

# Q.brixx A109

Analog Output Module with Digital I/Os

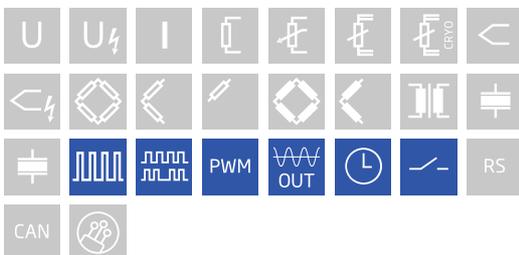
Q.brixx brings the performance and functionality of Q.bloxx into a scalable, portable, and rugged form factor. Q.brixx DAQ systems can consist of up to 16 measurement modules and an integrated, high-performance controller for communication, control, and data logging purposes. With a robust aluminum housing capable of withstanding severe shock and vibration, Q.brixx is ideal for on-the-go applications in potentially harsh environments.

- Electromagnetic compatibility according EN 61000-4 and EN 55011
- Robust and reliable stable and compact aluminum housing, easy to carry
- Power supply 10 ... 30 VDC
- Temperature range -20 up to +60°C
- High density and flexibility up to 16 modules in one system in any constellation



## Key Features

- 4 Analog output channels  
voltage ( $\pm 10$  VDC) or current (0 - 20 mA), configurable per channel
- DAC-resolution 16 bit  
100 kHz each channel
- Outputs freely scalable
- 4 digital inputs and outputs  
configurable as 2 counter, 2 frequency, or 2 PWM inputs, 4 frequency out, 4 PWM output or 4 state out
- Frequency measurement  
Frequency measurement up to 1 MHz, direction detection
- Counter  
Forward-backward counter, quadrature counter with reference position recognition (reset/enable), up to 1 MHz
- PWM input  
Measurement of duty cycle and frequency
- 3-Way galvanic isolation  
500 VDC channel to channel, channel to power supply, and bank



### Technical Data

#### Analog Output

Channels	4
Accuracy	0.02 % typical
Output type	voltage or current, configurable per channel
Isolation voltage	500 VDC channel to channel to power supply channel to bus <sup>1</sup>

<sup>1</sup> noise pulses up to 1000 VDC, continuous up to 250 VDC

#### Output Mode Voltage

Output voltage	±10 VDC	
Allowable load resistance	> 2 kΩ	
Long-term drift	< 1 mV / 24 hrs	< 2.5 mV / 8000 hrs
Temperature influence	< 2 mV / 10 K Offset drift	< 0.05 % / 10 K Gain drift
Noise voltage	< 10 mV at 1000 Hz	< 2 mV at 10 Hz

#### Current Output

Output current	0 - 20 mA	
Load burden	< 400 Ω	
burden influence	< 0.1 μA / Ω	
Long-term stability	< 2 μA / 24 hrs	< 5 μA / 8000 hrs
Temperature drift	< 4 μA / 10 K Offset drift	< 0.05 % / 10 K Gain drift
Noise current	< 20 μA at 1000 Hz	< 4 μA at 10 Hz

#### Digital Input

Channels	4
Logic levels	TTL or 24 VDC according to IEC 61131-2, Type 1
TTL logic voltage	< 0.8 VDC (Low) > 3 VDC (High)
24 VDC logic voltage	-3 to 5 VDC (Low) 11 to 30 VDC (High)
Input type	PNP (current sinking)
Input voltage	30 VDC max.
Input current	2 mA max.
Isolation voltage	500 VDC, group to group, group to power supply, channel to bus <sup>1</sup>

<sup>1</sup> noise pulses up to 1000 VDC, continuous up to 250 VDC

### Digital Input Modes

Status	
Response time	10 $\mu$ s
Frequency measurement	
Method	Chronos method (optimized by a combination of time measurement and pulse counting), detection of rotational direction (0 deg. / 90 deg.)
Frequency range	0.1 Hz to 1 MHz
Time base	0.001 s to 1 s
Internal reference frequency	48 MHz
Accuracy	0.01% at timebase > 1ms
Resolution	21 ns
Pulse counting	
Accuracy	0.01% at timebase > 1ms
Resolution	21 ns
Counter frequency	1 MHz
Mode(s) of operation	- Forward and reverse counting (additional input for direction of counting) - Quadrature counter (additional input for detection of rotational direction) - Quadrature counter with zero reference and reset/enable (two additional inputs)
Pulse-width measurement	
Input frequency	0.1 Hz to 1 MHz
Accuracy	0.01% at timebase > 1ms
Resolution	21 ns

### Digital Output

Channels	4
Contact	open drain p-channel MOSFET
Output voltage	12 to 30 VDC (external supply required)
Load capacity	30 VDC / 500 mA (ohmic load)
Isolation voltage	500 VDC, group to group, group to power supply, channel to bus <sup>1</sup>

<sup>1</sup> noise pulses up to 1000 VDC, continuous up to 250 VDC

### Digital Output Modes

Status			
Response time	10 $\mu$ s (>0.5 A)	100 $\mu$ s (>0.1 A)	1000 $\mu$ s (<0.1 A)
Frequency output			
Frequency range	0.1 Hz to 1 kHz / 10 kHz (depending on load capacity)		
Accuracy	0.1 %		
Resolution	1 $\mu$ s		
PWM output			
Frequency range	0.1 Hz to 1 kHz / 10 kHz (depending on load capacity)		
Accuracy	0.1 %		
Resolution	1 $\mu$ s		

# Q.brixx A109

Analog Output Module with Digital I/Os

## Digital to Analog Conversion

Resolution	16-bit
Update rate	100 kHz per channel
Settling time	3 $\mu$ s

## Communication Interface

Protocols	proprietary Localbus (115200 bps to 24 Mbps, latency <100 ns) ASCII (19200 bps to 115200 bps) Modbus RTU Profibus-DP (19200 bps to 12 Mbps) (special Firmware required)
Data format	8E1
Electrical standard	ANSI/TIA/EIA-485-A, 2-wire

## Input Power

Input voltage	10 to 30 VDC, overvoltage and overcurrent protection
Power consumption	2 W (approx.)
Input voltage influence	<0.001 % / V

## Environmental Specifications

Electromagnetic compatibility	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)

## Remarks

Validity of all listed specifications 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)	30 x 125 x 155 mm
Weight	approx. 200 g

## Ordering Information

Article number	796943
----------------	--------

### Gantner Instruments

Austria | Germany | France | Sweden | India | USA | China | Singapore  
Montafonerstraße 4 · A-6780 Schruns · T +43 55 56 · 77 463-0

office@gantner-instruments.com  
www.gantner-instruments.com