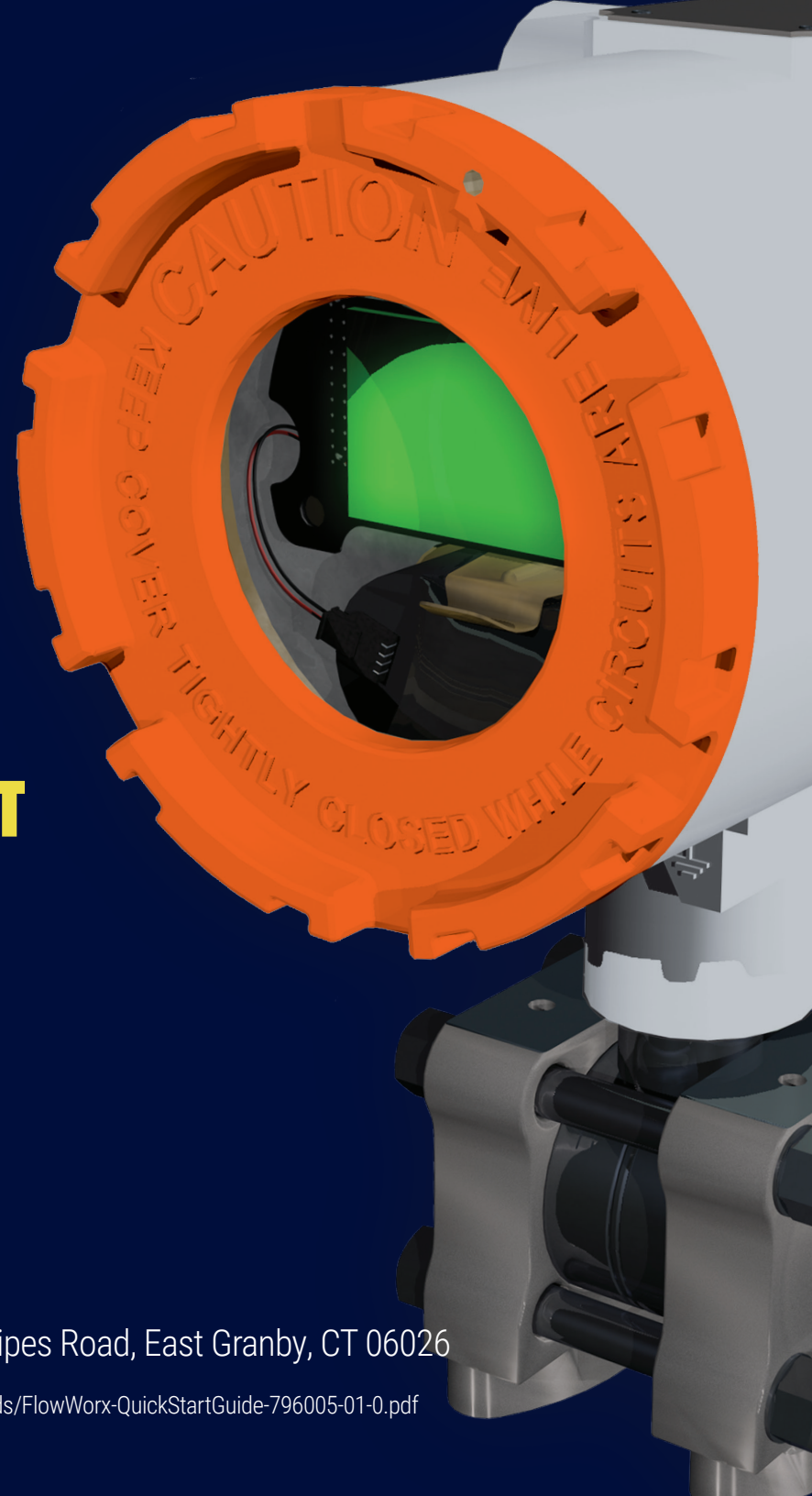




FLOW KING

FLOW COMPUTER & MEASUREMENT PLATFORM INSTALLATION GUIDE



FLOWWORX ENERGY LLC • 860.413.3058 • flowworxenergy.com • 29 Kripes Road, East Granby, CT 06026

796005-01-0 The latest version of this document may be found at <https://flowworxenergy.com/wp-content/uploads/FlowWorx-QuickStartGuide-796005-01-0.pdf>

1

Mechanical-Mounting and Pressure Connections

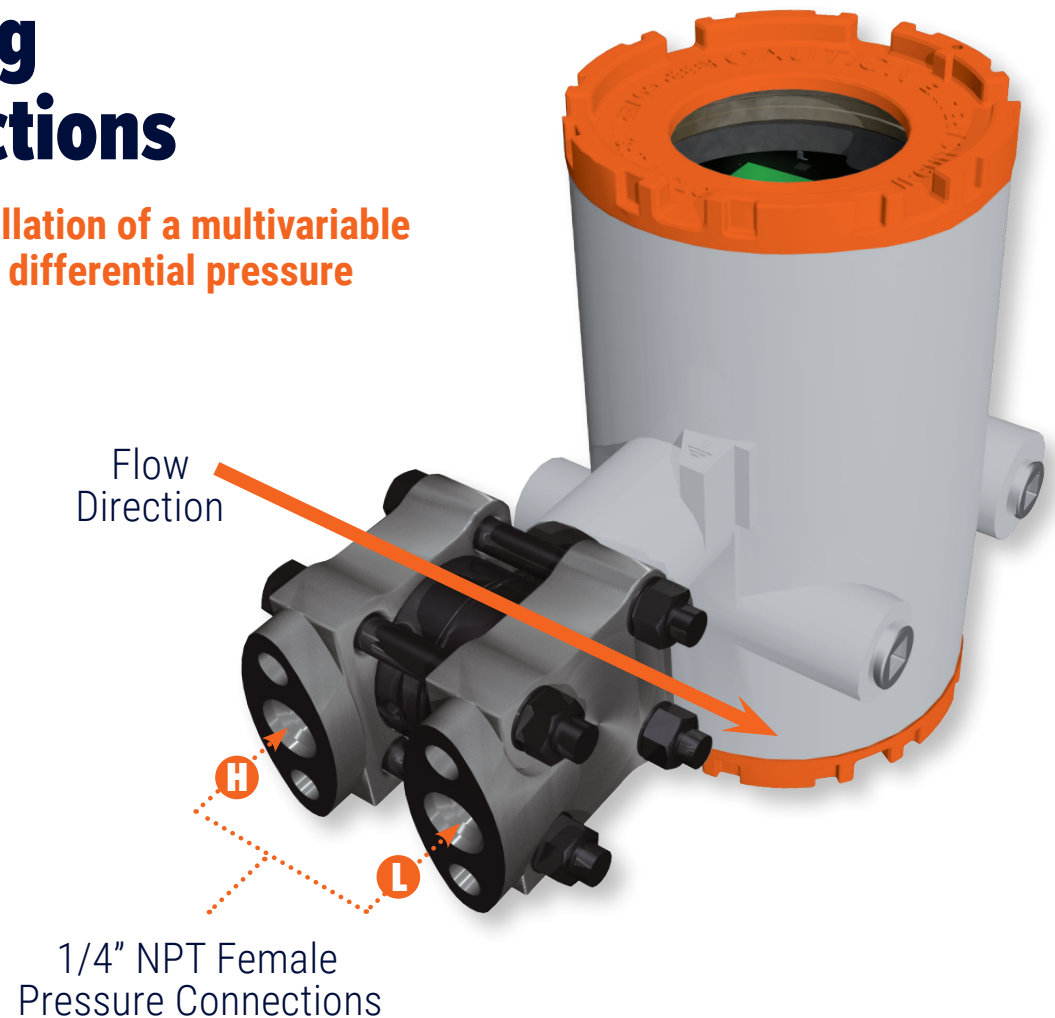
Follow your standard procedures for installation of a multivariable (DP/pressure/temperature) transmitter or differential pressure and temperature transmitters.



Hazardous Area Note: Before working in a hazardous area, use a gas detector to make sure that no hazardous gases are present.

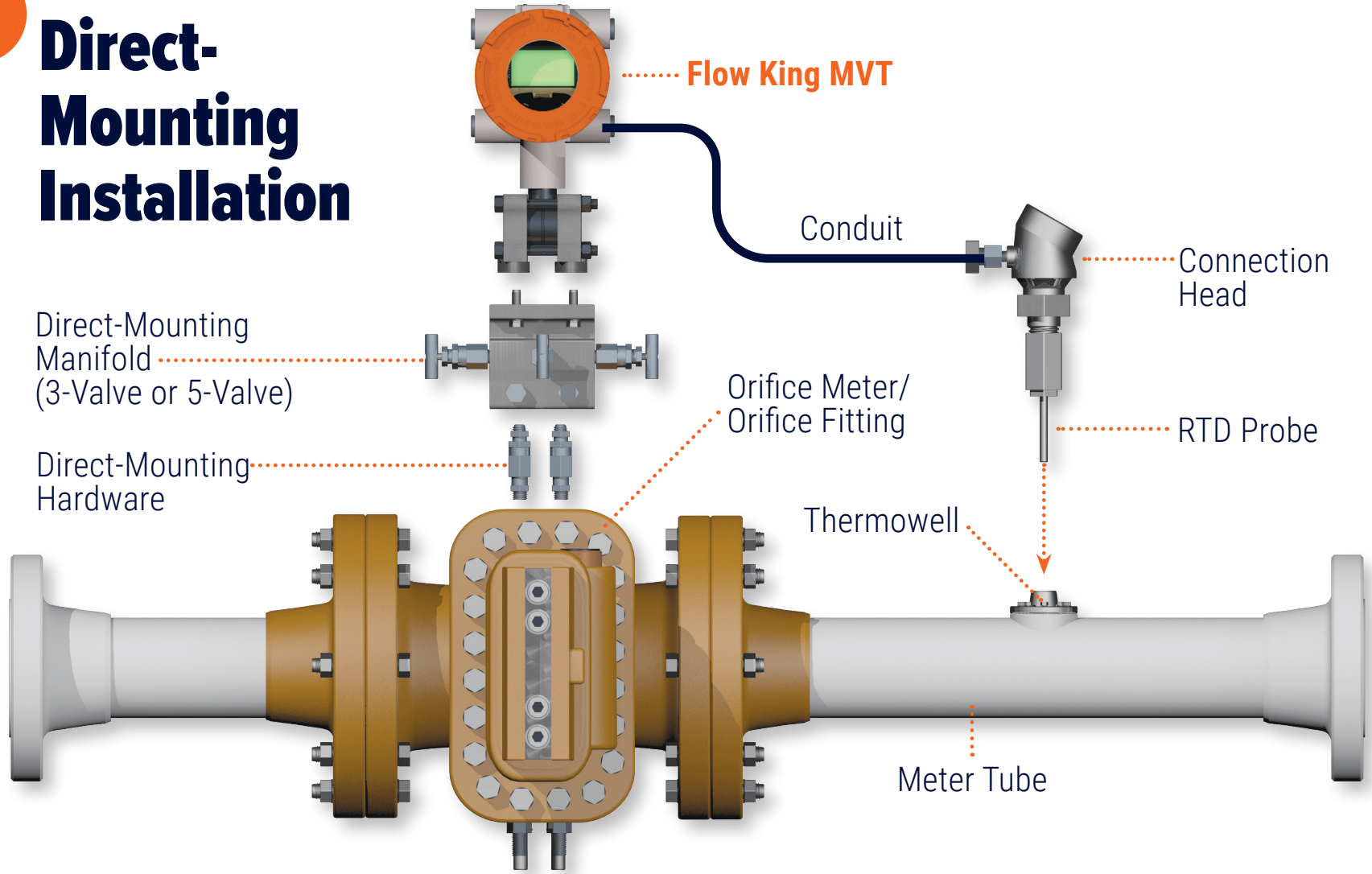
The Flow King MVT must be secured to a pipe, wall or direct-mounted to an instrument manifold.

Be sure fittings and torque meet maximum pressure rating requirements.



2

Direct-Mounting Installation



3A

Electrical Wiring

Connecting Power



Hazardous Area Note: In a hazardous area, use explosion-proof practices. Route wiring to the Flow King MVT through hard conduit.

3 ways to provide power to the Flow King MVT:

1 Connection

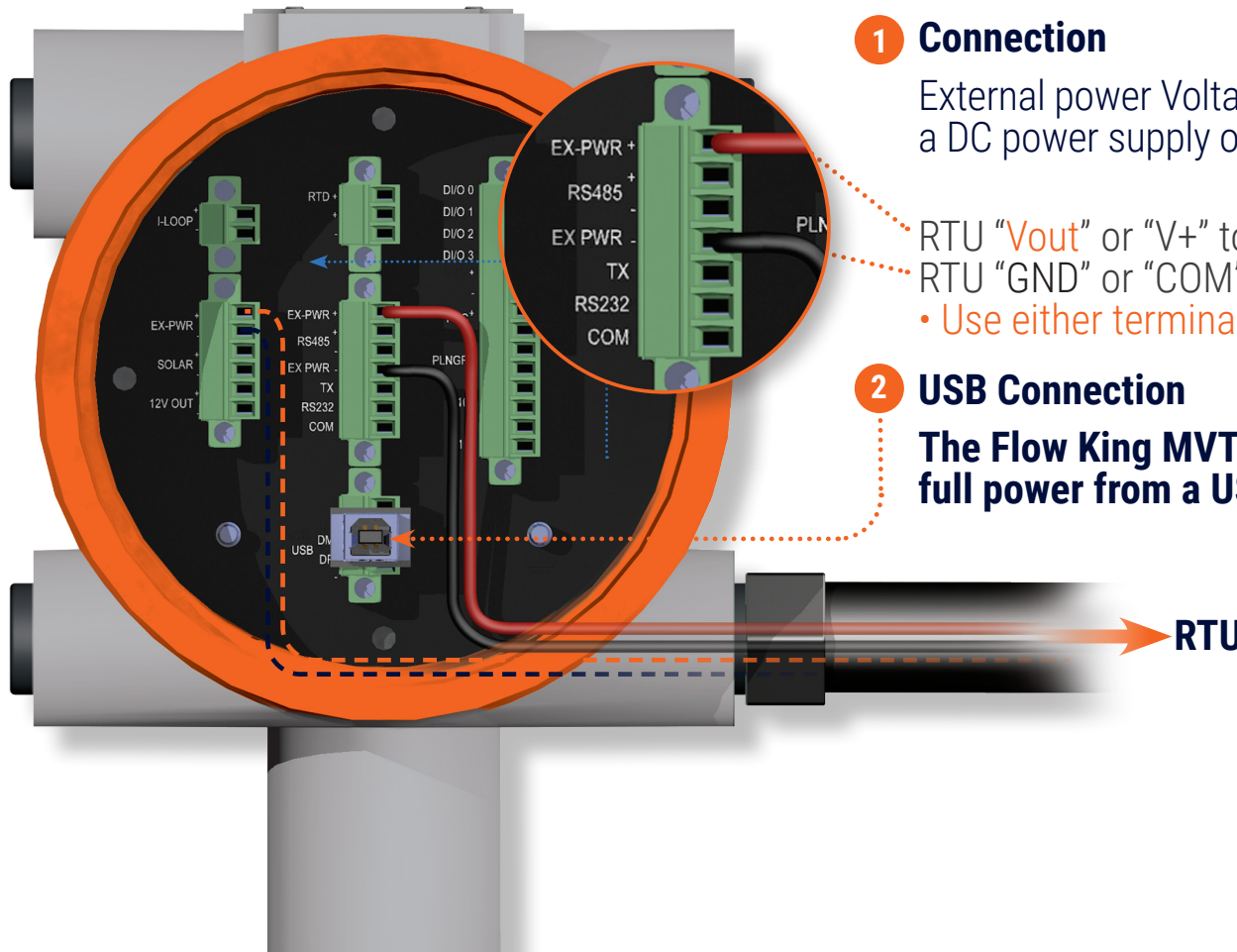
External power Voltage (Range: 4.0 to 30 Vdc) from a DC power supply or Remote Terminal Unit (RTU)

RTU "Vout" or "V+" to Flow King MVT "EX PWR +"
RTU "GND" or "COM" to Flow King MVT "EX PWR -"
• Use either terminal block for power

2 USB Connection

The Flow King MVT can also draw full power from a USB connection.

The internal grounding terminal shall be used as the primary equipment ground. The external terminal is only a supplemental bonding connection where local authorities permit or require such a connection.



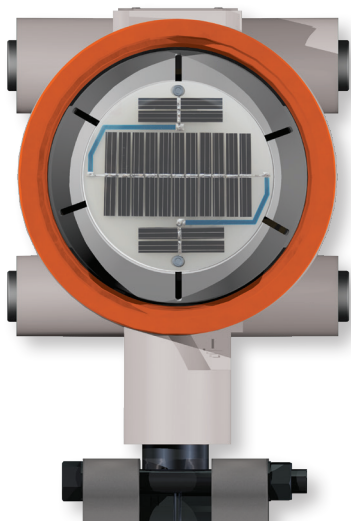
3B

Electrical Wiring (cont.)

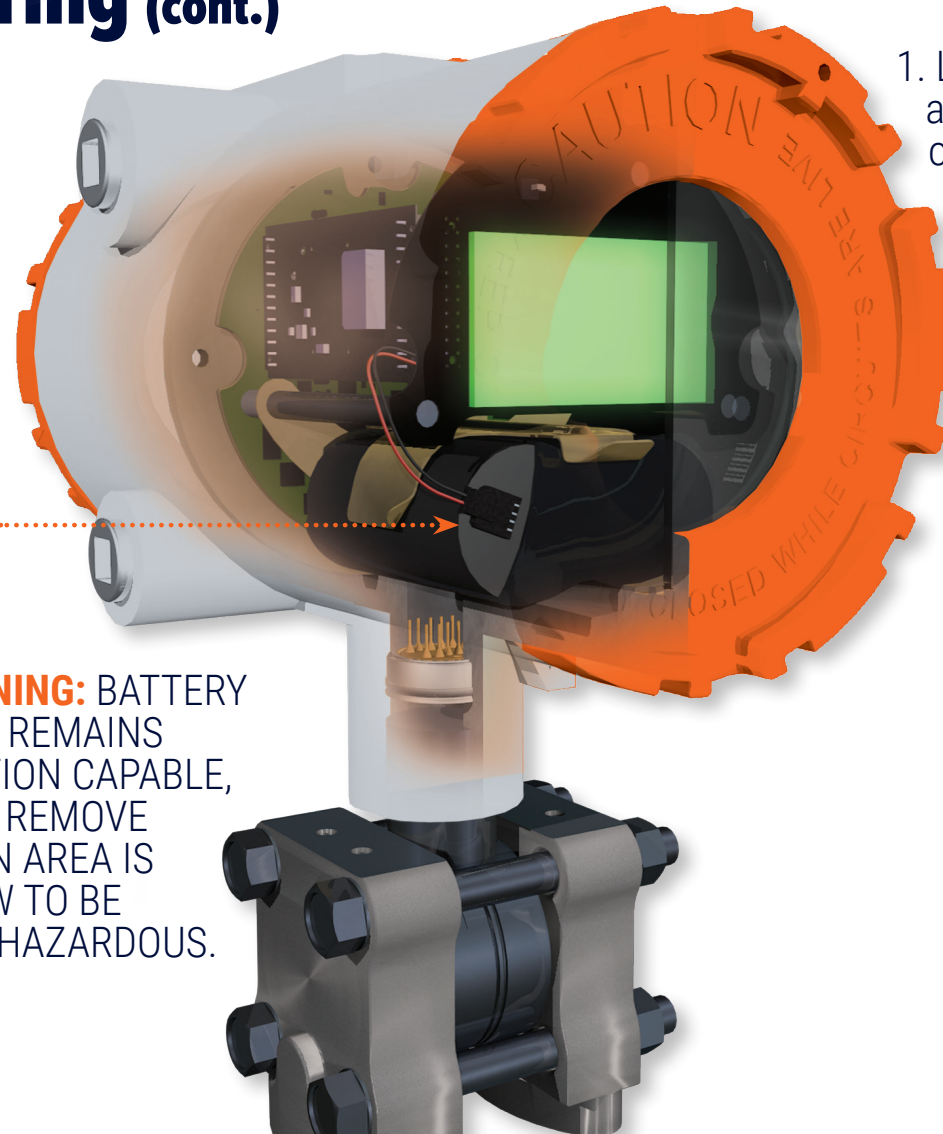
3 Internal Lithium or Lead Acid Cell Battery*

Lead Acid Cell Battery can be used with internal solar panel or external charging source.

Internal Solar Panel*



WARNING: BATTERY PACK REMAINS IGNITION CAPABLE, ONLY REMOVE WHEN AREA IS KNOWN TO BE NON-HAZARDOUS.



To Remove Battery:

1. Lift spring clip lever and pull battery pack out one inch.
2. Squeeze connector release lever on left and pull cable out of battery. Then pull the battery out the rest of the way.

*Optional Item

3C

Electrical Wiring (cont.)

Resistance Temperature Detectors (RTD)

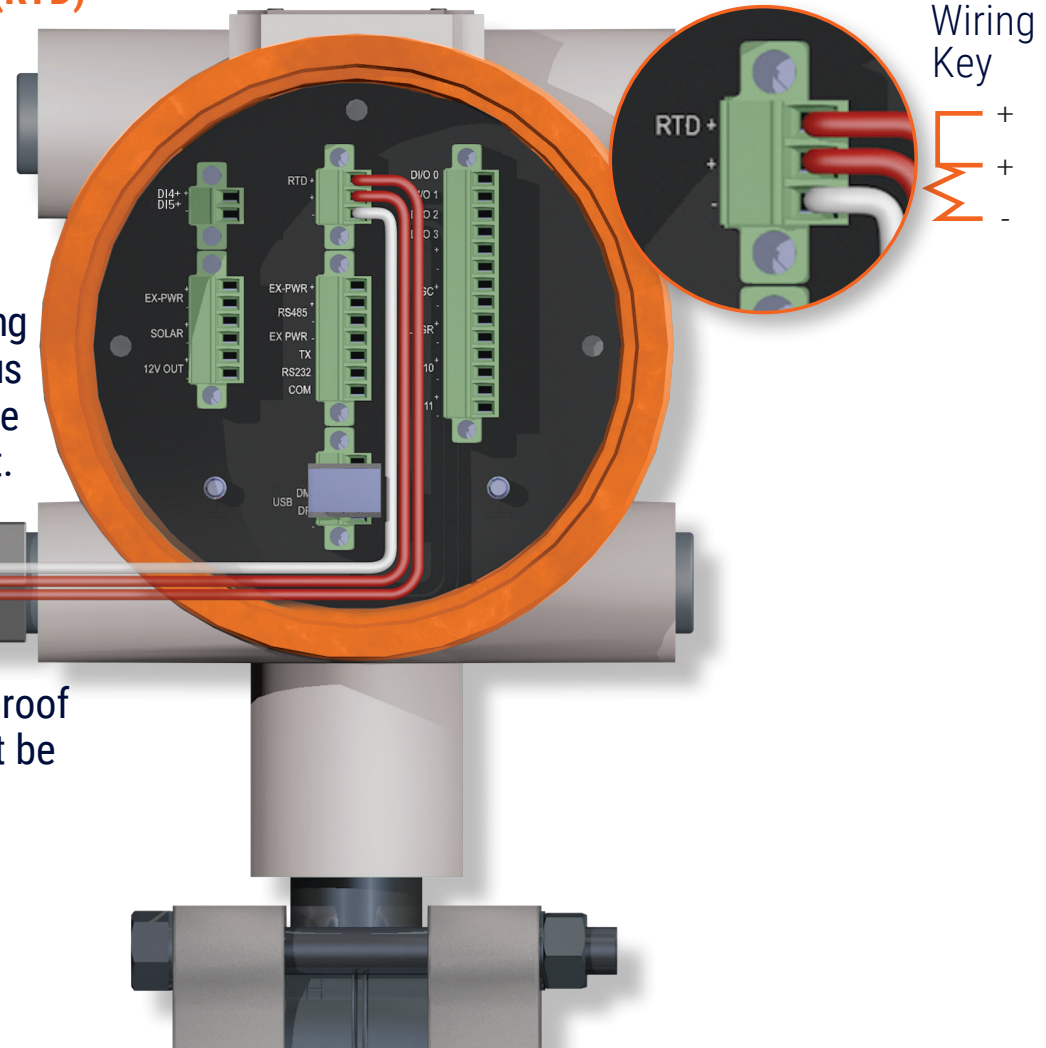
- Pluggable terminal blocks
- Use 2.5 mm screwdriver blade



Hazardous Area Note: Before connecting wires and applying power in a hazardous area, use a gas detector to make sure that no hazardous gases are present.

RTD

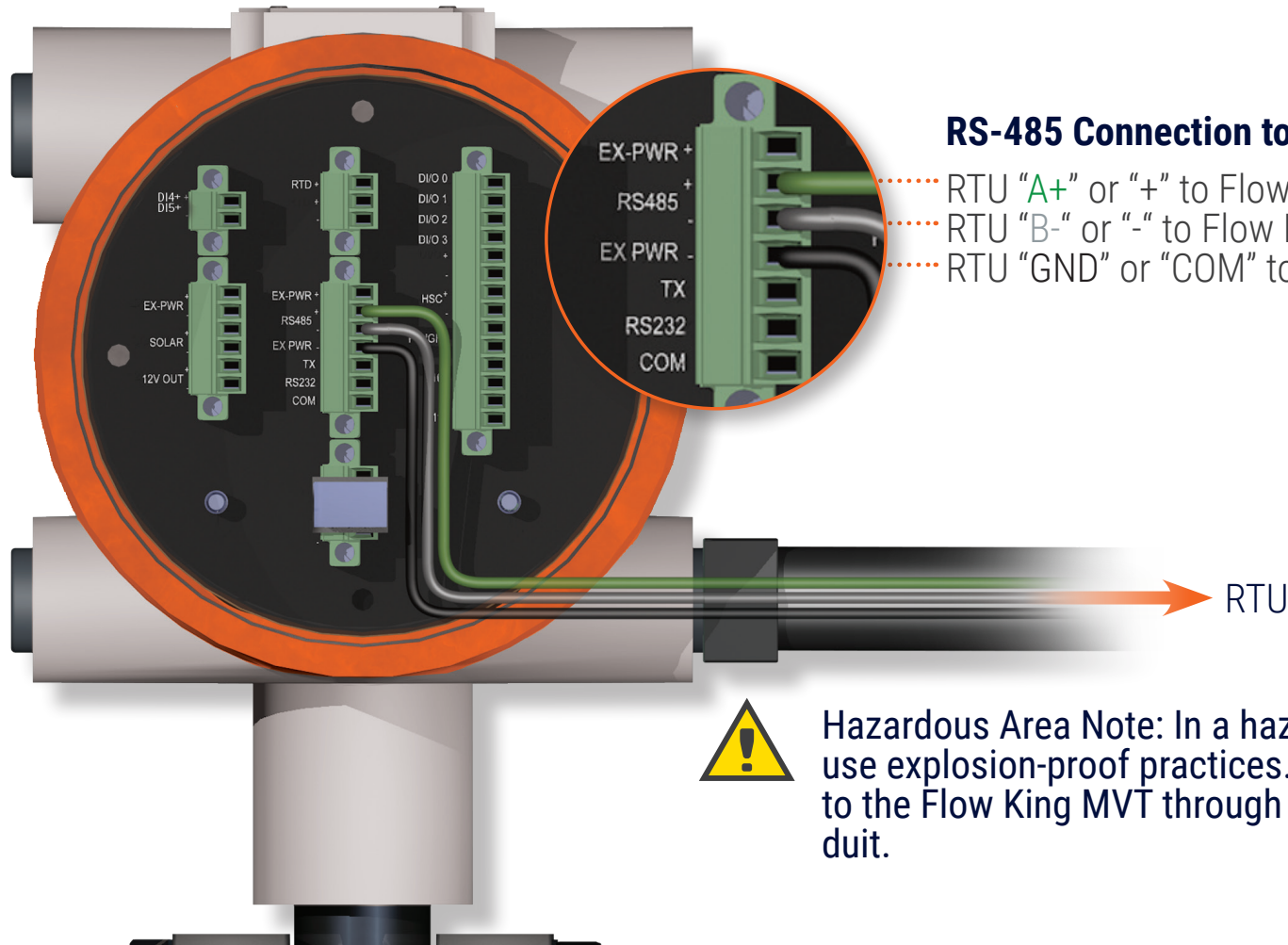
In a hazardous area, use explosion-proof practices. All permanent wiring must be routed through hard conduit.





Electrical Wiring (cont.)

Communications Ports



RS-485 Connection to RTU

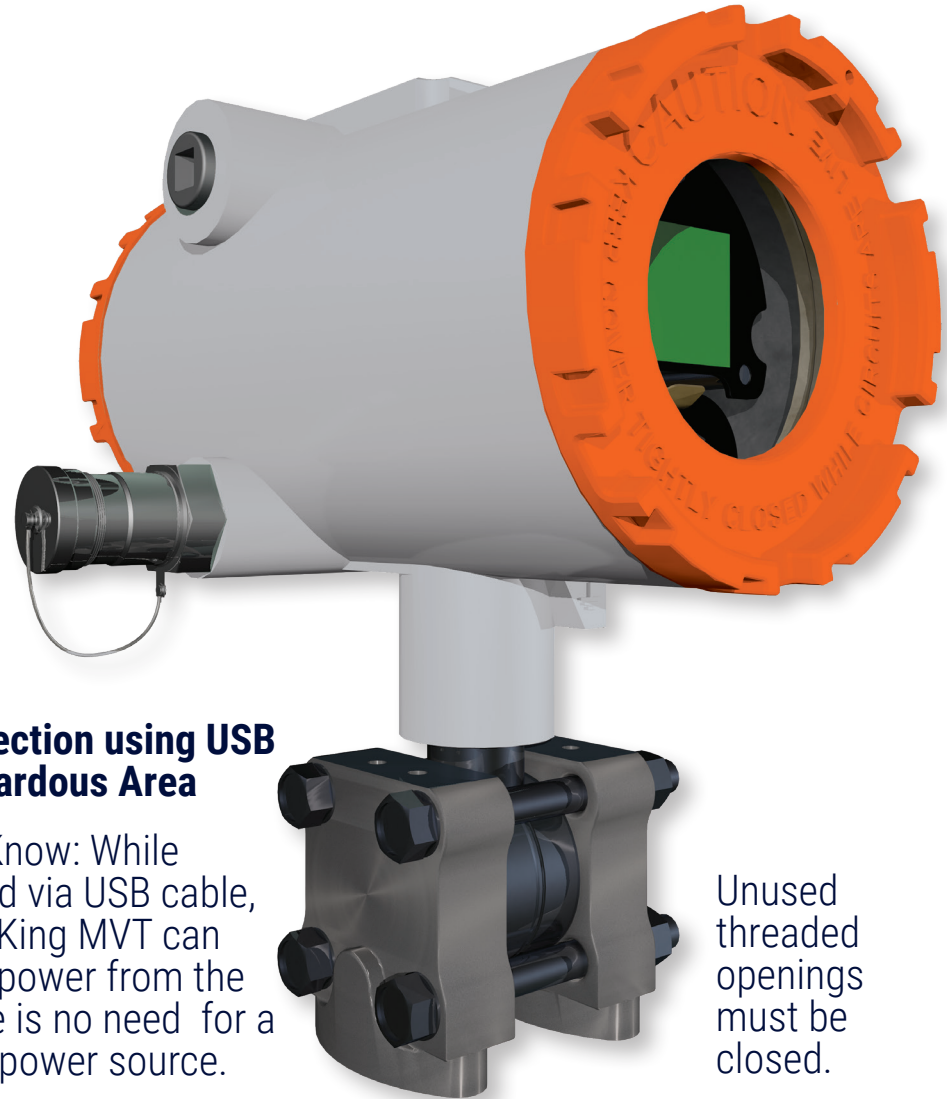
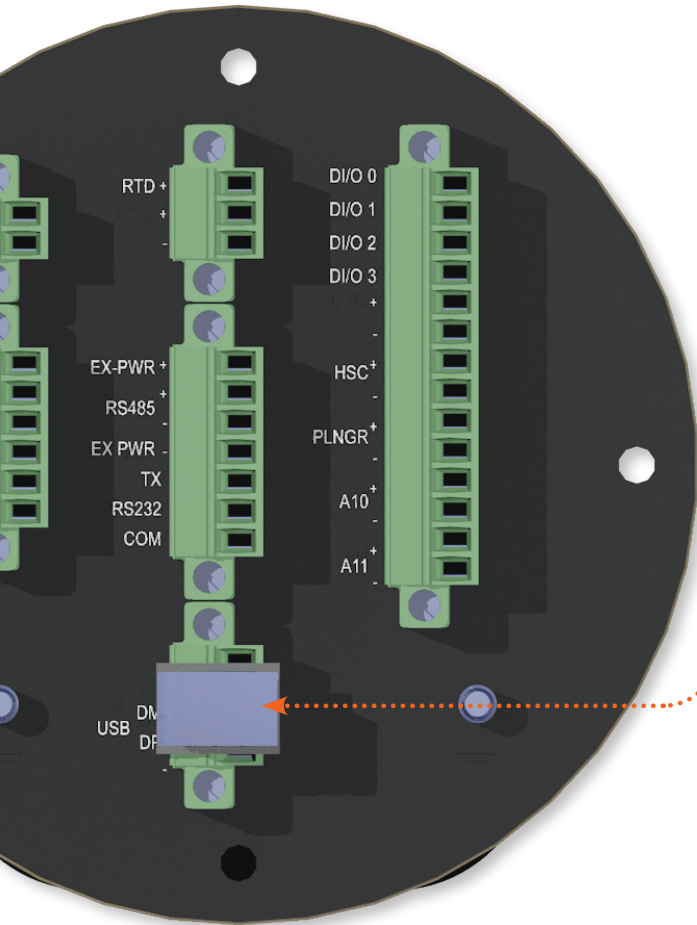
- RTU "A+" or "+" to Flow King MVT "+"
- RTU "B-" or "-" to Flow King MVT "-"
- RTU "GND" or "COM" to Flow King MVT "COM"



Hazardous Area Note: In a hazardous area, use explosion-proof practices. Route wiring to the Flow King MVT through hard conduit.

3E Electrical Wiring (cont.)

PC Connections



PC Connection using USB Non-Hazardous Area

Did You Know: While connected via USB cable, the Flow King MVT can draw full power from the PC. There is no need for a separate power source.

Unused threaded openings must be closed.

4A

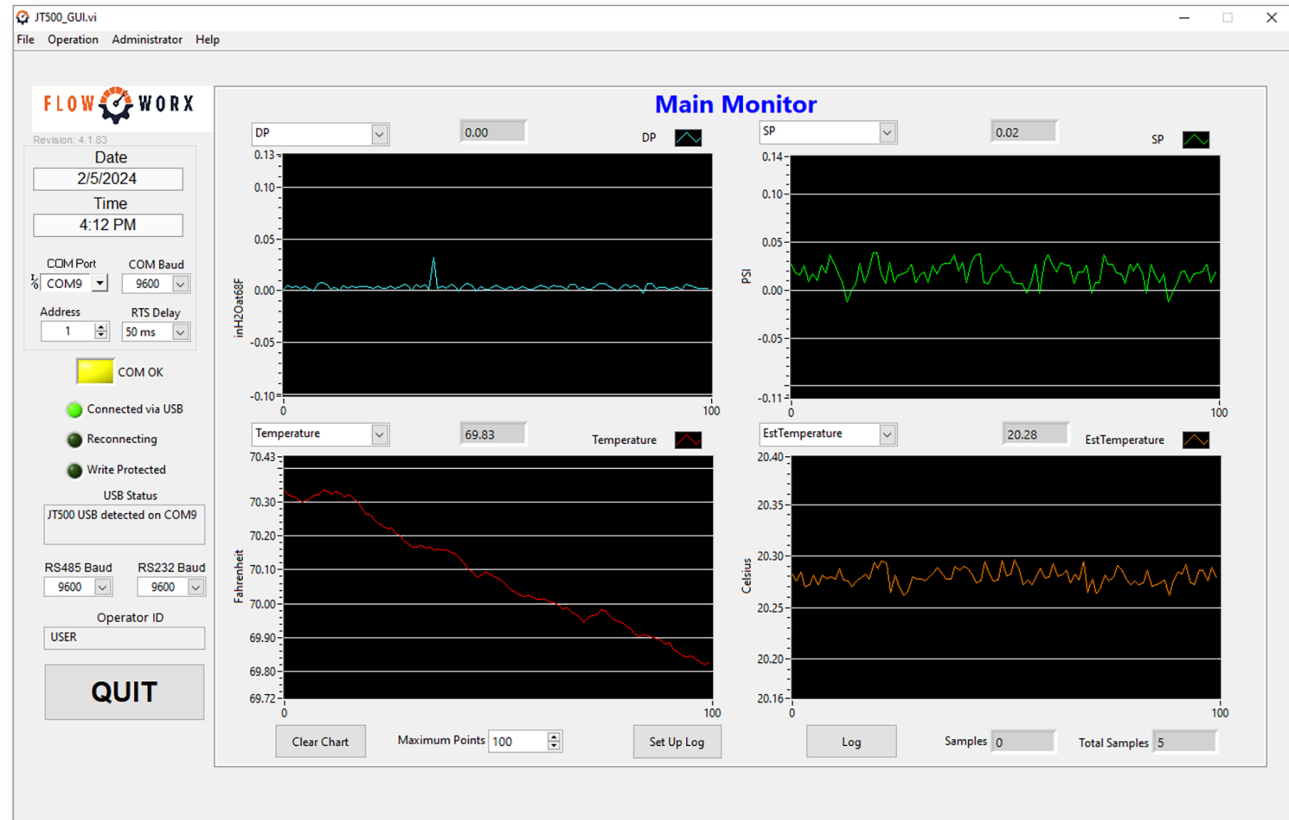
Calibration and Configuration

Software Installation

- Download the GUI, install on computer and run the User Interface installation process.
- On the desktop, click the “JT500 GUI” icon.

Main Screen

- If necessary, change the Communication Port, Baud Rate, and Transmitter Address settings.
- Click “Setup.”



4B

Calibration and Configuration (cont.)

Setup

- If necessary, enter a User Description and change Address, Units and Damping.
- Click "Close."

The screenshot shows a software interface titled "Set Address, Units & Configuration". At the top, it states "To Change the settings the Write Protection must be off". The interface is divided into several sections:

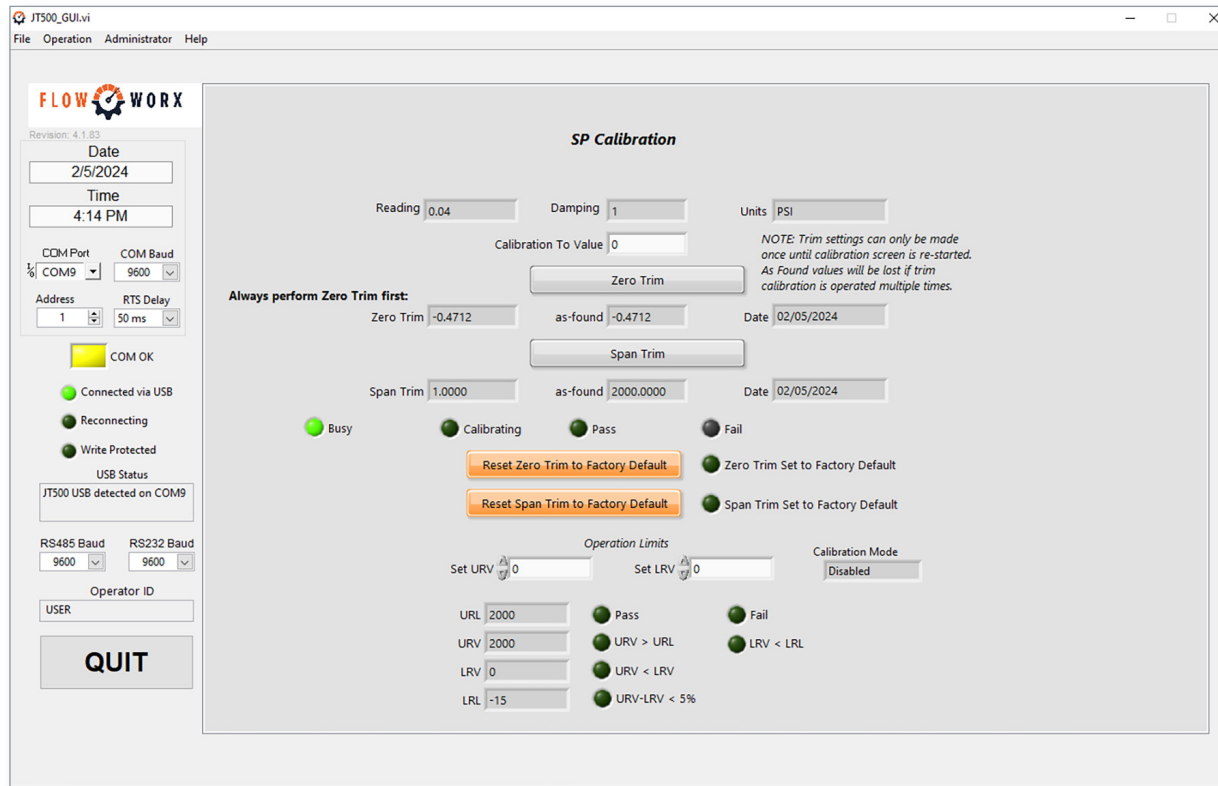
- General Settings:** Includes fields for Write Protection (0), Board Rev (0), Operator ID (12 chars), Station ID (30 chars), Meter ID (12 chars), BSAP Meter ID (12 nums), Change Address to (1 to 239) (1), and BSAP Group Number (0 to 127) (1). There are also buttons for "Read Config" and "Write Config".
- Calibration Mode:** Set to "OFF".
- Calibration Presets:** Three sections for DP, SP, and Temp. Each has a "Reading Option" (Predefined Value) and a "Preset Value" (11000011).
- Units:** A dropdown menu is set to "English". Below it, there are three columns: DP (Unit: inH2Oat68F), SP (Unit: PSI), and Temperature (Unit: Fahrenheit).
- Damping (sec):** Three input fields for DP (1), SP (1), and Temperature (4).
- Config File Path:** A text box containing "C:\Program Files...\JT500Config.ini" with a file explorer icon. To the right are four buttons: "Load cfg from file", "Save cfg to file", "Get cfg from JT500", and "Update cfg to JT500".
- Other Features:** "JT500 Clock" section with "Read JT500 Clock" and "Update JT500 Clock to current time" buttons.



Calibration and Configuration (cont.)

Calibration

- Click “Calibration.”





Calibration and Configuration (cont.)

Calibration

- Click “DP Calibration”.
- Always calibrate zero first.
- Apply a known pressure to the unit and enter that value in the “Calibration To Value” box. Wait 10 seconds.
- Click “Zero Trim” to change offset. Click “Span Trim” to change Slope. Close window.
- Repeat for Static Pressure (SP) and Temperature.
- Click “Generate Report” for an As found/ As left report in Excel.
- Click “Close” to exit.

Before Leaving Site



Hazardous Area Note: In a hazardous area, close end caps tightly (at least seven turns) to be sure of an explosion-proof seal.

DP Calibration

Reading Damping Units

Calibration To Value

Zero Trim

Zero Trim first:

Zero Trim as-found Date

Span Trim

Span Trim as-found Date

Busy Calibrating Pass Fail

Zero Trim Set to Factory Default

Span Trim Set to Factory Default

Operation Limits

Set URV Set LRV Calibration Mode

URL Pass Fail

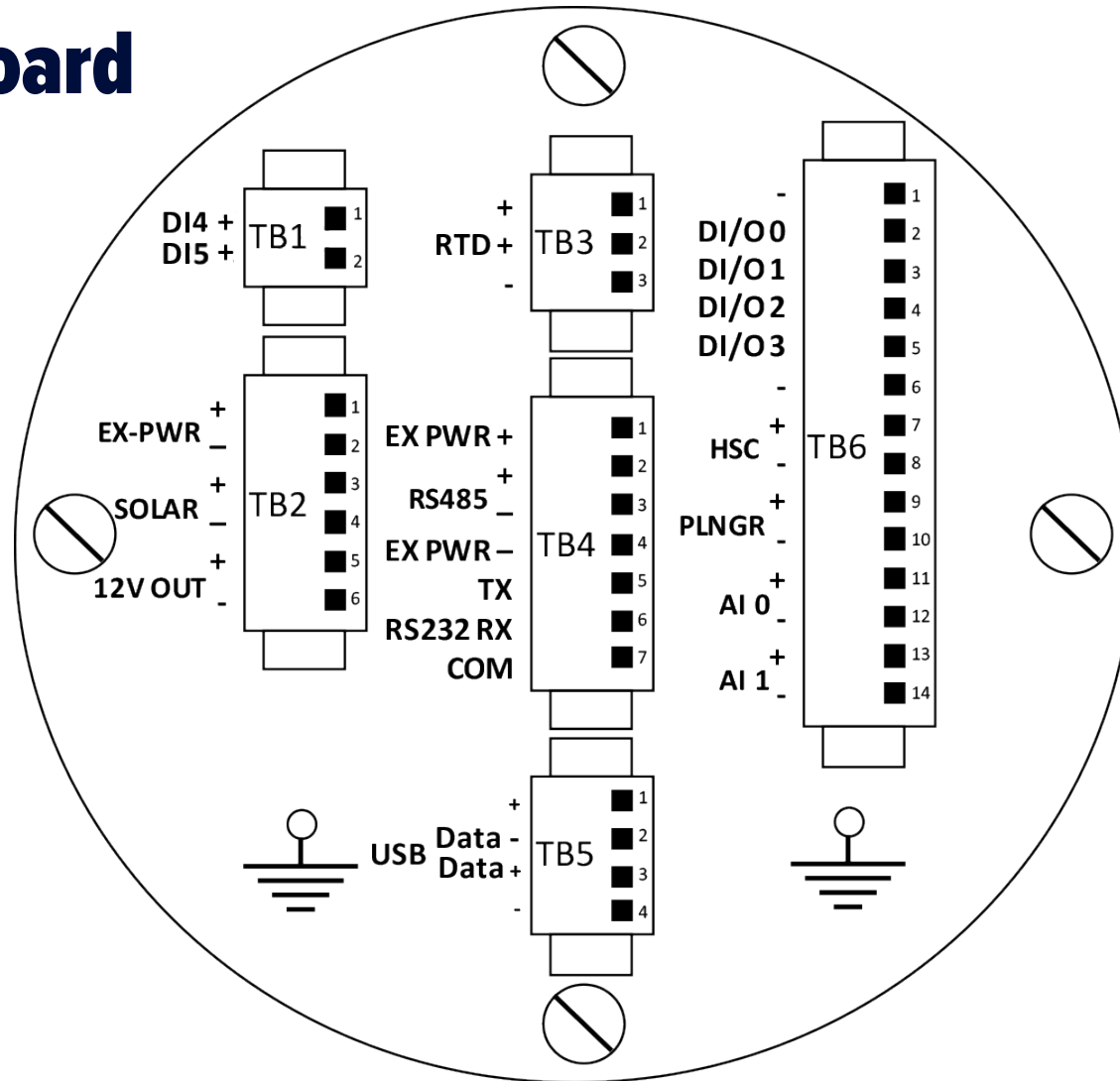
URV URV > URL LRV < LRL

LRV URV < LRV

LRL URV-LRV < 5%

NOTE: Trim settings can only be made once until calibration screen is re-started. As Found values will be lost if trim calibration is operated multiple times.

5 Terminal Board Diagram





Electrical Ratings

This device is to be connected to an isolating source, such as a transformer, that has no direct connection to the primary circuit, other than through the grounding means, and can supply no more than 30 VAC, 8A and 100 VA.

TB1-1 DI 4	Input, Digital, switch, open drain, 0-30V
TB1-2 DI 5	Input, Digital, switch, open drain, 0-30V
TB2-1 EX-PWR +	Input - External Supply 4.0 to 30Vdc, 50mA max, Class 2 Power System tied directly to TB4-1. External Power Common
TB2-2 EX-PWR -	
TB2-3 SOLAR +	Input - Solar Panel 12Vdc, 100mA max. Solar Common
TB2-4 SOLAR -	
TB2-5 12V OUT +	Optional Output - 12Vdc, 250 mA max. 12V Out Common.
TB2-6 12V OUT -	
TB3-1 RTD +	Input RTD 5Vdc, Pt100 3-wire 275uA
TB3-2 RTD +	
TB3-3 RTD -	
TB4-1 EX-PWR +	Input - External Supply 4.0 to 30Vdc, 50mA max, Class 2 Power System tied directly to TB2-1. RS485 + Signal RS485 - Signal External Power Common Output – RS232 Transmit Input – RS232 Receive RS232 Common
TB4-2 RS485 +	
TB4-3 RS485 –	
TB4-4 EX-PWR -	
TB4-5 RS232 TX	
TB4-6 RS232 RX	
TB4-7 RS232 COM	
TB5-1 +	USB Power 5Vdc, 2mA plus 15mA for communications (17mA Total) max.
TB5-2 DM	USB Data –
TB5-3 DP	USB Data +
TB5-4 -	USB Power Common

6B Electrical Ratings (cont.)

TB6-1 -	Signal Common
TB6-2 D I/O 0	Digital Input / Output 0 thru 3 , Input: 5Vdc, Output: Open Drain, 4 to 30Vdc, 500mA General Purpose, 100mA Pilot Duty.
TB6-3 D I/O 1	
TB6-4 D I/O 2	
TB6-5 D I/O 3	
TB6-6 -	Signal Common
TB6-7 HSC +	Input – (HSC) High Speed Counter Switch, Open Collector, Drain Input
TB6-8 HSC -	HSC Signal Common
TB6-9 PLNGR +	Input – (PLNGR) High Speed Switch, Interruptable, Debounced
TB6-10 PLNGR -	PLNGR Signal Common
TB6-11 AI 0 +	Input (Analog) 1-5Vdc max.
TB6-12 AI 0 -	Analog Input Signal Common
TB6-13 AI 1 +	Input (Analog) 1-5Vdc max.
TB6-14 AI 1	Analog Input Signal Common

Battery Power: Lead Acid Type 4Vdc, 1mA max.
Lithium 7.2Vdc, 1A max.



Ground Symbol indicates Case (Earth) Ground.



Signal/Power Common. Isolated from case ground.

Temperature Ratings: Operating Temperature range: -40 to +60 C
Process Temperature range: -40 to 100 C

External Connections: 1/2" and 3/4" NPT Conduit Connections. Use UL approved Type 4 conduit plugs to seal unused conduit ports.

7 Pipe-Mounting Installation

