




Figure similar

SIMATIC S7-1200, Analog input, SM 1231, 8 AI, +/-10 V, +/-5 V, +/-2.5 V, or 0-20 mA/4-20 mA, 12 bit+sign or (13 bit ADC)

| General information | |
|---|--|
| Product type designation | SM 1231, AI 8x13 bit |
| Supply voltage | |
| Rated value (DC) | 24 V |
| Input current | |
| Current consumption, typ. | 60 mA |
| from backplane bus 5 V DC, typ. | 90 mA |
| Power loss | |
| Power loss, typ. | 1.5 W |
| Analog inputs | |
| Number of analog inputs | 8; Current or voltage differential inputs |
| permissible input voltage for voltage input (destruction limit), max. | 35 V |
| permissible input current for current input (destruction limit), max. | 40 mA |
| Cycle time (all channels) max. | 625 μ s |
| Input ranges | |
| <ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance | Yes; $\pm 10V$, $\pm 5V$, $\pm 2.5V$ Yes; 4 to 20 mA, 0 to 20 mA No No Yes |
| 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) • 4 mA to 20 mA — Input resistance (4 mA to 20 mA) | Yes 280 Ω Yes 280 Ω |
| Thermocouple (TC) | |
| Temperature compensation | |
| — parameterizable | No |
| Analog value generation for the inputs | |
| 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 | 12 bit; + sign Yes 40 dB, DC to 60 V for interference frequency 50 / 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 $\pm 0.1\%$, to 55 °C $\pm 0.2\%$ total measurement range |
| Basic error limit (operational limit at 25 °C) | |
| <ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) | 0.1 % 0.1 % |
| Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency | |
| <ul style="list-style-type: none"> Common mode voltage, max. | 12 V |
| 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"> Monitoring the supply voltage Wire-break | Yes Yes |
| Diagnostics indication LED | |
| <ul style="list-style-type: none"> for status of the inputs for maintenance | Yes Yes |
| Degree and class of protection | |
| IP degree of protection | IP20 |
| 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 | 45 mm |
| Height | 100 mm |
| Depth | 75 mm |
| Weights | |
| Weight, approx. | 180 g |
| last modified: | 8/23/2023  |