e.bloxx A1

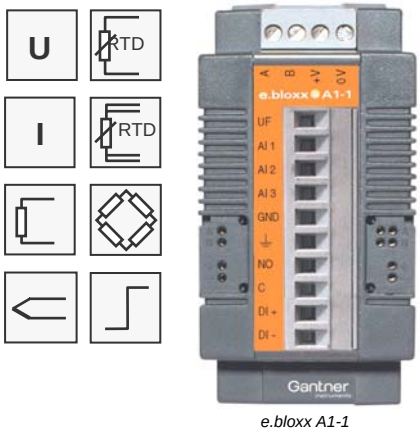
Universal Analog Measurement Module

Ethernet TCP/IP | PROFIBUS | EtherCAT Technology Group | USB

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 5000 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 USB ports.



e.bloxx A1-1

e.bloxx A1-4 *e.bloxx A1-8*

1, 4, or 8 universal analog input channels

Voltage, current, resistance, Pt100, Pt1000, thermocouples, bridges

1 digital input per channel

Status, tare, memory reset

1 solid state relay output per channel

Status, alarm, limit value, tolerance band

Signal conditioning

Linearization, digital filtering, averaging, scaling, minimum/maximum, arithmetic, alarm

RS 485 fieldbus interface

Profibus-DP, Modbus-RTU, ASCII

Order Information

Product	Article No.
e.bloxx A1-1	897428
e.bloxx A1-4	941418
e.bloxx A1-8	941519
Accessories	
Configuration Software	
ICP 100	633214
Cold Junction Compensation	
e.bloxx Terminal CJC	111874
Interface Converter	
RS232 / RS485	
ISK 200	229682
ISK 101	689326

Additional Features

- Accuracy 0.01 %
- ADC resolution and internal calculation accuracy of 19 bits
- Measuring rate up to 1000 samples/sec
- Linearization, scaling, and data formatting

- Data transmission up to 1.5 Mbps
- Up to 32 modules on a single two wire RS-485 interface
- PC-Software (ICP 100) for easy configuration of the modules

- Galvanic isolation of I/O signals, power supply, and communication interface
- Power supply 10 to 30 VDC
- DIN rail mounting (EN 50022 rail)
- Pluggable screw terminals for field, power, and communication connections
- Electromagnetic Compatibility according to EN 61000-4 and EN 55011

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e.bloxx A1 Technical Data

Analog Input

Accuracy	0.01 % typical
	0.02 % in controlled environment[1]
	0.05 % in industrial area[2]
Repeatability	0.003 % typical (within 24 h)

Measurement	Range	Accuracy	Resolution
Voltage	±10 V	±2 mV	40 µV
	±1 V	±0.2 mV	4 µV
	±100 mV	±20 µV	0.4 µV
	±10 mV	±10 µV	0.04 µV
Current	4-20 mA	±4 µA	80 nA
(internal shunt 100 Ω)	±20 mA	±4 µA	80 nA
Resistance	4 kΩ	±1 Ω	0.05 Ω
(2, 3 and 4 wire)	2 kΩ	±0.6 Ω	0.03 Ω
Bridge	±1000 mV/V	±1 mV/V	50 µV/V
(Supply 5 VDC/120 Ω)	±200 mV/V	±200 µV/V	10 µV/V
	±20 mV/V	±20 µV/V	1 µV/V
	±8 mV/V	±8 µV/V	0.4 µV/V
	±2 mV/V	±2 µV/V	0.1 µV/V
RTD (2, 3 and 4 wire)			
Pt100 (-200 to +850 °C)		±0.5 °C	0.1 °C
Pt100 (-200 to +250 °C)		±0.2 °C	0.01 °C
Pt1000 (-200 to +850 °C)		±1 °C	0.1 °C
Pt1000 (-200 to +140 °C)		±0.3 °C	0.01 °C
Thermocouples			
Type B:		better than ±5 °C	
Type E, J, K, L, T, U		better than ±1 °C	
Type N		better than ±2 °C	
Type R, S		better than ±3 °C	

Input resistance	> 10 MΩ
Common mode voltage	500 V permanent
Linearity deviation	0.01 % of the final value
Signal to noise ratio	voltage measurement
1 kHz	90 dB
1 Hz	120 dB
Temperature influence	
on zero	1µV / 10 K
on sensitivity	0.02 % / 10 K
Long-time drift	1 µV / 24 h; 0.1 µA / 24 h

Analog/Digital Conversion

Resolution	19 bit
Sample rate	1000 samples/sec for voltage, current potentiometer, bridge
	10 samples/sec for resistance, RTD
	5 samples/sec for thermocouples
Conversion method	Sigma-Delta
Filter	Anti-aliasing Bessel filter 4th ord. 200 Hz
	variable digital low pass filter 1st order
	averaging, sliding averaging

Warm Up Time

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

Digital In/Output

Input	Status, tare, reset
Input voltage	max. 30 VDC
Input current	max. 1.5 mA
Upper switching threshold	> 10 V (high)
Lower switching threshold	< 2.0 V (low)

Output	Solid State Relay output
Contact	Opto – MOSFET
Nominal load	60 VDC / 100 mA (ohmic load)
Galvanic isolation	500 V

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 A1-1	approx. 1.5 W
e.bloxx A1-4	approx. 6 W
e.bloxx A1-8	approx. 12 W
Influence of the voltage	0.001 %/V

Mechanical

Case	Aluminium and ABS
Dimensions (W x H x D) and weight	
e.bloxx A1-1	45 x 90 x 83 mm (1.77 x 3.54 x 3.27 in), 160 g (0.35 lb)
e.bloxx A1-4	104 x 90 x 83 mm (4.10 x 3.54 x 3.27 in), 500 g (1.1 lb)
e.bloxx A1-8	186 x 90 x 83 mm (7.32 x 3.54 x 3.27 in), 900 g (2.0 lb)
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

[1] according to EN 61326: 1997, appendix B
[2] according to EN 61326: 1997, appendix A

Valid from January 2008. Specification subject to change without notice.
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