



SIMATIC ET 200SP, Analog input module, AI 2x U/I 2-/4-wire High Speed, suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.3%

General information	
Product type designation	AI 2xU/I 2-/4-wire HS
HW functional status	from FS21
Firmware version	V2.0.3
• FW update possible	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes; 125 µs
• Measuring range scalable	No
• Scalable measured values	No
• Adjustment of measuring range	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V13 SP1
• STEP 7 configurable/integrated from version	V5.5 SP3 / -
• PROFIBUS from GSD version/GSD revision	One GSD file each, Revision 3 and 5 and higher
• PROFINET from GSD version/GSD revision	GSDML V2.3
Operating mode	
• Oversampling	Yes; 2 channels per module
• MSI	No
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
Calibration possible in RUN	No
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption (rated value)	39 mA; without sensor supply
Encoder supply	
24 V encoder supply	
• 24 V	Yes; For current measurement
• Short-circuit protection	Yes
• Output current, max.	20 mA; max. 50 mA per channel for a duration < 10 s
Power loss	
Power loss, typ.	0.95 W; without sensor supply
Address area	
Address space per module	

- Address space per module, max.

4 byte; + 1 byte for QI information (32 bytes in the oversampling operating mode)

Hardware configuration

Automatic encoding	Yes
• Mechanical coding element	Yes
• Type of mechanical coding element	Type A

Selection of BaseUnit for connection variants

• 2-wire connection	BU type A0, A1
• 4-wire connection	BU type A0, A1

Analog inputs

Number of analog inputs	2; Differential inputs
• For current measurement	2
• For voltage measurement	2
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.	125 µs
Analog input with oversampling	Yes
• Values per cycle, max.	16
• Resolution, min.	50 µs

Input ranges (rated values), voltages

• 0 to +10 V — Input resistance (0 to 10 V)	Yes; 15 bit 75 kΩ
• 1 V to 5 V — Input resistance (1 V to 5 V)	Yes; 13 bit 75 kΩ
• -10 V to +10 V — Input resistance (-10 V to +10 V)	Yes; 16 bit incl. sign 75 kΩ
• -5 V to +5 V — Input resistance (-5 V to +5 V)	Yes; 15 bit incl. sign 75 kΩ

Input ranges (rated values), currents

• 0 to 20 mA — Input resistance (0 to 20 mA)	Yes; 15 bit 130 Ω
• -20 mA to +20 mA — Input resistance (-20 mA to +20 mA)	Yes; 16 bit incl. sign 130 Ω
• 4 mA to 20 mA — Input resistance (4 mA to 20 mA)	Yes; 14 bit 130 Ω

Cable length

• shielded, max.	1 000 m; 200 m for voltage measurement
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Analog value generation for the inputs

Measurement principle	Actual value encryption (successive approximation)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Interference voltage suppression for interference frequency f1 in Hz	No
• Conversion time (per channel)	10 µs

Smoothing of measured values

• Number of smoothing levels	7; none; 2-/4-/8-/16-/32-/64-fold
• parameterizable	Yes

Encoder

Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer — Burden of 2-wire transmitter, max.	Yes 650 Ω
• for current measurement as 4-wire transducer	Yes

Errors/accuracies

Linearity error (relative to input range), (+/-)	0.03 %
Temperature error (relative to input range), (+/-)	0.01 %/K
Crosstalk between the inputs, min.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.1 %
Operational error limit in overall temperature range	

• Voltage, relative to input range, (+/-)	0.3 %		
• Current, relative to input range, (+/-)	0.3 %		
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to input range, (+/-)	0.2 %		
• Current, relative to input range, (+/-)	0.2 %		
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency			
• Common mode voltage, max.	35 V		
• Common mode interference, min.	90 dB		
Isochronous mode			
Filtering and processing time (TCI), min.	80 μs		
Bus cycle time (TDP), min.	125 μs; Starting from firmware Version V2.0.1		
Interrupts/diagnostics/status information			
Alarms			
• Diagnostic alarm	Yes		
• Limit value alarm	Yes; two upper and two lower limit values in each case		
Diagnoses			
• Wire-break	Yes; channel-by-channel, at 4 to 20 mA only		
• Short-circuit	Yes; channel-by-channel, at 1 to 5 V or for current measuring ranges short-circuit in encoder supply		
• Group error	Yes		
• Overflow/underflow	Yes; channel by channel		
Diagnostics indication LED			
• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED		
• Channel status display	Yes; green LED		
• for channel diagnostics	Yes; red LED		
• for module diagnostics	Yes; green/red DIAG LED		
Potential separation			
Potential separation channels			
• between the channels	Yes		
• between the channels and backplane bus	Yes		
• between the channels and the power supply of the electronics	Yes		
Isolation			
Isolation tested with	707 V DC (type test)		
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-30 °C; < 0 °C as of FS07		
• horizontal installation, max.	60 °C		
• vertical installation, min.	-30 °C; < 0 °C as of FS07		
• vertical installation, max.	50 °C		
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual		
Dimensions			
Width	15 mm		
Height	73 mm		
Depth	58 mm		
Weights			
Weight, approx.	32 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	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](#)



[KC](#)

General Product Approval	For use in hazardous locations
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[Metrological Approval](#)



[EM](#)

[CCC-Ex](#)



For use in hazardous locations	Marine / Shipping
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[Miscellaneous](#)



Marine / Shipping	Environment
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[NK / Nippon Kaiji Kyokai](#)



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



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