



Figure similar

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 	<ul style="list-style-type: none"> Yes 250 Ω No

<ul style="list-style-type: none"> • -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) 	<p>Yes</p> <p>250 Ω</p> <p>No</p> <p>Yes</p> <p>250 Ω</p>
Input ranges (rated values), thermocouples	
<ul style="list-style-type: none"> • 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 	<p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p>
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> • Cu 10 • Ni 100 • Ni 1000 • LG-Ni 1000 • Ni 120 • Ni 200 • Ni 500 • Pt 100 • Pt 1000 • Pt 200 • Pt 500 	<p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p>
Input ranges (rated values), resistors	
<ul style="list-style-type: none"> • 0 to 150 ohms • 0 to 300 ohms • 0 to 600 ohms • 0 to 6000 ohms 	<p>No</p> <p>No</p> <p>No</p> <p>No</p>
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	<p>200 m</p>
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 • Interference voltage suppression for interference frequency f_1 in Hz 	<p>16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign</p> <p>Yes; 10/ 16.67/ 20/ 100 ms</p> <p>400 / 60 / 50 / 10 Hz</p>
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> • for voltage measurement • for current measurement as 2-wire transducer • for current measurement as 4-wire transducer 	<p>Yes</p> <p>Yes; with external transmitter; possible with separate supply for transmitter</p> <p>Yes</p>
Errors/accuracies	
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-) 	<p>0.1 %; At $U_{cm} = 0$ V or ± 0.7 % at $U_{cm} = 50$ V</p> <p>0.3 %; At $U_{cm} = 0$ V or ± 0.9 % at $U_{cm} = 50$ V</p>
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-) 	<p>0.05 %</p> <p>0.05 %</p>
Interrupts/diagnostics/status information	
<ul style="list-style-type: none"> • Diagnostics function 	<p>Yes; Parameterizable</p>
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



[EM](#)



[Miscellaneous](#)

[CCC-Ex](#)

Maritime application



[NK / Nippon Kaiji Kyokai](#)



Maritime application

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

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