

Siemens 6ES7331-7KF02-0AB0 Manual

Brand	Siemens
Product Series	Siemens
Product Type	transmitter,

Description

6ES7331-7KF02-0AB0

SIMATIC S7-300, Analog input SM 331, isolated, 8 AI, Resolution 9/12/14 bits, U/I/thermocouple/resistor, alarm, diagnostics, 1x 20-pole Removing/inserting with active backplane bus

Supply voltage

Load voltage L+

- Rated value (DC) 24 V
- Reverse polarity protection Yes

Input current

from load voltage L+ (without load), max. 30 mA

from backplane bus 5 V DC, max. 50 mA

Power loss

Power loss, typ. 1 W

Analog inputs

Number of analog inputs 8

- For resistance measurement 4

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

20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)

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

40 mA

Constant measurement current for resistance-type transmitter, typ.

1.67 mA

Input ranges

- Voltage Yes
- Current Yes
- Thermocouple Yes
- Resistance thermometer Yes
- Resistance Yes

Input ranges (rated values), voltages

- 0 to +10 V No
- 1 V to 5 V Yes

— Input resistance (1 V to 5 V) 100 k Ω

- 1 V to 10 V No
- -1 V to +1 V Yes

- Input resistance (-1 V to +1 V) 10 M Ω
- -10 V to +10 V Yes
- Input resistance (-10 V to +10 V) 100 k Ω
- -2.5 V to +2.5 V Yes
- Input resistance (-2.5 V to +2.5 V) 100 k Ω
- -250 mV to +250 mV Yes
- Input resistance (-250 mV to +250 mV) 10 M Ω
- -5 V to +5 V Yes
- Input resistance (-5 V to +5 V) 100 k Ω
- -50 mV to +50 mV No

- -500 mV to +500 mV Yes
- Input resistance (-500 mV to +500 mV) 10 M Ω
- -80 mV to +80 mV Yes
- Input resistance (-80 mV to +80 mV) 10 M Ω

Input ranges (rated values), currents

- 0 to 20 mA Yes
- Input resistance (0 to 20 mA) 25 Ω
- -10 mA to +10 mA Yes
- Input resistance (-10 mA to +10 mA) 25 Ω
- -20 mA to +20 mA Yes
- Input resistance (-20 mA to +20 mA) 25 Ω
- -3.2 mA to +3.2 mA Yes
- Input resistance (-3.2 mA to +3.2 mA) 25 Ω
- 4 mA to 20 mA Yes
- Input resistance (4 mA to 20 mA) 25 Ω

Input ranges (rated values), thermocouples

- Type B No
- Type C No
- Type E Yes
- Input resistance (Type E) 10 M Ω
- Type J Yes
- Input resistance (type J) 10 M Ω
- Type K Yes
- Input resistance (Type K) 10 M Ω
- Type L Yes
- Input resistance (Type L) 10 M Ω
- Type N Yes
- Input resistance (Type N) 10 M Ω
- 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
- Input resistance (Ni 100) 10 M Ω
- Ni 1000 No
- LG-Ni 1000 No
- Ni 120 No

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- Ni 200 No
- Ni 500 No
- Pt 100 Yes; Standard
- Input resistance (Pt 100) 10 M Ω
- Pt 1000 No
- Pt 200 No
- Pt 500 No

Input ranges (rated values), resistors

- 0 to 150 ohms Yes
- Input resistance (0 to 150 ohms) 10 M Ω
- 0 to 300 ohms Yes
- Input resistance (0 to 300 ohms) 10 M Ω
- 0 to 600 ohms Yes
- Input resistance (0 to 600 ohms) 10 M Ω
- 0 to 6000 ohms No

Thermocouple (TC)

Temperature compensation

- parameterizable Yes
- internal temperature compensation Yes
- external temperature compensation with compensations socket

Yes

- for definable comparison point temperature Yes

Characteristic linearization

- parameterizable Yes

- for thermocouples Type E, J, K, L, N

- for resistance thermometer Pt100 (standard, climatic range), Ni100 (standard, climatic range)

Cable length

- shielded, max. 200 m; 50 m at 80 mV and thermocouples

Analog value generation for the inputs

Integration and conversion time/resolution per channel

- Resolution with overrange (bit including sign), max. 15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/12 bit + sign/12 bit + sign/14 bit + sign

- Integration time, parameterizable Yes; 2,5 / 16,67 / 20 / 100 ms

- Basic conversion time (ms) 3 / 17 / 22 / 102 ms

- Interference voltage suppression for interference

frequency f1 in Hz

400 / 60 / 50 / 10 Hz

Encoder

Connection of signal encoders

- for voltage measurement Yes
- for current measurement as 2-wire transducer Yes
- for current measurement as 4-wire transducer Yes
- for resistance measurement with two-wire connection Yes
- for resistance measurement with three-wire connection Yes
- for resistance measurement with four-wire connection Yes

Errors/accuracies

Operational error limit in overall temperature range

- Voltage, relative to input range, (+/-) 1 %; $\pm 1\%$ (80 mV); $\pm 0.6\%$ (250 mV to 1 000 mV); $\pm 0.8\%$ (2.5 V to 10 V)
- Current, relative to input range, (+/-) 0.7 %; From 3.2 to 20 mA

- Resistance, relative to input range, (+/-) 0.7 %; 150, 300, 600 Ohm
- Resistance thermometer, relative to input range, (+/-) 0.7 %; ± 0.7 % (Pt100/ Ni100); ± 0.8 % (Pt100 climate)
- Thermocouple, relative to input range, (+/-) 1.1 %; Type E, J, K, L, N

Basic error limit (operational limit at 25 °C)

- Voltage, relative to input range, (+/-) 0.6 %; ± 0.4 % (250 mV to 1 000 mV); ± 0.6 % (2.5 mV to 10 mV); ± 0.7 % (80 mV)
- Current, relative to input range, (+/-) 0.5 %; 3.2 to 20 mA
- Resistance, relative to input range, (+/-) 0.5 %; 150, 300, 600 Ohm
- Resistance thermometer, relative to input range, (+/-) 0.6 %; ± 0.5 % (Pt100/ Ni100), ± 0.6 % (Pt100 climate)
- Thermocouple, relative to input range, (+/-) 0.7 %; Type E, N, J, K, L

Interrupts/diagnostics/status information

Diagnostics function Yes; Parameterizable

Alarms

- Diagnostic alarm Yes; Parameterizable, channels 0 and 2
- Limit value alarm Yes; Parameterizable

Diagnoses

- Diagnostic information readable Yes

Diagnostics indication LED

- Group error SF (red) Yes

Potential separation

Potential separation analog inputs

- between the channels No
- between the channels and backplane bus Yes
- between the channels and the power supply of the electronics

Yes

Isolation

Isolation tested with 500 V DC

connection method

required front connector 20-pin

Dimensions

Width 40 mm

Height 125 mm

Depth 117 mm

Weights

Weight, approx. 250 g

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