



SIMATIC ET 200SP, Analog input module, AI 4xRTD/TC High Feature, suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.1%, 2-/3-/4-wire

General information

Product type designation	AI 4xRTD/TC 2-/3-/4-wire HF
Firmware version	V2.1
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	No
Adjustment of measuring range	Yes

Engineering with

STEP 7 TIA Portal configurable/integrated from version	V12 SP1 / V13
STEP 7 configurable/integrated from version	V5.5 SP3 / V5.5 SP4
PCS 7 configurable/integrated from version	V8.1 SP1
PROFIBUS from GSD version/GSD revision	GSD Revision 5
PROFINET from GSD version/GSD revision	GSDML V2.3

CIr - Configuration in RUN

Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes

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

Power loss

Power loss, typ.	0.75 W
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Address area

Address space per module	
Address space per module, max.	8 byte; + 1 byte for QI information

Hardware configuration

Automatic encoding	
Type of mechanical coding element	Type A

Analog inputs

Number of analog inputs	4
permissible input voltage for voltage input (destruction limit), max.	30 V
Constant measurement current for resistance-type transmitter, typ.	2 mA
Cycle time (all channels), min.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels); for line

Technical unit for temperature measurement adjustable		compensation in case of a three-wire connection, an additional cycle is necessary 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 — Input resistance (LG-Ni 1000)		Yes; 16 bit incl. sign 1 MΩ
• 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 — Input resistance (Pt 500)		Yes; 16 bit incl. sign 1 MΩ
Input ranges (rated values), resistors		
• 0 to 150 ohms — Input resistance (0 to 150 ohms)		Yes; 15 bit 1 MΩ
• 0 to 300 ohms		Yes; 15 bit

— Input resistance (0 to 300 ohms) • 0 to 600 ohms — Input resistance (0 to 600 ohms) • 0 to 3000 ohms — Input resistance (0 to 3000 ohms) • 0 to 6000 ohms — Input resistance (0 to 6000 ohms) • PTC — Input resistance (PTC)	1 MΩ Yes; 15 bit 1 MΩ Yes; 15 bit 1 MΩ Yes; 15 bit 1 MΩ Yes; 15 bit 1 MΩ
Thermocouple (TC)	
Temperature compensation	
— parameterizable — Reference channel of the module — internal comparison point — Number of reference channel groups	Yes Yes Yes; with BaseUnit type A1 4; Group 0 to 3
Cable length	
• shielded, max.	200 m; 50 m with thermocouples
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. • Integration time, parameterizable • Basic conversion time, including integration time (ms) — additional processing time for wire-break check — additional power line wire-break check • Interference voltage suppression for interference frequency f1 in Hz • Conversion time (per channel)	16 bit Yes 2 ms; In the ranges resistance thermometers, resistors and thermocouples 2 ms; for 3/4 wire transducer (resistance thermometer and resistor) 16.6 / 50 / 60 Hz 180 / 60 / 50 / (67.5 / 22.5 / 18.75) ms
Smoothing of measured values	
• Number of smoothing levels • parameterizable	4; None; 4/8/16 times Yes
Encoder	
Connection of signal encoders	
• for voltage measurement • for resistance measurement with two-wire connection • for resistance measurement with three-wire connection • for resistance measurement with four-wire connection	Yes Yes Yes Yes
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, (+/-) • Resistance, relative to input range, (+/-)	0.1 % 0.1 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-) • Resistance, relative to input range, (+/-)	0.05 % 0.05 %
Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency	
• Series mode interference (peak value of interference < rated value of input range), min. • Common mode voltage, max. • Common mode interference, min.	70 dB; With conversion time 67.5 / 22.5 / 18.75 ms: 40 dB 10 V 90 dB
Interrupts/diagnostics/status information	
Alarms	
• Limit value alarm	Yes; two upper and two lower limit values in each case
Diagnoses	
• Monitoring the supply voltage	Yes

• Wire-break • Group error • Overflow/underflow	Yes; channel by channel Yes Yes; channel by channel
Diagnostics indication LED	
• Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • for module diagnostics	Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min. • horizontal installation, max. • vertical installation, min. • vertical installation, max.	-30 °C; < 0 °C as of FS08 60 °C -30 °C; < 0 °C as of FS08 50 °C
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm

last modified: 12/28/2021 