



SIMATIC S7-300, ANALOG INPUT SM 331, OPTICALLY ISOLATED, 8 AI, 13 BIT RESOLUTION, U/I/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 losses | |
| 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 k Ω |
| • -10 V to +10 V | Yes |
| • Input resistance (-10 V to +10 V) | 100 k 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) | 100 k Ω |
| • -50 mV to +50 mV | Yes |
| • Input resistance (-50 mV to +50 mV) | 100 k Ω |
| • -500 mV to +500 mV | Yes |
| • Input resistance (-500 mV to +500 mV) | 100 k Ω |
| • -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), thermoelements | |
| • Type B | 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 M Ω |
| • Ni 1000 | Yes |
| • Input resistance (Ni 1000) | 100 M Ω |
| • LG-Ni 1000 | Yes; Standard/climate |
| • Input resistance (LG-Ni 1000) | 100 M Ω |

| | |
|--|--|
| • Ni 120 | No |
| • Ni 200 | No |
| • Ni 500 | No |
| • Pt 100 | Yes; Standard/climate |
| • Input resistance (Pt 100) | 100 M Ω |
| • 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 | Yes |
| • Input resistance (0 to 600 ohms) | 100 M Ω |
| • 0 to 6000 ohms | Yes |
| • Input resistance (0 to 6000 ohms) | 100 M Ω |
| Thermocouple (TC) | |
| Temperature compensation | |
| — Parameterizable | No |
| — internal temperature compensation | No |
| — external temperature compensation with compensations socket | No |
| Characteristic linearization | |
| • 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. |
| Cable length | |
| • shielded, max. | 200 m; max. 50 m at 50 mV |
| Analog value creation | |
| Measurement principle | integrating |
| Integration and conversion time/resolution per channel | |
| • 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
- for resistance measurement with three-wire connection
- for resistance measurement with four-wire connection

Yes
Yes
Yes

Errors/accuracies

Operational 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)

Isochronous mode

Isochronous operation (application synchronized up to terminal)

No

Interrupts/diagnostics/status information

Alarms

- Diagnostic alarm
- Limit value alarm

No
No

Diagnostic messages

- Diagnostic functions
- Diagnostic information readable
- Diagnostics
- Group error

No
No
No
No

Diagnostics indication LED

- Group error SF (red)

No

Galvanic isolation

Galvanic isolation analog inputs

- between the channels
- between the channels and the backplane bus

No
Yes

Isolation

Isolation checked 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 |
| last modified: | 12.03.2015 |