



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	
• 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	
• Voltage	Yes
• Current	Yes
• Thermocouple	No
• Resistance thermometer	No
• Resistance	No
Input ranges (rated values), voltages	
• 0 to +10 V	No
• 1 V to 5 V	Yes
— Input resistance (1 V to 5 V)	2 MΩ
• 1 V to 10 V	No
• -1 V to +1 V	No
• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	2 MΩ
• -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)	2 MΩ
• -50 mV to +50 mV	No
• -500 mV to +500 mV	No
• -80 mV to +80 mV	No
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	250 Ω
• -10 mA to +10 mA	No

• -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 250 Ω No Yes 250 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 • Ni 1000 • LG-Ni 1000 • Ni 120 • Ni 200 • Ni 500 • Pt 100 • Pt 1000 • Pt 200 • Pt 500	No No No No No No No No No No No No
Input ranges (rated values), resistors	
• 0 to 150 ohms • 0 to 300 ohms • 0 to 600 ohms • 0 to 6000 ohms	No No No 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. • Integration time, parameterizable • Interference voltage suppression for interference frequency f_1 in Hz	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign Yes; 10/ 16.67/ 20/ 100 ms 400 / 60 / 50 / 10 Hz
Encoder	
Connection of signal encoders	
• for voltage measurement • for current measurement as 2-wire transducer • for current measurement as 4-wire transducer	Yes Yes; with external transmitter; possible with separate supply for transmitter Yes
Errors/accuracies	
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-)	0.1 %; At $U_{cm} = 0$ V or ± 0.7 % at $U_{cm} = 50$ V 0.3 %; At $U_{cm} = 0$ V or ± 0.9 % at $U_{cm} = 50$ V
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-)	0.05 % 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	16	27-24-22-01
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
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[China RoHS](#)

[Manufacturer Declaration](#)



EMV	For use in hazardous locations
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RCM



ATEX

[FM](#)



IECEX



ATEX

[Miscellaneous](#)

For use in hazard-
ous locations

Maritime application

[CCC-Ex](#)



ABS



DNV



LRS

[NK / Nippon Kaiji Ky-
okai](#)



PRS

Maritime application



RINA

[CCS \(China Classifica-
tion Society\)](#)

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