e.bloxx D1

Multi-Channel Analog Output Module

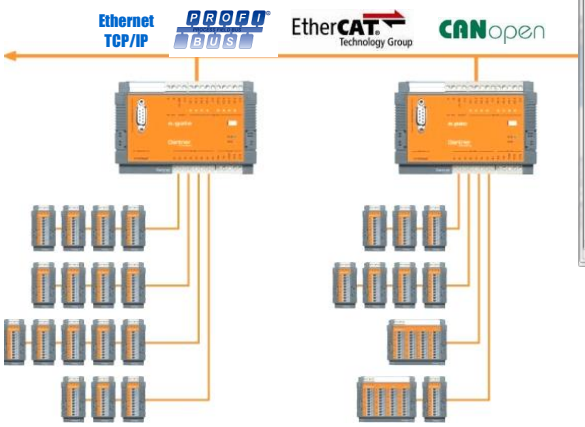
e.bloxx D1-1

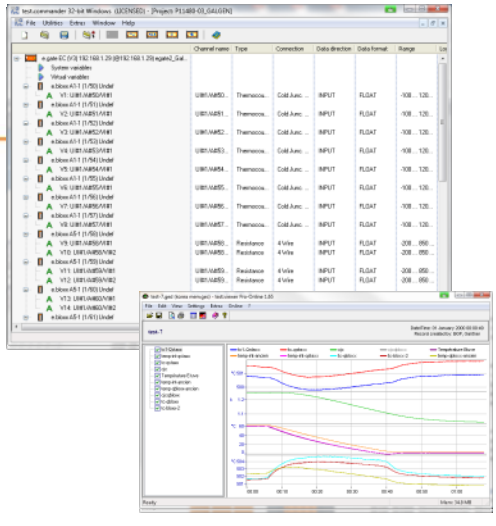
e.bloxx D1-4

The e.bloxx series is designed for industrial and experimental test systems requiring precise high speed measurement of electrical, thermal, and mechanical quantities in engine and component test beds.
All units are based on a clean modular design, and easily connect to the wide variety of field devices used in today's test beds. Sample rates up to 1000 Hz and resolutions up to 19 bit are possible depending on the module and signal type used. Standardized communication protocols (Profibus-DP and Modbus-RTU) allow the e.bloxx family to work with a wide variety of application hardware and software.
Adding an e.series Test Controller dramatically increases the system's throughput and connectivity options. An e.series Test Controller is a data concentrator, communication gateway, and optionally a Programmable Automation Controller (PAC) with 100Mbps Ethernet, Profibus-DP, EtherCAT, or CANopen.

Most important features:

- **8 or 32 configurable digital inputs / outputs**
- **Status in/outputs**
  Process or host controlled
  (each I/O can be configured as IN or OUT)
- **Frequency in/outputs**
  Frequency measurement up to 2 MHz,
  frequency output up to 10 kHz
- **Counter inputs**
  Quadrature counter, up/down counter, up to 400 kHz
- **PWM in/outputs, time measurement**
  Measurement of duty cycle and frequency
- **Signal conditioning**
  Additional scaling, minimum/maximum, arithmetic, alarm
- **RS 485 fieldbus interface**
  Profibus-DP, Modbus-RTU, ASCII
  as well as connectable to any e.series Test Controller
- **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 (EN500022)**





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e.bloxx D1 Technical Data

Digital Inputs

Function per terminal strip	8 x status inputs/outputs
or	4 x frequency
or	4 x quadrature counter
or	4 x up/down counter
Status	
Response time	1 ms
Frequency measurement	
Time base	0.01 to 10 s
Max. frequency	400 kHz
Counter	
Counter depth	32 bit
Counter frequency	400 kHz
Input voltage	max. 30 VDC
Input current	max. 1.5 mA
Upper switching threshold	>3.5 V (logical “Low“)
Lower switching threshold	<1.0 V (logical “High“)
Reference frequency	6 MHz
Accuracy	0.01 %
Temperature drift	0.01 %/10 K

Digital Outputs

Function	Process or host controlled
Type of output	Open-Collector
Output Voltage	max. 30 VDC
Output Current	max. 100 mA

Communication Interface

Standard	RS 485, 2-wire
Data format	8E1
Protocols	ASCII, Modbus-RTU, Profibus-DP Local-Bus
Baud rate	
ASCII and ModBus-RTU	19.2; 38.4; 57.6; 93.75; 115.2 kBaud
Profibus-DP	19.2; 93.75; 187.5; 500; 1500 kBaud
Local-Bus	19.2; 38.4; 57.6; 93.75; 115.2; 187.5; 500; 1500 kBaud
Connectable devices	up to 32
Galvanic isolation	500 V

Power Supply

Power supply	10 to 30 VDC overvoltage and overload protection
Power consumption	
e.bloxx D1-1	approx. 1.5 W
e.bloxx D1-4	approx. 6 W
Influence of the voltage	0.001 %/V

Mechanical

Case	Aluminium and ABS
Dimensions (W x H x D) and weight	
e.bloxx D1-1	45 x 90 x 83 mm ,160 g
e.bloxx D1-4	104 x 90 x 83 mm, 500 g
Protective system	IP20
Mounting	DIN EN-Rail

Environmental

Operating temperature	-20 °C to +60 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	5 % to 95 % at 50 °C non condensing

Firmware-Variant (included)

Chronos

Function	frequency measurement
Method	Chronos, optimization by the combination of time measurement and edge counting direction detection (0°, 90°)
Number of input channels	4
Max. frequency	400 kHz
Time base	0.01 to 1 s
Reference frequency	6 MHz
Accuracy	0.01 %
Temperature drift	0.01 %/10 K

Chronos Fast

Function	frequency measurement (s. above)
Number of input channels	2
Frequency range	1 Hz to 2 MHz
Time base	0.001 to 1 s
Reference frequency	48 MHz
Resolution	0,002 %
Accuracy	0.01 %
Temperature drift	0.01 %/10K
Refresh rate	1 ms at 1 channel 2 ms at 2 channels

Chronos PWM

Function	frequency measurement (s. above)
Number of input channels	2
Function	frequency output pulse width modulation
Frequency range	0.1 Hz to 10 kHz (Accuracy 0.15 %)
Number of output channels	2 x frequencies or 2 x PWM

PWM Measure

Function	measurement of a pulse width modulated signal
Number of PWM channels	2 x PWM signal 0 to 1 2 x frequency of the PWM signal
Signal frequency	1 Hz to 60 kHz
Resolution	83.3 ns
Configuration Meas. type	Duty cycle: Counter, frequency measurement

Time Measure

Function	measurement of time between Start and stop signal (each one I/O)
Number of time channels	2
Time range	1 µs to 16 s
Time resolution	1 µs
Configuration Meas. type	frequency measurement

Warm Up Time

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

Valid from Nov. 2010. Specification subject to change without notice.

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