SIEMENS

## Data sheet 6ES7431-7KF00-0AB0



Figure similar

SIMATIC S7-400, analog input SM 431, 8 AI, resolution 16 bit, U/I/Thermocouple, isolated with single rooting, diagnostics, alarm, 20 ms conversion time

| | |
|---|---|
| **Input current** | |
| from backplane bus 5 V DC, max. | 1 200 mA |
| **Power loss** | |
| Power loss, typ. | 4.6 W |
| **Analog inputs** | |
| Number of analog inputs | 8 |
| ● For voltage/current measurement | 8 |
| permissible input voltage for voltage input (destruction limit), max. | 35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20) |
| permissible input current for current input (destruction limit), max. | 32 mA |
| Input ranges | |
| ● Voltage | Yes |
| ● Current | Yes |
| ● Thermocouple | Yes |
| ● Resistance thermometer | No |
| ● Resistance | No |
| Input ranges (rated values), voltages | |
| ● 1 V to 5 V | Yes |
| — Input resistance (1 V to 5 V) | > 2 000 ohms |
| ● -1 V to +1 V | Yes |
| ● -10 V to +10 V | Yes |
| ● -100 mV to +100 mV | Yes |
| ● -2.5 V to +2.5 V | Yes |
| ● -20 mV to +20 mV | Yes |
| ● -250 mV to +250 mV | Yes |
| ● -5 V to +5 V | Yes |
| ● -50 mV to +50 mV | Yes |
| ● -500 mV to +500 mV | Yes |
| ● -80 mV to +80 mV | Yes |
| Input ranges (rated values), currents | |
| ● 0 to 20 mA | Yes |
| ● -10 mA to +10 mA | Yes |
| ● -20 mA to +20 mA | Yes |
| ● -3.2 mA to +3.2 mA | Yes |
| ● 4 mA to 20 mA | Yes |
| — Input resistance (4 mA to 20 mA) | 50 Ω |
| ● -5 mA to +5 mA | Yes |
| Input ranges (rated values), thermocouples | |


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| | |
|---|---|
| ● type B | Yes |
| — Input resistance (Type B) | > 2 000 ohms |
| ● Type E | Yes |
| ● Type J | Yes |
| ● Type K | Yes |
| ● Type L | Yes |
| ● Type N | Yes |
| — Input resistance (Type N) | > 2 000 ohms |
| ● Type R | Yes |
| ● Type S | Yes |
| ● Type T | Yes |
| ● Type U | Yes |
| Thermocouple (TC) | |
| Temperature compensation | |
| — connection for compensating the cold junction | 6ES7431-7KF00-6AA0 |
| — Parameterizable | Yes |
| — internal temperature compensation | Yes |
| — external temperature compensation with compensations socket | Yes |
| — dynamic reference temperature value | Yes |
| Characteristic linearization | |
| ● Parameterizable | Yes |
| — for thermocouples | Type B, E, J, K, L, N, R, S, T, U |
| 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. | 16 bit |
| ● Integration time, parameterizable | Yes |
| ● Basic conversion time (ms) | 10 / 16,7 / 20 / 100 |
| ● Integration time (ms) | 2,5 / 16,7 / 20 / 100 |
| ● Interference voltage suppression for interference frequency f1 in Hz | 400 / 60 / 50 / 10 Hz |
| **Encoder** | |
| Connection of signal encoders | |
| ● for voltage measurement | Yes; possible |
| ● for current measurement as 4-wire transducer | Yes |
| ● for resistance measurement with four-wire connection | Yes |
| **Errors/accuracies** | |
| Operational error limit in overall temperature range | |
| ● Voltage, relative to input range, (+/-) | 0.3 % |
| ● Current, relative to input range, (+/-) | 0.5 % |
| Basic error limit (operational limit at 25 °C) | |
| ● Voltage, relative to input range, (+/-) | 0.1 % |
| ● Current, relative to input range, (+/-) | 0.17 % |
| **Interrupts/diagnostics/status information** | |
| Diagnostics function | Yes; Parameterizable |
| Alarms | |
| ● Diagnostic alarm | Yes; Parameterizable |
| ● Limit value alarm | Yes |
| ● Hardware interrupt | Yes; Parameterizable |
| Diagnoses | |
| ● Diagnostic information readable | Yes; possible |
| **Potential separation** | |
| Potential separation analog inputs | |
| ● Potential separation analog inputs | Yes; internal/external |
| ● between the channels | Yes |
| ● between the channels and backplane bus | Yes |
| **Isolation** | |


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| | |
|---|---|
| Isolation tested with | 1 500 V DC |
| **Dimensions** | |
| Width | 25 mm |
| Height | 290 mm |
| Depth | 210 mm |
| **Weights** | |
| Weight, approx. | 650 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 |
| ETIM | 8 | EC001420 |
| ETIM | 7 | EC001420 |
| IDEA | 4 | 3562 |
| UNSPSC | 15 | 32-15-17-05 |

**Approvals / Certificates**

**General Product Approval**

CE EG-Konf. | Manufacturer Declaration | Miscellaneous | UKCA | UL | Metrological Approval

**General Product Approval** | **EMV**

KC | RCM | China RoHS | Miscellaneous | Manufacturer Declaration | RCM

**EMV** | **For use in hazardous locations**

RCM | ATEX | FM | CCC | UL | IECEx

**For use in hazardous locations** | **Maritime application**

Type Examination Certificate | ATEX | ABS | BUREAU VERITAS | DNV | LRS

**Maritime application**


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CCS (China Classification Society)

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