



Figure similar

SIMATIC ET 200SP, Analog input module, AI 4xRTD/TC High Feature, Pack quantity: 10 units, 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
HW functional status	From FS08
Firmware version	
• 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	V14
• STEP 7 configurable/integrated from version	V5.6
• PCS 7 configurable/integrated from version	V8.1 SP1
• 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	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.	8 byte; + 1 byte for QI information
Hardware configuration	
Automatic encoding	Yes
• Mechanical coding element	Yes
• Type of mechanical coding element	Type A

Selection of BaseUnit for connection variants	
<ul style="list-style-type: none"> <li>• 2-wire connection</li> </ul>	BU type A0, A1
<ul style="list-style-type: none"> <li>• 3-wire connection</li> </ul>	BU type A0, A1
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.	0.7 mA; 1.7 mA for Cu10 sensors
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 compensation in case of a three-wire connection, an additional cycle is necessary
Technical unit for temperature measurement adjustable	Yes; °C/°F/K
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> <li>• -1 V to +1 V <ul style="list-style-type: none"> <li>— Input resistance (-1 V to +1 V)</li> </ul> </li> <li>• -250 mV to +250 mV <ul style="list-style-type: none"> <li>— Input resistance (-250 mV to +250 mV)</li> </ul> </li> <li>• -50 mV to +50 mV <ul style="list-style-type: none"> <li>— Input resistance (-50 mV to +50 mV)</li> </ul> </li> <li>• -80 mV to +80 mV <ul style="list-style-type: none"> <li>— Input resistance (-80 mV to +80 mV)</li> </ul> </li> </ul>	Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> <li>• Type B <ul style="list-style-type: none"> <li>— Input resistance (Type B)</li> </ul> </li> <li>• Type C <ul style="list-style-type: none"> <li>— Input resistance (Type C)</li> </ul> </li> <li>• Type E <ul style="list-style-type: none"> <li>— Input resistance (Type E)</li> </ul> </li> <li>• Type J <ul style="list-style-type: none"> <li>— Input resistance (type J)</li> </ul> </li> <li>• Type K <ul style="list-style-type: none"> <li>— Input resistance (Type K)</li> </ul> </li> <li>• Type L <ul style="list-style-type: none"> <li>— Input resistance (Type L)</li> </ul> </li> <li>• Type N <ul style="list-style-type: none"> <li>— Input resistance (Type N)</li> </ul> </li> <li>• Type R <ul style="list-style-type: none"> <li>— Input resistance (Type R)</li> </ul> </li> <li>• Type S <ul style="list-style-type: none"> <li>— Input resistance (Type S)</li> </ul> </li> <li>• Type T <ul style="list-style-type: none"> <li>— Input resistance (Type T)</li> </ul> </li> <li>• Type U <ul style="list-style-type: none"> <li>— Input resistance (Type U)</li> </ul> </li> <li>• Type TXK/TXK(L) to GOST <ul style="list-style-type: none"> <li>— Input resistance (Type TXK/TXK(L) to GOST)</li> </ul> </li> </ul>	Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> <li>• Cu 10 <ul style="list-style-type: none"> <li>— Input resistance (Cu 10)</li> </ul> </li> <li>• Ni 100 <ul style="list-style-type: none"> <li>— Input resistance (Ni 100)</li> </ul> </li> <li>• Ni 1000 <ul style="list-style-type: none"> <li>— Input resistance (Ni 1000)</li> </ul> </li> <li>• LG-Ni 1000 <ul style="list-style-type: none"> <li>— Input resistance (LG-Ni 1000)</li> </ul> </li> <li>• Ni 120 <ul style="list-style-type: none"> <li>— Input resistance (Ni 120)</li> </ul> </li> <li>• Ni 200 <ul style="list-style-type: none"> <li>— Input resistance (Ni 200)</li> </ul> </li> <li>• Ni 500 <ul style="list-style-type: none"> <li>— Input resistance (Ni 500)</li> </ul> </li> </ul>	Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ Yes; 16 bit incl. sign 1 MΩ

<ul style="list-style-type: none"> <li>• Pt 100 <ul style="list-style-type: none"> <li>— Input resistance (Pt 100)</li> </ul> </li> <li>• Pt 1000 <ul style="list-style-type: none"> <li>— Input resistance (Pt 1000)</li> </ul> </li> <li>• Pt 200 <ul style="list-style-type: none"> <li>— Input resistance (Pt 200)</li> </ul> </li> <li>• Pt 500 <ul style="list-style-type: none"> <li>— Input resistance (Pt 500)</li> </ul> </li> </ul>	<p>Yes; 16 bit incl. sign 1 MΩ</p> <p>Yes; 16 bit incl. sign 1 MΩ</p> <p>Yes; 16 bit incl. sign 1 MΩ</p> <p>Yes; 16 bit incl. sign 1 MΩ</p>
<b>Input ranges (rated values), resistors</b>	
<ul style="list-style-type: none"> <li>• 0 to 150 ohms <ul style="list-style-type: none"> <li>— Input resistance (0 to 150 ohms)</li> </ul> </li> <li>• 0 to 300 ohms <ul style="list-style-type: none"> <li>— Input resistance (0 to 300 ohms)</li> </ul> </li> <li>• 0 to 600 ohms <ul style="list-style-type: none"> <li>— Input resistance (0 to 600 ohms)</li> </ul> </li> <li>• 0 to 3000 ohms <ul style="list-style-type: none"> <li>— Input resistance (0 to 3000 ohms)</li> </ul> </li> <li>• 0 to 6000 ohms <ul style="list-style-type: none"> <li>— Input resistance (0 to 6000 ohms)</li> </ul> </li> <li>• PTC <ul style="list-style-type: none"> <li>— Input resistance (PTC)</li> </ul> </li> </ul>	<p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p> <p>Yes; 15 bit 1 MΩ</p>
<b>Thermocouple (TC)</b>	
<b>Temperature compensation</b>	
<ul style="list-style-type: none"> <li>— parameterizable</li> <li>— Reference channel of the module</li> <li>— internal comparison point</li> <li>— Reference channel of the group</li> <li>— Number of reference channel groups</li> <li>— fixed reference temperature</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes; with BaseUnit type A1</p> <p>Yes</p> <p>4; Group 0 to 3</p> <p>Yes</p>
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	200 m; 50 m with thermocouples
<b>Analog value generation for the inputs</b>	
Measurement principle	integrating (Sigma-Delta)
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> <li>• Integration time, parameterizable</li> <li>• Basic conversion time, including integration time (ms) <ul style="list-style-type: none"> <li>— additional processing time for wire-break check</li> <li>— additional power line wire-break check</li> </ul> </li> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> <li>• Conversion time (per channel)</li> </ul>	<p>16 bit</p> <p>Yes</p> <p>2 ms; In the ranges resistance thermometers, resistors and thermocouples 2 ms; for 3/4 wire transducer (resistance thermometer and resistor)</p> <p>16.6 / 50 / 60 Hz</p> <p>180 / 60 / 50 ms</p>
<b>Smoothing of measured values</b>	
<ul style="list-style-type: none"> <li>• Number of smoothing levels</li> <li>• parameterizable</li> </ul>	<p>4; None; 4/8/16 times</p> <p>Yes</p>
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
<ul style="list-style-type: none"> <li>• for voltage measurement</li> <li>• for resistance measurement with two-wire connection</li> <li>• for resistance measurement with three-wire connection</li> <li>• for resistance measurement with four-wire connection</li> </ul>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<b>Errors/accuracies</b>	
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 %
<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> <li>• Resistance, relative to input range, (+/-)</li> </ul>	<p>0.1 %</p> <p>0.1 %</p>
Basic error limit (operational limit at 25 °C)	

• Voltage, relative to input range, (+/-)	0.05 %
• Resistance, relative to input range, (+/-)	0.05 %
<b>Interference voltage suppression for <math>f = n \times (f1 \pm 1 \%)</math>, <math>f1 =</math> interference frequency</b>	
• 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
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
<b>Alarms</b>	
• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case
<b>Diagnoses</b>	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; channel by channel
• Group error	Yes
• Overflow/underflow	Yes; channel by channel
<b>Diagnostics indication LED</b>	
• 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
<b>Potential separation</b>	
<b>Potential separation channels</b>	
• between the channels	No
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
<b>Permissible potential difference</b>	
between the inputs (UCM)	10 V DC
<b>Isolation</b>	
Isolation tested with	707 V DC (type test)
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• horizontal installation, min.	-30 °C; < 0 °C as of FS08
• horizontal installation, max.	60 °C
• vertical installation, min.	-30 °C; < 0 °C as of FS08
• vertical installation, max.	50 °C
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
<b>Dimensions</b>	
Width	15 mm
Height	73 mm
Depth	58 mm

**last modified:** 5/22/2024 