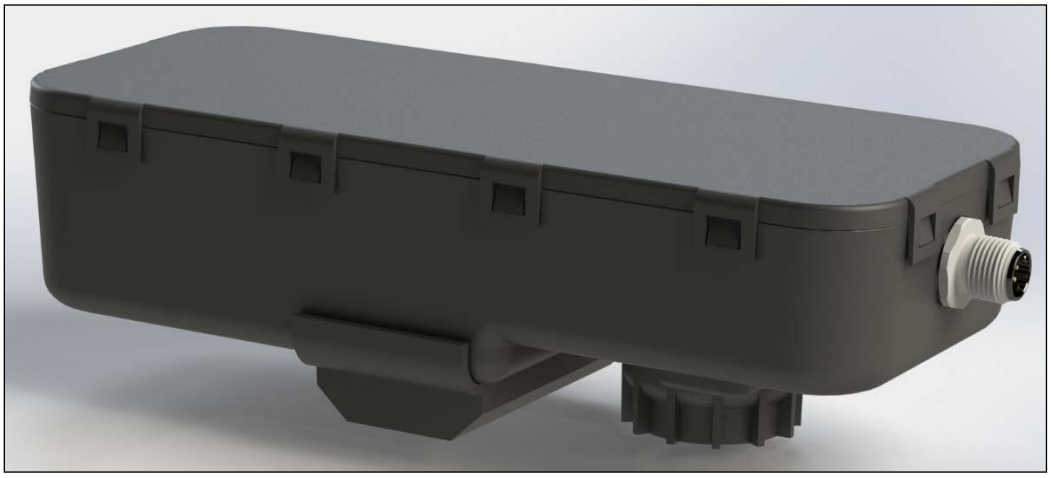
Hatch Sensor Unit

Installation Instructions



April 14, 2020

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SAFETY INFORMATION

*** IMPORTANT SAFETY INSTRUCTIONS ***

Do not drop the device.

Do not open the device.

Do not expose device to conditions other than those in the "Technical Data" section.

The ultrasonic transducer case is made from anodized aluminum, because of the material used there is a risk for spark if the transducer is impacted. Avoid impact or friction of any type to the Ultrasonic transducer.

Warning: Device contains a Lithium battery. Danger of fire if punctured, crushed or otherwise forcefully damaged, exposed to heat above the values given in the "Technical Data" section.

TAKE EXTREME CARE WHEN CLIMBING ON OR ABOUT A RAILCAR OR RAIL EQUIPMENT. ALL SAFETY RULES AND REGULATION OF THE AAR, FRA OR ANY OTHER GOVERNING BODY MUST BE STRICTLY FOLLOWED AT ALL TIMES.

FUNCTIONAL DESCRIPTION

The *TrinityRail* Hatch Sensor Unit (TRHT-01) is a smart sensor pack for railcar asset monitoring. It is battery powered with a life span of 6-10 years. It is intended to monitor the environmental conditions inside railcars and the integrity of the commodity being transported.

Main Features:

- Measures commodity fill-level
- Measures temperature and humidity
- Detects a full opening of the hatch cover

Optional, Add-on Feature:

- Detects a fully-latched hatch cover

Do not use this device for any other purpose. *TrinityRail* is not liable for any damage to property or personal injury that results from unintended use.

WARNING LABEL

Due to the specific plastic used in the product enclosure, it may be possible for an Electrostatic Discharge to occur if improper handling of the device is performed. The warning ("Electrostatic Discharge hazard") informs the users to read the following instructions before performing any installation or maintenance related task.

Installation and maintenance shall only be limited to NON hazardous locations.

Prior handling the Hatch Sensor Unit and to minimize electrostatic discharge, please adhere to the following steps:

1. Keep the Hatch Sensor Unit away from plastics and other synthetic materials which can accumulate an electrostatic charge.
2. Ground yourself utilizing a grounded ESD (Electrostatic Discharge) wrist strap or other approved grounding system designed to dissipate an electrostatic charge.

FCC RF Warning:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FCC 15.19 caution:

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.

INSTALLATION INSTRUCTIONS

HATCH SENSOR UNIT

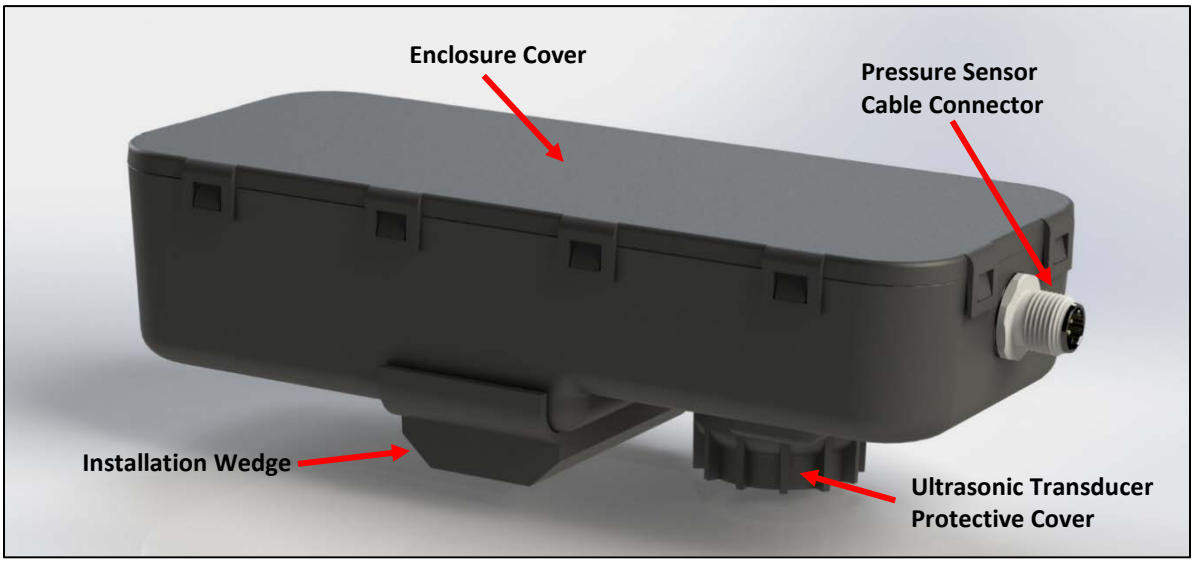

Figure 1: Parts of the Hatch Sensor Unit

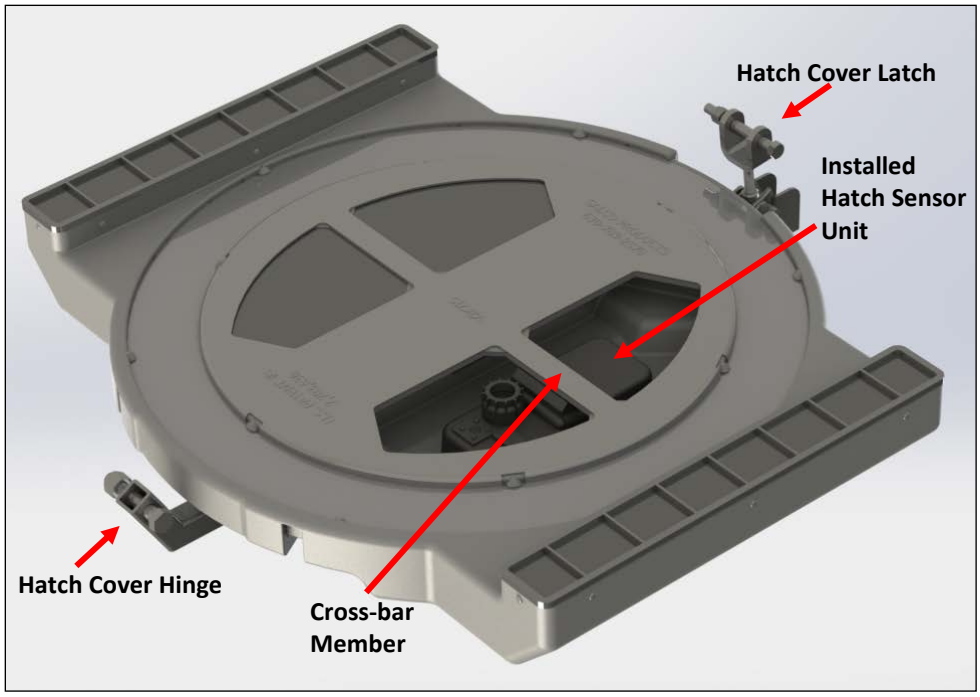

Figure 2: Installed Hatch Sensor Unit and Parts of the Hatch Cover

HATCH SENSOR UNIT INSTALLATION TO HATCH COVER

1. Remove the Center Pellet Screen from the Hatch Cover.
2. Apply adhesive onto the cleaned area of the Hatch Cover that the Hatch Sensor Unit will attach to.
3. Attach the Hatch Sensor Unit onto the adhesive, as seen in Figure 2, with the distance sensor housing closest to the center line of the vented hatch cover and facing towards the hinge of the Hatch Cover.
4. Slide the hatch installation wedge along the hatch sensor unit until it is under the cross-bar member and snapped into place.
5. Secure device and wedge mechanically.

HATCH PRESSURE SENSOR INSTALLATION

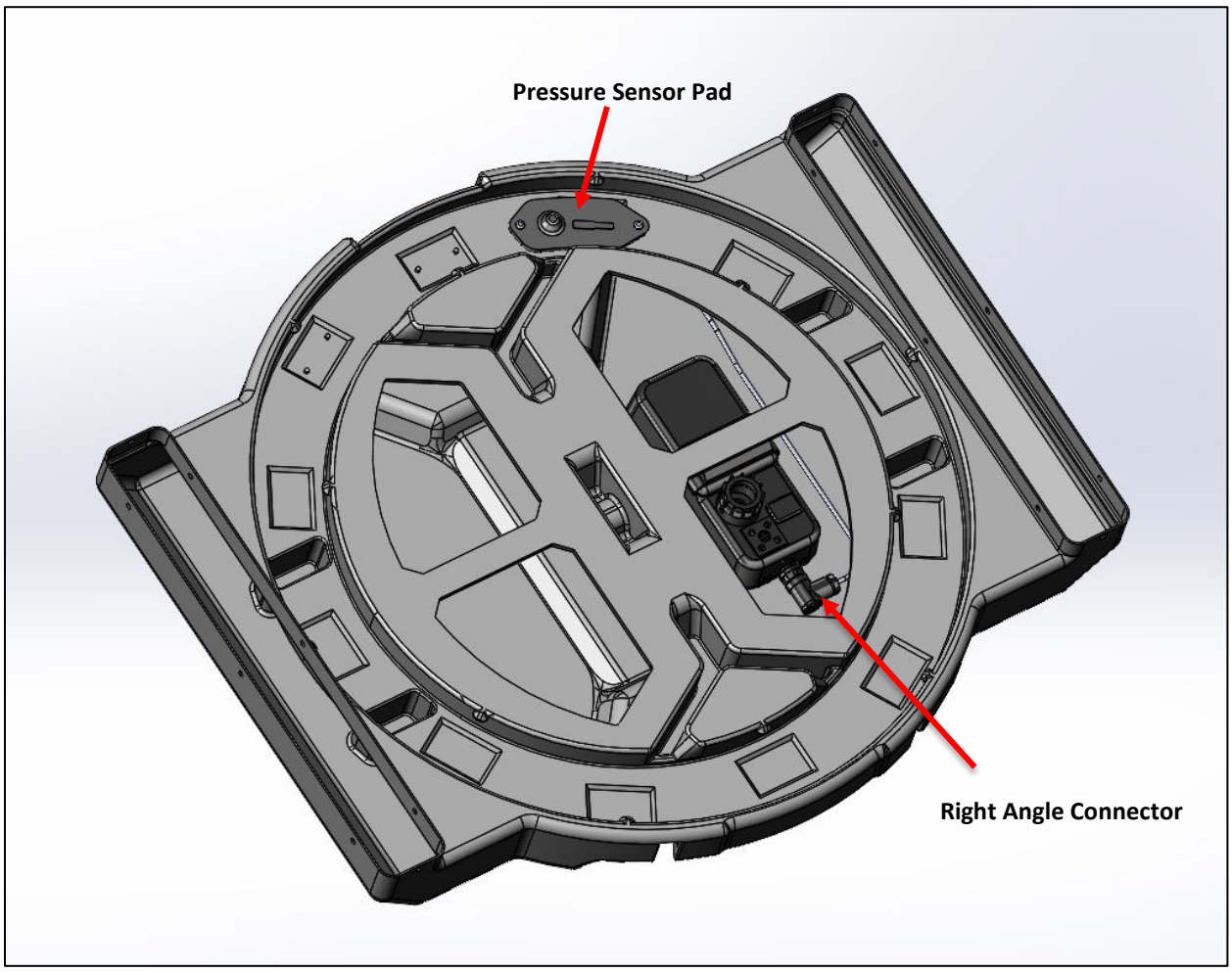

Figure 3: Pressure Sensor Pad attachment for Hatch Cover

1. Remove the Hatch Cover Seal. Position the Pressure Sensor Pad in the pocket to the right of the Hatch Cover Latch, as shown in Figure 3, and identify the mechanical securing locations.
2. Secure pressure sensor pad in position mechanically.

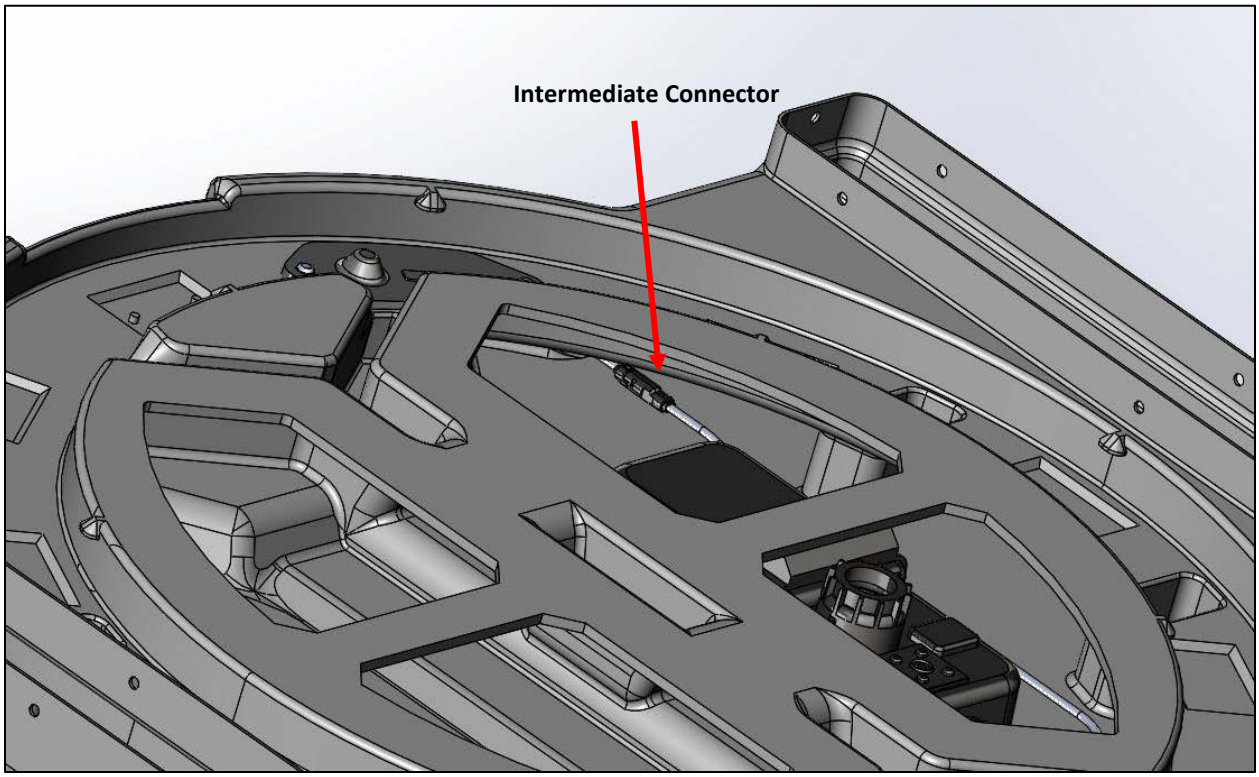

Figure 4: Sensor Pad to Hatch Sensor Unit Cable Connection

3. Disconnect the Intermediate cable connection on the Pressure Sensor Pad.
4. Secure the Pressure Sensor Pad to the Hatch Cover mechanically.
5. Reconnect the Intermediate cable connection.
6. Connect the Right Angle Connector from the Pressure Sensor Pad to the Pressure Sensor Cable Connector on the Hatch Sensor.
7. Secure the Pressure Sensor cable to the Hatch Sensor Unit.
8. Replace the Center Pellet Screen on the hatch cover. Replace the Hatch Cover Seal.

HATCH SENSOR UNIT COMMISSIONING

Please reference the *TrinityRail* mobile pairing application for instructions on commissioning the Hatch Sensor Unit with the gateway.

MULTIPLE HATCH SENSOR UNIT COMMISSIONING

Please reference the *TrinityRail* mobile pairing application for instructions on commissioning multiple Hatch Sensor Units with the gateway.

MAINTENANCE INSTRUCTIONS

This product does not require maintenance.

It is not possible to replace the battery in the field.

DEVICE REPLACEMENT INSTRUCTIONS

Remove the old device by pulling it away from the adhesive from the hatch cover. Use the *TrinityRail* mobile pairing application to decommission the Hatch Sensor Unit from the associated gateway on the railcar. Install the new device and use the *TrinityRail* mobile pairing application to commission the Hatch Sensor Unit to the railcar and associated gateway.

Please reference the *TrinityRail* mobile pairing application for instructions on commissioning the Hatch Sensor Unit with the gateway.

DECOMMISSIONING AN OLD DEVICE

Devices that are taken out of service must be sent back to *TrinityRail*. Please consult our website for the shipping address. *TrinityRail* will take care of proper recycling.

TECHNICAL DATA

Product		*TrinityRail* Hatch Sensor Unit (TRHT-01)
ID		TRHT-01
Physical	Size	9.0in x 5.0in x 5.0in (LWH)
	Weight	27.9 oz. (790g)
Environmental	Operating Temperature	-22˚F to 176˚F (-30˚C to 80˚C)
	Hazardous Location Temperature	-22˚F to 140˚F (-30˚C to 60˚C)
Energy	Battery Type	Lithium Thionyl Chloride
	Nominal Battery Voltage	3.6V
	Size	D cell, quantity = 3
	Targeted Battery Life	6+ years
Communication	Bluetooth 5.1	2.400 to 2.485 GHz

CERTIFICATIONS

Hazardous Locations: Intrinsic Safety ia (UL 913 5th Ed, UL 61010, & CSA 22.2 No. 60079-0 and 60079-11, Class I, II, III / Division 1 / Zone 0/ Groups A-G / T4)	MET c US
Environmental: UL IP65	
Communication: FCC, IC, NOM Bluetooth Sig, IFETEL	FEDERAL COMMUNICATIONS COMMISSION FC USA · IC Canada: Industry Canada (IC) · NOM

FCC Statement
Changes or modifications not expressly approved by the party responsible for compliance 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 in-stalled 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.

Industry Canada Statement
This device complies with ISED's licence-exempt RSSs. 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.*

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be chosen so that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.
Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. *le dispositif ne doit pas produire de brouillage préjudiciable, et*
2. *ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.*

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radio électrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

REVISION HISTORY

Revision	Revision Date	Description of Change	Prepared By:	Approved By:
A	4.22.2020	Initial Release	JT	