



SIPLUS S7-1500 AI 8xU/I HF based on 6ES7531-7NF00-0AB0 with conformal coating, -40...+70 °C, start up -25 °C, analog input module 16-bit resolution, accuracy 0.1%, 8 channels in groups of 1, common mode voltage: 30 V AC/60 V DC, diagnostics; hardware interrupts; including infeed element, shielding bracket and shield terminal

| General information | |
|---|------------------------------------|
| Product type designation | AI 8xU/I HF |
| Firmware version | |
| • FW update possible | Yes |
| based on | 6ES7531-7NF00-0AB0 |
| Product function | |
| • I&M data | Yes; I&M0 to I&M3 |
| • Isochronous mode | No |
| • Prioritized startup | Yes |
| • Measuring range scalable | No |
| • Scalable measured values | Yes |
| • Adjustment of measuring range | Yes |
| Engineering with | |
| • STEP 7 TIA Portal configurable/integrated from version | see entry ID: 109746275 |
| Operating mode | |
| • Oversampling | No |
| • MSI | Yes |
| CiR - Configuration in RUN | |
| Reparameterization possible in RUN | Yes |
| Calibration possible in RUN | Yes |
| Supply voltage | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |
| permissible range, upper limit (DC) | 28.8 V |
| Reverse polarity protection | Yes |
| Input current | |
| Current consumption, max. | 50 mA; with 24 V DC supply |
| Power | |
| Power consumption from the backplane bus | 0.85 W |
| Power loss | |
| Power loss, typ. | 1.9 W |
| Analog inputs | |
| Number of analog inputs | 8 |
| • For current measurement | 8 |
| • For voltage measurement | 8 |
| permissible input voltage for voltage input (destruction limit), max. | 28.8 V |
| permissible input current for current input (destruction limit), max. | 40 mA |

| Input ranges (rated values), voltages | |
|---|--|
| • 0 to +5 V | No |
| • 0 to +10 V | No |
| • 1 V to 5 V | Yes |
| — Input resistance (1 V to 5 V) | 100 kΩ |
| • -10 V to +10 V | Yes |
| — Input resistance (-10 V to +10 V) | 100 kΩ |
| • -2.5 V to +2.5 V | Yes |
| — Input resistance (-2.5 V to +2.5 V) | 100 kΩ |
| • -25 mV to +25 mV | No |
| • -250 mV to +250 mV | No |
| • -5 V to +5 V | Yes |
| — Input resistance (-5 V to +5 V) | 100 kΩ |
| • -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) | 25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC |
| • -20 mA to +20 mA | Yes |
| — Input resistance (-20 mA to +20 mA) | 25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC |
| • 4 mA to 20 mA | Yes |
| — Input resistance (4 mA to 20 mA) | 25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC |
| 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 TXK/TXK(L) to GOST | No |
| Input ranges (rated values), resistance thermometer | |
| • Cu 10 | No |
| • Cu 10 according to GOST | No |
| • Cu 50 | No |
| • Cu 50 according to GOST | No |
| • Cu 100 | No |
| • Cu 100 according to GOST | No |
| • Ni 10 | No |
| • Ni 10 according to GOST | No |
| • Ni 100 | No |
| • Ni 100 according to GOST | No |
| • Ni 1000 | No |
| • Ni 1000 according to GOST | No |
| • LG-Ni 1000 | No |
| • Ni 120 | No |
| • Ni 120 according to GOST | No |
| • Ni 200 | No |
| • Ni 200 according to GOST | No |
| • Ni 500 | No |
| • Ni 500 according to GOST | No |
| • Pt 10 | No |
| • Pt 10 according to GOST | No |
| • Pt 50 | No |
| • Pt 50 according to GOST | No |

| | |
|--|---|
| • Pt 100 | No |
| • Pt 100 according to GOST | No |
| • Pt 1000 | No |
| • Pt 1000 according to GOST | No |
| • Pt 200 | No |
| • Pt 200 according to GOST | No |
| • Pt 500 | No |
| • Pt 500 according to GOST | No |
| Input ranges (rated values), resistors | |
| • 0 to 150 ohms | No |
| • 0 to 300 ohms | No |
| • 0 to 600 ohms | No |
| • 0 to 3000 ohms | No |
| • 0 to 6000 ohms | No |
| • PTC | No |
| Cable length | |
| • shielded, max. | 800 m |
| Analog value generation for the inputs | |
| Integration and conversion time/resolution per channel | |
| • Resolution with overrange (bit including sign), max. | 24 bit; When using the function "Scaling of the measured values" or "Measuring range adaptation" (32 bit REAL format); 16 bit when using the S7 format (16 bit INTEGER) |
| • Integration time, parameterizable | Yes |
| • Integration time (ms) | Fast mode: 2.5 / 16.67 / 20 / 100 ms, standard mode: 7.5 / 50 / 60 / 300 ms |
| • Basic conversion time, including integration time (ms) | Fast mode: 4 / 18 / 22 / 102 ms; Standard mode: 9 / 52 / 62 / 302 ms |
| • Interference voltage suppression for interference frequency f1 in Hz | 400 / 60 / 50 / 10 Hz |
| • Basic execution time of the module (all channels released) | Corresponds to the channel with the highest basic conversion time |
| Smoothing of measured values | |
| • parameterizable | Yes |
| • Step: None | Yes |
| • Step: low | Yes |
| • Step: Medium | Yes |
| • Step: High | Yes |
| Encoder | |
| Connection of signal encoders | |
| • for voltage measurement | Yes |
| • for current measurement as 2-wire transducer | Yes; with external transmitter supply |
| • for current measurement as 4-wire transducer | Yes |
| • for resistance measurement with two-wire connection | No |
| • for resistance measurement with three-wire connection | No |
| • for resistance measurement with four-wire connection | No |
| Errors/accuracies | |
| Linearity error (relative to input range), (+/-) | 0.04 % |
| Temperature error (relative to input range), (+/-) | 0.01 %/K |
| Crosstalk between the inputs, max. | -80 dB |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-) | 0.02 % |
| Operational error limit in overall temperature range | |
| • Voltage, relative to input range, (+/-) | 0.2 % |
| • Current, relative to input range, (+/-) | 0.2 % |
| Basic error limit (operational limit at 25 °C) | |
| • Voltage, relative to input range, (+/-) | 0.05 % |
| • Current, relative to input range, (+/-) | 0.05 % |
| Interference voltage suppression for $f = n \times (f1 \pm 1 \%)$, f1 = interference frequency | |
| • Series mode interference (peak value of interference < rated value of input range), min. | 80 dB; in the Standard operating mode, 40 dB in the Fast operating mode |
| • Common mode voltage, max. | 60 V DC/30 V AC |
| • Common mode interference, min. | 80 dB |

| Interrupts/diagnostics/status information | |
|---|---|
| Diagnostics function | Yes |
| Alarms | |
| • Diagnostic alarm | Yes |
| • Limit value alarm | Yes; two upper and two lower limit values in each case |
| Diagnoses | |
| • Monitoring the supply voltage | Yes |
| • Wire break | Yes; only for 1 ... 5 V and 4 ... 20 mA |
| • Overflow/Underflow | Yes |
| Diagnostics indication LED | |
| • RUN LED | Yes; green LED |
| • ERROR LED | Yes; red LED |
| • Monitoring of the supply voltage (PWR-LED) | Yes; green LED |
| • Channel status display | Yes; green LED |
| • for channel diagnostics | Yes; red LED |
| • for module diagnostics | Yes; red LED |
| Potential separation | |
| Potential separation channels | |
| • between the channels | Yes |
| • between the channels, in groups of | 1 |
| • between the channels and backplane bus | Yes |
| • between the channels and the power supply of the electronics | Yes |
| Permissible potential difference | |
| between different circuits | 60 V DC/30 V AC; insulation rated for 120 V AC basic insulation: between the channels and the supply voltage L+; between the channels and the backplane bus; between the channels |
| Isolation | |
| Isolation tested with | 2 000 V DC between the channels and the supply voltage L+; 2 000 V DC between the channels and the backplane bus; 2 000 V DC between the channels; 707 V DC (type test) between the supply voltage L+ and the backplane bus |
| Standards, approvals, certificates | |
| Ecological footprint | |
| • environmental product declaration | Yes |
| Global warming potential | |
| — global warming potential, (total) [CO2 eq] | 38.6 kg |
| — global warming potential, (during production) [CO2 eq] | 14.4 kg |
| — global warming potential, (during operation) [CO2 eq] | 24.6 kg |
| — global warming potential, (after end of life cycle) [CO2 eq] | -0.44 kg |
| Security | |
| signed firmware update | No |
| data integrity | No |
| Ambient conditions | |
| Ambient temperature during operation | |
| • horizontal installation, min. | -40 °C; = Tmin (incl. condensation/frost) |
| • horizontal installation, max. | 70 °C; = Tmax |
| • vertical installation, min. | -40 °C; = Tmin |
| • vertical installation, max. | 40 °C; = Tmax |
| 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) |
| Relative humidity | |
| • With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |
| Resistance | |
| Coolants and lubricants | |

| | | |
|---|---|-----------------------|
| — Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air | |
| 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! | |
| Conformal coating | | |
| <ul style="list-style-type: none"> • Coatings for printed circuit board assemblies acc. to EN 61086 • Protection against fouling acc. to EN 60664-3 • Military testing according to MIL-I-46058C, Amendment 7 • Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A | <p>Yes; Class 2 for high reliability</p> <p>Yes; Type 1 protection</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p> | |
| Dimensions | | |
| Width | 35 mm | |
| Height | 147 mm | |
| Depth | 129 mm | |
| Weights | | |
| Weight, approx. | 280 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 | 10 | EC001420 |
| ETIM | 9 | EC001420 |
| ETIM | 8 | EC001420 |
| ETIM | 7 | EC001420 |
| IDEA | 4 | 3562 |
| UNSPSC | 15 | 32-15-17-05 |
| Approvals / Certificates | | |
| General Product Approval | | |

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[Manufacturer Declaration](#)



General Product Approval

EMV

For use in hazardous locations

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For use in hazardous locations

Maritime application

Environment



last modified:

10/23/2025