

SIMATIC S7-300, Analog input SM 331, single channel Isolated 250 V AC, 6 AI thermocouples Type B, E, J, K, L, N, R, S, T Voltage: +/- 25mV to +/-1V 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.	150 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	2.2 W
Analog inputs	
Number of analog inputs	6
permissible input voltage for voltage input (destruction limit), max.	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
Input ranges	
• Voltage	Yes
• 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	Yes
• Input resistance (-1 V to +1 V)	10 MΩ
• -10 V to +10 V	No
• -2.5 V to +2.5 V	No
• -250 mV to +250 mV	Yes
• Input resistance (-250 mV to +250 mV)	10 MΩ
• -5 V to +5 V	No
• -50 mV to +50 mV	Yes
• Input resistance (-50 mV to +50 mV)	10 MΩ
• -500 mV to +500 mV	Yes
• Input resistance (-500 mV to +500 mV)	10 MΩ
• -80 mV to +80 mV	Yes
• Input resistance (-80 mV to +80 mV)	10 MΩ
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
• Input resistance (Type B)	10 MΩ
• Type C	Yes
• Input resistance (Type C)	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
• Type TXK/TXK(L) to GOST	Yes
• Input resistance (Type TXK/TXK(L) to GOST)	10 MΩ
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
Characteristic linearization	
• parameterizable	Yes
— for thermocouples	Type B, E, J, K, L, N, R, S, T, U, C, TXK, XK(L)
— for resistance thermometer	No
Cable length	
• shielded, max.	200 m

Analog value generation for the inputs	
Measurement principle	integrating
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)	30 / 50 / 60 / 300 ms
Integration time (ms)	10/ 16.67/ 20/ 100 ms
Interference voltage suppression for interference frequency f1 in Hz	10 / 50 / 60 / 400 Hz
Errors/accuracies	
Operational error limit in overall temperature range	
Voltage, relative to input range, (+/-)	Operating error at 0 ... 60 °C: $\pm 0.12\%$ @ ± 25 mV, $\pm 0.08\%$ @ ± 50 mV, $\pm 0.6\%$ @ ± 80 mV, $\pm 0.05\%$ @ ± 250 mV, $\pm 0.05\%$ @ 500 mV, $\pm 0.05\%$ @ ± 1 V
Basic error limit (operational limit at 25 °C)	
Voltage, relative to input range, (+/-)	See manual for details
Interrupts/diagnostics/status information	
Diagnostic functions	Yes; Parameterizable
Alarms	
Diagnostic alarm	Yes; channel by channel
Limit value alarm	Yes; Parameterizable
Hardware interrupt	Yes; Parameterizable
Diagnostic messages	
Diagnostic information readable	Yes
Diagnostics indication LED	
Group error SF (red)	Yes
Potential separation	
Potential separation analog inputs	
between the channels and backplane bus	Yes
Isolation	
Isolation tested with	2500 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:

05/22/2018