



## Q.bloxx A111

Measurement Module for IEPE Sensors and Voltages



The Q.series has been designed for demanding measurements found in today's most industrial measuring and testing environments. The range of applications starts from single stand-alone solutions up to networked multi-channel applications in the field of component testing, engine testing, process performance testing and structural monitoring.

The range and flexibility of the modules allows an optimized solution for each single task: Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning.

Data exchange between Test Controller and automation level is communicated via Ethernet TCP/IP or fieldbus systems like EtherCAT or Profibus-DP and additional Ethernet-based industrial standards.

### Most important features:

- **4 galvanic isolated analog input channels**  
IEPE sensors, voltages
- **Fast high accuracy digitalization**  
24 bit ADC, 100 kHz sample rate per channel
- **Signal conditioning**  
16 virtual channels, linearization, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
- **RS485 fieldbus interface**  
up to 24 Mbps: LocalBus  
up to 115.2 kbps: Modbus-RTU, ASCII
- **Connectable to any Test Controller**  
e.g. Q.station, Q.gate or Q.pac
- **Galvanic isolation**  
channel to channel to power supply and to interface  
Isolation voltage 500 VDC
- **Electromagnetic Compatibility**  
according EN 61000-4 and EN 55011
- **Power supply 10...30 VDC**
- **DIN rail mounting (EN 60715)**

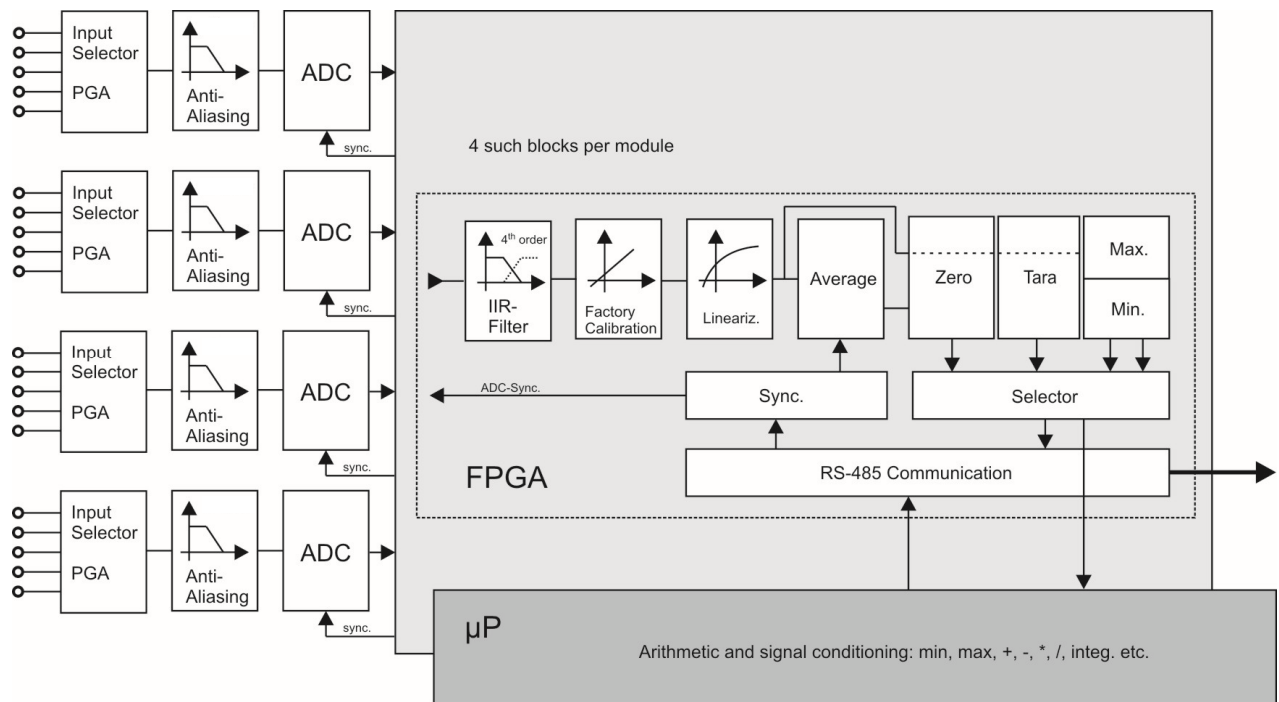




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## Block Diagram



| Analog Inputs         |  |                 |            |
|-----------------------|--|-----------------|------------|
| Number                | 4  |                 |            |
| Accuracy              | 0.01 % typical   |                 |            |
|                       | 0.025 % in controlled environment <sup>1</sup>                       |                 |            |
|                       | 0.05 % in industrial area <sup>2</sup>                               |                 |            |
| Linearity error       | 0.01 % of the final value typical                                    |                 |            |
| Repeatability         | 0.003 % typical (within 24 h)  |                 |            |
| Isolation voltage     | 500 VDC channel to channel to power supply to interface <sup>3</sup> |                 |            |
| Measurement Voltage   | Range  | max. Deviation  | Resolution |
|                       | ±10 V  | ±2 mV           | 1.2 µV     |
|                       | ±1 V   | ±0.2 mV         | 120 nV     |
|                       | ±100 mV  | ±20 µV          | 12 nV      |
| Input resistance      | >1 MΩ  |                 |            |
| Long term drift       | <20 µV / 24 h, <200 µV / 8000 h                                      |                 |            |
| Temperature influence | on zero  | on sensitivity  | range ±1 V |
|                       | <50 µV / 10 K  | <0.01 % / 10 K  |            |
| Signal-noise-ratio    | > 90 dB at 1 kHz   | >120 dB at 1 Hz |            |

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

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

<sup>3</sup> noise pulses up to 1000 VDC, permanent up to 250 VDC



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### Measurement Module for IEPE Sensors and Voltages

| Measurement IEPE sensor          | Range  | max. Deviation  | Resolution |
|----------------------------------|--|-----------------|------------|
|                                  | ±10 V  | ±10 mV          | 40 µV      |
|                                  | ±1 V   | ±1 mV           | 4 µV       |
|                                  | ±100 mV  | ±0,1 mV         | 0,4 µV     |
| Supply                           | Constant current 4 mA  |                 |            |
| Minimum input frequency          | 0.5 Hz   |                 |            |
| Limit frequency                  | 20 kHz   |                 |            |
| Temperature influence            | on zero  | on sensitivity  |            |
|                                  | <10 µV / 10 K  | <0.025 % / 10 K |            |
| <b>Analog/Digital-Conversion</b> |  |                 |            |
| Resolution                       | 24 bit   |                 |            |
| Sample rate                      | 100 kHz  |                 |            |
| Conversion method                | Sigma-Delta (group delay time 380 µs)  |                 |            |
| Anti-aliasing filter             | 20 kHz, 3 <sup>rd</sup> order  |                 |            |
| Digital filter                   | IIR, low pass, high pass, band pass, 4 <sup>th</sup> order, 1 Hz up to 10 kHz in steps 1, 2, 5 |                 |            |
| Averaging                        | configurable or automated according the selected data rate                                     |                 |            |
| <b>Power Supply</b>              |  |                 |            |
| Power supply                     | 10 up to 30 VDC, overvoltage and overload protection   |                 |            |
| Power consumption                | approx. 2.5 W  |                 |            |
| Influence of the voltage         | <0.001 %/V   |                 |            |
| <b>Environmental</b>             |  |                 |            |
| Operating temperature            | -20°C up to +60°C  |                 |            |
| Storage temperature              | -40°C up to +85°C  |                 |            |
| Relative humidity                | 5 % up to 95 % at 50°C, non condensing   |                 |            |
| <b>Communication Interface</b>   |  |                 |            |
| Standard                         | RS-485, 2-wire   |                 |            |
| Data format                      | 8e1  |                 |            |
| Protocols                        | Local-Bus: 115200 bps up to 24 Mbps  |                 |            |
|                                  | Modbus-RTU, ASCII: 19200 bps up to 115200 bps  |                 |            |
| <b>Mechanical</b>                |  |                 |            |
| Case                             | Aluminum and ABS   |                 |            |
| Dimensions (W x H x D)           | (27 x 120 x 105) mm  |                 |            |
| Weight                           | approx. 200 g  |                 |            |
| Mounting                         | DIN EN-rail  |                 |            |



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### Warm Up Time

All declarations are valid after a warm up time of 45 minutes.

Valid from October 2015. Specification subject to change without notice  
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