

SIMATIC ET 200SP, ANALOG INPUT MODULE, AI 8xRTD/TC 2-WIRE HIGH FEATURE FITS TO BU-TYPE A0, A1, COLOR CODE CC00, CHANNEL DIAGNOSIS, 16BIT, +/-0,1%



General information	
Product type designation	ET 200SP, AI 8xRTD/TC 2-wire HF, VPE 1
Firmware version	V2.0
• 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
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V13
• STEP 7 configurable/integrated as of version	V5.5 / -
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3
Operating mode	
• Oversampling	No
• MSI	No

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

Input current

Current consumption, max.	35 mA
---------------------------	-------

Power loss

Power loss, typ.	0.75 W
------------------	--------

Address area

Address space per module	
• Address space per module, max.	16 byte; + 1 byte for QI information

Analog inputs

Number of analog inputs	8
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)
Technical unit for temperature measurement adjustable	Yes

Input ranges (rated values), voltages

• -1 V to +1 V	Yes; 16 bit incl. sign
• Input resistance (-1 V to +1 V)	1 M Ω
• -250 mV to +250 mV	Yes; 16 bit incl. sign
• Input resistance (-250 mV to +250 mV)	1 M Ω
• -50 mV to +50 mV	Yes; 16 bit incl. sign
• Input resistance (-50 mV to +50 mV)	1 M Ω
• -80 mV to +80 mV	Yes; 16 bit incl. sign
• Input resistance (-80 mV to +80 mV)	1 M Ω

Input ranges (rated values), thermocouples

• Type B	Yes; 16 bit incl. sign
• Input resistance (Type B)	1 M Ω
• Type C	Yes; 16 bit incl. sign
• Input resistance (Type C)	1 M Ω
• Type E	Yes; 16 bit incl. sign
• Input resistance (Type E)	1 M Ω

• Type J	Yes; 16 bit incl. sign
• Input resistance (type J)	1 MΩ
• Type K	Yes; 16 bit incl. sign
• Input resistance (Type K)	1 MΩ
• Type L	Yes; 16 bit incl. sign
• Input resistance (Type L)	1 MΩ
• Type N	Yes; 16 bit incl. sign
• Input resistance (Type N)	1 MΩ
• Type R	Yes; 16 bit incl. sign
• Input resistance (Type R)	1 MΩ
• Type S	Yes; 16 bit incl. sign
• Input resistance (Type S)	1 MΩ
• Type T	Yes; 16 bit incl. sign
• Input resistance (Type T)	1 MΩ
• Type U	Yes; 16 bit incl. sign
• Input resistance (Type U)	1 MΩ
• Type TXK/TXK(L) to GOST	Yes; 16 bit incl. sign
• Input resistance (Type TXK/TXK(L) to GOST)	1 MΩ
Input ranges (rated values), resistance thermometer	
• Ni 100	Yes; 16 bit incl. sign
• Input resistance (Ni 100)	1 MΩ
• Ni 1000	Yes; 16 bit incl. sign
• Input resistance (Ni 1000)	1 MΩ
• LG-Ni 1000	Yes; 16 bit incl. sign
• Input resistance (LG-Ni 1000)	1 MΩ
• Ni 120	Yes; 16 bit incl. sign
• Input resistance (Ni 120)	1 MΩ
• Ni 200	Yes; 16 bit incl. sign
• Input resistance (Ni 200)	1 MΩ
• Ni 500	Yes; 16 bit incl. sign
• Input resistance (Ni 500)	1 MΩ
• Pt 100	Yes; 16 bit incl. sign
• Input resistance (Pt 100)	1 MΩ
• Pt 1000	Yes; 16 bit incl. sign
• Input resistance (Pt 1000)	1 MΩ
• Pt 200	Yes; 16 bit incl. sign
• Input resistance (Pt 200)	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)	
• Technical unit for temperature measurement	°C/°F/K
Temperature compensation	
— parameterizable	Yes
— Reference channel of the module	Yes
— internal comparison point	Yes; with BaseUnit type A1
— Reference channel of the group	Yes
— Number of reference channel groups	4; Group 0 to 3
— fixed reference temperature	Yes
Resistance thermometer (RTD)	
• permissible input voltage for voltage input (destruction limit), max.	30 V
• Technical unit for temperature measurement	°C/°F/K
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.	16 bit
• Integration time, parameterizable	Yes
• Basic conversion time, including integration time (ms)	
— additional processing time for wire-break check	2 ms; In the ranges resistance thermometers, resistors and thermocouples
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz
• Conversion time (per channel)	180 / 60 / 50 ms
Smoothing of measured values	
• Number of levels	4; None; 4/8/16 times
• parameterizable	Yes

Encoder

Connection of signal encoders

• for voltage measurement	Yes
• for resistance measurement with two-wire connection	Yes
• for resistance measurement with three-wire connection	No
• for resistance measurement with four-wire connection	No

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 area), (+/-)	0.05 %

Operational error limit in overall temperature range

• Voltage, relative to input area, (+/-)	0.1 %
• Resistance, relative to input area, (+/-)	0.1 %

Basic error limit (operational limit at 25 °C)

• Voltage, relative to input area, (+/-)	0.05 %
• Resistance, relative to input area, (+/-)	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.	10 V
• Common mode interference, min.	90 dB

Isochronous mode

Isochronous operation (application synchronized up to terminal)	No
---	----

Interrupts/diagnostics/status information

Alarms

• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case

Diagnostic messages

• Diagnostics	Yes
• Monitoring the supply voltage	Yes
• Wire-break	Yes; channel by channel
• 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
- for module diagnostics

Yes; Red LED
Yes; green/red DIAG LED

Potential separation

Potential separation channels

- between the channels
- between the channels and backplane bus
- between the channels and the power supply of the electronics

No
Yes
Yes

Permissible potential difference

between different circuits	75 V DC/60 V AC (base isolation)
between the inputs (UCM)	10 V DC

Isolation

Isolation tested with	707 V DC (type test)
-----------------------	----------------------

Dimensions

Width	15 mm
-------	-------

Weights

Weight, approx.	32 g
-----------------	------

last modified: 18.12.2015