## SIEMENS

## Data sheet

## 6AG1231-4HF32-4XB0



SIPLUS S7-1200 SM 1231 8AI based on 6ES7231-4HF32-0XB0 with conformal coating, -20...+60 °C, analog input SM 1231, 8 AI, +/-10 V, +/-5 V, +/-2.5 V, or 0-20 mA/4-20 mA, 12 bit+sign or (13 bit ADC)

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General information         SMI 1231, AI 8x13 bit           Product type designation         SMI 1231, AI 8x13 bit           Supply voltage         Rated value (DC)         24 V           Input current         Current consumption, typ.         45 mA           from backplane bus 5 V DC, typ.         90 mA           Power loss         Power loss           Power loss         power loss           power loss         \$, Current or voltage differential inputs           permissible input current for current input (destruction limit), max.         35 V           permissible input current for current input (destruction limit), max.         625 µs           input ranges         Yes: ±10V, ±5V, ±2.5V           • Voltage         Yes: ±10V, ±5V, ±2.5V           • Current         Yes: 4 to 20 mA           • Thermocouple         No           • Resistance         Yes           • Input ranges (rated values), voltages         Yes           • 10 V to 10 V         Yes           • Input resistance (-25 V to +2.5 V)         Yes           • Input resistance (-5 V to +5 V)         Yes <t< th=""><th></th><th></th></t<>		
Supply voltage           Rated value (DC)         24 V           Input current         Current consumption, typ.         45 mA           from backplane bus 5 V DC, typ.         90 mA           Power loss         Power loss, typ.           Number of analog inputs         8: Current or voltage differential inputs           Number of analog inputs         8: Current or voltage differential inputs           number of analog inputs         8: Current or voltage differential inputs           permissible input current for current input (destruction limit), max.         40 mA           cycle time (all channels) max.         625 µs           input ranges         Yes; ±10V, ±5V, ±2.5V           • Voltage         Yes; ±10V, ±5V, ±2.5V           • Current         Yes; ±10V, ±5V, ±2.5V           • Resistance thermometer         No           • No         No           • Resistance thermometer         No           • Input resistance (-10 V to +10 V)         29 MOhm           • Log ther sistance (-5 V to +5 V)         29 MOhm           • S V to +5 V         Yes           - Input resistance (-5 V to +5	General information	
Rated value (DC)     24 V       Input current     24 V       Current consumption, typ.     45 mA       from backplane bus 5 V DC, typ.     90 mA       Power loss.     90 mA       Power loss, typ.     1.5 W       Analog inputs     8; Current or voltage differential inputs       permetrissible input voltage for voltage input (destruction limit), max.     35 V       prover loss     40 mA       imiti, max.     625 μs       Input ranges     625 μs       Input ranges     625 μs       Input ranges     625 μs       Input ranges     90 MA       • Voltage     Yes; ±10V, ±5V, ±2.5V       • Current     Yes; ± to 20 mA, 0 to 20 mA       • Resistance thermometer     No       • No to 10 V     Yes       - Input resistance (-10 V to +10 V)     29 MOhm       • 25 V to +25 V     Yes       - Input resistance (-25 V to +2.5 V)     29 MOhm       • No to ±25 V     Yes       - Input resistance (-5 V to +5 V)     29 MOhm       Input resistance (-5 V to +5 V)     29 MOhm       • Di to 20 mA     Yes       • Input resistance (-5 V to +5 V)     29 MOhm       Input resistance (0 to 20 mA)     Yes       • Input resistance (0 to 20 mA)     Yes       • Input resistance (0 to	Product type designation	SM 1231, AI 8x13 bit
Input current         45 mA           Current consumption, typ.         45 mA           from backplane bus 5 V DC, typ.         90 mA           Power loss, typ.         1.5 W           Analog inputs         8; Current or voltage differential inputs           permissible input voltage for voltage input (destruction limit), max.         35 V           permissible input current for current input (destruction limit), max.         625 μs           Input ranges         40 mA           • Voltage         Yes; ±10V, ±5V, ±2.5V           • Current         Yes; ±10V, ±5V, ±2.5V           • Resistance         Yes           • Input resistance (-10 V to +10 V)         29 MOhm           • 2.5 V to ±2.5 V         Yes           - Input resistance (-2.5 V to ±2.5 V)         29 MOhm           • 5.0 V to ±5 V         Yes           - Input resistance (-5 V to ±5 V)         29 MOhm           Input ranges (rated values), currents         Yes     <	Supply voltage	
Current consumption, typ.     45 mA       from backplane bus 5 V DC, typ.     90 mA       Power loss     Power loss       Power loss     1.5 W       Analog inputs     8: Current or voltage differential inputs       permissible input voltage for voltage input (destruction limit), max.     8: Current or voltage differential inputs       permissible input current for current input (destruction limit), max.     40 mA       limity, max.     625 μs       Input ranges     Yes; ±10V, ±5V, ±2.5V       • Voltage     Yes; ±10V, ±5V, ±2.5V       • Current     Yes; ±10V, ±5V, ±2.5V       • Current     Yes; ±10V, ±5V, ±2.5V       • Resistance thermometer     No       • Resistance thermometer     No       • Resistance (10 V to +10 V)     ¥es       - Input resistance (-2.5 V to +2.5 V)     ¥9 MOhm       • 5.2 V to +2.5 V     Yes       - Input resistance (-2.5 V to +2.5 V)     ¥9 MOhm       • 5.2 V to +5.2 V     Yes       - Input resistance (-2.5 V to +5.5 V)     ¥9 MOhm       • 5.0 to 5 V     Yes       - Input resistance (-2.5 V to +5.5 V)     ¥9 MOhm       • 10 v to +10 V     Yes       - Input resistance (0 to 20 mA     Yes       - Input resistance (0 to 20 mA)     280 Ω       Thermocouple (TC)     Temperature compensation	Rated value (DC)	24 V
from backplane bus 5 V DC, typ.     90 mA       Power loss     -       Power loss, typ.     1.5 W       Analog inputs     8; Current or voltage differential inputs       permissible input voltage for voltage input (destruction limit), max.     35 V       permissible input current for current input (destruction limit), max.     40 mA       cycle time (all channels) max.     625 µs       Input ranges     -       • Voltage     Yes; ±10V, ±5V, ±2.5V       • Current     Yes; 4 to 20 mA, 0 to 20 mA       • Thermocouple     No       • Resistance     Yes       Input ranges (rated values), voltages     -       • 10 V to +10 V     Yes       • - Input resistance (-10 V to +10 V)     29 MOhm       • 2.5 V to +2.5 V     Yes       - Input resistance (-5 V to +2.5 V)     29 MOhm       • - SV to +5 V     Yes       - Input resistance (-5 V to +2.5 V)     29 MOhm       • - SV to +5 V     Yes       - Input resistance (-10 V to +10 V)     29 MOhm       • - SV to +5 V     29 MOhm       - Input resistance (-10 V to +10 V)     29 MOhm       • - Input resistance (0 to 20 mA)     Yes	Input current	
Power loss         Power loss, typ.         Analog inputs         Number of analog inputs permissible input voltage for voltage input (destruction limit), max.         permissible input voltage for voltage input (destruction limit), max.         permissible input current for current input (destruction limit), max.         cycle time (all channels) max.         625 μs         Input ranges         • Voltage         • Outage         • 10 V to +10 V         • No         - Input resistance (-10 V to +10 V)         • Pes         - Input resistance (-2.5 V to +2.5 V)         • O to +10 V         • - Input resistance (-5 V to +5 V)         • O to 20 mA         • Input resistance (0 to 20 mA)	Current consumption, typ.	45 mA
Power loss, typ.       1.5 W         Analog inputs       8; Current or voltage differential inputs         permissible input voltage for voltage input (destruction limit), max.       35 V         permissible input current for current input (destruction limit), max.       40 mA         Cycle time (all channels) max.       625 μs         Input ranges       Yes; ±10V, ±5V, ±2.5V         • Voltage       Yes; ±10V, ±5V, ±2.5V         • Current       Yes; 4 to 20 mA, 0 to 20 mA         • Resistance thermometer       No         • Resistance       Yes         - Input ranges (rated values), voltages       Yes         - Input resistance (-10 V to +10 V)       29 MOhm         • 2.5 V to +2.5 V       Yes         - Input resistance (-2.5 V to +2.5 V)       29 MOhm         • 5.7 V to +5 V       Yes         - Input resistance (-2.5 V to +2.5 V)       29 MOhm         • 5.7 V to +5 V       Yes         - Input resistance (-5 V to +5 V)       29 MOhm         Input ranges (rated values), currents       Yes         - Input resistance (0 to 20 mA)       Yes         - Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         - parameterizable       No         Analo	from backplane bus 5 V DC, typ.	90 mA
Analog inputs       8; Current or voltage differential inputs         permissible input voltage for voltage input (destruction limit), max.       35 V         permissible input current for current input (destruction limit), max.       40 mA         cycle time (all channels) max.       625 µs         Input ranges       Yes; ±10V, ±5V, ±2.5V         • Voltage       Yes; ±10V, ±5V, ±2.5V         • Current       Yes; 4 to 20 mA, 0 to 20 mA         • Thermocouple       No         • Resistance thermometer       No         • 10 V to +10 V       Yes         - Input resistance (-10 V to +10 V)       29 MOhm         • 2.5 V to +2.5 V       Yes         - Input resistance (-2.5 V to +2.5 V)       29 MOhm         • -10 vt resistance (-5 V to +5 V)       29 MOhm         • -5 V to +5 V       Yes         - Input resistance (-5 V to +5 V)       29 MOhm         • 10 vt resistance (-5 V to +5 V)       29 MOhm         Input resistance (-6 V to +5 V)       29 MOhm         • 0 to 20 mA       Yes         - Input resistance (-5 V to +5 V)       29 MOhm         Integration c(0 to 20 mA)       Yes         - Input resistance (-10 V to +10 V)       280 Ω         Thermocouple (TC)       Temperature compensation	Power loss	
Number of analog inputs       8; Current or voltage differential inputs         permissible input voltage for voltage input (destruction limit), max.       35 V         optimissible input current for current input (destruction limit), max.       40 mA         Cycle time (all channels) max.       625 µs         Input ranges       Yes; ±10V, ±5V, ±2.5V         • Voltage       Yes; ±10V, ±5V, ±2.5V         • Current       Yes; 4 to 20 mA, 0 to 20 mA         • Resistance       Yes         • Resistance       Yes         Input ranges (rated values), voltages       Yes         • Input resistance (-10 V to +10 V)       Yes         • Lot to +10 V       Yes         - Input resistance (-10 V to +10 V)       29 MOhm         • 2.5 V to +2.5 V       Yes         - Input resistance (-2.5 V to +2.5 V)       29 MOhm         • 0 to 20 mA       Yes         - Input resistance (-5 V to +5 V)       Yes         • 0 to 20 mA       Yes         - Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         - parameterizable       No         Analog value generation for the inputs       No         Analog value generation for the inputs       Integration and conversing (bit including sign), max.	Power loss, typ.	1.5 W
permissible input voltage for voltage input (destruction limit), max.         35 V           permissible input current for current input (destruction limit), max.         40 mA           Cycle time (all channels) max.         625 μs           Input ranges         625 μs           • Voltage         Yes; ±10V, ±5V, ±2.5V           • Current         Yes; 4 to 20 mA, 0 to 20 mA           • Thermocouple         No           • Resistance thermometer         No           • Resistance         Yes           • 10 V to +10 V         Yes           • -10 put resistance (-2.5 V to +2.5 V)         29 MOhm           • 2.5 V to +2.5 V         Yes           • -1 Input resistance (-2.5 V to +5.5 V)         29 MOhm           • 5.5 V to +5 V         Yes           • -10 put resistance (0 to 20 mA)         Yes           • -10 put resistance (0 to 20 mA)         Yes           • -10 put resistance (0 to 20 mA)         Yes           • -10 put resistance (0 to 20 mA)         Yes           • -10 put resistance (0 to 20 mA)	Analog inputs	
imit), max.     40 mA       permissible input current for current input (destruction limit), max.     40 mA       Cycle time (all channels) max.     625 μs       Input ranges     Yes; ±10V, ±5V, ±2.5V       • Voltage     Yes; ±10V, ±5V, ±2.5V       • Current     Yes; ±10V, ±5V, ±2.5V       • Current     Yes; ±10V, ±5V, ±2.5V       • Current     Yes; ±10V, ±5V, ±2.5V       • Resistance thermometer     No       • Resistance     Yes       Input ranges (rated values), voltages     -       • -10 V to ±10 V     Yes       - lnput resistance (-10 V to ±10 V)     ≥9 MOhm       • -2.5 V to ±2.5 V     Yes       - Input resistance (-2.5 V to ±2.5 V)     ≥9 MOhm       • -5 V to ±5 V     Yes       - Input resistance (-5 V to ±2.5 V)     ≥9 MOhm       Input ranges (rated values), currents     >9 MOhm       • 0 to 20 mA     Yes       - Input resistance (0 to 20 mA)     280 Ω       Thermocouple (TC)     Temperature compensation       - parameterizable     No       Analog value generation for the Inputs       Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.     12 bit; + sign       • Integration time, parameterizable     Yes	Number of analog inputs	8; Current or voltage differential inputs
permissible input current for current input (destruction limit), max.40 mACycle time (all channels) max.625 μsInput ranges• VoltageYes; ±10V, ±5V, ±2.5V• CurrentYes; 4 to 20 mA, 0 to 20 mA• ThermocoupleNo• Resistance thermometerNo• ResistanceYes- 10 V to ±10 VYes- 10 V to ±10 VYes- 10 v to ±10 VYes- 10 put resistance (-10 V to ±10 V)29 MOhm• 2.5 V to ±2.5 VYes- 10 put resistance (-2.5 V to ±2.5 V)29 MOhm• 5.5 V to ±5 VYes- 10 put resistance (-2.5 V to ±2.5 V)29 MOhm• 5.5 V to ±5 VYes- 10 put resistance (-5 V to ±5.5 V)29 MOhm• 10 to 20 mAYes- 10 put resistance (0 to 20 mA)280 ΩThermocouple (TC)Temperature compensation- parameterizableNoAnalog value generation for the inputsIntegration and conversion time/resolution per channel• Resolution with overrange (bit including sign), max.12 bit; + sign• Integration time, parameterizableYes		35 V
Imiti, max.       625 μs         Cycle time (all channels) max.       625 μs         Input ranges       Voltage         Voltage       Yes; ±10V, ±5V, ±2.5V         Current       Yes; 4 to 20 mA, 0 to 20 mA         Thermocouple       No         Resistance thermometer       No         Resistance thermometer       No         - Resistance thermometer       No         - 10 V to +10 V       Yes         - 10 put resistance (-2.5 V to +2.5 V)       Yes         - 10 put resistance (-2.5 V to +2.5 V)       Yes         - 10 put resistance (-5 V to +5 V)       Yes         - 10 put resistance (0 to 20 mA)       Yes         - 10 put resistance (0 to 20 mA)       Yes         - 10 put resistance (0 to 20 mA)       Yes         - 10 put resistance (0 to 20 mA)       Yes         - 10 put resistance (0 to 20 mA)       Yes         - 10 put resistance (0 to 20 mA)       Yes         - 10 put resistance (0 to 20 mA)       Yes     <		40 mA
Cycle time (all channels) max.       625 μs         Input ranges       Yes; ±10V, ±5V, ±2.5V         • Courrent       Yes; 4 to 20 mA, 0 to 20 mA         • Thermocouple       No         • Resistance thermometer       No         • Resistance       Yes         • 10 V to +10 V       Yes         • -10 V to +10 V       Yes         - Input resistance (-10 V to +10 V)       29 MOhm         • 2.5 V to +2.5 V       Yes         - Input resistance (-2.5 V to +2.5 V)       29 MOhm         • -5 V to +5 V       Yes         - Input resistance (-2.5 V to +2.5 V)       29 MOhm         • -5 V to +5 V       Yes         - Input resistance (-2.5 V to +5.5 V)       29 MOhm         • 5 V to +5 V       Yes         - Input resistance (-5 V to +5 V)       29 MOhm         • 10 to 20 mA       Yes         - Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         - parameterizable       No         Analog value generation for the inputs         Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes </td <td></td> <td></td>		
Input ranges• VoltageYes; ±10V, ±5V, ±2.5V• CurrentYes; 4 to 20 mA, 0 to 20 mA• ThermocoupleNo• Resistance thermometerNo• Resistance thermometerYes• 10 V to +10 VYes- 10 V to +10 VYes- Input resistance (-10 V to +10 V)29 MOhm• 2.5 V to +2.5 VYes- Input resistance (-2.5 V to +2.5 V)29 MOhm• -5 V to +5 VYes- Input resistance (-5 V to +5 V)29 MOhm• 0 to 20 mAYes- Input resistance (0 to 20 mA)280 ΩThermocouple (TC)Temperature compensation- parameterizableNoAnalog value generation for the inputsIntegration and conversion time/resolution per channel• Integration time, parameterizableYesYes12 bit; + sign• Integration time, parameterizableYes		625 µs
• CurrentYes; 4 to 20 mA, 0 to 20 mA• ThermocoupleNo• Resistance thermometerNo• ResistanceYesInput ranges (rated values), voltagesYes• -10 V to +10 VYes- Input resistance (-10 V to +10 V)29 MOhm• -2.5 V to +2.5 VYes- Input resistance (-2.5 V to +2.5 V)29 MOhm• -5 V to +5 VYes- Input resistance (-5 V to +2.5 V)29 MOhm• -5 V to +5 VYes- Input resistance (-5 V to +5 V)29 MOhmInput ranges (rated values), currents29 MOhm• 0 to 20 mAYes- Input resistance (0 to 20 mA)280 ΩThermocouple (TC)Temperature compensation- parameterizableNoAnalog value generation for the inputsIntegration and conversion time/resolution per channel12 bit, + sign Yes• Integration time, parameterizableYes		
• ThermocoupleNo• Resistance thermometerNo• ResistanceYesInput ranges (rated values), voltagesYes• -10 V to +10 VYes- Input resistance (-10 V to +10 V)≥9 MOhm• -2.5 V to +2.5 VYes- Input resistance (-2.5 V to +2.5 V)≥9 MOhm• -5 V to +5 VYes- Input resistance (-5 V to +5 V)≥9 MOhm• 5 V to +5 VYes- Input resistance (-5 V to +5 V)≥9 MOhmInput ranges (rated values), currents≥9 MOhm• 0 to 20 mAYes- Input resistance (0 to 20 mA)280 ΩThermocouple (TC)Temperature compensation- parameterizableNoAnalog value generation for the inputsIntegration and conversion time/resolution per channel• Resolution with overrange (bit including sign), max.12 bit, + sign Yes	Voltage	Yes; ±10V, ±5V, ±2.5V
• Resistance thermometerNo• ResistanceYesInput ranges (rated values), voltagesYes• -10 V to +10 VYes- Input resistance (-10 V to +10 V)≥9 MOhm• -2.5 V to +2.5 VYes- Input resistance (-2.5 V to +2.5 V)≥9 MOhm• -5 V to +5 VYes- Input resistance (-5 V to +5 V)≥9 MOhm• 5.5 V to +5 VYes- Input resistance (-5 V to +5 V)Yes- Input resistance (-5 V to +5 V)≥9 MOhmInput ranges (rated values), currentsYes- Input resistance (0 to 20 mA)Yes- Input resistance (0 to 20 mA)280 ΩThermocouple (TC)Temperature compensation- parameterizableNoAnalog value generation for the inputsIntegration and conversion time/resolution per channel• Resolution with overrange (bit including sign), max.12 bit; + sign• Integration time, parameterizableYes	Current	Yes; 4 to 20 mA, 0 to 20 mA
• Resistance       Yes         Input ranges (rated values), voltages       ·         • -10 V to +10 V       Yes         — Input resistance (-10 V to +10 V)       ≥9 MOhm         • -2.5 V to +2.5 V       Yes         — Input resistance (-2.5 V to +2.5 V)       ≥9 MOhm         • -5 V to +5 V       Yes         — Input resistance (-2.5 V to +2.5 V)       ≥9 MOhm         • -5 V to +5 V       Yes         — Input resistance (-5 V to +5 V)       ≥9 MOhm         Input ranges (rated values), currents       Yes         • 0 to 20 mA       Yes         — Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         — parameterizable       No         Analog value generation for the inputs         Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes	Thermocouple	No
Input ranges (rated values), voltages         • -10 V to +10 V         - Input resistance (-10 V to +10 V)         ≥9 MOhm         • -2.5 V to +2.5 V         - Input resistance (-2.5 V to +2.5 V)         ≥9 MOhm         • -5 V to +5 V         - Input resistance (-5 V to +5 V)         ≥9 MOhm         • -5 V to +5 V         - Input resistance (-5 V to +5 V)         ≥9 MOhm         Input ranges (rated values), currents         • 0 to 20 mA         - Input resistance (0 to 20 mA)         280 Ω         Thermocouple (TC)         Temperature compensation         - parameterizable         No         Analog value generation for the inputs         Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.         • Integration time, parameterizable	<ul> <li>Resistance thermometer</li> </ul>	No
• -10 V to +10 V       Yes         — Input resistance (-10 V to +10 V)       ≥9 MOhm         • -2.5 V to +2.5 V       Yes         — Input resistance (-2.5 V to +2.5 V)       ≥9 MOhm         • -5 V to +5 V       Yes         — Input resistance (-5 V to +5 V)       ≥9 MOhm         Input ranges (rated values), currents       • 0 to 20 mA         • 0 to 20 mA       Yes         — Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         — parameterizable       No         Analog value generation for the inputs         Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes	Resistance	Yes
Input resistance (-10 V to +10 V)≥9 MOhm• -2.5 V to +2.5 VYes- Input resistance (-2.5 V to +2.5 V)≥9 MOhm• -5 V to +5 V≥9 MOhm• -5 V to +5 V≥9 MOhm- Input resistance (-5 V to +5 V)≥9 MOhmInput ranges (rated values), currents≥9 MOhm• 0 to 20 mAYes- Input resistance (0 to 20 mA)280 ΩThermocouple (TC)Temperature compensation- parameterizableNoAnalog value generation for the inputsIntegration and conversion time/resolution per channel• Resolution with overrange (bit including sign), max. • Integration time, parameterizable12 bit; + sign Yes	Input ranges (rated values), voltages	
• -2.5 V to +2.5 V       Yes         — Input resistance (-2.5 V to +2.5 V)       ≥9 MOhm         • -5 V to +5 V       Yes         — Input resistance (-5 V to +5 V)       ≥9 MOhm         Input ranges (rated values), currents       ≥9 MOhm         • 0 to 20 mA       Yes         — Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         — parameterizable       No         Analog value generation for the inputs       No         Integration and conversion time/resolution per channel       12 bit; + sign         • Integration time, parameterizable       Yes	• -10 V to +10 V	Yes
- Input resistance (-2.5 V to +2.5 V)       ≥9 MOhm         • -5 V to +5 V       Yes         - Input resistance (-5 V to +5 V)       ≥9 MOhm         Input ranges (rated values), currents       ≥9 MOhm         • 0 to 20 mA       Yes         - Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         - parameterizable       No         Analog value generation for the inputs       No         Integration and conversion time/resolution per channel       12 bit; + sign         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes	<ul> <li>Input resistance (-10 V to +10 V)</li> </ul>	≥9 MOhm
• -5 V to +5 V — Input resistance (-5 V to +5 V)Yes ≥9 MOhmInput ranges (rated values), currents≥9 MOhm• 0 to 20 mA — Input resistance (0 to 20 mA)Yes 280 ΩThermocouple (TC) Temperature compensation — parameterizableNoAnalog value generation for the inputsNoIntegration and conversion time/resolution per channel ● Resolution with overrange (bit including sign), max. ● Integration time, parameterizable12 bit; + sign Yes		Yes
— Input resistance (-5 V to +5 V)       ≥9 MOhm         Input ranges (rated values), currents       • 0 to 20 mA         • 0 to 20 mA       Yes         — Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         — parameterizable       No         Analog value generation for the inputs       Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes	<ul> <li>Input resistance (-2.5 V to +2.5 V)</li> </ul>	≥9 MOhm
Input ranges (rated values), currents         • 0 to 20 mA       Yes         — Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         — parameterizable       No         Analog value generation for the inputs       Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes	• -5 V to +5 V	Yes
• 0 to 20 mA       Yes         — Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)       Temperature compensation         — parameterizable       No         Analog value generation for the inputs       Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes	<ul> <li>Input resistance (-5 V to +5 V)</li> </ul>	≥9 MOhm
— Input resistance (0 to 20 mA)       280 Ω         Thermocouple (TC)	Input ranges (rated values), currents	
Thermocouple (TC)     Temperature compensation       — parameterizable     No       Analog value generation for the inputs       Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.     12 bit; + sign       • Integration time, parameterizable     Yes	• 0 to 20 mA	Yes
Temperature compensation         — parameterizable       No         Analog value generation for the inputs       Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.       12 bit; + sign         • Integration time, parameterizable       Yes		280 Ω
parameterizable     No       Analog value generation for the inputs     Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.     12 bit; + sign       • Integration time, parameterizable     Yes		
Analog value generation for the inputs         Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.         • Integration time, parameterizable         Yes		
Integration and conversion time/resolution per channel         • Resolution with overrange (bit including sign), max.         • Integration time, parameterizable         Yes	•	No
<ul> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time, parameterizable</li> <li>Yes</li> </ul>	Analog value generation for the inputs	
Integration time, parameterizable     Yes	Integration and conversion time/resolution per channel	
	<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	12 bit; + sign
Interference voltage suppression for interference     40 dB, DC to 60 V for interference frequency 50 / 60 Hz	<ul> <li>Integration time, parameterizable</li> </ul>	Yes
	Interference voltage suppression for interference	40 dB, DC to 60 V for interference frequency 50 / 60 Hz

frequency f1 in Hz				
Smoothing of measured values				
parameterizable	Yes			
Step: None	Yes			
Step: low	Yes			
Step: Medium	Yes			
Step: High	Yes			
Errors/accuracies				
Temperature error (relative to input range), (+/-)	25 °C ±0.1%, to 55 °C ±0.2% total measurement range			
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to input range, (+/-)	0.1 %			
• Current, relative to input range, (+/-)	0.1 %			
Interference voltage suppression for $f = n x (f1 +/-1 \%), f1 =$				
Common mode voltage, max.	12 V			
Interrupts/diagnostics/status information				
Alarms	Yes			
Diagnostics function	Yes			
Alarms	Ver			
Diagnostic alarm	Yes			
Diagnoses	Yes			
<ul> <li>Monitoring the supply voltage</li> <li>Wire-break</li> </ul>	Yes			
Diagnostics indication LED				
for status of the inputs	Yes			
for maintenance	Yes			
Degree and class of protection				
IP degree of protection	IP20			
Ambient conditions				
Free fall				
Fall height, max.	0.3 m; five times, in product package			
Ambient temperature during operation <ul> <li>min.</li> </ul>	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C			
• max.	-20 °C; = Tmax			
Ambient temperature during storage/transportation	00 0, - max			
• min.	-40 °C			
• max.	70 °C			
Altitude during operation relating to sea level				
<ul> <li>Installation altitude above sea level, max.</li> </ul>	5 000 m			
Ambient air temperature-barometric pressure-	Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin			
altitude	(Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin			
	(Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m)			
Relative humidity				
• Operation at 25 °C without condensation, max.	95 %			
With condensation, tested in accordance with IEC	100 %; RH incl. condensation/frost (no commissioning under			
60068-2-38, max. Resistance	condensation conditions)			
Coolants and lubricants				
— Resistant to commercially available coolants	Yes; Incl. diesel and oil droplets in the air			
and lubricants				
Use in stationary industrial systems				
<ul> <li>— to biologically active substances according to</li> </ul>	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of			
EN 60721-3-3	fauna); Class 3B3 on request			
<ul> <li>to chemically active substances according to</li> </ul>	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52			
EN 60721-3-3	(severity degree 3); * Yes; Class 3S4 incl. sand, dust, *			
<ul> <li>— to mechanically active substances according to EN 60721-3-3</li> </ul>	1 co, 01aoo 004 11101. Sanu, UUSI,			
Use on ships/at sea				
<ul> <li>to biologically active substances according to</li> </ul>	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on			
EN 60721-3-6	request			
<ul> <li>to chemically active substances according to</li> </ul>	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52			
EN 60721-3-6	(severity degree 3); *			
<ul> <li>— to mechanically active substances according to EN 60721-3-6</li> </ul>	Yes; Class 6S3 incl. sand, dust; *			
Usage in industrial process technology				
— Against chemically active substances acc. to	Yes; Class 3 (excluding trichlorethylene)			

EN 60654-4 — Environmental conditions for process, measuring and control systems acc. to ANSI/ISA- 71.04	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)
Remark	level LCS (sait spray) and level LBS (Oil)
<ul> <li>Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04</li> </ul>	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
<ul> <li>Coatings for printed circuit board assemblies acc. to EN 61086</li> </ul>	Yes; Class 2 for high reliability
<ul> <li>Protection against fouling acc. to EN 60664-3</li> </ul>	Yes; Type 1 protection
<ul> <li>Military testing according to MIL-I-46058C, Amendment 7</li> </ul>	Yes; Discoloration of coating possible during service life
<ul> <li>Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A</li> </ul>	Yes; Conformal coating, Class A
connection method / header	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	180 g
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