

SIMATIC S7-1200, Analog input, SB 1231 TC, 1 AI thermocouples
Type J or K



General information

Product type designation SB 1231, AI 1x16 bit TC

Supply voltage

Rated value (DC) 24 V

Input current

Current consumption, typ. 5 mA
from backplane bus 5 V DC, typ. 20 mA

Power loss

Power loss, typ. 0.5 W

Analog inputs

Number of analog inputs 1; Thermocouples
permissible input voltage for current input
(destruction limit), max. ± 35 V
permissible input voltage for voltage input
(destruction limit), max. ± 35 V
Technical unit for temperature measurement
adjustable Degrees Celsius/degrees Fahrenheit

Input ranges

| | |
|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| • Voltage | Yes |
| • Current | No |
| • Thermocouple | Yes; J, K, T, E, R & S, B, N, C, TXK/XK(L); voltage range: ± 80 mV |
| • Resistance thermometer | No |
| • Resistance | No |
| Input ranges (rated values), voltages | |
| • -80 mV to +80 mV | Yes |
| — Input resistance (-80 mV to +80 mV) | ≥ 1 MOhm |
| Input ranges (rated values), thermocouples | |
| • Type J | Yes |
| — Input resistance (type J) | 1 200 °C |
| • Type K | Yes |
| — Input resistance (Type K) | 1 372 °C |
| Thermocouple (TC) | |
| Temperature compensation | |
| — parameterizable | No |
| Analog outputs | |
| Number of analog outputs | 0 |
| Cable length | |
| • shielded, max. | 100 m; shielded, twisted pair |
| 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 10 / 50 / 60 / 400 Hz |
| Smoothing of measured values | |
| • parameterizable | Yes |
| Errors/accuracies | |
| Temperature error (relative to input range), (+/-) | 25 °C $\pm 0.1\%$, to 55 °C $\pm 0.2\%$ total measurement range |
| Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) | 0.5 % |
| 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 |

| Diagnoses | |
|---------------------------------------------------|------------------------------------------------------------|
| • Wire-break | Yes |
| Diagnostics indication LED | |
| • for status of the inputs | Yes |
| • for maintenance | Yes |
| Standards, approvals, certificates | |
| 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 |
| Ambient conditions | |
| 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 |
| Relative humidity | |
| • Operation at 25 °C without condensation, max. | 95 % |
| Pollutant concentrations | |
| • SO2 at RH < 60% without condensation | SO2: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free |
| Connection method | |
| required front connector | Yes |
| Mechanics/material | |
| Enclosure material (front) | |
| • Plastic | Yes |

Dimensions

| | |
|--------|-------|
| Width | 38 mm |
| Height | 62 mm |
| Depth | 21 mm |

Weights

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|-----------------|------|
| Weight, approx. | 35 g |
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last modified: 08/25/2020