



VIBRATION ANALYSIS HARDWARE



**MX542 Mini-MAXX Box  
1-2 Channel  
Product Manual**

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## INTRODUCTION

CTC mini-MAXX Boxes provide a common location for routine data collection with portable data collectors by bringing sensor cables into 1-4 channel termination points. CTC mini-MAXX Boxes provide BNC outputs for each channel.

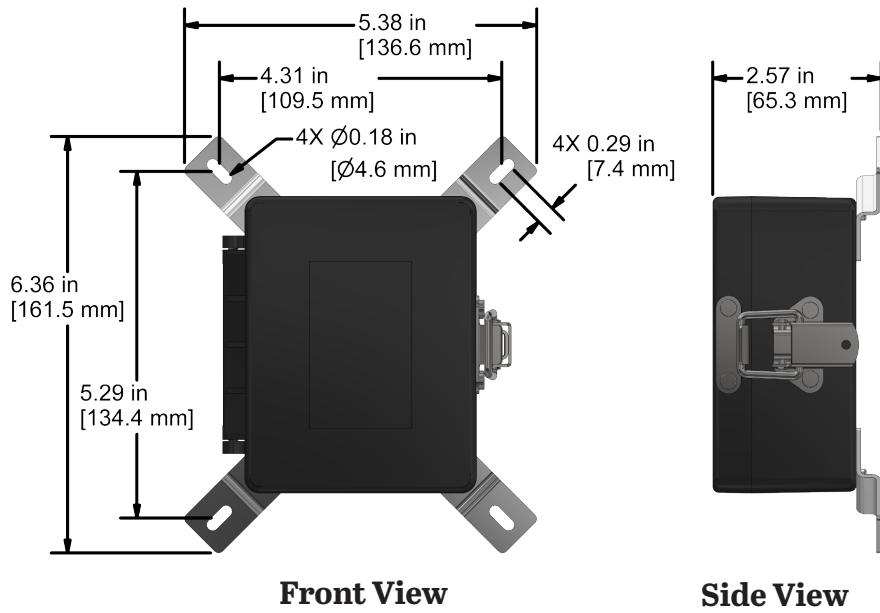
### MX542 Overview

The MX542 Series is a powder-coated aluminum junction box that provides connection of the three-conductor input wiring of up to two dual output vibration and temperature accelerometers or piezo velocity sensors to a portable data collection unit. Each sensor is wired to BNC connectors via an internal terminal strip that is located on the reverse side of the BNC panel. Four connections per channel are clearly labeled along the terminal strip – signal/power, common and ground with the shield drain wire earth grounded via the aluminum enclosure.

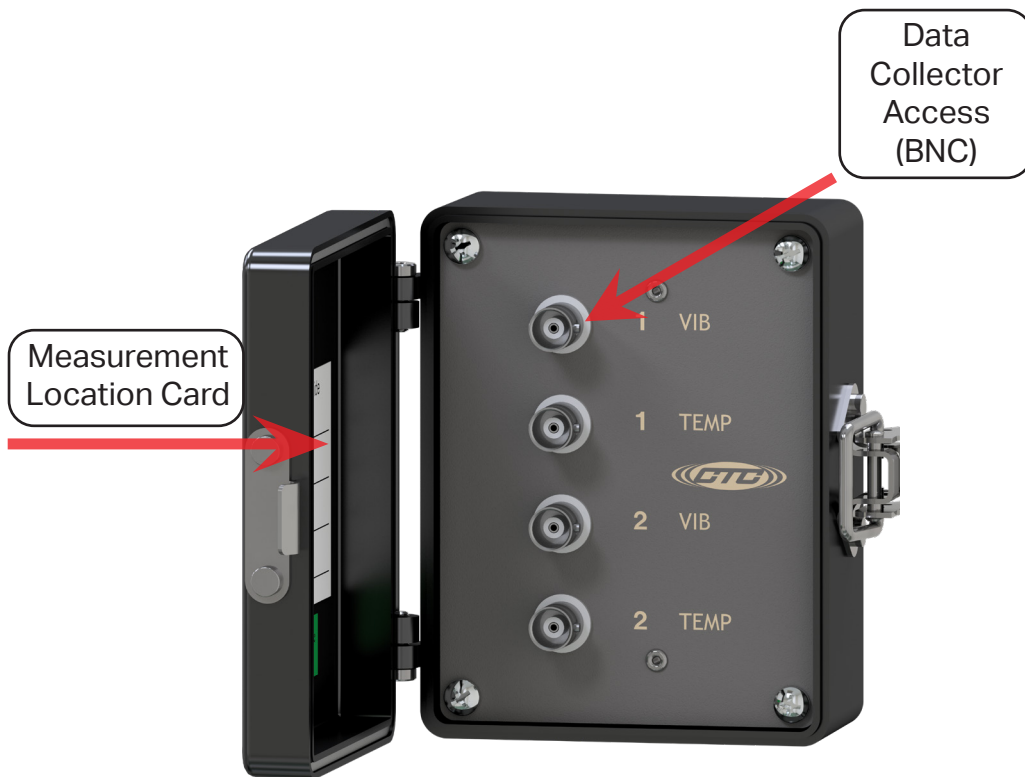
Each MX42 features a hinged cover door with a snap latch to protect the BNC connectors when not in use. Located on the inside of the door is a measurement location card that the user can use to identify and label each BNC connector. Rated for NEMA 4X (IP66), the box is also resistant to hose directed fluid and corrosion and is rated for temperatures ranging from -58° to 180° F (-50° to 82° C). This mini-MAXX box measures 3.54 in. W x 4.53 in. H (89.9 mm W x 115.1 mm H), allowing it to be installed in many locations.



# PRODUCT DIMENSIONS



**Figure 1. Dimensions**

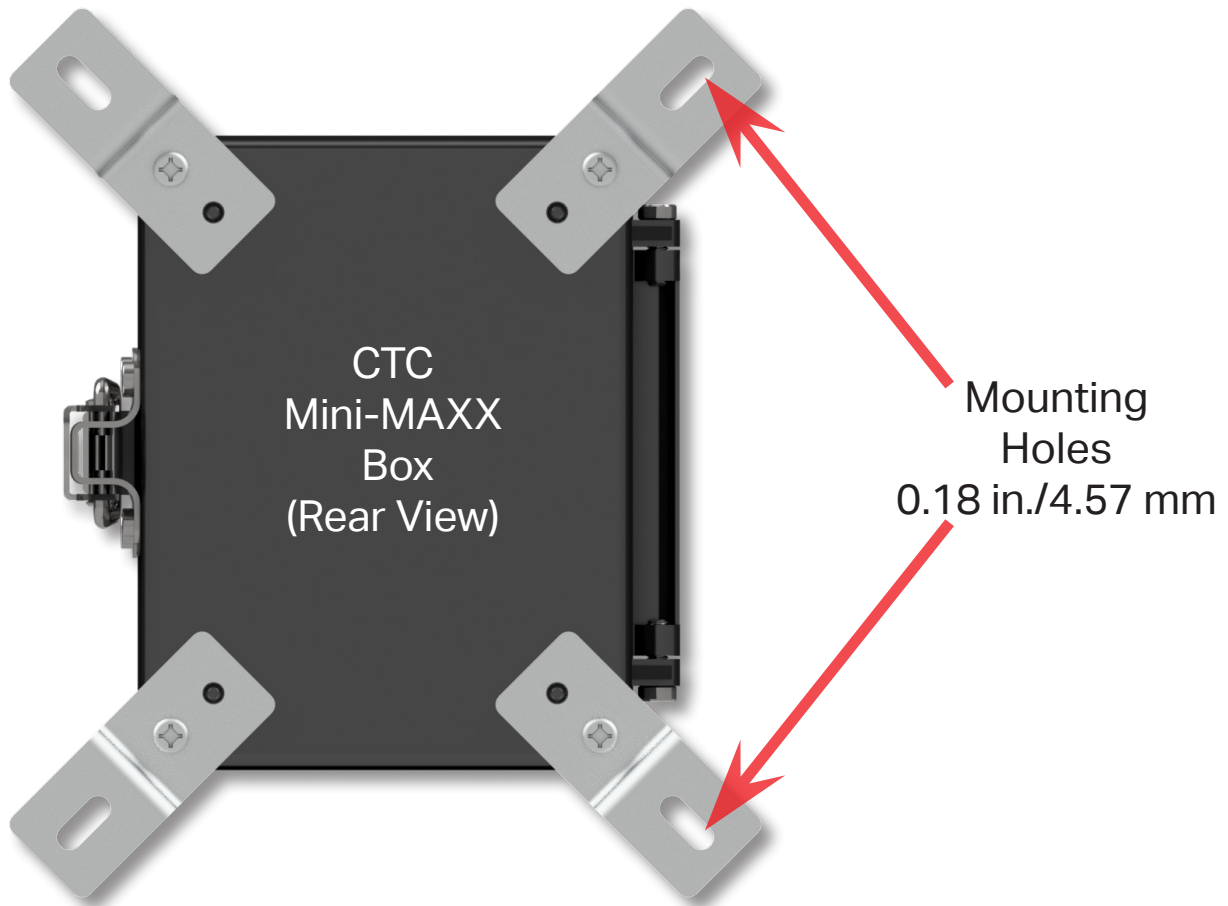


**Figure 2. Diagram**

## MOUNTING INSTRUCTIONS

Independent stainless steel mounting feet are included with the enclosure. Wall anchoring screws are not included.

**Note:** If you have purchased a MX542 box without cable entries provided, you should add your own entry prior to mounting the termination box. CTC does not recommend drilling holes in the top of the enclosure as it will cause restricted access to the wire termination connection points and also allow possible moisture ingress.

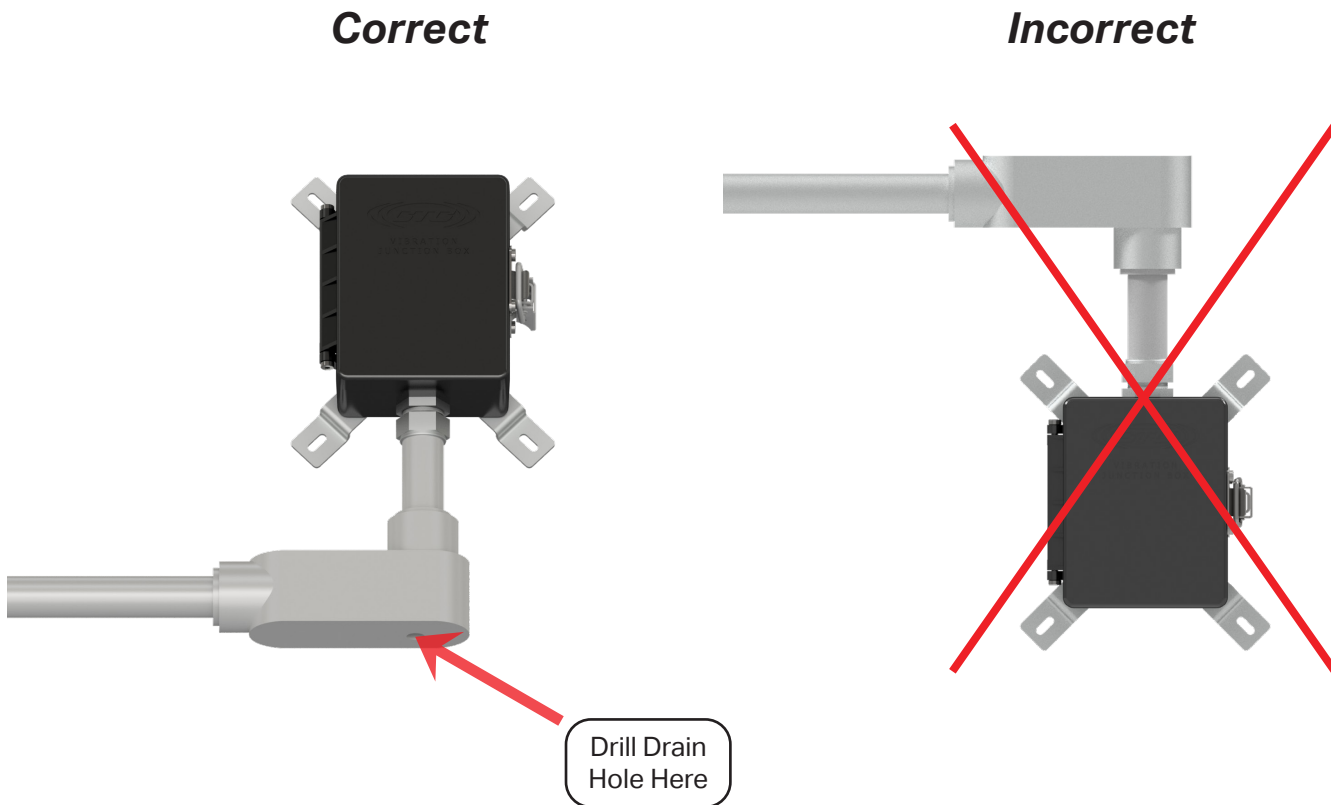


**Figure 3. Mounting Bracket Placement**

## CONDUIT ENTRY

If you are running conduit to your enclosure, ensure the conduit enters from the bottom of the enclosure when mounted.

**Note:** To ensure moisture will not flow into the enclosure, a hole should be drilled at the lowest point in the conduit to provide drainage for any moisture.



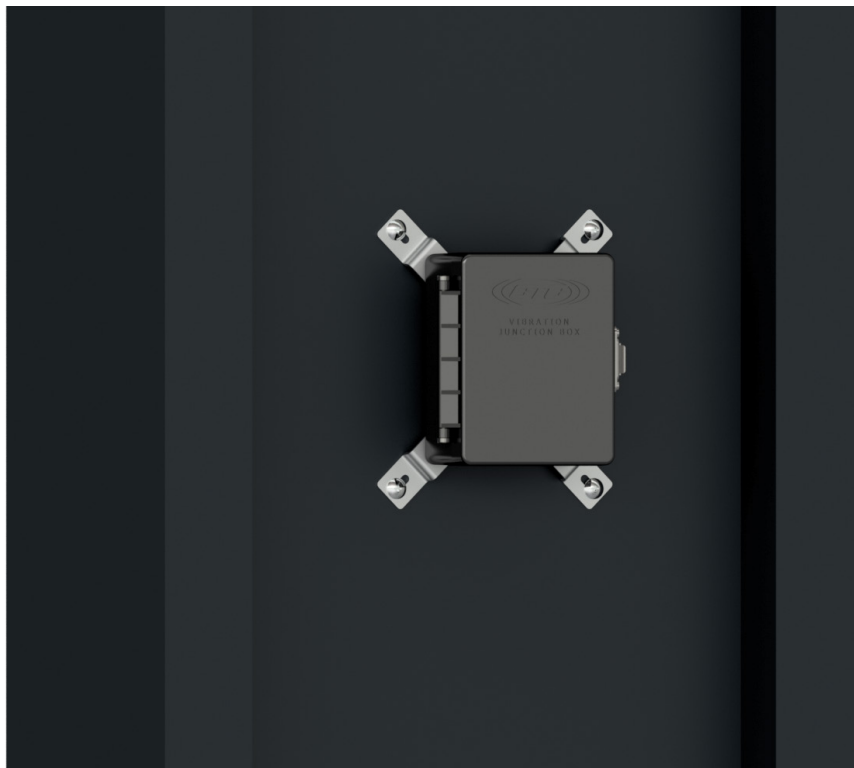
**Figure 4. Conduit Entry for Termination box**

## GROUNDING

Ensure the shield ground wire on the MX542 Series Termination Box is grounded to earth ground.

### *A. Mounting to Earth Ground*

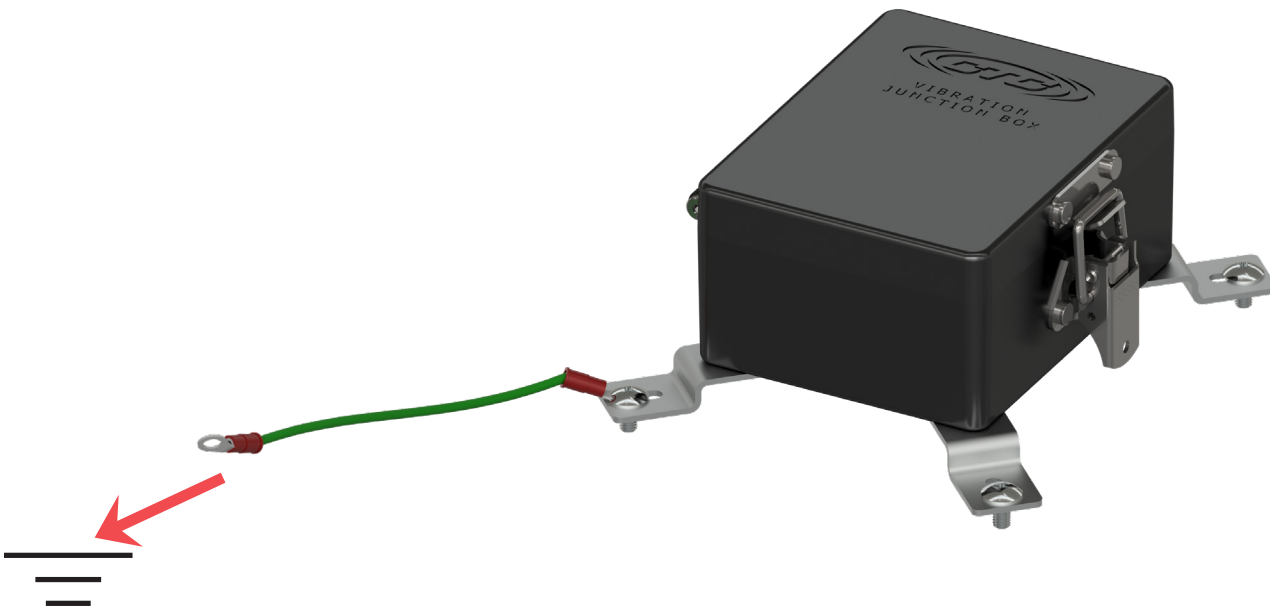
When mounting an MX542 Series Termination box to earth ground (such as an I-Beam), no additional steps are necessary, as the enclosure is grounded internally.



***Figure 5. Termination Box (MX542) Earth Ground***

## B. Mounting to non-grounded structure

When mounting the MAXX box to a non-grounded structure, ensure the shield ground wire or customer supplied ground wire is tied to a source of earth ground.



**Figure 6. Ground Wire Placement**

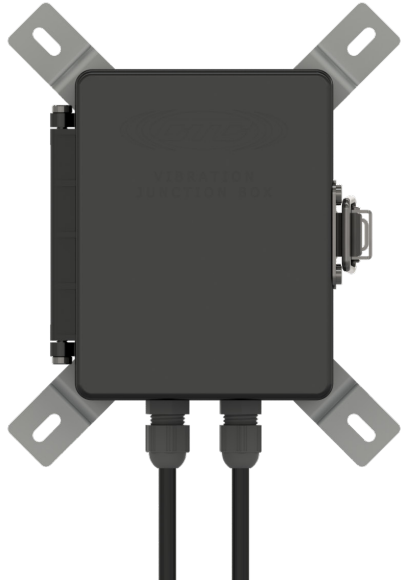
## SENSOR INSTALLATION

### Installation of sensors/signal input cable

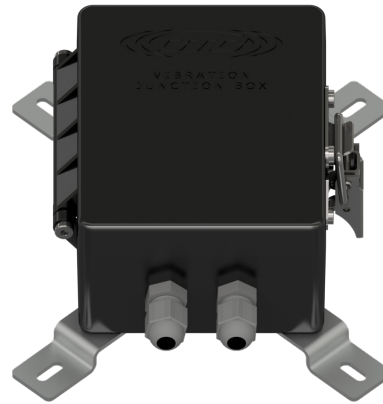
1. Feed blunt end through the cable entry at the bottom of the enclosure.  
**Note:** it is recommended that cables are marked on both ends.

For cord grip cable entry, take off the cord grip cover with bushing and run cable through cord grip cover and into enclosure, then hand tighten cord grip cover to base.



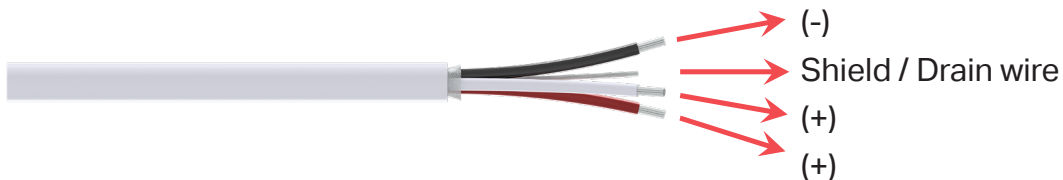


**Figure 7. Front View**



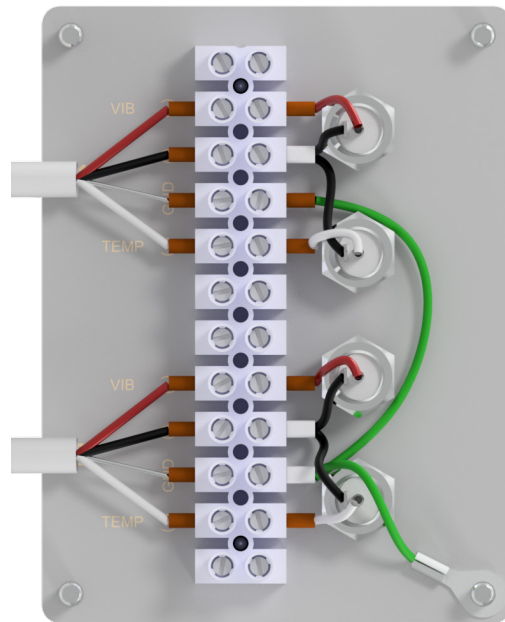
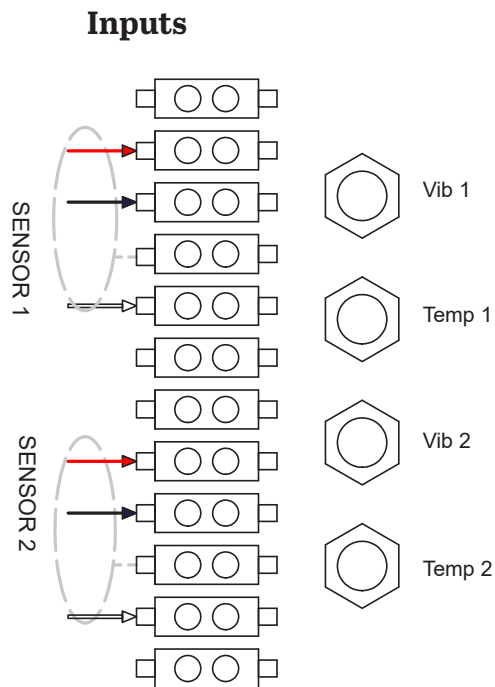
**Figure 8. Bottom View**

1. Strip outer jacket of cable back 1¼ in. and remove all of the shielding.
2. Separate the internal wires from the shield.
3. Strip red, black, and white insulation back ¼ in.



**Figure 9. Stripped Wire**

4. While viewing the rear of the panel, locate the appropriate channel. Using a mini flathead screwdriver, loosen the three screws for the channel and insert the wires into the termination block. Orientation is as follows:
  - a. Red insulated conductor wire is connected to (+) Vibration.
  - b. Black insulated conductor wire is connected to (-).
  - c. Shield drain wire is connected to ground (GND).
  - d. White insulated conductor wire is connected to (+) Temperature.
  - e. Tighten the screw on each wire to hold it in place.



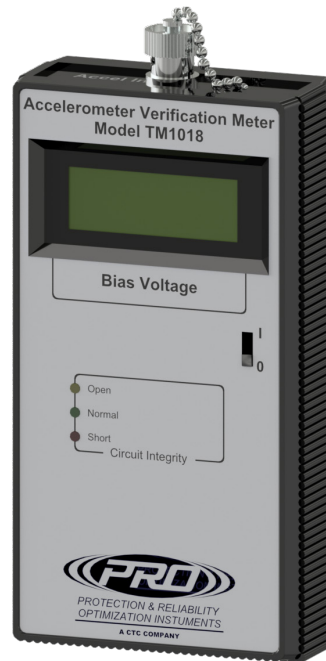
Sensor Inputs  
 Red = Positive Vib  
 Black = Common  
 Grey = Shield (Ground)  
 White = Positive Temp

**Figure 10. Field Wiring for 2-Conductor Sensor Inputs**

5. Mark the Measurement Location Card located on the inside front cover with a description of each measurement location.

## POST INSTALLATION TESTING

The TM1018 Accelerometer Verification Meter can be used to verify cable conductivity, sensor location and proper wiring connections. The Verification Meter will indicate if the sensor, cable and/or junction box is in working condition. It will also confirm bias voltage of the accelerometer, which will inform you of the operation of the internal accelerometer amplifier.



**Figure 11. TM1018 Accelerometer Verification Meter**

### Testing Method:

1. Utilizing two personnel, Person A will be located at the termination box, while Person B will be located at the measurement location.
2. Once positioned, Person A will connect the TM1018 to the Vib output channel of the MX542, Person A should observe a "NORMAL" LED reading.
3. Person B disconnects the cable from the accelerometer, and the TM1018 should respond with an "OPEN" LED. Reconnect the cable to the accelerometer, and the TM1018 should respond with a "NORMAL" LED.
4. Repeat for each Vib measurement location to verify that accelerometer location is properly identified at the termination box.

The following LED Readout indicates the circuit integrity:

1. Green LED: Normal. Indicates proper connection and an output bias will be given, indicating the health of the sensor (4 – 16 V indicates a healthy accelerometer).
2. Yellow LED: Open Circuit. Indicates one of the following:
  - a. Cable connector is not connected to accelerometer.
  - b. Cable is open circuit (broken or not connected @ one end).
  - c. Accelerometer is not functioning correctly
3. Red LED: Short Circuit. Indicates one of the following:
  - a. Water or contamination in the connector.
  - b. Reverse Wiring ((+) and (-) leads are reversed).
  - c. Wires in termination box or cable connector (+) & (-) are touching.



# WARRANTY & REFUND

## Warranty

All CTC products are backed by our unconditional lifetime warranty. If any CTC product should ever fail, we will repair or replace it at no charge.

## Refund

All stock products qualify for a full refund if returned in new condition within 90 days of shipment. Build to order products qualify for a 50% refund if returned in new condition within 90 days of shipment. Custom products are quoted and built specifically to the requirements of the customer, which may include completely custom product designs or private labeled versions of standard products for OEM customers. Custom products ordered are non-cancellable, non-returnable and non-refundable.

