



WV418-2000

# ULTRA SLIMPAK® II

## WV418

### DC Powered RTD 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
- Supports 2, 3 or 4 Wire RTD's

#### 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 WV418 supports 2-wire, 3-wire or 4-wire Pt100 RTDs with alphas of either 0.00385 or 0.00392, as well as Cu10. Ranges are DIP switch selectable or (optionally) PC programmable. Outputs include 0-10V, 0-20mA and 4-20mA.

#### Smart Power

The Ultra SlimPak II uses Smart Power to control its output supply. Smart Power automatically adjusts the 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 WV418 as follows:

Input: Pt100, 3-wire, alpha = 0.00385  
 Range: -200 to 600°C  
 Output: 4-20mA  
 Reverse Out: Off  
 Remote Cal: Off

1. For other ranges, refer to the SWITCH SETTINGS table. Reconfigure switches S1 and S2 for the desired input type and range.
2. Set position 1 of S2 to ON if a WVC16 will be utilized and remote calibration capability is desired.
3. Set position 2 and 3 of S2 for the desired output type and range.
4. Set position 4 of S2 to ON for reverse output operation.
5. Set positions 1-7 of S1 and positions 5 & 6 of S2 for the desired input range.

It is also possible to remotely select the setpoints using an Ethernet connection and the optional WVC16 WebView 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:

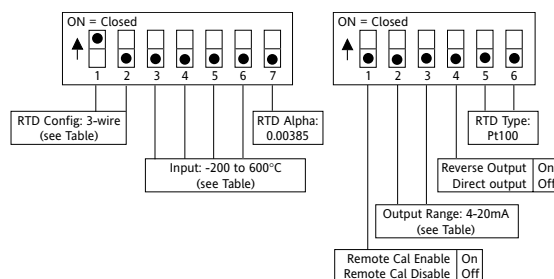
- a) Input Type, Range and Units.
- b) Output Type, Range and Units.
- c) Reverse Output (ON/OFF)

Function	S1						
	1	2	3	4	5	6	7
<b>Pt100 Input Range</b>							
-200 to 600 C	-	-					-
-200 to 260 C	-	-	■	■			-
-200 to -100 C	-	-	■	■			-
-50 to 100 C	-	-				■	-
-18 to 300 C	-	-	■	■		■	-
<b>Cu10 Input Range</b>							
-200 to 260 C	-	-	■	■			-
-200 to 100 C	-	-			■		-
-200 to -100 C	-	-	■	■			-
-50 to 100 C	-	-				■	-
-18 to 260 C	-	-	■	■		■	-
<b>RTD Configuration</b>							
4 Wire		-	-	-	-	-	-
3 Wire	■	-	-	-	-	-	-
2 Wire	■	-	-	-	-	-	-
<b>RTD alpha</b>							
Pt 0.00385	-	-	-	-	-	-	-
Pt 0.00392	-	-	-	-	-	-	■

Key: ■ = 1 = ON or Closed; - = n/a

Function	S2					
	1	2	3	4	5	6
<b>RTD Type</b>						
Pt100	-	-	-			
Cu10	-	-	-	■	■	
<b>Reverse Output</b>				■		
<b>Remote Cal</b>	■	-	-	-	-	-
<b>Output Range</b>						
0 to 10V	-	■	■	-	-	-
0 to 20 mA	-		■	-	-	-
4 to 20 mA	-			-	-	-

Key: ■ = 1 = ON or Closed; - = n/a



Default Switch Settings

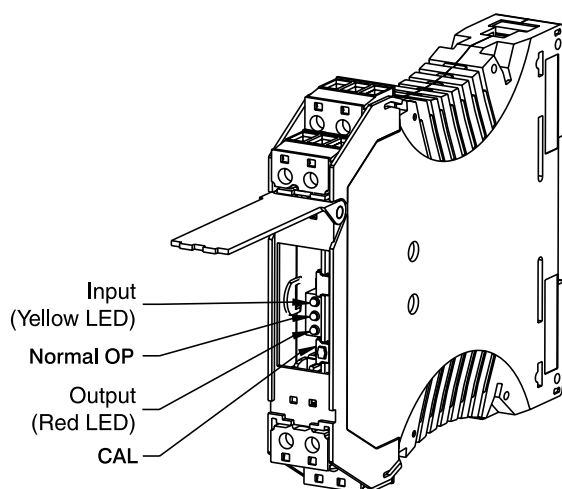
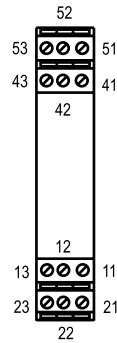


Figure 1: Switch Settings



*Figure 2: Wiring Connections*

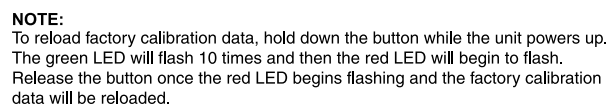


Figure 3: Calibration Flowchart

## Specifications

### Inputs:

#### Sensor Types:

Pt100, 0.00385 alpha & 0.00392 alpha  
Cu10

**Sensor Connection:** 2-wire, 3-wire or 4-wire RTD

### Ranges:

#### Pt100 RTDs:

°C	°F	alpha	Range Number
-200 to 600	-328 to 1112	0.00385	1
-200 to 260	-328 to 500	0.00385	2
-200 to -100	-328 to -148	0.00385	3
-50 to 100	-58 to 212	0.00385	4
-18 to 300	0 to 572	0.00385	5
-200 to 600	-328 to 1112	0.00392	6
-200 to 260	-328 to 500	0.00392	7
-200 to -100	-328 to -148	0.00392	8
-50 to 100	-58 to 122	0.00392	9
-18 to 300	0 to 572	0.00392	10

#### Cu10 RTDs:

°C	°F	Range Number
-200 to 260	-328 to 500	11
-200 to 100	-328 to 212	12
-200 to -100	-328 to -148	13
-50 to 100	-58 to 212	14
-18 to 260	0 to 500	15

### RTD Excitation:

Pt100: 0.45mA, max  
Cu10: 5.0mA, max

**Lead Wire Resistance:** 40% of the base sensor resistance maximum or 100 ohms (whichever is less)

**Lead Wire Effect:** Changing from 0 ohm lead resistance (each lead) to maximum allowed lead resistance: Error <1% of largest span PT and Cu ranges; -200 to 600°C for Pt and -200 to 260°C for Cu.

### Pushbutton Adjustment (Inputs >10mV):

Effective zero offset: ≥95%

Effective span turn down: ≥95%

**Local Range Selection:** By DIP switch

### Output:

**Voltage:** 0 to 10V

**Source Impedance:** <10 ohms

**Drive:** 10mA

**Current:** 0 to 20mA

**Source Impedance:** >100k ohms

**Compliance:** 20V

**Output Accuracy:** 0.05% of Full Scale

**Response Time:** 100mSec (10 to 90%)

**Stability:** ±100ppm of full scale/°C (±0.01%/°C)

**Common Mode Rejection:** 120dB @ DC, >90dB @ 60Hz, or better

**Isolation:** ≥1800VDC or peak AC between input, output & power.

**ESD Susceptibility:** Capable of meeting IEC 801-2 level 3 (8kV)

### Humidity (non-condensing):

Operating: 15 to 95% RH @45°C

Soak: 90% RH for 24hrs @60°C

### Temperature:

Operating: 0 to 60°C

Storage: -25 to +85°C

**Power:** 9 to 30VDC; 1.0W typical, 2.0W max

**Host Module Interface:** IR link

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

### 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:

- Model:  
**WV418-2000**
- Optional Custom Factory Calibration (specify **C620**, see required settings under "Calibration, page 2).
- Accessories.

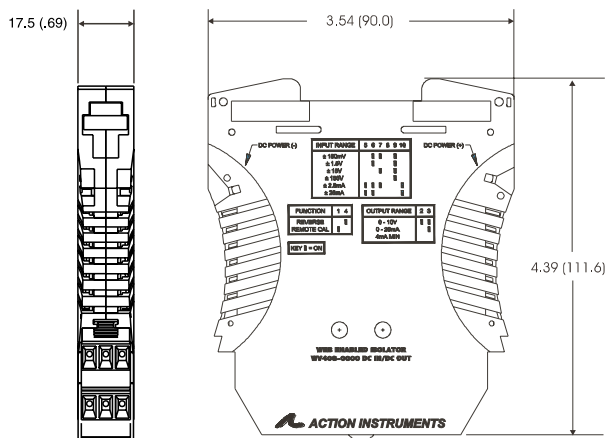
### Accessories

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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