## **SIEMENS**

## **Data sheet**

## 6ES7135-6HB00-0CA1



SIMATIC ET 200SP, Analog output module, AQ 2x U/I High Feature suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit,  $\pm$ 0.1%

General information	
Product type designation	AQ 2xU/I HF
HW functional status	from FS04
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
<ul> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
Isochronous mode	Yes
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V13 / V13
<ul> <li>STEP 7 configurable/integrated from version</li> </ul>	V5.5 SP3 / -
<ul> <li>PCS 7 configurable/integrated from version</li> </ul>	V8.1 SP1
<ul> <li>PROFIBUS from GSD version/GSD revision</li> </ul>	GSD Revision 5
PROFINET from GSD version/GSD revision	GSDML V2.3
Operating mode	
<ul> <li>Oversampling</li> </ul>	No
• 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
Current consumption, max.	90 mA; 2 channels current output 20 mA
Power loss	
Power loss, typ.	0.9 W
Address area	
Address space per module	
<ul> <li>Address space per module, max.</li> </ul>	4 byte; + 1 byte for QI information
Hardware configuration	
Automatic encoding	
Mechanical coding element	Yes
Type of mechanical coding element	Type A
Analog outputs	

Number of and a set of	0
Number of analog outputs	2
Voltage output, short-circuit protection	Yes 45 ma
Voltage output, short-circuit current, max.	45 mA
Cycle time (all channels), min.	750 µs
Output ranges, voltage	V 4519
• 0 to 10 V	Yes; 15 bit
• 1 V to 5 V	Yes; 13 bit
• -5 V to +5 V	Yes; 15 bit incl. sign
• -10 V to +10 V	Yes; 16 bit incl. sign
Output ranges, current	Was AF his
• 0 to 20 mA	Yes; 15 bit
• -20 mA to +20 mA	Yes; 16 bit incl. sign
• 4 mA to 20 mA	Yes; 14 bit
Connection of actuators	V
for voltage output two-wire connection	Yes
for voltage output four-wire connection	Yes
for current output two-wire connection	Yes
Load impedance (in rated range of output)	2 k0
with voltage outputs, min.      with voltage outputs, capacitive load, may	2 kΩ
with voltage outputs, capacitive load, max.	1 μF
with current outputs, max.	500 Ω
with current outputs, inductive load, max.	1 mH
Destruction limits against externally applied voltages and cu	
Voltages at the outputs  Cable leasth	30 V
Cable length	1 000 m; 200 m for voltage output
shielded, max.	1 000 m; 200 m for voltage output
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	40.1%
Resolution with overrange (bit including sign), max.	16 bit
Settling time	0.05
• 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	0.000
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.03 %
	0.00 /0
	0.003 %/K
Temperature error (relative to output range), (+/-)	
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.	0.003 %/K
Temperature error (relative to output range), (+/-)	0.003 %/K -50 dB
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max. Repeat accuracy in steady state at 25 °C (relative to	0.003 %/K -50 dB 0.03 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)	0.003 %/K -50 dB 0.03 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-)	0.003 %/K -50 dB 0.03 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)	0.003 %/K -50 dB 0.03 % 0.2 % 0.2 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)	0.003 %/K -50 dB 0.03 % 0.2 % 0.2 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)	0.003 %/K -50 dB 0.03 % 0.2 % 0.2 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)	0.003 %/K -50 dB 0.03 % 0.2 % 0.2 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)	0.003 %/K -50 dB 0.03 % 0.2 % 0.2 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-) Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-)	0.003 %/K -50 dB 0.03 % 0.2 % 0.2 % 0.1 % 0.1 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs 750 μs
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs 750 μs
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.  Interrupts/diagnostics/status information	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs 750 μs 5 μs
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.  Interrupts/diagnostics/status information  Diagnostics function	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs 750 μs 5 μs  5 μs
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C) • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.  Interrupts/diagnostics/status information  Diagnostics function  Substitute values connectable	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs 750 μs 5 μs  5 μs
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.  Interrupts/diagnostics/status information  Diagnostics function  Substitute values connectable  Alarms	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs 750 μs 5 μs  Yes Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.  Interrupts/diagnostics/status information  Diagnostics function  Substitute values connectable  Alarms  • Diagnostic alarm	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 %  0.1 % 0.1 %  500 μs 750 μs 5 μs  Yes Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)  Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Basic error limit (operational limit at 25 °C)  • Voltage, relative to output range, (+/-)  • Current, relative to output range, (+/-)  • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.  Interrupts/diagnostics/status information  Diagnostics function  Substitute values connectable  Alarms  • Diagnostic alarm  Diagnoses	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 % 0.1 % 0.1 % 500 μs 750 μs 5 μs  Yes Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, max.  Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-) Basic error limit (operational limit at 25 °C) • Voltage, relative to output range, (+/-) • Current, relative to output range, (+/-) • Current, relative to output range, (+/-)  Isochronous mode  Execution and activation time (TCO), min.  Bus cycle time (TDP), min.  Jitter, max.  Interrupts/diagnostics/status information  Diagnostics function  Substitute values connectable  Alarms • Diagnostic alarm  Diagnoses • Monitoring the supply voltage	0.003 %/K -50 dB 0.03 %  0.2 % 0.2 % 0.1 % 0.1 %  500 μs 750 μs 5 μs  Yes  Yes  Yes

Group error	Yes
<ul> <li>Overflow/underflow</li> </ul>	Yes
Diagnostics indication LED	
<ul> <li>Monitoring of the supply voltage (PWR-LED)</li> </ul>	Yes; green PWR LED
<ul> <li>Channel status display</li> </ul>	Yes; green LED
<ul> <li>for channel diagnostics</li> </ul>	Yes; red LED
<ul> <li>for module diagnostics</li> </ul>	Yes; green/red DIAG LED
Potential separation	
Potential separation channels	
<ul> <li>between the channels</li> </ul>	No
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
<ul> <li>between the channels and the power supply of the electronics</li> </ul>	Yes
Isolation	
Isolation tested with	707 V DC (type test)
Ambient conditions	
Ambient temperature during operation	
<ul> <li>horizontal installation, min.</li> </ul>	-30 °C; < 0 °C as of FS04
<ul> <li>horizontal installation, max.</li> </ul>	60 °C
<ul> <li>vertical installation, min.</li> </ul>	-30 °C; < 0 °C as of FS04
vertical installation, max.	50 °C
Altitude during operation relating to sea level	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Dimensions	
Width	15 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	31 g

1/16/2021

last modified: