

SIMATIC S7-300, ANALOG INPUT SM 331, OPT. ISOL., 2/3/4 WIRE, 8AI, RESISTANCE, PT100/200/1000 NI100/120/200/500/1000, CU10, 16 (INTERN 24) BIT, 50MS, 40 PIN

Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• 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.	4.6 W
Analog inputs	
Number of analog inputs	8
• For resistance measurement	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)
Input ranges	
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), resistance thermometer	
• Cu 10	Yes
• Ni 100	Yes
• Ni 1000	Yes
• Ni 120	Yes
• Ni 200	Yes
• Ni 500	Yes
• Pt 100	Yes
• Pt 1000	Yes
• Pt 200	Yes
• Pt 500	Yes
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes
• 0 to 300 ohms	Yes
• 0 to 600 ohms	Yes
Characteristic linearization	

<ul style="list-style-type: none"> <li>parameterizable</li> <li>— for resistance thermometer</li> </ul>	Yes Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10; (standard/climate)
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<b>Cable length</b>	
<ul style="list-style-type: none"> <li>shielded, max.</li> </ul>	200 m

### Analog value generation for the inputs

Measurement principle	integrating
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> </ul>	16 bit; Two's complement
<ul style="list-style-type: none"> <li>Integration time, parameterizable</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Basic conversion time (ms)</li> </ul>	up to 4 channels: 10 ms per module, over 5 channels: 190 ms per module, 8 channels: 80 ms
<ul style="list-style-type: none"> <li>Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	400 / 60 / 50 Hz

### Encoder

<b>Connection of signal encoders</b>	
<ul style="list-style-type: none"> <li>for resistance measurement with two-wire connection</li> </ul>	Yes; without resistance correction
<ul style="list-style-type: none"> <li>for resistance measurement with three-wire connection</li> </ul>	Yes
<ul style="list-style-type: none"> <li>for resistance measurement with four-wire connection</li> </ul>	Yes

### Errors/accuracies

<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>Resistance, relative to input range, (+/-)</li> </ul>	0.1 %
<ul style="list-style-type: none"> <li>Resistance thermometer, relative to input range, (+/-)</li> </ul>	±1 K
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>Resistance, relative to input range, (+/-)</li> </ul>	0.05 %
<ul style="list-style-type: none"> <li>Resistance thermometer, relative to input range, (+/-)</li> </ul>	±0.5 K

### Interrupts/diagnostics/status information

Diagnostic functions	Yes; Parameterizable
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes; Parameterizable per group
<ul style="list-style-type: none"> <li>Limit value alarm</li> </ul>	Yes; Parameterizable
<ul style="list-style-type: none"> <li>Hardware interrupt</li> </ul>	Yes; Parameterizable, channels 0 to 7
<b>Diagnostic messages</b>	
<ul style="list-style-type: none"> <li>Diagnostic information readable</li> </ul>	Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>Group error SF (red)</li> </ul>	Yes

## Potential separation

### Potential separation analog inputs

- 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 120 mm

## Weights

Weight, approx. 272 g

**last modified:** 03/09/2018