

SIMATIC S7-1200, Analog input, SM 1231 RTD, 8xAI RTD module



Figure similar

| 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  | No  |
| • Resistance thermometer  | Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000 |
| • Resistance  | Yes; 150 Ω, 300 Ω, 600 Ω  |
| Input ranges (rated values), resistance thermometer                   |   |
| • Cu 10   | Yes   |
| — Input resistance (Cu 10)  | 10 Ω  |
| • Ni 100  | Yes   |
| — Input resistance (Ni 100)   | 100 Ω   |
| • Ni 1000   | Yes   |
| — Input resistance (Ni 1000)  | 1 000 Ω   |
| • LG-Ni 1000  | Yes   |
| — Input resistance (LG-Ni 1000)                                       | 1 000 Ω   |
| • Ni 120  | Yes   |
| — Input resistance (Ni 120)   | 120 Ω   |
| • Ni 200  | Yes   |
| — Input resistance (Ni 200)   | 200 Ω   |
| • Ni 500  | Yes   |
| — Input resistance (Ni 500)   | 500 Ω   |
| • Pt 100  | Yes   |
| — Input resistance (Pt 100)   | 100 Ω   |
| • Pt 1000   | Yes   |
| — Input resistance (Pt 1000)  | 1 000 Ω   |

|   |   |
|---|---|
| • Pt 200  | Yes   |
| — Input resistance (Pt 200)   | 200 Ω   |
| • Pt 500  | Yes   |
| — Input resistance (Pt 500)   | 500 Ω   |
| <b>Input ranges (rated values), resistors</b>   |   |
| • 0 to 150 ohms   | Yes   |
| • 0 to 300 ohms   | Yes   |
| • 0 to 600 ohms   | Yes   |
| <b>Thermocouple (TC)</b>  |   |
| Temperature compensation  |   |
| — parameterizable   | No  |
| <b>Analog value generation for the inputs</b>   |   |
| 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                           |
| <b>Errors/accuracies</b>  |   |
| 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  |
| <b>Interrupts/diagnostics/status information</b>  |   |
| Alarms  | Yes   |
| Diagnostics function  | Yes; Can be read out                                |
| Alarms  |   |
| • Diagnostic alarm  | Yes   |
| Diagnoses   |   |
| • Monitoring the supply voltage   | Yes   |
| • Wire-break  | Yes   |
| Diagnostics indication LED  |   |
| • for status of the inputs  | Yes   |
| • for maintenance   | Yes   |
| <b>Degree and class of protection</b>   |   |
| IP degree of protection   | IP20  |
| <b>Standards, approvals, certificates</b>   |   |
| CE mark   | Yes   |
| CSA approval  | Yes   |
| UL approval   | Yes   |
| cULus   | Yes   |
| FM approval   | Yes   |
| RCM (formerly C-TICK)   | Yes   |
| KC approval   | Yes   |
| Marine approval   | Yes   |
| <b>Ambient conditions</b>   |   |
| Free fall   |   |
| • Fall height, max.   | 0.3 m; five times, in product package               |
| Ambient temperature during operation  |   |
| • min.  | -20 °C  |
| • max.  | 60 °C   |
| • horizontal installation, min.   | -20 °C  |
| • horizontal installation, max.   | 60 °C   |
| • vertical installation, min.   | -20 °C  |
| • vertical installation, max.   | 50 °C   |
| Ambient temperature during storage/transportation   |   |
| • min.  | -40 °C  |
| • max.  | 70 °C   |
| Air pressure acc. to IEC 60068-2-13   |   |
| • Operation, min.   | 795 hPa   |

|   |  |
|---|--|
| • Operation, max.                               | 1 080 hPa  |
| • Storage/transport, min.                       | 660 hPa  |
| • Storage/transport, max.                       | 1 080 hPa  |
| <b>Relative humidity</b>                        |  |
| • Operation at 25 °C without condensation, max. | 95 %   |
| <b>Pollutant concentrations</b>                 |  |
| • SO2 at RH < 60% without condensation          | SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free |
| <b>connection method</b>                        |  |
| required front connector                        | Yes  |
| <b>Mechanics/material</b>                       |  |
| Enclosure material (front)                      |  |
| • Plastic                                       | Yes  |
| <b>Dimensions</b>                               |  |
| Width   | 70 mm  |
| Height  | 100 mm   |
| Depth   | 75 mm  |
| <b>Weights</b>                                  |  |
| Weight, approx.                                 | 220 g  |

**last modified:** 8/23/2023 