e.bloxx A5CR

2-Channel Module (RTD) for Cryo-Application

Ethernet TCP/IP

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 A5-1 CR

2 input channels for Cryo sensors

e.g. Cernox or TVO

Sensor excitation only 8 μA_{eff}

Avoids self heading of the sensor

Individual linearization of the sensor characteristics

Sensor specific linearization by using 64 nodes and archive in a sensor data file (import function).

1 digital input, 1 digital output

Status, alarm, limit value, tolerance band

RS 485 fieldbus interface

Profibus-DP, Modbus-RTU, ASCII

Order Information

Product	Article No.
e.bloxx A5-1 CR	368181
Accessories	
Configuration Software	
ICP 100	633214
Interface Converter	
RS232 / RS485	
ISK 200	229682
ISK 101	689326

Additional Features

- 2 input channels for Cryo sensors or resistors in 4-wire technique
- Accuracy 0.01 %
- ADC resolution and internal calculation accuracy of 19 bits (1 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 A5CR 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)
Type of measurement	Resistance
Measuring range	0 Ω to 6500 Ω
Accuracy	0.65 Ω
Resolution	0.02 Ω
Temperature drift	0.6 Ω / 10 K
Measuring current	16 µA switched 8 μA_{eff} using 1 channel 5 μA_{eff} using 2 channels
Linearity deviation	0.01 % of final value

Exemplified at test measurements at a research institute using two Cryo-sensors (references) shows the following results:

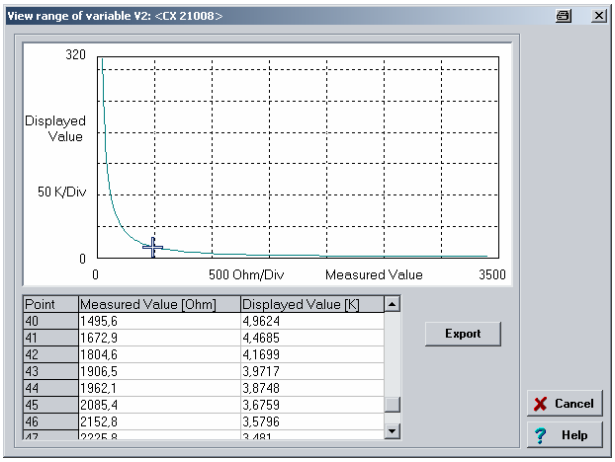
Type TVO	Aviation [K]	[% of actual value]
at 3.8 K (3684 Ω)	0.012	0.32
at 77.5 K (1135 Ω)	0.2	0.26
at 273.7 K (1455 Ω)	0.7	0.26

Type Cernox	Aviation [K]	[% of actual value]
at 2.5 K (3405 Ω)	0	0,00
at 72.9 K (154,5 Ω)	0.015	0.02
at 316.3 K (44.83 Ω)	0.86	0.27

Analog/Digital-Conversion

Resolution	19 bit
Sample rate	1 sample/sec (2 sensors, 4-wire)
Conversion method	Sigma-Delta
Filter	variable digital low pass filter 1st order averaging

Example: Linearization of a Cernox sensor



Digital In/Output

Input	Status, tare, reset
Input voltage	max. 30 VDC
Input current	max. 6 mA
Upper switching threshold	> 10 V (high)
Lower switching threshold	< 2,0 V (low)
Output	Process or host controlled
Type of output	Open Collector
Output voltage	max. 30 V
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	approx. 1.5 W
Influence of the voltage	0.001 %/V

Mechanical

Case	Aluminium and ABS
Dimensions (W x H x D) and weight	45 x 90 x 83 mm (1.77 x 3.54 x 3.27 in), 160 g (0.35 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

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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