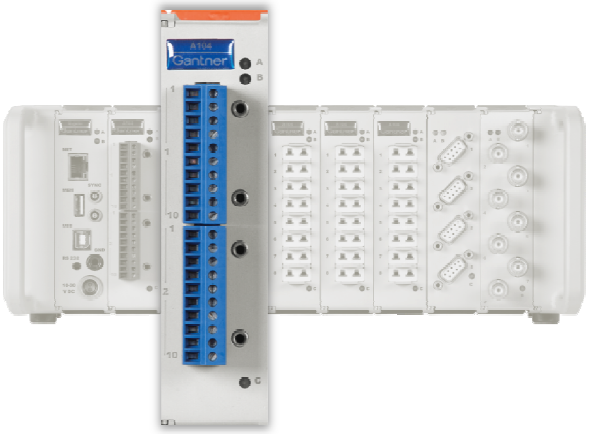
Q.brixx A109

Universal Analog Output Module with Digital I/Os



The Q.brixx product line is designed for portable measurements with a high level of flexibility, reliability and accuracy. The range of applications starts from small stand-alone solutions up to networked multi-channel applications in the field of mobile and stationary performance testing and structural monitoring.

The wide range of available modules and the flexibility of the system configuration allows an optimized solution for each single task. Up to 16 modules in one system plus a Controller Unit provide a powerful package with PAC functionality, logging possibilities and an Ethernet TCP/IP interface.

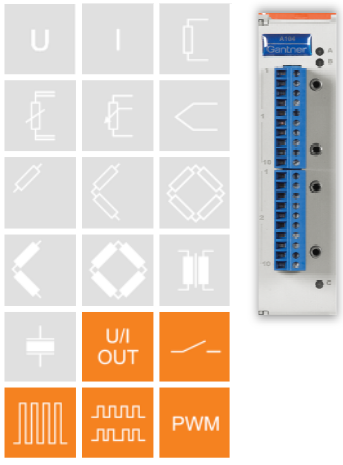
Conclusion: Dynamic signal acquisition up to 100 kHz, inputs and outputs for all types of signals, galvanic isolation of inputs and outputs, multi-channel solutions, high density packaging and intelligent signal conditioning for mobile application.

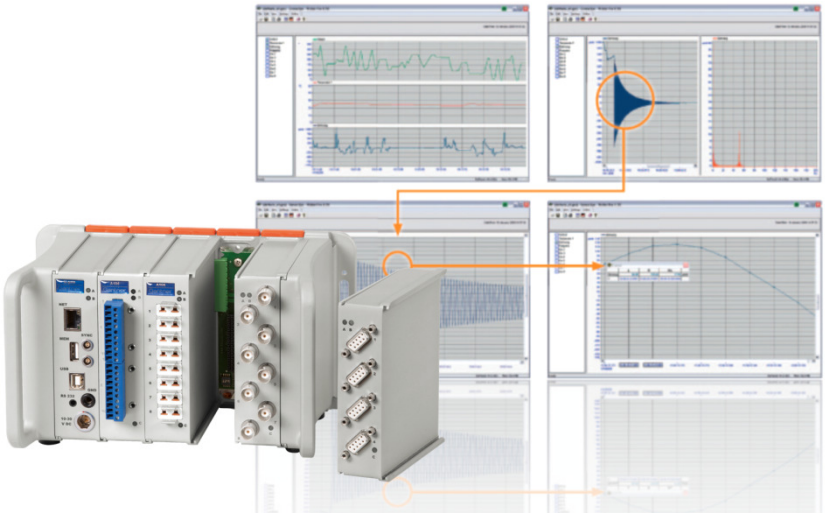
Most important features of the system:

- **High density and flexibility**
  up to 16 modules in one system in any constellation,
  flexible plug selection
- **Test Controller inclusive**
  Ethernet TCP/IP for configuration and data transfer,
  16 MByte data memory, expandable by USB device,
  logging features, PAC functionality, IRIG synchronization
- **Robust and reliable**
  stable and compact aluminum housing, easy to carry
  electromagnetic compatibility according EN 61000-4 and EN 55011
  Temperature range -20 up to +60°C
  power supply 10 up to 30 VDC

Most important features of the module A109:

- **4 galvanic isolated analog output channels**
  voltage ±10 V, current 0…20 mA selectable, isolation voltage 500 VDC
- **DAC-resolution 16 bit**
  100 kHz with 1 channel, outputs free scalable
- **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 inputs and outputs**
  measurement up to 1 MHz (Chronos), output up to 10 kHz
- **Counter**
  For/backward counter, quadrature counter with reference zero recognition (enable/disable), up to 1 MHz
- **PWM in and output**
  measurement of duty cycle and frequency





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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 / 24h; <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

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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 counter functionality individually.
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 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		

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

Valid from March 2012. Specification subject to change without notice
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