

SIMATIC S7-300, ANALOG INPUT SM 331, OPTICALLY ISOLATED, 8 AI, 13 BIT RESOLUTION, U//RESISTANCE/PT100, NI100, NI1000, LG-NI1000, PTC / KTY, 66 MS MODULE UPDATE, 1 X 40 PIN



Figure similar

Input current	
from backplane bus 5 V DC, max.	90 mA
Power loss	
Power loss, typ.	0.4 W
Analog inputs	
Number of analog inputs	8
• For resistance measurement	8
permissible input voltage for voltage input (destruction limit), max.	30 V; 12 V continuous, 30 V for max. 1 s
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
• Voltage	Yes
• Current	Yes
• Thermocouple	No
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), voltages	

• 0 to +10 V	Yes
• Input resistance (0 to 10 V)	100 kΩ
• 1 V to 5 V	Yes
• Input resistance (1 V to 5 V)	100 kΩ
• 1 V to 10 V	No
• -1 V to +1 V	Yes
• Input resistance (-1 V to +1 V)	100 kΩ
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	100 kΩ
• -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)	100 kΩ
• -50 mV to +50 mV	Yes
• Input resistance (-50 mV to +50 mV)	100 kΩ
• -500 mV to +500 mV	Yes
• Input resistance (-500 mV to +500 mV)	100 kΩ
• -80 mV to +80 mV	No

#### Input ranges (rated values), currents

• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	100 Ω
• -10 mA to +10 mA	No
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	100 Ω
• -3.2 mA to +3.2 mA	No
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	100 Ω

#### Input ranges (rated values), thermocouples

• Type B	No
• Type C	No
• Type E	No
• Type J	No
• Type K	No
• Type L	No
• Type N	No
• Type R	No
• Type S	No
• Type T	No
• Type U	No
• Type TXK/TXK(L) to GOST	No

#### Input ranges (rated values), resistance thermometer

• Cu 10	No
• Ni 100	Yes; Standard/climate
• Input resistance (Ni 100)	100 MΩ
• Ni 1000	Yes
• Input resistance (Ni 1000)	100 MΩ
• LG-Ni 1000	Yes; Standard/climate
• Input resistance (LG-Ni 1000)	100 MΩ
• Ni 120	No
• Ni 200	No
• Ni 500	No
• Pt 100	Yes; Standard/climate
• Input resistance (Pt 100)	100 MΩ
• Pt 1000	No
• Pt 200	No
• Pt 500	No
<b>Input ranges (rated values), resistors</b>	
• 0 to 150 ohms	No
• 0 to 300 ohms	No
• 0 to 600 ohms	Yes
• Input resistance (0 to 600 ohms)	100 MΩ
• 0 to 6000 ohms	Yes
• Input resistance (0 to 6000 ohms)	100 MΩ
<b>Thermocouple (TC)</b>	
<b>Temperature compensation</b>	
— Parameterizable	No
— internal temperature compensation	No
— external temperature compensation with compensations socket	No
<b>Characteristic linearization</b>	
• parameterizable	Yes
— for thermocouples	No
— for resistance thermometer	yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.
<b>Cable length</b>	
• shielded, max.	200 m; max. 50 m at 50 mV
<b>Analog value generation</b>	
Measurement principle	integrating
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	13 bit
• Integration time, parameterizable	Yes; 60 / 50 ms
• Basic conversion time (ms)	66 / 55 ms

- Interference voltage suppression for interference frequency f1 in Hz

50 / 60 Hz

## Encoder

### Connection of signal encoders

- |   |                           |
|---|---------------------------|
| • for current measurement as 2-wire transducer          | Yes; with external supply |
| • for current measurement as 4-wire transducer          | Yes                       |
| • for resistance measurement with two-wire connection   | Yes                       |
| • for resistance measurement with three-wire connection | Yes                       |
| • for resistance measurement with four-wire connection  | Yes                       |

## Errors/accuracies

### Operational error limit in overall temperature range

- |   |  |
|---|--|
| • Voltage, relative to input area, (+/-)                | 0.6 %; +/-0.6% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); +/-0.5% (+/-50 mV, 500 mV, 1 V)  |
| • Current, relative to input area, (+/-)                | 0.5 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA  |
| • Resistance, relative to input area, (+/-)             | 0.5 %; 0 to 6 kohms, 0 to 600 kohms  |
| • Resistance thermometer, relative to input area, (+/-) | 1 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic); 1.2 Kelvin (Pt100, Ni100, standard) |

### Basic error limit (operational limit at 25 °C)

- |   |  |
|---|--|
| • Voltage, relative to input area, (+/-)                | 0.4 %; 0.4% (+/-5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (+/-50 mV, 500 mV, 1 V)  |
| • Current, relative to input area, (+/-)                | 0.3 %; +/-20 mA, 0 to 20 mA, 4 to 20 mA  |
| • Resistance, relative to input area, (+/-)             | 0.3 %; 0 to 6 kohms, 0 to 600 kohms  |
| • Resistance thermometer, relative to input area, (+/-) | 1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic) |

## Interrupts/diagnostics/status information

### Alarms

- |                     |    |
|---------------------|----|
| • Diagnostic alarm  | No |
| • Limit value alarm | No |

### Diagnostic messages

- |                                   |    |
|-----------------------------------|----|
| • Diagnostic functions            | No |
| • Diagnostic information readable | No |

### Diagnostics indication LED

- |                        |    |
|------------------------|----|
| • Group error SF (red) | No |
|------------------------|----|

## Potential separation

### Potential separation analog inputs

- |  |     |
|--|-----|
| • between the channels and the 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.	250 g
<b>last modified:</b>	17.07.2015