



Figure similar

SIPLUS ET 200SP AQ 2xU/I HS rail based on 6ES7135-6HB00-0DA1 with conformal coating, -40...+60 °C, OT2 with ST1/2 (+70 °C für 10 minutes), analog output module, suitable for BU type A0, A1, color code CC00, channel diagnostics, 16-bit, +/-0.2%

General information	
Product type designation	AQ 2xU/I HS
based on	6ES7135-6HB00-0DA1
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"> Isochronous mode 	Yes
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version 	see entry ID: 109746275
Operating mode	
<ul style="list-style-type: none"> Oversampling 	Yes; 2 channels per module
<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 (rated value)	45 mA; without load
Power loss	
Power loss, typ.	0.9 W
Address area	
Address space per module	
<ul style="list-style-type: none"> Address space per module, max. 	4 byte; + 1 byte for QI information (32 bytes in the oversampling operating mode)
Analog outputs	
Number of analog outputs	2
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	45 mA
Cycle time (all channels), min.	125 µs
Analog output with oversampling	Yes
<ul style="list-style-type: none"> Values per cycle, max. 	16
<ul style="list-style-type: none"> Resolution, min. 	45 µs; (2 channels), 35 µs (1 channel)
Output ranges, voltage	
<ul style="list-style-type: none"> 0 to 10 V 	Yes; 15 bit

<ul style="list-style-type: none"> • 1 V to 5 V • -5 V to +5 V • -10 V to +10 V 	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 k Ω 1 μ F 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 • for capacitive load • for inductive load 	0.05 ms 0.05 ms; Max. 47 nF and 20 m cable length 0.05 ms
Errors/accuracies	
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.03 %
Temperature error (relative to output range), (+/-)	0.003 %/K
Crosstalk between the outputs, max.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.03 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-) 	0.4 % 0.4 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-) 	0.1 % 0.1 %
Isochronous mode	
Execution and activation time (TCO), min.	70 μ s
Bus cycle time (TDP), min.	125 μ s
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
<ul style="list-style-type: none"> • Diagnostic alarm 	Yes
Diagnoses	
<ul style="list-style-type: none"> • Monitoring the supply voltage • Wire-break • Short-circuit • Group error • Overflow/underflow 	Yes Yes; channel-by-channel, only for output type "current" Yes; channel-by-channel, only for output type "voltage" Yes 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 PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED
Potential separation	

Potential separation channels	
<ul style="list-style-type: none"> • between the channels • between the channels and backplane bus • between the channels and the power supply of the electronics 	<p>No</p> <p>Yes</p> <p>Yes</p>
Isolation	
Isolation tested with	750 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 50121-5 • EN 50124-1 	<p>Yes; EMC for rail vehicles</p> <p>Yes; EMC for signal and telecommunications systems</p> <p>Yes; EMC for fixed installations and railway power supply equipment</p> <p>Yes; Railway applications - overvoltage category OV2; pollution degree PD2; rated surge voltage UNi = 0.5 kV; UNm = 24 V DC</p>
<ul style="list-style-type: none"> • EN 50125-1 • EN 50125-2 • EN 50125-3 	<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>
<ul style="list-style-type: none"> • EN 50155 	<p>Yes; Rail vehicles - temperature class OT2, ST1/ST2, horizontal mounting position</p>
<ul style="list-style-type: none"> • EN 61373 	<p>Yes; Rail vehicles - vibrations and shocks: Category 1 Class A/B</p>
<ul style="list-style-type: none"> • Fire protection acc. to EN 45545-2 	<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>60 °C; = Tmax; +70 °C for 10 min (OT1, ST1/ST2 acc. to EN 50155); +70 °C continuously with configured empty slots to the left and right of the module (OT3, ST0 acc. to EN 50155)</p>
<ul style="list-style-type: none"> • vertical installation, min. • vertical installation, max. 	<p>-40 °C; = Tmin (incl. condensation/frost)</p> <p>50 °C; = Tmax</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 in bedewed state), horizontal installation</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	
<ul style="list-style-type: none"> — 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 — Against mechanical environmental conditions acc. to EN 60721-3-5 	<p>Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request</p> <p>Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *</p> <p>Yes; Class 5S3 incl. sand, dust; *</p> <p>Yes; Class 5M2 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)</p>
Usage in industrial process technology	
<ul style="list-style-type: none"> — Against chemically active substances acc. to EN 60654-4 — Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04 	<p>Yes; Class 3 (excluding trichlorethylene)</p> <p>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)</p>
Remark	
<ul style="list-style-type: none"> — Note regarding classification of environmental 	<p>* The supplied plug covers must remain in place over the unused interfaces</p>

conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04

during operation!

Conformal coating

- Coatings for printed circuit board assemblies acc. to EN 61086
- Protection against fouling acc. to EN 60664-3
- Electronic equipment on rolling stock acc. to EN 50155
- 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; Class 2 for high reliability

Yes; Type 1 protection

Yes; Class PC2 protective coating acc. to EN 50155:2017

Yes; Discoloration of coating possible during service life

Yes; Conformal coating, Class A

Dimensions

Width	15 mm
Height	73 mm
Depth	58 mm

Weights

Weight, approx.	31 g
-----------------	------

Other

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

last modified:

5/29/2024 