

## Product Datasheet - Technical Specifications



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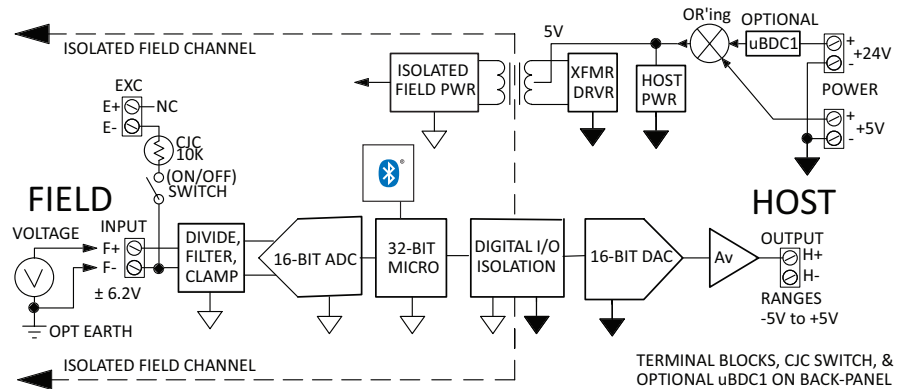
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# Signal Conditioners: microBlox™ Series

**uB31/41** DC Voltage Field Input



**Bluetooth®**



**Bluetooth® wireless configuration option ♦ Narrow or wide band voltage field input ♦ Host voltage output**

## Description

**Field Input:** ±1V to ±60V ranges  
**Host Output:** 0-5V or ±5V ranges

Acromag's microBlox™ uB Series I/O modules offer a compact, high-performance solution for interfacing sensors and field devices with data acquisition systems. uB signal conditioning modules are ideal to isolate, filter, convert and amplify a wide variety of signal types for test, measurement and control systems. Just plug uB modules into 4, 8, or 16-channel backpanels in any mix for a high-density analog I/O interface. Channel-to-channel isolation provides optimal noise and surge protection from ground loops, spikes, and high common mode voltages

The uB31 and uB41 models condition and convert a high-level DC voltage field input signal to a scaled 0-5V or ±5V output. The uB31 has more filtering for low-band applications, while the uB41 relaxes filtering for higher speed applications. uB31 modules are recommended for noisier environments where conversion speed is less of a concern. uB41 modules drive a faster response, but with less filtering for noise.

Bluetooth wireless technology versions enable configuration using a smart phone or tablet. Acromag's Agility™ app, available for Android™ and iOS® mobile devices, helps you vary input/output ranges and scaling to your specific application. The Agility app. can also set an alarm output function with a setpoint limit and deadband. Other app functions include polling inputs, trending values in a sharable chart, updating calibration, and diagnostic troubleshooting.

For cost-sensitive projects, a commercial-grade version is available (-CG models). These units offer similar performance, but over a limited temperature range and lack hazloc approvals.

Backpanels provide power, I/O wiring terminals, and host access to an industry-standard analog signal bus. Modules are hot-swappable without screws. Data acquisition boards can access all host I/O signals on the DB25 bus connector.



## Key Features & Benefits

- Wide variety of input and output ranges
- Mixes with different I/O types on compact 4, 8, or 16 channel backpanels
- Select fixed I/O range models or Bluetooth wireless technology user-configurable models
- Cost-saving commercial-grade versions available for less demanding applications
- Android® and iOS® apps simplify wireless configuration with a smartphone or tablet
- Mobile app configures I/O ranges, sets scaling, calibrates and performs diagnostics
- Optional alarm function with setpoint and deadband control driving 0/5V host output
- Poll and trend I/O values to sharable charts
- High accuracy, noise immunity, and stability
- Isolated field-to-host and channel-to-channel (1500Vac peak, 250Vac/354Vdc continuous)
- Over-molded I/O circuits offer superior shock, vibration, moisture, and dust protection.
- Wide operating temperature range
- UL/cUL Class I, Div 2, ABCD and ATEX Zone 2 hazardous location approvals

ISO9001  
 AS9100 

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## uB31/41 DC Voltage Field Input

### Performance Specifications

See Backpanels for additional system specifications.

#### Field Input

##### Field Range

Fixed ranges: ±1V to ±60V

User-configurable -B models: DC ranges up to ±60V

##### Resolution

16-bit ADC ±1V: 1/27395

±5V/±10V/±20V/±40V: 1/34244. ±60: 1/51366

##### Resistance

203.32KΩ (via resistive input divider x0.0163)

##### Input Sample Rate

uB31: 40sps

uB41: 2000sps

##### Normal Mode (Bandwidth)

uB31: -3dB at 4Hz

uB41: -3dB at 1KHz

##### Common Mode Rejection

103dB typical, 50-60Hz

#### Host Output

##### Host Range

Fixed ranges: 0-5V or ±5V DC

User-configurable -B models: ±5V

##### Resolution

16-bit DAC, 0-5V: 1/26305. ±5VDC: 1/52610

##### Current Drive.

5V into 1KΩ minimum or 5mA max

##### Response Time.

uB31: Output Step 0-98% in 200ms

uB41: Output step 0-98% in 2ms

#### General

##### Power Consumption

Up to 0.25W, or 50mA max. from 5V

##### I/O Resolution

Effective resolution is the least of input (A/D) and output (D/A) resolution: uBx1-01/-04: 1/27395

uBx1-02/-03: 1/34244. uBx1-04/-05/-06: 1/26305

uBx1-07: 1/34244. uBx1-08/-10/-13: 1/26305

uBx1-09/-12: 1/51366

##### Accuracy

Better than ±0.1%. 0.05% typical

-CG models: Better than ±0.125%. 0.075% typical

##### Non-Linearity

Better than ±0.05%, typical

##### Noise

Less than 0.03% of 10V span p-p rms

##### Ambient Effect

Less than ±80ppm/°C

##### Dimensions

Height: 1.380" with connectors, 0.970" without

Width: 0.425". Length: 1.425"

#### Environmental

##### Operating Temperature

-40 to 80°C (-40° to 176°F)

-CG models: 0 to 55°C (32 to 131°F)

##### Storage Temperature

-40 to 85°C (-40° to 185°F)

##### Relative Humidity

0 to 95% non-condensing

##### Power Requirement

5V powered. 10-32V power optional

(requires uBDC-1 power module & backpanel.)

##### Safety Isolation

Field channels are individually isolated field channel-to-field channel and from the field to the host I/O bus (host group includes 5V power) for common-mode voltages up to 250V AC, 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 and Vibration Immunity

Conforms to:

IEC 60068-2-6: 10-500 Hz, 4G, 2 hours/axis, for sinusoidal vibration.

IEC 60068-2-64: 10-500 Hz, 4G-rms, 2 hours/axis, for random vibration.

EC 60068-2-27: 25G, 11ms half-sine, 18 shocks at 6 orientations, for mechanical shock.

##### Electromagnetic Compatibility (EMC) Compliance

Minimum immunity per BS EN 61000-6-1 (2007):

CE marked, per EMC Directive 2004/108/EC.

Electrostatic Discharge Immunity (ESD), per IEC 61000-4-2

Radiated Field Immunity (RFI), per IEC 61000-4-4

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  
Class B product with emissions per BS EN 61000-6-3 (2007+A1:2011): enclosure port, per CISPR 16.

Low voltage AC mains port, per CISPR 16.

##### Approvals

CE compliant. RoHS Compliant.

UL/cUL Class 1, Division 2, Groups ABCD.

ATEX Zone 2. No UL or ATEX on -CG models.

### Ordering Information

To order commercial grade modules & backpanels append with -CG (except -B & UBDC-1 models), e.g. uB31-01-CG. Note: -CG modules should be paired with only -CG panels.

Model (4Hz)	Model (1KHz)	Field Input	Host Output
<a href="#">uB31-01</a>	<a href="#">uB41-01</a>	-1V to +1V	±5V
<a href="#">uB31-02</a>	<a href="#">uB41-02</a>	-5V to +5V	±5V
<a href="#">uB31-03</a>	<a href="#">uB41-03</a>	-10V to +10V	±5V
<a href="#">uB31-04</a>	<a href="#">uB41-04</a>	-1V to +1V	0 to +5V
<a href="#">uB31-05</a>	<a href="#">uB41-05</a>	-5V to +5V	0 to +5V
<a href="#">uB31-06</a>	<a href="#">uB41-06</a>	-10V to +10V	0 to +5V
<a href="#">uB31-07</a>	<a href="#">uB41-07</a>	-20V to +20V	±5V
<a href="#">uB31-08</a>	<a href="#">uB41-08</a>	-20V to +20V	0 to +5V
<a href="#">uB31-09</a>	<a href="#">uB41-09</a>	-40V to +40V	±5V
<a href="#">uB31-10</a>	<a href="#">uB41-10</a>	-40V to +40V	0 to +5V
<a href="#">uB31-12</a>	<a href="#">uB41-12</a>	-60V to +60V	±5V
<a href="#">uB31-13</a>	<a href="#">uB41-13</a>	-60V to +60V	0 to +5V
<a href="#">uB31-B</a>	<a href="#">uB41-B</a>	Config. ±1V to ±60V DC	Config. ±5V

### Configuration using Agility™ Config. Tool via Bluetooth technology

The [Acromag Agility™](#) configuration tool is a mobile application that allows easy setup, calibration, and reconfiguration of microBlox™ I/O modules.

Bluetooth wireless technology microBlox™ modules (-B models) allow their input and output ranges to be wirelessly reconfigured and calibrated using a smart phone or tablet. This mobile app. supports smart devices with Android 4.3 or later or iOS 5.0 or later. You can download the Agility application free of charge from the Google Play™ store at [play.google.com](#) (Android), or the Apple® App. Store® at [itunes.apple.com](#) (Apple iOS).

### Accessories

Model	Description
<a href="#">uBDC1</a>	10-32V, non-isolated: 5V/1A power supply
<a href="#">uB04</a>	4 channel panel, surface mount
<a href="#">uB04D</a>	4 channel panel, DIN rail mount
<a href="#">uB08</a>	8 channel panel, surface mount
<a href="#">uB08D</a>	8 channel panel, DIN rail mount
<a href="#">uB16</a>	16 channel panel, surface mount


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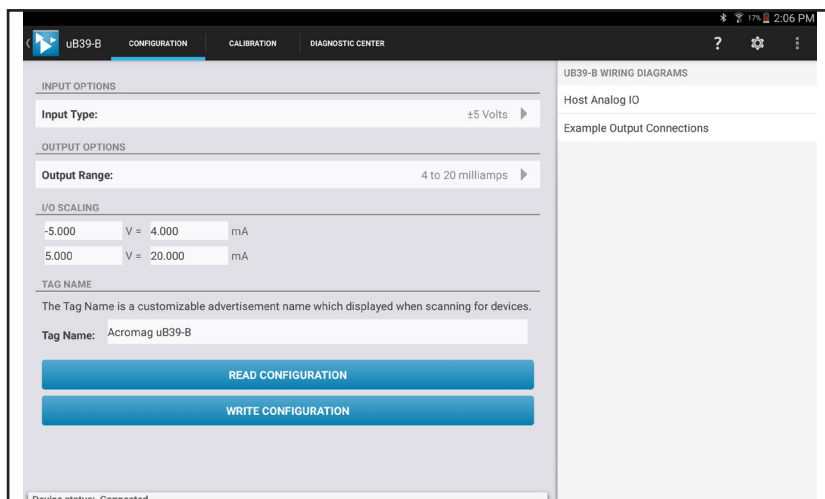
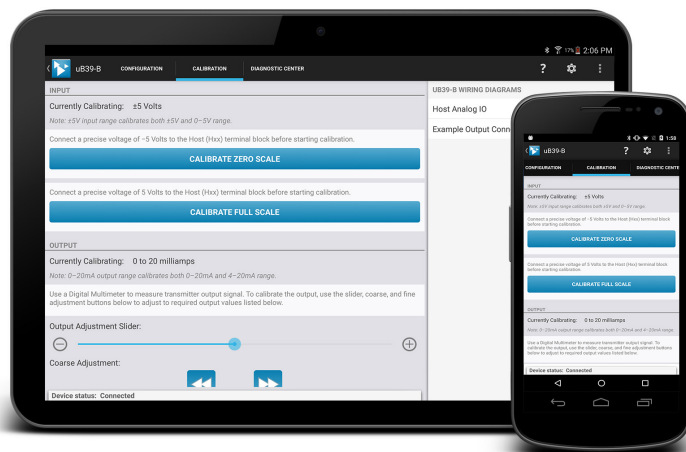
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## Acromag Agility™ Config Tool Mobile Application

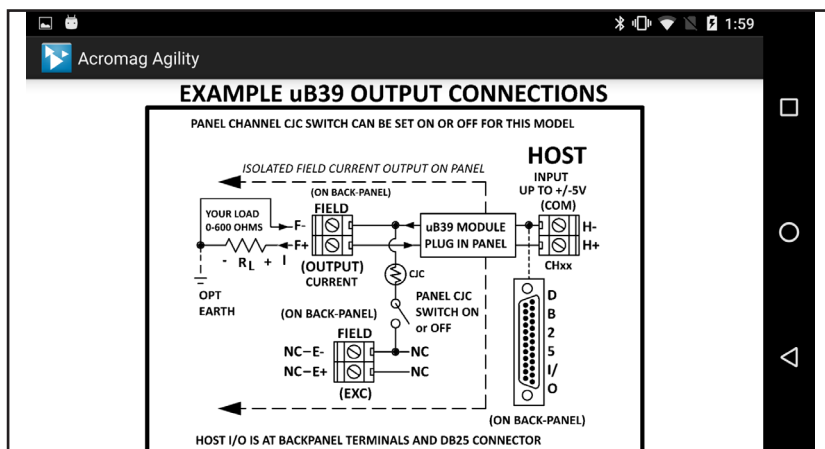
The Agility™ Config Tool is a mobile application that allows easy setup and configuration of Acromag microBlox® Series signal conditioners and alarms.

You can download the Agility application free of charge from the Google Play™ store at [play.google.com](http://play.google.com) (Android), or the Apple® App Store® at [itunes.apple.com](http://itunes.apple.com) (Apple iOS).

Demo the software, no need for a module. To enter demo mode simply tap the  icon in the upper left corner 8 times.



With a couple of taps, quickly configure input, output, unit and scaling options.



Quick and easy access to the wiring diagram, even offline without internet access.

### Key Features & Benefits

- Connects to microBlox signal conditioners via Bluetooth wireless technology
- Requires the use of a smart device
- Configures and calibrates microBlox UB Series products via phone or tablet running Android 4.3 or later or iOS 8.1 or later.
- View wiring diagrams, even without an internet connection
- Perform quick and easy field diagnostics and troubleshooting
- Ideal for field technicians
- Trend and share field data

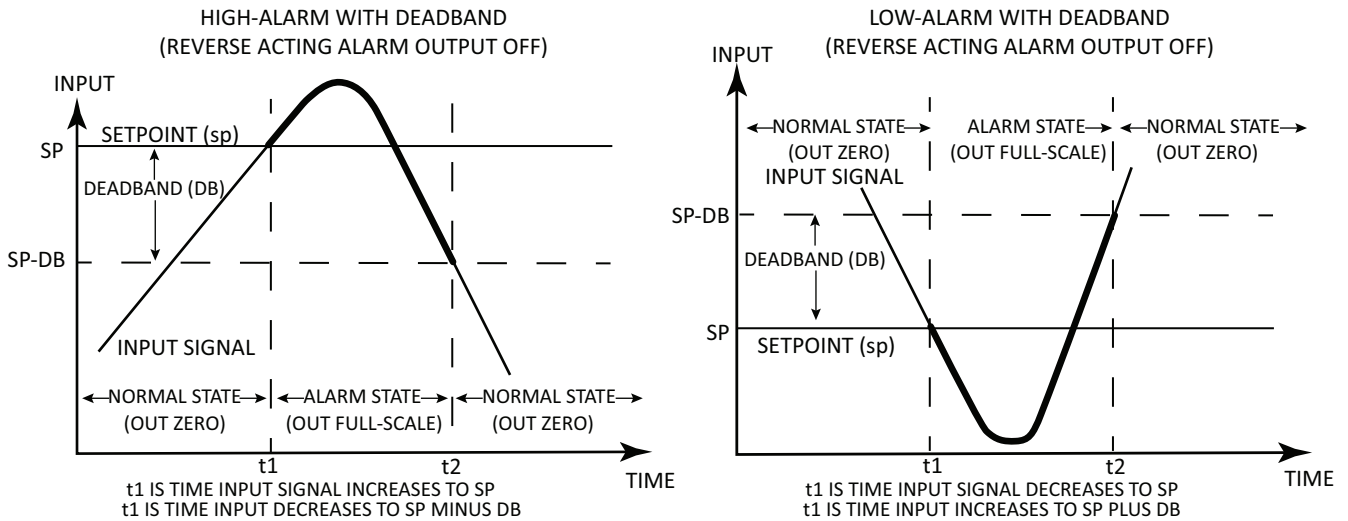




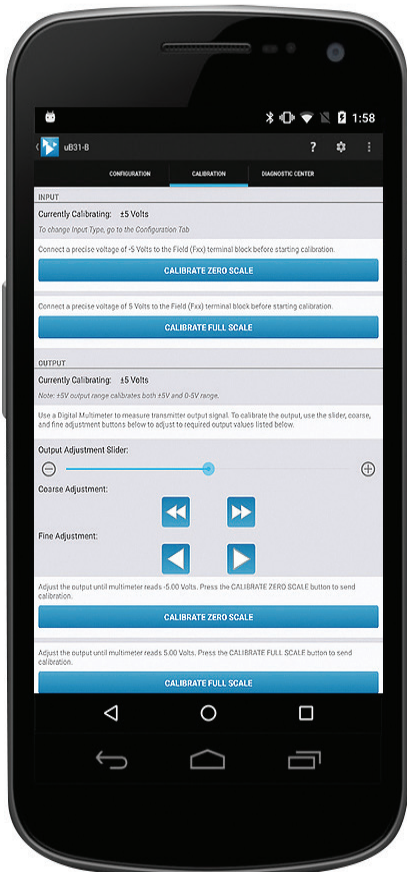
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## Acromag Agility™ Config Tool Mobile Application

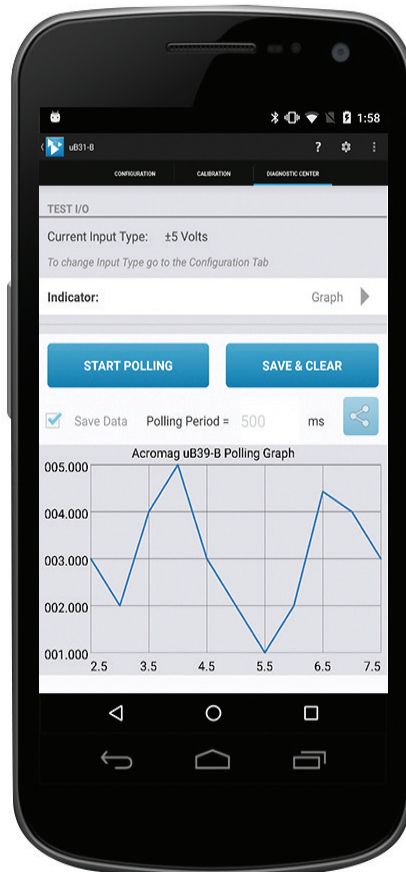
### Alarm Function



### Calibration



### Data Logging



### Diagnostics

