

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

DC Voltage INPUT uB31 (Narrowband) & uB41 (Wideband)

NARROW	WIDE	FIELD (INPUT)	HOST (OUTPUT)
uB31-01, 4Hz	uB41-01, 1KHz	-1V to +1V	-5V to +5V
uB31-02, 4Hz	uB41-02, 1KHz	-5V to +5V	-5V to +5V
uB31-03, 4Hz	uB41-03, 1KHz	-10V to +10V	-5V to +5V
uB31-04, 4Hz	uB41-04, 1KHz	-1V to +1V	0 to +5V
uB31-05, 4Hz	uB41-05, 1KHz	-5V to +5V	0 to +5V
uB31-06, 4Hz	uB41-06, 1KHz	-10V to +10V	0 to +5V
uB31-07, 4Hz	uB41-07, 1KHz	-20V to +20V	-5V to +5V
uB31-08, 4Hz	uB41-08, 1KHz	-20V to +20V	0 to +5V
uB31-09, 4Hz	uB41-09, 1KHz	-40V to +40V	-5V to +5V
uB31-10, 4Hz	uB41-10, 1KHz	-40V to +40V	0 to +5V
uB31-12, 4Hz	uB41-12, 1KHz	-60V to +60V	-5V to +5V
uB31-13, 4Hz	uB41-13, 1KHz	-60V to +60V	0 to +5V
uB31-B, 4Hz	uB41-B, 1KHz	Pgm ±1V to ±60V DC	Pgm Any -5V to +5V



Add model suffix “-CG” to specify Commercial Grade model with 0°C to 55°C operating temperature, ±0.125% accuracy, and no hazardous location approvals.

The microBlox™ modules offer a flexible space-saving solution for isolating, monitoring, and driving industrial process signals to interface with modern data acquisition systems. Individual microBlox™ modules plug into 4, 8, or 16 channel carriers in any mix to build flexible high-density analog I/O systems. Bluetooth wireless technology enabled versions allow input polling & trending, and input/output ranges to be wirelessly configured to your specific application using a smart phone or tablet. All microBlox™ components have a high immunity to harsh industrial environments, are CE & ATEX compliant, and UL approved for installation in Class I, Division II hazardous locations (pending).

The uB31 & uB41 models isolate a high-level DC voltage field input to an industry-standard host analog signal bus for the I/O ranges indicated in the Table above. The uB31 has higher filtering for signals below 4Hz, while the uB41 relaxes filtering somewhat for a wider signal bandwidth useful for high-speed applications up to 1KHz. See similar uB30/40 models for low-level (millivolt) ranges below 1V.

INPUT (FIELD)

Field Range:	Fixed DC Voltage ranges from ±1V to ±60V (see Table) and programmable voltage ranges from ±1V to ±60V (“-B”). Channel CJC switch can be ON or OFF for this model.
Resolution:	16-bit bipolar ADC, ±1V: 1/27395; ±5V/±10V/±20V/±40V: 1/34244; ±60V: 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 typical; uB41: -3dB at 1KHz typical.
Protection:	TVS & Diode Clamps built-in, plus additional protection on back-panel.
Common Mode Rejection:	130dB typical, 50-60Hz.

OUTPUT (HOST)

Host Range:	0-5V or ±5V DC per model, or programmable from -5V to +5V (“-B” models).
Resolution:	16-bit DAC, 0-5V: 1/26305; ±5VDC: 1/52610.
Current Drive:	5V into 1KΩ minimum or 5mA max load.
Response Time:	Output Step 0-98% in 200ms (uB31) or 2ms (uB41).

GENERAL I/O

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%. “-CG” model: Better than ±0.125%.
Non-Linearity:	Better than ±0.05%.
Noise:	Less than 0.03% of 10V span p-p rms (uB31 or uB41).
Ambient Effect:	Less than ±80ppm/°C.
MTBF:	Consult Factory.

PANEL CHANNEL C/JC SWITCH CAN BE SET ON OR OFF FOR THIS MODEL

(ON BACK-PANEL)
FIELD
NC — E+ — NC
NC — E- — NC
FIELD (EXC)
CJC Thermistor 10K
SWITCH ON or OFF (ON BACK-PANEL)
VOLTAGE -6.2V to +6.2V
F+ —
F- — (INPUT)
(ON BACK-PANEL)
EARTH (SEE NOTE 2)

3.3V
"-B" SUFFIX MODELS ONLY
BLE RADIO
SOCKET
32-BIT MICRO
1.25V REF
JTAG
SPI PGM SKT
RST GEN

16-BIT ADC
200K
3.32K
-2.5V

POWER
+24V
COMMON
+5V
COMMON
(ON BACK-PANEL)
MODULE
OPTION uBDC1
(ON BACK-PANEL)
PWR OR'ing
5V
XFMR DRVR
+5V
3.3V LDO
-5V
-2.5V LDO
3.3V
3x DIGITAL ISOLATOR

HOST
(ON BACK-PANEL)
HOST
COMMON
(OUTPUT)
+10V
Av
0-2.5V
-10V
16-BIT DAC
5V
3

ISOLATED HOST

NOTE 1: FILTERING, CLAMPING, & TRANSIENT PROTECTION CIRCUITRY NOT SHOWN FOR SIMPLIFICATION. FIELD CHANNELS ISOLATED FROM HOST & FIELD CHANNEL TO CHANNEL. HOST CHANNELS SHARE A COMMON AND 5V POWER CONNECTION. SOME CIRCUITRY SHOWN LOCATED ON BACK-PANEL (BOLD OUTLINE ELEMENTS LOCATED ON MODULE).

NOTE 2: INPUT CIRCUIT SHOULD BE EARTH GROUNDED AT ONE POINT. DO NOT ADD EARTH GROUND IF SIGNAL SOURCE IS ALREADY EARTH GROUNDING.

Technical drawing of the back-side view of a module, showing dimensions and labels:

- TOP VIEW:** Dimensions are 1.425" (width) and 0.425" (height).
- BACK-SIDE VIEW:**
 - NOTE:** MODULE SITS 1.400" TALL IN BACK-PANEL SOCKET.
 - EDGE VIEW:** Shows the side profile of the module.
 - 0.384" MTG FOOT:** Dimension for the mounting foot.
 - 0.266"**: Dimension for the mounting foot.
 - 0.970"**: Dimension for the mounting foot.
 - 1.380"**: Total height dimension.
 - 0.225"**: Dimension for the field.
 - 0.063"**: Dimension for the field.
 - 0.25" DIA**: Dimension for the field.
 - 0.410"**: Dimension for the host.
 - 0.536"**: Dimension for the host.
 - FIELD** and **HOST**: Labels for the respective sections.

PANEL CHANNEL CJC SWITCH CAN BE SET ON OR OFF FOR THIS MODEL

ISOLATED FIELD INPUT (AT BACKPANEL)

(ON BACK-PANEL)

FIELD

UP TO +/-60V DC

(INPUT)

EARTH GROUND

uB31 or uB41 MODULE PLUG-IN PANEL

HOST

OUTPUT UP TO +/-5V (COM)

H- H+

CHxx

PANEL CJC SWITCH ON or OFF

(ON BACK-PANEL)

FIELD

NC-E- NC

NC-E+ NC

(EXC)

FIELD INPUT

HOST OUTPUT IS AT BACKPANEL TERMINALS AND DB25

(ON BACK-PANEL)

D B

2 5

1/ O

(ON BACK-PANEL)

HOST I/O

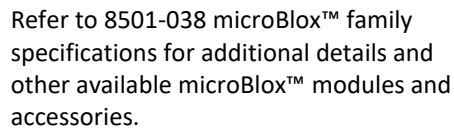
CH08 (14) COM
 CH09 (15)
 CH10 (17) COM
 CH11 (18) COM
 CH12 (19) COM
 CH13 (20) COM
 CH14 (22) COM
 CH15 (24) COM

0V to 5V
 -5V to 5V

CH0 (1)
 CH1 (3)
 CH2 (4)
 CH3 (6)
 CH4 (7)
 CH5 (9)
 CH6 (10)
 CH7 (12)

EARTH GROUND

VOLTAGE OUTPUTS CAN SOURCE 5mA.



Revision History

REV DATE	Version	EGR/DOC	Description of Revision
17 OCT 2017	B	BC/MJO	Added earth ground note 2, CJC switch note, formatting.
02 APR 2018	C	BC/MJO	Corrected $\pm 40V$ Input Resolution.