# Q.raxx XE A108 MEMS-2M3

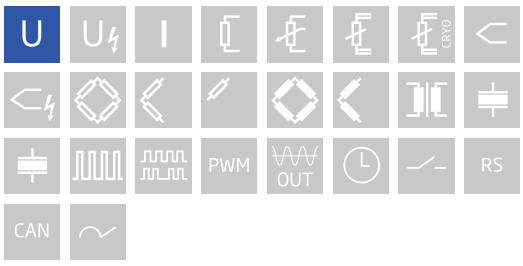
## I/O module for 2 tri-axis MEMS sensors

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 with13 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

- I/O module for 2 tri-axis MEMS sensors
  2 DSUB9 input sockets
  Sensor supply galvanic isolated
- 6+2 Analog input channels
  AI1,AI2,AI3 differential /single-ended switchable in groups
  AI5,AI6,AI7 differential /single-ended switchable in groups
  AI4,AI8 single-ended (e.g. for temperature input/compensation)
- High-accuracy digitization
  24-bit ADC, 20 kHz sample rate per channel
- Signal conditioning
  linearization, filtering, average, scaling, min/max, RMS, arithmetic, alarm
- 3-Way galvanic isolation
  Channel to channel, channel to power supply, and channel to bus

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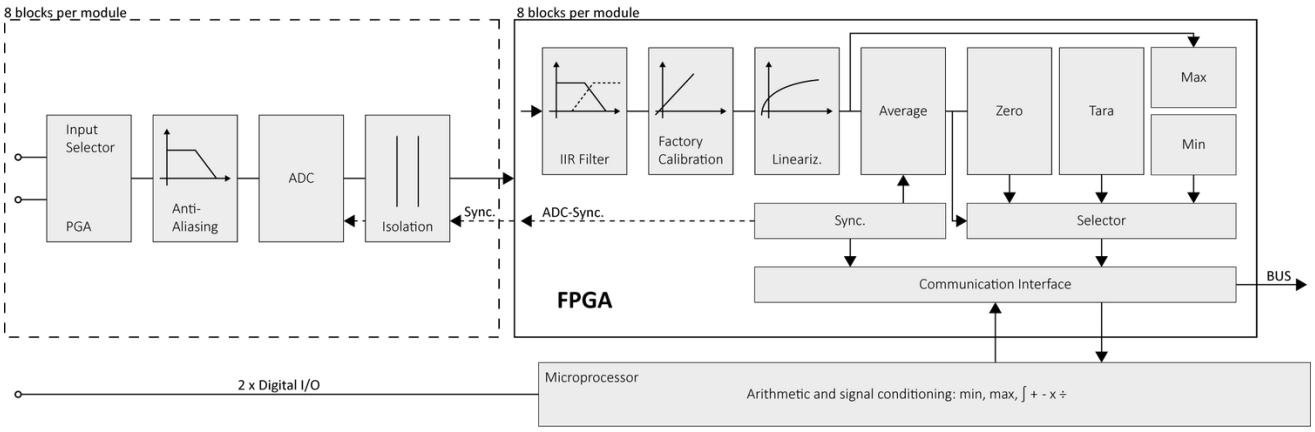
## Block diagram




## Technical Data

### Pin assignment DSUB 9

| Pin | | | |
|---|---|---|---|
| 1 | | Power | Supply +15 V |
| 2 | | Return | Supply GND |
| 3 | | X + | X-axis + |
| 4 | | Y + | Y-axis + |
| 5 | | Z + | Z-axis + |
| 6 | | X - | X-axis - |
| 7 | | Y - | Y-axis - |
| 8 | | Z - | Z-axis - |
| 9 | | Temp | temperature |

### Analog Input

| | |
|---|---|
| Channels | 6 + 2<br>AI1, AI2, AI3 differential / single ended, switchable in groups<br>AI5, AI6, AI7 differential / single ended, switchable in groups<br>AI4, AI8 single ended (e.g. for temperature input/compensation) |
| 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 hrs) |
| Isolation voltage | 500 VDC channel to channel, to power supply, and channel to bus [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

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## Voltage Measurement

| | | |
|---|---|---|
| Input range | ±10 VDC | |
| Margin of error | ±2 mV | |
| Resolution | 1.5 µV | |
| Long-term stability | <50 µV / 24 hrs | <200 µV / 8000 hrs |
| Temperature drift | <200 µV / 10 K Offset drift | <100 ppm / 10 K Gain drift |
| Signal-to-noise ratio | >100 dB at 100 Hz | >120 dB at 1 Hz |
| Input impedance | > 1 MΩ | |
| Overvoltage protection | ± 200 V | |

## Analog-to-Digital Conversion

| | |
|---|---|
| Resolution | 24-bit |
| Sample rate | 20 kHz per channel |
| Modulation method | sigma-delta |
| Anti-aliasing filter | 2 kHz, 3rd order |
| Digital filters | Infinite impulse response (IIR), low-pass, high-pass, band-pass, Butterworth or Bessel (2nd, 4th, 6th or 8th order), frequency range 0.1 Hz to 1 kHz (adjustable via software) |
| Averaging | configurable or automatic according to the user-defined data rate |

## Sensor excitation

| | |
|---|---|
| Channels | 2 |
| Voltage | 15 V |
| Current | max. 40 mA (short circuit proof) |
| Accuracy | < 3 % |
| Load regulation | < 0.1 % |
| Noise | 1.2 mV (RMS) |

## Communication Interface

| | |
|---|---|
| Electrical standard | RS-485, 2-wire |
| Protocols | EtherCAT (LVDS) |

## Input Power

| | |
|---|---|
| Input voltage | 10 to 30 VDC, overvoltage and overcurrent protection |
| Power consumption | 3.5 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) |

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### Remarks

| |
|---|
| 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 | 586734 |


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