



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	FS04
Firmware version	V1.0.x
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version STEP 7 configurable/integrated from version PROFIBUS from GSD version/GSD revision PROFINET from GSD version/GSD revision 	STEP 7 V13 SP1 or higher From V5.5 SP4 Hotfix 3 GSD as of Revision 5 GSDML V2.3.1
Supply voltage	
power supply according to NEC Class 2 required	No
Load voltage 1L+	
<ul style="list-style-type: none"> Rated value (DC) permissible range, lower limit (DC) permissible range, upper limit (DC) Reverse polarity protection 	24 V 20.4 V 28.8 V 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	
<ul style="list-style-type: none"> Short-circuit protection Output current, max. 	Yes; per channel, electronic 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
<ul style="list-style-type: none"> For current measurement For voltage measurement For resistance/resistance thermometer measurement 	4 4 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, (+/-) ● Resistance, relative to input range, (+/-) ● Resistance thermometer, relative to input range, (+/-) 	0.25 % 0.25 % 0.15 % 0.15 %
Interference voltage suppression for $f = n \times (f1 \pm 0.5 \%)$, f1 = interference frequency	

<ul style="list-style-type: none"> Series mode interference (peak value of interference < rated value of input range), min. 	40 dB
Interrupts/diagnostics/status information	
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm Limit value alarm 	Yes; Parameterizable Yes; Parameterizable
Diagnoses	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Channel status display for module diagnostics 	Yes; green LED Yes; green/red LED
Potential separation	
between the load voltages	Yes
Potential separation channels	
<ul style="list-style-type: none"> between the channels between the channels and backplane bus between the channels and the power supply of the electronics 	No Yes 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	
<ul style="list-style-type: none"> Performance level according to ISO 13849-1 Category according to ISO 13849-1 SIL acc. to IEC 62061 remark on safety-oriented shutdown 	PL d Cat. 3 SIL 2 https://support.industry.siemens.com/cs/de/en/view/39198632
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> min. max. 	-30 °C 55 °C
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	
<ul style="list-style-type: none"> ET-Connection 	M8, 4-pin, shielded
Dimensions	
Width	30 mm
Height	159 mm
Depth	40 mm
Weights	
Weight, approx.	168 g
last modified:	8/16/2023 