SIEMENS

Data sheet 6ES7144-5KD00-0BA0

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	
● 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	
● 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
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
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
Ambient conditions	
Ambient temperature during operation	
● min.	-30 °C
● max.	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	
● ET-Connection	M8, 4-pin, shielded
Dimensions	
Width	30 mm
Height	159 mm
Depth	40 mm
Weights	
Weight, approx.	168 g

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