Q.brixx XE A146 350

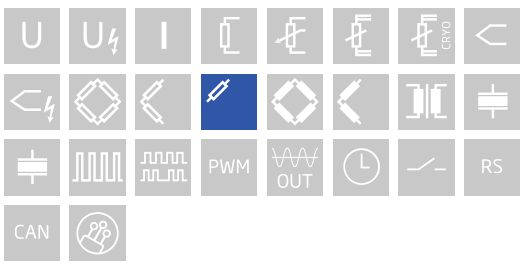
High Density Strain Gage Measurement Module

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

- **16 analog input channels for strain gages**
  quarter-bridge configuration
- **High-accuracy digitization**
  24-bit ADC, 10 kHz sample rate per channel
- **Selectable input ranges for optimal signal-to-noise ratio**
  2 or 20 mV/V (±4000 µm/m or ±40000 µm/m with k=2)
- **Active lead wire resistance compensation**
  online compensation signal (OCS) for continuous compensation of lead wire resistance changes
- **Build-in shunt resistor**
  Shunt verification of the complete measurement chain.
- **Galvanic isolation**
  channel to supply to interface
- **Electromagnetic compatibility (EMC)**
  according to IEC 61000-4 and EN 55011



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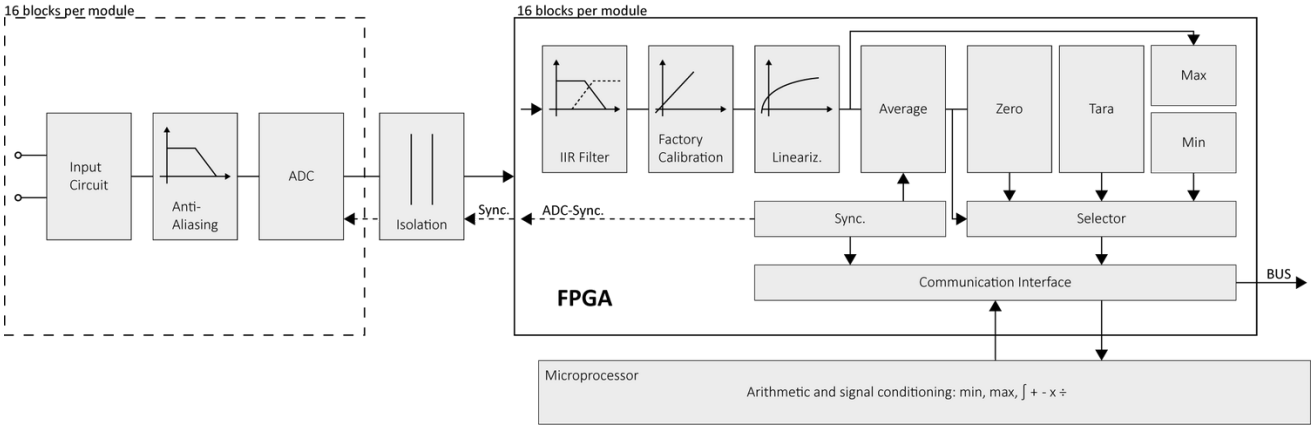
Block diagram



Technical Data

Analog Input

Channels	16
Accuracy	0.02 % typical
	0.05 % in controlled environment [1]
	0.1 % in industrial area [2]
Linearity error	0.01 % typical full-scale
Input impedance	<10 MΩ
Isolation voltage	500 VDC channel to input voltage to interface [3]

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

Analog-to-Digital Conversion

Resolution	24-bit
Sample rate	10 kHz per channel
Modulation method	sigma-delta
Anti-aliasing filter	1 kHz, 3rd order
Digital filters	Infinite Impulse Response (IIR), low-pass, high-pass, band-pass, band-stop, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 2 kHz
Averaging	configurable or automatic according to the user-defined data rate

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Strain Gage Measurement

Bridge configuration(s)	resistance quarter-bridge (3-wire, with lead wire resistance compensation)	
Accuracy class	0.05	
Bridge completion resistor	350 Ω (others upon request)	
Temp. Coefficient of Resistance (TCR)	0.05 ppm/K	
Input range	selectable ±2 mV/V or ±20 mV/V per channel (±4000 µm/m or ±40000 µm/m with k=2)	
Shunt resistor	100 kΩ internal resistor	
Bridge excitation	2 VDC per channel	
Maximum sensor cable length	150 m	
Long-term stability	<0.2 µV/V / 24 hrs	<2 µV/V / 8000 hrs
Temperature drift	<0.5 µV/V / 10 K Offset drift	0.05 % / 10 K Gain drift
Noise	<0.3 µV/V (at 10 Hz)	

Communication Interfae 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 (EMC)	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

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	541927
Accessories	Connection Terminal A146, article number 536224

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