

Siemens 6ES7431-1KF20-0AB0 Manual

Brand	Siemens
Product Series	Siemens
Product Type	transmitter,

Description

6ES7431-1KF20-0AB0

SIMATIC S7-400, analog input SM 431, isolated 8 AI, resolution 14 bit, U/IResistor

8 AI, cycle time 0.416 ms

Supply voltage

Load voltage L+

- Rated value (DC) 24 V; Only required for supplying 2-wire transmitters
- Reverse polarity protection Yes

Input current

from load voltage L+ (without load), max. 200 mA; for 8 connected, fully controlled 2-wire transmitters

from backplane bus 5 V DC, max. 1 000 mA

Power loss

Power loss, typ. 4.9 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.

18 V; 18 V continuous, 75 V for 1 ms (mark to space ratio 1:20)

permissible input current for current input (destruction limit),
max.

40 mA; Permanent

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) 10 M Ω

- -1 V to +1 V Yes

— Input resistance (-1 V to +1 V) 10 M Ω

- -10 V to +10 V Yes

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— Input resistance (-10 V to +10 V) 100 k Ω

Input ranges (rated values), currents

- -20 mA to +20 mA Yes

— Input resistance (-20 mA to +20 mA) 50 Ω

- 4 mA to 20 mA Yes

— Input resistance (4 mA to 20 mA) 50 k Ω

Input ranges (rated values), resistors

- 0 to 600 ohms Yes

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. 14 bit; 14 / 14 / 14

- Integration time, parameterizable Yes

- Basic conversion time (ms) 52 μ s

- Interference voltage suppression for interference

frequency f1 in Hz

none / 400 / 60 / 50 Hz

- Time constant of the input filter 15 μ s

- Basic execution time of the module (all channels released)

0.42 s

Encoder

Connection of signal encoders

- for voltage measurement Yes; possible
- for current measurement as 2-wire transducer Yes
- 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), (+/-) 0.03 %/K

Operational error limit in overall temperature range

- Voltage, relative to input range, (+/-) 0.7 %; ± 0.7 % at ± 1 V; ± 0.9 % at ± 10 V, 1 to 5 V
- Current, relative to input range, (+/-) 0.8 %; at ± 20 mA, 4 to 20 mA
- Resistance, relative to input range, (+/-) 1 %

Basic error limit (operational limit at 25 °C)

- Voltage, relative to input range, (+/-) 0.6 %; 0.6 % at ± 1 V; 0.75 % at ± 10 V, 1 to 5 V
- Current, relative to input range, (+/-) 0.7 %; at ± 20 mA, 4 to 20 mA
- Resistance, relative to input range, (+/-) 0.7 %; 0 to 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
- Between the channels and load voltage L+ Yes

Isolation

Isolation tested with 2 120 V DC between bus and analog section; 500 V DC between bus and local

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ground; 500 V DC between analog part and L+/M; 2 120 V DC between analog part and local ground; 2 120 V DC between L+/M and local ground

Dimensions

Width 25 mm

Height 290 mm

Depth 210 mm

Weights

Weight, approx. 500 g

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