



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+	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Voltage Current Thermocouple Resistance thermometer Resistance 	<ul style="list-style-type: none"> Yes No Yes Yes Yes
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> -1 V to +1 V <ul style="list-style-type: none"> Input resistance (-1 V to +1 V) -25 mV to +25 mV <ul style="list-style-type: none"> Input resistance (-25 mV to +25 mV) -250 mV to +250 mV <ul style="list-style-type: none"> Input resistance (-250 mV to +250 mV) -50 mV to +50 mV <ul style="list-style-type: none"> Input resistance (-50 mV to +50 mV) -500 mV to +500 mV <ul style="list-style-type: none"> Input resistance (-500 mV to +500 mV) -80 mV to +80 mV <ul style="list-style-type: none"> Input resistance (-80 mV to +80 mV) 	<ul style="list-style-type: none"> Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> Type B <ul style="list-style-type: none"> Input resistance (Type B) Type E <ul style="list-style-type: none"> Input resistance (Type E) Type J <ul style="list-style-type: none"> Input resistance (type J) Type K <ul style="list-style-type: none"> Input resistance (Type K) 	<ul style="list-style-type: none"> Yes 10 MΩ Yes 10 MΩ Yes 10 MΩ Yes 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

- 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

Connection method

required front connector

20-pin

Weights

Weight, approx.

210 g

last modified: 5/31/2021 