



SIMATIC S7-1200, Analog input, SB 1231, 1 AI, +/-10 V DC (12 bit resol.) or 0-20 mA

| General information | |
|--|--|
| Product type designation | SB 1231, AI 1x12 bit |
| Supply voltage | |
| Rated value (DC) | 24 V |
| Input current | |
| from backplane bus 5 V DC, typ. | 55 mA |
| Power loss | |
| Power loss, typ. | 0.4 W |
| Analog inputs | |
| Number of analog inputs | 1; Current or voltage differential inputs |
| permissible input voltage for current input (destruction limit), max. | ±35 V |
| permissible input voltage for voltage input (destruction limit), max. | 35 V |
| permissible input current for voltage input (destruction limit), max. | 40 mA |
| permissible input current for current input (destruction limit), max. | 40 mA |
| Cycle time (all channels) max. | 156.25 µs; 400 Hz suppression |
| Input ranges | |
| <ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance | Yes; ±10V, ±5V, ±2.5V Yes; 0 to 20 mA No No No |
| Input ranges (rated values), voltages | |
| <ul style="list-style-type: none"> • -10 V to +10 V — Input resistance (-10 V to +10 V) • -2.5 V to +2.5 V — Input resistance (-2.5 V to +2.5 V) • -5 V to +5 V — Input resistance (-5 V to +5 V) | Yes ≥9 MOhm Yes ≥9 MOhm Yes ≥9 MOhm |
| Input ranges (rated values), currents | |
| <ul style="list-style-type: none"> • 0 to 20 mA — Input resistance (0 to 20 mA) | Yes ≥ 250 Ohm |
| Analog outputs | |
| Number of analog outputs | 0 |
| Cable length | |
| <ul style="list-style-type: none"> • shielded, max. | 100 m; shielded, twisted pair |
| Analog value generation for the inputs | |

| | |
|---|---|
| Measurement principle | integrating |
| Integration and conversion time/resolution per channel | |
| <ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f_1 in Hz | 11 bit; + sign Yes 40 dB, DC to 60 Hz |
| Smoothing of measured values | |
| <ul style="list-style-type: none"> parameterizable Step: None Step: low Step: Medium Step: High | Yes Yes Yes Yes Yes |
| Errors/accuracies | |
| Temperature error (relative to input range), (+/-) | 25 °C \pm 0.3%, to 55 °C \pm 0.6% total measurement range |
| Interrupts/diagnostics/status information | |
| Alarms | Yes |
| Diagnostics function | Yes |
| Alarms | |
| <ul style="list-style-type: none"> Diagnostic alarm | Yes |
| Diagnoses | |
| <ul style="list-style-type: none"> Wire break | No |
| Diagnostics indication LED | |
| <ul style="list-style-type: none"> for status of the inputs for maintenance | Yes 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 | |
| <ul style="list-style-type: none"> Fall height, max. | 0.3 m; five times, in product package |
| Ambient temperature during operation | |
| <ul style="list-style-type: none"> min. max. horizontal installation, min. horizontal installation, max. vertical installation, min. vertical installation, max. | -20 °C 60 °C -20 °C 60 °C -20 °C 50 °C |
| Ambient temperature during storage/transportation | |
| <ul style="list-style-type: none"> min. max. | -40 °C 70 °C |
| Air pressure acc. to IEC 60068-2-13 | |
| <ul style="list-style-type: none"> Operation, min. Operation, max. Storage/transport, min. Storage/transport, max. | 795 hPa 1 080 hPa 660 hPa 1 080 hPa |
| Relative humidity | |
| <ul style="list-style-type: none"> Operation at 25 °C without condensation, max. | 95 % |
| Pollutant concentrations | |
| <ul style="list-style-type: none"> SO₂ at RH < 60% without condensation | SO ₂ : < 0.5 ppm; H ₂ S: < 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

| | |
|-----------------|------|
| Weight, approx. | 35 g |
|-----------------|------|

Classifications

| | Version | Classification |
|--------|---------|----------------|
| eClass | 14 | 27-24-22-01 |
| eClass | 12 | 27-24-22-01 |
| eClass | 9.1 | 27-24-22-01 |
| eClass | 9 | 27-24-22-01 |
| eClass | 8 | 27-24-22-01 |
| eClass | 7.1 | 27-24-22-01 |
| eClass | 6 | 27-24-22-01 |
| ETIM | 10 | EC001420 |
| ETIM | 9 | EC001420 |
| ETIM | 8 | EC001420 |
| ETIM | 7 | EC001420 |
| IDEA | 4 | 3562 |
| UNSPSC | 15 | 32-15-17-05 |

Approvals / Certificates

General Product Approval



[Miscellaneous](#)

[Manufacturer Declaration](#)



[Metrological Approval](#)

General Product Approval

EMV

For use in hazardous locations



[China RoHS](#)

[Manufacturer Declaration](#)



For use in hazardous locations

Maritime application



[FM](#)



[Miscellaneous](#)

[CCC-Ex](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



[CCS \(China Classification Society\)](#)

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