## **SIEMENS**

## **Data sheet**

## 6ES7135-6HD00-0BA1



SIMATIC ET 200SP, Analog output module, AQ 4XU/I Standard, suitable for BU type A0, A1, Color code CC00, Module diagnostics, 16 bit, +/-0.3%

General information	
Product type designation	AQ 4xU/I ST
HW functional status	from FS21
Firmware version	
<ul> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type A0, A1
Color code for module-specific color identification plate	CC00
Product function	
● I&M data	Yes; I&M0 to I&M3
<ul> <li>Isochronous mode</li> </ul>	No
Output range scalable	No
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V11 SP2 / 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>	One GSD file each, Revision 3 and 5 and higher
<ul> <li>PROFINET from GSD version/GSD revision</li> </ul>	GSDML V2.3
Operating mode	
<ul> <li>Oversampling</li> </ul>	No
• MSO	No
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
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> <li>Address space per module, max.</li> </ul>	8 byte; + 1 byte for QI information
Hardware configuration	
Automatic encoding	Yes
Mechanical coding element	Yes
Type of mechanical coding element	Type A
Analog outputs	

Number of analog outputs	4
Number of analog outputs	45 mA
Voltage output, short-circuit current, max.	45 mA
Cycle time (all channels), min.	5 ms
Analog output with oversampling	No
Output ranges, voltage	
• 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	
• 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	
<ul> <li>for voltage output two-wire connection</li> </ul>	Yes
<ul> <li>for voltage output four-wire connection</li> </ul>	Yes
for current output two-wire connection	Yes
Load impedance (in rated range of output)	
<ul> <li>with voltage outputs, min.</li> </ul>	2 kΩ
<ul> <li>with voltage outputs, capacitive load, max.</li> </ul>	1 μF
• with current outputs, max.	500 Ω
<ul> <li>with current outputs, inductive load, max.</li> </ul>	1 mH
Destruction limits against externally applied voltages and currents	
Voltages at the outputs	30 V
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	0.1 ms
for capacitive load	1 ms
for inductive load	0.5 ms
Errors/accuracies	C.O IIIO
Eliois/accuracies	
Linearity error (relative to output range) (+/)	0.03.%
Linearity error (relative to output range), (+/-)	0.03 %
Temperature error (relative to output range), (+/-)	0.005 %/K
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min.	0.005 %/K -50 dB
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. Repeat accuracy in steady state at 25 °C (relative to output	0.005 %/K
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min.	0.005 %/K -50 dB
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.005 %/K -50 dB
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) Operational error limit in overall temperature range  • Voltage, relative to output range, (+/-)	0.005 %/K -50 dB 0.05 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)	0.005 %/K -50 dB 0.05 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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)	0.005 %/K -50 dB 0.05 % 0.5 % 0.5 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)	0.005 %/K -50 dB 0.05 % 0.5 % 0.5 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)	0.005 %/K -50 dB 0.05 % 0.5 % 0.5 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min.  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, (+/-)  Interrupts/diagnostics/status information	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function Substitute values connectable	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes  Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses	0.005 %/K -50 dB 0.05 %  0.5 % 0.5 %  0.3 % 0.3 %  Yes Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage	0.005 %/K -50 dB 0.05 %  0.5 % 0.5 %  0.3 % 0.3 %  Yes  Yes  Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Wire-break	0.005 %/K -50 dB 0.05 %  0.5 % 0.5 %  0.3 % 0.3 %  Yes Yes Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)  Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes  Yes  Yes  Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-) Interrupts/diagnostics/status information Diagnostics function Substitute values connectable Alarms • Diagnostic alarm Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • Group error	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  7es  Yes  Yes  Yes  Yes  Yes  Yes  Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)  Interrupts/diagnostics/status information  Diagnostics function Substitute values connectable Alarms • Diagnostic alarm  Diagnoses  • Monitoring the supply voltage • Wire-break • Short-circuit • Group error • Overflow/underflow	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes  Yes  Yes  Yes
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)  Interrupts/diagnostics/status information  Diagnostics function Substitute values connectable  Alarms • Diagnostic alarm  Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • Group error • Overflow/underflow  Diagnostics indication LED	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)  Interrupts/diagnostics/status information  Diagnostics function Substitute values connectable Alarms • Diagnostic alarm  Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • Group error • Overflow/underflow  Diagnostics indication LED • Monitoring of the supply voltage (PWR-LED)	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)  Interrupts/diagnostics/status information  Diagnostics function Substitute values connectable  Alarms • Diagnostic alarm  Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • Group error • Overflow/underflow  Diagnostics indication LED	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye
Temperature error (relative to output range), (+/-) Crosstalk between the outputs, min. 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, (+/-)  Interrupts/diagnostics/status information  Diagnostics function Substitute values connectable Alarms • Diagnostic alarm  Diagnoses • Monitoring the supply voltage • Wire-break • Short-circuit • Group error • Overflow/underflow  Diagnostics indication LED • Monitoring of the supply voltage (PWR-LED)	0.005 %/K -50 dB 0.05 %  0.5 %  0.5 %  0.3 %  0.3 %  Yes  Yes  Yes  Yes  Yes  Yes  Yes  Ye

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 FS07	
<ul> <li>horizontal installation, max.</li> </ul>	60 °C; Observe derating	
<ul> <li>vertical installation, min.</li> </ul>	-30 °C; < 0 °C as of FS07	
vertical installation, max.	50 °C; Observe derating	
Altitude during operation relating to sea level		
Installation altitude above sea level, max.	5 000 m; restrictions for installation altitudes > 2 000 m, see ET 200SP system manual	
Dimensions		
Width	15 mm	
Height	73 mm	
Depth	58 mm	
Weights		
Weight, approx.	31 g	

last modified:

5/22/2024