




SIMATIC S7-1200, Analog input, SM 1231 TC, 8 AI thermocouples

| General information | |
|---|---|
| Product type designation | SM 1231, AI 8x16 bit TC |
| 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; Thermocouples |
| Technical unit for temperature measurement adjustable | Degrees Celsius/degrees Fahrenheit |
| Input ranges | |
| <ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance | Yes No Yes; J, K, T, E, R & S, B, N, C, TXK/XK(L); voltage range: ± 80 mV No No |
| Input ranges (rated values), voltages | |
| <ul style="list-style-type: none"> • -80 mV to +80 mV — Input resistance (-80 mV to +80 mV) | Yes ≥ 1 MOhm |
| Input ranges (rated values), thermocouples | |
| <ul style="list-style-type: none"> • Type B • Type C • Type E • Type J • Type K • Type N • Type R • Type S • Type T • Type TXK/TXK(L) to GOST | Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes |
| Thermocouple (TC) | |
| Temperature compensation | |
| — parameterizable | No |
| 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 f1 in Hz | 15 bit; + sign No 85 dB at 50 / 60 / 400 Hz |
| Smoothing of measured values | |
| <ul style="list-style-type: none"> parameterizable | Yes |
| Errors/accuracies | |
| 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), (+/-) | 0.5 % |
| Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency | |
| <ul style="list-style-type: none"> Common mode interference, min. | 120 dB |
| Interrupts/diagnostics/status information | |
| Alarms | Yes |
| Diagnostics function | Yes; Can be read out |
| 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 |
| 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 | 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 | 45 mm |
| Height | 100 mm |
| Depth | 75 mm |
| Weights | |
| Weight, approx. | 220 g |
| last modified: | 2/26/2021  |