

SIPLUS ET 200SP AI 8XRTD/TC HF T1 RAIL -25°C...60°C T1 with 70°C for 10 min with conformal coating BasedOn:6ES7134-6JF00-0CA1 . Analog input module, AI 8xRTD/TC 2-wire High Feature suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.1%



General information	
Product type designation	ET 200SP, AI 8x RTD/TC 2-wire HF, PU 1
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
Operating mode	
<ul style="list-style-type: none"> Oversampling 	No
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 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; °C/°F/K
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> -1 V to +1 V Input resistance (-1 V to +1 V) -250 mV to +250 mV Input resistance (-250 mV to +250 mV) -50 mV to +50 mV Input resistance (-50 mV to +50 mV) -80 mV to +80 mV Input resistance (-80 mV to +80 mV) 	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"> Type B Input resistance (Type B) Type C Input resistance (Type C) Type E Input resistance (Type E) Type J Input resistance (type J) Type K Input resistance (Type K) Type L Input resistance (Type L) 	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

- 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 M Ω
• 0 to 6000 ohms	Yes; 15 bit
• Input resistance (0 to 6000 ohms)	1 M Ω
• PTC	Yes; 15 bit
• Input resistance (PTC)	1 M Ω
Thermocouple (TC)	
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
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 smoothing 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 range), (+/-)	0.05 %
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.2 %
• Resistance, relative to input range, (+/-)	0.2 %
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.	10 V
• Common mode interference, min.	90 dB
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
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
Diagnostic messages	
• 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	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 the power supply of the electronics	Yes
Permissible potential difference	
between the inputs (UCM)	10 V DC

Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
<ul style="list-style-type: none"> • EN 50121-3-2 • EN 50121-4 • EN 50124-1 • EN 50125-1 • EN 50125-2 • EN 50125-3 • EN 50155 • EN 61373 • Fire protection acc. to EN 45545-2 	<p>Yes; EMC for rail vehicles</p> <p>Yes; EMC for signal and telecommunications systems</p> <p>Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC</p> <p>Yes; Rail vehicles - see ambient conditions</p> <p>Yes; Stationary electrical equipment - see ambient conditions</p> <p>Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)</p> <p>Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2</p> <p>Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B</p> <p>Yes; Rail vehicles - verification on request</p>
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> • horizontal installation, min. • horizontal installation, max. 	<p>-40 °C; = Tmin; Startup @ -25 °C</p> <p>60 °C; = Tmax; +70 °C for 10 min (T1 acc. to EN 50155)</p>
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude 	<p>2 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)</p>
Relative humidity	
<ul style="list-style-type: none"> • With condensation, tested in accordance with IEC 60068-2-38, max. 	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
— Resistant to commercially available coolants and lubricants	Yes
Use in stationary industrial systems	
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles	
— to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request

— to chemically active substances according to EN 60721-3-5

Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *

— to mechanically active substances according to EN 60721-3-5

Yes; Class 5S3 incl. sand, dust; *

from supply voltage 1L+

— Note regarding classification of environmental conditions acc. to EN 60721

* The supplied plug covers must remain in place over the unused interfaces during operation!

Dimensions

Width	15 mm
Height	73 mm
Depth	58 mm

Weights

Weight, approx.	32 g
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Other

Note:

For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

last modified:

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