



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

General information	
Product type designation	AI 4xU/I/RTD
HW functional status	FS07
Firmware version	V2.0.x
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	STEP 7 V13 SP1 or higher
• STEP 7 configurable/integrated from version	From V5.5 SP4 Hotfix 3
• PROFIBUS from GSD version/GSD revision	GSD as of Revision 5
• PROFINET from GSD version/GSD revision	GSDML V2.3.1
Supply voltage	
power supply according to NEC Class 2 required	No
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	
<ul style="list-style-type: none"> • 0 to +10 V <ul style="list-style-type: none"> — Input resistance (0 to 10 V) • 1 V to 5 V <ul style="list-style-type: none"> — Input resistance (1 V to 5 V) 	Yes 10 MΩ Yes 10 MΩ
Input ranges (rated values), currents	
<ul style="list-style-type: none"> • 0 to 20 mA <ul style="list-style-type: none"> — Input resistance (0 to 20 mA) • 4 mA to 20 mA <ul style="list-style-type: none"> — Input resistance (4 mA to 20 mA) 	Yes 50 Ω Yes 50 Ω
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> • Ni 100 <ul style="list-style-type: none"> — Input resistance (Ni 100) • Pt 100 <ul style="list-style-type: none"> — Input resistance (Pt 100) 	Yes; Standard/climate 10 MΩ Yes; Standard/climate 10 MΩ
Input ranges (rated values), resistors	
<ul style="list-style-type: none"> • 0 to 150 ohms <ul style="list-style-type: none"> — Input resistance (0 to 150 ohms) • 0 to 300 ohms <ul style="list-style-type: none"> — Input resistance (0 to 300 ohms) 	Yes 10 MΩ Yes 10 MΩ
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	30 m
Analog value generation for the inputs	
Measurement principle	integrating
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Interference voltage suppression for interference frequency f1 in Hz • Conversion time (per channel) 	16 bit Yes; channel by channel 0,3 / 16,7 / 20 / 60 3 600 / 60 / 50 / 16.7 2 / 18 / 21 / 61 ms
Smoothing of measured values	
<ul style="list-style-type: none"> • parameterizable • Step: None • Step: low • Step: Medium • Step: High 	Yes Yes; 1x cycle time Yes; 4x cycle time Yes; 16x cycle time Yes; 32x cycle time
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> • for voltage measurement • for current measurement as 2-wire transducer • for current measurement as 4-wire transducer • for resistance measurement with two-wire connection • for resistance measurement with three-wire connection 	Yes Yes Yes Yes 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	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-) • Resistance, relative to input range, (+/-) • Resistance thermometer, relative to input range, (+/-) 	0.35 % 0.45 % 0.25 % 0.25 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-) 	0.25 % 0.25 %

• Resistance, relative to input range, (+/-)	0.15 %	
• Resistance thermometer, relative to input range, (+/-)	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	Yes; Parameterizable	
• Limit value alarm	Yes; Parameterizable	
Diagnoses		
• 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	
• SIL acc. to IEC 62061	SIL 2	
• remark on safety-oriented shutdown	https://support.industry.siemens.com/cs/de/en/view/39198632	
Security		
signed firmware update	Yes	
data integrity	Yes	
Ambient conditions		
Ambient temperature during operation		
• min.	-30 °C	
• max.	55 °C	
Altitude during operation relating to sea level		
• Ambient air temperature-barometric pressure-altitude	Up to max. 5 000 m, at installation height > 2 000 m additional restrictions	
Connection method		
Design of electrical connection for the inputs and outputs	M12, 5-pole	
Design of electrical connection for supply voltage	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	
Classifications		
	Version	Classification
eClass	14	27-24-26-01
eClass	12	27-24-26-01

eClass	9.1	27-24-26-01
eClass	9	27-24-26-01
eClass	8	27-24-26-01
eClass	7.1	27-24-26-01
eClass	6	27-24-26-01
ETIM	10	EC001596
ETIM	9	EC001596
ETIM	8	EC001596
ETIM	7	EC001596
IDEA	4	3562
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

[Miscellaneous](#)

[Manufacturer Declaration](#)



General Product Approval

EMV



[China RoHS](#)



Functional Safety

Maritime application

[TUEV](#)



[NK / Nippon Kaiji Kyokai](#)

Maritime application

other



[CCS \(China Classification Society\)](#)

[KR \(Korean Register of Shipping\)](#)



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