

## Product Datasheet - Technical Specifications



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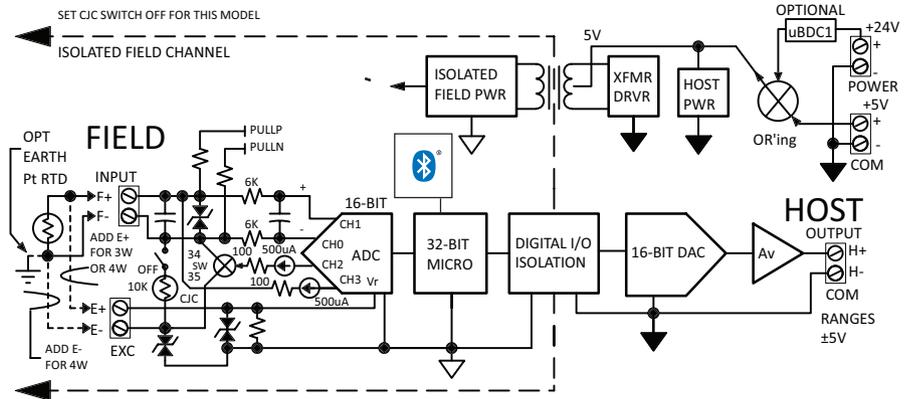
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# Signal Conditioners: microBlox™ Series

## uB34/uB35 Platinum RTD Field Input



Bluetooth® wireless configuration option ♦ Platinum RTD (2,3, or 4-wire) field input ♦ Voltage host output

### Description

**Field Input:** -100 to +100°C or 0 to 600°C ranges, 3Hz  
**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 uB34 and uB35 models condition and convert a Platinum RTD sensor or resistance signal to a scaled 0-5V or ±5V output. For two and three-wire RTDs, use the uB34. Four-wire RTDs use the uB35. Both models provide sensor excitation, linearization, lead-wire compensation, lead-break or sensor burnout protection, and input isolation.

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 1, Div 2, ABCD and ATEX Zone 2 hazardous location approvals

ISO9001  
AS9100 MADE IN USA

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# Signal Conditioners: microBlox™ Series

## uB34/uB35 Platinum RTD Field Input

### Performance Specifications

See Backpanels for additional system specifications.

#### Field Input

##### Field Range

Fixed ranges:  $\pm 100^{\circ}\text{C}$  or 0-100/200/600 $^{\circ}\text{C}$ .  
User-configurable -B models: inside  $-200^{\circ}\text{C}$  to  $+850^{\circ}\text{C}$  range limits for 100 $\Omega$  Pt RTD sensors, or linear resistance.

##### Resolution

16-bit ADC. uB34-01: 1/12431. uB34-02: 1/6118  
uB34-03: 1/12052. uB34-04: 1/16976

##### Resistance

100M $\Omega$

##### Excitation

uB35: 500uA  
uB34: 1mA (Dual matched 500uA sources at  $\pm$  leads).

##### Lead-Wire Compensation

Up to 25 $\Omega$ /lead and requires balanced  $\pm$ sensor leads (same size, length, type).

##### Lead Resistance Effect

Less than  $\pm 0.01\%$  of output shift per ohm of lead resistance with a maximum shift less than  $\pm 0.1\%$  for up to 10 $\Omega$  per  $\pm$ lead.

##### Lead Break Detection

-B model: Upscale, or selectable upscale/downscale

##### Input Sample Rate

40sps

##### Normal Mode (Bandwidth)

-3dB at 3Hz, typical

##### Protection

TVS & diode clamps built-in plus additional protection on back-panel

##### Common Mode Rejection

130dB typical, 50-60Hz

#### Host Output

##### Host Range

Fixed ranges: 0-5V per range model.  
User-configurable -B models: 0-5V/ $\pm 5\text{V}$  selectable.

##### Resolution

16-bit DAC, 0-5V: 1/26305.  $\pm 5\text{V}$ : 1/52610

##### Current Drive

5V into 1K $\Omega$  minimum or 5mA maximum

##### Response Time

Output Step 0-98% in 250ms, typical/

#### General

##### Power Consumption

0.23W, or 46mA from +5V maximum

##### I/O Resolution

Effective resolution is least of input (A/D) & output (D/A) resolution (see Input).

##### Non-Linearity

Better than  $\pm 0.05\%$ , typical

##### Accuracy

Better than  $\pm 0.1\%$ . 0.05% typical.  
-CG models: Better than  $\pm 0.125\%$ . 0.075% typical.

##### Noise

Better than 0.06% of span p-p rms

##### Ambient Effect

Better than  $\pm 80\text{ppm}/^{\circ}\text{C}$

##### Dimensions

Height: 1.380" with connectors, 0.970" without  
Width: 0.425" Length: 1.425"

#### Environmental

##### Operating Temperature

-40 to 80 $^{\circ}\text{C}$  (-40 $^{\circ}$  to 176 $^{\circ}\text{F}$ )  
-CG models: 0 to 55 $^{\circ}\text{C}$  (32 to 131 $^{\circ}\text{F}$ )

##### Storage Temperature

-40 to 85 $^{\circ}\text{C}$  (-40 $^{\circ}$  to 185 $^{\circ}\text{F}$ )

##### 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. uB34-01-CG. Note: -CG modules should be paired with only -CG panels.

Model (2/3 Wire)	Model (4-WIRE)	FIELD INPUT	HOST OUTPUT
<a href="#">uB34-01</a>	<a href="#">uB35-01</a>	$\pm 100^{\circ}\text{C}$	0-5V DC
<a href="#">uB34-02</a>	<a href="#">uB35-02</a>	0 $^{\circ}\text{C}$ to $+100^{\circ}\text{C}$	0-5V DC
<a href="#">uB34-03</a>	<a href="#">uB35-03</a>	0 $^{\circ}\text{C}$ to $+200^{\circ}\text{C}$	0-5V DC
<a href="#">uB34-04</a>	<a href="#">uB35-04</a>	0 $^{\circ}\text{C}$ to $+600^{\circ}\text{C}$	0-5V DC
<a href="#">uB34-B</a>	<a href="#">uB35-B</a>	Config. $-200^{\circ}\text{C}$ to $+850^{\circ}\text{C}$	Config. $\pm 5\text{V}$

### 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
<a href="#">uB16D</a>	16 channel panel, DIN rail mount

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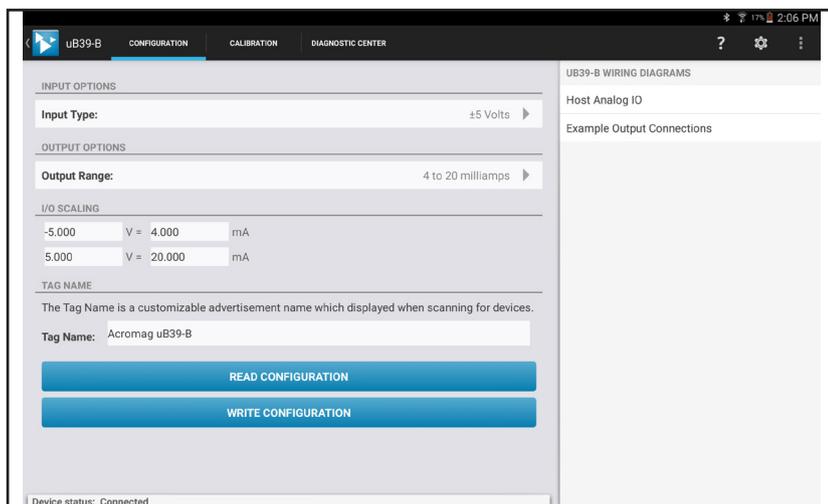
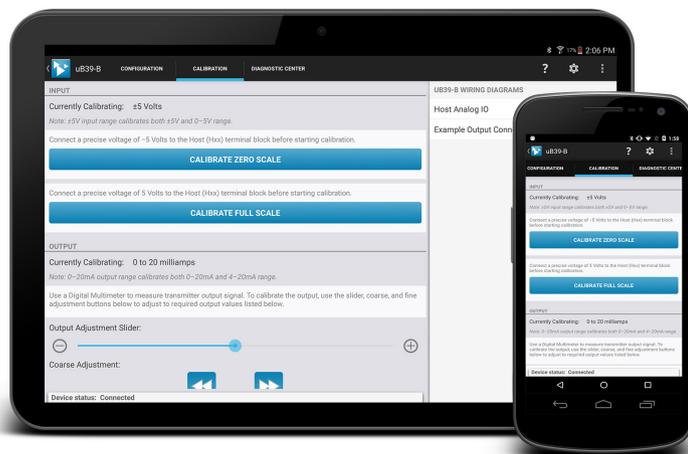
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## Acromag Agility™ Config Tool Mobile Application

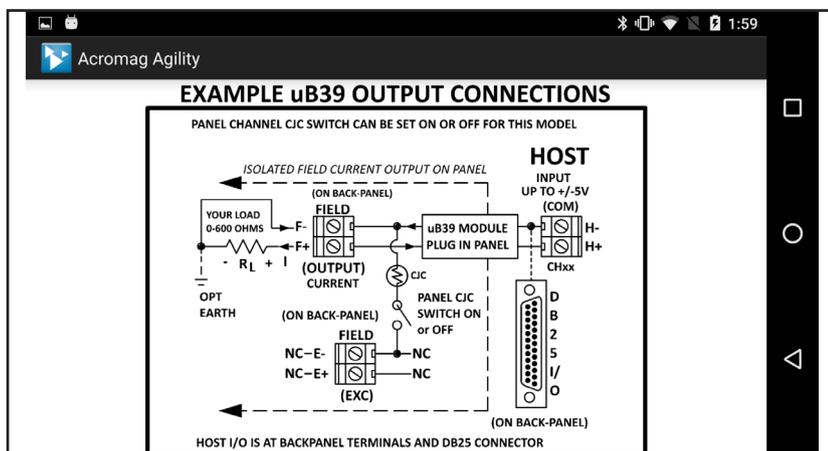
The Agility™ Config Tool is a mobile application that allows easy setup and configuration of Acromag microBlox® Series signal conditioners and alarms.

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.



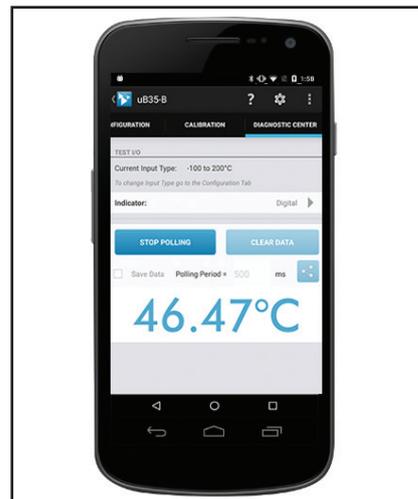
With a couple of taps, quickly configure input, output, unit and scaling options.



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

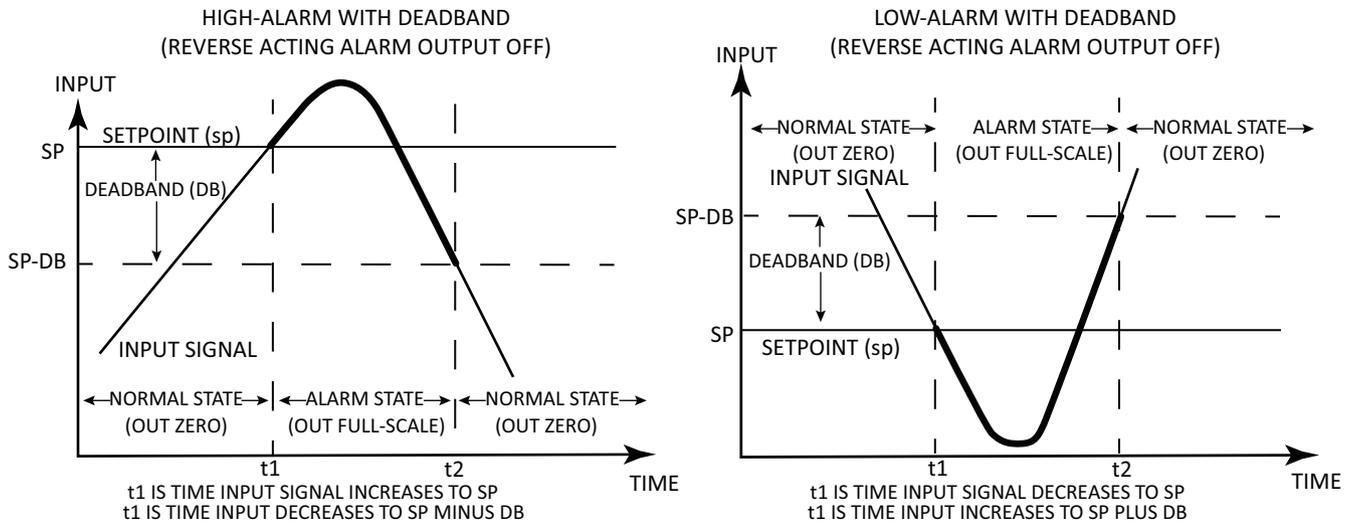


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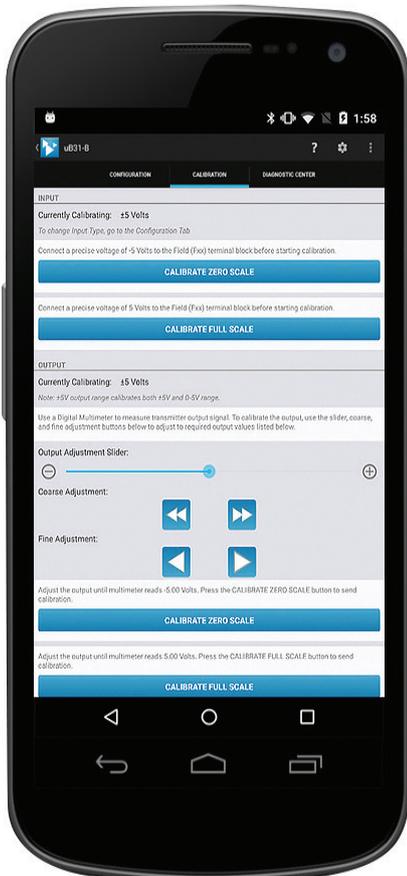
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## Acromag Agility™ Config Tool Mobile Application

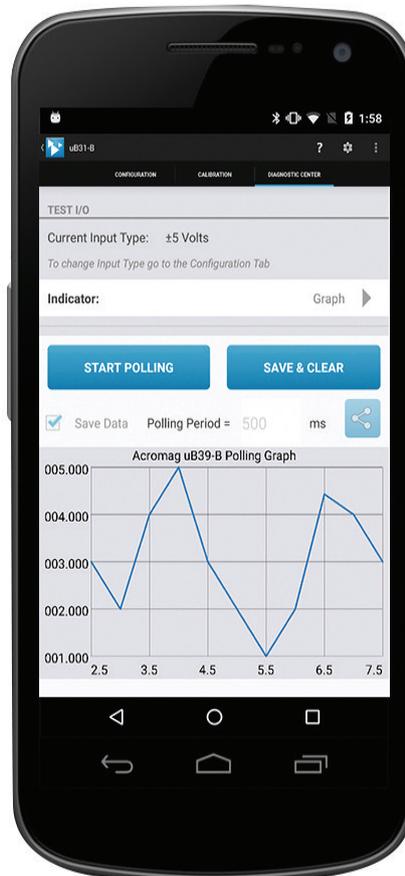
### Alarm Function



### Calibration



### Data Logging



### Diagnostics

