



SIMATIC S7, analog input SM 331, isolated, 8 AI thermocouples/4 AI Pt100, for signals from the hazardous area, diagnostics-capable, PTB tested 1 x 20-pole

| Supply voltage | |
|--|---|
| Load voltage L+ | |
| • Rated value (DC) | 24 V |
| Input current | |
| from backplane bus 5 V DC, max. | 120 mA |
| Power loss | |
| Power loss, typ. | 0.6 W |
| Analog inputs | |
| Number of analog inputs | 8; 8x thermocouples; 4x RTD thermoresistors |
| Input ranges | |
| • Voltage | Yes |
| • Current | No |
| • Thermocouple | Yes |
| • Resistance thermometer | Yes |
| • Resistance | Yes |
| Input ranges (rated values), voltages | |
| • -1 V to +1 V | Yes |
| — Input resistance (-1 V to +1 V) | 10 MΩ |
| • -25 mV to +25 mV | Yes |
| — Input resistance (-25 mV to +25 mV) | 10 MΩ |
| • -250 mV to +250 mV | Yes |
| — Input resistance (-250 mV to +250 mV) | 10 MΩ |
| • -50 mV to +50 mV | Yes |
| — Input resistance (-50 mV to +50 mV) | 10 MΩ |
| • -500 mV to +500 mV | Yes |
| — Input resistance (-500 mV to +500 mV) | 10 MΩ |
| • -80 mV to +80 mV | Yes |
| — Input resistance (-80 mV to +80 mV) | 10 MΩ |
| Input ranges (rated values), thermocouples | |
| • Type B | Yes |
| — Input resistance (Type B) | 10 MΩ |
| • Type E | Yes |
| — Input resistance (Type E) | 10 MΩ |
| • Type J | Yes |
| — Input resistance (type J) | 10 MΩ |
| • Type K | Yes |
| — Input resistance (Type K) | 10 MΩ |

| | |
|--|---------------------------------|
| • Type L | Yes |
| — Input resistance (Type L) | 10 MΩ |
| • Type N | Yes |
| — Input resistance (Type N) | 10 MΩ |
| • Type R | Yes |
| — Input resistance (Type R) | 10 MΩ |
| • Type S | Yes |
| — Input resistance (Type S) | 10 MΩ |
| • Type T | Yes |
| — Input resistance (Type T) | 10 MΩ |
| • Type U | Yes |
| — Input resistance (Type U) | 10 MΩ |
| Input ranges (rated values), resistance thermometer | |
| • Ni 100 | Yes |
| — Input resistance (Ni 100) | 10 MΩ |
| • Pt 100 | Yes |
| — Input resistance (Pt 100) | 10 MΩ |
| • Pt 200 | Yes |
| — Input resistance (Pt 200) | 10 MΩ |
| Cable length | |
| • shielded, max. | 200 m; TC: 50 m |
| Analog value generation for the inputs | |
| Integration and conversion time/resolution per channel | |
| • Resolution with overrange (bit including sign), max. | 16 bit; 10 bit to 15 bit + sign |
| • Integration time, parameterizable | Yes; 2.5 to 100 ms |
| • Interference voltage suppression for interference frequency f1 in Hz | 10 to 400 Hz |
| Encoder | |
| Connection of signal encoders | |
| • for current measurement as 2-wire transducer | Yes |
| • for current measurement as 4-wire transducer | Yes |
| Errors/accuracies | |
| Operational error limit in overall temperature range | |
| • Resistance thermometer, relative to input range, (+/-) | 0.04 %; 0.09 to 0.04% |
| Basic error limit (operational limit at 25 °C) | |
| • Resistance thermometer, relative to input range, (+/-) | 0.008 %; 0.018 ... 0.008% |
| Interrupts/diagnostics/status information | |
| Diagnostics function | Yes |
| Diagnoses | |
| • Diagnostic information readable | Yes |
| • Overage | Yes |
| • Wire-break in signal transmitter cable | Yes |
| • Short-circuit of the signal encoder cable | Yes |
| Diagnostics indication LED | |
| • Group error SF (red) | Yes |
| • Channel fault indicator F (red) | Yes |
| Ex(i) characteristics | |
| Module for Ex(i) protection | Yes |
| maximum values for connecting terminals for gas group IIC | |
| • Uo (no-load voltage), max. | 5.9 V |
| • Io (short-circuit current), max. | 28.8 mA |
| • Po (power output), max. | 41.4 mW |
| • Co (permissible external capacity), max. | 43 μF |
| • Lo (permissible external inductivity), max. | 40 mH |
| Potential separation | |
| Potential separation analog inputs | |

- between the channels
- between the channels and backplane bus

No
Yes

Standards, approvals, certificates

Use in hazardous areas

- Type of protection acc. to EN 50020 (CENELEC)
- Type of protection acc. to FM
- Test number PTB

[EEx ib] IIC
Class I, Division 2, Group A, B, C, D T4
Ex-96.D.2108X

Ambient conditions

Ambient temperature during operation

- max.

60 °C

Connection method

required front connector

20-pin

Weights

Weight, approx.

210 g

last modified:

3/16/2021 