



SIMATIC S7, ANALOG INPUT SM 331, OPTICALLY ISOLATED, 4 AI, 0/4 - 20mA, 1 X 20 PIN, F. SIGNALS F. HAZARDOUS AREAS, CAPABLE OF DIAGNOST.,PTB-TESTED

Figure similar

Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from backplane bus 5 V DC, max.	60 mA
from supply voltage L+, max.	150 mA
Output voltage	
Power supply to the transmitters	
• present	Yes
• Rated value (DC)	13 V; at 22 mA
• No-load voltage (DC)	25.2 V
Power losses	
Power loss, typ.	3 W
Analog inputs	
Number of analog inputs	4
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
• Current	Yes
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	50 Ω
• 4 mA to 20 mA	Yes

• Input resistance (4 mA to 20 mA)	50 Ω
<b>Cable length</b>	
• shielded, max.	200 m
<b>Analog value creation</b>	
Measurement principle	Sigma Delta
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	16 bit; 10 to 15 bits + sign
• Integration time, parameterizable	Yes
<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 limit in overall temperature range</b>	
• Current, relative to input area, (+/-)	0.45 %
<b>Basic error limit (operational limit at 25 °C)</b>	
• Current, relative to input area, (+/-)	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>	
<b>Diagnostic messages</b>	
• Diagnostic functions	Yes
• 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>	
• Short circuit per channel (red)	Yes
• Short-circuit group error (red)	Yes
<b>Ex(i) characteristics</b>	
Module for Ex(i) protection	Yes
<b>Max. 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

### Galvanic isolation

#### Galvanic isolation analog inputs

• Galvanic isolation 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 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

#### Use in hazardous areas

• Type of protection acc. to EN 50020 (CENELEC) [Ex 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

#### Ambient temperature in operation

• max. 60 °C

### Connection method

required front connector 20-pin

### Weights

Weight, approx. 290 g

**last modified:** 12.03.2015