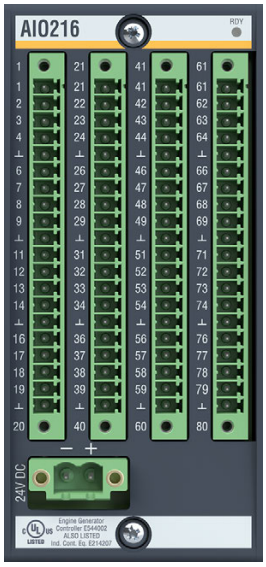

Part type designation	Part number
AIO208	00020628-00
AIO208 CC	On request
AIO216	00020627-00
AIO216 CC	00020631-00

AIO208, AIO216
Universal Analog Input/Output Module

The AIO208 and AIO216 modules enable the measuring or output of all standard analog signals. The AIO208 offers 8 channels and the AIO216 16 channels compactly in a single module. The standard signal types for current (0 mA to 20 mA and 4 mA to 20 mA) and voltage (±10 V to ±10 mV) allow the connection of a wide range of sensors and actuators. A minimum 14 bit resolution makes it possible to also measure signals that do not fully utilize the measuring range (e.g. 0 V to 5 V) with a sufficiently high resolution.

Temperatures are playing an important role in an increasing number of processes. These modules therefore also support Pt100/Pt1000 in 2-, 3- and 4-wire measuring circuits, as well as all standard thermocouples. For each channel, a second channel with unused signal types can be used in addition to the primary configured signal type. For example, a current output can be assigned to a voltage input so that up to twice the number of channels per module are provided. This enables one module to cover virtually all analog signal measuring tasks. It is not necessary to use a separate module for each signal type. This makes the solution cost-effective and simplifies logistics and service. Different modes can be combined and set simply using a configuration wizard in the SolutionCenter engineering tool.

Features

- 8 channels AIO208, 16 channels AIO216
- Analog inputs and outputs
- Modes that can be selected per channel:
  - Analog voltage input ±10 V to ±10 mV
  - Analog current input 0(4) mA to 20 mA
  - Temperature sensor Pt elements as 2- ,3- ,4-wire
  - Thermocouples type J, K, T, N, E, R, S, B
  - Analog voltage output ±10 V
  - Analog current output 0(4) mA to 20 mA
- Resolution: Input 16 bit with filter, output 14 bit
- Filter adjustable from 4 kHz to 0.5 Hz per channel
- All outputs overload, short-circuit and external voltage-proof
- Measuring range monitoring freely adjustable (±105 %)
- Error message on overload and overtemperature and undervoltage of the supply
- Galvanic isolation for the system 500 V
- Optional condensation proof ColdClimate design (❄)

AIO208, AIO216

Inputs/Outputs		AIO208	AIO216
Number		8 channels	16 channels
Modes per channel		Analog input Temperature measurement input for Pt elements and thermo couples Analog output	
SYNC signal	In	Analog input, temperature measurement	
	Out	Analog output	
Analog inputs in general			
Digital resolution		16 bit	
Measuring range		±105 % of nominal range	
Measuring range monitoring		Lower and upper measurement range limit, error message as status or measurement range monitoring	
Permitted common mode voltage		Max. ±1 V	
Refresh cycle time		100 µs	
Cut-off frequency		4 kHz to 0.5 Hz adjustable channel by channel	
Filter slope		> 80 dB/decade	
Voltage inputs			
Input voltage		±10 V, ±1 V, ±100 mV, ±10 mV	
Accuracy at 25 °C		Range ±10 V: ±0.05 % FS Range ±1 V: ±0.05 % FS Range ±100 mV: ±0.05 % FS Range ±10 mV: ±0.2 % FS	
Current inputs			
Input current		±20 mA or 0 mA to 20 mA or 4 mA to 20 mA	
Accuracy at 25 °C		Range ±20 mA: ±0.1 % FS Range 0 mA to 20 mA: ±0.2 % FS Range 4 mA to 20 mA: ±0.2 % FS	
Input impedance		Max. 300 Ω	
Shunt short-circuit proof		Up to +24 V	
External withstand voltage		±24 V	
Temperature inputs PTC			
Temperature inputs		Pt100/Pt1000	
Connection technology		2-, 3- or 4-wire	
Input impedance		> 100 kΩ	
Temperature range		-100 °C to +800 °C	
Accuracy at 25 °C		Pt100/Pt1000: 0.15 % of 900 °C (measurement range -100 °C to 800 °C)	
Value of LSB		0.1 K; measured value in 1/10 Kelvin	
Temperature inputs TE			
Temperature elements		Types J, K, T, N, E, R, S, B can be selected	
Temperature ranges per type	J	-30 °C to +1200 °C	
	K	-30 °C to +1370 °C	
	T	-30 °C to +400 °C	
	N	-30 °C to +1300 °C	
	E	30 °C to +1000 °C	
	R	-30 °C to +1768 °C	
	S	-30 °C to +1768 °C	
	B	+600 °C to +1820 °C	

Temperature inputs TE	
Ground	Up to ±3 V
Accuracy at 25 °C	Max. ±0.15 % of measuring range (S, R, T, B max. ±0.3 %)
Value of LSB	0.1 K; measured values in 1/10 Kelvin
Analog outputs in general	
Digital resolution	14 bit
Output signal range	±105 % nominal range
Voltage outputs	
Output voltage	±10 V
Output current	Max. 10 mA
Accuracy at 25 °C	Min. 1 kΩ, max. ±0.05 % of output range
Current outputs	
Output current	0(4) mA to 20 mA
Accuracy at 25 °C	Max. ±0.2 % FS
Burden	Up to 600 Ω
Approvals/Certificates	
General	CE, UKCA, cULus
Marine	ABS, BV, DNV, KR, LR, NK, RINA
Environmental conditions	
Operating temperature	-30 °C to +60 °C
Relative humidity, operation	Standard: 5 % to 95 % noncondensing
	ColdClimate: 5 % to 95 % with condensation
Storage temperature	-40 °C to +85 °C
Relative humidity, storage	5 % to 95 % with condensation
Pollution degree (IEC 60664-1)	Standard: 2 (noncondensing)
	ColdClimate: 2
Power supply	
Internal supply	Via BS2xx backplane
Internal current consumption	80 mA
External voltage range	18 V DC to 34 V DC
External current consumption 24 V	Typically 200 mA without external load
Galvanic isolation from the system	500 V

Order data

Part type designation	Part number	Description
AIO208	00020628-00	Universal analog input/output module; 8x analog In ±10 V, ±20 mA, 0/4 mA to 20 mA, Pt TC; 16 bit; analog out ±10 V, 20 mA; 14 bit; configurable analog filter; 100 µs sample and refresh time; threshold monitoring; isolated
AIO208 CC	On request	AIO208; ColdClimate (❄)
AIO216	00020627-00	Universal analog input/output module; 16x analog In ±10 V, ±20 mA, 0/4 mA to 20 mA, Pt TE; 16 bit; analog Out ±10 V, 20 mA; 14 bit; configurable analog filter; 100 µs sample and refresh time; threshold monitoring; isolated
AIO216 CC	00020631-00	AIO216; ColdClimate (❄)