



SIMATIC S7-300, Analog input SM 331, isolated, 8 AI thermocouples Type B, E, J, K, L, N, R, S, T TXK/TXK (L) according to GOST 16 bit, 50ms, 1x 40-pole

Figure similar

Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> Rated value (DC) 	24 V
<ul style="list-style-type: none"> Reverse polarity protection 	Yes
Input current	
from load voltage L+ (without load), max.	240 mA
from backplane bus 5 V DC, max.	100 mA
Power loss	
Power loss, typ.	3 W
Analog inputs	
Number of analog inputs	8
permissible input voltage for voltage input (destruction limit), max.	75 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)
Constant measurement current for resistance-type transmitter, typ.	0.7 mA
Input ranges	
<ul style="list-style-type: none"> Voltage 	No
<ul style="list-style-type: none"> Current 	No
<ul style="list-style-type: none"> Thermocouple 	Yes
<ul style="list-style-type: none"> Resistance thermometer 	No
<ul style="list-style-type: none"> Resistance 	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 -10 V to +10 V -2.5 V to +2.5 V -250 mV to +250 mV -5 V to +5 V -50 mV to +50 mV -500 mV to +500 mV -80 mV to +80 mV 	No
Input ranges (rated values), currents	
<ul style="list-style-type: none"> 0 to 20 mA -10 mA to +10 mA -20 mA to +20 mA -3.2 mA to +3.2 mA 4 mA to 20 mA 	No
Input ranges (rated values), thermocouples	

• Type B	Yes
• Type C	Yes
• Type E	Yes
• Type J	Yes
• Type K	Yes
• Type L	Yes
• Type N	Yes
• Type R	Yes
• Type S	Yes
• Type T	Yes
• Type U	Yes
• Type TXK/TXK(L) to GOST	Yes

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

• parameterizable	Yes
— for thermocouples	Type B, E, J, K, L, N, R, S, T, U, C

Cable length

• shielded, max.	100 m
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Analog value generation for the inputs

Integration and conversion time/resolution per channel

• Resolution with overrange (bit including sign), max.	16 bit; Two's complement
• Integration time, parameterizable	Yes
• Basic conversion time (ms)	Up to 4 channels: 10 ms per module, 5 channels upwards: 190 ms per module
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 Hz

Errors/accuracies

Operational error limit in overall temperature range

• Voltage, relative to input range, (+/-)	±1 K
• Thermocouple, relative to input range, (+/-)	Type T: ±0.18%, Type U: ±0.15%, Type E: ±0.12%, Type J: ±0.12%, Type L: ±0.17%, Type K: ±0.15%, Type N: ±0.17%, Type R: ±0.08%, Type S: ±0.10%, Type B: ±0.13%, Type C: ±0.10%, TXK/XK(L): ±1.00% accuracy in the lower range of the characteristic curve

Basic error limit (operational limit at 25 °C)

• Thermocouple, relative to input range, (+/-)	Type T: ±0.13%, Type U: ±0.08%, Type E: ±0.05%, Type J: ±0.04%, Type L: ±0.06%, Type K: ±0.04%, Type N: ±0.04%, Type R: ±0.03%, Type S: ±0.03%, Type B: ±0.05%, Type C: ±0.02%, TXK/XK(L): ±0.67 % accuracy in the lower range of the characteristic curve
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Interrupts/diagnostics/status information

Diagnostics function	Yes; Parameterizable
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Alarms	
• Diagnostic alarm	Yes; Parameterizable per group
• Limit value alarm	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable, channels 0 to 7
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 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	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420
IDEA	4	3562
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

[Manufacturer Declaration](#)



[Declaration of Conformity](#)



[Metrological Approval](#)

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

For use in hazardous locations	Marine / Shipping
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IECEX



ATEX

[Miscellaneous](#)

[CCC-Ex](#)



ABS



DNV

Marine / Shipping



LRS

[NK / Nippon Kaiji Kyokai](#)



PRS

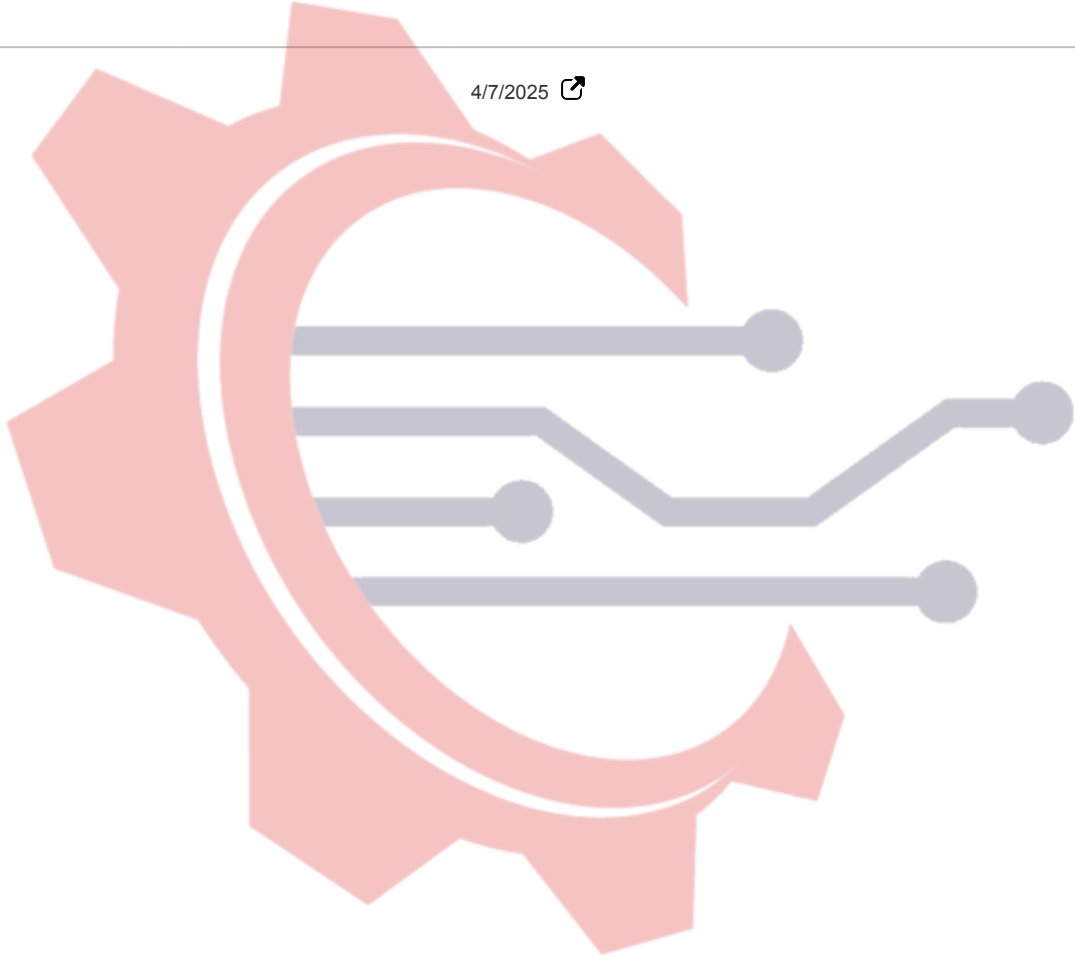


RINA

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

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