

SIPLUS S7-1200 SM 1231 RTD 8AI with conformal coating based on 6ES7231-5PF32-0XB0 . Analog input, SM 1231 RTD, 8xAI RTD module



General information	
Product type designation	SM 1231, AI 8x16 bit RTD
Supply voltage	
Rated value (DC)	24 V
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	8; Resistance thermometer
permissible input voltage for voltage input (destruction limit), max.	±35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit
Input ranges	
• Voltage	No
• Current	No

- Thermocouple
- Resistance thermometer
- Resistance

No
 Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000
 Yes; 150 Ω, 300 Ω, 600 Ω

Input ranges (rated values), resistance thermometer

- Cu 10
 - Input resistance (Cu 10) 10 Ω
- Ni 100
 - Input resistance (Ni 100) 100 Ω
- Ni 1000
 - Input resistance (Ni 1000) 1 000 Ω
- LG-Ni 1000
 - Input resistance (LG-Ni 1000) 1 000 Ω
- Ni 120
 - Input resistance (Ni 120) 120 Ω
- Ni 200
 - Input resistance (Ni 200) 200 Ω
- Ni 500
 - Input resistance (Ni 500) 500 Ω
- Pt 100
 - Input resistance (Pt 100) 100 Ω
- Pt 1000
 - Input resistance (Pt 1000) 1 000 Ω
- Pt 200
 - Input resistance (Pt 200) 200 Ω
- Pt 500
 - Input resistance (Pt 500) 500 Ω

Input ranges (rated values), resistors

- 0 to 150 ohms Yes
- 0 to 300 ohms Yes
- 0 to 600 ohms Yes

Thermocouple (TC)

- Temperature compensation
 - parameterizable No

Analog value generation for the inputs

Measurement principle integrating

Integration and conversion time/resolution per channel

- Resolution with overrange (bit including sign), max. 15 bit; + sign
- Integration time, parameterizable No

- Interference voltage suppression for interference frequency f1 in Hz

85 dB at 50 / 60 / 400 Hz

Errors/accuracies

Temperature error (relative to input range), (+/-) 25 °C ±0.1%, to 55 °C ±0.2% total measurement range

Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) 0.05 %

Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency

- Common mode interference, min. 120 dB

Interrupts/diagnostics/status information

Alarms Yes

Diagnostics function Yes; Can be read out

Alarms

- Diagnostic alarm Yes

Diagnostic messages

- Monitoring the supply voltage Yes
- Wire-break 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

- min. -20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
- max. 60 °C; = Tmax

Ambient temperature during storage/transportation

- min. -40 °C
- max. 70 °C

Altitude during operation relating to sea level

- Installation altitude above sea level, max. 5 000 m
- Ambient air temperature-barometric pressure-altitude
Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (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 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; 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 ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— 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); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
— 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	
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A
Connection method	
required front connector	Yes
Mechanics/material	
Enclosure material (front)	
• Plastic	Yes
Dimensions	
Width	70 mm
Height	100 mm

Depth	75 mm
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Weights

Weight, approx.	220 g
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last modified:	05/09/2020
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