

Siemens
EcoTech



SIMATIC ET 200SP HA, analog input module, AI 16XTC/8XRTD 2-/3-/4-wire HA, suitable for terminal block H1, M1, color code CC00, channel diagnostics, 16-bit, +/-0.05%, 2-/3-/4-wire

General information

Product type designation	AI 16 x TC/8 x RTD 2/3/4-wire HA
Firmware version	V1.1
• FW update possible	Yes
Usable terminal block	type H1, M1, N0, H0, M0 (for details see the system manual)
Color code for module-specific color-coded label	CC00

Product function

• I&M data	Yes; I&M0 to I&M3
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Engineering with

• STEP 7 TIA Portal configurable/integrated from version	V16
• STEP 7 configurable/integrated from version	V5.6
• PCS 7 configurable/integrated from version	V9.0
• PCS neo can be configured/integrated from version	V3.0
• PROFINET from GSD version/GSD revision	GSDML V2.3

Redundancy

• Redundancy capability	Yes; With TB type M1
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CiR - Configuration in RUN

Reparameterization possible in RUN	Yes
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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)	75 mA
Current consumption, max.	100 mA

Power loss

Power loss, typ.	1.8 W
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Address area

Address space per module	
• Address space per module, max.	64 byte; + 2 bytes for QI information

Analog inputs

Number of analog inputs	
• For voltage measurement	16
• For resistance/resistance thermometer measurement	8
• For thermocouple measurement	16

permissible input voltage for voltage input (destruction limit), max.	5 V
Constant measurement current for resistance-type transmitter, typ.	2 mA
Technical unit for temperature measurement adjustable	Yes; °C/°F/K
Input ranges (rated values), voltages	
• -1 V to +1 V — Input resistance (-1 V to +1 V)	Yes; 16 bit incl. sign 1 MΩ
• -250 mV to +250 mV — Input resistance (-250 mV to +250 mV)	Yes; 16 bit incl. sign 1 MΩ
• -50 mV to +50 mV — Input resistance (-50 mV to +50 mV)	Yes; 16 bit incl. sign 1 MΩ
• -80 mV to +80 mV — Input resistance (-80 mV to +80 mV)	Yes; 16 bit incl. sign 1 MΩ
Input ranges (rated values), thermocouples	
• type B — Input resistance (Type B)	Yes; 16 bit incl. sign 1 MΩ
• type C — Input resistance (Type C)	Yes; 16 bit incl. sign 1 MΩ
• Type E — Input resistance (Type E)	Yes; 16 bit incl. sign 1 MΩ
• Type J — Input resistance (type J)	Yes; 16 bit incl. sign 1 MΩ
• Type K — Input resistance (Type K)	Yes; 16 bit incl. sign 1 MΩ
• Type L — Input resistance (Type L)	Yes; 16 bit incl. sign 1 MΩ
• Type N — Input resistance (Type N)	Yes; 16 bit incl. sign 1 MΩ
• Type R — Input resistance (Type R)	Yes; 16 bit incl. sign 1 MΩ
• Type S — Input resistance (Type S)	Yes; 16 bit incl. sign 1 MΩ
• Type T — Input resistance (Type T)	Yes; 16 bit incl. sign 1 MΩ
• Type U — Input resistance (Type U)	Yes; 16 bit incl. sign 1 MΩ
• Type TXK/TXK(L) to GOST — Input resistance (Type TXK/TXK(L) to GOST)	Yes; 16 bit incl. sign 1 MΩ
Input ranges (rated values), resistance thermometer	
• Cu 10 — Input resistance (Cu 10)	Yes; 16 bit incl. sign 1 MΩ
• Ni 100 — Input resistance (Ni 100)	Yes; 16 bit incl. sign 1 MΩ
• Ni 1000 — Input resistance (Ni 1000)	Yes; 16 bit incl. sign 1 MΩ
• LG-Ni 1000	Yes; 16 bit incl. sign
• Ni 120 — Input resistance (Ni 120)	Yes; 16 bit incl. sign 1 MΩ
• Ni 200 — Input resistance (Ni 200)	Yes; 16 bit incl. sign 1 MΩ
• Ni 500 — Input resistance (Ni 500)	Yes; 16 bit incl. sign 1 MΩ
• Pt 100 — Input resistance (Pt 100)	Yes; 16 bit incl. sign 1 MΩ
• Pt 1000 — Input resistance (Pt 1000)	Yes; 16 bit incl. sign 1 MΩ
• Pt 200 — Input resistance (Pt 200)	Yes; 16 bit incl. sign 1 MΩ

• Pt 500	Yes; 16 bit incl. sign
— Input resistance (Pt 500)	1 MΩ
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes; 15 bit
— Input resistance (0 to 150 ohms)	1 MΩ
• 0 to 300 ohms	Yes; 15 bit
— Input resistance (0 to 300 ohms)	1 MΩ
• 0 to 600 ohms	Yes; 15 bit
— Input resistance (0 to 600 ohms)	1 MΩ
• 0 to 3000 ohms	Yes; 15 bit
— Input resistance (0 to 3000 ohms)	1 MΩ
• 0 to 6000 ohms	Yes; 15 bit
— Input resistance (0 to 6000 ohms)	1 MΩ
• PTC	Yes; 15 bit
— Input resistance (PTC)	1 MΩ
Thermocouple (TC)	
Temperature compensation	
— Parameterizable	Yes
— external temperature compensation via RTD	Yes
— Reference channel of the module	Yes
— internal comparison point	Yes; with terminal block H1 and M1
— Reference channel of the group	Yes
— Number of reference channel groups	4
— fixed reference temperature	Yes
Cable length	
• shielded, max.	200 m; Measurement ranges for thermocouples / voltages: shielded cable length max. 600 m, loop resistance max 8 kOhm; measuring ranges RTD: shielded cable length max. 600 m, cable resistance (single) max. 75 ohms
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time, parameterizable	Yes; Channel-by-channel, results from the selected interference frequency suppression
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz, channel-by-channel
• Conversion time (per channel)	60 ms; 180 / 50 ms, results from the selected interference frequency suppression
Smoothing of measured values	
• parameterizable	Yes; none, weak, medium, strong, channel-by-channel
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.01 %; ±0.1 % for resistance thermometers and resistance
Temperature error (relative to input range), (+/-)	0.0009 %/K; ±0.005 % / K at thermocouple
Crosstalk between the inputs, min.	50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.1 %
• Resistance, relative to input range, (+/-)	0.1 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %
• Resistance, relative to input range, (+/-)	0.05 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB
• Common mode voltage, max.	60 V
• Common mode interference, min.	90 dB
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
• Diagnostic alarm	Yes

• Limit value alarm	Yes; two upper and two lower limit values in each case
Diagnoses	
• Monitoring the supply voltage	Yes
• Wire break	Yes; channel by channel
• Overflow/Underflow	Yes; channel by channel
Diagnostics indication LED	
• MAINT LED	Yes; Yellow 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	No
• between the channels and backplane bus	Yes
• Between the channels and load voltage L+	Yes
Permissible potential difference	
between the inputs (UCM)	75 V DC/60 V AC
Isolation	
Isolation tested with	1 500 V DC/1 min, type test
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C
• horizontal installation, max.	70 °C
• vertical installation, min.	-40 °C
• vertical installation, max.	60 °C
Dimensions	
Width	22.5 mm
Height	115 mm
Depth	138 mm
Weights	
Weight, approx.	150 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

Approvals / Certificates

General Product Approval



[Miscellaneous](#)



[Declaration of Conformity](#)



General Product Approval



[Miscellaneous](#)

[China RoHS](#)



[Manufacturer Declaration](#)

For use in hazardous locations



IECEX

[Declaration of Conformity](#)



CCC



UL



ATEX



IECEX

For use in hazardous locations

Maritime application

[Miscellaneous](#)



ABS



BUREAU
VERITAS



DNV



LRS

[NK / Nippon Kaiji Kyokai](#)

Maritime application

Environment



RINA

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

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