

SIPLUS ET 200SP AQ 4XU/I ST TX RAIL -40 ... +70°C TX with 85 °C for 10 minutes with conformal coating based on 6ES7135-6HD00-0BA1 . AQ 4XU/I Standard, suitable for BU type A0, A1, Color code CC00, Module diagnostics



Figure similar

General information	
Product type designation	AQ 4xU/I ST
Firmware version	
<ul style="list-style-type: none"> FW update possible 	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Output range scalable 	No
Operating mode	
<ul style="list-style-type: none"> Oversampling 	No
<ul style="list-style-type: none"> MSO 	No
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	No

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.	150 mA
Power loss	
Power loss, typ.	1.5 W
Address area	
Address space per module	
<ul style="list-style-type: none"> Address space per module, max. 	8 byte; + 1 byte for QI information
Analog outputs	
Number of analog outputs	4; > +60 °C max. 2x ±10 V permissible
Voltage output, short-circuit current, max.	45 mA
Cycle time (all channels), min.	5 ms
Analog output with oversampling	No
Output ranges, voltage	
<ul style="list-style-type: none"> 0 to 10 V 1 V to 5 V -5 V to +5 V -10 V to +10 V 	Yes; 15 bit Yes; 13 bit Yes; 15 bit incl. sign Yes; 16 bit incl. sign
Output ranges, current	
<ul style="list-style-type: none"> 0 to 20 mA -20 mA to +20 mA 4 mA to 20 mA 	Yes; 15 bit Yes; 16 bit incl. sign Yes; 14 bit
Connection of actuators	
<ul style="list-style-type: none"> for voltage output two-wire connection for voltage output four-wire connection for current output two-wire connection 	Yes Yes Yes
Load impedance (in rated range of output)	
<ul style="list-style-type: none"> with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. 	2 kΩ 1 μF 500 Ω 1 mH
Destruction limits against externally applied voltages and currents	
<ul style="list-style-type: none"> Voltages at the outputs 	30 V
Cable length	
<ul style="list-style-type: none"> shielded, max. 	1 000 m; 200 m for voltage output
Analog value generation for the outputs	

Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. 	16 bit
Settling time	
<ul style="list-style-type: none"> for resistive load 	0.1 ms
<ul style="list-style-type: none"> for capacitive load 	1 ms
<ul style="list-style-type: none"> for inductive load 	0.5 ms
Errors/accuracies	
Linearity error (relative to output range), (+/-)	0.03 %
Temperature error (relative to output range), (+/-)	0.005 %/K
Crosstalk between the outputs, min.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.05 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> Voltage, relative to output range, (+/-) 	0.7 %
<ul style="list-style-type: none"> Current, relative to output range, (+/-) 	0.7 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> Voltage, relative to output range, (+/-) 	0.3 %
<ul style="list-style-type: none"> Current, relative to output range, (+/-) 	0.3 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
<ul style="list-style-type: none"> Diagnostic alarm 	Yes
Diagnostic messages	
<ul style="list-style-type: none"> Monitoring the supply voltage 	Yes
<ul style="list-style-type: none"> Wire-break 	Yes
<ul style="list-style-type: none"> Short-circuit 	Yes
<ul style="list-style-type: none"> Group error 	Yes
<ul style="list-style-type: none"> Overflow/underflow 	Yes
Diagnostics indication LED	
<ul style="list-style-type: none"> Monitoring of the supply voltage (PWR-LED) 	Yes; green PWR LED
<ul style="list-style-type: none"> Channel status display 	Yes; green LED
<ul style="list-style-type: none"> for channel diagnostics 	No
<ul style="list-style-type: none"> for module diagnostics 	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
<ul style="list-style-type: none"> between the channels 	No
<ul style="list-style-type: none"> between the channels and backplane bus 	Yes
<ul style="list-style-type: none"> between the channels and the power supply of the electronics 	Yes

Isolation	
Isolation tested with	707 V DC (type test) and according to EN 50155 (routine test)
Standards, approvals, certificates	
Railway application	
<ul style="list-style-type: none"> • EN 50121-3-2 • EN 50121-4 • EN 50124-1 • EN 50125-1 • EN 50125-2 • EN 50125-3 • EN 50155 • EN 61373 • Fire protection acc. to EN 45545-2 	<p>Yes; EMC for rail vehicles</p> <p>Yes; EMC for signal and telecommunications systems</p> <p>Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC</p> <p>Yes; Rail vehicles - see ambient conditions</p> <p>Yes; Stationary electrical equipment - see ambient conditions</p> <p>Yes; Signal and telecommunications systems - see ambient conditions; vibrations and shocks: Application point outside of tracks (1 m to 3 m away from track)</p> <p>Yes; Rail vehicles - temperature class Tx, horizontal mounting position, salt spray Class ST2</p> <p>Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B</p> <p>Yes; Rail vehicles - verification on request</p>
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> • horizontal installation, min. • horizontal installation, max. 	<p>-40 °C; = Tmin (incl. condensation/frost)</p> <p>70 °C; = Tmax; +85 °C for 10 min (Tx acc. to EN 50155)</p>
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> • Installation altitude above sea level, max. • Ambient air temperature-barometric pressure-altitude 	<p>2 000 m</p> <p>Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)</p>
Relative humidity	
<ul style="list-style-type: none"> • With condensation, tested in accordance with IEC 60068-2-38, max. 	<p>100 %; RH incl. condensation/frost (no commissioning under condensation conditions)</p>
Resistance	
Coolants and lubricants	
<ul style="list-style-type: none"> — Resistant to commercially available coolants and lubricants 	<p>Yes; Incl. diesel and oil droplets in the air</p>
Use in stationary industrial systems	
<ul style="list-style-type: none"> — to biologically active substances according to EN 60721-3-3 — to chemically active substances according to EN 60721-3-3 — to mechanically active substances according to EN 60721-3-3 — Against mechanical environmental conditions acc. to EN 60721-3-3 	<p>Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request</p> <p>Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *</p> <p>Yes; Class 3S4 incl. sand, dust, *</p> <p>Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)</p>
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 50155 (ST2); *
— 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!
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Conformal coating

• Coatings for printed circuit board assemblies acc. to EN 61086	Yes
• 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

Weights

Weight, approx.	31 g
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Other

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