SIEMENS

## Data sheet 6ES7431-1KF00-0AB0

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



Figure similar

| | |
|---|---|
| **Supply voltage** | |
| Load voltage L+ | |
| ● 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 |
| ● For voltage/current measurement | 8 |
| ● 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 | |


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| | |
|---|---|
| ● 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 |
| ● Basic execution time of the module (all channels released) | 200 ms; 184 / 200 ms |
| **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 | Yes; Line resistances are also measured |
| ● for resistance measurement with four-wire connection | Yes |
| **Errors/accuracies** | |
| Temperature error (relative to input range), (+/-) | 0.02 %/K; ±0.02 %/K in impedance measuring range; ±0.007 % in all other measuring ranges |
| 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 |

**Classifications**

| | Version | Classification |
|---|---|---|
| eClass | 16 | 27-24-22-01 |
| 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 | 10 | EC001420 |
| ETIM | 9 | EC001420 |


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| | | |
|---|---|---|
| ETIM | 8 | EC001420 |
| ETIM | 7 | EC001420 |
| IDEA | 4 | 3562 |
| UNSPSC | 15 | 32-15-17-05 |

## Approvals / Certificates

### General Product Approval

CE EG-Konf. | Miscellaneous | UKCA | UL | Metrological Approval | KC

### General Product Approval

RCM | China RoHS | Miscellaneous | Manufacturer Declaration

### EMV

RCM | RCM

### For use in hazardous locations

ATEX | FM | CCC | IECEx | Type Examination Certificate | ATEX

### Maritime application

ABS | BUREAU VERITAS | DNV | LRS | NK / Nippon Kaiji Kyokai | PRS

### Maritime application

RINA | RMRS | CCS (China Classification Society)

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