

SIPLUS ET 200SP AQ 2 X U/I HIGH SPEED -40...+60°C start up - 25°C with conformal coating based on 6ES7135-6HB00-0DA1 .
Analog output module, AQ 2x U/I High Speed, suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.3%



General information	
Product type designation	AQ 2xU/I HS
Firmware version	V2.0
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
Engineering with	
<ul style="list-style-type: none"> PROFIBUS as of GSD version/GSD revision 	GSD Revision 5
<ul style="list-style-type: none"> PROFINET as of GSD version/GSD revision 	GSDML V2.3
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	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)	45 mA; without load
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Power loss

Power loss, typ.	0.9 W
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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 μ s
Analog output with oversampling	Yes
<ul style="list-style-type: none"> Values per cycle, max. Resolution, min. 	16 45 μ s; (2 channels), 35 μ s (1 channel)

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
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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
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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
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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
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Destruction limits against externally applied voltages and currents

<ul style="list-style-type: none"> Voltages at the outputs 	30 V
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Cable length

- shielded, max.

1 000 m; 200 m for voltage output

Analog value generation for the outputs

Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit
Settling time	
• for resistive load	0.05 ms
• for capacitive load	0.05 ms; Max. 47 nF and 20 m cable length
• for inductive load	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	
• Voltage, relative to output range, (+/-)	0.4 %
• Current, relative to output range, (+/-)	0.4 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output range, (+/-)	0.1 %
• Current, relative to output range, (+/-)	0.1 %

Isochronous mode

Execution and activation time (TCO), min.	70 µs
Bus cycle time (TDP), min.	125 µs

Interrupts/diagnostics/status information

Diagnostics function	Yes
Substitute values connectable	Yes
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; channel-by-channel, only for output type "current"
• Short-circuit	Yes; channel-by-channel, only for output type "voltage"
• Group error	Yes
• Overflow/underflow	Yes
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
- between the channels and backplane bus
- between the channels and the power supply of the electronics

No
Yes
Yes

Permissible potential difference

between different circuits

75 V DC/60 V AC (base isolation)

Isolation

Isolation tested with

707 V DC (type test)

Ambient conditions

Ambient temperature during operation

- horizontal installation, min.
- horizontal installation, max.

-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
60 °C; = Tmax

Altitude during operation relating to sea level

- Installation altitude above sea level, max.
- Ambient air temperature-barometric pressure-altitude

5 000 m
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
- 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

Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
Yes; Class 3S4 incl. sand, dust, *
Yes; Class 3M8 using the SIPLUS Mounting Kit ET 200SP (6AG1193-6AA00-0AA0)

Use on ships/at sea

- to biologically active substances according to EN 60721-3-6
- to chemically active substances according to EN 60721-3-6

Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
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; *
— Against mechanical environmental conditions acc. to EN 60721-3-6	Yes; Class 6M4 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	
<ul style="list-style-type: none"> • 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 	<p>Yes</p> <p>Yes; Type 1 protection</p> <p>Yes; Discoloration of coating possible during service life</p> <p>Yes; Conformal coating, Class A</p>
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	31 g
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