Q.bloxx A109

Universal Analog Output Module with Digital I/Os

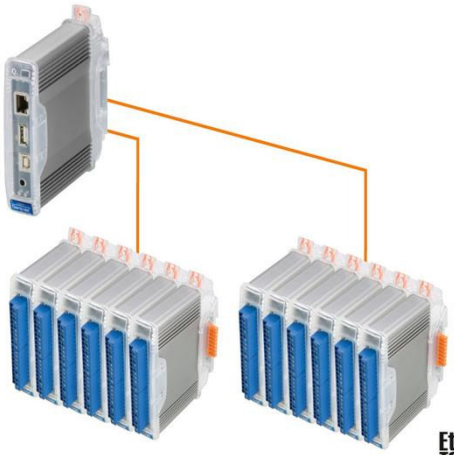
The Q.series has been designed for demanding measurements found in today's most industrial measuring and testing environments. The range of applications starts from single stand-alone solutions up to networked multi-channel applications in the field of component testing, engine testing, process performance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

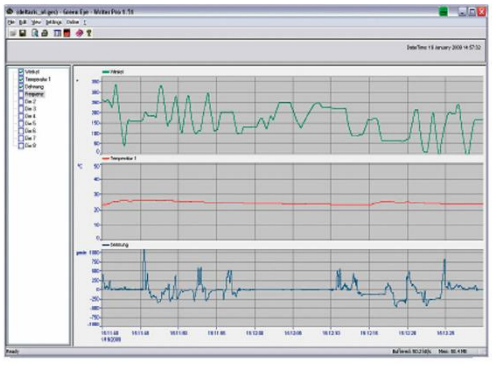
The range and flexibility of the modules allows an optimized solution for each single task:
Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning.

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 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)**





Ethernet TCP/IP EtherCAT PROFIBUS USB UNIVERSAL SERIAL BUS

Gantner Instruments Test & Measurement GmbH · www.gantner-instruments.com · office@gantner-instruments.com
Silvrettastrasse 11-13 · A-6780 Schruns/Austria · Tel. +43 (0) 5556 77463-0 · Fax +43 (0) 5556 77463-300
Industriestrasse 12 · D-64297 Darmstadt/Germany · Tel. +49 (0) 6151 95136-0 · Fax +49 (0) 6151 95136-26

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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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Universal Analog Output Module with Digital I/Os

Function Digital Inputs	
State	
Reaction time	10 µs
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 µs
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 April 15th 2010. Specification subject to change without notice
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