

SIMATIC S7, analog input SM 331, isolated, 4 AE; 0/4 to 20 mA, 1 x 20-pole, for signals from the hazardous area, diagnostics-capable, PTB tested



Figure similar

Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	250 mA
from backplane bus 5 V DC, max.	60 mA
Output voltage	
Power supply to the transmitters	
• Rated value (DC)	13 V; at 22 mA
• No-load voltage (DC)	25.2 V
Power loss	
Power loss, typ.	3 W
Analog inputs	
Number of analog inputs	4

permissible input current for current input (destruction limit), max.	40 mA
<b>Input ranges</b>	
• Voltage	No
• Current	Yes
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No
<b>Input ranges (rated values), currents</b>	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	50 $\Omega$
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	50 $\Omega$
<b>Cable length</b>	
• shielded, max.	200 m
<b>Analog value generation for the inputs</b>	
Measurement principle	Sigma Delta
<b>Integration and conversion time/resolution per channel</b>	
• 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
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
• for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes
<b>Errors/accuracies</b>	
<b>Operational error limit in overall temperature range</b>	
• Current, relative to input range, (+/-)	0.45 %
<b>Basic error limit (operational limit at 25 °C)</b>	
• Current, relative to input range, (+/-)	0.1 %
<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

### Ex(i) characteristics

Module for Ex(i) protection	Yes
<b>Maximum values of input circuits (per channel)</b>	
• Co (permissible external capacity), max.	90 nF
• Io (short-circuit current), max.	68.5 mA
• Lo (permissible external inductivity), max.	7.5 mH
• Po (power of load), max.	431 mW
• Ri, max.	50 Ω
• Uo (output no-load voltage), max.	25.2 V

### Potential separation

<b>Potential separation analog inputs</b>	
• Potential separation analog inputs	Yes

### Permissible potential difference

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

### Standards, approvals, certificates

<b>Use in hazardous areas</b>	
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2092X

### Ambient conditions

<b>Ambient temperature during operation</b>	
• max.	60 °C

### Connection method

required front connector	20-pin
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### Weights

Weight, approx.	290 g
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**last modified:** 12/14/2018