



SIPLUS S7-300 SM 331 8AI 40-pole based on 6ES7331-7PF11-0AB0 with conformal coating, 0...+60 °C, analog input isolated, 8 AI thermocouples type B, E, J, K, L, N, R, S, T TXK/TXK (L) according to GOST 16-bit, 50 ms, 1x 40-pole

Figure similar

| General information   |  |
|---|--|
| based on  | <a href="#">6ES7331-7PF11-0AB0</a>                               |
| Supply voltage  |  |
| Load voltage L+   |  |
| <ul style="list-style-type: none"> <li>Rated value (DC)</li> </ul>            | 24 V   |
| <ul style="list-style-type: none"> <li>Reverse polarity protection</li> </ul> | Yes  |
| Input current   |  |
| from load voltage L+ (without load), max.                                     | 240 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; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20) |
| Constant measurement current for resistance-type transmitter, typ.            | 0.7 mA   |
| Input ranges  |  |
| <ul style="list-style-type: none"> <li>Voltage</li> </ul>                     | No   |
| <ul style="list-style-type: none"> <li>Current</li> </ul>                     | No   |
| <ul style="list-style-type: none"> <li>Thermocouple</li> </ul>                | Yes  |
| <ul style="list-style-type: none"> <li>Resistance thermometer</li> </ul>      | No   |
| <ul style="list-style-type: none"> <li>Resistance</li> </ul>                  | No   |
| Input ranges (rated values), voltages   |  |
| <ul style="list-style-type: none"> <li>0 to +10 V</li> </ul>                  | No   |
| <ul style="list-style-type: none"> <li>1 V to 5 V</li> </ul>                  | No   |
| <ul style="list-style-type: none"> <li>1 V to 10 V</li> </ul>                 | No   |
| <ul style="list-style-type: none"> <li>-1 V to +1 V</li> </ul>                | No   |
| <ul style="list-style-type: none"> <li>-10 V to +10 V</li> </ul>              | No   |
| <ul style="list-style-type: none"> <li>-2.5 V to +2.5 V</li> </ul>            | No   |
| <ul style="list-style-type: none"> <li>-250 mV to +250 mV</li> </ul>          | No   |
| <ul style="list-style-type: none"> <li>-5 V to +5 V</li> </ul>                | No   |
| <ul style="list-style-type: none"> <li>-50 mV to +50 mV</li> </ul>            | No   |
| <ul style="list-style-type: none"> <li>-500 mV to +500 mV</li> </ul>          | No   |
| <ul style="list-style-type: none"> <li>-80 mV to +80 mV</li> </ul>            | No   |
| Input ranges (rated values), currents   |  |
| <ul style="list-style-type: none"> <li>0 to 20 mA</li> </ul>                  | No   |
| <ul style="list-style-type: none"> <li>-10 mA to +10 mA</li> </ul>            | No   |
| <ul style="list-style-type: none"> <li>-20 mA to +20 mA</li> </ul>            | No   |
| <ul style="list-style-type: none"> <li>-3.2 mA to +3.2 mA</li> </ul>          | No   |

|  |   |
|--|---|
| • 4 mA to 20 mA  | No  |
| <b>Input ranges (rated values), thermocouples</b>                      |   |
| • Type B   | Yes   |
| • Type C   | Yes   |
| • Type E   | Yes   |
| • Type J   | Yes   |
| • Type K   | Yes   |
| • Type L   | Yes   |
| • Type N   | Yes   |
| • Type R   | Yes   |
| • Type S   | Yes   |
| • Type T   | Yes   |
| • Type U   | Yes   |
| • Type TXK/TXK(L) to GOST  | Yes   |
| <b>Input ranges (rated values), resistance thermometer</b>             |   |
| • 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  |
| <b>Input ranges (rated values), resistors</b>                          |   |
| • 0 to 150 ohms  | No  |
| • 0 to 300 ohms  | No  |
| • 0 to 600 ohms  | No  |
| • 0 to 6000 ohms   | No  |
| <b>Thermocouple (TC)</b>   |   |
| <b>Temperature compensation</b>  |   |
| — parameterizable  | Yes   |
| — internal temperature compensation                                    | Yes   |
| — external temperature compensation with Pt100                         | Yes   |
| — external temperature compensation with compensations socket          | Yes   |
| — for definable comparison point temperature                           | Yes   |
| <b>Characteristic linearization</b>                                    |   |
| • parameterizable  | Yes   |
| — for thermocouples  | Type B, E, J, K, L, N, R, S, T, U, C  |
| <b>Cable length</b>  |   |
| • shielded, max.   | 100 m   |
| <b>Analog value generation for the inputs</b>                          |   |
| <b>Integration and conversion time/resolution per channel</b>          |   |
| • Resolution with overrange (bit including sign), max.                 | 16 bit; Two's complement  |
| • Integration time, parameterizable                                    | Yes   |
| • Basic conversion time (ms)   | up to 4 channels: 10 ms per module, over 5 channels: 190 ms per module, 8 channels: 80 ms   |
| • Interference voltage suppression for interference frequency f1 in Hz | 400 / 60 / 50 Hz  |
| <b>Errors/accuracies</b>   |   |
| <b>Operational error limit in overall temperature range</b>            |   |
| • Voltage, relative to input range, (+/-)                              | ±1 K  |
| • Thermocouple, relative to input range, (+/-)                         | Type T: ±0.18%, Type U: ±0.15%, Type E: ±0.12%, Type J: ±0.12%, Type L: ±0.17%, Type K: ±0.15%, Type N: ±0.17%, Type R: ±0.08%, Type S: ±0.10%, Type B: ±0.13%, Type C: ±0.10%, TXK/XK(L): ±1.00% accuracy in the lower range of the characteristic curve |
| <b>Basic error limit (operational limit at 25 °C)</b>                  |   |
| • Thermocouple, relative to input range, (+/-)                         | Type T: ±0.13%, Type U: ±0.08%, Type E: ±0.05%, Type J: ±0.04%, Type L: ±0.06%, Type K: ±0.04%, Type N: ±0.04%, Type R: ±0.03%, Type S: ±0.03%, Type B: ±0.05%, Type C: ±0.02%, TXK/XK(L): ±0.67 % accuracy in the lower                                  |

range of the characteristic curve

**Interrupts/diagnostics/status information**

|                                   |                                       |
|-----------------------------------|---------------------------------------|
| Diagnostics function              | Yes; Parameterizable                  |
| <b>Alarms</b>                     |                                       |
| • Diagnostic alarm                | Yes; Parameterizable per group        |
| • Limit value alarm               | Yes; Parameterizable                  |
| • Hardware interrupt              | Yes; Parameterizable, channels 0 to 7 |
| <b>Diagnoses</b>                  |                                       |
| • Diagnostic information readable | Yes                                   |
| <b>Diagnostics indication LED</b> |                                       |
| • Group error SF (red)            | Yes                                   |

**Potential separation**

|  |     |
|--|-----|
| <b>Potential separation analog inputs</b>                      |     |
| • 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 DC |
|-----------------------|----------|

**Standards, approvals, certificates**

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

**Ambient conditions**

|  |   |
|--|---|
| <b>Ambient temperature during operation</b>              |   |
| • min.   | 0 °C; = Tmin  |
| • max.   | 60 °C; = Tmax   |
| <b>Ambient temperature during storage/transportation</b> |   |
| • min.   | -40 °C  |
| • max.   | 70 °C   |
| <b>Altitude during operation relating to sea level</b>   |   |
| • 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) |

**Relative humidity**

|   |   |
|---|---|
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation/frost (no commissioning under condensation conditions) |
|---|---|

**Resistance**

|  |  |
|--|--|
| <b>Use in stationary industrial systems</b>  |  |
| — 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, *   |
| <b>Use on ships/at sea</b>   |  |
| — 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; *   |
| <b>Usage in industrial process technology</b>  |  |
| — 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

Classifications

|        | Version | Classification |
|--------|---------|----------------|
| 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   | 9       | EC001420       |
| ETIM   | 8       | EC001420       |
| ETIM   | 7       | EC001420       |
| IDEA   | 4       | 3562           |
| UNSPSC | 15      | 32-15-17-05    |

Approvals / Certificates

General Product Approval

EMV

[Miscellaneous](#)



[Manufacturer Declaration](#)



[KC](#)

EMV

For use in hazardous locations



[CCC-Ex](#)

last modified:

12/8/2024 ↻