

ULTRA SLIMPAK® II MODEL WV418-2000

RTD Input Isolating Signal Conditioner

Installation and Calibration Instructions

NOTE: The unit has been shipped with the Power Clips attached. Please remove the clips before installing the module on the DIN rail. If the Power Clips are chosen as the means to route power, they can be installed once the modules are in place on the DIN rail.

DIN Rail Mounting

The WV418 mounts on a 35mm TS35 DIN rail, by simply hooking one side of the mounting foot over the rail and pressing the module towards the rail until it locks into place. To remove the unit from the rail, place the tip of a flat-bladed screwdriver under the release clip on either the top or the bottom of the module and pry up until the module releases from the rail. See Figure 1.

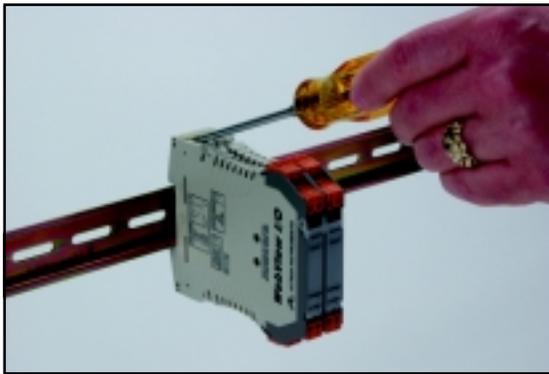


Figure 1

until the two tabs lock firmly in place. This may require pressing on the front side of the upper and lower terminal blocks for a positive fit. The board slides in where the switch and the switch position chart on the case can be viewed together.

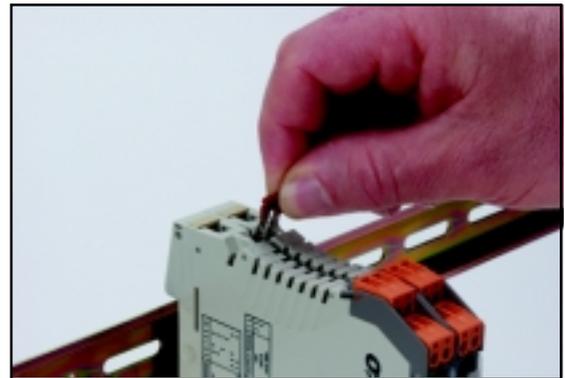
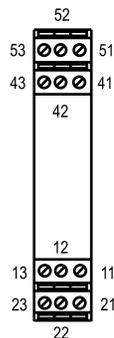


Figure 2

Wiring Connections



Pin	Description
11	DC Power (+)
12	DC Power (-)
13	No Connection
21	DC Power (+)
22	DC Power (-)
23	No Connection
41	RTD Input (+)
42	RTD Input (-)
43	RTD Sense (-)
51	Output (+)
52	Output (-)
53	RTD Sense (+)

Power Connections

The power jumper clips (see Figure 2) are used to distribute power to a maximum of 16 modules. In applications using more than 16 modules, power wiring must be connected to the first and last module, and distributed to the remaining modules using the power clips. This technique allows for "hot swapping" of a module without interrupting power to the remaining units.

Opening the Case

The case can be opened by simultaneously pressing in on the two ribbed tabs located at the top and bottom of the front cap of the case and sliding out the circuit board. This provides easy access to the DIP switch for range selection. To close the case, slide the board back in

Input Range Configuration

Unless otherwise specified, the factory presets the Model WV418 as follows:

Input: Pt100, 3-wire, $\alpha = 0.00385$
Range: -200°C to 600°C
Output: Current
Range: 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.
4. Set position 4 of S2 to ON for reverse output operation.
5. Set positions 1-7 of S1 and 5 & 6 of S2 for the desired input range.

Switch Settings

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

Key: ■ = 1 = ON or Closed; - = n/a

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

Key: ■ = 1 = ON or Closed; - = n/a

set, the Green and Red LEDs will be on. At that point simply press the CAL button rapidly 3 times and you will exit the calibration routine without effecting the last saved calibration for the operational output values.

1. Connect the input to a calibrated RTD source or decade box and the output to a voltage or current meter. Apply power and allow the system to reach thermal equilibrium. Refer to Figure 3 for a detailed flow chart of the procedure. The section in the dotted-line box is all that is required for the user to calibrate operational input and output, and is all that is described in this procedure.

2. Adjust the input signal to the desired maximum and observe that the Green LED is on or flashing. Push the CAL button and hold for more than 4 seconds. The Yellow and Red LEDs should be on. Push the CAL button momentarily and the Yellow and Green LEDs will be on. From this point on, you can exit the calibration procedure at any step, without saving new data, by holding the CAL button for at least 4 seconds.

3. Apply the maximum input signal level desired and push the CAL button. The Yellow LED should now be on.

4. Apply the minimum input signal level desired and push the CAL button. The Green and Red LEDs should now be on. If you do not wish to change the output calibration, press the CAL button rapidly three times to exit the calibration routine.

5. Adjust the input signal upward until the output is at the desired maximum level (e.g. 20.00mA), and then push the CAL button. The Red LED should be on.

6. Adjust the input signal level downward until the output is at the desired minimum level (e.g. 4.00mA), and then push the CAL button. All three LEDs should now be on.

7. Push the CAL button once more to save the calibration data. The Green LED should be on if the input is within the calibrated range.

Diagnostic LEDs

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

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

Calibration

For best results, calibration should be performed in the operating environment, mounted to a piece of DIN rail, allowing at least one hour for thermal equilibrium of the system. If pre-calibration on a test bench is desired, then an output load equal to the input impedance of the devices connected to the WV418 output is recommended, along with the warm-up period.

Note: Many applications do not require calibrating the output levels and simply utilize the default operational output ranges of the unit (0-10VDC, 0-20mA or 4-20mA). If the factory default calibration has been changed, the last saved operational output values are utilized. In those applications, the only calibration required is the operational input values. Once the maximum and minimum input values have been

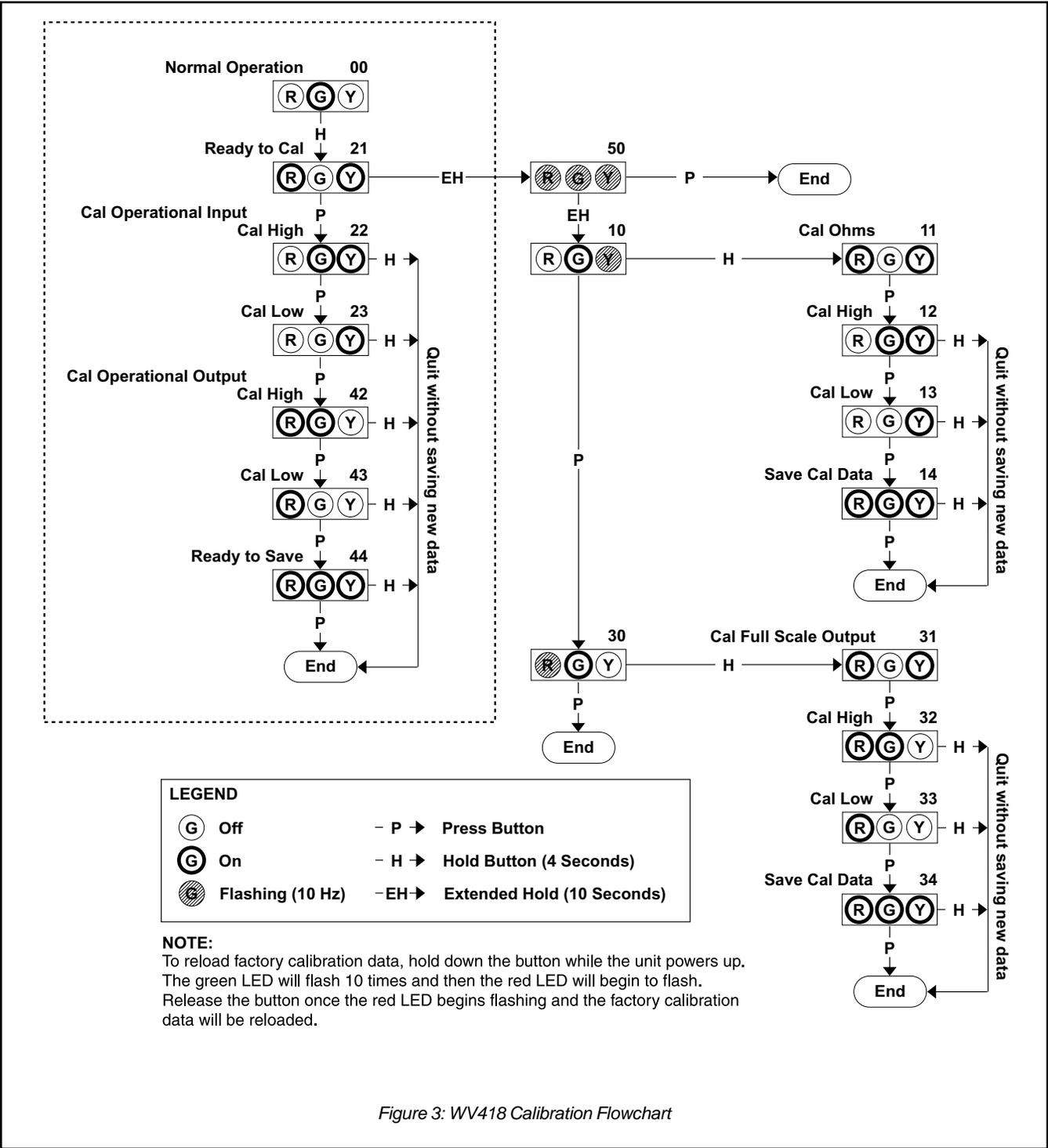


Figure 3: WV418 Calibration Flowchart

Specifications

Sensor Types

Pt100, both alphas of 0.00385 & 0.00392

Cu10

Sensor Connection

2-wire, 3-wire or 4-wire RTD

Ranges

Pt100 RTDs		Range Number	
°C	°F	alpha	
-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		Range Number	
C	F		
-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

Lead Wire Effect

Changing from Zero ohms (each lead) lead resistance 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

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 @ 20mA (1k ohm max)

Output Accuracy

0.05% of Full Scale (typical),

0.1% worst case

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

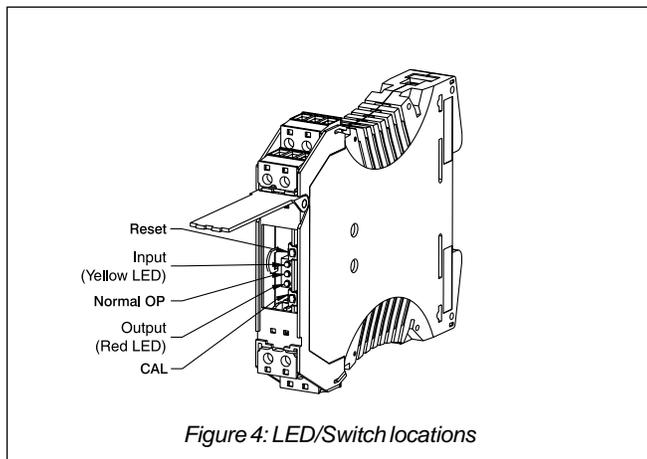
Host Module Interface

IR link

Agency Approvals

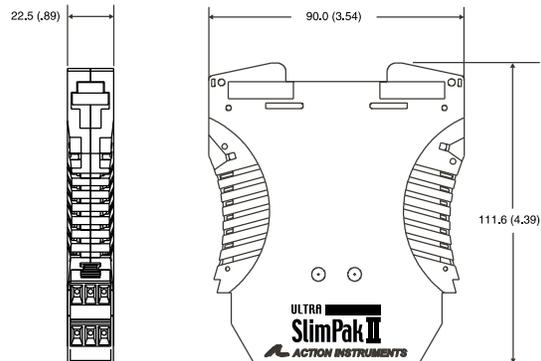
CE, EN61326, EN61010-1

UL & CSA combined mark



Dimensions

Dimensions are in mm (inches)



invensys

Eurotherm Controls

741-F Miller Drive

Leesburg, VA 20175-8993

703-443-0000

info@eurotherm.com

Factory Assistance

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

703-669-1318

actionsupport@eurotherm.com

HA136738WV418 Rev - Copyright © Eurotherm, Inc 2004