RETIRED

microBlox™ I/O Modules w/ *Bluetooth*® Wireless Technology

Introduction to the microBlox™ Module Family

The microBlox™ (uB) family of analog I/O modules and back-panel carriers offer a modern and flexible space-saving solution for isolating and monitoring common analog industrial I/O signals for interface with industry-standard analog data acquisition systems. Although smaller than their analog counterparts, microBlox™ modules include a digital interface, 16-bit A/D & D/A conversion, plus optional support for Bluetooth wireless technology re-programmability and recalibration.

The microBlox™ modules individually isolate analog I/O field signals from an industry-standard host analog I/O bus. Fixed-range microBlox™ models support popular analog I/O range types, while Bluetooth wireless technology models allow input and output ranges to be wirelessly configured to your specific application using a smart phone or tablet and our easy to use Agility™ app. Individual microBlox™ modules plug into 4, 8, and 16 channel carriers, in any mix, to build a flexible high-density analog I/O system.

All microBlox™ modules are CE compliant, UL approved for installation in Class I, Division II hazardous locations and ATEX approved. They have high immunity in harsh industrial environments. The microBlox™ modules are fully over-molded, offering superior shock and vibration protection, plus resistance to liquid and dust contamination. These modules also incorporate a captive plug-in design that uses no screws to firmly secure the modules to the back-plane. Back-planes include standoffs for surface mounting, and can use industry standard plastic channels for DIN rail mounting (optional).

- Industry-standard and compatible transmitter I/O ranges with support for DC voltage/current, AC current, Frequency, Thermocouple, and RTD input, plus DC voltage and current output. Support for the DB25 analog I/O bus. Commercial Grade Models add model suffix "-CG" after the range code (except "-B" models) to specify a similar model with 0˚C to 55˚C operating temperature, ±0.125% accuracy, and no hazardous location approvals.
- Surface (panel) or DIN-rail mounted, with pluggable and captive I/O on 4, 8, or 16 channel back-panels.
- Models have pre-calibrated fixed I/O ranges or include support for radio reconfiguration & calibration.
- Over-molded I/O circuits offer superior shock, moisture, and dust protection and are RoHS Compliant.
- Designed for Rugged Environments and UL Listed (USA & Canada) for Hazardous Locations – Class I, Division 2, Groups A, B, C, and D. ATEX approved. "-CG" Models have No Hazardous Location approvals.
- Units are 5V powered or optionally 10-32V powered (requires uBDC-1 power module and back-panel).
- Better than ±0.1% accuracy. "-CG" Commercial Grade Models: Better than ±0.125% accuracy.
- -40˚C to 80˚C Operating ("-CG" Models 0-55˚C), -40˚C to 85˚C Storage, 0% to 95% non-condensing Relative Humidity.
- Field config App for Bluetooth wireless technology models with Android™ or iOS™ support, no software required.
- Sixteen-character Password Protection for Bluetooth wireless technology access.
- Wireless App includes input trending/graphing capability with data sharing.
- Restore Factory Settings & Reset Factory Calibration function for restoration/sanitization of calibration/configuration.
- Bluetooth wireless technology input models include optional alarm operation w/ setpoint & deadband control driving 0 or 5V host output. Single/dual channel alarm carriers are also available in solid-state and mechanical relay versions.
- EMC (Electromagnetic Compatibility) - Minimum Immunity per BS EN 61000-6-1 (2007):
  CE marked, per EMC Directive 2014/30/EU. Electrostatic Discharge Immunity (ESD), per IEC 61000-4-2. Radiated Field Immunity (RFI), per IEC 61000-4-3 and ETSI EN 301 489. Electrical Fast Transient Immunity (EFT), per IEC 61000-4-4. Surge Immunity, per IEC 61000-4-5. Conducted RF Immunity (CRFI), per IEC 61000-4-6.
- Emissions - This is a Class B Product with Emissions per BS EN 61000-6-3 (2007+A1:2011) and Spurious Emissions per ETSI EN 300 328. Enclosure Port, per CISPR 16. Low Voltage AC Mains Port, per CISPR 16.
- Installation Category - Suitable for installation in a Pollution Degree 2 environment with an Installation Category (Over-voltage Category) II rating per IEC 1010-1 (1990).
- Safety Isolation: Field channels are individually isolated field channel-to-field channel and from the field to the host I/O bus (as a group including 5V power) for common-mode voltages up to 250VAC, or 354V DC off DC power ground, on a continuous basis (will withstand 1500VAC HIPOT/dielectric strength test for one minute without breakdown). This complies with test requirements of ANSI/ISA-82.01-1988 for voltage rating specified.
- Shock & Vibration Immunity - Conforms to: IEC 60068-2-6: 10-500 Hz, 5G, 2 Hours/axis, for sinusoidal vibration; IEC 60068-2-64: 10-500 Hz, 5G-rms, 2 Hours/axis , for random vibration, and IEC 60068-2-27: 30G, 11ms half-sine, 18 shocks at 6 orientations and 50G, 3ms half-sine, 18 shocks at 6 orientations, for mechanical shock.

- Agency Approvals: For Models uB04/04D, uB08/08D, and uB16/16D Back-Panels, excluding Commercial Grade Models, model suffix "-CG".

  Electromagnetic Compatibility (EMC): CE marked, per EMC Directive 2014/30/EU. Note: The Commercial Grade Models are CE Marked.

  Safety Approvals: UL Listed (USA & Canada). Hazardous Locations – Class I, Division 2, Groups A, B, C, D Hazardous Location or Nonhazardous Locations only. These devices are open-type devices that are to be installed in an enclosure suitable for the environment.

  ATEX Certified: ATEX Certified for Explosive Atmospheres per ATEX Directive 2014/34/EU which complies with standards BS EN 60079-0:2012 & BS EN 60079-15:2010.

  ⟨Ex⟩ II 3 G Ex ic nA IIC T4 Gc
  -40°C ≤ Ta ≤ +80°C
  DEMKO 16 ATEX 1715X

  X = Special Conditions

  1) The equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.
  2) The equipment shall be installed in an enclosure that provides a degree of protection not less than IP 54 in accordance with EN 60079-15.
  3) Provision shall be made to prevent the rated voltage being exceeded by the transient disturbances of more than 140% of the peak rated voltage.
  4) Provision should be made, to ensure the circuits are limited to overvoltage category II as defined in EN 60664-1.
  5) Conductors (wiring) to Back-Panel should be suitable for 85°C or better.

- Agency Approvals: For all microBlox™ (uB) Modules, excluding Commercial Grade Models, model suffix "-CG".

  Electromagnetic Compatibility (EMC): CE Marked, per EMC Directive 2014/30/EU. Note: The Commercial Grade Models are CE Marked.

  Safety Approvals: UL Listed (USA & Canada). Hazardous Locations – Class I, Division 2, Groups A, B, C, D Hazardous Location or Nonhazardous Locations only. All microBlox™ (uB) Modules are used with uB04x, UB08x, and uB16x Back-Panels covered in UL File E202242. These devices are open-type devices that are to be installed in an enclosure suitable for the environment.

  ATEX Certified: All microBlox™ (uB) Modules are used with uB04x, UB08x, and uB16x Back-Panels covered in certificate DEMKO 16 ATEX 1715X

ORDERING INFORMATION

Modules: *Add model suffix "-CG" to specify a Commercial Grade module with reduced operating temperature, reduced accuracy, and no hazardous location approvals (see module manual).*

Back-Panels: *Add model suffix "-CG" to specify a Commercial Grade panel with no hazardous location approvals.*

IMPORTANT: UL Class I, Division II and ATEX agency approval is only applicable to standard uB modules mounted on standard uB back-panels (no "-CG" model suffix). If you have selected a Commercial Grade module marked with a "-CG" model suffix, you need to also select a Commercial Grade back-panel marked with a "-CG" model suffix—safety agency approval of components is voided by any combination with a Commercial Grade module or back-panel marked with a "-CG" model suffix.

Business Address:
ACROMAG INCORPORATED
30765 South Wixom Road
Wixom, MI 48393-2417 U.S.A.

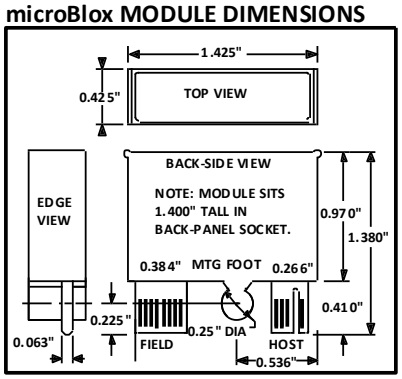
Tel: (248) 295-0880
Fax: (248) 624-9234
email: sales@acromag.com

The microBlox I/O Family

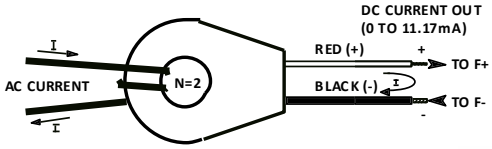
MODEL	Field I/O, Min Bandwidth	HOST I/O
uB31-B	IN: Config ±1 to ±60V, 4Hz	Config ±5V
uB31-01	IN: ±1V, 4Hz	OUT: ±5V
uB31-02	IN: ±5V, 4Hz	OUT: ±5V
uB31-03	IN: ±10V Input, 4Hz	OUT: ±5V
uB31-04	IN: ±1V Input, 4Hz	OUT: 0-5V
uB31-05	IN: ±5V Input, 4Hz	OUT: 0-5V
uB31-06	IN: ±10V Input, 4Hz	OUT: 0-5V
uB31-07	IN: ±20V Input, 4Hz	OUT: ±5V
uB31-08	IN: ±20V Input, 4Hz	OUT: 0-5V
uB31-09	IN: ±40V Input, 4Hz	OUT: ±5V
uB31-10	IN: ±40V Input, 4Hz	OUT: 0-5V
uB31-12	IN: ±60V Input, 4Hz	OUT: ±5V
uB31-13	IN: ±60V Input, 4Hz	OUT: 0-5V
uB41-B	IN: Config ±1 to ±60V, 1KHz	Config ±5V
uB41-01	IN: ±1V, 1KHz	OUT: ±5V
uB41-02	IN: ±5V, 1KHz	OUT: ±5V
uB41-03	IN: ±10V, 1KHz	OUT: ±5V
uB41-04	IN: ±1V, 1KHz	OUT: 0-5V
uB41-05	IN: ±5V, 1KHz	OUT: 0-5V
uB41-06	IN: ±10V, 1KHz	OUT: 0-5V
uB41-07	IN: ±20V, 1KHz	OUT: ±5V
uB41-08	IN: ±20V, 1KHz	OUT: 0-5V
uB41-09	IN: ±40V, 1KHz	OUT: ±5V
uB41-10	IN: ±40V, 1KHz	OUT: 0-5V
uB41-12	IN: ±60V, 1KHz	OUT: ±5V
uB41-13	IN: ±60V, 1KHz	OUT: 0-5V
uB32-B	IN: Config 0-20mA, 7Hz	Config ±5V
uB32-01	IN: 4-20mA, 7Hz	OUT: 0-5V
uB32-02	IN: 0-20mA, 7Hz	OUT: 0-5V
uB32-03	IN: 0-11.17mA, 7Hz	OUT: 0-5V
uB34-B	IN: Pt RTD, Config 0-600C	Config ±5V
uB34-01	IN: Pt RTD, ±100C, 3Hz	OUT: 0-5V
uB34-02	IN: Pt RTD, 0-100C, 3Hz	OUT: 0-5V
uB34-03	IN: Pt RTD,0-200C, 3Hz	OUT: 0-5V
uB34-04	IN: Pt RTD, 0-600C, 3Hz	OUT: 0-5V
uB35-B	IN: 4W Pt RTD, Config 0-600C	Config ±5V
uB35-01	IN: 4W Pt RTD, ±100C, 3Hz	OUT: 0-5V
uB35-02	IN: 4W Pt RTD, 0-100C, 3Hz	OUT: 0-5V
uB35-03	IN: 4W Pt RTD,0-200C, 3Hz	OUT: 0-5V
uB35-04	IN: 4W Pt RTD, 0-600C, 3Hz	OUT: 0-5V
uB39-B	OUT: Config 0-20mADC, 100Hz	Config: ±5V
uB39-01	OUT: 4-20mA, 100Hz	IN: 0-5V
uB39-02	OUT: 4-20mA, 100Hz	IN: ±5V
uB39-03	OUT: 0-20mA, 100Hz	IN: 0-5V
uB39-04	OUT: 0-20mA, 100Hz	IN: ±5V
uB45-B	IN: Config 0-50KHz Frequency	Config: ±5V
uB45-01	IN: 0-500Hz Frequency	OUT: 0-5V
uB45-02	IN: 0-1K0Hz Frequency	OUT: 0-5V
uB45-03	IN: 0-2.5KHz Frequency	OUT: 0-5V
uB45-04	IN: 0-5KHz Frequency	OUT: 0-5V
uB45-05	IN: 0-10KHz Frequency	OUT: 0-5V
uB45-06	IN: 0-25KHz Frequency	OUT: 0-5V
uB45-07	IN: 0-50KHz Frequency	OUT: 0-5V

MODEL	Field I/O, Min Bandwidth	HOST I/O
uB30-B	IN: Config ±10 to ±100mV, 5Hz	Config ±5V
uB30-01	IN: ±10mV, 5Hz	OUT: ±5V
uB30-02	IN: ±50mV, 5Hz	OUT: ±5V
uB30-03	IN: ±100mV, 5Hz	OUT: ±5V
uB30-04	IN: ±10mV, 5Hz	OUT: 0-5V
uB30-05	IN: ±50mV, 5Hz	OUT: 0-5V
uB30-06	IN: ±100mV, 5Hz	OUT: 0-5V
uB40-B	IN: Config ±10 to ±100mV, 1KHz	Config ±5V
uB40-01	IN: ±10mV, 1KHz	OUT: ±5V
uB40-02	IN: ±50mV, 1KHz	OUT: ±5V
uB40-03	IN: ±100mV, 1KHz	OUT: ±5V
uB40-04	IN: ±10mV, 1KHz	OUT: 0-5V
uB40-05	IN: ±50mV, 1KHz	OUT: 0-5V
uB40-06	IN: ±100mV, 1KHz	OUT: 0-5V
uB42-B	IN: Config 0-20mA w/EXC, 100Hz	Config ±5V
uB42-01	IN: 4-20mA w/ 2-W EXC, 100Hz	OUT: 0-5V
uB42-02	IN: 4-20mA w/ 2-W EXC, 100Hz	OUT: 1-5V
uB37-B	IN: Config J/K/T/R/S Non-Lin, 5Hz	Config ±5V
uB37J	IN: J TC -100-760C, Non-Lin, 5Hz	OUT: 0-5V
uB37K	IN: K TC -100-1350C, Non-Lin, 5Hz	OUT: 0-5V
uB37T	IN: T TC -100-400C, Non-Lin, 5Hz	OUT: 0-5V
uB37R	IN: R TC 0-1750C, Non-Lin, 5Hz	OUT: 0-5V
uB37S	IN: S TC 0-1750C, Non-Lin, 5Hz	OUT: 0-5V
uB47-B	IN: Config TC J/K/T Lin, 5Hz	Config ±5V
uB47J-01	IN: J TC 0-760C, Lin, 5Hz	OUT: 0-5V
uB47J-02	IN: J TC -100-300C, Lin, 5Hz	OUT: 0-5V
uB47J-03	IN: J TC 0-500C, Lin, 5Hz	OUT: 0-5V
uB47J-12	IN: J TC -100-760C, Lin, 5Hz	OUT: 0-5V
uB47K-04	IN: K TC 0-1000C, Lin, 5Hz	OUT: 0-5V
uB47K-05	IN: K TC 0-500C, Lin, 5Hz	OUT: 0-5V
uB47K-13	IN: K TC -100-1350C, Lin, 5Hz	OUT: 0-5V
uB47K-14	IN: K TC 0-1200C, Lin, 5Hz	OUT: 0-5V
uB47T-06	IN: T TC -100-400C, Lin, 5Hz	OUT: 0-5V
uB47T-07	IN: T TC 0-200C, Lin, 5Hz	OUT: 0-5V
uB49-B	OUT: Config to ±10V, 100Hz	Config ±5V
uB49-01	OUT: 0-5V, 100Hz	IN: ±5V
uB49-02	OUT: ±5V, 100Hz	IN: ±5V
uB49-03	OUT: ±5V, 100Hz	IN: 0-5V
uB49-04	OUT: 0-10V, 100Hz	IN: ±10V
uB49-05	OUT: ±10V, 100Hz	IN: ±10V
uB49-06	OUT: ±10V, 100Hz	IN: 0-10V
uB49-07	OUT: ±5V, 100Hz	IN: ±10V
ACCESSORIES		
uBDC1	Non-Isolated, 10-32V: 5V/1A Power Supply	
uB04	4 Channel Panel, Surface Mount Only	
uB04D	4 Channel Panel, Surface or DIN Rail Mount	
uB08	8 Channel Panel, Surface Mount Only	
uB08D	8 Channel Panel, Surface or DIN Rail Mount	
uB16	16 Channel Panel, Surface Mount Only	
uB16D	16 Channel Panel, Surface or DIN Rail Mount	
uBDN4	uB04 Surface to DIN Rail Mount Conversion Kit	
uBDN8	uB08 Surface to DIN Rail Mount Conversion Kit	
uBDN16	uB16 Surface to DIN Rail Mount Conversion Kit	
5025-350	AC Current Sensor, 0-11.17mADC Output	

microBlox MODULE DIMENSIONS



OPTIONAL AC CURRENT SENSOR 5020-350 FOR USE WITH uB32-3 OR uB32-B MODELS

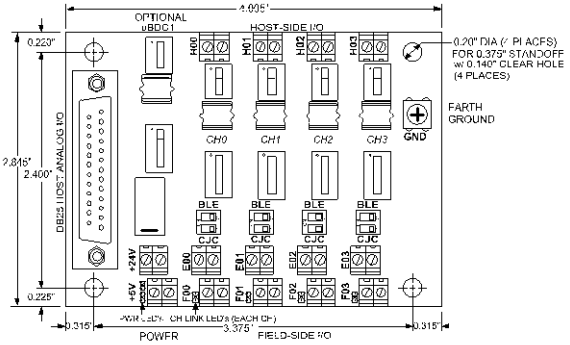


AC INPUT CURRENT IS A SIMPLE FUNCTION OF PRIMARY TURNS

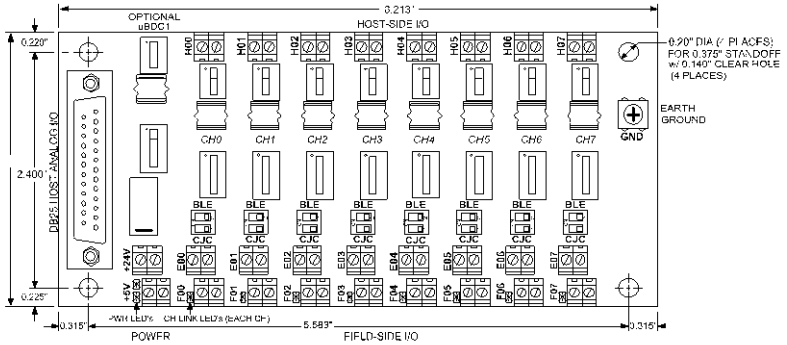
PRIMARY TURNS	AC CURRENT INPUT
N=1	0-20A
N=2	0-10A
N=4	0-5A
N=10	0-2A
N=20	0-1A

SENSOR OUTPUT CURRENT IS ALWAYS 0 TO 11.17mA DC

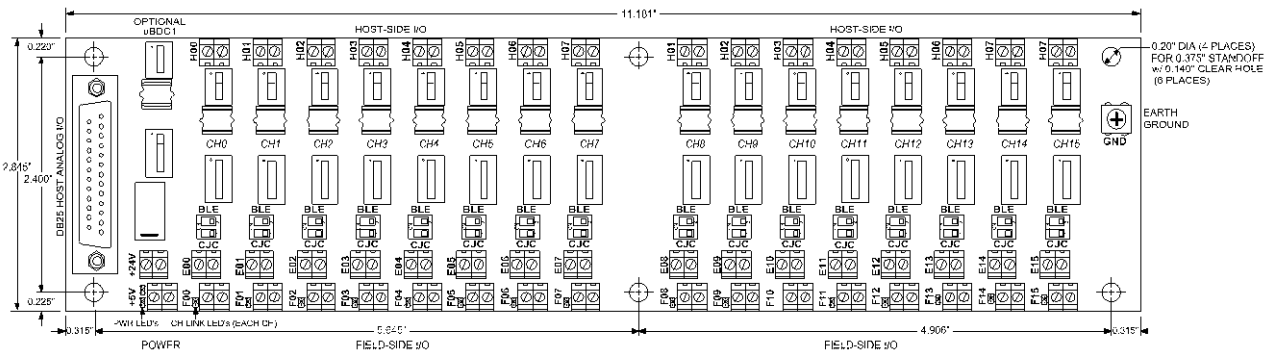
uB04 BACK-PANEL DIMENSIONS



uB08 BACK-PANEL DIMENSIONS



uB16 BACK-PANEL DIMENSIONS



Please refer to the following reference documents for detailed specific-model microBlox™ information:

REFERENCE	DESCRIPTION
8501-037	uB31 & uB41 Voltage Input User Manual
8501-039	uB39 Current Output User Manual
8501-040	uB30 & uB40 mV Input User Manual
8501-041	uB32 DC Current Input User Manual
8501-042	uB42 DC Current Input w/2-Wire Excitation User Manual
8501-043	uB34 2/3-Wire & uB35 4-Wire RTD Input User's Manual
8501-044	Introduction to Acromag Agility Configuration Tool for microBlox
8501-045	uB45 Frequency Input User Manual
8501-047	uB37 & uB47 TC Input User Manual
8501-048	uBDC-1 Power Supply User Manual
8501-049	uB49 Voltage Output User Manual
8501-050	uB04/uB08/uB16 Back-Panel User Manual
8501-074	uBDN4/uBDN8/uBDN16 Surface-to-DIN Rail Conversion Kit Instructions
8501-079	uBTA-H-1x Single Transmitter/Alarm Carrier for microBlox™
8501-080	uBTA-P-1x Single Transmitter/Alarm Carrier for microBlox™
8501-081	uBTA-P-2x Dual Transmitter/Alarm Carrier for microBlox™
8501-109	uBSP-P-1 uB Module Panel Splitter to Dual Isolated I/V Outputs

Revision History for this Document:

Release Date	Version	EGR/DOC	Description of Revision
01 APR 2016	A	BC/MJO	Initial Release
27 JUN 2016	B	CAP/MJO	Updating with UL and Atex Agency Approvals
30-OCT-2017	C	BC/MJO	Formatting, reduce pages, add uBTA & uBSP manual ref