



Figure similar

SIMATIC S7-300, Analog input SM 331, isolated, 8 AI; $\pm 5/10\text{V}$, $1-5\text{ V}$, $\pm 20\text{ mA}$, $0/4$ to 20 mA , 16 bit, Single rooting (60 V COM.), 4-channel operation: 10 ms, 8-channel operation: 23-95ms, 1x 40-pole

Supply voltage

Load voltage L+

• Rated value (DC)	24 V
• Reverse polarity protection	Yes

Input current

from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	100 mA

Power loss

Power loss, typ.	3 W
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Analog inputs

Number of analog inputs	8
permissible input voltage for voltage input (destruction limit), max.	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 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)	10 M Ω
• 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)	10 M Ω
• -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)	10 M Ω
• -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
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 • Basic conversion time (ms) • Interference voltage suppression for interference frequency f1 in Hz	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign Yes; 23 / 72 / 83 / 95 ms 10 ms (4-channel mode); 95/83/72/23 ms (8-channel mode) 400 / 60 / 50 Hz, combinations of 400, 60, 50 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, current supply; 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 % 0.1 %
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 all channels (end of cycle interrupt is also supported across modules)
• Hardware interrupt	Yes; Parameterizable, channels 0 to 7 (on exceeding limit value), at end of cycle
Diagnoses	
• Diagnostic information readable	Yes
Diagnostics indication LED	
• Group error SF (red)	Yes
Potential separation	
Potential separation analog inputs	
• between the channels	Yes
• between the channels, in groups of	2
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
Isolation	
Isolation tested with	500 V AC
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](#)



EMV	For use in hazardous locations
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[FM](#)



For use in hazardous locations	Maritime application
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IECEX

[Miscellaneous](#)

[CCC-Ex](#)



ABS



DNV



LRS

Maritime application

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



PRS



RINA

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

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