

SIMATIC S7-400, analog input SM 431, isolated 8 AI, resolution 13 bit, U/I Resistor



Figure similar

| | |
|---|-------------------------|
| Supply voltage | |
| Load voltage L+ | |
| <ul style="list-style-type: none"> Rated value (DC) | not necessary |
| Input current | |
| from backplane bus 5 V DC, max. | 350 mA |
| Power loss | |
| Power loss, typ. | 1.8 W |
| Analog inputs | |
| Number of analog inputs | 8 |
| <ul style="list-style-type: none"> For voltage/current measurement | 8 |
| <ul style="list-style-type: none"> For resistance measurement | 4 |
| permissible input voltage for voltage input (destruction limit), max. | 50 V |
| permissible input current for current input (destruction limit), max. | 50 mA; 40 mA continuous |

| | |
|--|---|
| Constant measurement current for resistance-type transmitter, typ. | 1.67 mA |
| Input ranges | |
| • Voltage | Yes |
| • Current | Yes |
| • Thermocouple | No |
| • Resistance thermometer | No |
| • Resistance | Yes |
| Input ranges (rated values), voltages | |
| • 1 V to 5 V | Yes |
| — Input resistance (1 V to 5 V) | 200 kΩ |
| • -1 V to +1 V | Yes |
| — Input resistance (-1 V to +1 V) | 200 kΩ |
| • -10 V to +10 V | Yes |
| — Input resistance (-10 V to +10 V) | 200 kΩ |
| Input ranges (rated values), currents | |
| • -20 mA to +20 mA | Yes |
| — Input resistance (-20 mA to +20 mA) | 80 Ω |
| • 4 mA to 20 mA | Yes |
| — Input resistance (4 mA to 20 mA) | 80 Ω |
| Input ranges (rated values), resistors | |
| • 0 to 600 ohms | Yes |
| — Input resistance (0 to 600 ohms) | usable up to 500 ohms |
| Cable length | |
| • shielded, max. | 200 m |
| Analog value generation for the inputs | |
| Integration and conversion time/resolution per channel | |
| • Resolution with overrange (bit including sign), max. | 13 bit |
| • Integration time, parameterizable | Yes |
| • Basic conversion time (ms) | 23 / 25 ms |
| • Integration time (ms) | 16,7 / 20 ms |
| • Interference voltage suppression for interference frequency f1 in Hz | 50 / 60 Hz |
| Encoder | |
| Connection of signal encoders | |
| • for voltage measurement | Yes; possible |
| • for current measurement as 2-wire transducer | Yes; with external transmitter supply |
| • for current measurement as 4-wire transducer | Yes |
| • for resistance measurement with two-wire connection | Yes; Line resistances are also measured |

- for resistance measurement with three-wire connection
- for resistance measurement with four-wire connection

Yes; Line resistances are also measured

Yes

Errors/accuracies

Operational error limit in overall temperature range

- Voltage, relative to input range, (+/-) 1 %; ± 1.0 % at ± 1 V; ± 0.6 % at ± 10 V; ± 0.7 % at 1 to 5 V
- Current, relative to input range, (+/-) 1 %; at ± 20 mA, 4 to 20 mA
- Resistance, relative to input range, (+/-) 1.25 %; 0 to 500 ohms (4-conductor measurement, in range of 600 ohms)

Basic error limit (operational limit at 25 °C)

- Voltage, relative to input range, (+/-) 0.7 %; 0.7% at ± 1 V; 0.4% at ± 10 V; 0.5% at 1 to 5 V
- Current, relative to input range, (+/-) 0.7 %; at ± 20 mA, 4 to 20 mA
- Resistance, relative to input range, (+/-) 0.8 %; 0 to 500 ohms (4-conductor measurement, in range of 600 ohms)

Interrupts/diagnostics/status information

Diagnostics function

No

Potential separation

Potential separation analog inputs

- Potential separation analog inputs Yes; internal/external
- between the channels No
- between the channels and backplane bus Yes

Isolation

Isolation tested with

2 120 V DC between bus and analog part; 500 V DC between bus and local ground; 2 120 V DC between analog part and local ground

Dimensions

| | |
|--------|--------|
| Width | 25 mm |
| Height | 290 mm |
| Depth | 210 mm |

Weights

Weight, approx. 500 g

last modified: 08/29/2020