

SIMATIC S7-300, Analog input SM 331, isolated, 8 AI thermocouples Type B, E, J, K, L, N, R, S, T TXK/TXK (L) according to GOST 16 bit, 50ms, 1x 40-pole



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.	240 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	3 W
Analog inputs	
Number of analog inputs	8
permissible input voltage for voltage input (destruction limit), max.	75 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)
Constant measurement current for resistance-type transmitter, typ.	0.7 mA
Input ranges	

• Voltage	No
• Current	No
• Thermocouple	Yes
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• 0 to +10 V	No
• 1 V to 5 V	No
• 1 V to 10 V	No
• -1 V to +1 V	No
• -10 V to +10 V	No
• -2.5 V to +2.5 V	No
• -250 mV to +250 mV	No
• -5 V to +5 V	No
• -50 mV to +50 mV	No
• -500 mV to +500 mV	No
• -80 mV to +80 mV	No
Input ranges (rated values), currents	
• 0 to 20 mA	No
• -10 mA to +10 mA	No
• -20 mA to +20 mA	No
• -3.2 mA to +3.2 mA	No
• 4 mA to 20 mA	No
Input ranges (rated values), thermocouples	
• Type B	Yes
• Type C	Yes
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type L	Yes
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type U	Yes
• Type TXK/TXK(L) to GOST	Yes
Input ranges (rated values), resistance thermometer	
• Cu 10	No
• Ni 100	No
• Ni 1000	No
• LG-Ni 1000	No

• Ni 120	No
• Ni 200	No
• Ni 500	No
• Pt 100	No
• Pt 1000	No
• Pt 200	No
• Pt 500	No
Input ranges (rated values), resistors	
• 0 to 150 ohms	No
• 0 to 300 ohms	No
• 0 to 600 ohms	No
• 0 to 6000 ohms	No
Thermocouple (TC)	
Temperature compensation	
— parameterizable	Yes
— internal temperature compensation	Yes
— external temperature compensation with Pt100	Yes
— external temperature compensation with compensations socket	Yes
— for definable comparison point temperature	Yes
Characteristic linearization	
• parameterizable	Yes
— for thermocouples	Type B, E, J, K, L, N, R, S, T, U, C
Cable length	
• shielded, max.	100 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; Two's complement
• Integration time, parameterizable	Yes
• Basic conversion time (ms)	Up to 4 channels: 10 ms per module, 5 channels upwards: 190 ms per module
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 Hz
Errors/accuracies	
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	±1 K

- Thermocouple, relative to input range, (+/-)

Type T: $\pm 0.18\%$, Type U: $\pm 0.15\%$, Type E: $\pm 0.12\%$, Type J: $\pm 0.12\%$, Type L: $\pm 0.17\%$, Type K: $\pm 0.15\%$, Type N: $\pm 0.17\%$, Type R: $\pm 0.08\%$, Type S: $\pm 0.10\%$, Type B: $\pm 0.13\%$, Type C: $\pm 0.10\%$, TXK/XK(L): $\pm 1.00\%$ accuracy in the lower range of the characteristic curve

Basic error limit (operational limit at 25 °C)

- Thermocouple, relative to input range, (+/-)

Type T: $\pm 0.13\%$, Type U: $\pm 0.08\%$, Type E: $\pm 0.05\%$, Type J: $\pm 0.04\%$, Type L: $\pm 0.06\%$, Type K: $\pm 0.04\%$, Type N: $\pm 0.04\%$, Type R: $\pm 0.03\%$, Type S: $\pm 0.03\%$, Type B: $\pm 0.05\%$, Type C: $\pm 0.02\%$, TXK/XK(L): $\pm 0.67\%$ accuracy in the lower range of the characteristic curve

Interrupts/diagnostics/status information

Diagnostics function Yes; Parameterizable

Alarms

- Diagnostic alarm Yes; Parameterizable per group
- Limit value alarm Yes; Parameterizable
- Hardware interrupt Yes; Parameterizable, channels 0 to 7

Diagnoses

- Diagnostic information readable Yes

Diagnostics indication LED

- Group error SF (red) Yes

Potential separation

Potential separation analog inputs

- between the channels Yes
- between the channels, in groups of 2
- between the channels and backplane bus Yes
- between the channels and the power supply of the electronics Yes

Isolation

Isolation tested with 500 V DC

Connection method

required front connector 40-pin

Dimensions

Width 40 mm
 Height 125 mm
 Depth 120 mm

Weights

Weight, approx. 272 g

last modified: 10/09/2020