Q.bloxx EC A103

## Multi-Channel Module for Voltages

Gantner instruments

The Q.bloxx EC brings the high precision and performance of Q.bloxx to EtherCAT-based applications. Q.bloxx EC measurement modules possess integrated signal conditioning and arithmetic functions, packaged in environmentally secure (up to IP65), DIN Rail mountable enclosures that easily snap together for system expansion. With measurement speeds of up to 100 kHz per channel, short cycle times, and low jitter for accurate synchronization, Q.bloxx EC is the ideal solution for EtherCAT applications.

- CoE (CAN over EtherCAT) according to Modular Device Profil ETG.5001.1
- XFC technology for oversampling, oscilloscope function, cycle times 1 ms up to 0.1 ms, oversampling ≤100

- Configurable PDO Mapping to optimize the data throughput
- Module Configuration via SDO or FoE and alternative via configuration software
- Modular design for DIN Rail Mounting

Key Features

- **8 galvanic isolated input channels**
  differential voltage, current via shunt connector Isolation voltage 100 VDC

- **High accuracy digitalization**
  24 bit ADC, 100 Hz sample rate per channel

- **Signal conditioning**
  linearization, digital filter, average, scaling, min/max storage, arithmetic, alarm

- **Galvanic isolation**
  channel to channel, isolation voltage 100VDC, power supply and interface, isolation voltage 500 VDC

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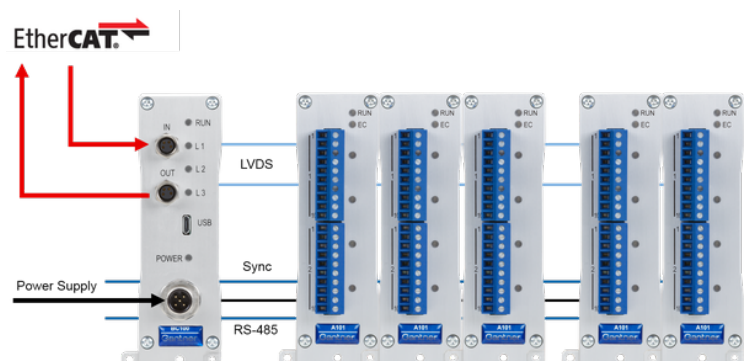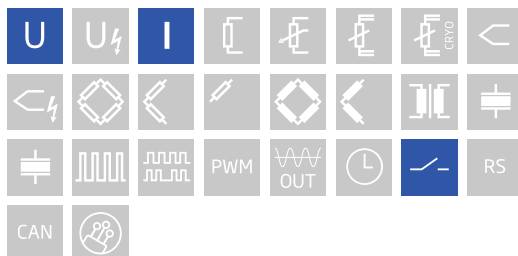
Block diagram
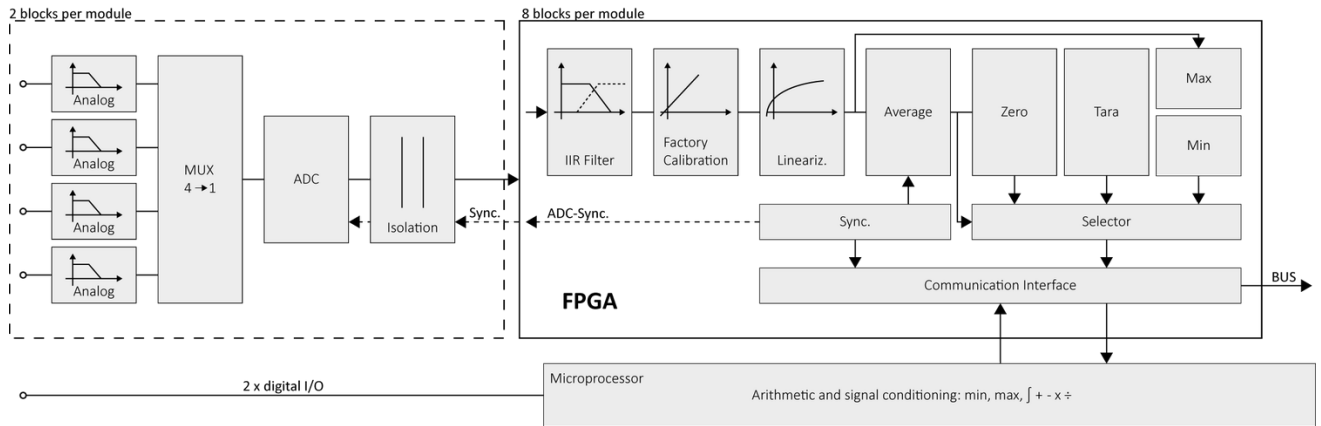
Technical Data

Analog Input

Channels	8
Accuracy	0.01 % typical
	0.025 % in controlled environment[1]
	0.05 % in industrial area[2]
Linearity error	0.01 % typical full-scale
Repeatability	0.003 % typical (within 24 h)
Isolation voltage	500 VDC channels to power supply channel to bus[3]
	100 VDC continuous, channel to channel

[1] according to EN 61326 2006: appendix B

[2] according to EN 61326 2006: appendix A

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

Measurement Mode Voltage

Error	Range	max. Error	Resolution
	±10 V	±2 mV	40 µV
Input impedance	>1 MΩ		
Long-term drift	<50 µV / 24 h	<500 µV / 8000 h	
Temperature influence	Offset drift	Gain drift	
	<50 µV / 10 K	<0.025 % / 10 K	
Signal-to-noise ratio	>100 dB at 100 Hz	>120 dB at 1 Hz	
Overvoltage protection	± 200 V		

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Measurement Mode Current (Only with Q.series Terminal SR [791989])

Input range	±25 mA
Margin of error	±22 µA
Resolution	400 nA
Long-term stability	500 nA / 24 hrs
Temperature drift	<75 ppm / 10 K
Input impedance	100 Ω

Analog/Digital-Conversion

Resolution	24-bit
Update rate	100 Hz per channel
Modulation method	Sigma-Delta
Anti-aliasing filter	20 Hz, 3rd order
Digital filters	Infinite impulse response (IIR), low-pass, high-pass, band-pass, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 10 Hz (adjustable via software)
Averaging	configurable or automatic according to the user-defined data rate

Communication interface EtherCAT

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

Power Supply

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

Environmental

Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	5 % to 95 % at 50°C, non-condensing

Remarks

Warm-up time	Validity of all listed specifications are subject to a warm-up period at least 45 minutes
	Specifications subject to change without notice

Mechanical information

Material	Aluminum and ABS
Measurements (W x H x D)	35.6 x 118.8 x 124 mm
Weight	approx. 400 g

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Oversampling

EtherCAT also enables transmitting of very high data rates at low bus cycle by over sampling. In this case, a higher number of values of one channel per PDO transmitted so as to reduce protocol overhead.

Example: bus cycle 1 kHz, 100 times over sampling
= > 100 values are transferred per bus cycle
= > effective sample rate 100 kHz
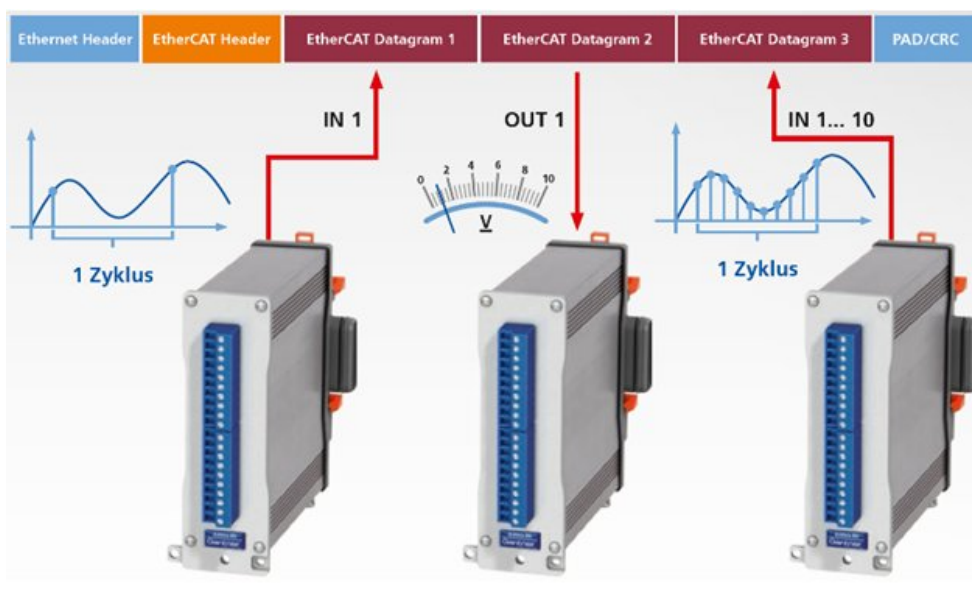
Ordering Information

Article number	528027