Q.brixx XE A104

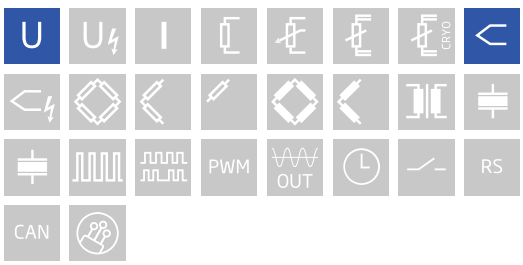
Thermocouple and Low Voltage Measurement Module

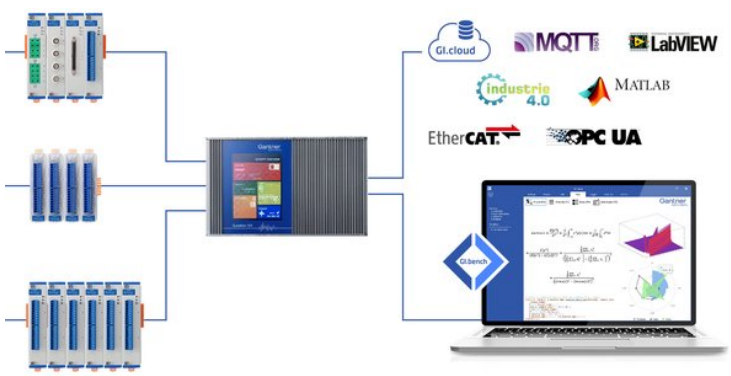
Q.brixx XE is a new addition to the Q.series product family - the ideal EtherCAT DAQ solution for on-the-go applications in potentially harsh environments. Q.brixx XE DAQ systems consist of up to 10 measurement modules capable of up to 100 kHz sampling per channel and an integrated EtherCAT bus coupler providing short cycle times and low jitter for accurate synchronization, all within a robust aluminum housing capable of withstanding severe shock and vibration without sacrificing performance.

- DC (distributed clock) for data synchronization
- 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

Key Features

- **8 analog input channels**
  thermocouple (type B / E / J / K / L / N / R / S / T / U), voltage (±80 mV)
- **High-accuracy digitization**
  24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- **Automatic linearization correction**
  optimal position of the interpolation points adjusted to the input range
- **Open thermocouple detection**
  detect broken wire, loose connection or thermocouple burnout
- **3-Way galvanic isolation**
  100 VDC channel to channel, 500 VDC channel to power supply and bank
- **Electromagnetic compatibility (EMC)**
  according to IEC 61000-4 and EN 55011





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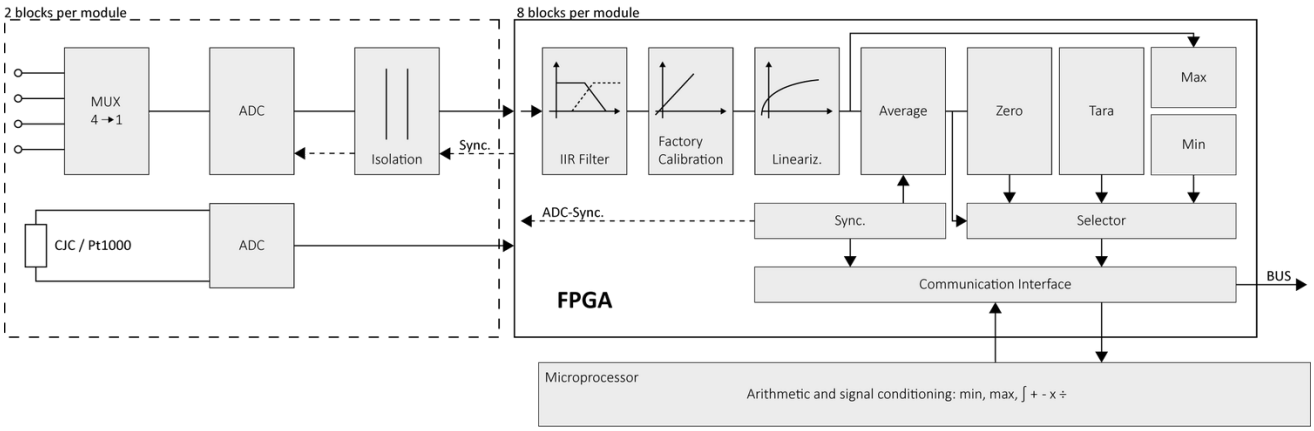
Block diagram



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)
Input impedance	>10 MΩ
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

Voltage Measurement

Input range	±80 mV	
Margin of error	±10 µV	
Resolution	10 nV	
Long-term stability	<1 µV / 24 hrs	<10 µV / 8000 hrs
Temperature drift	<2 µV / 10 K Offset drift	<0.02 % / 10 K Gain drift
Signal-to-noise ratio	>100 dB at 100 Hz	

Q.brixx XE A104

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Thermocouple Measurement

	Type	Range	Adjusted with cold junction compensation	Not adjusted, with CJC terminal
Deviation in the relevant Temperature range The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz	Type B	400°C to 1820°C	< ±1.5 °C	< ±2.5°C
	Type E, J, K	-100°C to 1000°C	< ±0.5°C	< ±1°C
	Type E	-270°C to 1000°C	< ±0.8°C	< ±1°C
	Type K	-270°C to 1372°C	< ±0,8°C	< ±1°C
	Type L	-200°C to 900°C	< ±0.5°C	< ±1°C
	Type N	-100°C to 1000°C	< ±0.5°C	< ±1°C
	Type N	-270°C to 1300°C	< ±0.8°C	< ±1°C
	Type R, S	-50°C to 1768°C	< ±1°C	< ±1.5°C
	Type T, U	-100°C to 400°C	< ±0.5°C	< ±1°C
	Type T	-270°C to 400°C	< ±0.8°C	< ±1°C
Long-term drift	<0.025°C / 24 h		<0.05°C / 8000 h	
Temperature influence	Offset drift		Gain drift	
	<0.05°C / 10 K		<0.02% / 10 K	
Uncertainty CJC	<0.3°C			

Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	100 Hz per channel fast mode 10 Hz per channel with 60 Hz mains frequency rejection 6 Hz per channel with 50 Hz mains frequency rejection
Modulation method	sigma-delta
Digital filters	Infinite impulse response (IIR), low-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)

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

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

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Remarks

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

Mechanical information

Material	Aluminum
Measurements (W x H x D)	30x 137 x 135mm
Weight	approx. 500 g

Ordering Information

Article number	521824
Accessories	Terminal CJC-A104, article number 791080

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