

Q.bloxx EC A124 TCK

High Isolation Module for Thermocouples

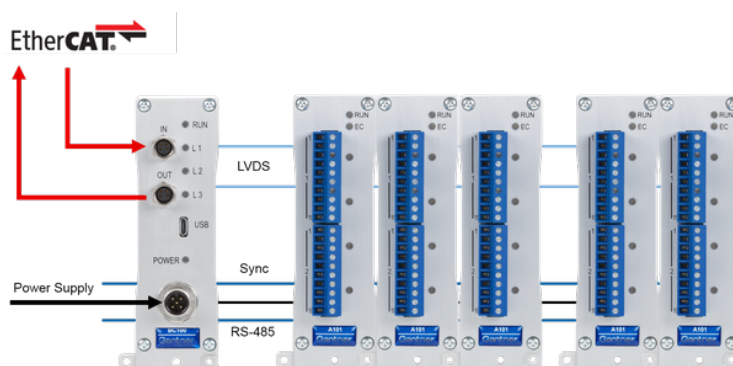
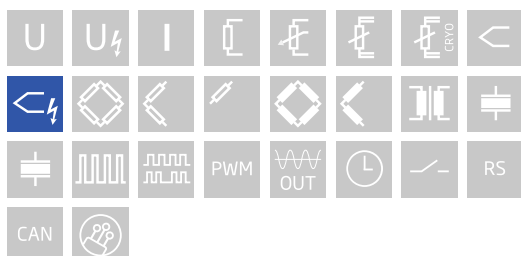
The Q.bloxx EC brings the high precision and performance of Q.bloxx to EtherCAT-based applications. Q.bloxx EC measurement modules possess integrated signal conditioning and arithmetic functions, packaged in environmentally secure (up to IP65), DIN Rail mountable enclosures that easily snap together 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

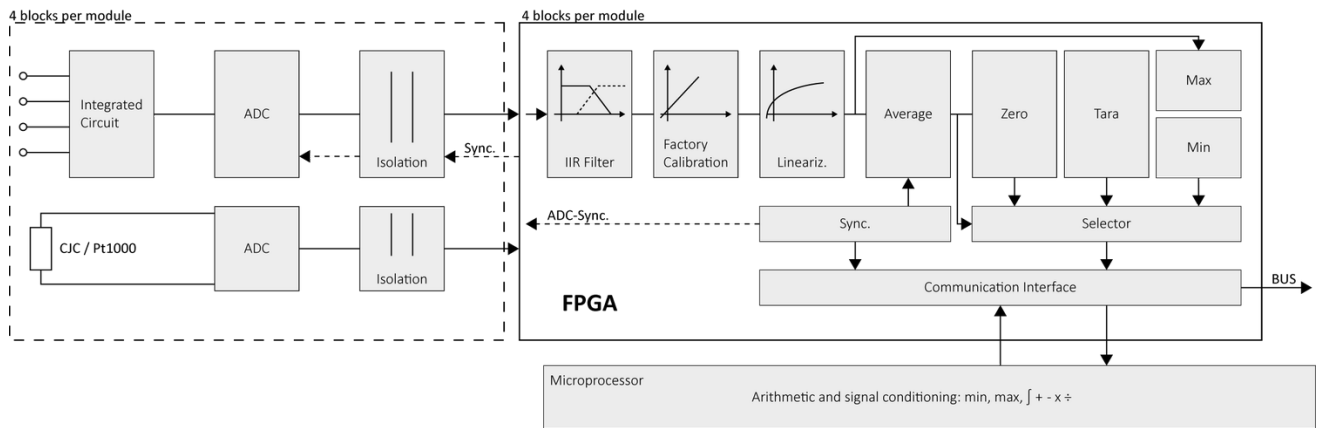


Key Features

- 4 galvanically isolated input channels for non-insulated thermocouples at high potential
- Cold junction compensation
- Signal conditioning
digital filter, average, scaling, min/max storage, arithmetic, alarm
- Dynamic linearization
Optimum positioning of interpolation points in selected range, types B, E, J, K, L, N, R, S, T, U
- High accuracy digitalization
24 bit ADC, 20 kHz sample rate per channel
- Galvanic isolation
channel to channel to power supply and to interface
isolation voltage 1200 VDC / 848 VACrms
test voltage 5 kVrms over 1 minute
- Categories
1000 V CAT II and 600 V CAT III



Block diagram



Technical Data

Analog Inputs

Channels	4
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	1200 VDC continuous, channel to channel to power supply channel to bus ³

¹ according to EN 61326 2006: appendix B

² according to EN 61326 2006: appendix A

³ High voltage lifetime (TDD B E Model): time to fail approx. 4 years at 1200 VDC and 60 °C

Measurement Mode Thermocouple

	Type	Range	error
	Type B	400 °C to 1820 °C	< ± 1.5 °C
	Type E, J, K	-100 °C to 1000 °C	< ± 0.5 °C
	Type E	-270 °C to 1000 °C	< ± 0.8 °C
	Type K	-270 °C to 1372 °C	< ± 0.8 °C
	Type L	-200 °C to 900 °C	< ± 0.5 °C
	Type N	-100 °C to 1000 °C	< ± 0.5 °C
	Type N	-270 °C to 1300 °C	< ± 0.8 °C
	Type R, S	-50 °C to 1768 °C	< ± 1 °C
	Type T, U	-100 °C to 400 °C	< ± 0.5 °C
	Type T	-270 °C to 400 °C	< ± 0.8 °C
Input impedance	> 100 MΩ		
Long-term drift	< 0.05 °C / 24 h		< 0.5 °C / 8000 h
Temperature influence	Offset drift		Gain drift
	< 0.02 °C / 10 K		< 0.025 % / 10K
Uncertainty cold junction compensation	< 0.5 °C		

Analog/Digital-Conversion

Resolution	24-bit
Update rate	10 kHz
Modulation method	Sigma-Delta
Anti-aliasing filter	1000 Hz, 2nd 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 100 Hz (adjustable via software)
Averaging	configurable or automatic according to the selected 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
Pollution degree	1

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Remarks

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

High Voltage Warnings



- Attention High voltage device, Danger for life and health in case of non regular use.
- Only special and sufficient educated persons are permitted to handle this device only.
- all metal housing parts must be safely and continuous connected to protected earth (PE)
- Only contact protection plugs and cables may be used. All parts must be approved for voltages up to 1200 VDC.
- During installation, the whole system must be without voltage and safely be disconnected from the mains.
- All relevant safety regulations must be considered.

Base is the european standard EN61010-1

Mechanical Information

Material	Aluminum and ABS
Measurements (W x H x D)	35.6 x 118.8 x 162 mm
Weight	approx. 400 g

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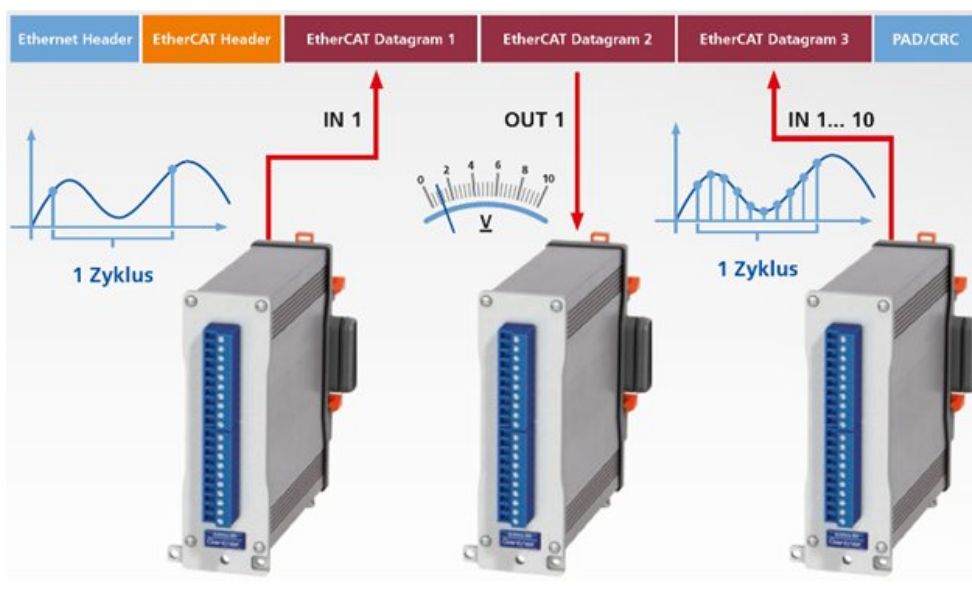
Oversampling

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	528734
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