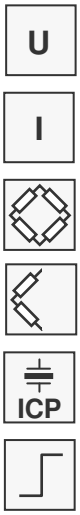
e.bloxx A2

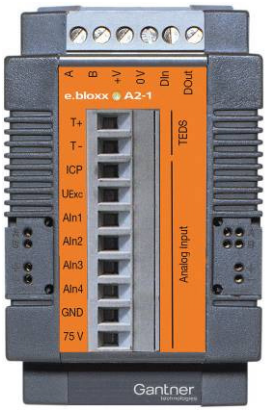
Fast General Purpose Measurement Module

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 CANopen.





e.bloxx A2-1

1 general purpose analog input channel

Voltage, current, strain gauge, piezo resistive bridges, and ICP sensors

1 digital input and 1 digital output per channel

Status, tare, memory reset, alarm, limit value, tolerance band

Signal conditioning

Linearization, digital filtering, averaging, scaling, minimum/maximum store, RMS-value, arithmetic

TEDS functionality

Reading of Transducer Electronic Data Sheet from a TEDS sensor module and setup of the A2 internals automatically (IEEE 1451.4 Class 2)

RS 485 fieldbus interface

Modbus-RTU, ASCII, and Local Bus to Test Controller

Order Information

Product	Article No.
e.bloxx A2-1	443276
Accessories	
Configuration Software	
ICP 100	633214
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 5000 samples/sec
- Linearization, scaling, and data formatting

- Data transmission up to 6 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 A2 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	±75 V	±15 mV	300 µV
	±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	20 mA	±4 µA	80 nA
(internal shunt 100 Ω)			

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
5 Hz	120 dB
Temperature influence	
on zero	1µV/10 K
on sensitivity	0.02 %/10 K
Long-time drift	1 µV/24h, 0.1 µA/24 h

Measurement	Range	Accuracy	Resolution
Bridge	±2.5 mV/V	±1.25 µV/V	0.01 µV/V
	±20 mV/V	±10 µV/V	0.08 µV/V
	±40 mV/V	±20 µV/V	0.16 µV/V
	±400 mV/V	±200 µV/V	1.6 µV/V

Type of bridge	full and half bridge, 5-/6-wire (sense)
Bridge excitation	5 VDC / 120 to 1000 Ω / 10000 Ω
Linearity deviation	0.02 % of the final value, R_B < 1000 Ω 0.2 % of the final value, R_B > 1000 Ω
Temperature influence	
on zero	10µV/V/10 K
on sensitivity	0.05 %/10 K
Long-time drift	1 µV/V/24 h

Measurement	Range	Accuracy	Resolution
ICP sensors	10 V	±5 mV	40 µV
(current supplied piezo)	1 V	±0.5 mV	4 µV

Excitation	4 mA
Linearity deviation	0.05 % of the final value
Signal to noise ratio	
2 Hz to 5 kHz	70 dB
Temperature influence	
on sensitivity	0.05 %/10 K

Analog/Digital Conversion

Resolution	24 bit, effective 19 bit
Sample rate	5000 samples/sec
Conversion method	Sigma-Delta
Filter	anti-aliasing Bessel filter 4th order variable digital low pass filter 3rd order 12 steps - 0.1; 0.2; 0.5; 1; 2; 5; 10; 20; 50; 100; 200 ; 500 Hz averaging, sliding averaging, high pass 0.1 Hz; 1 Hz
Further signal conditioning	minimum/maximum, envelope curve peak to peak, RMS value enhanced arithmetic
TEDS	according IEEE 1541.4 automatic amplifier setup without PC

Digital In/Output

Input	status, tare, reset
Input voltage	max. 30 VDC
Input current	max. 0.5 mA
Upper switching threshold	> 10 V (high)
Lower switching threshold	< 2.0 V (low)
Output	process- or host controlled
Type of output	open drain p-channel MOSFET
Output voltage	max. 30 V
Output current	max. 100 mA

Communication Interface

Standard	RS 485, 2-wire
Data format	8E1
Protocols	ASCII, Modbus-RTU, Local-Bus
Baud rate	
ASCII and ModBus-RTU	19.2; 38.4; 57.6; 93.75; 115.2 kBaud
Local-Bus	115.2; 187.5; 500; 1500; 6000 kBaud
Connectable devices	up to 32
Galvanic isolation	500 V

Notice:
Together with an e.gate or an e.pac the Local Bus will run with 6 MBaud to provide a measuring rate of 5000 samplles/s. Therefore it is not possible to connect e.bloxx A2 together with other e.bloxx modules to one Local Bus (UART). Another UART of the controller can be used.

Power Supply

Power supply	10 to 30 VDC overvoltage and overload protection
Power consumption	approx. 3 W
Influence of the voltage	0.001 %/V

Mechanical

Case	Aluminium and ABS
Dimensions (W x H x D)	55 x 90 x 83 mm (2.17 x 3.54 x 3.27 in)
Weight	250 g (0.44lb)
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

Warm Up Time

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

[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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