

SIPLUS S7-1500 AI 8XU/I HF -40 ... +70°C with conformal coating based on 6ES7531-7NF00-0AB0 . 16 bit resolution, Accuracy 0.1%, 8 channels in groups of 1, Common mode voltage: 30V AC/60V DC, "diagnostics; hardware" "interrupts; incl. infeed" element, Shield bracket and shield terminal



General information	
Product type designation	AI 8xU/I HF
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Prioritized startup 	Yes
<ul style="list-style-type: none"> Measuring range scalable 	No
<ul style="list-style-type: none"> Scalable measured values 	Yes
<ul style="list-style-type: none"> Adjustment of measuring range 	Yes
Engineering with	
<ul style="list-style-type: none"> PROFIBUS from GSD version/GSD revision 	V1.0 / V5.1
<ul style="list-style-type: none"> PROFINET from GSD version/GSD revision 	V2.3 / -
Operating mode	
<ul style="list-style-type: none"> Oversampling 	No
<ul style="list-style-type: none"> MSI 	Yes
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes

Calibration possible in RUN	Yes
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 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 available 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 k 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
• -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 k Ω
• -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
 - Input resistance (-20 mA to +20 mA)
- 4 mA to 20 mA
 - Input resistance (4 mA to 20 mA)

Yes
 25 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
 Yes
 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.	16 bit
• 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
- for resistance measurement with four-wire connection

No

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 $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ 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

Diagnostic messages

- 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
- between the channels and the power supply of the electronics

Yes

Yes

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

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

- 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

Yes

Yes; Type 1 protection

Yes; Discoloration of coating possible during service life

Yes; Conformal coating, Class A

Dimensions

Width	35 mm
Height	147 mm
Depth	129 mm

Weights

Weight, approx. 280 g

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