Data sheet 6AG2531-7KF00-4AB0



SIPLUS S7-1500 AI 8xU/I/RTD/TC TX rail based on 6ES7531-7KF00-0AB0 with conformal coating, -40...+70 °C, OT4 with ST1/2 (+85 °C for 10 minutes), analog input module 16-bit resolution, accuracy 0.3%, 8 channels in groups of 8, 4 channels for RTD measurement, common mode voltage 10 V; diagnostics; hardware interrupts including infeed element, shielding bracket and shield terminal

General information	
Product type designation	AI 8xU/I/RTD/TC ST
Firmware version	
FW update possible	Yes
based on	6ES7531-7KF00-0AB0
Product function	
■ I&M data	Yes; I&M0 to I&M3
 Isochronous mode 	No
 Prioritized startup 	No
 Measuring range scalable 	No
 Scalable measured values 	No
Adjustment of measuring range	No
Engineering with	
STEP 7 TIA Portal configurable/integrated from version	see entry ID: 109746275
Operating mode	
 Oversampling 	No
• MSI	Yes
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.	240 mA; with 24 V DC supply
Encoder supply	
24 V encoder supply	
Short-circuit protection	Yes
 Output current, max. 	20 mA; Max. 47 mA per channel for a duration < 10 s
Power	
Power available from the backplane bus	0.7 W
Power loss	
Power loss, typ.	2.7 W
Analog inputs	
Number of analog inputs	8; > +60 °C max. 2x ±20 mA or 4x ±10 V or 4x RTD permissible
For current measurement	o, - 100 o max. Ex 120 m/ or 4x 110 v or 4x 1110 permissible
• I of current measurement	8
For current measurement For voltage measurement	· ·

For thermocouple measurement	8
permissible input voltage for voltage input (destruction limit),	28.8 V
max.	
permissible input current for current input (destruction limit), max.	40 mA
Technical unit for temperature measurement adjustable	Yes; °C/°F/K
Input ranges (rated values), voltages	
• 0 to +5 V	No
• 0 to +10 V	No
• 1 V to 5 V	Yes
— Input resistance (1 V to 5 V)	100 kΩ
• -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	10 ΜΩ
• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	100 kΩ
• -2.5 V to +2.5 V	Yes
— Input resistance (-2.5 V to +2.5 V)	10 ΜΩ
• -25 mV to +25 mV	No .
• -250 mV to +250 mV	Yes
— Input resistance (-250 mV to +250 mV)	10 ΜΩ
• -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	100 kΩ
 -50 mV to +50 mV — Input resistance (-50 mV to +50 mV) 	Yes 10 MΩ
- Input resistance (-50 mV to +50 mV) • -500 mV to +500 mV	Yes
— Input resistance (-500 mV to +500 mV)	10 ΜΩ
-80 mV to +80 mV	Yes
— Input resistance (-80 mV to +80 mV)	10 ΜΩ
Input ranges (rated values), currents	10 1012
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	25 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC
• -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	25 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
Input ranges (rated values), thermocouples	
• Type B	Yes
— Input resistance (Type B)	10 ΜΩ
• Type C	No
• Type E	Yes
— Input resistance (Type E)	10 ΜΩ
• Type J	Yes
— Input resistance (type J)	10 ΜΩ
• Type K	Yes
— Input resistance (Type K)	10 ΜΩ
• Type L	No
• Type N	Yes
— Input resistance (Type N)	10 ΜΩ
• Type R	Yes
— Input resistance (Type R)	10 ΜΩ
• Type S	Yes
— Input resistance (Type S)	10 ΜΩ
• Type T	Yes
— Input resistance (Type T)	10 ΜΩ
Type TXK/TXK(L) to GOST Input spages (stand values), resistance thermometer.	No
Input ranges (rated values), resistance thermometer	No
• Cu 10	No No
Cu 10 according to GOST	No No
• Cu 50	No No
Cu 50 according to GOST Cu 100	No No
• Cu 100	No

N I 10 according to GOST	 Cu 100 according to GOST 	No
Ni 100	• Ni 10	No
- Input resistance (NI 100) • NI 1000 according to GOST • NI 1000 - Input resistance (NI 1000) • NI 1000 according to GOST • NO • NI 1000 - Input resistance (Lo-NI 1000) • NI 120 • NI 120 • NI 120 • NI 120 • NI 120 according to GOST • No • NI 120 • NI 120 according to GOST • No • NI 200 according to GOST • No • NI 200 according to GOST • No • NI 200 according to GOST • No • NI 800 according to GOST • No • NI 800 according to GOST • No • NI 800 according to GOST • No • PI 10 • PI 100 • PI 10	 Ni 10 according to GOST 	No
N N N 100 according to GOST	• Ni 100	Yes; Standard/climate
• N 1 7000 Yes, Standardclimate − Impt resistance (NI 4000) 10 MΩ • N 1 1000 according to GOST No • In 1 120 No • N 1 120 No • N 1 120 according to GOST No • N 1 200 according to GOST No • N 1 800 according to GOST No • N 1 800 according to GOST No • P 1 10 No • P 1 10 No • P 1 10 according to GOST No • P 1 10 according to GOST No • P 1 100 No • P 1 100 Yes, Standardclimate • P 1 100 according to GOST No • P 1 100 according to GOST No • P 1 100 according to GOST No • P 1 200 Yes, Standardclimate • P 1 200 according to GOST No • P 1 200	— Input resistance (Ni 100)	10 ΜΩ
- Input resistance (N-1000) 10 MΩ • IN 1000 according to GOST	 Ni 100 according to GOST 	No
No	• Ni 1000	Yes; Standard/climate
C.C.N. 1000	— Input resistance (Ni 1000)	10 ΜΩ
No 120	Ni 1000 according to GOST	No
Nil 120 according to GOST	• LG-Ni 1000	Yes; Standard/climate
Ni 120 according to GOST	— Input resistance (LG-Ni 1000)	10 ΜΩ
Ni 1200 according to GOST	• Ni 120	No
Ni 1200 according to GOST	Ni 120 according to GOST	No
N N 500 N is 500 according to GOST No P 1 to 0 No • P 1 to according to GOST No • P 1 50 No • P 1 50 No • P 1 50 No • P 1 100 Yes; Standardiclimate • P 1 100 according to GOST No • P 1 100 according to GOST No • P 1 1000 according to GOST No • P 1 1000 according to GOST No • P 1 1000 according to GOST No • P 1 100 according to GOST No • P 1 200 according to GOST No • P 1 500 Yes; Standardiclimate • Input resistance (P 1 500) Yes • Input resistance (I 1 50 ohms) Yes • Input resistance (I 1 50 ohms) Yes <td>-</td> <td>No</td>	-	No
• Pt 10 No • Pt 50 No • Pt 50 No • Pt 50 according to GOST No • Pt 100 Yes; Standard/climate • Pt 100 according to GOST No • Pt 100 according to GOST No • Pt 1000 according to GOST No • Pt 100 according to GOST No • Pt 200 according to GOST No • Pt 500 according to GOST No Input resistance (Pt 500) 10 MΩ • 10 to 50 obms Yes • 10 to 50 obms Yes • 10 to 50 obms Yes • 10 to 500 obms Yes <	-	No
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Pt 10 according to GOST Pt 50 Pt 50 according to GOST Pt 100 — Input resistance (Pt 100) — Input resistance (Pt 100) — Input resistance (Pt 1000) — Input resistance (Pt 200) — Input resistance (Pt 500) — Input 700 of 500	-	
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Pt 100		
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• Pt 1000 Yes; Standard/climate • Pt 1000 Yes; Standard/climate • Input resistance (Pt 1000) 10 MΩ • Pt 200 Yes; Standard/climate • Pt 200 Yes; Standard/climate • Input resistance (Pt 200) 10 MΩ • Pt 200 according to GOST No • Pt 500 Yes; Standard/climate • Input resistance (Pt 500) 10 MΩ • Pt 500 according to GOST No Input ranges (rated values), resistors • 0 to 150 ohms • 0 to 150 ohms Yes • Input resistance (0 to 150 ohms) 10 MΩ • 0 to 300 ohms Yes • Input resistance (0 to 600 ohms) Yes • Input resistance (0 to 600 ohms) No • 0 to 3000 ohms Yes • Input resistance (0 to 6000 ohms) No • 0 to 5000 ohms Yes • Input resistance (0 to 6000 ohms) Yes • Input resistance (0 to 6000 ohms) Yes • Integrature compensation Yes • Integrature compensation Yes • Integrature compensation for 0 'C reference		
• Pt 1000 Yes; Standard/climate — Input resistance (Pt 1000) 10 MΩ • Pt 200 Yes; Standard/climate — Input resistance (Pt 200) 10 MΩ • Pt 200 Yes; Standard/climate — Input resistance (Pt 200) 10 MΩ • Pt 500 Yes; Standard/climate — Input resistance (Pt 500) 10 MΩ • Pt 500 according to GOST No Input resistance (OST No Input resistance (OST No • Input resistance (0 to 150 ohms) 10 MΩ • 0 to 300 ohms Yes — Input resistance (0 to 300 ohms) 10 MΩ • 0 to 300 ohms Yes — Input resistance (0 to 600 ohms) 10 MΩ • 0 to 3000 ohms Yes — Input resistance (PTC) 10 MΩ — Parameterizable (PTC) Yes — Input resistance (PTC) 10 MΩ Thermocouple (TC) Yes Temperature compensation Yes — external temperature compensation via RTD Yes Yes, fixed value can be set — external temperature compensation via RTD Yes		
- Input resistance (Pt 1000) • Pt 1000 according to GOST • Pt 200 • Pt 200 - Input resistance (Pt 200) • Pt 200 according to GOST • Pt 200 Yes; Standard/climate - Input resistance (Pt 200) • Pt 500 - Input resistance (Pt 500) • Pt 500 according to GOST • Pt 500 according to GOST No Input ranges (rated values), resistors • 0 to 150 ohms - Input resistance (0 to 150 ohms) • 10 MΩ • 0 to 300 ohms - Input resistance (0 to 300 ohms) • 10 MΩ • 0 to 600 ohms - Input resistance (0 to 600 ohms) • 0 to 600 ohms - Input resistance (0 to 600 ohms) • 0 to 6000 ohms • 0 to 6000 ohms - Input resistance (0 to 600 ohms) • 0 to 6000 ohms - Input resistance (0 to 600 ohms) • O to 6000 ohms - Input resistance (PTC) - Input resistance (PTC) Temperature compensation - parameterizable - external temperature compensation - parameterizable - external temperature compensation ves - Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the Inputs Integration time, parameterizable • Resolution with overange (bit Including integration time (ms) • Basic conversion time, including integration time (ms) • Basic conversion time, including integration time (ms) - additional conversion time for wire-break monitoring • m (to be considered in R/RTD/TC measurement)	-	
• Pt 1000 according to GOST No • Pt 200 Yes; Standard/climate — Input resistance (Pt 200) 10 MΩ • Pt 200 according to GOST No • Pt 500 Yes; Standard/climate — Input resistance (Pt 500) 10 MΩ • Pt 500 according to GOST No Input resistance (rested values), resistors Input resistance (0 to 150 ohms) 10 MΩ • 0 to 300 ohms Yes — Input resistance (0 to 300 ohms) 10 MΩ • 0 to 600 ohms Yes — Input resistance (0 to 600 ohms) 10 MΩ • 0 to 3000 ohms Yes — Input resistance (0 to 6000 ohms) 10 MΩ • 0 to 6000 ohms Yes — Input resistance (PTC) 10 MΩ • PTC Yes — Input resistance (PTC) 10 MΩ • PTC Yes — Input resistance (PTC) 10 MΩ • Promposation for 0° To reference point temperature compensation Yes — external temperature compensation Yes — external temperature compensation via RTD Yes — ex		
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• Pt 500 according to GOST No Input ranges (rated values), resistors Yes • 0 to 150 ohms Yes — Input resistance (0 to 150 ohms) 10 MΩ • 0 to 300 ohms Yes — Input resistance (0 to 600 ohms) 10 MΩ • 0 to 3000 ohms Yes — Input resistance (0 to 600 ohms) No • 0 to 8000 ohms Yes — Input resistance (0 to 6000 ohms) 10 MΩ • PTC Yes — Input resistance (PTC) 10 MΩ Thermocouple (TC) Temperature compensation — parameterizable Yes — internal temperature compensation via RTD Yes — external temperature compensation via RTD Yes — Compensation for 0 °C reference point temperature Yes; fixed value can be set — Reference channel of the module Yes Cable length 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration time, parameterizable Yes • Integration time, parameterizable Yes • Integration time, parameterizable Yes <td></td> <td></td>		
Input ranges (rated values), resistors • 0 to 150 ohms — Input resistance (0 to 150 ohms) • 0 to 300 ohms 9		
 ● 0 to 150 ohms — Input resistance (0 to 150 ohms) 10 MΩ • 0 to 300 ohms — Input resistance (0 to 300 ohms) • 0 to 600 ohms — Input resistance (0 to 600 ohms) • 0 to 600 ohms — Input resistance (0 to 600 ohms) • 0 to 5000 ohms • 0 to 6000 ohms — Input resistance (0 to 6000 ohms) • 0 to 6000 ohms — Input resistance (0 to 6000 ohms) • PTC — Input resistance (PTC) Temperature compensation — parameterizable — internal temperature compensation — parameterizable — external temperature compensation via RTD — external temperature compensation via RTD — Compensation for °C reference point temperature — Reference channel of the module Yes — external temperature compensation via RTD — Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time, including integration time (ms) • Basic conversion time, including integration time (ms) • Basic conversion time, including integration time (ms) • Massic conversion time for wire-break monitoring • Massic conversion time for wire-break monitoring		No
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• 0 to 300 ohms — Input resistance (0 to 300 ohms) • 0 to 600 ohms — Input resistance (0 to 600 ohms) • 0 to 3000 ohms — Input resistance (0 to 600 ohms) • 0 to 3000 ohms • 0 to 3000 ohms • 0 to 6000 ohms — Input resistance (0 to 6000 ohms) • Input resistance (0 to 6000 ohms) • PTC — Input resistance (PTC) Temperature compensation — parameterizable — parameterizable — internal temperature compensation — external temperature compensation — external temperature compensation va RTD — Compensation for 0°C reference point temperature — Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the Inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time, parameterizable • Integration time, parameterizable • Integration time, including integration time (ms) — additional conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)		
- Input resistance (0 to 300 ohms) • 0 to 600 ohms — Input resistance (0 to 600 ohms) • 0 to 3000 ohms • 0 to 6000 ohms • 0 to 6000 ohms • Input resistance (0 to 6000 ohms) • Input resistance (0 to 6000 ohms) • Input resistance (0 to 6000 ohms) • PTC — Input resistance (PTC) Temperature compensation — parameterizable — parameterizable — internal temperature compensation — external temperature compensation via RTD — compensation for 0 °C reference point temperature — Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the Inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time, parameterizable • Integration time, including integration time (ms) • Basic conversion time, including integration time (ms) — additional conversion time, for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)		
• 0 to 600 ohms — Input resistance (0 to 600 ohms) • 0 to 3000 ohms • 0 to 6000 ohms — Input resistance (0 to 6000 ohms) • 10 MΩ • 10 to 6000 ohms — Input resistance (0 to 6000 ohms) • PTC — Input resistance (PTC) Temperature compensation — parameterizable — internal temperature compensation — external temperature compensation via RTD — Compensation for 0 °C reference point temperature — Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • PCS •		
- Input resistance (0 to 600 ohms) • 0 to 3000 ohms • 0 to 6000 ohms - Input resistance (0 to 6000 ohms) • PTC - Input resistance (PTC) Temperature compensation - parameterizable - internal temperature compensation - external temperature compensation yes - external temperature compensation via RTD - Compensation for 0 °C reference point temperature - Reference channel of the module - shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation firm (resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time, parameterizable • Integration time, parameterizable • Integration time, including integration time (ms) • Basic conversion time, including integration time (ms) • Basic conversion time, including integration time (ms) • additional conversion time, including integration time (ms) • g / 23 / 27 / 107 ms • ms (to be considered in R/RTD/TC measurement)	— Input resistance (0 to 300 ohms)	10 ΜΩ
• 0 to 5000 ohms • 0 to 6000 ohms • 0 to 6000 ohms — Input resistance (0 to 6000 ohms) • PTC — Input resistance (PTC) Thermocouple (TC) Temperature compensation — parameterizable — internal temperature compensation — external temperature compensation — external temperature compensation is RTD — Compensation for 0 °C reference point temperature — Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time, parameterizable • Integration time, including integration time (ms) • Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)		
• 0 to 6000 ohms — Input resistance (0 to 6000 ohms) • PTC — Input resistance (PTC) — Input resistance (PTC) Thermocouple (TC) Temperature compensation — parameterizable — internal temperature compensation — external temperature compensation via RTD — compensation for 0 °C reference point temperature — Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time, parameterizable • Integration time (ms) • Basic conversion time (including integration time (ms) — additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)	— Input resistance (0 to 600 ohms)	10 ΜΩ
- Input resistance (0 to 6000 ohms) • PTC - Input resistance (PTC) Thermocouple (TC) Temperature compensation - parameterizable - internal temperature compensation - external temperature compensation - compensation for 0 °C reference point temperature - Reference channel of the module Cable length • shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) - additional conversion time for wire-break monitoring 10 MΩ Yes 10 MΩ Yes Yes Yes Yes Yes Yes 10 MΩ Yes Yes Yes Yes 11 Dit Ohm Yes Yes 12 Dit Ohm Yes Yes 13 Dit Ohm Yes 14 Dit Ohm Yes 15 Dit Ohm Yes 16 Dit Yes 16 Dit Yes 17 Dit Ohm Yes 18 Dit Ohm Yes 19 J 23 / 27 / 100 ms Yes Yes Yes Yes Yes 10 Dit Ohm Yes Yes Yes Yes Yes Yes Yes Ye	• 0 to 3000 ohms	No
PTC — Input resistance (PTC) Thermocouple (TC) Temperature compensation — parameterizable — internal temperature compensation — external temperature compensation in temperature — compensation for 0 °C reference point temperature — Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)	• 0 to 6000 ohms	Yes
- Input resistance (PTC) Thermocouple (TC) Temperature compensation - parameterizable - internal temperature compensation - external temperature compensation in temperature - external temperature compensation via RTD - Compensation for 0 °C reference point temperature - Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) - additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)	— Input resistance (0 to 6000 ohms)	10 ΜΩ
Thermocouple (TC) Temperature compensation — parameterizable — internal temperature compensation — external temperature compensation via RTD — Compensation for 0 °C reference point temperature — Reference channel of the module Cable length • shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)	• PTC	Yes
Temperature compensation — parameterizable — internal temperature compensation — external temperature compensation via RTD — compensation for 0 °C reference point temperature — Reference channel of the module Cable length • shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)	— Input resistance (PTC)	10 ΜΩ
 — parameterizable — internal temperature compensation — external temperature compensation via RTD — external temperature compensation via RTD — Compensation for 0 °C reference point temperature — Reference channel of the module Shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Integration time (ms) Integration time, including integration time (ms) Pasic conversion time, including integration time (ms) 9 ms (to be considered in R/RTD/TC measurement) 	Thermocouple (TC)	
- internal temperature compensation - external temperature compensation via RTD - Compensation for 0 °C reference point temperature - Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) - additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)	Temperature compensation	
- external temperature compensation via RTD - Compensation for 0 °C reference point temperature - Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) - additional conversion time for wire-break monitoring Yes Yes 16 bit Yes 2,5 / 16,67 / 20 / 100 ms 9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement)	— parameterizable	Yes
- Compensation for 0 °C reference point temperature - Reference channel of the module Cable length • shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time, parameterizable • Integration time (ms) • Basic conversion time, including integration time (ms) - additional conversion time for wire-break monitoring Yes; fixed value can be set Yes Yes 2.5 / 16,67 / 20 / 100 m for R/RTD, 50 m for TC	 internal temperature compensation 	Yes
— Reference channel of the module Cable length ● shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. ● Integration time, parameterizable ● Integration time (ms) ● Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring Yes 9 ms (to be considered in R/RTD/TC measurement)	 external temperature compensation via RTD 	Yes
Cable length ● shielded, max. 800 m; for U/I, 200 m for R/RTD, 50 m for TC Analog value generation for the inputs Integration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. ● Integration time, parameterizable ● Integration time (ms) ● Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)	 Compensation for 0 °C reference point temperature 	Yes; fixed value can be set
shielded, max. Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Integration time (ms) Analog value generation for the inputs Resolution with overrange (bit including sign), max. Yes Integration time, parameterizable Yes Integration time (ms) Analog value generation for time/resolution per channel Per Solution with overrange (bit including sign), max. Yes Integration time, parameterizable Yes Integration time (ms) Analog value generation for the inputs Yes Yes Integration time, parameterizable Yes I	— Reference channel of the module	Yes
Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Integration time (ms) Basic conversion time, including integration time (ms) additional conversion time for wire-break monitoring Integration time (ms) 2,5 / 16,67 / 20 / 100 ms 9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement)	Cable length	
Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Basic conversion time, including integration time (ms) additional conversion time for wire-break monitoring Integration time (ms) yes 2,5 / 16,67 / 20 / 100 ms 9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement)	• shielded, max.	800 m; for U/I, 200 m for R/RTD, 50 m for TC
 Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 16 bit Yes 2,5 / 16,67 / 20 / 100 ms 9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement) 	Analog value generation for the inputs	
 Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time (ms) Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 16 bit Yes 2,5 / 16,67 / 20 / 100 ms 9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement) 	Integration and conversion time/resolution per channel	
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Basic conversion time, including integration time (ms) — additional conversion time for wire-break monitoring 9 / 23 / 27 / 107 ms 9 ms (to be considered in R/RTD/TC measurement)		
— additional conversion time for wire-break monitoring 9 ms (to be considered in R/RTD/TC measurement)		
	-	

measurement	Pt1000, Ni1000, LG-Ni1000, PTC: 4 ms
 Interference voltage suppression for interference frequency f1 in Hz 	400 / 60 / 50 / 10 Hz
Time for offset calibration (per module)	Basic conversion time of the slowest channel
Smoothing of measured values	
 parameterizable 	Yes
Step: None	Yes
Step: low	Yes
Step: Medium	Yes
Step: High	Yes
Encoder	
Connection of signal encoders	
 for voltage measurement 	Yes
• for current measurement as 2-wire transducer	Yes
 Burden of 2-wire transmitter, max. 	820 Ω
• for current measurement as 4-wire transducer	Yes
 for resistance measurement with two-wire connection 	Yes; Only for PTC
• for resistance measurement with three-wire connection	Yes; All measuring ranges except PTC; internal compensation of the cable resistances
• for resistance measurement with four-wire connection	Yes; All measuring ranges except PTC
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.02 %
Temperature error (relative to input range), (+/-)	0.005 %/K; With TC type T 0.02 ± % / K
Crosstalk between the inputs, max.	-80 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.02 %
Temperature error of internal compensation	±6 °C
Operational error limit in overall temperature range	
Voltage, relative to input range, (+/-)	0.5 %
 Current, relative to input range, (+/-) 	0.5 %
• Resistance, relative to input range, (+/-)	0.5 %
• Resistance thermometer, relative to input range, (+/-)	Ptxxx standard: ±1.5 K, Ptxxx climate: ±0.5 K, Nixxx standard: ±0.5 K, Nixxx climate: ±0.3 K
• Thermocouple, relative to input range, (+/-)	Type B: > 600 °C ±4.6 K, type E: > -200 °C ±1.5 K, type J: > -210 °C ±1.9 K, type K: > -200 °C ±2.4 K, type N: > -200 °C ±2.9 K, type R: > 0 °C ±4.7 K, type S: > 0 °C ±4.6 K, type T: > -200 °C ±2.4 K
Basic error limit (operational limit at 25 °C)	***
Voltage, relative to input range, (+/-)	0.1 %
Current, relative to input range, (+/-)	0.1 %
Resistance, relative to input range, (+/-)	0.1 %
• Resistance thermometer, relative to input range, (+/-)	Ptxxx standard: ±0.7 K, Ptxxx climate: ±0.2 K, Nixxx standard: ±0.3 K, Nixxx climate: ±0.15 K
• Thermocouple, relative to input range, (+/-)	Type B: > 600 °C ±1.7 K, type E: > -200 °C ±0.7 K, type J: > -210 °C ±0.8 K, type K: > -200 °C ±1.2 K, type N: > -200 °C ±1.2 K, type R: > 0 °C ±1.9 K, type S: > 0 °C ±1.9 K, type T: > -200 °C ±0.8 K
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference	erence frequency
Series mode interference (peak value of interference < rated value of input range), min.	40 dB
Common mode voltage, max.	10 V
Common mode interference, min.	60 dB
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
Diagnoses	
Monitoring the supply voltage	Yes
Wire-break	Yes; Only for 1 to 5 V, 4 to 20 mA, TC, R, and RTD
Overflow/underflow	Yes
Diagnostics indication LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
Monitoring of the supply voltage (PWR-LED)	Yes; green LED
Channel status display	Yes: green LFD

for channel diagnostics	Yes; red LED
for module diagnostics	Yes; red LED
Potential separation	. 30, 133 LED
Potential separation channels	
between the channels	No
between the channels, in groups of	8
between the channels and backplane bus	Yes
between the channels and the power supply of the	Yes
electronics	
Permissible potential difference	
between the inputs (UCM)	20 V DC
Between the inputs and MANA (UCM)	10 V DC
Isolation	
Isolation tested with	750 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Ecological footprint	
environmental product declaration	Yes
Global warming potential	20 G km
 — global warming potential, (total) [CO2 eq] — global warming potential, (during production) [CO2 	38.6 kg
— global warming potential, (during production) [CO2 eq]	14.4 kg
— global warming potential, (during operation) [CO2 eq]	24.6 kg
global warming potential, (after end of life cycle) [CO2 eq]	-0.44 kg
Railway application	
• EN 50121-3-2	Yes; EMC for rail vehicles
• EN 50121-4	Yes; EMC for signal and telecommunications systems
• EN 50121-5	Yes; EMC for fixed installations and railway power supply equipment
• EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
• EN 50125-1	Yes; Rail vehicles - see ambient conditions
• EN 50125-2	Yes; Stationary electrical equipment - see ambient conditions
• EN 50125-3	Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
• EN 50155	Yes; Rail vehicles - temperature class OT4, ST1/ST2, horizontal mounting position
• EN 61373	Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
 Fire protection acc. to EN 45545-2 	Yes; For proof of conformity, see Service & Support
Ambient conditions	
Ambient temperature during operation	
 horizontal installation, min. 	-40 °C; = Tmin (incl. condensation/frost)
 horizontal installation, max. 	70 °C; = Tmax; +85 °C for 10 min (OT4, ST1/ST2 acc. to EN 50155)
vertical installation, min.	-40 °C; = Tmin
vertical installation, max.	40 °C; = Tmax
Altitude during operation relating to sea level	0.000
Installation altitude above sea level, max. Ambient dir temperature beremetrie pressure altitude.	2 000 m
Ambient air temperature-barometric pressure-altitude Pelative humidity	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m)
Relative humidity With condensation, tested in accordance with IEC 60068- 2-38 may	100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation
2-38, max. Resistance	HOHZOHAI HISIAHAIOH
Coolants and lubricants	
Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air
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	
,	

Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
Yes; Class 5S3 incl. sand, dust; *
Yes; Class 3 (excluding trichlorethylene)
Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
* The supplied plug covers must remain in place over the unused interfaces during operation!
Yes; Class 2 for high reliability
Yes; Type 1 protection
Yes; Class PC2 protective coating acc. to EN 50155:2017
Yes; Discoloration of coating possible during service life
Yes; Conformal coating, Class A
35 mm
147 mm
129 mm
310 g
for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776

last modified:

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