Product Datasheet - Technical Specifications

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Your contact

Technical and commercial sales, price information, quotations, demo/test equipment, consulting:

Tel.:   **+49 - 81 41 - 52 71-0**

FAX: **+49 - 81 41 - 52 71-129**

E-Mail: **sales@meilhaus.com**

Downloads:
www.meilhaus.com/en/infos/download.htm

www.meilhaus.de

uB39 DC Current Field Output

Bluetooth
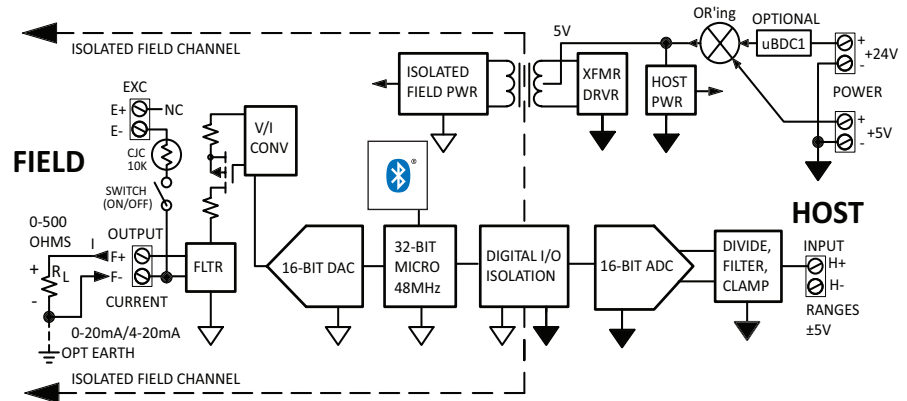
Bluetooth® wireless configuration option ◆ DC current field output ◆ Voltage host input

Description

Host Input: ±5V or 0-5V ranges
Field Output: 0-20mA or 4-20mA DC 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 uB39 model converts a 0-5V or ±5V signal received from the host system to drive a scaled process current field output signal. It functions like an isolated, voltage-controlled current source to drive field instruments.

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 shareable 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

MADE IN USA

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uB39 DC Current Field Output

Performance Specifications

See Backpanels for additional system specifications.

■ Host Input

Host Range
Fixed ranges: ±5V or 0-5V
User-configurable -B models: ±5V

A/D Resolution
16-bit A/D. ±5V: 1/58886. 0-5V: 1/29442

Input Resistance
111.4KΩ

Input Sample Rate
1200sps

Normal Mode (Bandwidth)
100Hz. -3dB at 110Hz typical

Protection
TVS & diode clamps built-in

■ Field Output

Field Range
0-20mA or 4-20mA DC, per model.
User-configurable -B models: 0-20mA

D/A Resolution
4-20mA: 1/47395. 0-20mA: 1/59244

Output Maximum
21.5mA, typical

Response Time
Output Step 0-98% into 250Ω load in 7ms, typical

■ General

Power Consumption
Output 0mA: 0.18W max. or 35mA max. from +5V
Output 20mA: 0.59W max. or 117mA max. from +5V

Resolution
Effective resolution is the least of input (A/D) or output (D/A) resolution.
uB39-01: 1/29442
uB39-02: 1/47395
uB39-03: 1/59244
uB39-04: 1/59244

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 0.08% of span p-p, rms

Ambient Effect
Less than ±80ppm/°C

Common Mode Rejection
100dB typical, 50-60Hz

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 uBDC1 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. uB39-01-CG. Note: -CG modules should be paired with only -CG panels.

Model	Field Output	Host Input
uB39-01	4mA to 20mA DC	0-5V DC
uB39-02	4mA to 20mA DC	±5V DC
uB39-03	0 to 20mA DC	0-5V DC
uB39-04	0 to 20mA DC	±5V DC
uB39-B	Configurable 0 to 20mA	Configurable ±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 technolgy 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
uBDC1	Non-isolated, 10-32V: 5V/1A power supply
uB04	4 channel panel, surface mount
uB04D	4 channel panel, DIN rail mount
uB08	8 channel panel, surface mount
uB08D	8 channel panel, DIN rail mount
uB16	16 channel panel, surface mount
uB16D	16 channel panel, DIN rail mount

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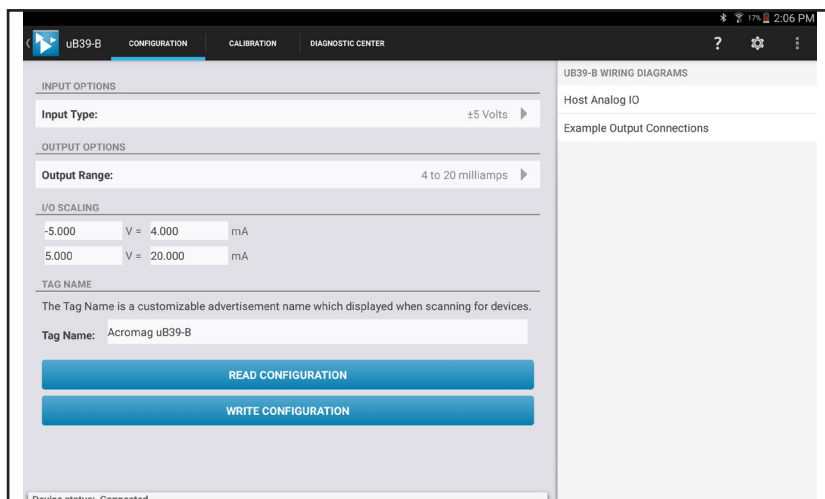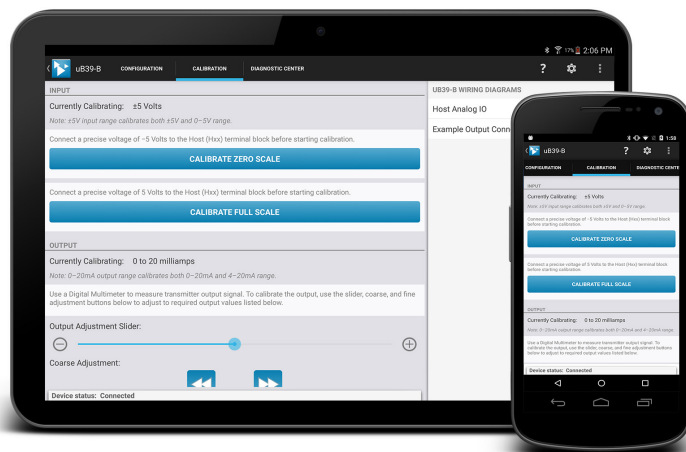
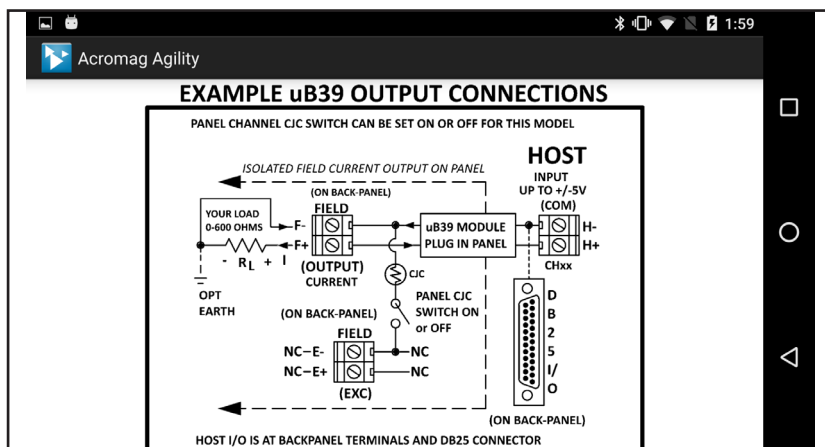## Acromag Agility™ Config Tool Mobile Application

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 (Android), or the Apple® App Store® at 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.
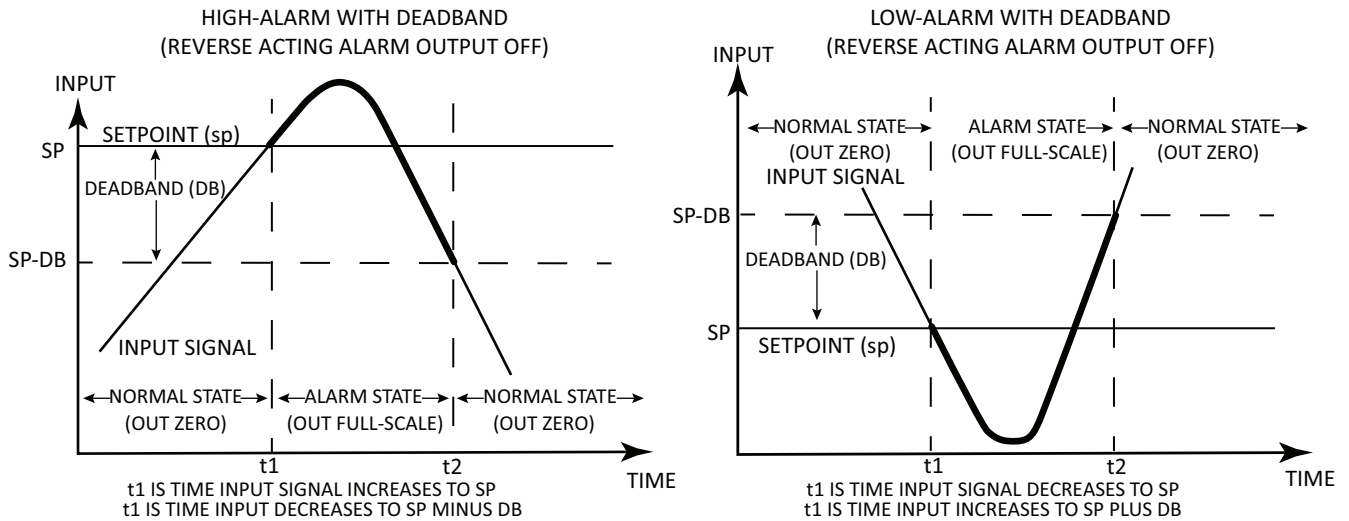

Key Features & Benefits

- 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
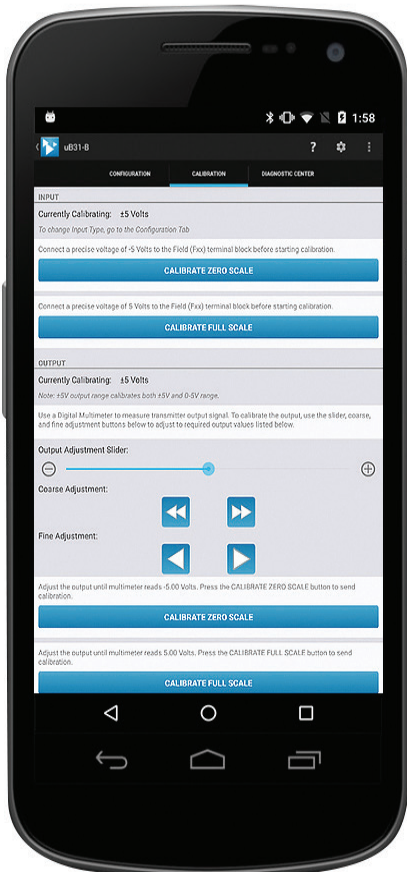- Trend and share field data

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.

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Signal Conditioners: microBlox™ Series

Acromag Agility™ Config Tool Mobile Application

Alarm Function

HIGH-ALARM WITH DEADBAND
(REVERSE ACTING ALARM OUTPUT OFF)

INPUT
SP — SETPOINT (sp)
DEADBAND (DB)
SP-DB
INPUT SIGNAL

←NORMAL STATE→ ←ALARM STATE→ ←NORMAL STATE→
(OUT ZERO) (OUT FULL-SCALE) (OUT ZERO)

t1   t2   TIME

t1 IS TIME INPUT SIGNAL INCREASES TO SP
t1 IS TIME INPUT DECREASES TO SP MINUS DB

LOW-ALARM WITH DEADBAND
(REVERSE ACTING ALARM OUTPUT OFF)

INPUT

←NORMAL STATE→ ←ALARM STATE→ ←NORMAL STATE→
(OUT ZERO) (OUT FULL-SCALE) (OUT ZERO)
INPUT SIGNAL

SP-DB
DEADBAND (DB)
SP — SETPOINT (sp)

t1   t2   TIME

t1 IS TIME INPUT SIGNAL DECREASES TO SP
t1 IS TIME INPUT INCREASES TO SP PLUS DB

Calibration
Data Logging
Diagnostics