

SIPLUS ET 200SP AI 8xRTD/TC 2-wire -40...+60 °C Start-up 25 °C with conformal coating based on 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	230 RCE
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
Engineering with	
<ul style="list-style-type: none"> PROFIBUS as of GSD version/GSD revision 	GSD Revision 5
<ul style="list-style-type: none"> PROFINET as of GSD version/GSD revision 	GSDML V2.3
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	
permissible range, lower limit (DC)	100 V
permissible range, upper limit (DC)	253 V
Reverse polarity protection	Yes

Input current	
Current consumption, max.	40 mA

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	0
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 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (-1 V to +1 V) 	1 MΩ
<ul style="list-style-type: none"> -250 mV to +250 mV 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (-250 mV to +250 mV) 	1 MΩ
<ul style="list-style-type: none"> -50 mV to +50 mV 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (-50 mV to +50 mV) 	1 MΩ
<ul style="list-style-type: none"> -80 mV to +80 mV 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (-80 mV to +80 mV) 	1 MΩ

Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> Type B 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (Type B) 	1 MΩ
<ul style="list-style-type: none"> Type C 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (Type C) 	1 MΩ
<ul style="list-style-type: none"> Type E 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (Type E) 	1 MΩ
<ul style="list-style-type: none"> Type J 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (type J) 	1 MΩ
<ul style="list-style-type: none"> Type K 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> Input resistance (Type K) 	1 MΩ
<ul style="list-style-type: none"> Type L 	Yes; 16 bit incl. sign
<ul style="list-style-type: none"> 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 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 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)
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> horizontal installation, min. 	-40 °C; = Tmin; Startup @ -25 °C
<ul style="list-style-type: none"> horizontal installation, max. 	60 °C
<ul style="list-style-type: none"> vertical installation, min. 	-40 °C; = Tmin; Startup @ -25 °C
<ul style="list-style-type: none"> vertical installation, max. 	50 °C
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> Installation altitude above sea level, max. 	3 000 m
<ul style="list-style-type: none"> Ambient air temperature-barometric pressure-altitude 	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... Tmax -5K at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)
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 in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
<ul style="list-style-type: none"> Resistant to commercially available coolants and lubricants 	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems	
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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); *
<ul style="list-style-type: none"> to mechanically active substances according to EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
<ul style="list-style-type: none"> to biologically active substances according to EN 60721-3-6 	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
<ul style="list-style-type: none"> to chemically active substances according to EN 60721-3-6 	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
<ul style="list-style-type: none"> to mechanically active substances according to EN 60721-3-6 	Yes; Class 6S3 incl. sand, dust; *
from supply voltage 1L+	
<ul style="list-style-type: none"> 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	71.5 mm
Height	90 mm
Depth	60 mm
Weights	

Weight, approx.

32 g

last modified:

05/17/2018