

spare part SIMATIC S7-300, analog input SM 331, isolated, 8 AI; +/-5/10V, 1-5 V, +/-20 mA, 0/4 to 20 mA, 16 bit (55 ms), single-point grounding (50 V COM.), 1x 40-pole

General information	
Product function	
<ul style="list-style-type: none"> • Isochronous mode 	No
Input current	
from backplane bus 5 V DC, max.	130 mA
Power loss	
Power loss, typ.	0.6 W
Analog inputs	
Number of analog inputs	8
permissible input voltage for voltage input (destruction limit), max.	50 V; Permanent
permissible input current for current input (destruction limit), max.	32 mA
Input ranges	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance 	<ul style="list-style-type: none"> Yes Yes No No No
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> • 0 to +10 V • 1 V to 5 V <ul style="list-style-type: none"> — Input resistance (1 V to 5 V) • 1 V to 10 V • -1 V to +1 V • -10 V to +10 V <ul style="list-style-type: none"> — Input resistance (-10 V to +10 V) • -2.5 V to +2.5 V • -250 mV to +250 mV • -5 V to +5 V <ul style="list-style-type: none"> — Input resistance (-5 V to +5 V) • -50 mV to +50 mV • -500 mV to +500 mV • -80 mV to +80 mV 	<ul style="list-style-type: none"> No Yes 2 MΩ No No Yes 2 MΩ No No Yes 2 MΩ No No No
Input ranges (rated values), currents	
<ul style="list-style-type: none"> • 0 to 20 mA <ul style="list-style-type: none"> — Input resistance (0 to 20 mA) • -10 mA to +10 mA • -20 mA to +20 mA <ul style="list-style-type: none"> — Input resistance (-20 mA to +20 mA) • -3.2 mA to +3.2 mA • 4 mA to 20 mA <ul style="list-style-type: none"> — Input resistance (4 mA to 20 mA) 	<ul style="list-style-type: none"> Yes 250 Ω No Yes 250 Ω No Yes 250 Ω
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> • Type B • Type C • Type E • Type J • Type K 	<ul style="list-style-type: none"> No No No No No

• Type L	No
• Type N	No
• Type R	No
• Type S	No
• Type T	No
• Type U	No
• Type TXK/TXK(L) to GOST	No
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
Cable length	
• shielded, max.	200 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign
• Integration time, parameterizable	Yes; 10/ 16.67/ 20/ 100 ms
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 / 10 Hz
Encoder	
Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes; with external transmitter; possible with separate supply for transmitter
• for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.1 %; At Ucm = 0 V or ±0.7 % at Ucm = 50 V
• Current, relative to input range, (+/-)	0.3 %; At Ucm = 0 V or ±0.9 % at Ucm = 50 V
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %
• Current, relative to input range, (+/-)	0.05 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Limit value alarm	Yes; Parameterizable, channels 0 and 2
Diagnoses	
• Diagnostic information readable	Yes
Diagnostics indication LED	
• Group error SF (red)	Yes
Potential separation	
Potential separation analog inputs	
• between the channels	No
• between the channels, in groups of	2
• 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.	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](#)



[Metrological Approval](#)


General Product Approval | **EMV**



[China RoHS](#)
[Manufacturer Declaration](#)







For use in hazardous locations


[FM](#)


[Miscellaneous](#)
[CCC-Ex](#)

Maritime application




[NK / Nippon Kaiji Kyokai](#)



Maritime application

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