

Q.raxx XE A104 TCx

Thermocouple Measurement Module

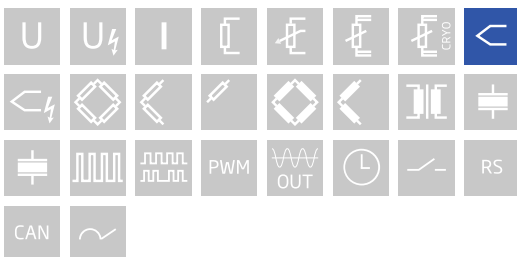
Q.raxx XE is an new addition to the Q.series product family - the ideal 19" rackmount EtherCAT DAQ solution for applications that require high channel density and custom sensor terminations. Q.raxx XE DAQ systems can consist of an integrated EtherCAT bus coupler for communication and 10 measurement modules 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

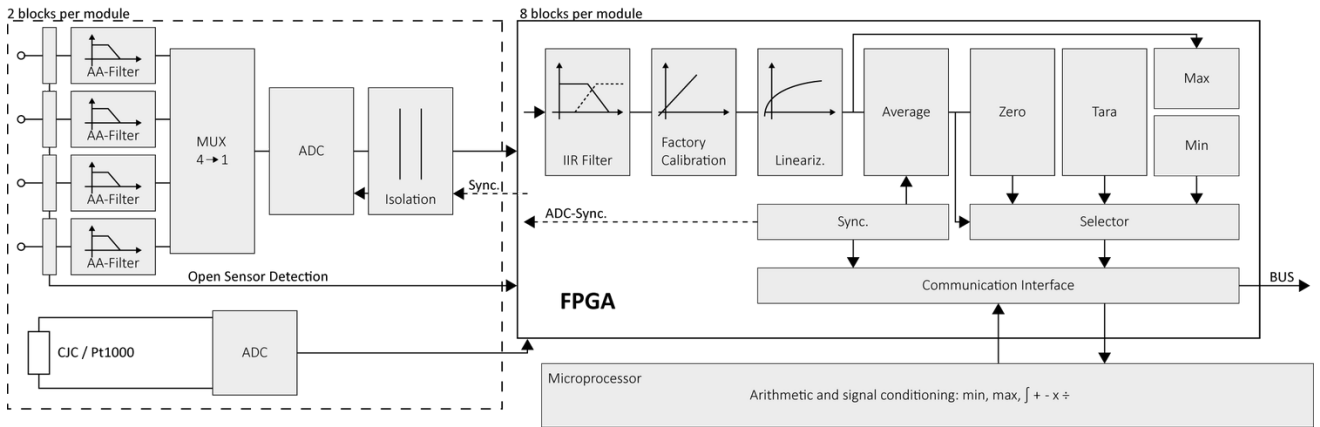
- 8 analog input channels
thermocouple (type B / E / J / K / L / N / R / S / T / U), voltage (± 80 mV)
- High-accuracy digitization
24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- Automatic linearization correction
optimal position of the interpolation points adjusted to the input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



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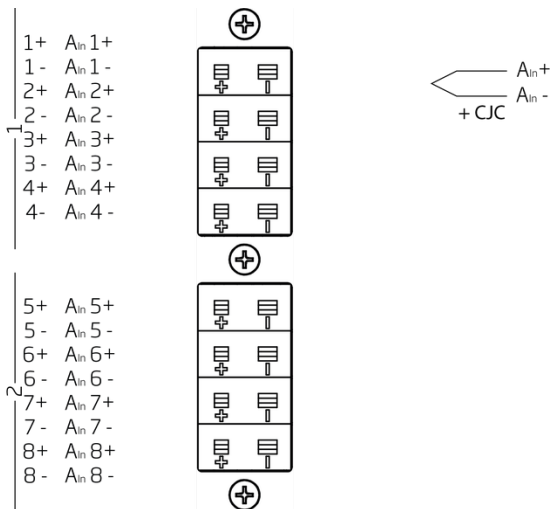
Thermocouple Measurement Module

Block diagram



Technical Data

Terminal assignment thermocouple type



Analog Input

Channels	8
Input impedance	>10 MΩ
Isolation voltage	500 VDC channels to power supply channel to bus ¹
	100 VDC continuous, channel to channel

¹ noise pulses up to 1000 VDC, continuous up to 250 VDC

Thermocouple Measurement

	Type	Set measuring range	margin of error	
	Deviation in the relevant Temperature range The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz	Type B	0°C to 1820°C	100°C to 400°C
400°C to 1820°C				< ±2.5°C
Type E		-270°C to 1000°C	-250°C to -100°C	< ±2.5°C
			-100°C to 1000°C	< ±1°C
		-200°C to 1000°C	-200°C to -100°C	< ±1.5°C
			-100°C to 1000°C	< ±0.8°C
Type K		-270°C to 1372°C	-250°C to -100°C	< ±2°C
			-100°C to 1372°C	< ±1°C
		-200°C to 1200°C	-200°C to -100°C	< ±1.5°C
			-100°C to 1200°C	< ±0.8°C
Type J		-210°C to 1200°C	-210°C to -100°C	< ±1.5°C
			-100°C to 1200°C	< ±0.8°C
Type T		-270°C to 400°C	-250°C to -100°C	< ±2°C
			-100°C to 400°C	< ±1°C
		-200°C to 400°C	-200°C to -100°C	< ±1.5°C
			-100°C to 400°C	< ±0.8°C
Type S		-50°C to 1768°C	-50°C to 400°C	< ±2°C
			400°C to 1768°C	< ±1.5°C
Type N		-270°C to 1300°C	-250°C to -100°C	< ±2°C
			-100°C to 1300°C	< ±1°C
	-200°C to 1300°C	-200°C to -100°C	< ±1.5°C	
		-100°C to 1300°C	< ±0.8°C	
Type U	-200°C to 600°C	-200°C to -100°C	< ±2°C	
		-100°C to 600°C	< ±0.8°C	
Type R	-50°C to 1768°C	-50°C to 100°C	< ±2°C	
		100°C to 1768°C	< ±1.5°C	
Type L	-200°C to 900°C	-200°C to 0°C	< ±1.5°C	
		0°C to 900°C	< ±0.8°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

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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)

Remarks

Are subject to a warm-up period of at least 45 minutes

in a controlled electromagnetic environment¹

With configuration: Low-pass 10Hz²

Specifications subject to change without notice

¹ according to EN 61326 2006: appendix B

² according to EN 61326 2006: appendix A

Mechanical information

Material	Aluminum
Measurements (W x H x D)	30x 128 x 120mm
Weight	approx. 200 g

Ordering Information

Article number	644325
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