

Q.raxx XE A146 350

High Density Strain Gage Measurement Module

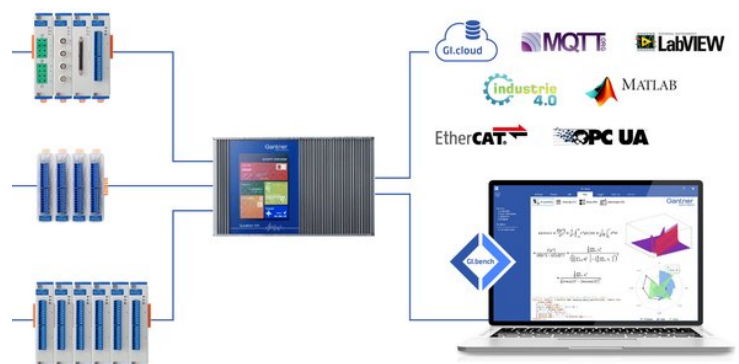
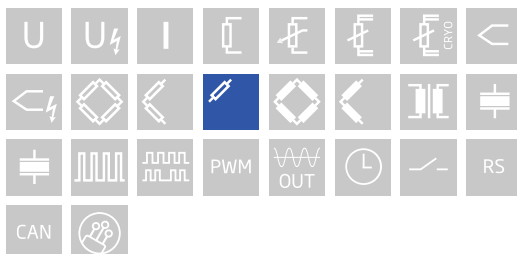
Q.raxx XE is an new addition to the Q.series product family - the ideal 19" rackmount EtherCAT DAQ solution for applications that require high channel density and custom sensor terminations. Q.raxx XE DAQ systems can consist of an integrated EtherCAT bus coupler for communication and 10 measurement modules capable of up to 100 kHz sampling per channel with short cycle times and low jitter for accurate synchronization

- According 19"-standard IEC
- Electromagnetic Compatibility according to EN61000-4 and EN55011
- High density and flexibility with 13 modules in one system in any constellation
- FoE (file access over EtherCAT, ETG.1000.5) and CoE (CAN over EtherCAT, ETG.50001.1)

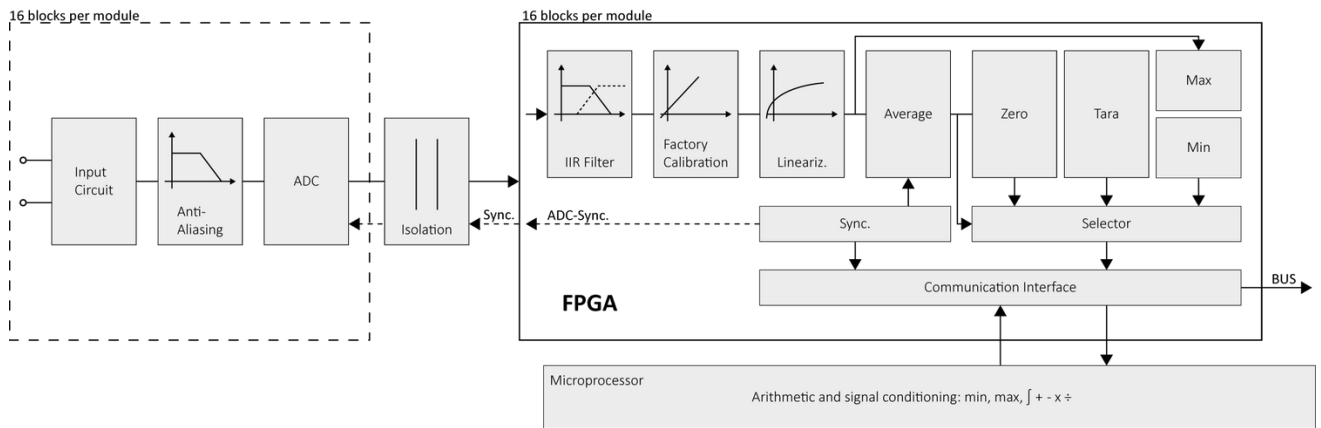


Key Features

- 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 ($\pm 4000 \mu\text{m/m}$ or $\pm 40000 \mu\text{m/m}$ 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



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 $\mu\text{m/m}$ or ± 40000 $\mu\text{m/m}$ with $k=2$)	
Shunt resistor	100 k Ω internal resistor	
Bridge excitation	2 VDC per channel	
Maximum sensor cable length	150 m	
Long-term stability	< 0.2 $\mu\text{V/V}$ / 24 hrs	< 2 $\mu\text{V/V}$ / 8000 hrs
Temperature drift	< 0.5 $\mu\text{V/V}$ / 10 K Offset drift	0.05 % / 10 K Gain drift
Noise	< 0.3 $\mu\text{V/V}$ (at 10 Hz)	

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 (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 128 x 120mm
Weight	approx. 200 g

Ordering Information

Article number	541523
Accessories	Connection Terminal A146, article number 536224

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