# **SIEMENS**

### Data sheet

6ES7143-5BF00-0BA0

SIMATIC ET 200AL, DIQ 4+DQ 4x 24 V DC/0.5 A, 8XM8, Degree of protection IP67



General information	
Product type designation	DIQ 4+DQ 4X24VDC/0.5A, 8xM8
HW functional status	E01
Firmware version	V1.0.x
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated as of version</li> </ul>	STEP 7 V13 SP1 or higher
<ul> <li>STEP 7 configurable/integrated as of version</li> </ul>	From V5.5 SP4 Hotfix 3
<ul> <li>PROFIBUS as of GSD version/GSD revision</li> </ul>	GSD as of Revision 5
<ul> <li>PROFINET as of GSD version/GSD revision</li> </ul>	GSDML V2.3.1

## Supply voltage

## Load voltage 1L+

- Rated value (DC)permissible range, lower limit (DC)24 V20.4 V
- permissible range, upper limit (DC) 28.8 V

Reverse polarity protection	Yes; Against destruction; encoder power supply outputs applied with reversed polarity, loads pick up
Load voltage 2L+	
Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes; against destruction; load increasing
Input current	
Current consumption (rated value)	40 mA; without load
from load voltage 1L+ (unswitched voltage)	4 A; Maximum value
from load voltage 2L+, max.	4 A; Maximum value
Encoder supply	
Number of outputs	4
24 V encoder supply	
Short-circuit protection	Yes; per module, electronic
Output current, max.	0.7 A; Total current of all encoders
Power loss	
Power loss, typ.	2.5 W
Digital inputs	
Number of digital inputs	4; Parameterizable as DIQ
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Number of simultaneously controllable inputs	
all mounting positions	
— up to 55 °C, max.	4
Input voltage	
Type of input voltage	DC
<ul><li>Rated value (DC)</li></ul>	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
Input current	
● for signal "1", typ.	3.2 mA
Input delay (for rated value of input voltage)	
for standard inputs	
— at "0" to "1", min.	1.2 ms
— at "0" to "1", max.	4.8 ms
— at "1" to "0", min.	1.2 ms
— at "1" to "0", max.	4.8 ms
Cable length	
• unshielded, max.	30 m

Number of digital outputs  • in groups of 4, 2 load groups for 4 outputs aach  Short-circuit protection  • Response threshold, typ.  Limitation of inductive shutdown voltage to  Switching capacity of the outputs  • on lamp load, max.  Load resistance range  • lower limit 48 Ω  • upper limit 4 kΩ  Cutput voltage  • for signal "1", min.  L+ (-0.8 V)  Output current  • for signal "1" rated value • for signal "0" residual current, max.  Switching frequency • with resistive load, max. • vith inductive load, max. • vith inductive load, max. • on lamp load, max.  • Cable length • unshielded, max.  100 Hz  Survice sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms • Diagnostic alarm  Ves; Parameterizable  Diagnostic indication LED • Channel status display • for module diagnostics • For load voltages  Ves  Ves  Cercen LED  Potential separation  between the load voltages  Ves  Ves  Ves  Ves  Ves  Ves  Ves	Digital outputs	
Short-circuit protection  Response threshold, typ.  Imitation of inductive shutdown voltage to  Switching capacity of the outputs  on lamp load, max.  to on lamp load, max.  Load resistance range  olower limit  upper limit  of or signal "1", min.  Output voltage  for signal "1" rated value  of or signal "1" rated value  of or signal "0" residual current, max.  Switching frequency  with resistive load, max.  on lamp load, max.  total current of the outputs  Current per group, max.  Cable length  unshelded, max.  a unshelded, max.  sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  Diagnostic alarm  Diagnostic alarm  Diagnostic alarm  Diagnostic messages  Short-circuit  Potential separation  Potential separation  Potential separation	Number of digital outputs	8; 4 DQ fixed, 4 DIQ parameterizable
Response threshold, typ. 0.7 Å  Limitation of inductive shutdown voltage to 2L+ (-47 V)  Switching capacity of the outputs  • on lamp load, max. 5 W  Load resistance range  • lower limit 48 Ω  • upper limit 4kΩ  Output voltage  • for signal "1", min. L+ (-0.8 V)  Output current  • for signal "1" rated value 0.5 A  • for signal "0" residual current, max. 0.5 mA  Switching frequency  • with resistive load, max. 100 Hz  • with inductive load, max. 1 Hz  Total current per group, max. 2 A  Cable length  • unshielded, max. 30 m  Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Yes; channel by channel, parameterizable  Alarms  • Diagnostic alarm Yes; Outputs to M; encoder supply to M; module by module  Diagnostics messages  • Short-circuit Yes; Outputs to M; encoder supply to M; module by module  Potential separation	• in groups of	4; 2 load groups for 4 outputs each
Limitation of inductive shutdown voltage to  Switching capacity of the outputs  • on lamp load, max.  Load resistance range • lower limit • upper limit • upper limit • upper limit • for signal "1", min.  Output current • for signal "1" rated value • for signal "1" rated value • for signal "1" rated value • for signal "0" residual current, max.  Switching frequency • with resistive load, max. • with inductive load, max. • on lamp load, max. • on lamp load, max.  1 Hz  Total current of the outputs • Current per group, max.  Cable length • unshielded, max.  30 m  Encoder  Connectable encoders • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms • Diagnostic alarm Diagnostic messages • Short-circuit  Post Current per yes, Cutputs to M; encoder supply to M; module by module  Diagnostics messages • Short-circuit  Yes; Outputs to M; encoder supply to M; module by module  Diagnostics indication LED • Channel status display • for module diagnostics • For load voltage monitoring  Potential separation	Short-circuit protection	Yes; per channel, electronic
Switching capacity of the outputs  • on lamp load, max.  Load resistance range  • lower limit  • upper limit  • upper limit  • for signal "1", min.  Cutput voltage  • for signal "1" rated value  • for signal "0" residual current, max.  0.5 mA  Switching frequency  • with resistive load, max.  • with inductive load, max.  • on lamp load, max.  • on lamp load, max.  • on lamp load, max.  • Current per group, max.  Cable length  • unshielded, max.  • 2 A  Cable length  • unshielded, max.  • 2-wire sensor  — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  • Diagnostic alarm  Diagnostic alarm  Pes; Outputs to M; encoder supply to M; module by module  Diagnostics messages  • Short-circuit  Yes; Green LED  Potential separation	<ul> <li>Response threshold, typ.</li> </ul>	0.7 A
• on lamp load, max.  Load resistance range  • lower limit • upper limit • upper limit • for signal "1", min.  Output voltage • for signal "1" rated value • for signal "1" rated value • for signal "0" residual current, max.  Switching frequency • with resistive load, max. • with inductive load, max. • on lamp load, max. • on lamp load, max. • Cable length • unshielded, max. • Cable length • unshielded, max.  100 Hz  Carrent per group, max.  Cable length • unshielded, max.  15 Ma   Encoder  Connectable encoders • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information Substitute values connectable  Alarms • Diagnostic alarm  Ves; Parameterizable  Diagnostic messages • Short-circuit  Ves; Outputs to M; encoder supply to M; module by module  Diagnostics indication LED • Channel status display • for module diagnostics • For load voltage monitoring  Potential separation	Limitation of inductive shutdown voltage to	2L+ (-47 V)
Load resistance range  • lower limit • upper limit • upper limit • upper limit • upper limit • for signal "1", min.  Output voltage • for signal "1" rated value • for signal "1" residual current, max. • for signal "0" residual current, max.  0.5 mA  Switching frequency • with resistive load, max. • with inductive load, max. • on lamp load, max. • on lamp load, max. • Current per group, max.  • Current per group, max.  Cable length • unshielded, max. • 2 A  Cable length • unshielded, max.  Interrupts/diagnostics/status information  Substitute values connectable  Ves; channel by channel, parameterizable  Alarms • Diagnostic alarm  Diagnostic alarm  Ves; Parameterizable  Diagnostics messages • Short-circuit • Ves; Outputs to M; encoder supply to M; module by module  Diagnostics information  Ves; Green LED  Potential separation	Switching capacity of the outputs	
lower limit   48 Ω     upper limit   4 kΩ     Output voltage     for signal "1", min.   L+ (-0.8 V)     Output current     for signal "0" residual current, max.   0.5 A     for signal "0" residual current, max.   0.5 mA     Switching frequency     with resistive load, max.   100 Hz     with inductive load, max.   1 Hz     Total current of the outputs     Current per group, max.   2 A     Cable length     unshielded, max.   30 m	• on lamp load, max.	5 W
• upper limit  • upper limit  Output voltage  • for signal "1", min.  Output current  • for signal "0" residual current, max.  Switching frequency  • with resistive load, max.  • on lamp load, max.  • on lamp load, max.  • Current per group, max.  Cable length  • unshielded, max.  • 2 A  Cable length  • unshielded, max.  15 mA   Encoder  Connectable encoders  • 2-wire sensor  — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  • Diagnostic alarm  • Diagnostic messages  • Short-circuit  Potential separation  Potential separation  Potential separation  Potential separation  Potential separation	Load resistance range	
Output voltage  • for signal "1" min.  Output current  • for signal "0" residual current, max.  • for signal "0" residual current, max.  Switching frequency  • with resistive load, max.  • with inductive load, max.  • on lamp load, max.  • Current per group, max.  Cable length  • unshielded, max.  • 2 A  Cable length  • unshielded, max.  Sensor  — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  • Diagnostic alarm  Diagnostic alarm  Point-circuit  Diagnostics indication LED  • Channel status display  • for module diagnostics  • For load voltage monitoring  Potential separation	• lower limit	48 Ω
• for signal "1", min.  Output current  • for signal "1" rated value • for signal "0" residual current, max.  0.5 mA  Switching frequency • with resistive load, max. • with inductive load, max. • on lamp load, max. • on lamp load, max.  • Cable length • unshielded, max.  2 A  Cable length • unshielded, max.  52 A  Cannectable encoders • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms • Diagnostic alarm  Diagnostic messages • Short-circuit  Postential separation  Potential separation  Potential separation  L+ (-0.8 V)  0.5 A 0.5 A 0.5 MA  100 Hz 0.5 MA  100 Hz 0.5 MA  100 Hz 100 H	• upper limit	4 kΩ
Output current  • for signal "1" rated value • for signal "0" residual current, max.  • for signal "0" residual current, max.  Switching frequency  • with resistive load, max. • with inductive load, max. • on lamp load, max.  • on lamp load, max.  • Cable length • unshielded, max.  2 A  Cable length • unshielded, max.  50 m   Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms • Diagnostic alarm  Diagnostic messages • Short-circuit  Post Green LED  • Channel status display • for module diagnostics • For load voltage monitoring  Potential separation	Output voltage	
• for signal "1" rated value     • for signal "0" residual current, max.  Switching frequency      • with resistive load, max.     • with inductive load, max.     • with inductive load, max.     • on lamp load, max.      • on lamp load, max.      • Current of the outputs      • Current per group, max.  Cable length      • unshielded, max.   Encoder  Connectable encoders      • 2-wire sensor     — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms      • Diagnostic alarm  Diagnostic messages      • Short-circuit  Diagnostics indication LED      • Channel status display     • For load voltage monitoring  Potential separation	● for signal "1", min.	L+ (-0.8 V)
of or signal "0" residual current, max.     Switching frequency	Output current	
Switching frequency  • with resistive load, max.  • with inductive load, max.  • on lamp load, max.  • Cable length  • unshielded, max.  2 A  Cable length  • unshielded, max.  2 A  Cancetable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  • Diagnostic alarm  Diagnostic messages  • Short-circuit  Diagnostics indication LED  • Channel status display • for module diagnostics • For load voltage monitoring  Potential separation	• for signal "1" rated value	0.5 A
with resistive load, max.     with inductive load, max.     on lamp load, max.     1 Hz  Total current of the outputs     Current per group, max. 2 A  Cable length     unshielded, max. 30 m  Encoder  Connectable encoders     2-wire sensor     — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms     Diagnostic alarm  Diagnostic messages     Short-circuit  Diagnostics indication LED     Channel status display     for module diagnostics     Yes; Green LED  Potential separation	• for signal "0" residual current, max.	0.5 mA
with inductive load, max.     on lamp load, max.     1 Hz  Total current of the outputs      Current per group, max.     2 A  Cable length     unshielded, max.  30 m  Encoder  Connectable encoders      2-wire sensor     — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms      Diagnostic alarm  Diagnostic messages      Short-circuit  Diagnostic indication LED      Channel status display     for module diagnostics     For load voltage monitoring  Potential separation	Switching frequency	
on lamp load, max.  Total current of the outputs      Current per group, max.      Cable length          unshielded, max.  Encoder  Connectable encoders	with resistive load, max.	100 Hz
Total current of the outputs  Cable length  unshielded, max.  2 A  Cable length  unshielded, max.  30 m   Encoder  Connectable encoders  2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  Diagnostic alarm  Poiagnostic alarm  Diagnostic messages  Short-circuit  Poiagnostics indication LED  Channel status display for module diagnostics For load voltage monitoring  Potential separation	<ul> <li>with inductive load, max.</li> </ul>	0.5 Hz
Total current of the outputs  Current per group, max.  Cable length  unshielded, max.  30 m  Encoder  Connectable encoders  2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  Diagnostic alarm  Pers, Parameterizable  Diagnostic messages  Short-circuit  Piagnostics indication LED  Channel status display for module diagnostics  For load voltage monitoring  Potential separation	● on lamp load, max.	1 Hz
Cable length  unshielded, max.  So m  Encoder  Connectable encoders  2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  Diagnostic alarm  Poiagnostic alarm  Diagnostic messages  Short-circuit  Poiagnostics indication LED  Channel status display for module diagnostics For load voltage monitoring  Potential separation		
Cable length  • unshielded, max.  30 m  Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  • Diagnostic alarm  Diagnostic messages • Short-circuit  Diagnostics indication LED  • Channel status display • for module diagnostics • For load voltage monitoring  Potential separation		2 A
Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable Alarms • Diagnostic alarm Piagnostic messages • Short-circuit Piagnostics indication LED • Channel status display • for module diagnostics • For load voltage monitoring  Yes Yes Yes  Yes  Yes  Than  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye		
Encoder  Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable Alarms • Diagnostic alarm Piagnostic messages • Short-circuit Piagnostics indication LED • Channel status display • for module diagnostics • For load voltage monitoring  Yes Yes Yes  Yes  Yes  That  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye	• unshielded, max.	30 m
Connectable encoders  • 2-wire sensor — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information Substitute values connectable Alarms • Diagnostic alarm Piagnostic messages • Short-circuit Piagnostics indication LED • Channel status display • for module diagnostics • For load voltage monitoring  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye		
2-wire sensor     — permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  Diagnostic alarm  Poiagnostic messages  Short-circuit  Potential separation  Yes  Yes  1.5 mA  Yes  1.5 mA  Yes; channel by channel, parameterizable  Yes; Parameterizable  Yes; Outputs to M; encoder supply to M; module by module  Yes; Green LED  Yes; Green LED  Yes; Green/red LED  Yes; Green LED  Yes; Green LED  Yes; Green LED		
— permissible quiescent current (2-wire sensor), max.  Interrupts/diagnostics/status information  Substitute values connectable  Alarms  • Diagnostic alarm  Diagnostic messages  • Short-circuit  Piagnostics indication LED  • Channel status display • for module diagnostics • For load voltage monitoring  Potential separation		V
Interrupts/diagnostics/status information  Substitute values connectable Yes; channel by channel, parameterizable  Alarms  • Diagnostic alarm Yes; Parameterizable  Diagnostic messages  • Short-circuit Yes; Outputs to M; encoder supply to M; module by module  Diagnostics indication LED  • Channel status display Yes; Green LED  • for module diagnostics Yes; Green/red LED  • For load voltage monitoring Yes; Green LED		
Interrupts/diagnostics/status information  Substitute values connectable Yes; channel by channel, parameterizable  Alarms  • Diagnostic alarm Yes; Parameterizable  Diagnostic messages  • Short-circuit Yes; Outputs to M; encoder supply to M; module by module  Diagnostics indication LED  • Channel status display Yes; Green LED  • for module diagnostics Yes; Green/red LED  • For load voltage monitoring Yes; Green LED  Potential separation		1.5 mA
Substitute values connectable  Alarms  Diagnostic alarm  Yes; Parameterizable  Diagnostic messages  Short-circuit  Yes; Outputs to M; encoder supply to M; module by module  Diagnostics indication LED  Channel status display  for module diagnostics  For load voltage monitoring  Yes; Green LED	sensor), max.	
Alarms  Diagnostic alarm  Yes; Parameterizable  Diagnostic messages  Short-circuit  Yes; Outputs to M; encoder supply to M; module by module  Diagnostics indication LED  Channel status display  for module diagnostics  For load voltage monitoring  Yes; Green LED  Yes; Green LED  Yes; Green LED  Yes; Green LED	Interrupts/diagnostics/status information	
<ul> <li>Diagnostic alarm</li> <li>Diagnostic messages</li> <li>Short-circuit</li> <li>Diagnostics indication LED</li> <li>Channel status display</li> <li>for module diagnostics</li> <li>For load voltage monitoring</li> <li>Yes; Parameterizable</li> <li>Yes; Outputs to M; encoder supply to M; module by module</li> <li>Yes; Green LED</li> <li>Yes; Green LED</li> <li>Yes; Green/red LED</li> <li>Yes; Green LED</li> </ul>	Substitute values connectable	Yes; channel by channel, parameterizable
Diagnostic messages  Short-circuit  Yes; Outputs to M; encoder supply to M; module by module  Diagnostics indication LED  Channel status display  For module diagnostics  For load voltage monitoring  Potential separation	Alarms	
<ul> <li>Short-circuit</li> <li>Diagnostics indication LED</li> <li>Channel status display</li> <li>for module diagnostics</li> <li>For load voltage monitoring</li> <li>Yes; Green LED</li> <li>Yes; Green/red LED</li> <li>Yes; Green LED</li> <li>Yes; Green LED</li> </ul>	Diagnostic alarm	Yes; Parameterizable
Diagnostics indication LED	Diagnostic messages	
<ul> <li>Channel status display</li> <li>for module diagnostics</li> <li>For load voltage monitoring</li> <li>Yes; Green LED</li> <li>Yes; Green LED</li> </ul> Potential separation	Short-circuit	Yes; Outputs to M; encoder supply to M; module by module
<ul> <li>for module diagnostics</li> <li>For load voltage monitoring</li> <li>Yes; Green/red LED</li> <li>Yes; Green LED</li> </ul>	Diagnostics indication LED	
• For load voltage monitoring  Yes; Green LED  Potential separation	Channel status display	Yes; Green LED
Potential separation	• for module diagnostics	Yes; Green/red LED
<u> </u>	<ul> <li>For load voltage monitoring</li> </ul>	Yes; Green LED
between the load voltages Yes	Potential separation	
	between the load voltages	Yes

### Potential separation channels 4; DIQ channels are isolated from DQ channels • between the channels, in groups of • between the channels and backplane bus • between the channels and the power supply of No; DIQ channels are non-isolated and DQ channels are isolated from supply voltage 1L+ the electronics Isolation tested with 707 V DC (type test) Degree and class of protection IP degree of protection IP65/67 Standards, approvals, certificates Suitable for safety-related tripping of standard Yes; From FS01 modules Highest safety class achievable for safety-related tripping of standard modules PL d • Performance level according to ISO 13849-1 Cat. 3 Category according to ISO 13849-1 SILCL 2 • SILCL according to IEC 62061 Ambient conditions Ambient temperature during operation -25 °C • min. 55 °C • max. Connection method Design of electrical connection for the inputs and M8, 3-pole outputs Power supply M8, 4-pole **ET-Connection** • ET-Connection M8, 4-pin, shielded

Dimensions	
Width	30 mm
Height	159 mm
Depth	40 mm
Weighte	

Depth	40 mm
Weights	
Weight, approx.	145 g
last modified:	09/10/2018