

SIPLUS ET 200SP, (-40) -25...+60 °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	230 RCE
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"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
Engineering with	
<ul style="list-style-type: none"> <li>PROFIBUS as of GSD version/GSD revision</li> <li>PROFINET as of GSD version/GSD revision</li> </ul>	GSD Revision 5 GSDML V2.3
Operating mode	
<ul style="list-style-type: none"> <li>Oversampling</li> <li>MSO</li> </ul>	Yes; 2 channels per module No
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Supply voltage	

permissible range, lower limit (DC)	100 V
permissible range, upper limit (DC)	253 V
Reverse polarity protection	Yes

<b>Input current</b>	
Current consumption (rated value)	45 mA; without load
Current consumption, max.	40 mA

<b>Address area</b>	
Address space per module	
<ul style="list-style-type: none"> <li>Address space per module, max.</li> </ul>	4 byte; + 1 byte for QI information (32 bytes in the oversampling operating mode)

<b>Analog outputs</b>	
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 $\mu$ s
Analog output with oversampling	Yes
<ul style="list-style-type: none"> <li>Values per cycle, max.</li> <li>Resolution, min.</li> </ul>	16 45 $\mu$ s; (2 channels), 35 $\mu$ s (1 channel)

<b>Output ranges, voltage</b>	
<ul style="list-style-type: none"> <li>0 to 10 V</li> <li>1 V to 5 V</li> <li>-5 V to +5 V</li> <li>-10 V to +10 V</li> </ul>	Yes; 15 bit Yes; 13 bit Yes; 15 bit incl. sign Yes; 16 bit incl. sign

<b>Output ranges, current</b>	
<ul style="list-style-type: none"> <li>0 to 20 mA</li> <li>-20 mA to +20 mA</li> <li>4 mA to 20 mA</li> </ul>	Yes; 15 bit Yes; 16 bit incl. sign Yes; 14 bit

<b>Connection of actuators</b>	
<ul style="list-style-type: none"> <li>for voltage output two-wire connection</li> <li>for voltage output four-wire connection</li> <li>for current output two-wire connection</li> </ul>	Yes Yes Yes

<b>Load impedance (in rated range of output)</b>	
<ul style="list-style-type: none"> <li>with voltage outputs, min.</li> <li>with voltage outputs, capacitive load, max.</li> <li>with current outputs, max.</li> <li>with current outputs, inductive load, max.</li> </ul>	2 k $\Omega$ 1 $\mu$ F 500 $\Omega$ 1 mH

<b>Destruction limits against externally applied voltages and currents</b>	
<ul style="list-style-type: none"> <li>Voltages at the outputs</li> </ul>	30 V

<b>Cable length</b>	
<ul style="list-style-type: none"> <li>shielded, max.</li> </ul>	1 000 m; 200 m for voltage output

### Analog value generation for the outputs

<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>Resolution with overrange (bit including sign), max.</li> </ul>	16 bit
<b>Settling time</b>	
<ul style="list-style-type: none"> <li>for resistive load</li> </ul>	0.05 ms
<ul style="list-style-type: none"> <li>for capacitive load</li> </ul>	0.05 ms; Max. 47 nF and 20 m cable length
<ul style="list-style-type: none"> <li>for inductive load</li> </ul>	0.05 ms
<b>Errors/accuracies</b>	
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 %
<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>Voltage, relative to output range, (+/-)</li> </ul>	0.4 %
<ul style="list-style-type: none"> <li>Current, relative to output range, (+/-)</li> </ul>	0.4 %
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>Voltage, relative to output range, (+/-)</li> </ul>	0.1 %
<ul style="list-style-type: none"> <li>Current, relative to output range, (+/-)</li> </ul>	0.1 %
<b>Isochronous mode</b>	
Isochronous operation (application synchronized up to terminal)	Yes
Execution and activation time (TCO), min.	70 µs
Bus cycle time (TDP), min.	125 µs
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
Substitute values connectable	Yes
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes
<b>Diagnostic messages</b>	
<ul style="list-style-type: none"> <li>Monitoring the supply voltage</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Wire-break</li> </ul>	Yes; channel-by-channel, only for output type "current"
<ul style="list-style-type: none"> <li>Short-circuit</li> </ul>	Yes; channel-by-channel, only for output type "voltage"
<ul style="list-style-type: none"> <li>Group error</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Overflow/underflow</li> </ul>	Yes
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>Monitoring of the supply voltage (PWR-LED)</li> </ul>	Yes; green PWR LED
<ul style="list-style-type: none"> <li>Channel status display</li> </ul>	Yes; Green LED
<ul style="list-style-type: none"> <li>for channel diagnostics</li> </ul>	Yes; Red LED
<ul style="list-style-type: none"> <li>for module diagnostics</li> </ul>	Yes; green/red DIAG LED

Potential separation	
Potential separation channels	
<ul style="list-style-type: none"> <li>• between the channels</li> </ul>	No
<ul style="list-style-type: none"> <li>• between the channels and backplane bus</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• between the channels and the power supply of the electronics</li> </ul>	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	
<ul style="list-style-type: none"> <li>• horizontal installation, min.</li> </ul>	-40 °C; = Tmin; Startup @ -25 °C
<ul style="list-style-type: none"> <li>• horizontal installation, max.</li> </ul>	60 °C; = Tmax
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> <li>• Installation altitude above sea level, max.</li> </ul>	3 000 m
<ul style="list-style-type: none"> <li>• Ambient air temperature-barometric pressure-altitude</li> </ul>	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... Tmax -5K) at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)
Relative humidity	
<ul style="list-style-type: none"> <li>• With condensation, tested in accordance with IEC 60068-2-38, max.</li> </ul>	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, *
Use on ships/at sea	
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	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, *
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!

## Dimensions

Width	71.5 mm
Height	90 mm
Depth	60 mm

## Weights

Weight, approx.	31 g
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**last modified:** 05/17/2018