



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                                                          |                                           |
| • Voltage                                                             | Yes; ±10V, ±5V, ±2.5V                     |
| • Current                                                             | Yes; 0 to 20 mA                           |
| • Thermocouple                                                        | No                                        |
| • Resistance thermometer                                              | No                                        |
| • Resistance                                                          | No                                        |
| 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 (-5 V to +5 V)                                     | ≥9 MOhm                                   |
| Input ranges (rated values), currents                                 |                                           |
| • 0 to 20 mA                                                          | Yes                                       |
| — Input resistance (0 to 20 mA)                                       | ≥ 250 Ohm                                 |
| 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.                 | 11 bit; + sign                                             |
| • Integration time, parameterizable                                    | Yes                                                        |
| • Interference voltage suppression for interference frequency f1 in Hz | 40 dB, DC to 60 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 ±0.3%, to 55 °C ±0.6% total measurement range        |
| Interrupts/diagnostics/status information                              |                                                            |
| Alarms                                                                 | Yes                                                        |
| Diagnostics function                                                   | Yes                                                        |
| Alarms                                                                 |                                                            |
| • Diagnostic alarm                                                     | Yes                                                        |
| Diagnoses                                                              |                                                            |
| • Wire-break                                                           | No                                                         |
| 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         |       |
| Weight, approx. | 35 g  |

last modified: 8/16/2023 