



VIBRATION ANALYSIS HARDWARE



**MMX-MOD3 MAXX Box Module
3 Sensor Inputs
Product Manual**

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INTRODUCTION

This document will explain the operation, setup, installation and maintenance of the MMX-MOD3 modules, for use with vibration sensors. This module will take the input from up to three separate single axis, 2 wire sensors, one dual output sensor where the common is shared between the dual output sensor, or one triaxial output sensor, where the "common" is shared between all sensors.

Product Description

The MMX-MOD3 module is a DIN rail mountable component with a small footprint to accommodate limited spaces, and has been designed to allow flexibility in adding a common collection point for vibration sensors. The modules are traditionally mounted inside a protective enclosure.



PRODUCT DIMENSIONS

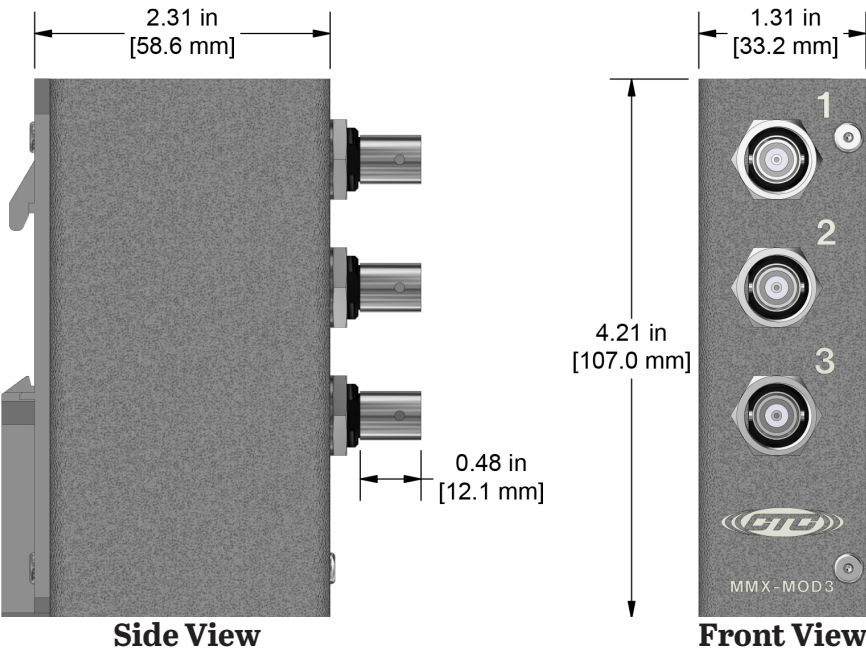


Figure 1. Dimensions

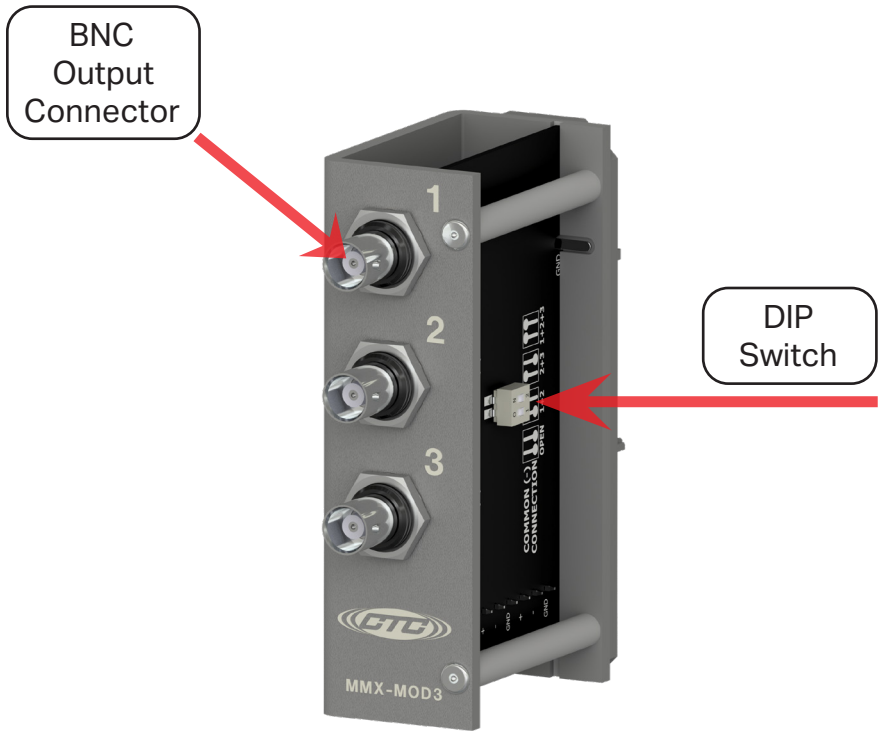


Figure 2. Diagram

MOUNTING INSTRUCTIONS

The MMX-MOD3 module is intended to be installed inside a protective enclosure. This minimizes the effects of the environment contaminating the BNC jacks or the PC board, and assures better data collection. CTC offers our MMX1000/2000 Series enclosures for this purpose.

Mounting

The MMX-MOD3 is designed to be mounted on 35mm DIN rail. The mounting clip is spring loaded to facilitate simple installation.

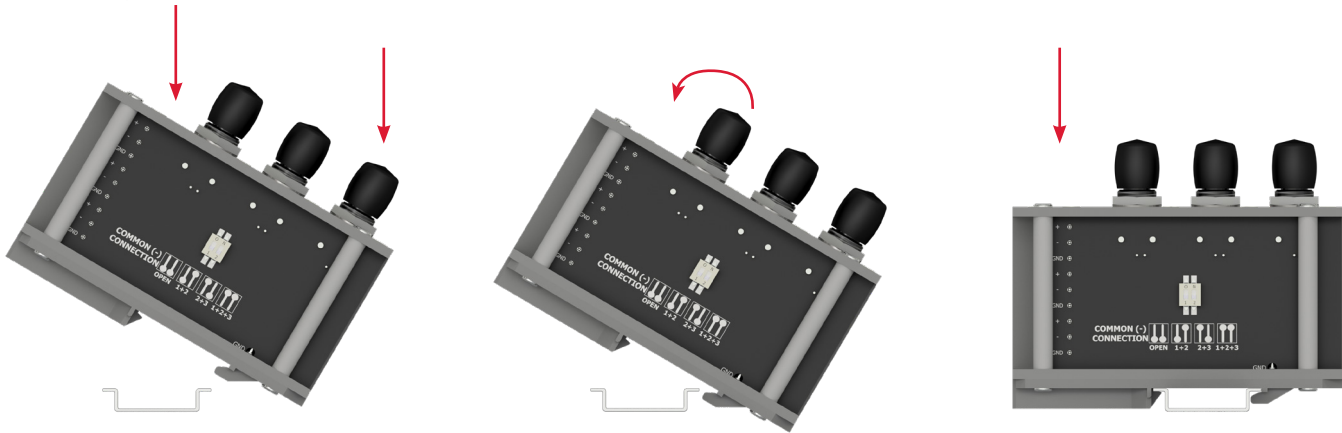


Figure 3. Module Attachment

To remove the module, it is recommended that a small flat head screw driver be used as a lever on the spring loaded mount clip. With the clip disengaged, simply pull the module off the mounting rail. To make removal easier, the terminal blocks can be removed without the need to disconnect the wiring.

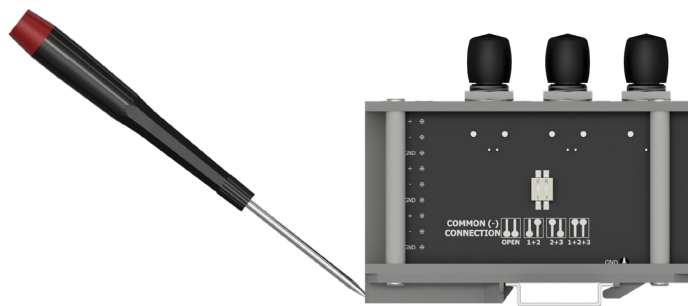


Figure 4. MAXX Module Removal

GROUNDING

A. Mounting to Earth Ground

If mounting the MMX-MOD3 module in a CTC MMX Series enclosure, a ground lug is provided on fiberglass enclosures for connection to earth ground. All stainless steel CTC MMX enclosures are internally grounded, and no additional steps are necessary.



Figure 5. Proper Shield Grounding Technique

B. Mounting to Non-Grounded Structure

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

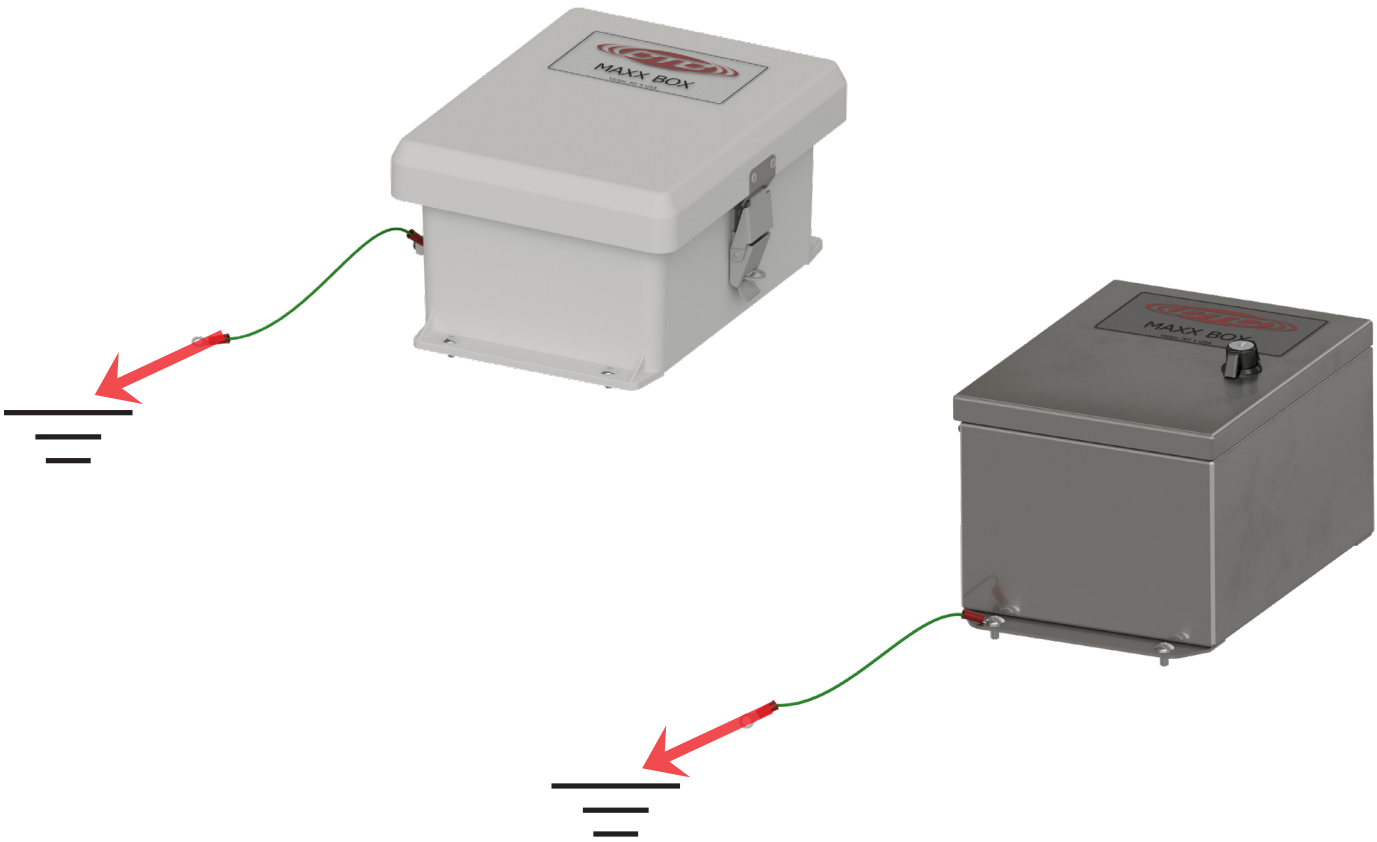
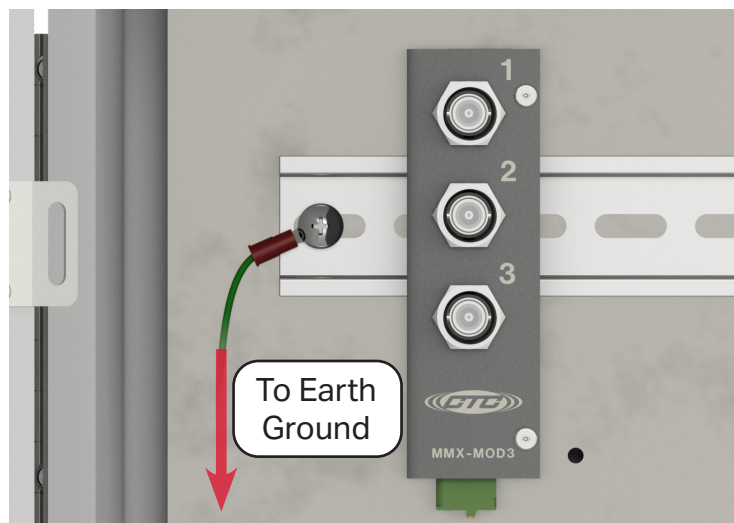


Figure 6. Ground Wire Placement

If installing in a non-CTC enclosure, CTC recommends that the internal DIN rail be grounded.



SETUP OF DIP SWITCHES

The MMX-MOD3 modules can be setup to provide grouped signals from a dual output sensor, or a triaxial style sensor that share the "common" conductor. By adjusting the switches, the common connection can be shared between inputs 1 & 2, 2 & 3, for dual outputs and between inputs 1, 2, & 3 for triaxial sensors. This eliminates the need to insert jumper wires between the different inputs within the module. The switches are displayed in Figure 7. at the center of the module, on the circuit board.

Note: All modules are set at "Commons OPEN" at factory.

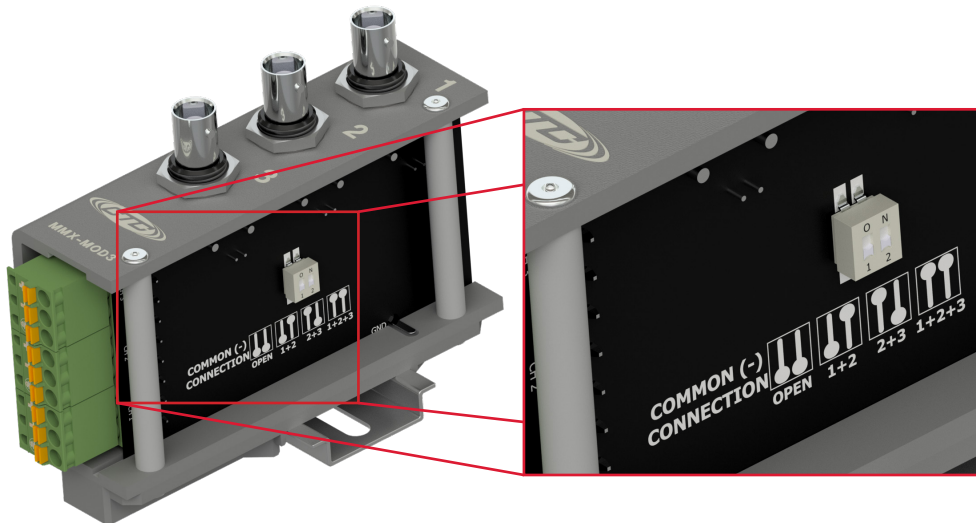


Figure 7. MMX-MOD3 DIP Switch Settings

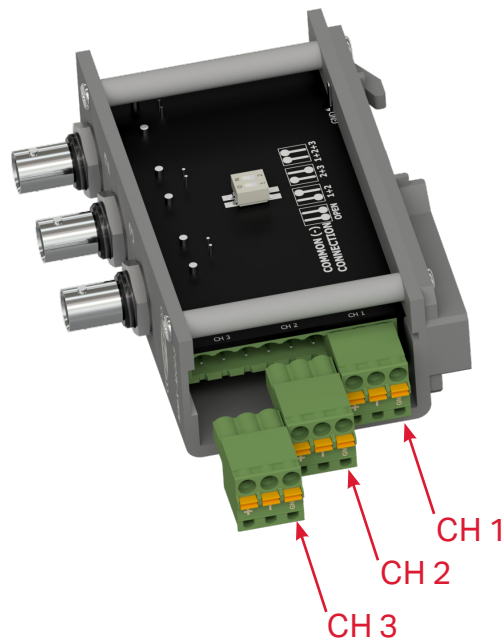


Figure 8. Removable Terminal Blocks

SENSOR INSTALLATION

Installation of Sensors/Signal Input Cable

1. Feed blunt-cut 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 into enclosure, hand-tighten cord grip cover to base to prevent damage of cord grip.



Figure 9. Front View



Figure 10. Bottom View

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

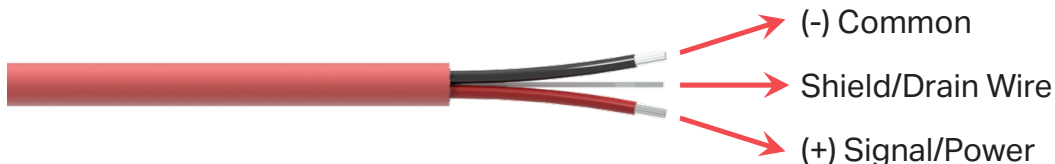


Figure 11. Stripped Wire

5. Locate the appropriate plug, identified by channel number, remove the plug and install the wires using a small flathead screwdriver. Push plug back into location. Orientation is as follows:
 - a. Red insulated conductor wire is connected to (+).
 - b. Black insulated conductor wire is connected to (-).
 - c. Shield drain wire is connected to ground (GND).
 - d. Depress selected position button to open terminal for respective wire (may require a mini flat head screwdriver).

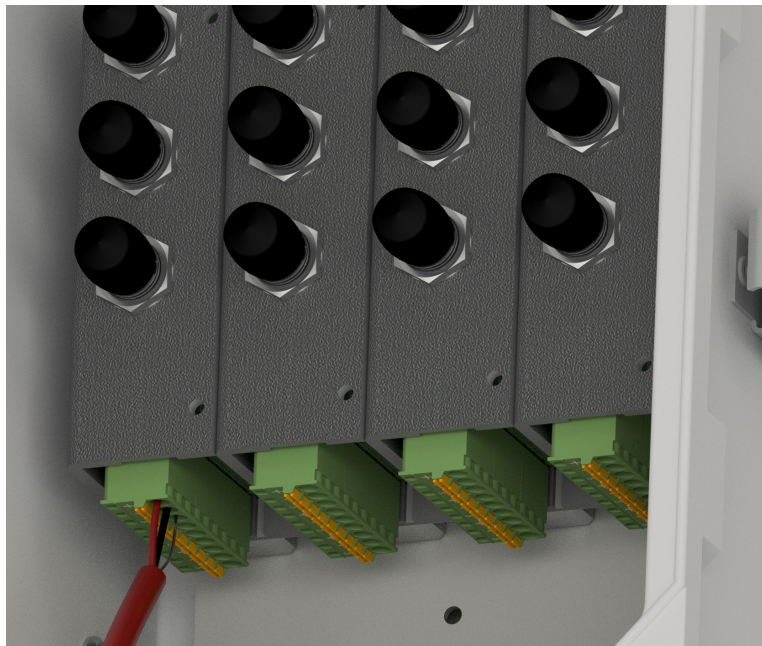
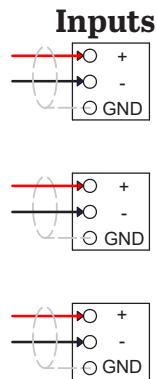


Figure 12. Connecting Cables to MAXX Box

6. Insert plug into the appropriate PC board connector and double check to ensure that the cable is going to the correct channel.
7. Mark the Measurement Location Card located on the inside front cover with a description of each measurement location.

Wiring Sensors to Module

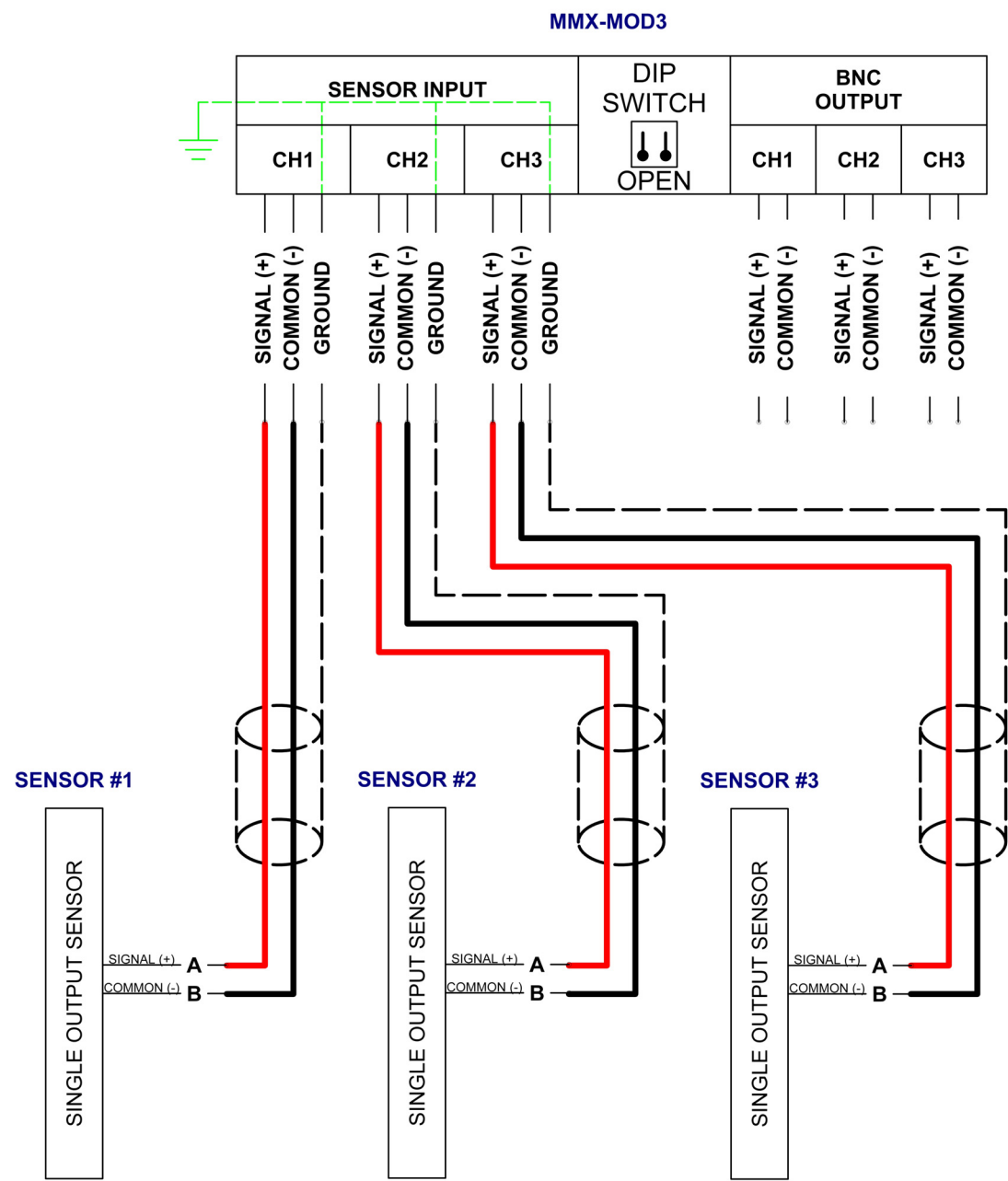


Figure 13. Single Output Sensor Wiring to MMX-MOD3 Module

MMX-MOD3

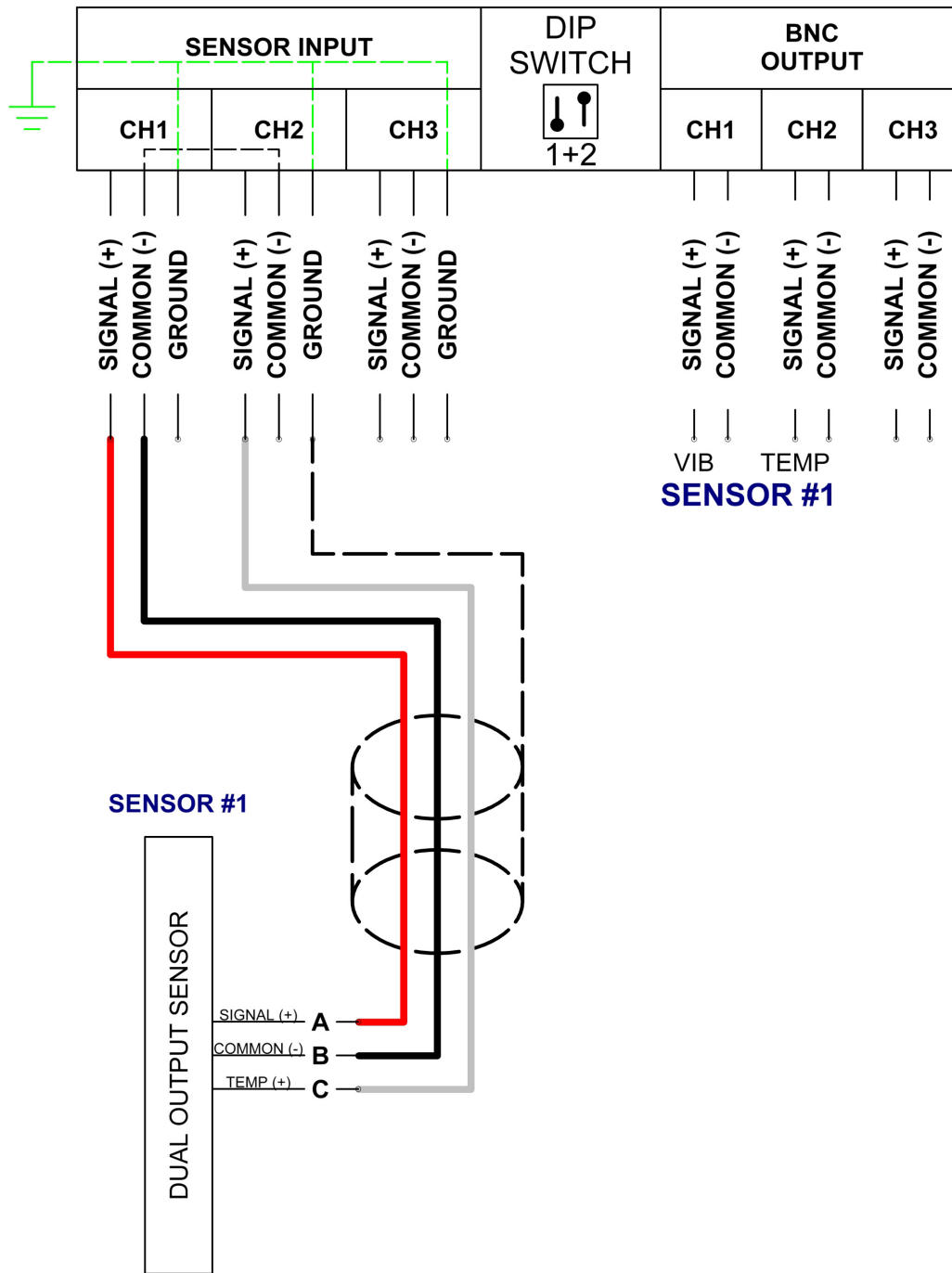


Figure 14. TA Sensor Wiring to MMX-MOD3 Module

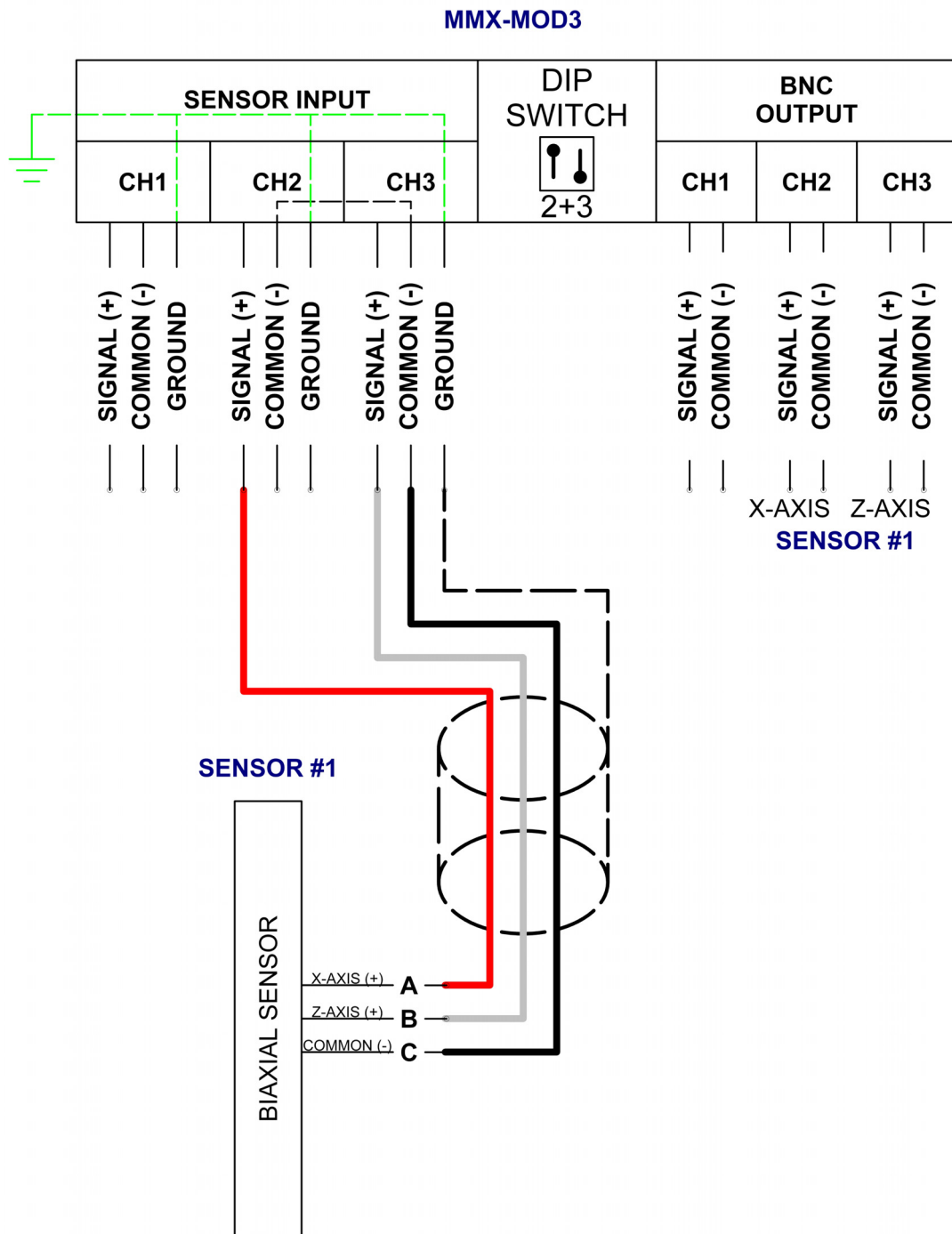


Figure 15. Biaxial Sensor Wiring To MMX-MOD3 Module

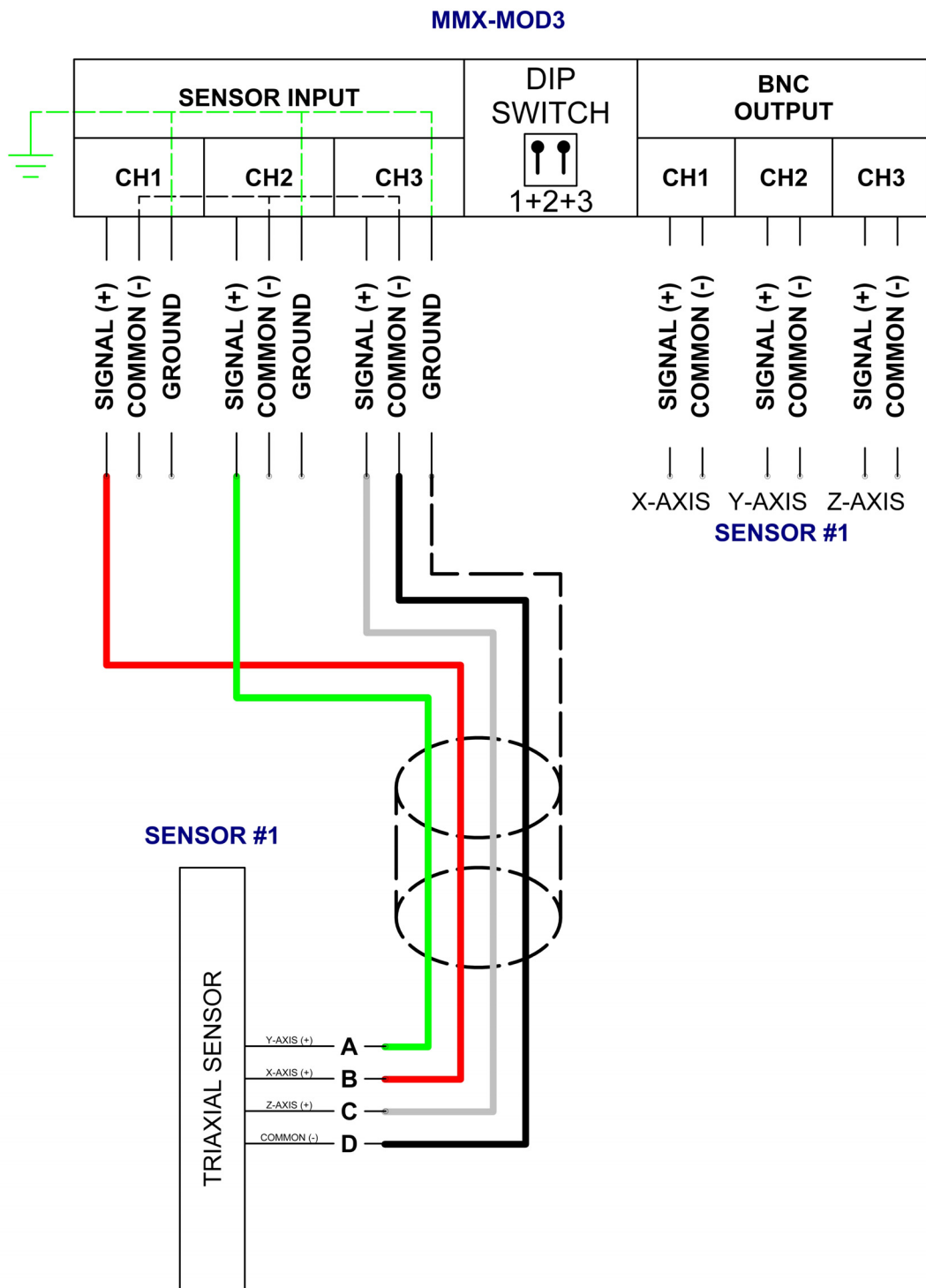


Figure 14. Triaxial Sensor Wiring to MMX-MOD3 Module

POST-INSTALLATION TESTING

The TM1223 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 15. TM1223 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 TM1223 to the data collector output on the modular MAXX Box and turn the Channel Selector to the channel that corresponds to the referenced measurement. Person A should observe a "NORMAL" LED reading.
3. Person B disconnects the cable from the accelerometer, and the TM1223 should respond with an "OPEN" LED. Reconnect the cable to the accelerometer, and the TM1223 should respond with a "NORMAL" LED.
4. Repeat for each 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 at 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 AND REFUND

Please visit www.ctconline.com to view a complete recapitulation of our warranty and refund policies.

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