SIEMENS

## Data sheet 6ES7331-7NF10-0AB0

Figure similar

SIMATIC S7-300, Analog input SM 331, isolated, 8 AI; +/-5/10V, 1-5 V, +/-20 mA, 0/4 to 20 mA, 16 bit, Single rooting (60 V COM.), 4-channel operation: 10 ms, 8-channel operation: 23-95ms, 1x 40-pole

| | |
|---|---|
| **Supply voltage** | |
| Load voltage L+ | |
| ● Rated value (DC) | 24 V |
| ● Reverse polarity protection | Yes |
| **Input current** | |
| from load voltage L+ (without load), max. | 200 mA |
| from backplane bus 5 V DC, max. | 100 mA |
| **Power loss** | |
| Power loss, typ. | 3 W |
| **Analog inputs** | |
| Number of analog inputs | 8 |
| permissible input voltage for voltage input (destruction limit), max. | 75 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. | 40 mA |
| Input ranges | |
| ● Voltage | Yes |
| ● Current | Yes |
| ● Thermocouple | No |
| ● Resistance thermometer | No |
| ● Resistance | No |
| Input ranges (rated values), voltages | |
| ● 0 to +10 V | No |
| ● 1 V to 5 V | Yes |
| — Input resistance (1 V to 5 V) | 10 MΩ |
| ● 1 V to 10 V | No |
| ● -1 V to +1 V | No |
| ● -10 V to +10 V | Yes |
| — Input resistance (-10 V to +10 V) | 10 MΩ |
| ● -2.5 V to +2.5 V | No |
| ● -250 mV to +250 mV | No |
| ● -5 V to +5 V | Yes |
| — Input resistance (-5 V to +5 V) | 10 MΩ |
| ● -50 mV to +50 mV | No |
| ● -500 mV to +500 mV | No |
| ● -80 mV to +80 mV | No |
| Input ranges (rated values), currents | |
| ● 0 to 20 mA | Yes |
| — Input resistance (0 to 20 mA) | 250 Ω |

| | |
|---|---|
| ● -10 mA to +10 mA | No |
| ● -20 mA to +20 mA | Yes |
| — Input resistance (-20 mA to +20 mA) | 250 Ω |
| ● -3.2 mA to +3.2 mA | No |
| ● 4 mA to 20 mA | Yes |
| — Input resistance (4 mA to 20 mA) | 250 Ω |
| Input ranges (rated values), thermocouples | |
| ● Type B | No |
| ● Type C | No |
| ● Type E | No |
| ● Type J | No |
| ● Type K | No |
| ● Type L | No |
| ● Type N | No |
| ● 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 | No |
| ● Ni 1000 | No |
| ● LG-Ni 1000 | No |
| ● Ni 120 | No |
| ● Ni 200 | No |
| ● Ni 500 | No |
| ● Pt 100 | No |
| ● Pt 1000 | No |
| ● Pt 200 | No |
| ● Pt 500 | No |
| Input ranges (rated values), resistors | |
| ● 0 to 150 ohms | No |
| ● 0 to 300 ohms | No |
| ● 0 to 600 ohms | No |
| ● 0 to 6000 ohms | No |
| 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; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign |
| ● Integration time, parameterizable | Yes; 23 / 72 / 83 / 95 ms |
| ● Basic conversion time (ms) | 10 ms (4-channel mode); 95/83/72/23 ms (8-channel mode) |
| ● Interference voltage suppression for interference frequency f1 in Hz | 400 / 60 / 50 Hz, combinations of 400, 60, 50 Hz |
| **Encoder** | |
| Connection of signal encoders | |
| ● for voltage measurement | Yes |
| ● for current measurement as 2-wire transducer | Yes; with external transmitter, current supply; possible with separate supply for transmitter |
| ● for current measurement as 4-wire transducer | Yes |
| **Errors/accuracies** | |
| Operational error limit in overall temperature range | |
| ● Voltage, relative to input range, (+/-) | 0.1 % |
| ● Current, relative to input range, (+/-) | 0.1 % |
| Basic error limit (operational limit at 25 °C) | |
| ● Voltage, relative to input range, (+/-) | 0.05 % |
| ● Current, relative to input range, (+/-) | 0.05 % |
| **Interrupts/diagnostics/status information** | |

| | |
|---|---|
| Diagnostics function | Yes; Parameterizable |
| Alarms | |
| ● Diagnostic alarm | Yes; Parameterizable |
| ● Limit value alarm | Yes; Parameterizable all channels (end of cycle interrupt is also supported across modules) |
| ● Hardware interrupt | Yes; Parameterizable, channels 0 to 7 (on exceeding limit value), at end of cycle |
| Diagnoses | |
| ● Diagnostic information readable | Yes |
| Diagnostics indication LED | |
| ● Group error SF (red) | Yes |
| **Potential separation** | |
| Potential separation analog inputs | |
| ● between the channels | Yes |
| ● between the channels, in groups of | 2 |
| ● between the channels and backplane bus | Yes |
| ● between the channels and the power supply of the electronics | Yes |
| **Isolation** | |
| Isolation tested with | 500 V AC |
| **connection method / header** | |
| required front connector | 40-pin |
| **Dimensions** | |
| Width | 40 mm |
| Height | 125 mm |
| Depth | 117 mm |
| **Weights** | |
| Weight, approx. | 272 g |

**last modified:** 1/17/2021