Q.bloxx XE A109

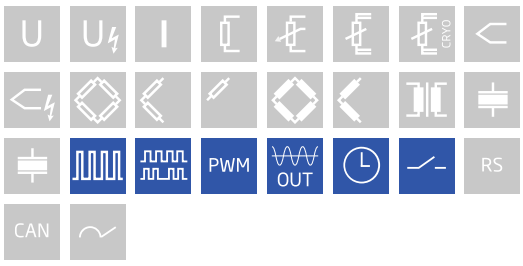
Analog Output Module with Digital I/Os

Q.bloxx XE is a new addition to the Q.series product family - the ideal EtherCAT DAQ solution for widely distributed installations that require higher performance and custom sensor terminations. Q.bloxx XE measurement modules possess integrated signal conditioning and arithmetic functions, packaged in modular, DIN Rail mountable enclosures that easily snap together for system expansion and are capable of measuring up to 100 kHz per channel with short cycle times and low jitter for accurate synchronization.

- RS-485, EtherCAT (LVDS)
- FoE (file access over EtherCAT, ETG.1000.5) and CoE (CAN over EtherCAT, ETG.50001.1)
- Configurable PDO mapping to optimize the data throughput
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- Power supply 10 ... 30 VDC and DIN rail mounting (EN60715)

Key Features

- **4 Analog output channels**
  voltage (±10 VDC) or current (0 - 20 mA), configurable per channel
- **DAC-resolution 16 bit**
  100 kHz each channel
- **Outputs freely scalable**
- **4 digital inputs and outputs**
  configurable as 2 counter, 2 frequency, or 2 PWM inputs, 4 frequency out, 4 PWM output or 4 state out
- **Frequency measurement**
  Frequency measurement up to 1 MHz, direction detection
- **Counter**
  Forward-backward counter, quadrature counter with reference position recognition (reset/enable), up to 1 MHz
- **PWM input**
  Measurement of duty cycle and frequency
- **3-Way galvanic isolation**
  Channel to channel, channel to power supply, and bank



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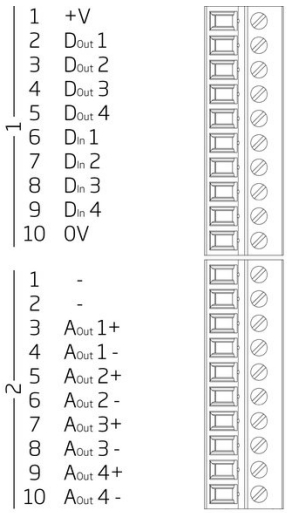
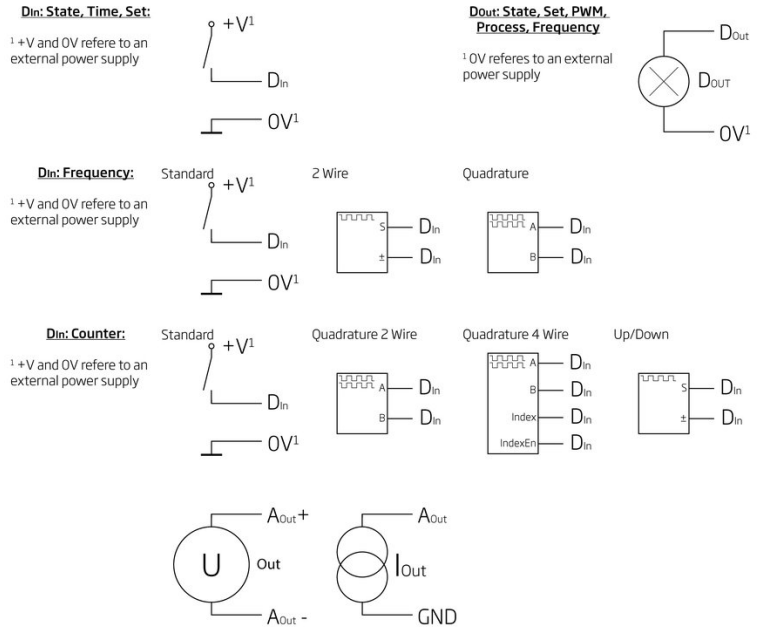
Technical Data

Terminal assignment 10pole screw





Analog Output

Channels	4
Output type	voltage or current, configurable per channel
Isolation voltage	500 VDC channel to channel to power supply channel to bus [1]

1 noise pulses up to 1000 VDC, continuous up to 250 VDC

Output Mode Voltage

Output voltage	±10 VDC	
Allowable load resistance	>2 kΩ	
Long-term drift	<1 mV / 24 hrs	<2.5 mV / 8000 hrs
Temperature influence	<2 mV / 10 K Offset drift	<0.05 % / 10 K Gain drift
Noise voltage	<10 mV at 1000 Hz	<2 mV at 10 Hz

Current Output

Output current	0 - 20 mA	
Load burden	<400 Ω	
burden influence	<0.1 µA / Ω	
Long-term stability	<2 µA / 24 hrs	<5 µA / 8000 hrs
Temperature drift	<4 µA / 10 K Offset drift	<0.05 % / 10 K Gain drift
Noise current	<20 µA at 1000 Hz	<4 µA at 10 Hz

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Digital Input

Channels	4
Logic levels	TTL or 24 VDC according to IEC 61131-2, Type 1
TTL logic voltage	< 0.8 VDC (Low) > 3 VDC (High)
24 VDC logic voltage	-3 to 5 VDC (Low) 11 to 30 VDC (High)
Input type	PNP (current sinking)
Input voltage	30 VDC max.
Input current	2 mA max.
Isolation voltage	500 VDC, group to group, group to power supply, channel to bus [1]

[1] noise pulses up to 1000 VDC, continuous up to 250 VDC

Digital Input Modes

Status	
Response time	10 µs
Frequency measurement	
Method	Chronos method (optimized by a combination of time measurement and pulse counting), detection of rotational direction (0 deg. / 90 deg.)
Frequency range	0.1 Hz to 1 MHz
Time base	0.001 s to 1 s
Internal reference frequency	48 MHz
Accuracy	0.01% at timebase > 1ms
Resolution	21 ns
Pulse counting	
Accuracy	0.01% at timebase > 1ms
Resolution	21 ns
Counter frequency	1 MHz
Mode(s) of operation	- Forward and reverse counting (additional input for direction of counting) - Quadrature counter (additional input for detection of rotational direction) - Quadrature counter with zero reference and reset/enable (two additional inputs)
Pulse-width measurement	
Input frequency	0.1 Hz to 1 MHz
Accuracy	0.01% at timebase > 1ms
Resolution	21 ns

Digital Output

Channels	4
Contact	open drain p-channel MOSFET
Output voltage	12 to 30 VDC (external supply required)
Load capacity	30 VDC / 500 mA (ohmic load)
Isolation voltage	500 VDC, group to group, group to power supply, channel to bus [1]

[1] noise pulses up to 1000 VDC, continuous up to 250 VDC

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Digital Output Modes

Status			
Response time	10 µs (>0.5 A)	100 µs (>0.1 A)	1000 µs (<0.1 A)
Frequency output			
Frequency range	0.1 Hz to 1 kHz / 10 kHz (depending on load capacity)		
Accuracy	0.1 %		
Resolution	1 µs		
PWM output			
Frequency range	0.1 Hz to 1 kHz / 10 kHz (depending on load capacity)		
Accuracy	0.1 %		
Resolution	1 µs		

Digital to Analog Conversion

Resolution	16-bit
Update rate	100 kHz per channel
Settling time	3 µs

Communication Interface EtherCAT

Electrical standard	RS-485, 2-wire
Protocols	EtherCAT (LVDS)

Input Power

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	2 W (approx.)
Input voltage influence	<0.001 % / V

Environmental Specifications

Electromagnetic compatibility	according to IEC 61000-4 and EN 55011
Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 - 95 % at 50°C (non-condensing)

Remarks

Are subject to a warm-up period of at least 45 minutes
in a controlled electromagnetic environment[1]
Specifications subject to change without notice

[1] according to EN 61326 2006: appendix B

Mechanical information

Material	Aluminum and ABS
Measurements (W x H x D)	30x 145 x 135mm
Weight	approx. 500 g
Protection class	IP20

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Analog Output Module with Digital I/Os

Ordering Information

Article number	508021

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