SIEMENS

Data sheet 6ES7145-5ND00-0BA0

SIMATIC ET 200AL, AQ 4xU/I, 4xM12, Degree of protection IP67

Figure similar

General information	
Product type designation	AQ 4xU/I
HW functional status	FS03
Firmware version	V1.0.x
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	STEP 7 V14 or higher
• STEP 7 configurable/integrated as of version	V5.5 SP4 Hotfix 7 or higher
• PROFIBUS as of GSD version/GSD revision	GSD as of Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3.1
Supply voltage	
Load voltage 1L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	20.4 V
• permissible range, upper limit (DC)	28.8 V

• Reverse polarity protection	Yes; Against destruction; actuator power supply outputs applied with reversed polarity
Input current	
Current consumption (rated value)	110 mA; without load
from load voltage 1L+ (unswitched voltage)	4 A; Maximum value
from load voltage 2L+, max.	4 A; Maximum value
Actuator supply	
Number of outputs	4
Short-circuit protection	Yes; per module, electronic
Output current	
• Rated value	Total current 1 A up to 45 °C; 0.5 A up to 55 °C
Power loss	
Power loss, typ.	2.6 W
Analog outputs	
Number of analog outputs	4
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	24 mA
Current output, no-load voltage, max.	15 V
Cycle time (all channels) max.	1 ms
Output ranges, voltage	
• 0 to 10 V	Yes; 15 bit
• 1 V to 5 V	Yes; 14 bit
• -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	
• for voltage output two-wire connection	Yes
• for voltage output four-wire connection	Yes
• for current output two-wire connection	Yes
• for current output four-wire connection	Yes
Load impedance (in rated range of output)	
• with voltage outputs, min.	1 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 currents	
• Voltages at the outputs towards MANA	16 V
Cable length	
• shielded, max.	30 m

Analog value generation for the outputs	
Settling time	
• for resistive load	1 ms
• for capacitive load	1 ms
• for inductive load	1 ms
Errors/accuracies	
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.1 %
Temperature error (relative to output range), (+/-)	0.005 %/K
Crosstalk between the outputs, max.	-70 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, (+/-)	0.25 % from 55 °C to -25 °C and 0.35 % to -30 °C
• Current, relative to output range, (+/-)	0.25 %
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to output range, (+/-)	0.15 %
• Current, relative to output range, (+/-)	0.15 %
Interrupts/diagnostics/status information	
Substitute values connectable	Yes; channel by channel, parameterizable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
Diagnostic messages	
• Wire-break	Yes; channel-by-channel, only for output type "current"
• Short-circuit	Yes; Actuator supply module by module; channel by channel for output type "voltage"
Diagnostics indication LED	
• Channel status display	Yes; green LED
• for module diagnostics	Yes; green/red LED
Potential separation	
between the load voltages	Yes
Potential separation channels	
• between the channels	No
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	No
Isolation	
Isolation tested with	707 V DC (type test)
Degree and class of protection	
IP degree of protection	IP65/67

Ambient conditions	
Ambient temperature during operation	
• min.	-30 °C
• max.	55 °C
Connection method	
Design of electrical connection for the inputs and outputs	M12, 5-pole
Design of electrical connection for supply voltage	M8, 4-pole
ET-Connection	
• ET-Connection	M8, 4-pin, shielded
Dimensions	
Width	30 mm
Height	159 mm
Depth	40 mm
Weights	
Weight, approx.	175 g

last modified: 02/24/2020