SIEMENS

SIMATIC ET 200AL, AI 4XU/I/RTD, 4x M12, Degree of protection IP67

General information	
Product type designation	AI 4xU/I/RTD, 4xM12
HW functional status	E02
Firmware version	V1.0.x
Product function	
• I&M data	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 configurable/integrated as of version	From V5.5 SP4 Hotfix 3
• PROFIBUS as of GSD version/GSD revision	GSD as of Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3.1

Supply voltage	
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Load voltage 1L+	
• 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

Input current

Current consumption (rated value)	35 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 channel, electronic
• Output current, max.	0.5 A; per channel, total current of all channels max. 1 A

Power loss

Power loss, typ.	1.5 W

Analog inputs

Number of analog inputs	4
• For current measurement	4
• For voltage measurement	4
• For resistance/resistance thermometer measurement	4
permissible input voltage for voltage input (destruction limit), max.	30 V
permissible input current for current input (destruction limit), max.	50 mA
Cycle time (all channels), min.	8 ms
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
• Input resistance (0 to 10 V)	10 MΩ
• 1 V to 5 V	Yes
• Input resistance (1 V to 5 V)	10 MΩ
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	50 Ω
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	50 Ω
Input ranges (rated values), resistance thermometer	
• Ni 100	Yes; Standard/climate
• Input resistance (Ni 100)	10 MΩ
• Pt 100	Yes; Standard/climate
• Input resistance (Pt 100)	10 MΩ

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Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes
• Input resistance (0 to 150 ohms)	10 MΩ
• 0 to 300 ohms	Yes
• Input resistance (0 to 300 ohms)	10 MΩ

Cable length	
• shielded, max.	30 m

Analog value generation for the inputs

Measurement principle	integrating

Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time, parameterizable	Yes; channel by channel
• Integration time (ms)	0,3 / 16,7 / 20 / 60
• Interference voltage suppression for interference frequency f1 in Hz	3 600 / 60 / 50 / 16.7
• Conversion time (per channel)	2 / 18 / 21 / 61 ms

Smoothing of measured values	
• parameterizable	Yes
• Step: None	Yes; 1x cycle time
• Step: low	Yes; 4x cycle time
• Step: Medium	Yes; 16x cycle time
• Step: High	Yes; 32x cycle time

Encoder

Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes
• for resistance measurement with two-wire connection	Yes
• for resistance measurement with three-wire connection	Yes

Errors/accuracies

Linearity error (relative to input range), (+/-)	0.025 %
Temperature error (relative to input range), (+/-)	0.01 %/K
Crosstalk between the inputs, max.	-70 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.01 %

Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.35 %
• Current, relative to input range, (+/-)	0.45 %

• Resistance, relative to input range, (+/-)	0.25 %
• Resistance thermometer, relative to input range, (+/-)	0.25 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.25 %
• Current, relative to input range, (+/-)	0.25 %
• Resistance, relative to input range, (+/-)	0.15 %
• Resistance thermometer, relative to input range, (+/-)	0.15 %
Interference voltage suppression for f = n x (f1 +/- 0.5 %), f1 = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB

Interrupts/diagnostics/status information

Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Limit value alarm	Yes; Parameterizable
Diagnostic messages	
• Wire-break	Yes; at 4 mA to 20 mA and 1 V to 5 V
• Short-circuit	Yes; Encoder supply to M, channel by channel
• Overflow/underflow	Yes
Diagnostics indication LED	
• Channel status display	Yes; Green LED
• for module diagnostics	Yes; Green/red LED

Potential separation

between the load voltages	Yes
Potential separation channels	
• between the channels	No
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	No

Isolation

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 modules	Yes; From FS02
Highest safety class achievable for safety-related tripping of standard modules	
• Performance level according to ISO 13849-1	PL d
• Category according to ISO 13849-1	Cat. 3
• SILCL according to IEC 62061	SILCL 2

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Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C
• max.	55 °C

Connection method	
Design of electrical connection for the inputs and outputs	M12, 5-pole
Power supply	M8, 4-pole
ET-Connection	
• ET-Connection	M8, 4-pin, shielded

Dimensions	
Width	30 mm
Height	159 mm
Depth	40 mm

Weights	
Weight, approx.	168 g

last modified:	09/10/2018