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Products for Totally Integrated Automation

SIMATIC



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Introduction	1
LOGO! logic module	2
SIMATIC S7-1200 basic controller	3
SIMATIC S7-1500 advanced controller	4
SIMATIC S7-300 advanced controller	5
SIMATIC S7-400 advanced controller	6
Distributed controllers	7
Software controllers	8
I/O systems	9
SIMATIC control systems	10
Software for SIMATIC controllers	11
SIMATIC programming devices	12
Products for specific requirements	13
Overviews	14
Supplementary components	15
Appendix	16

LOGO! logic module



2/2

2/2

2/6

2/9

LOGO! modular

SIPLUS LOGO! modular basic variants
 SIPLUS LOGO! modular pure variants
 SIPLUS LOGO! modular expansion modules

2/14

2/14

LOGO! modular communication modules

LOGO! CMK2000 communication module

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

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LOGO! logic module

LOGO! modular

SIPLUS LOGO! modular basic variants

Overview

2



- The space-saving basic variants
- Interface for connecting expansion modules, up to 24 digital inputs, 20 (16) digital outputs, 8 analog inputs and 8 (2) analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! 0BA6 and 0BA7 basic versions); LOGO! TDE can be connected to LOGO! 8 or higher

New for LOGO! 8

- All basic units with integrated Web server
 - Same enclosure width as LOGO! 0BA6 (4 U)
 - All basic units with Ethernet interface for communication with LOGO!, SIMATIC Controller, SIMATIC Panel and PC
 - Use of standard micro CF cards
- LOGO! 0BA7 versions:
- Ethernet interface for communication with SIMATIC Controller, SIMATIC Panel and PC
 - Networking of max. 8 LOGO! devices
 - Use of standard SD card or SIMATIC Memory Card

Note:

SIPLUS LOGO! 6/7 versions are not compatible with SIPLUS LOGO! 8.

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1052-1CC01-7BA8	6AG1052-1MD00-7BA8	6AG1052-1HB00-7BA8	6AG1052-1FB00-7BA8
Based on	6ED1052-1CC01-0BA8	6ED1052-1MD00-0BA8	6ED1052-1HB00-0BA8	6ED1052-1FB00-0BA8
	SIPLUS LOGO! 24CE	SIPLUS LOGO! 12/24RCE	SIPLUS LOGO! 24RCE	SIPLUS LOGO! 230RCE
Ambient conditions				
Ambient temperature during operation				
• min.	-10 °C; = Tmin; Startup @ 0 °C	-10 °C; = Tmin; Startup @ 0 °C	-10 °C; = Tmin; Startup @ 0 °C	-10 °C; = Tmin; Startup @ 0 °C
• max.	60 °C; Tmax; Tmax > +55 °C max. load 0.2 A per output	60 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points)	60 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points)	60 °C; Tmax; Tmax > +55 °C max. load 1 A per relay
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• At cold restart, min.	0 °C	0 °C	0 °C	0 °C
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Technical specifications (continued)

Article number	6AG1052-1MD00-2BA7	6AG1052-1FB00-2BA7		
Based on	6ED1052-1MD00-0BA7 SIPLUS LOGO! 12/24RCE	6ED1052-1FB00-0BA7 SIPLUS LOGO! 230RCE		
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	-25 °C; = Tmin		
• max.	70 °C; = Tmax	70 °C; = Tmax		
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)		
Relative humidity	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)			
- With condensation, tested in accordance with IEC 60068-2-38, max.				
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Article number	6AG1052-1CC01-2BA6	6AG1052-1MD00-2BA6	6AG1052-1HB00-2BA6	6AG1052-1FB00-2BA6
Based on	6ED1052-1CC01-0BA6 SIPLUS LOGO! 24C	6ED1052-1MD00-0BA6 SIPLUS LOGO! 12/24RC	6ED1052-1HB00-0BA6 SIPLUS LOGO! 24RC	6AED1052-1FB00-0BA6 SIPLUS LOGO! 230RC
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)			
- With condensation, tested in accordance with IEC 60068-2-38, max.				
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

LOGO! logic module

LOGO! modular

SIPLUS LOGO! modular basic variants**Ordering data****Article No.****Article No.****SIPLUS LOGO! 8 logic module****SIPLUS LOGO! 24CE**

Supply voltage 24 V DC,
8 digital inputs 24 V DC, of which
4 can be used in analog mode
(0 to 10 V),
4 digital outputs 24 V DC, 0.3 A,
integrated time switch,
Ethernet interface;
400 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1CC01-7BA8**SIPLUS LOGO! 12/24RCE**

Supply voltage 12...24 V DC,
8 digital inputs 12/24 V DC, of
which 4 can be used in analog
mode (0 to 10 V),
4 relay outputs 10 A,
integral time switch,
Ethernet interface;
400 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1MD00-7BA8**SIPLUS LOGO! 24RCE**

Supply voltage 24 V AC/DC,
8 digital inputs 24 V AC/DC,
4 relay outputs 10 A,
integral time switch,
Ethernet interface;
400 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1HB00-7BA8**SIPLUS LOGO! 230RCE**

Supply voltage 115...230 V AC/DC,
8 digital inputs 115...230 V AC/DC,
4 relay outputs 10 A,
integral time switch,
Ethernet interface;
400 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1FB00-7BA8**SIPLUS LOGO! 7 logic module****SIPLUS LOGO! 12/24RCE**

12/24 V DC supply voltage,
8 digital inputs 12/24 V DC, of
which 4 can be used in analog
mode (0 to 10 V),
4 relay outputs 10 A,
integral time switch;
400 function blocks can be
interlinked,
Ethernet interface,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1MD00-2BA7**SIPLUS LOGO! 230RCE**

115/230 V AC/DC supply voltage,
8 digital inputs 115/230 V AC/DC,
4 relay outputs 10 A,
integral time switch;
400 function blocks can be
interlinked,
Ethernet interface,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1FB00-2BA7**SIPLUS LOGO! 6 logic module****SIPLUS LOGO! 24**

24 V DC supply voltage,
8 digital inputs 24 V DC, of which
4 can be used in analog mode
(0 to 10 V),
4 digital outputs 24 V DC, 0.3 A,
integrated time switch;
200 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1CC01-2BA6**SIPLUS LOGO! 12/24RC**

12/24 V DC power supply,
8x 12/24 V DC digital inputs, of
which 4 can be used in analog
mode (0 to 10 V)
4x 10 A relay outputs,
integral time switch;
200 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1MD00-2BA6**SIPLUS LOGO! 24RC**

24 V AC/DC supply voltage,
8 digital inputs 24 V AC/DC,
4 relay outputs 10 A,
integral time switch;
200 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1HB00-2BA6**SIPLUS LOGO! 230RC**

Control supply voltage 115/230 V
AC/DC,
8 digital inputs 115/230 V AC/DC,
4 relay outputs 10 A,
integrated time switch;
200 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-1FB00-2BA6**SIPLUS LOGO! 6, 7, 8
accessories****LOGO! PROM**

Programming device used to
simultaneously reproduce program
module contents on up to
8 program modules

6AG1057-1AA01-0BA6**LOGO!Soft Comfort V8**

For programming on the PC in
LAD/FBD; executes on Windows 8,
7, XP, Linux and Mac OSX; on DVD

6ED1058-0BA08-0YA1**LOGO!Soft Comfort V8 Upgrade**

Upgrade from V1.0 to V8, on DVD

6ED1058-0CA08-0YE1**Front panel mounting set**

Width 4 U

6AG1057-1AA00-0AA0

Width 8 U

6AG1057-1AA00-0AA1

Width 8 U, with keys

6AG1057-1AA00-0AA2

Ordering data	Article No.	Ordering data	Article No.
SIPLUS LOGO! 6, 7 accessories		SIPLUS LOGO! 6 accessories	
SIPLUS LOGO! TD text display (Extended temperature range -10 ... +60 °C and medial loading) 4-line text display, can be connected to all LOGO! basic and pure variants as of -0BA6, including connecting cable	6AG1055-4MH00-2BA0	LOGO! PC cable For program transfer between LOGO! and PC	6ED1057-1AA00-0BA0
LOGO! memory card Program module for copying, with know-how protection	6ED1056-1DA00-0BA0	LOGO! USB PC cable For program transfer between LOGO! and PC, including driver on CD-ROM	6ED1057-1AA01-0BA0
LOGO! battery card Battery module for backing up integral real-time clock (not LOGO! 24)	6ED1056-6XA00-0BA0		
LOGO! memory/battery card Combined program and battery module, with know-how protection and for backing up the integral real-time clock (not LOGO! 24)	6ED1056-7DA00-0BA0		

LOGO! logic module

LOGO! modular

SIPLUS LOGO! modular pure variants**Overview**

2



- Basic variants optimized for costs
- Interface for connecting expansion modules, up to 24 digital inputs, 16 (20) digital outputs, 8 analog inputs and 2 (8) analog outputs can be addressed
- With connection option for LOGO! TD text display (can be connected to all LOGO! 0BA6 basic variants)

New for SIPLUS LOGO! 8

- All basic units with integrated Web server
- Same enclosure width as LOGO! 0BA6 (4 U)
- All basic units with Ethernet interface for communication with LOGO!, SIMATIC Controller, SIMATIC Panel and PC
- Use of standard micro CF cards

Note:

SIPLUS LOGO! 6 versions are not compatible with SIPLUS LOGO! 8.

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1052-2CC01-7BA8	6AG1052-2MD00-7BA8	6AG1052-2HB00-7BA8	6AG1052-2FB00-7BA8
Based on	6ED1052-2CC01-0BA8 SIPLUS LOGO! 24CEO	6ED1052-2MD00-0BA8 SIPLUS LOGO! 12/24RCEO	6ED1052-2HB00-0BA8 SIPLUS LOGO! 24RCEO (AC)	6ED1052-2FB00-0BA8 SIPLUS LOGO! 230RCEO
Ambient conditions				
Ambient temperature during operation				
• min.	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; Tmax; Tmax > +55 °C max. load 0.2 A per output	70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points)	70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay or max. load 3 A per relay and half the number of DIs (no adjacent points)	70 °C; Tmax; Tmax > +55 °C max. load 1 A per relay
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• At cold restart, min.	0 °C	0 °C	0 °C	0 °C
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Technical specifications (continued)

Article number	6AG1052-2CC01-2BA6	6AG1052-2MD00-2BA6	6AG1052-2HB00-2BA6	6AG1052-2FB00-2BA6
Based on	6ED1052-2CC01-0BA6 SIPLUS LOGO! 24CO	6ED1052-2MD00-0BA6 SIPLUS LOGO! 12/24RCO	6ED1052-2HB00-0BA6 SIPLUS LOGO! 24RCO	6ED1052-2FB00-0BA6 SIPLUS LOGO! 230RCO
Ambient conditions				
Ambient temperature during operation				
• min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• max.	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Ordering data

Article No.	Article No.
SIPLUS LOGO! 8 logic module	SIPLUS LOGO! 12/24RCEo
SIPLUS LOGO! 24CEo 24 V DC supply voltage, 8 digital inputs 24 V DC, of which 4 can be used in analog mode (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A, integral time switch, Ethernet interface; without display and keyboard; 400 function blocks can be interlinked, modular expansion capability	12...24 V DC supply voltage, 8 digital inputs 12...24 V DC, of which 4 can be used in analog mode (0 to 10 V), 4 relay outputs 10 A, integral time switch, Ethernet interface; without display or keyboard; 400 function blocks can be interlinked, modular expansion capability
Extended temperature range and exposure to media	Extended temperature range and exposure to media
SIPLUS LOGO! 230RCEo 115...230 V AC/DC supply voltage, 8 digital inputs 115...230 V AC/DC, 4 relay outputs 10 A, integral time switch, Ethernet interface; without display or keyboard; 400 function blocks can be interlinked, modular expansion capability	SIPLUS LOGO! 6 logic module
Extended temperature range and exposure to media	SIPLUS LOGO! 24o 24 V DC supply voltage, 8 digital inputs 24 V DC, of which 4 can be used in analog mode (0 to 10 V), 4 digital outputs 24 V DC, 0.3 A, integrated time switch; without display and keyboard; 200 function blocks can be interlinked, modular expansion capability
SIPLUS LOGO! 24RCEo 24 V AC/DC supply voltage, 8 digital inputs 24 V AC/DC, 4 relay outputs 10 A, integral time switch, Ethernet interface; without display or keyboard; 400 function blocks can be interlinked, modular expansion capability	Extended temperature range and exposure to media
Extended temperature range and exposure to media	SIPLUS LOGO! 230RCo 115/230 V AC/DC supply voltage, 8 digital inputs 115/230 V AC/DC, 4 relay outputs 10 A, integral time switch; without display and keyboard; 200 function blocks can be interlinked, modular expansion capability
Extended temperature range and exposure to media	Extended temperature range and exposure to media

LOGO! logic module

LOGO! modular

SIPLUS LOGO! modular pure variants

2

Ordering data**Article No.****SIPLUS LOGO! 24RCo**

24 V AC/DC supply voltage,
8 digital inputs 24 V AC/DC,
4 relay outputs 10 A,
integral time switch;
without display and keyboard;
200 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-2HB00-2BA6**SIPLUS LOGO! 12/24RCo**

12/24 V DC supply voltage,
8 digital inputs 12/24 V DC, of
which 4 can be used in analog
mode (0 to 10 V),
4 relay outputs 10 A,
integral time switch;
without display and keyboard;
200 function blocks can be
interlinked,
modular expansion capability

Extended temperature range and
exposure to media

6AG1052-2MD00-2BA6**SIPLUS LOGO! 6, 8 accessories****LOGO! PROM**

Programming device used to
simultaneously reproduce pro-
gram module contents on up to
8 program modules

6AG1057-1AA01-0BA6**LOGO!Soft Comfort V8**

For programming on the PC in
LAD/FBD; executes on Windows 8,
7, XP, Linux and Mac OSX; on DVD

6ED1058-0BA08-0YA1**LOGO!Soft Comfort V8 Upgrade**

Upgrade from V1.0 to V8, on DVD

6ED1058-0CA08-0YE1**Front panel mounting set**

Width 4 U

6AG1057-1AA00-0AA0

Width 8 U

6AG1057-1AA00-0AA1

Width 8 U, with keys

6AG1057-1AA00-0AA2**Article No.****SIPLUS LOGO! 6 accessories****SIPLUS LOGO! TD text display**

(Extended temperature range
-10 ... +60 °C and medial loading)

4-line text display, can be
connected to all LOGO! basic and
pure variants as of -0BA6,
including connecting cable

6AG1055-4MH00-2BA0**LOGO! memory card**

Program module for copying,
with know-how protection

6ED1056-1DA00-0BA0**LOGO! battery card**

Battery module for backing up
integral real-time clock
(not LOGO! 24)

6ED1056-6XA00-0BA0**LOGO! memory/battery card**

Combined program and battery
module, with know-how protection
and for backing up the integral
real-time clock (not LOGO! 24)

6ED1056-7DA00-0BA0**LOGO! PC cable**

For program transfer between
LOGO! and PC

6ED1057-1AA00-0BA0**LOGO! USB PC cable**

For program transfer between
LOGO! and PC, including driver on
CD-ROM

6ED1057-1AA01-0BA0

Overview


- Expansion modules for connection to LOGO! modular
- With digital inputs and outputs, analog inputs, or analog outputs

Note:

SIPLUS LOGO! 6 versions are not compatible with SIPLUS LOGO! 8.

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1055-1CB00-7BA2	6AG1055-1HB00-7BA2	6AG1055-1MB00-7BA2
Based on	6ED1055-1CB00-0BA2 SIPLUS LOGO! DM8 24 V8	6ED1055-1HB00-0BA2 SIPLUS LOGO! DM8 24R V8	6ED1055-1MB00-0BA2 SIPLUS LOGO! DM8 12/24R V8
Ambient conditions			
Ambient temperature during operation			
• min.	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; Tmax; Tmax > +55 °C max. load 0.2 A per output	70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay or max. total current 10 A	70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay or max. total current 10 A
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
• At cold restart, min.	-25 °C	-25 °C	-25 °C
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

LOGO! logic module

LOGO! modular

SIPLUS LOGO! modular expansion modules**Technical specifications (continued)**

Article number	6AG1055-1FB00-7BA2	6AG1055-1NB10-7BA2
Based on	6ED1055-1FB00-0BA2 SIPLUS LOGO! DM8 230R V8	6ED1055-1NB10-0BA2 SIPLUS LOGO! DM16 24R V8
Ambient conditions		
Ambient temperature during operation		
• min.	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay or max. total current 10 A	70 °C; = Tmax; Tmax > +55 °C max. load 3 A per relay
Ambient temperature during storage/transportation		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Extended ambient conditions		
• At cold restart, min.	-25 °C	-25 °C
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

Article number	6AG1055-1MA00-7BA2	Article number	6AG1055-1MM00-7BA2
Based on	6ED1055-1MA00-0BA2 SIPLUS LOGO! AM2 V8	Based on	6ED1055-1MM00-0BA2 SIPLUS LOGO! AM2 AQ V8
Ambient conditions		Ambient conditions	
Ambient temperature during operation		Ambient temperature during operation	
• min.	-40 °C; = Tmin; Startup @ -25 °C	• min.	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax	• max.	70 °C; = Tmax
Ambient temperature during storage/transportation		Ambient temperature during storage/transportation	
• min.	-40 °C	• min.	-40 °C
• max.	70 °C	• max.	70 °C
Extended ambient conditions		Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	-25 °C	• At cold restart, min.	-25 °C
Relative humidity		Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation		100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
Resistance		Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number	6AG1055-1CB00-2BY0	6AG1055-1PB00-2BY0	6AG1055-1HB00-2BY0	6AG1055-1MB00-2BY1
Based on	6ED1055-1CB00-0BA0 SIPLUS LOGO! DM8 24	6ED1055-1CB00-0BA0 SIPLUS LOGO! DM8 12/24	6ED1055-1HB00-0BA0 SIPLUS LOGO! DM8 24R (-2BY0)	6ED1055-1MB00-0BA1 SIPLUS LOGO! DM8 12/24R
Ambient conditions				
Ambient temperature during operation				
• min.	-40 °C; = Tmin			
• max.	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use	70 °C; = Tmax; 55 °C @ UL/cUL use
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Article number	6AG1055-1FB00-2BY1		6AG1055-1NB10-2BA0	
Based on	6ED1055-1FB00-0BA1 SIPLUS LOGO! DM8 230R		6ED1055-1NB10-0BA0 SIPLUS LOGO! DM16 24R EXP. MODULE	
Ambient conditions				
Ambient temperature during operation				
• min.	-40 °C; = Tmin		-25 °C; = Tmin	
• max.	70 °C; = Tmax; 55 °C @ UL/cUL use		70 °C; = Tmax; 55 °C @ UL/cUL use	
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)		Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

LOGO! logic module

LOGO! modular

SIPLUS LOGO! modular expansion modules**Technical specifications (continued)**

Article number	6AG1055-1MA00-2BY0
Based on	6ED1055-1MA00-0BA0 SIPLUS LOGO! AM2
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 55 °C @ UL/cUL use
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Article number	6AG1055-1MM00-2BY1
Based on	6ED1055-1MM00-0BA1 SIPLUS LOGO! AM2_AQ
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 55 °C @ UL/cUL use
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data**Article No.**

SIPLUS LOGO! 8 expansion modules	
SIPLUS LOGO! DM8 24	
Supply voltage 24 V DC, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A	
Extended temperature range and exposure to media	6AG1055-1CB00-7BA2
SIPLUS LOGO! DM8 230R	
115...230 V AC/DC supply voltage, 4 digital inputs 115...230 V AC/DC, 4 relay outputs 5 A	
Extended temperature range and exposure to media	6AG1055-1FB00-7BA2
SIPLUS LOGO! DM8 24R	
Supply voltage 24 V AC/DC, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A	
Extended temperature range and exposure to media	6AG1055-1HB00-7BA2
SIPLUS LOGO! AM2	
12...24 V DC supply voltage, 2 analog inputs 0 to 10 V or 0 to 20 mA, resolution 10 bit	
Extended temperature range and exposure to media	6AG1055-1MA00-7BA2

Article No.

SIPLUS LOGO! DM8 12/24R	
12...24 V DC supply voltage, 4 digital inputs 12...24 V DC, 4 relay outputs 5 A	
Extended temperature range and exposure to media	6AG1055-1MB00-7BA2
SIPLUS LOGO! AM2 AQ	
Supply voltage 24 V DC, 2 analog outputs 0 to 10 V, 0/4 to 20 mA	
Extended temperature range and exposure to media	6AG1055-1MM00-7BA2
SIPLUS LOGO! DM16 24R	
Supply voltage 24 V DC, 8 digital inputs 24 V DC, 8 relay outputs 5 A	
Extended temperature range and exposure to media	6AG1055-1NB10-7BA2

Ordering data	Article No.	Ordering data	Article No.
SIPLUS LOGO! 6 expansion modules		SIPLUS LOGO! 6, 8 accessories	
SIPLUS LOGO! DM8 24 24 V DC supply voltage, 4 digital inputs 24 V DC, 4 digital outputs 24 V DC, 0.3 A Extended temperature range and exposure to media	6AG1055-1CB00-2BY0	LOGO! PROM Programming device used to simultaneously reproduce program module contents on up to 8 program modules	6AG1057-1AA01-0BA6
SIPLUS LOGO! DM8 230R 115/230 V AC/DC supply voltage, 4 digital inputs 115/230 V AC/DC, 4 relay outputs 5 A Extended temperature range and exposure to media	6AG1055-1FB00-2BY1	LOGO!Soft Comfort V8 For programming on the PC in LAD/FBD; executes on Windows 8, 7, XP, Linux and Mac OS X; on DVD	6ED1058-0BA08-0YA1
SIPLUS LOGO! DM8 24R 24 V AC/DC supply voltage, 4 digital inputs 24 V AC/DC, 4 relay outputs 5 A Extended temperature range and exposure to media	6AG1055-1HB00-2BY0	LOGO!Soft Comfort V8 Upgrade Upgrade from V1.0 to V8, on DVD	6ED1058-0CA08-0YE1
SIPLUS LOGO! AM2 12/24 V DC supply voltage, 2 analog inputs 0 ... 10 V or 0 ... 20 mA, 10-bit resolution Extended temperature range and exposure to media	6AG1055-1MA00-2BY0	Front panel mounting set Width 4 U Width 8 U Width 8 U, with keys	6AG1057-1AA00-0AA0 6AG1057-1AA00-0AA1 6AG1057-1AA00-0AA2
SIPLUS LOGO! DM8 12/24R 12/24 V DC supply voltage, 4 digital inputs 12/24 V DC, 4 relay outputs 5 A Extended temperature range and exposure to media	6AG1055-1MB00-2BY1	SIPLUS LOGO! 6 accessories	
SIPLUS LOGO! AM2 AQ 24 V DC supply voltage, 2 analog inputs 0 ... 10 V, 0/4 ... 20 mA, 10-bit resolution Extended temperature range and exposure to media	6AG1055-1MM00-2BY1	SIPLUS LOGO! TD text display (Extended temperature range -10 ... +60 °C and medial loading) 4-line text display, can be connected to all LOGO! basic and pure variants as of -0BA6, including connecting cable	6AG1055-4MH00-2BA0
SIPLUS LOGO! DM16 24R 24 V DC supply voltage, 8 digital outputs 24 V DC, 8 relay outputs 5 A Extended temperature range and exposure to media	6AG1055-1NB10-2BA0	LOGO! memory card Program module for copying, with know-how protection	6ED1056-1DA00-0BA0
SIPLUS LOGO! DM8 12/24 12/24 V DC supply voltage, 4 digital inputs 12/24 V DC, 4 digital outputs 24 V DC, 0.3 A Extended temperature range and exposure to media	6AG1055-1PB00-2BY0	LOGO! battery card Battery module for backing up integral real-time clock (not LOGO! 24)	6ED1056-6XA00-0BA0
		LOGO! memory/battery card Combined program and battery module, with know-how protection and for backing up the integral real-time clock (not LOGO! 24)	6ED1056-7DA00-0BA0
		LOGO! PC cable For program transfer between LOGO! and PC	6ED1057-1AA00-0BA0
		LOGO! USB PC cable For program transfer between LOGO! and PC, including driver on CD-ROM	6ED1057-1AA01-0BA0

LOGO! logic module

LOGO! modular communication modules

LOGO! CMK2000 communication module**Overview**

- Expansion module for LOGO! 8 basic versions
- For integrating LOGO! 8 in KNX installations
- With 24 digital inputs, 20 digital outputs as well as 8 analog inputs and outputs for processing process signals via KNX.

Technical specifications

Article number	6BK1700-0BA20-0AA0 LOGO! CMK2000
General information	
Firmware version	
• FW update possible	Yes
Installation type/mounting	
Mounting	on 35 mm DIN rail, 4 spacing units wide
Supply voltage	
Rated value (DC)	24 V
• 12 V DC	No
• 24 V DC	Yes
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Rated value (AC)	
• 24 V AC	No
Input current	
Current consumption, max.	0.04 A
Power loss	
Power loss, max.	1.1 W
Memory	
Flash	Yes
Time of day	
Clock synchronization	
• supported	Yes
Interfaces	
Transmission rate, max.	100 Mbit/s over Ethernet, 9 600 bit/s over KNX
Protocols	
EIB/KNX	Yes
Web server	
• supported	Yes

Article number	6BK1700-0BA20-0AA0 LOGO! CMK2000
Interrupts/diagnostics/ status information	
Diagnostics indication LED	
• RUN/STOP LED	Yes
EMC	
Emission of radio interference acc. to EN 55 011	
• Limit class B, for use in residential areas	Yes; In accordance with EN 61000-6-3
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes
Standards, approvals, certificates	
CE mark	Yes
CSA approval	Yes
UL approval	Yes
cULus	Yes
FM approval	No
RCM (formerly C-TICK)	No
KC approval	Yes
EAC (formerly Gost-R)	Yes
according to VDE 0631	No
Marine approval	
• Marine approval	No
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	55 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Relative humidity	
• Operation, max.	95 %
Connection method	
Bus connector	KNX terminal 0.6 mm ² - 1.0 mm ²
Power supply	2 screw-type terminals: L+, M 0.5 mm ² - 2.5 mm ² Screw-type terminal: FE 0.5 mm ² ... 6.0 mm ²
Dimensions	
Width	71.5 mm; 4 WU
Height	90 mm
Depth	58.5 mm
Weights	
Weight, approx.	0.14 kg

Ordering data	Article No.
LOGO! CMK2000 communication module	6BK1700-0BA20-0AA0
For integrating LOGO! 8 in the KNX building system bus, max. 50 communication objects can be configured; RJ45 port for Ethernet; supply voltage 24 V DC/40 mA	

SIMATIC S7-1200 basic controller

**3/2 Central processing units**

- 3/2 [SIPLUS standard CPUs](#)
- 3/2 SIPLUS CPU 1212C
- 3/6 SIPLUS CPU 1214C
- 3/10 SIPLUS CPU 1215C

3/14 I/O modules

- 3/14 [SIPLUS analog modules](#)
- 3/14 SIPLUS RTD SM 1231 signal module
- 3/16 [Special modules](#)
- 3/16 SIPLUS CMS1200 SM 1281
Condition Monitoring
- 3/17 SIWAREX WP251
- 3/19 [SIPLUS communication](#)
- 3/19 SIPLUS CM 1241 communication module

3/21 Operator control and monitoring

- 3/21 SIPLUS Basic Panels (2nd Generation)

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

SIMATIC S7-1200 basic controller

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1212C

Overview



- The superior compact solution
- With 14 integral input/outputs
- Expandable by:
 - 1 signal board (SB) or communication board (CB);
not possible with: 6AG1212-1AE31-2XB0, 6AG1212-1BE31-2XB0, 6AG1212-1HE31-2XB0
 - 2 signal modules (SM)
 - Max. 3 communication modules (CM)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1212-1AE40-4XB0	6AG1212-1AE40-2XB0
Based on	6ES7212-1AE40-0XB0 SIPLUS S7-1200 CPU 1212C DC/DC/DC	6ES7212-1AE40-0XB0 SIPLUS S7-1200 CPU 1212C DC/DC/DC
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
Extended ambient conditions		
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

Technical specifications (continued)

Article number	6AG1212-1BE40-4XB0	6AG1212-1BE40-2XB0
Based on	6ES7212-1BE40-0XB0	6ES7212-1BE40-0XB0
	SIPLUS S7-1200 CPU 1212C AC/DC/RLY	SIPLUS S7-1200 CPU 1212C AC/DC/RLY
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
Extended ambient conditions		
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC	
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	
Article number	6AG1212-1HE40-4XB0	6AG1212-1HE40-2XB0
Based on	6ES7212-1HE40-0XB0	6ES7212-1HE40-0XB0
	SIPLUS S7-1200 CPU 1212C DC/DC/RLY	SIPLUS S7-1200 CPU 1212C DC/DC/RLY
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 4, digital outputs 3, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 3, digital outputs 2, analog inputs 0 (no adjacent points) with horizontal mounting position
Extended ambient conditions		
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC	
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

SIMATIC S7-1200 basic controller

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1212C**Ordering data****Article No.****Article No.****SIPLUS CPU 1212C
compact CPU, AC/DC/relay**

(Extended temperature range and medial exposure)

Integrated program/data memory
75 KB, load memory 1 MB;
Wide-range power supply
85 ... 264 V AC;
Boolean execution times
0.1 µs per operation;
8 digital inputs,
6 digital outputs (relays),
2 analog inputs;
Expandable by up to
3 communication modules,
2 signal modules and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 100 kHz

- For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C

6AG1212-1BE40-4XB0**6AG1212-1BE40-2XB0****SIPLUS CPU 1212C
compact CPU, DC/DC/DC**

(Extended temperature range and medial exposure)

Integrated program/data memory
75 KB, load memory 1 MB;
Power supply 24 V DC;
Boolean execution times
0.1 µs per operation;
8 digital inputs,
6 digital outputs,
2 analog inputs;
Expandable by up to
3 communication modules,
2 signal modules, and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 100 kHz,
24 V DC digital outputs can be
used as pulse outputs (PTO) or
pulse-width modulated outputs
(PWM) at 100 kHz

- For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C

6AG1212-1AE40-4XB0**6AG1212-1AE40-2XB0****SIPLUS CPU 1212C
compact CPU, DC/DC/relay**

(Extended temperature range and medial exposure)

Integrated program/data memory
75 KB, load memory 1 MB;
Power supply 24 V DC;
Boolean execution times
0.1 µs per operation;
8 digital inputs,
6 digital outputs (relays),
2 analog inputs;
Expandable by up to
3 communication modules,
2 signal modules, and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 100 kHz

- For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C

6AG1212-1HE40-4XB0**6AG1212-1HE40-2XB0****Accessories****SIPLUS SB 1221
digital input signal board**

(Extended temperature range and medial exposure; cannot be used with 6AG1212-1.....-2XB0)

4 inputs, 5 V DC, 200 kHz,
sourcing

6AG1221-3AD30-5XB0

4 inputs, 24 V DC, 200 kHz,
sourcing

6AG1221-3BD30-5XB0**SIPLUS SB 1222
digital output signal board**

(Extended temperature range and medial exposure; cannot be used with 6AG1212-1.....-2XB0)

4 outputs, 5 V DC, 0.1 A, 200 kHz

6AG1222-1AD30-5XB0

4 outputs, 24 V DC, 0.1 A, 200 kHz

6AG1222-1BD30-5XB0**Digital input/output
SIPLUS SB 1223 signal board**

(Extended temperature range and medial exposure; cannot be used with 6AG1212-1.....-2XB0)

2 inputs, 24 V DC,
IEC type 1 current sinking;
2 transistor outputs 24 V DC,
0.5 A, 5 W;
can be used as HSC at up to
30 kHz

- Suitable for areas with extreme medial exposure (conformal coating)
- Ambient temperature -25 ... +55 °C

6AG1223-0BD30-4XB0**6AG1223-0BD30-5XB0**

2 inputs, 5 V DC, 200 kHz
2 outputs 5 V DC, 0.1 A, 200 kHz

6AG1223-3AD30-5XB0

2 inputs, 24 V DC, 200 kHz
2 outputs 24 V DC, 0.1 A, 200 kHz

6AG1223-3BD30-5XB0

SIMATIC S7-1200 basic controller

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1214C

Overview



- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable with:
 - 1 signal board (SB) or communication board (CB);
not possible with: 6AG1214-1AG40-2XB0, 6AG1214-1BG40-2XB0, 6AG1214-1HG40-2XB0
 - 8 signal modules (SM)
 - Max. 3 communication modules (CM)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1214-1AG40-4XB0	6AG1214-1AG40-5XB0	6AG1214-1AG40-2XB0
Based on	6ES7214-1AG40-0XB0	6ES7214-1AG40-0XB0	6ES7214-1AG40-0XB0
	SIPLUS S7-1200 CPU 1214C DC/DC/DC	SIPLUS S7-1200 CPU 1214C DC/DC/DC	SIPLUS S7-1200 CPU 1214C DC/DC/DC
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1 (no adjacent points) with horizontal mounting position
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Technical specifications (continued)

Article number	6AG1214-1BG40-4XB0	6AG1214-1BG40-5XB0	6AG1214-1BG40-2XB0
Based on	6ES7214-1BG40-0XB0 SIPLUS S7-1200 CPU 1214C AC/DC/RLY	6ES7214-1BG40-0XB0 SIPLUS S7-1200 CPU 1214C AC/DC/RLY	6ES7214-1BG40-0XB0 SIPLUS S7-1200 CPU 1214C AC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position ; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1 (no adjacent points) with horizontal mounting position
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC		
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		
Article number	6AG1214-1HG40-4XB0	6AG1214-1HG40-5XB0	6AG1214-1HG40-2XB0
Based on	6ES7214-1HG40-0XB0 SIPLUS S7-1200 CPU 1214C DC/DC/RLY	6ES7214-1HG40-0XB0 SIPLUS S7-1200 CPU 1214C DC/DC/RLY	6ES7214-1HG40-0XB0 SIPLUS S7-1200 CPU 1214C DC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1 (no adjacent points) with horizontal mounting position
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC		
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

SIMATIC S7-1200 basic controller

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1214C**Ordering data****Article No.****Article No.****SIPLUS CPU 1214C
compact CPU, AC/DC/relay**

(Extended temperature range and medial exposure)

Integrated program/data memory
100 KB, load memory 2 MB;
Wide-range power supply
85 ... 264 V AC;
Boolean execution times
0.1 µs per operation;
14 digital inputs,
10 digital outputs (relays),
2 analog inputs;
Expandable by up to
3 communication modules,
8 signal modules and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 100 kHz

- For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C

6AG1214-1BG40-4XB0**6AG1214-1BG40-5XB0****6AG1214-1BG40-2XB0****SIPLUS CPU 1214C
compact CPU, DC/DC/DC**

(Extended temperature range and medial exposure)

Integrated program/data memory
100 KB, load memory 2 MB;
Power supply 24 V DC;
Boolean execution times
0.1 µs per operation;
14 digital inputs,
10 digital outputs,
2 analog inputs;
expandable by up to
3 communication modules,
8 signal modules, and 1 signal
board/communication board;
Digital inputs can be used as HSC
at 100 kHz,
24 V DC digital outputs can be
used as pulse outputs (PTO) or
pulse-width modulated outputs
(PWM) at 100 kHz

- For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C

6AG1214-1AG40-4XB0**6AG1214-1AG40-5XB0****6AG1214-1AG40-2XB0**

Ordering data	Article No.	Accessories	Article No.
<p>SIPLUS CPU 1214C compact CPU, DC/DC/relay</p> <p>(Extended temperature range and medial exposure)</p> <p>Integrated program/data memory 100 KB, load memory 2 MB; Power supply 24 V DC; Boolean execution times 0.1 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs; Expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; Digital inputs can be used as HSC at 100 kHz</p> <ul style="list-style-type: none"> For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C 	<p>6AG1214-1HG40-4XB0</p> <p>6AG1214-1HG40-5XB0</p> <p>6AG1214-1HG40-2XB0</p>	<p>SIPLUS SB 1221 digital input signal board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1214-1.....-2XB0)</p> <p>4 inputs, 5 V DC, 200 kHz, sourcing</p> <p>4 inputs, 24 V DC, 200 kHz, sourcing</p> <p>SIPLUS SB 1222 digital output signal board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1214-1.....-2XB0)</p> <p>4 outputs, 5 V DC, 0.1 A, 200 kHz</p> <p>4 outputs, 24 V DC, 0.1 A, 200 kHz</p> <p>SIPLUS SB 1223 digital input/output signal board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1214-1.....-2XB0)</p> <p>2 inputs, 24 V DC, IEC type 1 current sinking; 2 transistor outputs 24 V DC, 0.5 A, 5 W; can be used as HSC at up to 30 kHz</p> <ul style="list-style-type: none"> Suitable for areas with extreme medial exposure (conformal coating) Ambient temperature -25 ... +55 °C <p>2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz</p> <p>2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz</p> <p>SIPLUS SB 1232 analog output signal board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1214-1.....-2XB0)</p> <p><u>Ambient temperature range</u> -25 ... +55 °C</p> <p>1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits</p> <p><u>Ambient temperature range</u> 0 ... +55 °C</p> <p>1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits</p> <p>SIPLUS CB 1241 RS 485 communication board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1214-1.....-2XB0)</p> <p>for point-to-point connection, with 1 RS 485 interface</p> <p>Additional accessories</p>	<p>6AG1221-3AD30-5XB0</p> <p>6AG1221-3BD30-5XB0</p> <p>6AG1222-1AD30-5XB0</p> <p>6AG1222-1BD30-5XB0</p> <p>6AG1223-0BD30-4XB0</p> <p>6AG1223-0BD30-5XB0</p> <p>6AG1223-3AD30-5XB0</p> <p>6AG1223-3BD30-5XB0</p> <p>6AG1232-4HA30-5XB0</p> <p>6AG1232-4HA30-4XB0</p> <p>6AG1241-1CH30-5XB1</p> <p>See Catalog ST 70, SIMATIC S7-1200 CPU 1214C</p>

SIMATIC S7-1200 basic controller

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1215C

Overview



- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable with:
 - 1 signal board (SB) or communication board (CB);
not possible with: 6AG1215-1AG40-2XB0, 6AG1215-1BG40-2XB0, 6AG1215-1HG40-2XB0
 - 8 signal modules (SM)
 - Max. 3 communication modules (CM)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1215-1AG40-4XB0	6AG1215-1AG40-5XB0	6AG1215-1AG40-2XB0
Based on	6ES7215-1AG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/DC	6ES7215-1AG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/DC	6ES7215-1AG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/DC
Ambient conditions			
Ambient temperature during operation			
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position	70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1, analog outputs 1 (no adjacent points) with horizontal mounting position
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Technical specifications (continued)

Article number	6AG1215-1BG40-4XB0	6AG1215-1BG40-5XB0	6AG1215-1BG40-2XB0
Based on	6ES7215-1BG40-0XB0 SIPLUS S7-1200 CPU 1215C AC/DC/RLY	6ES7215-1BG40-0XB0 SIPLUS S7-1200 CPU 1215C AC/DC/RLY	6ES7215-1BG40-0XB0 SIPLUS S7-1200 CPU 1215C AC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
<ul style="list-style-type: none"> • min. • max. 	-20 °C; = Tmin; Startup @ 0 °C 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	-40 °C; = Tmin; Startup @ -25 °C 60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position	-40 °C; = Tmin; Startup @ -25 °C 70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1, analog outputs 1 (no adjacent points) with horizontal mounting position
Extended ambient conditions			
<ul style="list-style-type: none"> • relative to ambient temperature-atmospheric pressure-installation altitude 	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC		
Relative humidity			
<ul style="list-style-type: none"> - With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
<ul style="list-style-type: none"> - against biologically active substances / conformity with EN 60721-3-3 - against chemically active substances / conformity with EN 60721-3-3 - against mechanically active substances / conformity with EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		
Article number	6AG1215-1HG40-4XB0	6AG1215-1HG40-5XB0	6AG1215-1HG40-2XB0
Based on	6ES7215-1HG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/RLY	6ES7215-1HG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/RLY	6ES7215-1HG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/RLY
Ambient conditions			
Ambient temperature during operation			
<ul style="list-style-type: none"> • min. • max. 	-20 °C; = Tmin; Startup @ 0 °C 60 °C; Number of simultaneously activated inputs or outputs 7 or 5 (no adjacent points) at 60 °C horizontal or 50 °C vertical, 14 or 10 at 55 °C horizontal or 45 °C vertical	-40 °C; = Tmin; Startup @ -25 °C 60 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position	-40 °C; = Tmin; Startup @ -25 °C 70 °C; = Tmax; Tmax > +55 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 2, analog outputs 2 (no adjacent points) with horizontal mounting position; Tmax > +60 °C number of simultaneously switched-on digital inputs 7, digital outputs 5, analog inputs 1, analog outputs 1 (no adjacent points) with horizontal mounting position

SIMATIC S7-1200 basic controllerCentral processing units
SIPLUS standard CPUs**SIPLUS CPU 1215C****Technical specifications (continued)**

Article number	6AG1215-1HG40-4XB0	6AG1215-1HG40-5XB0	6AG1215-1HG40-2XB0
Based on	6ES7215-1HG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/RLY	6ES7215-1HG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/RLY	6ES7215-1HG40-0XB0 SIPLUS S7-1200 CPU 1215C DC/DC/RLY
Extended ambient conditions	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1 080 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); from 2 000 m max. 132 V AC
Relative humidity	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
- With condensation, tested in accordance with IEC 60068-2-38, max.			
Resistance	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3			

Ordering data**SIPLUS CPU 1215C
compact CPU, AC/DC/relay**

(Extended temperature range and medial exposure)

Integrated program and data memory 125 KB, load memory 4 MB; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relay), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz

- For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C

Article No.**6AG1215-1BG40-4XB0****6AG1215-1BG40-5XB0****6AG1215-1BG40-2XB0****Article No.****SIPLUS CPU 1215C
compact CPU, DC/DC/DC**

(Extended temperature range and medial exposure)

Integrated program and data memory 125 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz; 24 V DC digital outputs usable as pulse outputs (PTO) or pulse-width-modulated outputs (PWM) with 100 kHz

- For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C
- For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C

6AG1215-1AG40-4XB0**6AG1215-1AG40-5XB0****6AG1215-1AG40-2XB0**

Ordering data	Article No.	Accessories	Article No.
<p>SIPLUS CPU 1215C compact CPU, DC/DC/relay</p> <p>(Extended temperature range and medial exposure)</p> <p>Integrated program and data memory 125 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relay), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; digital inputs usable as HSC with 100 kHz</p> <ul style="list-style-type: none"> For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +60 °C For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C 	<p>6AG1215-1HG40-4XB0</p> <p>6AG1215-1HG40-5XB0</p> <p>6AG1215-1HG40-2XB0</p>	<p>SIPLUS SB 1221 digital input signal board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1215-1.....-2XB0)</p> <p>4 inputs, 5 V DC, 200 kHz, sourcing</p> <p>4 inputs, 24 V DC, 200 kHz, sourcing</p> <p>SIPLUS SB 1222 digital output signal board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1215-1.....-2XB0)</p> <p>4 outputs, 5 V DC, 0.1 A, 200 kHz</p> <p>4 outputs, 24 V DC, 0.1 A, 200 kHz</p> <p>Digital input/output SIPLUS signal board SB 1223</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1215-1.....-2XB0)</p> <p>2 inputs, 24 V DC, IEC type 1 current sinking; 2 transistor outputs 24 V DC, 0.5 A, 5 W; can be used as HSC at up to 30 kHz</p> <ul style="list-style-type: none"> Suitable for areas with extreme medial exposure (conformal coating) Ambient temperature -25 ... +55 °C <p>2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz</p> <p>2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz</p> <p>SIPLUS SB 1232 analog output signal board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1215-1.....-2XB0)</p> <p><u>Ambient temperature range</u> -25 ... +55 °C</p> <p>1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits</p> <p><u>Ambient temperature range</u> 0 ... +55 °C</p> <p>1 analog output, ±10 V with 12 bits or 0 ... 20 mA with 11 bits</p> <p>SIPLUS CB 1241 RS 485 communication board</p> <p>(Extended temperature range and medial exposure; cannot be used with 6AG1215-1.....-2XB0)</p> <p>For point-to-point connection, with 1 RS 485 interface</p> <p>Additional accessories</p>	<p>6AG1221-3AD30-5XB0</p> <p>6AG1221-3BD30-5XB0</p> <p>6AG1222-1AD30-5XB0</p> <p>6AG1222-1BD30-5XB0</p> <p>6AG1223-0BD30-4XB0</p> <p>6AG1223-0BD30-5XB0</p> <p>6AG1223-3AD30-5XB0</p> <p>6AG1223-3BD30-5XB0</p> <p>6AG1232-4HA30-5XB0</p> <p>6AG1232-4HA30-4XB0</p> <p>6AG1241-1CH30-5XB1</p> <p>See Catalog ST 70, SIMATIC S7-1200 CPU 1215C</p>

SIMATIC S7-1200 basic controller

I/O modules

SIPLUS analog modules

SIPLUS RTD SM 1231 signal module**Overview**

- For the convenient recording of temperatures with great accuracy
- 4 inputs
- Most popular resistance temperature detectors can be used
- Can easily be retrofitted to existing plant

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1231-5PD32-4XB0	6AG1231-5PD32-2XB0	6AG1231-5PF32-4XB0	6AG1231-5PF32-2XB0
Based on	6ES7231-5PD32-0XB0	6ES7231-5PD32-0XB0	6ES7231-5PF32-0XB0	6ES7231-5PF32-0XB0
	SIPLUS S7-1200 SM 1231 4AI RTD 16BIT	SIPLUS S7-1200 SM 1231 4AI RTD 16BIT	SIPLUS S7-1200 SM 1231 8AI RTD 16BIT	SIPLUS S7-1200 SM 1231 8AI RTD 16BIT
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package			
Ambient temperature during operation				
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = Tmax	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax
Ambient temperature during storage/transportation				
• min.	-40 °C			
• max.	70 °C			
Air pressure acc. to IEC 60068-2-13				
• Storage/transport, min.	660 hPa			
• Storage/transport, max.	1 080 hPa			
Relative humidity				
• permissible range (without condensation) at 25 °C	95 %			
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Ordering data	Article No.		Article No.
<p>SIPLUS RTD signal module SM 1231</p> <p>(Extended temperature range and medial exposure)</p> <p>4 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign</p> <ul style="list-style-type: none"> For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C 	<p>6AG1231-5PD32-4XB0</p> <p>6AG1231-5PD32-2XB0</p>	<p>8 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign</p> <ul style="list-style-type: none"> For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +60 °C For areas with extreme medial exposure (conformal coating); ambient temperature -40 ... +70 °C <p>Accessories</p>	<p>6AG1231-5PF32-4XB0</p> <p>6AG1231-5PF32-2XB0</p> <p>See Catalog ST 70, SIMATIC S7-1200 RTD SM 1231 signal module</p>

SIMATIC S7-1200 basic controller

I/O modules

Special modules

SM 1281 Condition Monitoring**Overview**

SIPLUS CMS1200 SM 1281 Condition Monitoring forms part of SIMATIC S7-1200 and is used for the:

- Monitoring of motors, generators, pumps, fans, or other mechanical components
- Recording and analysis of vibrations
- Expansion capability of up to 7 modules

Technical specifications

Article number	6AT8007-1AA10-0AA0	
product brand name	SIPLUS	
Product designation	CMS1200 SM 1281 Condition Monitoring	
General technical data:		
Protection class IP	IP20	
Browser software required	Web browser Mozilla Firefox (ESR31) or Microsoft Internet Explorer (10/11)	
Storage capacity total	Gbyte	1
Scanning frequency maximum	Hz	46 875
Material of the enclosure	Plastic: polycarbonate:abbreviation: PC- GF 10 FR	
Hardware configuration	Modular, up to 7 modules per CPU	
Vibration frequency measuring range		
• initial value	Hz	0.05
• Full-scale value	Hz	10 000
Power loss [W] total typical	W	6
Equipment marking acc. to DIN EN 81346-2	P	
Weight	g	260
Supply voltage:		
Supply voltage 1 at DC rated value	V	24
Type of voltage of the supply voltage	DC	
Supply voltage at DC rated value		
• minimum	V	20.4
• maximum	V	28.8

Article number	6AT8007-1AA10-0AA0	
Installation/ mounting/ dimensions:		
Mounting position	vertical, horizontal	
Mounting position recommended	horizontal	
Mounting type	Rail or wall mounting	
Width	mm	70
Height	mm	112
Depth	mm	75
Inputs/ Outputs:		
Number of sensor inputs for IEPE sensors	4	
Number of speed inputs	1	
Product function Bus communication	Yes	
Product function monitoring of sensor inputs	Yes	
Input voltage at speed input DC 24 V digital	Yes	
Display:		
Display version for diagnostic function: status display digital input LED green	No	
Communication:		
Type of data transmission	Exporting of raw data as WAV file for further analyses (e.g. using SIPLUS CMS X-Tools) can be downloaded via browser	
Design of the interface	Yes	
Ethernet interface	Yes	
Service as web server HTTP	Yes	
Ambient conditions:		
Ambient temperature		
• during operation	-20 ... +55	
• during storage	-25 ... +85	
• during transport	-25 ... +85	
Air pressure during storage and transport	660 ... 1 080	
Height of fall maximum	m	0.3
Options:		
Alert function Diagnostics alarm	Yes	
Type of electrical connection	screw-type terminals	

Ordering data	Article No.
SIPLUS CMS1200 SM 1281 Condition Monitoring	6AT8007-1AA10-0AA0
Module for SIMATIC S7-1200 for monitoring vibrations in mechanical components based on characteristic values and frequency-selective analysis functions.	

Overview



SIWAREX WP251 electronic weighing module

SIWAREX WP251 is a flexible weighing module for dosing and filling processes. The compact module can be installed seamlessly in the SIMATIC S7-1200 automation system. It can also be used without a SIMATIC CPU in stand-alone mode.

Technical specifications

SIWAREX WP251	
Weighing modes	<ul style="list-style-type: none"> Non-automatic weighing instrument (NAWI) (filling + emptying) (in accordance with OIML R-76)¹⁾ Automatic catchweighing instrument (filling + emptying) (in accordance with OIML R-51)¹⁾ Automatic gravimetric filling instrument (in accordance with OIML R-61)¹⁾
Ports	<ul style="list-style-type: none"> 1 x SIMATIC S7-1200 system bus 1 x Ethernet (SIWATOOL and Modbus TCP/IP) 1 x RS485 (Modbus RTU or remote display) 1 x analog output (0/4 ... 20 mA) 4 x digital input (24 V DC floating) 4 x digital output (24 V DC floating, short-circuit proof)
Functions	<ul style="list-style-type: none"> 3 limits Tare Tare specification Set to zero Zero adjustment Statistics Automatic correction of the shut-off points Internal protocol memory for 550 000 entries Trace function for signal analysis Internal restore point Stand-alone mode or SIMATIC S7-1200 integrated
Parameter assignment	<ul style="list-style-type: none"> Full access using function block in SIMATIC S7-1200 Full access using Modbus TCP/IP Full access using Modbus RTU
Remote display	
Connection	Via RS485
Setting the scales	PC software SIWATOOL (Ethernet), S7-1200 function block and touch panel or directly connected operator panel (Modbus)
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05%
Internal resolution	Up to ±4 million parts

SIWAREX WP251	
Number of measurements/second	100 or 120 (selectable)
Filter	<ul style="list-style-type: none"> Low-pass filter 0.1 ... 50 Hz Average value filter
Load cells	Strain gauges in 4-wire or 6-wire system
Load cell powering	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	<ul style="list-style-type: none"> R_{Lmin} > 40 Ω R_{Lmax} < 4 100 Ω
With SIWAREX IS Ex interface	<ul style="list-style-type: none"> R_{Lmin} > 50 Ω R_{Lmax} < 4 100 Ω
Load cell characteristic	1 ... 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Certificates	<ul style="list-style-type: none"> ATEX Zone 2 UL KCC EAC RCM
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection according to DIN EN 60529; IEC 60529	IP20
Climatic requirements T_{min}(IND) ... T_{max}(IND) (operating temperature)	
Vertical installation	-10 ... +55 °C (14 ... 131 °F)
Horizontal installation	-10 ... +40 °C (14 ... 104 °F)
EMC requirements according to	EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 in)

¹⁾ Calibration capability available soon

SIMATIC S7-1200 basic controller

I/O modules

Special modules

SIWAREX WP251

Ordering data	Article No.	Article No.
SIWAREX WP251 Electronic weighing module for dosing and batching scales in SIMATIC S7-1200	7MH4960-6AA01	Ex interface, type SIWAREX IS With ATEX approval, but without UL and FM approvals , for intrinsically-safe connection of load cells, including device manual Suitable for the SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241, WP251 and WP321 weighing modules Approved for use in the EU • Short-circuit current < 199 mA DC • Short-circuit current < 137 mA DC
SIWAREX WP251 device manual Available in a range of languages Free-of-charge download from the Internet at: http://www.siemens.com/weighing		
SIWAREX WP251 "Ready for Use" Free-of-charge download from the Internet at: http://www.siemens.com/weighing		7MH4710-5BA 7MH4710-5CA
Configuration package SIWAREX WP251 on CD-ROM for TIA Portal V12 • "Ready for use" software for operating a scale with SIWAREX WP251 and a touch panel (in a variety of languages) • SIWATOOL V7.0 • Device manuals (PDF files in a variety of languages)	7MH4960-6AK01	Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241, WP251 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs. For fixed laying, occasional bending is possible, approx. 10.8 mm (0.43 inch) outer diameter. For ambient temperature -40 ... +80 °C (-104 ... +176 °F).
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP251 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.	6XV1850-2GH20	Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, blue sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241, WP251 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs. For fixed laying, occasional bending is possible, approx. 10.8 mm (0.43 inch) outer diameter. For ambient temperature -40 ... +80 °C (-104 ... +176 °F).
Remote display (optional) The digital remote displays can be connected directly to the SIWAREX WP251 via the RS 485 interface. Suitable remote display: S102 Siebert Industrieelektronik GmbH Postfach 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: http://www.siebert.de Detailed information is available from the manufacturer.		Ground terminal for connecting the load cell cable shield to the grounded DIN rail
Accessories		
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting several junction boxes	7MH4710-1BA	
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel	7MH4710-1EA	
SIWAREX JB junction box, stainless steel housing (ATEX) For connecting up to 4 load cells in parallel	7MH4710-1EA01	

Overview



- For fast, high-performance serial data exchange via point-to-point coupling
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can also be loaded
- Simple parameterization with STEP 7 Basic

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

3

Technical specifications

Article number	6AG1241-1AH32-4XB0	6AG1241-1AH32-2XB0	6AG1241-1CH32-4XB0	6AG1241-1CH32-2XB0
Based on	6ES7241-1AH32-0XB0	6ES7241-1AH32-0XB0	6ES7241-1CH32-0XB0	6ES7241-1CH32-0XB0
	SIPLUS S7-1200 CM 1241 RS232	SIPLUS S7-1200 CM1241 RS232	SIPLUS S7-1200 CM 1241 RS422/485	SIPLUS S7-1200 CM 1241 RS422/485
Ambient conditions				
Free fall				
• Fall height, max.	0.3 m; five times, in product package			
Ambient temperature during operation				
• min.	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C	-20 °C; = Tmin; Startup @ 0 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	60 °C	70 °C; = Tmax	60 °C; = Tmax	70 °C; Tmax > 60 °C, derating: Max. one module may be configured; this module must be the last module on the CM bus; minimum clearance on the left side of at least 45 mm
Ambient temperature during storage/transportation				
• min.	-40 °C			
• max.	70 °C			
Air pressure acc. to IEC 60068-2-13				
• Operation, min.				795 hPa
• Operation, max.				1 080 hPa
• Storage/transport, min.	660 hPa			660 hPa
• Storage/transport, max.	1 080 hPa			1 080 hPa
Relative humidity				
• permissible range (without condensation) at 25 °C	95 %			95 %
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

SIMATIC S7-1200 basic controller

I/O modules

SIPLUS communication

SIPLUS CM 1241 communication module**Ordering data****Article No.****SIPLUS CM 1241
communication module**(Extended temperature range and
medial exposure)Ambient temperature -40 ... +70° CCommunication module
for point-to-point connection,
with one RS232 interfaceCommunication module
for point-to-point connection,
with one RS485 interfaceSuitable for areas
with extreme medial exposure
(conformal coating)Communication module
for point-to-point connection,
with one RS232 interfaceCommunication module
for point-to-point connection,
with one RS485 interface**6AG1241-1AH32-2XB0****6AG1241-1CH32-2XB0****6AG1241-1AH32-4XB0****6AG1241-1CH32-4XB0****Accessories****Article No.**See Catalog ST 70,
SIMATIC S7-1200 CM 1241
communication module

3

SIMATIC S7-1200 basic controller

Operator control and monitoring

SIPLUS Basic Panels (2nd Generation)

Overview



With their fully developed HMI basic functions, 2nd generation SIPLUS Basic Panels are the ideal entry level series for simple HMI applications.

The device family offers panels with 4", 7", 9" and 12" displays, as well as combined key and touch operation.

The innovative high-resolution widescreen displays with 64 000 colors are also suitable for upright installation, and they can be dimmed down to 100 %. The innovative operator interface with improved usability opens up a diverse range of options thanks to new controls and graphics. The new USB interface enables the connection of keyboard, mouse or barcode scanner, and supports the simple archiving of data on a USB stick.

The integrated Ethernet or RS 485/422 interface (version-specific) enables simple connection to the controller.

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical documentation on SIPLUS can be found here:
<http://www.siemens.com/siplus-extreme>

Technical specifications

Article number	6AG1123-2DB03-2AX0	6AG1123-2GB03-2AX0	6AG1123-2GA03-2AX0
Based on	6AV2123-2DB03-0AX0 SIPLUS HMI KTP400 BASIC	6AV2123-2GB03-0AX0 SIPLUS HMI KTP700 BASIC	6AV2123-2GA03-0AX0 SIPLUS HMI KTP700 BASIC DP
Ambient conditions			
Ambient temperature during operation			
• Operation (vertical installation)			
- For vertical installation, min.	-20 °C	-20 °C	-20 °C; = Tmin
- For vertical installation, max.	50 °C	50 °C	50 °C
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning when condensation present), vertical mounting position
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

SIMATIC S7-1200 basic controller

Operator control and monitoring

SIPLUS Basic Panels (2nd Generation)**Technical specifications** (continued)

Article number	6AG1123-2JB03-2AX0	6AG1123-2MB03-2AX0	6AG1123-2MA03-2AX0
Based on	6AV2123-2JB03-0AX0 SIPLUS HMI KTP900 BASIC	6AV2123-2MB03-0AX0 SIPLUS HMI KTP1200 BASIC	6AV2123-2MA03-0AX0 SIPLUS HMI KTP1200 BASIC DP
Ambient conditions			
Ambient temperature during operation			
<ul style="list-style-type: none"> Operation (vertical installation) <ul style="list-style-type: none"> For vertical installation, min. -20 °C For vertical installation, max. 50 °C 		<ul style="list-style-type: none"> For vertical installation, min. -10 °C; = Tmin For vertical installation, max. 50 °C 	<ul style="list-style-type: none"> For vertical installation, min. -10 °C; = Tmin For vertical installation, max. 50 °C
Extended ambient conditions			
<ul style="list-style-type: none"> relative to ambient temperature-atmospheric pressure-installation altitude 	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
Relative humidity			
<ul style="list-style-type: none"> With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning when condensation present), vertical mounting position
Resistance			
<ul style="list-style-type: none"> against biologically active substances / conformity with EN 60721-3-3 against chemically active substances / conformity with EN 60721-3-3 against mechanically active substances / conformity with EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Ordering data

	Article No.		Article No.
SIPLUS HMI Basic Panels, Key and Touch		SIPLUS HMI KTP1200 Basic	6AG1123-2MB03-2AX0
SIPLUS HMI KTP400 Basic	6AG1123-2DB03-2AX0	For areas with extreme medial exposure (conformal coating); ambient temperature -10 ... +50 °C	
For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +50 °C		SIPLUS HMI KTP1200 Basic DP	6AG1123-2MA03-2AX0
SIPLUS HMI KTP700 Basic	6AG1123-2GB03-2AX0	For areas with extreme medial exposure (conformal coating); ambient temperature -10 ... +50 °C	
For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +50 °C		Accessories	See Catalog ST 80, SIMATIC Basic Panels 2nd Generation
SIPLUS HMI KTP700 Basic DP	6AG1123-2GA03-2AX0		
For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +50 °C			
SIPLUS HMI KTP900 Basic	6AG1123-2JB03-2AX0		
For areas with extreme medial exposure (conformal coating); ambient temperature -20 ... +50 °C			

SIMATIC S7-1500 advanced controllers

**4/2 Central processing units**Standard CPUs

4/2 CPU 1511-1 PN

4/5 CPU 1513-1 PN

4/8 CPU 1515-2 PN

4/11 CPU 1516-3 PN/DP

4/15 CPU 1517-3 PN/DP

SIPLUS standard CPUs

4/19 SIPLUS CPU 1511-1 PN

4/20 SIPLUS CPU 1513-1 PN

4/21 SIPLUS CPU 1516-3 PN/DP

Compact CPUs

4/22 CPU 1511C-1 PN

4/26 CPU 1512C-1 PN

Fail-safe CPUs

4/30 CPU 1511F-1 PN

4/33 CPU 1513F-1 PN

4/36 CPU 1515F-2 PN

4/40 CPU 1516F-3 PN/DP

SIPLUS fail-safe CPUs

4/44 SIPLUS CPU 1518F-4 PN/DP

4/46 I/O modulesDigital modules

4/46 SM 521 digital input modules

4/51 SM 522 digital output modules

Analog modules

4/59 SM 531 analog input modules

4/67 SM 532 analog output modules

SIPLUS communication

4/71 SIPLUS NET CP 1543-1

Fail-safe digital/analog I/O modules

4/72 F digital input module

4/74 F digital output module

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1511-1 PN

Overview



- Entry-level CPU in the S7-1500 controller product range
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6ES7511-1AK01-0AB0 CPU 1511-1PN, 150KB PROGRAM, 1MB DATA
General information	
Product type designation	CPU 1511-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	3.45 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.7 W
Memory	
Work memory	
• integrated (for program)	150 kbyte
• integrated (for data)	1 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	60 ns
for word operations, typ.	72 ns
for fixed point arithmetic, typ.	96 ns
for floating point arithmetic, typ.	384 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	6ES7511-1AK01-0AB0 CPU 1511-1PN, 150KB PROGRAM, 1MB DATA
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
Protocols	
Number of connections	
• Number of connections, max.	96; via integrated interfaces of the CPU and connected CPs / CMs

Technical specifications (continued)

Article number	6ES7511-1AK01-0AB0	Article number	6ES7511-1AK01-0AB0
	CPU 1511-1PN, 150KB PROGRAM, 1MB DATA		CPU 1511-1PN, 150KB PROGRAM, 1MB DATA
PROFINET IO Controller Services		Controller	
- Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via PROFIBUS or PROFINET	• PID_Compact	Yes; Universal PID controller with integrated optimization
- Of which IO devices with IRT, max.	64	• PID_3Step	Yes; PID controller with integrated optimization for valves
- Number of connectable IO Devices for RT, max.	128	• PID-Temp	Yes; PID controller with integrated optimization for temperature
Isochronous mode		Counting and measuring	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 625 µs	• High-speed counter	Yes
Supported technology objects		Ambient conditions	
Motion Control	Yes	Ambient temperature during operation	
• Speed-controlled axis		• horizontal installation, min.	0 °C
- Number of speed-controlled axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• Positioning axis		• vertical installation, min.	0 °C
- Number of positioning axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
• Synchronized axes (relative gear synchronization)		Configuration	
- Number of axes, max.	3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Programming	
• External encoders		Programming language	
- Number of external encoders, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	- LAD	Yes
		- FBD	Yes
		- STL	Yes
		- SCL	Yes
		- GRAPH	Yes
		Know-how protection	
		• User program protection	Yes
		• Copy protection	Yes
		• Block protection	Yes
		Access protection	
		• Password for display	Yes
		• Protection level: Write protection	Yes
		• Protection level: Read/write protection	Yes
		• Protection level: Complete protection	Yes
		Dimensions	
		Width	35 mm
		Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	430 g

Ordering data

Ordering data	Article No.	Ordering data	Article No.
CPU 1511-1 PN	6ES7511-1AK01-0AB0	SIMATIC S7-1500 DIN rail	
Work memory 150 KB for program, 1 MB for data, PROFINET IO IRT interface, SIMATIC Memory Card required		Fixed lengths, with grounding elements	
Accessories		• 160 mm	6ES7590-1AB60-0AA0
SIMATIC Memory Card		• 245 mm	6ES7590-1AC40-0AA0
4 MB	6ES7954-8LC02-0AA0	• 482 mm	6ES7590-1AE80-0AA0
12 MB	6ES7954-8LE02-0AA0	• 530 mm	6ES7590-1AF30-0AA0
24 MB	6ES7954-8LF02-0AA0	• 830 mm	6ES7590-1AJ30-0AA0
256 MB	6ES7954-8LL02-0AA0	For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
2 GB	6ES7954-8LP02-0AA0	• 2000 mm	6ES7590-1BC00-0AA0
32 GB	6ES7954-8LT02-0AA0	PE connection element for DIN rail 2000 mm	6ES7590-5AA00-0AA0
		20 units	

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1511-1 PN

Ordering data	Article No.	Ordering data	Article No.
Power supply For supplying the backplane bus of the S7-1500 24 V DC input voltage, power 25 W 24/48/60 V DC input voltage, power 60 W 120/230 V AC input voltage, power 60 W	6ES7505-0KA00-0AB0 6ES7505-0RA00-0AB0 6ES7507-0RA00-0AB0	IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
Power connector With coding element for power supply module; spare part, 10 units	6ES7590-8AA00-0AA0	Display for CPU 1511-1 PN and CPU 1513-1 PN; spare part	6ES7591-1AA01-0AA0
Load power supply 24 V DC/3A 24 V DC/8A	6EP1332-4BA00 6EP1333-4BA00	SIMATIC S7-1500 Starter Kit Comprising: CPU 1511-1 PN, SIMATIC Memory Card 4 MB, digital input DI 16 x 24 V DC HF, digital output DO 16 x 24 V DC/0.5 A ST, 160 mm DIN rail, front connector, STEP 7 Professional V13 SP1, 365-day license, power supply PM 70, 120/230 V AC, Ethernet cable, documentation	6ES7511-1AK02-4YB5
Power supply connector Spare part; for connecting the 24 V DC supply voltage • with push-in terminals	6ES7193-4JB00-0AA0	STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables		STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5
IE FC RJ45 Plug 180 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
IE FC TP Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-3AH10		
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-4AH10		

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Overview

- The CPU for applications with medium requirements for program/data storage in the S7-1500 controller product range
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6ES7513-1AL01-0AB0 CPU 1513-1 PN, 300KB PROG., 1.5MB DATA
General information	
Product type designation	CPU 1513-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	3.45 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.7 W
Memory	
Work memory	
• integrated (for program)	300 kbyte
• integrated (for data)	1.5 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	40 ns
for word operations, typ.	48 ns
for fixed point arithmetic, typ.	64 ns
for floating point arithmetic, typ.	256 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	6ES7513-1AL01-0AB0 CPU 1513-1 PN, 300KB PROG., 1.5MB DATA
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
Protocols	
Number of connections	
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1513-1 PN

Technical specifications (continued)

Article number	6ES7513-1AL01-0AB0 CPU 1513-1 PN, 300KB PROG., 1.5MB DATA
PROFINET IO Controller Services	
- Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	128
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 625 µs
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Positioning axis	
- Number of positioning axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• External encoders	
- Number of external encoders, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool

Article number	6ES7513-1AL01-0AB0 CPU 1513-1 PN, 300KB PROG., 1.5MB DATA
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Password for display	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	430 g

Ordering data

Article No.	Article No.
CPU 1513-1 PN	6ES7513-1AL01-0AB0
Work memory 300 KB for program, 1.5 MB for data, PROFINET IO IRT interface, SIMATIC Memory Card required	
Accessories	
SIMATIC Memory Card	
4 MB	6ES7954-8LC02-0AA0
12 MB	6ES7954-8LE02-0AA0
24 MB	6ES7954-8LF02-0AA0
256 MB	6ES7954-8LL02-0AA0
2 GB	6ES7954-8LP02-0AA0
32 GB	6ES7954-8LT02-0AA0

Article No.

SIMATIC S7-1500 DIN rail	
Fixed lengths, with grounding elements	
• 160 mm	6ES7590-1AB60-0AA0
• 245 mm	6ES7590-1AC40-0AA0
• 482 mm	6ES7590-1AE80-0AA0
• 530 mm	6ES7590-1AF30-0AA0
• 830 mm	6ES7590-1AJ30-0AA0
For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
• 2000 mm	6ES7590-1BC00-0AA0
PE connection element for DIN rail 2000 mm	6ES7590-5AA00-0AA0
20 units	

Ordering data	Article No.	Ordering data	Article No.
Power supply For supplying the backplane bus of the S7-1500 24 V DC input voltage, power 25 W 24/48/60 V DC input voltage, power 60 W 120/230 V AC input voltage, power 60 W	6ES7505-0KA00-0AB0 6ES7505-0RA00-0AB0 6ES7507-0RA00-0AB0	IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
Power connector With coding element for power supply module; spare part, 10 units	6ES7590-8AA00-0AA0	Display for CPU 1511-1 PN and CPU 1513-1 PN; spare part	6ES7591-1AA01-0AA0
Load power supply 24 V DC/3A 24 V DC/8A	6EP1332-4BA00 6EP1333-4BA00	STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5
Power supply connector Spare part; for connecting the 24 V DC supply voltage • with push-in terminals	6ES7193-4JB00-0AA0	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables		SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
IE FC RJ45 Plug 180 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0		
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10		
IE FC TP Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-3AH10		
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-4AH10		

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1515-2 PN

Overview



- The CPU for applications with medium to high requirements for program/data storage in the S7-1500 controller product range
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6ES7515-2AM01-0AB0 CPU 1515-2 PN, 500KB PROG., 3MB DATA
General information	
Product type designation	CPU 1515-2 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	6.1 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	6.3 W
Memory	
Work memory	
• integrated (for program)	500 kbyte
• integrated (for data)	3 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	30 ns
for word operations, typ.	36 ns
for fixed point arithmetic, typ.	48 ns
for floating point arithmetic, typ.	192 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048

Article number	6ES7515-2AM01-0AB0 CPU 1515-2 PN, 500KB PROG., 3MB DATA
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
2. Interface	
Interface types	
• Number of ports	1
• integrated switch	No
• RJ 45 (Ethernet)	Yes; X2

Technical specifications (continued)

Article number	6ES7515-2AM01-0AB0	Article number	6ES7515-2AM01-0AB0
	CPU 1515-2 PN, 500KB PROG., 3MB DATA		CPU 1515-2 PN, 500KB PROG., 3MB DATA
Functionality		<ul style="list-style-type: none"> External encoders <ul style="list-style-type: none"> - Number of external encoders, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
<ul style="list-style-type: none"> PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server 	No No Yes Yes Yes	Controller	Yes; Universal PID controller with integrated optimization
Protocols		<ul style="list-style-type: none"> PID_Compact PID_3Step PID-Temp 	Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature
Number of connections		Counting and measuring	
<ul style="list-style-type: none"> Number of connections, max. 	192; via integrated interfaces of the CPU and connected CPs / CMs	<ul style="list-style-type: none"> High-speed counter 	Yes
PROFINET IO Controller		Ambient conditions	
Services		Ambient temperature during operation	
<ul style="list-style-type: none"> Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable IO Devices for RT, max. 	256; In total, up to 512 distributed I/O devices can be connected via PROFIBUS or PROFINET 64 256	<ul style="list-style-type: none"> horizontal installation, min. horizontal installation, max. 	0 °C 60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
Isochronous mode		<ul style="list-style-type: none"> vertical installation, min. vertical installation, max. 	0 °C 40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 500 µs	Configuration	
Supported technology objects		Programming	
Motion Control	Yes	Programming language	
<ul style="list-style-type: none"> Speed-controlled axis <ul style="list-style-type: none"> - Number of speed-controlled axes, max. Positioning axis <ul style="list-style-type: none"> - Number of positioning axes, max. Synchronized axes (relative gear synchronization) <ul style="list-style-type: none"> - Number of axes, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 15; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	<ul style="list-style-type: none"> LAD FBD STL SCL GRAPH 	Yes Yes Yes Yes Yes
		Know-how protection	
		<ul style="list-style-type: none"> User program protection Copy protection Block protection 	Yes Yes Yes
		Access protection	
		<ul style="list-style-type: none"> Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection 	Yes Yes Yes Yes
		Dimensions	
		Width	70 mm
		Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	830 g

Ordering data

Article No.	Article No.
CPU 1515-2 PN	Accessories
500 KB work memory for program, 3 MB for data, PROFINET IO IRT interface, PROFINET interface; SIMATIC Memory Card required	SIMATIC Memory Card
6ES7515-2AM01-0AB0	4 MB
	12 MB
	24 MB
	256 MB
	2 GB
	32 GB
	6ES7954-8LC02-0AA0
	6ES7954-8LE02-0AA0
	6ES7954-8LF02-0AA0
	6ES7954-8LL02-0AA0
	6ES7954-8LP02-0AA0
	6ES7954-8LT02-0AA0

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1515-2 PN

4

Ordering data	Article No.	Article No.	
SIMATIC S7-1500 DIN rail Fixed lengths, with grounding elements <ul style="list-style-type: none"> • 160 mm • 245 mm • 482 mm • 530 mm • 830 mm For cutting to length by customer, without drill holes; grounding elements must be ordered separately <ul style="list-style-type: none"> • 2000 mm 	6ES7590-1AB60-0AA0 6ES7590-1AC40-0AA0 6ES7590-1AE80-0AA0 6ES7590-1AF30-0AA0 6ES7590-1AJ30-0AA0	IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-4AH10
PE connection element for DIN rail 2000 mm 20 units	6ES7590-5AA00-0AA0	IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
Power supply For supplying the backplane bus of the S7-1500 24 V DC input voltage, power 25 W 24/48/60 V DC input voltage, power 60 W 120/230 V AC input voltage, power 60 W	6ES7505-0KA00-0AB0 6ES7505-0RA00-0AB0 6ES7507-0RA00-0AB0	Display For CPU 1515-2 PN, CPU 1516-3 PN/DP, CPU 1517-3PN/DP and CPU 1518-4 PN/DP; spare part	6ES7591-1BA01-0AA0
Power connector With coding element for power supply module; spare part, 10 units	6ES7590-8AA00-0AA0	STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
Load power supply 24 V DC/3A 24 V DC/8A	6EP1332-4BA00 6EP1333-4BA00	STEP 7 Professional V13 SP1, floating license	6ES7822-1AA03-0YA5
Power supply connector Spare part; for connecting the 24 V DC supply voltage <ul style="list-style-type: none"> • with push-in terminals 	6ES7193-4JB00-0AA0	STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AE03-0YA5
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables		SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
IE FC RJ45 Plug 180 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0		
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
IE FC TP Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-3AH10		

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Overview

- The CPU with a large program and data memory in the S7-1500 controller product range for applications with high requirements regarding program scope and networking
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6ES7516-3AN01-0AB0 CPU 1516-3 PN/DP, 1MB PROG., 5MB DATA
General information	
Product type designation	CPU 1516-3 PN/DP
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	6.1 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	7 W
Memory	
Work memory	
• integrated (for program)	1 Mbyte
• integrated (for data)	5 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	10 ns
for word operations, typ.	12 ns
for fixed point arithmetic, typ.	16 ns
for floating point arithmetic, typ.	64 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	6ES7516-3AN01-0AB0 CPU 1516-3 PN/DP, 1MB PROG., 5MB DATA
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
2. Interface	
Interface types	
• Number of ports	1
• integrated switch	No
• RJ 45 (Ethernet)	Yes; X2
Functionality	
• PROFINET IO Controller	No
• PROFINET IO Device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1516-3 PN/DP

Technical specifications (continued)

Article number	6ES7516-3AN01-0AB0 CPU 1516-3 PN/DP, 1MB PROG., 5MB DATA
3. Interface	
Interface types	
• Number of ports	1
• RS 485	Yes
Functionality	
• SIMATIC communication	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	No
Protocols	
Number of connections	
• Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	256; In total, up to 768 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	256
PROFIBUS DP master	
Services	
- Number of DP slaves	125; In total, up to 768 distributed I/O devices can be connected via PROFIBUS or PROFINET
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 375 µs
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
- Number of speed-controlled axes, max.	
• Positioning axis	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
- Number of positioning axes, max.	
• Synchronized axes (relative gear synchronization)	15; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
- Number of axes, max.	

Article number	6ES7516-3AN01-0AB0 CPU 1516-3 PN/DP, 1MB PROG., 5MB DATA
• External encoders	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
- Number of external encoders, max.	
Controller	Yes; Universal PID controller with integrated optimization
• PID_Compact	Yes; PID controller with integrated optimization for valves
• PID_3Step	Yes; PID controller with integrated optimization for temperature
• PID-Temp	
Counting and measuring	Yes
• High-speed counter	
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Password for display	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	845 g

Ordering data	Article No.	Article No.
CPU 1516-3 PN/DP 1 MB work memory for program, 5 MB for data, PROFINET IO IRT interface, PROFINET/PROFIBUS interface; SIMATIC Memory Card required	6ES7516-3AN01-0AB0	PROFIBUS FC standard cable GP 6XV1830-0EH10 Standard type with special design for fast mounting, 2-core, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
Accessories		PROFIBUS FC Robust Cable 6XV1830-0JH10 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
SIMATIC Memory Card		PROFIBUS FC Flexible Cable 6XV1831-2K 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
4 MB	6ES7954-8LC02-0AA0	PROFIBUS FC Trailing Cable 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
12 MB	6ES7954-8LE02-0AA0	Sheath color: Petrol 6XV1830-3EH10
24 MB	6ES7954-8LF02-0AA0	Sheath color: Violet 6XV1831-2L
256 MB	6ES7954-8LL02-0AA0	PROFIBUS FC Food Cable 6XV1830-0GH10 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
2 GB	6ES7954-8LP02-0AA0	PROFIBUS FC Ground Cable 6XV1830-3FH10 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
32 GB	6ES7954-8LT02-0AA0	PROFIBUS FC FRNC Cable GP 6XV1830-0LH10 2-wire, shielded, flame-retardant, with copolymer outer sheath FRNC; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
SIMATIC S7-1500 DIN rail		PROFIBUS FastConnect Stripping Tool 6GK1905-6AA00 Preadjusted stripping tool for fast stripping of PROFIBUS FastConnect bus cables
Fixed lengths, with grounding elements		IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal en- closure and integrated insulation dis- placement contacts for connecting Industrial Ethernet FC installation cables
• 160 mm	6ES7590-1AB60-0AA0	IE FC RJ45 Plug 180 180° cable outlet
• 245 mm	6ES7590-1AC40-0AA0	1 unit
• 482 mm	6ES7590-1AE80-0AA0	10 units
• 530 mm	6ES7590-1AF30-0AA0	50 units
• 830 mm	6ES7590-1AJ30-0AA0	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
For cutting to length by customer, without drill holes; grounding ele- ments must be ordered separately		
• 2000 mm	6ES7590-1BC00-0AA0	
PE connection element for DIN rail 2000 mm	6ES7590-5AA00-0AA0	
20 units		
Power supply		
For supplying the backplane bus of the S7-1500		
24 V DC input voltage, power 25 W	6ES7505-0KA00-0AB0	
24/48/60 V DC input voltage, power 60 W	6ES7505-0RA00-0AB0	
120/230 V AC input voltage, power 60 W	6ES7507-0RA00-0AB0	
Power connector	6ES7590-8AA00-0AA0	
With coding element for power supply module; spare part, 10 units		
Load power supply		
24 V DC/3A	6EP1332-4BA00	
24 V DC/8A	6EP1333-4BA00	
Power supply connector		
Spare part; for connecting the 24 V DC supply voltage		
• with push-in terminals	6ES7193-4JB00-0AA0	
PROFIBUS FastConnect RS 485 bus connector with 90° cable outlet		
with insulation displacement, max. transmission rate 12 Mbit/s		
without PG interface, grounding via control cabinet contact surface; 1 unit	6ES7972-0BA70-0XA0	
with PG interface, grounding via control cabinet contact surface; 1 unit	6ES7972-0BB70-0XA0	

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1516-3 PN/DP

Ordering data	Article No.	Article No.
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	
IE FC TP Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-3AH10	
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-4AH10	
IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00	
Display for CPU 1515-2 PN, CPU 1516-3 PN/DP, CPU 1517-3 PN/DP and CPU 1518-4 PN/DP; spare part	6ES7591-1BA01-0AA0	
		STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license 6ES7822-1AA03-0YA5 STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ 6ES7822-1AE03-0YA5 Email address required for delivery
		SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC 6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates 6ES7998-8XC01-8YE2

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

Overview

The CPU with a large program and data memory in the S7-1500 controller product range for applications with high requirements regarding program scope and networking

- High processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, positionally precise gearing between axes
- Integrated web server with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

Technical specifications

Article number	6ES7517-3AP00-0AB0 CPU 1517-3 PN/DP, 2MB PROG./8MB DATA
General information	
Product type designation	CPU 1517-3 PN/DP
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	6.1 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	24 W
Memory	
Work memory	
• integrated (for program)	2 Mbyte
• integrated (for data)	8 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	2 ns
for word operations, typ.	3 ns
for fixed point arithmetic, typ.	3 ns
for floating point arithmetic, typ.	12 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048

Article number	6ES7517-3AP00-0AB0 CPU 1517-3 PN/DP, 2MB PROG./8MB DATA
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes

SIMATIC S7-1500 advanced controllers

Central processing units
Standard CPUs

CPU 1517-3 PN/DP

Technical specifications (continued)

Article number	6ES7517-3AP00-0AB0 CPU 1517-3 PN/DP, 2MB PROG./8MB DATA
2. Interface	
Interface types	
• Number of ports	1
• integrated switch	No
• RJ 45 (Ethernet)	Yes; X2
Functionality	
• PROFINET IO Controller	No
• PROFINET IO Device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
3. Interface	
Interface types	
• Number of ports	1
• RS 485	Yes
Functionality	
• SIMATIC communication	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	No
Protocols	
Number of connections	
• Number of connections, max.	320; via integrated interfaces of the CPU and connected CPs / CMs
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	512; In total, up to 1000 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	512
PROFIBUS DP master	
Services	
- Number of DP slaves	125; In total, up to 1000 distributed I/O devices can be connected via PROFIBUS or PROFINET
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 375 µs
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	96; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Positioning axis	
- Number of positioning axes, max.	96; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool

Article number	6ES7517-3AP00-0AB0 CPU 1517-3 PN/DP, 2MB PROG./8MB DATA
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	48; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• External encoders	
- Number of external encoders, max.	96; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Password for display	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	175 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	1 978 g

Ordering data	Article No.	Article No.
CPU 1517-3 PN/DP 2 MB work memory for program, 8 MB for data, PROFINET IO IRT interface, PROFINET/PROFIBUS interface; SIMATIC Memory Card required	6ES7517-3AP00-0AB0	PROFIBUS FC standard cable GP 6XV1830-0EH10 Standard type with special design for fast mounting, 2-core, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
Accessories		PROFIBUS FC Robust Cable 6XV1830-0JH10 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
SIMATIC Memory Card		PROFIBUS FC Flexible Cable 6XV1831-2K 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
4 MB	6ES7954-8LC02-0AA0	PROFIBUS FC Trailing Cable 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
12 MB	6ES7954-8LE02-0AA0	Sheath color: Petrol 6XV1830-3EH10
24 MB	6ES7954-8LF02-0AA0	Sheath color: Violet 6XV1831-2L
256 MB	6ES7954-8LL02-0AA0	PROFIBUS FC Food Cable 6XV1830-0GH10 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
2 GB	6ES7954-8LP02-0AA0	PROFIBUS FC Ground Cable 6XV1830-3FH10 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
32 GB	6ES7954-8LT02-0AA0	PROFIBUS FC FRNC Cable GP 6XV1830-0LH10 2-wire, shielded, flame-retardant, with copolymer outer sheath FRNC; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m
SIMATIC S7-1500 DIN rail		PROFIBUS FastConnect Stripping Tool 6GK1905-6AA00 Preadjusted stripping tool for fast stripping of PROFIBUS FastConnect bus cables
Fixed lengths, with grounding elements		IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal en- closure and integrated insulation dis- placement contacts for connecting Industrial Ethernet FC installation cables
• 160 mm	6ES7590-1AB60-0AA0	IE FC RJ45 Plug 180 180° cable outlet
• 245 mm	6ES7590-1AC40-0AA0	1 unit
• 482 mm	6ES7590-1AE80-0AA0	10 units
• 530 mm	6ES7590-1AF30-0AA0	50 units
• 830 mm	6ES7590-1AJ30-0AA0	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
For cutting to length by customer, without drill holes; grounding ele- ments must be ordered separately		
• 2000 mm	6ES7590-1BC00-0AA0	
PE connection element for DIN rail 2000 mm	6ES7590-5AA00-0AA0	
20 units		
Power supply		
For supplying the backplane bus of the S7-1500		
24 V DC input voltage, power 25 W	6ES7505-0KA00-0AB0	
24/48/60 V DC input voltage, power 60 W	6ES7505-0RA00-0AB0	
120/230 V AC input voltage, power 60 W	6ES7507-0RA00-0AB0	
Power connector	6ES7590-8AA00-0AA0	
With coding element for power supply module; spare part, 10 units		
Load power supply		
24 V DC/3A	6EP1332-4BA00	
24 V DC/8A	6EP1333-4BA00	
Power supply connector		
Spare part; for connecting the 24 V DC supply voltage		
• with push-in terminals	6ES7193-4JB00-0AA0	
PROFIBUS FastConnect RS 485 bus connector with 90° cable outlet		
with insulation displacement, max. transmission rate 12 Mbit/s		
without PG interface, grounding via control cabinet contact surface; 1 unit	6ES7972-0BA70-0XA0	
with PG interface, grounding via control cabinet contact surface; 1 unit	6ES7972-0BB70-0XA0	

SIMATIC S7-1500 advanced controllersCentral processing units
Standard CPUs**CPU 1517-3 PN/DP**

Ordering data	Article No.	Article No.
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates
IE FC TP Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-3AH10	
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-4AH10	
IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00	
Display for CPU 1515-2 PN, CPU 1516-3 PN/DP, CPU 1517-3 PN/DP and CPU 1518-4 PN/DP; spare part	6ES7591-1BA01-0AA0	
Front cover for PROFIBUS DP interface for CPU 1517-3 PN/DP and CPU 1518-4 PN/DP; spare part	6ES7591-8AA00-0AA0	

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1511-1 PN

Overview



- Entry-level CPU in the S7-1500 controller product range
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- SIMATIC memory card required for operation of the CPU

Please note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1511-1AK01-2AB0	6AG1511-1AK01-7AB0
Based on	6ES7511-1AK01-0AB0 SIPLUS S7-1500 CPU 1511-1 PN	6ES7511-1AK01-0AB0 SIPLUS S7-1500 CPU 1511-1 PN
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -20 °C	-40 °C; = Tmin; Startup @ -20 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	70 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-40 °C; = Tmin; Startup @ -20 °C	-40 °C; = Tmin; Startup @ -20 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off

Article number	6AG1511-1AK01-2AB0	6AG1511-1AK01-7AB0
Based on	6ES7511-1AK01-0AB0 SIPLUS S7-1500 CPU 1511-1 PN	6ES7511-1AK01-0AB0 SIPLUS S7-1500 CPU 1511-1 PN
Extended ambient conditions		
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation in corrosive atmospheres!

Ordering data

Article No.

Ordering data	Article No.
SIPLUS CPU 1511-1 PN (extended temperature range and medial exposure) Work memory 150 KB for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC memory card required	
Temperature range -40 ... +60 °C (startup -20 °C)	6AG1511-1AK01-2AB0
Temperature range -40 ... +70 °C (startup -20 °C)	6AG1511-1AK01-7AB0
Power supply (extended temperature range and medial exposure) 24 V DC input voltage, power 25 W	6AG1505-0KA00-7AB0
24/48/60 V DC input voltage, power 60 W	6AG1505-0RA00-7AB0
120/230 V AC input voltage, power 60 W	6AG1507-0RA00-7AB0
Load power supply (extended temperature range and medial exposure) 24 V DC/3A	6AG1332-4BA00-7AA0
24 V DC/8A	6AG1333-4BA00-7AA0
Display (extended temperature range and medial exposure) for SIPLUS CPU 1511-1 PN and CPU 1513-1 PN; spare part	6AG1591-1AA01-2AA0
Further accessories	See SIMATIC S7-1500, CPU 1511-1 PN, page 4/3

SIMATIC S7-1500 advanced controllers

Central processing units
SIPLUS standard CPUs

SIPLUS CPU 1513-1 PN

Overview



- The CPU for applications with medium/high requirements for program/data storage in the S7-1500 controller product range
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- SIMATIC memory card required for operation of the CPU

Please note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1513-1AL01-2AB0	6AG1513-1AL01-7AB0
Based on	6ES7513-1AL01-0AB0	6ES7513-1AL01-0AB0
	SIPLUS S7-1500 CPU 1513-1 PN	SIPLUS S7-1500 CPU 1513-1 PN

Ambient conditions

Ambient temperature during operation

• horizontal installation, min.	-40 °C; = Tmin; Startup @ -20 °C	-40 °C; = Tmin; Startup @ -20 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	70 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-40 °C; = Tmin; Startup @ -20 °C	-40 °C; = Tmin; Startup @ -20 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off

Article number	6AG1513-1AL01-2AB0	6AG1513-1AL01-7AB0
Based on	6ES7513-1AL01-0AB0	6ES7513-1AL01-0AB0
	SIPLUS S7-1500 CPU 1513-1 PN	SIPLUS S7-1500 CPU 1513-1 PN

Extended ambient conditions

- relative to ambient temperature-atmospheric pressure-installation altitude
- Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)

Relative humidity

- With condensation, tested in accordance with IEC 60068-2-38, max.
- 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation

Resistance

- against biologically active substances / conformity with EN 60721-3-3
 - against chemically active substances / conformity with EN 60721-3-3
 - against mechanically active substances / conformity with EN 60721-3-3
- Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

Article No.

SIPLUS CPU 1513-1 PN

(extended temperature range and medial exposure)

Work memory 300 KB for program, 1.5 MB for data, PROFINET IO IRT interface; SIMATIC memory card required

Temperature range -40 ... +60 °C (startup -20 °C)

6AG1513-1AL01-2AB0

Temperature range -40 ... +70 °C (startup -20 °C)

6AG1513-1AL01-7AB0

Accessories

Power supply

(extended temperature range and medial exposure)

24 V DC input voltage, power 25 W

6AG1505-0KA00-7AB0

24/48/60 V DC input voltage, power 60 W

6AG1505-0RA00-7AB0

120/230 V AC input voltage, power 60 W

6AG1507-0RA00-7AB0

Load power supply

(extended temperature range and medial exposure)

24 V DC/3A

6AG1332-4BA00-7AA0

24 V DC/8A

6AG1333-4BA00-7AA0

Display

(extended temperature range and medial exposure)

6AG1591-1AA01-2AA0

for SIPLUS CPU 1511-1 PN and CPU 1513-1 PN; spare part

Further accessories

See SIMATIC S7-1500, CPU 1513-1 PN, page 4/6

SIMATIC S7-1500 advanced controllers

Central processing units

SIPLUS standard CPUs

SIPLUS CPU 1516-3 PN/DP

Overview



- The CPU with large program and data memory in the S7-1500 controller product range for applications with high program scope requirements.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET
- SIMATIC memory card required for operation of the CPU

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1516-3AN01-2AB0	6AG1516-3AN01-7AB0
Based on	6ES7516-3AN01-0AB0	6ES7516-3AN01-0AB0
	SIPLUS S7-1500 CPU 1516-3 PN/DP	SIPLUS S7-1500 CPU 1516-3 PN/DP
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -20 °C	-40 °C; = Tmin; Startup @ -20 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	70 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-40 °C; = Tmin; Startup @ -20 °C	-40 °C; = Tmin; Startup @ -20 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off

Article number	6AG1516-3AN01-2AB0	6AG1516-3AN01-7AB0
Based on	6ES7516-3AN01-0AB0	6ES7516-3AN01-0AB0
	SIPLUS S7-1500 CPU 1516-3 PN/DP	SIPLUS S7-1500 CPU 1516-3 PN/DP
Extended ambient conditions		
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
Relative humidity		
- With condensation, tested in acc. with IEC 60068-2-38, max.	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

Ordering data

Article No.

Ordering data	Article No.
SIPLUS CPU 1516-3 PN/DP (extended temperature range and medial exposure) 1 MB work memory for program, 5 MB for data, PROFINET IO IRT interface, PROFINET/PROFIBUS interface; SIMATIC Memory Card required	
Temperature range -40 ... +60 °C (startup -20 °C)	6AG1516-3AN01-2AB0
Temperature range -40 ... +70 °C (startup -20 °C)	6AG1516-3AN01-7AB0
Accessories	
System power supply	See SIPLUS S7-1500, CPU 1513-1 PN/DP, page 4/20
Load power supply (extended temperature range and medial exposure)	
24 V DC/3A	6AG1332-4BA00-7AA0
24 V DC/8A	6AG1333-4BA00-7AA0
Display	6AG1591-1BA01-2AA0
(extended temperature range and medial exposure)	
For SIPLUS CPU 1516-3 PN/DP; spare part	
Further accessories	See SIMATIC S7-1500, CPU 1516-3 PN/DP, page 4/13

SIMATIC S7-1500 advanced controllers

Central processing units
Compact CPUs

CPU 1511C-1 PN

Overview



- The compact CPU with integral digital and analog inputs and outputs in the product spectrum of the S7-1500 Controllers
- With integrated technological functions
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO Controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined Web pages

Note

SIMATIC Memory Card required for operation of the CPU.

Technical specifications

Article number	6ES7511-1CK00-0AB0
	CPU 1511C-1 PN, 175 KB PROG, 1 MB DATA
General information	
Product type designation	CPU 1511C-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	3.45 cm
Supply voltage	
Type of supply voltage	24 V DC
Input current	
Digital inputs	
• from load voltage L+ (without load), max.	20 mA; per group
Digital outputs	
• from load voltage L+, max.	30 mA; Per group, without load
Power loss	
Power loss, typ.	11.8 W
Memory	
Work memory	
• integrated (for program)	175 kbyte
• integrated (for data)	1 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	60 ns
for word operations, typ.	72 ns
for fixed point arithmetic, typ.	96 ns
for floating point arithmetic, typ.	384 ns

Article number	6ES7511-1CK00-0AB0
	CPU 1511C-1 PN, 175 KB PROG, 1 MB DATA
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
Digital inputs	
integrated channels (DI)	16
Digital outputs	
integrated channels (DO)	16
Short-circuit protection	Yes; electronic/thermal
Analog outputs	
integrated channels (AO)	2

Technical specifications (continued)

Article number	6ES7511-1CK00-0AB0	Article number	6ES7511-1CK00-0AB0
	CPU 1511C-1 PN, 175 KB PROG, 1 MB DATA		CPU 1511C-1 PN, 175 KB PROG, 1 MB DATA
1. Interface			
Interface types			
• Number of ports	2	• External encoders	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• integrated switch	Yes	- Number of external encoders, max.	
• RJ 45 (Ethernet)	Yes; X1		
Functionality		Controller	
• PROFINET IO Controller	Yes	• PID_Compact	Yes; Universal PID controller with integrated optimization
• PROFINET IO Device	Yes	• PID_3Step	Yes; PID controller with integrated optimization for valves
• SIMATIC communication	Yes	• PID-Temp	Yes; PID controller with integrated optimization for temperature
• Open IE communication	Yes		
• Web server	Yes	Counting and measuring	
• Media redundancy	Yes	• High-speed counter	Yes
Protocols		Ambient conditions	
Number of connections		Ambient temperature during operation	
• Number of connections, max.	96; via integrated interfaces of the CPU and connected CPs / CMs	• horizontal installation, min.	0 °C
PROFINET IO Controller		• horizontal installation, max.	60 °C; Note derating data for onboard I/O in the manual. Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
Services		• vertical installation, min.	0 °C
- Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via PROFIBUS or PROFINET	• vertical installation, max.	40 °C; Note derating data for onboard I/O in the manual. Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
- Of which IO devices with IRT, max.	64		
- Number of connectable IO Devices for RT, max.	128		
Isochronous mode		Configuration	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 625 µs	Programming	
Supported technology objects		Programming language	
Motion Control	Yes	- LAD	Yes
• Speed-controlled axis		- FBD	Yes
- Number of speed-controlled axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	- STL	Yes
• Positioning axis		- SCL	Yes
- Number of positioning axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	- GRAPH	Yes
• Synchronized axes (relative gear synchronization)		Know-how protection	
- Number of axes, max.	3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	• User program protection	Yes
		• Copy protection	Yes
		• Block protection	Yes
		Access protection	
		• Password for display	Yes
		• Protection level: Write protection	Yes
		• Protection level: Read/write protection	Yes
		• Protection level: Complete protection	Yes
		Dimensions	
		Width	85 mm
		Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	1 050 g

SIMATIC S7-1500 advanced controllers

Central processing units

Compact CPUs

CPU 1511C-1 PN

Ordering data

CPU 1511C-1 PN

Work memory 175 KB for program, 1 MB for data, 16 digital inputs, 16 digital outputs, 5 analog inputs, 2 analog outputs, 6 high-speed counters, PROFINET IO IRT interface, SIMATIC Memory Card required

Accessories

SIMATIC Memory Card

4 MB

12 MB

24 MB

256 MB

2 GB

32 GB

Front connector

For 25 mm modules; including cable ties and individual labeling strips; push-in terminal 40-pin; Spare part

Shielding set I/O

For 25 mm modules; Infeed element, shield clamp, and shield terminal; 4 units, spare part (one shield set supplied with the module).

Shield terminal element

10 units; spare part

SIMATIC S7-1500 DIN rail

Fixed lengths, with grounding elements

- 160 mm
- 245 mm
- 482 mm
- 530 mm
- 830 mm

For cutting to length by customer, without drill holes; grounding elements must be ordered separately

- 2000 mm

PE connection element for DIN rail 2000 mm

20 units

Power supply

For supplying the backplane bus of the S7-1500

24 V DC input voltage, power 25 W

24/48/60 V DC input voltage, power 60 W

120/230 V AC input voltage, power 60 W

Power connector

With coding element for power supply module; spare part, 10 units

Article No.

6ES7511-1CK00-0AB0

6ES7954-8LC02-0AA0

6ES7954-8LE02-0AA0

6ES7954-8LF02-0AA0

6ES7954-8LL02-0AA0

6ES7954-8LP02-0AA0

6ES7954-8LT02-0AA0

6ES7592-1BM00-0XA0

6ES7590-5CA10-0XA0

6ES7590-5BA00-0AA0

6ES7590-1AB60-0AA0

6ES7590-1AC40-0AA0

6ES7590-1AE80-0AA0

6ES7590-1AF30-0AA0

6ES7590-1AJ30-0AA0

6ES7590-1BC00-0AA0

6ES7590-5AA00-0AA0

6ES7505-0KA00-0AB0

6ES7505-0RA00-0AB0

6ES7507-0RA00-0AB0

6ES7590-8AA00-0AA0

Article No.

Load power supply

24 V DC/3A

24 V DC/8A

6EP1332-4BA00

6EP1333-4BA00

Power supply connector

Spare part; for connecting the 24 V DC supply voltage

- with push-in terminals

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 180

180° cable outlet

1 unit

10 units

50 units

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

IE FC TP standard cable GP 2x2

6XV1840-2AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Trailing Cable 2 x 2 (Type C)

6XV1840-3AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Marine Cable 2 x 2 (Type B)

6XV1840-4AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC stripping tool

6GK1901-1GA00

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

Display

6ES7591-1AA01-0AA0

For CPU 1511(F), CPU 1511C, CPU 1512C, CPU 1513(F); spare part

SIMATIC S7-1500 advanced controllers

Central processing units
Compact CPUs

CPU 1512C-1 PN

Overview



- The compact CPU with integral digital and analog inputs and outputs in the product spectrum of the S7-1500 Controllers
- With integrated technological functions
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO Controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined Web pages

Note

SIMATIC Memory Card required for operation of the CPU.

Technical specifications

Article number	6ES7512-1CK00-0AB0
	CPU 1512C-1 PN, 250 KB PROG, 1 MB DATA
General information	
Product type designation	CPU 1512C-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	3.45 cm
Supply voltage	
Type of supply voltage	24 V DC
Input current	
Digital inputs	
• from load voltage L+ (without load), max.	20 mA; per group
Digital outputs	
• from load voltage L+, max.	30 mA; Per group, without load
Power loss	
Power loss, typ.	15.2 W
Memory	
Work memory	
• integrated (for program)	250 kbyte
• integrated (for data)	1 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	48 ns
for word operations, typ.	58 ns
for fixed point arithmetic, typ.	77 ns
for floating point arithmetic, typ.	307 ns

Article number	6ES7512-1CK00-0AB0
	CPU 1512C-1 PN, 250 KB PROG, 1 MB DATA
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
Digital inputs	
integrated channels (DI)	32
Digital outputs	
integrated channels (DO)	32
Short-circuit protection	Yes; electronic/thermal
Analog outputs	
integrated channels (AO)	2

Technical specifications (continued)

Article number	6ES7512-1CK00-0AB0	Article number	6ES7512-1CK00-0AB0
	CPU 1512C-1 PN, 250 KB PROG, 1 MB DATA		CPU 1512C-1 PN, 250 KB PROG, 1 MB DATA
1. Interface			
Interface types			
• Number of ports	2	• External encoders	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• integrated switch	Yes	- Number of external encoders, max.	
• RJ 45 (Ethernet)	Yes; X1		
Functionality		Controller	
• PROFINET IO Controller	Yes	• PID_Compact	Yes; Universal PID controller with integrated optimization
• PROFINET IO Device	Yes	• PID_3Step	Yes; PID controller with integrated optimization for valves
• SIMATIC communication	Yes	• PID-Temp	Yes; PID controller with integrated optimization for temperature
• Open IE communication	Yes		
• Web server	Yes	Counting and measuring	
• Media redundancy	Yes	• High-speed counter	Yes
Protocols		Ambient conditions	
Number of connections		Ambient temperature during operation	
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs	• horizontal installation, min.	0 °C
PROFINET IO Controller Services		• horizontal installation, max.	60 °C; Note derating data for onboard I/O in the manual. Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
- Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via PROFIBUS or PROFINET	• vertical installation, min.	0 °C
- Of which IO devices with IRT, max.	64	• vertical installation, max.	40 °C; Note derating data for onboard I/O in the manual. Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
- Number of connectable IO Devices for RT, max.	128		
Isochronous mode		Configuration	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 625 µs	Programming language	
Supported technology objects		• LAD	Yes
Motion Control		• FBD	Yes
• Speed-controlled axis		• STL	Yes
- Number of speed-controlled axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	• SCL	Yes
• Positioning axis		• GRAPH	Yes
- Number of positioning axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Know-how protection	
• Synchronized axes (relative gear synchronization)		• User program protection	Yes
- Number of axes, max.	3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	• Copy protection	Yes
		• Block protection	Yes
		Access protection	
		• Protection level: Write protection	Yes
		• Protection level: Read/write protection	Yes
		• Protection level: Complete protection	Yes
		Dimensions	
		Width	110 mm
		Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	1 360 g

SIMATIC S7-1500 advanced controllers

Central processing units
Compact CPUs

CPU 1512C-1 PN

Ordering data

CPU 1512C-1 PN

Work memory 250 KB for program, 1 MB for data, 32 digital inputs, 32 digital outputs, 5 analog inputs, 2 analog outputs, 6 high-speed counters, PROFINET IO IRT interface; SIMATIC Memory Card required

Accessories

SIMATIC Memory Card

4 MB
12 MB
24 MB
256 MB
2 GB
32 GB

Article No.

6ES7512-1CK00-0AB0

6ES7954-8LC02-0AA0

6ES7954-8LE02-0AA0

6ES7954-8LF02-0AA0

6ES7954-8LL02-0AA0

6ES7954-8LP02-0AA0

6ES7954-8LT02-0AA0

Front connector

For 25 mm modules; including cable ties and individual labeling strips; push-in terminal 40-pin; Spare part

6ES7592-1BM00-0XA0

Shielding set I/O

For 25 mm modules; Infeed element, shield clamp, and shield terminal; 4 units, spare part (one shield set supplied with the module).

6ES7590-5CA10-0XA0

Shield terminal element

10 units; spare part

6ES7590-5BA00-0AA0

SIMATIC S7-1500 DIN rail

Fixed lengths, with grounding elements

- 160 mm
- 245 mm
- 482 mm
- 530 mm
- 830 mm

For cutting to length by customer, without drill holes; grounding elements must be ordered separately

- 2000 mm

6ES7590-1AB60-0AA0

6ES7590-1AC40-0AA0

6ES7590-1AE80-0AA0

6ES7590-1AF30-0AA0

6ES7590-1AJ30-0AA0

6ES7590-1BC00-0AA0

PE connection element for DIN rail 2000 mm

20 units

6ES7590-5AA00-0AA0

Power supply

For supplying the backplane bus of the S7-1500

24 V DC input voltage, power 25 W

24/48/60 V DC input voltage, power 60 W

120/230 V AC input voltage, power 60 W

6ES7505-0KA00-0AB0

6ES7505-0RA00-0AB0

6ES7507-0RA00-0AB0

Power connector

With coding element for power supply module; spare part, 10 units

6ES7590-8AA00-0AA0

Article No.

Load power supply

24 V DC/3A

6EP1332-4BA00

24 V DC/8A

6EP1333-4BA00

Power supply connector

Spare part; for connecting the 24 V DC supply voltage

- with push-in terminals

6ES7193-4JB00-0AA0

IE FC RJ45 plugs

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 180

180° cable outlet

1 unit

6GK1901-1BB10-2AA0

10 units

6GK1901-1BB10-2AB0

50 units

6GK1901-1BB10-2AE0

IE FC TP standard cable GP 2x2

6XV1840-2AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Trailing Cable 2 x 2 (Type C)

6XV1840-3AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Marine Cable 2 x 2 (Type B)

6XV1840-4AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC stripping tool

6GK1901-1GA00

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

Display

6ES7591-1AA01-0AA0

for CPU 1511(F), CPU 1511C, CPU 1512C, CPU 1513(F); spare part

Ordering data	Article No.	Article No.
<p>STEP 7 Professional V13 SP1</p> <p>Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC</p> <p>Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation)</p> <p>Available in: German, English, Chinese, Italian, French, Spanish</p> <p>STEP 7 Professional V13 SP1, floating license</p> <p>STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾</p> <p>Email address required for delivery</p>	<p>6ES7822-1AA03-0YA5</p> <p>6ES7822-1AE03-0YA5</p>	<p>SIMATIC Manual Collection</p> <p>Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC</p> <p>SIMATIC Manual Collection update service for 1 year</p> <p>6ES7998-8XC01-8YE0</p> <p>6ES7998-8XC01-8YE2</p>

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

Central processing units
Fail-safe CPUs

CPU 1511F-1 PN

Overview



- Entry-level CPU in the S7-1500F Controller product range
- Suitable for standard and fail-safe applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configuration
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode

Note:
SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6ES7511-1FK01-0AB0 CPU 1511F-1PN, 225KB PROG, 1MB DATA
General information	
Product type designation	CPU 1511F-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	3.45 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.7 W
Memory	
Work memory	
• integrated (for program)	225 kbyte
• integrated (for data)	1 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	60 ns
for word operations, typ.	72 ns
for fixed point arithmetic, typ.	96 ns
for floating point arithmetic, typ.	384 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte

Article number	6ES7511-1FK01-0AB0 CPU 1511F-1PN, 225KB PROG, 1MB DATA
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
Protocols	
Number of connections	
• Number of connections, max.	96; via integrated interfaces of the CPU and connected CPs / CMs
PROFINET IO Controller Services	
- Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	128
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes

Technical specifications (continued)

Article number	6ES7511-1FK01-0AB0	Article number	6ES7511-1FK01-0AB0
	CPU 1511F-1PN, 225KB PROG, 1MB DATA		CPU 1511F-1PN, 225KB PROG, 1MB DATA
Supported technology objects		Ambient conditions	
Motion Control	Yes	Ambient temperature during operation	
• Speed-controlled axis		• horizontal installation, min.	0 °C
- Number of speed-controlled axes, max.	6; Max. number of speed-controlled axes (requirement: there must be no other motion technology objects created)	• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• Positioning axis		• vertical installation, min.	0 °C
- Number of positioning axes, max.	6; Max. number of positioning axes (requirement: there must be no other motion technology objects created)	• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
• Synchronized axes (relative gear synchronization)			
- Number of axes, max.	3; Max. number of synchronous axes (requirement: there must be no other motion technology objects created)	Configuration	
• External encoders		Programming	
- Number of external encoders, max.	6; Max. number of external encoders (requirement: there must be no other motion technology objects created)	Programming language	
Controller		- LAD	Yes; incl. failsafe
• PID_Compact	Yes; Universal PID controller with integrated optimization	- FBD	Yes; incl. failsafe
• PID_3Step	Yes; PID controller with integrated optimization for valves	- STL	Yes
Counting and measuring		- SCL	Yes
• High-speed counter	Yes	- GRAPH	Yes
		Know-how protection	
		• User program protection	Yes
		• Copy protection	Yes
		• Block protection	Yes
		Access protection	
		• Password for display	Yes
		• Protection level: Write protection	Yes
		• Protection level: Read/write protection	Yes
		• Protection level: Complete protection	Yes
		Dimensions	
		Width	35 mm
		Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	430 g

Ordering data

Ordering data	Article No.	Ordering data	Article No.
CPU 1511F-1 PN	6ES7511-1FK01-0AB0	SIMATIC S7-1500 DIN rail	
Failsafe CPU, 230 KB work memory for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC Memory Card required		Fixed lengths, with grounding elements	
Accessories		• 160 mm	6ES7590-1AB60-0AA0
SIMATIC Memory Card		• 245 mm	6ES7590-1AC40-0AA0
4 MB	6ES7954-8LC02-0AA0	• 482 mm	6ES7590-1AE80-0AA0
12 MB	6ES7954-8LE02-0AA0	• 530 mm	6ES7590-1AF30-0AA0
24 MB	6ES7954-8LF02-0AA0	• 830 mm	6ES7590-1AJ30-0AA0
256 MB	6ES7954-8LL02-0AA0	For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
2 GB	6ES7954-8LP02-0AA0	• 2000 mm	6ES7590-1BC00-0AA0
32 GB	6ES7954-8LT02-0AA0	PE connection element for DIN rail 2000 mm	6ES7590-5AA00-0AA0
		20 units	

Overview

- The CPU for standard and fail-safe applications with medium/high requirements for program/data storage in the S7-1500 controller product range
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configuration
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode

Note:

SIMATIC memory card required for operation of the CPU

Technical specifications

Article number	6ES7513-1FL01-0AB0 CPU 1513F-1 PN, 450KB PROG, 1,5MB DATA
General information	
Product type designation	CPU 1513F-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	3.45 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.7 W
Memory	
Work memory	
• integrated (for program)	450 kbyte
• integrated (for data)	1.5 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	40 ns
for word operations, typ.	48 ns
for fixed point arithmetic, typ.	64 ns
for floating point arithmetic, typ.	256 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	6ES7513-1FL01-0AB0 CPU 1513F-1 PN, 450KB PROG, 1,5MB DATA
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
Protocols	
Number of connections	
• Number of connections, max.	128; via integrated interfaces of the CPU and connected CPs / CMs
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	128; In total, up to 256 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	128

SIMATIC S7-1500 advanced controllers

Central processing units

Fail-safe CPUs

CPU 1513F-1 PN

Technical specifications (continued)

Article number	6ES7513-1FL01-0AB0 CPU 1513F-1 PN, 450KB PROG, 1,5MB DATA
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 500 µs
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	6; Requirement: There must be no other motion technology objects created
• Positioning axis	
- Number of positioning axes, max.	6; Requirement: There must be no other motion technology objects created
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	3; Requirement: There must be no other motion technology objects created
• External encoders	
- Number of external encoders, max.	6; Requirement: There must be no other motion technology objects created
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature

Article number	6ES7513-1FL01-0AB0 CPU 1513F-1 PN, 450KB PROG, 1,5MB DATA
Counting and measuring	
• High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Configuration	
Programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Password for display	Yes
• Protection level: Write protection	Yes; Specific write protection both for Standard and for Failsafe
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	430 g

Ordering data

Article No.	Article No.
CPU 1513F-1 PN	6ES7513-1FL01-0AB0
Failsafe CPU, 450 KB work memory for program, 1.5 MB for data, PROFINET IO IRT interface; SIMATIC Memory Card required	
Accessories	
SIMATIC Memory Card	
4 MB	6ES7954-8LC02-0AA0
12 MB	6ES7954-8LE02-0AA0
24 MB	6ES7954-8LF02-0AA0
256 MB	6ES7954-8LL02-0AA0
2 GB	6ES7954-8LP02-0AA0
32 GB	6ES7954-8LT02-0AA0

Article No.	Article No.
SIMATIC S7-1500 DIN rail	
Fixed lengths, with grounding elements	
• 160 mm	6ES7590-1AB60-0AA0
• 245 mm	6ES7590-1AC40-0AA0
• 482 mm	6ES7590-1AE80-0AA0
• 530 mm	6ES7590-1AF30-0AA0
• 830 mm	6ES7590-1AJ30-0AA0
For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
• 2000 mm	6ES7590-1BC00-0AA0
PE connection element for DIN rail 2000 mm	6ES7590-5AA00-0AA0
20 units	

Ordering data	Article No.	Ordering data	Article No.
Power supply For supplying the backplane bus of the S7-1500 24 V DC input voltage, power 25 W 24/48/60 V DC input voltage, power 60 W 120/230 V AC input voltage, power 60 W	6ES7505-0KA00-0AB0 6ES7505-0RA00-0AB0 6ES7507-0RA00-0AB0	Display For CPU 1511-1 PN and CPU 1513-1 PN; spare part	6ES7591-1AA01-0AA0
Power connector With coding element for power supply module; spare part, 10 units	6ES7590-8AA00-0AA0	STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish	
Load power supply 24 V DC/3A 24 V DC/8A	6EP1332-4BA00 6EP1333-4BA00	STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5
Power supply connector Spare part; for connecting the 24 V DC supply voltage • with push-in terminals	6ES7193-4JB00-0AA0	STEP 7 Safety Advanced V13 SP1 Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1	
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables		Floating license for 1 user Floating license for 1 user, license key download without software or documentation ¹⁾ Email address required for delivery	
IE FC RJ45 Plug 180 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
IE FC TP Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-3AH10		
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-4AH10		
IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00		

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

Central processing units
Fail-safe CPUs

CPU 1515F-2 PN

Overview



- The CPU for applications with medium to high requirements for program/data storage in the S7-1500 controller product range

- Can be used for failsafe functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849.
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Supports PROFIsafe in centralized and distributed configurations
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages

Note

SIMATIC Memory Card required for operation of the CPU

Technical specifications

Article number	6ES7515-2FM01-0AB0 CPU 1515F-2 PN, 750KB PROG., 3MB DATA
General information	
Product type designation	CPU 1515F-2 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	6.1 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	6.3 W
Memory	
Work memory	
• integrated (for program)	750 kbyte
• integrated (for data)	3 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	30 ns
for word operations, typ.	36 ns
for fixed point arithmetic, typ.	48 ns
for floating point arithmetic, typ.	192 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)

Article number	6ES7515-2FM01-0AB0 CPU 1515F-2 PN, 750KB PROG., 3MB DATA
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes

Technical specifications (continued)

Article number	6ES7515-2FM01-0AB0 CPU 1515F-2 PN, 750KB PROG., 3MB DATA	Article number	6ES7515-2FM01-0AB0 CPU 1515F-2 PN, 750KB PROG., 3MB DATA
2. Interface		Controller	
Interface types		• PID_Compact	Yes; Universal PID controller with integrated optimization
• Number of ports	1	• PID_3Step	Yes; PID controller with integrated optimization for valves
• integrated switch	No	• PID-Temp	Yes; PID controller with integrated optimization for temperature
• RJ 45 (Ethernet)	Yes; X2	Counting and measuring	
Functionality		• High-speed counter	Yes
• PROFINET IO Controller	No	Ambient conditions	
• PROFINET IO Device	No	Ambient temperature during operation	
• SIMATIC communication	Yes	• horizontal installation, min.	0 °C
• Open IE communication	Yes	• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• Web server	Yes	• vertical installation, min.	0 °C
Protocols		• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Number of connections		Configuration	
• Number of connections, max.	192; via integrated interfaces of the CPU and connected CPs / CMs	Programming	
PROFINET IO Controller Services		Programming language	
- Number of connectable IO Devices, max.	256; In total, up to 512 distributed I/O devices can be connected via PROFIBUS or PROFINET	- LAD	Yes; incl. failsafe
- Of which IO devices with IRT, max.	64	- FBD	Yes; incl. failsafe
- Number of connectable IO Devices for RT, max.	256	- STL	Yes
Isochronous mode		- SCL	Yes
Isochronous operation (application synchronized up to terminal)	Yes	- GRAPH	Yes
Supported technology objects		Know-how protection	
Motion Control	Yes	• User program protection	Yes
• Speed-controlled axis		• Copy protection	Yes
- Number of speed-controlled axes, max.	30; Requirement: There must be no other motion technology objects created	• Block protection	Yes
• Positioning axis		Access protection	
- Number of positioning axes, max.	30; Requirement: There must be no other motion technology objects created	• Password for display	Yes
• Synchronized axes (relative gear synchronization)		• Protection level: Write protection	Yes
- Number of axes, max.	15; Requirement: There must be no other motion technology objects created	• Protection level: Read/write protection	Yes
• External encoders		• Protection level: Complete protection	Yes
- Number of external encoders, max.	30; Requirement: There must be no other motion technology objects created	Dimensions	
		Width	70 mm
		Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	830 g

SIMATIC S7-1500 advanced controllers

Central processing units
Fail-safe CPUs

CPU 1515F-2 PN**Ordering data****Article No.****Article No.****CPU 1515F-2 PN**

Failsafe CPU, 750 KB work memory for program, 3 MB for data, PROFINET IO IRT interface, PROFINET interface; SIMATIC Memory Card required

6ES7515-2FM01-0AB0**Accessories****SIMATIC Memory Card**

4 MB

6ES7954-8LC02-0AA0

12 MB

6ES7954-8LE02-0AA0

24 MB

6ES7954-8LF02-0AA0

256 MB

6ES7954-8LL02-0AA0

2 GB

6ES7954-8LP02-0AA0

32 GB

6ES7954-8LT02-0AA0**SIMATIC S7-1500 DIN rail**

Fixed lengths, with grounding elements

- 160 mm
- 245 mm
- 482 mm
- 530 mm
- 830 mm

For cutting to length by customer, without drill holes; grounding elements must be ordered separately

- 2000 mm

6ES7590-1AB60-0AA0**6ES7590-1AC40-0AA0****6ES7590-1AE80-0AA0****6ES7590-1AF30-0AA0****6ES7590-1AJ30-0AA0****6ES7590-1BC00-0AA0****PE connection element for DIN rail 2000 mm****6ES7590-5AA00-0AA0**

20 units

Power supply

For supplying the backplane bus of the S7-1500

24 V DC input voltage, power 25 W

6ES7505-0KA00-0AB0

24/48/60 V DC input voltage, power 60 W

6ES7505-0RA00-0AB0

120/230 V AC input voltage, power 60 W

6ES7507-0RA00-0AB0**Power connector****6ES7590-8AA00-0AA0**

With coding element for power supply module; spare part, 10 units

Load power supply

24 V DC/3A

6EP1332-4BA00

24 V DC/8A

6EP1333-4BA00**Power supply connector**

Spare part; for connecting the 24 V DC supply voltage

- with push-in terminals

6ES7193-4JB00-0AA0**IE FC RJ45 plugs**

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 180

180° cable outlet

1 unit

6GK1901-1BB10-2AA0

10 units

6GK1901-1BB10-2AB0

50 units

6GK1901-1BB10-2AE0**IE FC TP standard cable GP 2x2****6XV1840-2AH10**

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Trailing Cable 2 x 2 (Type C)**6XV1840-3AH10**

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Marine Cable 2 x 2 (Type B)**6XV1840-4AH10**

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC stripping tool**6GK1901-1GA00**

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

Display**6ES7591-1BA01-0AA0**

For CPU 1515-2 PN, CPU 1515F-2 PN, CPU 1516-3 PN/DP, CPU 1516F-3 PN/DP, CPU 1517-3 PN/DP, CPU 1517F-3 PN/DP, CPU 1518-4 PN/DP and CPU 1518F-4 PN/DP; spare part

Ordering data	Article No.	Ordering data	Article No.
<p>STEP 7 Professional V13 SP1</p> <p>Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC</p> <p>Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation)</p> <p>Type of delivery: German, English, Chinese, Italian, French, Spanish</p> <p>STEP 7 Professional V13 SP1, floating license</p> <p>STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾</p> <p>Email address required for delivery</p>	<p>6ES7822-1AA03-0YA5</p> <p>6ES7822-1AE03-0YA5</p>	<p>SIMATIC Manual Collection</p> <p>Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC</p> <p>SIMATIC Manual Collection update service for 1 year</p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>	<p>6ES7998-8XC01-8YE0</p> <p>6ES7998-8XC01-8YE2</p>
<p>STEP 7 Safety Advanced V13 SP1</p> <p>Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco</p> <p>Requirement: STEP 7 Professional V13 SP1</p> <p>Floating license for 1 user</p> <p>Floating license for 1 user, license key download without software or documentation ¹⁾</p> <p>Email address required for delivery</p>	<p>6ES7833-1FA13-0YA5</p> <p>6ES7833-1FA13-0YH5</p>		

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

Central processing units
Fail-safe CPUs

CPU 1516F-3 PN/DP

Overview



- The CPU with a large program and data memory in the S7-1500 controller product range for failsafe applications with high requirements regarding program scope and networking.
- Can be used for failsafe functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849.

- High processing speed for binary and floating-point arithmetic.
- Used as central controller in production lines with central and distributed I/O.
- Supports PROFIsafe in centralized and distributed configuration.
- PROFINET IO IRT interface with 2-port switch.
- Additional PROFINET interface with separate IP address.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface.
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders.
- Integrated Web server with the option of creating user-defined Web pages.

Note:

SIMATIC Memory Card required for operation of the CPU

Technical specifications

Article number	6ES7516-3FN01-0AB0
	CPU 1516F-3 PN/DP, 1,5MB PROG, 5MB DATA
General information	
Product type designation	CPU 1516F-3 PN/DP
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Display	
Screen diagonal (cm)	6.1 cm
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	7 W
Memory	
Work memory	
• integrated (for program)	1.5 Mbyte
• integrated (for data)	5 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	10 ns
for word operations, typ.	12 ns
for fixed point arithmetic, typ.	16 ns
for floating point arithmetic, typ.	64 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)

Article number	6ES7516-3FN01-0AB0
	CPU 1516F-3 PN/DP, 1,5MB PROG, 5MB DATA
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Time of day	
Clock	
• Type	Hardware clock
1. Interface	
Interface types	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes

Technical specifications (continued)

Article number	6ES7516-3FN01-0AB0	Article number	6ES7516-3FN01-0AB0
	CPU 1516F-3 PN/DP, 1,5MB PROG, 5MB DATA		CPU 1516F-3 PN/DP, 1,5MB PROG, 5MB DATA
2. Interface			
Interface types			
• Number of ports	1	• Synchronized axes (relative gear synchronization)	15; Requirement: There must be no other motion technology objects created
• integrated switch	No	- Number of axes, max.	
• RJ 45 (Ethernet)	Yes; X2	• External encoders	30; Requirement: There must be no other motion technology objects created
Functionality		- Number of external encoders, max.	
• PROFINET IO Controller	No	Controller	
• PROFINET IO Device	No	• PID_Compact	Yes; Universal PID controller with integrated optimization
• SIMATIC communication	Yes	• PID_3Step	Yes; PID controller with integrated optimization for valves
• Open IE communication	Yes	• PID-Temp	Yes; PID controller with integrated optimization for temperature
• Web server	Yes	Counting and measuring	
3. Interface		• High-speed counter	Yes
Interface types		Ambient conditions	
• Number of ports	1	Ambient temperature during operation	
• RS 485	Yes	• horizontal installation, min.	0 °C
Functionality		• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• SIMATIC communication	Yes	• vertical installation, min.	0 °C
• PROFIBUS DP master	Yes	• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
• PROFIBUS DP slave	No	Configuration	
Protocols		Programming	
Number of connections		Programming language	
• Number of connections, max.	256; via integrated interfaces of the CPU and connected CPs / CMs	- LAD	Yes; incl. failsafe
PROFINET IO Controller		- FBD	Yes; incl. failsafe
Services		- STL	Yes
- Number of connectable IO Devices, max.	256; In total, up to 768 distributed I/O devices can be connected via PROFIBUS or PROFINET	- SCL	Yes
- Of which IO devices with IRT, max.	64	- GRAPH	Yes
- Number of connectable IO Devices for RT, max.	256	Know-how protection	
PROFIBUS DP master		• User program protection	Yes
Services		• Copy protection	Yes
- Number of DP slaves	125; In total, up to 768 distributed I/O devices can be connected via PROFIBUS or PROFINET	• Block protection	Yes
Isochronous mode		Access protection	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 375 µs	• Password for display	Yes
Supported technology objects		• Protection level: Write protection	Yes
Motion Control	Yes	• Protection level: Read/write protection	Yes
• Speed-controlled axis		• Protection level: Complete protection	Yes
- Number of speed-controlled axes, max.	30; Requirement: There must be no other motion technology objects created	Dimensions	
• Positioning axis		Width	70 mm
- Number of positioning axes, max.	30; Requirement: There must be no other motion technology objects created	Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	845 g

SIMATIC S7-1500 advanced controllers

Central processing units
Fail-safe CPUs

CPU 1516F-3 PN/DP

Ordering data	Article No.	Ordering data	Article No.
CPU 1516F-3 PN/DP Failsafe CPU, 1.5 MB work memory for program, 5 MB for data, PROFINET IO IRT interface, PROFINET/PROFIBUS interface; SIMATIC Memory Card required	6ES7516-3FN01-0AB0	PROFIBUS FC standard cable GP Standard type with special design for fast mounting, 2-core, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0EH10
Accessories		PROFIBUS FC Robust Cable 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0JH10
SIMATIC Memory Card		PROFIBUS FC Flexible Cable 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1831-2K
4 MB 12 MB 24 MB 256 MB 2 GB 32 GB	6ES7954-8LC02-0AA0 6ES7954-8LE02-0AA0 6ES7954-8LF02-0AA0 6ES7954-8LL02-0AA0 6ES7954-8LP02-0AA0 6ES7954-8LT02-0AA0	PROFIBUS FC Trailing Cable 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m Sheath color: Petrol Sheath color: Violet	6XV1830-3EH10 6XV1831-2L
SIMATIC S7-1500 DIN rail Fixed lengths, with grounding elements <ul style="list-style-type: none"> • 160 mm • 245 mm • 482 mm • 530 mm • 830 mm For cutting to length by customer, without drill holes; grounding elements must be ordered separately <ul style="list-style-type: none"> • 2000 mm 	6ES7590-1AB60-0AA0 6ES7590-1AC40-0AA0 6ES7590-1AE80-0AA0 6ES7590-1AF30-0AA0 6ES7590-1AJ30-0AA0 6ES7590-1BC00-0AA0	PROFIBUS FC Food Cable 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0GH10
PE connection element for DIN rail 2000 mm 20 units	6ES7590-5AA00-0AA0	PROFIBUS FC Ground Cable 2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-3FH10
Power supply For supplying the backplane bus of the S7-1500		PROFIBUS FC FRNC Cable GP 2-wire, shielded, flame-retardant, with copolymer outer sheath FRNC; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0LH10
24 V DC input voltage, power 25 W 24/48/60 V DC input voltage, power 60 W 120/230 V AC input voltage, power 60 W	6ES7505-0KA00-0AB0 6ES7505-0RA00-0AB0 6ES7507-0RA00-0AB0	PROFIBUS FastConnect Stripping Tool Preadjusted stripping tool for fast stripping of PROFIBUS FastConnect bus cables	6GK1905-6AA00
Power connector With coding element for power supply module; spare part, 10 units	6ES7590-8AA00-0AA0	IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
Load power supply 24 V DC/3A 24 V DC/8A	6EP1332-4BA00 6EP1333-4BA00	IE FC RJ45 Plug 180 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
Power supply connector Spare part; for connecting the 24 V DC supply voltage <ul style="list-style-type: none"> • with push-in terminals 	6ES7193-4JB00-0AA0		
PROFIBUS FastConnect RS 485 bus connector with 90° cable outlet with insulation displacement, max. transmission rate 12 Mbit/s Without PG interface, grounding via control cabinet contact surface; 1 unit With PG interface, grounding via control cabinet contact surface; 1 unit	6ES7972-0BA70-0XA0 6ES7972-0BB70-0XA0		

Ordering data	Article No.	Article No.
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-2AH10	
IE FC TP Trailing Cable 2 x 2 (Type C) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-3AH10	
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1840-4AH10	
IE FC stripping tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00	
Display For CPU 1516-3 PN/DP; spare part	6ES7591-1BA01-0AA0	
STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5	STEP 7 Safety Advanced V13 SP1 Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1 Floating license for 1 user Floating license for 1 user, license key download without software or documentation ¹⁾ ; email address required for delivery
		6ES7833-1FA13-0YA5 6ES7833-1FA13-0YH5
		SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
		6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates
		6ES7998-8XC01-8YE2

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

Central processing units
SIPLUS fail-safe CPUs

SIPLUS CPU 1518F-4 PN/DP

Overview



- The CPU with a very large program and data memory in the SIPLUS S7-1500 controller product range for failsafe applications with highest requirements regarding program scope, performance and networking.
- Can be used for failsafe functions up to SIL 3 according to IEC 61508 and up to PLe according to ISO 13849.
- Extremely high processing speed for binary and floating-point arithmetic.
- For cross-industry automation tasks in series machine, special machine and plant construction.
- Used as central controller in production lines with central and distributed I/O.
- Supports PROFIsafe in centralized and distributed configuration.
- PROFINET IO IRT interface with 2-port switch.
- Two additional PROFINET interfaces with separate IP addresses.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface.
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated motion control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated Web server with the option of creating user-defined Web pages.

Note:

SIMATIC memory card required for operation of the CPU.

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the corresponding standard products. SIPLUS extreme-specific information was added.

Technical specifications

Article number	6AG1518-4FP00-4AB0
Based on	6ES7518-4FP00-0AB0 SIPLUS S7-1500 CPU 1518F-4 PN/DP
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIMATIC S7-1500 advanced controllers

Central processing units

SIPLUS fail-safe CPUs

SIPLUS CPU 1518F-4 PN/DP

Ordering data	Article No.
CPU 1518F-4 PN/DP (environmental stress) Fail-safe CPU, work memory 6 MB for program, 20 MB for data, PROFINET IO IRT interface, 2 PROFINET interfaces, PROFIBUS interface; SIMATIC memory card required	6AG1518-4FP00-4AB0
Accessories	
Power supply (Extended temperature range and environmental stress) For supplying the backplane bus of the S7-1500 24 VDC input voltage, power 25 W 24/48/60 VDC input voltage, power 60 W 120/230 VAC input voltage, power 60 W	6AG1505-0KA00-7AB0 6AG1505-0RA00-7AB0 6AG1507-0RA00-7AB0
Load power supply (Extended temperature range and environmental stress) 24 VDC/3A 24 VDC/8A	6AG1332-4BA00-7AA0 6AG1333-4BA00-7AA0
Display (Extended temperature range and environmental stress) for CPU 1518-4F PN/DP; spare part	6AG1591-1BA00-2AA0
Other accessories	See Catalog ST 70, SIMATIC S7-1500, CPU 1518F-4 PN/DP

SIMATIC S7-1500 advanced controllers

I/O modules

Digital modules

SM 521 digital input modules

Overview



- 16 and 32-channel digital input modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs
- 35 mm wide modules with parameters and diagnostic functions
- 25 mm wide modules for use in tight spaces: particularly economical, without parameters or diagnostic functions

4

Technical specifications

Article number	6ES7521-1BH00-0AB0	6ES7521-1BL00-0AB0	6ES7521-1BH50-0AA0	6ES7521-1FH00-0AA0	6ES7521-7EH00-0AB0
	S7-1500, DI 16X24VDC HF	S7-1500, DI 32X24VDC HF	S7-1500, DI 16X24VDC SRC BA	S7-1500, DI 16X230VAC BA	S7-1500, DI 16 X 24...125V UC HF
General information					
Product type designation	DI 16x24 V DC HF	DI 32x24 V DC HF	DI 16x24 V DC SRC BA	DI 16x230 V AC BA	DI 16x24 ... 125VUC HF
Product function					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with					
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1 / -	V13 SP1 / -	V12 / V12	V12 / V12	V13 SP1 / -
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode					
• DI	Yes	Yes	Yes	Yes	Yes
• Counter	Yes	Yes	No	No	No
• Oversampling	No				
• MSI	Yes	Yes	Yes	Yes	Yes
Supply voltage					
Type of supply voltage	DC	DC			
Rated value (DC)	24 V	24 V			
Reverse polarity protection	Yes	Yes			
Digital inputs					
Number of digital inputs	16	32	16	16	16
Digital inputs, parameterizable	Yes	Yes	No	No	Yes
m/p-reading	p-reading	p-reading	m-reading	p-reading	p-reading
Input characteristic curve in accordance with IEC 61131, type 1				Yes	
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes	Yes		Yes; at 24 V DC
Digital input functions, parameterizable					
• Gate start/stop	Yes	Yes			
• Freely usable digital input	Yes	Yes			
• Counter					
- Number, max.	2	2			
- Counting frequency, max.	1 kHz	1 kHz			
- Counting width	32 bit	32 bit			
- Counting direction up/down	Up	Up			

Technical specifications (continued)

Article number	6ES7521-1BH00-0AB0 S7-1500, DI 16X24VDC HF	6ES7521-1BL00-0AB0 S7-1500, DI 32X24VDC HF	6ES7521-1BH50-0AA0 S7-1500, DI 16X24VDC SRC BA	6ES7521-1FH00-0AA0 S7-1500, DI 16X230VAC BA	6ES7521-7EH00-0AB0 S7-1500, DI 16 X 24...125V UC HF
Input voltage					
• Type of input voltage	DC	DC	DC	AC	AC/DC
• Rated value (DC)	24 V	24 V	24 V		24 V; 48 V, 125 V
• Rated value (AC)				230 V; 120/230V AC, 50/60 Hz	24 V; 48 V, 125 V (50 - 60 Hz)
• for signal "0"	-30 to +5V	-30 to +5V	-5 to +30V	0V AC to 40V AC	-5 ... +5 V
• for signal "1"	+11 to +30V	+11 to +30V	-11 to -30V	79V AC to 264V AC	+11 V DC to +146 V DC
Input current					
• for signal "1", typ.	2.5 mA	2.5 mA	4.5 mA	11 mA; At 230 V AC and 5.5 mA at 120 V AC	3 mA; at 24 V DC
Input delay (for rated value of input voltage) for standard inputs					
- parameterizable	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms	No	No	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms parameterizable with DC, 20 ms fixed with AC
for interrupt inputs					
- parameterizable	Yes	Yes	No	No	Yes
for counter/technological functions					
- parameterizable	Yes	Yes	No	No	No
Cable length					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m
Encoder					
Connectable encoders					
• 2-wire sensor	Yes	Yes	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA	1.5 mA	2 mA	1.5 mA
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	Yes	Yes	No	No	No
Filtering and processing time (TCI), min.	80 µs; At 50 µs filter time	80 µs; At 50 µs filter time			
Bus cycle time (TDP), min.	250 µs	250 µs			
Interrupts/diagnostics/ status information					
Diagnostics	Yes	Yes	No	No	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	No	No	Yes
• Hardware interrupt	Yes	Yes	No	No	Yes
Diagnostic messages					
• Monitoring the supply voltage	Yes	Yes	No	No	No
• Wire-break	Yes; to I < 350 µA	Yes; to I < 350 µA	No	No	Yes; To I < 550 µA
• Short-circuit	No	No	No	No	No
Diagnostics indication LED					
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED	No	No	No
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	Yes; Red LED	No	No	Yes; Red LED
• for module diagnostics	Yes; Red LED	Yes; Red LED	No	Yes; Red LED	Yes; Red LED

SIMATIC S7-1500 advanced controllers

I/O modules

Digital modules

SM 521 digital input modules

Technical specifications (continued)

Article number	6ES7521-1BH00-0AB0 S7-1500, DI 16X24VDC HF	6ES7521-1BL00-0AB0 S7-1500, DI 32X24VDC HF	6ES7521-1BH50-0AA0 S7-1500, DI 16X24VDC SRC BA	6ES7521-1FH00-0AA0 S7-1500, DI 16X230VAC BA	6ES7521-7EH00-0AB0 S7-1500, DI 16 X 24...125V UC HF
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	2500 V DC	1 200 V DC
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C	40 °C
Decentralized operation					
Prioritized startup	Yes	Yes	Yes	Yes	Yes
Dimensions					
Width	35 mm	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	240 g	260 g	230 g	300 g	240 g

Article number	6ES7521-1BH10-0AA0 S7-1500, DI 16X24VDC BA	6ES7521-1BL10-0AA0 S7-1500, DI 32X24VDC BA
General information		
Product type designation	DI 16 x 24 V DC BA	DI 32 x 24 V DC BA
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with		
• STEP 7 TIA Portal configurable/integrated as of version	V13 / V13	V13 / V13
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• DI	Yes	Yes
• Counter	No	No
• MSI	Yes	Yes
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Digital inputs		
Number of digital inputs	16	32
Digital inputs, parameterizable	No	No
m/p-reading	p-reading	p-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes
Input voltage		
• Type of input voltage	DC	DC
• Rated value (DC)	24 V	24 V
• for signal "0"	-30 to +5V	-30 to +5V
• for signal "1"	+11 to +30V	+11 to +30V
Input current		
• for signal "1", typ.	2.7 mA	2.7 mA

Technical specifications (continued)

Article number	6ES7521-1BH10-0AA0 S7-1500, DI 16X24VDC BA	6ES7521-1BL10-0AA0 S7-1500, DI 32X24VDC BA
Input delay (for rated value of input voltage) for standard inputs		
- parameterizable	No	No
for interrupt inputs		
- parameterizable	No	No
for counter/technological functions		
- parameterizable	No	No
Cable length		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
Encoder		
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	No	No
Interrupts/diagnostics/ status information		
Diagnostics	No	No
Alarms		
• Diagnostic alarm	No	No
• Hardware interrupt	No	No
Diagnostic messages		
• Monitoring the supply voltage	No	No
• Wire-break	No	No
• Short-circuit	No	No
Diagnostics indication LED		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	No	No
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No
• for module diagnostics	No	No
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Isolation		
Isolation tested with	707 V DC (type test)	707 V DC (type test)
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C
• vertical installation, max.	40 °C	40 °C
Decentralized operation		
Prioritized startup	Yes	Yes
Dimensions		
Width	25 mm	25 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	230 g	260 g
Other		
Note:	Supplied incl. 40-pole push-in front connectors	Supplied incl. 40-pole push-in front connectors

SIMATIC S7-1500 advanced controllers

I/O modules

Digital modules

SM 521 digital input modules**Ordering data****Article No.****Article No.****SM 521 digital input modules**Module width 35 mm

16 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts

6ES7521-1BH00-0AB0

32 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts

6ES7521-1BL00-0AB0

16 inputs, 24 V DC, isolated, input delay 3.2 ms

6ES7521-1BH50-0AA0

16 inputs, 230 V AC, isolated, input delay 20 ms

6ES7521-1FH00-0AA0

16 inputs, 24 ... 125 V UC, input delay 0.05 ... 20 ms, parameterizable diagnostics and hardware interrupts

6ES7521-7EH00-0AB0

Module width 25 mm;
front connector (push-in)
included in delivery package

16 inputs, 24 V DC, isolated

6ES7521-1BH10-0AA0

32 inputs, 24 V DC, isolated

6ES7521-1BL10-0AA0**Accessories****Front connectors**

For 35 mm modules; including four potential bridges, cable ties and individual labeling strips, 40-pin

- Screw terminals
- Push-in

6ES7592-1AM00-0XB0**6ES7592-1BM00-0XB0**

For 25 mm modules; including cable ties and individual labeling strips; push-in terminal 40-pin; Spare part

6ES7592-1BM00-0XA0**Potential bridges for front connectors**

For 35 mm modules; 20 pieces; spare part

6ES7592-3AA00-0AA0**DIN A4 labeling sheets**

For 35 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray

6ES7592-2AX00-0AA0

For 25 mm modules; 10 sheets with 20 labeling strips each for I/O modules; perforated, Al gray

6ES7592-1AX00-0AA0**U connector**

5 units; spare part

6ES7590-0AA00-0AA0**Universal front door for I/O modules**

For 35 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part

6ES7528-0AA00-7AA0

For 25 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part

6ES7528-0AA00-0AA0**SIMATIC Manual Collection**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

6ES7998-8XC01-8YE0**SIMATIC Manual Collection update service for 1 year**

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6ES7998-8XC01-8YE2

Overview



- 8, 16 and 32-channel digital output modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- 35 mm wide modules with parameters and diagnostic functions
- 25 mm wide modules for use in tight spaces: particularly economical, without parameters or diagnostic functions

Technical specifications

Article number	6ES7522-1BH01-0AB0	6ES7522-1BL01-0AB0	6ES7522-1BF00-0AB0	6ES7522-5EH00-0AB0
	S7-1500, DQ 16X24V DC/0.5A HF	S7-1500, DQ 32X24VDC/0.5A HF	S7-1500, DQ 8X24VDC/2A HF	S7-1500, DQ 16X24...48VUC/125VDC/ 0.5A ST
General information				
Product type designation	DQ 16x24VDC/0.5A HF	DQ 32x24VDC/0.5A HF	DQ 8x24VDC/2A HF	DQ 16x24 ... 48VUC/ 125VDC/0.5A ST
Product function				
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with				
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 / -	V13 SP1 / -	V13 SP1 / -	V13 SP1 / -
• STEP 7 configurable/integrated as of version			V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode				
• DQ	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	Yes; with an application	No
• PWM	No	No	Yes	No
• Oversampling	No	No	No	No
• MSO	Yes	Yes	Yes	Yes
Supply voltage				
Type of supply voltage	DC	DC	DC	
Rated value (DC)	24 V	24 V	24 V	
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; through internal protection with 7 A per group	Yes; through internal protection with 10 A per group	
Digital outputs				
Type of digital output	Transistor	Transistor	Transistor	Transistor
Number of digital outputs	16	32	8	16
Current-sinking				Yes
Current-sourcing	Yes	Yes	Yes	Yes
Digital outputs, parameterizable	Yes	Yes	Yes	Yes
Short-circuit protection	Yes; Clocked electronically	Yes; Clocked electronically	Yes	
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)	-17 V	200 V (suppressor diode)
Controlling a digital input	Yes	Yes	Yes	Yes

SIMATIC S7-1500 advanced controllers

I/O modules

Digital modules

SM 522 digital output modules

Technical specifications (continued)

Article number	6ES7522-1BH01-0AB0 S7-1500, DQ 16X24V DC/0.5A HF	6ES7522-1BL01-0AB0 S7-1500, DQ 32X24VDC/0.5A HF	6ES7522-1BF00-0AB0 S7-1500, DQ 8X24VDC/2A HF	6ES7522-5EH00-0AB0 S7-1500, DQ 16X24...48VUC/125VDC/ 0.5A ST
Digital output functions, parameterizable				
<ul style="list-style-type: none"> Freely usable digital output PWM output <ul style="list-style-type: none"> Number, max. Cycle duration, parameterizable 			Yes Yes 2 Yes; 2 ... 100 ms continuous	
Switching capacity of the outputs				
<ul style="list-style-type: none"> with resistive load, max. on lamp load, max. 	0.5 A 5 W	0.5 A 5 W	10 W	0.5 A 40 W; At 125 V DC, 10 W at 48 V UC, 5 W at 24 V UC
Load resistance range				
<ul style="list-style-type: none"> lower limit upper limit 	48 Ω 12 kΩ	48 Ω 12 kΩ	12 Ω 4 kΩ	
Output voltage				
<ul style="list-style-type: none"> Type of output voltage for signal "1", min. 	DC L+ (-0.8 V)	DC L+ (-0.8 V)	DC L+ (-0.8 V)	UC L+ (-1.0 V)
Output current				
<ul style="list-style-type: none"> for signal "1" rated value for signal "0" residual current, max. 	0.5 A 0.5 mA	0.5 A 0.5 mA	2 A 0.5 mA	0.5 A
Output delay with resistive load				
<ul style="list-style-type: none"> "0" to "1", typ. "0" to "1", max. "1" to "0", typ. "1" to "0", max. 	100 μs 500 μs	100 μs 500 μs	80 μs 100 μs 300 μs 500 μs	5 ms 5 ms
Parallel switching of two outputs				
<ul style="list-style-type: none"> for logic links for uprating for redundant control of a load 	Yes No Yes	Yes No Yes	Yes No Yes	Yes No Yes
Switching frequency				
<ul style="list-style-type: none"> with resistive load, max. with inductive load, max. on lamp load, max. 	100 Hz 0.5 Hz; According to IEC 60947-5-1, DC-13 10 Hz	100 Hz 0.5 Hz; According to IEC 60947-5-1, DC-13 10 Hz	100 Hz; With PWM operation: 500 Hz 0.5 Hz; According to IEC 60947-5-1, DC-13; max. 500 Hz with PWM operation only with external circuit; see additional description in the manual 10 Hz	25 Hz 0.5 Hz 10 Hz
Total current of the outputs				
<ul style="list-style-type: none"> Current per channel, max. Current per group, max. Current per module, max. 	0.5 A; see additional description in the manual 4 A; see additional description in the manual 8 A; see additional description in the manual	0.5 A; see additional description in the manual 4 A; see additional description in the manual 16 A; see additional description in the manual	2 A; see additional description in the manual 8 A; see additional description in the manual 16 A; see additional description in the manual	0.5 A 0.5 A 8 A
Cable length				
<ul style="list-style-type: none"> shielded, max. unshielded, max. 	1 000 m 600 m	1 000 m 600 m	1 000 m 600 m	1 000 m 600 m
Isochronous mode				
Isochronous operation (application synchronized up to terminal) Execution and activation time (TCO), min. Bus cycle time (TDP), min.	Yes 70 μs 250 μs	Yes 70 μs 250 μs	No	No

Technical specifications (continued)

Article number	6ES7522-1BH01-0AB0 S7-1500, DQ 16X24V DC/0.5A HF	6ES7522-1BL01-0AB0 S7-1500, DQ 32X24VDC/0.5A HF	6ES7522-1BF00-0AB0 S7-1500, DQ 8X24VDC/2A HF	6ES7522-5EH00-0AB0 S7-1500, DQ 16X24...48VUC/125VDC/ 0.5A ST
Interrupts/diagnostics/ status information				
Diagnostics	Yes	Yes	Yes	No
Substitute values connectable	Yes	Yes	Yes	Yes
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	No
Diagnostic messages				
• Monitoring the supply voltage	Yes	Yes	Yes	No
• Wire-break	Yes	Yes	No	No
• Short-circuit	Yes	Yes	Yes	No
• Group error	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED	Yes; Green LED	No
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED	No
• for module diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	1 200 V DC
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	0 °C			0 °C
• horizontal installation, max.	60 °C			60 °C
• vertical installation, min.	0 °C			0 °C
• vertical installation, max.	60 °C			40 °C
Decentralized operation				
Prioritized startup	Yes	Yes	Yes	Yes
Dimensions				
Width	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
Weights				
Weight, approx.	230 g	280 g	240 g	230 g
Article number	6ES7522-5HF00-0AB0 S7-1500, DQ 8X230VAC/5A ST (RELAY)	6ES7522-5HH00-0AB0 S7-1500, DQ 16X230VAC/2A ST (RELAY)	6ES7522-5FF00-0AB0 S7-1500, DQ 8X230VAC/2A ST (TRIAC)	6ES7522-5FH00-0AB0 S7-1500, DQ 16X230VAC/1A ST (TRIAC)
General information				
Product type designation	DQ 8x230 V AC/5 A ST (relay)	DQ 16x230VAC/2A ST (relay)	DQ 8x230 V AC/2A ST (triac)	DQ 16x230VAC/1A ST (Triac)
Product function				
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with				
• STEP 7 TIA Portal configurable/integrated as of version	V12 / V12	V13 SP1 / -	V12 / V12	V13 SP1 / -
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -

SIMATIC S7-1500 advanced controllers

I/O modules

Digital modules

SM 522 digital output modules

Technical specifications (continued)

Article number	6ES7522-5HF00-0AB0	6ES7522-5HH00-0AB0	6ES7522-5FF00-0AB0	6ES7522-5FH00-0AB0
	S7-1500, DQ 8X230VAC/5A ST (RELAY)	S7-1500, DQ 16X230VAC/2A ST (RELAY)	S7-1500, DQ 8X230VAC/2A ST (TRIAC)	S7-1500, DQ 16X230VAC/1A ST (TRIAC)
Operating mode				
• DQ	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No	No
• PWM	No	No	No	No
• Oversampling	No	No	No	No
• MSO	Yes	Yes	Yes	Yes
Supply voltage				
Type of supply voltage	DC	DC		
Rated value (DC)	24 V	24 V		
Reverse polarity protection	Yes	Yes		
Digital outputs				
Type of digital output	Relays	Relays	Triac	Triac
Number of digital outputs	8	16	8	16
Current-sinking	Yes	Yes		Yes
Current-sourcing	Yes	Yes	Yes	Yes
Digital outputs, parameterizable	Yes	Yes	Yes	Yes
Short-circuit protection	No	No	No	No
Controlling a digital input	possible	Yes		
Switching capacity of the outputs				
• with resistive load, max.			2 A	1 A
• on lamp load, max.	1 500 W; 10 000 operating cycles	50 W (230 V AC), 5 W (24 V DC)	50 W	50 W
• Low energy/fluorescent lamps with electronic control gear	10x 58 W (25 000 operating cycles)			
• Fluorescent tubes, conventionally compensated	1x 58 W (25 000 operating cycles)			
• Fluorescent tubes, uncompensated	10x 58 W (25 000 operating cycles)			
Output voltage				
• Type of output voltage			AC	AC
• for signal "1", min.			L1 (-1.5 V) at maximum output current; L1 (-8.5 V) at minimum output current	L1 (-1.5 V) at maximum output current; L1 (-8.5 V) at minimum output current
Output current				
• for signal "1" rated value	5 A	2 A	2 A	1 A
• for signal "0" residual current, max.	0 A	0 A	2 mA	2 mA
Output delay with resistive load				
• "0" to "1", max.			1 AC cycle	1 AC cycle
• "1" to "0", max.			1 AC cycle	1 AC cycle
Parallel switching of two outputs				
• for logic links	Yes	Yes	No	No
• for uprating	No	No	No	No
• for redundant control of a load	Yes	Yes	Yes	Yes
Switching frequency				
• with resistive load, max.	2 Hz	1 Hz	10 Hz	10 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	2 Hz	1 Hz	1 Hz	1 Hz
Total current of the outputs				
• Current per channel, max.	8 A; see additional description in the manual	2 A; see additional description in the manual	2 A; see additional description in the manual	1 A; see additional description in the manual
• Current per group, max.	8 A; see additional description in the manual	2 A; see additional description in the manual	2 A; see additional description in the manual	2 A; see additional description in the manual
• Current per module, max.	64 A; see additional description in the manual	32 A; see additional description in the manual	10 A; see additional description in the manual	10 A; see additional description in the manual

Technical specifications (continued)

Article number	6ES7522-5HF00-0AB0	6ES7522-5HH00-0AB0	6ES7522-5FF00-0AB0	6ES7522-5FH00-0AB0
	S7-1500, DQ 8X230VAC/5A ST (RELAY)	S7-1500, DQ 16X230VAC/2A ST (RELAY)	S7-1500, DQ 8X230VAC/2A ST (TRIAC)	S7-1500, DQ 16X230VAC/1A ST (TRIAC)
Relay outputs				
• Number of relay outputs	8	16		
• Rated supply voltage of relay coil L+ (DC)	24 V	24 V		
• Current consumption of relays (coil current of all relays), max.	80 mA	150 mA		
• external protection for relay outputs	With miniature circuit breaker with characteristic B for: cos φ 1.0: 600 A cos φ 0.5 ... 0.7: 900 A with 8 A Diazed fuse: 1000 A	Miniature circuit breaker B10 / B16		
• Contact connection (internal)	No	No		
• Size of motor starters according to NEMA, max.	5	5		
• Number of operating cycles, max.	4 000 000; see additional description in the manual	see additional description in the manual		
• Relay approved acc. to UL 508	Yes; 250 V AC/5 A g.p.; 120 V AC TV-4 tungsten; A300, R300	No		
Switching capacity of contacts				
- with inductive load, max.	see additional description in the manual	2 A; see additional description in the manual		
- with resistive load, max.	see additional description in the manual	2 A; see additional description in the manual		
Triac outputs				
• Size of motor starters according to NEMA, max.			5	4
Cable length				
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	No	No	No	No
Interrupts/diagnostics/status information				
Diagnostics	Yes	Yes	No	No
Substitute values connectable	Yes	Yes	Yes	Yes
Alarms				
• Diagnostic alarm	Yes	Yes	No	No
Diagnostic messages				
• Monitoring the supply voltage	Yes	Yes	No	No
• Wire-break	No	No	No	No
• Short-circuit	No	No	No	No
Diagnostics indication LED				
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED	No	No
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No	No	No
• for module diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation tested with	Between the channels: 2 500 V DC; between the channels and backplane bus: 2 500 V DC; between L+ backplane bus 707 V DC (type test)	Between the channels: 2 500 V DC; between the channels and backplane bus: 2 500 V DC; between L+ backplane bus 707 V DC (type test)	2500 V DC	2500 V DC

SIMATIC S7-1500 advanced controllers

I/O modules

Digital modules

SM 522 digital output modules

Technical specifications (continued)

Article number	6ES7522-5HF00-0AB0	6ES7522-5HH00-0AB0	6ES7522-5FF00-0AB0	6ES7522-5FH00-0AB0
	S7-1500, DQ 8X230VAC/5A ST (RELAY)	S7-1500, DQ 16X230VAC/2A ST (RELAY)	S7-1500, DQ 8X230VAC/2A ST (TRIAC)	S7-1500, DQ 16X230VAC/1A ST (TRIAC)
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	40 °C	40 °C	40 °C	60 °C
Decentralized operation				
Prioritized startup	Yes	Yes	Yes	Yes
Dimensions				
Width	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
Weights				
Weight, approx.	350 g	350 g	290 g	310 g

Article number	6ES7522-1BH10-0AA0	6ES7522-1BL10-0AA0
	S7-1500, DQ 16X24VDC/0.5A BA	S7-1500, DQ 32X24VDC/0.5A BA
General information		
Product type designation	DQ 16 x 24 V DC / 0.5 A BA	DQ 32 x 24 V DC / 0.5 A BA
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with		
• STEP 7 TIA Portal configurable/integrated as of version	V13 / V13	V13 / V13
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• DQ	Yes	Yes
• DQ with energy-saving function	No	No
• PWM	No	No
• Oversampling	No	No
• MSO	Yes	Yes
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; through internal protection with 7 A per group
Digital outputs		
Type of digital output	Transistor	Transistor
Number of digital outputs	16	32
Current-sourcing	Yes	Yes
Digital outputs, parameterizable	No	No
Short-circuit protection	Yes	Yes
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)
Controlling a digital input	Yes	Yes

Article number	6ES7522-1BH10-0AA0	6ES7522-1BL10-0AA0
	S7-1500, DQ 16X24VDC/0.5A BA	S7-1500, DQ 32X24VDC/0.5A BA
Switching capacity of the outputs		
• with resistive load, max.	0.5 A	0.5 A
• on lamp load, max.	5 W	5 W
Load resistance range		
• lower limit	48 Ω	48 Ω
• upper limit	12 kΩ	12 kΩ
Output voltage		
• Type of output voltage	DC	DC
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)
Output current		
• for signal "1" rated value	0.5 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Output delay with resistive load		
• "0" to "1", max.	100 μs	100 μs
• "1" to "0", max.	500 μs	500 μs
Parallel switching of two outputs		
• for logic links	Yes	Yes
• for uprating	No	No
• for redundant control of a load	Yes	Yes
Switching frequency		
• with resistive load, max.	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz; According to IEC 60947-5-1, DC-13	0.5 Hz; According to IEC 60947-5-1, DC-13
• on lamp load, max.	10 Hz	10 Hz
Total current of the outputs		
• Current per channel, max.	0.5 A; see additional description in the manual	0.5 A; see additional description in the manual
• Current per group, max.	4 A; see additional description in the manual	4 A; see additional description in the manual
• Current per module, max.	8 A; see additional description in the manual	16 A; see additional description in the manual

Technical specifications (continued)

Article number	6ES7522-1BH10-0AA0 S7-1500, DQ 16X24VDC/0.5A BA	6ES7522-1BL10-0AA0 S7-1500, DQ 32X24VDC/0.5A BA
Cable length		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	No	No
Interrupts/diagnostics/status information		
Diagnostics	No	No
Substitute values connectable	No	No
Alarms		
• Diagnostic alarm	No	No
Diagnostic messages		
• Monitoring the supply voltage	No	No
• Wire-break	No	No
• Short-circuit	No	No
• Group error	No	No

Article number	6ES7522-1BH10-0AA0 S7-1500, DQ 16X24VDC/0.5A BA	6ES7522-1BL10-0AA0 S7-1500, DQ 32X24VDC/0.5A BA
Diagnostics indication LED		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No
• for module diagnostics	No	No
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Isolation		
Isolation tested with	707 V DC (type test)	707 V DC (type test)
Decentralized operation		
Prioritized startup	Yes	Yes
Dimensions		
Width	25 mm	25 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	230 g	280 g
Other		
Note:	Supplied incl. 40-pole push-in front connectors	Supplied incl. 40-pole push-in front connectors

Ordering data

SM 522 digital output modules

Module width 35 mm

8 outputs, 24 V DC; 2 A, isolated	6ES7522-1BF00-0AB0
16 outputs, 24 V DC; 0.5 A, isolated	6ES7522-1BH01-0AB0
32 outputs, 24 V DC; 0.5 A, isolated	6ES7522-1BL01-0AB0
8 relay outputs, 230 V AC, 5 A	6ES7522-5HF00-0AB0
16 relay outputs, 230 V AC, 2 A	6ES7522-5HH00-0AB0
8 outputs (triac), 230 V AC, 2 A	6ES7522-5FF00-0AB0
16 outputs (triac), 230 V AC, 1 A	6ES7522-5FH00-0AB0
16 outputs, 24 ... 48 V UC, 125 V DC, 0.5 A, isolated	6ES7522-5EH00-0AB0

Module width 25 mm;
front connector (push-in)
included in delivery package

16 outputs, 24 V DC; 0.5 A, isolated	6ES7 522-1BH10-0AA0
32 outputs, 24 V DC; 0.5 A, isolated	6ES7 522-1BL10-0AA0

Article No.

Article No.

Accessories

Front connectors

For 35 mm modules; including four potential bridges, cable ties and individual labeling strips, 40-pin

- Screw terminals
- Push-in

6ES7592-1AM00-0XB0
6ES7592-1BM00-0XB0

For 25 mm modules; including cable ties and individual labeling strips; push-in terminal 40-pin; Spare part

6ES7592-1BM00-0XA0

Potential bridges for front connectors

For 35 mm modules; 20 pieces; spare part

6ES7592-3AA00-0AA0

DIN A4 labeling sheets

For 35 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray

6ES7592-2AX00-0AA0

For 25 mm modules; 10 sheets with 20 labeling strips each for I/O modules; perforated, Al gray

6ES7592-1AX00-0AA0

SIMATIC S7-1500 advanced controllers

I/O modules

Digital modules

SM 522 digital output modules

Ordering data	Article No.		Article No.
U connector 5 units; spare part	6ES7590-0AA00-0AA0	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
Universal front door for I/O modules For 35 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	6ES7528-0AA00-7AA0	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
For 25 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	6ES7528-0AA00-0AA0		

4

Overview



- 4 or 8-channel analog input modules
- Optionally with extremely short conversion times
- For the connection of analog sensors without additional amplifiers
- Even solves more complex automation tasks

Technical specifications

Article number	6ES7531-7QD00-0AB0	6ES7531-7KF00-0AB0	6ES7531-7NF10-0AB0
	S7-1500, AI 4xU//RTD/TC ST	S7-1500, AI 8xU//RTD/TC ST	S7-1500, AI 8xU/I HS
General information			
Product type designation	AI 4xU//RTD/TC ST	AI 8xU//RTD/TC ST	AI 8xU/I HS
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Scalable measuring range	No	No	No
Engineering with			
• STEP 7 TIA Portal configurable/integrated as of version	V13 / V13.0.2	V12 / V12	V12 / V12
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode			
• Oversampling	No	No	No
• MSI	Yes	Yes	Yes
CiR - Configuration in RUN			
Reparameterization possible in RUN	Yes	Yes	Yes
Calibration possible in RUN	Yes	Yes	Yes
Supply voltage			
Type of supply voltage	DC	DC	DC
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Analog inputs			
Number of analog inputs	4	8	8
• For current measurement	4	8	8
• For voltage measurement	4	8	8
• For resistance/resistance thermometer measurement	2	4	
• For thermocouple measurement	4	8	
permissible input voltage for voltage input (destruction limit), max.	28.8 V	28.8 V	28.8 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA	40 mA
Technical unit for temperature measurement adjustable	Yes; °C/°F/K	Yes; °C/°F/K	

SIMATIC S7-1500 advanced controllers

I/O modules

Analog modules

SM 531 analog input modules**Technical specifications (continued)**

Article number	6ES7531-7QD00-0AB0 S7-1500, AI 4XU//RTD/TC ST	6ES7531-7KF00-0AB0 S7-1500, AI 8XU//RTD/TC ST	6ES7531-7NF10-0AB0 S7-1500, AI 8XU// HS
Input ranges (rated values), voltages			
• 1 V to 5 V	Yes	Yes	Yes
• -1 V to +1 V	Yes	Yes	
• -10 V to +10 V	Yes	Yes	Yes
• -2.5 V to +2.5 V	Yes	Yes	
• -250 mV to +250 mV	Yes	Yes	
• -5 V to +5 V	Yes	Yes	Yes
• -50 mV to +50 mV	Yes	Yes	
• -500 mV to +500 mV	Yes	Yes	
• -80 mV to +80 mV	Yes	Yes	
Input ranges (rated values), currents			
• 0 to 20 mA	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes
Input ranges (rated values), thermocouples			
• Type B	Yes	Yes	
• Type E	Yes	Yes	
• Type J	Yes	Yes	
• Type K	Yes	Yes	
• Type N	Yes	Yes	
• Type R	Yes	Yes	
• Type S	Yes	Yes	
• Type T	Yes	Yes	
Input ranges (rated values), resistance thermometer			
• Ni 100	Yes; Standard/climate	Yes; Standard/climate	
• Ni 1000	Yes; Standard/climate	Yes; Standard/climate	
• LG-Ni 1000	Yes; Standard/climate	Yes; Standard/climate	
• Pt 100	Yes; Standard/climate	Yes; Standard/climate	
• Pt 1000	Yes; Standard/climate	Yes; Standard/climate	
• Pt 200	Yes; Standard/climate	Yes; Standard/climate	
• Pt 500	Yes; Standard/climate	Yes; Standard/climate	
Input ranges (rated values), resistors			
• 0 to 150 ohms	Yes	Yes	
• 0 to 300 ohms	Yes	Yes	
• 0 to 600 ohms	Yes	Yes	
• 0 to 6000 ohms	Yes	Yes	
• PTC	Yes	Yes	
Thermocouple (TC)			
Temperature compensation			
- parameterizable	Yes	Yes	
Cable length			
• shielded, max.	800 m; for U/I, 200 m for R/RTD, 50 m for TC	800 m; for U/I, 200 m for R/RTD, 50 m for TC	800 m
Analog value generation for the inputs			
Integration and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes	
• Integration time (ms)	2,5 / 16,67 / 20 / 100 ms	2,5 / 16,67 / 20 / 100 ms	

Technical specifications (continued)

Article number	6ES7531-7QD00-0AB0 S7-1500, AI 4XU//RTD/TC ST	6ES7531-7KF00-0AB0 S7-1500, AI 8XU//RTD/TC ST	6ES7531-7NF10-0AB0 S7-1500, AI 8XU// HS
Analog value generation for the inputs (continued)			
<ul style="list-style-type: none"> Basic conversion time, including integration time (ms) - additional conversion time for wire-break monitoring - additional conversion time for resistance measurement 	9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement) 150 ohm, 300 ohm, 600 ohm, Pt100, Pt200, Ni100: 2 ms, 6000 ohm, Pt500, Pt1000, Ni1000, LG-Ni1000, PTC: 4 ms	9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement) 150 ohm, 300 ohm, 600 ohm, Pt100, Pt200, Ni100: 2 ms, 6000 ohm, Pt500, Pt1000, Ni1000, LG-Ni1000, PTC: 4 ms	
<ul style="list-style-type: none"> Interference voltage suppression for interference frequency f1 in Hz Basic execution time of the module (all channels released) 	400 / 60 / 50 / 10	400 / 60 / 50 / 10 Hz	62.5 µs; independent of number of activated channels
Smoothing of measured values			
<ul style="list-style-type: none"> parameterizable 	Yes	Yes	Yes
Encoder			
Connection of signal encoders			
<ul style="list-style-type: none"> for voltage measurement for current measurement as 2-wire transducer - Burden of 2-wire transmitter, max. for current measurement as 4-wire transducer for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection 	Yes Yes 820 Ω Yes Yes; Only for PTC Yes; All measuring ranges except PTC; internal compensation of the cable resistances Yes; All measuring ranges except PTC	Yes Yes 820 Ω Yes Yes; Only for PTC Yes; All measuring ranges except PTC; internal compensation of the cable resistances Yes; All measuring ranges except PTC	Yes Yes 820 Ω Yes
Errors/accuracies			
Basic error limit (operational limit at 25 °C)			
<ul style="list-style-type: none"> Voltage, relative to input area, (+/-) Current, relative to input area, (+/-) Resistance, relative to input area, (+/-) Resistance thermometer, relative to input area, (+/-) Thermocouple, relative to input area, (+/-) 	0.1 % 0.1 % 0.1 % 0.1 %; Ptxxx standard: ±0.7 K, Ptxxx climate: ±0.2 K, Nixxx standard: ±0.3 K, Nixxx climate: ±0.15 K 0.1 %; Type B: > 600 °C ±1.7 K, type E: > -200 °C ±0.7 K, type J: > -210 °C ±0.8 K, type K: > -200 °C ±1.2 K, type N: > -200 °C ±1.2 K, type R: > 0 °C ±1.9 K, type S: > 0 °C ±1.9 K, type T: > -200 °C ±0.8 K	0.1 % 0.1 % 0.1 % Ptxxx standard: ±0.7 K, Ptxxx climate: ±0.2 K, Nixxx standard: ±0.3 K, Nixxx climate: ±0.15 K Type B: > 600 °C ±1.7 K, type E: > -200 °C ±0.7 K, type J: > -210 °C ±0.8 K, type K: > -200 °C ±1.2 K, type N: > -200 °C ±1.2 K, type R: > 0 °C ±1.9 K, type S: > 0 °C ±1.9 K, type T: > -200 °C ±0.8 K	0.2 % 0.2 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency			
<ul style="list-style-type: none"> Series mode interference (peak value of interference < rated value of input range), min. Common mode voltage, max. Common mode interference, min. 	40 dB 10 V 60 dB	40 dB 10 V 60 dB	10 V 60 dB; at 400 Hz: 50 dB

SIMATIC S7-1500 advanced controllers

I/O modules

Analog modules

SM 531 analog input modules

Technical specifications (continued)

Article number	6ES7531-7QD00-0AB0 S7-1500, AI 4XU//RTD/TC ST	6ES7531-7KF00-0AB0 S7-1500, AI 8XU//RTD/TC ST	6ES7531-7NF10-0AB0 S7-1500, AI 8XU// HS
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	Yes
Filtering and processing time (TCI), min.			80 µs
Bus cycle time (TDP), min.			250 µs
Interrupts/diagnostics/status information			
Diagnostics	Yes	Yes	Yes
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case
Diagnostic messages			
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire-break	Yes; Only for 1 to 5 V, 4 to 20 mA, TC, R, and RTD	Yes; Only for 1 to 5 V, 4 to 20 mA, TC, R, and RTD	Yes; only for 1 ... 5 V and 4 ... 20 mA
• Overflow/underflow	Yes	Yes	Yes
Diagnostics indication LED			
• RUN LED	Yes; Green LED	Yes; Green LED	
• ERROR LED	Yes; Red LED	Yes; Red LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED	Yes; Green LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED
Potential separation			
Potential separation channels			
• between the channels and backplane bus	Yes	Yes	Yes
Isolation			
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C	0 °C
• vertical installation, max.	40 °C	40 °C	40 °C
Decentralized operation			
Prioritized startup	No	No	No
Dimensions			
Width	25 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm
Weights			
Weight, approx.	210 g	310 g	200 g
Other			
Note:	Supplied incl. 40-pole push-in front connectors. Additional basic error and noise for integration time = 2.5 ms: Voltage: ±250 mV (±0.02%), ±80 mV (±0.05%), ±50 mV (±0.05%); resistance: 150 Ohms (±0.02%); resistance thermometer: Pt100 climate: ±0.08 K, Ni100 climate: ±0.08 K; thermocouple: Type B, R, S: ±3 K, type E, J, K, N, T: ±1 K	Additional basic error and noise for integration time = 2.5 ms: Voltage: ±250 mV (±0.02%), ±80 mV (±0.05%), ±50 mV (±0.05%); resistance: 150 ohms ±0.02%; resistance thermometer: Pt100 climate: ±0.08 K, Ni100 climate: ±0.08 K; thermocouple: Type B, R, S: ±3 K, type E, J, K, N, T: ±1 K	

Technical specifications (continued)

Article number	6ES7531-7NF00-0AB0	Article number	6ES7531-7NF00-0AB0
General information		Encoder	
Product type designation	AI 8xU/I HF	Connection of signal encoders	
Product function		• for voltage measurement	Yes
• I&M data	Yes; I&M0 to I&M3	• for current measurement as 2-wire transducer	Yes; with external transmitter supply
• Scalable measuring range	No	• for current measurement as 4-wire transducer	Yes
Engineering with		Errors/accuracies	
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1 / V14	Basic error limit (operational limit at 25 °C)	
• STEP 7 configurable/integrated as of version	V5.5 SP3 / V5.5 SP4	• Voltage, relative to input area, (+/-)	0.05 %
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	• Current, relative to input area, (+/-)	0.05 %
• PROFINET as of GSD version/GSD revision	V2.3 / -	Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1 = \text{interference frequency}$	
Operating mode		• Series mode interference (peak value of interference < rated value of input range), min.	80 dB; in the Standard operating mode, 40 dB in the Fast operating mode
• Oversampling	No	• Common mode voltage, max.	60 V DC/30 V AC
• MSI	Yes	• Common mode interference, min.	80 dB
CiR - Configuration in RUN		Isochronous mode	
Reparameterization possible in RUN	Yes	Isochronous operation (application synchronized up to terminal)	No
Calibration possible in RUN	No	Interrupts/diagnostics/status information	
Supply voltage		Diagnostics	Yes
Type of supply voltage	DC	Alarms	
Rated value (DC)	24 V	• Diagnostic alarm	Yes
Reverse polarity protection	Yes	• Limit value alarm	Yes; two upper and two lower limit values in each case
Analog inputs		Diagnostic messages	
Number of analog inputs	8	• Monitoring the supply voltage	Yes
• For current measurement	8	• Wire-break	Yes; only for 1 ... 5 V and 4 ... 20 mA
• For voltage measurement	8	• Overflow/underflow	Yes
permissible input voltage for voltage input (destruction limit), max.	28.8 V	Diagnostics indication LED	
permissible input current for current input (destruction limit), max.	40 mA	• RUN LED	Yes; Green LED
Input ranges (rated values), voltages		• ERROR LED	Yes; Red LED
• 1 V to 5 V	Yes	• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED
• -10 V to +10 V	Yes	• Channel status display	Yes; Green LED
• -2.5 V to +2.5 V	Yes	• for channel diagnostics	Yes; Red LED
• -5 V to +5 V	Yes	• for module diagnostics	Yes; Red LED
Input ranges (rated values), currents		Potential separation	
• 0 to 20 mA	Yes	Potential separation channels	
• -20 mA to +20 mA	Yes	• between the channels and backplane bus	Yes
• 4 mA to 20 mA	Yes	Isolation	
Cable length		Isolation tested with	2 000 V DC between the channels and the supply voltage L+; 2 000 V DC between the channels and the backplane bus; 2 000 V DC between the channels; 707 V DC (type test) between the supply voltage L+ and the backplane bus
• shielded, max.	800 m		
Analog value generation for the inputs			
Integration and conversion time/resolution per channel			
• Resolution with overrange (bit including sign), max.	16 bit		
• Integration time, parameterizable	Yes		
• Integration time (ms)	Fast mode: 2.5 / 16.67 / 20 / 100 ms, standard mode: 7.5 / 50 / 60 / 300 ms		
• Basic conversion time, including integration time (ms)	Fast mode: 4 / 18 / 22 / 102 ms; Standard mode: 9 / 52 / 62 / 302 ms		
• Interference voltage suppression for interference frequency $f1$ in Hz	400 / 60 / 50 / 10 Hz		
• Basic execution time of the module (all channels released)	Corresponds to the channel with the highest basic conversion time		
Smoothing of measured values			
• parameterizable	Yes		

SIMATIC S7-1500 advanced controllers

I/O modules

Analog modules

SM 531 analog input modules

Technical specifications (continued)

Article number	6ES7531-7NF00-0AB0
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C
Decentralized operation	
Prioritized startup	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	280 g
Article number	6ES7531-7PF00-0AB0
General information	
Product type designation	AI 8xU/R/RTD/TC HF
Product function	
• I&M data	Yes; I&M0 to I&M3
• Scalable measuring range	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1 / V14
• STEP 7 configurable/integrated as of version	V5.5 SP3 / V5.5 SP4
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1
• PROFINET as of GSD version/GSD revision	V2.3 / -
Operating mode	
• Oversampling	No
• MSI	Yes
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	No
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Analog inputs	
Number of analog inputs	8; Plus one additional RTD (reference) channel
• For voltage measurement	8; Plus one additional RTD (reference) channel
• For resistance/resistance thermometer measurement	8; Plus one additional RTD (reference) channel
• For thermocouple measurement	8; Plus one additional RTD (reference) channel
permissible input voltage for voltage input (destruction limit), max.	20 V
Technical unit for temperature measurement adjustable	Yes; °C/°F/K

Article number	6ES7531-7PF00-0AB0
Input ranges (rated values), voltages	
• -1 V to +1 V	Yes
• -250 mV to +250 mV	Yes
• -50 mV to +50 mV	Yes
• -500 mV to +500 mV	Yes
• -80 mV to +80 mV	Yes
Input ranges (rated values), thermocouples	
• Type B	Yes
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type TXK/TXK(L) to GOST	Yes
Input ranges (rated values), resistance thermometer	
• Cu 10	Yes; Standard/climate
• Cu 10 according to GOST	Yes; Standard/climate
• Cu 50 according to GOST	Yes; Standard/climate
• Cu 100 according to GOST	Yes; Standard/climate
• Ni 10	Yes; Standard/climate
• Ni 100	Yes; Standard/climate
• Ni 100 according to GOST	Yes; Standard/climate
• Ni 1000	Yes; Standard/climate
• LG-Ni 1000	Yes; Standard/climate
• Ni 120	Yes; Standard/climate
• Ni 200	Yes; Standard/climate
• Ni 500	Yes; Standard/climate
• Pt 10 according to GOST	Yes; Standard/climate
• Pt 50 according to GOST	Yes; Standard/climate
• Pt 100	Yes; Standard/climate
• Pt 100 according to GOST	Yes; Standard/climate
• Pt 1000	Yes; Standard/climate
• Pt 200	Yes; Standard/climate
• Pt 500	Yes; Standard/climate
• Pt 500 according to GOST	Yes; Standard/climate
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes
• 0 to 300 ohms	Yes
• 0 to 600 ohms	Yes
• 0 to 6000 ohms	Yes
• PTC	Yes
Thermocouple (TC)	
Temperature compensation	
- parameterizable	Yes
Cable length	
• shielded, max.	800 m; at U; 200 m at R/RTD/TC

Technical specifications (continued)

Article number	6ES7531-7PF00-0AB0	Article number	6ES7531-7PF00-0AB0
Analog value generation for the inputs		Isochronous mode	
Integration and conversion time/resolution per channel		Isochronous operation (application synchronized up to terminal)	No
• Resolution with overrange (bit including sign), max.	16 bit	Interrupts/diagnostics/status information	
• Integration time, parameterizable	Yes	Diagnostics	Yes
• Integration time (ms)	Fast mode: 2.5 / 16.67 / 20 / 100 ms, standard mode: 7.5 / 50 / 60 / 300 ms	Alarms	
• Basic conversion time, including integration time (ms)	Fast mode: 4 / 18 / 22 / 102 ms; Standard mode: 9 / 52 / 62 / 302 ms	• Diagnostic alarm	Yes
- additional conversion time for wire-break monitoring	Thermocouples, 150 Ohm, 300 Ohm, 600 Ohm, Cu10, Cu50, Cu100, Ni10, Ni50, Ni100, Ni120, Ni200, Pt10, Pt50, Pt100, Pt200: 4 ms; 6 kOhm, Ni500, Ni1000, LG-Ni1000, Pt500, Pt1000: 13 ms	• Limit value alarm	Yes; two upper and two lower limit values in each case
- additional conversion time for resistance measurement	Only for three-wire: 150 Ohm, 300 Ohm, 600 Ohm, Cu10, Cu50, Cu100, Ni10, Ni50, Ni100, Ni120, Ni200, Pt10, Pt50, Pt100, Pt200: 2 ms; 6 kOhm, Ni500, Ni1000, LG-Ni1000, Pt500, Pt1000: 8 ms	Diagnostic messages	
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10 Hz	• Monitoring the supply voltage	Yes
• Basic execution time of the module (all channels released)	Corresponds to the channel with the highest basic conversion time	• Wire-break	Yes; Only with TC, R, RTD
Smoothing of measured values		• Overflow/underflow	Yes
• parameterizable	Yes	Diagnostics indication LED	
Encoder		• RUN LED	Yes; Green LED
Connection of signal encoders		• ERROR LED	Yes; Red LED
• for voltage measurement	Yes	• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED
• for resistance measurement with two-wire connection	Yes	• Channel status display	Yes; Green LED
• for resistance measurement with three-wire connection	Yes; All measuring ranges except PTC; internal compensation of the cable resistances	• for channel diagnostics	Yes; Red LED
• for resistance measurement with four-wire connection	Yes; All measuring ranges except PTC	• for module diagnostics	Yes; Red LED
Errors/accuracies		Potential separation	
Basic error limit (operational limit at 25 °C)		Potential separation analog inputs	
• Voltage, relative to input area, (+/-)	0.05 %	• between the channels and backplane bus	Yes
• Resistance, relative to input area, (+/-)	0.05 %	Isolation	
• Resistance thermometer, relative to input area, (+/-)	Cuxxx Standard: ±0.3 K, Cuxxx Klima: ±0.2 K, Ptxxx Standard: ±0.5 K, Ptxxx Klima: ±0.2 K, Nixxx Standard: ±0.3 K, Nixxx Klima: ±0.15 K	Isolation tested with	2 000 V DC between the channels and the supply voltage L+; 2 000 V DC between the channels and the backplane bus; 2 000 V DC between the channels; 707 V DC (type test) between the supply voltage L+ and the backplane bus
• Thermocouple, relative to input area, (+/-)	Type B: > 600 °C ±1 K, Type E: > -200 °C ±0.5 K, Type J: > -210 °C ±0.5 K, Type K: > -200 °C ±1 K, Type N: > -200 °C ±1 K, Type R: > 0 °C ±1 K, Type S: > 0 °C ±1 K, Type T: > -200 °C ±0.5 K, Type TXK/TXK(L): ±0.5 K	Ambient conditions	
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency		Ambient temperature during operation	
• Series mode interference (peak value of interference < rated value of input range), min.	80 dB; in the Standard operating mode, 40 dB in the Fast operating mode	• horizontal installation, min.	0 °C
• Common mode voltage, max.	60 V DC/30 V AC	• horizontal installation, max.	60 °C
• Common mode interference, min.	80 dB	• vertical installation, min.	0 °C
		• vertical installation, max.	40 °C
		Decentralized operation	
		Prioritized startup	Yes
		Dimensions	
		Width	35 mm
		Height	147 mm
		Depth	129 mm
		Weights	
		Weight, approx.	290 g

SIMATIC S7-1500 advanced controllers

I/O modules

Analog modules

SM 531 analog input modules**Ordering data****Article No.****Article No.****SM 531 analog input modules**

4 x U/I/RTD/TC
4 analog inputs ± 10 V, ± 5 V, ± 2.5 V,
 ± 1 V, ± 500 mV, ± 250 mV, ± 80 mV,
 ± 50 mV, 1 ... 5 V,
0/4 ... 20 mA, ± 20 mA,
thermocouples
type B, E, J, K, N, R, S, T,
resistance thermometers
Ni 100, Ni 1000, LG-Ni 1000,
Pt 100, Pt 1000, Pt 250, Pt 500,
resistors
0...150/300/600/6000 ohms,
16 bit;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7531-7QD00-0AB0

8 x U/I HS
8 analog inputs, ± 10 V, ± 5 V,
1 ... 5 V or 0/4 ... 20 mA, ± 20 mA,
16 bit + sign;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7531-7NF10-0AB0

8 x U/I/RTD/TC
8 analog inputs ± 10 V, ± 5 V, ± 2.5 V,
 ± 1 V, ± 500 mV, ± 250 mV, ± 80 mV,
 ± 50 mV, 1 ... 5 V,
0/4 ... 20 mA, ± 20 mA,
thermocouples
type B, E, J, K, N, R, S, T,
resistance thermometers
Ni 100, Ni 1000, LG-Ni 1000,
Pt 100, Pt 1000, Pt 250, Pt 500,
resistors
0...150/300/600/6000 ohms,
16 bit;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7531-7KF00-0AB0

8 x U/I HF
8 analog inputs, ± 10 V, ± 5 V,
1 ... 5 V or 0/4 ... 20 mA, ± 20 mA,
16 bit + sign;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7531-7NF00-0AB0

8 x U/R/RTD/TC
8 analog inputs, ± 1 V, ± 500 mV,
 ± 250 mV, ± 80 mV, ± 50 mV, ± 25 mV;
thermocouples
type B, E, J, K, N, R, S, T, TXK/
TXK(L) according to GOST;
resistance thermometers
Cu 10, Cu 50, Cu 100, Ni 10,
Ni 100, Ni 120, Ni 200, Ni 500,
Ni 1000, LG-Ni 1000, Pt 10, Pt 50,
Pt 100, Pt 200, Pt 500, Pt 1000;
resistors
0...150/300/600/6000 ohms, PTC;
16 bit;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7531-7PF00-0AB0**Accessories****Front connectors**

For 35 mm modules;
including four potential bridges,
cable ties and individual labeling
strips, 40-pin

- Screw terminals
- Push-in

6ES7592-1AM00-0XB0**6ES7592-1BM00-0XB0**

For 25 mm modules;
including cable ties and individual
labeling strips; push-in terminal
40-pin;
Spare part

6ES7592-1BM00-0XA0**DIN A4 labeling sheets**

For 35 mm modules;
10 sheets with 10 labeling strips
each for I/O modules; perforated,
Al gray

6ES7592-2AX00-0AA0

For 25 mm modules;
10 sheets with 20 labeling strips
each for I/O modules; perforated,
Al gray

6ES7592-1AX00-0AA0**U connector**

5 units; spare part

6ES7590-0AA00-0AA0**Universal front door
for I/O modules**

For 35 mm modules;
5 front doors; with 5 labeling strips
(front) and 5 cabling diagrams per
front door; spare part

6ES7528-0AA00-7AA0

For 25 mm modules;
5 front doors; with 5 labeling strips
(front) and 5 cabling diagrams per
front door; spare part

6ES7528-0AA00-0AA0**Shielding set I/O**

For 35 mm modules;
Infeed element, shield clamp, and
shield terminal;
5 units, spare part (one shield set
supplied with the module).

6ES7590-5CA00-0AA0

For 25 mm modules;
Infeed element, shield clamp, and
shield terminal;
4 units, spare part (one shield set
supplied with the module).

6ES7590-5CA10-0XA0**Shield terminal element**

10 units; spare part

6ES7590-5BA00-0AA0**SIMATIC Manual Collection**

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multi-language: LOGO!, SIMADYN,
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6ES7998-8XC01-8YE0**SIMATIC Manual Collection
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and the three subsequent updates

6ES7998-8XC01-8YE2

Overview



- 2, 4 and 8-channel analog output modules
- Optionally with extremely short conversion times
- For connecting analog actuators without additional amplifiers
- Even solves more complex automation tasks

Technical specifications

Article number	6ES7532-5NB00-0AB0 S7-1500, AQ 2XU/I ST	6ES7532-5HD00-0AB0 S7-1500, AQ 4XU/I ST	6ES7532-5HF00-0AB0 S7-1500, AQ 8XU/I HS
General information			
Product type designation	AQ 2XU/I ST	AQ 4XU/I ST	AQ 8XU/I HS
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Scalable output range	No	No	No
Engineering with			
• STEP 7 TIA Portal configurable/ integrated as of version	V13 / V13.0.2	V12 / V12	V12 / V12
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/ GSD revision	V1.0 / V5.1	V1.0 / V5.1	V1.0 / V5.1
• PROFINET as of GSD version/ GSD revision	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode			
• Oversampling	No	No	No
• MSO	Yes	Yes	Yes
CiR - Configuration in RUN			
Reparameterization possible in RUN	Yes	Yes	Yes
Calibration possible in RUN	Yes	Yes	Yes
Supply voltage			
Type of supply voltage	DC	DC	DC
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Analog outputs			
Number of analog outputs	2	4	8
Cycle time (all channels), min.	3.2 ms; independent of number of activated channels	3.2 ms; independent of number of activated channels	125 µs; independent of number of activated channels
Output ranges, voltage			
• 0 to 10 V	Yes	Yes	Yes
• 1 V to 5 V	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes
Output ranges, current			
• 0 to 20 mA	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes

SIMATIC S7-1500 advanced controllers

I/O modules

Analog modules

SM 532 analog output modules

Technical specifications (continued)

Article number	6ES7532-5NB00-0AB0 S7-1500, AQ 2XU/I ST	6ES7532-5HD00-0AB0 S7-1500, AQ 4XU/I ST	6ES7532-5HF00-0AB0 S7-1500, AQ 8XU/I HS
Connection of actuators			
• for voltage output two-wire connection	Yes	Yes	Yes
• for voltage output four-wire connection	Yes	Yes	Yes
• for current output two-wire connection	Yes	Yes	Yes
Load impedance (in rated range of output)			
• with voltage outputs, min.	1 k Ω ; 0.5 k Ω at 1 to 5 V	1 k Ω ; 0.5 k Ω at 1 to 5 V	1 k Ω
• with voltage outputs, capacitive load, max.	1 μ F	1 μ F	100 nF
• with current outputs, max.	750 Ω	750 Ω	500 Ω
• with current outputs, inductive load, max.	10 mH	10 mH	1 mH
Cable length			
• shielded, max.	800 m; for current, 200 m for voltage	800 m; for current, 200 m for voltage	200 m
Analog value generation for the outputs			
Integration and conversion time/ resolution per channel			
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit
• Conversion time (per channel)	0.5 ms	0.5 ms	50 μ s; independent of number of activated channels
Settling time			
• for resistive load	1.5 ms	1.5 ms	30 μ s; see additional description in the manual
• for capacitive load	2.5 ms	2.5 ms	100 μ s; see additional description in the manual
• for inductive load	2.5 ms	2.5 ms	100 μ s; see additional description in the manual
Errors/accuracies			
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to output area, (+/-)	0.2 %	0.2 %	0.2 %
• Current, relative to output area, (+/-)	0.2 %	0.2 %	0.2 %
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	Yes
Execution and activation time (TCO), min.			100 μ s
Bus cycle time (TDP), min.			250 μ s
Interrupts/diagnostics/ status information			
Diagnostics	Yes	Yes	Yes
Substitute values connectable	Yes	Yes	Yes
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
Diagnostic messages			
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire-break	Yes; Only for output type "current"	Yes; Only for output type "current"	Yes; Only for output type "current"
• Short-circuit	Yes; Only for output type "voltage"	Yes; Only for output type "voltage"	Yes; Only for output type "voltage"
• Overflow/underflow	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7532-5NB00-0AB0	6ES7532-5HD00-0AB0	6ES7532-5HF00-0AB0
	S7-1500, AQ 2XU/I ST	S7-1500, AQ 4XU/I ST	S7-1500, AQ 8XU/I HS
Diagnostics indication LED			
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; Green LED	Yes; Green LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED
Potential separation			
Potential separation channels			
• between the channels and backplane bus	Yes	Yes	Yes
Isolation			
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Decentralized operation			
Prioritized startup	No	No	No
Dimensions			
Width	25 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm
Weights			
Weight, approx.	200 g	310 g	325 g
Other			
Note:	Supplied incl. 40-pole push-in front connectors		

Article number	6ES7532-5ND00-0AB0	Article number	6ES7532-5ND00-0AB0
General information		Output ranges, current	
Product type designation	AQ 4xU/I HF	• 0 to 20 mA	Yes
Product function		• -20 mA to +20 mA	Yes
• I&M data	Yes; I&M0 to I&M3	• 4 mA to 20 mA	Yes
Engineering with		Connection of actuators	
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1 / V14	• for voltage output two-wire connection	Yes
• STEP 7 configurable/integrated as of version	V5.5 SP3 / V5.5 SP4	• for voltage output four-wire connection	Yes
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1	• for current output two-wire connection	Yes
• PROFINET as of GSD version/GSD revision	V2.3 / -	Load impedance (in rated range of output)	
Operating mode		• with voltage outputs, min.	1 kΩ ; 0.5 kOhm at 1 to 5 V
• Oversampling	No	• with voltage outputs, capacitive load, max.	1 μF
• MSO	Yes	• with current outputs, max.	750 Ω
CiR - Configuration in RUN		• with current outputs, inductive load, max.	10 mH
Reparameterization possible in RUN	Yes	Cable length	
Calibration possible in RUN	No	• shielded, max.	800 m; for current, 200 m for voltage
Supply voltage		Analog value generation for the outputs	
Type of supply voltage	DC	Integration and conversion time/resolution per channel	
Rated value (DC)	24 V	• Resolution with overrange (bit including sign), max.	16 bit
Reverse polarity protection	Yes	• Conversion time (per channel)	125 μs; independent of number of activated channels
Analog outputs			
Number of analog outputs	4		
Cycle time (all channels), min.	125 μs; independent of number of activated channels		
Output ranges, voltage			
• 0 to 10 V	Yes		
• 1 V to 5 V	Yes		
• -10 V to +10 V	Yes		

SIMATIC S7-1500 advanced controllers

I/O modules

Analog modules

SM 532 analog output modules

Technical specifications (continued)

Article number	6ES7532-5ND00-0AB0
Settling time	
• for resistive load	0.2 ms; see additional description in the manual
• for capacitive load	1.8 ms; see additional description in the manual
• for inductive load	2 ms; see additional description in the manual
Errors/accuracies	
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output area, (+/-)	0.06 %
• Current, relative to output area, (+/-)	0.1 %
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Diagnostics	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; Only for output type "current"
• Short-circuit	Yes; Only for output type "voltage"
• Overflow/underflow	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; Red LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	2 000 V DC between the channels and the supply voltage L+; 2 000 V DC between the channels and the backplane bus; 2 000 V DC between the channels; 707 V DC (type test) between the supply voltage L+ and the backplane bus
Decentralized operation	
Prioritized startup	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	300 g

Ordering data

SM 532 analog output modules

Module width 25 mm

2 x U/I ST;
2 analog outputs, ± 10 V,
1 ... 5 V, 0 ... 10 V or ± 20 mA,
0/4 ... 20 mA, 16 bit;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7532-5NB00-0AB0

Module width 35 mm

4 x U/I ST;
4 analog outputs, ± 10 V,
1 ... 5 V, 0 ... 10 V or ± 20 mA,
0/4 ... 20 mA, 16 bit;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7532-5HD00-0AB0

8 x U/I HF;
8 analog outputs, ± 10 V,
1 ... 5 V, 0 ... 10 V or ± 20 mA,
0/4 ... 20 mA, 16 bit;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7532-5HF00-0AB0

4 x U/I HF;
4 analog outputs, ± 10 V,
1 ... 5 V, 0 ... 10 V or ± 20 mA,
0/4 ... 20 mA, 16 bit;
incl. infeed element, shield clamp,
shield terminal, labeling strips,
U connector, printed front door

6ES7532-5ND00-0AB0

Accessories

see SIMATIC S7-1500,
SM 531 analog input
module, page 4/66

Overview



ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●			●		●	●

The SIMATIC CP 1543-1 communications processor securely connects the new SIMATIC S7-1500 controller to Industrial Ethernet networks. By combining a variety of security features such as an SPI (Stateful Packet Inspection) firewall, VPN and data encryption protocols such as FTPS and SNMPv3, the communications processor protects individual S7-1500 stations or even entire automation cells against unauthorized access.

The CP can also be used for linking the S7-1500 station into an IPv6-based network. All functions are configured by means of STEP 7 Professional V12 (TIA Portal) or higher.

The CP 1543-1 supports the following communications services:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE, FETCH/WRITE)
- IT communication
 - FTP functions (File Transfer Protocol FTP/FTPS) for file management and access to data blocks in the CPU (client and server function)
 - Sending e-mails via SMTP or ESMTP with "SMTP-Auth" for authentication on an e-mail server (also with IPv6)
- Security functions
 - Stateful Packet Inspection (layers 3 and 4) firewall
 - Secure communication via VPN (IPsec)
 - Secure access to the Web server of the CPU via the HTTPS protocol
 - Secure file transfer using FTPS
 - Secure transfer of the time of day (NTP)
 - SNMPv3 for tap-proof transfer of network analysis information
- Integration of the S7-1500 into IPv6-based networks; An IPv6-compliant IP address can be used for the following communication services:
 - FETCH/WRITE access (CP as server)
 - FTP server mode
 - FTP client mode with addressing by program block
 - E-mail transfer with addressing by program block

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Ordering data

Article No.

**SIPLUS CP 1543-1
Communications processor****6AG1543-1AX00-2XE0**

(Extended temperature range and medial exposure)

for connection of SIMATIC S7-1500 to Industrial Ethernet via TCP/IP, ISO and UDP and Security functions; 1 x RJ45 interface with 10/100/1000 Mbit/s; electronic manual on DVD

Accessories

see Catalog ST 70, SIMATIC S7-1500, CP 1543-1 communications processor

SIMATIC S7-1500 advanced controllers

I/O modules

Fail-safe digital/analog I/O modules

F digital input module**Overview**

Failsafe digital input module:
F-DI 16x24VDC PROFISAFE

Important properties:

- 16-channel failsafe digital input module for ET 200MP/S7-1500
- For failsafe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 4 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
 - Plain text identification of the module type
 - Complete Article No.
 - 2D matrix code (article and serial number)
 - Connection diagram
 - Hardware and firmware version
- Optional labeling accessories
 - Labeling sheets, yellow
- The modules support PROFISafe in both PROFIBUS and PROFINET configurations. Can be used with all failsafe SIMATIC S7-1500 F-CPU's in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPU's.

Technical specifications

Article number	6ES7526-1BH00-0AB0 ET 200MP, F-DI 16x24VDC
General information	
Product type designation	F-DI 16x24VDC
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 with HSP0086
Operating mode	
• DI	Yes
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	4
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.8 A)
24 V encoder supply	
• 24 V	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA; Max. 100 mA when mounted vertically
Digital inputs	
Number of digital inputs	16
m/p-reading	Yes; p-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+15 to +30V
Input current	
• for signal "1", typ.	3.7 mA
Input delay (for rated value of input voltage) for standard inputs	
- parameterizable	Yes
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	500 m
Interrupts/diagnostics/ status information	
Diagnostics	Yes
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	No
• Short-circuit	Yes
• Group error	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; Red LED

Technical specifications (continued)

Article number	6ES7526-1BH00-0AB0 ET 200MP, F-DI 16X24VDC
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to EN ISO 13849-1:2008	PLe
• SIL acc. to IEC 61508	SIL 3
• Low demand mode: PFDavg in accordance with SIL3	< 5.00E-05
• High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	280 g

Ordering data

Article No.

F digital input module	
16 inputs, 24 V DC, PROFISAFE	6ES7526-1BH00-0AB0
Accessories	
Coding elements	6ES7592-6EF00-1AA0
E-coding element type F for ET 200 MP-module F-DI/F-DQ; 5 units, spare part	
Front connectors	
Incl. four potential bridges, cable ties and individual labeling strips, 40-pin	
• Screw terminals	6ES7592-1AM00-0XB0
• Push-in	6ES7592-1BM00-0XB0
DIN A4 labeling sheets	6ES7592-2CX00-0AA0
For 35-mm F-modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, yellow	
U connector	6ES7590-0AA00-0AA0
5 units; spare part	
Front door for F-I/O modules	6ES7528-0AA10-7AA0
5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	
STEP 7 Safety Advanced V13 SP1	
Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F controller, ET 200SP, ET 200S, ET 200MP, ET 200M, ET 200iSP, ET 200pro, ET 200eco	
Requirement: STEP 7 Professional V13 SP1	
Floating license for 1 user	6ES7833-1FA13-0YA5
Floating license for 1 user, license key download without software or documentation ¹⁾ ; email address required for delivery	6ES7833-1FA13-0YH5
S7 Distributed Safety V5.4 programming tool	
Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200MP, ET 200M, ET 200iSP, ET 200pro, ET 200eco	
Requirement: STEP 7 V5.3 SP3 and higher	
Floating license for 1 user	6ES7833-1FC02-0YA5
Floating License for 1 user, license key download without software or documentation ²⁾ ; email address required for delivery	6ES7833-1FC02-0YH5

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

I/O modules

Fail-safe digital/analog I/O modules

F digital output module**Overview**

Digital failsafe digital output module:
F-DQ 8x24VDC 2A PPM PROFISAFE

Important properties:

- 8-channel digital failsafe output module for ET 200MP/S7-1500
- Failsafe 2-channel activation (parameterizable PM/PP switching) of actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
 - Plain text identification of the module type
 - Complete Article No.
 - 2D matrix code (article and serial number)
 - Connection diagram
 - Hardware and firmware version
- Optional labeling accessories
 - Labeling sheets, yellow
- The module supports PROFIsafe in both PROFIBUS and PROFINET configurations.
- Can be used with all failsafe SIMATIC S7-1500 F-CPU's in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPU's.

Technical specifications

Article number	6ES7526-2BF00-0AB0 ET 200MP, F-DQ 8X24VDC 2A PPM
General information	
Product type designation	F-DQ 8x24VDC/2A PPM
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 with HSP0086
Operating mode	
• DQ	Yes
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Digital outputs	
Number of digital outputs	8
Current-sinking	Yes
Current-sourcing	Yes
Short-circuit protection	Yes
Open-circuit detection	Yes
Overload protection	Yes
Limitation of inductive shutdown voltage to	PM-switching: -24 V + (-47 V), PP-switching: -24 V
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	10 W
Load resistance range	
• lower limit	12 Ω
• upper limit	2 000 Ω
Output voltage	
• Type of output voltage	DC
• for signal "1", min.	24 V; L+ (-0.5 V)
Output current	
• for signal "1" rated value	2 A
• for signal "0" residual current, max.	0.5 mA; Current-sourcing, or current sourcing and sinking switches individually, current sinking: max. 1 mA
Switching frequency	
• with resistive load, max.	30 Hz
• with inductive load, max.	0.1 Hz
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per channel, max.	2 A
Total current of the outputs (per module)	
horizontal installation	
- up to 40 °C, max.	16 A
- up to 60 °C, max.	8 A
vertical installation	
- up to 40 °C, max.	8 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	500 m

Technical specifications (continued)

Article number	6ES7526-2BF00-0AB0 ET 200MP, F-DQ 8X24VDC 2A PPM
Interrupts/diagnostics/ status information	
Diagnostics	Yes
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring of the supply voltage (PWR-LED)	Yes
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; Red LED
Potential separation	
Potential separation channels	
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to EN ISO 13849-1:2008	PLe
• SIL acc. to IEC 61508	SIL 3
• Low demand mode: PFDavg in accordance with SIL3	< 6.00E-05
• High demand/continuous mode: PFH in accordance with SIL3	< 2.00E-09 1/h
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	300 g

Ordering data

Article No.

F digital output module	
8 outputs, 24 V DC, 2 A, PROFISAFE, p/m-switching	6ES7526-2BF00-0AB0
Accessories	
Coding elements	6ES7592-6EF00-1AA0
E-coding element type F for ET 200 MP-module F-DI/F-DQ; 5 units, spare part	
Front connectors	
Incl. four potential bridges, cable ties and individual labeling strips, 40-pin	
• Screw terminals	6ES7592-1AM00-0XB0
• Push-in	6ES7592-1BM00-0XB0
DIN A4 labeling sheets	6ES7592-2CX00-0AA0
For 35-mm F-modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, yellow	
U connector	6ES7590-0AA00-0AA0
5 units; spare part	
Front door for F-I/O modules	6ES7528-0AA10-7AA0
5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	
STEP 7 Safety Advanced V13 SP1	
Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F controller, ET 200SP, ET 200S, ET 200MP, ET 200M, ET 200iSP, ET 200pro, ET 200eco	
Requirement: STEP 7 Professional V13 SP1	
Floating license for 1 user	6ES7833-1FA13-0YA5
Floating license for 1 user, license key download without software or documentation ¹⁾ ; email address required for delivery	6ES7833-1FA13-0YH5
S7 Distributed Safety V5.4 programming tool	
Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200MP, ET 200M, ET 200iSP, ET 200pro, ET 200eco	
Requirement: STEP 7 V5.3 SP3 and higher	
Floating license for 1 user	6ES7833-1FC02-0YA5
Floating License for 1 user, license key download without software or documentation ²⁾ ; email address required for delivery	6ES7833-1FC02-0YH5

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-1500 advanced controllers

Notes

4

SIMATIC S7-300 advanced controller**5/2****Central processing units**

5/2

SIPLUS compact CPUs

5/2

SIPLUS S7-300 CPU 314C-2 PN/DP

5/4**I/O modules**

5/4

SIPLUS F digital/analog modules

5/4

SIPLUS S7-300 SM 326 F digital input modules - Safety Integrated

5/6

SIPLUS S7-300 SM 336 F analog input modules - Safety Integrated

5/8

SIPLUS special modules

5/8

SIPLUS S7-300 DM 370 dummy modules

5/9

Connection methods

5/9

System cabling for SIMATIC S7-300/400 and ET 200M - Fully modular connection

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

SIMATIC S7-300 advanced controller

Central processing units
SIPLUS compact CPUs

SIPLUS S7-300 CPU 314C-2 PN/DP

Overview



- The compact CPU with integral digital and analog inputs/ outputs and technological functions
- High processing performance in binary and floating-point arithmetic
- For connecting distributed I/O via PROFIBUS and PROFINET
- Combined MPI/PROFIBUS DP master/slave interface
- PROFINET interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or third-party PROFINET I/O controller
- Component based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component based Automation (CBA)
- Integrated Web server with the option of creating user-defined web pages
- Isochronous mode on PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Order number	6AG1314-6EH04-7AB0
Based on	6ES7314-6EH04-0AB0 SIPLUS S7-300 CPU314C-2PN/DP
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

SIPLUS S7-300 CPU 314C-2 PN/DP

For industrial applications with particularly demanding environmental conditions

Compact CPU,
192 KB work memory,
24 V DC power supply,
24 DI/16 DQ/4 AI/2 AQ integrated,
integrated functions, MPI;
PROFIBUS DP master/slave
interface;
PROFINET IO Controller/I-Device
interface,
MMC is required

Extended temperature range and exposure to media

Article No.

6AG1314-6EH04-7AB0

Ordering data	Article No.	Article No.
Accessories		
<i>Mandatory</i>		
SIMATIC Micro Memory Card		
64 KB	6ES7953-8LF30-0AA0	
128 KB	6ES7953-8LG30-0AA0	
512 KB	6ES7953-8LJ30-0AA0	
2 MB	6ES7953-8LL31-0AA0	
4 MB	6ES7953-8LM31-0AA0	
8 MB	6ES7953-8LP31-0AA0	
Front connector (1 unit)		
For compact CPUs		
40-pin, with spring-loaded contacts		
• 1 unit	6ES7392-1BM01-0AA0	
• 100 units	6ES7392-1BM01-1AB0	
<i>For communication within the application</i>		
PROFIBUS DP bus connector RS 485		
(extended temperature range and exposure to media)		
With 90° cable outlet, max. transfer rate 12 Mbit/s		
• Without PG interface	6AG1972-0BA12-2XA0	
• With PG interface	6AG1972-0BB12-2XA0	
With angled cable outlet, max. transfer rate 12 Mbit/s		
• Without PG interface	6AG1972-0BA42-7XA0	
• With PG interface	6AG1972-0BB42-7XA0	
(extended temperature range)		
With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	6AG1500-0EA02-2AA0	
IE FC RJ45 Plug 180		
(extended temperature range and exposure to media)		
180° cable outlet		
• 1 unit	6AG1901-1BB10-7AA0	
SIPLUS SCALANCE X-200 Industrial Ethernet switches		
Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM		
• With electrical and optical ports for glass multimode FOC up to 3 km		
• Extended temperature range and exposure to media		
• SIPLUS SCALANCE X204-2 With four 10/100 Mbit/s RJ45 ports and two fiber-optic ports	6AG1204-2BB10-4AA3	
PROFIBUS FastConnect bus cable	6XV1830-0EH10	
Standard type with special design for quick mounting, 2-core, shielded, sold by the meter; max. length 1000 m, minimum ordering quantity 20 m		
		IE FC TP Standard Cable GP 2x2 6XV1840-2AH10
		4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter; max. length 1 000 m minimum order quantity 20 m
		FO Standard Cable GP (50/125) 6XV1873-2A
		Standard cable, splittable, UL approval, sold by the meter; max. length 1 000 m minimum order quantity 20 m
		RS 485 repeater for PROFIBUS 6AG1972-0AA02-7XA0
		(extended temperature range and exposure to media)
		Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure
		<i>For commissioning</i>
		MPI cable 6ES7901-0BF00-0AA0
		For connection of SIMATIC S7 and PG via MPI; length 5 m
		USB A2 PC adapter 6GK1571-0BA00-0AA0
		For connecting a PG/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery
		<i>Consumables</i>
		Front door, elevated design 6ES7328-7AA20-0AA0
		For compact CPUs; for connecting 1,3 mm ² /16 AWG wires; wiring diagram and labels in petrol
		Power supply connector 6ES7391-1AA00-0AA0
		10 units, spare part
		Slot number plates 6ES7912-0AA00-0AA0
		Labeling strips 6ES7392-2XX00-0AA0
		10 units, spare part
		Label cover 6ES7392-2XY00-0AA0
		10 units, spare part
		Labeling sheets for machine inscription
		For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units
		Petrol 6ES7392-2AX10-0AA0
		Light beige 6ES7392-2BX10-0AA0
		Yellow 6ES7392-2CX10-0AA0
		Red 6ES7392-2DX10-0AA0
		<i>Documentation</i>
		SIMATIC Manual Collection 6ES7998-8XC01-8YE0
		Electronic manuals on DVD, multilingual
		SIMATIC Manual Collection update service for 1 year 6ES7998-8XC01-8YE2
		Current "Manual Collection" DVD and the three subsequent updates

SIMATIC S7-300 advanced controller

I/O modules

SIPLUS F digital/analog modules

SIPLUS S7-300 SM 326 F digital input modules - Safety Integrated**Overview**

- Digital inputs for the fail-safe SIPLUS S7 systems
- For connecting:
 - Switches and 2-wire proximity switches
 - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
 - Centrally: With S7-31xF-2 DP
 - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- In standard operation can be used in the same way as S7-300 modules

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Order number	6AG1326-1BK02-2AB0	6AG1326-1BK02-2AY0	6AG1326-1RF01-4AB0
Based on	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1RF01-0AB0 SIPLUS S7-300 SM326F DI8 NAMUR
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax; +70 °C where forced convection with a minimum air velocity of 0.7 m/s through the modules and rated voltage of 24 V ±5 % are ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN 50155	60 °C; = Tmax
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data	Article No.	Article No.
SIPLUS S7-300 SM 326 F digital input		<i>Programming tools and documentation</i>
<i>For industrial applications with extended ambient conditions</i>		S7 Distributed Safety programming tool V5.4
<u>Extended temperature range and exposure to media</u>		Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco
24 inputs, 24 V DC, failsafe, with diagnostics interrupt	6AG1326-1BK02-2AB0	Requirement: STEP 7 V5.3 SP3 and higher
8 inputs, 24 V DC, NAMUR, failsafe	6AG1326-1RF01-4AB0	Floating license
<i>For rolling stock railway applications</i>		6ES7833-1FC02-0YA5
<u>Conforms to EN 50155</u>		6ES7833-1FC02-0YH5
24 inputs, 24 V DC, failsafe, with diagnostics interrupt	6AG1326-1BK02-2AY0	Floating license for 1 user, license key download without software or documentation ¹⁾ ; email address required for delivery
Accessories		S7 Distributed Safety upgrade
<i>Mandatory</i>		From V5.x to V5.4; floating license for 1 user
Front connector		6ES7833-1FC02-0YE5
40-pin, with spring-loaded contacts		STEP 7 Safety Advanced V13 SP1
• 1 unit	6ES7392-1BM01-0AA0	Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco
• 100 units	6ES7392-1BM01-1AB0	Requirement: STEP 7 Professional V13 SP1
<i>Accessories for hot swapping function</i>		Floating license for 1 user
Active bus module		6ES7833-1FA13-0YA5
BM 1 x 80 for 1 module, 80 mm wide	6AG1195-7HC00-2XA0	6ES7833-1FA13-0YH5
<i>Consumables</i>		Floating license for 1 user, license key download without software or documentation ¹⁾ ; email address required for delivery
DIN rail for active bus modules		SIMATIC Manual Collection
For max. 5 active bus modules for hot swapping function		Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
• Length 483 mm (19")	6ES7195-1GA00-0XA0	6ES7998-8XC01-8YE0
• Length 530 mm	6ES7195-1GF30-0XA0	
• Length 620 mm	6ES7195-1GG30-0XA0	
• Length 2000 mm	6ES7195-1GC00-0XA0	
Front door, elevated design, for F-modules	6ES7328-7AA10-0AA0	SIMATIC Manual Collection update service for 1 year
For F-modules; for connecting 1.3 mm ² /16 AWG wires; wiring diagram and labels in yellow		Current "Manual Collection" DVD and the three subsequent updates
Labeling strips	6ES7392-2XX20-0AA0	
For fail-safe modules (spare part); 10 units		
Label cover	6ES7392-2XY20-0AA0	
For fail-safe modules (spare part); 10 units		
LK 393 cable guide	6ES7393-4AA10-0AA0	
For F-modules; L+ and M connections; 5 units		

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 advanced controller

I/O modules

SIPLUS F digital/analog modules

SIPLUS S7-300 SM 336 F analog input modules - Safety Integrated**Overview**

- Analog inputs for fail-safe SIPLUS S7 systems
- Applicable in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIPLUS S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 ... 20 mA HART:
 - 6 analog inputs with galvanic isolation between channels and backplane bus
 - Input ranges: 0 mA to 20 mA, 4 mA to 20 mA
 - Short-circuit proof power supply of 2 or 4-wire transmitter via the module
 - External encoder supply possible
 - Applicable in safety mode
 - HART communication
 - Firmware update using HW Config
 - Identification data
 - Temperature range -25 ... +70 °C; (+70 °C when ensuring a forced convection with a minimal air velocity of 0.3 m/s through the module). If a violation of the permissible, specified parameters is detected during maintenance or by automatic diagnostics, the modules must be proof-tested by the manufacturer. Without this measure the temperature range is -25...60 °C

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products.
SIPLUS extreme specific information was added.

Technical specifications

Order number	6AG1336-4GE00-2AB0
Based on	6ES7336-4GE00-0AB0 SIPLUS S7-300 SM336 F 6AI 15BIT
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = T max; +70 °C when forced convection at a minimum air speed of 0.3 m/s through the modules is ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
• At cold restart, min.	-25 °C
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; incl. condensation / frost permitted (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data	Article No.	Article No.
F analog input module SIPLUS S7-300 SM 336		
<i>For industrial applications with extended ambient conditions</i>		
<u>Extended temperature range and exposure to environmental substances</u>		
6 inputs, 15 bit, 0/4 - 20 mA HART	6AG1336-4GE00-2AB0	
Accessories		
<i>Mandatory</i>		
Front connector		
20-pin, with spring-loaded contacts		
• 1 unit	6ES7392-1BJ00-0AA0	
• 100 units	6ES7392-1BJ00-1AB0	
<i>Accessories for hot swapping function</i>		
Active bus module		
BM 2 x 40 for accepting 2 IO modules, each 40 mm wide	6AG1195-7HB00-7XA0	
<i>Consumables</i>		
DIN rail for active bus modules		
For max. 5 active bus modules for hot swapping function		
• Length 483 mm (19")	6ES7195-1GA00-0XA0	
• Length 530 mm	6ES7195-1GF30-0XA0	
• Length 620 mm	6ES7195-1GG30-0XA0	
• Length 2000 mm	6ES7195-1GC00-0XA0	
Front door, elevated design, for F-modules	6ES7328-7AA10-0AA0	
For F-modules; for connecting 1.3 mm ² /16 AWG wires; wiring diagram and labels in yellow		
Labeling strips	6ES7392-2XX20-0AA0	
For fail-safe modules (spare part); 10 units		
Label cover	6ES7392-2XY20-0AA0	
For fail-safe modules (spare part); 10 units		
LK 393 cable guide	6ES7393-4AA10-0AA0	
For F-modules; L+ and M connections; 5 units		
		<i>Programming tools and documentation</i>
		S7 Distributed Safety programming tool V5.4
		Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco
		Requirement: STEP 7 V5.3 SP3 and higher
		Floating license
		6ES7833-1FC02-0YA5
		Floating license for 1 user, license key download without software or documentation ¹⁾ ; email address required for delivery
		6ES7833-1FC02-0YH5
		S7 Distributed Safety upgrade
		From V5.x to V5.4; floating license for 1 user
		6ES7833-1FC02-0YE5
		STEP 7 Safety Advanced V13 SP1
		Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco
		Requirement: STEP 7 Professional V13 SP1
		Floating license for 1 user
		6ES7833-1FA13-0YA5
		Floating license for 1 user, license key download without software or documentation ¹⁾ ; email address required for delivery
		6ES7833-1FA13-0YH5
		SIMATIC Manual Collection
		Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
		6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year
		Current "Manual Collection" DVD and the three subsequent updates
		6ES7998-8XC01-8YE2

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 advanced controller

I/O modules

SIPLUS special modules

SIPLUS S7-300 DM 370 dummy modules**Overview**

- Dummy module for reserving slots for unconfigured signal modules
- Retention of design and address assignment when replacing with a signal module

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

Order number	6AG1370-0AA01-7AA0
Based on	6ES7370-0AA01-0AA0 SIPLUS S7-300 DUMMY MODULE

Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data**Article No.**

SIMATIC S7-300 DM 370 dummy module	
For use when replacing modules	
Extended temperature range and exposure to media	6AG1370-0AA01-7AA0
Accessories	
<i>Consumables</i>	
Bus connectors	6ES7390-0AA00-0AA0
1 unit (spare part)	
Labeling strips	
10 units (spare part)	
For modules with 20-pin front connector	6ES7392-2XX00-0AA0
Label cover	
10 units (spare part)	
For modules with 20-pin front connector	6ES7392-2XY00-0AA0
Labeling sheets for machine printing	
For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Petrol	6ES7392-2AX00-0AA0
Light beige	6ES7392-2BX00-0AA0
Yellow	6ES7392-2CX00-0AA0
Red	6ES7392-2DX00-0AA0

Overview

Wiring of SIMATIC S7 I/O modules with the sensors/actuators is a significant factor with respect to time/cost overhead, configuring, control cabinet installation, procurement and ease of service.

With SIMATIC TOP connect system cabling, it is simple and quick to establish a reliable connection for your SIMATIC S7-300 or ET 200M.

The fully modular connection is the standard connection for the SIMATIC S7-300/ET 200 M and allows the sensors and actuators from the field to be conveniently and quickly connected to the SIMATIC S7-300/ET 200 M without errors.

With the TIA Selection Tool, a mouse click is all that is required to configure the connection from the SIMATIC S7 module to the I/O. The program automatically checks for plausibility and generates a parts list for the selected connection components that can then be ordered in the Industry Mall.

Further information can be found on the Internet at

<http://www.siemens.com/tia-selection-tool>

Benefits

- Easy plugging in of front connector module, connecting cable and connection module
- Fast and low-cost wiring
- Supply voltage connectable to front connector module or connection module for digital and analog signals
- Reduction in wiring errors, clear control cabinet wiring
- Distribution of digital signals by byte or by double-byte
- Each component can be replaced individually.
- Every cable length can be configured without cutting, or pre-assembled cables can be used

Design**Fully modular connection**

Each component is individually inserted.

The system consists of:

- Front connector module
- Connecting cable
- Terminal modules in the following versions:
 - Basic module, signal module and function module

Connection errors are thus practically excluded and installation overhead is minimized. Systematic connection of the SIMATIC system. The assembly overhead for the connecting cables is drastically reduced thanks to the use of pre-assembled or easily assembled cables sold by the meter.

Front connector module

Modified front connectors, called front connector modules, are available for connecting to the module. These are plugged into the module to be wired instead of the front connector. The front connector modules are available in many different digital and analog versions. The connecting cables are plugged into these front connector modules.

Connecting cable

The connecting cable is available in two different versions.

As a pre-assembled 16-pin round cable (shielded or unshielded) up to a length of 10 m, or as a 16-pin round-sheath ribbon cable (with or without shield), which can be easily assembled by the user; or as 2 x 16-pin round-sheath ribbon cable (without shield).

When assembled, there are one or two insulation displacement connectors (female ribbon connectors) at both ends of the cable.

The round-sheath ribbon cable is assembled by the user with the aid of pliers (can be ordered separately). The cable transmits 8 or 2 x 8 channels over a distance of up to 30 m.

The connecting cable connects the front connector module with the terminal module.

Terminal module

The system has digital and analog terminal modules for connecting the I/O signals. These are snapped onto the DIN rail.

Terminal modules are available for two different connection methods: with spring-loaded or screw-type terminals

Basic module:

Terminal modules with basic functionality for getting the signal from the field to the module or from the module to the field quickly and easily. For digital or analog signals.

Signal module:

Expands the digital basic module with LEDs for signaling the active high signal. This makes commissioning easier for you, and you always have an overview of the signal states of your I/O. One LED signals the availability of the supply voltage.

SIMATIC S7-300 advanced controller

I/O modules

Connection methods

System cabling for SIMATIC S7-300/400 and ET 200M - Fully modular connection

Design (continued)

Function module:

Digital terminal modules that are fitted with relays or optocouplers.

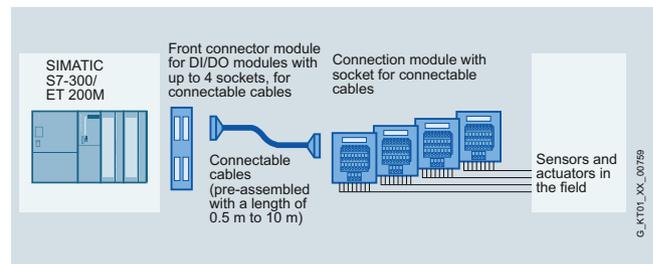
If other voltage or power levels are required in the field, the terminal module for TPRo or TPOo output signals is used. For the TPRo terminal module, relays are used for the implementation. For the TPOo terminal module, optocouplers are used for the implementation. This converts the 24 V DC output signal simply and reliably to another voltage or power level. If 230 V AC input signals have to be transmitted to the controller in the field, a connection module with relay TPRi is available that simply converts the 230 V AC signal to 24 V DC. This means that there is always the same voltage level on the module side.

Use with optocouplers for the TPRo relay modules

If higher switching frequencies of the relay terminal module are required for the output signals, the relay can simply be replaced with an optocoupler (note technical specifications) in order to increase the switching frequency.

Shield plate

The shield plate is latched onto the connection module for 3-core initiators or optionally onto the connection module for analog signals and then snapped onto the DIN rail with the connection module. With the terminal elements, optimal shield connection is achieved between the shielded round-sheath ribbon cable or the shielded field cables and the grounded DIN rail.



SIMATIC TOP connect for S7-300/ ET200 M, fully modular connection

Technical specifications Front connector module

Technical data of front connector module	
Rated operating voltage	24 VDC
Max. permissible operating voltage	60 V DC
Max. permissible continuous current • per connector pin	1 A
Max. permissible summation current	4 A/byte

Technical data of front connector module	
Permissible ambient temperature	0 to + 60°C
Test voltage	0.5 kV, 50 Hz, 60 sec.
Air gaps and creepage distances	IEC 664 (1980), IEC 664 A (1981), in accordance with DIN VDE 0110 (01.89), overvoltage class II, pollution degree 2

Wiring rules for the front connector modules

Front connector module SIMATIC TOP connect, connection for potential infeed	
Spring connection Screw connection	
Modules up to 4 connections	
Connectable cable cross-sections	<ul style="list-style-type: none"> • solid cables No • flexible cables with/without wire end ferrule 0,25 to 1.5 mm²
Number of wires per connection	1 or a combination of 2 conductors up to 1.5 mm ² (total) in a common wire end ferrule
Max. diameter of the cable insulation	3.1 mm
Stripping length of the cables	<ul style="list-style-type: none"> • without insulating collar 6 mm • with insulating collar -
Wire-end ferrules in acc. with DIN 46228	
<ul style="list-style-type: none"> • without insulating collar Form A; 5 to 7 mm long • with insulating collar 0.25 to 1.0 mm² - • with insulating collar 1.5 mm² - 	
Blade width of the screwdriver	3.5 mm (cylindrical shape)
Tightening torque for connecting the cables	- 0.4 to 0.7 Nm

Front connector module SIMATIC TOP connect, connection for potential infeed	
Spring connection Screw connection	
Modules up to 8 connections	
Connectable cable cross-sections	<ul style="list-style-type: none"> • solid cables No • flexible cables with/without wire end ferrule 0.25 to 0.75 mm²
Number of cables per connection	1 or a combination of 2 wires up to 0.75 mm ² (total) in a common wire end ferrule
Max. diameter of the cable insulation	2.0 mm
Stripping length of the cables	<ul style="list-style-type: none"> • without insulating collar 6 mm • with insulating collar -
Wire-end ferrules in acc. with DIN 46228	
<ul style="list-style-type: none"> • without insulating collar Form A; 5 to 7 mm long • with insulating collar 0.25 to 1.0 mm² - • with insulating collar 1.5 mm² - 	
Blade width of the screwdriver	3.5 mm (cylindrical shape)
Tightening torque for connecting the cables	- 0.4 to 0.7 Nm

Technical specifications Connecting cable

Technical specifications of connecting cable from SIMATIC S7 to connection module		Technical specifications of connecting cable from SIMATIC S7 to connection module	
Operating voltage	60 V DC	Outer diameter of pre-assembled round cable in mm unshielded/shielded (16-pole)	Approx. 6.5/7.0
Continuous current per signal conductor	1 A	Outer diameter of round-sheath ribbon cable in mm 16-pole/2 x 16-pole	approx. 9.5/11.5
Max. aggregate current	4 A/byte		
Operating temperature	0 to +60 °C		

Ordering data

Article No.

Article No.

Front connector modules

Front connector module (compact CPU 312C) Power supply via • Screw terminals	6ES7921-3AK20-0AA0
Front connector module (compact CPU 313C/314C-2PtP/314C-2DP), slot X1 Power supply via • Screw terminals	6ES7921-3AM20-0AA0
Front connector module (digital 2 x 8 I/O) Power supply via • Spring-loaded terminals • Screw terminals	6ES7921-3AA00-0AA0 6ES7921-3AB00-0AA0
Front connector module (digital 4 x 8 I/O) Power supply via • Spring-loaded terminals • Screw terminals	6ES7921-3AA20-0AA0 6ES7921-3AB20-0AA0
Front connector module (1 x 8 outputs) for 2 ampere digital outputs Power supply via • Spring-loaded terminals • Screw terminals	6ES7921-3AC00-0AA0 6ES7921-3AD00-0AA0
Front connector module 20-pin (analog) Power supply via • Spring-loaded terminals • Screw terminals	6ES7921-3AF00-0AA0 6ES7921-3AG00-0AA0
Front connector module 40-pin (analog) Power supply via • Spring-loaded terminals • Screw terminals	6ES7921-3AF20-0AA0 6ES7921-3AG20-0AA0

Connecting cable

Connecting cables for SIMATIC S7-300/S7-1500	
Pre-assembled round cable 16-pin, 0.14 mm ²	
unshielded	
• 0.5 m	6ES7923-0BA50-0CB0
• 1.0 m	6ES7923-0BB00-0CB0
• 1.5 m	6ES7923-0BB50-0CB0
• 2.0 m	6ES7923-0BC00-0CB0
• 2.5 m	6ES7923-0BC50-0CB0
• 3.0 m	6ES7923-0BD00-0CB0
• 4.0 m	6ES7923-0BE00-0CB0
• 5.0 m	6ES7923-0BF00-0CB0
• 6.5 m	6ES7923-0BG50-0CB0
• 8.0 m	6ES7923-0BJ00-0CB0
• 10.0 m	6ES7923-0CB00-0CB0
shielded	
• 1.0 m	6ES7923-0BB00-0DB0
• 2.0 m	6ES7923-0BC00-0DB0
• 2.5 m	6ES7923-0BC50-0DB0
• 3.0 m	6ES7923-0BD00-0DB0
• 4.0 m	6ES7923-0BE00-0DB0
• 5.0 m	6ES7923-0BF00-0DB0
• 6.5 m	6ES7923-0BG50-0DB0
• 8.0 m	6ES7923-0BJ00-0DB0
• 10.0 m	6ES7923-0CB00-0DB0
<u>Version 4 x 16 to 1 x 50-pin, 0.14 mm²</u>	
Unshielded	
• 0.5 m	6ES7923-5BA50-0EB0
• 1.0 m	6ES7923-5BB00-0EB0
• 1.5 m	6ES7923-5BB50-0EB0
• 2.0 m	6ES7923-5BC00-0EB0
• 2.5 m	6ES7923-5BC50-0EB0
• 3.0 m	6ES7923-5BD00-0EB0
• 4.0 m	6ES7923-5BE00-0EB0
• 5.0 m	6ES7923-5BF00-0EB0
• 6.5 m	6ES7923-5BG50-0EB0
• 8.0 m	6ES7923-5BJ00-0EB0
• 10.0 m	6ES7923-5CB00-0EB0
Round-sheath ribbon cable 16-pin, 0.14 mm ²	
Unshielded	
• 30 m	6ES7923-0CD00-0AA0
• 60 m	6ES7923-0CG00-0AA0
Shielded	
• 30 m	6ES7923-0CD00-0BA0
• 60 m	6ES7923-0CG00-0BA0

SIMATIC S7-300 advanced controller

I/O modules

Connection methods

System cabling for SIMATIC S7-300/400 and ET 200M - Fully modular connection

Ordering data	Article No.	Article No.
Round-sheath ribbon cable 2 x 16-pin, 0.14 mm ² Unshielded • 30 m • 60 m	6ES7923-2CD00-0AA0 6ES7923-2CG00-0AA0	Terminal module TPRo Relay module for 8 outputs, relay as normally open contact • Push-in terminals with LEDs • Screw-type terminals with LEDs
Connector (female ribbon connector) 16-pin, insulation displacement system, with strain relief devices; packing unit: 8 connectors and 8 cable grips	6ES7921-3BE10-0AA0	Terminal module TPRI Relay module for 8 outputs (110 V AC), relay as normally open contact • Push-in terminals with LEDs • Screw-type terminals with LEDs
Accessories Manual pliers For preparing the connectors (female ribbon connector)	6ES7928-0AA00-0AA0	Terminal module TPRI Relay module for 8 outputs (230 V AC), relay as normally open contact • Push-in terminals with LEDs • Screw-type terminals with LEDs
Terminal modules Terminal module TP1 For 1-wire connection, for 16-pin connecting cables • Push-in terminals without LEDs • Screw-type terminals without LEDs • Push-in terminals with LEDs • Screw-type terminals with LEDs For 1-wire connection, for 50-pin connecting cables • Push-in terminals without LEDs • Push-in terminals with LEDs • Screw-type terminals with LEDs	6ES7924-0AA20-0AC0 6ES7924-0AA20-0AA0 6ES7924-0AA20-0BC0 6ES7924-0AA20-0BA0 6ES7924-2AA20-0AC0 6ES7924-2AA20-0BC0 6ES7924-2AA20-0BA0	Terminal module TPOo Optocoupler module for 8 outputs (max. 24 V DC/4 A) • Push-in terminals with LEDs • Screw-type terminals with LEDs
Terminal module TP3 For 3-wire connection, for 16-pin connecting cables • Push-in terminals without LEDs • Screw-type terminals without LEDs • Push-in terminals with LEDs • Screw-type terminals with LEDs • Push-in terminals with LEDs and one isolating terminal per channel • Screw-type terminals with LEDs and one isolating terminal per channel • Push-in terminals with LED and fuse per channel • Push-in terminals with LED and fuse per channel For 3-wire connection, for 50-pin connecting cables • Push-in terminals without LEDs • Screw-type terminals without LEDs • Push-in terminals with LEDs • Screw-type terminals with LEDs	6ES7924-0CA20-0AC0 6ES7924-0CA20-0AA0 6ES7924-0CA20-0BC0 6ES7924-0CA20-0BA0 6ES7924-0CH20-0BC0 6ES7924-0CH20-0BA0 6ES7924-0CL20-0BC0 6ES7924-0CL20-0BA0 6ES7924-2CA20-0AC0 6ES7924-2CA20-0AA0 6ES7924-2CA20-0BC0 6ES7924-2CA20-0BA0	Terminal module for digital output modules 2 A Terminal module TP2 • Push-in terminals without LEDs • Screw-type terminals without LEDs Terminal module for analog modules (for S7-300 only) Terminal module TPA • Push-in terminals without LEDs • Screw-type terminals without LEDs
		Accessories Shield for analog terminal module PU = 4 units (for connection of 16-pin connecting cable)
		Shield connection clamp For shield plate at SIMATIC end, PU = 10 units For shield plate at field end, 2 x 2 ... 6 mm For shield plate at field end, 3 ... 8 mm For shield plate at field end, 4 ... 13 mm

5

SIMATIC S7-400 advanced controller

**6/2 Central processing units**Standard CPUs

6/2 CPU 412

6/6 CPU 414

6/11 CPU 416

6/16 CPU 417

Fail-safe CPUs

6/19 CPU 414F

6/23 CPU 416F

High-availability CPUs

6/27 Y-link for S7-400H

SIPPLUS high-availability CPUs

6/29 SIPPLUS Y-Link for S7-400H

6/31 Function modules6/31 FM 458-1 DP application module

6/31 D7-SYS

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

SIMATIC S7-400 advanced controller

Central processing units
Standard CPUs

CPU 412**Overview**

- The low-cost starter solution for the medium performance range
- Can be used in small and medium-sized systems with requirements of the medium performance range

Technical specifications

Article number	6ES7412-1XJ07-0AB0	6ES7412-2XK07-0AB0	6ES7412-2EK07-0AB0
	CPU412-1, MPI/DP, 512 KB	CPU412-2, MPI/DP, 1 MB	CPU412-2 PN, 1 MB, 2 INTERFACES
General information			
Product type designation	CPU 412-1	CPU 412-2	CPU 412-2 PN
Engineering with			
• Programming package	STEP 7 V5.4 or higher with HSP 261	STEP 7 V5.4 or higher with HSP 261	STEP 7 V5.5 or higher with HSP 262
Supply voltage			
Rated value (DC)			
• 24 V DC	No; Power supply via system power supply	No; Power supply via system power supply	No; Power supply via system power supply
Power loss			
Power loss, typ.	3.5 W	4.5 W	5.5 W
Memory			
Work memory			
• integrated	512 kbyte	1 Mbyte	1 Mbyte
• integrated (for program)	256 kbyte	512 kbyte	512 kbyte
• integrated (for data)	256 kbyte	512 kbyte	512 kbyte
Load memory			
• expandable FEPRAM, max.	64 Mbyte	64 Mbyte	64 Mbyte
• integrated RAM, max.	512 kbyte	512 kbyte	512 kbyte
• expandable RAM, max.	64 Mbyte	64 Mbyte	64 Mbyte
CPU processing times			
for bit operations, typ.	31.25 ns	31.25 ns	31.25 ns
for word operations, typ.	31.25 ns	31.25 ns	31.25 ns
for fixed point arithmetic, typ.	31.25 ns	31.25 ns	31.25 ns
for floating point arithmetic, typ.	62.5 ns	62.5 ns	62.5 ns
Counters, timers and their retentivity			
S7 counter			
• Number	2 048	2 048	2 048
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	2 048	2 048	2 048
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Number, max.	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area	4 kbyte; Size of bit memory address area

Technical specifications (continued)

Article number	6ES7412-1XJ07-0AB0	6ES7412-2XK07-0AB0	6ES7412-2EK07-0AB0
	CPU412-1, MPI/DP, 512 KB	CPU412-2, MPI/DP, 1 MB	CPU412-2 PN, 1 MB, 2 INTERFACES
Address area			
I/O address area			
• Inputs	4 kbyte	4 kbyte	4 kbyte
• Outputs	4 kbyte	4 kbyte	4 kbyte
Process image			
• Inputs, adjustable	4 kbyte	4 kbyte	4 kbyte
• Outputs, adjustable	4 kbyte	4 kbyte	4 kbyte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
Operating hours counter			
• Number	16	16	16
Interfaces			
Interfaces/bus type	1 x MPI/PROFIBUS DP	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports)
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP	2; Combined MPI / PROFIBUS DP and PROFIBUS DP	1; Combined MPI / PROFIBUS DP
1. Interface			
Interface type	Integrated	Integrated	Integrated
Physics	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI
Functionality			
• MPI	Yes	Yes	Yes
• DP master	Yes	Yes	Yes
• DP slave	Yes	Yes	Yes
DP master			
• Number of DP slaves, max.	32	32	32
2. Interface			
Interface type		Integrated	PROFINET
Physics		RS 485 / PROFIBUS	Ethernet RJ45
Interface types			
• Number of ports			2
Functionality			
• DP master		Yes	No
• DP slave		Yes	No
• PROFINET IO Controller			Yes
• PROFINET IO Device			Yes
• PROFINET CBA			Yes
DP master			
• Number of DP slaves, max.		64	
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes; For PROFIBUS only	Yes; For PROFIBUS only	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
Standard communication (FMS)			
• supported	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB

SIMATIC S7-400 advanced controller

Central processing units
Standard CPUs

CPU 412**Technical specifications (continued)**

Article number	6ES7412-1XJ07-0AB0	6ES7412-2XK07-0AB0	6ES7412-2EK07-0AB0
	CPU412-1, MPI/DP, 512 KB	CPU412-2, MPI/DP, 1 MB	CPU412-2 PN, 1 MB, 2 INTERFACES
Open IE communication			
• TCP/IP			Yes; via integrated PROFINET interface and loadable FBs 46
- Number of connections, max.			46
• ISO-on-TCP (RFC1006)	Via CP 443-1 Adv. and loadable FB	Via CP 443-1 and loadable FB	Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable FBs 46
- Number of connections, max.			46
• UDP			Yes; via integrated PROFINET interface and loadable FBs 46
- Number of connections, max.			46
Web server			
• supported	No	No	Yes
Number of connections			
• overall	48	48	48
Standards, approvals, certificates			
Use in hazardous areas			
• ATEX	ATEX II 3 G Ex nA IIC T4 Gc	ATEX II 3 G Ex nA IIC T4 Gc	ATEX II 3 G Ex nA IIC T4 Gc
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Know-how protection			
• User program protection/password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	25 mm	25 mm	25 mm
Height	290 mm	290 mm	290 mm
Depth	219 mm	219 mm	219 mm
Weights			
Weight, approx.	700 g	700 g	750 g

Ordering data	Article No.	Article No.
CPU 412-1 Work memory 512 KB, power supply 24 V DC, MPI/PROFIBUS DP master interface, slot for memory card, incl. slot number labels	6ES7412-1XJ07-0AB0	
CPU 412-2 Work memory 1 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, slot for memory card, incl. slot number labels	6ES7412-2XK07-0AB0	
CPU 412-2 PN Work memory 1 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFINET interface, slot for memory card, incl. slot number labels	6ES7412-2EK07-0AB0	
RAM memory card • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 64 MB	6ES7952-0AF00-0AA0 6ES7952-1AH00-0AA0 6ES7952-1AK00-0AA0 6ES7952-1AL00-0AA0 6ES7952-1AM00-0AA0 6ES7952-1AP00-0AA0 6ES7952-1AS00-0AA0 6ES7952-1AY00-0AA0	
FEPROM memory card • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 32 MB • 64 MB	6ES7952-0KF00-0AA0 6ES7952-0KH00-0AA0 6ES7952-1KK00-0AA0 6ES7952-1KL00-0AA0 6ES7952-1KM00-0AA0 6ES7952-1KP00-0AA0 6ES7952-1KS00-0AA0 6ES7952-1KT00-0AA0 6ES7952-1KY00-0AA0	
MPI cable For connection of SIMATIC S7 and PG via MPI; length: 5 m	6ES7901-0BF00-0AA0	
Slot number labels 1 set (spare part)	6ES7912-0AA00-0AA0	
SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0	
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2	
		RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbps • Without PG interface • With PG interface
		6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0
		RS 485 bus connector with angled cable outlet Max. transfer rate 12 Mbps • Without PG interface • With PG interface
		6ES7972-0BA42-0XA0 6ES7972-0BB42-0XA0
		RS 485 bus connector with 90° cable outlet for FastConnect system Max. transfer rate 12 Mbps • Without PG interface - 1 unit - 100 units • With PG interface - 1 unit - 100 units
		6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0
		RS 485 bus connector with axial cable outlet For SIMATIC OP, for connection to PPI, MPI, PROFIBUS
		6GK1500-0EA02
		PROFIBUS FastConnect bus cable Standard type with special design for fast mounting, 2-core, shielded, sold by the meter; max. delivery unit 1 000 m, minimum ordering quantity 20 m
		6XV1830-0EH10

SIMATIC S7-400 advanced controller

Central processing units
Standard CPUs

CPU 414

Overview



- CPUs for high demands in the mid-level performance range
- Applicable for plants with additional demands on programming scope and processing speed
- Integrated PROFINET functions in CPU 414-3 PN/DP

Technical specifications

Article number	6ES7414-2XL07-0AB0 CPU414-2, MPI/DP, 2 MB	6ES7414-3XM07-0AB0 CPU414-3, 4 MB, 3 INTERFACES	6ES7414-3EM07-0AB0 CPU414-3 PN/DP, 4 MB, 3 INTERFACES
General information			
Product type designation	CPU 414-2	CPU 414-3	CPU414-3 PN/DP
Engineering with			
• Programming package	STEP 7 V5.4 or higher with HSP 261	STEP 7 V5.4 or higher with HSP 261	STEP 7 V5.5 or higher with HSP 262
Supply voltage			
Rated value (DC)			
• 24 V DC	No; Power supply via system power supply	No; Power supply via system power supply	No; Power supply via system power supply
Power loss			
Power loss, typ.	4.5 W	5.5 W	6.5 W
Memory			
Work memory			
• integrated	2 Mbyte	4 Mbyte	4 Mbyte
• integrated (for program)	1 Mbyte	2 Mbyte	2 Mbyte
• integrated (for data)	1 Mbyte	2 Mbyte	2 Mbyte
Load memory			
• expandable FEPRAM, max.	64 Mbyte	64 Mbyte	64 Mbyte
• integrated RAM, max.	512 kbyte	512 kbyte	512 kbyte
• expandable RAM, max.	64 Mbyte	64 Mbyte	64 Mbyte
CPU processing times			
for bit operations, typ.	18.75 ns	18.75 ns	18.75 ns
for word operations, typ.	18.75 ns	18.75 ns	18.75 ns
for fixed point arithmetic, typ.	18.75 ns	18.75 ns	18.75 ns
for floating point arithmetic, typ.	37.5 ns	37.5 ns	37.5 ns
Counters, timers and their retentivity			
S7 counter			
• Number	2 048	2 048	2 048
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	2 048	2 048	2 048
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Number, max.	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area	8 kbyte; Size of bit memory address area

Technical specifications (continued)

Article number	6ES7414-2XL07-0AB0 CPU414-2, MPI/DP, 2 MB	6ES7414-3XM07-0AB0 CPU414-3, 4 MB, 3 INTERFACES	6ES7414-3EM07-0AB0 CPU414-3 PN/DP, 4 MB, 3 INTERFACES
Address area			
I/O address area			
• Inputs	8 kbyte	8 kbyte	8 kbyte
• Outputs	8 kbyte	8 kbyte	8 kbyte
Process image			
• Inputs, adjustable	8 kbyte	8 kbyte	8 kbyte
• Outputs, adjustable	8 kbyte	8 kbyte	8 kbyte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
Operating hours counter			
• Number	16	16	16
Interfaces			
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 1 x PROFIBUS DP (optionally pluggable)	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP	2; Combined MPI / PROFIBUS DP and PROFIBUS DP	1; Combined MPI / PROFIBUS DP
Number of other interfaces		1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)	1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)
1. Interface			
Interface type	Integrated	Integrated	Integrated
Physics	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI
Functionality			
• MPI	Yes	Yes	Yes
• DP master	Yes	Yes	Yes
• DP slave	Yes	Yes	Yes
DP master			
• Number of DP slaves, max.	32	32	32
2. Interface			
Interface type	Integrated	Integrated	PROFINET
Physics	RS 485 / PROFIBUS	RS 485 / PROFIBUS	Ethernet RJ45
Interface types			
• Number of ports			2
Functionality			
• DP master	Yes	Yes	No
• DP slave	Yes	Yes	No
• PROFINET IO Controller			Yes
• PROFINET IO Device			Yes
• PROFINET CBA			Yes
DP master			
• Number of DP slaves, max.	96	96	
3. Interface			
Interface type		Pluggable interface module (IF), technical data as for 2nd interface	Pluggable interface module (IF)
Plug-in interface modules		IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Physics		RS 485 / PROFIBUS	RS 485 / PROFIBUS
Functionality			
• MPI		No	No
• DP master		Yes	Yes
• DP slave		Yes	Yes
DP master			
• Number of DP slaves, max.		96	96

SIMATIC S7-400 advanced controllerCentral processing units
Standard CPUs**CPU 414****Technical specifications (continued)**

Article number	6ES7414-2XL07-0AB0 CPU414-2, MPI/DP, 2 MB	6ES7414-3XM07-0AB0 CPU414-3, 4 MB, 3 INTERFACES	6ES7414-3EM07-0AB0 CPU414-3 PN/DP, 4 MB, 3 INTERFACES
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes; For PROFIBUS only	Yes; For PROFIBUS only	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
Standard communication (FMS)			
• supported	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB
Open IE communication			
• TCP/IP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			62
• ISO-on-TCP (RFC1006)	Via CP 443-1 and loadable FB	Via CP 443-1 and loadable FB	Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable FBs
- Number of connections, max.			62
• UDP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			62
Web server			
• supported	No	No	Yes
Number of connections			
• overall	64	64	64
Standards, approvals, certificates			
Use in hazardous areas			
• ATEX	ATEX II 3 G Ex nA IIC T4 Gc	ATEX II 3 G Ex nA IIC T4 Gc	ATEX II 3 G Ex nA IIC T4 Gc
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Know-how protection			
• User program protection/password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	25 mm	50 mm	50 mm
Height	290 mm	290 mm	290 mm
Depth	219 mm	219 mm	219 mm
Weights			
Weight, approx.	700 g	900 g	900 g

Ordering data	Article No.	Ordering data	Article No.
CPU 414-2 Work memory 2 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, slot for memory card, incl. slot number labels	6ES7414-2XL07-0AB0	Slot number labels 1 set (spare part)	6ES7912-0AA00-0AA0
CPU 414-3 Work memory 4 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFIBUS DP master interface, slot for memory card, module slots for 1 IF module, incl. slot number labels	6ES7414-3XM07-0AB0	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
CPU 414-3 PN/DP Work memory 4 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFINET interface, slot for memory card, module slot for 1 IF module, incl. slot number labels	6ES7414-3EM07-0AB0	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
RAM memory card • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 64 MB	6ES7952-0AF00-0AA0 6ES7952-1AH00-0AA0 6ES7952-1AK00-0AA0 6ES7952-1AL00-0AA0 6ES7952-1AM00-0AA0 6ES7952-1AP00-0AA0 6ES7952-1AS00-0AA0 6ES7952-1AY00-0AA0	PROFIBUS bus components	
FEPRAM memory card • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 32 MB • 64 MB	6ES7952-0KF00-0AA0 6ES7952-0KH00-0AA0 6ES7952-1KK00-0AA0 6ES7952-1KL00-0AA0 6ES7952-1KM00-0AA0 6ES7952-1KP00-0AA0 6ES7952-1KS00-0AA0 6ES7952-1KT00-0AA0 6ES7952-1KY00-0AA0	RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbps • Without PG interface • With PG interface	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0
MPI cable for connection of SIMATIC S7 and PG via MPI; length: 5 m	6ES7901-0BF00-0AA0	RS 485 bus connector with angled cable outlet Max. transfer rate 12 Mbps • Without PG interface • With PG interface	6ES7972-0BA42-0XA0 6ES7972-0BB42-0XA0
IF 964-DP interface module For connecting an additional DP line; for CPU 414-3, CPU 414-3 PN/DP, CPU 416-3, CPU 416-3 PN/DP, CPU 417-4	6ES7964-2AA04-0AB0	RS 485 bus connector with 90° cable outlet for FastConnect connection system Max. transfer rate 12 Mbps • Without PG interface - 1 unit - 100 units • With PG interface - 1 unit - 100 units	6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0
		RS 485 bus connector with axial cable outlet For SIMATIC OP, for connection to PPI, MPI, PROFIBUS	6GK1500-0EA02
		PROFIBUS FastConnect bus cable Standard type with special design for fast mounting, 2-core, shielded, sold by the meter; max. delivery unit 1 000 m, minimum ordering quantity 20 m	6XV1830-0EH10

SIMATIC S7-400 advanced controller

Central processing units

Standard CPUs

CPU 414**Ordering data****Article No.****RS 485 repeater for PROFIBUS**

Transmission rate up to 12 Mbps;
24 V DC; IP20 enclosure

6ES7972-0AA02-0XA0**PROFINET bus components****IE FC TP standard cable GP 2x2**

4-core, shielded TP installation
cable for connection to
IE FC Outlet RJ45/IE FC RJ45 Plug;
PROFINET-compatible;
with UL approval
Sold by the meter

6XV1840-2AH10**FO standard cable GP (50/125)**

Standard cable, splittable,
UL approval, sold by the meter

6XV1873-2A**SCALANCE X204-2 Industrial Ethernet Switch**

Industrial Ethernet Switches
with integral SNMP access,
Web diagnostics,
copper cable diagnostics and
PROFINET diagnostics for configur-
ing line, star and ring topologies;
four 10/100 Mbps RJ45 ports and
two FO ports

6GK5204-2BB10-2AA3**Article No.****IE FC RJ45 plugs**

RJ45 plug connector for
Industrial Ethernet with a rugged
metal enclosure and integrated
insulation displacement contacts
for connecting Industrial Ethernet
FC installation cables

IE FC RJ45 Plug 180

180° cable outlet

- 1 unit
- 10 units
- 50 units

6GK1901-1BB10-2AA0**6GK1901-1BB10-2AB0****6GK1901-1BB10-2AE0****PROFIBUS/PROFINET bus components**

For establishing MPI/PROFIBUS/
PROFINET communication

See catalogs IK PI, CA 01

Overview

- High-performance CPUs in the high-end performance range
- Applicable for plants with high requirements in the high-end performance range
- Integrated PROFINET functions in CPU 416-3 PN/DP

Technical specifications

Article number	6ES7416-2XP07-0AB0 CPU 416-2, MPI, PROFIBUS, 8 MB	6ES7416-3XS07-0AB0 CPU 416-3, 16 MB, 3 INTERFACES	6ES7416-3ES07-0AB0 CPU416-3 PN/DP, 16 MB, 3 INTERFACES
General information			
Product type designation	CPU 416-2	CPU 416-3	CPU416-3 PN/DP
Engineering with			
• Programming package	STEP 7 V5.4 or higher with HSP 261	STEP 7 V5.4 or higher with HSP 261	STEP 7 V5.5 or higher with HSP 262
Supply voltage			
Rated value (DC)			
• 24 V DC	No; Power supply via system power supply	No; Power supply via system power supply	No; Power supply via system power supply
Power loss			
Power loss, typ.	4.5 W	5.5 W	6.5 W
Memory			
Work memory			
• integrated	8 Mbyte	16 Mbyte	16 Mbyte
• integrated (for program)	4 Mbyte	8 Mbyte	8 Mbyte
• integrated (for data)	4 Mbyte	8 Mbyte	8 Mbyte
Load memory			
• expandable FEPRAM, max.	64 Mbyte	64 Mbyte	64 Mbyte
• integrated RAM, max.	1 Mbyte	1 Mbyte	1 Mbyte
• expandable RAM, max.	64 Mbyte	64 Mbyte	64 Mbyte
CPU processing times			
for bit operations, typ.	12.5 ns	12.5 ns	12.5 ns
for word operations, typ.	12.5 ns	12.5 ns	12.5 ns
for fixed point arithmetic, typ.	12.5 ns	12.5 ns	12.5 ns
for floating point arithmetic, typ.	25 ns	25 ns	25 ns
Counters, timers and their retentivity			
S7 counter			
• Number	2 048	2 048	2 048
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	2 048	2 048	2 048
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Number, max.	16 kbyte; Size of bit memory address area	16 kbyte; Size of bit memory address area	16 kbyte; Size of bit memory address area

SIMATIC S7-400 advanced controller

Central processing units
Standard CPUs

CPU 416**Technical specifications (continued)**

Article number	6ES7416-2XP07-0AB0 CPU 416-2, MPI, PROFIBUS, 8 MB	6ES7416-3XS07-0AB0 CPU 416-3, 16 MB, 3 INTERFACES	6ES7416-3ES07-0AB0 CPU416-3 PN/DP, 16 MB, 3 INTERFACES
Address area			
I/O address area			
• Inputs	16 kbyte	16 kbyte	16 kbyte
• Outputs	16 kbyte	16 kbyte	16 kbyte
Process image			
• Inputs, adjustable	16 kbyte	16 kbyte	16 kbyte
• Outputs, adjustable	16 kbyte	16 kbyte	16 kbyte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
Operating hours counter			
• Number	16	16	16
Interfaces			
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 1 x PROFIBUS DP (optionally pluggable)	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP	2; Combined MPI / PROFIBUS DP and PROFIBUS DP	1; Combined MPI / PROFIBUS DP
Number of other interfaces		1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)	1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)
1. Interface			
Interface type	Integrated	Integrated	Integrated
Physics	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI
Functionality			
• MPI	Yes	Yes	Yes
• DP master	Yes	Yes	Yes
• DP slave	Yes	Yes	Yes
DP master			
• Number of DP slaves, max.	32	32	32
2. Interface			
Interface type	Integrated	Integrated	PROFINET
Physics	RS 485 / PROFIBUS	RS 485 / PROFIBUS	Ethernet RJ45
Interface types			
• Number of ports			2
Functionality			
• DP master	Yes	Yes	No
• DP slave	Yes	Yes	No
• PROFINET IO Controller			Yes
• PROFINET IO Device			Yes
• PROFINET CBA			Yes
DP master			
• Number of DP slaves, max.	125	125	
3. Interface			
Interface type		Pluggable interface module (IF), technical data as for 2nd interface	Pluggable interface module (IF)
Plug-in interface modules		IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Physics		RS 485 / PROFIBUS	RS 485 / PROFIBUS
Functionality			
• MPI		No	No
• DP master		Yes	Yes
• DP slave		Yes	Yes
DP master			
• Number of DP slaves, max.		125	125

6

Technical specifications (continued)

Article number	6ES7416-2XP07-0AB0 CPU 416-2, MPI, PROFIBUS, 8 MB	6ES7416-3XS07-0AB0 CPU 416-3, 16 MB, 3 INTERFACES	6ES7416-3ES07-0AB0 CPU416-3 PN/DP, 16 MB, 3 INTERFACES
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes; For PROFIBUS only	Yes; For PROFIBUS only	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
Standard communication (FMS)			
• supported	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB
Open IE communication			
• TCP/IP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			94
• ISO-on-TCP (RFC1006)	Via CP 443-1 and loadable FB	Via CP 443-1 and loadable FB	Yes; Via integrated PROFINET interface or CP 443-1 and loadable FBs
- Number of connections, max.			94
• UDP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			94
Web server			
• supported	No	No	Yes
Number of connections			
• overall	96	96	96
Standards, approvals, certificates			
Use in hazardous areas			
• ATEX	ATEX II 3 G Ex nA IIC T4 Gc	ATEX II 3 G Ex nA IIC T4 Gc	ATEX II 3 G Ex nA IIC T4 Gc
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Know-how protection			
• User program protection/password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	25 mm	50 mm	50 mm
Height	290 mm	290 mm	290 mm
Depth	219 mm	219 mm	219 mm
Weights			
Weight, approx.	700 g	900 g	900 g

SIMATIC S7-400 advanced controller

Central processing units
Standard CPUs

CPU 416**Ordering data****Article No.****CPU 416-2**

Work memory 8 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFIBUS DP master interface, slot for memory card, incl. slot number labels

6ES7416-2XP07-0AB0**CPU 416-3**

Work memory 16 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFIBUS DP master interface, module slot for 1 IF module, slot for memory card, incl. slot number labels

6ES7416-3XS07-0AB0**CPU 416-3 PN/DP**

Work memory 16 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFINET interface, PROFIBUS DP master interface, module slot for 1 IF module, slot for memory card, incl. slot number labels

6ES7416-3ES07-0AB0**RAM memory card**

- 64 KB
- 256 KB
- 1 MB
- 2 MB
- 4 MB
- 8 MB
- 16 MB
- 64 MB

6ES7952-0AF00-0AA0
6ES7952-1AH00-0AA0
6ES7952-1AK00-0AA0
6ES7952-1AL00-0AA0
6ES7952-1AM00-0AA0
6ES7952-1AP00-0AA0
6ES7952-1AS00-0AA0
6ES7952-1AY00-0AA0

FEPRM memory card

- 64 KB
- 256 KB
- 1 MB
- 2 MB
- 4 MB
- 8 MB
- 16 MB
- 32 MB
- 64 MB

6ES7952-0KF00-0AA0
6ES7952-0KH00-0AA0
6ES7952-1KK00-0AA0
6ES7952-1KL00-0AA0
6ES7952-1KM00-0AA0
6ES7952-1KP00-0AA0
6ES7952-1KS00-0AA0
6ES7952-1KT00-0AA0
6ES7952-1KY00-0AA0

MPI cable

For connection of SIMATIC S7 and PG via MPI; length: 5 m

6ES7901-0BF00-0AA0**Article No.****IF 964-DP interface module**

For connecting an additional DP line; for CPU 414-3, CPU 414-3 PN/DP, CPU 416-3, CPU 416-3 PN/DP, CPU 417-4

6ES7964-2AA04-0AB0**Slot number labels**

1 set (spare part)

6ES7912-0AA00-0AA0**SIMATIC Manual Collection**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

6ES7998-8XC01-8YE0**SIMATIC Manual Collection update service for 1 year**

Current "Manual Collection" DVD and the three subsequent updates

6ES7998-8XC01-8YE2**PROFIBUS bus components****RS 485 bus connector with 90° cable outlet**

Max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6ES7972-0BA12-0XA0
6ES7972-0BB12-0XA0

RS 485 bus connector with angled cable outlet

Max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6ES7972-0BA42-0XA0
6ES7972-0BB42-0XA0

RS 485 bus connector with 90° cable outlet for FastConnect connection system

Max. transfer rate 12 Mbps

- Without PG interface
 - 1 unit
 - 100 units
- With PG interface
 - 1 unit
 - 100 units

6ES7972-0BA52-0XA0
6ES7972-0BA52-0XB0
6ES7972-0BB52-0XA0
6ES7972-0BB52-0XB0

Ordering data	Article No.	Ordering data	Article No.
RS 485 bus connector with axial cable outlet For SIMATIC OP, for connection to PPI, MPI, PROFIBUS	6GK1500-0EA02	SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports	6GK5204-2BB10-2AA3
PROFIBUS FastConnect bus cable Standard type with special design for fast mounting, 2-core, shielded, sold by the meter; max. delivery unit 1 000 m, minimum ordering quantity 20 m	6XV1830-0EH10	IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure	6ES7972-0AA02-0XA0	IE FC RJ45 Plug 180 180° cable outlet • 1 unit • 10 units • 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
PROFINET bus components		PROFIBUS/PROFINET bus components	
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval Sold by the meter	6XV1840-2AH10	For establishing MPI/PROFIBUS/PROFINET communication	See catalogs IK PI, CA 01
FO standard cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter	6XV1873-2A		

SIMATIC S7-400 advanced controller

Central processing units
Standard CPUs

CPU 417

Overview



- The most powerful SIMATIC S7-400 CPU
- Can be used in the most sophisticated installations in the upper performance range
- With two slots for IF modules

6

Technical specifications

Article number	6ES7417-4XT07-0AB0 CPU 417-4, 32 MB, 4 INTERFACES
General information	
Product type designation	CPU 417-4
Engineering with	
• Programming package	STEP 7 V5.4 or higher with HSP 261
Supply voltage	
Rated value (DC)	No; Power supply via system power supply
• 24 V DC	
Power loss	
Power loss, typ.	6.5 W
Memory	
Work memory	
• integrated	32 Mbyte
• integrated (for program)	16 Mbyte
• integrated (for data)	16 Mbyte
Load memory	
• expandable FEPRM, max.	64 Mbyte
• integrated RAM, max.	1 Mbyte
• expandable RAM, max.	64 Mbyte
CPU processing times	
for bit operations, typ.	7.5 ns
for word operations, typ.	7.5 ns
for fixed point arithmetic, typ.	7.5 ns
for floating point arithmetic, typ.	15 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• present	Yes
S7 times	
• Number	2 048
IEC timer	
• present	Yes
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte; Size of bit memory address area

Article number	6ES7417-4XT07-0AB0 CPU 417-4, 32 MB, 4 INTERFACES
Address area	
I/O address area	
• Inputs	16 kbyte
• Outputs	16 kbyte
Process image	
• Inputs, adjustable	16 kbyte
• Outputs, adjustable	16 kbyte
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
Operating hours counter	
• Number	16
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP, 2 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
Number of other interfaces	2; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)
1. Interface	
Interface type	Integrated
Physics	RS 485 / PROFIBUS + MPI
Functionality	
• MPI	Yes
• DP master	Yes
• DP slave	Yes
DP master	
• Number of DP slaves, max.	32
2. Interface	
Interface type	Integrated
Physics	RS 485 / PROFIBUS

Technical specifications (continued)

Article number	6ES7417-4XT07-0AB0 CPU 417-4, 32 MB, 4 INTERFACES
Functionality	
• DP master	Yes
• DP slave	Yes
DP master	
• Number of DP slaves, max.	125
3. Interface	
Interface type	Pluggable interface module (IF), technical data as for 2nd interface
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Physics	RS 485 / PROFIBUS
Functionality	
• MPI	No
• DP master	Yes
• DP slave	Yes
DP master	
• Number of DP slaves, max.	125
4. Interface	
Interface type	Pluggable interface module (IF), technical data as for 2nd interface
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; For PROFIBUS only
Communication functions	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
• supported	Yes
S7 basic communication	
• supported	Yes
S7 communication	
• supported	Yes

Article number	6ES7417-4XT07-0AB0 CPU 417-4, 32 MB, 4 INTERFACES
S5 compatible communication	
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB
Open IE communication	
• ISO-on-TCP (RFC1006)	Via CP 443-1 and loadable FB
Web server	
• supported	No
Number of connections	
• overall	120
Standards, approvals, certificates	
Use in hazardous areas	
• ATEX	ATEX II 3 G Ex nA IIC T4 Gc
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Configuration	
Know-how protection	
• User program protection/password protection	Yes
• Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	900 g

Ordering data

Ordering data	Article No.
CPU 417-4 Work memory 30 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFIBUS DP master interface, module slots for up to 2 additional IF modules, slot for memory card, incl. slot number labels	6ES7417-4XT07-0AB0
RAM memory card	
• 64 KB	6ES7952-0AF00-0AA0
• 256 KB	6ES7952-1AH00-0AA0
• 1 MB	6ES7952-1AK00-0AA0
• 2 MB	6ES7952-1AL00-0AA0
• 4 MB	6ES7952-1AM00-0AA0
• 8 MB	6ES7952-1AP00-0AA0
• 16 MB	6ES7952-1AS00-0AA0
• 64 MB	6ES7952-1AY00-0AA0

Ordering data	Article No.
FEPR0M memory card	
• 64 KB	6ES7952-0KF00-0AA0
• 256 KB	6ES7952-0KH00-0AA0
• 1 MB	6ES7952-1KK00-0AA0
• 2 MB	6ES7952-1KL00-0AA0
• 4 MB	6ES7952-1KM00-0AA0
• 8 MB	6ES7952-1KP00-0AA0
• 16 MB	6ES7952-1KS00-0AA0
• 32 MB	6ES7952-1KT00-0AA0
• 64 MB	6ES7952-1KY00-0AA0
MPI cable For connection of SIMATIC S7 and PG via MPI; length: 5 m	6ES7901-0BF00-0AA0

SIMATIC S7-400 advanced controller

Central processing units
Standard CPUs

CPU 417**Ordering data****Article No.****IF 964-DP interface module**

For connecting an additional DP line; for CPU 414-3, CPU 414-3 PN/DP, CPU 416-3, CPU 416-3 PN/DP, CPU 417-4

6ES7964-2AA04-0AB0**Slot number labels**

1 set (spare part)

6ES7912-0AA00-0AA0**SIMATIC Manual Collection**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

6ES7998-8XC01-8YE0**SIMATIC Manual Collection update service for 1 year**

Current "Manual Collection" DVD and the three subsequent updates

6ES7998-8XC01-8YE2**RS 485 bus connector with 90° cable outlet**

Max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6ES7972-0BA12-0XA0
6ES7972-0BB12-0XA0**RS 485 bus connector with angled cable outlet**

Max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6ES7972-0BA42-0XA0
6ES7972-0BB42-0XA0**RS 485 bus connector with 90° cable outlet for FastConnect connection system**

Max. transfer rate 12 Mbps

- Without PG interface
 - 1 unit
 - 100 units
- With PG interface
 - 1 unit
 - 100 units

6ES7972-0BA52-0XA0
6ES7972-0BA52-0XB0**6ES7972-0BB52-0XA0**
6ES7972-0BB52-0XB0**RS 485 bus connector with axial cable outlet**

For SIMATIC OP, for connection to PPI, MPI, PROFIBUS

6GK1500-0EA02**PROFIBUS FastConnect bus cable**

Standard type with special design for fast mounting, 2-core, shielded, cut-to-length; max. delivery unit 1 000 m, minimum ordering quantity 20 m

6XV1830-0EH10

6

Overview

- For constructing a fail-safe automation system for plants with increased safety requirements
- CPUs for high demands in the mid-level performance range
- Applicable for plants with additional demands on programming scope and processing speed
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Standard and safety-related tasks can be performed with a single CPU
- Integrated PROFINET functions with CPU 414F-3 PN/DP
- Multi-processor mode is possible
- Safety-related communication with distributed I/O devices over PROFIBUS DP or PROFINET IO with PROFIsafe profile
- Fail-safe I/O modules can be connected in a distributed manner via the integrated interfaces (DP and PN with CPU 414F-3 PN/DP) and/or through communication modules (CP 443-5 Extended and CP 443-1 Advanced)
- Central and distributed use of standard modules for non-safety-oriented applications

Technical specifications

Article number	6ES7414-3FM07-0AB0 CPU414F-3 PN/DP, 4 MB, 3 INTERFACES
General information	
Product type designation	CPU414F-3 PN/DP
Engineering with	
• Programming package	STEP 7 V5.5 or higher with HSP 262
Supply voltage	
Rated value (DC)	No; Power supply via system power supply
• 24 V DC	
Power loss	
Power loss, typ.	6.5 W
Memory	
Work memory	
• integrated	4 Mbyte
• integrated (for program)	2 Mbyte
• integrated (for data)	2 Mbyte
Load memory	
• expandable FEPRAM, max.	64 Mbyte
• integrated RAM, max.	512 kbyte
• expandable RAM, max.	64 Mbyte
CPU processing times	
for bit operations, typ.	18.75 ns
for word operations, typ.	18.75 ns
for fixed point arithmetic, typ.	18.75 ns
for floating point arithmetic, typ.	37.5 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• present	Yes
S7 times	
• Number	2 048

Article number	6ES7414-3FM07-0AB0 CPU414F-3 PN/DP, 4 MB, 3 INTERFACES
IEC timer	
• present	Yes
Data areas and their retentivity	
Flag	
• Number, max.	8 kbyte; Size of bit memory address area
Address area	
I/O address area	
• Inputs	8 kbyte
• Outputs	8 kbyte
Process image	
• Inputs, adjustable	8 kbyte
• Outputs, adjustable	8 kbyte
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
Operating hours counter	
• Number	16
Interfaces	
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
Number of other interfaces	1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)
1. Interface	
Interface type	Integrated
Physics	RS 485 / PROFIBUS + MPI

SIMATIC S7-400 advanced controller

Central processing units
Fail-safe CPUs

CPU 414F**Technical specifications (continued)**

Article number	6ES7414-3FM07-0AB0 CPU414F-3 PN/DP, 4 MB, 3 INTERFACES
Functionality	
• MPI	Yes
• DP master	Yes
• DP slave	Yes
DP master	
• Number of DP slaves, max.	32
2. Interface	
Interface type	PROFINET
Physics	Ethernet RJ45
Interface types	
• Number of ports	2
Functionality	
• DP master	No
• DP slave	No
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• PROFINET CBA	Yes
3. Interface	
Interface type	Pluggable interface module (IF)
Plug-in interface modules	IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Physics	RS 485 / PROFIBUS
Functionality	
• MPI	No
• DP master	Yes
• DP slave	Yes
DP master	
• Number of DP slaves, max.	96
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
• supported	Yes
S7 basic communication	
• supported	Yes
S7 communication	
• supported	Yes
S5 compatible communication	
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
Standard communication (FMS)	
• supported	Yes; Via CP and loadable FB

Article number	6ES7414-3FM07-0AB0 CPU414F-3 PN/DP, 4 MB, 3 INTERFACES
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	62
• ISO-on-TCP (RFC1006)	Yes; Via integrated PROFINET interface or CP 443-1 Adv. and loadable FBs
- Number of connections, max.	62
• UDP	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	62
Web server	
• supported	Yes
Number of connections	
• overall	64
Standards, approvals, certificates	
Use in hazardous areas	
• ATEX	ATEX II 3 G Ex nA IIC T4 Gc
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Configuration	
Know-how protection	
• User program protection/password protection	Yes
• Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	50 mm
Height	290 mm
Depth	219 mm
Weights	
Weight, approx.	900 g

Ordering data	Article No.	Article No.
CPU 414F-3 PN/DP For setting up safety-related automation systems; work memory 4 MB, power supply 24 V DC, MPI/PROFIBUS DP master interface, PROFINET interface, slot for memory card, module slot for 1 IF module, incl. slot number labels	6ES7414-3FM07-0AB0	IF 964-DP interface module For connecting an additional DP line
Distributed Safety V5.4 programming tool Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 V5.3 SP3 or higher • Floating License • Floating License for 1 user, license key download without software or documentation ¹⁾ ; e-mail address required for delivery	6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5	Slot number labels 1 set (spare part)
Distributed Safety Upgrade From V5.x to V5.4; Floating License for 1 user	6ES7833-1FC02-0YE5	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
STEP 7 Safety Advanced V13 Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 • Floating License for 1 user • Floating License for 1 user, license key download without software or documentation ¹⁾ ; e-mail address required for delivery	6ES7833-1FA13-0YA5 6ES7833-1FA13-0YH5	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates
RAM memory card • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 64 MB	6ES7952-0AF00-0AA0 6ES7952-1AH00-0AA0 6ES7952-1AK00-0AA0 6ES7952-1AL00-0AA0 6ES7952-1AM00-0AA0 6ES7952-1AP00-0AA0 6ES7952-1AS00-0AA0 6ES7952-1AY00-0AA0	PROFIBUS bus components RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbps • Without PG interface • With PG interface
FEPRM memory card • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 32 MB • 64 MB	6ES7952-0KF00-0AA0 6ES7952-0KH00-0AA0 6ES7952-1KK00-0AA0 6ES7952-1KL00-0AA0 6ES7952-1KM00-0AA0 6ES7952-1KP00-0AA0 6ES7952-1KS00-0AA0 6ES7952-1KT00-0AA0 6ES7952-1KY00-0AA0	RS 485 bus connector with angled cable outlet Max. transfer rate 12 Mbps • Without PG interface • With PG interface
MPI cable For connection of SIMATIC S7 and PG via MPI; length: 5 m	6ES7901-0BF00-0AA0	RS 485 bus connector with 90° cable outlet for FastConnect connection system Max. transfer rate 12 Mbps • Without PG interface - 1 unit - 100 units • With PG interface - 1 unit - 100 units
		RS 485 bus connector with axial cable outlet For SIMATIC OP, for connection to PPI, MPI, PROFIBUS
		PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter; max. delivery unit 1000 m, minimum ordering quantity 20 m
		RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure
		PROFINET bus components IE FC TP standard cable GP 2x2
		4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum ordering quantity 20 m

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-400 advanced controller

Central processing units

Fail-safe CPUs

CPU 414F

Ordering data	Article No.	Article No.
FO standard cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter: max. delivery unit 1 000 m, minimum ordering quantity 20 m	6XV1873-2A	IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables
SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports	6GK5204-2BB10-2AA3	IE FC RJ45 Plug 180 180° cable outlet <ul style="list-style-type: none"> • 1 unit • 10 units • 50 units
		6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
		PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/PROFINET communication
		See catalogs IK PI, CA 01

Overview

- For constructing a fail-safe automation system for plants with increased safety requirements
- High-performance CPU in the top-end performance range
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Standard and safety-related tasks can be performed with a single CPU
- Multi-processor mode is possible
- Safety-related communication with distributed I/O devices over PROFIBUS DP with the *PROFIsafe* profile
- Fail-safe I/O modules can be connected decentralized over the integrated interfaces (DP and PN with CPU416F-3 PN/DP) and/or through communication modules (CP443-5 Ext. and CP443-1 Adv.)
- Standard modules for non-safety-related applications can be operated centrally and decentralized

Technical specifications

Article number	6ES7416-2FP07-0AB0	6ES7416-3FS07-0AB0
	CPU 416F-2, MPI, PROFIBUS, 8 MB	CPU416F-3 PN/DP, 16 MB, 3 INTERFACES
General information		
Product type designation	CPU 416F-2	CPU416F-3 PN/DP
Engineering with		
• Programming package	STEP 7 V5.4 or higher with HSP 261	STEP 7 V5.5 or higher with HSP 262
Supply voltage		
Rated value (DC)		
• 24 V DC	No; Power supply via system power supply	No; Power supply via system power supply
Power loss		
Power loss, typ.	4.5 W	6.5 W
Memory		
Work memory		
• integrated	8 Mbyte	16 Mbyte
• integrated (for program)	4 Mbyte	8 Mbyte
• integrated (for data)	4 Mbyte	8 Mbyte
Load memory		
• expandable FEPRAM, max.	64 Mbyte	64 Mbyte
• integrated RAM, max.	1 Mbyte	1 Mbyte
• expandable RAM, max.	64 Mbyte	64 Mbyte
CPU processing times		
for bit operations, typ.	12.5 ns	12.5 ns
for word operations, typ.	12.5 ns	12.5 ns
for fixed point arithmetic, typ.	12.5 ns	12.5 ns
for floating point arithmetic, typ.	25 ns	25 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• present	Yes	Yes
S7 times		
• Number	2 048	2 048
IEC timer		
• present	Yes	Yes

Article number	6ES7416-2FP07-0AB0	6ES7416-3FS07-0AB0
	CPU 416F-2, MPI, PROFIBUS, 8 MB	CPU416F-3 PN/DP, 16 MB, 3 INTERFACES
Data areas and their retentivity		
Flag		
• Number, max.	16 kbyte; Size of bit memory address area	16 kbyte; Size of bit memory address area
Address area		
I/O address area		
• Inputs	16 kbyte	16 kbyte
• Outputs	16 kbyte	16 kbyte
Process image		
• Inputs, adjustable	16 kbyte	16 kbyte
• Outputs, adjustable	16 kbyte	16 kbyte
Time of day		
Clock		
• Hardware clock (real-time clock)	Yes	Yes
Operating hours counter		
• Number	16	16
Interfaces		
Interfaces/bus type	1 x MPI/PROFIBUS DP, 1 x PROFIBUS DP	1 x MPI/PROFIBUS DP, 1 x PROFINET (2 ports), 1 x PROFIBUS DP (optionally pluggable)
Number of RS 485 interfaces	2; Combined MPI / PROFIBUS DP and PROFIBUS DP	1; Combined MPI / PROFIBUS DP
Number of other interfaces		1; PROFIBUS DP with IF 964-DP (plug-in option; MLFB: 6ES7964-2AA04-0AB0)
1. Interface		
Interface type	Integrated	Integrated
Physics	RS 485 / PROFIBUS + MPI	RS 485 / PROFIBUS + MPI
Functionality		
• MPI	Yes	Yes
• DP master	Yes	Yes
• DP slave	Yes	Yes
• PROFIBUS DP master	Yes	Yes
• PROFIBUS DP slave	Yes	Yes
DP master		
• Number of DP slaves, max.	32	32

SIMATIC S7-400 advanced controller

Central processing units
Fail-safe CPUs

CPU 416F**Technical specifications (continued)**

Article number	6ES7416-2FP07-0AB0	6ES7416-3FS07-0AB0
	CPU 416F-2, MPI, PROFIBUS, 8 MB	CPU416F-3 PN/DP, 16 MB, 3 INTERFACES
2. Interface		
Interface type	Integrated	PROFINET
Physics	RS 485 / PROFIBUS	Ethernet RJ45
Interface types		
• Number of ports		2
Functionality		
• DP master	Yes	No
• DP slave	Yes	No
• PROFINET IO Controller		Yes
• PROFINET IO Device		Yes
• PROFINET CBA		Yes
• PROFIBUS DP master	Yes	No
• PROFIBUS DP slave	Yes	No
DP master		
• Number of DP slaves, max.	125	
3. Interface		
Interface type		Pluggable interface module (IF)
Plug-in interface modules		IF 964-DP (MLFB: 6ES7964-2AA04-0AB0)
Physics		RS 485 / PROFIBUS
Functionality		
• MPI		No
• DP master		Yes
• DP slave		Yes
• PROFIBUS DP master		Yes
• PROFIBUS DP slave		Yes
DP master		
• Number of DP slaves, max.		125
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes; For PROFIBUS only	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions		
PG/OP communication	Yes	Yes
Data record routing	Yes	Yes
Global data communication		
• supported	Yes	Yes
S7 basic communication		
• supported	Yes	Yes
S7 communication		
• supported	Yes	Yes
S5 compatible communication		
• supported	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5	Yes; Via FC AG_SEND and AG_RECV, max. via 10 CP 443-1 or 443-5
Standard communication (FMS)		
• supported	Yes; Via CP and loadable FB	Yes; Via CP and loadable FB

Article number	6ES7416-2FP07-0AB0	6ES7416-3FS07-0AB0
	CPU 416F-2, MPI, PROFIBUS, 8 MB	CPU416F-3 PN/DP, 16 MB, 3 INTERFACES
Open IE communication		
• TCP/IP		Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		94
• ISO-on-TCP (RFC1006)	Via CP 443-1 and loadable FB	Yes; Via integrated PROFINET interface or CP 443-1 and loadable FBs
- Number of connections, max.		94
• UDP		Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		94
Web server		
• supported	No	Yes
• Web server	No	Yes
Number of connections		
• overall	96	96
Standards, approvals, certificates		
Use in hazardous areas		
• ATEX	ATEX II 3 G Ex nA IIC T4 Gc	ATEX II 3 G Ex nA IIC T4 Gc
Ambient conditions		
Ambient temperature during operation		
• min.	0 °C	0 °C
• max.	60 °C	60 °C
Configuration		
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions		
Width	25 mm	50 mm
Height	290 mm	290 mm
Depth	219 mm	219 mm
Weights		
Weight, approx.	700 g	900 g

Ordering data	Article No.	Ordering data	Article No.
CPU 416F-2 For configuring safety-related automation systems; 8 MB work memory, 24 V DC power supply, MPI/PROFIBUS DP master interface, PROFIBUS DP master interface, slot for memory card, incl. slot number labels	6ES7416-2FP07-0AB0	FEPROM memory card <ul style="list-style-type: none"> • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 32 MB • 64 MB 	6ES7952-0KF00-0AA0 6ES7952-0KH00-0AA0 6ES7952-1KK00-0AA0 6ES7952-1KL00-0AA0 6ES7952-1KM00-0AA0 6ES7952-1KP00-0AA0 6ES7952-1KS00-0AA0 6ES7952-1KT00-0AA0 6ES7952-1KY00-0AA0
CPU 416F-3 PN/DP For configuring safety-related automation systems; work memory 16 MB, 24 V DC power supply, MPI/PROFIBUS DP master interface, PROFINET interface, PROFIBUS DP master interface, receptacle for 1 IF module, slot for memory card, incl. slot number labels	6ES7416-3FS07-0AB0	MPI cable For connection of SIMATIC S7 and PG via MPI; length: 5 m	6ES7901-0BF00-0AA0
S7 Distributed Safety programming tool V5.4 Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 V5.3 SP3 or higher <ul style="list-style-type: none"> • Floating License • Floating License for 1 user, license key download without software or documentation¹⁾; e-mail address required for delivery 	6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5	IF 964-DP interface module For connecting an additional DP line	6ES7964-2AA04-0AB0
S7 Distributed Safety upgrade Von V5.x auf V5.4; Floating License for 1 user	6ES7833-1FC02-0YE5	Slot number labels 1 set (spare part)	6ES7912-0AA00-0AA0
STEP 7 Safety Advanced V13 Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 <ul style="list-style-type: none"> • Floating License for 1 user • Floating License for 1 user, license key download without software or documentation¹⁾; e-mail address required for delivery 	6ES7833-1FA13-0YA5 6ES7833-1FA13-0YH5	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
RAM memory card <ul style="list-style-type: none"> • 64 KB • 256 KB • 1 MB • 2 MB • 4 MB • 8 MB • 16 MB • 64 MB 	6ES7952-0AF00-0AA0 6ES7952-1AH00-0AA0 6ES7952-1AK00-0AA0 6ES7952-1AL00-0AA0 6ES7952-1AM00-0AA0 6ES7952-1AP00-0AA0 6ES7952-1AS00-0AA0 6ES7952-1AY00-0AA0	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
		PROFIBUS bus components	
		RS 485 bus connector with 90° cable outlet Max. transfer rate 12 Mbps <ul style="list-style-type: none"> • Without PG interface • With PG interface 	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0
		RS 485 bus connector with angled cable outlet Max. transfer rate 12 Mbps <ul style="list-style-type: none"> • Without PG interface • With PG interface 	6ES7972-0BA42-0XA0 6ES7972-0BB42-0XA0
		RS 485 bus connector with 90° cable outlet for FastConnect system Max. transfer rate 12 Mbps <ul style="list-style-type: none"> • Without PG interface <ul style="list-style-type: none"> - 1 unit - 100 units • With PG interface <ul style="list-style-type: none"> - 1 unit - 100 units 	6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0
		RS 485 bus connector with axial cable outlet For SIMATIC OP, for connection to PPI, MPI, PROFIBUS	6GK1500-0EA02

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-400 advanced controller

Central processing units

Fail-safe CPUs

CPU 416F**Ordering data****Article No.****Article No.****PROFIBUS FastConnect bus cable**

Standard type with special design for fast mounting, 2-core, shielded, sold by the meter; max. delivery unit 1 000 m, minimum ordering quantity 20 m

6XV1830-0EH10**RS 485 repeater for PROFIBUS**

Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure

6ES7972-0AA02-0XA0**PROFINET bus components****IE FC TP standard cable GP 2x2**

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/IE FC RJ45 Plug; PROFINET-compatible; with UL approval

Sold by the meter

6XV1840-2AH10**FO standard cable GP (50/125)**

Standard cable, splittable, UL approval, sold by the meter

6XV1873-2A**SCALANCE X204-2 Industrial Ethernet Switch**

Industrial Ethernet Switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports

6GK5204-2BB10-2AA3**IE FC RJ45 plugs**

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 180

180° cable outlet

- 1 unit
- 10 units
- 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

PROFIBUS/PROFINET bus components

For establishing MPI/PROFIBUS/PROFINET communication

See catalogs IK PI, CA 01

Overview

- Transceiver for the transition from a redundant PROFIBUS DP master system to a single-channel PROFIBUS DP master system
- To connect devices with a single PROFIBUS DP interface to the redundant PROFIBUS DP master system of the SIMATIC S7-400H

Technical specifications

Article number	6ES7153-2BA70-0XB0 ET200M, INTERFACE IM153-2 HF OUTDOOR
General information	
Vendor identification (VendorID)	801Eh
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range (ripple included), lower limit (DC)	20.4 V
permissible range (ripple included), upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2,5 A
Mains buffering	
• Mains/voltage failure stored energy time	5 ms
Input current	
Current consumption, max.	650 mA
Inrush current, typ.	3 A
I ² t	0.1 A ² ·s
Output current	
for backplane bus (5 V DC), max.	1.5 A
Power loss	
Power loss, typ.	5.5 W
Address area	
Addressing volume	
• Inputs	244 byte
• Outputs	244 byte
Hardware configuration	
Number of modules per DP slave interface, max.	12
Time stamping	
Accuracy	1 ms; 1ms at up to 8 modules; 10ms at up to 12 modules
Number of message buffers	15

Article number	6ES7153-2BA70-0XB0 ET200M, INTERFACE IM153-2 HF OUTDOOR
Messages per message buffer	20
Number of stampable digital inputs, max.	128; Max. 128 signals/station; max. 32 signals/slot
Time format	RFC 1119
Time resolution	0.466 ns
Time interval for transmitting the message buffer if a message is present	1 000 ms
Time stamp on signal change	rising / falling edge as signal entering or exiting
Interfaces	
Interface physics, RS 485	Yes
Interface physics, FOC	No
PROFIBUS DP	
• Node addresses	1 to 125 permitted
• automatic detection of transmission rate	Yes
• Output current, max.	70 mA
• Transmission rate, max.	12 Mbit/s
• Transmission procedure	RS 485
• SYNC capability	Yes
• FREEZE capability	Yes
• Direct data exchange (slave-to-slave communication)	Yes; as publisher with all IO, as subscriber with F-IO only
• Connector type	9-pin sub D
1. Interface	
DP slave	
• GSD file	SI05801E.GSG
• automatic baud rate search	Yes
Protocols	
Bus protocol/transmission protocol	PROFIBUS DP to EN 50170
Isolation	
Isolation tested with	Isolation voltage 500 V
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP20	Yes

SIMATIC S7-400 advanced controller

Central processing units
High-availability CPUs

Y-link for S7-400H**Technical specifications (continued)**

Article number	6ES7153-2BA70-0XB0 ET200M, INTERFACE IM153-2 HF OUTDOOR
Air pressure acc. to IEC 60068-2-13	
• Operating altitude above sea level, max.	3 000 m
Configuration	
Configuration software	
• STEP 7	Yes; STEP 7 / COM PROFIBUS / non-Siemens tools via GSD file
Dimensions	
Width	40 mm
Height	125 mm
Depth	117 mm
Weights	
Weight, approx.	360 g
Article number	6ES7197-1LB00-0XA0 Y-COUPLER F. BUILDING Y-LINK, REDUNDANT
General information	
Requirements for DP master system	
• Length of parameter assignment telegram	244 byte
Supply voltage	
Description	via bus module
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Interfaces	
PROFIBUS DP	
Properties of the lower-level DP master system	
- Transmission rate, max.	12 Mbit/s; 45.45 kbit/s to 12 Mbit/s
- Termination of lower-level DP master system	Active terminating resistor (Bus Terminator)
- Use of OLM/OBT	Yes
- Use of RS 485 repeaters, max.	9
- Number of DP slaves, max.	31; 64 when using RS 485 repeaters or OLM/OBT
Protocols	
PROFIBUS DP	Yes
Interrupts/diagnostics/status information	
Status indicator	No
Alarms	No
Diagnostic functions	Yes
Potential separation	
to lower-level DP master system	Yes
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	200 g

Ordering data**Article No.**

For use with STEP 7 from V5.4
or SIMATIC PCS 7 from V7.0

Y link

For connecting devices with only one PROFIBUS DP interface to a redundant S7-400H, comprising:

- 2 IM 153-2 High Feature Outdoor interface modules (6ES7153-2BA70-0XA0)
- 1 Y coupler (6ES7197-1LB00-0XA0)
- 1 BM IM/IM bus module (6ES7195-7HD80-0XA0)
- 1 BM Y-coupler bus module (6ES7654-7HY00-0XA0)

6ES7197-1LA12-0XA0**Accessories****Mounting rail**

For assembling the Y link with active bus modules

- Length 483 mm
- Length 530 mm

6ES7195-1GA00-0XA0
6ES7195-1GF30-0XA0

Overview

- Bus coupler for transition from a redundant PROFIBUS DP master system to a single-channel PROFIBUS DP master system
- For connection of devices with only one PROFIBUS DP interface to the redundant PROFIBUS DP master system of the SIMATIC S7-400H

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical documentation on SIPLUS can be found here:
<http://www.siemens.com/siplus-extreme>

Technical specifications

Article number	6AG1153-2BA10-7XB0
Based on	6ES7153-2BA10-0XB0 SIPLUS ET200M IM153-2 HF
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	-25 °C
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Article number	6AG1197-1LB00-4XA0
Based on	6ES7197-1LB00-0XA0 SIPLUS S7 Y COUPLER
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C; = Tmin
• max.	60 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

SIMATIC S7-400 advanced controller

Central processing units

SIPLUS high-availability CPUs

SIPLUS Y-Link for S7-400H**Technical specifications (continued)**

Article number	6AG1195-7HD10-2XA0
Based on	6ES7195-7HD10-0XA0 SIPLUS ET200M DP BUS MODULE
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data**Article No.****SIPLUS ET 200M IM 153-2 High Feature (2 units required)**

Slave interface for connecting an ET 200M to PROFIBUS DP for a maximum of 12 S7-300 modules; also for use in redundant systems

- Extended temperature range and exposure to media

6AG1153-2BA10-7XB0**Y coupler**

For establishing a Y-link for redundant controllers

- Exposure to media

6AG1197-1LB00-4XA0**Bus module for SIPLUS ET 200M**

Bus module for accommodating two IM-153 modules for the hot-swapping function; for setting up redundant systems

- Extended temperature range and exposure to media

6AG1195-7HD10-2XA0**SIPLUS S7 bus module BM Y-coupler**

to accommodate a Y-coupler incl. bus module cover

- Extended temperature range and exposure to media

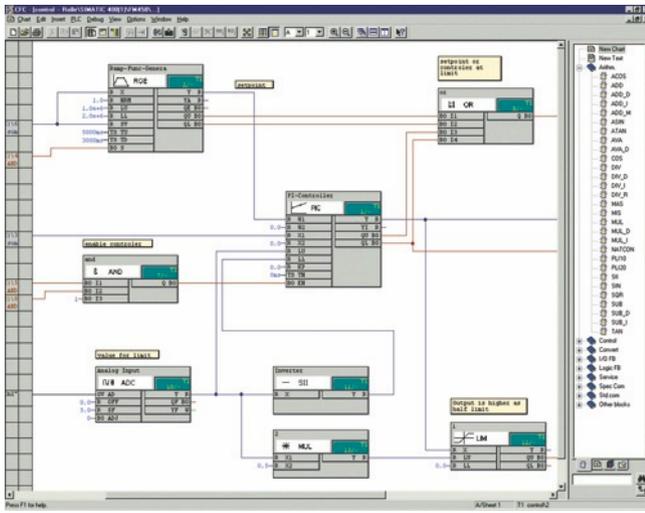
6AG1654-7HY00-7XA0**Accessories***Consumables***Mounting rail**

For assembling the Y-link with active bus modules

- Length 483 mm
- Length 530 mm

6ES7195-1GA00-0XA0
6ES7195-1GF30-0XA0

Overview



- Optional package for STEP 7 V5.5 for configuring closed-loop control and automation tasks with SIMATIC TDC, FM 458-1 DP and T400
- Extensive block library
- Generation of user libraries in ANSI C with D7-FB-GEN function block generator

Ordering data

Article No.

SIMATIC D7-SYS V8.1

Reference hardware:
SIMATIC TDC, FM 458-1 DP, T400

Requirement:

MS Windows 7 Professional/
Enterprise/Ultimate + SP1
(32/64-bit);
MS Windows XP Professional SP3
(32-bit);
MS Windows Server 2003 R2 SP2
(32-bit) / 2008 R2 SP1 (64-bit);
STEP 7 V5.5 SP4 or higher

Type of delivery:

on DVD, German, English,
with electronic documentation

Floating license

Upgrade License V7.x and higher
Software Update Service¹⁾

6ES7852-0CC04-0YA5

6ES7852-0CC04-0YE5

6ES7852-0CC01-0YL5

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD,
multilingual: LOGO!, SIMADYN,
SIMATIC bus components,
SIMATIC C7,
SIMATIC distributed I/O,
SIMATIC HMI, SIMATIC Sensors,
SIMATIC NET, SIMATIC PC Based
Automation, SIMATIC PCS 7,
SIMATIC PG/PC, SIMATIC S7,
SIMATIC Software, SIMATIC TDC

**SIMATIC Manual Collection
update service for 1 year**

6ES7998-8XC01-8YE2

Current "Manual Collection" DVD
and the three subsequent updates

¹⁾ For more information on the software update service, see chapter 11,
page 11/2.

SIMATIC S7-400 advanced controller

Notes

6

Distributed controllers



- 7/2** **Based on ET 200SP**
- 7/2 Standard CPUs
- 7/2 CPU 1510SP-1 PN
- 7/6 CPU 1512SP-1 PN
- 7/10 SIPLUS standard CPUs
- 7/10 SIPLUS CPU 1510SP-1 PN
- 7/11 SIPLUS CPU 1512SP-1 PN
- 7/12 Fail-safe CPUs
- 7/12 CPU 1510SP F-1 PN
- 7/16 CPU 1512SP F-1 PN

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

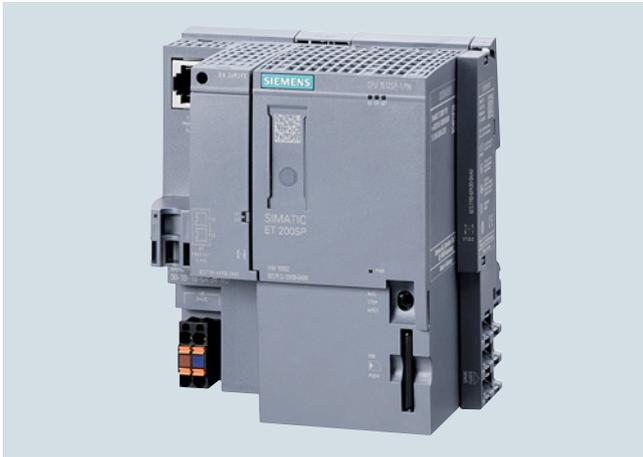
www.siemens.com/simatic/printmaterial

Distributed controllers

Based on ET 200SP
Standard CPUs

CPU 1510SP-1 PN

Overview



- CPU 1510SP-1 PN for SIMATIC ET 200SP based on S7-1500 CPU 1511-1 PN
- For high-performance control solutions using ET 200SP
- Increase in availability of systems and machines
- PROFINET IO Controller for up to 64 IO devices

- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET I/O Controller
- PROFINET shared I-Device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Optional PROFIBUS DP master for 125 PROFIBUS DP slaves (with CM DP module 6ES7545-5DA00-0AB0)
- Optional PROFIBUS DP-slave (with CM DP module 6ES7545-5DA00-0AB0)
- Configuration control (option handling)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders

Note

SIMATIC Memory Card required for operation of the CPU. The bus adapter is not included in scope of delivery and is to be ordered separately.

Technical specifications

Article number	6ES7510-1DJ01-0AB0
	CPU 1510SP-1 PN, 100KB PROG./750KB DATA
General information	
Product type designation	CPU 1510SP-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.6 W
Memory	
Work memory	
• integrated (for program)	100 kbyte
• integrated (for data)	750 kbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	72 ns
for word operations, typ.	86 ns
for fixed point arithmetic, typ.	115 ns
for floating point arithmetic, typ.	461 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	6ES7510-1DJ01-0AB0
	CPU 1510SP-1 PN, 100KB PROG./750KB DATA
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Address space per module	
• Address space per module, max.	32 byte; For input and output data respectively
Address space per station	
• Address space per station, max.	1 280 byte; for central inputs and outputs; depending on configuration
Time of day	
Clock	
• Type	Hardware clock
1st interface	
Interface types	
• Number of ports	3; 1. integr. + 2. via BusAdapter
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
• Bus adapter (PROFINET)	Yes; Applicable BusAdapters: BA 2x RJ45, BA 2x FC
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes

Technical specifications (continued)

Article number	6ES7510-1DJ01-0AB0 CPU 1510SP-1 PN, 100KB PROG./750KB DATA
2nd interface	
Interface types	
• Number of ports	1
• RS 485	Yes; Via CM DP module
Functionality	
• SIMATIC communication	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
Protocols	
Number of connections	
• Number of connections, max.	64
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	64; In total, up to 189 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	64
PROFIBUS DP master	
Services	
- Number of DP slaves	125
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; Only with PROFINET; with minimum OB 6x cycle of 625 µs
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Positioning axis	
- Number of positioning axes, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• External encoders	
- Number of external encoders, max.	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool

Article number	6ES7510-1DJ01-0AB0 CPU 1510SP-1 PN, 100KB PROG./750KB DATA
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
Configuration	
Programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	310 g

Distributed controllers

Based on ET 200SP
Standard CPUs

CPU 1510SP-1 PN

Ordering data

CPU 1510SP-1 PN

Work memory 100 KB for program, 750 KB for data, PROFINET I/O IRT interface; SIMATIC Memory Card required

Accessories

CM DP for ET 200SP CPU

PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbit/s

SIMATIC Memory Card

4 MB
12 MB
24 MB
256 MB
2 GB
32 GB

DIN rail 35 mm

- Length: 483 mm for 19" cabinets
- Length: 530 mm for 600 mm cabinets
- Length: 830 mm for 900 mm cabinets
- Length: 2 m

PE connection element for DIN rail 2000 mm

BusAdapter BA 2xRJ45

BusAdapter BA 2xFC for increased vibration and EMC loads

BusAdapter BA 2xSCRJ

BusAdapter BA SCRJ/RJ45

BusAdapter BA SCRJ/FC

Reference identification label

10 sheets of 16 labels

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer

1000 labeling strips DIN A4, light gray, card, for inscription with laser printer

1000 labeling strips DIN A4, yellow, card, for inscription with laser printer

Article No.

6ES7510-1DJ01-0AB0

6ES7545-5DA00-0AB0

6ES7954-8LC02-0AA0

6ES7954-8LE02-0AA0

6ES7954-8LF02-0AA0

6ES7954-8LL02-0AA0

6ES7954-8LP02-0AA0

6ES7954-8LT02-0AA0

6ES5710-8MA11

6ES5710-8MA21

6ES5710-8MA31

6ES5710-8MA41

6ES7590-5AA00-0AA0

6ES7193-6AR00-0AA0

6ES7193-6AF00-0AA0

6ES7193-6AP00-0AA0

6ES7193-6AP20-0AA0

6ES7193-6AP40-0AA0

6ES7193-6LF30-0AW0

6ES7193-6LR10-0AA0

6ES7193-6LR10-0AG0

6ES7193-6LA10-0AA0

6ES7193-6LA10-0AG0

Article No.

IE FC RJ45 plugs

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 90

90° cable outlet

1 unit

10 units

50 units

IE FC RJ45 Plug 180

180° cable outlet

1 unit

10 units

50 units

IE FC TP standard cable GP 2x2

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Trailing Cable 2 x 2 (Type C)

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Marine Cable 2 x 2 (Type B)

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC stripping tool

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

Manuals for ET 200SP distributed I/O system

ET 200SP library:
ET 200SP Manual Collection, comprising system manual, product information, and device manuals

Manuals can be downloaded from the Internet as PDF files:

<http://www.siemens.com/simatic-docu>

6GK1901-1BB20-2AA0

6GK1901-1BB20-2AB0

6GK1901-1BB20-2AE0

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

6XV1840-2AH10

6XV1840-3AH10

6XV1840-4AH10

6GK1901-1GA00

Ordering data	Article No.	Ordering data	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0	Spare parts Power supply connector Spare part; for connecting the 24 V DC supply voltage • With push-in terminals; 10 units	6ES7193-4JB00-0AA0
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2	Cover for bus adapter interface 5 units	6ES7591-3AA00-0AA0
STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5	Server module	6ES7193-6PA00-0AA0

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

Distributed controllers

Based on ET 200SP
Standard CPUs

CPU 1512SP-1 PN

Overview



- CPU 1512SP-1 PN for SIMATIC ET 200SP based on S7-1500 CPU 1513-1 PN
- For applications with medium requirements regarding the program scope and processing speed, for distributed setup via PROFINET IO or PROFIBUS DP.
- Increase in availability of systems and machines
- PROFINET IO Controller for up to 128 IO devices

- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET I/O Controller
- PROFINET shared I-Device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Optional PROFIBUS DP master for 125 PROFIBUS DP slaves (with CM DP module 6ES7545-5DA00-0AB0)
- Optional PROFIBUS DP-slave (with CM DP module 6ES7545-5DA00-0AB0)
- Configuration control (option handling)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders

Note

SIMATIC Memory Card required for operation of the CPU. BusAdapter is not included in scope of delivery and is to be ordered separately.

Technical specifications

Article number	6ES7512-1DK01-0AB0 CPU 1512SP-1 PN, 200KB PROG./1MB DATA
General information	
Product type designation	CPU 1512SP-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.6 W
Memory	
Work memory	
• integrated (for program)	200 kbyte
• integrated (for data)	1 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	48 ns
for word operations, typ.	58 ns
for fixed point arithmetic, typ.	77 ns
for floating point arithmetic, typ.	307 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048

Article number	6ES7512-1DK01-0AB0 CPU 1512SP-1 PN, 200KB PROG./1MB DATA
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Address space per module	
• Address space per module, max.	32 byte; For input and output data respectively
Address space per station	
• Address space per station, max.	1 280 byte; for central inputs and outputs; depending on configuration
Time of day	
Clock	
• Type	Hardware clock
1st interface	
Interface types	
• Number of ports	3; 1. integr. + 2. via BusAdapter
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
• Bus adapter (PROFINET)	Yes; Applicable BusAdapters: BA 2x RJ45, BA 2x FC, BA 2x SCRJ, BA SCRJ / RJ45, BA SCRJ / FC

Technical specifications (continued)

Article number	6ES7512-1DK01-0AB0 CPU 1512SP-1 PN, 200KB PROG./1MB DATA	Article number	6ES7512-1DK01-0AB0 CPU 1512SP-1 PN, 200KB PROG./1MB DATA
Functionality		<ul style="list-style-type: none"> External encoders <ul style="list-style-type: none"> Number of external encoders, max. 	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
<ul style="list-style-type: none"> PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy 	Yes Yes Yes Yes Yes Yes	Controller	
2nd interface		<ul style="list-style-type: none"> PID_Compact PID_3Step PID-Temp 	Yes; Universal PID controller with integrated optimization Yes; PID controller with integrated optimization for valves Yes; PID controller with integrated optimization for temperature
Interface types		Counting and measuring	
<ul style="list-style-type: none"> Number of ports RS 485 	1 Yes; Via CM DP module	<ul style="list-style-type: none"> High-speed counter 	Yes
Functionality		Ambient conditions	
<ul style="list-style-type: none"> SIMATIC communication PROFIBUS DP master PROFIBUS DP slave 	Yes Yes Yes	Ambient temperature during operation	
Protocols		<ul style="list-style-type: none"> horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. 	0 °C 60 °C 0 °C 50 °C
Number of connections		Configuration	
<ul style="list-style-type: none"> Number of connections, max. 	88	Programming	
PROFINET IO Controller		Programming language	
Services		<ul style="list-style-type: none"> LAD FBD STL SCL GRAPH 	Yes Yes Yes Yes Yes
<ul style="list-style-type: none"> Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable IO Devices for RT, max. 	128; In total, up to 253 distributed I/O devices can be connected via PROFIBUS or PROFINET 64 128	Know-how protection	
PROFIBUS DP master		<ul style="list-style-type: none"> User program protection Copy protection Block protection 	Yes Yes Yes
Services		Access protection	
<ul style="list-style-type: none"> Number of DP slaves 	125	<ul style="list-style-type: none"> Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection 	Yes Yes Yes
Isochronous mode		Dimensions	
Isochronous operation (application synchronized up to terminal)	Yes; Only with PROFINET; with minimum OB 6x cycle of 625 µs	Width	100 mm
Supported technology objects		Height	117 mm
Motion Control	Yes	Depth	75 mm
<ul style="list-style-type: none"> Speed-controlled axis <ul style="list-style-type: none"> Number of speed-controlled axes, max. Positioning axis <ul style="list-style-type: none"> Number of positioning axes, max. Synchronized axes (relative gear synchronization) <ul style="list-style-type: none"> Number of axes, max. 	6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 6; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool 3; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Weights	
		Weight, approx.	310 g

Distributed controllers

Based on ET 200SP
Standard CPUs

CPU 1512SP-1 PN

Ordering data

CPU 1512SP-1 PN

Work memory 200 KB for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC Memory Card required

Accessories

CM DP for ET 200SP CPU

PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbit/s

SIMATIC Memory Card

4 MB

12 MB

24 MB

256 MB

2 GB

32 GB

DIN rail 35 mm

- Length: 483 mm for 19" cabinets
- Length: 530 mm for 600 mm cabinets
- Length: 830 mm for 900 mm cabinets
- Length: 2 m

PE connection element for DIN rail 2000 mm

BusAdapter BA 2xRJ45

BusAdapter BA 2xFC for increased vibration and EMC loads

BusAdapter BA 2xSCRJ

BusAdapter BA SCRJ/RJ45

BusAdapter BA SCRJ/FC

Reference identification label

10 sheets of 16 labels

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer

1000 labeling strips DIN A4, light gray, card, for inscription with laser printer

1000 labeling strips DIN A4, yellow, card, for inscription with laser printer

Article No.

6ES7512-1DK01-0AB0

6ES7545-5DA00-0AB0

6ES7954-8LC02-0AA0

6ES7954-8LE02-0AA0

6ES7954-8LF02-0AA0

6ES7954-8LL02-0AA0

6ES7954-8LP02-0AA0

6ES7954-8LT02-0AA0

6ES5710-8MA11

6ES5710-8MA21

6ES5710-8MA31

6ES5710-8MA41

6ES7590-5AA00-0AA0

6ES7193-6AR00-0AA0

6ES7193-6AF00-0AA0

6ES7193-6AP00-0AA0

6ES7193-6AP20-0AA0

6ES7193-6AP40-0AA0

6ES7193-6LF30-0AW0

6ES7193-6LR10-0AA0

6ES7193-6LR10-0AG0

6ES7193-6LA10-0AA0

6ES7193-6LA10-0AG0

Article No.

IE FC RJ45 plugs

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 90

90° cable outlet

1 unit

10 units

50 units

6GK1901-1BB20-2AA0

6GK1901-1BB20-2AB0

6GK1901-1BB20-2AE0

IE FC RJ45 Plug 180

180° cable outlet

1 unit

10 units

50 units

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

IE FC TP standard cable GP 2x2

6XV1840-2AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Trailing Cable 2 x 2 (Type C)

6XV1840-3AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Marine Cable 2 x 2 (Type B)

6XV1840-4AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC stripping tool

6GK1901-1GA00

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

Manuals for ET 200SP distributed I/O system

ET 200SP library:
ET 200SP Manual Collection, comprising system manual, product information, and device manuals

Manuals can be downloaded from the Internet as PDF files:

<http://www.siemens.com/simatic-docu>

Ordering data	Article No.	Ordering data	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0	Spare parts Power supply connector Spare part; for connecting the 24 V DC supply voltage • With push-in terminals; 10 units	6ES7193-4JB00-0AA0
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2	Cover for bus adapter interface 5 units	6ES7591-3AA00-0AA0
STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5	Server module 6ES7193-6PA00-0AA0	

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

Distributed controllers

Based on ET 200SP
SIPLUS standard CPUs

SIPLUS CPU 1510SP-1 PN

Overview



- SIPLUS CPU 1510SP-1 PN for SIPLUS ET 200SP based on SIPLUS-S7-1500 CPU 1511-1 PN
- For high-performance control solutions using ET 200SP
- Increase in availability of systems and machines
- PROFINET IO Controller for up to 64 IO devices
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET I/O Controller

- PROFINET shared I-Device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Optional PROFIBUS DP master for 125 PROFIBUS DP slaves (with CM DP module 6ES7545-5DA00-0AB0)
- Optional PROFIBUS DP-slave (with CM DP module 6ES7545-5DA00-0AB0)
- Configuration control (option handling)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders

Note

SIMATIC Memory Card required for operation of the CPU. The bus adapter is not included in scope of delivery and is to be ordered separately.

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

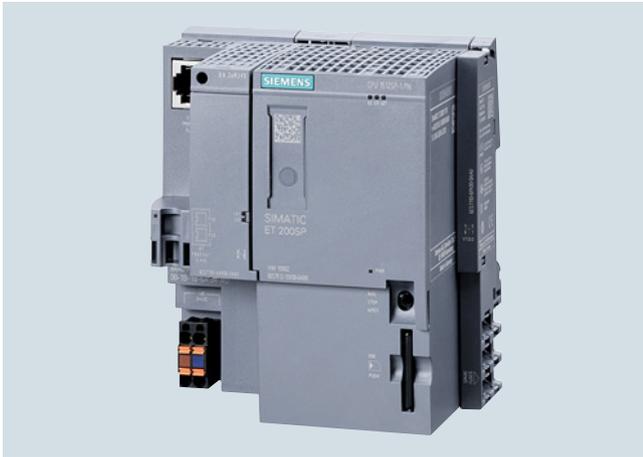
Article number	6AG1510-1DJ00-2AB0
Based on	6ES7510-1DJ00-0AB0 SIPLUS ET 200SP CPU 1510SP-1 PN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	50 °C; = Tmax
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

Article No.

SIPLUS CPU 1510SP-1 PN (Extended temperature range and medial exposure) Work memory 100 KB for program, 750 KB for data, PROFINET IO IRT interface; SIMATIC Memory Card required	6AG1510-1DJ00-2AB0
Accessories	
BusAdapter BA 2xRJ45 (Extended temperature range and medial exposure)	6AG1193-6AR00-7AA0
BusAdapter BA 2xFC for increased vibration and EMC loads (Extended temperature range and medial exposure)	6AG1193-6AF00-7AA0
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 Plug 180 (Extended temperature range and medial exposure) 180° cable outlet 1 unit	6AG1901-1BB10-7AA0
Additional accessories	see SIMATIC ET 200SP CPU 1510SP-1 PN, page 7/4

Overview



- SIPLUS CPU 1512SP-1 PN for SIPLUS ET 200SP based on SIPLUS-S7-1500 CPU 1513-1 PN
- For applications with medium requirements regarding the program scope and processing speed, for distributed setup via PROFINET IO or PROFIBUS DP.
- Increase in availability of systems and machines
- PROFINET IO Controller for up to 128 IO devices

- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET I/O Controller
- PROFINET shared I-Device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Optional PROFIBUS DP master for 125 PROFIBUS DP slaves (with CM DP module 6ES7545-5DA00-0AB0)
- Optional PROFIBUS DP-slave (with CM DP module 6ES7545-5DA00-0AB0)
- Configuration control (option handling)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders

Note

SIMATIC Memory Card required for operation of the CPU. BusAdapter is not included in scope of delivery and is to be ordered separately.

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1512-1DK00-2AB0
Based on	6ES7512-1DK00-0AB0 SIPLUS ET 200SP CPU 1512SP-1 PN
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	50 °C; = Tmax
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

Article No.

SIPLUS CPU 1512SP-1 PN (Extended temperature range and medial exposure) Work memory 200 KB for program, 1 MB for data, PROFINET IO IRT interface; SIMATIC Memory Card required	6AG1512-1DK00-2AB0
Accessories	
BusAdapter BA 2xRJ45 (Extended temperature range and medial exposure)	6AG1193-6AR00-7AA0
BusAdapter BA 2xFC for increased vibration and EMC loads (Extended temperature range and medial exposure)	6AG1193-6AF00-7AA0
IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
IE FC RJ45 Plug 180 180° cable outlet 1 unit	6AG1901-1BB10-7AA0
Additional accessories	see SIMATIC ET 200SP, CPU 1512SP-1 PN, page 7/8

Distributed controllers

Based on ET 200SP

Fail-safe CPUs

CPU 1510SP F-1 PN

Overview



- CPU 1510SP F-1 PN for SIMATIC ET 200SP based on S7-1500 CPU 1511F-1 PN
- For high-performance control solutions using ET 200SP
- Increase in availability of systems and machines
- Supports PROFIsafe in centralized and distributed configurations

- PROFINET IO controller for up to 64 IO devices
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET I/O controller
- PROFINET Shared I-Device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Optional PROFIBUS master for 125 PROFIBUS DP slaves (with CM DP module 6ES7545-5DA00-0AB0)
- Configuration control (option handling)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders

Note

SIMATIC Memory Card required for operation of the CPU.

The bus adapter is not included in the scope of supply and must be ordered separately.

Technical specifications

Article number	6ES7510-1SJ01-0AB0 CPU1510SP F-1 PN, 150KB PROG./750KB DATA
General information	
Product type designation	CPU 1510SP F-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.6 W
Memory	
Work memory	
• integrated (for program)	150 kbyte
• integrated (for data)	750 kbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	72 ns
for word operations, typ.	86 ns
for fixed point arithmetic, typ.	115 ns
for floating point arithmetic, typ.	461 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	6ES7510-1SJ01-0AB0 CPU1510SP F-1 PN, 150KB PROG./750KB DATA
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Address space per module	
• Address space per module, max.	32 byte; For input and output data respectively
Address space per station	
• Address space per station, max.	1 280 byte; for central inputs and outputs; depending on configuration
Time of day	
Clock	
• Type	Hardware clock
1st interface	
Interface types	
• Number of ports	3
• integrated switch	Yes
• RJ 45 (Ethernet)	1. integr. + 2. via Bus Adapter BA 2x RJ45
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes

Technical specifications (continued)

Article number	6ES7510-1SJ01-0AB0 CPU1510SP F-1 PN, 150KB PROG./750KB DATA
2nd interface	
Interface types	
• Number of ports	1
• RS 485	Via CM DP module
Functionality	
• SIMATIC communication	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
Protocols	
Number of connections	
• Number of connections, max.	64
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	64; In total, up to 189 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	64
PROFIBUS DP master	
Services	
- Number of DP slaves	125
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; For PROFINET only
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	6; Max. number of speed-controlled axes (requirement: there must be no other motion technology objects created)
• Positioning axis	
- Number of positioning axes, max.	6; Max. number of positioning axes (requirement: there must be no other motion technology objects created)
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	3; Max. number of synchronous axes (requirement: there must be no other motion technology objects created)
• External encoders	
- Number of external encoders, max.	6; Max. number of external encoders (requirement: there must be no other motion technology objects created)

Article number	6ES7510-1SJ01-0AB0 CPU1510SP F-1 PN, 150KB PROG./750KB DATA
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
Configuration	
Programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	310 g

Distributed controllers

Based on ET 200SP

Fail-safe CPUs

CPU 1510SP F-1 PN

Ordering data

CPU 1510SP F-1 PN

Work memory 150 KB for program, 750 KB for data, PROFINET I/O IRT interface; SIMATIC Memory Card required

Accessories

CM DP for ET 200SP CPU

PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbit/s

SIMATIC Memory Card

4 MB

12 MB

24 MB

256 MB

2 GB

32 GB

DIN rail 35 mm

- Length: 483 mm for 19" cabinets
- Length: 530 mm for 600 mm cabinets
- Length: 830 mm for 900 mm cabinets
- Length: 2 m

PE connection element for DIN rail 2000 mm

BusAdapter BA 2xRJ45

BusAdapter BA 2xFC for increased vibration and EMC loads

BusAdapter BA 2xSCRJ

BusAdapter BA SCRJ/RJ45

BusAdapter BA SCRJ/FC

Reference identification label

10 sheets of 16 labels

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer

1000 labeling strips DIN A4, light gray, card, for inscription with laser printer

1000 labeling strips DIN A4, yellow, card, for inscription with laser printer

Article No.

6ES7510-1SJ01-0AB0

6ES7545-5DA00-0AB0

6ES7954-8LC02-0AA0

6ES7954-8LE02-0AA0

6ES7954-8LF02-0AA0

6ES7954-8LL02-0AA0

6ES7954-8LP02-0AA0

6ES7954-8LT02-0AA0

6ES5710-8MA11

6ES5710-8MA21

6ES5710-8MA31

6ES5710-8MA41

6ES7590-5AA00-0AA0

6ES7193-6AR00-0AA0

6ES7193-6AF00-0AA0

6ES7193-6AP00-0AA0

6ES7193-6AP20-0AA0

6ES7193-6AP40-0AA0

6ES7193-6LF30-0AW0

6ES7193-6LR10-0AA0

6ES7193-6LR10-0AG0

6ES7193-6LA10-0AA0

6ES7193-6LA10-0AG0

Article No.

IE FC RJ45 plugs

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 90

90° cable outlet

1 unit

10 units

50 units

6GK1901-1BB20-2AA0

6GK1901-1BB20-2AB0

6GK1901-1BB20-2AE0

IE FC RJ45 Plug 180

180° cable outlet

1 unit

10 units

50 units

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

IE FC TP Standard Cable GP 2x2

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC TP Trailing Cable 2 x 2 (Type C)

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-3AH10

IE FC TP Marine Cable 2 x 2 (Type B)

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-4AH10

IE FC stripping tool

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Manuals for ET 200SP distributed I/O system

ET 200SP library:
ET 200SP Manual Collection, comprising system manual, product information, and device manuals

Manuals can be downloaded from the Internet as PDF files:

<http://www.siemens.com/simatic-docu>

Ordering data	Article No.	Ordering data	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0	STEP 7 Safety Advanced V13 SP1 Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1 Floating license for 1 user Floating license for 1 user, license key download without software or documentation ¹⁾ Email address required for delivery	6ES7833-1FA13-0YA5 6ES7833-1FA13-0YH5
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2	Spare parts Power supply connector Spare part; for connecting the 24 V DC supply voltage • With push-in terminals; 10 units	6ES7193-4JB00-0AA0
STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5	Cover for bus adapter interface 5 units Server module	6ES7591-3AA00-0AA0 6ES7193-6PA00-0AA0

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Distributed controllers

Based on ET 200SP

Fail-safe CPUs

CPU 1512SP F-1 PN

Overview



- CPU 1512SP F-1 PN for SIMATIC ET 200SP based on S7-1500 CPU 1513F-1 PN
- For applications with medium requirements in terms of program scope and processing speed, for distributed configurations via PROFINET IO or PROFIBUS DP.
- Increase in availability of systems and machines
- Supports PROFIsafe in centralized and distributed configurations

- PROFINET IO controller for up to 128 IO devices
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or third-party PROFINET I/O controller
- PROFINET Shared I-Device for 4 controllers
- PROFINET IO IRT interface with integrated 3-port switch
- Isochronous mode on PROFINET
- With multiple communication options: PG/OP communication, PROFINET IO, open IE communication (TCP, ISO-on-TCP and UDP), Web server and S7 communication (with loadable FBs)
- Optional PROFIBUS master for 125 PROFIBUS DP slaves (with CM DP module 6ES7545-5DA00-0AB0)
- Configuration control (option handling)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders

Note

SIMATIC Memory Card required for operation of the CPU.

The bus adapter is not included in the scope of supply and must be ordered separately.

Technical specifications

Article number	6ES7512-1SK01-0AB0 CPU 1512SP F-1 PN, 300KB PROG./1MB DATA
General information	
Product type designation	CPU 1512SP F-1 PN
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Supply voltage	
Type of supply voltage	24 V DC
Power loss	
Power loss, typ.	5.6 W
Memory	
Work memory	
• integrated (for program)	300 kbyte
• integrated (for data)	1 Mbyte
Load memory	
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte
CPU processing times	
for bit operations, typ.	48 ns
for word operations, typ.	58 ns
for fixed point arithmetic, typ.	77 ns
for floating point arithmetic, typ.	307 ns
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048

Article number	6ES7512-1SK01-0AB0 CPU 1512SP F-1 PN, 300KB PROG./1MB DATA
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image
Address space per module	
• Address space per module, max.	32 byte; For input and output data respectively
Address space per station	
• Address space per station, max.	1 280 byte; for central inputs and outputs; depending on configuration
Time of day	
Clock	
• Type	Hardware clock
1st interface	
Interface types	
• Number of ports	3; 1. integr. + 2. via BusAdapter
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
• Bus adapter (PROFINET)	Yes; Applicable BusAdapters: BA 2x RJ45, BA 2x FC

Technical specifications (continued)

Article number	6ES7512-1SK01-0AB0
	CPU 1512SP F-1 PN, 300KB PROG./1MB DATA
Functionality	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	Yes
2nd interface	
Interface types	
• Number of ports	1
• RS 485	Yes; Via CM DP module
Functionality	
• SIMATIC communication	Yes
• PROFIBUS DP master	Yes
• PROFIBUS DP slave	Yes
Protocols	
Number of connections	
• Number of connections, max.	88
PROFINET IO Controller	
Services	
- Number of connectable IO Devices, max.	128; In total, up to 253 distributed I/O devices can be connected via PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	128
PROFIBUS DP master	
Services	
- Number of DP slaves	125
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; Only with PROFINET; with minimum OB 6x cycle of 625 µs
Supported technology objects	
Motion Control	Yes
• Speed-controlled axis	
- Number of speed-controlled axes, max.	6; Max. number of speed-controlled axes (requirement: there must be no other motion technology objects created)
• Positioning axis	
- Number of positioning axes, max.	6; Max. number of positioning axes (requirement: there must be no other motion technology objects created)
• Synchronized axes (relative gear synchronization)	
- Number of axes, max.	3; Max. number of synchronous axes (requirement: there must be no other motion technology objects created)
• External encoders	
- Number of external encoders, max.	6; Max. number of external encoders (requirement: there must be no other motion technology objects created)

Article number	6ES7512-1SK01-0AB0
	CPU 1512SP F-1 PN, 300KB PROG./1MB DATA
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
Configuration	
Programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- GRAPH	Yes
Know-how protection	
• User program protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
Dimensions	
Width	100 mm
Height	117 mm
Depth	75 mm
Weights	
Weight, approx.	310 g

Distributed controllers

Based on ET 200SP

Fail-safe CPUs

CPU 1512SP F-1 PN

Ordering data

CPU 1512SP F-1 PN

Work memory 300 KB for program, 1 MB for data, PROFINET IO IRT interface, SIMATIC Memory Card required

Accessories

CM DP for ET 200SP CPU

PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbit/s

SIMATIC Memory Card

4 MB

12 MB

24 MB

256 MB

2 GB

32 GB

DIN rail 35 mm

- Length: 483 mm for 19" cabinets
- Length: 530 mm for 600 mm cabinets
- Length: 830 mm for 900 mm cabinets
- Length: 2 m

PE connection element for DIN rail 2000 mm

BusAdapter BA 2xRJ45

BusAdapter BA 2xFC for increased vibration and EMC loads

BusAdapter BA 2xSCRJ

BusAdapter BA SCRJ/RJ45

BusAdapter BA SCRJ/FC

Reference identification label

10 sheets of 16 labels

Labeling strips

500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer

500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer

1000 labeling strips DIN A4, light gray, card, for inscription with laser printer

1000 labeling strips DIN A4, yellow, card, for inscription with laser printer

Article No.

6ES7512-1SK01-0AB0

6ES7545-5DA00-0AB0

6ES7954-8LC02-0AA0

6ES7954-8LE02-0AA0

6ES7954-8LF02-0AA0

6ES7954-8LL02-0AA0

6ES7954-8LP02-0AA0

6ES7954-8LT02-0AA0

6ES5710-8MA11

6ES5710-8MA21

6ES5710-8MA31

6ES5710-8MA41

6ES7590-5AA00-0AA0

6ES7193-6AR00-0AA0

6ES7193-6AF00-0AA0

6ES7193-6AP00-0AA0

6ES7193-6AP20-0AA0

6ES7193-6AP40-0AA0

6ES7193-6LF30-0AW0

6ES7193-6LR10-0AA0

6ES7193-6LR10-0AG0

6ES7193-6LA10-0AA0

6ES7193-6LA10-0AG0

Article No.

IE FC RJ45 plugs

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables

IE FC RJ45 Plug 90

90° cable outlet

1 unit

10 units

50 units

6GK1901-1BB20-2AA0

6GK1901-1BB20-2AB0

6GK1901-1BB20-2AE0

IE FC RJ45 Plug 180

180° cable outlet

1 unit

10 units

50 units

6GK1901-1BB10-2AA0

6GK1901-1BB10-2AB0

6GK1901-1BB10-2AE0

IE FC TP standard cable GP 2x2

6XV1840-2AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Trailing Cable 2 x 2 (Type C)

6XV1840-3AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC TP Marine Cable 2 x 2 (Type B)

6XV1840-4AH10

4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

IE FC stripping tool

6GK1901-1GA00

Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables

Manuals for ET 200SP distributed I/O system

ET 200SP library:
ET 200SP Manual Collection, comprising system manual, product information, and device manuals

Manuals can be downloaded from the Internet as PDF files:

<http://www.siemens.com/simatic-docu>

Ordering data	Article No.	Ordering data	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0	STEP 7 Safety Advanced V13 SP1 Task: Engineering tool for configuring failsafe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13 SP1 Floating license for 1 user Floating license for 1 user, license key download without software or documentation ¹⁾ Email address required for delivery	6ES7833-1FA13-0YA5 6ES7833-1FA13-0YH5
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2	Spare parts Power supply connector Spare part; for connecting the 24 V DC supply voltage • With push-in terminals; 10 units	6ES7193-4JB00-0AA0
STEP 7 Professional V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64-bit), Windows 7 Enterprise SP1 (64-bit), Windows 7 Ultimate SP1 (64-bit), Windows 8.1 (64-bit), Windows 8.1 Professional (64-bit), Windows 8.1 Enterprise (64-bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Available in: German, English, Chinese, Italian, French, Spanish STEP 7 Professional V13 SP1, floating license STEP 7 Professional V13 SP1, floating license, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-1AA03-0YA5 6ES7822-1AE03-0YA5	Cover for bus adapter interface 5 units Server module	6ES7591-3AA00-0AA0 6ES7193-6PA00-0AA0

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Distributed controllers

Notes

7

Software controllers



8/2

SIMATIC S7-1500 Software Controller

8/2

Standard CPUs

8/2

CPU 1507S

8/6

Open Development Kits

8/6

ODK 1500S

8/7

Add-on applications

8/7

ODK 1500S SQL driver

8/7

ODK 1500S DataAccess driver

8/8

ODK 1500S FileServer

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

Software controllers

SIMATIC S7-1500 Software Controller Standard CPUs

CPU 1507S

Overview



- Software controller for implementing the functions of a SIMATIC S7-1500 Controller on a SIMATIC IPC
- Optimized for PC-based control tasks with the IPC427 Microbox PC and the IPC477D Panel PC.
- Can also be used on IPC627D and IPC827D Box PCs, IPC677D Panel PC, and IPC647D and IPC847D Rack PCs.

Technical specifications

Article number	6ES7672-7AC00-0YA0
	SIMATIC SOFTWARE CONTROLLER CPU 1507S
General information	
Product type designation	CPU 1507S
Software version	V1.8
Engineering with	
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1 Update 4
Memory	
Work memory	
• integrated (for program)	5 Mbyte
• integrated (for data)	20 Mbyte
• Integrated (for ODK application)	19 Mbyte
Load memory	
• integrated (on PC mass storage)	300 Mbyte
Backup	
• with UPS	Yes; all memory areas declared retentive
• with non-volatile memory	Yes
CPU processing times	
for bit operations, typ.	1 ns; on SIMATIC IPC427D, Intel Core i7 processor, 1.7 GHz
for word operations, typ.	2 ns; on SIMATIC IPC427D, Intel Core i7 processor, 1.7 GHz
for fixed point arithmetic, typ.	2 ns; on SIMATIC IPC427D, Intel Core i7 processor, 1.7 GHz
for floating point arithmetic, typ.	2 ns; on SIMATIC IPC427D, Intel Core i7 processor, 1.7 GHz
CPU-blocks	
Number of blocks (total)	6 000
DB	
• Number, max.	6 000; Number range: 1 to 65535
• Size, max.	16 Mbyte
FB	
• Number, max.	5 998; Number range: 1 to 65535
• Size, max.	512 kbyte
FC	
• Number, max.	5 999; Number range: 1 to 65535
• Size, max.	512 kbyte

Article number	6ES7672-7AC00-0YA0
	SIMATIC SOFTWARE CONTROLLER CPU 1507S
OB	
• Size, max.	1 048 kbyte
• Number of free cycle OBs	100
• Number of time alarm OBs	20
• Number of delay alarm OBs	20
• Number of cyclic interrupt OBs	20
• Number of process alarm OBs	50
• Number of DPV1 alarm OBs	3
• Number of isochronous mode OBs	0
• Number of technology synchronous alarm OBs	2
• Number of startup OBs	100
• Number of asynchronous error OBs	4
• Number of synchronous error OBs	2
• Number of diagnostic alarm OBs	1
Nesting depth	
• per priority class	24
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Number, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte
• Outputs	32 kbyte

Technical specifications (continued)

Article number	6ES7672-7AC00-0YA0	Article number	6ES7672-7AC00-0YA0
	SIMATIC SOFTWARE CONTROLLER CPU 1507S		SIMATIC SOFTWARE CONTROLLER CPU 1507S
Time of day		PROFINET IO Device Services	
Clock		- Isochronous mode	No
• Type	Software clock, synchronizable, no battery backup	- IRT	No
Interfaces		- MRP	No
Number of interfaces	3	- Prioritized startup	Yes; If you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
1. Interface		- Shared device	Yes
Interface type	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T	- Number of IO Controllers with shared device, max.	2
Interface types		2. Interface	
• Number of ports	1	Interface type	PROFIBUS with CP 5622, CP 5622 onboard
• RJ 45 (Ethernet)	Yes	Interface types	
- Transmission rate, max.	100 Mbit/s	• RS 485	Yes
- Industrial Ethernet status LED	Yes	Functionality	
Functionality		• Number of connections via this interface	44
• Number of connections via this interface	128	• SIMATIC communication	Yes; no PG/STEP 7 connection possible
• PROFINET IO Controller	Yes	• PROFIBUS DP master	Yes
• PROFINET IO Device	Yes	• PROFIBUS DP slave	No
• SIMATIC communication	Yes	DP master	
• Open IE communication	Yes	Services	
• Web server	Yes	- Equidistance	No
PROFINET IO Controller Services		- Isochronous mode	No
- Isochronous mode	No	- Number of connectable DP slaves, max.	64
- IRT	No	3. Interface	
- MRP	No	Interface type	PROFIBUS with CP 5623
- Prioritized startup	Yes; Max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)	Functionality	
- Number of connectable IO Devices, max.	128	• Number of connections via this interface	44
- Number of connectable IO Devices for RT, max.	128	• SIMATIC communication	Yes; no PG/STEP 7 connection possible
- of which in line, max.	128	DP master	
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	Services	
- IO Devices changing during operation (partner ports), supported	Yes	- Equidistance	No
- Number of IO Devices per tool, max.	8	- Isochronous mode	No
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	- Number of connectable DP slaves, max.	125
Update time for RT		Protocols	
- for send cycle of 1 ms	1 ms to 512 ms	Number of connections	
		• Number of connections, max.	128
		SIMATIC communication	
		• PG/OP communication	Yes
		• S7 routing	Yes
		• S7 communication, as server	Yes
		• S7 communication, as client	Yes
		• User data per job, max.	64 kbyte; BSEND/BRCV: 64 KB; PUT/GET: 960 bytes

Software controllers

SIMATIC S7-1500 Software Controller Standard CPUs

CPU 1507S

Technical specifications (continued)

Article number	6ES7672-7AC00-0YA0	Article number	6ES7672-7AC00-0YA0
	SIMATIC SOFTWARE CONTROLLER CPU 1507S		SIMATIC SOFTWARE CONTROLLER CPU 1507S
Open IE communication		Hardware requirements	
• TCP/IP	Yes	Hardware required	SIMATIC IPC4x7D, IPC6x7D, IPC8x7D
- Data length, max.	64 kbyte	free hard disk memory for installation, min.	100 Mbyte
• ISO-on-TCP (RFC1006)	Yes	free hard disk memory at runtime, min.	400 Mbyte
- Data length, max.	64 kbyte	Work memory, min.	4 Gbyte
• UDP	Yes		
- Data length, max.	1 472 byte	Processor	
• DHCP	No	• Single-core processor	No
• SNMP	Yes	• Single-core processor with hyper- threading	No
• DCP	Yes	• Multi-core processor	Yes
• LLDP	Yes	• Multi-core processor with hyper- threading	Yes
Web server		• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
• HTTP	Yes; Standard and user-defined pages		
• HTTPS	Yes; Standard and user-defined pages	Operating systems	
Supported technology objects		pre-installed operating system	
Motion Control	Yes	• Windows XP	No
• Speed-controlled axis		• Windows 7	Yes; Professional, Enterprise, Ultimate (32 bits and 64 bits)
- Number of speed-controlled axes, max.	60; configurable, up to 60 axes in total (speed-controlled, positioning axis, external encoders) are supported	• Windows Embedded Standard 7	Yes; With the delivery image of the SIMATIC PC
• Positioning axis		• Windows 8	No
- Number of positioning axes, max.	60; configurable, up to 60 axes in total (speed-controlled, positioning axis, external encoders) are supported	• Windows Embedded Standard 8	No
• Synchronized axes (relative gear synchronization)		Configuration	
- Number of axes, max.	30; Max. number of synchronous axes (requirement: there must be no other motion technology objects created)	Programming	
• External encoders		Programming language	
- Number of external encoders, max.	60; configurable, up to 60 axes in total (speed-controlled, positioning axis, external encoders) are supported	- LAD	Yes
Controller		- FBD	Yes
• PID_Compact	Yes; Universal PID controller with integrated optimization	- STL	Yes
• PID_3Step	Yes; PID controller with integrated optimization for valves	- SCL	Yes
Counting and measuring		- CFC	No
• High-speed counter	Yes	- GRAPH	Yes
		Know-how protection	
		• User program protection	Yes
		• Copy protection	Yes
		• Block protection	Yes
		Access protection	
		• Protection level: Write protection	Yes
		• Protection level: Read/write protection	Yes
		• Protection level: Complete protection	Yes
		Open Development interfaces	
		• Size of ODK SO file, max.	1 Mbyte
		Dimensions	
		Width	18.2 cm; Packaging
		Height	26.5 cm
		Depth	3 cm
		Weights	
		Weight, approx.	200 g

Ordering data	Article No.	Article No.
<p>SIMATIC S7-1500 Software Controller CPU 1507S</p> <p>For implementing the function of an S7-1500 Controller on SIMATIC IPC</p> <p>Target system: Optimized for IPC427 Microbox PC IPC477D Panel PC; can also be used with IPC677D Panel PC IPC627D Box PC IPC827D Box PC IPC647D Rack PC IPC847D Rack PC</p> <p>Requirement: Windows 7</p> <p>Available in: German, English, Chinese, Italian, French, Spanish</p> <ul style="list-style-type: none"> • Single license for one installation; software and documentation on DVD, license key on USB flash drive • Single license for one installation; software download including license key ¹⁾ 	<p>6ES7672-7AC00-0YA0</p> <p>6ES7672-7AC00-0YG0</p>	<p>Accessories</p> <p>SIMATIC IPC</p> <ul style="list-style-type: none"> • SIMATIC IPC427D Microbox PC 6AG4140-.....-.... • SIMATIC IPC477D Panel PC 6AV7240-.....-.... • SIMATIC IPC677D Panel PC 6AV7260-.....-.... • SIMATIC IPC627D Box PC 6AG4131-2.....-.... • SIMATIC IPC827D Box PC 6AG4132-2.....-.... • SIMATIC IPC647D Rack PC 6AG4112-2.....-.... • SIMATIC IPC847D Rack PC 6AG4114-2.....-.... <p>For further information, see Catalog ST 80 / ST PC</p> <p>CP 5622 communications processor 6GK1562-2AA00</p> <p>PCI Express x1 card (32 bit) for connection of a programming device or PC to PROFIBUS</p> <p>CP 5623 communications processor 6GK1562-3AA00</p> <p>PCI Express x1 card (32 bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP slave, incl. PG and FDL protocols; single license for 1 installation, runtime software, software and electronic manual on CD-ROM, Class A, for operating system support see SIMATIC NET software; German/English</p>

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

Software controllers

SIMATIC S7-1500 Software Controller Open Development Kits

ODK 1500S

Overview

- For developing dynamically loadable function libraries for S7-1500 Software Controllers:
 - Implementation of function libraries by means of high-level programming with C/C++.
 - Execution of the library functions under Windows or in the real-time context of the software controller.
 - Calling the functions directly from the PLC program.
- Development environment for real-time library functions included in the scope of delivery.
- Development of Windows library functions with MS Visual Studio.
- Automatic creation of function blocks for calling the library functions.
- Simple integration of the function blocks into STEP 7 by importing.
- Simple use of the library functions in the controller without specific high-level language know-how.

Technical specifications

System requirements

The SIMATIC ODK 1500S can be used on PC platforms with the following requirements:

- Windows 7, Windows 8 operating systems
- Min. 150 MB hard drive memory
- Min. 4 GB work memory
- Mouse, keyboard, screen

Ordering data

SIMATIC ODK 1500S

Open Development Kit for support in developing Windows and real-time library functions for S7-1500 software controllers

Article No.

6ES7 806-2CD00-0YA0

Overview

Note

This catalog entry contains non-binding information on a supplementary application software for the SIMATIC S7-1500 Software Controller and the SIMATIC ET 200SP Open Controller.

Overview

The ODK 1500S SQL driver enables direct access to an SQL database from the PLC program. In this case the database can be installed on the same computer as the S7- 1500 Software Controller or in the network.

- Direct data exchange with SQL-based database by means of SQL commands from the PCL program
- Connection to SQL-based database on the same PC or to database servers in the network

Application

Generally the ODK1500S SQL driver can be used in all application scenarios in which an SQL database is required. Typical fields of application are warehouse management, message memory management or recipe management

Technical specifications

Supported SQL commands	<ul style="list-style-type: none"> • SELECT • INSERT • UPDATE • DELETE
Supported data types	All standard SQL data types
System requirements	SIMATIC IPC with S7-1500 Software Controller or SIMATIC ET 200SP Open Controller STEP 7 in the TIA Portal V13 SP1
<ul style="list-style-type: none"> • Runtime PC • Engineering 	

More information

If you are interested, please contact your sales representative:
<http://www.automation.siemens.com/partner/>

You can find Service and Support at:
<https://support.industry.siemens.com/cs/ww/en/view/109479140>

Overview

Note

This catalog entry contains non-binding information on a supplementary application software for the SIMATIC S7-1500 Software Controller and the SIMATIC ET 200SP Open Controller.

Overview

With the function blocks of the ODK 1500S XML Data Access driver it is possible to access specific information in XML files in the Windows file system from the PLC program.

XPath expressions are used for accessing XML file elements since they provide the highest possible flexibility for processing XML data. This means that extremely large XML files can be edited, too.

The driver offers the following functionality:

- XML data can be read into and processed in the PLC.
- XML data can be modified and written back to the XML file.

Application

- Reading in of parameters or recipes that have been made available as XML files by the control system.
- Return of production data which need to be made available in the form of an XML file.

Technical specifications

System requirements	SIMATIC IPC with S7-1500 software controller or SIMATIC ET 200SP open controller STEP 7 in the TIA Portal V13 SP1
<ul style="list-style-type: none"> • Runtime PC • Engineering 	

More information

If you are interested, please contact your sales representative:
<http://www.automation.siemens.com/partner/>

You can find Service and Support at:
<https://support.industry.siemens.com/cs/ww/en/view/109479496>

Software controllers

SIMATIC S7-1500 Software Controller

Add-on applications

ODK 1500S FileServer

Overview

Note

This catalog entry contains non-binding information on a supplementary application software for the SIMATIC S7-1500 software controller and the SIMATIC ET 200SP open controller.

Overview

The ODK 1500S FileServer enhances the file functions of the SIMATIC S7-1500 software controller with an option enabling direct access to the Windows file system of the PC from the STEP 7 program.

The driver enables reading and writing of data blocks in/from files in structured form. Various file formats are supported.

There are also FBs available for handling (e.g. renaming, deleting) files.

Application

Driver blocks enable file operations to be directly integrated in automation solutions, e.g.:

- Writing of measured values to CSV
- Writing of quality data to CSV
- Reading of parameters from INI file
- Reading of recipes from XML file

Technical specifications

Supported file formats	<ul style="list-style-type: none"> • CSV • ASCII • Windows-INI • XML¹⁾ • Binary
System requirements	SIMATIC IPC with S7-1500 software controller or SIMATIC ET 200SP open controller STEP 7 in the TIA Portal V13 SP1
<ul style="list-style-type: none"> • Runtime PC • Engineering 	

¹⁾ The XML format is predefined. A DB can be saved and read in as an XML file. It is not possible to parse any particular XML file.

More information

If you are interested, please contact your sales representative:
<http://www.automation.siemens.com/partner/>

You can find Service and Support at:
<https://support.industry.siemens.com/cs/ww/en/view/109479497>

I/O systems

**9/2 ET 200 systems for the control cabinet**

9/2	<u>ET 200SP – interface modules</u>
9/2	<u>SIPLUS interface modules</u>
9/3	<u>ET 200SP – I/O modules</u>
9/3	Digital output modules
9/13	SIPLUS digital output modules
9/15	Analog input modules
9/27	Analog output modules
9/32	SIPLUS analog input modules
9/35	SIPLUS analog output modules
9/37	<u>ET 200SP – I/O modules – Technology modules</u>
9/37	Pulse output module TM Pulse 2x24V
9/40	<u>ET 200SP – I/O modules – Communication</u>
9/40	SIPLUS CM DP for ET 200SP CPU
9/41	<u>ET 200SP – I/O modules – Fail-safe I/O modules</u>
9/41	SIPLUS digital F input modules
9/43	SIPLUS digital F output modules
9/45	SIPLUS fail-safe customized modules
9/46	<u>ET 200SP – I/O modules</u>
9/46	ET 200SP motor starters
9/52	<u>ET 200SP – BaseUnits</u>
9/55	<u>ET 200SP – SIPLUS BaseUnits</u>
9/58	<u>ET 200SP – BusAdapters</u>
9/61	<u>ET 200SP – SIPLUS BusAdapter</u>
9/63	<u>ET 200SP – Accessories</u>
9/64	<u>SIMATIC ET 200S</u>
9/65	<u>ET 200M – Interface modules</u>
9/65	IM 153-1/153-2
9/68	SIPLUS IM 153-1/153-2

9/70 ET 200 systems without control cabinet

9/70	<u>ET 200pro</u>
9/70	ET 200pro FC-2 Frequency Converter
9/73	<u>SIMATIC ET 200AL – I/O modules</u>
9/73	Digital I/O modules
9/80	<u>SIMATIC ET 200AL – Accessories</u>
9/80	Cables and connectors

9/92 Heating control systems

9/92	<u>SIPLUS HCS3200 heating control system</u>
9/94	<u>SIPLUS HCS4200 heating control system</u>
9/94	Rack
9/95	Central Interface Module (CIM)
9/97	Power Output Module (POM)
9/99	<u>SIPLUS HCS4300 heating control system</u>
9/99	Central Interface Module (CIM)
9/101	Power Output Module (POM)

9/104 PROFINET components

9/104	PROFINET Driver
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Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

I/O systems

ET 200 systems for the control cabinet
ET 200SP – interface modules

SIPLUS interface modules

Overview



- Interface module for linking the I/O modules to a higher level controller with PROFINET or PROFIBUS

- Server module included in the scope of supply
- Station expansion with IP67 I/O system ET 200AL via ET-connection to BU-Send / BA-Send
- PROFINET bus connection
 - 2 ports for line configuration
 - PN connection selected via BusAdapter (ST, HF)
 - Two integrated RJ45 sockets (BA)
- PROFIBUS bus connection
 - 9-pole D-sub socket
 - PROFIBUS connector included in scope of delivery
 - Hot swapping (module replacement during operation)
 - Startup and operation with gaps
 - Dynamic re-parameterization in RUN mode
 - Configuration control (option handling)
 - Pluggable 24 V DC supply connector
 - Electronically readable rating plate (I&M data)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1155-6AA00-7BN0	6AG1155-6AU00-4CN0	6AG1155-6BA00-7CN0
Based on	6ES7155-6AA00-0BN0	6ES7155-6AU00-0CN0	6ES7155-6BA00-0CN0
	SIPLUS ET 200SP IM155-6PN ST	SIPLUS ET 200SP IM155-6PN HF	SIPLUS ET 200SP IM155-6DP HF
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C	0 °C	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax	60 °C	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C	0 °C	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	50 °C; = Tmax	50 °C	50 °C; = Tmax
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
Relative humidity			
- With condensation, tested in acc. with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Ordering data

SIPLUS interface module Standard

(Extended temperature range and medial exposure)

- IM 155-6PN ST, with server module and installed BusAdapter BA 2xRJ45

6AG1155-6AA00-7BN0

SIPLUS interface module High Feature

(Extended temperature range and medial exposure)

- IM 155-6DP HF, with server module, with multi-hot-swap, incl. PROFIBUS connector

6AG1155-6BA00-7CN0

- (medial exposure)
- IM 155-6PN HF, incl. server module, without BusAdapter

6AG1155-6AU00-4CN0

Accessories

see catalog ST 70, SIMATIC ET 200SP, IM 155-6 interface module

Overview



- 4, 8 and 16-channel digital output (DQ) modules
- Apart from the standard delivery form in an individual package, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time of unpacking individual modules.

For different requirements, the digital output modules offer:

- Function classes Basic, Standard, High Feature and High-Speed as well as fail-safe DQ (see "Fail-safe I/O modules")
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Option of connecting actuators with rated load voltages of up to 120 V DC or 230 V AC and load currents of up to 5 A (depending on module)
- Relay modules
 - NO contact or changeover contact
 - For load or signal voltages (coupling relay)
 - With manual operation (as simulation module for inputs and outputs, jog mode for commissioning or emergency operation on failure of controller)

- PNP (source output) and NPN (sink output) versions
- Clear labeling on front of module
- LEDs for diagnostics, status, power supply and faults
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - MSO operating mode (simultaneous reading of input data from as many as three other controllers)
 - Pulse width modulation mode (output value as pulse-pause ratio of between 0.0% and 100.0% for controlling the output current)
 - Oversampling (n-fold equidistant output of digital values within a PN cycle for the precise time control of an output or a sequence of output values)
 - Isochronous mode (simultaneous equidistant output of all output channels)
 - Output of substitute value in the event of interruptions to communication (0, 1 or last value retained)
 - Re-parameterization during operation
 - Firmware update
 - Valve control (output signal does not switch automatically after a set pickup time to a current-saving PWM output)
 - Diagnosis of wire break and short-circuit (on channel or module basis)
 - Value status (optional binary validity information of the output signal in the process image)
 - Support of the PROFINET profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shielding terminal

A quick and clear comparison of the functions of the different DQ modules is offered by the TIA Selection Tool.

Overview of digital output modules

Digital output	PU	Article No.	CC code	BU type
DQ 16 x 24 V DC/0.5 A ST	1	6ES7132-6BH00-0BA0	CC00	A0
DQ 16 x 24 V DC/0.5 A ST	10	6ES7132-6BH00-2BA0	CC00	A0
DQ 8 x 24 V DC/0.5 A SNK BA	1	6ES7132-6BF60-0AA0	CC01	A0
DQ 8 x 24 V DC/0.5 A BA	1	6ES7132-6BF00-0AA0	CC02	A0
DQ 8 x 24 V DC/0.5 A BA	10	6ES7132-6BF00-2AA0	CC02	A0
DQ 8 x 24 V DC/0.5 A ST	1	6ES7132-6BF00-0BA0	CC02	A0
DQ 8 x 24 V DC/0.5 A ST	10	6ES7132-6BF00-2BA0	CC02	A0
DQ 8 x 24 V DC/0.5 A HF	1	6ES7132-6BF00-0CA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	1	6ES7132-6BD20-0BA0	CC02	A0
DQ 4 x 24 V DC/2 A ST	10	6ES7132-6BD20-2BA0	CC02	A0
DQ 4 x 24 V DC/2 A HF	1	6ES7132-6BD20-0CA0	CC02	A0

I/O systems

ET 200 systems for the control cabinet

ET 200SP – I/O modules

Digital output modules

Overview (continued)

Digital output	PU	Article No.	CC code	BU type
DQ 4 x 24 V DC/2 A HS With three operating modes: • Fast isochronous DQ with valve control • Pulse width modulation • Oversampling	1	6ES7132-6BD20-0DA0	CC02	A0
DQ 4 x 24...230 V AC/2 A ST	1	6ES7132-6FD00-0BB1	CC41	B0, B1
RQ 4 x 24 V UC/2 A CO ST	1	6ES7132-6GD50-0BA0	--	A0
RQ 4 x 120 V DC-230 V AC/5 A NO ST	1	6ES7132-6HD00-0BB1	--	B0, B1
RQ 4 x 120 V DC-230 V AC/5 A NO ST	10	6ES7132-6HD00-0BB1	--	B0, B1
RQ MA 4 x 120 V DC...230 V AC/5A NO ST	1	6ES7132-6MD00-0BB1	--	B0, B1

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--
BU type B0 • Forwarding of load group (dark) • 12 process terminals • With 4 AUX terminals	1	6ES7193-6BP20-0BB0	CC41	CC81 to CC83
BU type B0 • Forwarding of load group (dark) • 12 process terminals • With 4 AUX terminals	10	6ES7193-6BP20-0BB0	CC41	CC81 to CC83
BU type B1 • Forwarding of load group (dark) • 12 process terminals • 2 x 2 (1L, 2L, 1N, 2N) direct infeed module • Without AUX terminals	1	6ES7193-6BP20-0BB1	CC41	--

Technical specifications

Article number	6ES7132-6BH0-0BA0	6ES7132-6BF60-0AA0	6ES7132-6BF00-0AA0	6ES7132-6BF00-0BA0	6ES7132-6BF00-0CA0
	ET 200SP, DQ 16X24VDC/0.5A ST	ET 200SP, DQ 8X24VDC/0.5A SINK BASIC	ET 200SP, DQ 8X24VDC/0.5A BASIC, PU 1	ET 200SP, DQ 8X24VDC/0.5A ST	ET 200SP, DQ 8X24VDC/0.5A HF
General information					
Product type designation	ET 200SP, DQ 16x24VDC/0.5A ST, PU 1	DQ 8x24VDC/0.5A SNK BA	ET 200SP, DQ 8x24VDC/0.5A BA, PU 1	ET 200SP, DQ 8x24VDC/0.5A ST, PU 1	DQ 8x24VDC/0.5A HF
Product function					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with					
• STEP 7 TIA Portal configurable/integrated as of version	V11 SP2 / V13	V13 / V13	V13 SP1 / -	V11 SP2 / V13	V13 / V13
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PCS 7 configurable/integrated as of version	V8.1 SP1			V8.1 SP1	V8.1 SP1
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3
Operating mode					
• DQ	Yes	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	No	No	No
• PWM	No	No	No	No	No
• Oversampling	No	No	No	No	No
• MSO	No	No	No	No	Yes
Supply voltage					
Type of supply voltage	DC	24 V DC	DC	DC	DC
Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes		Yes	Yes	Yes
Digital outputs					
Number of digital outputs	16	8	8	8	8
Current-sinking	No	Yes	No	No	No
Current-sourcing	Yes	No	Yes	Yes	Yes
Digital outputs, parameterizable	Yes	Yes	Yes	Yes	Yes
Short-circuit protection	Yes	Yes	Yes; per channel, electronic		
Open-circuit detection		No			
Limitation of inductive shutdown voltage to	Typ. L+ (-50 V)	Typ. 47 V	Typ. L+ (-53 V)		Typ. L+ (-50 V)
Controlling a digital input	Yes	Yes	Yes		Yes
Switching capacity of the outputs					
• with resistive load, max.	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
• on lamp load, max.	5 W	5 W	5 W	5 W	5 W
Load resistance range					
• lower limit	48 Ω	48 Ω	48 Ω	48 Ω	48 Ω
• upper limit	12 kΩ	3 400 Ω	12 kΩ	12 kΩ	12 kΩ
Output current					
• for signal "1" rated value	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
• for signal "0" residual current, max.	0.1 mA	5 μA	1 mA	0.1 mA	0.1 mA
Output delay with resistive load					
• "0" to "1", typ.	50 μs				50 μs
• "0" to "1", max.		300 μs	100 μs; at rated load	50 μs; at rated load	
• "1" to "0", typ.	100 μs				100 μs
• "1" to "0", max.		600 μs	150 μs; at rated load	100 μs; at rated load	
Parallel switching of two outputs					
• for uprating	No	No	No		No
• for redundant control of a load	Yes	Yes	Yes; per module	Yes	Yes

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Digital output modules

Technical specifications (continued)

Article number	6ES7132-6BH00-0BA0 ET 200SP, DQ 16X24VDC/0.5A ST	6ES7132-6BF60-0AA0 ET 200SP, DQ 8X24VDC/0.5A SINK BASIC	6ES7132-6BF00-0AA0 ET 200SP, DQ 8X24VDC/0.5A BASIC, PU 1	6ES7132-6BF00-0BA0 ET 200SP, DQ 8X24VDC/0.5A ST	6ES7132-6BF00-0CA0 ET 200SP, DQ 8X24VDC/0.5A HF
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
• with inductive load, max.	2 Hz	0.5 Hz	2 Hz	2 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz
Total current of the outputs					
• Current per channel, max.	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
• Current per module, max.	8 A	4 A	4 A	4 A	4 A
Total current of the outputs (per module)					
horizontal installation					
- up to 30 °C, max.	8 A				
- up to 40 °C, max.	8 A				
- up to 50 °C, max.	6 A				
- up to 60 °C, max.	4 A	4 A	4 A	4 A	4 A
vertical installation					
- up to 30 °C, max.	8 A				
- up to 40 °C, max.	6 A				
- up to 50 °C, max.	4 A		4 A		
- up to 60 °C, max.	4 A	4 A		4 A	4 A
Cable length					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	No	No	No	Yes
Execution and activation time (TCO), min.					48 µs
Bus cycle time (TDP), min.					500 µs
Interrupts/diagnostics/status information					
Diagnostics	Yes	Yes	Yes	Yes	Yes
Substitute values connectable	Yes	No	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnostic messages					
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	Yes
• Wire-break	Yes; Module-wise	No	No	Yes; Module-wise	Yes; channel by channel
• Short-circuit	Yes; Module-wise	No	No	Yes; Module-wise	Yes; channel by channel
• Group error	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No	No	No	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	15 mm
Weights					
Weight, approx.	28 g	30 g	28 g	28 g	30 g

Technical specifications (continued)

Article number	6ES7132-6BD20-0BA0 ET 200SP, DQ 4X24VDC/2A ST	6ES7132-6BD20-0CA0 ET 200SP, DQ 4X24VDC/2A HF	6ES7132-6BD20-0DA0 ET 200SP, DQ 4X24VDC/2A HIGH SPEED, PU 1	6ES7132-6FD00-0BB1 ET 200SP, DQ 4X24...230VAC/2A ST	6ES7132-6GD50-0BA0 ET 200SP, RQ 4X24VDC/2A CO ST
General information					
Product type designation	ET 200SP, DQ 4x24VDC/2A ST, PU 1	ET 200SP, DQ 4x24VDC/2A HF, PU 1	ET 200SP, DQ 4x24VDC/2A High Speed, PU 1	ET 200SP, DQ 4x24 ...230VAC/2A ST, PU 1	RQ 4x24VDC/2A CO ST
Product function					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with					
• STEP 7 TIA Portal configurable/integrated as of version	V11 SP2 / V13	V13 / V13	V13 SP1	V13 / V13	V13 / V13
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PCS 7 configurable/integrated as of version	V8.1 SP1				
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3
Operating mode					
• DQ	Yes	Yes	Yes	Yes	Yes
• DQ with energy-saving function	No	No	Yes; Valve control	No	No
• PWM	No	No	Yes	No	No
• Oversampling	No	No	Yes	No	No
• MSO	No	Yes	No	No	No
Supply voltage					
Type of supply voltage	DC	DC	DC	24V AC to 230V AC	DC
Rated value (DC)	24 V	24 V	24 V		24 V
Rated value (AC)				230 V	
Reverse polarity protection	Yes	Yes	Yes		
Digital outputs					
Type of digital output				Triac with zero point detection	Relays
Number of digital outputs	4	4	4	4	4
Current-sinking	No	No	No	No	
Current-sourcing	Yes	Yes	Yes; Push-pull output	Yes	
Digital outputs, parameterizable	Yes	Yes	Yes	No	
Short-circuit protection	Yes	Yes	Yes	No; when using BU type B1, a fuse with 10 A tripping current must be provided	No
Limitation of inductive shutdown voltage to	Typ. L+ (-50 V)	L+ -(37 to 41V)	M (-1 V)		
Controlling a digital input	Yes	Yes; Minimum current consumption 7 mA	No	Yes	
Digital output functions, parameterizable					
• PWM output			Yes		
- Number, max.			4		
- Cycle duration, parameterizable			Yes; 0 ms, 0.2 ms, 0.4 ms, 0.93 ms, 1.33 ms, 4.27 ms, 10.67 ms, 21.33 ms, 34.13 ms, 59.73 ms		
• Digital output with oversampling			Yes		
- Number, max.			4		
- Values per cycle, max.			32		
- Resolution, min.			100 µs		
Switching capacity of the outputs					
• with resistive load, max.	2 A	2 A	2 A	2 A	
• on lamp load, max.	10 W	10 W	10 W	100 W	

I/O systems

ET 200 systems for the control cabinet

ET 200SP – I/O modules

Digital output modules

Technical specifications (continued)

Article number	6ES7132-6BD20-0BA0 ET 200SP, DQ 4X24VDC/2A ST	6ES7132-6BD20-0CA0 ET 200SP, DQ 4X24VDC/2A HF	6ES7132-6BD20-0DA0 ET 200SP, DQ 4X24VDC/2A HIGH SPEED, PU 1	6ES7132-6FD00-0BB1 ET 200SP, DQ 4X24..230VAC/2A ST	6ES7132-6GD50-0BA0 ET 200SP, RQ 4X24VDC/2A CO ST
Load resistance range					
• lower limit	12 Ω	12 Ω	12 Ω		
• upper limit	3 400 Ω	3 400 Ω	3 400 Ω		
Output voltage					
• Type of output voltage				24V AC to 230V AC	
• for signal "1", min.				20.4 V	
• permissible voltage at output, min.				20.4 V	
• permissible voltage at output, max.				264 V	
Output current					
• for signal "1" rated value	2 A	2 A	2 A	2 A	
• for signal "0" residual current, max.	0.1 mA	0.1 mA	0.1 mA	460 μA	
Output delay with resistive load					
• "0" to "1", typ.	50 μs	50 μs			
• "0" to "1", max.	50 μs		1 μs	10 ms	
• "1" to "0", typ.	100 μs	100 μs			
• "1" to "0", max.	100 μs		1 μs	10 ms	
Parallel switching of two outputs					
• for logic links				No	
• for uprating	No	No	No	No	
• for redundant control of a load	Yes			Yes	
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	5 kHz	10 Hz	2 Hz
• with inductive load, max.	2 Hz	2 Hz	5 kHz	0.5 Hz	
• on lamp load, max.	10 Hz	10 Hz	5 kHz	1 Hz	
Total current of the outputs					
• Current per channel, max.	2 A	2 A	2 A	2 A	2 A
• Current per module, max.	8 A	8 A	8 A	8 A	8 A
Total current of the outputs (per module)					
horizontal installation					
- up to 30 °C, max.	8 A	8 A	8 A; DQ mode		
- up to 40 °C, max.	8 A	8 A	6.9 A; DQ mode	8 A	
- up to 50 °C, max.	6 A	6 A	4.7 A; DQ mode	6 A	
- up to 60 °C, max.	4 A	4 A	2.5 A; DQ mode	4 A	8 A
vertical installation					
- up to 30 °C, max.	8 A	8 A	7.2 A; DQ mode	8 A	
- up to 40 °C, max.	6 A	6 A	5.6 A; DQ mode	6 A	
- up to 50 °C, max.	4 A	4 A	4 A; DQ mode	4 A	
- up to 60 °C, max.	4 A	4 A	4 A; DQ mode		8 A
Relay outputs					
• Number of relay outputs					4
• Rated supply voltage of relay coil L+ (DC)					24 V
• Current consumption of relays (coil current of all relays), max.					40 mA
Switching capacity of contacts					
- with resistive load, max.					2 A
- Thermal continuous current, max.					2 A
- Switching current, min.					1 mA; 5 V DC
- Rated switching voltage (DC)					24 V
- Rated switching voltage (AC)					24 V

Technical specifications (continued)

Article number	6ES7132-6BD20-0BA0 ET 200SP, DQ 4X24VDC/2A ST	6ES7132-6BD20-0CA0 ET 200SP, DQ 4X24VDC/2A HF	6ES7132-6BD20-0DA0 ET 200SP, DQ 4X24VDC/2A HIGH SPEED, PU 1	6ES7132-6FD00-0BB1 ET 200SP, DQ 4X24..230VAC/2A ST	6ES7132-6GD50-0BA0 ET 200SP, RQ 4X24VDC/2A CO ST
Triac outputs				5	
• Size of motor starters according to NEMA, max.					
Cable length					
• shielded, max.	1 000 m	1 000 m	50 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	50 m	600 m	200 m
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	Yes	Yes; Operating modes DQ and OVS only	No	No
Bus cycle time (TDP), min.		500 µs	250 µs		
Interrupts/diagnostics/status information					
Diagnostics	Yes	Yes	Yes	No	Yes
Substitute values connectable	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	No	Yes
Diagnostic messages					
• Monitoring the supply voltage	Yes	Yes	Yes	No	Yes
• Wire-break	Yes; Module-wise	Yes; channel by channel	No	No	No
• Short-circuit	Yes; Module-wise	Yes; channel by channel	Yes; Module-wise	No	No
• Group error	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	Yes; Red LED	No	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	2 545 V DC/2 s (routine test)	707 V DC (type test)
Dimensions					
Width	15 mm	15 mm	15 mm	20 mm	15 mm
Weights					
Weight, approx.	30 g	30 g	31 g	50 g	30 g

Article number	6ES7132-6HD00-0BB1 ET 200SP, RQ NO 4X120VDC..230VAC/ 5A ST	6ES7132-6MD00-0BB1 ET 200SP,RQ NO-MA 4X120VDC..230VAC/ 5A ST	Article number	6ES7132-6HD00-0BB1 ET 200SP, RQ NO 4X120VDC..230VAC/ 5A ST	6ES7132-6MD00-0BB1 ET 200SP,RQ NO-MA 4X120VDC..230VAC/ 5A ST
General information			Operating mode		
Product type designation	ET 200SP, RQ 4x120VDC-230VAC/5A NO ST, PU 1	ET 200SP, RQ 4x120VDC-230VAC/5A NO MA ST	• DQ	Yes	Yes
Product function			• DQ with energy-saving function	No	No
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	• PWM	No	No
Engineering with			• Oversampling	No	No
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1	V13 SP1	• MSO	No	No
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	Supply voltage		
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	Type of supply voltage	DC	DC
• PROFINET as of GSD version/GSD revision	GSDML V2.3	GSDML V2.3	Rated value (DC)	24 V	24 V
			Reverse polarity protection	Yes	Yes

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Digital output modules

Technical specifications (continued)

Article number	6ES7132-6HD00-0BB1	6ES7132-6MD00-0BB1
	ET 200SP, RQ NO 4X120VDC..230VAC/ 5A ST	ET 200SP,RQ NO-MA 4X120VDC..230VAC/ 5A ST
Digital outputs		
Type of digital output	Relays	Relays
Number of digital outputs	4	4
Short-circuit protection	No	No
Switching frequency		
• with resistive load, max.	2 Hz	2 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz
• on lamp load, max.	2 Hz	2 Hz
Total current of the outputs		
• Current per channel, max.	5 A	5 A
• Current per module, max.	20 A	20 A
Total current of the outputs (per module) horizontal installation		
- up to 50 °C, max.		20 A
- up to 60 °C, max.	20 A	16 A
vertical installation		
- up to 40 °C, max.		20 A
- up to 50 °C, max.		16 A
- up to 60 °C, max.	20 A	
Relay outputs		
• Number of relay outputs	4	4
• Rated supply voltage of relay coil L+ (DC)	24 V	24 V
• Current consumption of relays (coil current of all relays), max.	40 mA	40 mA
• external protection for relay outputs	Yes, with 6A	Yes, with 6A
• Number of operating cycles, max.		7 000 000; see additional description in the manual
Switching capacity of contacts		
- with inductive load, max.		2 A; see additional description in the manual
- with resistive load, max.	5 A	5 A; see additional description in the manual
- Thermal continuous current, max.	5 A; Max. 1 385 VA, 150 W	5 A
- Switching current, min.	100 mA; 5 V DC	100 mA; 5 V DC
- Rated switching voltage (DC)	24 V DC to 120 V DC	24 V DC to 120 V DC
- Rated switching voltage (AC)	24V AC to 230V AC	24V AC to 230V AC

Article number	6ES7132-6HD00-0BB1	6ES7132-6MD00-0BB1
	ET 200SP, RQ NO 4X120VDC..230VAC/ 5A ST	ET 200SP,RQ NO-MA 4X120VDC..230VAC/ 5A ST
Cable length		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	200 m	200 m
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	No	No
Interrupts/diagnostics/status information		
Diagnostics	Yes	Yes
Substitute values connectable	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	No	No
• Short-circuit	No	No
• Group error	Yes	Yes
Diagnostics indication LED		
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Isolation		
Isolation tested with	2 500 V DC (type test)	2 500 V DC (type test)
tested with		
• between channels and backplane bus/supply voltage	2500 V DC	2500 V DC
• between backplane bus and supply voltage	707 V DC (type test)	707 V DC (type test)
Dimensions		
Width	20 mm	20 mm
Weights		
Weight, approx.	40 g	45 g

Ordering data	Article No.	Article No.
Digital output modules Delivery options: Apart from the standard delivery form in an individual package, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time of unpacking individual modules. The number of modules required is the number of modules ordered. The type of packaging is chosen by selecting the article number. Packs of 10 can therefore only be ordered in integer multiples of 10.		Relay module RQ NO 4x120 V DC-230 V AC/5 A Standard, NO contact, BU type B0, B1 • PU: 1 unit • PU: 10 units
		6ES7132-6HD00-0BB1 6ES7132-6HD00-2BB1
		Relay module RQ NO 4x120 V DC-230 V AC/5 A Standard, NO contact, with manual actuation, BU type B0, B1
		6ES7132-6MD00-0BB1
		Usable BaseUnits
		BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) • PU: 1 unit • PU: 10 units
		6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0
		BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A) • PU: 1 unit • PU: 10 units
		6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0
		BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group • PU: 1 unit • PU: 10 units
		6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0
		BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group • PU: 1 unit • PU: 10 units
		6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0
		BU20-P12+A4+0B BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group; PU: 1 unit • PU: 1 unit • PU: 10 units
		6ES7193-6BP20-0BB0 6ES7193-6BP20-2BB0
		BU20-P12+A0+4B BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group; PU: 1 unit
		6ES7193-6BP20-0BB1
		Accessories
		Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter
		6ES7193-6LF30-0AW0
Digital output module DQ 16x24 V DC/0.5 A Standard, BU type A0, color code CC00 • PU: 1 unit • PU: 10 units	6ES7132-6BH00-0BA0 6ES7132-6BH00-2BA0	
Digital output module DQ 8x24 V DC/0.5 A sink output, basic, BU type A0, color code CC01; PU: 1 unit	6ES7132-6BF60-0AA0	
Digital output module DQ 8x24 V DC/0.5 A basic, BU type A0, color code CC02 • PU: 1 unit • PU: 10 units	6ES7132-6BF00-0AA0 6ES7132-6BF00-2AA0	
Digital output module DQ 8x24 V DC/0.5 A Standard, BU type A0, color code CC02 • PU: 1 unit • PU: 10 units	6ES7132-6BF00-0BA0 6ES7132-6BF00-2BA0	
Digital output module DQ 8x24 V DC/0.5 A High Feature, BU type A0, color code CC02; PU: 1 unit	6ES7132-6BF00-0CA0	
Digital output module DQ 4x24 V DC/2 A Standard, BU type A0, color code CC02 • PU: 1 unit • PU: 10 units	6ES7132-6BD20-0BA0 6ES7132-6BD20-2BA0	
Digital output module DQ 4x24 V DC/2 A High Feature, BU type A0, color code CC02, channel-precise diagnostics, isochronous mode, shared output (MSO); PU: 1 unit	6ES7132-6BD20-0CA0	
Digital output module DQ 4x24 V DC/2 A High Feature, BU type A0, color code CC02, 3 operating modes (fast isochronous DQ with valve control, pulse width modulation, oversampling); PU: 1 unit	6ES7132-6BD20-0DA0	
Digital output module DQ 4x24 V AC...230 V AC/2 A Standard for BU type B1, color code CC41; PU: 1 unit • PU: 1 unit • PU: 10 units	6ES7132-6FD00-0BB1 6ES7132-6FD00-2BB1	
Signal relay module RQ CO 4x24 V UC/2 A Standard, changeover contact, BU type A0, color code CC00; PU: 1 unit	6ES7132-6GD50-0BA0	

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Digital output modules

Ordering data	Article No.	Ordering data	Article No.	
Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer 1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0	Color-coded labels for 15 mm wide BaseUnits Color code CC00, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC01, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units Color code CC02, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units	6ES7193-6CP00-2MA0 6ES7193-6CP01-2MA0 6ES7193-6CP02-2MA0 6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0	
BU cover for covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0			
Shield connection 5 shield supports and 5 shield terminals	6ES7193-6SC00-1AM0		Color-coded labels for 20 mm wide BaseUnits Color code CC41, for 16 push-in terminals; for BU type B1, gray (terminals 1 to 4), red (terminals 5 to 8), blue (terminals 9 to 12); 10 units Color code CC81, for 4 AUX terminals, BU type B0, yellow/green (terminals 1 A to 4 A); 10 units Color code CC82, for 4 AUX terminals, BU type B0, red (terminals 1 A to 4 A); 10 units Color code CC83, for 4 AUX terminals, BU type B0, blue (terminals 1 A to 4 A); 10 units	6ES7193-6CP41-2MB0 6ES7193-6CP81-2AB0 6ES7193-6CP82-2AB0 6ES7193-6CP83-2AB0

Overview



- 4-, 8- and 16-channel DQ modules
- 4-channel RQ modules
- BaseUnits for single conductor or multiple-conductor connection
- Function classes Basic, Standard, High Feature and High-Speed as well as fail-safe DQ and RQ
- Clear labeling on front of module
- LEDs for diagnostics, status and errors
- Individual system-integrated load group formation with self-assembling potential multi-terminal busbars (power module not required for ET 200SP)
- Electronically readable rating plate (I&M data)
- Additional operating modes in some cases
- Optional accessories:
 - Labeling strips
 - Equipment marking label
 - Color-coded label with module-specific CC code
 - Shielding terminal

Overview of digital output modules

Digital output	Article No.	CC code	BU type	PU
DQ 16 x 24 V DC/0.5 A ST	6AG1132-6BH00-7BA0	CC00	A0	1
DQ 8 x 24 V DC/0.5 A ST	6AG1132-6BF00-7BA0	CC02	A0	1
DQ 8 x 24 V DC/0.5 A HF	6AG1132-6BF00-7CA0	CC02	A0	1
DQ 4 x 24 V DC/2 A ST	6AG1132-6BD20-7BA0	CC02	A0	1
RQ 4 x 120 V DC-230 V AC/5 A NO ST	6AG1132-6HD00-7BB0	--	B0, B1	1

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1132-6BD20-7BA0	6AG1132-6BF00-7BA0	6AG1132-6BH00-7BA0
Based on	6ES7132-6BD20-0BA0	6ES7132-6BF00-0BA0	6ES7132-6BH00-0BA0
	SIPLUS ET200SP DQ 4X24VDC/2A ST	SIPLUS ET 200SP DQ 8X24VDC 0.5A ST	SIPLUS ET 200SP DQ 16X24VDC 0.5A ST
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; > +60 °C number of simultaneously controllable outputs max. 2 x 0.25 A or max. 4 x 0.125 A, max. total current 0.5 A	70 °C; = Tmax; > +60 °C max. total current 1.0 A	70 °C; = Tmax; > +60 °C max. total current 1.0 A
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• vertical installation, max.	50 °C; = Tmax	50 °C; = Tmax	50 °C; = Tmax
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

SIPLUS digital output modules

Technical specifications (continued)

Article number	6AG1132-6BF00-7CA0	6AG1132-6HD00-7BB0
Based on	6ES7132-6BF00-0CA0 SIPLUS ET 200SP DQ 8X24VDC/0.5A HF	6ES7132-6HD00-0BB0 SIPLUS ET 200SP RQ 4X120VDC/230VAC/5A
Ambient conditions		
Ambient temperature during operation		
<ul style="list-style-type: none"> horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. 	-40 °C; = Tmin; Startup @ -25 °C 70 °C; = Tmax; > +60 °C max. total current 1.0 A	-40 °C; = Tmin 70 °C; = Tmax; > +60 °C max. continuous current per relay 3 A, max. total current module 12 A -40 °C 50 °C
Extended ambient conditions		
<ul style="list-style-type: none"> relative to ambient temperature-atmospheric pressure-installation altitude 	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity		
<ul style="list-style-type: none"> With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
Resistance		
<ul style="list-style-type: none"> against biologically active substances / conformity with EN 60721-3-3 against chemically active substances / conformity with EN 60721-3-3 against mechanically active substances / conformity with EN 60721-3-3 	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

Ordering data

Ordering data	Article No.	Article No.
SIPLUS digital output modules		
(Extended temperature range and medial exposure)		
Digital output module DQ 4x24 V DC/2 A Standard, BU type A0, color code CC02	6AG1132-6BD20-7BA0	BU15-P16+A10+2D
Digital output module DQ 8x24 V DC/0.5 A Standard, BU type A0, color code CC02	6AG1132-6BF00-7BA0	(Extended temperature range and medial exposure) BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)
Digital output module DQ 8x24 V DC/0.5 A High Feature, BU type A0, color code CC02	6AG1132-6BF00-7CA0	BU15-P16+A10+2B
Digital output module DQ 16x24 V DC/0.5 A Standard, BU type A0, color code CC00	6AG1132-6BH00-7BA0	(Extended temperature range and medial exposure) BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group
Relay module RQ NO 4x120 V DC - 230 V AC/5 A Standard, normally-open, BU type B0, color code CC00; 1 unit	6AG1132-6HD00-7BB0	BU20-P12+A4+0B
Usable SIPLUS BaseUnits		(extended temperature range and exposure to media) BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit
BU15-P16+A0+2D	6AG1193-6BP00-7DA0	6AG1193-6BP20-7DA0
(Extended temperature range and medial exposure) BU type A0; BaseUnit (light) with 16 process terminals to the module, for starting a new load group (max. 10 A)		
BU15-P16+A0+2B	6AG1193-6BP00-7BA0	6AG1193-6BP20-7BB0
(Extended temperature range and medial exposure) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group		
Accessories		See SIMATIC ET 200SP, digital output modules, page 9/11

Overview



- 2, 4 and 8-channel analog input (AI) modules
- Apart from the standard delivery form in an individual package, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time of unpacking individual modules.

For different requirements, the digital output modules offer:

- Function classes Basic, Standard, High Feature and High-Speed
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Option of connecting current, voltage and resistance sensors, as well as thermocouples
- Energy Meter for recording up to 200 electrical variables
- Clear labeling on front of module

- LEDs for diagnostics, status, power supply and faults
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - MSI operating mode (simultaneous reading of input data from as many as three other controllers)
 - Oversampling operating mode (n-fold equidistant acquisition of analog values within one PN cycle for increasing the time resolution for slow CPU cycles)
 - Isochronous mode (simultaneous equidistant reading in of all analog values)
 - Scalable measuring range (adaptation of measuring range, increase of the 16-bit resolution by adapting the measuring range to a limited section)
 - Scaling of the measured values (transmission of the analog value normalized to the required physical value as a 32-bit floating point value)
 - Internal compensation of the line resistance for thermocouples by means of terminal temperature measurement in the BaseUnit for BU type A1
 - Internal compensation also for 2-conductor resistance measurement by means of adjustable line resistance
 - Calibration during runtime
 - Single-channel electrical isolation
 - HART communication
 - Re-parameterization during operation
 - Firmware update
 - Diagnosis of wire break, short circuit, overflow, underflow
 - Two upper and lower hardware interrupts in each case, interference frequency suppression, smoothing
 - Value status (optional binary validity information of the analog signal in the process image)
 - Support of the PROFlenergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shielding terminal

A quick and clear comparison of the functions of the AI modules is offered by the TIA Selection Tool.

Overview of analog input modules

Analog input	PU	Article No.	CC code	BU type
AI 8 x I 2/4-wire BA	1	6ES7134-6GF00-0AA1	CC01	A0, A1
AI 2 x U ST	1	6ES7134-6FB00-0BA1	CC00	A0, A1
AI 8 x U BA	1	6ES7134-6FF00-0AA1	CC02	A0, A1
AI 4 x U/I 2-wire ST	1	6ES7134-6HD00-0BA1	CC03	A0, A1
AI 4 x U/I 2-wire ST	10	6ES7134-6HD00-2BA1	CC03	A0, A1
AI 2 x I 2/4-wire ST	1	6ES7134-6GB00-0BA1	CC05	A0, A1
AI 4 x I 2/4-wire ST	1	6ES7134-6GD00-0BA1	CC03	A0, A1
AI 4 x I 2-wire 4...20 mA HART	1	6ES7134-6TD00-0CA1	CC03	A0, A1
AI 2 x U/I 2/4-wire HF	1	6ES7134-6HB00-0CA1	CC05	A0, A1
AI 2xU/I 2/4-wire HS	1	6ES7134-6HB00-0DA1	CC00	A0, A1
With two operating modes				
• High-speed isochronous AI				
• Oversampling				
AI 8 x RTD/TC 2-wire HF	1	6ES7134-6JF00-0CA1	CC00	A0, A1
AI 8 x RTD/TC 2-wire HF	10	6ES7134-6JF00-2CA1	CC00	A0, A1
AI 4 x RTD/TC 2/3/4-wire HF	1	6ES7134-6JD00-0CA1	CC00	A0, A1
AI 4 x RTD/TC 2/3/4-wire HF	10	6ES7134-6JD00-2CA1	CC00	A0, A1
AI Energy Meter AC 400 V ST	1	6ES7134-6PA01-0BD0	--	D0
AI Energy Meter 480 V AC ST	1	6ES7134-6PA20-0BD0	--	D0

I/O systems

ET 200 systems for the control cabinet

ET 200SP – I/O modules

Analog input modules**Overview** (continued)

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--
BU type A1 • New load group (light) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0DA1	CC01 to CC05	CC74
BU type A1 • New load group (light) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0DA1	CC01 to CC05	--
BU type A1 • Forwarding of load group (dark) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0BA1	CC01 to CC05	CC74
BU type A1 • Forwarding of load group (dark) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0BA1	CC01 to CC05	--
BU type D0 • Forwarding of load group (dark) • 12 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BD0	--	--

Technical specifications

Article number	6ES7134-6GF00-0AA1 ET 200SP, AI 8xI 2/4-WIRE BASIC	6ES7134-6FB00-0BA1 ET 200SP, AI 2xU STANDARD, PU 1	6ES7134-6FF00-0AA1 ET 200SP, AI 8xU BASIC	6ES7134-6HD00-0BA1 ET 200SP, AI 4xU/I 2-WIRE ST	6ES7134-6GB00-0BA1 ET 200SP, AI 2xI 2/4-WIRE ST, PU 1
General information					
Product type designation	ET 200SP, AI 8xI 2/4-wire Basic	ET 200SP, AI 2xU Standard	ET 200SP, 8xU Basic	AI 4xU/I 2-wire ST	ET 200SP, AI 2xI 2/4-wire ST
Product function					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Scalable measuring range	No	No	No	No	No
Engineering with					
• STEP 7 TIA Portal configurable/ integrated as of version	V13 SP1	V13 SP1	V13 SP1	V11 SP2 / V13	V13 SP1
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3
• PCS 7 configurable/integrated as of version				V8.1 SP1	
• PROFIBUS as of GSD version/ GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	V2.3 / -
Operating mode					
• Oversampling	No	No	No	No	No
• MSI	No	No	No	No	No
CiR - Configuration in RUN					
Reparameterization possible in RUN	Yes	Yes	Yes	Yes	Yes
Calibration possible in RUN	No	No	No	No	No
Supply voltage					
Type of supply voltage	DC	DC	DC	DC	DC
Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Analog inputs					
Number of analog inputs	8; Single-ended	2	8; Single-ended	4; Differential inputs	2
permissible input voltage for voltage input (destruction limit), max.		30 V	30 V	30 V	
permissible input current for current input (destruction limit), max.	50 mA			50 mA	50 mA
Cycle time (all channels), min.	1 ms; per channel	500 µs	1 ms; per channel	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)	500 µs
Input ranges (rated values), voltages					
• 0 to +10 V		Yes; 15 bit	Yes; 15 bit	Yes; 15 bit	
• 1 V to 5 V		Yes; 15 bit		Yes; 15 bit	
• -10 V to +10 V		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• -5 V to +5 V		Yes; 16 bit incl. sign		Yes; 16 bit incl. sign	
Input ranges (rated values), currents					
• 0 to 20 mA	Yes			Yes; 15 bit	Yes; 15 bit
• -20 mA to +20 mA	Yes				Yes; 16 bit incl. sign
• 4 mA to 20 mA	Yes			Yes; 15 bit	Yes; 15 bit
Cable length					
• shielded, max.	200 m	200 m	200 m	1 000 m; 200 m for voltage measurement	1 000 m

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Analog input modules

Technical specifications (continued)

Article number	6ES7134-6GF00-0AA1 ET 200SP, AI 8XI 2/4-WIRE BASIC	6ES7134-6FB00-0BA1 ET 200SP, AI 2XU STANDARD, PU 1	6ES7134-6FF00-0AA1 ET 200SP, AI 8XU BASIC	6ES7134-6HD00-0BA1 ET 200SP, AI 4XU/I 2-WIRE ST	6ES7134-6GB00-0BA1 ET 200SP, AI 2XI 2/4-WIRE ST, PU 1
Analog value generation for the inputs					
Integration and conversion time/ resolution per channel					
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes	Yes	Yes	Yes
• Interference voltage suppression for interference frequency f1 in Hz	16.67 / 50 / 60 / 4 800 (16.67 / 50 / 60)	16.6 / 50 / 60 Hz / off	16.67 / 50 / 60 / 4 800 (16.67 / 50 / 60)	16.6 / 50 / 60 Hz	16.6 / 50 / 60 Hz / off
• Conversion time (per channel)	180 / 60 / 50 / 0.625 (67.5 / 22.5 / 18.75) ms	50 ms @ 60 Hz, 60 ms @ 50 Hz, 180 ms @ 16.6 Hz, 250 µs without filter	180 / 60 / 50 / 0.625 (67.5 / 22.5 / 18.75) ms	180 / 60 / 50 ms	50 ms @ 60 Hz, 60 ms @ 50 Hz, 180 ms @ 16.6 Hz, 250 µs without filter
Smoothing of measured values					
• Number of levels	4; None; 4/8/16 times	4	4; None; 4/8/16 times	4; None; 4/8/16 times	4
• parameterizable	Yes	Yes	Yes	Yes	Yes
Encoder					
Connection of signal encoders					
• for voltage measurement	No	Yes	Yes	Yes	
• for current measurement as 2-wire transducer	Yes			Yes	Yes
- Burden of 2-wire transmitter, max.	650 Ω			650 Ω	650 Ω
• for current measurement as 4-wire transducer	Yes		No	No	Yes
Errors/accuracies					
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to input area, (+/-)		0.3 %	0.3 %	0.3 %	
• Current, relative to input area, (+/-)	0.3 %			0.3 %	0.3 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, $f1 =$ interference frequency					
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB; With conversion time 67.5 / 22.5 / 18.75 ms: 40 dB	70 dB	70 dB; With conversion time 67.5 / 22.5 / 18.75 ms: 40 dB	70 dB	70 dB
• Common mode voltage, max.		10 V		10 V	10 V
• Common mode interference, min.		90 dB		90 dB	90 dB
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	No	No	No	No
Interrupts/diagnostics/ status information					
Diagnostics	Yes	Yes	Yes		Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
• Limit value alarm	No	No	No	No	No
Diagnostic messages					
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	Yes
• Wire-break	Yes; at 4 to 20 mA	No	No	Yes; at 4 to 20 mA	Yes; at 4 to 20 mA
• Short-circuit	Yes; Sensor supply to M; module by module	Yes; at 1 to 5 V	No	Yes; with 1 to 5 V or 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; Short-circuit of the encoder supply
• Group error	Yes	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes	Yes	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7134-6GF00-0AA1 ET 200SP, AI 8XI 2/4-WIRE BASIC	6ES7134-6FB00-0BA1 ET 200SP, AI 2XU STANDARD, PU 1	6ES7134-6FF00-0AA1 ET 200SP, AI 8XU BASIC	6ES7134-6HD00-0BA1 ET 200SP, AI 4XU/I 2-WIRE ST	6ES7134-6GB00-0BA1 ET 200SP, AI 2XI 2/4-WIRE ST, PU 1
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; green PWR LED	Yes; green PWR LED	Yes; Green LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No	No	No	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; Green/red LED	Yes; green/red DIAG LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	15 mm
Weights					
Weight, approx.	31 g	31 g	31 g	31 g	32 g
Article number	6ES7134-6GD00-0BA1 ET 200SP, AI 4XI 2/4-WIRE ST	6ES7134-6TD00-0CA1 ET 200SP, AI 4XI 2-WIRE 4...20mA HART	6ES7134-6HB00-0CA1 ET 200SP AI 2 X U/I 2/4-WIRE HF	6ES7134-6HB00-0DA1 ET 200SP AI 2 X U/I 2/4-WIRE HS	
General information					
Product type designation	AI 4xI 2/4-wire ST	AI 4xI 2-wire 4 ... 20 mA HART	ET 200SP, AI 2xU/I 2/4-wire High Feature, PU 1		
Product function					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	
• Scalable measuring range	No	No	No	No	
Engineering with					
• STEP 7 TIA Portal configurable/integrated as of version	V11 SP2 / V13	V13 SP1	V13	V13 SP1	
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP4 and higher	V5.5 / -	V5.5 SP3 / -	
• PCS 7 configurable/integrated as of version	V8.1 SP1	V8.1 SP1	V8.1 SP1		
• PROFIBUS as of GSD version/ GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5	
• PROFINET as of GSD version/ GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	
Operating mode					
• Oversampling	No	No	No	Yes; 2 channels per module	
• MSI	No	No	Yes	No	
CiR - Configuration in RUN					
Reparameterization possible in RUN	Yes	Yes	Yes	Yes	
Calibration possible in RUN	No	No	Yes	No	
Supply voltage					
Type of supply voltage	DC	DC	DC	DC	
Rated value (DC)	24 V	24 V	24 V	24 V	
Reverse polarity protection	Yes	Yes	Yes	Yes	
Analog inputs					
Number of analog inputs	4; Differential inputs	4; Differential inputs	2; Differential inputs	2; Differential inputs	
permissible input voltage for voltage input (destruction limit), max.			30 V	30 V	
permissible input current for current input (destruction limit), max.	50 mA	50 mA	50 mA	50 mA	
Cycle time (all channels), min.		Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)		125 µs	

I/O systems

ET 200 systems for the control cabinet

ET 200SP – I/O modules

Analog input modules

Technical specifications (continued)

Article number	6ES7134-6GD00-0BA1 ET 200SP, AI 4XI 2/4-WIRE ST	6ES7134-6TD00-0CA1 ET 200SP, AI 4XI 2-WIRE 4...20MA HART	6ES7134-6HB00-0CA1 ET 200SP AI 2 X U/I 2/4-WIRE HF	6ES7134-6HB00-0DA1 ET 200SP AI 2 X U/I 2/4-WIRE HS
Analog input with oversampling			No	Yes
• Values per cycle, max.				16
• Resolution, min.				50 µs
Standardization of measured values			Yes	
Input ranges (rated values), voltages				
• 0 to +10 V			Yes; 15 bit	Yes; 15 bit
• 1 V to 5 V			Yes; 15 bit	Yes; 13 bit
• -10 V to +10 V			Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• -5 V to +5 V			Yes; 16 bit incl. sign	Yes; 15 bit incl. sign
Input ranges (rated values), currents				
• 0 to 20 mA	Yes	No	Yes; 15 bit	Yes; 15 bit
• -20 mA to +20 mA	Yes	No	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• 4 mA to 20 mA	Yes	Yes; 15 bit + sign	Yes; 15 bit	Yes; 14 bit
Cable length				
• shielded, max.	1 000 m	800 m	1 000 m; 200 m for voltage measurement	1 000 m; 200 m for voltage measurement
Analog value generation for the inputs				
Integration and conversion time/resolution per channel				
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes; channel by channel	Yes	No
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz	10 / 50 / 60 Hz	16.6 / 50 / 60 / 300 / 600 / 1 200 / 2 400 / 4 800	No
• Conversion time (per channel)	180 / 60 / 50 ms			10 µs
• Basic execution time of the module (all channels released)			1 ms	
Smoothing of measured values				
• Number of levels	4; None; 4/8/16 times	4; None; 4/8/16 times	6; none; 2-/4-/8-/16-/32-fold	7; none; 2-/4-/8-/16-/32-/64-fold
• parameterizable	Yes	Yes	Yes	Yes
Encoder				
Connection of signal encoders				
• for voltage measurement	No	No	Yes	Yes
• for current measurement as 2-wire transducer	Yes	Yes	Yes	Yes
- Burden of 2-wire transmitter, max.	650 Ω		650 Ω	650 Ω
• for current measurement as 4-wire transducer	Yes		Yes	Yes
Errors/accuracies				
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to input area, (+/-)			0.05 %; 0.1 % at SFU 4.8 kHz	0.2 %
• Current, relative to input area, (+/-)	0.3 %	0.3 %	0.05 %; 0.1 % at SFU 4.8 kHz	0.2 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency				
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB	60 dB		
• Common mode voltage, max.	10 V		35 V	35 V
• Common mode interference, min.	90 dB		90 dB	90 dB
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	No	No	Yes	Yes
Filtering and processing time (TCI), min.			800 µs	80 µs
Bus cycle time (TDP), min.			1 ms	125 µs

Technical specifications (continued)

Article number	6ES7134-6GD00-0BA1 ET 200SP, AI 4X1 2/4-WIRE ST	6ES7134-6TD00-0CA1 ET 200SP, AI 4X1 2-WIRE 4...20MA HART	6ES7134-6HB00-0CA1 ET 200SP AI 2 X U/I 2/4-WIRE HF	6ES7134-6HB00-0DA1 ET 200SP AI 2 X U/I 2/4-WIRE HS
Interrupts/diagnostics/ status information				
Diagnostics	Yes	Yes	Yes	
Alarms				
• Diagnostic alarm	Yes	Yes	Yes	Yes
• Limit value alarm	No	Yes	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case
Diagnostic messages				
• Monitoring the supply voltage	Yes	Yes	Yes	
• Wire-break	Yes; at 4 to 20 mA	Yes; channel by channel	Yes; Measuring range 4 to 20 mA only	Yes; channel-by-channel, at 4 to 20 mA only
• Short-circuit	Yes; 2-wire mode: Short- circuit of the encoder supply to ground or of an input to the encoder supply	Yes; Channel-by-channel, short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes	Yes; channel-by-channel, at 1 to 5 V or for current measuring ranges short- circuit in encoder supply
• Group error	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes	Yes; channel by channel	Yes	Yes
Diagnostics indication LED				
• Monitoring of the supply voltage (PWR-LED)	Yes; Green LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	Yes; Red LED	Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; Green/red LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation				
Potential separation channels				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Dimensions				
Width	15 mm	15 mm	15 mm	15 mm
Weights				
Weight, approx.	31 g	31 g	32 g	32 g

Article number	6ES7134-6JF00-0CA1 ET 200SP, AI 8XRTD/TC 2-WIRE HF	6ES7134-6JD00-0CA1 ET 200SP, AI 4XRTD/TC 2/3/4-WIRE HF
General information		
Product type designation	ET 200SP, AI 8xRTD/TC 2-wire HF, PU 1	ET 200SP, AI 4xRTD/TC 2/3/4-wire HF, PU 1
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with		
• STEP 7 TIA Portal configurable/integrated as of version	V13	V12 SP1 / V13
• STEP 7 configurable/ integrated as of version	V5.5 / -	V5.5 SP3 / V5.5 SP4
• PCS 7 configurable/ integrated as of version		V8.1 SP1
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3	GSDML V2.3
Operating mode		
• Oversampling	No	No
• MSI	No	No

Article number	6ES7134-6JF00-0CA1 ET 200SP, AI 8XRTD/TC 2-WIRE HF	6ES7134-6JD00-0CA1 ET 200SP, AI 4XRTD/TC 2/3/4-WIRE HF
CiR - Configuration in RUN		
Reparameterization possible in RUN	Yes	Yes
Calibration possible in RUN	Yes	Yes
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Analog inputs		
Number of analog inputs	8	4
permissible input voltage for voltage input (destruction limit), max.	30 V	30 V
Constant measurement current for resistance-type transmitter, typ.	2 mA	2 mA

Technical specifications (continued)

Article number	6ES7134-6JF00-0CA1	6ES7134-6JD00-0CA1
	ET 200SP, AI 8XRTD/TC 2-WIRE HF	ET 200SP, AI 4XRTD/TC 2/3/4-WIRE HF
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for resistance measurement with two-wire connection	Yes	Yes
• for resistance measurement with three-wire connection	No	Yes
• for resistance measurement with four-wire connection	No	Yes
Errors/accuracies		
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area, (+/-)	0.05 %	0.05 %
• Resistance, relative to input area, (+/-)	0.05 %	0.05 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB	70 dB
• Common mode voltage, max.	10 V	10 V
• Common mode interference, min.	90 dB	90 dB
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	No	No

Article number	6ES7134-6PA01-0BD0	6ES7134-6PA20-0BD0
	ET 200SP AI ENERGY METER 400VAC ST	ET 200SP AI ENERGY METER 480VAC ST
General information		
Product type designation	ET 200SP, AI Energy Meter 400VAC ST, PU 1	ET 200SP, AI Energy Meter 480VAC ST, PU 1
Product function		
• Voltage measurement	Yes	Yes
• Voltage measurement with voltage transformers	No	Yes
• Current measurement	Yes	Yes
• Phase current measurement without current transformers	No	No
• Phase current measurement with current transformers	Yes	Yes
• Energy measurement	Yes	Yes
• Frequency measurement	Yes	Yes
• Power measurement	Yes	Yes
• Active power measurement	Yes	Yes
• Reactive power measurement	Yes	Yes
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Isochronous mode	No	No

Article number	6ES7134-6JF00-0CA1	6ES7134-6JD00-0CA1
	ET 200SP, AI 8XRTD/TC 2-WIRE HF	ET 200SP, AI 4XRTD/TC 2/3/4-WIRE HF
Interrupts/diagnostics/status information		
Diagnostics	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case
Diagnostic messages		
• Monitoring the supply voltage	Yes	Yes
• Wire-break	Yes; channel by channel	Yes; channel by channel
• Group error	Yes	Yes
• Overflow/underflow	Yes; channel by channel	Yes; channel by channel
Diagnostics indication LED		
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes	Yes
Isolation		
Isolation tested with	707 V DC (type test)	707 V DC (type test)
Dimensions		
Width	15 mm	15 mm
Weights		
Weight, approx.	32 g	30 g

Article number	6ES7134-6PA01-0BD0	6ES7134-6PA20-0BD0
	ET 200SP AI ENERGY METER 400VAC ST	ET 200SP AI ENERGY METER 480VAC ST
Engineering with		
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1	V13 SP1
• STEP 7 configurable/integrated as of version	V5.5 SP4 and higher	V5.5 SP4 and higher
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	V2.3	V2.3
Operating mode		
• cyclic measurement	Yes	Yes
• acyclic measurement	Yes	Yes
• Acyclic measured value access	Yes	Yes
• Fixed measured value sets	Yes	Yes
• Freely definable measured value sets	No	Yes
CiR - Configuration in RUN		
Reparameterization possible in RUN	Yes	Yes
Calibration possible in RUN	No	Yes

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Analog input modules

Technical specifications (continued)

Article number	6ES7134-6PA01-0BD0 ET 200SP AI ENERGY METER 400VAC ST	6ES7134-6PA20-0BD0 ET 200SP AI ENERGY METER 480VAC ST
Installation type/ mounting		
Mounting position	Any	Any
Supply voltage		
Description	Supply via voltage measurement channel L1	Supply via voltage measurement channel L1
Type of supply voltage	100 - 240 V AC	AC 100 - 277 V
permissible range, lower limit (AC)	90 V	90 V
permissible range, upper limit (AC)	264 V	293 V
Line frequency		
• permissible range, lower limit	47 Hz	47 Hz
• permissible range, upper limit	63 Hz	63 Hz
Address area		
Address space per module		
• Address space per module, max.	44 byte; 32 byte input / 12 byte output	268 byte; 256 byte input / 12 byte output
Analog inputs		
Cycle time (all channels), typ.	50 ms; Time for consistent update of all measured and calculated values (cyclic und acyclic data)	50 ms; Time for consistent update of all measured and calculated values (cyclic und acyclic data)
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes	Yes
• Limit value alarm	No	Yes
• Hardware interrupt	No	Yes; Monitoring of up to 16 freely selectable process values (exceeding or undershooting of value)
Diagnostics indication LED		
• Monitoring of the supply voltage (PWR-LED)	Yes	Yes
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; red Fn LED	Yes; red Fn LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Integrated Functions		
Measuring functions		
• Buffering of measured variables	No	Yes
• Parameter length	38 byte	74 byte
• Measuring procedure for voltage measurement	TRMS	TRMS
• Measuring procedure for current measurement	TRMS	TRMS
• Type of measured value acquisition	seamless	seamless
• Curve shape of voltage	Sinusoidal or distorted	Sinusoidal or distorted
• Bandwidth of measured value acquisition	2 kHz; Harmonics: 39 / 50 Hz, 32 / 60 Hz	2 kHz; Harmonics: 39 / 50 Hz, 32 / 60 Hz

Article number	6ES7134-6PA01-0BD0 ET 200SP AI ENERGY METER 400VAC ST	6ES7134-6PA20-0BD0 ET 200SP AI ENERGY METER 480VAC ST
Operating mode for measured value acquisition		
- automatic detection of line frequency	No; Parameterizable	No; Parameterizable
Measuring range		
- Frequency measurement, min.	45 Hz	45 Hz
- Frequency measurement, max.	65 Hz	65 Hz
Measuring inputs for voltage		
- Measurable line voltage between phase and neutral conductor	230 V	277 V
- Measurable line voltage between the line conductors	400 V	480 V
- Measurable line voltage between phase and neutral conductor, min.	90 V	90 V
- Measurable line voltage between phase and neutral conductor, max.	264 V	293 V
- Measurable line voltage between the line conductors, min.	155 V	155 V
- Measurable line voltage between the line conductors, max.	460 V	508 V
- Measurement category for voltage measurement in accordance with IEC 61010-2-030	CAT II; CAT III in case of guaranteed protection level of 1.5 kV	CAT II; CAT III in case of guaranteed protection level of 1.5 kV
- Internal resistance line conductor and neutral conductor	3.4 MΩ	3.4 MΩ
- Power consumption per phase	20 mW	20 mW
- Impulse voltage resistance 1,2/50 μs	1 kV	1 kV
Measuring inputs for current		
- measurable relative current (AC), min.	5 %; Relative to the secondary rated current; 1 A, 5 A	1 %; Relative to the secondary rated current 5 A
- measurable relative current (AC), max.	100 %; Relative to the secondary rated current; 1 A, 5 A	100 %; Relative to the secondary rated current 5 A
- Continuous current with AC, maximum permissible	5 A	5 A
- Apparent power consumption per phase for measuring range 5 A	0.6 V·A	0.6 V·A
- Rated value short-time withstand current restricted to 1 s	100 A	100 A
- Input resistance measuring range 0 to 5 A	25 mΩ; At the terminal	25 mΩ; At the terminal
- Zero point suppression	Parameterizable: 20 - 250 mA, default 50 mA	Parameterizable: 2 - 250 mA, default 50 mA
- Surge strength	10 A; for 1 minute	10 A; for 1 minute

Technical specifications (continued)

Article number	6ES7134-6PA01-0BD0 ET 200SP AI ENERGY METER 400VAC ST	6ES7134-6PA20-0BD0 ET 200SP AI ENERGY METER 480VAC ST
Accuracy class according to IEC 61557-12		
- Measured variable voltage	0.5	0,2
- Measured variable current	0.5	0,2
- Measured variable apparent power	1	0.5
- Measured variable active power	1	0.5
- Measured variable reactive power	1	1
- Measured variable power factor	0.5	0.5
- Measured variable active energy	1	0.5
- Measured variable reactive energy	2	1
- Measured variable neutral current		0.5; calculated
- Measured variable	±1 °; not covered by IEC 61577-12	±1 °; not covered by IEC 61577-12
- Measured variable frequency	0.05	0.05
Potential separation		
Potential separation channels		
• between the channels and backplane bus	Yes; 3 700 V AC (type test) CAT III	Yes; 3 700 V AC (type test) CAT III
Isolation		
Isolation tested with	2 300V AC for 1 min. (type test)	2 300V AC for 1 min. (type test)
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C
• vertical installation, max.	50 °C	50 °C
Dimensions		
Width	20 mm	20 mm
Weights		
Weight (without packaging)	45 g	45 g
Data for selecting a current transformer		
• Burden power current transformer x/1A, min.	As a function of cable length and cross section, see device manual	As a function of cable length and cross section, see device manual
• Burden power current transformer x/5A, min.	As a function of cable length and cross section, see device manual	As a function of cable length and cross section, see device manual

Ordering data**Article No.****Analog input modules**

Delivery options:
Apart from the standard delivery form in an individual package, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time of unpacking individual modules.

The number of modules required is the number of modules ordered. The type of packaging is chosen by selecting the article number. Packs of 10 can therefore only be ordered in integer multiples of 10.

Analog input module AI 8xI 2/4-wire BA, BU type A0 or A1, color code CC01

6ES7 134-6GF00-0AA1

Analog input module AI 2xU ST, BU type A0 or A1, color code CC00

6ES7134-6FB00-0BA1

Analog input module AI 8xU BA, BU type A0 or A1, color code CC02

6ES7 134-6FF00-0AA1

Analog input module AI 4xU/I 2-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3%

- 1 unit
- 10 units

6ES7134-6HD00-0BA1
6ES7134-6HD00-2BA1

Analog input module AI 2xI 2/4-wire Standard, BU type A0 or A1, color code CC05, 16 bit

6ES7134-6GB00-0BA1

Analog input module AI 4xI 2-/4-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3%

6ES7134-6GD00-0BA1

Analog input module AI 4xI 2-wire 4...20 mA HART, BU type A0 or A1, color code CC03

6ES7134-6TD00-0CA1

Analog input module AI 2xU/I 2/4-wire High Feature, BU type A0 or A1, color code CC05, 16 bit, ± 0.1%, independent channel isolation, isochronous mode above 1 ms

6ES7134-6HB00-0CA1

Analog input module AI 2xU/I 2-/4-wire High Speed, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%, isochronous mode above 250 µs, oversampling above 50 µs

6ES7134-6HB00-0DA1

Analog input module AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range

- 1 unit
- 10 units

6ES7134-6JF00-0CA1
6ES7134-6JF00-2CA1

Analog input module AI 4xRTD/TC 2, 3, 4-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range

- 1 unit
- 10 units

6ES7134-6JD00-0CA1
6ES7134-6JD00-2CA1

Analog input module AI Energy Meter Standard, 400 V AC, BU type D0

6ES7134-6PA01-0BD0

Analog input module AI Energy Meter Standard, 480 V AC, BU type D0

6ES7134-6PA20-0BD0

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Analog input modules

Ordering data	Article No.	Accessories	Article No.
Usable type A0 BaseUnits		Equipment labeling plate	6ES7193-6LF30-0AW0
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) • 1 unit • 10 units	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A) • 1 unit • 10 units	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0	Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AA0
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group • 1 unit • 10 units	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0	500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	6ES7193-6LR10-0AG0
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group • 1 unit • 10 units	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0	1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer	6ES7193-6LA10-0AA0
Usable type A1 BaseUnits (temperature detection)		1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer	6ES7193-6LA10-0AG0
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	6ES7193-6BP40-0DA1	BU cover for covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6ES7193-6BP00-0DA1	Shield connection 5 shield supports and 5 shield terminals	6ES7193-6SC00-1AM0
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	6ES7193-6BP40-0BA1	Color-coded labels Color code CC00, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units	6ES7193-6CP00-2MA0
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6ES7193-6BP00-0BA1	Color code CC01, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units	6ES7193-6CP01-2MA0
Usable type D0 BaseUnits		Color code CC02, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16); 10 units	6ES7193-6CP02-2MA0
BU20-P12+A0+0B BU type D0; BaseUnit with 12 push-in terminals, without AUX terminals, bridged to the left	6ES7193-6BP00-0BD0	Color code CC03, for 16 push-in terminals, for BU type A0, A1 gray (terminals 1 to 8), red (terminals 9 to 12), gray (terminals 13 to 16); 10 units	6ES7193-6CP03-2MA0
		Color code CC05, for 16 push-in terminals, for BU type A0, A1, gray (terminals 1 to 12), red (terminals 13 to 14), blue (terminals 15 to 16); 10 units	6ES7193-6CP05-2MA0
		Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units	6ES7193-6CP71-2AA0
		Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units	6ES7193-6CP72-2AA0
		Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units	6ES7193-6CP73-2AA0
		Color code CC74, for 2x5 additional terminals, BU type A1, red (terminals 1B to 5B), blue (terminals 1C to 5C); 10 units	6ES7193-6CP74-2AA0

Overview



- 2 and 4-channel analog output (AQ) modules
- Apart from the standard delivery form in an individual package, selected I/O modules and BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time of unpacking individual modules.

For different requirements, the digital output modules offer:

- Function classes Standard, High Feature and High-Speed
- BaseUnits for single or multiple-conductor connection with automatic slot coding
- Individual system-integrated load group formation with self-assembling voltage distribution bars (a separate power module is no longer required for ET 200SP)
- Option for connecting current and voltage actuators

- Clear labeling on front of module
- LEDs for diagnostics, status, power supply and faults
- Electronically readable and non-volatile writable rating plate (I&M data 0 to 3)
- Extended functions and additional operating modes in some cases
 - Oversampling (n-fold equidistant output of an analog value within one PN cycle and thus the precisely timed output of an analog value or a sequence of analog values)
 - Isochronous mode (simultaneous equidistant output of analog values)
 - Output of substitute value in the event of interruptions to communication (shutdown, output adjustable substitute value, or keep last value)
 - Calibration during runtime
 - Re-parameterization during operation
 - Firmware update
 - Diagnosis of wire break, short circuit, overflow, underflow
 - Value status (optional binary validity information of the analog signal in the process image)
 - Support of the PROFINergy profile
- Optional accessories
 - Labeling strips (film or card)
 - Equipment labeling plate
 - Color-coded label with module-specific CC code
 - Shielding terminal

A quick and clear comparison of the functions of the AQ modules is offered by the TIA Selection Tool.

Overview of analog output modules

Analog output	PU	Article No.	CC code	BU type
AQ 2 x U ST	1	6ES7135-6FB00-0BA1	CC00	A0, A1
AQ 2 x I ST	1	6ES7135-6GB00-0BA1	CC00	A0, A1
AQ 4 x U/I ST	1	6ES7135-6HD00-0BA1	CC00	A0, A1
AQ 2 x U/I HF	1	6ES7135-6HB00-0CA1	CC00	A0, A1
AQ 2xU/I HS	1	6ES7135-6HB00-0DA1	CC00	A0, A1
With two operating modes				
• High-speed isochronous AQ				
• Oversampling				

Overview of BaseUnits

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2DA0	CC01 to CC05	CC71 to CC73
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0DA0	CC01 to CC05	--
BU type A0 • New load group (light) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2DA0	CC01 to CC05	--

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Analog output modules

Overview (continued)

BaseUnit	PU	Article No.	CC codes for process terminals	CC codes for AUX terminals
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	1	6ES7193-6BP20-0BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • With 10 AUX terminals	10	6ES7193-6BP20-2BA0	CC01 to CC05	CC71 to CC73
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	1	6ES7193-6BP00-0BA0	CC01 to CC05	--
BU type A0 • Forwarding of load group (dark) • 16 process terminals • Without AUX terminals	10	6ES7193-6BP00-2BA0	CC01 to CC05	--
BU type A1 • New load group (light) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0DA1	CC01 to CC05	CC74
BU type A1 • New load group (light) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0DA1	CC01 to CC05	--
BU type A1 • Forwarding of load group (dark) • With temperature sensor • 16 process terminals • With 2x5 additional terminals	1	6ES7193-6BP40-0BA1	CC01 to CC05	CC74
BU type A1 • Forwarding of load group (dark) • With temperature sensor • 16 process terminals • Without 2x5 additional terminals	1	6ES7193-6BP00-0BA1	CC01 to CC05	--

Technical specifications

Article number	6ES7135-6FB00-0BA1	6ES7135-6GB00-0BA1	6ES7135-6HD00-0BA1	6ES7135-6HB00-0DA1	6ES7135-6HB00-0CA1
	ET 200SP, AQ 2xU STANDARD, PU 1	ET 200SP, AQ 2xI STANDARD, PU 1	ET 200SP, AQ 4xU/I ST	ET 200SP, AQ 2 X U/I HIGH SPEED	ET 200SP, AQ 2 X U/I HIGH FEATURE
General information					
Product type designation	ET 200SP, AQ 2xU Standard	ET 200SP, AQ 2xI Standard	ET 200SP, AQ 4xU/I Standard	ET 200SP, AQ 2xU/I High Speed	AQ 2xU/I HF
Product function					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
• Scalable output range	No	No	No		
Engineering with					
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1 / -	V13 SP1 / -	V11 SP2 / V13	V13 SP1	V13 / V13
• STEP 7 configurable/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PCS 7 configurable/integrated as of version			V8.1 SP1		V8.1 SP1
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3	GSDML V2.3

Technical specifications (continued)

Article number	6ES7135-6FB00-0BA1 ET 200SP, AQ 2XU STANDARD, PU 1	6ES7135-6GB00-0BA1 ET 200SP, AQ 2XI STANDARD, PU 1	6ES7135-6HD00-0BA1 ET 200SP, AQ 4XU/I ST	6ES7135-6HB00-0DA1 ET 200SP, AQ 2 X U/I HIGH SPEED	6ES7135-6HB00-0CA1 ET 200SP, AQ 2 X U/I HIGH FEATURE
Operating mode					
• Oversampling	No	No	No	Yes; 2 channels per module	No
• MSO	No	No	No	No	No
CiR - Configuration in RUN					
Reparameterization possible in RUN	Yes	Yes	Yes	Yes	Yes
Calibration possible in RUN	No	No	No	Yes	Yes
Supply voltage					
Type of supply voltage	DC	DC	DC	DC	DC
Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes	Yes
Analog outputs					
Number of analog outputs	2	2	4	2	2
Cycle time (all channels), min.	1 ms	1 ms	5 ms	125 µs	750 µs
Analog output with oversampling	No	No	No	Yes	
• Values per cycle, max.				16	
• Resolution, min.				45 µs; (2 channels), 35 µs (1 channel)	
Output ranges, voltage					
• 0 to 10 V	Yes; 15 bit		Yes; 15 bit	Yes; 15 bit	Yes; 15 bit
• 1 V to 5 V	Yes; 13 bit		Yes; 13 bit	Yes; 13 bit	Yes; 13 bit
• -5 V to +5 V	Yes; 15 bit incl. sign		Yes; 15 bit incl. sign	Yes; 15 bit incl. sign	Yes; 15 bit incl. sign
• -10 V to +10 V	Yes; 16 bit incl. sign		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
Output ranges, current					
• 0 to 20 mA		Yes; 15 bit	Yes; 15 bit	Yes; 15 bit	Yes; 15 bit
• -20 mA to +20 mA		Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• 4 mA to 20 mA		Yes; 14 bit	Yes; 14 bit	Yes; 14 bit	Yes; 14 bit
Connection of actuators					
• for voltage output two-wire connection	Yes		Yes	Yes	Yes
• for voltage output four-wire connection	No		Yes	Yes	Yes
• for current output two-wire connection		Yes	Yes	Yes	Yes
Load impedance (in rated range of output)					
• with voltage outputs, min.	2 kΩ		2 kΩ	2 kΩ	2 kΩ
• with voltage outputs, capacitive load, max.	1 µF		1 µF	1 µF	1 µF
• with current outputs, max.		500 Ω	500 Ω	500 Ω	500 Ω
• with current outputs, inductive load, max.		1 mH	1 mH	1 mH	1 mH
Cable length					
• shielded, max.	200 m	1 000 m	1 000 m; 200 m for voltage output	1 000 m; 200 m for voltage output	1 000 m; 200 m for voltage output
Settling time					
• for resistive load	0.1 ms	0.1 ms; Typical value	0.1 ms	0.05 ms	0.05 ms
• for capacitive load	1 ms		1 ms	0.05 ms; Max. 47 nF and 20 m cable length	0.05 ms; Max. 47 nF and 20 m cable length
• for inductive load		0.5 ms	0.5 ms	0.05 ms	0.05 ms
Errors/accuracies					
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to output area, (+/-)	0.3 %	0.3 %	0.3 %	0.1 %	0.1 %
• Current, relative to output area, (+/-)	0.3 %	0.3 %	0.3 %	0.1 %	0.1 %

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

Analog output modules

Technical specifications (continued)

Article number	6ES7135-6FB00-0BA1	6ES7135-6GB00-0BA1	6ES7135-6HD00-0BA1	6ES7135-6HB00-0DA1	6ES7135-6HB00-0CA1
	ET 200SP, AQ 2XU STANDARD, PU 1	ET 200SP, AQ 2XI STANDARD, PU 1	ET 200SP, AQ 4XU/I ST	ET 200SP, AQ 2 X U/I HIGH SPEED	ET 200SP, AQ 2 X U/I HIGH FEATURE
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	No	No	Yes	Yes
Execution and activation time (TCO), min.				70 µs	500 µs
Bus cycle time (TDP), min.				125 µs	750 µs
Interrupts/diagnostics/status information					
Diagnostics	Yes	Yes	Yes	Yes	Yes
Substitute values connectable	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes
Diagnostic messages					
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	Yes
• Wire-break		Yes	Yes	Yes; channel-by-channel, only for output type "current"	Yes; channel-by-channel, only for output type "current"
• Short-circuit	Yes		Yes	Yes; channel-by-channel, only for output type "voltage"	Yes; channel-by-channel, only for output type "voltage"
• Group error	Yes	Yes	Yes	Yes	Yes
• Overflow/underflow	Yes	Yes	Yes	Yes	Yes
Diagnostics indication LED					
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No	No	Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Potential separation					
Potential separation channels					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C	60 °C; Observe derating	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	50 °C	50 °C	50 °C; Observe derating	50 °C	50 °C
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	15 mm
Weights					
Weight, approx.	31 g	31 g	31 g	31 g	31 g

Ordering data

Ordering data	Article No.	Article No.
Analog output modules		
Analog output module AQ 2xU Standard, BU type A0 or A1, color code CC00, 16 bit	6ES7135-6FB00-0BA1	6ES7135-6HD00-0BA1
Analog output module AQ 2xi Standard, BU type A0 or A1, color code CC00, 16 bit	6ES7135-6GB00-0BA1	6ES7135-6HB00-0CA1
Analog output module AQ 2xU/I High Speed, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%		6ES7135-6HB00-0DA1

Ordering data	Article No.	Article No.
<p>Usable type A0 BaseUnits</p> <p>Delivery options: Apart from the standard delivery form in an individual package, selected BaseUnits are also available in a pack of 10 units. The pack of 10 units enables the amount of waste to be reduced considerably, as well as saving the time of unpacking individual modules.</p> <p>The number of modules required is the number of modules ordered. The type of packaging is chosen by selecting the article number. Packs of 10 can therefore only be ordered in integer multiples of 10.</p>		<p>BU15-P16+A0+12B/T</p> <p>BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group</p> <p>6ES7193-6BP40-0BA1</p>
		<p>BU15-P16+A0+2B/T</p> <p>BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group</p> <p>6ES7193-6BP00-0BA1</p>
		<p>Accessories</p> <p>Equipment labeling plate</p> <p>10 sheets of 16 labels, for printing with thermal transfer card printer or plotter</p> <p>6ES7193-6LF30-0AW0</p>
		<p>Labeling strips</p> <p>500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer</p> <p>6ES7193-6LR10-0AA0</p> <p>500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer</p> <p>6ES7193-6LR10-0AG0</p> <p>1000 labeling strips DIN A4, light gray, card, perforated, for inscription with laser printer</p> <p>6ES7193-6LA10-0AA0</p> <p>1000 labeling strips DIN A4, yellow, card, perforated, for inscription with laser printer</p> <p>6ES7193-6LA10-0AG0</p>
<p>BU15-P16+A10+2D</p> <p>BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)</p> <ul style="list-style-type: none"> • 1 unit • 10 units 	<p>6ES7193-6BP20-0DA0</p> <p>6ES7193-6BP20-2DA0</p>	
<p>BU15-P16+A0+2D</p> <p>BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)</p> <ul style="list-style-type: none"> • 1 unit • 10 units 	<p>6ES7193-6BP00-0DA0</p> <p>6ES7193-6BP00-2DA0</p>	
<p>BU15-P16+A10+2B</p> <p>BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group</p> <ul style="list-style-type: none"> • 1 unit • 10 units 	<p>6ES7193-6BP20-0BA0</p> <p>6ES7193-6BP20-2BA0</p>	
<p>BU15-P16+A0+2B</p> <p>BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group</p> <ul style="list-style-type: none"> • 1 unit • 10 units 	<p>6ES7193-6BP00-0BA0</p> <p>6ES7193-6BP00-2BA0</p>	
<p>Usable type A1 BaseUnits (temperature detection)</p>		
<p>BU15-P16+A0+12D/T</p> <p>BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)</p>	<p>6ES7193-6BP40-0DA1</p>	<p>Color code CC00, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16); 10 units</p> <p>6ES7193-6CP00-2MA0</p> <p>Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A); 10 units</p> <p>6ES7193-6CP71-2AA0</p> <p>Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A); 10 units</p> <p>6ES7193-6CP72-2AA0</p> <p>Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A); 10 units</p> <p>6ES7193-6CP73-2AA0</p> <p>Color code CC74, for 2x5 additional terminals, BU type A1, red (terminals 1B to 5B), blue (terminals 1C to 5C); 10 units</p> <p>6ES7193-6CP74-2AA0</p>
<p>BU15-P16+A0+2D/T</p> <p>BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)</p>	<p>6ES7193-6BP00-0DA1</p>	

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

SIPLUS analog input modules

Overview



- 2-, 4- and 8-channel AI modules
- Measuring ranges for current, voltage, thermocouples, resistance thermometer, resistor and PTC
- BaseUnits for 2-, 3- and 4-conductor connection
- Function classes Basic, Standard, High Feature and High Speed
- Clear labeling on front of module
- LEDs for diagnostics, status and errors
- Individual system-integrated load group formation with self-assembling potential multi-terminal busbars (power module not required for ET 200SP)
- Electronically readable rating plate (I&M data)
- Additional operating modes in some cases
- Optional accessories:
 - Labeling strips
 - Equipment marking label
 - Color-coded label with module-specific CC code
 - Shielding terminal

Overview of SIPLUS analog input modules

Analog input	Article No.	CC code	BU type	PU
AI 4 x U/I 2-wire ST	6AG1134-6HD00-7BA1	CC03	A0, A1	1
AI 4 x I 2-/4-wire ST	6AG1134-6GD00-7BA1	CC03	A0, A1	1
AI 4 x I 2-wire 4...20 mA HART	6AG1134-6TD00-2CA1	CC03	A0, A1	1
AI 2xU/I 2/4-wire HS With two operating modes • High-speed isochronous AI • Oversampling	6AG1134-6HB00-2DA1	CC00	A0, A1	1
AI 8 x RTD/TC 2-wire HF	6AG1134-6JF00-2CA1	CC00	A0, A1	1
AI 4 x RTD/TC 2-/3-/4-wire HF	6AG1134-6JD00-2CA1	CC00	A0, A1	1
AI 4 x RTD/TC 2-/3-/4-wire HF	6AG1134-6JD00-2CA1	CC00	A0, A1	1
AI Energy Meter AC 400 V ST	6AG1134-6PA00-7BD0	--	D0	1

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1134-6HD00-7BA1	6AG1134-6GD00-7BA1	6AG1134-6TD00-2CA1
Based on	6ES7134-6HD00-0BA1	6ES7134-6GD00-0BA1	6ES7134-6TD00-0CA1
	SIPLUS ET 200SP AI 4XU/I 2-WIRE ST	SIPLUS ET 200SP AI 4XI 2-/4-WIRE ST	SIPLUS ET 200SP AI 4XI 2-WIRE 4...20MA H
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; > 60 °C max. 1x +/- 20 mA or 4x +/- 10 V permissible	70 °C; = Tmax; > 60 °C max. 1x +/- 20 mA permissible	60 °C
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	50 °C; = Tmax	50 °C; = Tmax	50 °C
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude			Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)

Technical specifications (continued)

Article number	6AG1134-6HD00-7BA1	6AG1134-6GD00-7BA1	6AG1134-6TD00-2CA1
Based on	6ES7134-6HD00-0BA1 SIPLUS ET 200SP AI 4XU/I 2-WIRE ST	6ES7134-6GD00-0BA1 SIPLUS ET 200SP AI 4XI 2-/4-WIRE ST	6ES7134-6TD00-0CA1 SIPLUS ET 200SP AI 4XI 2-WIRE 4...20MA H
Relative humidity	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
- With condensation, tested in acc. with IEC 60068-2-38, max.			
Resistance	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against biologically active substances / conformity with EN 60721-3-3			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		
Article number	6AG1134-6HB00-2DA1	6AG1134-6JF00-2CA1	6AG1134-6JD00-2CA1
Based on	6ES7134-6HB00-0DA1 SIPLUS ET 200SP AI 2 X U/I 2-/4-WIRE HS	6ES7134-6JF00-0CA1 SIPLUS ET 200SP AI 8XRTD/TC 2-WIRE HF	6ES7134-6JD00-0CA1 SIPLUS ET 200SP AI 4XRTD/TC HF
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin
• horizontal installation, max.	60 °C; = Tmax	60 °C	60 °C; = Tmax
• vertical installation, min.		-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin
• vertical installation, max.		50 °C	50 °C; = Tmax
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
Relative humidity	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation		
- With condensation, tested in accordance with IEC 60068-2-38, max.			
Resistance	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against biologically active substances / conformity with EN 60721-3-3			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		
Article number	6AG1134-6PA00-7BD0	Article number	6AG1134-6PA00-7BD0
Based on	6ES7134-6PA00-0BD0 SIPLUS ET 200SP AI ENERGY METER	Based on	6ES7134-6PA00-0BD0 SIPLUS ET 200SP AI ENERGY METER
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin	Resistance	- against biologically active substances / conformity with EN 60721-3-3
• horizontal installation, max.	70 °C; = Tmax; > +60 °C max. permissible current 1 A per phase		Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)		- against chemically active substances / conformity with EN 60721-3-3
Relative humidity	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
- With condensation, tested in accordance with IEC 60068-2-38, max.			
			Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
			- against mechanically active substances / conformity with EN 60721-3-3
			Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

SIPLUS analog input modules

Ordering data	Article No.	Article No.
SIPLUS analog input modules (Extended temperature range and medial exposure) Analog input module AI 4xU/I 2-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3% Analog input module AI 4xI 2-/4-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3% Analog input module AI 4xRTD/TC 2-, 3-, 4-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range Analog input module AI 4xI 2-wire 4...20 mA HART, BU type A0 or A1, color code CC03 Analog input module AI 2xU/I 2-/4-wire High Speed, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%, isochronous mode above 250 µs, oversampling above 50 µs Analog input module AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range Analog input module AI 4xRTD/TC 2-, 3-, 4-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range Analog input module AI Energy Meter Standard, BU type D0	6AG1134-6HD00-7BA1 6AG1134-6GD00-7BA1 6AG1134-6JD00-2CA1 6AG1134-6TD00-2CA1 6AG1134-6HB00-2DA1 6AG1134-6JF00-2CA1 6AG1134-6JD00-2CA1 6AG1134-6PA00-7BD0	6AG1193-6BP20-7BA0 6AG1193-6BP00-7DA1 6AG1193-6BP00-7BA1 6AG1193-6BP40-7DA1 6AG1193-6BP40-7BA1
Usable SIPLUS BaseUnits type A0		
BU15-P16+A0+2D (Extended temperature range and medial exposure) BU type A0; BaseUnit (light) with 16 process terminals to the module, for starting a new load group (max. 10 A)	6AG1193-6BP00-7DA0	
BU15-P16+A0+2B (Extended temperature range and medial exposure) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA0	
BU15-P16+A10+2D (Extended temperature range and medial exposure) BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	6AG1193-6BP20-7DA0	
BU15-P16+A10+2B (Extended temperature range and medial exposure) BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group		6AG1193-6BP20-7BA0
Usable SIPLUS BaseUnits type D0		
BU20-P12+A0+0B (Extended temperature range and medial exposure) BU type D0; BaseUnit with 12 push-in terminals, without AUX terminals, bridged to the left		6AG1193-6BP00-7BD0
Accessories		See SIMATIC ET 200SP, analog input modules, page 9/26

Overview



- 2 and 4-channel AQ modules
- Output ranges for current, voltage
- BaseUnits for 2-, 3- and 4-conductor connection
- Function classes Standard and High Speed
- Clear labeling on front of module
- LEDs for diagnostics, status and errors
- Individual system-integrated load group formation with self-assembling potential multi-terminal busbars (power module not required for ET 200SP)
- Electronically readable rating plate (I&M data)
- Additional operating modes in some cases
- Optional accessories
 - Labeling strips
 - Reference identification label
 - Color-coded label with module-specific CC code
 - Shielding terminal

Overview of analog output modules

Analog output	Article No.	CC code	BU type	PU
AQ 4 x U/I ST	6AG1135-6HD00-7BA1	CC00	A0, A1	1
AQ 2xU/I HS	6AG1135-6HB00-2DA1	CC00	A0, A1	1

With two operating modes

- High-speed isochronous AQ
- Oversampling

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1135-6HD00-7BA1	6AG1135-6HB00-2DA1
Based on	6ES7135-6HD00-0BA1 SIPLUS ET 200SP AQ 4XU/I ST	6ES7135-6HB00-0DA1 SIPLUS ET 200SP AQ 2 X U/I HIGH SPEED
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; > +60 °C max. 2x +/- 10 V permissible	60 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	
• vertical installation, max.	50 °C; = Tmax	
Extended ambient conditions		
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
Resistance		
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

SIPLUS analog output modules

Ordering data

SIPLUS analog output modules

(Extended temperature range and medial exposure)

AQ 4XU/I Standard,
BU type A0 or A1, color code CC03

6AG1135-6HD00-7BA1

Analog output module
AQ 2xU/I High Speed,
BU type A0 or A1,
color code CC00, 16 bit, ± 0.3%

6AG1135-6HB00-2DA1

Usable SIPLUS BaseUnits type A0

BU15-P16+A0+2D

(Extended temperature range and medial exposure)

BU type A0; BaseUnit (light)
with 16 process terminals to the
module, for starting a new load
group (max. 10 A)

6AG1193-6BP00-7DA0

BU15-P16+A0+2B

(Extended temperature range and medial exposure)

BU type A0; BaseUnit (dark)
with 16 process terminals to the
module; for continuing the load
group

6AG1193-6BP00-7BA0

BU15-P16+A10+2D

(Extended temperature range and medial exposure)

BU type A0; BaseUnit (light)
with 16 process terminals (1...16)
to the module and an additional
10 internally jumpered AUX termi-
nals (1 A to 10 A); for starting a new
load group (max. 10 A)

6AG1193-6BP20-7DA0

BU15-P16+A10+2B

(Extended temperature range and medial exposure)

BU type A0; BaseUnit (dark)
with 16 process terminals (1...16)
to the module and an additional
10 internally jumpered AUX termi-
nals (1 A to 10 A); for continuing the
load group

6AG1193-6BP20-7BA0

Usable SIPLUS BaseUnits type A1 (temperature detection)

BU15-P16+A0+2D/T

(Extended temperature range and medial exposure)

BU type A1; BaseUnit (light)
with 16 process terminals to the
module, for starting a new load
group (max. 10 A)

6AG1193-6BP00-7DA1

BU15-P16+A0+2B/T

(Extended temperature range and medial exposure)

BU type A1; BaseUnit (dark)
with 16 process terminals to the
module; for continuing the load
group

6AG1193-6BP00-7BA1

BU15-P16+A0+12D/T

(Extended temperature range and medial exposure)

BU type A1; BaseUnit (light)
with 16 process terminals (1...16)
to the module and an additional
2x5 internally jumpered AUX termi-
nals (1 B to 5 B and 1 C to 5 C);
for starting a new load group
(max. 10 A)

6AG1193-6BP40-7DA1

BU15-P16+A0+12B/T

(Extended temperature range and medial exposure)

BU type A1; BaseUnit (dark)
with 16 process terminals (1...16)
to the module and an additional
2x5 internally jumpered AUX termi-
nals (1 B to 5 B and 1 C to 5 C);
for continuing the load group

6AG1193-6BP40-7BA1

Accessories

See SIMATIC ET 200SP,
analog output modules,
page 9/31

Overview



2-channel pulse output module for ET 200SP

- Operating modes:
 - Single pulse with defined length
 - Pulse chain with defined number of pulses
 - Pulse width modulation (with flexible ON period, optional current control and dither function)
 - PWM signal for controlling a DC motor
 - On and OFF delay; rising and falling edge can be delayed separately to the microsecond
 - Frequency output with defined output frequency
- Hardware:
 - 2 24V channels, 2A output current
 - Can be switched in parallel to boost performance to 4A of output current
 - Switching frequencies to 10 kHz; at reduced output current to 0.1 A up to 100 kHz
 - Push/pull output driver for especially steep edges at the outputs
 - Polarity change in DC motor operation for direction reversal
 - 1 high-speed 24 V digital input per channel with parameterizable input delay from 4 μ s
- Channel functions:
 - HW enable; Start of signal output with the onboard digital input
 - Parameterizable ON delay; for precise deceleration between the HW enable and the start of output
 - Current measurement in the operating modes pulse-width modulation and pulse chain; enables control of the output current mean value over a period. Temperature influences can thus be balanced to the resistance of the actuator.
 - Cyclic control of the respective main setpoint from the PLC in every operating mode; other values can be modified flexibly from the user program.
- Supported system functions:
 - Isochronous mode; enables precision-timed connection of the setpoint output to a higher-level controller
 - Firmware update
 - Identification data I&M

Technical specifications

Article number	6ES7138-6DB00-0BB1 ET 200SP, TM PULSE 2X24V
General information	
Product type designation	TM Pulse 2x24 V
Product function	
• I&M data	Yes; I&M 0
• Isochronous mode	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V13 SP1
• STEP 7 configurable/integrated as of version	V5.5 SP4 and higher
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.31
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	19.2 V
• permissible range, upper limit (DC)	28.8 V
• Short-circuit protection	Yes
• Reverse polarity protection	Yes; against destruction
Input current	
Current consumption, max.	70 mA; without load
Encoder supply	
Number of outputs	2; A common 24V encoder supply for both channels
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes; per module, electronic
• Output current, max.	300 mA
Power loss	
Power loss, typ.	1.7 W
Digital inputs	
Number of digital inputs	2; 1 per channel
Digital inputs, parameterizable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Freely usable digital input	Yes
• HW enable for digital output	Yes
Input voltage	
• Type of input voltage	DC
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+11 to +30V
• permissible voltage at input, min.	-30 V
• permissible voltage at input, max.	30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage) for standard inputs	
- parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
- at "0" to "1", min.	4 μ s; for parameterization "none"
- at "1" to "0", min.	4 μ s; for parameterization "none"

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules – Technology modules

Pulse output module TM Pulse 2x24V

Technical specifications (continued)

Article number	6ES7138-6DB00-0BB1 ET 200SP, TM PULSE 2X24V
Digital outputs	
Type of digital output	P- and M-switching
Number of digital outputs	2; 1 per channel
Current-sinking	Yes
Current-sourcing	Yes
Digital outputs, parameterizable	Yes
Short-circuit protection	Yes; electronic/thermal
Limitation of inductive shutdown voltage to	-0.8 V
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Freely usable digital output	Yes
• PWM output	Yes
- Number, max.	2; 1 per channel
• Connection of a proportional valve	Yes
• Dithering	Yes
• Current measurement	Yes
• Current control	Yes
• Connection of a DC motor	Yes
• ON-delay	Yes
• OFF-delay	Yes
• Frequency output	Yes
• Pulse train	Yes
• Pulse output	Yes
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	10 W; 1 W with High Speed output
Load resistance range	
• lower limit	12 Ω; 240 ohm with High Speed output
• upper limit	12 kΩ
Output voltage	
• Type of output voltage	DC
• for signal "0", max.	1 V
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	2 A; 0.1 A with High Speed output, observe derating
Output delay with resistive load	
• "0" to "1", typ.	0 μs; With High Speed output, 4.5 μs with Standard output
• "0" to "1", max.	0.8 μs; With High Speed output, 9 μs with Standard output
• "1" to "0", typ.	0 μs; With High Speed output, 4.5 μs with Standard output
• "1" to "0", max.	0.8 μs; With High Speed output, 9 μs with Standard output
Parallel switching of two outputs	
• for uprating	Yes

Article number	6ES7138-6DB00-0BB1 ET 200SP, TM PULSE 2X24V
Switching frequency	
• with resistive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• with inductive load, max.	100 kHz; With High Speed output, 10 kHz with standard output
• on lamp load, max.	10 Hz
Total current of the outputs	
• Current per channel, max.	2 A
• Current per group, max.	4 A
• Current per module, max.	4 A
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Bus cycle time (TDP), min.	250 μs; with 1 channel configuration, 375 μs with 2 channel configuration
Interrupts/diagnostics/status information	
Diagnostics	Yes
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Short-circuit	Yes
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes
• for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
• between the channels	No
• between the channels and backplane bus	Yes
Permissible potential difference	
between different circuits	75 V DC/60 V AC (base isolation)
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, max.	50 °C; Observe derating
Decentralized operation	
to SIMATIC S7-300	Yes
to SIMATIC S7-400	Yes
to SIMATIC S7-1200	Yes
to SIMATIC S7-1500	Yes
to standard PROFIBUS master	Yes
to standard PROFINET controller	Yes
Dimensions	
Width	20 mm
Weights	
Weight, approx.	50 g

Ordering data	Article No.	Ordering data	Article No.
Pulse output module TM Pulse 2x24V PWM and pulse output, 2 channels of 2 A for proportional valves and DC motors	6ES7138-6DB00-0BB1	Accessories Reference identification label 10 sheets of 16 labels	6ES7193-6LF30-0AW0
Usable BaseUnits BU20-P12+A0+4B BU type B1; BaseUnit (dark); without AUX terminals; for continuing the load group	6ES7193-6BP20-0BB1	Labeling strips 500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer 500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer 1000 labeling strips DIN A4, light gray, card, for inscription with laser printer 1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	6ES7193-6LR10-0AA0 6ES7193-6LR10-0AG0 6ES7193-6LA10-0AA0 6ES7193-6LA10-0AG0
		BU cover for covering empty slots (gaps); 5 units • 15 mm wide • 20 mm wide	6ES7133-6CV15-1AM0 6ES7133-6CV20-1AM0

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules – Communication

SIPLUS CM DP for ET 200SP CPU

Overview



- PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbit/s
- Expands the ET 200SP CPUs 1510SP-1 PN / 1512SP-1 PN by one PROFIBUS connection
- For communication with lower-level PROFIBUS devices at bandwidths of 9.6 kbit/s to 12 Mbit/s
- Communications services:
 - PROFIBUS DP
 - PG/OP communication
 - S7 communication
 This makes it possible to establish communication between the ET 200SP CPU and other devices, for example those from the SIMATIC S7-300/400/1500 range.
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Data record routing

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1545-5DA00-2AB0
Based on	6ES7545-5DA00-0AB0 SIPLUS ET 200SP CM DP
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	50 °C; = Tmax
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

Article No.

SIPLUS CM DP for ET 200SP CPU (Extended temperature range and medial exposure) PROFIBUS DP master/slave with electrical interface for connecting the ET 200SP CPUs to PROFIBUS at up to 12 Mbit/s	6AG1545-5DA00-2AB0
Accessories	see Catalog ST 70, SIMATIC CM DP

Overview



Digital fail-safe input module:
F-DI 8x24 V DC High Feature for BU type A0, color code CC01

Important features:

- 8-channel digital fail-safe input module for the ET 200SP
- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 8 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: White
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete article No.
- Optional labeling accessories
 - Labeling strips
 - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe, both in PROFIBUS, and in PROFINET configurations. They can be used with all fail-safe SIMATIC S7 CPUs.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1136-6BA00-2CA0
Based on	6ES7136-6BA00-0CA0 SIPLUS ET 200SP F-DI 4/8X24VDC HF
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C
• vertical installation, max.	50 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

I/O systems

ET 200 systems for the control cabinet
 ET 200SP – Fail-safe I/O modules

SIPLUS digital F input modules

Ordering data	Article No.		Article No.
SIPLUS digital fail-safe input modules (Extended temperature range and exposure to media) F-DI 8x24 V DC High Feature, BU type A0, color code CC01	6AG1136-6BA00-2CA0		
Usable BaseUnits			
BU15-P16+A0+2D (Extended temperature range and exposure to media) BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6AG1193-6BP00-7DA0	BU15-P16+A10+2D (Extended temperature range and exposure to media) BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	6AG1193-6BP20-7DA0
BU15-P16+A0+2B (Extended temperature range and exposure to media) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA0	BU15-P16+A10+2B (Extended temperature range and exposure to media) BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	6AG1193-6BP20-7BA0
		Accessories	See Catalog ST 70, SIMATIC ET 200SP, digital fail-safe input modules

Overview



Digital fail-safe output module:
F-DQ 4x24VDC High Feature, BU type A0, color code CC01

Important features:

- 4-channel digital fail-safe output module for the ET 200SP
- Fail-safe 2-channel activation (sink/source output) by actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: White
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete article No.
- Optional labeling accessories
 - Labeling strips
 - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFI-safe, both in PROFIBUS, and in PROFINET configurations.
- They can be used with all fail-safe SIMATIC S7 CPUs.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1136-6DB00-2CA0
Based on	6ES7136-6DB00-0CA0 SIPLUS ET 200SP F-DQ 4X24VDC/2A PM HF
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C
• vertical installation, max.	50 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

I/O systems

ET 200 systems for the control cabinet
ET 200SP – Fail-safe I/O modules

SIPLUS digital F output modules

Ordering data	Article No.		Article No.
SIPLUS digital fail-safe output modules (extended temperature range and exposure to media) F-DQ 4x24VDC High Feature, BU type A0, color code CC01	6AG1136-6DB00-2CA0		
Usable BaseUnits			
BU15-P16+A0+2D (extended temperature range and exposure to media) BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6AG1193-6BP00-7DA0		
BU15-P16+A0+2B (extended temperature range and exposure to media) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA0		
BU15-P16+A10+2D (extended temperature range and exposure to media) BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	6AG1193-6BP20-7DA0		
		BU15-P16+A10+2B (extended temperature range and exposure to media) BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	6AG1193-6BP20-7BA0
		BU20-P12+A4+0B (extended temperature range and exposure to media) BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit	6AG1193-6BP20-7BB0
		Accessories	see Catalog ST 70, SIMATIC ET 200SP, digital F-output modules

Overview



Digital fail-safe power module:
F-PM-E PPM 24VDC/8A for BU type C0,
color code CC52

Important features:

- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Safety-related shutdown of output modules within the potential group of the F-PM-E
- Two fail-safe digital inputs, for reading of sensor information (1 or 2 channels)
- One fail-safe digital output onboard (ppm switching, up to 2 A, up to SIL 3/PL e)
- Fail-safe digital output and potential supply pp or pm switching can be parameterized
- Parameterizable onboard evaluation of the fail-safe inputs for control of the fail-safe digital outputs and of the potential group
- Digital standard output modules can be shut down up to PL d (ISO 13849) and SIL 2 (IEC61508) (up to 8 A).
- Can be plugged into type C0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
 - Plain text identification of the module type and function class
 - 2D matrix code (order and serial number)
 - Connection diagram
 - Color coding of the module type DI: White
 - Hardware and firmware version
 - Color code CC for module-specific color coding of the potentials at the terminals of the BU
 - Complete article No.
- Optional labeling accessories
 - Labeling strips
 - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. They can be used with all fail-safe SIMATIC S7 CPUs.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1136-6PA00-2BC0
Based on	6ES7136-6PA00-0BC0 SIPLUS ET 200SP F-PM-E 24VDC/8A PPM
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-25 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C
• vertical installation, max.	50 °C
Extended ambient conditions	
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

Article No.

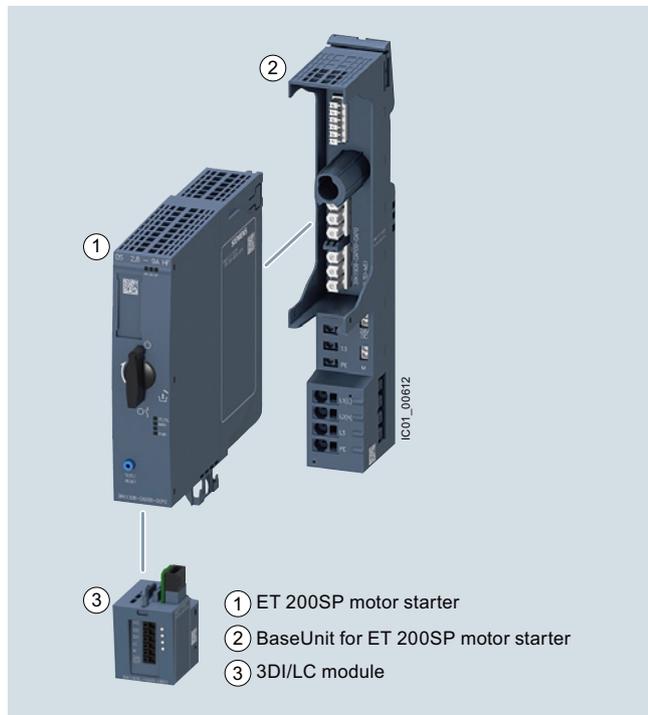
SIPLUS digital F power module F-PM-E 24VDC/8 A PPM Standard (extended temperature range and exposure to media) BU type C0, color code CC52. 2 inputs, 1 output, SIL3/Cat.4/PLe	6AG1136-6PA00-2BC0
Type C0 BaseUnits	
BU20-P6+A2+4D (extended temperature range and exposure to media) BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and an additional 2 AUX terminals; new load group	6AG1193-6BP20-7DC0
Accessories	see Catalog ST 70, SIMATIC ET 200SP, fail-safe special modules

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

ET 200SP motor starters

Overview



Motor starter, BaseUnit and 3DI/LC control module

Further information

Home page, see www.siemens.com/motorstarter/ET200SP

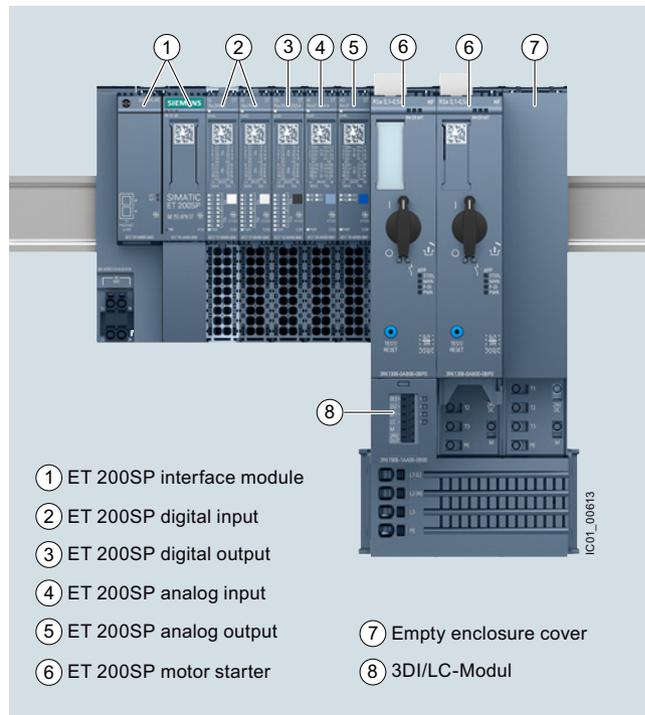
For further components in the ET 200SP I/O system:

- Catalog ST 70, see www.siemens.com/industry/infocenter
- Industry Mall, see www.siemens.com/product?ET200SP

ET 200SP motor starters

ET 200SP is a scalable and extremely flexible modular I/O system with IP20 degree of protection.

As I/O modules, the ET 200SP motor starters are an integral part of this I/O system. They are switching and protection devices for single and three-phase loads and are available as direct-on-line or reversing starters.



3RK1308 motor starter in the ET 200SP I/O system

Basic functionality

All versions of the ET 200SP motor starter feature the following functionality:

- Fully pre-wired motor starters for switching and protecting any AC loads up to 4 kW at 400 V AC and 500 V AC
- Self-assembling 32 A power bus, i.e. a single load voltage infeed for a whole group of motor starters
- All control supply voltages connected only once, i.e. when modules are added they are automatically connected to the next module
- Hot swapping is permissible
- Digital inputs can optionally be used via a 3DI/LC module
- Control of the motor starter from the control system and extensive diagnostics status via the cyclic process image
- Diagnostics capability for active monitoring of the switching and protection functions
- The signal states in the process image of the motor starter provide information about protective devices (short circuit or overload), the switching states of the motor starter, and system faults.

Article No. scheme

Product versions		Article number			
Motor starters		3RK1308	-	0	□ □ 0 0 - 0 C P 0
Product function	Direct-on-line starters	A			for motor standard output 0.12 ... 4 kW ¹⁾
	Reversing starters	B			for motor standard output 0.12 ... 4 kW ¹⁾
Current range	0.3 ... 1 A	B			
	0.9 ... 3 A	C			
	2.8 ... 9 A	D			

¹⁾ For standard motors: Single- or three-phase asynchronous motors, single-phase AC motors, single-phase asynchronous motors, at 400 V AC and 500 V AC; the actual startup characteristics of the motor as well as its rated data are important factors here.

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers. For your orders please use the article numbers quoted in the selection and ordering data.

Overview (continued)**BaseUnits for motor starters**

BaseUnits are components for accommodating the ET 200SP I/O modules. The self-assembling voltage buses integrated into the terminal modules reduce wiring outlay to the single infeed (both of auxiliary and load voltage).

All modules following on the right are automatically supplied upon plugging the BaseUnits together, if BaseUnits are inserted with routing. The rugged design and keyed connection technology enables use in harsh industrial conditions.

The BaseUnits are available with various infeeds for the motor starters.

Article No. scheme

Product versions		Article number									
BaseUnit		3RK1908	-	0	A	P	0	-	0	<input type="checkbox"/> P	0
BU infeed	24 V and 500 V					A					
	500 V					B					
	24 V					C					
	None					D					

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders please use the article numbers quoted in the selection and ordering data.

3DI/LC control module

This is a digital input module with three inputs for local motor starter functions such as "manual local control", implementation of fast inputs or "end position disconnection". For a list of all functions permitted by the 3DI/LC module, see Manual "ET 200SP Motor Starters", "Function overview" section <https://support.industry.siemens.com/cs/ww/en/view/109479973>.

The module is plugged into the front of the motor starter, from which it receives its 24 V DC operating voltage.

Benefits**Product advantages**

The ET 200SP motor starters offer a number of advantages:

- Fully integrated into the ET 200SP I/O system (including TIA Selection Tool and TIA Portal)
- Simple, integrated current value transmission
- Extensive parameterization by means of TIA Portal
- Increase of plant availability through fast replacement of units (easy mounting and plug-in technology)
- Greater endurance and reduced heat losses thanks to hybrid technology
- Less space required in the control cabinet (20 to 80 %) as a result of greater functional density (direct-on-line and reversing starters in same width)
- Extensive diagnostics and information for preventive maintenance
- Parameterizable inputs via 3DI/LC control module

- Less wiring and testing required as a result of integrating several functions into a single device
- Lower costs for stock keeping and configuration as a result of the wide setting range of the electronic overload release (up to 1:3)
- Technology-reduced inherent power loss as speed-controlled drive systems, thereby reducing cooling effort required (and enabling a more compact design)

The ET 200SP motor starters can be used with highly energy-efficient IE3/IE4 motors.

For further information on IE3/IE4, see [Catalog IC 10 N, page 5](#).

Standards and approvals

- IEC/EN 60947-4-2
- UL 508
- CCC approval for China

Application

The ET 200SP motor starters are suitable for the following applications:

- Switching and monitoring of
 - 3-phase motors with overload and short-circuit protection (e.g. 400 V asynchronous motors for secondary drives in conveyor systems)
 - 1-phase motors with overload and short-circuit protection (e.g. 250 V motors for pump applications)
 - Resistive loads by means of current value and diagnosis via the maintenance function (e.g. for heaters)
- Plant monitoring and energy management in conveyor systems
By means of the phase asymmetry and zero current detection, for example, it is possible to monitor drive belts and blocking.

- Track switching and lifting table control in conveyor systems
Track switches can be implemented by means of the quick stop function and lifting table controls by means of the "immediate end position disconnection" function without any laborious programming.
- Safe isolation of drive from main power supply
The isolating functions in accordance with IEC 60947-1 offer protection against inadvertent activation during plant maintenance.

I/O systems

ET 200 systems for the control cabinet
ET 200SP – I/O modules

ET 200SP motor starters**Technical specifications****Further information**

Industry Mall, see www.siemens.com/product?3RK1308

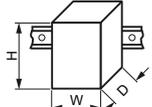
Manual, see

<https://support.industry.siemens.com/cs/ww/en/view/109479973>

FAQs, see

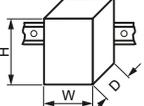
<https://support.industry.siemens.com/cs/products?dtp=FAQ&pnid=21800&lc=en-WW>

ET 200SP motor starters

Article number		3RK1308-0.B00-0CP0	3RK1308-0.C00-0CP0	3RK1308-0.D00-0CP0
General technical specifications:				
Width x Height x Depth	mm	30 × 142 × 150		
				
Design of the switch contact		Hybrid		
Design of the motor protection		Electronic		
Installation altitude at height above sea level maximum	m	2000		
Mounting position		Vertical, horizontal, flat		
Type of mounting		Can be plugged into BaseUnit		
Ambient temperature				
• During operation	°C	-25 ... +60		
• During transport	°C	-40 ... +70		
• During storage	°C	-40 ... +70		
Relative humidity during operation	%	10 ... 95		
Vibration resistance		15 mm up to 6 Hz; 2 g up to 500 Hz		
Shock resistance		6 g / 11 ms		
IP degree of protection		IP20		
Type of coordination		1		
Electrical data:				
Operating frequency	Hz	50 ... 60		
Ultimate short-circuit current breaking capacity (I_{cu})				
• at 400 V rated value	kA	55		
• at 500 V rated value	kA	55		
Adjustable current response value of the inverse-time delayed overload release	A	0.3 ... 1	0.9 ... 3	2.8 ... 9
Maximum permissible voltage for protective separation				
• between main and auxiliary circuit	V	500		
• between control and auxiliary circuit	V	75		
Insulation voltage, rated value	V	500		
Trip class		CLASS 5 and 10 adjustable		

Technical specifications (continued)

BaseUnits for motor starters

Article number	3RK1908-0AP00-0.P0	
General technical specifications:		
Width x Height x Depth	mm	30 x 217 x 75
		
Ambient temperature		
• During operation	°C	-25 ... +60
• During transport	°C	-40 ... +70
• During storage	°C	-40 ... +70
IP degree of protection	IP20	
Touch protection against electric shock	Finger-safe	
Connections / terminals:		
Connectable conductor cross-section for main contacts		
• Solid or stranded	mm ²	1 ... 6
• Finely stranded with end sleeve	mm ²	1 ... 6
• Finely stranded without end sleeve	mm ²	1 ... 6
Connectable conductor cross-section at DC input		
• Solid or stranded	mm ²	0.5 ... 2.5
• Finely stranded with end sleeve	mm ²	0.5 ... 2.5
• Finely stranded without end sleeve	mm ²	0.5 ... 2.5
AWG number as coded connectable conductor cross-section		
• For main contacts		24 ... 10
• At DC input		20 ... 12
Type of electrical connection for auxiliary and control circuits	Spring-type terminals (push-in)	
Miscellaneous:		
Type of screwdriver tip	Slotted	
Size of screwdriver tip	Standard screwdriver 0.6 mm x 3.5 mm	

I/O systems

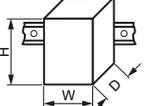
ET 200 systems for the control cabinet

ET 200SP – I/O modules

ET 200SP motor starters

Technical specifications (continued)

3DI/LC control module

Article number	3RK1908-1AA00-0BP0	
General technical specifications:		
Width x Height x Depth	mm	30 × 54.5 × 42.3
		
Number of digital inputs		4
Installation altitude at height above sea level maximum	m	2000
Mounting position		Vertical, horizontal, flat
Type of mounting		Can be plugged onto motor starter
Ambient temperature		
• During operation	°C	-25 ... +40
• During transport	°C	-40 ... +70
• During storage	°C	-40 ... +70
Connections / terminals:		
Connectable conductor cross-section for auxiliary contacts		
• Solid or stranded	mm ²	0.2 ... 1.5
• Finely stranded with end sleeve	mm ²	0.2 ... 1.5
• Finely stranded without end sleeve	mm ²	0.2 ... 1.5
AWG number as coded connectable conductor cross-section		24 ... 16
Type of electrical connection for auxiliary and control circuits		Spring-type terminals (push-in)
Electrical data:		
Type of voltage of the control supply voltage		DC
Control voltage 1 at DC rated value	V	20.4 ... 28.8
Miscellaneous:		
Type of screwdriver tip		Slotted
Size of screwdriver tip		Standard screwdriver 0.6 mm x 3.5 mm

9

Selection and ordering data

	Rating for AC-3 at 400 V rated value	Adjustable current response value of the inverse-time delayed overload release	DT	Article No.
	kW	A		
Motor starters				
Direct-on-line starters				
 3RK1308-0AB00-0CP0	0.25	0.3 ... 1	A	3RK1308-0AB00-0CP0 3RK1308-0AC00-0CP0 3RK1308-0AD00-0CP0
	1.1	0.9 ... 3	A	
	4	2.8 ... 9	A	
Reversing starters				
 3RK1308-0BB00-0CP0	0.25	0.3 ... 1	A	3RK1308-0BB00-0CP0 3RK1308-0BC00-0CP0 3RK1308-0BD00-0CP0
	1.1	0.9 ... 3	A	
	4	2.8 ... 9	A	

Selection and ordering data (continued)

	Operational voltage Maximum rated value	Control supply voltage at DC rated value	DT	Spring-type terminals (push-in) Article No.
	V	V		
BaseUnits				
	500	20.4 ... 28.8	A	3RK1908-0AP00-0APO
		--	A	3RK1908-0AP00-0CP0
	--	20.4 ... 28.8	A	3RK1908-0AP00-0BP0
		--	A	3RK1908-0AP00-0DP0
3RK1908-0AP00-0APO				
3DI/LC control module				
	Control supply voltage at DC rated value	Product function Local control Digital inputs parameterizable	DT	Spring-type terminals (push-in) Article No.
	V			
3RK1908-1AA00-0BP0	20.4 ... 28.8	Yes Yes	A	3RK1908-1AA00-0BP0
Accessories				
	BaseUnit cover		A	3RK1908-1CA00-0BP0
	3RK1908-1CA00-0BP0			
	Infeed bus cover		A	3RK1908-1DA00-2BP0
	3RK1908-1DA00-2BP0			
	Mechanical bracket		A	3RK1908-1EA00-1BP0
	3RK1908-1EA00-1BP0			
	Fan		▶	3RW4928-8VB00
	3RW4928-8VB00			

I/O systems

ET 200 systems for the control cabinet
ET 200SP

BaseUnits

Overview



With the BaseUnits, the ET 200SP offers a rugged and service-friendly design with permanent wiring:

- No tools needed for one-handed wiring using push-in terminals
- Actuation of the spring NC contacts with a standard screwdriver, with a blade width up to 3.5 mm
- Outstanding access due to arrangement of measuring tap, spring NC contacts and cable entry in columns, while at the same time reducing the space required by 64%
- Fault-proof color coding of the spring NC contacts for better orientation in the terminal panel

- Replacement of I/O modules during operation without affecting the wiring
- Operation with module gaps (gaps without I/O module)
- Automatic coding of the I/O modules prevents destruction of the electronics if a module is accidentally inserted in the wrong slot during replacement
- High EMC interference immunity:
 - Self-assembling shielded backplane bus
 - Multi-layer conductor plate with shield levels for interference-free signal transmission from the terminal to the I/O module,
 - System-integrated, space-saving shield connection for quick installation
- Self-assembling potential groups without external wiring or jumpers
- Replaceable terminal box
- Side-by-side latching of the BUs for high mechanical and EMC loads
- Optional module-specific color identification of the terminals according to the color code CC
- Optional equipment marking using slide-in equipment labeling plates

An ET 200SP station can be expanded via one "BU-Send" BaseUnit with a "BA-Send" BusAdapter plugged onto it with up to 16 modules from the ET 200AL series of I/O devices with IP67 protection.

Technical specifications

Article number	6ES7193-6BP20-0DA0 BASEUNIT TYPE A0, BU15-P16+A10+2D	6ES7193-6BP00-0DA0 BASEUNIT TYPE A0, BU15-P16+A0+2D	6ES7193-6BP20-0BA0 BASEUNIT TYPE A0, BU15-P16+A10+2B	6ES7193-6BP00-0BA0 BASEUNIT TYPE A0, BU15-P16+A0+2B	
General information					
Product type designation	BU Type A0, BU15-P16+A10+2D, PU 1	BU Type A0, BU15-P16+A0+2D, PU 1	BU Type A0, BU15-P16+A10+2B, PU 1	BU Type A0, BU15-P16+A0+2B, PU 1	
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	
Height	141 mm	117 mm	141 mm	117 mm	
Weights					
Weight, approx.	50 g	40 g	50 g	40 g	
Article number	6ES7193-6BP20-0BB0 BASEUNIT TYP B0, BU20-P12+A4+0B	6ES7193-6BP20-0BB1 BASEUNIT TYPE B1, BU20-P12+A0+4B	6ES7193-6BP20-0DC0 BASEUNIT TYP C0, BU20-P6+A2+4D	6ES7193-6BP00-0BD0 BASEUNIT TYPE D0, BU20-P12+A0+0B	6ES7193-6BP20-0BF0 BASEUNIT TYPE F0, BU20-P8+A4+0B
General information					
Product type designation	ET 200SP, BaseUnit BU-Typ B0, PU 1	BU20-P12+A0+4B	BU20-P6+A2+4D	BU20-P12+A0+0B	BU20-P8+A4+0B
Dimensions					
Width	20 mm	20 mm	20 mm	20 mm	20 mm
Height	117 mm	117 mm	117 mm	117 mm	117 mm
Weights					
Weight, approx.	48 g	48 g	47 g	47 g	48 g
Article number	6ES7193-6BP40-0DA1 BASEUNIT TYPE A1, BU15-P16+A0+12D/T	6ES7193-6BP00-0DA1 BASEUNIT TYPE A1, BU15-P16+A0+2D/T	6ES7193-6BP40-0BA1 BASEUNIT TYPE A1, BU15-P16+A0+12B/T	6ES7193-6BP00-0BA1 BASEUNIT TYPE A1, BU15-P16+A0+2B/T	
General information					
Product type designation	BU15-P16+A0+12D/T	BU15-P16+A0+2D/T	BU15-P16+A0+12B/T	BU15-P16+A0+2B/T	
Dimensions					
Width	15 mm	15 mm	15 mm	15 mm	
Height	141 mm	117 mm	141 mm	117 mm	
Weights					
Weight, approx.	50 g	40 g	50 g	40 g	

Technical specifications (continued)

Article number	6ES7193-6BN00-0NE0 ET 200SP, BASEUNIT BU-SEND
General information	
Product type designation	BaseUnit BU-Send
Dimensions	
Width	20 mm
Height	117 mm
Weights	
Weight, approx.	30 g

Ordering data

Ordering data	Article No.	Ordering data	Article No.
Type A0 BaseUnits		Type C0 BaseUnits	
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A) • 1 unit • 10 units	6ES7193-6BP20-0DA0 6ES7193-6BP20-2DA0	BU20-P6+A2+4D BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and an additional 2 AUX terminals; new load group	6ES7193-6BP20-0DC0
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A) • 1 unit • 10 units	6ES7193-6BP00-0DA0 6ES7193-6BP00-2DA0	Type D0 BaseUnits	
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group • 1 unit • 10 units	6ES7193-6BP20-0BA0 6ES7193-6BP20-2BA0	BU20-P12+A0+0B BU type D0; BaseUnit (dark) with 12 push-in terminals, without AUX terminals, bridged to the left	6ES7193-6BP00-0BD0
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group • 1 unit • 10 units	6ES7193-6BP00-0BA0 6ES7193-6BP00-2BA0	Type A1 BaseUnits (with temperature detection)	
Type B0 BaseUnits		BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	6ES7193-6BP40-0DA1
BU20-P12+A4+0B BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit • 1 unit • 10 units	6ES7193-6BP20-0BB0 6ES7193-6BP20-2BB0	BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	6ES7193-6BP00-0DA1
Type B1 BaseUnits		BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	6ES7193-6BP40-0BA1
BU20-P12+A0+4B BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group; 1 unit	6ES7193-6BP20-0BB1	BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6ES7193-6BP00-0BA1
		Type F0 BaseUnits	
		BU20-P8+A4+0B BU type F0; BaseUnit (dark) with 8 process terminals to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group	6ES7193-6BP20-0BF0

I/O systems

ET 200 systems for the control cabinet
ET 200SP

BaseUnits

Ordering data	Article No.	Article No.
Station expansion with IP67 I/O system ET 200AL		
BaseUnit BU-Send	6ES7193-6BN00-0NE0	
ET 200SP BusAdapter BA-Send 1 x FC	6ES7193-6AS00-0AA0	
Accessories		
Equipment labeling plate	6ES7193-6LF30-0AW0	
10 sheets of 16 labels		
BU cover		
for covering empty slots (gaps); 5 units		
• 15 mm wide	6ES7133-6CV15-1AM0	
• 20 mm wide	6ES7133-6CV20-1AM0	
Shield connection	6ES7193-6SC00-1AM0	
5 shield supports and 5 shield terminals		
		Color-coded labels
		<ul style="list-style-type: none"> • Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units • Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units • Color code CC03, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units • Color code CC04, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units • Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units • Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units • Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units • Color code CC74, for 2x5 additional terminals, 5 x red, 5 x blue, for BU type A1, with push-in terminals; 10 units • Color code CC81, for 4 AUX terminals 1 A to 4 A, yellow/green, for BaseUnit type B0; 10 units • Color code CC82, for 4 AUX terminals 1 A to 4 A, red, for BaseUnit type B0; 10 units • Color code CC83, for 4 AUX terminals 1 A to 4 A, blue, for BaseUnit type B0; 10 units • Color code CC41, module-specific, for 12 push-in terminals; for BaseUnit type B1; 10 units • Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow/green, for BaseUnit type C0; 10 units • Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0; 10 units • Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0; 10 units
		6ES7193-6CP01-2MA0
		6ES7193-6CP02-2MA0
		6ES7193-6CP03-2MA0
		6ES7193-6CP04-2MA0
		6ES7193-6CP71-2AA0
		6ES7193-6CP72-2AA0
		6ES7193-6CP73-2AA0
		6ES7193-6CP74-2AA0
		6ES7193-6CP81-2AB0
		6ES7193-6CP82-2AB0
		6ES7193-6CP83-2AB0
		6ES7193-6CP41-2MB0
		6ES7193-6CP84-2AC0
		6ES7193-6CP85-2AC0
		6ES7193-6CP86-2AC0

Overview



With the BaseUnits, the ET 200SP offers a rugged and service-friendly design with permanent wiring:

- No tools needed for one-handed wiring using push-in terminals
- Outstanding access due to arrangement of measuring tap, spring NC contacts and cable entry in columns, while at the same time reducing the space required by 64%
- Fault-proof color coding of the spring NC contacts for better orientation in the terminal panel

- Replacement of I/O modules during operation without affecting the wiring
- Operation with module gaps (missing I/O module)
- Automatic coding of the I/O modules prevents destruction of the electronics if a module is accidentally inserted in the wrong slot during replacement
- High immunity to electromagnetic interference due to
 - Self-assembling shielded backplane bus
 - Multi-layer conductor plate with shield levels for interference-free signal transmission from the terminal to the I/O module
 - System-integrated, space-saving shield connection for quick installation
- Self-assembling potential groups without external wiring or jumpers
- Replaceable terminal box
- Side-by-side latching of the BUs for high mechanical load capacity
- Optional module-specific color identification of the terminals according to the color code CC
- Actuation of the spring NC contacts with a standard screwdriver, with a blade width up to 3.5 mm

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1193-6BP00-7BA0	6AG1193-6BP00-7DA0	6AG1193-6BP20-7BA0	6AG1193-6BP20-7DA0
Based on	6ES7193-6BP00-0BA0	6ES7193-6BP00-0DA0	6ES7193-6BP20-0BA0	6ES7193-6BP20-0DA0
	SIPLUS ET 200SP BU15-P16+A0+2B	SIPLUS ET 200SP BU15-P16+A0+2D	SIPLUS ET 200SP BU15-P16+A10+2B	SIPLUS ET 200SP BU15-P16+A10+2D
Extended ambient conditions	<ul style="list-style-type: none"> • relative to ambient temperature-atmospheric pressure-installation altitude Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m) 			
Relative humidity	<ul style="list-style-type: none"> - With condensation, tested in acc. with IEC 60068-2-38, max. 100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
Resistance	<ul style="list-style-type: none"> - against biologically active substances / conformity with EN 60721-3-3 - against chemically active substances / conformity with EN 60721-3-3 - against mechanically active subst. / conformity with EN 60721-3-3 Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Article number	6AG1193-6BP00-7BA1	6AG1193-6BP00-7DA1	6AG1193-6BP40-7BA1	6AG1193-6BP40-7DA1
Based on	6ES7193-6BP00-0BA1	6ES7193-6BP00-0DA1	6ES7193-6BP40-0BA1	6ES7193-6BP40-0DA1
	SIPLUS ET 200SP BU15-P16+A0+2B/T	SIPLUS ET 200SP BU15-P16+A0+2D/T	SIPLUS ET 200SP BU15-P16+A0+12B/T	SIPLUS ET 200SP BU15-P16+A0+12D/T
Extended ambient conditions	<ul style="list-style-type: none"> • relative to ambient temperature-atmospheric pressure-installation altitude Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m) 			
Relative humidity	<ul style="list-style-type: none"> - With condensation, tested in acc. with IEC 60068-2-38, max. 100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
Resistance	<ul style="list-style-type: none"> - against biologically active substances / conformity with EN 60721-3-3 - against chemically active substances / conformity with EN 60721-3-3 - against mechanically active subst. / conformity with EN 60721-3-3 Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation! Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

I/O systems

ET 200 systems for the control cabinet
ET 200SP

SIPLUS BaseUnits

Technical specifications (continued)

Article number	6AG1193-6BP20-7BB0	6AG1193-6BP20-7DC0	6AG1193-6BP00-7BD0
Based on	6ES7193-6BP20-0BB0	6ES7193-6BP20-0DC0	6ES7193-6BP00-0BD0
	SIPLUS ET 200SP BU20-P12+A4+0B	SIPLUS ET 200SP BU20-P6+A2+4D	SIPLUS ET 200SP BU20-P12+A0+0B
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C	-25 °C	-40 °C
• vertical installation, max.	50 °C	50 °C	50 °C
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

9

Ordering data

SIPLUS BaseUnits type A0	Article No.	SIPLUS BaseUnits type A1 (with temperature detection)	Article No.
BU15-P16+A0+2D (Extended temperature range and medial exposure) BU type A0; BaseUnit (light) with 16 process terminals to the module, for starting a new load group (max. 10 A)	6AG1193-6BP00-7DA0	BU15-P16+A0+2D/T (Extended temperature range and medial exposure) BU type A1; BaseUnit (light) with 16 process terminals to the module, for starting a new load group (max. 10 A)	6AG1193-6BP00-7DA1
BU15-P16+A0+2B (Extended temperature range and medial exposure) BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA0	BU15-P16+A0+2B/T (Extended temperature range and medial exposure) BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	6AG1193-6BP00-7BA1
BU15-P16+A10+2D (Extended temperature range and medial exposure) BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1A to 10A); for starting a new load group (max. 10 A)	6AG1193-6BP20-7DA0	BU15-P16+A0+12D/T (Extended temperature range and medial exposure) BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	6AG1193-6BP40-7DA1
BU15-P16+A10+2B (Extended temperature range and medial exposure) BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1A to 10A); for continuing the load group	6AG1193-6BP20-7BA0	BU15-P16+A0+12B/T (Extended temperature range and medial exposure) BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered AUX terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	6AG1193-6BP40-7BA1

Ordering data	Article No.	Ordering data	Article No.
SIPLUS BaseUnits type B0		SIPLUS BaseUnits type D0	
BU20-P12+A4+0B (Extended temperature range and exposure to media) BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group; 1 unit	6AG1193-6BP20-7BB0	BU20-P12+A0+0B (Extended temperature range and exposure to media) BU type D0; BaseUnit (dark) with 12 push-in terminals, without AUX terminals, bridged to the left	6AG1193-6BP00-7BD0
SIPLUS BaseUnits type C0		Accessories	
BU20-P6+A2+4D (Extended temperature range and exposure to media) BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and an additional 2 AUX terminals; new load group	6AG1193-6BP20-7DC0	see SIMATIC ET 200SP BaseUnits, page 9/54	

I/O systems

ET 200 systems for the control cabinet
ET 200SP

BusAdapters

Overview



BA 2xFC BusAdapter

SIMATIC BusAdapter BA 2xFC for direct laying of the PROFINET cable via FastConnect connection



ET 200SP BusAdapter BA-Send for expansion of an ET 200SP station with ET 200AL modules

For the SIMATIC ET 200SP, two types of BusAdapter (BA) are available for selection:

- ET 200SP BusAdapter "BA-Send" for expansion of an ET 200SP station with up to 16 modules from the ET 200AL I/O series with IP67 protection via an ET connection
- SIMATIC BusAdapter for the free selection of the connection system (pluggable or direct connection) and physical PROFINET connection (copper, POF, HCS or glass fiber) to devices with a SIMATIC BusAdapter interface.

One further advantage of the SIMATIC BusAdapter: only the adapter needs to be replaced for subsequent conversion to the rugged FastConnect technology or a fiber-optic connection, or to repair defective RJ45 sockets.



SIMATIC BusAdapter BA LC/RJ45 for use as a system-integrated media converter from copper (RJ45) to glass fiber (LC)

Technical specifications

Article number	6ES7193-6AR00-0AA0	6ES7193-6AF00-0AA0	6ES7193-6AP00-0AA0	6ES7193-6AP20-0AA0
	ET 200SP, BUSADAPTER BA 2XRJ45	ET 200SP, BUSADAPTER BA 2XFC	ET 200SP, BUSADAPTER BA 2XSCRJ	ET 200SP, BUSADAPTER BA SCRJ/RJ45
General information				
Product type designation	SIMATIC BusAdapter BA 2XRJ45	SIMATIC BusAdapter BA 2XFC	SIMATIC BusAdapter BA 2XSCRJ	SIMATIC BusAdapter BA SCRJ/RJ45
Interfaces				
Number of PROFINET interfaces	1	1	1; 2 ports (switch) SCRJ FO	1; 2 ports (SCRJ + RJ45)
PROFINET IO				
• RJ 45	Yes; 2x		No	Yes; 1x
• FC (FastConnect)	No	Yes; 2x	No	No
• SCRJ	0		2	1
• LC	0		0	0
Cable length				
- PCF			100 m	100 m
- Plastic FOC (POF)			50 m	50 m
- PCF-GI			300 m	300 m
- Cu conductors	100 m	100 m		100 m

Technical specifications (continued)

Article number	6ES7193-6AR00-0AA0 ET 200SP, BUSADAPTER BA 2XRJ45	6ES7193-6AF00-0AA0 ET 200SP, BUSADAPTER BA 2XFC	6ES7193-6AP00-0AA0 ET 200SP, BUSADAPTER BA 2XSCRJ	6ES7193-6AP20-0AA0 ET 200SP, BUSADAPTER BA SCRJ/RJ45
Dimensions				
Width	20 mm	20 mm	20 mm	20 mm
Height	69.5 mm	69.5 mm	69.5 mm	
Depth	59 mm	59 mm	59 mm	
Weights				
Weight, approx.	46 g	53 g	50 g	50 g

Article number	6ES7193-6AP40-0AA0 ET 200SP, BUSADAPTER BA SCRJ/FC	6ES7193-6AG00-0AA0 SIMATIC BUSADAPTER BA 2xLC	6ES7193-6AG20-0AA0 SIMATIC BUSADAPTER BA LC/RJ45	6ES7193-6AG40-0AA0 SIMATIC BUSADAPTER BA LC/FC
General information				
Product type designation	SIMATIC BusAdapter BA SCRJ/FC	SIMATIC BusAdapter BA 2xLC	SIMATIC BusAdapter BA LC/RJ45	SIMATIC BusAdapter BA LC/FC
Interfaces				
Number of PROFINET interfaces	1; 2 ports (SCRJ + FC)	1; 2 ports (switch) LC multimode glass fiber	1; 2 ports (switch) LC / RJ45	1
PROFINET IO				
• RJ 45	No	No	Yes; 1x	No
• FC (FastConnect)	Yes; 1x	No	No	Yes; 1x
• SCRJ	1	0	0	0
• LC	0	2	1	1
Cable length				
- PCF	100 m			
- Plastic FOC (POF)	50 m			
- PCF-GI	300 m			
- Cu conductors	100 m		100 m	100 m
- Multi-mode graded index fiber 50/125 µm		2 km	2 km	2 km
- Multi-mode graded index fiber 62.5/125 µm		2 km	2 km	2 km
Ambient conditions				
Ambient temperature during operation				
• min.		0 °C	0 °C	0 °C
• max.		60 °C	60 °C	60 °C
Dimensions				
Width	20 mm	20 mm	20 mm	20 mm
Height	69.5 mm	69.5 mm	69.5 mm	69.5 mm
Depth	59 mm	59 mm	59 mm	59 mm
Weights				
Weight, approx.	50 g	40 g	32 g	50 g

Article number	6ES7193-6AS00-0AA0 ET 200SP, BUSADAPTER BA-SEND BA1XFC
General information	
Product type designation	BusAdapter BA-Send 1xFC
Interfaces	
PROFINET IO	
Cable length	
- Cu conductors	15 m; as from IM Firmware V3.3: between BA-Send and the first ET-CONNECTION bus station and between all other bus stations

Article number	6ES7193-6AS00-0AA0 ET 200SP, BUSADAPTER BA-SEND BA1XFC
ET connection	
• Number of ET connection interfaces	1
• FC (FastConnect)	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
Dimensions	
Width	20 mm
Weights	
Weight, approx.	44 g

I/O systems

ET 200 systems for the control cabinet
ET 200SP

BusAdapters

Ordering data	Article No.		Article No.
BusAdapter BA 2xRJ45 for IM 155-6PN ST, HF	6ES7193-6AR00-0AA0	BusAdapter BA 2XLC for IM 155-6PN HF; 2 glass FO connections	6ES7193-6AG00-0AA0
BusAdapter BA 2xFC for IM 155-6PN ST, HF; for increased resistance to vibration and EMC loads	6ES7193-6AF00-0AA0	BusAdapter BA LC/RJ45 for IM 155-6PN HF; with media converter glass FO - copper; 1 x LC connection, 1 x RJ45 connection	6ES7193-6AG20-0AA0
BusAdapter BA 2xSCRJ for IM 155-6PN HF; fiber-optic con- nection for POF or PCF cables up to 250 m, with monitoring of damping	6ES7193-6AP00-0AA0	BusAdapter BA LC/FC for IM 155-6PN HF; with media converter glass FO - copper; 1 x LC connection, 1 x FastConnect connection	6ES7193-6AG40-0AA0
BusAdapter BA SCRJ/RJ45 for IM 155-6PN HF; with media converter FOC-Cu; 1 x SCRJ FO connection, 1 x RJ45 connection	6ES7193-6AP20-0AA0	Station expansion with IP67 I/O system ET 200AL	
BusAdapter BA SCRJ/FC for IM 155-6PN HF; with media converter FOC-Cu; 1 x SCRJ FO connection, 1 x FastConnect connection	6ES7193-6AP40-0AA0	ET 200SP BusAdapter BA-Send 1 x FC	6ES7193-6AS00-0AA0
		BaseUnit BU-Send	6ES7193-6BN00-0NE0
		Accessories	
		Equipment labeling plate 10 sheets of 16 labels, for printing with thermal transfer card printer or plotter	6ES7193-6LF30-0AW0

Overview

ET 200SP BusAdapter (RJ45)



BusAdapter BA 2xFC

Some interface modules of the SIPLUS ET 200SP have a universal PROFINET interface for BusAdapters. With the appropriate bus adapter, the type of connection can be adapted to the requirements of the respective application:

- For standard applications with a moderate mechanical and EMC load, the BusAdapter BA 2xRJ45 is used. It offers two sockets for standard RJ45 plugs.
- For machines and systems in which higher mechanical and/or EMC loads act on the devices, the BusAdapter BA 2xFC is recommended. In this case, the bus cables are connected directly by means of FastConnect terminals – similar to the PROFIBUS connector, proven in millions of applications. The technology is extremely quick to assemble and achieves 5 times better vibration resistance and also 5 times greater resistance to electromagnetic interference, when compared to RJ45 plug-in connectors.
- BusAdapters with connections for fiber-optic cables can be used to cover high potential differences between two stations and/or high EMC loads.

Another advantage of the BusAdapters: In order to repair defective RJ45 sockets or for subsequent conversion to the rugged FastConnect technology or a fiber-optic connection, only the adapter needs to be replaced.

The following interface modules offer a PROFINET connection via BusAdapter:

- SIPLUS IM 155-6PN Standard
- SIPLUS IM 155-6PN High Feature

Note

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

I/O systems

ET 200 systems for the control cabinet
ET 200SP

SIPLUS BusAdapter**Technical specifications**

Article number	6AG1193-6AR00-7AA0	6AG1193-6AF00-7AA0	6AG1193-6AP00-2AA0
Based on	6ES7193-6AR00-0AA0 SIPLUS ET 200SP BA 2XRJ45	6ES7193-6AF00-0AA0 SIPLUS ET 200SP BA 2XFC PN	6ES7193-6AP00-0AA0 SIPLUS ET 200SP BA 2XSCRJ PN
Ambient conditions			
Ambient temperature during operation			
• min.	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax	70 °C; = Tmax	60 °C; = Tmax
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Ordering data**Article No.****Article No.****SIPLUS BA 2xRJ45 BusAdapter**

(Extended temperature range and medial exposure)

For IM 155-6PN ST, HF

6AG1193-6AR00-7AA0**Reference identification label**

10 sheets of 16 labels,
for printing with thermal transfer
card printer or plotter

6ES7193-6LF30-0AW0**SIPLUS BA 2xFC BusAdapter**

(Extended temperature range and medial exposure)

For IM 155-6PN ST, HF;
for increased resistance to
vibration and EMC loads

6AG1193-6AF00-7AA0**SIPLUS BA 2xSCRJ BusAdapter**

(Extended temperature range and medial exposure)

For IM 155-6PN HF; fiber-optic con-
nection for POF or PCF cables up to
250 m, with monitoring of damping

6AG1193-6AP00-2AA0

Overview

The I/O modules that are plugged onto the BaseUnits determine the potentials connected at the process terminals.

The +/- potentials can optionally be identified using module-specific color-coded labels. The potentials of the AUX and add-on terminals can also be marked using color-coded labels.

Advantages of the color-coded labels:

- Quick installation (one label for marking 16 terminals)
- Printed terminal numbers
- Avoidance of wiring errors
- Simple detection of potentials during servicing

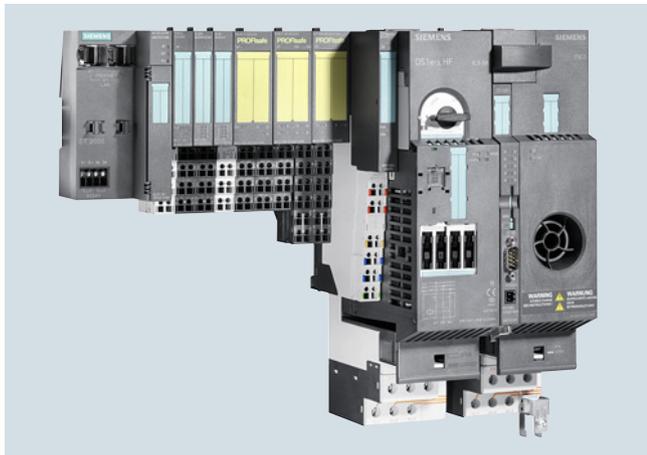
Ordering data	Article No.	Ordering data	Article No.
Module-specific color-coded labels (pack containing 10 labels) Color code CC00, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16) Color code CC01, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 16) Color code CC02, for 16 process terminals, for BU type A0, A1, gray (terminals 1 to 8), blue (terminals 9 to 16) Color code CC03, for 16 push-in terminals, for BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 12), gray (terminals 13 to 16) Color code CC04, for 16 push-in terminals, BU type A0, A1, gray (terminals 1 to 8), red (terminals 9 to 12), blue (terminals 13 to 16) Color code CC05, for 16 push-in terminals, for BU type A0, A1, gray (terminals 1 to 12), red (terminals 13 to 14), blue (terminals 15 to 16) Color code CC41, for 16 push-in terminals; for BU type B1, gray (terminals 1 to 4), red (terminals 5 to 8), blue (terminals 9 to 12) Color code CC42, for 12 push-in terminals, BU type F0, gray (terminals 1 to 8), red (terminals 9 to 10), blue (terminals 11 to 12) Color code CC51, for 6 process terminals, for BU type C0, C1, gray (terminals 1 to 4), red (terminal 5), blue (terminal 6) Color code CC51, for 6 process terminals, for BU type C0, gray (terminals 1, 2 and 5), red (terminals 3 and 4), blue (terminal 6)	6ES7193-6CP00-2MA0 6ES7193-6CP01-2MA0 6ES7193-6CP02-2MA0 6ES7193-6CP03-2MA0 6ES7193-6CP04-2MA0 6ES7193-6CP05-2MA0 6ES7193-6CP41-2MB0 6ES7193-6CP42-2MB0 6ES7193-6CP51-2MC0 6ES7193-6CP52-2MC0	Color-coded labels for additional terminals (pack containing 10 labels) Color code CC71, for 10 AUX terminals, BU type A0, yellow/green (terminals 1 A to 10 A) Color code CC72, for 10 AUX terminals, BU type A0, red (terminals 1 A to 10 A) Color code CC73, for 10 AUX terminals, BU type A0, blue (terminals 1 A to 10 A) Color code CC74, for 2x5 additional terminals, BU type A1, red (terminals 1B to 5B), blue (terminals 1C to 5C) Color code CC81, for 4 AUX terminals, BU type B0, yellow/green (terminals 1 A to 4 A) Color code CC82, for 4 AUX terminals, BU type B0, red (terminals 1 A to 4 A) Color code CC83, for 4 AUX terminals, BU type B0, blue (terminals 1 A to 4 A) Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow/green, for BaseUnit type C0, C1 Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0, C1 Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0, C1	6ES7193-6CP71-2AA0 6ES7193-6CP72-2AA0 6ES7193-6CP73-2AA0 6ES7193-6CP74-2AA0 6ES7193-6CP81-2AB0 6ES7193-6CP82-2AB0 6ES7193-6CP83-2AB0 6ES7193-6CP84-2AC0 6ES7193-6CP85-2AC0 6ES7193-6CP86-2AC0

I/O systems

ET 200 systems for the control cabinet
ET 200S

SIMATIC ET 200S

Overview



Information on SIMATIC ET 200S

Introduced in 2012, the successor system of the tried and tested SIMATIC ET 200S, the SIMATIC ET 200SP, brings a number of advantages.

For this reason, we recommend the use of the successor system SIMATIC ET 200SP for new automation concepts.

In addition to the well-known good system properties of the SIMATIC ET 200S such as

- Finely modular design for adaptation to the automation task in hand
- Permanent wiring (replacement of the I/O modules without affecting the wiring, even during operation)
- Connection to PROFINET and PROFIBUS

SIMATIC ET 200SP offers further innovative system advantages compared to SIMATIC ET 200S:

- Faster and more compact setup
 - Up to 50 % reduced space requirements in the control cabinet, with unchanged cross-section area
 - No tools needed for one-handed wiring thanks to push-in terminals
 - Reduced part variance with increased scope of functions
 - System-integrated self-assembling load group formation without power modules
 - As many as 16 channels per module and 1024 channels per station
 - Flexible PROFINET connection via BusAdapter (RJ45, FastConnect, plastic or glass fiber-optic cables), also as integrated media converter
 - System-integrated shield connection
- Increased performance
 - Short response times and isochronous mode for motion applications
 - High-speed data acquisition (digital from 1 μ s, analog from 50 μ s) and transmission (up to 100 Mbps):
for digital signals with time-based I/O for precisely timed controlling independent of bus cycles; for analog and digital signal oversampling, n-fold acquisition or output of signals within a PN cycle.

- Additional functions
 - Measurement of machine consumption, e.g. current, using an integrated energy meter (up to 480 V)
 - Comprehensive diagnostics function (wire break and short-circuit) integrated by default even in Standard-class modules
 - System-integrated fail-safe modules (PROFIsafe) with simplified switchless address setting
 - Enhanced configuration control for easy option handling
 - Operation with gaps
 - Multi hot swapping
 - Larger module range (AS-i, AS-i Safety, additional CPU versions, Open Controller, etc.)
 - MSI/MSO: Simultaneous access to input and output data from up to 4 controllers
 - Adaptation of measuring range: Increased resolution by adapting the measuring range to a limited section of a measuring range supported by the analog input module
 - Station expansion through system-integrated IP67 components (ET 200AL)

Overview



The ET 200M system with various interface modules is available for the distributed use of S7-300 I/O modules. Depending on the application purpose, the best suited IM in terms of costs and functions can be selected:

IM153-1 Standard

The IM153-1 is one reasonably priced variant that is excellently suited for most applications in the manufacturing environment. It permits the use of up to 8 S7-300 I/O modules.

IM153-2 High Feature

For higher requirements in manufacturing technology, such as the use of F-technology or the highest performance in conjunction with clock synchronization, the IM153-2 High Feature is available. This IM is also designed for use with the PCS7 in the field of process-oriented applications. This IM can be redundantly used and supports typical functions as they are required in the control field. These include, for example, clock synchronization or time stamping with an accuracy of up to 1ms.

Technical specifications

Article number	6ES7153-1AA03-0XB0 ET200M, INTERFACE MODULE IM153-1	6ES7153-2BA10-0XB0 ET200M, INTERFACE IM153-2 HF	6ES7153-2BA70-0XB0 ET200M, INTERFACE IM153-2 HF OUTDOOR
General information			
Product type designation	IM 153-1 DP ST	IM 153-2 DP HF	
Vendor identification (VendorID)	801Dh	801Eh	801Eh
Supply voltage			
Rated value (DC)	24 V	24 V	
• 24 V DC	Yes	Yes	Yes
permissible range (ripple included), lower limit (DC)	20.4 V	20.4 V	20.4 V
permissible range (ripple included), upper limit (DC)	28.8 V	28.8 V	28.8 V
external protection for power supply lines (recommendation)	not necessary	2.5 A	2.5 A
Mains buffering			
• Mains/voltage failure stored energy time	5 ms	5 ms	5 ms
Input current			
Current consumption, max.	350 mA; at 24 V DC	650 mA; with 24 V DC supply	650 mA
Inrush current, typ.	2.5 A	3 A	3 A
I ² t	0.1 A ² ·s	0.1 A ² ·s	0.1 A ² ·s
Output voltage			
Rated value (DC)	5 V		
Output current			
for backplane bus (5 V DC), max.	1 A	1.5 A	1.5 A
Power loss			
Power loss, typ.	3 W	5.5 W	5.5 W
Address area			
Addressing volume			
• Inputs	128 byte	244 byte	244 byte
• Outputs	128 byte	244 byte	244 byte
Hardware configuration			
Number of modules per DP slave interface, max.	8	12	12

I/O systems

ET 200 systems for the control cabinet
ET 200M – Interface modules

IM 153-1/153-2**Technical specifications (continued)**

Article number	6ES7153-1AA03-0XB0 ET200M, INTERFACE MODULE IM153-1	6ES7153-2BA10-0XB0 ET200M, INTERFACE IM153-2 HF	6ES7153-2BA70-0XB0 ET200M, INTERFACE IM153-2 HF OUTDOOR
Time stamping			
Accuracy		1 ms; 1ms at up to 8 modules; 10ms at up to 12 modules	1 ms; 1ms at up to 8 modules; 10ms at up to 12 modules
Number of message buffers		15	15
Messages per message buffer		20	20
Number of stampable digital inputs, max.		128; Max. 128 signals/station; max. 32 signals/slot	128; Max. 128 signals/station; max. 32 signals/slot
Time format		RFC 1119	RFC 1119
Time resolution		0.466 ns	0.466 ns
Time interval for transmitting the message buffer if a message is present		1 000 ms	1 000 ms
Time stamp on signal change		rising / falling edge as signal entering or exiting	rising / falling edge as signal entering or exiting
Interfaces			
Interface physics, RS 485	Yes	Yes	Yes
Interface physics, FOC	No	No	No
PROFIBUS DP			
• Node addresses	1 to 125 permitted	1 to 125 permitted	1 to 125 permitted
• automatic detection of transmission rate	Yes	Yes	Yes
• Output current, max.	90 mA	70 mA	70 mA
• Transmission rate, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s
• Transmission procedure	RS 485	RS 485	RS 485
• SYNC capability	Yes	Yes	Yes
• FREEZE capability	Yes	Yes	Yes
• Direct data exchange (slave-to-slave communication)	Yes; Sender	Yes; as publisher with all IO, as subscriber with F-IO only	Yes; as publisher with all IO, as subscriber with F-IO only
• Connector type	9-pin sub D socket	9-pin sub D	9-pin sub D
1. Interface			
DP slave			
• GSD file	(for DPV1) SIEM801D.GSD; SI01801D.GSG	SI05801E.GSG	SI05801E.GSG
• automatic baud rate search	Yes	Yes	Yes
Protocols			
Bus protocol/transmission protocol	PROFIBUS DP to EN 50170	PROFIBUS DP to EN 50170	PROFIBUS DP to EN 50170
Isolation			
Isolation tested with	Isolation voltage 500 V	Isolation voltage 500 V	Isolation voltage 500 V
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP20	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	
• max.	60 °C	60 °C	
Air pressure acc. to IEC 60068-2-13			
• Operating altitude above sea level, max.	3 000 m	3 000 m	3 000 m
Configuration			
Configuration software			
• STEP 7	STEP 7 / COM PROFIBUS / non-Siemens tools via GSD file	Yes; STEP 7 / COM PROFIBUS / non-Siemens tools via GSD file	Yes; STEP 7 / COM PROFIBUS / non-Siemens tools via GSD file
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	117 mm	117 mm	117 mm
Weights			
Weight, approx.	360 g	360 g	360 g

Technical specifications (continued)

Article number	6ES7195-7HD10-0XA0 ET200M, BUS MODULE F. 2 IM 153-2 RED.	6ES7195-7HA00-0XA0 ET200M, BUS MODULE F. PS AND IM 153	6ES7195-7HB00-0XA0 ET200M, BUS MODULE F. 2 40MM I/O MODULES	6ES7195-7HC00-0XA0 ET200M, BUS MODULE F. 1 80MM I/O MODULE
Accessories				
belongs to product	ET 200M	ET 200M	ET 200M	ET 200M
Dimensions				
Width	97 mm	97 mm	97 mm	97 mm
Height	92 mm	92 mm	92 mm	92 mm
Depth	30 mm	30 mm	30 mm	30 mm
Weights				
Weight, approx.	133 g	111 g	140 g	127 g

Ordering data

	Article No.	Article No.
IM 153-1 interface module Slave interface for connecting an ET 200M to PROFIBUS DP • Standard temperature range	6ES7153-1AA03-0XB0	
IM 153-2 interface module Slave interface for connecting an ET 200M to PROFIBUS DP; also for use in redundant systems • High Feature • High Feature with extended temperature range	6ES7153-2BA10-0XB0 6ES7153-2BA70-0XB0	
Active IM 153/IM 153 bus module For two IM 153-2 High Feature modules for designing redundant systems	6ES7195-7HD10-0XA0	
Bus module for ET 200M • For accommodating a power supply and an IM 153 module for the hot-swapping function during RUN, incl. bus module cover • To accommodate two 40-mm wide I/O modules for the hot-swapping function • To accommodate one 80-mm wide I/O module for the hot-swapping function	6ES7195-7HA00-0XA0 6ES7195-7HB00-0XA0 6ES7195-7HC00-0XA0	
ET 200M redundancy bundle Comprising two IM 153-2 High Feature modules and one IM 153/IM 153 bus module	6ES7153-2AR04-0XA0	
		Accessories
		PROFIBUS bus connector 90° outgoing cable, terminating resistor with disconnecting function, up to 12 Mbps, FastConnect Without PG interface • 1 unit • 100 units With PG interface • 1 unit • 100 units
		SIMATIC DP DIN rail for ET 200M Accommodates up to 5 bus modules; for hot-swapping function • Length: 483 mm (19") • Length: 530 mm • Length: 620 mm • Length: 2000 mm
		SIMATIC S7-300 DIN rail • Length: 160 mm • Length: 480 mm (19") • Length: 530 mm • Length: 830 mm • Length: 2000 mm
		S7 Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
		S7 Manual Collection, update service for 1 year Scope of delivery: Current DVD "S7 Manual Collection" and the three subsequent updates
		6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0 6ES7195-1GA00-0XA0 6ES7195-1GF30-0XA0 6ES7195-1GG30-0XA0 6ES7195-1GC00-0XA0 6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0 6ES7998-8XC01-8YE0 6ES7998-8XC01-8YE2

I/O systems

ET 200 systems for the control cabinet
ET 200M – Interface modules

SIPLUS IM 153-1/153-2

Overview



Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

Technical specifications

Article number	6AG1153-1AA03-2XB0	6AG1153-2BA02-2XY0	6AG1153-2BA10-7XB0
Based on	6ES7153-1AA03-0XB0 SIPLUS IM153-1	6ES7153-2BA02-0XB0 SIPLUS ET200M IM153-2 EN50155	6ES7153-2BA10-0XB0 SIPLUS ET200M IM153-2 HF
Ambient conditions			
Ambient temperature during operation			
• min.	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax
Ambient temperature during storage/transportation			
• min.		-40 °C	-40 °C
• max.		70 °C	70 °C
Extended ambient conditions			
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• At cold restart, min.	-25 °C		-25 °C
Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

Article number	6AG1195-7HA00-2XA0	6AG1195-7HB00-7XA0	6AG1195-7HC00-2XA0	6AG1195-7HD10-2XA0
Based on	6ES7195-7HA00-0XA0 SIPLUS ET 200M DP BUS MODULE	6ES7195-7HB00-0XA0 SIPLUS DP BUS MODULE ET 200M 2X40	6ES7195-7HC00-0XA0 SIPLUS ET 200M BUS MODULE	6ES7195-7HD10-0XA0 SIPLUS ET 200M DP BUS MODULE
Ambient conditions				
Ambient temperature during operation				
• min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Ambient temperature during storage/transportation				
• min.		-40 °C	-40 °C	-40 °C
• max.		70 °C	70 °C	70 °C
Extended ambient conditions				
• relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
Resistance				
- against biologically active substances / conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- against chemically active substances / conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- against mechanically active substances / conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Ordering data

Article No.	Article No.
SIPLUS ET 200M IM 153-1 Slave interface for connecting an ET 200M to PROFIBUS DP for a maximum of 8 S7-300 modules <ul style="list-style-type: none"> Extended temperature range and exposure to media Conformity to EN 50155 	Bus module for SIPLUS ET 200M Bus module for accommodating a power supply and an IM 153 module for the hot-swapping function during RUN, incl. bus module cover <ul style="list-style-type: none"> Extended temperature range and exposure to media
SIPLUS ET 200M IM 153-2 High Feature Slave interface for connecting an ET 200M to PROFIBUS DP for a maximum of 12 S7-300 modules; also for use in redundant systems <ul style="list-style-type: none"> Extended temperature range and exposure to media Conforms to EN 50155 	Bus module for accommodating two 40-mm wide I/O modules for the hot-swapping function <ul style="list-style-type: none"> Extended temperature range and exposure to media Bus module for accommodating one 80 mm wide I/O module for the hot swapping function <ul style="list-style-type: none"> Extended temperature range and exposure to media Bus module for accommodating two IM-153 modules for the hot-swapping function; for setting up redundant systems <ul style="list-style-type: none"> Extended temperature range and exposure to media
6AG1153-1AA03-2XB0 6AG1153-1AA03-2XB0	6AG1195-7HA00-2XA0 6AG1195-7HB00-7XA0 6AG1195-7HC00-2XA0 6AG1195-7HD10-2XA0
6AG1153-2BA10-7XB0 6AG1153-2BA02-2XY0	RS 485 bus connector with 90° cable outlet max. transfer rate 12 Mbit/s Extended temperature range and exposure to media <ul style="list-style-type: none"> Without PG interface With PG interface 6AG1972-0BA12-2XA0 6AG1972-0BB12-2XA0
	Additional accessories see SIMATIC ET 200M IM 153-1/153-2, page 9/67

I/O systems

ET 200 systems without control cabinet

ET 200pro

ET 200pro FC-2 Frequency Converter

Overview



ET 200pro FC-2 frequency converter

- 1.5 kW output
- Sensorless vector control, open-loop frequency control or closed-loop torque control
- Safety Integrated (STO)
- Integrated brake control, 180 V DC
- Integrated regenerative feedback
- Power looped through using power jumper plug with 25 A per segment
- Extensive diagnostics

Technical specifications

ET 200pro FC-2 frequency converter 6SL3514-1KE13-5AE0	
Selection features	
Integrated safety functions to IEC 61508 SIL 2 and EN ISO 13849-1 PL d and Category 3.	<ul style="list-style-type: none"> • Safe Torque Off (STO) • Activation of the integrated safety functions via the Safety Local isolator module F-RSM or via F-Switch PROFIsafe
Electrical data	
Line voltage	380 ... 480 V 3 AC +10 %/-10 %
Power	1.1 kW
<ul style="list-style-type: none"> • At 0 ... 55 °C ambient temperature • At 0 ... 45 °C ambient temperature 	1.5 kW
Rated input current/output current	2.0 A/3.5 A
<ul style="list-style-type: none"> • At 0 ... 55 °C ambient temperature • At 0 ... 45 °C ambient temperature 	2.5 A/3.9 A
Line frequency	47 ... 63 Hz
Overload capability	<ul style="list-style-type: none"> • Overload current 1.5 × rated output current (i.e. 150 % overload) for 60 s, cycle time 300 s • Overload current 2 × rated output current (i.e. 200 % overload) for 3 s, cycle time 300 s
Output frequency	0 ... 550 Hz
Pulse frequency	4 kHz (standard), 4 ... 16 kHz (in 2 kHz steps)
Standard SCCR (Short Circuit Current Rating)	10 kA
Skipped frequency range	1, programmable
Converter efficiency	95 ... 97 %

ET 200pro FC-2 frequency converter 6SL3514-1KE13-5AE0	
Interfaces	<ul style="list-style-type: none"> • Connection to PROFIBUS and PROFINET over the ET 200pro backplane bus • Mini USB interface for commissioning via PC (software: STARTER Version 4.4 and higher) • Optical interface for commissioning via the IOP Handheld • Slot for an optional memory card (SD) to upload or download parameter settings • PTC/bimetal/KTY84 interface for motor temperature monitoring
Functions	
Open-loop/closed-loop control procedure	<ul style="list-style-type: none"> • V/f control – linear ($M \sim n$) with/without flux current control (FCC), quadratic ($M \sim n^2$) or parameterizable • Vector control – sensorless • Torque control
Operating functions	<ul style="list-style-type: none"> • Jogging • BICO technology • Automatic restart following interruptions in operation due to a power failure • Smooth connection of converter to rotating motor
Braking functions	<ul style="list-style-type: none"> • Integrated regenerative feedback functionality • Activation of an electromechanical holding brake 180 V DC at 400 V line voltage ($U_{line} \times 0.45 = \text{brake voltage}$)
Protective functions	<ul style="list-style-type: none"> • Undervoltage • Overvoltage • Ground fault • Short-circuit • Stall protection • Thermal motor protection (I^2t or sensor) • Converter overtemperature • Motor blocking protection • Phase failure detection
Connectable motors	<ul style="list-style-type: none"> • Low-voltage asynchronous motors • Motor cable lengths: max. 15 m (shielded)

Technical specifications (continued)

ET 200pro FC-2 frequency converter 6SL3514-1KE13-5AE0		ET 200pro FC-2 frequency converter 6SL3514-1KE13-5AE0	
Mechanical data		Standards	
Degree of protection	IP65	Approvals, according to	UL508C, cUL, CE, low-voltage directive 2006/95/EC, EMC directive EN 61800-3 (corresponds to Class A acc. to EN 55011)
Operating temperature	0 ... 55 °C		
Mounting position	Vertical wall mounting (vertical alignment of the cooling fins)		
Dimensions (W x H x D) in mm	155 x 246 x 248		
Weight, approx.	4.0 kg		

Derating data

Pulse frequency

Ambient temperature °C	Rated output current in A at a pulse frequency of						
	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	14 kHz	16 kHz
0 ... 55 (1.1 kW)	3.5	2.8	2.2	1.6	1.1	0.5	0.0
0 ... 45 (1.5 kW)	3.9	3.9	3.9	3.6	3.3	2.7	2.2

Ordering data

Article No.	Article No.
ET 200pro FC-2 frequency converter with integral safety function 380 ... 480 V 3 AC +10 %/-10 % 47 ... 63 Hz Overload: 150 % 60 s; 200 % 3 s Output: 1.1 kW (0 ... 55 °C) 1.5 kW (0 ... 45 °C)	Accessories Connector set For energy supply, HAN Q4/2 <ul style="list-style-type: none"> 2.5 mm² 3RK1911-2BE50 4.0 mm² 3RK1911-2BE10 6.0 mm² 3RK1911-2BE30 Motor cables Motor cables pre-assembled at one end For motors with brake and temperature sensor with HAN Q8 connector, shielded Cross-section 1.5 mm ² <ul style="list-style-type: none"> Length 1.5 m ZKT: 70020501000150 HTG: 61 88 201 0288 Length 3 m ZKT: 70020501000300 HTG: 61 88 201 0289 Length 5 m ZKT: 70020501000500 HTG: 61 88 201 0290 Length 10 m ZKT: 70020501001000 HTG: 61 88 201 0299
Backplane bus module to hold the frequency converter (Essential for operation of the converter)	(HTG: supplied by Harting) (ZKT: supplied by KnorrTec)
6SL3514-1KE13-5AE0	6SL3260-2TA00-0AAA

Further selected accessories are available from Siemens Solution Partners. Select "Distributed Field Installation System" as technology in the "Solution Partner Finder".

<http://www.siemens.com/automation/partnerfinder>

I/O systems

ET 200 systems without control cabinet

ET 200pro

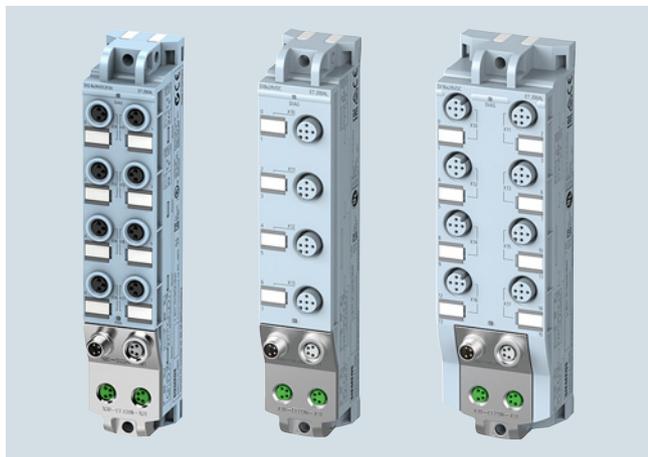
ET 200pro FC-2 Frequency Converter

Ordering data	Article No.	Article No.
Frequency converter connector For motor cable, shielded, HAN Q8	(HTG: supplied by Harting) (ZKT: supplied by KnorrTec) ZKT: 10032001 HTG: 61 83 401 0131	PC converter connection kit 2 (mini USB interface cable for communication with a PC) For controlling and commissioning a converter directly from a PC via a point-to-point connection if the appropriate software has been installed (STARTER commissioning tool ²⁾ V4.3 or higher); including USB cable (length 3 m)
Power jumper plug For 400 V power transmission to following 400 V modules	3RK1922-2BQ00	
IOP Handheld For use with SINAMICS G120, SINAMICS G120C, SINAMICS G120P, SINAMICS G110D, SINAMICS G120D, SINAMICS G110M, SINAMICS S110 or SIMATIC ET 200pro FC-2 Included in the scope of delivery: <ul style="list-style-type: none"> • IOP (6SL3255-0AA00-4JA1) • Handheld housing • Rechargeable batteries (4 × AA) • Charging unit (international) • RS 232 connecting cable (length 3 m, can only be used for SINAMICS G120, SINAMICS G120C, SINAMICS G120P and SINAMICS S110 ¹⁾) • USB cable (length 1 m) 	6SL3255-0AA00-4HA0	Memory card (SD) For the parameter settings of the ET 200pro FC-2 If required, the complete parameter settings of the frequency converter can be saved on the memory card. When servicing, the plant is immediately ready for use again after replacing the frequency converter and inserting the memory card.
RS 232 interface cable With optical interface to connect the ET 200pro FC-2 frequency converter to the IOP Handheld (length 2.5 m) ¹⁾	3RK1922-2BP00	

¹⁾ RS 232 connecting cable with optical interface (Article no.: 3RK1922-2BP00) required for use with SINAMICS G110D, SINAMICS G120D, SINAMICS G110M or SIMATIC ET 200pro FC-2. The cable must be ordered separately.

²⁾ The STARTER commissioning tool is available on the Internet at <http://www.siemens.com/starter>

Overview



- 30 and 45 mm wide modules with parameters and diagnostic functions
- 8-channel digital input module with M8 or M12 connection
- 16-channel digital input module with M12 connection
- 8-channel digital input/output module with M8 or M12 connection
- 8-channel digital output module 2A with M12 connection

Technical specifications

Article number	6ES7141-5BF00-0BA0	6ES7141-5AF00-0BA0	6ES7141-5AH00-0BA0
	ET 200AL, DI 8X24VDC, 8XM8	ET 200AL, DI 8X24VDC, 4XM12	ET 200AL, DI 16X24VDC, 8XM12
General information			
Product type designation	DI 8x24VDC, 8xM8	DI 8x24VDC, 4XM12	DI 16x24VDC, 8XM12
HW functional status	E01	E01	E01
Firmware version	V1.0.x	V1.0.x	V1.0.x
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with			
• STEP 7 TIA Portal configurable/integrated as of version	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher
• STEP 7 configurable/integrated as of version	From V5.5 SP4 Hotfix 3	V5.5 SP4 Hotfix 7 or higher	V5.5 SP4 Hotfix 7 or higher
• PROFIBUS as of GSD version/GSD revision	GSD as of Revision 5	GSD as of Revision 5	GSD as of Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3.1	GSDML V2.3.1	GSDML V2.3.1
Supply voltage			
Load voltage 1L+			
• Rated value (DC)	24 V	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V
• Reverse polarity protection	Yes; Against destruction; encoder power supply outputs applied with reversed polarity	Yes; Against destruction; encoder power supply outputs applied with reversed polarity	Yes; Against destruction; encoder power supply outputs applied with reversed polarity
Input current			
Current consumption (rated value) from load voltage 1L+ (unswitched voltage)	25 mA; without load 4 A; Maximum value	25 mA; without load 4 A; Maximum value	30 mA; without load 4 A; Maximum value
from load voltage 2L+, max.	4 A; Maximum value	4 A; Maximum value	4 A; Maximum value
Encoder supply			
Number of outputs	8	4	8
24 V encoder supply			
• Short-circuit protection	Yes; per module, electronic	Yes; per module, electronic	Yes; per module, electronic
• Output current, max.	0.7 A; total current of all encoders	0.7 A; total current of all encoders	1.4 A; total current of all encoders
Power loss			
Power loss, typ.	1.9 W	1.9 W	2.7 W

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – I/O modules

Digital I/O modules

Technical specifications (continued)

Article number	6ES7141-5BF00-0BA0 ET 200AL, DI 8X24VDC, 8XM8	6ES7141-5AF00-0BA0 ET 200AL, DI 8X24VDC, 4XM12	6ES7141-5AH00-0BA0 ET 200AL, DI 16X24VDC, 8XM12
Digital inputs			
Number of digital inputs	8	8	16
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes	Yes
Number of simultaneously controllable inputs all mounting positions			
- up to 55 °C, max.	8	8	16
Input voltage			
• Type of input voltage	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V
• for signal "0"	-30 to +5V	-30 to +5V	-30 to +5V
• for signal "1"	+11 to +30V	+11 to +30V	+11 to +30V
Input current			
• for signal "1", typ.	3.2 mA	3.2 mA	3.2 mA
Input delay (for rated value of input voltage)			
for standard inputs			
- at "0" to "1", min.	1.2 ms	1.2 ms	1.2 ms
- at "0" to "1", max.	4.8 ms	4.8 ms	4.8 ms
- at "1" to "0", min.	1.2 ms	1.2 ms	1.2 ms
- at "1" to "0", max.	4.8 ms	4.8 ms	4.8 ms
Cable length			
• unshielded, max.	30 m	30 m	30 m
Encoder			
Connectable encoders			
• 2-wire sensor	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA	1.5 mA
Interrupts/diagnostics/status information			
Alarms			
• Diagnostic alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Diagnostic messages			
• Short-circuit	Yes; Sensor supply to M; module by module	Yes; Sensor supply to M; module by module	Yes; Sensor supply to M; module by module
Diagnostics indication LED			
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for module diagnostics	Yes; Green/red LED	Yes; Green/red LED	Yes; Green/red LED
Potential separation			
between the load voltages	Yes	Yes	Yes
Potential separation channels			
• between the channels	No	No	No
• between the channels and backplane bus	Yes	Yes	Yes
• between the channels and the power supply of the electronics	No	No	No
Isolation			
Isolation tested with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP65	Yes	Yes	Yes
• IP67	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C	-25 °C	-25 °C
• max.	55 °C	55 °C	55 °C

Technical specifications (continued)

Article number	6ES7141-5BF00-0BA0 ET 200AL, DI 8X24VDC, 8XM8	6ES7141-5AF00-0BA0 ET 200AL, DI 8X24VDC, 4XM12	6ES7141-5AH00-0BA0 ET 200AL, DI 16X24VDC, 8XM12
Connection method			
Inputs/outputs	M8, 3-pole	M12, 5-pole	M12, 5-pole
Power supply	M8, 4-pole	M8, 4-pole	M8, 4-pole
ET-Connection			
• ET-Connection	M8, 4-pin, shielded	M8, 4-pin, shielded	M8, 4-pin, shielded
Dimensions			
Width	30 mm	30 mm	45 mm
Height	159 mm	159 mm	159 mm
Depth	40 mm	40 mm	40 mm
Weights			
Weight, approx.	145 g	145 g	184 g
<hr/>			
Article number	6ES7142-5AF00-0BA0 ET 200AL, DQ 8X24VDC/2A, 8XM12	Article number	6ES7142-5AF00-0BA0 ET 200AL, DQ 8X24VDC/2A, 8XM12
General information		Switching capacity of the outputs	
Product type designation	DQ 8X24VDC/2A, 8XM12	• on lamp load, max.	10 W
HW functional status	E01	Load resistance range	
Firmware version	V1.0.x	• lower limit	12 Ω
Product function		• upper limit	4 kΩ
• I&M data	Yes; I&M0 to I&M3	Output voltage	
Engineering with		• for signal "1", min.	L+ (-0.8 V)
• STEP 7 TIA Portal configurable/ integrated as of version	STEP 7 V13 SP1 or higher	Output current	
• STEP 7 configurable/integrated as of version	V5.5 SP4 Hotfix 7 or higher	• for signal "1" rated value	2 A
• PROFIBUS as of GSD version/ GSD revision	GSD as of Revision 5	• for signal "1" permissible range, max.	2 A; with inductive load to IEC 60947-5-1, DC-13 / AC-15
• PROFINET as of GSD version/ GSD revision	GSDML V2.3.1	• for signal "0" residual current, max.	0.5 mA
Supply voltage		Switching frequency	
Load voltage 1L+		• with resistive load, max.	100 Hz
• Rated value (DC)	24 V	• with inductive load, max.	0.1 Hz; 0.25 Hz at 25 °C
• permissible range, lower limit (DC)	20.4 V	• on lamp load, max.	1 Hz
• permissible range, upper limit (DC)	28.8 V	Total current of the outputs	
• Reverse polarity protection	Yes; against destruction; load increasing	• Current per group, max.	4 A; For inductive load max. 2 channels per group
Load voltage 2L+		Cable length	
• Rated value (DC)	24 V	• unshielded, max.	30 m
• permissible range, lower limit (DC)	20.4 V	Interrupts/diagnostics/ status information	
• permissible range, upper limit (DC)	28.8 V	Substitute values connectable	Yes; channel by channel, parameterizable
• Reverse polarity protection	Yes; against destruction; load increasing	Alarms	
Input current		• Diagnostic alarm	Yes; Parameterizable
Current consumption (rated value)	40 mA; without load	Diagnostic messages	
from load voltage 1L+ (unswitched voltage)	4 A; Maximum value	• Short-circuit	Yes; Outputs to ground; module by module
from load voltage 2L+, max.	4 A; Maximum value	Diagnostics indication LED	
Power loss		• Channel status display	Yes; Green LED
Power loss, typ.	4 W	• for module diagnostics	Yes; Green/red LED
Digital outputs		• For load voltage monitoring	Yes; Green LED
Number of digital outputs	8	Potential separation	
• in groups of	4; 2 load groups for 4 outputs each	between the load voltages	Yes
Short-circuit protection	Yes; per channel, electronic	Potential separation channels	
• Response threshold, typ.	2,8 A	• between the channels, in groups of	4
Limitation of inductive shutdown voltage to	2L+ (-47 V)	• between the channels and backplane bus	Yes
		• between the channels and the power supply of the electronics	No; 4 channels are non-isolated and 4 channels are isolated from supply voltage 1L+

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – I/O modules

Digital I/O modules

Technical specifications (continued)

Article number	6ES7142-5AF00-0BA0	Article number	6ES7142-5AF00-0BA0
	ET 200AL, DQ 8X24VDC/2A, 8XM12		ET 200AL, DQ 8X24VDC/2A, 8XM12
Isolation		Dimensions	
Isolation tested with	707 V DC (type test)	Width	45 mm
Degree and class of protection		Height	159 mm
Degree of protection acc. to EN 60529		Depth	40 mm
• IP65	Yes	Weights	
• IP67	Yes	Weight, approx.	192 g
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C		
• max.	55 °C		
Connection method			
Inputs/outputs	M12, 5-pole		
Power supply	M8, 4-pole		
ET-Connection			
• ET-Connection	M8, 4-pin, shielded		

Article number	6ES7143-5BF00-0BA0	6ES7143-5AF00-0BA0
	ET 200AL, DIQ 4+DQ 4X24VDC/0.5A, 8XM8	ET 200AL, DIQ 4+DQ 4X24VDC/0.5A, 4XM12
General information		
Product type designation	DIQ 4+DQ 4X24VDC/0.5A, 8xM8	DIQ 4+DQ 4X24VDC/0.5 A, 4XM12
HW functional status	E01	E01
Firmware version	V1.0.x	V1.0.x
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with		
• STEP 7 TIA Portal configurable/integrated as of version	STEP 7 V13 SP1 or higher	STEP 7 V13 SP1 or higher
• STEP 7 configurable/integrated as of version	From V5.5 SP4 Hotfix 3	V5.5 SP4 Hotfix 7 or higher
• PROFIBUS as of GSD version/GSD revision	GSD as of Revision 5	GSD as of Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3.1	GSDML V2.3.1
Supply voltage		
Load voltage 1L+		
• Rated value (DC)	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V
• Reverse polarity protection	Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up	Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up
Load voltage 2L+		
• Rated value (DC)	24 V	24 V
• permissible range, lower limit (DC)	20.4 V	20.4 V
• permissible range, upper limit (DC)	28.8 V	28.8 V
• Reverse polarity protection	Yes; against destruction; load increasing	Yes; against destruction; load increasing
Input current		
Current consumption (rated value)	40 mA; without load	40 mA; without load
from load voltage 1L+ (unswitched voltage)	4 A; Maximum value	4 A; Maximum value
from load voltage 2L+, max.	4 A; Maximum value	4 A; Maximum value
Encoder supply		
Number of outputs	4	4
24 V encoder supply		
• Short-circuit protection	Yes; per module, electronic	Yes; per module, electronic
• Output current, max.	0.7 A; total current of all encoders	0.7 A; total current of all encoders

Technical specifications (continued)

Article number	6ES7143-5BF00-0BA0 ET 200AL, DIQ 4+DQ 4X24VDC/0.5A, 8XM8	6ES7143-5AF00-0BA0 ET 200AL, DIQ 4+DQ 4X24VDC/0.5A, 4XM12
Power loss		
Power loss, typ.	2.5 W	2.5 W
Digital inputs		
Number of digital inputs	4; Parameterizable as DIQ	4; Parameterizable as DIQ
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes
Number of simultaneously controllable inputs		
all mounting positions		
- up to 55 °C, max.	4	4
Input voltage		
• Type of input voltage	DC	DC
• Rated value (DC)	24 V	24 V
• for signal "0"	-3 to +5V	-3 to +5V
• for signal "1"	+11 to +30V	+11 to +30V
Input current		
• for signal "1", typ.	3.2 mA	3.2 mA
Input delay (for rated value of input voltage)		
for standard inputs		
- at "0" to "1", min.	1.2 ms	1.2 ms
- at "0" to "1", max.	4.8 ms	4.8 ms
- at "1" to "0", min.	1.2 ms	1.2 ms
- at "1" to "0", max.	4.8 ms	4.8 ms
Cable length		
• unshielded, max.	30 m	30 m
Digital outputs		
Number of digital outputs	8; 4 DQ fixed, 4 DIQ parameterizable	8; 4 DQ fixed, 4 DIQ parameterizable
• in groups of	4; 2 load groups for 4 outputs each	4; 2 load groups for 4 outputs each
Short-circuit protection	Yes; per channel, electronic	Yes; per channel, electronic
• Response threshold, typ.	0.7 A	0.7 A
Limitation of inductive shutdown voltage to	2L+ (-47 V)	2L+ (-47 V)
Switching capacity of the outputs		
• on lamp load, max.	5 W	5 W
Load resistance range		
• lower limit	48 Ω	48 Ω
• upper limit	4 kΩ	4 kΩ
Output voltage		
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)
Output current		
• for signal "1" rated value	0.5 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Switching frequency		
• with resistive load, max.	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz
• on lamp load, max.	1 Hz	1 Hz
Total current of the outputs		
• Current per group, max.	2 A	2 A
Cable length		
• unshielded, max.	30 m	30 m
Encoder		
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – I/O modules

Digital I/O modules

Technical specifications (continued)

Article number	6ES7143-5BF00-0BA0 ET 200AL, DIQ 4+DQ 4X24VDC/0.5A, 8XM8	6ES7143-5AF00-0BA0 ET 200AL, DIQ 4+DQ 4X24VDC/0.5A, 4XM12
Interrupts/diagnostics/ status information		
Substitute values connectable	Yes; channel by channel, parameterizable	Yes; channel by channel, parameterizable
Alarms		
• Diagnostic alarm	Yes; Parameterizable	Yes; Parameterizable
Diagnostic messages		
• Short-circuit	Yes; Outputs to M; encoder supply to M; module by module	Yes; Outputs to M; encoder supply to M; module by module
Diagnostics indication LED		
• Channel status display	Yes; Green LED	Yes; Green LED
• for module diagnostics	Yes; Green/red LED	Yes; Green/red LED
• For load voltage monitoring	Yes; Green LED	Yes; Green LED
Potential separation		
between the load voltages	Yes	Yes
Potential separation channels		
• between the channels, in groups of	4; DIQ channels are isolated from DQ channels	4; DIQ channels are isolated from DQ channels
• between the channels and backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	No; DIQ channels are non-isolated and DQ channels are isolated from supply voltage 1L+	No; DIQ channels are non-isolated and DQ channels are isolated from supply voltage 1L+
Isolation		
Isolation tested with	707 V DC (type test)	707 V DC (type test)
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP65	Yes	Yes
• IP67	Yes	Yes
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C	-25 °C
• max.	55 °C	55 °C
Connection method		
Inputs/outputs	M8, 3-pole	M12, 5-pole
Power supply	M8, 4-pole	M8, 4-pole
ET-Connection		
• ET-Connection	M8, 4-pin, shielded	M8, 4-pin, shielded
Dimensions		
Width	30 mm	30 mm
Height	159 mm	159 mm
Depth	40 mm	40 mm
Weights		
Weight, approx.	145 g	145 g

Ordering data	Article No.	Ordering data	Article No.
Digital input modules		Power cable M8	
DI 8X24VDC, 8XM8	6ES7141-5BF00-0BA0	4-pin	
DI 8X24VDC, 4XM12	6ES7141-5AF00-0BA0	Pre-assembled at both ends, M8 connector and M8 socket	
DI 16X24VDC, 8XM12	6ES7141-5AH00-0BA0	0.19 m	6ES7194-2LH02-1AA0
Digital output modules		0.3 m	6ES7194-2LH03-1AA0
DQ 8X24VDC/2A, 8XM12	6ES7142-5AF00-0BA0	1 m	6ES7194-2LH10-1AA0
Digital input/output modules		2 m	6ES7194-2LH20-1AA0
4 DIO / 4 DO, 24 V DC, 0.5 A	6ES7143-5BF00-0BA0	5 m	6ES7194-2LH50-1AA0
DIQ 4+DQ 4X24VDC/0.5A, 4XM12	6ES7143-5AF00-0BA0	10 m	6ES7194-2LN10-1AA0
Accessories		15 m	6ES7194-2LN15-1AA0
Bus cable for backplane bus (ET connection)		Pre-assembled at both ends, angled M8 connector and angled M8 socket	
4-pin, shielded		0.3 m	6ES7194-2LH03-1AB0
Pre-assembled at both ends, 2 M8 connectors		1 m	6ES7194-2LH10-1AB0
0.19 m	6ES7194-2LH02-0AA0	2 m	6ES7194-2LH20-1AB0
0.3 m	6ES7194-2LH03-0AA0	5 m	6ES7194-2LH50-1AB0
1 m	6ES7194-2LH10-0AA0	10 m	6ES7194-2LN10-1AB0
2 m	6ES7194-2LH20-0AA0	15 m	6ES7194-2LN15-1AB0
5 m	6ES7194-2LH50-0AA0	Pre-assembled at one end, M8 socket	
10 m	6ES7194-2LN10-0AA0	2 m	6ES7194-2LH20-1AC0
15 m	6ES7194-2LN15-0AA0	5 m	6ES7194-2LH50-1AC0
Pre-assembled at both ends, two M8 connectors, angled		10 m	6ES7194-2LN10-1AC0
0.3 m	6ES7194-2LH03-0AB0	15 m	6ES7194-2LN15-1AC0
1 m	6ES7194-2LH10-0AB0	M8 connector for ET connection	6ES7194-2AB00-0AA0
2 m	6ES7194-2LH20-0AB0	4-pin, shielded	
5 m	6ES7194-2LH50-0AB0	M8 power connector	
10 m	6ES7194-2LN10-0AB0	Male contact insert, 4-pin	6ES7194-2AA00-0AA0
15 m	6ES7194-2LN15-0AB0	Female contact insert, 4-pin	6ES7194-2AC00-0AA0
Pre-assembled at one end, one M8 connector		ET connection FastConnect stripping tool	6ES7194-2KA00-0AA0
2 m	6ES7194-2LH20-0AC0	Stripping tool for stripping the ET connection bus cable	
5 m	6ES7194-2LH50-0AC0	Labels	6ES7194-2BA00-0AA0
10 m	6ES7194-2LN10-0AC0	10 x 5 mm, RAL 9016; 5 frames with 40 labels each	
15 m	6ES7194-2LN15-0AC0		

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – Accessories

Cables and connectors

Overview

- Pre-assembled cables in various designs and lengths:
 - For connecting the interface modules and I/O modules via the internal backplane bus (ET connection).
 - For power supply.

Technical specifications

Article number	6ES7194-2LH02-0AA0	6ES7194-2LH03-0AA0	6ES7194-2LH10-0AA0	6ES7194-2LH20-0AA0
	BUS CABLE ET CONNECTION, 0.19M	BUS CABLE ET CONNECTION, 0.3M	BUS CABLE ET CONNECTION, 1.0M	BUS CABLE ET CONNECTION, 2.0M
General information				
Product type designation	BUS CABLE ET CONNECTION, 0.19M	BUS CABLE ET CONNECTION, 0.3M	BUS CABLE ET CONNECTION, 1.0M	BUS CABLE ET CONNECTION, 2.0M
Product description	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, 4-pin, shielded
Application/function	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67
Degree and class of protection				
Degree of protection acc. to EN 60529				
• IP65	Yes	Yes	Yes	Yes
• IP67	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C	80 °C
Cables				
Cable designation	2Y(ST)CY 1x4x0.5/1.0-100- GN	2Y(ST)CY 1x4x0.5/1.0-100- GN	2Y(ST)CY 1x4x0.5/1.0-100- GN	2Y(ST)CY 1x4x0.5/1.0-100- GN
Cable length	0.19 m	0.3 m	1 m	2 m
Number of electrical cores	4	4	4	4
Design of shield	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires
Outer diameter of inner conductor	0.5 mm	0.5 mm	0.5 mm	0.5 mm
Outer diameter of core insulation	1 mm	1 mm	1 mm	1 mm
Outer diameter of cable sheath	5 mm	5 mm	5 mm	5 mm
Number of bending cycles	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²
Permissible bending radius, single bend, min.	20 mm	20 mm	20 mm	20 mm
Permissible bending radius, multiple bends, min.	40 mm	40 mm	40 mm	40 mm
Bending radius for continuous bending	100 mm	100 mm	100 mm	100 mm
Color of cable sheath	Green	Green	Green	Green
Color of core insulation of data cores	white / yellow / blue / orange			
Weight per length	34 kg/km	34 kg/km	34 kg/km	34 kg/km

Technical specifications (continued)

Article number	6ES7194-2LH02-0AA0 BUS CABLE ET CONNECTION, 0.19M	6ES7194-2LH03-0AA0 BUS CABLE ET CONNECTION, 0.3M	6ES7194-2LH10-0AA0 BUS CABLE ET CONNECTION, 1.0M	6ES7194-2LH20-0AA0 BUS CABLE ET CONNECTION, 2.0M
Mechanics/material				
Type of cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet
Material of housing	metal	metal	metal	metal
Material of core insulation	PE	PE	PE	PE
Material of cable sheath	PVC	PVC	PVC	PVC
Material property halogen-free	No	No	No	No
Material property silicone-free	Yes	Yes	Yes	Yes
Article number	6ES7194-2LH50-0AA0 BUS CABLE ET CONNECTION, 5.0M	6ES7194-2LN10-0AA0 BUS CABLE ET CONNECTION, 10M	6ES7194-2LN15-0AA0 BUS CABLE ET CONNECTION, 15M	
General information				
Product type designation	BUS CABLE ET-CONNECTION, 5.0M	BUS CABLE ET-CONNECTION, 10M	BUS CABLE ET CONNECTION, 15M	
Product description	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, 4-pin, shielded	
Application/function	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	
Degree and class of protection				
Degree of protection acc. to EN 60529				
• IP65	Yes	Yes	Yes	Yes
• IP67	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C	
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C	
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	
• max.	80 °C	80 °C	80 °C	
Cables				
Cable designation	2Y(ST)CY 1x4x0.5/1.0-100-GN	2Y(ST)CY 1x4x0.5/1.0-100-GN	2Y(ST)CY 1x4x0.5/1.0-100-GN	
Cable length	5 m	10 m	15 m	
Number of electrical cores	4	4	4	
Design of shield	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	
Outer diameter of inner conductor	0.5 mm	0.5 mm	0.5 mm	
Outer diameter of core insulation	1 mm	1 mm	1 mm	
Outer diameter of cable sheath	5 mm	5 mm	5 mm	
Number of bending cycles	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²		
Permissible bending radius, single bend, min.	20 mm	20 mm	20 mm	
Permissible bending radius, multiple bends, min.	40 mm	40 mm	40 mm	
Bending radius for continuous bending	100 mm	100 mm	100 mm	
Color of cable sheath	Green	Green	Green	
Color of core insulation of data cores	white / yellow / blue / orange	white / yellow / blue / orange	white / yellow / blue / orange	
Weight per length	34 kg/km	34 kg/km	34 kg/km	
Mechanics/material				
Type of cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet	
Material of housing	metal	metal	metal	
Material of core insulation	PE	PE	PE	
Material of cable sheath	PVC	PVC	PVC	
Material property halogen-free	No	No	No	
Material property silicone-free	Yes	Yes	Yes	

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – Accessories

Cables and connectors

Technical specifications (continued)

Article number	6ES7194-2LH03-0AB0	6ES7194-2LH10-0AB0	6ES7194-2LH20-0AB0
	BUS CABLE ET CON., ANGLED, 0.3M	BUS CABLE ET CON., ANGLED, 1.0M	BUS CABLE ET CON., ANGLED, 2.0M
General information			
Product type designation	BUS CABLE ET CONNECTION, ANGLED, 0.3M	BUS CABLE ET CONNECTION, ANGLED, 1.0M	BUS CABLE ET CONNECTION, ANGLED, 2.0M
Product description	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, angled, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, angled, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, angled, 4-pin, shielded
Application/function	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP65	Yes	Yes	Yes
• IP67	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C
Cables			
Cable designation	2Y(ST)CY 1x4x0.5/1.0-100-GN	2Y(ST)CY 1x4x0.5/1.0-100-GN	2Y(ST)CY 1x4x0.5/1.0-100-GN
Cable length	0.3 m	1 m	2 m
Number of electrical cores	4	4	4
Design of shield	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires
Outer diameter of inner conductor	0.5 mm	0.5 mm	0.5 mm
Outer diameter of core insulation	1 mm	1 mm	1 mm
Outer diameter of cable sheath	5 mm	5 mm	5 mm
Number of bending cycles	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²
Permissible bending radius, single bend, min.	20 mm	20 mm	20 mm
Permissible bending radius, multiple bends, min.	40 mm	40 mm	40 mm
Bending radius for continuous bending	100 mm	100 mm	100 mm
Color of cable sheath	Green	Green	Green
Color of core insulation of data cores	white / yellow / blue / orange	white / yellow / blue / orange	white / yellow / blue / orange
Weight per length	34 kg/km	34 kg/km	34 kg/km
Mechanics/material			
Type of cable outlet	90 degree cable outlet	90 degree cable outlet	90 degree cable outlet
Material of housing	metal	metal	metal
Material of core insulation	PE	PE	PE
Material of cable sheath	PVC	PVC	PVC
Material property halogen-free	No	No	No
Material property silicone-free	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7194-2LH50-0AB0	6ES7194-2LN10-0AB0	6ES7194-2LN15-0AB0
	BUS CABLE ET CON., ANGLED, 5.0M	BUS CABLE ET CONNECTION, ANGLED, 10M	BUS CABLE ET CONNECTION, ANGLED, 15M
General information			
Product type designation	BUS CABLE ET CONNECTION, ANGLED, 5.0M	BUS CABLE ET CONNECTION, ANGLED, 10M	BUS CABLE ET CONNECTION, ANGLED, 15M
Product description	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, angled, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, angled, 4-pin, shielded	Flexible cable (4-core), preassembled at both ends with 2x M8 plugs, angled, 4-pin, shielded
Application/function	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP65	Yes	Yes	Yes
• IP67	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C
Cables			
Cable designation	2Y(ST)CY 1x4x0.5/1.0-100-GN	2Y(ST)CY 1x4x0.5/1.0-100-GN	2Y(ST)CY 1x4x0.5/1.0-100-GN
Cable length	5 m	10 m	15 m
Number of electrical cores	4	4	4
Design of shield	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires
Outer diameter of inner conductor	0.5 mm	0.5 mm	0.5 mm
Outer diameter of core insulation	1 mm	1 mm	1 mm
Outer diameter of cable sheath	5 mm	5 mm	5 mm
Number of bending cycles	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²
Permissible bending radius, single bend, min.	20 mm	20 mm	20 mm
Permissible bending radius, multiple bends, min.	40 mm	40 mm	40 mm
Bending radius for continuous bending	100 mm	100 mm	100 mm
Color of cable sheath	Green	Green	Green
Color of core insulation of data cores	white / yellow / blue / orange	white / yellow / blue / orange	white / yellow / blue / orange
Weight per length	34 kg/km	34 kg/km	34 kg/km
Mechanics/material			
Type of cable outlet	90 degree cable outlet	90 degree cable outlet	90 degree cable outlet
Material of housing	metal	metal	metal
Material of core insulation	PE	PE	PE
Material of cable sheath	PVC	PVC	PVC
Material property halogen-free	No	No	No
Material property silicone-free	Yes	Yes	Yes

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – Accessories

Cables and connectors

Technical specifications (continued)

Article number	6ES7194-2LH20-0AC0	6ES7194-2LH50-0AC0	6ES7194-2LN10-0AC0	6ES7194-2LN15-0AC0
	BUS CABLE ET CONNECTION, 2.0M	BUS CABLE ET CONNECTION, 5.0M	BUS CABLE ET CONNECTION, 10M	BUS CABLE ET CONNECTION, 15M
General information				
Product type designation	BUS CABLE ET CONNECTION, 2.0M	BUS CABLE ET CONNECTION, 5.0M	BUS CABLE ET CONNECTION, 10M	BUS CABLE ET CONNECTION, 15M
Product description	Flexible cable (4-core), preassembled at one end with 1x M8 plug, 4-pin, shielded	Flexible cable (4-core), preassembled at one end with 1x M8 plug, 4-pin, shielded	Flexible cable (4-core), preassembled at one end with 1x M8 plug, 4-pin, shielded	Flexible cable (4-core), preassembled at one end with 1x M8 plug, 4-pin, shielded
Application/function	for connecting ET- CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET- CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET- CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67	for connecting ET- CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67
Degree and class of protection				
Degree of protection acc. to EN 60529				
• IP65	Yes	Yes	Yes	Yes
• IP67	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C	80 °C
Cables				
Cable designation	2Y(ST)CY 1x4x0.5/1.0-100- GN	2Y(ST)CY 1x4x0.5/1.0-100- GN	2Y(ST)CY 1x4x0.5/1.0-100- GN	2Y(ST)CY 1x4x0.5/1.0-100- GN
Cable length	2 m	5 m	10 m	15 m
Number of electrical cores	4	4	4	4
Design of shield	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires	Overlapped aluminum-clad foil, sheathed in a braid of tin-plated copper wires
Outer diameter of inner conductor	0.5 mm	0.5 mm	0.5 mm	0.5 mm
Outer diameter of core insulation	1 mm	1 mm	1 mm	1 mm
Outer diameter of cable sheath	5 mm	5 mm	5 mm	5 mm
Number of bending cycles	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	1 000 000; Cable carrier compliant for 1 million bending cycles with a bending radius of 100 mm, a speed of 4 m/s and an acceleration of 4 m/s ²	
Permissible bending radius, single bend, min.	20 mm	20 mm	20 mm	20 mm
Permissible bending radius, multiple bends, min.	40 mm	40 mm	40 mm	40 mm
Bending radius for continuous bending	100 mm	100 mm	100 mm	100 mm
Color of cable sheath	Green	Green	Green	Green
Color of core insulation of data cores	white / yellow / blue / orange	white / yellow / blue / orange	white / yellow / blue / orange	white / yellow / blue / orange
Weight per length	34 kg/km	34 kg/km	34 kg/km	34 kg/km
Mechanics/material				
Type of cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet
Material of housing	metal	metal	metal	metal
Material of core insulation	PE	PE	PE	PE
Material of cable sheath	PVC	PVC	PVC	PVC
Material property halogen-free	No	No	No	No
Material property silicone-free	Yes	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7194-2LH02-1AA0	6ES7194-2LH03-1AA0	6ES7194-2LH10-1AA0	6ES7194-2LH20-1AA0
	POWER CABLE M8, 0.19M	POWER CABLE M8, 0.3M	POWER CABLE M8, 1.0M	POWER CABLE M8, 2.0M
General information				
Product type designation	POWER CABLE M8, 0.19M	POWER CABLE M8, 0.3M	POWER CABLE M8, 1.0M	POWER CABLE M8, 2.0M
Product description	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector
Application/function	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply
Degree and class of protection				
Degree of protection acc. to EN 60529				
• IP65	Yes	Yes	Yes	Yes
• IP67	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C	80 °C
Cables				
Cable designation	4 Li9Y 0.50	4 Li9Y 0.50	4 Li9Y 0.50	4 Li9Y 0.50
Cable length	0.19 m	0.3 m	1 m	2 m
Number of electrical cores	4	4	4	4
Outer diameter of inner conductor	0.8 mm	0.8 mm	0.8 mm	0.8 mm
Outer diameter of core insulation	1.46 mm	1.46 mm	1.46 mm	1.46 mm
Outer diameter of cable sheath	5.2 mm	5.2 mm	5.2 mm	5.2 mm
Number of bending cycles	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²
Permissible bending radius, single bend, min.	26 mm	26 mm	26 mm	26 mm
Permissible bending radius, multiple bends, min.	52 mm	52 mm	52 mm	52 mm
Bending radius for continuous bending	52 mm	52 mm	52 mm	52 mm
Color of cable sheath	gray	gray	gray	gray
Color of core insulation of energy core	white / brown / blue / black			
Weight per length	44 kg/km	44 kg/km	44 kg/km	44 kg/km
Mechanics/material				
Type of cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet
Material of housing	plastic	plastic	plastic	plastic
Material of core insulation	PP	PP	PP	PP
Material of cable sheath	PVC	PVC	PVC	PVC
Material property silicone-free	Yes	Yes	Yes	Yes

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – Accessories

Cables and connectors

Technical specifications (continued)

Article number	6ES7194-2LH50-1AA0	6ES7194-2LN10-1AA0	6ES7194-2LN15-1AA0
	POWER CABLE M8, 5.0M	POWER CABLE M8, 10M	POWER CABLE M8, 15M
General information			
Product type designation	POWER CABLE M8, 5.0M	POWER CABLE M8, 10M	POWER CABLE M8, 15M
Product description	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector
Application/function	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP65	Yes	Yes	Yes
• IP67	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C
Cables			
Cable designation	4 Li9Y 0.50	4 Li9Y 0.50	4 Li9Y 0.50
Cable length	5 m	10 m	15 m
Number of electrical cores	4	4	4
Outer diameter of inner conductor	0.8 mm	0.8 mm	0.8 mm
Outer diameter of core insulation	1.46 mm	1.46 mm	1.46 mm
Outer diameter of cable sheath	5.2 mm	5.2 mm	5.2 mm
Number of bending cycles	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²
Permissible bending radius, single bend, min.	26 mm	26 mm	26 mm
Permissible bending radius, multiple bends, min.	52 mm	52 mm	52 mm
Bending radius for continuous bending	52 mm	52 mm	52 mm
Color of cable sheath	gray	gray	gray
Color of core insulation of energy core	white / brown / blue / black	white / brown / blue / black	white / brown / blue / black
Weight per length	44 kg/km	44 kg/km	44 kg/km
Mechanics/material			
Type of cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet
Material of housing	plastic	plastic	plastic
Material of core insulation	PP	PP	PP
Material of cable sheath	PVC	PVC	PVC
Material property silicone-free	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7194-2LH03-1AB0	6ES7194-2LH10-1AB0	6ES7194-2LH20-1AB0
	POWER CABLE M8, ANGLED, 0.3M	POWER CABLE M8, ANGLED, 1.0M	POWER CABLE M8, ANGLED, 2.0M
General information			
Product type designation	POWER CABLE M8, ANGLED, 0.3M	POWER CABLE M8, ANGLED, 1.0M	POWER CABLE M8, ANGLED, 2.0M
Product description	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector, angled	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector, angled	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector, angled
Application/function	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP65	Yes	Yes	Yes
• IP67	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C
Cables			
Cable designation	4 Li9Y 0.50	4 Li9Y 0.50	4 Li9Y 0.50
Cable length	0.3 m	1 m	2 m
Number of electrical cores	4	4	4
Outer diameter of inner conductor	0.8 mm	0.8 mm	0.8 mm
Outer diameter of core insulation	1.46 mm	1.46 mm	1.46 mm
Outer diameter of cable sheath	5.2 mm	5.2 mm	5.2 mm
Number of bending cycles	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²
Permissible bending radius, single bend, min.	26 mm	26 mm	26 mm
Permissible bending radius, multiple bends, min.	52 mm	52 mm	52 mm
Bending radius for continuous bending	52 mm	52 mm	52 mm
Color of cable sheath	gray	gray	gray
Color of core insulation of energy core	white / brown / blue / black	white / brown / blue / black	white / brown / blue / black
Weight per length	44 kg/km	44 kg/km	44 kg/km
Mechanics/material			
Type of cable outlet	90 degree cable outlet	90 degree cable outlet	90 degree cable outlet
Material of housing	plastic	plastic	plastic
Material of core insulation	PP	PP	PP
Material of cable sheath	PVC	PVC	PVC
Material property silicone-free	Yes	Yes	Yes

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – Accessories

Cables and connectors

Technical specifications (continued)

Article number	6ES7194-2LH50-1AB0	6ES7194-2LN10-1AB0	6ES7194-2LN15-1AB0
	POWER CABLE M8, ANGLED, 5.0M	POWER CABLE M8, ANGLED, 10M	POWER CABLE M8, ANGLED, 15M
General information			
Product type designation	POWER CABLE M8, ANGLED, 5.0M	POWER CABLE M8, ANGLED 10M	POWER CABLE M8, ANGLED, 15M
Product description	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector, angled	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector, angled	Flexible cable (4-core), preassembled at each end with a 4-pin M8 male / female connector, angled
Application/function	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply
Degree and class of protection			
Degree of protection acc. to EN 60529			
• IP65	Yes	Yes	Yes
• IP67	Yes	Yes	Yes
Ambient conditions			
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C
Cables			
Cable designation	4 Li9Y 0.50	4 Li9Y 0.50	4 Li9Y 0.50
Cable length	5 m	10 m	15 m
Number of electrical cores	4	4	4
Outer diameter of inner conductor	0.8 mm	0.8 mm	0.8 mm
Outer diameter of core insulation	1.46 mm	1.46 mm	1.46 mm
Outer diameter of cable sheath	5.2 mm	5.2 mm	5.2 mm
Number of bending cycles	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²
Permissible bending radius, single bend, min.	26 mm	26 mm	26 mm
Permissible bending radius, multiple bends, min.	52 mm	52 mm	52 mm
Bending radius for continuous bending	52 mm	52 mm	52 mm
Color of cable sheath	gray	gray	gray
Color of core insulation of energy core	white / brown / blue / black	white / brown / blue / black	white / brown / blue / black
Weight per length	44 kg/km	44 kg/km	44 kg/km
Mechanics/material			
Type of cable outlet	90 degree cable outlet	90 degree cable outlet	90 degree cable outlet
Material of housing	plastic	plastic	plastic
Material of core insulation	PP	PP	PP
Material of cable sheath	PVC	PVC	PVC
Material property silicone-free	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7194-2LH20-1AC0	6ES7194-2LH50-1AC0	6ES7194-2LN10-1AC0	6ES7194-2LN15-1AC0
	POWER CABLE M8, 2.0M	POWER CABLE M8, 5.0M	POWER CABLE M8, 10M	POWER CABLE M8, 15M
General information				
Product type designation	POWER CABLE M8, 2.0M	POWER CABLE M8, 5.0M	POWER CABLE M8, 10M	POWER CABLE M8, 15M
Product description	Flexible cable (4-core), preassembled at one end with 1x M8 female connector	Flexible cable (4-core), preassembled at one end with 1x M8 female connector	Flexible cable (4-core), preassembled at one end with 1x M8 plug, 4-pin, shielded	Flexible cable (4-core), preassembled at one end with 1x M8 plug, 4-pin, shielded
Application/function	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply
Degree and class of protection				
Degree of protection acc. to EN 60529				
• IP65	Yes	Yes	Yes	Yes
• IP67	Yes	Yes	Yes	Yes
Ambient conditions				
Ambient temperature during assembly, min.	-30 °C	-30 °C	-30 °C	-30 °C
Ambient temperature during assembly, max.	80 °C	80 °C	80 °C	80 °C
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	80 °C	80 °C	80 °C	80 °C
Cables				
Cable designation	4 Li9Y 0.50	4 Li9Y 0.50	4 Li9Y 0.50	4 Li9Y 0.50
Cable length	2 m	5 m	10 m	15 m
Number of electrical cores	4	4	4	4
Outer diameter of inner conductor	0.8 mm	0.8 mm	0.8 mm	0.8 mm
Outer diameter of core insulation	1.46 mm	1.46 mm	1.46 mm	1.46 mm
Outer diameter of cable sheath	5.2 mm	5.2 mm	5.2 mm	5.2 mm
Number of bending cycles	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²	2 500 000; Cable carrier compliant for 2.5 million bending cycles with a bending radius of 52 mm, a speed of 3 m/s and an acceleration of 10 m/s ²
Permissible bending radius, single bend, min.	26 mm	26 mm	26 mm	26 mm
Permissible bending radius, multiple bends, min.	52 mm	52 mm	52 mm	52 mm
Bending radius for continuous bending	52 mm	52 mm	52 mm	52 mm
Color of cable sheath	gray	gray	gray	gray
Color of core insulation of energy core	white / brown / blue / black			
Weight per length	44 kg/km	44 kg/km	44 kg/km	44 kg/km
Mechanics/material				
Type of cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet	180 degree cable outlet
Material of housing	plastic	plastic	plastic	plastic
Material of core insulation	PP	PP	PP	PP
Material of cable sheath	PVC	PVC	PVC	PVC
Material property silicone-free	Yes	Yes	Yes	Yes

I/O systems

ET 200 systems without control cabinet
SIMATIC ET 200AL – Accessories

Cables and connectors

Technical specifications (continued)

Article number	6ES7194-2AA00-0AA0 M8 POWER CONNECTOR	6ES7194-2AC00-0AA0 M8 POWER CONNECTOR, SOCKET
General information		
Product type designation	M8 POWER CONNECTOR	POWER CONNECTOR M8, SOCKET
Product description	M8 plug connector with high degree of protection, 4-pin, plastic version	M8 plug connector with high degree of protection, socket insert, 4-pin, plastic version
Application/function	For connection to ET 200AL for 24 V DC power supply	For connection to ET 200AL for 24 V DC power supply
Degree and class of protection		
Degree of protection acc. to EN 60529		
• IP65	Yes	Yes
• IP67	Yes	Yes
Ambient conditions		
Ambient temperature during assembly, min.	-30 °C	-30 °C
Ambient temperature during assembly, max.	85 °C	85 °C
Ambient temperature during storage/transportation		
• min.	-40 °C	-40 °C
• max.	85 °C	85 °C
Mechanics/material		
Type of cable outlet	180 degree cable outlet	180 degree cable outlet
Material of housing	plastic	plastic
Dimensions		
Width	14 mm	14 mm
Depth	47 mm	47 mm

Article number	6ES7194-2AB00-0AA0 M8 CONNECTOR ET-CONNECTION
General information	
Product type designation	M8 PLUG ET-CONNECTION
Product description	M8 plug connector with high degree of protection, 4-pin, metal version
Application/function	for connecting ET-CONNECTION nodes (e.g. SIMATIC ET 200AL) in degree of protection IP65 / 67
Degree and class of protection	
Degree of protection acc. to EN 60529	
• IP65	Yes
• IP67	Yes
Ambient conditions	
Ambient temperature during assembly, min.	-30 °C
Ambient temperature during assembly, max.	80 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	80 °C
Mechanics/material	
Type of cable outlet	180 degree cable outlet
Material of housing	metal
Dimensions	
Width	14 mm
Depth	47 mm

Ordering data	Article No.	Article No.
Bus cable for backplane bus (ET connection)		M8 connector for ET connection
4-pin, shielded		4-pin, shielded
Pre-assembled at both ends, 2 M8 connectors		M8 power connector
0.19 m	6ES7194-2LH02-0AA0	Male contact insert, 4-pin
0.3 m	6ES7194-2LH03-0AA0	Female contact insert, 4-pin
1 m	6ES7194-2LH10-0AA0	
2 m	6ES7194-2LH20-0AA0	ET connection FastConnect stripping tool
5 m	6ES7194-2LH50-0AA0	Stripping tool for stripping the ET connection bus cable
10 m	6ES7194-2LN10-0AA0	
15 m	6ES7194-2LN15-0AA0	
Pre-assembled at both ends, 2 M8 connectors, angled		
0.3 m	6ES7194-2LH03-0AB0	
1 m	6ES7194-2LH10-0AB0	
2 m	6ES7194-2LH20-0AB0	
5 m	6ES7194-2LH50-0AB0	
10 m	6ES7194-2LN10-0AB0	
15 m	6ES7194-2LN15-0AB0	
Pre-assembled at one end, 1 M8 connector		
2 m	6ES7194-2LH20-0AC0	
5 m	6ES7194-2LH50-0AC0	
10 m	6ES7194-2LN10-0AC0	
15 m	6ES7194-2LN15-0AC0	
Power cable M8		
4-pin		
Pre-assembled at both ends, M8 connector and M8 socket		
0.19 m	6ES7194-2LH02-1AA0	
0.3 m	6ES7194-2LH03-1AA0	
1 m	6ES7194-2LH10-1AA0	
2 m	6ES7194-2LH20-1AA0	
5 m	6ES7194-2LH50-1AA0	
10 m	6ES7194-2LN10-1AA0	
15 m	6ES7194-2LN15-1AA0	
Pre-assembled at both ends, angled M8 connector and angled M8 socket		
0.3 m	6ES7194-2LH03-1AB0	
1 m	6ES7194-2LH10-1AB0	
2 m	6ES7194-2LH20-1AB0	
5 m	6ES7194-2LH50-1AB0	
10 m	6ES7194-2LN10-1AB0	
15 m	6ES7194-2LN15-1AB0	
Pre-assembled at one end, M8 socket		
2 m	6ES7194-2LH20-1AC0	
5 m	6ES7194-2LH50-1AC0	
10 m	6ES7194-2LN10-1AC0	
15 m	6ES7194-2LN15-1AC0	

I/O systems

Heating control systems

SIPLUS HCS3200 heating control system

SIPLUS HCS3200 heating control system

Overview



SIPLUS HCS3200 heating control system with fixing brackets

The SIPLUS HCS3200 heating control system was developed as a compact solution for controlling linear heat emitter arrays.

Thanks to the high IP65 degree of protection, it can be used independently of a control cabinet at a distributed location near the emitters.

There are two versions:

- HCS3200 fan: For controlling 9 emitters and 1 output for switching an external fan on/off
- HCS3200: With UL Recognized Component certification for controlling 9 emitters.

Technical specifications

Article number	6BK1932-0BA00-0AA0	6BK1932-0AA00-0AA0
Product brand name	SIPLUS	
Product designation	HCS3200 fan	HCS3200
General technical data:		
Control version of heat emitters	Half-wave control	
Type of load	Ohmic load	
Equipment marking acc. to DIN EN 81346-2	Q	
Degree of pollution	2	
Certificates/ approvals:		
Certificate of suitability	CE	CE, UL
Power supply:		
Type of voltage of the supply voltage	AC	
Supply voltage at AC rated value	V	400
Relative negative tolerance of the supply voltage	%	10
Relative positive tolerance of the supply voltage	%	10
Supply voltage frequency		
• 1 rated value	Hz	50
• 2 rated value	Hz	60
Relative symmetrical tolerance of the supply voltage frequency	%	5
Switching capacity current per phase maximum	A	63
Maximum short-circuit current breaking capacity (I _{cu}) at 400 V rated value	kA	25
Design of the electrical isolation	Optocoupler between main circuit and PELV	
Power capacity maximum permissible	kW	25.2

Article number	6BK1932-0BA00-0AA0	6BK1932-0AA00-0AA0
Type of electrical connection for supply voltage	Connector, 4-pole + PE	Connector, 2-pole + PE
Type of connectable conductor cross-sections		
• for supply voltage finely stranded with core end processing	3x (6 ... 25 mm ²) and 1x PE (6 ... 16 mm ²)	2x (6 ... 25 mm ²) and 1x PE (6 ... 16 mm ²)
• at AWG conductors for supply voltage	3x (8 ... 4)	2x (8 ... 4)
Power Electronics:		
Number of outputs for heating power	9	
Number of heat emitters per output maximum	1	
Output voltage at output for heating power	V	400
Power capacity per output	W	200 ... 4 000
Output current at output for heating power rated value	A	10
Design of short-circuit protection for heating power per output	Fuse 16 A	Fuse 15 A
Galvanic isolation between the outputs	No	
Number of outputs for fan	1	0
Output voltage at output for fan	V	230
Power capacity for fan per output	W	60 ... 500
Design of short-circuit protection at output for fan	Safety fuse 4 A	
Type of electrical connection at output for heating and fan	Connector, 20-pole + PE	

Technical specifications (continued)

Article number	6BK1932-0BA00-0AA0	6BK1932-0AA00-0AA0	Article number	6BK1932-0BA00-0AA0	6BK1932-0AA00-0AA0
Type of connectable conductor cross-sections			Vibration resistance		
<ul style="list-style-type: none"> for heating and fan finely stranded with core end processing 	20x (1.5 ... 4 mm ²), 1x PE (1.5 ... 16 mm ²)	18x (1.5 ... 4 mm ²), 1x PE (1.5 ... 16 mm ²)	<ul style="list-style-type: none"> during operation acc. to IEC 60068-2-6 during storage acc. to IEC 60068-2-6 	10 ... 58 Hz / 0.15 mm, 58 ... 150 Hz / 1g	5 ... 9 Hz / 3.5 mm, 9 ... 500 Hz / 1g
<ul style="list-style-type: none"> at AWG conductors stranded 	20x (18 ... 12)	18x (18 ... 12)	Protection class IP	IP65	
Product function voltage detection	Yes		Width	mm 300	
			Height	mm 380	
			Depth	mm 200	
Communication:			Electromagnetic compatibility:		
Protocol is supported PROFIBUS DP protocol	Yes		Conducted interference due to burst acc. to IEC 61000-4-4	2 kV power supply lines / 1 kV signal lines	
Design of the interface	PROFIBUS DP		Conducted interference due to surge acc. to IEC 61000-4-5	On supply lines: 1 kV symmetrical, 2 kV asymmetrical, (24 V DC supply only with external protective measure) for PROFIBUS cable : asymmetrical 1 kV	
Transfer rate with PROFIBUS DP maximum	Mbit/s 12		Conducted interference due to high-frequency radiation acc. to IEC 61000-4-6	10 V (0.15 ... 80 MHz)	
Type of electrical connection of the PROFIBUS interface	ECOFAST		Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge	
Power supply:			Field-bound parasitic coupling acc. to IEC 61000-4-3	10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)	
Design of the power supply	External		EMC emitted interference	in accordance with IEC 61000-6-4:2007 + A1:2011	
Type of voltage	DC		Overvoltage category	III	
Supply voltage for electronics	V 24				
Relative symmetrical tolerance of the input voltage	% 20				
Consumed current for electronics maximum	A 0.25				
Protective and monitoring functions:					
Number of status displays	2				
Display version as status display by LED	LED green = status indicator, LED red = fault indicator				
Product function	Yes				
Temperature monitoring	Yes				
Type of the temperature monitoring	NTC thermistor				
Diagnostics function	Yes				
Tripped fuse	Yes				
Diagnostics function	Yes				
Cable break	Yes				
Diagnostics function	Yes				
Heat emitter failure	Yes				
Mechanical data:					
Mounting position	vertical				
Mounting type	screw fixing				
Type of ventilation	Self-ventilation				
Shock resistance					
<ul style="list-style-type: none"> acc. to IEC 60068-2-27 acc. to IEC 60068-2-29 	15g / 11 ms / 3 shocks / axis 25 g / 6 ms / 1000 shocks / axis				

Ordering data**SIPLUS HCS3200 heating control system**

SIPLUS HCS3200 fan
SIPLUS HCS3200 UL-certified

Article No.

6BK1932-0BA00-0AA0
6BK1932-0AA00-0AA0

Article No.**Accessories**

SIPLUS HCS3200 fan as spare part
Installation kit for wall mounting

6BK1932-6AA00-0AA0
6BK1932-6BA00-0AA0

I/O systems

Heating control systems

SIPLUS HCS4200 heating control system

Rack

Overview



SIPLUS HCS4200 heating control system

The rack constitutes the basic mechanical structure of SIPLUS HCS4200

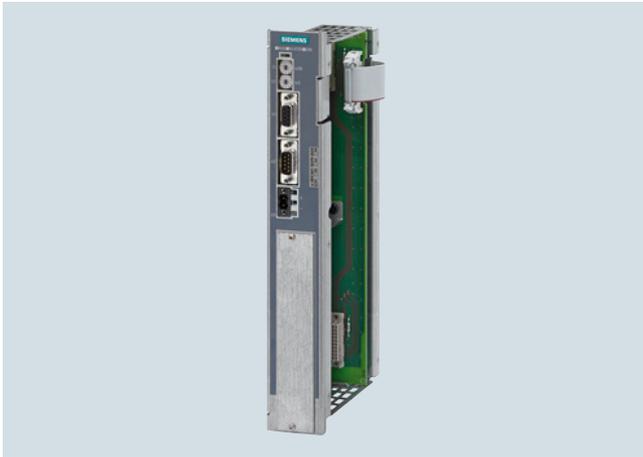
Technical specifications

Product brand name	SIPLUS	
Product designation	RACK4200 for 4 POM	RACK4200 for 12 POM
General technical data:		
Equipment marking acc. to DIN EN 81346-2	K	
Number of slots	4	12
Type of power output connectable	POM4220	
Supply voltage:		
Power capacity		
• without fan per rack maximum	29 kW	88 kW
• with fan per rack maximum	64 kW	193 kW
Communication:		
Design of the interface	system interface	
Mechanical data:		
Mounting position	horizontal	
Mounting type	Control cabinet backplane	
Type of ventilation	Self ventilation or forced ventilation	
Protection class IP	IP20	
Depth	293 mm	
Height	285 mm	
Width	204 mm	488 mm

Product brand name	SIPLUS	
Product designation	RACK4200 for 4 POM	RACK4200 for 12 POM
Electromagnetic compatibility:		
EMC emitted interference	Limit value in accordance with IEC 61000-6-4:2007 + A1:2011	
Field-bound parasitic coupling acc. to IEC 61000-4-3	10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)	
Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge	
Ambient conditions:		
Ambient temperature		
• during operation	0 ... 55 °C	
• during storage	-25 ... +70 °C	
• during transport	-25 ... +70 °C	
Air pressure		
• during operation	860 ... 1 080 hPa	
• during storage	660 ... 1 080 hPa	
Degree of pollution	2	
Installation altitude at height above sea level maximum	2 000 m	
Relative humidity		
• at 25 °C during operation maximum	95 %	
• at 50 °C during operation maximum	50 %	
• at 50 °C during operation maximum Note	95% at 25 °C, decreasing linearly to 50% at 50 °C	
Certificates/ approvals:		
Certificate of suitability	CE	

Ordering data	Article No.
SIPLUS HCS4200 Rack for 12 POM	6BK1942-0AA00-0AA0
Rack for accommodating up to 12 POM4320 power output modules	
SIPLUS HCS4200 Rack for 4 POM	6BK1942-0BA00-0AA0
Rack for accommodating up to 4 POM4320 power output modules	
Accessories	
SIPLUS HCS4200 Fan Module	6BK1942-4AA00-0AA0
Is attached to the top of the rack for accommodating up to 4 power output modules	
Blanking cover (10 items)	6BK1942-6DA00-0AA0
For covering unoccupied slots in the rack	

Overview



The central interface module (CIM) is the intelligent processor module of the SIPLUS HCS4200 heating control system.

Technical specifications

Article number	6BK1942-1AA00-0AA0	6BK1942-1BA00-0AA0
Product brand name	SIPLUS	
Product designation	CIM4210 PROFINET	CIM4210 PROFIBUS
General technical data:		
Equipment marking acc. to DIN EN 81346-2	K	
Number of slots	1	
Supply voltage:		
Type of voltage of the supply voltage	DC	
Supply voltage 1 at DC rated value	V	24
Relative negative tolerance of the supply voltage	%	20
Relative positive tolerance of the supply voltage	%	20
Consumed active power	W	3
Type of electrical connection for supply voltage	Connector 2x2-pin with tension spring connection	
Type of connectable conductor cross-sections		
• for supply voltage solid	1x (0.2 ... 2.5 mm ²)	
• for supply voltage finely stranded with core end processing	1x (0.2 ... 2.5 mm ²)	
• at AWG conductors for supply voltage	1x (26 ... 12)	
Communication:		
Design of the interface	PROFINET IO	PROFIBUS DP
Protocol is supported		
• PROFIBUS DP protocol	No	Yes
• PROFINET IO protocol	Yes	No
Transfer rate		
• with PROFIBUS DP maximum	Mbit/s	12
• with PROFINET IO maximum	Mbit/s	100

Article number	6BK1942-1AA00-0AA0	6BK1942-1BA00-0AA0
Product brand name	SIPLUS	
Product designation	CIM4210 PROFINET	CIM4210 PROFIBUS
Type of electrical connection		
• of the PROFIBUS interface		9-pin D-Sub socket
• of the PROFINET interface	2 x RJ45	
Display:		
Number of status displays	3	
Display version as status display by LED	LED green = ready, LED yellow = heating on/off, LED red = error display	
Mechanical data:		
Mounting position	vertical	
Mounting type	Screw mounting to rack	
Type of ventilation	Forced ventilation	
Vibration resistance		
• during operation acc. to IEC 60068-2-6	10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1g	
• during storage acc. to IEC 60068-2-6	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1g	
Protection class IP	IP20	
Depth	mm	136
Height	mm	285
Width	mm	43
Electromagnetic compatibility:		
EMC emitted interference	Limit value in accordance with IEC 61000-6-4:2007 + A1:2011	
Conducted interference due to burst acc. to IEC 61000-4-4	2 kV power supply lines, 2 kV PROFINET cables	2 kV power supply lines / 2 kV PROFIBUS cables

I/O systems

Heating control systems

SIPLUS HCS4200 heating control system

Central Interface Module (CIM)

Technical specifications (continued)

Article number	6BK1942-1AA00-0AA0	6BK1942-1BA00-0AA0
Product brand name	SIPLUS	
Product designation	CIM4210 PROFINET	CIM4210 PROFIBUS
Conducted interference due to surge acc. to IEC 61000-4-5	DC supply lines: 0.5 kV symmetric and unsymmetric PROFINET cables: 1 kV unsymmetric	DC supply lines: 0.5 kV symmetrical and asymmetrical, PROFIBUS lines: 1 kV asymmetrical
Conducted interference due to high-frequency radiation acc. to IEC 61000-4-6	10 V (0.15 ... 80 MHz)	
Field-bound parasitic coupling acc. to IEC 61000-4-3	10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)	
Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharging, 8 kV air discharging	
Overvoltage category	III	
Ambient conditions:		
Ambient temperature		
• during operation	°C	0 ... 55
• during storage	°C	-25 ... +70
• during transport	°C	-25 ... +70
Air pressure		
• during operation	hPa	860 ... 1 080
• during storage	hPa	660 ... 1 080
Degree of pollution		2
Installation altitude at height above sea level maximum		2 000
Relative humidity		
• at 25 °C during operation maximum	%	95
• at 50 °C during operation maximum	%	50
• at 50 °C during operation maximum Note		95% at 25 °C, decreasing linearly to 50% at 50 °C

Ordering data

Article No.

SIPLUS HCS4200 CIM4210 PROFINET	6BK1942-1AA00-0AA0
Central interface module with PROFINET communication	
SIPLUS HCS4200 CIM4210 PROFIBUS	6BK1942-1BA00-0AA0
Central interface module with PROFIBUS communication	
Accessories	
SIPLUS HCS4200 connector set	6BK1942-6FA00-0AA0
consisting of 20 x 2-pole connectors (24 V DC power supply)	
SIPLUS HCS4000 I/O module temperature	6BK1900-0AA00-0AA0
For recording temperatures using temperature sensors, thermocouples and pyrometers	
SIPLUS HCS4000 I/O module DI/DO	6BK1900-0BA00-0AA0
With 8 digital outputs and 8 configurable inputs/outputs	
SIPLUS HCS4000 I/O module U/I	6BK1900-0CA00-0AA0
For current and voltage measurement (line voltage compensation)	

Overview



The power output modules (POMs) are an essential component of the SIPLUS HCS4200 heating control system. Up to 24 power output modules can be operated on one CIM, split over two racks.

There are two power output module versions:

- POM4220 low-end
- POM4220 mid-range

Technical specifications

Article number	6BK1942-2AA00-0AA0	6BK1942-2CA00-0AA0
Product brand name	SIPLUS	
Product designation	POM4220 Lowend	POM4220 Midrange
General technical data:		
Type of load	Ohmic load	
Equipment marking acc. to DIN EN 81346-2	Q	
Supply voltage:		
Type of voltage of the supply voltage	AC	
Supply voltage at AC rated value	V 230	277
Relative negative tolerance of the supply voltage	% 10	25
Relative positive tolerance of the supply voltage	% 10	8
Supply voltage frequency 1 rated value	Hz 50	
Supply voltage frequency 2 rated value	Hz 60	
Relative symmetrical tolerance of the supply voltage frequency	% 5	
Power capacity		
• of the module with star connection at 40 °C with fan maximum	kW 16.1	27.7
• of the module with star connection at 40 °C without fan maximum	kW 7.3	9
• maximum permissible	kW 16.1	27.7
Switching capacity current per phase maximum	A 35	50
Design of the electrical isolation	Optocoupler and/or protective impedance between main circuit and PELV	
Recovery time after power failure typical	s 1	
Type of electrical connection for supply voltage	Connector, 3-pole with spring-loaded connection	Connector, 3-pin

Article number	6BK1942-2AA00-0AA0	6BK1942-2CA00-0AA0
Product brand name	SIPLUS	
Product designation	POM4220 Lowend	POM4220 Midrange
Power Electronics:		
Type of connectable conductor cross-sections		
• for supply voltage solid	1x (0.2 ... 10 mm ²)	1x (0.75 ... 16 mm ²)
• for supply voltage finely stranded with core end processing	1x (0,25 ... 6 mm ²)	1x (0,75 ... 16 mm ²)
• at AWG conductors for supply voltage	1x (24 ... 8)	1x (18 ... 4)
Control version of heat emitters	Half-wave control	Half-wave control and soft start
Number of outputs for heating power	16	12
Number of heat emitters per output maximum	1	
Output voltage at output for heating power	V 230	277
Power capacity per output	W 100 ... 1 449	100 ... 4 432
Power capacity at heating elements with high switch-on current per output maximum	W 750	1 600
Output current at output for heating power rated value	A 6.3	16
Design of short-circuit protection for heating power per output	Safety fuse 6.3 A	Fuse 16 A
Melting I2t value	A ² ·s 57	68
Design of the overvoltage protection	Transil Diode	
Galvanic isolation between the outputs	No	
Type of electrical connection at output for heating and fan	Connector, 8-pin with tension spring connection	Connector, 6-pin with tension spring connection
Type of connectable conductor cross-sections		
• for heating and fan solid	1x (0.2 ... 10 mm ²)	
• for heating and fan finely stranded with core end processing	1x (0,25 ... 6 mm ²)	
• at AWG conductors stranded	1x (24 ... 8)	

I/O systems

Heating control systems

SIPLUS HCS4200 heating control system

Power Output Module (POM)

Technical specifications (continued)

Article number	6BK1942-2AA00-0AA0	6BK1942-2CA00-0AA0
Product brand name	SIPLUS	
Product designation	POM4220 Lowend	POM4220 Midrange
Communication:		
Design of the interface	system interface	
Display:		
Number of status displays	19	15
Display version as status display by LED	LED green = ready, LED yellow = heating on/off, LED red = error display, LED red = error for each channel	
Auxiliary circuit:		
Design of the power supply	Power supply via rack	
Consumed active power maximum	W 1	
Protective and monitoring functions:		
Product function	Yes	
Temperature monitoring	NTC thermistor	
Type of the temperature monitoring	Voltage diagnostics	
Diagnostics function	<ul style="list-style-type: none"> • Tripped fuse • Cable break • Heat emitter failure 	
• Tripped fuse	Yes	
• Cable break	Yes	
• Heat emitter failure	Yes	
Mechanical data:		
Mounting position	vertical	
Mounting type	Screw mounting to rack	
Type of ventilation	Self ventilation or forced ventilation	
Vibration resistance	<ul style="list-style-type: none"> • during operation acc. to IEC 60068-2-6 • during storage acc. to IEC 60068-2-6 	
• during operation acc. to IEC 60068-2-6	10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1g	
• during storage acc. to IEC 60068-2-6	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1g	
Protection class IP	IP20	

Article number	6BK1942-2AA00-0AA0	6BK1942-2CA00-0AA0
Product brand name	SIPLUS	
Product designation	POM4220 Lowend	POM4220 Midrange
Depth	mm	281
Height	mm	285
Width	mm	36
Electromagnetic compatibility:		
EMC emitted interference	Limit value in accordance with IEC 61000-6-4:2007 + A1:2011	
Conducted interference due to burst acc. to IEC 61000-4-4	2 kV power supply lines, 2 kV load lines	
Conducted interference due to high-frequency radiation acc. to IEC 61000-4-6	10 V (0.15 ... 80 MHz)	
Field-bound parasitic coupling acc. to IEC 61000-4-3	10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)	
Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge	
Overvoltage category	III	
Ambient conditions:		
Ambient temperature	<ul style="list-style-type: none"> • during operation °C 0 ... 55 • during storage °C -25 ... +70 • during transport °C -25 ... +70 	
Air pressure	<ul style="list-style-type: none"> • during operation hPa 860 ... 1 080 • during storage hPa 660 ... 1 080 	
Degree of pollution	2	
Installation altitude at height above sea level maximum	m 2 000	
Relative humidity	<ul style="list-style-type: none"> • at 25 °C during operation maximum % 95 • at 50 °C during operation maximum % 50 • at 50 °C during operation maximum Note 95% at 25 °C, decreasing linearly to 50% at 50 °C 	

Ordering data

Article No.	Article No.
SIPLUS HCS4200 POM4220 Low-End	6BK1942-2AA00-0AA0
SIPLUS HCS4200 POM4220 Midrange	6BK1942-2CA00-0AA0
Power output module with 16 outputs for connecting resistive loads	
Accessories	
Spare fuse, 6.3 A/250 V, for POM4220 Low-end	6BK1942-6AA00-0AA0
Spare fuse, 16 A/500 V, for the POM4320 Mid-range	6BK1942-6BA00-0AA0
SIPLUS HCS4200 connector set as accessory	6BK1943-6AA00-0AA0
comprising 10 connectors, 3-pin, for incoming supply, POM4220 Low-end	

Article No.	Article No.
SIPLUS HCS4200 connector set as accessory	6BK1942-6CA00-0AA0
comprising 5 connectors, 8-pin, for power outputs, POM4220 Low-end	
SIPLUS HCS4200 connector set as accessory	6BK1942-6GA00-0AA0
comprising 6 connectors, 3-pin, for incoming supply, POM4220 Mid-range	
SIPLUS HCS4200 connector set as accessory	6BK1942-6EA00-0AA0
comprising 5 connectors, 6-pin, for power outputs, POM4220 Mid-range	

Overview



The Central Interface Module (CIM) is the intelligent processor module of the SIPLUS HCS4300 heating control system.

Technical specifications

Article number	6BK1943-1AA00-0AA0	6BK1943-1BA00-0AA0
Product brand name	SIPLUS	
Product designation	CIM4310 PROFINET	CIM4310 PROFIBUS
General technical data:		
Equipment marking acc. to DIN EN 81346-2	K	
Number of slots	1	
Type of power output connectable	POM4320	
Supply voltage:		
Type of voltage of the supply voltage	DC	
Supply voltage 1 at DC rated value	V	24
Relative negative tolerance of the supply voltage	%	20
Relative positive tolerance of the supply voltage	%	20
Consumed active power	W	3
Type of electrical connection for supply voltage	Connector 2x2-pin with tension spring connection	
Type of connectable conductor cross-sections		
• for supply voltage solid	1x (0.2 ... 2.5 mm ²)	
• for supply voltage finely stranded with core end processing	1x (0.2 ... 2.5 mm ²)	
• at AWG conductors for supply voltage	1x (26 ... 12)	
Communication:		
Design of the interface Protocol is supported	PROFINET IO	PROFIBUS DP
• PROFIBUS DP protocol	No	Yes
• PROFINET IO protocol	Yes	No

Article number	6BK1943-1AA00-0AA0	6BK1943-1BA00-0AA0
Product brand name	SIPLUS	
Product designation	CIM4310 PROFINET	CIM4310 PROFIBUS
Transfer rate		
• with PROFIBUS DP maximum	Mbit/s	12
• with PROFINET IO maximum	Mbit/s	100
Type of electrical connection		
• of the PROFIBUS interface		9-pin D-Sub socket
• of the PROFINET interface	2 x RJ45	
Display:		
Number of status displays	3	
Display version as status display by LED	LED green = ready, LED yellow = heating on/off, LED red = error display	
Mechanical data:		
Mounting position	vertical	
Mounting type	Screw mounting to POM	
Type of ventilation	Forced ventilation	
Vibration resistance		
• during operation acc. to IEC 60068-2-6	10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1g	
• during storage acc. to IEC 60068-2-6	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1g	
Protection class IP	IP20	
Depth	mm	136
Height	mm	285
Width	mm	56

I/O systems

Heating control systems

SIPLUS HCS4300 heating control system

Central Interface Module (CIM)**Technical specifications (continued)**

Article number	6BK1943-1AA00-0AA0	6BK1943-1BA00-0AA0
Product brand name	SIPLUS	
Product designation	CIM4310 PROFINET	CIM4310 PROFIBUS
Electromagnetic compatibility:		
EMC emitted interference	Limit value in accordance with IEC 61000-6-4:2007 + A1:2011	
Conducted interference due to burst acc. to IEC 61000-4-4	2 kV power supply lines, 2 kV PROFINET cables	2 kV power supply lines / 2 kV PROFIBUS cables
Conducted interference due to surge acc. to IEC 61000-4-5	DC supply lines: 0.5 kV symmetric and unsymmetric PROFINET cables: 1 kV unsymmetric	DC supply lines: 0.5 kV symmetrical and asymmetrical, PROFIBUS lines: 1 kV asymmetrical
Conducted interference due to high-frequency radiation acc. to IEC 61000-4-6	10 V (0.15 ... 80 MHz)	
Field-bound parasitic coupling acc. to IEC 61000-4-3	10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)	
Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge	
Overvoltage category	III	
Ambient conditions:		
Ambient temperature		
• during operation	°C	0 ... 55
• during storage	°C	-25 ... +70
• during transport	°C	-25 ... +70
Air pressure		
• during operation	hPa	860 ... 1 080
• during storage	hPa	660 ... 1 080
Degree of pollution	2	
Installation altitude at height above sea level maximum	m	2 000
Relative humidity		
• at 25 °C during operation maximum	%	95
• at 50 °C during operation maximum	%	50
• at 50 °C during operation maximum Note	95% at 25 °C, decreasing linearly to 50% at 50 °C	

Ordering data**Article No.****SIPLUS HCS4300 CIM 4310**

Central interface module with PROFINET communication

6BK1943-1AA00-0AA0

Central interface module with PROFIBUS communication

6BK1943-1BA00-0AA0**Accessories****SIPLUS HCS4300 EM 4315****6BK1943-1AA50-0AA0**

Expansion module for SIPLUS HCS4300, extends the configuration with 8 power output modules

SIPLUS HCS4000 I/O module temperature**6BK1900-0AA00-0AA0**

For recording temperatures using temperature sensors, thermocouples and pyrometers

SIPLUS HCS4000 I/O module DI/DO**6BK1900-0BA00-0AA0**

With 8 digital outputs and 8 configurable inputs/outputs

SIPLUS HCS4000 I/O module U/I**6BK1900-0CA00-0AA0**

For current and voltage measurement (line voltage compensation)

Overview



Technical specifications

Article number	6BK1943-2AA00-0AA0	6BK1943-2BA00-0AA0	6BK1943-2CA00-0AA0	6BK1943-2DA00-0AA0	
Product brand name	SIPLUS				
Product designation	POM4320 BUSBAR MOUNTING (IEC)	POM4320 BUSBAR MOUNTING (UL)	POM4320 rear panel mounting (IEC)	POM4320 rear panel mounting (UL)	
General technical data:					
Type of load	Ohmic load				
Equipment marking acc. to DIN EN 81346-2	Q				
Supply voltage:					
Type of voltage of the supply voltage	AC				
Supply voltage at AC rated value	V	400			
Relative negative tolerance of the supply voltage	%	10			
Relative positive tolerance of the supply voltage	%	30			
Supply voltage frequency 1 rated value	Hz	50			
Supply voltage frequency 2 rated value	Hz	60			
Relative symmetrical tolerance of the supply voltage frequency	%	5			
Power capacity					
• of the module with delta connection at 40 °C with fan maximum	kW	69.1	64.8	69.1	64.8
• maximum permissible	kW	69.1	64.8	69.1	64.8
Switching capacity current per phase maximum	A	83	80	83	80
Short-time withstand current (SCCR) acc. to UL 508A	kA		50		50
Design of the electrical isolation	Optocoupler and/or protective impedance between main circuit and PELV				
Recovery time after power failure typical	s	1			
Type of electrical connection for supply voltage	Busbar adapter, 3-pole + PE		Terminal, 3-pin		
Type of connectable conductor cross-sections					
• for supply voltage solid			1x (1.5 ... 50 mm ²)		
• for supply voltage finely stranded with core end processing			1x (1,5 ... 35 mm ²)		
• at AWG conductors for supply voltage			1x (16 ... 1)		

I/O systems

Heating control systems

SIPLUS HCS4300 heating control system

Power Output Module (POM)**Technical specifications (continued)**

Article number		6BK1943-2AA00-0AA0	6BK1943-2BA00-0AA0	6BK1943-2CA00-0AA0	6BK1943-2DA00-0AA0
Product brand name		SIPLUS			
Product designation		POM4320 BUSBAR MOUNTING (IEC)	POM4320 BUSBAR MOUNTING (UL)	POM4320 rear panel mounting (IEC)	POM4320 rear panel mounting (UL)
Power Electronics:					
Number of outputs for heating power		9			
Number of heat emitters per output maximum		1			
Output voltage at output for heating power	V	400			
Power capacity per output	W	200 ... 7 680	200 ... 7 200	200 ... 7 680	200 ... 7 200
Power capacity at heating elements with high switch-on current per output maximum	W	4 000	3 000	4 000	3 000
Output current at output for heating power rated value	A	16	15	16	15
Peak current	A	150	135	150	135
Design of short-circuit protection for heating power per output		Fuse 16 A	Fuse 15 A	Fuse 16 A	Fuse 15 A
Melting I ² t value	A ² ·s	250	225	250	225
Design of the overvoltage protection		Transil Diode			
Galvanic isolation between the outputs		No			
Type of electrical connection at output for heating and fan		Connector, 3-pole with spring-loaded connection			
Type of connectable conductor cross-sections					
• for heating and fan solid		1x (0.2 ... 10 mm ²)			
• for heating and fan finely stranded with core end processing		1x (0,25 ... 6 mm ²)			
• at AWG conductors stranded		1x (24 ... 8)			
Product function voltage detection		Yes			
Communication:					
Design of the interface		system interface			
Display:					
Number of status displays		12			
Display version as status display by LED		LED green = ready, LED yellow = heating on/off, LED red = error display, LED red = error for each channel			
Auxiliary circuit:					
Design of the power supply		Power supply via CIM			
Consumed active power maximum	W	8			
Protective and monitoring functions:					
Product function Temperature monitoring		Yes			
Type of the temperature monitoring		NTC thermistor			
Diagnostics function		Voltage diagnostics			
• Tripped fuse		Yes			
• Cable break		Yes			
• Heat emitter failure		Yes			
Mechanical data:					
Mounting position		vertical			
Mounting type		Busbar mounting		Backplane mounting	
Type of ventilation		Self-ventilation			
Vibration resistance					
• during operation acc. to IEC 60068-2-6		10 ... 58 Hz / 0.075 mm, 58 ... 150 Hz / 1g			
• during storage acc. to IEC 60068-2-6		5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1g			
Protection class IP		IP20			
Depth	mm	250		217	
Height	mm	340		344	
Width	mm	104			

Technical specifications (continued)

Article number	6BK1943-2AA00-0AA0	6BK1943-2BA00-0AA0	6BK1943-2CA00-0AA0	6BK1943-2DA00-0AA0
Product brand name	SIPLUS			
Product designation	POM4320 BUSBAR MOUNTING (IEC)	POM4320 BUSBAR MOUNTING (UL)	POM4320 rear panel mounting (IEC)	POM4320 rear panel mounting (UL)
Electromagnetic compatibility:				
EMC emitted interference	Limit value in accordance with IEC 61000-6-4:2007 + A1:2011			
Conducted interference due to burst acc. to IEC 61000-4-4	2 kV power supply lines, 2 kV load lines			
Conducted interference due to surge acc. to IEC 61000-4-5	on supply and load lines: 1 kV symmetric, 2 kV unsymmetric			
Conducted interference due to high-frequency radiation acc. to IEC 61000-4-6	10 V (0.15 ... 80 MHz)			
Field-bound parasitic coupling acc. to IEC 61000-4-3	10 V/m (80 ... 1000 MHz), 3 V/m (1.4 ... 2.0 GHz), 1 V/m (2.0 ... 2.7 GHz)			
Electrostatic discharge acc. to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge			
Overvoltage category	III			
Ambient conditions:				
Ambient temperature				
• during operation	°C	0 ... 55		
• during storage	°C	-25 ... +70		
• during transport	°C	-25 ... +70		
Air pressure				
• during operation	hPa	860 ... 1 080		
• during storage	hPa	660 ... 1 080		
Degree of pollution	2			
Installation altitude at height above sea level maximum	m	2 000		
Relative humidity				
• at 25 °C during operation maximum	%	95		
• at 50 °C during operation maximum	%	50		
• at 50 °C during operation maximum	%	95% at 25 °C, decreasing linearly to 50% at 50 °C		
Note				
Certificates/ approvals:				
Certificate of suitability	CE	CE / UL	CE	CE / UL

Ordering data**Article No.****Article No.****SIPLUS HCS4300 POM4320**

Power Output Module with 9 outputs for connecting resistive loads

Busbar mounting (IEC)

6BK1943-2AA00-0AA0

Busbar mounting (UL)

6BK1943-2BA00-0AA0

Rear panel mounting (IEC)

6BK1943-2CA00-0AA0

Rear panel mounting (UL)

6BK1943-2DA00-0AA0**Accessories****SIPLUS HCS4300 connecting cable from POM to POM**

consisting of 10 items, 10 cm long

6BK1943-5AA00-0AA0

consisting of 10 items, 25 cm long

6BK1943-5BA00-0AA0**SIPLUS HCS4300 connector set****6BK1943-6AA00-0AA0**

consisting of 10 x 3-pole connectors

Spare fuse, 16 A/500 V, for POM4320**6BK1943-6BA00-0AA0****Fan as spare part****6BK1700-2GA00-0AA0**

I/O systems

PROFINET components

PROFINET Driver

Overview

- For connecting distributed I/O and drives to user-specific control applications via PROFINET
- Operation of the control software on a standard PC using the standard Ethernet interface of the PC
- Supplied as portable source code and can therefore be used with any operating system
- Sample application for Windows included in the scope of delivery; uses SIMATIC IPCs as example hardware

Ordering data

PROFINET Driver

For connecting distributed I/O and drives to user-specific control applications via PROFINET

Development license¹⁾

6ES7195-3AA00-0YA0

Runtime licenses

- 1 unit
- 10 units
- 50 units
- 200 units
- 500 units

6ES7195-3AA05-0XA0

6ES7195-3AA10-0XA0

6ES7195-3AA20-0XA0

6ES7195-3AA30-0XA0

6ES7195-3AA40-0XA0

¹⁾ You are provided with the source code of the PN driver V1.1, as well as the source code of the application examples. These codes are to be used for modifying and editing in conjunction with SIMATIC only. You are not permitted to use PN driver source codes or the application examples without SIMATIC, nor are you permitted to pass them on to third parties. The application examples are not binding and do not claim to be complete regarding the circuits shown, equipping and any eventuality. The application examples do not represent customer-specific solutions. They are only intended to provide support for typical tasks. You are responsible for ensuring that the described products are used correctly. These application examples do not relieve you of your responsibility to use safe practices in application, installation, operation and maintenance processes. By using these application examples, you agree that we cannot be held liable for any damages/claims beyond the liability clause described. We reserve the right to make changes to these application examples at any time without prior notice. If there are any deviations between the recommendations provided in these application examples and other Siemens publications – e.g. Catalogs – the contents of the other documents have priority. We do not accept any liability for the information contained in this document.

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SIMATIC control systems



10/2

SIMATIC TDC multiprocessor control system

10/2

UR6021 rack

10/2

CPU555 processor module

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

SIMATIC control systems

SIMATIC TDC multiprocessor control system

UR6021 rack

Overview



- UR6021 rack as the base component for SIMATIC TDC
- Integrated system power supply and system fan
- With high-performance 64-bit backplane bus for high-speed data exchange between the inserted modules
- Requirement for operating the CPU555

Ordering data

Article No.

UR6021 racks	6DD1682-0CH3
Spare-part compatible successor of 6DD1682-0CH2	
Accessories	
Slot cover SR51	6DD1682-0DA1
Spare parts	
Backup battery	6ES7971-0BA00
Fan insert for UR6021	6DD1683-0CH3

CPU555 processor module

Overview



- Graphic freely configurable processor module
- For implementing highly dynamic open and closed-loop control functions

Ordering data

Article No.

CPU555 processor module	6DD1600-0BB0
Accessories	
SIMATIC Micro Memory Card	
2 MB	6ES7953-8LL31-0AA0
4 MB	6ES7953-8LM31-0AA0
8 MB	6ES7953-8LP31-0AA0
Crossed twisted pair cables 4x2 with RJ45 connectors	
0.5 m	6XV1870-3RE50
1 m	6XV1870-3RH10
2 m	6XV1870-3RH20
6 m	6XV1870-3RH60
10 m	6XV1870-3RN10

Software for SIMATIC controllers



11/2	Introduction
11/2	Information on software licensing
11/2	Software Update Service
11/3	Controller software in the TIA Portal
11/3	STEP 7 (TIA Portal)
11/6	STEP 7 Safety (TIA Portal)
11/8	Options for engineering and drive technology
11/8	D7-SYS
11/9	Drive ES engineering software
11/10	Software for joint tasks in the maintenance sector
11/10	SIMATIC PDM

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

Software for SIMATIC controllers

Introduction

Information on software licensing, Software Update Service

Overview Licensing

Siemens Digital Factory offers various types of licenses for software.

For further information, see chapter 16, page 16/16.

Overview Software Update Service

- Service for automatic dispatch of all new software versions during contract lifetime
- Reduced logistics effort thanks to automatic contract extension
- Reduced costs as updates are provided free of charge

Ordering

- The Software Update Service is ordered in the same way as any other product. The corresponding order number is given in the ordering information of the software product in question.
- You must own the current version of the software.
- One Software Update Service is ordered for each software license installed.
- The Software Update Service runs for 1 year from date of order.
- It is extended automatically by a further year in each case, as long as it is not canceled 3 months before it expires.
- An annual lump sum is invoiced per license.

Application

SIMATIC software is continuously enhanced and improved. The **Software Update Service** is the easiest way to regularly take advantage of these improvements. This service automatically sends new software updates when they are released so you always have the latest version.

The Software Update Service

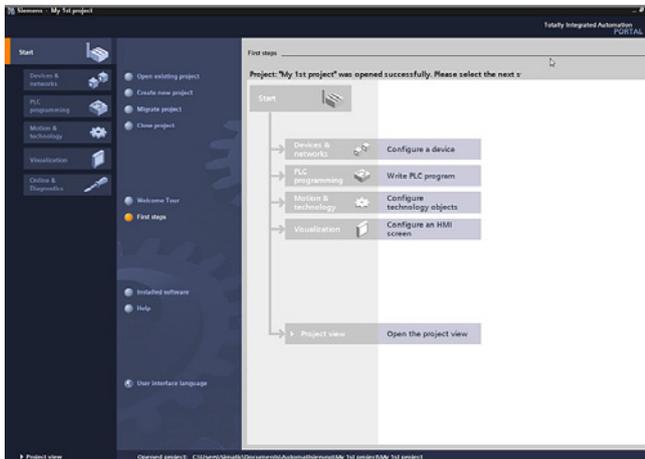
- Saves time and effort:
Once it is ordered, the Software Update Service is automatically renewed every year.
- Lowers costs:
The service pays for itself after the first update as it costs less than an individually ordered update.
- Makes budgeting easier:
Software expenditures can be accounted for early in the budgeting process and they are easier to write off.

Design

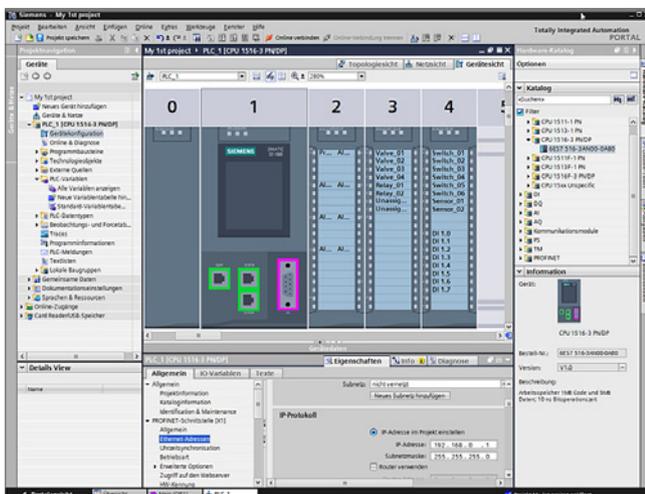
Scope of delivery

- All software versions released after ordering the Software Update Service (usually several consignments per year).
- SIMATIC Customer Support Knowledge Base CD-ROM with FAQs, tips & tricks and downloads (several issues per year).

Overview



STEP 7 V13 SP1 (TIA Portal), portal view



STEP 7 V13 SP1 (TIA Portal), device view: configuring and parameterizing in photographically realistic representation

Intuitive, efficient and future-oriented - the engineering software for programming the SIMATIC controllers

SIMATIC STEP 7 Professional V13 SP1 is the engineering system for the SIMATIC controllers S7-1200, S7-1500, S7-300, S7-400, WinAC and software controllers.

SIMATIC STEP 7 Basic V13 SP1 is the engineering system for the S7-1200.

STEP 7 V13 is based on the central engineering framework Totally Integrated Automation Portal (TIA Portal), which offers the user a uniform, efficient and intuitive solution to all automation tasks.

New with V13 SP1

- Supports the new SIMATIC Open controllers
- Systematic further development of language elements for programming
- Functional enhancements for team engineering
- Scalable online security options
- "Undo" is activated in online mode
- Simulation for S7-1200 V4.0 and higher
- API engineering of STEP 7 and WinCC
- Multiple usability expansions for efficient engineering

Technical specifications

	STEP 7 Professional / Basic V13 SP1 (TIA Portal)
Type of license	Floating license
Software class	A
Current version	V13 SP1
Target system	SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC, software controllers
Operating system	Windows 7 (64-bit) <ul style="list-style-type: none"> • Windows 7 Professional SP1 • Windows 7 Enterprise SP1 • Windows 7 Ultimate SP1 Windows 8.1 (64-bit) <ul style="list-style-type: none"> • Windows 8.1 • Windows 8.1 Professional • Windows 8.1 Enterprise Windows Server (64-bit) <ul style="list-style-type: none"> • Windows Server 2008 R2 StdE SP1 (full installation) • Windows Server 2012 R2 StdE (full installation)
Computer	SIMATIC Field PG M4 PREMIUM or higher (or comparable PC)
Processor	Intel Core i5-3320M 3.3GHz or higher
RAM	min. 8 GB
Hard disk	300 GB SSD
Screen	15.6" widescreen display (1920 x 1080)
Note	Includes the IEC programming languages SCL, LAD, FBD, STL and GRAPH

Compatibility with other SIMATIC products

STEP 7 Professional / Basic V13 SP1 (incl. WinCC Basic V13 SP1) can be installed on a PC in parallel with other versions of STEP 7 V12, V5.4 or V5.5, STEP 7 Micro/WIN, WinCC flexible (from 2008), S7-PCT (from V3.3) and WinCC (from V7.0 SP2).

Software for SIMATIC controllers

Controller software in the TIA Portal

STEP 7 (TIA Portal)

Ordering data	Article No.	Article No.
STEP 7 Professional / Basic V13 SP1 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish		Upgrade from STEP 7 Prof. V12 to STEP 7 Professional V13 SP1, Floating License, software download incl. license key¹⁾ Email address required for delivery
		Upgrade from STEP 7 Prof. 2006/2010 to STEP 7 Professional 2010/V13 SP1, Floating License
		Upgrade from STEP 7 Prof. 2006/2010 to STEP 7 Professional 2010/V13 SP1, Floating License, software download incl. license key¹⁾ Email address required for delivery
		PowerPack STEP 7 Prof. V13 Trial 365 to STEP 7 Prof. V13 SP1, Floating License. Only valid if ordered together with Software Update Service 6ES7 822-1AE00-0YY0 (STEP 7 Professional V1x) Prerequisite is a STEP 7 V13 Trial 365 license. License key download ¹⁾ Email address required for delivery
STEP 7 Professional V13 SP1, Floating License	6ES7822-1AA03-0YA5	6ES7822-1BE03-0YC5
STEP 7 Professional V13 SP1, Floating License, software download incl. license key¹⁾ Email address required for delivery	6ES7822-1AE03-0YA5	
STEP 7 Professional V13 SP1, Trial License	6ES7822-1AA03-0YA7	
STEP 7 Professional 2010/V13 SP1, Floating Combo License; on DVD	6ES7810-5CC11-0YA5	
STEP 7 Professional 2010/V13 SP1, Floating Combo License, license key download¹⁾ without software and documentation; email address required for delivery	6ES7810-5CE11-0YB5	
Conversion package STEP 7 Professional V13 SP1 Only valid if ordered together with a Software Update Service 6ES7 810-5CC04-0YE2 (STEP 7 Professional and STEP 7 Professional in TIA Portal). <ul style="list-style-type: none"> • Powerpack & upgrade from STEP 7 V5.5 to STEP 7 Professional 2010/V13 SP1, Floating License. Prerequisite is an existing STEP 7 Software Update Service. • Powerpack & upgrade from STEP 7 V5.5 to STEP 7 Professional 2010/V13 SP1, floating license. Prerequisite is an existing STEP 7 Software Update Service. Software download incl. license key¹⁾ Email address required for delivery 	6ES7822-1AA03-0XC2	6ES7822-1AA03-0XC5
	6ES7822-1AE03-0XC2	6ES7822-1AE03-0YC5
Upgrade STEP 7 Professional V12 to STEP 7 Professional V13 SP1, Floating License	6ES7822-1AA03-0YE5	6ES7822-0AA03-0YA5
		STEP 7 Basic V13 SP1, Floating License, software download incl. license key¹⁾ Email address required for delivery
		STEP 7 Basic V13 SP1, Floating License
		STEP 7 Basic V13 SP1, Floating License, software download incl. license key¹⁾ Email address required for delivery
		STEP 7 Basic V13 SP1, Trial License
		Upgrade STEP 7 Basic V12 to STEP 7 Basic V13 SP1, Floating License

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Ordering data	Article No.	Article No.
Upgrade STEP 7 Basic V12 to STEP 7 Basic V13 SP1, Floating License, software download incl. license key ¹⁾ Email address required for delivery	6ES7822-0AE03-0YE5	
Software Update Service For a period of 12 months and for a fixed price, the customer is automatically provided with all upgrades and service packs for each installed software package. The contract is automatically extended by a further year unless canceled at least 12 weeks prior to expiration. Requires the current software version		Software Update Service (Compact Edition)²⁾ The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB flash drive with the corresponding number of licenses and the corresponding number of COLs will be supplied. Delivery items to be combined must be ordered as one item. <ul style="list-style-type: none"> • STEP 7 Professional V1x • STEP 7 Professional and STEP 7 Professional in the TIA Portal • STEP 7 Basic
Software Update Service (Standard Edition)²⁾ The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.) <ul style="list-style-type: none"> • STEP 7 Professional V1x • STEP 7 Professional and STEP 7 Professional in the TIA Portal • STEP 7 Basic 	6ES7822-1AA00-0YL5 6ES7810-5CC04-0YE2 6ES7822-0AA00-0YLO	Software Update Service (download)²⁾ The upgrades and service packs are available for downloading. Email address required for delivery <ul style="list-style-type: none"> • STEP 7 Professional V1x • STEP 7 Professional and STEP 7 Professional in the TIA Portal • STEP 7 Basic

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

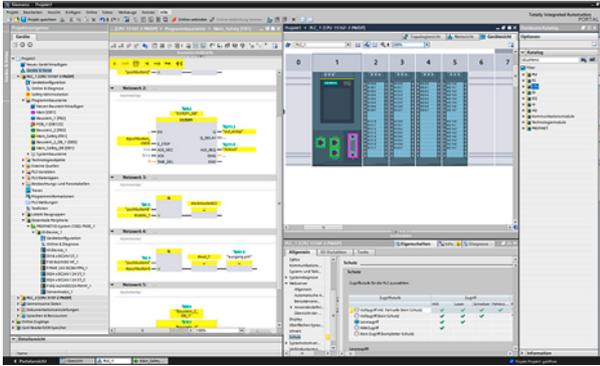
²⁾ For more information on the Software Update Service, see page 11/2.

Software for SIMATIC controllers

Controller software in the TIA Portal

STEP 7 Safety (TIA Portal)

Overview



- For creating safety-related programs on the STEP 7 operator interface
- For seamless and easy to use integration of safety-related functions into the standard automation
- All the required configuration and programming tools are integrated into the STEP 7 operator interface and utilize a common project structure
- STEP 7 Safety Basic option package for parameter assignment and programming of the fail-safe S7-1200
- STEP 7 Safety Advanced option package for all fail-safe TIA SIMATIC controller classes (S7-1500, S7-1200, S7-300, S7-400, WinAC)

Ordering data

Article No.

Article No.

STEP 7 Safety Advanced V13 SP1

Task:
Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP F controllers, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco

Requirement:
STEP 7 Professional V13 SP1

Floating License for 1 user, software and documentation on DVD, license key on USB stick

6ES7833-1FA13-0YA5

Floating License for 1 user, software, documentation and license key for download²⁾; e-mail address required for delivery

6ES7833-1FA13-0YH5

Software Update Service (Standard Edition)¹⁾

The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.) Requires the current software version.

6ES7833-1FC00-0YX2

Software Update Service (Compact Edition)¹⁾

The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB flash drive with the corresponding number of licenses and the corresponding number of COLs will be supplied. The deliveries that are to be grouped together must be ordered as one item.

Requires the current software version.

Minimum order quantity: 5 units

6ES7833-1FC00-0YM2

Software Update Service (Download)¹⁾

Requires the current software version.

E-mail address required for delivery.

6ES7833-1FC00-0YY0

STEP 7 Safety Advanced Upgrade

Upgrade from Distributed Safety V5.4 SP5 to STEP 7 Safety Advanced V13 SP1 for parallel use of both versions; software and documentation on DVD, license key on USB stick; Combo License

6ES7833-1FA13-0YF5

Upgrade from Distributed Safety V5.4 SP5 to STEP 7 Safety Advanced V13 SP1 for parallel use of both versions; software, license key and documentation for download²⁾; Combo License;

6ES7833-1FA13-0YY5

Upgrade from STEP 7 Safety Advanced V11/V12 to STEP 7 Advanced Safety V13 SP1 for parallel use of both versions; software and documentation on DVD, license key on USB stick; Upgrade License

6ES7833-1FA13-0YE5

Upgrade from STEP 7 Safety Advanced V11/V12 to STEP 7 Advanced Safety V13 SP1 for parallel use of both versions; Upgrade License; software, license key and documentation for download²⁾; e-mail address required for delivery

6ES7833-1FA13-0YK5

STEP 7 Safety Advanced PowerPack

Powerpack STEP 7 Safety Basic V13 SP1 to STEP 7 Safety Advanced V13 SP1; license key on USB stick; Floating License for 1 user

6ES7833-1FA13-0YC5

Powerpack STEP 7 Safety Basic V13 SP1 to STEP 7 Safety Advanced V13 SP1; license key for download²⁾; Floating License for 1 user; e-mail address required for delivery

6ES7833-1FA13-0YJ5

¹⁾ For more information on the software update service, see page 11/2.

²⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Ordering data	Article No.		Article No.
<p>STEP 7 Safety Advanced V13 SP1 Trial</p> <p>Trial License, valid for 21 days; software and documentation on DVD; executable with TIA Portal V13 SP1 from STEP 7 Professional V13 SP1 and higher; for configuring S7-1200 FC, S7-1500F, S7-300F, S7-400F, WinAC F</p>	6ES7833-1FA13-0YA8		6ES7833-1FD00-0YM2
<p>STEP 7 Safety Basic V13 SP1</p> <p>Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1200 FC</p> <p>Requirement: STEP 7 Basic V13 SP1 and higher</p> <p>Floating License for 1 user, software and documentation on DVD, license key on USB stick</p> <p>Floating License for 1 user, software, documentation and license key for download²⁾; e-mail address required for delivery</p>	<p>6ES7833-1FB13-0YA5</p> <p>6ES7833-1FB13-0YH5</p>	<p><u>Software Update Service (Compact Edition)</u>¹⁾</p> <p>The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB stick with the corresponding number of licenses and the corresponding number of COLs will be supplied. The deliveries that are to be grouped together must be ordered as a single item. Requires the current software version.</p> <p>Minimum order quantity: 5 units</p>	
<p><u>Software Update Service (Standard Edition)</u>¹⁾</p> <p>The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.). Requires the current software version.</p>	6ES7833-1FD00-0YX2	<p><u>Software Update Service (Download)</u>¹⁾</p> <p>Requires the current software version.</p> <p>Email address required for delivery.</p>	6ES7833-1FD00-0YN2

¹⁾ For more information on the software update service, see page 11/2.

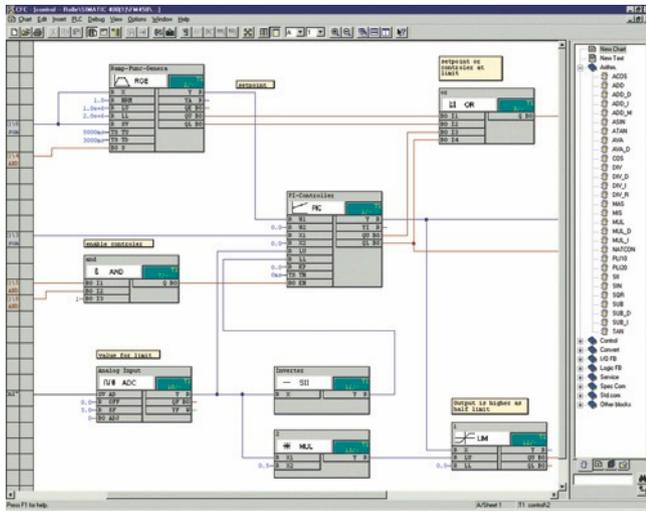
²⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Software for SIMATIC controllers

Options for engineering and drive technology

D7-SYS

Overview



- Optional package for STEP 7 V5.5 for configuring closed-loop control and automation tasks with SIMATIC TDC, FM 458-1 DP and T400
- Extensive block library
- Generation of user libraries in ANSI C with D7-FB-GEN function block generator

Ordering data

Article No.

SIMATIC D7-SYS V8.1

Reference hardware:
SIMATIC TDC, FM 458-1 DP, T400

Requirement:
MS Windows 7 Professional/
Enterprise/Ultimate + SP1
(32/64-bit);
MS Windows XP Professional SP3
(32-bit);
MS Windows Server 2003 R2 SP2
(32-bit) / 2008 R2 SP1 (64-bit);
STEP 7 V5.5 SP4 or higher

Type of delivery:
on DVD, German, English,
with electronic documentation

Floating license

Upgrade License V7.x and higher
Software Update Service¹⁾

6ES7852-0CC04-0YA5

6ES7852-0CC04-0YE5

6ES7852-0CC01-0YL5

SIMATIC Manual Collection

Electronic manuals on DVD,
multilingual:
LOGO!, SIMADYN,
SIMATIC bus components,
SIMATIC C7,
SIMATIC distributed I/O,
SIMATIC HMI, SIMATIC Sensors,
SIMATIC NET, SIMATIC PC Based
Automation, SIMATIC PCS 7,
SIMATIC PG/PC, SIMATIC S7,
SIMATIC Software, SIMATIC TDC

6ES7998-8XC01-8YE0

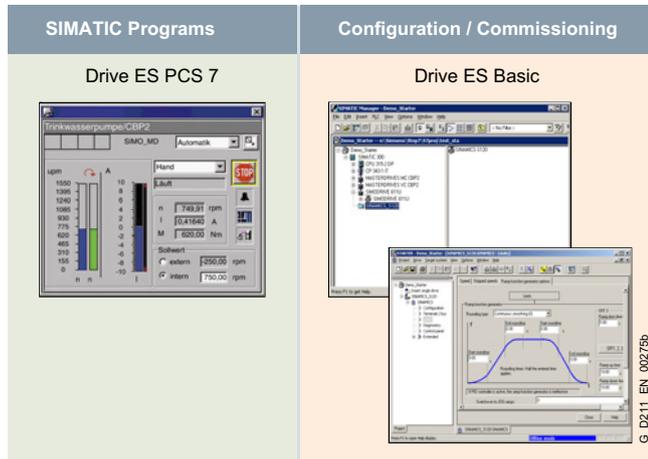
SIMATIC Manual Collection update service for 1 year

Current "Manual Collection" DVD
and the three subsequent updates

6ES7998-8XC01-8YE2

¹⁾ For more information on the software update service, page 11/2.

Overview



Drive ES is the engineering system used to integrate the communication, configuration and data management functions of Siemens drive technology into the SIMATIC automation world easily, efficiently and cost-effectively.

Various software packages are available for selection:

- Drive ES Basic
- Drive ES PCS 7

Drive ES (**Drive Engineering Software**) fully integrates drives from Siemens into the world of Totally Integrated Automation.

Ordering data

Article No.

Article No.

Drive ES Basic V5.5 SPx ¹⁾

Configuration software for the integration of drives into TIA (Totally Integrated Automation)
Requirement: STEP 7 from V5.3, SP3 and higher

Type of delivery: DVD
Languages: Ger, Eng, Fr, It, Sp with electronic documentation

- Floating license, 1 user
- Floating license, (copy license), 60 users
- Upgrade from V5.x to V5.5 SPx ¹⁾

6SW1700-5JA00-5AA0

6SW1700-5JA00-5AA1

6SW1700-5JA00-5AA4

Drive ES PCS 7 V7.0 SPx ¹⁾

Function block library for PCS 7 for the integration of drives
Requirement: PCS 7 V7.0 and higher

Type of delivery: CD-ROM
Languages: Ger, Eng, Fr, It, Sp with electronic documentation

- Single-user license incl. 1 runtime license
- Runtime license (without data storage medium)
- Update service for single-user license

6SW1700-7JD00-0AA0

6SW1700-5JD00-1AC0

6SW1700-0JD00-0AB2

Drive ES PCS 7 V7.1 SPx ¹⁾

Function block library for PCS 7 for the integration of drives
Requirement: PCS 7 V7.1 and higher

Type of delivery: CD-ROM
Languages: Ger, Eng, Fr, It, Sp with electronic documentation

- Single-user license incl. 1 runtime license
- Runtime license (without data storage medium)
- Update service for single-user license
- Upgrade from V6.x to V7.1 SPx ¹⁾

6SW1700-7JD00-1AA0

6SW1700-5JD00-1AC0

6SW1700-0JD00-0AB2

6SW1700-7JD00-1AA4

Drive ES PCS 7 V8.0 SPx ¹⁾

Function block library for PCS 7 for the integration of drives in Classic Style (as predecessor)
Requirement: PCS 7 V8.0 and higher

Type of delivery: CD-ROM
Languages: Ger, Eng, Fr, It, Sp with electronic documentation

- Single-user license incl. 1 runtime license
- Runtime license (without data storage medium)
- Update service for single-user license
- Upgrade from V6.x to V8.0 SPx ¹⁾

6SW1700-8JD00-0AA0

6SW1700-5JD00-1AC0

6SW1700-0JD00-0AB2

6SW1700-8JD00-0AA4

Drive ES PCS 7 APL V8.0 SPx ¹⁾

Function block library for PCS 7 for the integration of drives in APL style (Advanced Process Library)

Requirement: PCS 7 V8.0 and higher

Type of delivery: CD-ROM
Languages: Ger, Eng, Fr, It, Sp with electronic documentation

- Single-user license incl. 1 runtime license
- Runtime license (without data storage medium)
- Update service for single-user license
- Upgrade of APL V8.0 to V8.0 SP1 or Drive ES PCS7 V6.x, V7.x, V8.x classic to Drive ES PCS7 APL V8.0 SPx ¹⁾

6SW1700-8JD01-0AA0

6SW1700-5JD00-1AC0

6SW1700-0JD01-0AB2

6SW1700-8JD01-0AA4

Drive ES PCS 7 V8.1 SPx ¹⁾

Function block library for PCS 7 for the integration of drives in Classic Style (as predecessor)

Requirement: PCS 7 V8.1 and higher

Type of delivery: CD-ROM
Languages: Ger, Eng, Fr, It, Sp with electronic documentation

- Single-user license incl. 1 runtime license
- Runtime license (without data storage medium)
- Update service for single-user license
- Upgrade from V6.x/V7.x/V8.x to V8.1 SPx ¹⁾

6SW1700-8JD00-1AA0

6SW1700-5JD00-1AC0

6SW1700-0JD00-0AB2

6SW1700-8JD00-1AA4

Drive ES PCS 7 APL V8.1 SPx ¹⁾

Function block library for PCS 7 for the integration of drives in APL style (Advanced Process Library)

Requirement: PCS 7 V8.1 and higher

Type of delivery: CD-ROM
Languages: Ger, Eng, Fr, It, Sp with electronic documentation

- Single-user license incl. 1 runtime license
- Runtime license (without data storage medium)
- Update service for single-user license
- Upgrade of APL V8.x to V8.1 SPx ¹⁾ or Drive ES PCS 7 V6.x, V7.x, V8.x classic to Drive ES PCS 7 APL V8.1 SPx ¹⁾

6SW1700-8JD01-1AA0

6SW1700-5JD00-1AC0

6SW1700-0JD01-0AB2

6SW1700-8JD01-1AA4

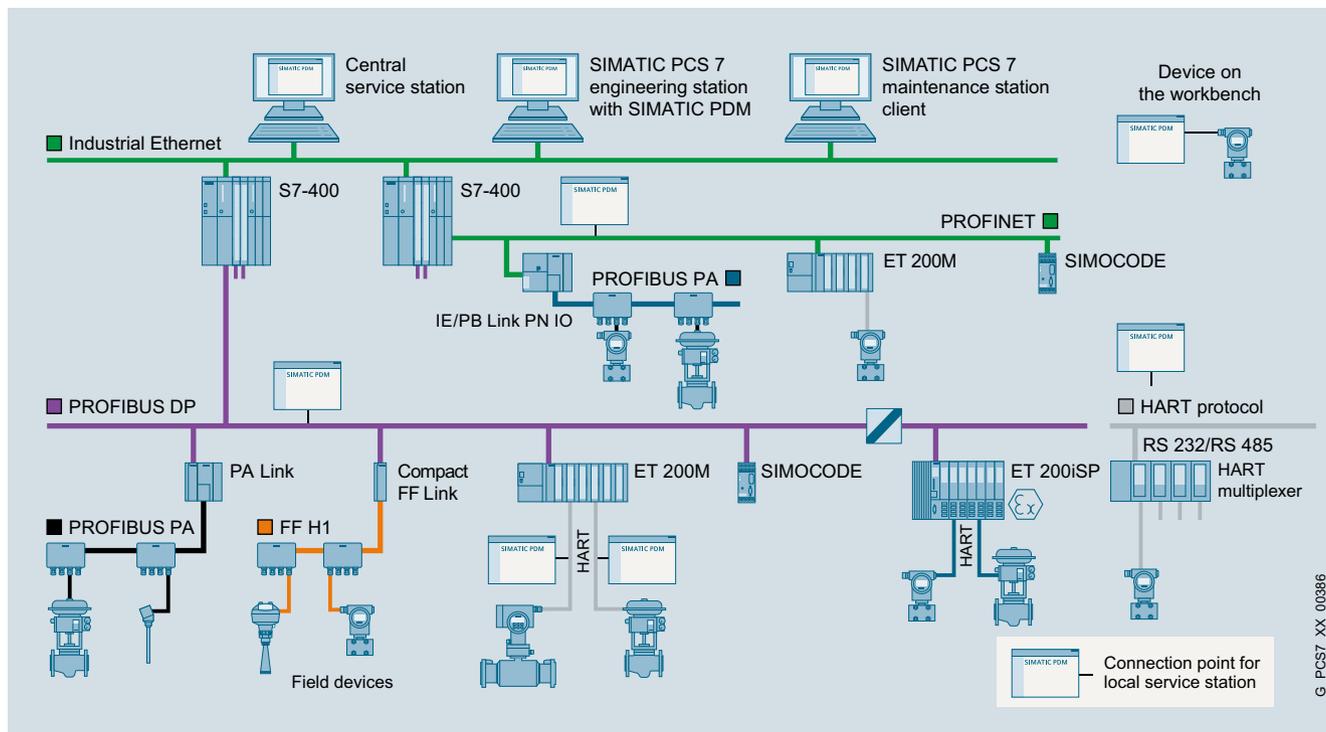
¹⁾ Orders are automatically supplied with the latest Service Pack (SP).

Software for SIMATIC controllers

Software for joint tasks in the maintenance sector

SIMATIC PDM

Overview



Configuration options with SIMATIC PDM

SIMATIC PDM (Process Device Manager) is a universal, vendor-independent tool for the configuration, parameter assignment, commissioning, diagnostics and servicing of intelligent field devices (sensors and actuators) and field components (remote I/Os, multiplexers, control-room devices, compact controllers), which in the following sections will be referred to simply as devices.

With *one* software product, SIMATIC PDM enables users to work with over 3 500 devices and device variants of Siemens and over 200 other manufacturers worldwide on a *single* homogeneous user interface.

The user interface satisfies the requirements of the VDI/VDE GMA 2187 and IEC 65/349/CD directives. Parameters and functions for all supported devices are displayed in a consistent and uniform fashion independent of their communications interface. Even complex devices with several hundred parameters can be represented clearly and processed quickly. Using SIMATIC PDM it is very easy to navigate in highly complex stations such as remote I/Os and even connected field devices.

From the viewpoint of device integration, SIMATIC PDM is the most powerful open process device manager on the global market. Devices which previously were not supported can be integrated in SIMATIC PDM by importing their device descriptions (EDD). This provides security for your investment and saves you investment costs, training expenses and follow-up costs.

SIMATIC PDM supports the operative system management in particular through:

- Uniform presentation and operation of devices
- Uniform representation of diagnostics information
- Indicators for preventive maintenance and servicing
- Detection of changes in the project and device
- Increasing the operational reliability
- Reducing the investment, operating and maintenance costs

Maintenance personnel can assign field device parameters using Microsoft Internet Explorer at mobile and stationary workstations with SIMATIC PDM. Practically every workstation integrated in the production plant can be used for configuration. Service personnel are thus able to work directly at the location of the field device, while data is stored centrally in the engineering station or maintenance station. This leads to a significant shortening of maintenance and travel times.

When a maintenance station is configured in the SIMATIC PCS 7 process control system, SIMATIC PDM is integrated in it and transmits parameter data and diagnostic information. You can switch directly to the SIMATIC PDM views from the diagnostics faceplates in the maintenance station.

A SIMATIC PDM user administration system based on SIMATIC Logon is used to assign various roles with defined function privileges to users. These function privileges refer to SIMATIC PDM system functions, e.g. writing to the device.

For all devices described per Electronic Device Description (EDD), SIMATIC PDM delivers a range of information for display and further processing on the maintenance station, e.g.:

- Device type information (electronic rating plate)
- Detailed diagnostics information (manufacturer information, information on error diagnostics and troubleshooting, further documentation)
- Results of internal condition monitoring functions
- Status information (e.g. local configuration changes)
- Information on changes (audit trail report)
- Parameter information

G_PCS7_XX_00386

Technical specifications

SIMATIC PDM V9.0

Hardware	<ul style="list-style-type: none"> PG/PC/notebook with processor corresponding to operating system requirements
Operating system (alternatives)	<p>Can be used generally:</p> <ul style="list-style-type: none"> Windows 7 Professional/Ultimate/Enterprise SP1, 32-bit/64-bit <p>Only with integration in SIMATIC PCS 7:</p> <ul style="list-style-type: none"> Windows Server 2008 R2 SP1 Standard Edition, 64-bit Windows Server 2012 R2 SP1 Standard Edition, 64-bit
Integration in STEP 7/PCS 7	<ul style="list-style-type: none"> SIMATIC PCS 7 V8.0+SP2 (without Communication FOUNDATION Fieldbus) SIMATIC PCS 7 V8.1 (with/without ServicePack) STEP 7 V5.5+SP4
SIMATIC PDM Client	<ul style="list-style-type: none"> Internet Explorer 10 or 11

Ordering data

Article No.

SIMATIC PDM Stand alone product packages

Minimum configuration

SIMATIC PDM Single Point V9.0 including 1 TAG; product package for operation and configuration of one field device; communication via PROFIBUS DP/PA, HART (modem, RS 232, PROFIBUS/PROFINET), Modbus, Ethernet or PROFINET

Additional functions or SIMATIC PDM TAGs are not possible

6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user

- Goods delivery (without SIMATIC PCS 7 Software Media Package)
License key on USB stick and certificate of license, bundled with 1 x SIMATIC PDM Software Media Package per ordering position

6ES7658-3HA58-0YA5

- Online delivery (without SIMATIC PCS 7 Software Media Package)
License Key download and online certificate of license combined with SIMATIC PDM Software Media Package (SIMATIC PDM and device library software download)
Note:
Email address required!

6ES7658-3HA58-0YH5

Basic configuration for individual product package as well as local service and parameter assignment stations

SIMATIC PDM Basic V9.0

including 4 TAGs; product package for operation and configuration of field devices and components; communication via PROFIBUS DP/PA, HART (modem, RS 232, PROFIBUS/PROFINET), Modbus, Ethernet or PROFINET

6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user

- Goods delivery (without SIMATIC PCS 7 Software Media Package)
License key on USB stick and certificate of license, bundled with 1 x SIMATIC PDM Software Media Package per ordering position

6ES7658-3AB58-0YA5

- Online delivery (without SIMATIC PCS 7 Software Media Package)
License key download and online certificate of license combined with SIMATIC PDM Software Media Package (SIMATIC PDM and device library software download)

6ES7658-3AB58-0YH5

Note:
Email address required!

Configuration for local service and parameter assignment station

SIMATIC PDM Service V9.0

Product package for service and measuring circuit tests on a local service station, with

- SIMATIC PDM Basic incl. 4 TAGs
- 50 TAGs

6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user

- Goods delivery (without SIMATIC PCS 7 Software Media Package)
License key on USB stick and certificate of license, bundled with 1 x SIMATIC PDM Software Media Package per ordering position

6ES7658-3JD58-0YA5

- Online delivery (without SIMATIC PCS 7 Software Media Package)
License key download and online certificate of license combined with SIMATIC PDM Software Media Package (SIMATIC PDM and device library software download)

6ES7658-3JD58-0YH5

Note:
Email address required!

Ordering data	Article No.	Article No.	
<p>SIMATIC PDM PCS 7 Server V9.0 Product package for use in a SIMATIC PCS 7 configuration environment, including server functionality</p> <p>6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit</p> <p>Single license for 1 installation, with</p> <ul style="list-style-type: none"> - SIMATIC PDM Basic incl. 4 TAGs - SIMATIC PDM Extended - SIMATIC PDM integration in STEP 7/PCS 7 - SIMATIC PDM Routing - SIMATIC PDM Server - 100 TAGs <ul style="list-style-type: none"> • Goods delivery (without SIMATIC PCS 7 Software Media Package) License key on USB stick and certificate of license, bundled with 1 × SIMATIC PDM Software Media Package per ordering position • Online delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key download and online certificate of license combined with SIMATIC PDM Software Media Package (SIMATIC PDM and device library software download) Note: E-mail address required! 	<p>6ES7658-3TD58-0YA5</p> <p>6ES7658-3TD58-0YH5</p>	<p>SIMATIC PDM Integration in STEP 7/SIMATIC PCS 7 V9.0 For integration in a SIMATIC S7/ SIMATIC PCS 7 configuration environment</p> <p>6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user</p> <ul style="list-style-type: none"> • Goods delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key on USB stick and certificate of license • Online delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key download and online certificate of license Note: E-mail address required! 	<p>6ES7658-3BX58-2YB5</p> <p>6ES7658-3BX58-2YH5</p>
<p>Optional product components for SIMATIC PDM</p> <p>SIMATIC PDM Extended V9.0 For activation of additional system functions</p> <p>6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user</p> <ul style="list-style-type: none"> • Goods delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key on USB stick and certificate of license • Online delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key download and online certificate of license Note: E-mail address required! 	<p>6ES7658-3NX58-2YB5</p> <p>6ES7658-3NX58-2YH5</p>	<p>SIMATIC PDM Routing V9.0 For plant-wide navigation to field devices</p> <p>6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user</p> <ul style="list-style-type: none"> • Goods delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key on USB stick and certificate of license • Online delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key download, online certificate of license Note: E-mail address required! 	<p>6ES7658-3CX58-2YB5</p> <p>6ES7658-3CX58-2YH5</p>
<p>SIMATIC PDM Server V9.0 For activation of server functionality</p> <p>6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, single license for 1 installation</p> <ul style="list-style-type: none"> • Goods delivery (without SIMATIC PCS 7/SIMATIC PDM Software Media Package) License key on USB stick, certificate of license • Online delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key download and online certificate of license Note: E-mail address required! 	<p>6ES7658-3TX58-2YB5</p> <p>6ES7658-3TX58-2YH5</p>		

Software for SIMATIC controllers

Software for joint tasks in the maintenance sector

SIMATIC PDM

Ordering data

SIMATIC PDM Communication FOUNDATION Fieldbus V9.0

For communication with field devices on FOUNDATION Fieldbus H1

6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user

- Goods delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key on USB stick and certificate of license

6ES7658-3QX58-2YB5

- Online delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key download and online certificate of license
Note:
E-mail address required!

6ES7658-3QX58-2YH5

SIMATIC PDM HART Server V9.0

For use of HART multiplexers as well as for parameter assignment of Wireless HART field devices
6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs on Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit, floating license for 1 user

- Goods delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key on USB stick and certificate of license

6ES7658-3EX58-2YB5

- Online delivery (without SIMATIC PCS 7/ SIMATIC PDM Software Media Package) License key download and online certificate of license
Note:
E-mail address required!

6ES7658-3EX58-2YH5

SIMATIC PDM 1 Client

Cumulative client license for SIMATIC PDM configurations with SIMATIC PDM Server, software class A, single license for 1 installation

- Goods delivery License key on USB stick and certificate of license

6ES7658-3UA00-2YB5

- Online delivery License key download and online certificate of license
Note:
Email address required!

6ES7658-3UA00-2YH5

SIMATIC PDM TAGs

TAG licenses for expanding the available TAG volume, cumulative, software class A, floating license for 1 user

- Goods delivery License key on USB stick and certificate of license
 - 10 TAGs
 - 100 TAGs
 - 1 000 TAGs
- Online delivery License key download and online certificate of license
Note: E-mail address required!
 - 10 TAGs
 - 100 TAGs
 - 1 000 TAGs

6ES7658-3XC00-2YB5

6ES7658-3XD00-2YB5

6ES7658-3XE00-2YB5

6ES7658-3XC00-2YH5

6ES7658-3XD00-2YH5

6ES7658-3XE00-2YH5

SIMATIC PDM Software Media Package

SIMATIC PDM Software Media Package V9.0

Installation software without license, 6 languages (German, English, French, Italian, Spanish, Chinese), software class A, runs with Windows 7 Ultimate 32/64-bit, Windows Server 2008 R2 Standard 64-bit, or Windows Server 2012 R2 Standard 64-bit

Note:
Can only be used in conjunction with a valid license or in demo mode!

- Goods delivery (without SIMATIC PCS 7 Software Media Package) SIMATIC PDM and device library software on DVD
- Online delivery (without SIMATIC PCS 7 Software Media Package) SIMATIC PDM and device library software download
Note:
E-mail address required!

6ES7658-3GX58-0YT8

6ES7658-3GX58-0YG8

Products for specific requirements



13/2	Telecontrol systems for comprehensive applications
13/2	SIPLUS RIC substations for IEC protocol
13/2	SIPLUS RIC libraries for ET 200SP
13/3	SIPLUS RIC libraries for SIMATIC S7-1500
13/4	Automatic door controls for industry applications
13/4	Geared motors
13/4	Accessories
13/6	Accessories
13/9	for railway applications – Controllers
13/9	SIDOOR ATE530S platform screen door drive
13/11	Condition monitoring systems
13/11	SIPLUS CMS1200 condition monitoring system
13/11	Introduction
13/11	SIPLUS CMS1200
13/11	SM 1281 Condition Monitoring
13/13	Accessories

Brochures

For brochures serving as selection guides for SIMATIC products refer to:

www.siemens.com/simatic/printmaterial

Products for specific requirements

Telecontrol systems for comprehensive applications
SIPLUS RIC substations for IEC protocol

SIPLUS RIC libraries for ET 200SP

Overview



If a SIMATIC ET 200SP-based system is to communicate with a Siemens control center, e.g. SIMATIC PCS 7 TeleControl, WinCC TeleControl, WinCC OA, or a control center of a third-party supplier using the IEC 60870-5 telecontrol standard, the IEC 60870-5-101 (serial), -103 (protection) or -104 (TCP/IP) telecontrol protocols can be used in the SIMATIC automation systems.

SIPLUS RIC libraries offer an integrated, scalable system based on SIMATIC ET 200SP functions, for the following data volumes:

- 200 information points, for use with CPU 1510
- 800 information points, for use with CPU 1512

The work memory for data is used for buffering the message frames. Longer communication failure times can thus be bridged should a connection fail. The SIPLUS RIC software libraries are based on the standard TIA Portal and can be used on various, mutually compatible types of SIMATIC S7 devices, thus saving hardware costs and programming overhead.

The libraries are on a CD and are supplied together with a SIMATIC memory card which can be used on all CPUs. Five versions with different storage capacities are available.

With SIPLUS Extreme hardware, telecontrol devices for an extended ambient temperature range (-25 ... +70 °C) and exceptional exposure to media (conformal coating) can be implemented with the telecontrol protocols.

A certificate of license enabling all IEC 60870-5-101 (serial), -103 (protection) or -104 (TCP/IP) telecontrol protocols is supplied for the SIMATIC memory card included in delivery.

Ordering data

SIPLUS RIC libraries for SIMATIC ET 200SP

Runtime license;
CD with software and documentation

with SIMATIC memory card;
12 MB

Article No.

6AG6003-8CF00-0LE0

Products for specific requirements

Telecontrol systems for comprehensive applications
SIPLUS RIC substations for IEC protocol

SIPLUS RIC libraries for SIMATIC S7-1500

Overview



If a SIMATIC S7-1500-based system is to communicate with a Siemens control center, e.g. SIMATIC PCS 7 TeleControl, WinCC TeleControl, WinCC OA, or a control center of a third-party supplier using the IEC 60870-5 telecontrol standard, the IEC 60870-5-101 (serial), -103 (protection) or -104 (TCP/IP) telecontrol protocols can be used in the SIMATIC automation systems.

SIPLUS RIC libraries offer an integrated, scalable system based on SIMATIC S7-1500 functions, for the following data quantities:

- 200 information points, for use with CPU 1511
- 1 000 information points, for use with CPU 1513
- 2 000 information points, for use with CPU 1516
- 5 000 information points, for use with CPU 1518

The work memory for data is used for buffering the message frames. Longer communication failure times can thus be bridged. The SIPLUS RIC software libraries are based on the standard TIA Portal and can be used on various, mutually compatible types of SIMATIC S7 devices, thus saving hardware costs and programming overhead.

The libraries on CD are supplied together with a SIMATIC memory card, which can be used on all CPUs. Five versions with different storage capacities are available.

With SIPLUS Extreme Hardware, telecontrol devices for an extended ambient temperature range (-25 ... +70 °C) and exceptional exposure to media (conformal coating) can be implemented using the telecontrol protocols.

A license certificate with the activation of all telecontrol protocols IEC 60870-5-101 (serial), -103 (protection) or -104 (TCP/IP) is supplied for the SIMATIC memory card included in the scope of delivery.

Ordering data

Article No.

SIPLUS RIC libraries for SIMATIC S7-1500

Runtime license;
CD with software and documentation

with SIMATIC memory card; 12 MB

6AG6003-7CF00-0LE0

with SIMATIC memory card; 24 MB

6AG6003-7CF00-0LF0

with SIMATIC memory card, 256 MB

6AG6003-7CF00-0LL0

with SIMATIC memory card, 2 GB

6AG6003-7CF00-0LP0

Products for specific requirements

Automatic door controls
for industry applications

Geared motors

Overview

SIDOOR geared motors are a combination of gear unit, motor and sensor. They are easy to connect to the controller via the interface provided and are automatically detected during commissioning.

The maintenance-free, variable speed drive unit comprises a DC motor with non-self-locking gearing.

The geared motors must be selected according to the dynamic door weight. Two different versions are available for each of the SIDOOR MDG180, SIDOOR MDG400 and SIDOOR M3 to SIDOOR M5 geared motors:

- SIDOOR MDG180 geared motors (max. door weight of 180 kg)
 - SIDOOR MDG180 L (pinion left) 6FB1103-0AT14-4MB0
 - SIDOOR MDG180 R (pinion right) 6FB1103-0AT13-4MB0
- SIDOOR MDG400 geared motors (max. door weight of 400 kg)
 - SIDOOR MDG400 L (pinion left) 6FB1103-0AT14-3MC0
 - SIDOOR MDG400 R (pinion right) 6FB1103-0AT13-3MC0
- SIDOOR MDG400 NMS geared motors (max. door weight 400 kg)
Shaft with groove and feather key A5X5 acc. to DIN 6885 - without pinion
 - SIDOOR MDG400 NMS L (shaft left) 6FB1103-0AT14-3MC1
 - SIDOOR MDG400 NMS R (shaft right) 6FB1103-0AT13-3MC1
- SIDOOR M3 geared motors (max. door weight 180 kg)
 - SIDOOR M3 L (pinion left) 6FB1103-0AT10-4MB0
 - SIDOOR M3 R (pinion right) 6FB1103-0AT11-4MB0

- SIDOOR M4 geared motors (max. door weight 400 kg)
 - SIDOOR M4 L (pinion left) 6FB1103-0AT10-3MC0
 - SIDOOR M4 R (pinion right) 6FB1103-0AT11-3MC0
- SIDOOR M5 geared motors (max. door weight 600 kg)
 - SIDOOR M5 L (pinion left) 6FB1103-0AT10-3MD0
 - SIDOOR M5 R (pinion right) 6FB1103-0AT11-3MD0

The gear outlet direction is defined as left or right when viewing the gear unit from the front.



Geared motors (versions with pinion left) shown from bottom to top: SIDOOR MDG180 L, SIDOOR MDG400 L, SIDOOR M3 L, SIDOOR M4 L, SIDOOR M5 L

Technical specifications

Article number	6FB1 103- 0AT14- 4MB0	6FB1 103- 0AT13- 4MB0	6FB1 103- 0AT14- 3MC0	6FB1 103- 0AT13- 3MC0	6FB1 103- 0AT14- 3MC1	6FB1 103- 0AT13- 3MC1	6FB1 103- 0AT10- 4MB0	6FB1 103- 0AT11- 4MB0	6FB1 103- 0AT10- 3MC0	6FB1 103- 0AT11- 3MC0	6FB1 103- 0AT10- 3MD0	6FB1 103- 0AT11- 3MD0
General technical data:												
Product brand name	SIDOOR											
Product designation	Motor for door control											
Design of the product	MDG180 L	MDG180 R	MDG400 L	MDG400 R	MDG400 NMS L	MDG400 NMS R	M3 L	M3 R	M4 L	M4 R	M5 L	M5 R
Supply voltage:												
Supply voltage	30											
• at DC	V	30										
Consumed active power rated value	W	120										225
Operating current Rated value	A	4										7.5
Mechanical data:												
Torque of the rotary actuator Rated value	N·m	3										6.8
Speed maximum	m/s	0.65	0.75		0.65			0.75		0.5		
Transmission ratio of gearbox		15										
Number of pulses per revolution maximum		100										
Weight of door maximum	kg	180	400		180			400		600		

Technical specifications (continued)

Article number	6FB1 103- 0AT14- 4MB0	6FB1 103- 0AT13- 4MB0	6FB1 103- 0AT14- 3MC0	6FB1 103- 0AT13- 3MC0	6FB1 103- 0AT14- 3MC1	6FB1 103- 0AT13- 3MC1	6FB1 103- 0AT10- 4MB0	6FB1 103- 0AT11- 4MB0	6FB1 103- 0AT10- 3MC0	6FB1 103- 0AT11- 3MC0	6FB1 103- 0AT10- 3MD0	6FB1 103- 0AT11- 3MD0
Ambient conditions:												
Ambient temperature												
• during operation	°C	-20 ... +50										
• during storage	°C	-40 ... +85										
Protection class IP												
• of the motor	IP56						IP54			IP54		
• of gearbox	IP56						IP40			IP54		
Installation/ mounting/ dimensions:												
Height of the motor	mm	98	115		98		115		124			
Length of the motor	mm	236	275		236		275		344			
Diameter of the motor	mm	63										
Width of gearbox including drive pinion	mm	85	105		106		85		105		111	

Ordering data

	Article No.		Article No.
SIDOOR MDG180 geared motors			
MDG180 L	6FB1103-0AT14-4MB0	SIDOOR M3 geared motors	
MDG180 R	6FB1103-0AT13-4MB0	M3 L	6FB1103-0AT10-4MB0
SIDOOR MDG400 geared motors			
MDG400 L	6FB1103-0AT14-3MC0	M3 R	6FB1103-0AT11-4MB0
MDG400 R	6FB1103-0AT13-3MC0	SIDOOR M4 geared motors	
SIDOOR MDG400 NMS			
MDG400 NMS L, without pinion	6FB1103-0AT14-3MC1	M4 L	6FB1103-0AT10-3MC0
MDG400 NMS R, without pinion	6FB1103-0AT13-3MC1	M4 R	6FB1103-0AT11-3MC0
SIDOOR M5 geared motors			
		M5 L	6FB1103-0AT10-3MD0
		M5 R	6FB1103-0AT11-3MD0

Products for specific requirements

Automatic door controls
for industry applications

Accessories

Overview

An extensive range of accessories is available for the door control drives.

This is necessary to ensure low-noise operation of the door by the motor. The geared motors can be optimally integrated into the respective door drive system.

Accessories for all controllers for industrial applications

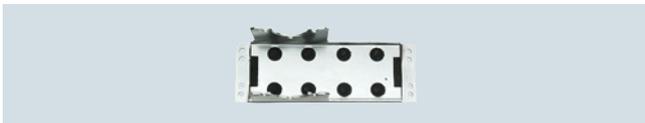
Rubber-metal anti-vibration mounts for geared motors

To ensure low-noise door operation, SIDOOR geared motors are integrated in the door system using rubber-metal anti-vibration mounts.

- Rubber-metal anti-vibration mount 6FB1104-0AT02-0AD0 for SIDOOR MDG180, SIDOOR M2 and SIDOOR M3 geared motors (door weights up to 180 kg)
- Rubber-metal anti-vibration mount 6FB1104-0AT01-0AD0 for SIDOOR MDG400 and SIDOOR M4 (door weights up to 400 kg), and SIDOOR M5 geared motors (door weights up to 600 kg)



Rubber-metal anti-vibration mount 6FB1104-0AT02-0AD0 for geared motors with door weights up to 180 kg



Rubber-metal anti-vibration mount 6FB1104-0AT01-0AD0 for geared motors with door weights up to 600 kg

Mounting bracket

Two different mounting brackets are available with elongated holes:

- Mounting bracket 6FB1104-0AT01-0AS0 for mounting SIDOOR geared motors, for flexible accommodation of the rubber-bonded metal
- Mounting bracket 6FB1104-0AT02-0AS0 for the deflector unit, this enables the toothed belt to be set to the required belt tension.



Mounting bracket 6FB1104-0AT01-0AS0 for mounting the geared motor



Mounting bracket 6FB1104-0AT02-0AS0 for the deflector unit

DIN rail holder

The standard DIN rail holder 6FB1144-0AT00-3SA0 is available for mounting controllers on the standard DIN rail TH 35 according to IEC 60715.

Door clutch holder

The door clutch holder serves to connect the respective door leaf by means of a toothed belt while also functioning as a toothed-belt lock. One door clutch holder per door leaf is required. The toothed-belt lock can accommodate both open ends of the toothed belt.

A door clutch holder is available for each toothed belt width:

- Width 12 mm: 6FB1104-0AT01-0CP0
- Width 14 mm: 6FB1104-0AT02-0CP0



Door clutch holder 6FB1104-0AT01-0CP0 (packaging size = 1 unit)

Deflector unit

The deflector unit 6FB1104-0AT03-0AS0 contains an embedded belt pulley which can be mounted on the door system. This unit deflects the STS toothed belt.



Deflector unit 6FB1104-0AT03-0AS0

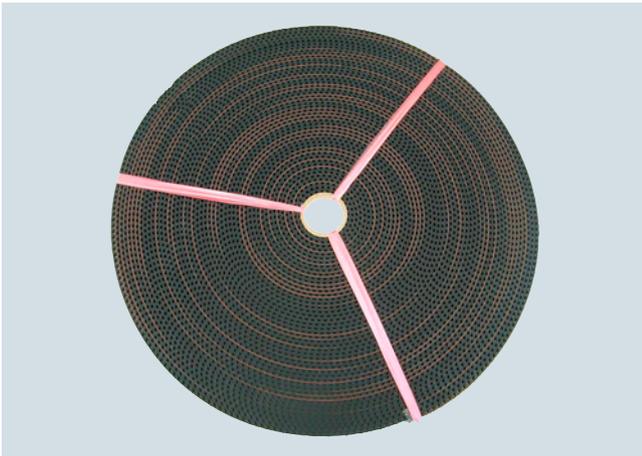
Overview (continued)Toothed belt STS

The door system is moved between the end positions of the door using the STS toothed belts. Two different toothed belt lengths can be ordered for each toothed belt width.

- Toothed belt width 12 mm:
 - Length 4 m: 6FB1104-OAT01-OAB0
 - Length 45 m: 6FB1104-OAT02-OAB0
- Toothed belt width 14 mm:
 - Length 4 m: 6FB1104-OAT03-OAB0
 - Length 55 m: 6FB1104-OAT04-OAB0



Toothed belt 6FB1104-OAT01-OAB0 (width 12 mm, length 4 m)



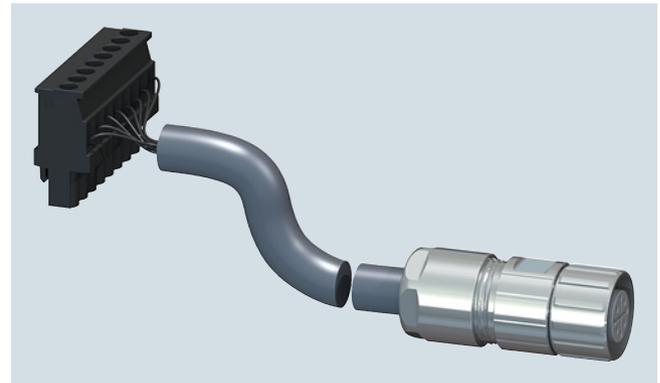
Toothed belt 6FB1104-OAT02-OAB0 (width 12 mm, length 45 m)

Accessories for machine tool door drives onlyHybrid connecting cables CABLE-MDG

These connecting cables connect the machine tool door drives to the SIDOOR MDG geared motor. Various lengths are available.

- Length 0.5 m: 6FB1104-OAT00-OCB5
- Length 1.5 m: 6FB1104-OAT01-OCB5
- Length 5 m: 6FB1104-OAT05-OCB0
- Length 7 m: 6FB1104-OAT07-OCB0
- Length 10 m: 6FB1104-OAT10-OCB0
- Length 15 m: 6FB1104-OAT15-OCB0
- Length 20 m: 6FB1104-OAT20-OCB0

The machine tool door drives are connected to a higher-level SIMATIC controller via the connector PB FC RS 485 PLUG 180 (6GK1500-0FC10) and the PB FC Standard Cable GP (6XV1830-0EH10), a standard bus cable with a special design for quick mounting. A SIMATIC RS 485/USS communication module is required on the controller side, such as the ET 200S electronic module (6ES7138-4DF11-0AB0) for the SIMATIC ET 200.



SIDOOR CABLE MDG

Electronic module for ET 200S

Single-channel module 6ES7138-4DF11-0AB0 for serial data exchange via point-to-point connection, for telegrams with a max. length of 224 bytes, RS 232C, RS 422, RS 485, 2 versions, ASCII and 3964(R) protocol, Modbus and USS protocol, parameter assignment via GSD file or STEP 7 (from V5.1)

Communication module CM PtP RS 422/485 BA

Basic communication module 6ES7540-1AB00-0AA0 with one RS 422/485 interface, Freeport, 3964(R) and USS protocols, 15-pin sub D socket, max. 19.2 kbit/s, for SIMATIC S7-1500

Communication module CM 1241

Communication module 6ES7241-1CH32-0XB0 for point-to-point connection with one RS 422/RS 485 interface, 9-pin, SUB D (pin) supports Freeport, for SIMATIC S7-1200

Products for specific requirements

Automatic door controls
for industry applications

Accessories

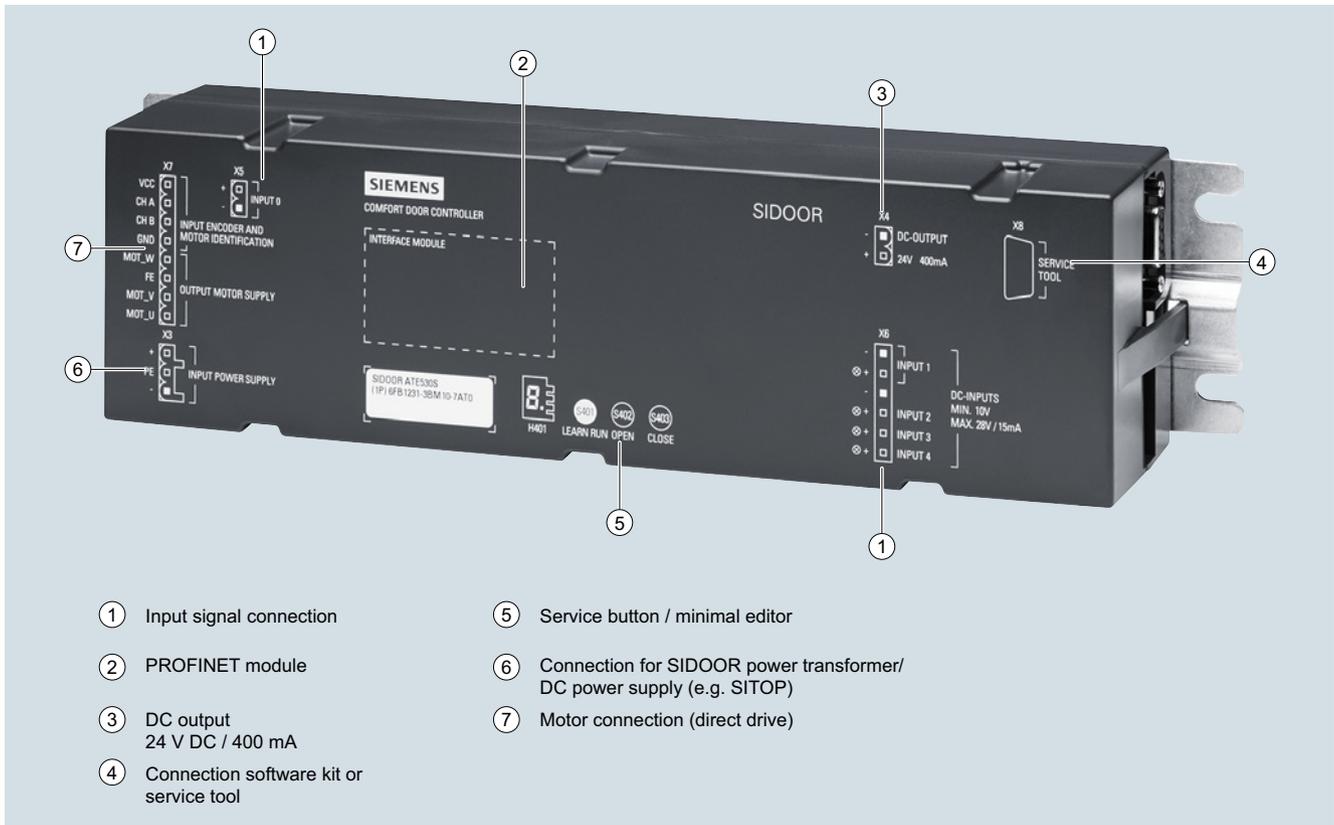
Ordering data	Article No.		Article No.
Rubber-metal anti-vibration mounts for geared motors <ul style="list-style-type: none"> SIDOOR rubber-metal anti-vibration mount for geared motors for door weights up to 300 kg SIDOOR rubber-metal anti-vibration mount for geared motors for door weights from 300 kg 	<p>6FB1104-0AT02-0AD0</p> <p>6FB1104-0AT01-0AD0</p>		
Mounting bracket <ul style="list-style-type: none"> SIDOOR mounting bracket for geared motor SIDOOR mounting bracket with tensioning device for deflector pulley 	<p>6FB1104-0AT01-0AS0</p> <p>6FB1104-0AT02-0AS0</p>		
DIN rail holder For mounting controllers on the standard DIN rail TH 35	6FB1144-0AT00-3AS0		
SIDOOR door clutch holder For toothed belt, width 12 mm	6FB1104-0AT01-0CP0		
SIDOOR deflector unit	6FB1104-0AT03-0AS0		
SIDOOR toothed belt STS Width 12 mm <ul style="list-style-type: none"> 4 m 45 m 	<p>6FB1104-0AT01-0AB0</p> <p>6FB1104-0AT02-0AB0</p>		
Width 14 mm <ul style="list-style-type: none"> 4 m 55 m 	<p>6FB1104-0AT03-0AB0</p> <p>6FB1104-0AT04-0AB0</p>		
		For machine tool drives only	
		CABLE-MDG hybrid connecting cables <ul style="list-style-type: none"> 0.5 m 1.5 m 5 m 7 m 10 m 15 m 20 m 	<p>6FB1104-0AT00-0CB5</p> <p>6FB1104-0AT01-0CB5</p> <p>6FB1104-0AT05-0CB0</p> <p>6FB1104-0AT07-0CB0</p> <p>6FB1104-0AT10-0CB0</p> <p>6FB1104-0AT15-0CB0</p> <p>6FB1104-0AT20-0CB0</p>
		PB FC RS485 PLUG 180	6GK1500-0FC10
		PB FC Standard Cable GP	6XV1830-0EH10
		Electronic module for ET 200S	6ES7138-4DF11-0AB0
		CM PtP RS422/485 BA communication module	6ES7540-1AB00-0AA0
		CM 1241 communication module	6ES7241-1CH32-0XB0
		SIDOOR door clutch holder For toothed belt, width 14 mm	6FB1104-0AT02-0CP0

Products for specific requirements

Automatic door controls
for railway applications – Controllers

SIDOOR ATE530S platform screen door drive

Overview



SIDOOR ATE530S platform screen door drive

Siemens has once again shown just how easy integration can be with the innovative SIDOOR ATE530S platform screen door drive in conjunction with MED280 EC motors.

Thanks to its PROFINET communication functionality, this modern complete drive can be integrated into individual platform control systems with very little effort.

At the same time, the system can also adapt to the specific boundary conditions of an application, thus offering a host of new opportunities in group sales with SIMATIC products. This minimizes overall engineering outlay and also proves extremely service-friendly.

- Use of standard automation components
- Full integration into TIA Portal and STEP 7 thanks to PROFINET connection
- Parameter assignment and monitoring of door control parameters via the PROFINET interface (function blocks available as example applications)
- Read-in of two safe signals (two-channel, antivalent)
- High level of system safety thanks to safe torque off (e.g. self-release in the event of a fault)
- Enhanced dynamic response and consequently faster opening times
- Enhanced energy efficiency thanks to high-efficiency motor (no gear losses)
- Firmware update for all SIDOOR controllers on an entire platform possible centrally via TCP/IP
- SIL 2 according to IEC 62061

Technical specifications

Article number	6FB1231-3BM10-7AT0	6FB1231-3BM12-7AT0
General technical data:		
product brand name	SIDOOR	
Product designation	Door controller	
Design of the product	ATE530S	ATE530S with protective coating
Product extension optional	Standard mounting rail holder 6FB1144-0AT00-3AS0	
Manufacturer's article number usable		
• of the motor	6FB1203-0AT12-7DA0	
• of power supply unit	6FB1112-0AT20-2TR0	
MTBF	13	

Products for specific requirements

Automatic door controls
for railway applications – Controllers

SIDOOR ATE530S platform screen door drive

Technical specifications (continued)

Article number	6FB1231-3BM10-7AT0	6FB1231-3BM12-7AT0
Supply voltage:		
Type of voltage supply	via SIDOOR network transformer or via DC	
Supply voltage at DC	V	19.2 ... 37.1
• rated value	V	36
- Note	with MED280: At 24 V DC max. door speed of 500 mm/s; at 28.8 V DC max. door speed of 800 mm/s	
Consumed active power		
• rated value	W	80
- maximum	W	540
• in standby mode rated value	W	7
Inputs/ Outputs:		
Input voltage per DC input	V	10 ... 28
Input current per DC input	mA	3 ... 15
Product feature		
• Isolated control inputs	Yes	
• Control inputs switching to P potential	Yes	
Output voltage at DC	V	24
Output current		
• at 24 V DC output maximum	mA	400
Property of the 24 V DC output		
• Short-circuit proof	Yes	
• with overload withstand capability	Yes	
Switching capacity current of the output relay		
• at DC at 30 V	A	0.01 ... 0.5
Door-relevant data:		
Door opening width	m	0.35 ... 5
Weight of door maximum	kg	280
Operating cycle frequency of door maximum	1/h	180
Kinetic energy maximum	J	75
Communication:		
Design of the interface	PROFINET according to Conformance Class A, B, C; integrated switch for linear and ring structure	
Ambient conditions:		
Ambient temperature		
• during operation	°C	-25 ... +50
• during operation Note	Screw control device thermally conductive onto a metallic mounting surface or standard rail mounting, otherwise the maximum operating temperature is only 40 °C	
• during storage	°C	-40 ... +85
Relative humidity without condensation	%	10 ... 93
Installation altitude at height above sea level maximum	m	2 000
Protection class IP	IP20	
Installation/ mounting/ dimensions:		
Width	mm	320
Height	mm	60
Depth	mm	80
Installation or assembly note	No direct exposure to the sun	
Standards:		
Standard		
• for safety	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013, EN 60335-1:2012+A11:2014, EN 14752: 2005-12 Chapter 5.2.1.4 and 5.5.1.4, DIN EN ISO 13849-1: 2008-12 Cat 2 PL d, IEC 62061 EDITION 1.1: 2012-11 SIL2	

Ordering data

Article No.

SIDOOR ATE530S

Controller for platform screen doors,
integrated PROFINET interface

6FB1231-3BM10-7AT0

Version with protective coating

6FB1231-3BM12-7AT0

Products for specific requirements

Condition monitoring systems

SIPLUS CMS1200 condition monitoring system

Introduction, SIPLUS CMS1200 SM 1281 Condition Monitoring

Overview



The SIPLUS CMS1200 Condition Monitoring System is part of SIMATIC S7-1200 and is designed for the early detection of mechanical damage.

It provides the following benefits:

- Machine monitoring vRMS in acc. with ISO 10816-3
- aRMS machine monitoring
- Detailed identification of damage with frequency-selective diagnostics
- Raw data recording and export for SIPLUS CMS X-Tools
- Trend recording and analysis
- Signaling of limit violations
- Permanent monitoring to protect the machines
- Effective monitoring of important processes and systems
- Early detection of damage
- Scheduled maintenance instead of spontaneous repair
- Reduction in maintenance costs
- Increase in system availability
- Optimum utilization of the service life of the units

Overview SIPLUS CMS1200 SM 1281 Condition Monitoring



SIPLUS CMS1200 SM 1281 Condition Monitoring forms part of SIMATIC S7-1200 and is used for the:

- Monitoring of motors, generators, pumps, fans, or other mechanical components
- Recording and analysis of vibrations
- Expansion capability of up to 7 modules

Technical specifications

Article number	6AT8007-1AA10-0AA0	
Product brand name	SIPLUS	
Product designation	CMS1200 SM 1281 Condition Monitoring	
General technical data:		
Protection class IP	IP20	
Browser software required	Web browser Mozilla Firefox (ESR31) or Microsoft Internet Explorer (10/11)	
Storage capacity total	Gbyte	1
Scanning frequency maximum	Hz	46 875
Material of the enclosure	Plastic: polycarbonate:abbreviation: PC- GF 10 FR	
Hardware configuration	Modular, up to 7 modules per CPU	
Vibration frequency measuring range		
• initial value	Hz	0.05
• Full-scale value	Hz	10 000
Power loss [W] total typical	W	6
Equipment marking acc. to DIN EN 81346-2	P	
Weight	g	260
Supply voltage:		
Supply voltage 1 at DC rated value	V	24
Type of voltage of the supply voltage	DC	
Supply voltage at DC rated value		
• minimum	V	20.4
• maximum	V	28.8

Products for specific requirements

Condition monitoring systems

SIPLUS CMS1200 condition monitoring system

SIPLUS CMS1200 SM 1281 Condition Monitoring

Technical specifications (continued)

Article number	6AT8007-1AA10-0AA0	
Installation/ mounting/ dimensions:		
Mounting position	vertical, horizontal	
Mounting position recommended	horizontal	
Mounting type	Rail or wall mounting	
Width	mm	70
Height	mm	112
Depth	mm	75
Inputs/ Outputs:		
Number of sensor inputs for IEPE sensors	4	
Number of speed inputs	1	
Product function Bus communication	Yes	
Product function monitoring of sensor inputs	Yes	
Input voltage at speed input DC 24 V digital	Yes	
Display:		
Display version for diagnostic function: status display digital input LED green	No	
Communication:		
Type of data transmission	Exporting of raw data as WAV file for further analyses (e.g. using SIPLUS CMS X-Tools) can be downloaded via browser	
Design of the interface Ethernet interface	Yes	
Service as web server HTTP	Yes	
Ambient conditions:		
Ambient temperature		
• during operation	-20 ... +55	
• during storage	-25 ... +85	
• during transport	-25 ... +85	
Air pressure during storage and transport	660 ... 1 080	
Height of fall maximum	m	0.3
Options:		
Alert function Diagnostics alarm	Yes	
Type of electrical connection	screw-type terminals	

Ordering data

SIPLUS CMS1200 SM 1281 Condition Monitoring

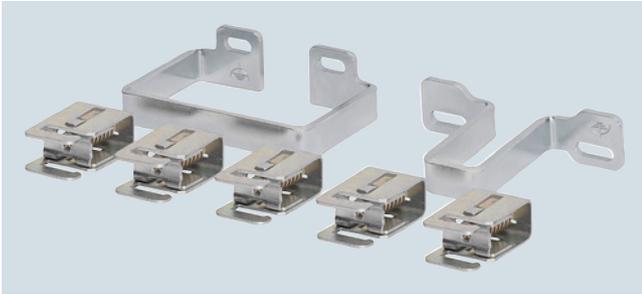
Module for SIMATIC S7-1200 for monitoring vibrations in mechanical components based on characteristic values and frequency-selective analysis functions.

Article No.

6AT8007-1AA10-0AA0

Overview

SM 1281 shield clamp set



Accessory SM 1281

SM 1281 shield clamp set 6AT8007-1AA20-0AA0

An additional shield clamp set must be ordered for the EMC-compliant connection of cables to the SIPLUS CMS1200 SM 1281 Condition Monitoring.

The SM 1281 shield clamp set comprises two shield clamps and five terminal clamps. One shield clamp is screwed on above and one below the module. The sensor cable shields are connected to the shield clamps by means of the terminal clamps.

VIB-SENSOR S01 vibration sensor



VIB-SENSOR S01 vibration sensor

VIB-SENSOR S01 6AT8002-4AB00 vibration sensor

The VIB-SENSOR S01 vibration sensor with IEPE (integrated electronics piezoelectric) interface can be directly connected to the SIPLUS CMS2000 Basic Unit VIB and the SIPLUS CMS2000 VIB-MUX expansion module.

The sensor detects vibration accelerations in the frequency range from 0.5 Hz to 15 kHz with a resolution of 100 mV/g.

A threaded screw with an M8 thread for mounting to the measuring point is included in the scope of supply. The connecting cable is connected to the vibration sensor via the MIL connector.

CABLE-MIL connecting cable



CABLE-MIL connecting cable

CABLE-MIL connecting cables 6AT8002-4AC03, 6AT8002-4AC10

The VIB-SENSOR S01 vibration sensor is connected to the SIPLUS CMS2000 Basic Unit VIB or the SIPLUS CMS2000 VIB-MUX expansion module by means of the CABLE-MIL connecting cable.

This high-quality industrial cable is made of black polyurethane and is assembled on one end with a MIL connector (MIL-C5015). The open cable end of the shielded two-wire cable is connected directly to the screw terminals of the basic unit.

The connecting cable is available in lengths of 3 m and 10 m.

Ordering data

SIPLUS CMS1200, SM1281 shield clamp set

For EMC-compliant connection of signal and encoder cables to SIPLUS CMS1200 SM 1281 Condition Monitoring.

Article No.

6AT8007-1AA20-0AA0

SIPLUS CMS2000 VIB-SENSOR S01

Piezoelectric sensor for connection to SIPLUS CMS1200 SM 1281 Condition Monitoring.

6AT8002-4AB00

Article No.

SIPLUS CMS2000 CABLE-MIL

For connection of VIB-SENSOR S01 vibration sensor to SIPLUS CMS1200 SM 1281 Condition Monitoring.

Connecting cable CAB-MIL-300; length 3 m

6AT8002-4AC03

Connecting cable CAB-MIL-1000; length 10 m

6AT8002-4AC10

Products for specific requirements

Notes

Appendix



16/2	SITRAIN – Training for Industry
16/3	Additional documentation
16/3	SIMATIC Manual Collection
16/4	Standards and approbations
16/4	CE marking
16/5	Certificates
16/5	Quality management
16/6	Partner at Siemens
16/6	Contacts worldwide
16/7	Siemens Partner Program
16/8	Siemens Automation Cooperates with Education
16/8	Simplify your education in automation
16/10	Online Services
16/10	Information and Ordering Options on the Internet and DVD
16/11	Information and Download Center, Social Media, Mobile Media
16/12	Industry Services
16/13	Portfolio overview
16/15	Online Support
16/16	Software Licenses
16/18	Index
16/20	Article No. index
16/24	Conditions of sale and delivery

Appendix

SITRAIN – Training for Industry

Introduction



Your benefit from practical training directly from the manufacturer

SITRAIN – Training for Industry – provides you with comprehensive support in solving your tasks.

Training directly from the manufacturer enables you to make correct decisions with confidence.

Increased profits and lower costs:

- Shorter times for commissioning, maintenance and servicing
- Optimized production operations
- Reliable configuration and startup
- Shorten commissioning times, reduce downtimes, and faster troubleshooting
- Exclude expensive faulty planning right from the start
- Flexible plant adaptation to market requirements
- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Your benefits with SITRAIN – Training for Industry

Certified top trainers

Our trainers are skilled specialists with practical experience. Course developers have close contact with product development, and pass on their knowledge to the trainers and then to you.

Practical application with practice

Practice, practice, practice! We have designed the trainings with an emphasis on practical exercises. They take up to half of the course time in our trainings. You can therefore implement your new knowledge in practice even faster.

300 courses in more than 60 countries

We offer a total of about 300 classroom-based courses. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You can find which course is offered at which location at:

www.siemens.com/sitrain

Skills development

Do you want to develop skills and fill in gaps in your knowledge? Our solution: We will provide a program tailored exactly to your personal requirements. After an individual requirements analysis, we will train you in our training centers near you or directly at your offices. You will practice on the most modern training equipment with special exercise units. The individual training courses are optimally matched to each other and help with the continuous development of knowledge and skills. After finishing a training module, the follow-up measures make success certain, as well as the refreshment and deepening of the knowledge gained.

Contact

Visit our site on the Internet at:

www.siemens.com/sitrain

or let us advise you personally. You can request our latest training catalog from:

SITRAIN – Training for Industry SITRAIN Customer Support Germany:

Tel.: +49 911 895-7575

Fax: +49 911 895-7576

Email: info@sitrain.com

SIMATIC Manual Collection

Overview

The SIMATIC manual collection brings together the manuals of Totally Integrated Automation in the smallest possible package. It is eminently suitable for startup and service, replaces the space-consuming paper version in the office and provides fast access to the information.

The manual collection contains manuals in 5 languages for

- LOGO!
- SIMADYN
- SIMATIC bus components
- SIMATIC C7
- SIMATIC Distributed I/O
- SIMATIC HMI
- SIMATIC Sensors
- SIMATIC NET
- SIMATIC PC Based Automation
- SIMATIC PCS 7
- SIMATIC PG/PC
- SIMATIC S7
- SIMATIC Software
- SIMATIC TDC

Manuals that are not yet available in all 5 languages will at least be included in English and German.

There is an update contract for the SIMATIC Manual Collection that encompasses supply of the up-to-date collection and three subsequent updates which is valid for one year. If the update contract is not cancelled, it is automatically extended and the list price will be charged to the customer.

Ordering data	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed IO, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2

Appendix

Standards and approbations

CE marking

Overview

The electronic products described in this catalog comply with the requirements and protection objectives of the following EC directives insofar as they relate to the product concerned. They also comply with the corresponding harmonized European standards (EN) published for these products in the Official Journals of the European Community.

- Directive 2004/108/EC of the European Parliament and Council on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive)
- Directive 2006/95/EC of the European Parliament and of the Council on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (Low Voltage Directive)
- Directive 94/9/EC of the European Parliament and the Council on approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive).
- Directive 1999/5/EC of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (RTTE Directive)

The originals of the declarations of conformity are kept available by us for the responsible supervisory authorities.

Note on the EMC Directive:

In terms of their interference emissions, SIMATIC products are designed for industrial applications.

If individual products deviate from this specification, it is noted in the catalog with the products.

The installation instructions in the manuals must be adhered to when installing and operating the products described in this catalog. These contain, for example, important information on installation in cabinets and on the use of shielded cables.

Notes for machine manufacturers

The SIMATIC automation system is not a machine within the context of the EU machine guidelines. Therefore a declaration of conformity with regard to the EU machine directive 89/392/EEC or 2006/42/EU (new edition, applicable from end of 2009) may not be provided for SIMATIC.

The EU machine directive regulates the requirements placed on a machine or a part thereof. A machine is understood for the purposes of this guideline to be a combination of interconnected parts or mechanisms (see also EN 292-1, Paragraph 3.1).

SIMATIC is part of the electrical equipment of a machine, and must therefore be integrated into the evaluation of the complete machine by the machine manufacturer.

As electrical equipment, SIMATIC is subject to the low-voltage directive which, as a "total safety directive", covers all dangers just like the machine directive.

The EN 60204-1 standard (safety of machines, general requirements for the electrical equipment of machines) is applicable to the electrical equipment of machines.

The following table will help you in the provision of your declaration of conformity, and shows which criteria according to EN 60204-1 (2006-06) apply to SIMATIC. You can obtain further information from the enclosed declaration of conformity according to the low-voltage and EMC directives (with list of included standards).

EN 60204-1	Topic/criterion	Notes
Paragraph 4	General requirements	The requirements are met when the equipment is assembled/ installed in accordance with the installation guidelines. Please note the relevant information in the manuals.
Paragraph 11.2	Digital input/output interfaces	The requirements are met
Paragraph 12.3	Programmable equipment	The requirements are met when the equipment is installed in lockable cabinets to protect against alteration of the memory contents by unauthorized persons
Paragraph 20.4	Voltage tests	The requirements are met

Certificates, authorizations, approbations, declarations of conformity

An overview of the certificates available for SIMATIC products (CE, UL, CSA, FM, shipping authorizations) can be found in the internet at

<http://www.siemens.com/simatic/certificates>

The lists are continuously updated. The data for products which have not yet been included in the overview is continuously collected and prepared for the subsequent edition.

You can also find certificates, approbations, verification certificates or characteristic curves under Product support "Entry list"

The screenshot shows the Siemens Industry Online Support interface. At the top, there's a navigation bar with 'Home', 'Product Support', 'PLC', 'Modular Controller SIMATIC S7', and 'S7-1500/S7-1500F'. Below this is a search and filter section. The 'Filter criteria for entries' section is active, showing a dropdown for 'Product Type' set to 'Certificate (CE)'. Other filters include 'Product', 'Search product', 'Certificate link', 'Approval office', and 'Country'. Below the filter, a table lists 10 entries. Each entry includes a checkbox, a title (e.g., 'Certificate Declaration of Conformity, EAC'), a date, and an ID. To the right of the table is a 'mySupport Cockpit' sidebar with links for 'Favorites', 'Personal messages', 'My requests', 'CAJ downloads', and 'User online (0)'. Below the cockpit is 'All information on S7-1500/S7-1500F' with links for 'Product info', 'Catalog and ordering system online', 'Technical info', 'Support', 'Service offer', 'Training', and 'Connect & partners'. At the bottom, there are 'Related links' for 'Compatibility Tool'.

or by going directly to the Link Box:

The screenshot shows a 'Link Box' menu for 'All about S7-1500/S7-1500F'. The menu is organized into several sections:

- Presales Info**
- Catalog and ordering system online**
- Technical info**
- Support**
 - > Product support
 - > FAQs
 - > Software downloads
 - > Manuals / Operating instructions
 - > Approvals / Certificates
 - > Updates
- MLFB**
- > Forum
- Contact & partners**

Quality management

The quality management system of the Industry Sector, Industry Automation Division, complies with the international standard ISO 9001.

The products and systems described in this catalog are sold under application of a quality management system certified by DQS in accordance with DIN EN ISO 9001.

The DQS certificate is recognized in all IQ Net countries.

DQS Registered Certificate No.:

Siemens AG

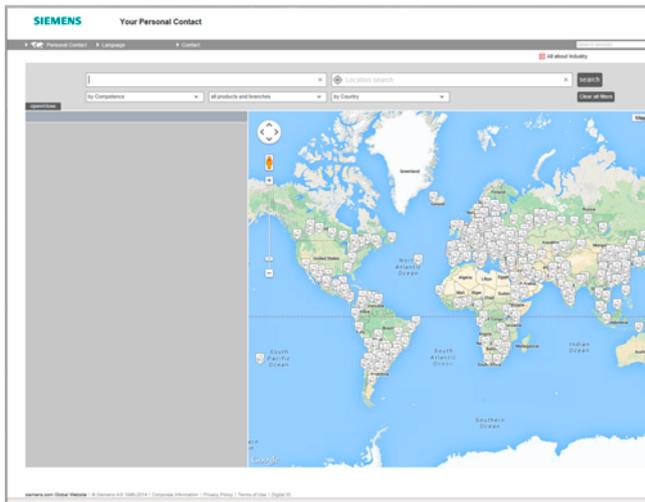
- DF FA
Reg. No.: 001323 QM08

Appendix

Partner at Siemens

Contacts worldwide

Overview



At Siemens we are resolutely pursuing the same goal: long-term improvement of your competitive ability. We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

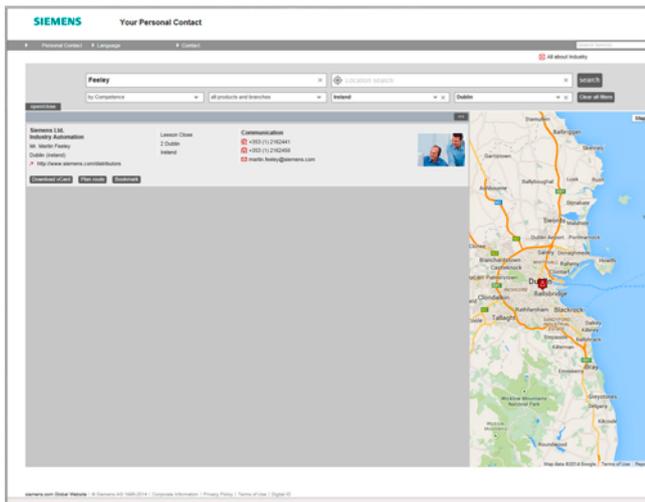
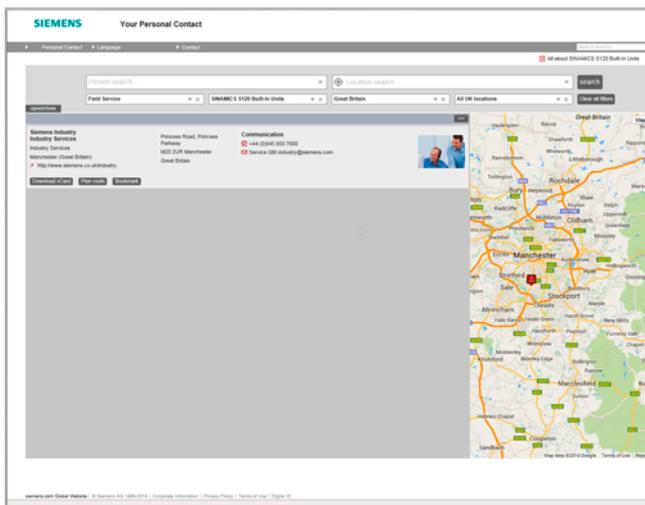
Your personal contact can be found in our Contacts Database at: www.siemens.com/automation/partner

You start by selecting

- the required competence,
- products and branches,
- a country,
- a city

or by a

- location search or
- person search.



Overview

Siemens Solution und Approved Partners



Highest competence in automation and drive technology as well as power distribution

Siemens works closely together with selected partner companies around the world in order to ensure that customer requirements for all aspects of automation and drives, as well as power distribution, are fulfilled as best as possible – wherever you are, and whatever the time. It is for this reason that we systematically train and keep our partners well prepared, in addition to certifying them in specific technologies. It is our declared intention and goal to train and prepare our partners to the same standards as our own employees.

This approach is based on contractually agreed quality criteria as well as optimum support for our partners by providing clearly-defined processes. This ensures that they possess all the qualities to meet customer requirements optimally. The partner emblem is the guarantee and indicator of proven quality.

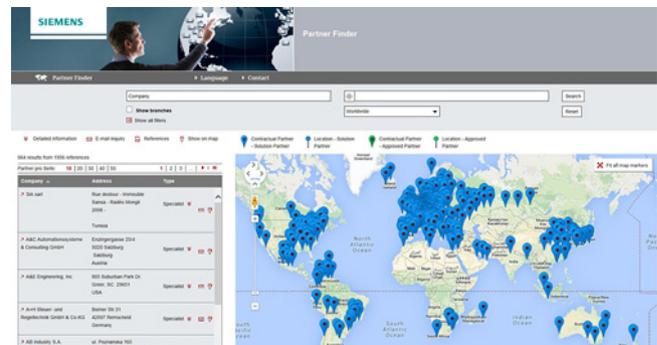
Solution Partners and Approved Partners

The Siemens Partner Program distinguishes between Solution Partners and Approved Partners.

At present we are working with more than 1,400 Solution Partners worldwide. They represent countless tailored and future-proof automation and drive solutions in the most diverse industries.

With their extensive technical product knowledge, Siemens Approved Partners offer a combination of goods and services that include specialist technologies, customized modifications and the provision of high-quality system and product packages. They also provide qualified technical support and assistance.

Partner Finder



In the Siemens global Solution Partner program, customers are certain to find the optimum partner for their specific requirements - with no great effort. The Partner Finder is basically a comprehensive database that showcases the profiles of all our solution partners.

Easy selection:

Set filters in the search screen form according to the criteria that are relevant to you. You can also directly enter the name of an existing partner.

Skills at a glance:

Gain a quick insight into the specific competencies of any particular partner with the reference reports.

Direct contact option:

Use our electronic query form:

www.siemens.com/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

www.siemens.com/partner-program

Appendix

Siemens Automation Cooperates with Education

Simplify your education in automation

Unique support for educators and students in educational institutions

Cooperates
with Education

Automation

SIEMENS

Siemens Automation Cooperates with Education (SCE)

offers a global system for sustained support of technical skills. SCE supports educational institutions in their teaching assignment in the industrial automation sector and offers added value in the form of partnerships, technical expertise, and know-how. As the technological leader, our comprehensive range of services can support you in the knowledge transfer for Industry 4.0.

Our services at a glance

- Training curriculums for your lessons
- Trainer packages for hands-on learning
- Courses convey up-to-date specialist knowledge
- Support for your projects / textbooks
- Complete didactic solutions from our partners
- Personal contact for individual support

Training curriculums for your lessons



Use our profound industrial know-how for practice-oriented and individual design of your course. We offer you more than 100 didactically prepared training curriculums on the topics of automation and drives technology free of charge. These materials are perfectly matched to your curricula and syllabuses, and optimally suited for use with our trainer packages. This takes into account all aspects of a modern industrial solution: installation, configuration, programming, and commissioning. All documents, including projects, can be individually matched to your specific requirements.

Particular highlights:

- The new SIMATIC PCS 7 curriculums and trainer packages. Using plant simulation, you can pass on basic, practice-oriented PCS 7 knowledge at universities within about 60 hours (= 1 semester).

- The new TIA Portal training materials for SIMATIC S7-1500 / S7-1200 / S7-300 are available in English, German, French, Italian, Spanish, Portuguese and Chinese for download.

www.siemens.com/sce/curriculum

Trainer packages for hands-on learning



Our SCE trainer packages offer a specific combination of original industrial components which are perfectly matched to your requirements and can be conveniently used in your course. These price-reduced bundles available exclusively to schools include innovative and flexible hardware and software packages.

SCE currently offers more than 80 SCE trainer packages including related equipment e.g. Micro Memory. These cover both the factory and process automation sectors. You can use them to impart the complete course contents on industrial automation at a very low cost.

Trainer packages are available for:

- Introduction to automation technology with LOGO! logic module
- PLC engineering with SIMATIC S7 hardware and STEP 7 software (S7-1500, S7-1200, S7-300 and TIA Portal)
- Operator control and monitoring with SIMATIC HMI
- Industrial networking over bus systems with SIMATIC NET (PROFINET, PROFIBUS, IO-Link)
- Sensor systems with VISION, RFID and SIWAREX
- Process automation with SIMATIC PCS 7
- Networked drive and motion technologies with SINAMICS/SIMOTION
- Power Monitoring Devices SENTRON PAC 4200
- Motor Management SIMOCODE
- CNC programming with SinuTrain

Important ordering notes:

Only the following institutions are authorized to obtain trainer packages: vocational schools, Colleges and Universities, in-house vocational training departments, non commercial research institutions and non commercial training departments.

To purchase a trainer package, you require a specific end-use certificate, which you can obtain from your regional sales office.

www.siemens.com/sce/tp

Unique support for educators and students in educational institutions (continued)**Courses convey up-to-date specialist knowledge**

Profit from our excellent know-how as the leader in industrial technologies. We offer you specific courses for automation and drive technology worldwide. These support you in the practice-oriented transferring of product and system know-how, are in conformance with curriculums, and derived from the training fields. Compact technical courses especially for use at universities are also available.

Our range of courses comprises a wide variety of training modules based on the principle of Totally Integrated Automation (TIA). The focus is on the same subject areas as with the SCE trainer packages.

Every PLC and drive course is oriented on state-of-the-art technology. Your graduates can thus be prepared optimally for their future professional life.

In some countries we are offering classes based on our training curriculums. Please inquire with your SCE contact partner.

www.siemens.com/sce/courses

Support for your projects/textbooks

Automation and drive technology is characterized by continuous and rapid developments. Service and Support therefore play an important role.

We can provide you with consulting for selected projects and support from your personal SCE contact as well as our web-based and regional Customer Support.

As a particular service, SCE supports technical authors with our know-how as well as with intensive technical consulting. Siemens library of special textbooks covering the industrial automation sector provides an additional resource for you and your students. These can be found at the SCE web site.

www.siemens.com/sce/contact
www.siemens.com/sce/books

Complete didactic solutions from our partners

Our partners for learning systems offer a wide range of training systems and solutions for use in your courses or laboratory.

These models have been designed based on our trainer packages and thus save you the time and cost of selfconstruction of individual components. The Partner systems provide you with simple and effective help in the fulfillment of your teaching assignment.

www.siemens.com/sce/partner

Contact for individual support

You can find your personal SCE contact on our Internet site. Your local SCE Promoter will answer all your questions concerning the complete SCE offering, and provide you with timely and competent information about innovations. When you encounter challenges, you can profit from our global team of excellence.

If a direct SCE contact is not listed for your country, please contact your local Siemens office.

www.siemens.com/sce/contact

SCE Support Finder for your Internet request

You are an educator and need support on the topic of industry automation? Send us your request:

www.siemens.com/sce/supportfinder

Discover
SCE

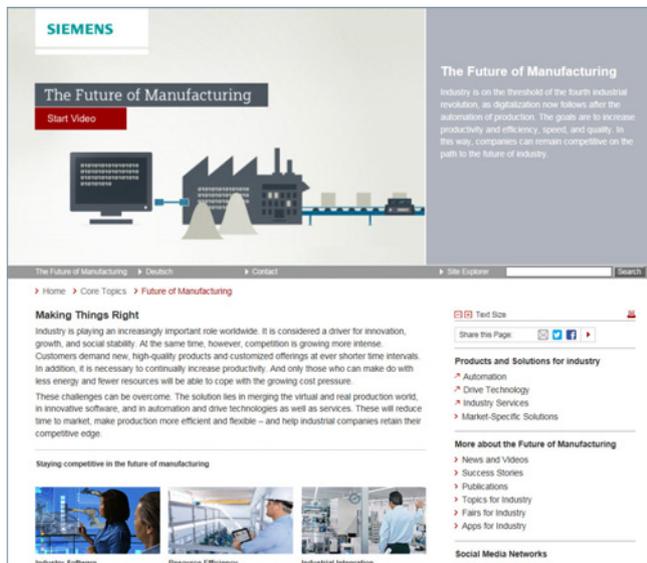


Appendix

Online Services

Information and Ordering Options on the Internet and DVD

The Future of Manufacturing on the Internet



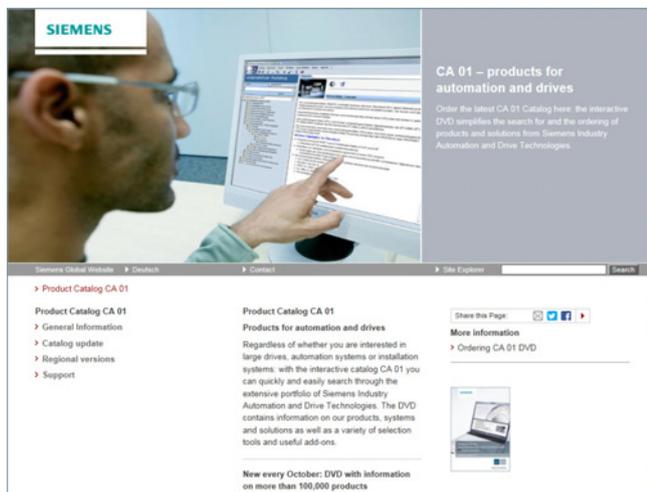
Detailed knowledge of the range of products and services available is essential when planning and engineering automation systems. It goes without saying that this information must always be as up-to-date as possible.

Industry is on the threshold of the fourth industrial revolution as digitization now follows after the automation of production. The goals are to increase productivity and efficiency, speed, and quality. In this way, companies can remain competitive on the path to the future of industry.

You will find everything you need to know about products, systems and services on the internet at:

www.siemens.com/industry

Product Selection Using the Interactive CA 01 Automation and Drives Catalog



Detailed information together with user-friendly interactive functions:

The CA 01 interactive catalog covers more than 100,000 products, thus providing a comprehensive overview of the product range provided by Siemens.

You will find everything you need here for solving tasks in the fields of automation, switching, installation and drives. All information is provided over a user interface that is both user-friendly and intuitive.

You can order the CA 01 product catalog from your Siemens sales contact or in the Information and Download Center:

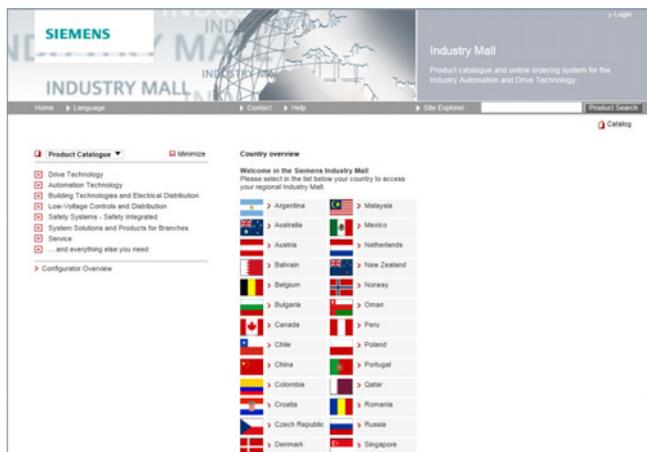
www.siemens.com/industry/infocenter

Information about the CA 01 interactive catalog can be found on the Internet at:

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall



The Industry Mall is the electronic ordering platform of Siemens AG on the Internet. Here you have online access to a huge range of products presented in an informative and attractive way.

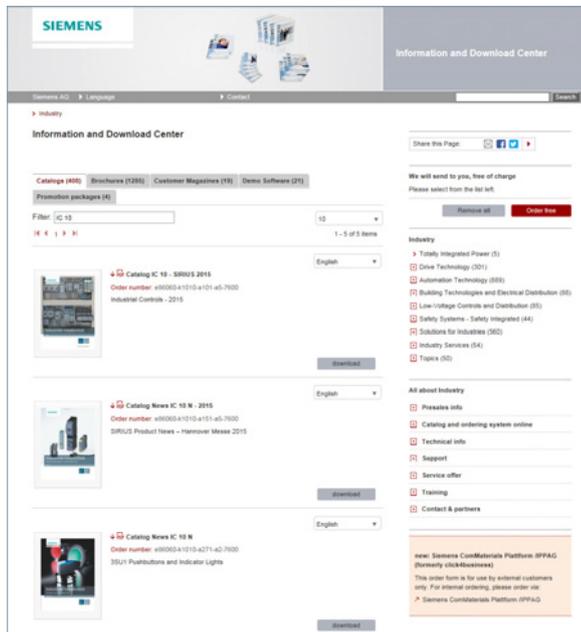
Data transfer via EDIFACT allows the whole procedure, from selection through ordering to tracking and tracing, to be carried out online. Availability checks, customer-specific discounts and bid creation are also possible.

Numerous additional functions are provided for your support. For example, powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAx data types are also provided here.

You can find the Industry Mall on the Internet at:

www.siemens.com/industrymall

Downloading Catalogs



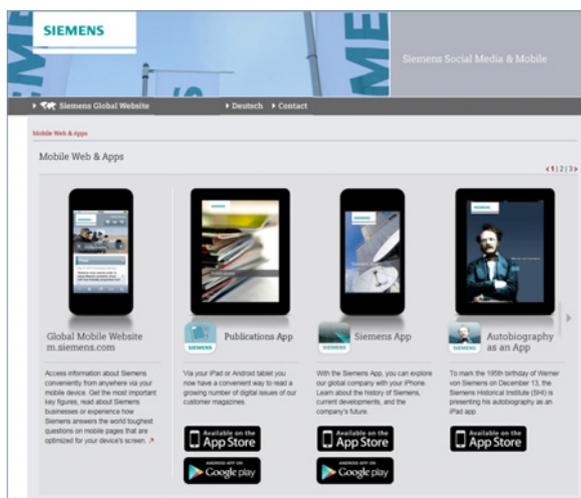
In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. You can download these catalogs in PDF format without having to register.

The filter dialog above the first catalog displayed makes it possible to carry out targeted searches. If you enter "MD 3" for example, you will find both the MD 30.1 and MD 31.1 catalogs. If you enter "IC 10", both the IC 10 catalog and the associated news or add-ons are displayed.

Visit us at:

www.siemens.com/industry/infocenter

Social and Mobile Media



Connect with Siemens through social media: visit our social networking sites for a wealth of useful information, demos on products and services, the opportunity to provide feedback, to exchange information and ideas with customers and other Siemens employees, and much, much more. Stay in the know and follow us on the ever-expanding global network of social media.

To find out more about Siemens' current social media activities, visit us at:

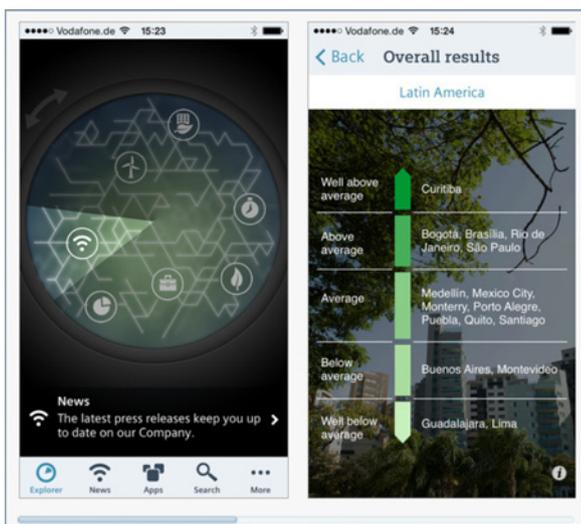
www.siemens.com/socialmedia

Or via our product pages at:

www.siemens.com/automation or www.siemens.com/drives

Connect with Siemens Industry at our central access point to read all the news on the future of manufacturing, watch current videos and inform yourself about all the latest industry developments:

www.siemens.com/future-of-manufacturing/news.html



Discover the world of Siemens.

We are also constantly expanding our offering of cross-platform apps for smartphones and tablets. You will find the current Siemens apps at the App Store (iOS) or at Google Play (Android):

<https://itunes.apple.com/en/app/siemens/id452698392?mt=8>

<https://play.google.com/store/search?q=siemens>

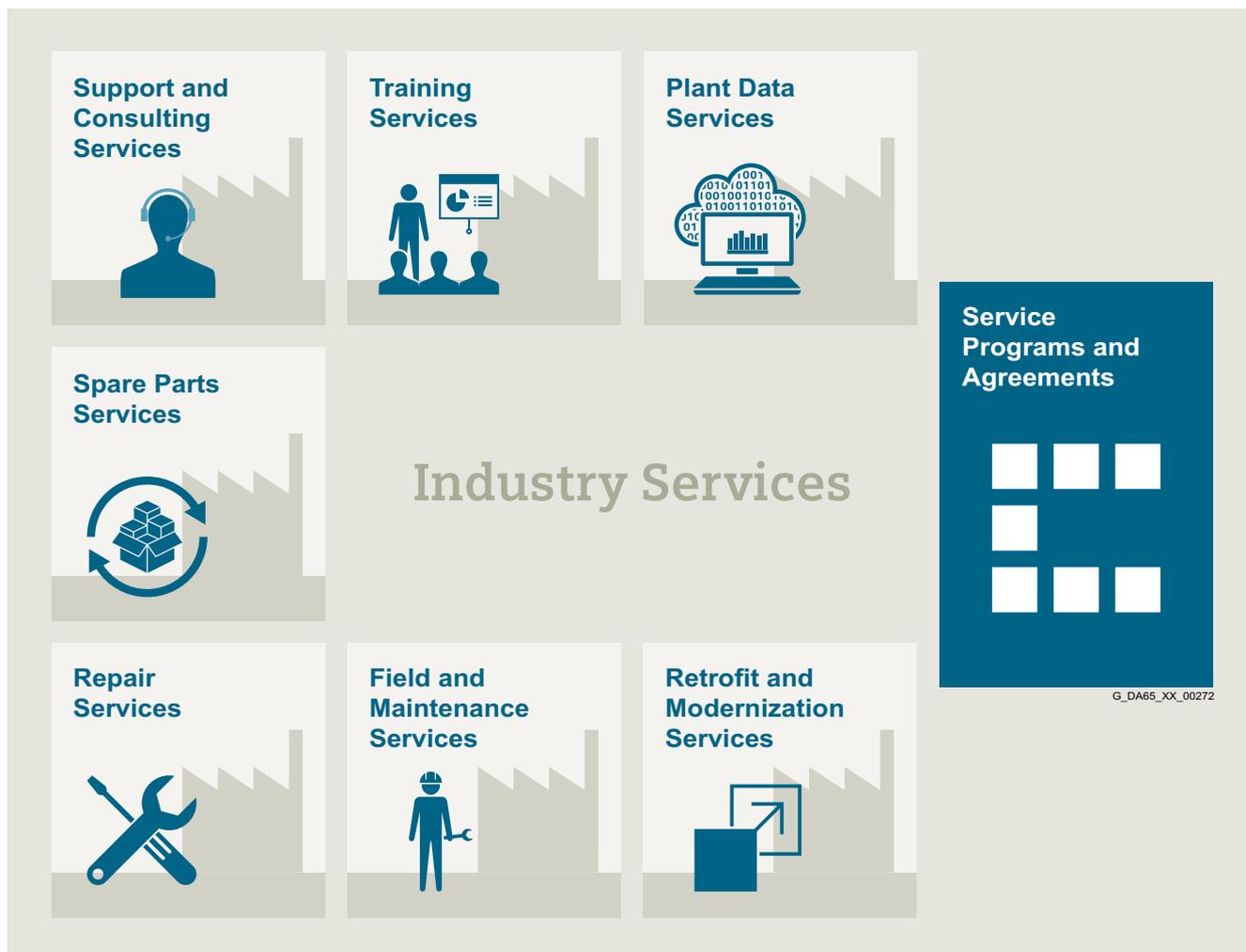
The Siemens app, for example, tells you all about the history, latest developments and future plans of the company – with informative pictures, fascinating reports and the most recent press releases.

Appendix

Industry Services

Overview

Unleash potential – with services from Siemens



Increase your performance – with Industry Services

Optimizing the productivity of your equipment and operations can be a challenge, especially with constantly changing market conditions. Working with our service experts makes it easier. We understand your industry's unique processes and provide the services needed so that you can better achieve your business goals.

You can count on us to maximize your uptime and minimize your downtime, increasing your operations' productivity and reliability. When your operations have to be changed quickly to meet a new demand or business opportunity, our services give you the flexibility to adapt. Of course, we take care that your production is protected against cyber threats. We assist in keeping your operations as energy and resource efficient as possible and reducing your total cost of ownership. As a trendsetter, we ensure that you can capitalize on the opportunities of digitalization and by applying data analytics to enhance decision making: You can be sure that your plant reaches its full potential and retains this over the longer lifespan.

You can rely on our highly dedicated team of engineers, technicians and specialists to deliver the services you need – safely, professionally and in compliance with all regulations. We are there for you, where you need us, when you need us.

Overview

Plant Data Services



Make your industrial processes transparent to gain improvements in productivity, asset availability, and energy efficiency.

Production data is generated, filtered and translated with intelligent analytics to enhance decision-making.

This is done whilst taking data security into consideration and with continuous protection against cyber attack threats.

www.industry.siemens.com/services/global/en/portfolio/plant-data-services/Pages/index.aspx

Support and Consulting Services



Industry Online Support site for comprehensive information, application examples, FAQs and support requests.

Technical and Engineering Support for advice and answers for all inquiries about functionality, handling, and fault clearance.

Information & Consulting Services, e.g. SIMATIC System Audit; clarity about the state and service capability of your automation system or Lifecycle Information Services; transparency on the lifecycle of the products in your plants.

www.industry.siemens.com/services/global/en/portfolio/support-consulting/Pages/index.aspx

Training Services



From the basics and advanced to specialist skills, SITRAIN courses provide expertise right from the manufacturer – and encompass the entire spectrum of Siemens products and systems for the industry.

Worldwide, SITRAIN courses are available wherever you need a training course in more than 170 locations in over 60 countries.

www.industry.siemens.com/services/global/en/portfolio/training/Pages/index.aspx

Spare Parts Services



Are available worldwide for smooth and fast supply of spare parts – and thus optimal plant availability. Genuine spare parts are available for up to ten years. Logistic experts take care of procurement, transport, custom clearance, storage and order management. Reliable logistics processes ensure that components reach their destination as needed.

Asset optimization services help you design a strategy for parts supply where your investment and carrying costs are reduced and the risk of obsolescence is avoided.

www.industry.siemens.com/services/global/en/portfolio/spare_parts/Pages/index.aspx

Appendix

Industry Services

Industry Services – Portfolio overview

Overview (continued)

Repair Services



Are offered on-site and in regional repair centers for fast restoration of faulty devices' functionality.

Also available are extended repair services, which include additional diagnostic and repair measures, as well as emergency services.

www.industry.siemens.com/services/global/en/portfolio/repair_services/Pages/index.aspx

Retrofit and Modernization Services



Provide a cost-effective solution for the expansion of entire plants, optimization of systems or upgrading existing products to the latest technology and software, e.g. migration services for automation systems.

Service experts support projects from planning through commissioning and, if desired over the entire extended lifespan, e.g. Retrofit for Integrated Drive Systems for an extended lifetime of your machines and plants

www.industry.siemens.com/services/global/en/portfolio/retrofit-modernization/Pages/index.aspx

Field and Maintenance Services



Siemens specialists are available globally to provide expert field and maintenance services, including commissioning, functional testing, preventive maintenance and fault clearance. All services can be included in customized service agreements with defined reaction times or fixed maintenance intervals.

www.industry.siemens.com/services/global/en/portfolio/field_service/Pages/index.aspx

Service Programs and Agreements



A technical Service Program or Agreement enables you to easily bundle a wide range of services into a single annual or multi-year agreement.

You pick the services you need to match your unique requirements or fill gaps in your organization's maintenance capabilities.

Programs and agreements can be customized as KPI-based and/or performance-based contracts.

www.industry.siemens.com/services/global/en/portfolio/service_programs/Pages/index.aspx

Overview


Online Support is a comprehensive information system for all questions relating to products, systems, and solutions that Siemens has developed for industry over time. With more than 300,000 documents, examples and tools, it offers users of automation and drive technology a way to quickly find up-to-date information. The 24-hour service enables direct, central access to detailed product information as well as numerous solution examples for programming, configuration and application.

Online Support App


Using the Online Support app, you can access over 300,000 documents covering all Siemens industrial products – anywhere, any time. Regardless of whether you need help implementing your project, fault-finding, expanding your system or are planning a new machine.

You have access to FAQs, manuals, certificates, characteristic curves, application examples, product notices (e.g. announcements of new products) and information on successor products in the event that a product is discontinued.

Just scan the product code printed on the product directly using the camera of your mobile device to immediately see all technical information available on this product at a glance. The graphical CAx information (3D model, circuit diagrams or EPLAN macros) is also displayed. You can forward this information to your workplace using the e-mail function.

The search function retrieves product information and articles and supports you with a personalized suggestion list. You can find your favorite pages – articles you need frequently – under “mySupport”. You also receive selected news on new functions, important articles or events in the News section.

The content, in six languages, is increasingly multimedia-based – and now also available as a mobile app. Online support’s “Technical Forum” offers users the opportunity to share information with each other. The “Support Request” option can be used to contact Siemens’ technical support experts. The latest content, software updates, and news via newsletters and Twitter ensure that industry users are always up to date.

www.siemens.com/industry/onlinesupport

Scan the QR code
for information on
our Online Support
app.



The app is available free of charge from the Apple App Store (iOS) or from Google Play (Android).

<https://support.industry.siemens.com/cs/ww/en/sc/2067>

Appendix

Software Licenses

Overview

Software types

Software requiring a license is categorized into types. The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started. A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).

One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of license (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated. The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.

A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.

The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.

A separate upgrade must be purchased for each original license of the software to be upgraded.

Overview**ServicePack**

ServicePacks are used to debug existing products. ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Appendix

Index

A		E		P	
Accessories	13/6, 13/13	ET 200M	9/65	Partner at Siemens	16/6
Additional documentation	16/3	ET 200pro	9/70	Platform screen door drive	
Analog input modules	9/15	ET 200S	9/64	SIDOOR ATE530S	13/9
Analog input modules SM 531	4/59	ET 200SP	9/2	Power Output Module (POM)	9/97, 9/101
Analog output modules	9/27	ET 200 systems for the control cabinet	9/2	Processor module CPU555	10/2
Analog output modules SM 532	4/67	ET 200 systems without control cabinet	9/70	PROFINET components	9/104
Application module FM 458-1 DP	6/31			PROFINET Driver	9/104
Approbations	16/4	F		Pulse output module TM Pulse 2x24V	9/37
Automatic door controls	13/4	F digital input module	4/72		
		F digital output module	4/74	Q	
B		Fail-safe CPUs	4/30, 6/19, 7/12	Quality management	16/5
BaseUnits	9/52	Fail-safe I/O modules	9/41		
BusAdapters	9/58	Frequency Converter ET 200pro FC-2	9/70	R	
		Function modules	6/31	Rack	9/94
C				Rack UR6021	10/2
Cables and connectors	9/80	G			
CE marking	16/4	Geared motors	13/4	S	
Central Interface Module (CIM)	9/95, 9/99			Siemens Automation Cooperates	
Central processing units	3/2, 4/2, 5/2, 6/2	H		with Education	16/8
Certificates	16/5	Heating control systems	9/92	Siemens Partner Program	16/7
CMK2000	2/14	Heating control systems		SIMATIC ET 200AL	9/73
Color-coded labels	9/63	SIPLUS HCS3200	9/92	SIMATIC ET 200S	9/64
Compact CPUs	4/22	Heating control systems		SIMATIC Manual Collection	16/3
Communication module		SIPLUS HCS4200	9/94	SIMATIC PDM	11/10
LOGO! CMK2000	2/14	Heating control systems		SIMATIC S7-1500	
Communication modules		SIPLUS HCS4300	9/99	Software Controller	8/2
LOGO! modular	2/14	High-availability CPUs	6/27	SIMATIC TDC multiprocessor	
Condition monitoring systems	13/11			control system	10/2
Conditions of sale and delivery	16/22	I		Simplify your education in automation	16/8
Contacts worldwide	16/6	IM 153-1/153-2	9/65	SIPLUS analog input modules	9/32
Controller Software inside TIA Portal	11/3, 11/6	Industry Services	16/12	SIPLUS analog output modules	9/35
CPU 1507S	8/2	Information and Download Center	16/11	SIPLUS BaseUnits	9/55
CPU 1510SP F-1 PN	7/12	Information and Ordering Options		SIPLUS Basic Panels (2nd Generation)	3/21
CPU 1510SP-1 PN	7/2	on the Internet and DVD	16/10	SIPLUS BusAdapter	9/61
CPU 1511-1 PN	4/2	Information on software licensing	11/2	SIPLUS CM 1241 communication module	3/19
CPU 1511C-1 PN	4/22	Interface modules	9/2, 9/65	SIPLUS CM DP for ET 200SP CPU	9/40
CPU 1511F-1 PN	4/30	I/O modules	3/14, 4/46, 5/4, 9/3	SIPLUS CMS1200	
CPU 1512C-1 PN	4/26			condition monitoring system	13/11
CPU 1512SP F-1 PN	7/16	L		SIPLUS CMS1200 SM 1281	
CPU 1512SP-1 PN	7/6	LOGO! communication module		Condition Monitoring	3/16
CPU 1513-1 PN	4/5	CMK2000	2/14	SIPLUS compact CPUs	5/2
CPU 1513F-1 PN	4/33	LOGO! modular	2/2	SIPLUS CPU 1212C	3/2
CPU 1515-2 PN	4/8	LOGO! modular communication modules	2/14	SIPLUS CPU 1214C	3/6
CPU 1515F-2 PN	4/36			SIPLUS CPU 1215C	3/10
CPU 1516-3 PN/DP	4/11	M		SIPLUS CPU 1510SP-1 PN	7/10
CPU 1516F-3 PN/DP	4/40	Mobile Media	16/11	SIPLUS CPU 1511-1 PN	4/19
CPU 1517-3 PN/DP	4/15	Motor starters ET 200SP	9/46	SIPLUS CPU 1512SP-1 PN	7/11
CPU 412	6/2	Multiprocessor control system		SIPLUS CPU 1513-1 PN	4/20
CPU 414	6/6	SIMATIC TDC	10/2	SIPLUS CPU 1516-3 PN/DP	4/21
CPU 414F	6/19			SIPLUS CPU 1518F-4 PN/DP	4/44
CPU 416	6/11	O		SIPLUS digital F input modules	9/41
CPU 416F	6/23	ODK 1500S	8/6	SIPLUS digital F output modules	9/43
CPU 417	6/16	ODK 1500S FileServer	8/8	SIPLUS digital output modules	9/13
CPU555	10/2	ODK 1500S SQL driver	8/7	SIPLUS fail-safe CPUs	4/44
		ODK 1500S XML DataAccess driver	8/7	SIPLUS fail-safe customized modules	9/45
		Online Services	16/10	SIPLUS high-availability CPUs	6/29
		Online Support	16/15	SIPLUS IM 153-1/153-2	9/68
		Operator control and monitoring	3/21	SIPLUS interface modules	9/2
		Options for engineering		SIPLUS LOGO! modular	
		and drive technology	11/8	basic variants	2/2
				SIPLUS LOGO! modular	
				expansion modules	2/9
				SIPLUS LOGO! modular	
				pure variants	2/6
				SIPLUS NET CP 1543-1	4/71
				SIPLUS RIC libraries for ET200SP	13/2
				SIPLUS RIC Libraries	
				for SIMATIC S7-1500	13/3
				SIPLUS RIC substations for IEC protocol ...	13/2
D					
D7-SYS	6/31, 11/8				
Digital F input modules	9/72				
Digital F output modules	9/74				
Digital input modules SM 521	4/46				
Digital I/O modules	9/73				
Digital output modules SM 522	4/51				
Digital output modules	9/3				
Distributed controllers					
based on ET 200SP	7/12				
Drive ES engineering software	11/9				

SIPLUS RTD SM 1231 signal module	3/14
SIPLUS S7-300 CPU 314C-2 PN/DP	5/2
SIPLUS S7-300 DM 370 dummy modules	5/8
SIPLUS S7-300 SM 326	
F digital input modules - Safety Integrated...	5/4
SIPLUS S7-300 SM 336	
F analog input modules - Safety Integrated .	5/6
SIPLUS standard CPUs	3/2, 4/19, 7/10
SIPLUS Y-Link for S7-400H	6/29
SITRAIN – Training for Industry	16/2
SIWAREX WP251	3/17
SM 1281 Condition Monitoring	3/16
SM 521 digital input modules	4/46
SM 522 digital output modules	4/51
Social Media	16/11
Software for joint tasks in the maintenance sector	11/10
Software Licenses	16/16
Software Update Service	11/2
Standard CPUs	4/2, 6/2, 7/2
Standards	16/4
STEP 7 (TIA Portal)	11/3
STEP 7 Safety (TIA Portal)	11/6
System cabling for SIMATIC S7-300/400 and ET 200M - Fully modular connection.....	5/9

T

Telecontrol systems for comprehensive applications	13/2
TM Pulse 2x24V pulse output module	9/37

Y

Y-link for S7-400H.....	6/27
-------------------------	------

Appendix

Article No. index

3			
3RK1308-.....	9/50		
3RK1908-.....	9/51		
3RK1911-.....	9/71		
3RK1922-.....	9/72		
3RW4928-.....	9/51		
6AG			
6AG1052-.....	2/4, 2/7, 2/8		
6AG1055-.....	2/5, 2/8, 2/12, 2/13		
6AG1057-.....	2/4, 2/8, 2/13		
6AG1123-.....	3/22		
6AG1132-.....	9/14		
6AG1134-.....	9/34		
6AG1135-.....	9/36		
6AG1136-.....	9/42, 9/44, 9/45		
6AG1153-.....	6/30, 9/69		
6AG1155-.....	9/2		
6AG1193-.....	7/10, 7/12, 9/14, 9/34, 9/36, 9/42, 9/44, 9/45, 9/56, 9/57, 9/62		
6AG1195-.....	5/5, 5/7, 6/30, 9/69		
6AG1197-.....	6/30		
6AG1204-.....	5/3		
6AG1212-.....	3/4		
6AG1214-.....	3/8, 3/9		
6AG1215-.....	3/12, 3/13		
6AG1221-.....	3/4, 3/9, 3/13		
6AG1222-.....	3/4, 3/9, 3/13		
6AG1223-.....	3/4, 3/9, 3/13		
6AG1231-.....	3/15		
6AG1232-.....	3/5, 3/9, 3/13		
6AG1241-.....	3/5, 3/9, 3/13, 3/20		
6AG1314-.....	5/2		
6AG1326-.....	5/5		
6AG1332-.....	4/19, 4/20, 4/21, 4/45		
6AG1333-.....	4/20, 4/45		
6AG1336-.....	5/7		
6AG1370-.....	5/8		
6AG1500-.....	5/3		
6AG1505-.....	4/19, 4/20, 4/45		
6AG1507-.....	4/19, 4/20, 4/45		
6AG1510-.....	7/10		
6AG1511-.....	4/19		
6AG1512-.....	7/12		
6AG1513-.....	4/20		
6AG1516-.....	4/21		
6AG1518-.....	4/45		
6AG1543-.....	4/71		
6AG1545-.....	9/40		
6AG1591-.....	4/19, 4/20, 4/21, 4/45		
6AG1654-.....	6/30		
6AG1901-.....	5/3, 7/10, 7/12		
6AG1972-.....	5/3, 9/69		
6AG41.-.....	8/5		
6AG6003-.....	13/2, 13/3		
6AT, 6AV			
6AT8002-.....	13/13		
6AT8007-.....	3/16, 13/12, 13/13		
6AV72.-.....	8/5		
6B, 6D			
6BK1700-.....	9/103		
6BK1700-0.....	2/14		
6BK1900-.....	9/96, 9/100		
6BK1932-.....	9/93		
6BK1942-.....	9/94, 9/96, 9/98		
6BK1943-.....	9/98, 9/100, 9/103		
6DD1600-.....	10/2		
6DD1682-.....	10/2		
6DD1683-.....	10/2		
6ED, 6EP			
6ED1056-.....	2/5, 2/8		
6ED1056-1.....	2/13		
6ED1057-.....	2/5, 2/8, 2/13		
6ED1058-.....	2/4, 2/8, 2/13		
6EP1332-.....	4/4, 4/7, 4/10, 4/13, 4/17, 4/24, 4/28, 4/32, 4/35, 4/38, 4/42		
6EP1333-.....	4/4, 4/7, 4/10, 4/13, 4/17, 4/24, 4/28, 4/32, 4/35, 4/38, 4/42		
6ES			
6ES5710-.....	7/4, 7/8, 7/14, 7/18		
6ES5728-.....	3/18		
6ES5734-.....	12/5		
6ES7132-.....	9/11		
6ES7133-.....	9/12, 9/26, 9/31, 9/39, 9/54		
6ES7134-.....	9/25		
6ES7135-.....	9/30		
6ES7138-.....	9/39, 13/8		
6ES7141-.....	9/79		
6ES7142-.....	9/79		
6ES7143-.....	9/79		
6ES7153-.....	9/67		
6ES7193-.....	4/4, 4/7, 4/10, 4/13, 4/17, 4/24, 4/28, 4/32, 4/35, 4/38, 4/42, 7/4, 7/5, 7/8, 7/9, 7/14, 7/15, 7/18, 7/19, 9/11, 9/12, 9/26, 9/31, 9/39, 9/53, 9/54, 9/60, 9/62, 9/63		
6ES7194-.....	9/79, 9/91		
6ES7195-.....	6/28, 6/30, 9/67, 9/104		
6ES7197-.....	6/28		
6ES7241-.....	13/8		
6ES7328-.....	5/3, 5/5, 5/7		
6ES7390-.....	5/8, 5/12, 9/67		
6ES7391-.....	5/3		
6ES7392-.....	5/3, 5/5, 5/7, 5/8		
6ES7393-.....	5/5, 5/7		
6ES7412-.....	6/5		
6ES7414-.....	6/9, 6/21		
6ES7416-.....	6/14, 6/25		
6ES7417-.....	6/17		
6ES7505-.....	4/4, 4/7, 4/10, 4/13, 4/17, 4/24, 4/28, 4/32, 4/35, 4/38, 4/42		
6ES7507-.....	4/4, 4/7, 4/10, 4/13, 4/17, 4/24, 4/28, 4/32, 4/35, 4/38, 4/42		
6ES7510-.....	7/4, 7/15		
6ES7511-.....	4/3, 4/4, 4/24, 4/31		
6ES7512-.....	4/28, 7/8, 7/18		
6ES7513-.....	4/6, 4/34		
6ES7515-.....	4/9, 4/38		
6ES7516-.....	4/13, 4/42		
6ES7517-.....	4/17		
6ES7521-.....	4/50		
6ES7522-.....	4/57		
6ES7526-.....	4/73, 4/75		
6ES7528-.....	4/50, 4/58, 4/66, 4/73, 4/75		
6ES7531-.....	4/66		
6ES7532-.....	4/70		
6ES7540-.....	13/8		
6ES7545-.....	7/4, 7/8, 7/14, 7/18		
6ES7590-.....	4/3, 4/4, 4/6, 4/7, 4/10, 4/13, 4/17, 4/24, 4/28, 4/31, 4/32, 4/34, 4/35, 4/38, 4/42, 4/50, 4/58, 4/66, 4/73, 4/75, 5/12, 7/4, 7/8, 7/14, 7/18		
6ES7591-.....	4/4, 4/7, 4/10, 4/14, 4/18, 4/24, 4/28, 4/32, 4/35, 4/38, 4/43, 7/5, 7/9, 7/15, 7/19		
6ES7592-.....	4/24, 4/28, 4/50, 4/57, 4/66, 4/73, 4/75		
6ES7658-.....	11/11, 11/12, 11/13, 11/14		
6ES7672-.....	8/5		
6ES7806-.....	8/6		
6ES7810-.....	11/4, 11/5		
6ES7822-.....	4/4, 4/7, 4/10, 4/14, 4/18, 4/25, 4/29, 4/32, 4/35, 4/39, 4/43, 7/5, 7/9, 7/15, 7/20, 11/4, 11/5		
6ES7833-.....	4/32, 4/35, 4/39, 4/43, 4/73, 4/75, 5/7, 6/21, 6/25, 7/15, 7/19, 11/6, 11/7		
6ES7833-1.....	5/5		
6ES7852-.....	6/31, 11/8		
6ES7901-.....	5/3, 6/5, 6/9, 6/14, 6/17, 6/21, 6/25		
6ES7912-.....	5/3, 6/5, 6/9, 6/14, 6/18, 6/21, 6/25		
6ES7921-.....	5/11, 5/12		
6ES7923-.....	5/11, 5/12		
6ES7924-.....	5/12		
6ES7928-.....	5/12		
6ES7952-.....	6/5, 6/9, 6/14, 6/17, 6/21, 6/25		
6ES7953-.....	5/3, 10/2		
6ES7954-.....	4/3, 4/6, 4/9, 4/13, 4/17, 4/24, 4/28, 4/31, 4/34, 4/38, 4/42		
6ES7964-.....	6/9, 6/14, 6/18, 6/21, 6/25		
6ES7971-.....	10/2		
6ES7972-.....	4/13, 4/17, 4/42, 6/5, 6/9, 6/10, 6/14, 6/15, 6/18, 6/21, 6/25, 6/26, 9/67		
6ES7998-.....	4/4, 4/7, 4/10, 4/14, 4/18, 4/25, 4/29, 4/32, 4/35, 4/39, 4/43, 4/50, 4/58, 4/66, 5/3, 5/5, 5/7, 6/5, 6/9, 6/14, 6/18, 6/21, 6/25, 6/31, 7/5, 7/9, 7/15, 7/19, 9/67, 11/8, 16/3		
6F, 6G, 6S, 6X, 6Z			
6FB1103-.....	13/5		
6FB1104-.....	13/8		
6FB1144-.....	13/8		
6FB1231-.....	13/10		
6GK1500-.....	6/5, 6/9, 6/15, 6/18, 6/21, 6/25, 13/8		
6GK1562-.....	8/5		
6GK1571-.....	5/3		
6GK1901.....	4/35		
6GK1901-.....	4/4, 4/7, 4/10, 4/13, 4/14, 4/17, 4/18, 4/24, 4/28, 4/32, 4/35, 4/38, 4/42, 4/43, 6/10, 6/15, 6/22, 6/26, 7/4, 7/8, 7/14, 7/18		
6GK1905-.....	4/13, 4/17, 4/42		
6GK5204-.....	6/10, 6/15, 6/22, 6/26		
6SL3054-.....	9/72		
6SL3255-.....	9/72		
6SL3260-.....	9/71		
6SL3514-.....	9/71		
6SW1700-.....	11/9		
6XV1830-.....	4/13, 4/17, 4/42, 5/3, 6/5, 6/9, 6/15, 6/18, 6/21, 6/26, 13/8		
6XV1831-.....	4/13, 4/17, 4/42		
6XV1840-.....	4/4, 4/7, 4/10, 4/14, 4/18, 4/24, 4/28, 4/32, 4/35, 4/38, 4/43, 5/3, 6/10, 6/15, 6/21, 6/26, 7/4, 7/8, 7/14, 7/18		
6XV1850-.....	3/18		
6XV1870-.....	10/2		
6XV1873-.....	5/3, 6/10, 6/15, 6/22, 6/26		
7			
7MH4702-.....	3/18		
7MH4710-.....	3/18		
7MH4960-.....	3/18		
H			
HTG:.....	9/71, 9/72		
Z			
ZKT:.....	9/71, 9/72		

Appendix

Notes

Appendix

Conditions of sale and delivery

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"¹⁾ and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office in Germany"¹⁾ and,
- for other supplies and services, the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"¹⁾.

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For customers with a seat or registered office outside Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"¹⁾ and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office outside of Germany"¹⁾ and
- for other supplies and/or services, the "General Conditions for Supplies of Siemens Industry for Customers with a Seat or Registered Office outside of Germany"¹⁾.

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The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export of goods listed in this catalog may be subject to licensing requirements. We will indicate in the delivery details whether licenses are required under German, European and US export lists. Goods labeled with "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to US re-export authorization.

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Even without a label, or with label "AL:N" or "ECCN:N", authorization may be required i .a. due to the final disposition and intended use of goods.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you must comply with all applicable national and international (re-)export control regulations.

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The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

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Interactive Catalog on DVD Products for Automation and Drives	<i>Catalog</i> CA 01	Low-Voltage Power Distribution and Electrical Installation Technology SENTRON · SIVACON · ALPHA Protection, Switching, Measuring and Monitoring Devices, Switchboards and Distribution Systems Standards-Compliant Components for Photovoltaic Plants Electrical Components for the Railway Industry TÜV-certified Power Monitoring System Components for Industrial Control Panels according to UL Standards 3WT Air Circuit Breakers up to 4000 A 3VT Molded Case Circuit Breakers up to 1600 A <i>Digital: SIVACON System Cubicles, System Lighting and System Air-Conditioning</i> <i>Digital: ALPHA Distribution Systems</i> ALPHA FIX Terminal Blocks SIVACON S4 Power Distribution Boards SIVACON 8PS Busbar Trunking Systems <i>Digital: DELTA Switches and Socket Outlets</i>	<i>Catalog</i> LV 10 LV 11 LV 12 LV 14 LV 16 LV 35 LV 36 LV 50 LV 51 LV 52 LV 56 LV 70 ET D1
Building Control GAMMA Building Control	ET G1	Motion Control SINUMERIK 840 Equipment for Machine Tools SINUMERIK 808 Equipment for Machine Tools SINUMERIK 828 Equipment for Machine Tools SIMOTION, SINAMICS S120 & SIMOTICS Equipment for Production Machines <i>Digital: Drive and Control Components for Cranes</i>	NC 62 NC 81.1 NC 82 PM 21 CR 1
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Process Instrumentation and Analytics <i>Digital: Field Instruments for Process Automation</i> <i>Digital: SIPART Controllers and Software</i> Products for Weighing Technology <i>Digital: Process Analytical Instruments</i> <i>Digital: Process Analytics, Components for Continuous Emission Monitoring</i>	FI 01 MP 31 WT 10 AP 01 AP 11	Information and Download Center Digital versions of the catalogs are available on the Internet at: www.siemens.com/industry/infocenter There you'll find additional catalogs in other languages. Please note the section "Downloading catalogs" on page "Online services" in the appendix of this catalog.	

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