

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



<b>Supply voltage</b>	
Load voltage L+	
• Rated value (DC)	24 V
<b>Input current</b>	
from backplane bus 5 V DC, max.	120 mA
<b>Power loss</b>	
Power loss, typ.	0.6 W
<b>Analog inputs</b>	
Number of analog inputs	8; 8x thermocouples; 4x RTD thermoresistors
<b>Input ranges</b>	
• Voltage	Yes
• Current	No
• Thermocouple	Yes
• Resistance thermometer	Yes
• Resistance	Yes
<b>Input ranges (rated values), thermocouples</b>	
• 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
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#### Analog value generation for the inputs

Measurement principle	Sigma Delta
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#### 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

Temperature error (relative to input range), (+/-)	0.001 %/K; Temperature error: 0.001 to 0.002 %/K
<b>Operational error limit in overall temperature range</b>	
• Resistance thermometer, relative to input range, (+/-)	0.04 %; 0.09 to 0.04%
<b>Basic error limit (operational limit at 25 °C)</b>	
• Resistance thermometer, relative to input range, (+/-)	0.008 %; 0.018 ... 0.008%
<b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1</math> = interference frequency</b>	
• Series mode interference (peak value of interference < rated value of input range), min.	60 dB
• Common mode interference, min.	130 dB
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
<b>Diagnostic messages</b>	
• Diagnostic information readable	Yes
• Overrange	Yes
• Wire-break in signal transmitter cable	Yes
• Short-circuit of the signal encoder cable	Yes
<b>Diagnostics indication LED</b>	
• Group error SF (red)	Yes
• Channel fault indicator F (red)	Yes
<b>Ex(i) characteristics</b>	
Module for Ex(i) protection	Yes
<b>Maximum values of input circuits (per channel)</b>	
• Co (permissible external capacity), max.	43 $\mu$ F
• Io (short-circuit current), max.	28.8 mA
• Lo (permissible external inductivity), max.	40 mH
• Po (power of load), max.	41.4 mW
• Uo (output no-load voltage), max.	5.9 V
<b>Potential separation</b>	
<b>Potential separation analog inputs</b>	
• Potential separation analog inputs	Yes
<b>Permissible potential difference</b>	
between the inputs (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Between the inputs and MANA (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
<b>Standards, approvals, certificates</b>	
<b>Use in hazardous areas</b>	
• Type of protection acc. to EN 50020 (CENELEC)	[Ex ib] IIC

- Type of protection acc. to FM
- Test number PTB

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:**

08/30/2019