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# Startup Guide

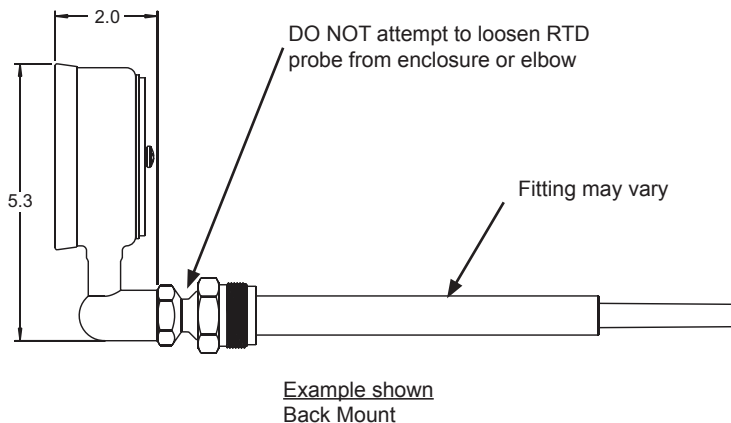
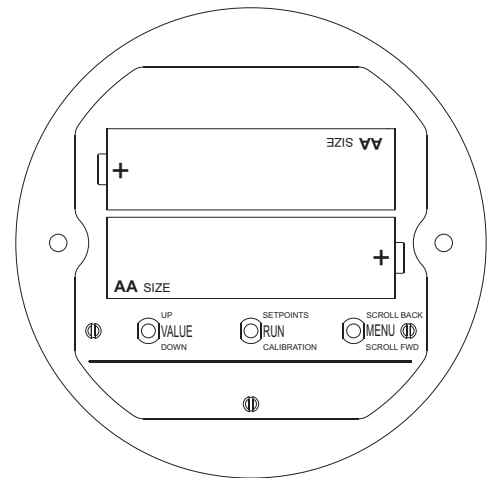
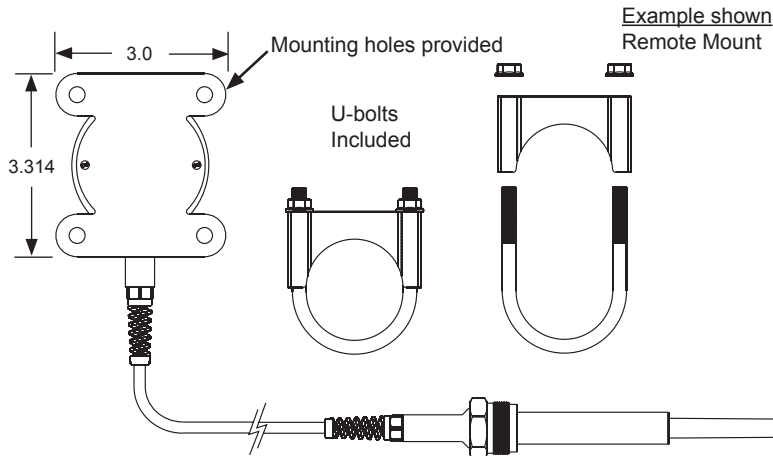
## “DTG” Digital Temperature Gauge

### Style FHO, FH1, FH2, or FH5

#### SPECIFICATIONS

Compliance: 3-A, NEMA 4X, IP-66  
Product Contact Surface: Fitting & Probe: 316L SS  
Non-Product Contact Surface: Housing - 304 SS  
Lens - Polysulfone  
Process Temp. Range: 0 to 300°F (-18 to 150°C)  
Units: Deg F and Deg C; field selectable  
Resolution: 0.1°F or °C  
Accuracy: +/- .5°F (+/-0.3°C)  
Ambient Operating Limits: 40 to 140°F (4.4 to 60°C)  
Ambient Temp. Stability: Better than 0.1°C per 10°C ambient shift  
Storage Temp.: 32 to 140°F (0 to 65°C)

Display: LCD: 4 digit main display, 6 digit secondary; 0.9" high contrast LCD  
Error Warning: LCD flashing  
Power: 2 AA Industrial Grade Batteries (Style 0,1,5); Customer supplied 9-30 VDC (Style 2)  
Battery Life: Style 0,1,5: 12 months typical  
Style 2: external power  
Vibration: 10 to 60 Hz, 2g  
Warranty: 2 year  
Display Update: 3 seconds  
Calibration Adjustment: Via onboard switches; single point offset adjust  
Surface Finish: R<sub>a</sub> max = 32 micro inches

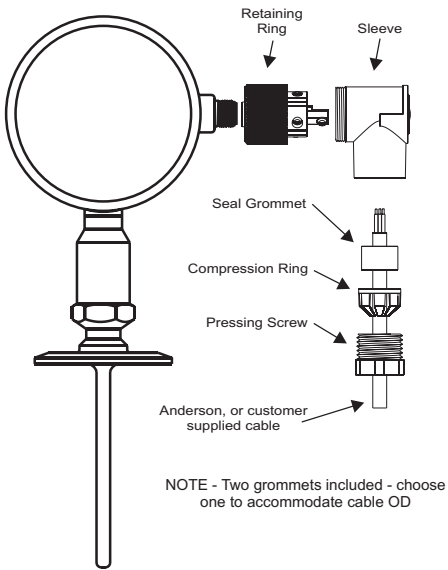


#### Battery Replacement

A three segment battery indicator allows the operator to monitor battery life of the DTG, and plan ahead for a battery change. When a low threshold is reached, the final indicator bar blinks on and off. Internal circuitry regulates battery voltages to ensure all factory specifications are met, even with a decrease in battery voltage. When an unacceptable level is reached, the DTG will shut down. Internal flash memory retains all prior calibration, and only replacement of the batteries is required to resume operation. Units with optional AC switch module do not require batteries.

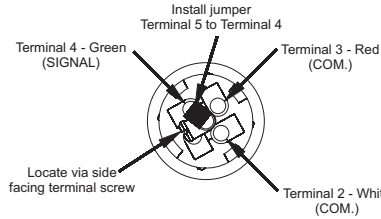
Full Battery	
Decreased Battery	
Low Battery (blinks between first and second)	

**NOTE:** When removing batteries, wait a minimum of (2) two minutes before re-installing.



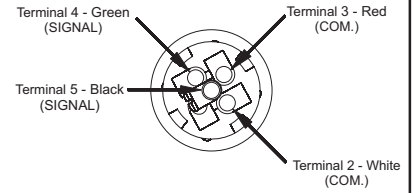
## DTG Model "FH1" - Secondary RTD Wiring

Wiring Diagram - 3 WIRE RTD



(NOTE: Anderson color codes indicated)

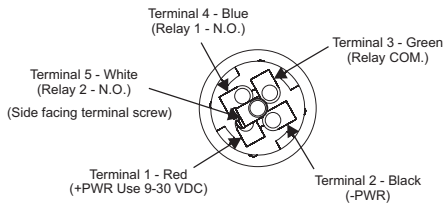
Wiring Diagram - 4 WIRE RTD



(NOTE: Anderson color codes indicated)

## DTG Model "FH2" - Switch Wiring

Wiring Diagram - Utilizing on-board switching only



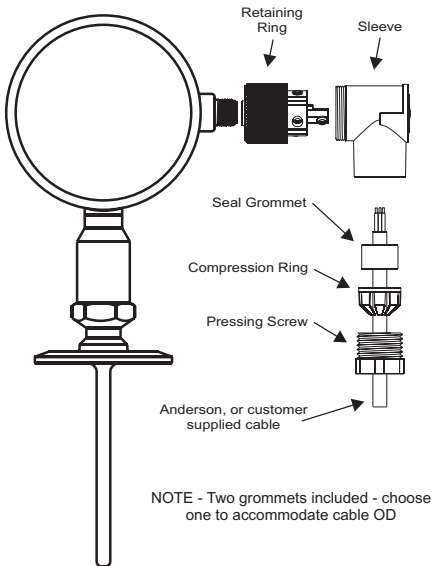
(NOTE: Anderson color codes indicated)

External DC supply must be used in order to utilize on-board switching

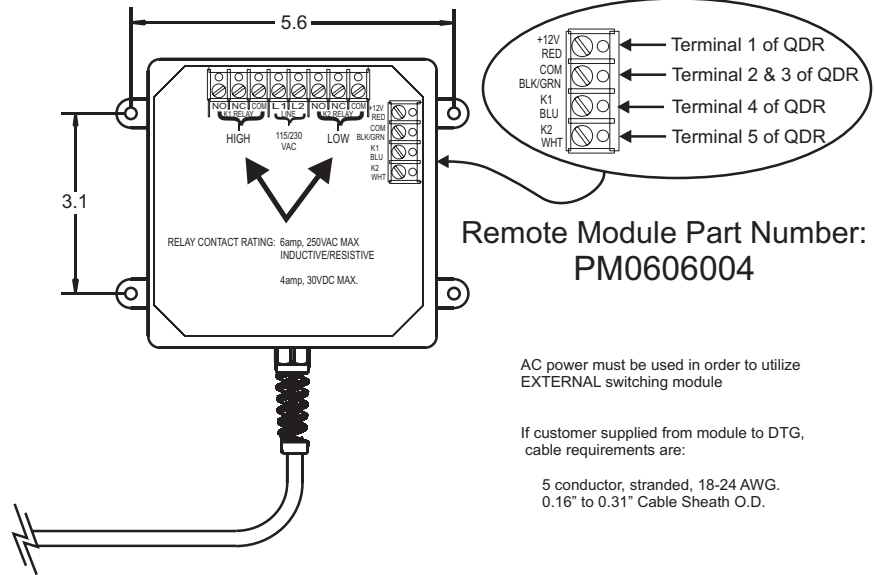
9-30 VDC, 250 mA typical external power required to energize relays

N.O. Relay contacts rated for 1 amp max @ 24 VDC

If customer supplied, cable requirements are:  
5 conductor, stranded, 18-24 AWG.  
0.16" to 0.31" Cable Sheath O.D.



Wiring Diagram - Utilizing "Optional" external AC powered switch module






### Change Offset Value

The "Offset Value" function is used to apply a linear offset factor to the device. If your DTG shows a repeatable discrepancy (less than 1 degree) throughout the test range, this function may be used to remove the differential.

Example: Reference reads 32.0°F and DTG reads 32.3°F  
 Reference reads 150.0°F and DTG reads 150.3°F  
 Reference reads 212.0°F and DTG reads 212.3°F







"Offset Value" of "-0.3°F" programmed will remove discrepancy

CAUTION: Be sure to use only an NIST traceable reference thermometer that is known accurate, and within it's specified calibration period.

1.	Flip <b>Run</b> switch to the down position.	
2.	Press <b>Menu</b> switch up and release once to go to <i>Offset</i> screen.	
3.	Use <b>Value</b> switch to set <i>Offset</i> from 0.0 to +/-5.0.	
4.	Flip <b>Run</b> switch to the middle position.	




### Restore Factory Settings

The "Restore Factory Settings" function will return the DTG to the factory shipped calibration.

1.	Flip <b>Run</b> switch to the down position.	
2.	Press <b>Menu</b> switch down and release once to go to <i>Unit</i> screen.	
3.	Press <b>Menu</b> switch down and release once to go to <i>Dampening Factor</i> screen.	
4.	Press <b>Menu</b> switch down and release once to go to <i>Decimal Position</i> screen.	
5.	Press <b>Menu</b> switch down and release once to go to <i>Factory Reset</i> screen.	
6.	Hold <b>Value</b> switch up for 5 seconds to restore factory settings.	
7.	Flip <b>Run</b> switch to middle position.	






### Change Unit of Measure

The DTG may be programmed to read in either Degrees F or Degrees C. When changing from one mode to another, any "User Calibration" points are converted automatically to their respective unit of measure – no additional programming is required.

1.	Flip <b>Run</b> switch to the down position.	
2.	Press <b>Menu</b> switch down and release once to go to <i>Unit</i> screen.	
3.	Use <b>Value</b> switch to alternate between °F and °C.	
4.	Flip <b>Run</b> switch to the middle position.	

### Change Decimal Position





The DTG is capable of displaying to the nearest WHOLE DEGREE, or with the addition of a decimal point, to the NEAREST TENTH degree. Modifying this parameter requires no additional programming changes to "User Calibration" points.

1.	Flip <b>Run</b> switch to the down position.	
2.	Press <b>Menu</b> switch down and release once to go to <i>Unit</i> screen.	
3.	Press <b>Menu</b> switch down and release once to go to <i>Dampening Factor</i> screen.	
4.	Press <b>Menu</b> switch down and release once to go to <i>Decimal Position</i> screen.	
5.	Use <b>Value</b> switch to alternate select decimal position.	
6.	Flip <b>Run</b> switch to middle position.	

WHOLE DEGREE display will ROUND DOWN to previous whole number.  
 Example: Process = 181.9 deg F Display = 181 deg F

### Change Dampening Factor

The "Dampening Factor" is used as a means to slow down the reaction rate of the unit. Under most circumstances, this value should be set to "0." If a process has very erratic temperature shifts, and the display fluctuates, introduction of a small dampening factor may smooth display.

1.	Flip <b>Run</b> switch to the down position.	
2.	Press <b>Menu</b> switch down and release once to go to <i>Unit</i> screen.	
3.	Press <b>Menu</b> switch down and release once to go to <i>Dampening Factor</i> screen.	
4.	Use <b>Value</b> switch to set <i>Dampening Factor</i> from 0.0 to 10.0.	
5.	Flip <b>Run</b> switch to middle position.	

### Change Alarm 1 Setpoint

1.	Flip <b>Mode</b> switch to the up position.	
2.	Use the <b>Value</b> switch to set the Setpoint.	
3.	The value of Alarm 1 Setpoint is saved after the <b>Mode</b> switch is returned to the middle position.	

### Change Alarm 1 Action

1.	Flip <b>Mode</b> switch to the up position.	
2.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Action</i> screen.	
3.	Use the <b>Value</b> switch to set the Action to either HI, LO or OFF.	
4.	The value of Alarm 1 Action is saved after the <b>Mode</b> switch is returned to the middle position.	

### Change Alarm 2 Setpoint

1.	Flip <b>Mode</b> switch to the up position.	
2.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Action</i> screen.	
3.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Hysteresis</i> screen.	
4.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 2 Setpoint</i> screen.	
5.	Use the <b>Value</b> switch to set the Setpoint.	
6.	The value of Alarm 2 Setpoint is saved after the <b>Mode</b> switch is returned to the middle position.	

### Change Alarm 1 Hysteresis

1.	Flip <b>Mode</b> switch to the up position.	
2.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Action</i> screen.	
3.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Hysteresis</i> screen.	
4.	Use the <b>Value</b> switch to set the Hysteresis.	
5.	The value of Alarm 1 Hysteresis is saved after the <b>Mode</b> switch is returned to the middle position.	

### Change Alarm 2 Action

1.	Flip <b>Mode</b> switch to the up position.	
2.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Action</i> screen.	
3.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Hysteresis</i> screen.	
4.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 2 Setpoint</i> screen.	
5.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 2 Action</i> screen.	
6.	Use the <b>Value</b> switch to set the Action to either HI, LO or OFF.	
7.	The value of Alarm 2 Action is saved after the <b>Mode</b> switch is returned to the middle position.	

### Change Alarm 2 Hysteresis

1.	Flip <b>Mode</b> switch to the up position.	
2.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Action</i> screen.	
3.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 1 Hysteresis</i> screen.	
4.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 2 Setpoint</i> screen.	
5.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 2 Action</i> screen.	
6.	Press the <b>Menu</b> switch down and release once to go to <i>Alarm 2 Hysteresis</i> screen.	
7.	Use the <b>Value</b> switch to set the Hysteresis.	
8.	The value of Alarm 2 Hysteresis is saved after the <b>Mode</b> switch is returned to the middle position.	