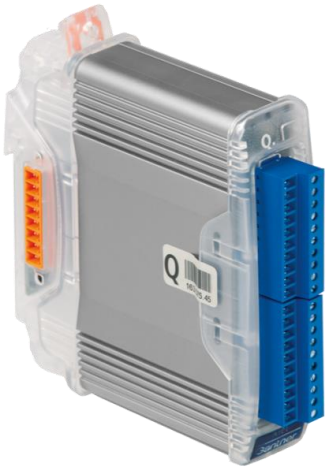
Q.bloxx A109

Universal Analog Output Module with Digital I/Os



The Q.series has been designed for the demanding measurements found in today's industrial measuring and testing environments. Applications range from single, stand-alone solutions to networked, multi-channel systems in real-world areas such as component testing, engine testing, process performance testing, materials testing and structural monitoring.

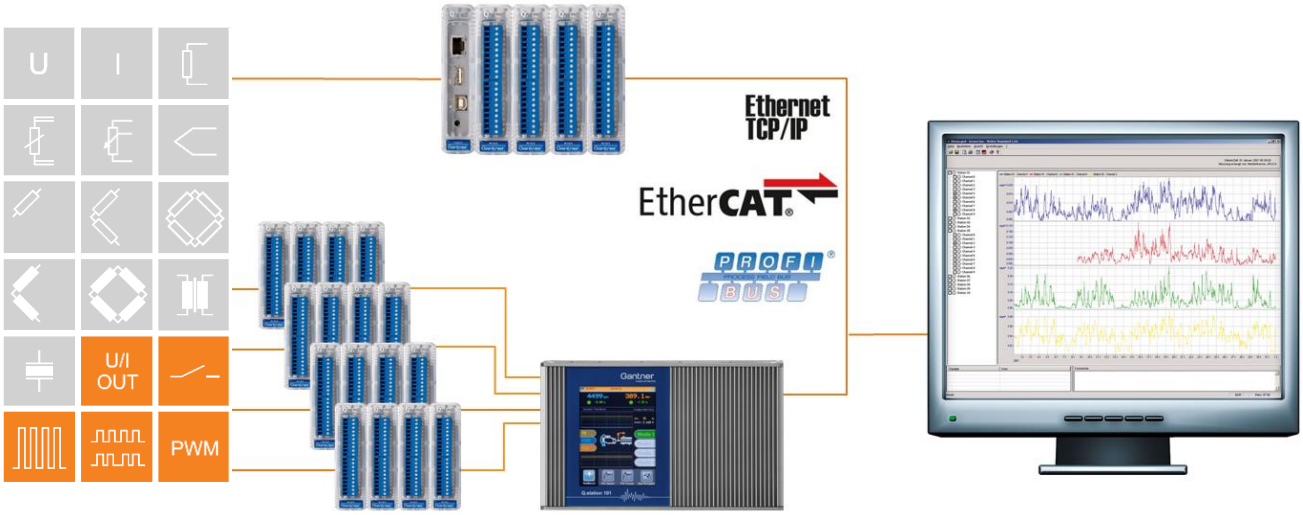
The range and flexibility of the modules allows for an optimized solution for each and every measurement and control point:

- Dynamic signal acquisition up to 100 kHz per channel
- inputs and outputs for all types of signals and sensors
- Galvanic isolation (up to 1200V) of inputs and outputs
- Multi-channel, High-density packaging
- Intelligent signal conditioning on every channel.

All modules connect to a Q.series test controller (Q.gate, Q.pac, or Q.station) for synchronization and buffering, and data exchange between the test controller and automation system is handled via Ethernet TCP/IP, EtherCAT, Profibus-DP, CANopen, or through additional industrial fieldbus standards.

Key Features:

- **4 galvanic isolated analog output channels**
  voltage ±10 V, current 0…20 mA selectable;
  Isolation voltage 500 VDC permanant
- **DAC-resolution 16 bit**
  100 kHz each channels
- **4 digital inputs and 4 digital outputs**
  configurable as 2 counter, 2 frequency, or 2 PWM inputs,
  4 frequency out, 4 PWM output or 4 state out
- **Frequency in and outputs**
  frequency measurement up to 1 MHz (Chronos method),
  frequency output up to 1 kHz / 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
- **RS485 fieldbus-interface**
  up to 48 Mbps: LocalBus, up to 115.2 kbps: Modbus-RTU, ASCII
- **Galvanic isolation**
  I/O-signals 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 50022)**



Gantner Instruments Incorporated
9835 Carroll Centre Road, Suite 100
San Diego, CA 92126 USA

- **www.gantnerinstruments.com**
  Toll Free: (877) 725-6997 (877 QBLOXXS)
  Direct: (858) 537-2060

- **info@gantnerinstruments.com**
  Toll Free Fax: (800) 303-9381
  Direct Fax: (858) 537-2064

Q.bloxx A109

Universal Analog Output Module with Digital I/Os

Analog Outputs		
Number	4	
Accuracy	0.02 %	
Output type	configurable voltage or current output	
Isolation voltage	500 VDC channel to channel to power supply to interface[1]	
Output voltage	±10 VDC	
Perm. load resistance	>2 kΩ	
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
Long term drift	<1 mV / 24 h; <2.5 mV / 8000 h	
Output current	0…20 mA	
Permitted burden	<400 Ω	
Burden influence	accuracy at 100 Ω	on sensitivity
	±4 µA	<0.1 µA / Ω
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
Long term drift	<2 µA / 24 h; 5 µA / 8000 h	
Digital/Analog-Conversion		
Resolution	16 bit	
Sample rate	100 kHz per channel	
Settling time	3 µs	
Digital Inputs		
Number	4	
Input voltage	max. 30 VDC	
Input current	max. 2 mA	
Threshold	TTL or	
Signal voltage „0“	-3… 5 VDC (EN61131-2, Type1)	
Signal voltage „1“	11… 30 VDC (EN61131-2, Type1)	
Isolation voltage	500 VDC group/group and against power supply and interface[1]	

[1] noise pulses up to 1000 VDC, permanent up to 250 VDC

Gantner Instruments Incorporated
9835 Carroll Centre Road, Suite 100
San Diego, CA 92126 USA

www.gantnerinstruments.com
Toll Free: (877) 725-6997 (877 QBLOXXS)
Direct: (858) 537-2060

info@gantnerinstruments.com
Toll Free Fax: (800) 303-9381
Direct Fax: (858) 537-2064

Q.bloxx A109

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	0.1 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	0.1 Hz up to 1 MHz
Resolution	21 ns
Configuration of the measurement type	Counter for duty cycle, frequency
Counter	
Counter	32 bit (±31 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 “0” reference recognition individually
Digital Outputs	
Number	4
Contact	open drain p-channel MOSFET (short circuit proof)
Output Voltage	10 V up to 30 V, external supply required
Load	30 VDC/500 mA (ohmic Load)

Gantner Instruments Incorporated
9835 Carroll Centre Road, Suite 100
San Diego, CA 92126 USA

www.gantnerinstruments.com
Toll Free: (877) 725-6997 (877 QBLOXXS)
Direct: (858) 537-2060

info@gantnerinstruments.com
Toll Free Fax: (800) 303-9381
Direct Fax: (858) 537-2064

Q.bloxx A109

Universal Analog Output Module with Digital I/Os

Function Digital Outputs			
State			
Reaction time (depending on load)	>0.5 A	>0.1 A	<0.1 A
	10 µs	100 µs	1000 µs
Frequency output			
Frequency range	0.1 Hz up to 1 kHz / 10 kHz depending on load		
Accuracy	0.1 %		
Resolution	1 µs		
PWM output			
Frequency range	0.1 Hz up to 1 kHz / 10 kHz depending on load		
Accuracy	0.1 %		
Resolution	1 µs		
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		
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 2015. Specification subject to change without notice
gantner-q.bloxx-a109.pdf (Version 0616)

Gantner Instruments Incorporated
9835 Carroll Centre Road, Suite 100
San Diego, CA 92126 USA

www.gantnerinstruments.com
Toll Free: (877) 725-6997 (877 QBLOXXS)
Direct: (858) 537-2060

info@gantnerinstruments.com
Toll Free Fax: (800) 303-9381
Direct Fax: (858) 537-2064