



G418-0001



# ULTRA SLIMPAK® G418-0001

## RTD Input Field Configurable Isolator

Provides an Isolated, Linearized DC Output  
in Proportion to an RTD Input



- Field Configurable Input Ranges for Platinum and Copper RTDs
- Eliminates Ground Loops
- Field Configurable Output Ranges: 0-5V, 0-10V, 0-1mA, 0-20mA and 4-20mA

- Ultra Slim Housing for High Density Installations
- Flexible Power Supply Accepts 9 to 30 VDC
- ASIC Technology for Enhanced Reliability
- RoHS Compliant

### Description

The Ultra SlimPak G418 is a DIN rail mount, RTD input signal conditioner with 1800VDC isolation between input, output and power. The field configurable input and output offers flexible, wide ranging capability for Platinum and Copper RTDs.

The G418 can be configured for any one of up to 16 temperature ranges (see Tables 1 & 2). The output is linear to the RTD temperature input and can be set for either 0-5V, 0-10V, 0-1mA, 0-20mA or 4-20mA.

Wide ranging, precision zero and span pots allow 50% adjustability of offset and span turn-down within each of the switch selectable ranges. For example, the 0-500°F range could be offset and turned down to provide a 4-20mA signal representing 0-250°F (or 250-500°F).

### Application

Three way isolation in the G418 completely eliminates ground loops from any source. Isolation protects expensive SCADA systems from ground faults and significantly reduces the effect of high common mode voltages which are prevalent in many RTD applications.

The constant current RTD excitation circuitry uses the third lead of the RTD to sense and compensate for the RTD lead resistance, resulting in an accurate RTD temperature measurement.

High density DIN rail mounting offers an extremely compact solution for saving valuable panel space.

### Diagnostic LED

The G418 is equipped with a dual function LED signal monitor. The green, front mounted LED indicates both DC power and input signal status. Active DC power is indicated by an illuminated LED. If the input signal is more than 110% of the full scale range, the LED will flash at 1Hz. Below -10%, the flash rate is 0.5Hz. If the LED flashes very fast, then the RTD input wires are open circuit. An 8Hz flash indicates that RTD (+) input (terminal 41) is open circuit, or a 4Hz flash indicates that either RTD (-) or RTD Return (terminal 42 or 43) are open. The CAL LED is on under normal operating conditions. If the CAL LED is off when the unit is powered, consult the factory for assistance.

### Configuration

The G418 has 16 input temperature range settings, six RTD type settings and five output range settings. Trim potentiometers allow 50% input zero and span adjustability within each of the 16 full scale input ranges.

Unless otherwise specified, the factory presets the Model G418 as follows:

Input: Pt100 Ohm  
Range: -200 to 600°C  
Output: 4-20mA

The DC power input accepts any DC source between 9 and 30V; typically a 12V or 24VDC source is used (see Accessories).

### Calibration

1. After configuring the dip switches, connect the input to a calibrated RTD source or decade resistance box. Connect the output to the device load (or a load approximately equivalent to the device load) and apply power.

*Note: To maximize thermal stability, final calibration should be performed in the operating installation, allowing approximately 1 to 2 hours for warm-up and thermal equilibrium of the system.*

2. Set the calibrator to the desired minimum temperature and adjust the zero potentiometer for the desired minimum output.

3. Set the calibrator to the desired maximum temperature and adjust the span potentiometer for the desired maximum output.

4. Repeat steps 2 and 3, as necessary for best accuracy.

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Table 1: G418 Platinum RTD Ranges

Pt100, Pt500 & Pt1000		Range
Celsius	Fahrenheit	
-200 to 600 <sub>i</sub> C	-328 to 1112 <sub>i</sub> F	1
-200 to 400 <sub>i</sub> C	-328 to 752 <sub>i</sub> F	2
-100 to 400 <sub>i</sub> C	-148 to 752 <sub>i</sub> F	3
-200 to 260 <sub>i</sub> C	-328 to 500 <sub>i</sub> F	4
-200 to 0 <sub>i</sub> C	-328 to 32 <sub>i</sub> F	5
-200 to -100 <sub>i</sub> C	-328 to -148 <sub>i</sub> F	6
-100 to 260 <sub>i</sub> C	-148 to 500 <sub>i</sub> F	7
-100 to 100 <sub>i</sub> C	-148 to 212 <sub>i</sub> F	8
-50 to 50 <sub>i</sub> C	-58 to 122 <sub>i</sub> F	9
-18 to 50 <sub>i</sub> C	0 to 122 <sub>i</sub> F	10
-18 to 100 <sub>i</sub> C	0 to 212 <sub>i</sub> F	11
-18 to 260 <sub>i</sub> C	0 to 500 <sub>i</sub> F	12
-18 to 300 <sub>i</sub> C	0 to 572 <sub>i</sub> F	13
-18 to 400 <sub>i</sub> C	0 to 752 <sub>i</sub> F	14
-18 to 500 <sub>i</sub> C	0 to 932 <sub>i</sub> F	15
-18 to 600 <sub>i</sub> C	0 to 1112 <sub>i</sub> F	16

Table 3: RTD Range Settings

Range	SW2				
	1	2	3	4	5
1		■	■	■	■
2		■	■	■	
3		■	■		■
4		■	■		
5		■		■	■
6		■		■	
7		■		■	
8		■			
9			■	■	■
10			■	■	
11			■		■
12			■		
13				■	■
14				■	
15					■
16					

Key: ■ = 1 = ON or Closed

Table 5: G418 Excitation Type

Excitation Type	SW3							
	1	2	3	4	5	6	7	8
Pt100, Cu100	■							
Pt500		■						
Pt1000			■					
Cu10				■		■		
Cu25					■		■	

Key: ■ = 1 = ON or Closed

(SW3-8 is undefined)

Table 2: G418 Copper RTD Ranges

Cu10, Cu25 & Cu100		Range
Celsius	Fahrenheit	
-200 to 260 <sub>i</sub> C	-328 to 500 <sub>i</sub> F	4
-200 to 0 <sub>i</sub> C	-328 to 32 <sub>i</sub> F	5
-200 to -100 <sub>i</sub> C	-328 to -148 <sub>i</sub> F	6
-100 to 260 <sub>i</sub> C	-148 to 500 <sub>i</sub> F	7
-100 to 100 <sub>i</sub> C	-148 to 212 <sub>i</sub> F	8
-50 to 50 <sub>i</sub> C	-58 to 122 <sub>i</sub> F	9
-18 to 50 <sub>i</sub> C	0 to 122 <sub>i</sub> F	10
-18 to 100 <sub>i</sub> C	0 to 212 <sub>i</sub> F	11
-18 to 260 <sub>i</sub> C	0 to 500 <sub>i</sub> F	12

Table 4: G418 RTD Input Type

RTD Type	SW2		
	6	7	8
Pt100	■	■	■
Pt500	■	■	
Pt1000	■		■
Cu10	■		
Cu25		■	■
Cu100		■	

Key: ■ = 1 = ON or Closed

Table 6: G418 Output Settings

Output	SW1							
	1	2	3	4	5	6	7	8
0 to 5V	■	■	■	■				
0 to 10V	■		■	■				
0 to 1mA		■	■	■				
4 to 20mA					■	■	■	
0 to 20mA	■	■		■		■	■	■

Key: ■ = 1 = ON or Closed

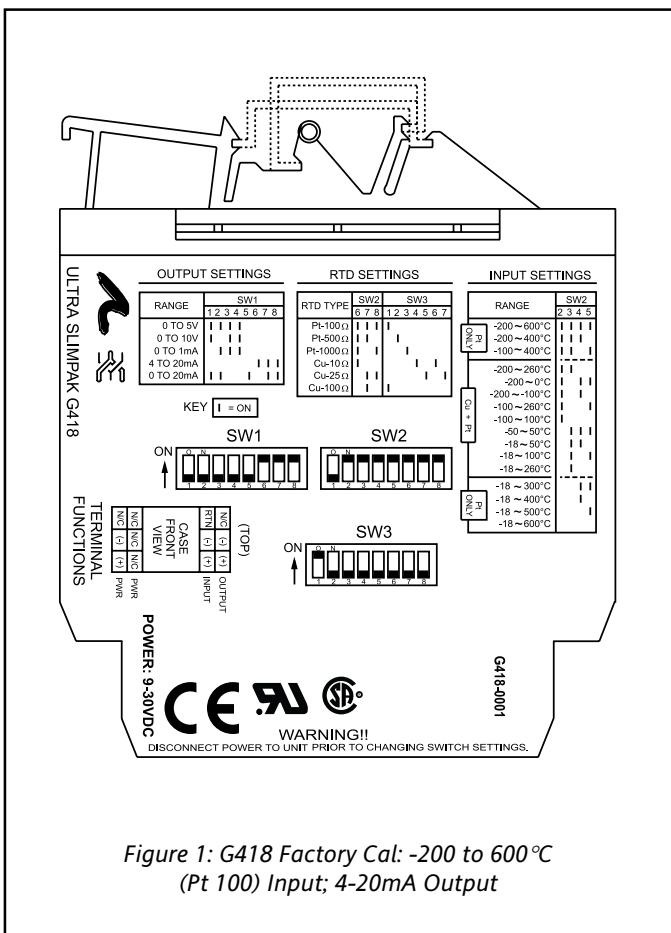


Figure 1: G418 Factory Cal: -200 to 600 °C  
(Pt 100) Input; 4-20mA Output

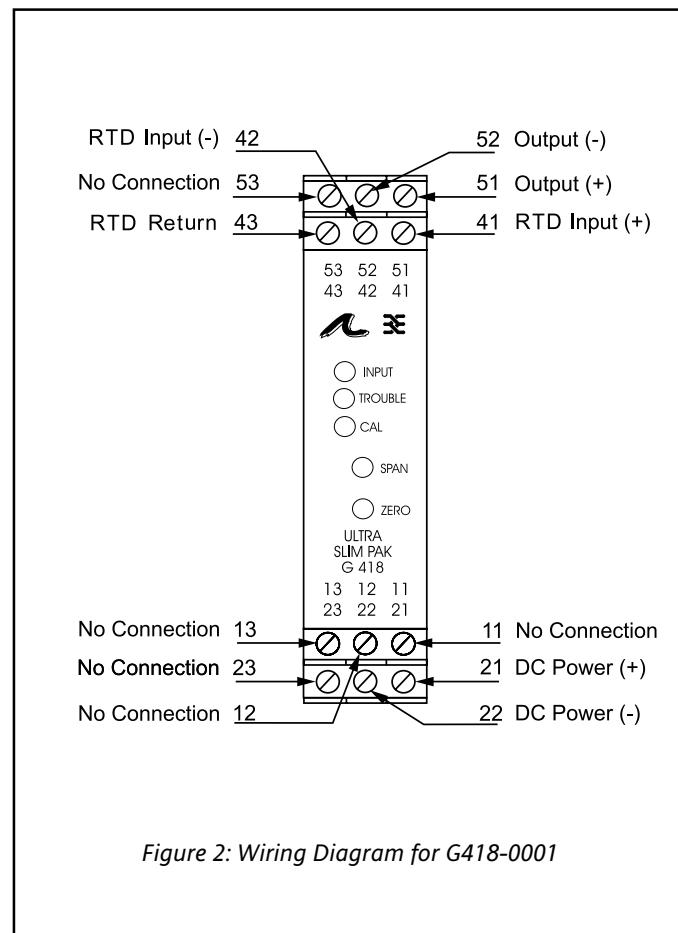


Figure 2: Wiring Diagram for G418-0001

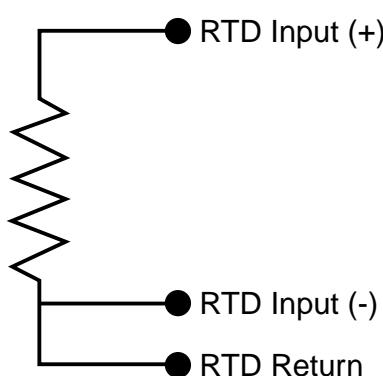
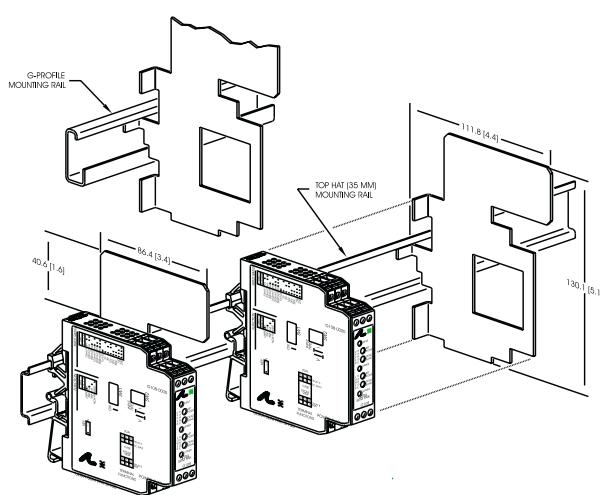


Figure 3: RTD Reference Designations



Note: All Ultra SlimPak modules are designed to operate in ambient temperatures from 0 to 55°C when mounted on a horizontal DIN rail. If five or more modules are mounted on a vertical rail, circulating air or model HS01 Heat Sink is recommended. Refer to HS01 Technical Bulletin (#721-0549-00) or contact the factory for assistance.

Figure 4: Mounting Multiple Modules

## Specifications

### Input:

Sensor Types:

Pt100, Pt500, Pt1000

(alpha: 0.00385 Ohms/Ohm/°C or  
0.00392 Ohms/Ohm/°C); Cu10, Cu25, Cu100.

Sensor Connection:

3-wire

Input Ranges: see table 1.

Common Mode (Input to Gnd): 1800VDC, max.

Zero Turn-Up:

50% of full scale range

Span Turn-Down:

50% of full scale range

### Excitation Current:

<2mA for Pt100, Pt500, Pt1000;  
<5mA for Cu100; <10mA for Cu10, Cu25.

### Leadwire Resistance:

40% of base sensor resistance or 100 Ohms  
(whichever is less), max per lead.

### Leadwire Effect:

Less than 1% of the max. input  
temperature span

### Output:

Voltage:

Output: 0-5V, 0-10V

Source Impedance: <10 Ohms

Drive: 10mA, max. (1K Ohms, min @10V)

Current:

Output: 0-1mA, 0-20mA, 4-20mA

Source Impedance: >100K Ohms

Compliance:

0-1mA; 7.5V, max.(7.5K Ohms)  
0-20mA; 12V, max.(600 Ohms)  
4-20mA; 12V, max.(600 Ohms)

### LED Diagnostics:

Solid Green:

power on

Flashing Green:

0.5Hz input under range (<-10%)  
1.0Hz input over range (110%)  
4Hz input open circuit (terminal 41)  
8Hz input open circuit (terminal 42 or 43)

Yellow ON = CAL OK

### Accuracy (Including Linearity, Hysteresis):

±0.1% typical, ±0.2% max. of the  
maximum input temperature range  
configurable for the RTD type; @ 25°C  
ambient and 0 Ohms lead resistance.

### Stability:

±0.015% of the max. input temperature  
range for the RTD type per °C change  
in ambient temperature, max.

### Response Time (10 to 90%):

200mSec., typical.

### Common Mode Rejection:

DC to 60Hz: 120dB

### Isolation:

1800VDC between input, output & power.

### ESD Susceptibility:

Meets IEC801-2, Level 2 (4kV)

### Humidity (Non-Condensing):

Operating: 15 to 95% @ 45°C

Soak: 90% for 24 hours @ 65°C

### Temperature Range:

Operating: 0 to 55°C (32 to 131°F)

Storage: -25 to 70°C (-13 to 158°F)

### Wire Terminations:

Screw terminals for 12-22 AWG

### Power:

Consumption: 1.5W typical, 2.5 W Max.

Range: 9-30VDC

### Weight:

0.54 lbs

### Agency Approvals:

CSA certified per standard C22.2, No. 0-M91  
and 142-M1987 (File No. LR42272)

UL recognized per standard UL508  
(File No. E99775)

CE Conformance per EMC directive 2004/  
108/EC and Low Voltage directive 2006/  
95/EC.

RoHS Compliant

## Ordering Information

### Models & Accessories

#### Specify:

1. Model: **G418-0001**
2. Accessories: (see Accessories)
3. Optional Custom Factory Calibration; specify **C620** with desired input and output range.

### Accessories

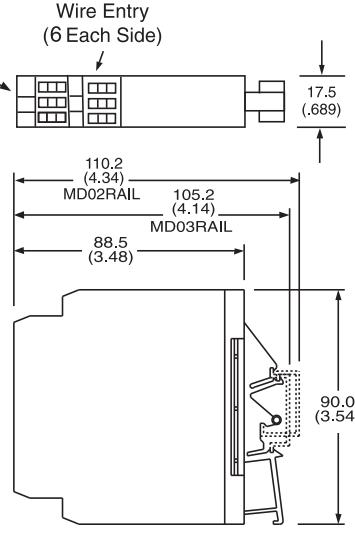
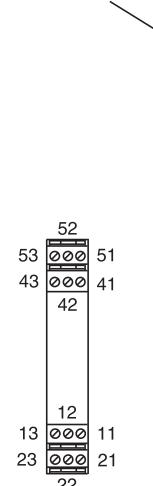
SlimPak "G" series modules will mount on standard TS32 (model MD02) or TS35 (model MD03) DIN rail. In addition, the following accessories are available:

<b>HS01</b>	Heat Sink
<b>MD03</b>	TS35 x 7.5 DIN rail
<b>WV905</b>	24VDC Power Supply (0.5A)
<b>H910</b>	24VDC Power Supply (1A)
<b>H915</b>	24VDC Power Supply (2.3A)
<b>MB03</b>	End Bracket for MD03
<b>C664</b>	I/O Descriptive Tags

## Dimensions

Terminal Screws  
(Top Access)

Wire Entry  
(6 Each Side)



Dimensions are in mm (inches)

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