



Figure similar

SIPLUS ET 200SP AI 4xRTD/TC HF rail based on 6ES7134-6JD00-0CA1 with conformal coating, -40...+60 °C, OT2 with ST1/2 (+70 °C für 10 minutes), analog input module, suitable for BU type A0, A1, color code CC00, channel diagnostics, 16 bit, +/-0.2%, 2/3/4-wire

General information	
Product type designation	AI 4xRTD/TC 2-/3-/4-wire HF
Firmware version	
• FW update possible	Yes
based on	6ES7134-6JD00-0CA1
usable BaseUnits	BU type A0, A1
Color code for module-specific color-coded label	CC00
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	No
• Adjustment of measuring range	Yes
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	see entry ID: 109746275
Operating mode	
• Oversampling	No
• MSI	No
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 (rated value)	30 mA
Current consumption, max.	32 mA
Power loss	
Power loss, typ.	0.75 W
Address area	
Address space per module	
• Address space per module, max.	8 byte; + 1 byte for Qi information
Hardware configuration	
Automatic encoding	
• Mechanical coding element	Yes
• Type of mechanical coding element	Type A
Analog inputs	
Number of analog inputs	4

permissible input voltage for voltage input (destruction limit), max.	30 V
Constant measurement current for resistance-type transmitter, typ.	2 mA
Cycle time (all channels), min.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels); for line compensation in case of a three-wire connection, an additional cycle is necessary
Technical unit for temperature measurement adjustable	Yes; °C/°F/K
Input ranges (rated values), voltages	
• -1 V to +1 V — Input resistance (-1 V to +1 V) • -250 mV to +250 mV — Input resistance (-250 mV to +250 mV) • -50 mV to +50 mV — Input resistance (-50 mV to +50 mV) • -80 mV to +80 mV — Input resistance (-80 mV to +80 mV)	- Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ
Input ranges (rated values), thermocouples	
• type B — Input resistance (Type B) • type C — Input resistance (Type C) • Type E — Input resistance (Type E) • Type J — Input resistance (type J) • Type K — Input resistance (Type K) • Type L — Input resistance (Type L) • Type N — Input resistance (Type N) • Type R — Input resistance (Type R) • Type S — Input resistance (Type S) • Type T — Input resistance (Type T) • Type U — Input resistance (Type U) • Type TXK/TXK(L) to GOST — Input resistance (Type TXK/TXK(L) to GOST)	- Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ
Input ranges (rated values), resistance thermometer	
• Cu 10 — Input resistance (Cu 10) • Ni 100 — Input resistance (Ni 100) • Ni 1000 — Input resistance (Ni 1000) • LG-Ni 1000 — Input resistance (LG-Ni 1000) • Ni 120 — Input resistance (Ni 120) • Ni 200 — Input resistance (Ni 200) • Ni 500 — Input resistance (Ni 500) • Pt 100 — Input resistance (Pt 100) • Pt 1000	- Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign 1 MΩ - Yes; 16 bit incl. sign

— Input resistance (Pt 1000)	1 MΩ
• Pt 200	Yes; 16 bit incl. sign
— Input resistance (Pt 200)	1 MΩ
• Pt 500	Yes; 16 bit incl. sign
— Input resistance (Pt 500)	1 MΩ
Input ranges (rated values), resistors	
• 0 to 150 ohms	Yes; 15 bit
— Input resistance (0 to 150 ohms)	1 MΩ
• 0 to 300 ohms	Yes; 15 bit
— Input resistance (0 to 300 ohms)	1 MΩ
• 0 to 600 ohms	Yes; 15 bit
— Input resistance (0 to 600 ohms)	1 MΩ
• 0 to 3000 ohms	Yes; 15 bit
— Input resistance (0 to 3000 ohms)	1 MΩ
• 0 to 6000 ohms	Yes; 15 bit
— Input resistance (0 to 6000 ohms)	1 MΩ
• PTC	Yes; 15 bit
— Input resistance (PTC)	1 MΩ
Thermocouple (TC)	
Temperature compensation	
— Parameterizable	Yes
— Reference channel of the module	Yes
— internal comparison point	Yes; with BaseUnit type A1
— Reference channel of the group	Yes
— Number of reference channel groups	4; Group 0 to 3
— fixed reference temperature	Yes
Cable length	
• shielded, max.	200 m; 50 m with thermocouples
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time, parameterizable	Yes
• Basic conversion time, including integration time (ms)	
— additional processing time for wire-break check	2 ms; In the ranges resistance thermometers, resistors and thermocouples
— additional power line wire-break check	2 ms; for 3/4 wire transducer (resistance thermometer and resistor)
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz
• Conversion time (per channel)	180 / 60 / 50 / (67.5 / 22.5 / 18.75) ms
Smoothing of measured values	
• Number of smoothing levels	4; None; 4/8/16 times
• Parameterizable	Yes
Encoder	
Connection of signal encoders	
• for voltage measurement	Yes
• for resistance measurement with two-wire connection	Yes
• for resistance measurement with three-wire connection	Yes
• for resistance measurement with four-wire connection	Yes
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.01 %; ±0.1 % for resistance thermometers and resistance
Temperature error (relative to input range), (+/-)	0.0009 %/K; ±0.005 % / K at thermocouple
Crosstalk between the inputs, min.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	0.2 %
• Resistance, relative to input range, (+/-)	0.2 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %

Resistance, 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.	70 dB
Common mode voltage, max.	10 V
Common mode interference, min.	90 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; channel by channel
Group error	Yes
Overflow/Underflow	Yes; channel by channel
Diagnostics indication LED	
Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
Channel status display	Yes; green LED
for channel diagnostics	Yes; red LED
for module diagnostics	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
between the channels	No
between the channels and backplane bus	Yes
between the channels and the power supply of the electronics	Yes
Permissible potential difference	
between the inputs (UCM)	10 V DC
Isolation	
Isolation tested with	750 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 50121-5	Yes; EMC for fixed installations and railway power supply equipment
EN 50124-1	Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage $UN_i = 0.5 \text{ kV}$; $UN_m = 24 \text{ V DC}$
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 OT2, ST1/ST2, horizontal mounting position
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 (incl. condensation/frost)
horizontal installation, max.	60 °C; = Tmax; +70 °C for 10 min (OT2, ST1/ST2 acc. to EN 50155); +70 °C continuously with spacing modules (6AG2193-6BN00-4BA0) or configured slots to the left and right of the module (OT4, ST0 acc. to EN 50155)
vertical installation, min.	-40 °C; = Tmin
vertical installation, max.	50 °C; = Tmax
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 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, *		
— Against mechanical environmental conditions acc. to EN 60721-3-3	Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		
Use on land craft, rail vehicles and special-purpose vehicles			
— to biologically 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		
— to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		
— to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		
— Against mechanical environmental conditions acc. to EN 60721-3-5	Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)		
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	Yes; Class 2 for high reliability		
● Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection		
● Electronic equipment on rolling stock acc. to EN 50155	Yes; Class PC2 protective coating acc. to EN 50155:2017		
● Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life		
● Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A		
Dimensions			
Width	15 mm		
Height	73 mm		
Depth	58 mm		
Other			
Note:	for use in railway applications, also observe the product information "SIPLUS extreme RAIL" A5E37661960A, Online Support article 109736776		
Classifications			
		Version	Classification
	eClass	16	27-24-26-01
	eClass	14	27-24-26-01
	eClass	12	27-24-26-01
	eClass	9.1	27-24-26-01
	eClass	9	27-24-26-01
	eClass	8	27-24-26-01
	eClass	7.1	27-24-26-01
	eClass	6	27-24-26-01
	ETIM	10	EC001596
	ETIM	9	EC001596
	ETIM	8	EC001596
	ETIM	7	EC001596

IDEA	4	3562
UNSPSC	15	32-15-17-05

Approvals / Certificates

General Product Approval

[Manufacturer Declaration](#)





[China RoHS](#)





General Product Approval	EMV	Railway
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[Confirmation](#)

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