



Figure similar

SIMATIC S7-300, Analog input SM 331, Isolated 8 AI, resolution 13 bits
U/I/resistor/Pt100, NI100, NI1000, LG-NI1000, PTC/KTY, 66 ms conversion
time; 1x 40-pole

Input current	
from backplane bus 5 V DC, max.	90 mA
Power loss	
Power loss, typ.	0.4 W
Analog inputs	
Number of analog inputs	8
• For resistance measurement	8
permissible input voltage for voltage input (destruction limit), max.	30 V; 12 V continuous, 30 V for max. 1 s
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
• Voltage	Yes
• Current	Yes
• Thermocouple	No
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 kΩ
• 1 V to 5 V	Yes
— Input resistance (1 V to 5 V)	100 kΩ
• 1 V to 10 V	No
• -1 V to +1 V	Yes
— Input resistance (-1 V to +1 V)	100 kΩ
• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	100 kΩ
• -2.5 V to +2.5 V	No
• -250 mV to +250 mV	No
• -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	100 kΩ
• -50 mV to +50 mV	Yes
— Input resistance (-50 mV to +50 mV)	100 kΩ
• -500 mV to +500 mV	Yes
— Input resistance (-500 mV to +500 mV)	100 kΩ
• -80 mV to +80 mV	No
Input ranges (rated values), currents	

• 0 to 20 mA — Input resistance (0 to 20 mA) • -10 mA to +10 mA • -20 mA to +20 mA — Input resistance (-20 mA to +20 mA) • -3.2 mA to +3.2 mA • 4 mA to 20 mA — Input resistance (4 mA to 20 mA)	Yes 100 Ω No Yes 100 Ω No Yes 100 Ω
Input ranges (rated values), thermocouples	
• Type B • Type C • Type E • Type J • Type K • Type L • Type N • Type R • Type S • Type T • Type U • Type TXK/TXK(L) to GOST	No No No No No No No No No No No No
Input ranges (rated values), resistance thermometer	
• Cu 10 • Ni 100 — Input resistance (Ni 100) • Ni 1000 — Input resistance (Ni 1000) • LG-Ni 1000 — Input resistance (LG-Ni 1000) • Ni 120 • Ni 200 • Ni 500 • Pt 100 — Input resistance (Pt 100) • Pt 1000 • Pt 200 • Pt 500	No Yes; Standard/climate 100 M Ω Yes 100 M Ω Yes; Standard/climate 100 M Ω No No No Yes; Standard/climate 100 M Ω No No No
Input ranges (rated values), resistors	
• 0 to 150 ohms • 0 to 300 ohms • 0 to 600 ohms — Input resistance (0 to 600 ohms) • 0 to 6000 ohms — Input resistance (0 to 6000 ohms)	No No Yes 100 M Ω Yes 100 M Ω
Thermocouple (TC)	
Temperature compensation	
— parameterizable — internal temperature compensation — external temperature compensation with compensations socket	No No No
Characteristic linearization	
• parameterizable — for thermocouples — for resistance thermometer	Yes No yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.
Cable length	
• shielded, max.	200 m; max. 50 m at 50 mV
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	

- Resolution with overrange (bit including sign), max. - Integration time, parameterizable	13 bit Yes
Encoder	
Connection of signal encoders	
for voltage measurement	Yes
for current measurement as 2-wire transducer	Yes; with external supply
for current measurement as 4-wire transducer	Yes
for resistance measurement with two-wire connection	Yes
for resistance measurement with three-wire connection	Yes
for resistance measurement with four-wire connection	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
Voltage, relative to input range, (+/-)	0.6 %; ± 0.6 % (± 5 V, 10 V, 1 to 5 V, 0 to 10 V); ± 0.5 % (± 50 mV, 500 mV, 1 V)
Current, relative to input range, (+/-)	0.5 %; ± 20 mA, 0 to 20 mA, 4 to 20 mA
Resistance, relative to input range, (+/-)	0.5 %; 0 to 6 kohms, 0 to 600 kohms
Resistance thermometer, relative to input range, (+/-)	1 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic); 1.2 Kelvin (Pt100, Ni100, standard)
Basic error limit (operational limit at 25 °C)	
Voltage, relative to input range, (+/-)	0.4 %; 0.4% (± 5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (± 50 mV, 500 mV, 1 V)
Current, relative to input range, (+/-)	0.3 %; ± 20 mA, 0 to 20 mA, 4 to 20 mA
Resistance, relative to input range, (+/-)	0.3 %; 0 to 6 kohms, 0 to 600 kohms
Resistance thermometer, relative to input range, (+/-)	1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic)
Interrupts/diagnostics/status information	
Diagnostics function	No
Alarms	
Diagnostic alarm	No
Limit value alarm	No
Diagnoses	
Diagnostic information readable	No
Diagnostics indication LED	
Group error SF (red)	No
Potential separation	
Potential separation analog inputs	
between the channels	No
between the channels and backplane bus	Yes
Isolation	
Isolation tested with	500 V DC
Connection method	
required front connector	40-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	117 mm
Weights	
Weight, approx.	250 g
last modified:	1/15/2021 