



Figure similar

SIMATIC S7-300, Analog input SM 331, isolated, 8 AI; +/-5/10V, 1-5 V, +/-20 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
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 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)	10 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)	10 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

<ul style="list-style-type: none"> <li>• -20 mA to +20 mA <ul style="list-style-type: none"> <li>— Input resistance (-20 mA to +20 mA)</li> </ul> </li> <li>• -3.2 mA to +3.2 mA</li> <li>• 4 mA to 20 mA <ul style="list-style-type: none"> <li>— Input resistance (4 mA to 20 mA)</li> </ul> </li> </ul>	<p>Yes</p> <p>250 Ω</p> <p>No</p> <p>Yes</p> <p>250 Ω</p>
<b>Input ranges (rated values), thermocouples</b>	
<ul style="list-style-type: none"> <li>• Type B</li> <li>• Type C</li> <li>• Type E</li> <li>• Type J</li> <li>• Type K</li> <li>• Type L</li> <li>• Type N</li> <li>• Type R</li> <li>• Type S</li> <li>• Type T</li> <li>• Type U</li> <li>• Type TXK/TXK(L) to GOST</li> </ul>	<p>No</p>
<b>Input ranges (rated values), resistance thermometer</b>	
<ul style="list-style-type: none"> <li>• Cu 10</li> <li>• Ni 100</li> <li>• Ni 1000</li> <li>• LG-Ni 1000</li> <li>• Ni 120</li> <li>• Ni 200</li> <li>• Ni 500</li> <li>• Pt 100</li> <li>• Pt 1000</li> <li>• Pt 200</li> <li>• Pt 500</li> </ul>	<p>No</p>
<b>Input ranges (rated values), resistors</b>	
<ul style="list-style-type: none"> <li>• 0 to 150 ohms</li> <li>• 0 to 300 ohms</li> <li>• 0 to 600 ohms</li> <li>• 0 to 6000 ohms</li> </ul>	<p>No</p> <p>No</p> <p>No</p> <p>No</p>
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	<p>200 m</p>
<b>Analog value generation for the inputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> <li>• Integration time, parameterizable</li> <li>• Basic conversion time (ms)</li> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	<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; 23 / 72 / 83 / 95 ms</p> <p>10 ms (4-channel mode); 95/83/72/23 ms (8-channel mode)</p> <p>400 / 60 / 50 Hz, combinations of 400, 60, 50 Hz</p>
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
<ul style="list-style-type: none"> <li>• for voltage measurement</li> <li>• for current measurement as 2-wire transducer</li> <li>• for current measurement as 4-wire transducer</li> </ul>	<p>Yes</p> <p>Yes; with external transmitter, current supply; possible with separate supply for transmitter</p> <p>Yes</p>
<b>Errors/accuracies</b>	
<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> <li>• Current, relative to input range, (+/-)</li> </ul>	<p>0.1 %</p> <p>0.1 %</p>
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> <li>• Current, relative to input range, (+/-)</li> </ul>	<p>0.05 %</p> <p>0.05 %</p>
<b>Interrupts/diagnostics/status information</b>	
<ul style="list-style-type: none"> <li>• Diagnostics function</li> </ul>	<p>Yes; Parameterizable</p>
<b>Alarms</b>	

• 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
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**Diagnostics indication LED**

• Group error SF (red)	Yes
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**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
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**connection method**

required front connector	40-pin
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**Dimensions**

Width	40 mm
Height	125 mm
Depth	117 mm

**Weights**

Weight, approx.	272 g
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**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**



[Miscellaneous](#)



General Product Approval	Test Certificates	other	Railway	Dangerous goods
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**Environment**

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