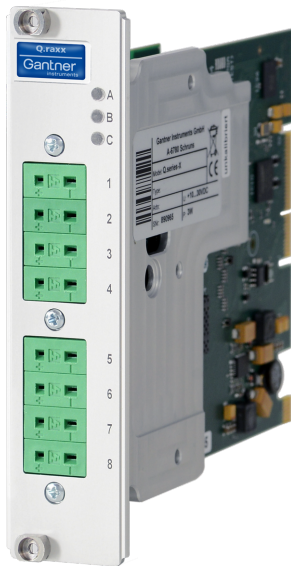


# Q.raxx XL A104 TCK

## Thermocouple and Low Voltage Measurement Module

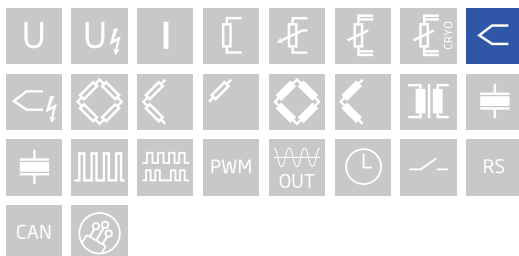
Q.raxx XL is a new addition to the Q.series product family - the ideal 19" rackmount DAQ solution for applications that require high channel density and custom sensor terminations. Q.raxx XL DAQ systems can utilize an integrated, high-performance controller for communication, control, and data logging purposes. With a controller, multiple Q.raxx XL systems can be synchronized to each other allowing for efficient DAQ distribution with low jitter and gradual expansion up to thousands of channels.

- **High Density**  
up to 13 I/O modules per Q.raxx 3U chassis with up to 16 channels per I/O module
- **User Friendly**  
front panel indicators for module status, power, and input range error
- **Fully Customizable**  
multiple front panel termination options available
- **Maximum Flexibility**  
parallel communication available in TCP/IP, CAN, PROFIBUS, Modbus, and EtherCAT
- **Gantner's Quality Standard**  
integrated filtering, galvanic isolation & signal/sensor conditioning per channel



### Key Features

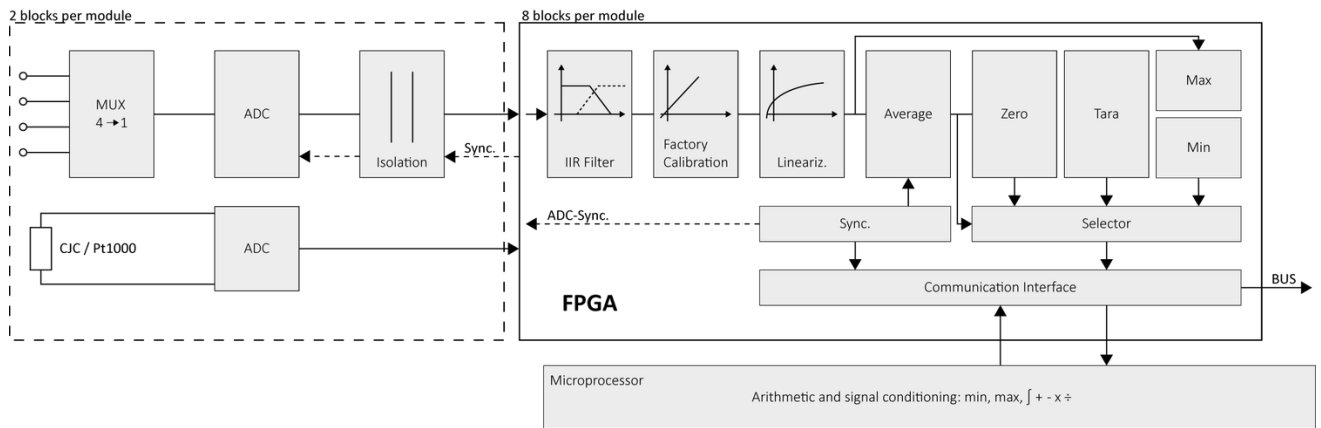
- **8 analog input channels**  
thermocouple (type K), voltage ( $\pm 80$  mV)
- **High-accuracy digitization**  
24-bit ADC, 100 Hz sample rate per channel, 50/60 Hz mains rejection
- **Automatic linearization correction**  
optimal position of the interpolation points adjusted to the input range
- **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**  
100 VDC channel to channel, 500 VDC channel to power supply and bank
- **Electromagnetic compatibility (EMC)**  
according to IEC 61000-4 and EN 55011



# Q.raxx XL A104 TCK

## Thermocouple and Low Voltage Measurement Module

### Block diagram



### Technical Data

#### Analog Input

|                   |  |
|-------------------|--|
| Channels          | 8  |
| Accuracy          | 0.01 % typical<br>0.025 % in controlled environment <sup>1</sup><br>0.05 % in industrial area <sup>2</sup> |
| Linearity error   | 0.01 % typical full-scale  |
| Repeatability     | 0.003 % typical (within 24 hrs)  |
| Input impedance   | >10 MΩ   |
| Isolation voltage | 100 VDC channel to channel<br>500 VDC to power supply, channel to bus <sup>3</sup>                         |

<sup>1</sup> according to EN 61326 2006: appendix B

<sup>2</sup> according to EN 61326 2006: appendix A

<sup>3</sup> 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     | <20 µV / 10 K Offset drift | <0.02 % / 10 K Gain drift |
| Signal-to-noise ratio | >100 dB at 100 Hz          |                           |

### Thermocouple Measurement

| Deviation in the relevant Temperature range   | Type            | Range             | Adjusted with cold junction compensation |
|---|-----------------|-------------------|--|
| The specifications are valid with enabled mains frequency rejection 50 Hz resp. 60 Hz | Type K          | -100 to 1000°C    | < ±0.5°C                                 |
|   |                 | -270°C to 1372°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<br>10 Hz per channel with 60 Hz mains frequency rejection<br>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 Localbus

|                     |  |
|---------------------|--|
| Protocols           | proprietary Localbus (115200 bps to 48 Mbps, latency <100 ns)<br>ASCII (19200 bps to 115200 bps)<br>Modbus RTU |
| Data format         | 8E1  |
| Electrical standard | ANSI/TIA/EIA-485-A, 2-wire   |

### 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

Validity of all listed specifications are subject to a warm-up period of at least 45 minutes

Specifications subject to change without notice

# Q.raxx XL A104 TCK

Thermocouple and Low Voltage Measurement Module

## Mechanical information

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

## Ordering Information

|                |        |
|----------------|--------|
| Article number | 528629 |
|----------------|--------|

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