



Figure similar

spare part 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: +/-25 mV to +/- 1 V 16 bit, 50 ms, 1x 40-pole

General information	
Product function	
<ul style="list-style-type: none"> • Isochronous mode 	No
Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> • Rated value (DC) • Reverse polarity protection 	24 V 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)
Constant measurement current for resistance-type transmitter, typ.	0.7 mA
Input ranges	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance 	Yes No Yes No No
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> • 0 to +10 V • 1 V to 5 V • 1 V to 10 V • -1 V to +1 V <ul style="list-style-type: none"> — Input resistance (-1 V to +1 V) • -10 V to +10 V • -2.5 V to +2.5 V • -250 mV to +250 mV <ul style="list-style-type: none"> — Input resistance (-250 mV to +250 mV) • -5 V to +5 V • -50 mV to +50 mV <ul style="list-style-type: none"> — Input resistance (-50 mV to +50 mV) • -500 mV to +500 mV 	No No No Yes 10 MΩ No No Yes 10 MΩ No Yes 10 MΩ 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
— for definable comparison point temperature	Yes

Characteristic linearization		
<ul style="list-style-type: none"> parameterizable — for thermocouples — for resistance thermometer 	Yes	Type B, E, J, K, L, N, R, S, T, U, C, TXK, XK(L)
	No	
Cable length		
<ul style="list-style-type: none"> shielded, max. 	200 m	
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Basic conversion time (ms) Integration time (ms) Interference voltage suppression for interference frequency f_1 in Hz 	16 bit; Two's complement	Yes
	30 / 50 / 60 / 300 ms	10 / 16.67 / 20 / 100 ms
	10 / 50 / 60 / 400 Hz	
Encoder		
Connection of signal encoders		
<ul style="list-style-type: none"> for voltage measurement 	Yes	
Errors/accuracies		
Operational error limit in overall temperature range		
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Thermocouple, 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	
	See manual for details	
Basic error limit (operational limit at 25 °C)		
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Thermocouple, relative to input range, (+/-) 	See manual for details	
	See manual for details	
Interrupts/diagnostics/status information		
Diagnostics function	Yes; Parameterizable	
Alarms		
<ul style="list-style-type: none"> Diagnostic alarm Limit value alarm Hardware interrupt 	Yes; channel by channel	
	Yes; Parameterizable	
	Yes; Parameterizable	
Diagnoses		
<ul style="list-style-type: none"> Diagnostic information readable 	Yes	
Diagnostics indication LED		
<ul style="list-style-type: none"> Group error SF (red) 	Yes	
Potential separation		
Potential separation analog inputs		
<ul style="list-style-type: none"> between the channels between the channels, in groups of between the channels and backplane bus between the channels and the power supply of the electronics 	Yes	1
	Yes	Yes
	Yes	
Isolation		
Isolation tested with	2 500 V DC	
Connection method		
required front connector	40-pin	
Dimensions		
Width	40 mm	
Height	125 mm	
Depth	120 mm	
Weights		
Weight, approx.	272 g	
Classifications		
	Version	Classification
eClass	14	27-24-22-01
eClass	12	27-24-22-01
eClass	9.1	27-24-22-01
eClass	9	27-24-22-01

eClass	8	27-24-22-01
eClass	7.1	27-24-22-01
eClass	6	27-24-22-01
ETIM	10	EC001420
ETIM	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420
IDEA	4	3562
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval



[Miscellaneous](#)

[Manufacturer Declaration](#)



[Metrological Approval](#)

General Product Approval

EMV



[China RoHS](#)

[Manufacturer Declaration](#)



EMV

For use in hazardous locations



[EM](#)



For use in hazardous locations

Maritime application

[Miscellaneous](#)

[CCC-Ex](#)



[NK / Nippon Kaiji Kyokai](#)

Maritime application



[CCS \(China Classification Society\)](#)

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