

# TRANSRAIL INNOVATION GROUP (TRIG) IOT MODULE - TIM MANUAL

**Written by: TRIG Engineering & Project Manager**

**Revision: 1.0**

**Date: April 20, 2022**

## Certificates and Warnings

### Hazardous/Normal Locations

#### TIM Basic (TIM-21-001)

Conforms to UL STDs 61010-1 & 121201  
Certified to CSA STDs C22.2# 61010-1-12 & 213



Class I Zone 2 IIC T4  
Class I Division 2 Group A,B,C,D T4  
(-40°C < Ta < 85°C)

#### TIM Plus Only (TIM-21-002)

Conforms to UL STDs 61010-1, 121201, 60079-0, & 60079-11  
Certified to CSA STDs C22.2# 61010-1-12, 213, 60079-0, & 60079-11



Class I Zone 2 IIC T4  
Class I Division 2 Group A,B,C,D T4  
(-40°C < Ta < 85°C)

#### WARNING

- DO NOT REPLACE BATTERIES IN AN EXPLOSIVE ATMOSPHERE!
- ONLY USE TIM COMPATIBLE BATTERY PACKS!
- DO NOT EXCEED THE AMBIENT TEMPERATURE RANGE OF -40C TO +85C!
- ONLY CERTIFIED PROFESSIONALS SHOULD PERFORM AN INSTALLATION!
- RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

#### AVERTISSEMENT

- NE PAS REMPLACER LES PILES DANS UNE ATMOSPHERE EXPLOSIVE!
- UTILISER UNIQUEMENT DES BLOC-PILES COMPATIBLES TIM!
- NE PAS DÉPASSER LA PLAGE DE TEMPÉRATURE AMBIANTE DE -40C À +85C!
- SEULS DES PROFESSIONNELS CERTIFIÉS DOIVENT EFFECTUER UNE INSTALLATION!
- RISQUE D'EXPLOSION SI LA PILE EST REMPLACÉE PAR UN TYPE DE PILE INCORRECT. JETER LES PILES USAGEES CONFORMÉMENT AUX INSTRUCTIONS

## FCC Warnings

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

NOTE: THE TRANSRAIL INNOVATION IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

# SAFETY, PROTECTION, AND MODIFICATION OF THE PRODUCT

Installation should protect the case from physical impacts to mitigate degradation of the case.



The TIM-Plus requires a mechanical protection for the enclosure is required. This can be purchased from TRIG or the end user is to provide a protection for the enclosure during normal operation.

Product is intended for outdoor use.

If the temperature rating on the label or this manual differ the more restrictive temperature range will apply to that device.

This manual is intended for the following personnel:

Personnel responsible for installation, wiring, and maintenance of the equipment

Reasonably foreseeable misuse was considered as part of the manual so following the manual is the main method of protection against foreseeable misuse.

To protect the system controlled by the product and the product itself and ensure safe operation, observe the safety precautions described in this user's manual. We assume no liability for safety if users fail to observe these instructions when operating the product.

If this instrument is used in a manner not specified in this user's manual, the protection provided by this instrument may be impaired.

If any protection or safety circuit is required for the system controlled by the product or for the product itself, it will be referenced in this manual.

Be sure to use the spare parts approved by TransRail Innovation (hereafter simply referred to as TRIG) when replacing parts or consumables.

Modification of the product is strictly prohibited.

## Description

There are two TIM versions. One in 100x75x22 (mm) enclosure, and one 100x100x40 (mm). The larger version also has an option of an external connection with a three-pin connector.

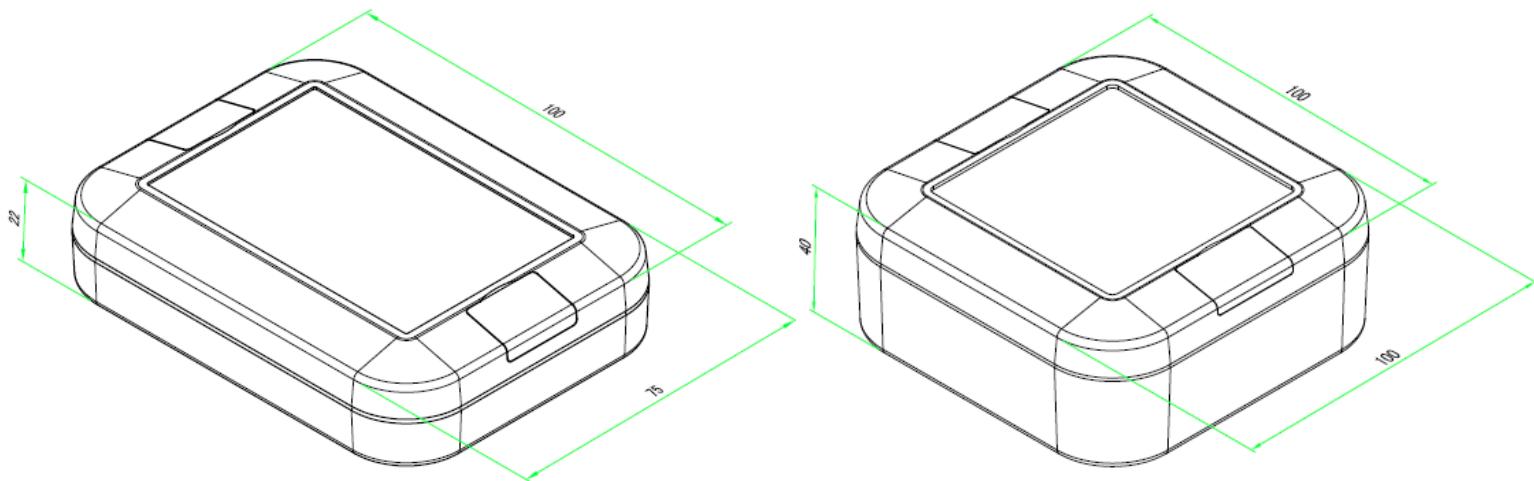


FIGURE 2 TIM BASIC



FIGURE 1 TIM PLUS W/CONNECTOR

## Labels

A sample of the label for each box is below. The label will be located on the area indented case top.

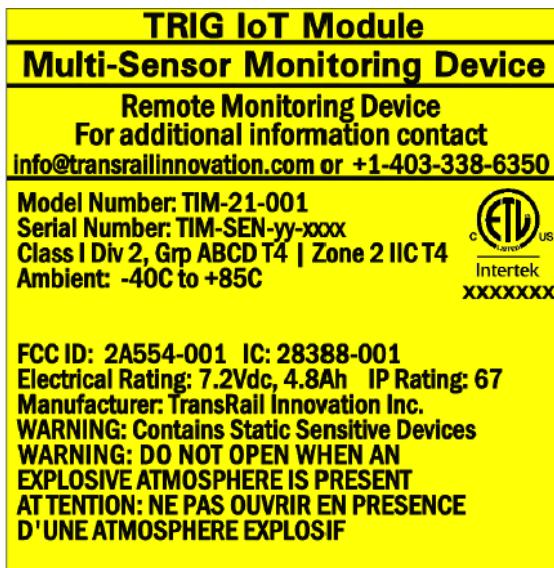


FIGURE 3 TIM BASIC LABEL

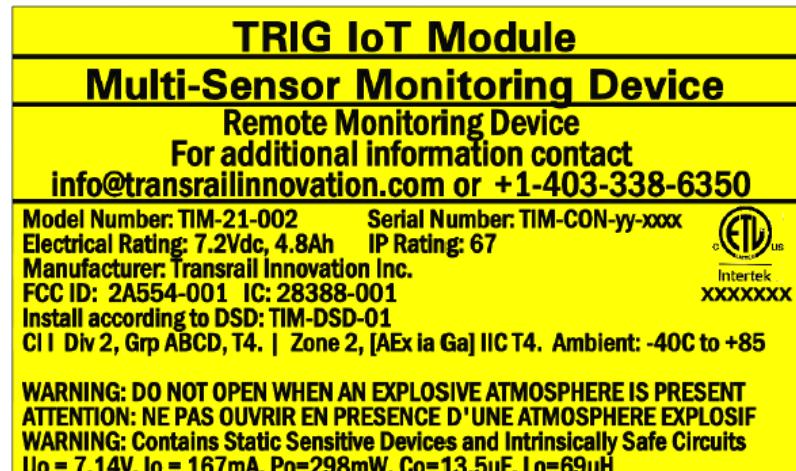


FIGURE 4 TIM PLUS LABEL

## Intrinsic Safety Wiring Information

All wiring should be performed to CEC and NEC standards, as well as any additional local standards. Cable diameter should fall within 3.0 to 6.0 mm to ensure IP rating is maintained.

The three-pin connector on the TIM Plus is an IS connection as identified by the label on the side of the case.

Please see below for pin layout. Ensure that the pins are connected properly before plugging in the connector.

Refer to the label for all relevant entity parameters to maintain IS certification.

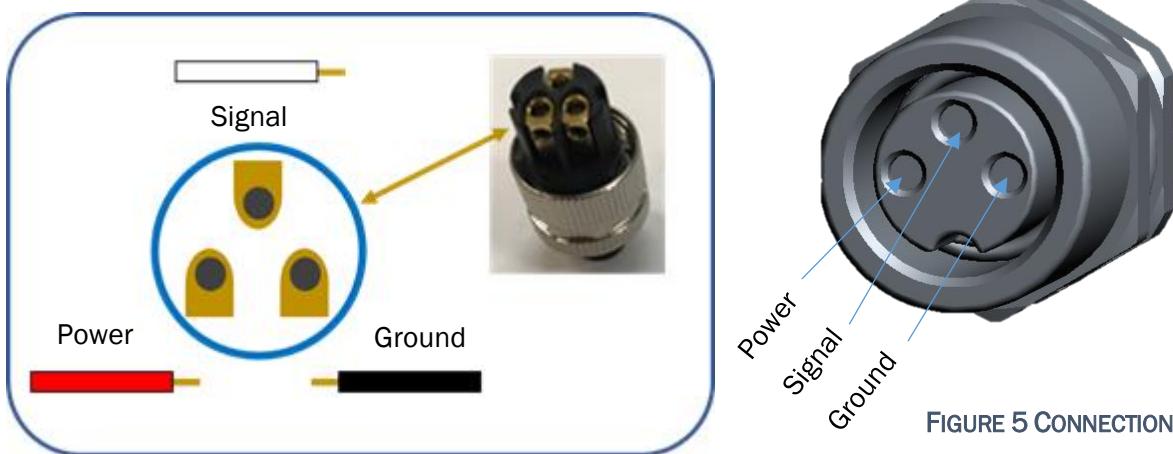


FIGURE 5 CONNECTION ON TIM PLUS

FIGURE 6 EXTERNAL THREE PIN CONNECTOR

## Protective Cover

TRIG offers a protective cover for both the TIM Basic and TIM Plus (A covering is required for the TIM Plus). This cover come pre-installed when bought from TRIG.



The cover consists of a PETG shield, two pan-head screws, two bottom screws (pan or flat depending on mounting), a hex standoff and two wide washers.

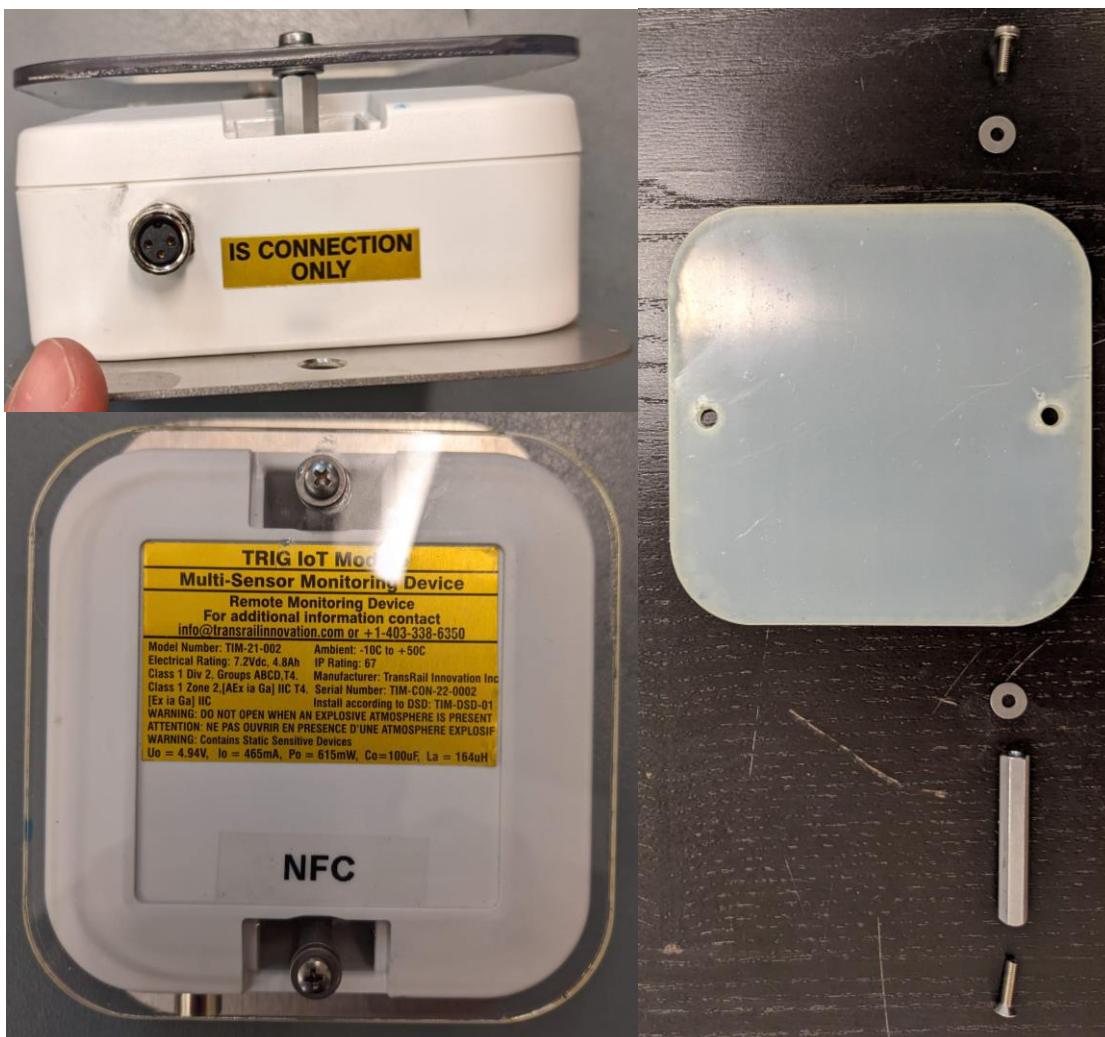
### Installing a new cover

Remove the side flaps covering the mounting holes of the case.

Insert the bottom screw through the mounting hole, loosely attaching the hex standoff to keep it from falling. Using pliers or a socket, holding the hex standoff tighten the bottom screw tight. Report for the other side.

Remove the protective cover from both sides of the PETG protective plate. Attach one washer onto the top screw, insert the top screw through the PETG, and attached a washer on the bottom side. Holding the washer against the PETG, insert the screw into one of the installed hex standoffs and loosely secure. Repeat with the other side. Tighten down the two top screws to secure the PETG, the cover is now installed.

If you need to replace or repair the cover, it can be removed by removing the top screw, being careful to secure the washers while removing the screw. Only replace with parts supplied from TRIG.



## Installation with Mounting Options

Ensure that

- Installation occurs in a non-hazardous area.
- Placement of the TIM is in an approved area
- Any holes drilled does not weaken the mechanical structure
- Drilling does not puncture any electrical, hydraulic or air tubes,
- Where possible have the TIM device located in a protected area to limit impacts to the device

### Options 1: Magnetic Mount

The TIM box can be mounted magnetically by two magnets attached to the bottom of the case through two bolts through the mounting holes (See Figure 7)

### Option 2: Bolt Mounted

The TIM box can be mounted with two bolts through the mounting holes located on the bottom of the case. (See Figure 7)

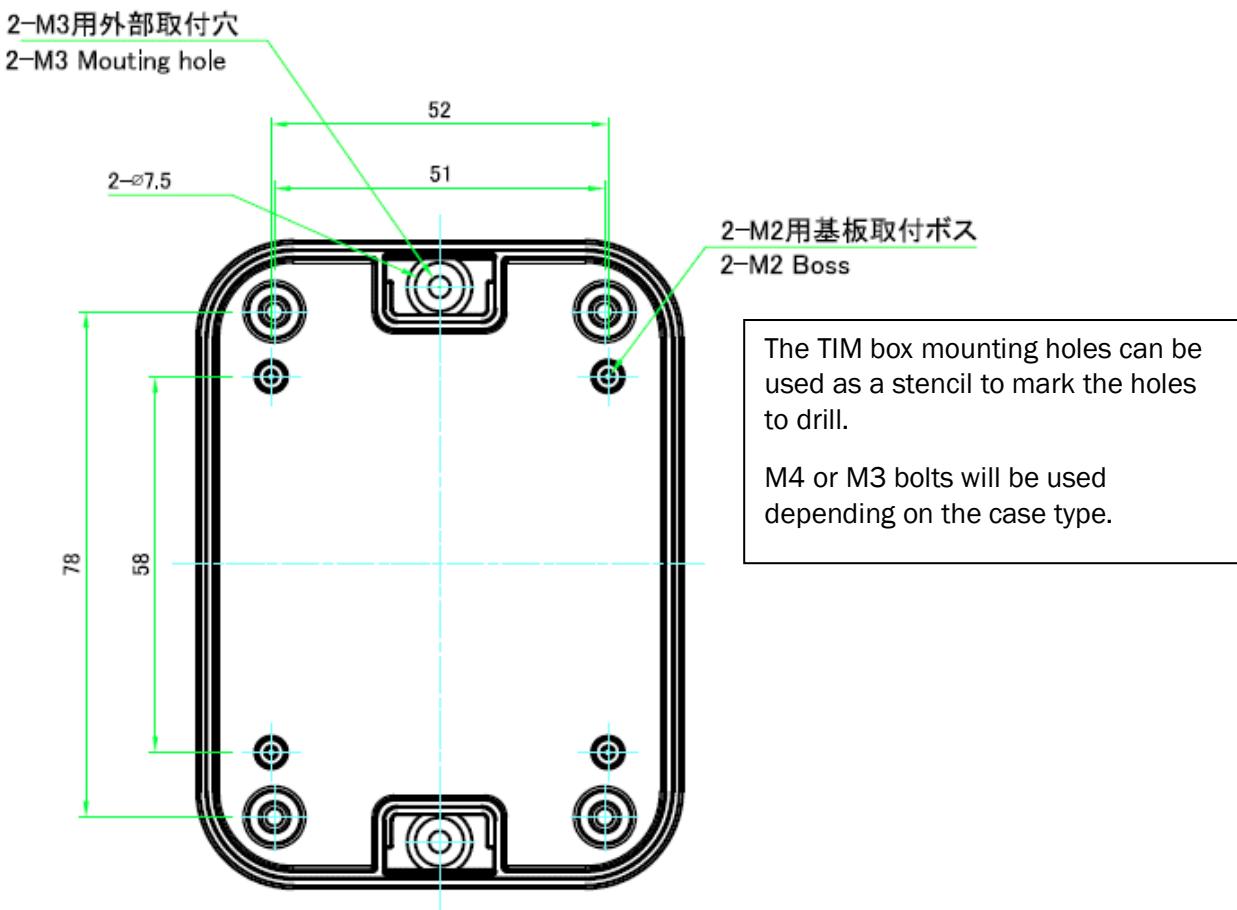
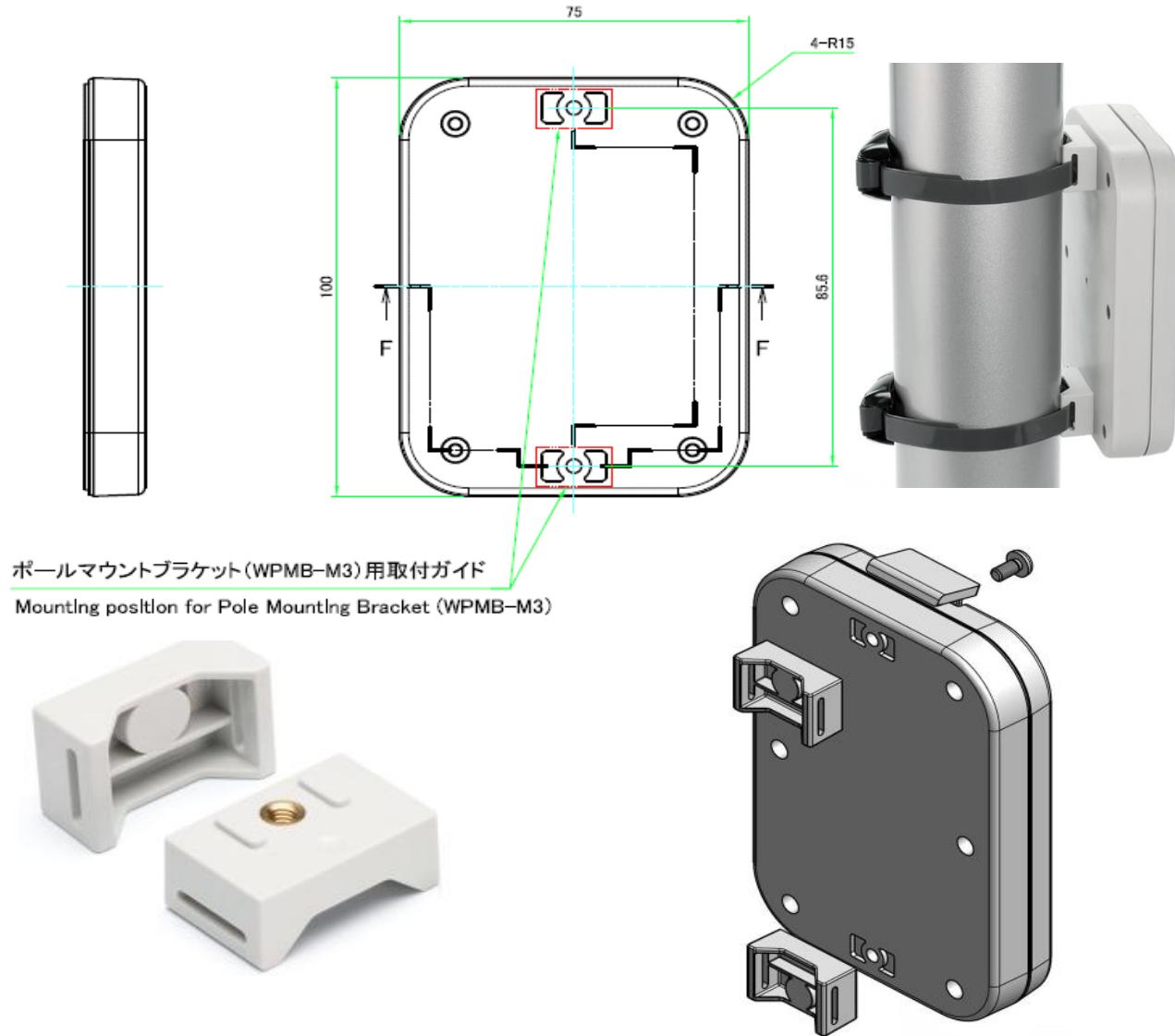


FIGURE 7 MOUNTING HOLES FOR BOLT OR MAGNETIC MOUNT

## Option 3: Pole Mounting Bracket

The TIM box can be mounted with two optional pole mounting brackets combined with either stainless steel or plastic bands.



## Option 4: Mounting Plate

The TIM can be provided with a mounting plate. This is useful when looking at attaching with self-tapping screws or M3 Adhesive tape.

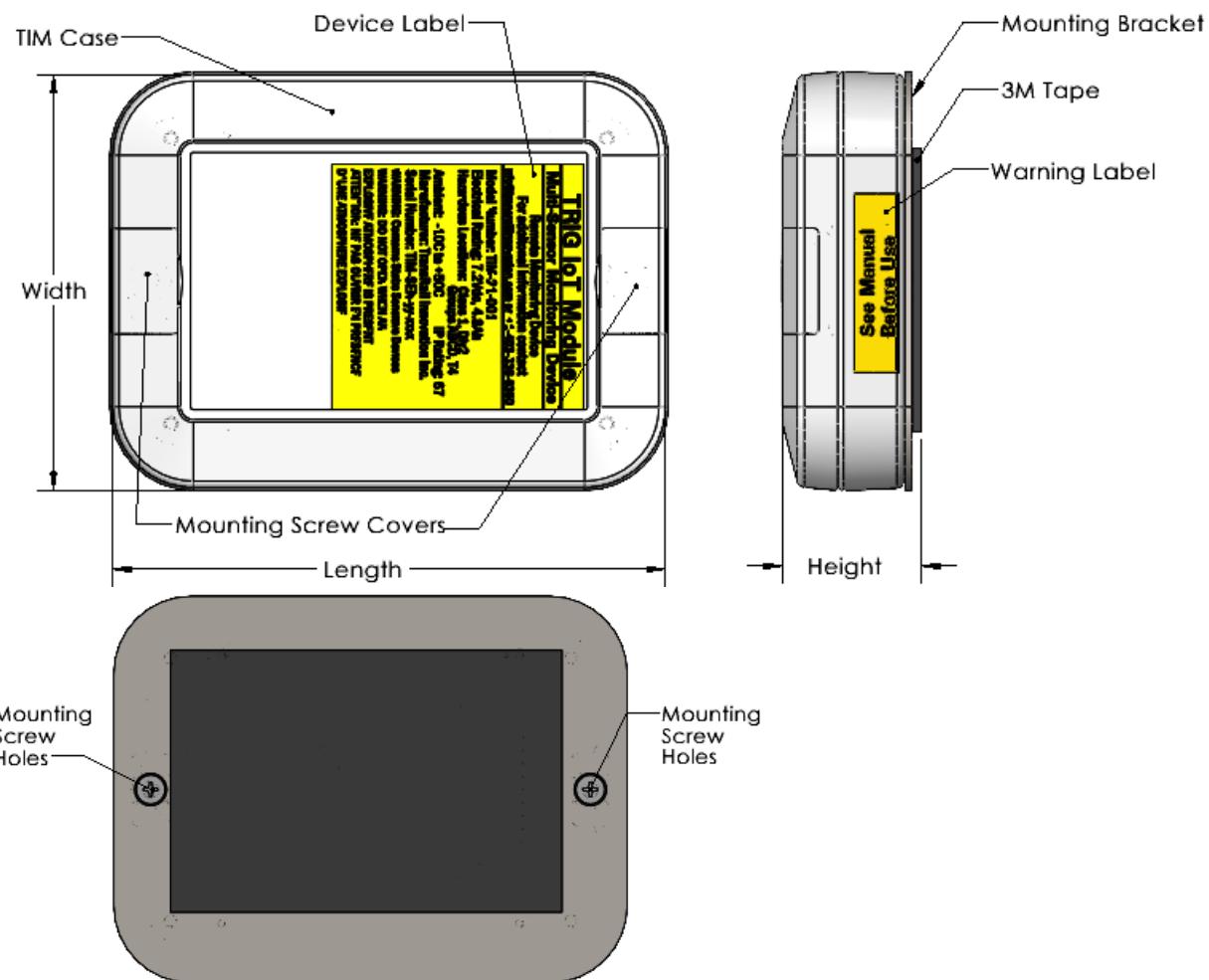


FIGURE 8 TIM BASIC MOUNT W/TAPE

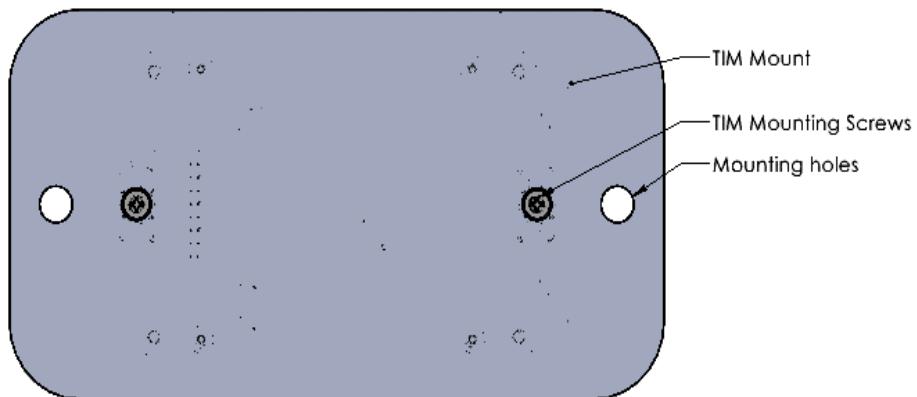


FIGURE 9 TIM BASIC MOUNT W/MOUNTING HOLES

## Setup

### Pairing with Globehopper

Requires an NFC enabled phone and the Nexxiot App.

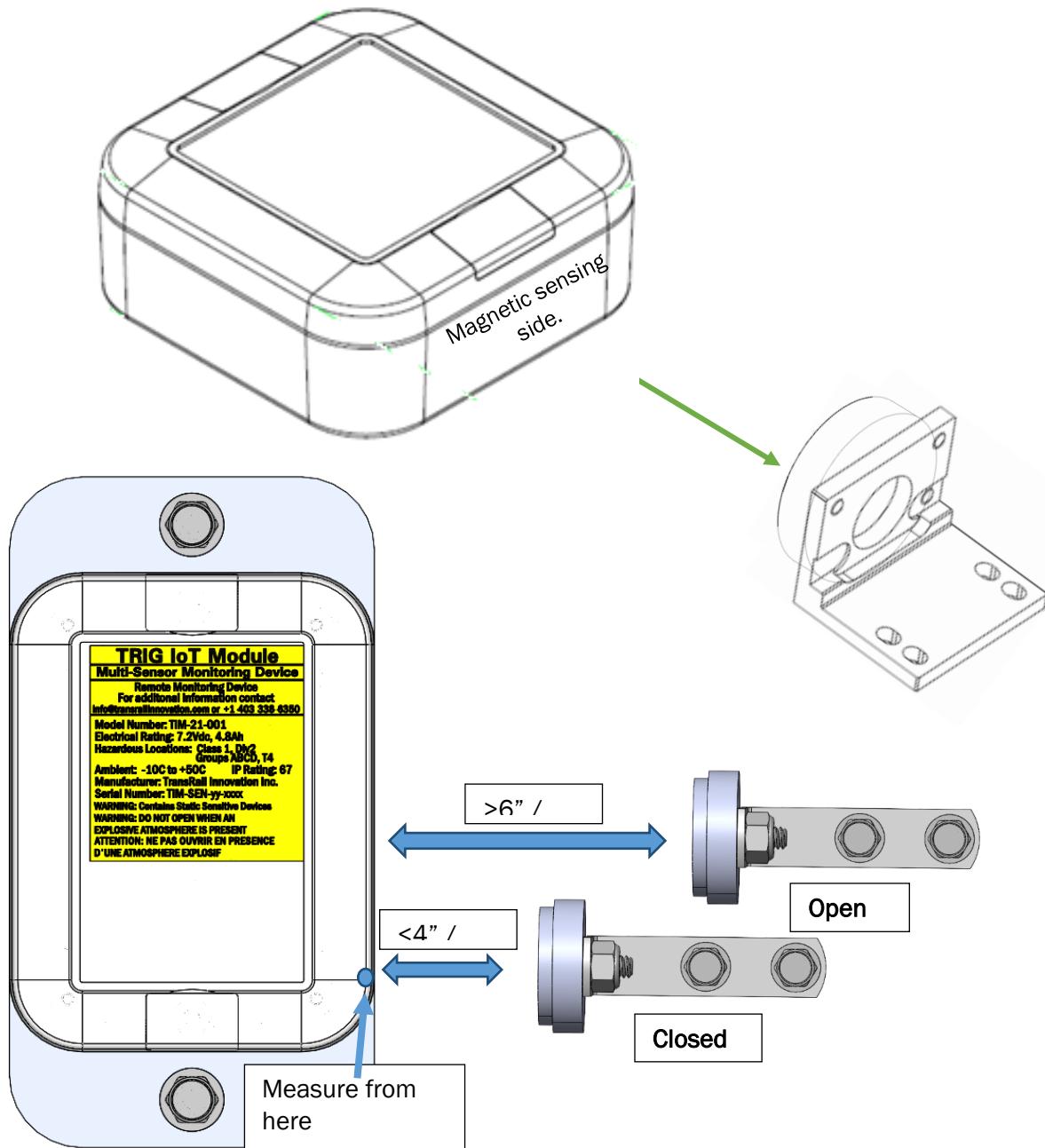
See latest Globehopper documentation for paring instructions. Contact [info@transrailinnovation.com](mailto:info@transrailinnovation.com) if you require an updated copy.

## Magnetic Sensor

When using the TIM for a magnetic sensing application, ensure the magnet is properly installed on the designated side. This will be marked on the TIM box to aid in proper alignment.

The TIM is by default setup to detect the magnet when within 4" or less and will ignore the magnet if it's at 6" or greater. If your application is different, please work with your installation tech for a customized solution.

Contact an installation tech for confirmation that the TIM box is properly detecting when the magnet is present and when it is absent.



## Acceleration Sensor

When using the TIM for a TIM is being used as an acceleration sensor, ensure the TIM box will not be damaged or hit during the full movements of where it is mounted.

## External TIM Connect

If using the TIM Connect version of the product, ensure that the external cabling will not get damaged in normal operations. Contact TRIG for additional information regarding connecting to external sensors.

**Any external sensors connected should adhere to the provided Descriptive System Document.**

## Mounting Locations for Specific Uses

See the following reference images for recommendations for mounting the TIM in different configurations.

Please check with the manufacturer of the specific wagon type or car type onto which the TIM is to be mounted to get approval for the chosen mounting location

### Handbrake Activation Sensor

Mount on the handbrake area that see rotation during activation.

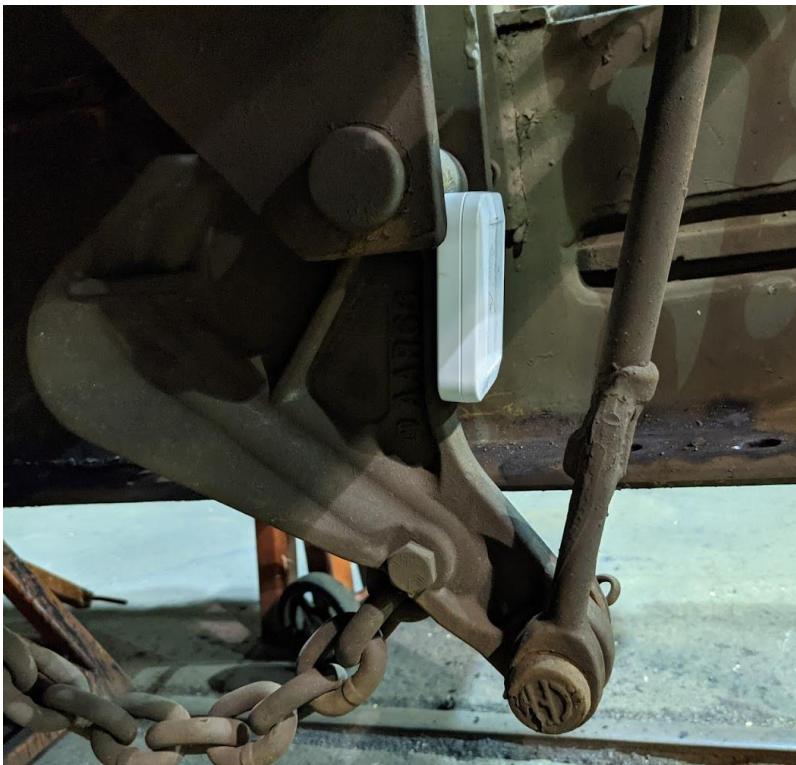


FIGURE 10 THE NORMAL MOUNTING LOCATION FOR THE HANDBRAKE SENSOR IS LOCATED ON THE SECTION OF ROTATING LEAVE ASSEMBLY.

## Magnetic Activation Sensor

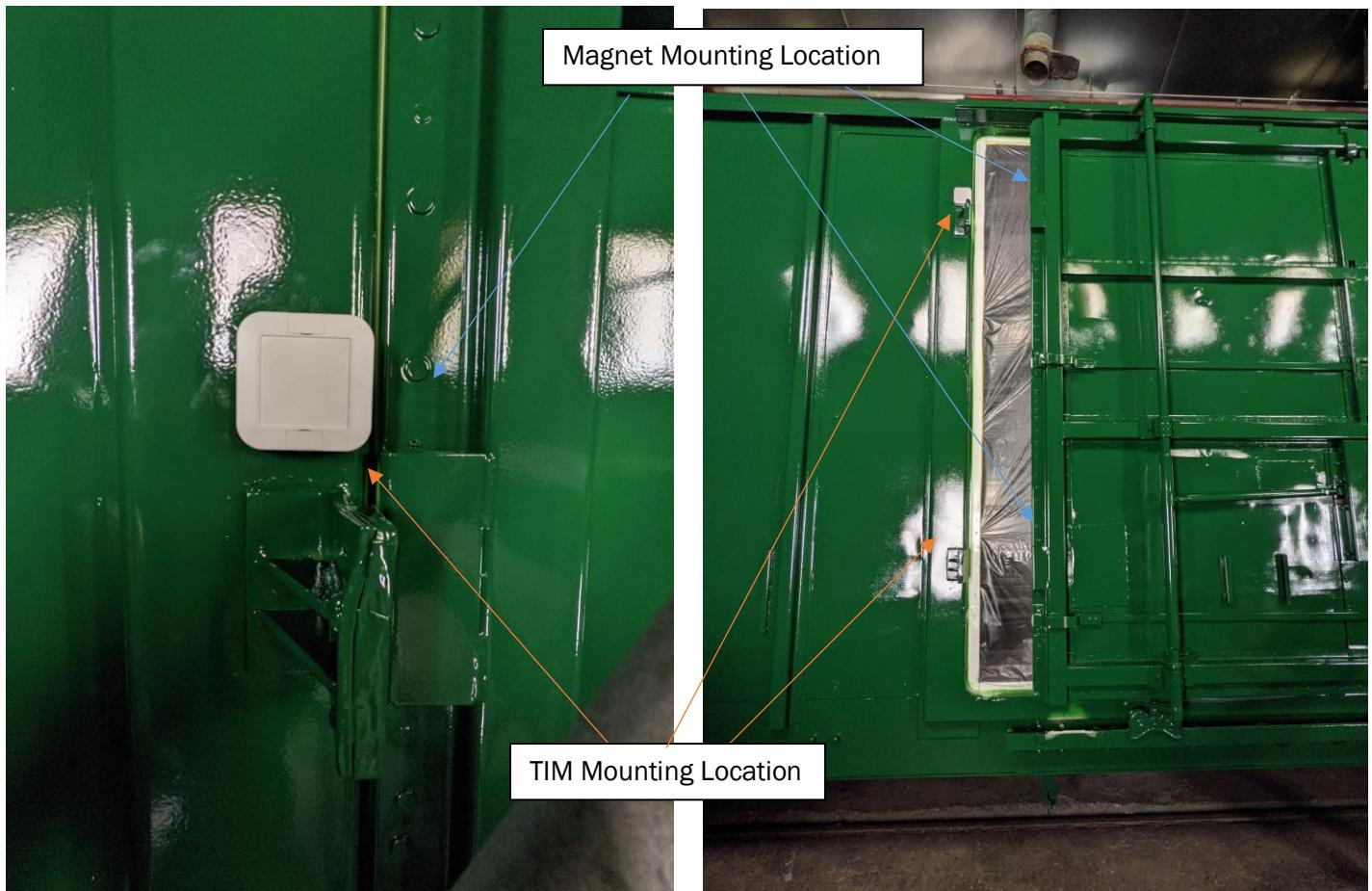


FIGURE 11 NORMAL LOCATIONS FOR MOUNTING ON SIDE SLIDING DOORS. OPTIONS OF EITHER HIGH MOUNTED OR LOWER MOUNTED. THE TIM SHOULD BE MOUNTED ALONG THE EDGE OF THE OPEN DOOR, WITH THE MAGNET MOUNTED ON THE CLOSING DOOR.



**FIGURE 12 MOUNTING LOCATION FOR HOPPER CARS TO DETECT IF THE GATE IS OPEN. (CLOSED POSITION SHOWN)**

## Maintenance

Contact support for any maintenance needs before opening device.

**Warning:** Batteries are not replaceable on TIM units.

**Ensure any maintenance is only performed in non-hazardous locations.**

## Contact Information

### Address:

TransRail Innovation Inc. (TRIG)  
Suite 100 – 999 8 Ave. SW  
Calgary, Alberta, Canada  
T3E 3M8

### TIM Support:

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