SIEMENS

## Data sheet 6AG1331-7NF10-2AB0

SIPLUS S7-300 SM 331 8AI 40-pole -25...+60°C with conformal coating based on 6ES7331-7NF10-0AB0 . Analog "input isolated, ""8 AI; +/-5/10" V, 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



Figure similar

| | |
|---|---|
| **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 | |


Subject to change without notice
© Copyright Siemens

| | |
|---|---|
| • 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 |
| • -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 |


© Copyright Siemens

| | |
|---|---|
| **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 %; @ 0 ... +60 °C; ±0.2% @ -25 ... +60 °C |
| • Current, relative to input range, (+/-) | 0.1 %; @ 0 ... +60 °C; ±0.2% @ -25 ... +60 °C |
| **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


Subject to change without notice
© Copyright Siemens

| | |
|---|---|
| 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 |
| **Diagnostic messages** | |
| • 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, 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 |

## Standards, approvals, certificates

| | |
|---|---|
| CE mark | Yes |
| UL approval | Yes; File E239877 |
| RCM (formerly C-TICK) | Yes |
| KC approval | Yes |
| EAC (formerly Gost-R) | Yes |
| **Railway application** | |
| • EN 50121-4 | No |
| • EN 50155 | No |

## Ambient conditions

| | |
|---|---|
| **Ambient temperature during operation** | |
| • min. | -25 °C; = Tmin |
| • max. | 60 °C; = Tmax |
| **Ambient temperature during storage/transportation** | |
| • min. | -40 °C |
| • max. | 70 °C |
| **Altitude during operation relating to sea level** | |
| • Installation altitude above sea level, max. | 5 000 m |
| • Ambient air temperature-barometric pressure-altitude | Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m) |


Subject to change without notice
© Copyright Siemens

| | |
|---|---|
| Relative humidity | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions) |
| Resistance | |
| Use in stationary industrial systems | |
| — to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| — to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| — to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * |
| Use on ships/at sea | |
| — to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| — to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| — to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * |
| Usage in industrial process technology | |
| — Against chemically active substances acc. to EN 60654-4 | Yes; Class 3 (excluding trichlorethylene) |
| — Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04 | Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil) |
| Remark | |
| — Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04 | * The supplied plug covers must remain in place over the unused interfaces during operation! |

| Connection method | |
|---|---|
| required front connector | 40-pin |

| Dimensions | |
|---|---|
| Width | 40 mm |
| Height | 125 mm |
| Depth | 120 mm |

| Weights | |
|---|---|
| Weight, approx. | 272 g |

**last modified:** 05/05/2020


Subject to change without notice
© Copyright Siemens