

SPARE PART SIPLUS S7-1500 AI 8xU/I HS T1 RAIL -25 ...
 +55°C T1 at 70°C for 10 min with conformal coating Based on:
 6ES7531-7NF10-0AB0 . 16-bit resolution: Accuracy 0.3 percent 8
 channels in groups of 8 "Common mode voltage 10 V; diagnostics;
 Hardware interrupts 8 channels in 0.0625ms incl. infeed element,
 Shield bracket and shield terminal

General information	
Product type designation	AI 8xU/I HS
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"> Measuring range scalable 	No
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	
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.	240 mA; with 24 V DC supply
Encoder supply	
24 V encoder supply	
<ul style="list-style-type: none"> Short-circuit protection 	Yes
<ul style="list-style-type: none"> Output current, max. 	53 mA
Power	
Power available from the backplane bus	1.2 W
Power loss	
Power loss, typ.	3.4 W
Analog inputs	
Number of analog inputs	8

<ul style="list-style-type: none"> • For current measurement 	8
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • 1 V to 5 V 	Yes
<ul style="list-style-type: none"> • Input resistance (1 V to 5 V) 	50 kΩ
<ul style="list-style-type: none"> • -10 V to +10 V 	Yes
<ul style="list-style-type: none"> • Input resistance (-10 V to +10 V) 	100 kΩ
<ul style="list-style-type: none"> • -5 V to +5 V 	Yes
<ul style="list-style-type: none"> • Input resistance (-5 V to +5 V) 	50 kΩ
Input ranges (rated values), currents	
<ul style="list-style-type: none"> • 0 to 20 mA 	Yes
<ul style="list-style-type: none"> • Input resistance (0 to 20 mA) 	41 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
<ul style="list-style-type: none"> • -20 mA to +20 mA 	Yes
<ul style="list-style-type: none"> • Input resistance (-20 mA to +20 mA) 	41 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
<ul style="list-style-type: none"> • 4 mA to 20 mA 	Yes
<ul style="list-style-type: none"> • Input resistance (4 mA to 20 mA) 	41 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
Thermocouple (TC)	
Temperature compensation	
— Reference channel of the module	Yes; 9th channel that can be used as a genuine 9th RTD channel regardless of the parameterization of the other channels, or that can be used for compensation in the case of TC measurement
Cable length	
<ul style="list-style-type: none"> • shielded, max. 	800 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. 	16 bit
<ul style="list-style-type: none"> • Basic execution time of the module (all channels released) 	62.5 μs; independent of number of activated channels
Smoothing of measured values	
<ul style="list-style-type: none"> • parameterizable 	Yes
<ul style="list-style-type: none"> • Step: None 	Yes
<ul style="list-style-type: none"> • Step: low 	Yes
<ul style="list-style-type: none"> • Step: Medium 	Yes
<ul style="list-style-type: none"> • Step: High 	Yes
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> • for voltage measurement 	Yes

<ul style="list-style-type: none"> • for current measurement as 2-wire transducer <ul style="list-style-type: none"> — Burden of 2-wire transmitter, max. • for current measurement as 4-wire transducer 	Yes 820 Ω Yes
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.02 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, max.	-60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.02 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-) 	0.4 % 0.4 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Voltage, relative to input range, (+/-) • Current, relative to input range, (+/-) 	0.2 % 0.2 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, f_1 = interference frequency	
<ul style="list-style-type: none"> • Common mode voltage, max. • Common mode interference, min. 	10 V 60 dB; at 400 Hz: 50 dB
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	80 μs
Bus cycle time (TDP), min.	250 μs
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
<ul style="list-style-type: none"> • Diagnostic alarm • Limit value alarm 	Yes Yes; two upper and two lower limit values in each case
Diagnostic messages	
<ul style="list-style-type: none"> • Monitoring the supply voltage • Wire-break • Overflow/underflow 	Yes Yes; only for 1 ... 5 V and 4 ... 20 mA Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> • Monitoring of the supply voltage (PWR-LED) • Channel status display • for channel diagnostics • for module diagnostics 	Yes; Green LED Yes; Green LED Yes; Red LED Yes; Red LED
Potential separation	
Potential separation channels	
<ul style="list-style-type: none"> • between the channels • between the channels, in groups of 	No 8

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

Yes

Yes

Permissible potential difference

between the inputs (UCM) 20 V DC

Between the inputs and MANA (UCM) 10 V DC

Isolation

Isolation tested with 707 V DC (type test) and according to EN 50155 (routine test)

Standards, approvals, certificates

Railway application

- EN 50121-3-2 Yes; EMC for rail vehicles
- EN 50121-4 Yes; EMC for signal and telecommunications systems
- EN 50124-1 Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC
- EN 50125-1 Yes; Rail vehicles - see ambient conditions
- EN 50125-2 Yes; Stationary electrical equipment - see ambient conditions
- EN 50125-3 Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)
- EN 50155 Yes; Rail vehicles - temperature class T1, horizontal mounting position, salt spray Class ST2
- EN 61373 Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B
- Fire protection acc. to EN 45545-2 Yes; Rail vehicles - verification on request

Ambient conditions

Ambient temperature during operation

- horizontal installation, min. -40 °C; = Tmin; Startup @ -25 °C
- horizontal installation, max. 70 °C; = Tmax; > +60 °C max. 4x ±20 mA or 4x ±10 V permissible

Altitude during operation relating to sea level

- Installation altitude above sea level, max. 2 000 m
- Ambient air temperature-barometric pressure-altitude Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 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

Coolants and lubricants

- Resistant to commercially available coolants and lubricants Yes

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
- to mechanically 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); *

Yes; Class 3S4 incl. sand, dust, *

Use on land craft, rail vehicles and special-purpose vehicles

- to biologically active substances according to EN 60721-3-5
- to chemically active substances according to EN 60721-3-5
- to mechanically active substances according to EN 60721-3-5

Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request

Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *

Yes; Class 5S3 incl. sand, dust; *

from supply voltage 1L+

- Note regarding classification of environmental conditions acc. to EN 60721

* The supplied plug covers must remain in place over the unused interfaces during operation!

Decentralized operation

Prioritized startup No

Dimensions

Width	35 mm
Height	147 mm
Depth	129 mm

Weights

Weight, approx. 200 g

Other

Note: For use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A Online Support article 109736776

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