



SIMATIC ET 200AL, AI 4XU/I/RTD, 4XM12, DEGREE OF PROTECTION IP67

Product type designation

General information

HW functional status	E01
Firmware version	V1.0.0
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	STEP 7 V13 SP1 or higher
• STEP 7 can be configured/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

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)	50 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 losses	
Power loss, typ.	2.5 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
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
Resistance thermometer (RTD)	
• Technical unit for temperature measurement	°C/°F/K

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	16.7 / 50 / 60 / 3 600
• Conversion time (per channel)	2 / 18 / 21 / 61 ms
Smoothing of measured values	
• Parameterizable	Yes
• Step: None	Yes; 1 x cycle time
• Step: low	Yes; 4 x cycle time
• Step: Medium	Yes; 16 x cycle time
• Step: High	Yes; 32 x 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 area), (+/-)	0.01 %
Operational limit in overall temperature range	
• Voltage, relative to input area, (+/-)	0.35 %
• Current, relative to input area, (+/-)	0.45 %
• Resistance, relative to input area, (+/-)	0.25 %
• Resistance thermometer, relative to input area, (+/-)	0.25 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input area, (+/-)	0.25 %
• Current, relative to input area, (+/-)	0.25 %

- Resistance, relative to input area, (+/-) - Resistance thermometer, relative to input area, (+/-)	0.15 % 0.15 %
Interference voltage suppression for $f = n \times (f_1 \pm 0.5 \%)$, f_1 = interference frequency	
Series mode interference (peak value of interference < rated value of input range), min.	40 dB
Interrupts/diagnostics/status information	
Alarms	
- Diagnostic alarm - Limit value alarm	Yes; Parameterizable Yes; Parameterizable
Diagnostic messages	
- Wire break - Short circuit - Overflow/underflow	Yes; at 4 mA to 20 mA and 1 V to 5 V Yes; Encoder supply to M, channel by channel Yes
Diagnostics indication LED	
- Channel status display - for module diagnostics	Yes; Green LED Yes; Green/red LED
Potential separation	
between the load voltages	Yes
Potential separation channels	
- between the channels - between the channels and the backplane bus - between the channels and the supply voltage of the electronics	No Yes No
Permissible potential difference	
between different circuits	60 V DC/50 V AC (basic insulation)
Isolation	
Isolation checked with	707 V DC (type test)
Degree and class of protection	
Degree of protection to EN 60529	
- IP65 - IP67	Yes Yes
Ambient conditions	
Ambient temperature in operation	
- Min. - max.	-25 °C 55 °C
Connection method	
Inputs/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	34 mm; Without connector

Weights

Weight, approx.	168 g
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last modified: 20.04.2015