



WV438-2000

# ULTRA SLIMPAK® II

## WV438

### DC Powered Potentiometer Input Isolating Signal Conditioner

High Accuracy Signal Conditioner with an  
Isolated DC Voltage or Current Output



- Lower Power Requirements with SmartPower
- Improved Accuracy
- Bussed Power with Plug-in Power Clips
- Removable Terminals for Easy Service

- RoHS Compliant
- Touch Cal for Best Stability and Accuracy
- DIP Switch Configuration
- Optional E-mail Notification of Alarms

#### Description

The Ultra SlimPak II is an exciting new line of isolating signal conditioners from Action Instruments with greater accuracy and better stability than virtually any other signal conditioners on the market today. The Ultra SlimPak II features Smart Power, which eliminates wasted power for low loop resistance loads in the current output mode.

The WV438 is a potentiometer input signal conditioner supporting 3-wire potentiometers and slidewire devices from 100 ohms to 100k ohms. The switch selectable output ranges are 0-10VDC, 0-20mA and 4-20mA. All of the output ranges are fully adjustable via pushbutton calibration. The input default range is 0 to 100% of the potentiometer range, but can be adjusted via pushbutton calibration to any 20% portion of the potentiometer. The default output range is 4-20mA.

#### Smart Power

The Ultra SlimPak II uses Smart Power to control its output supply. Smart Power automatically adjusts the voltage to drive the output loop to the required current. A low impedance current loop will subsequently require less voltage than a loop with higher impedance. Previous designs provided only a single supply at the highest voltage required to drive the highest impedance load. Using Smart Power results in power savings and reduces the operating temperature of the signal conditioner.

#### Enhanced LED Diagnostics

Other than when executing the pushbutton calibration routine, the LEDs blink under the following conditions:

##### GREEN:

Flashes at 2Hz when the input is under range.  
Flashes at 8Hz when the input is over range.

##### RED:

Flashes at 2Hz when the output is under range.  
Flashes at 8Hz when the output is over range.

An Under Range condition exists when the signal is lower than the operational low value minus 6.25% of the operational span. An Over Range condition exists when the signal is higher than the operational high value plus 6.25% of the operational span.

A voltage output short circuit may cause an under range condition (RED blinking at 2Hz rate). A current output open circuit may cause an over range condition (RED blinking at an 8Hz rate).

There could be two or more LEDs blinking at the same time, which means the module has more than one error condition. Only when all error conditions have been removed, will the LEDs be back to normal (Green ON, Red and Yellow Off).

Configuring Modules

Unless otherwise specified, the factory presets the Model WV438 as follows:

- Input: Potentiometer
- Range: 100 ohms to 100k ohms
- Output: Current
- Range: 4-20mA
- Reverse Out: Off
- Remote Cal: Off

- 1. Set position 1 of S1 to ON if a WVC16 will be utilized and remote calibration capability is desired.
- 2. Set position 2 and 3 of S1 for the desired output type.
- 3. Set position 4 of S1 to ON for reverse output operation.

It is also possible to remotely select the setpoints using an Ethernet connection and the optional WVC16 Communications Interface module.

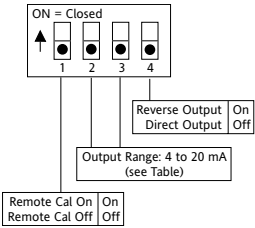
Calibration

See the calibration flowchart in Figure 3. The complete calibration procedure is contained in the Installation & Calibration Instructions document, which is available on our website ([www.actionio.com](http://www.actionio.com)). You can also obtain it by telephoning Action technical support (703-669-1318).

Note that Custom Calibration (option C620) is available from the factory (settings **MUST** be within the units specifications). For a C620, specify the following:

- a) Potentiometer Input Range, in percent (for example: Input = 25 to 75% of pot rotation).
- b) Output Type & Range (for example: 4-20mA).
- c) Reverse Output Function (ON/OFF).

Function	S1			
	1	2	3	4
Remote Cal Enable	■	-	-	-
Output Range				
	0 to 10V	-	■	-
	0 to 20mA	-	■	-
	4 to 20mA	-		-
Reverse Out	-	-	-	■
Key: ■ = 1 = ON or Closed; - = n/a				



Default Switch Settings

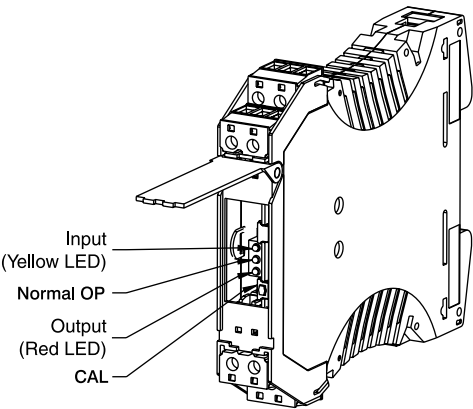
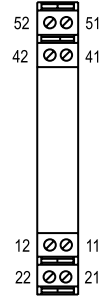


Figure 1: Switch Settings



Pin	Description
11	Potentiometer Input (full CW)
12	Potentiometer Input (full CCW)
21	DC Power (+)
22	DC Power (-)
41	Potentiometer Input (wiper)
42	Shield Ground
51	Output (+)
52	Output (-)

Figure 2: Wiring Connections

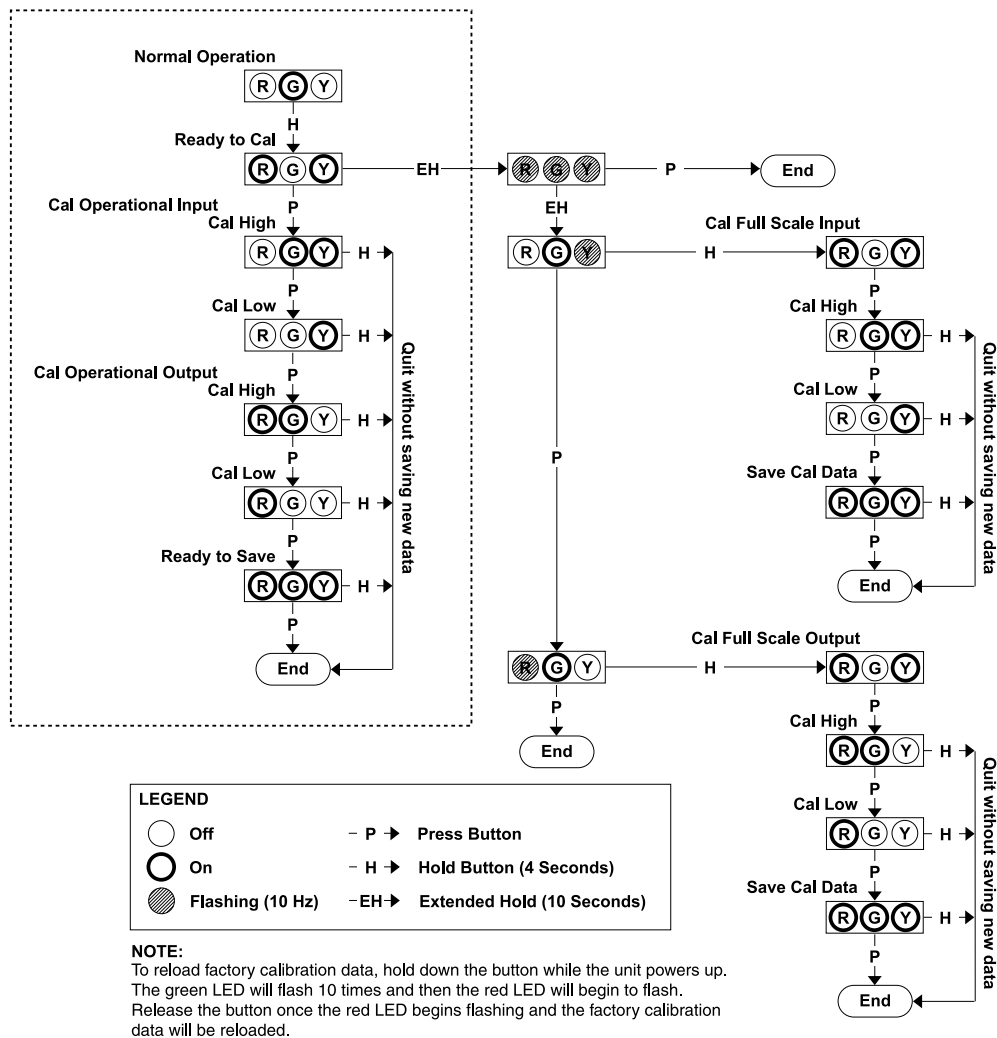


Figure 3: Calibration Flowchart

## Specifications

### Potentiometer Resistance (end to end):

100 ohms (min.) to 100k ohms (max.)

### Input Ranges: Pushbutton adjustable

**Linearity:**  $\pm 0.1\%$  of span, typical

**Excitation:** 300mV, nominal

**Turn-Up/Turn-Down:** 80% (90% to  $\pm 0.2\%$  linearity)

### Common Mode Rejection:

60Hz: >100dB

DC: >120dB

### Output Ranges:

0 to 10VDC

0 to 20mA

4 to 20 mA

**Response Time:** 100mSec typical

**Stability:**  $\pm 100$ ppm of full scale/ $^{\circ}$ C

**Output Ripple:** 0.2% of span, or 5mVrms, whichever is greater

### Output Impedance:

Voltage Output: <10 ohms

Current Output: >100k ohms

### Output Drive:

Voltage Output: 10 mA, max

Current Output: 20V compliance @ 20mA

**Power:** 9-30VDC; 1.0W typ., 2.0W max.

**Isolation:** 1800VDC input to output to power

**Host Module Interface:** IR Link

**Size:** DIN rail case – refer to Dimensions drawing

**Operating Temperature:** 0 to  $+60^{\circ}$ C (32 to  $140^{\circ}$ F)

**Storage Temperature:**  $-25$  to  $+85^{\circ}$ C ( $-13$  to  $185^{\circ}$ F)

**Operating Humidity:** 15% to 95% RH, non-condensing @  $45^{\circ}$ C

**Storage Humidity:** 90% RH, non-condensing @  $60^{\circ}$ C for 24 hours

### Agency Approvals (EMC & Safety):

UL recognized per standard UL508

(File No.E99775)

CE Conformance per EMC directive 89/336/EEC and Low Voltage 73/23/EEC (Input < 75VDC, only).

RoHS Compliant

*Note that detailed installation instructions are available on our website.*

## Ordering Information

Specify:

1. Model:  
**WV438-2000**
2. Optional Custom Factory Calibration (specify **C620**, see required settings under "Calibration, page 2).
3. Accessories.

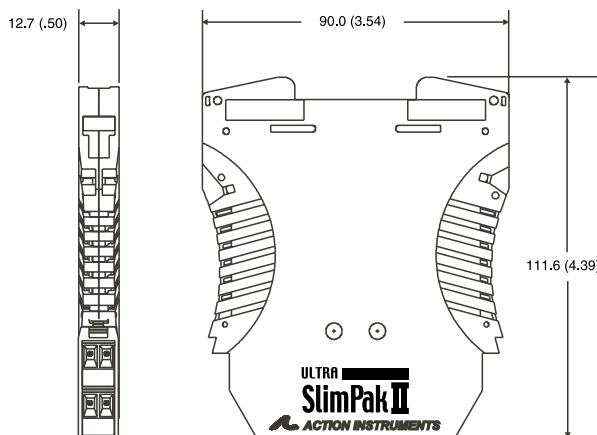
## Accessories

All WV Series modules will mount on standard TS35 (model MD03) DIN rail. In addition, the following accessories are available:

<b>WVC16</b>	Communications Interface
<b>MD03</b>	TS35 x 7.5 DIN Rail (2 meters)
<b>WV905</b>	24VDC Power Supply (0.5 Amp)
<b>H910</b>	24VDC Power Supply (1 Amp)
<b>H915</b>	24VDC Power Supply (2.3 Amp)
<b>MB03</b>	End Bracket for MD03
<b>C650</b>	Utility software for WVC16

## Dimensions

Dimensions are in millimeters (inches)



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## Factory Assistance

For additional information on calibration, operation and installation contact our Technical Services Group:

**703-669-1318**

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