



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 — Input resistance (Type N) • Type R — Input resistance (Type R) • Type S — Input resistance (Type S) • Type T — Input resistance (Type T) • Type U — Input resistance (Type U)	Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ
Input ranges (rated values), resistance thermometer	
• Ni 100 — Input resistance (Ni 100) • Pt 100 — Input resistance (Pt 100) • Pt 200 — Input resistance (Pt 200)	Yes 10 MΩ Yes 10 MΩ Yes 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. • Integration time, parameterizable • Interference voltage suppression for interference frequency f1 in Hz	16 bit; 10 bit to 15 bit + sign Yes; 2.5 to 100 ms 10 to 400 Hz
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer • for current measurement as 4-wire transducer	Yes 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 • Overage • Wire-break in signal transmitter cable • Short-circuit of the signal encoder cable	Yes Yes Yes Yes
Diagnostics indication LED	
• Group error SF (red) • Channel fault indicator F (red)	Yes Yes
Ex(i) characteristics	
Module for Ex(i) protection	Yes
maximum values for connecting terminals for gas group IIC	
• Uo (no-load voltage), max. • Io (short-circuit current), max. • Po (power output), max. • Co (permissible external capacity), max. • Lo (permissible external inductivity), max.	5.9 V 28.8 mA 41.4 mW 43 µF 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	

- ATEX marking
- FM marking
- Test number PTB

ATEX II 3 G (2) GD Ex nA [ib Gb] [ib IIIC Db] IIC T4 Gc
 Class I, Division 2, Group A, B, C, D T4
 Ex-96.D.2108X

Ambient conditions

Ambient temperature during operation

- max. 60 °C

Weights

Weight, approx. 210 g

last modified: 5/31/2021 