



Q.bloxx A109

Universal Analog Output Module with Digital I/Os



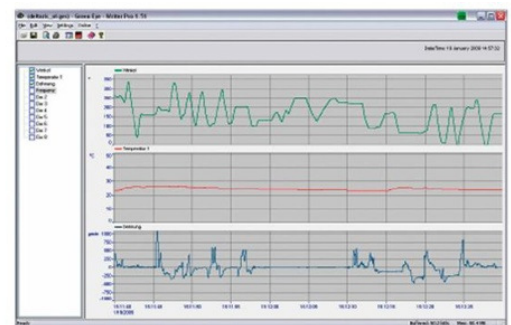
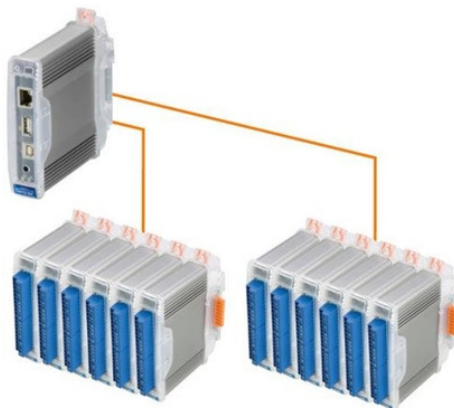
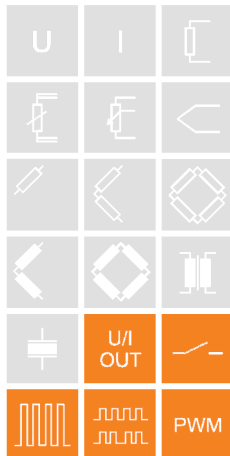
The Q.series has been designed for demanding measurements found in today's most industrial measuring and testing environments. The range of applications starts from single stand-alone solutions up to networked multi-channel applications in the field of component testing, engine testing, process performance 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, in/outputs for all types of signals, galvanic isolation of in/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, Profibus-DP or CANopen and additional Ethernet-based industrial standards.

Most important features:

- **4 galvanic isolated analog output channels**
voltage ± 10 V, current 4...20 mA selectable
Isolation voltage 500 VDC
- **DAC-resolution 16 bit**
100 kHz with 1 channel, 10 kHz with 4 channels
- **4 digital inputs and 4 digital outputs**
configurable as 2 counter, 2 frequency, or 2 PWM inputs, 2 frequency or PWM output, state in or output
- **Frequency in and outputs**
frequency measurement up to 1 MHz (Chronos method),
frequency output up to 10 kHz
- **Counter**
For/backward counter, quadrature counter with reference zero recognition (reset/enable), up to 1 MHz
- **PWM in and output**
measurement of duty cycle and frequency, output with variable frequency and/or duty cycle
- **Outputs freely scalable**
- **RS485 fieldbus-interface**
up to 48 Mbps: LocalBus, up to 115.2 kbps: Modbus-RTU, ASCII
- **Galvanic isolation**
of I/O-signals, power supply and interface
Isolation voltage 500 VDC
- **Electromagnetic Compatibility**
according EN 61000-4 and EN 55011
- **Power supply 10...30 VDC**
- **DIN rail mounting (EN 50022)**





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| Analog Outputs | | |
|---------------------------|---------------------------------------------------------|----------------|
| Number | 4 | |
| Accuracy | 0.02 % | |
| Output type | configurable voltage or current output | |
| Galvanic isolation | 500V channel/channel against power supply and interface | |
| Output voltage | ±10 VDC | |
| Perm. load resistance | >2 kΩ | |
| Long term drift | <1 mV/48 h | |
| Temperature influence | on zero | on sensitivity |
| | <2 mV/10 K | <0.05 %/10 K |
| Noise voltage | <10 mV at 1000 Hz | <2 mV at 10 Hz |
| Output current | 0...20 mA | |
| Perm. burden | <400 Ω | |
| Long term drift | <2 μA/48 h | |
| Temperature influence | on zero | on sensitivity |
| | <4 μA/10 K | <0.05 %/10 K |
| Noise current | <20 μA at 1000 Hz | <4 μA at 10 Hz |
| Digital/Analog-Conversion | | |
| Resolution | 16 bit | |
| Sample rate | 100 kHz per channel | |
| Settling time | 3 μs | |
| Filter | Selectable for 100 kHz, 10 kHz, 1 kHz | |
| Digital Inputs | | |
| Number | 4 | |
| Input voltage | max. 30 VDC | |
| Input current | max. 2 mA | |
| Threshold (programmable) | | |
| Signal voltage „0“ | -3... 5 VDC (EN61131-2, Type1) | |
| Signal voltage „1“ | 11... 30 VDC (EN61131-2, Type1) | |
| Digital Outputs | | |
| Number | 4 | |
| Contact | open drain p-channel MOSFET (short circuit proof) | |
| Load | 30 VDC/500 mA (ohmic Load) | |



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| Function Digital Inputs | |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| State | |
| Reaction time | 10 μ s |
| Frequency measurement | |
| Method | Chronos |
| | Optimized by combination of time measurement and pulse counting Recognition of the direction of rotation (0°, 90°) |
| Frequency range | 1 Hz up to 1 MHz |
| Time base | 0.001 up to 1 s |
| Counter frequency (reference) | 48 MHz |
| Resolution | 0.002 % |
| Frequency measurement with recognition of the direction of rotation | specification like frequency measurement. For the recognition of the direction of rotation the phasing of both inputs is being used. |
| PWM measurement | |
| Input frequency | 1 Hz up to 1 MHz |
| Resolution | 21 ns |
| Configuration of the measurement type | Counter for duty cycle, frequency |
| Counter | |
| Counter | 32 bit |
| Counter frequency | 1 MHz |
| For/backward counter | specification like counter but with an additional input for the direction of counting |
| Quadrature counter | specification like counter. For the recognition of the direction the phasing of both inputs is being used. |
| Quadrature counter with zero reference and reset/enable | specification like quadrature counter but with an additional input for the „0“ reference recognition and an additional input to activate the counter functionality individually. |



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| Function Digital Outputs | |
|---------------------------------|--------------------------------------------------------------------------------------|
| State | |
| Reaction time | 100 μ s |
| Frequency output | |
| Frequency range | 0.1 Hz up to 10 kHz |
| Accuracy | 0.01 % |
| PWM output | |
| Frequency range | 0.1 Hz up to 10 kHz |
| Resolution | 21 ns |
| Power Supply | |
| Power supply | 10 up to 30 VDC, overvoltage and overload protection |
| Power consumption | approx. 2 W |
| Influence of the voltage | <0.001 %/V |
| Environmental | |
| 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 |
| Communication Interface | |
| Standard | RS-485, 2-wire |
| Data format | 8e1 |
| Protocols | Local-Bus: 115200 bps up to 48 Mbps Modbus-RTU, ASCII: 19200 bps up to 115200 bps |
| Connectable devices | max. 32 |
| Mechanical | |
| Case | Aluminum and ABS |
| Dimensions (W x H x D) | (27 x 120 x 105) mm |
| Weight | approx. 200 g |
| Mounting | DIN EN-rail |

Warm Up Time

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

Valid from July 3rd 2009. Specification subject to change without notice
DB_Q.bloxx_A109_E_11.doc