

HUM INDUSTRIAL TECHNOLOGIES STANDARD PROCEDURES

DWG NO: HI24042701 REV. B

Date: 07/30/2026

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DESCRIPTION: Installation of HI24030204 Gateway using through bolts

1. COMPANY INFORMATION:

1.1. ADDRESS:

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1.3. EMAIL: info@humindustrial.com

1.4. WEBSITE: www.humindustrial.com

2. TITLE: Installation Instructions of the HUM Gateway Device to Train Car

3. SCOPE: HUM Gateway Devices using the bolted mounting plates

4. PURPOSE OF UNIT: The Hum Gateway uses a LoRa Protocol to connect to and collect data from Hum's peripheral IoT Devices. As of October 2025, Hum's current IoT devices are Hum Valve Sensor and Hum Boomerang. The Gateway then uses a cellular network to relay this data to a cloud-based server.

5. DISCUSSION:

5.1. TOOLS REQUIRED:

- 5.1.1. 7/16" Wrench
- 5.1.2. 7/16" Socket on a Ratchet or Impact Drill
- 5.1.3. Battery Powered Electric Drill
- 5.1.4. 9/32" Split Tip Drill Bits
- 5.1.5. HUM Hole Drilling Jig
- 5.1.6. Spring-Impact Marking Punch
- 5.1.7. Sharpie Pen or Spray Paint

5.2. HARDWARE REQUIRED:

- 5.2.1. Four (4) 1.0 Inch 1/4"-20 Steel Bolts
- 5.2.2. Four (4) 1/4"-20 Hex Nuts

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5.2.3. Four (4) ¼” Split Lock Washers

5.2.4. Eight (8) ¼” Flat Washers

5.3. MOUNTING LOCATION:

5.3.1. The Gateway Device is mounted horizontally on the side of the train car with the solar panels angled up as Shown in Figures 1 & 2

GATEWAY DEVICE
LOCATION



Figure 1

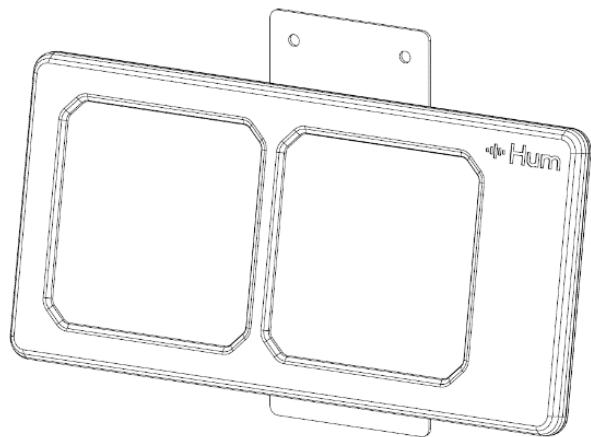


Figure 2

5.4. MOUNTING HOLES

5.4.1. Use the Handle to hold the Mounting Hole Jig Vertically (Figure 3) on the side of the train car as shown in STEP 5.2.1

5.4.2. Use a Sharpie Pen or Spray Paint to Mark the Four (4) Holes

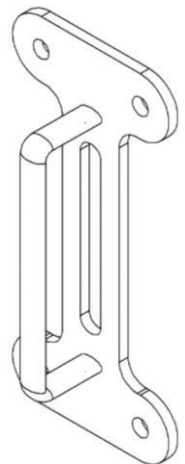


Figure 3

5.5. DRILLING MOUNTING HOLE

- 5.5.1. Use a Spring-Impact Punch to punch the center of the Four (4) circles marked in STEP 5.3.2
- 5.5.2. Drill through the side of the train car using a 9/32" Drill Bit at the 4 Locations punched in STEP 5.4.1

5.6. BOLT INSTALLATION

- 5.6.1. Install a 1/4" Flat Washer onto the 1/4"-20 Bolt
- 5.6.2. Hold the Gateway Device up to the holes drilled in the train car and install the bolt and washer through the top mount and hole in the train car.
- 5.6.3. Install a FLAT WASHER, LOCKING WASHER and 1/4-20 NUT onto the BOLT as shown in Figure 4.
- 5.6.4. Screw the NUT onto the BOLT, until snug but do not fully tighten until all bolts are installed.
- 5.6.5. Install the other three sets of BOLTS, NUTS and WASHERS as shown in Figure 4 & 5.
- 5.6.6. Tighten all of the NUTS and BOLTS with a 7/16" Wrench and Socket or Impact Drill.

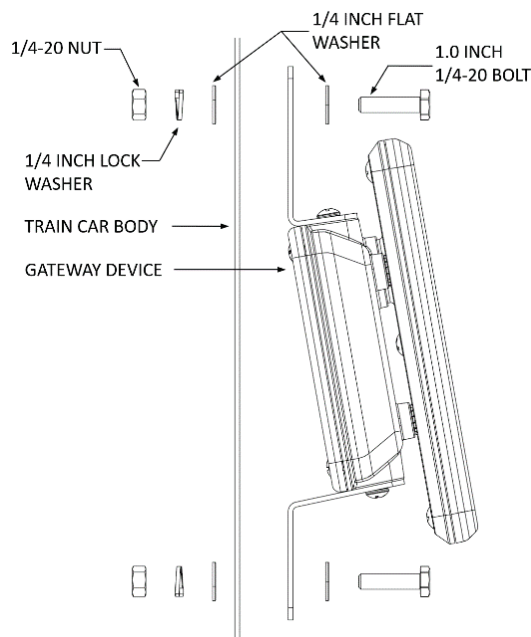


Figure 4

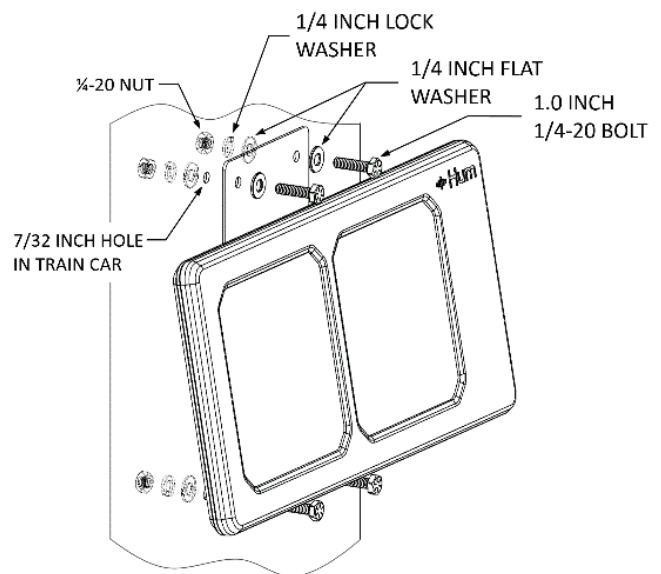


Figure 5

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6. TECHNICAL DETAILS

6.1. DEVICE LABEL DETAILS:

Hum Industrial Technology

Part Number: HI24030204

Class I, Div. 2 Groups A,B,C,D

Temperature Code: T6

T_{amb}: 10°C to 40°C

Electrical Rating: 500mA @ 4.2V

IP64 Rated

Explosion Hazard: Do Not Open Device. No user replaceable or serviceable parts.

Avertissement: Risque D'explosion. Ne Pas Ouvrir. Aucune pièce remplaçable ou réparable

6.2. BATTERY REPLACEMENT INSTRUCTIONS:

6.2.1 This device is not intended for on-site battery replacement. Any opening or tampering of the device will result in the void of all warranties. For device service, please contact HUM INDUSTRIAL.

6.2.2 Explosion Hazard: Do Not Open Device. No user replaceable or serviceable parts.
Avertissement: Risque D'explosion. Ne Pas Ouvrir. Aucune pièce remplaçable ou réparable

6.3. OPERATING INSTRUCTIONS: Once installed the device will start working automatically. All devices have been configured by HUM and do not require any set up from the user.

6.4. MAINTENANCE INSTRUCTIONS:

6.4.1. Cleaning: If the clear windows become covered in dust or dirt, spray clean with water or wipe clean with a wet sponge. Be careful not to scratch the windows while cleaning.

6.4.2. Inspection: The Gateway Device should be visually inspected every 3 months to ensure device has not been damaged. If there are any cracks, broken or missing parts, please contact HUM INDUSTRIAL for warranty or replacement.

6.5. ENVIRONMENTAL SEPECIFICATIONS:

Maximum Humidity: 100%

Maximum Altitude: 12,000 feet

Pollution Degree: 4 (Electrical Equipment for Outdoor Use)

Note: This device is designed to be used in outdoor locations, to withstand normal weather conditions, including wet locations.

6.6 WARNINGS:

The intended function of this device could be impaired if the equipment is used in a manner not specified by the manufacturer.

6.7 BATTERY MANAGEMENT:

There is a temperature control monitoring system within the Battery Management System

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6.8 WIRELESS REGULATORY INFORMATION

6.8.1 FCC ID



FCC ID: 2BUPV-GW01
IC: 35176-GW01

6.8.2 FCC Compliance Statement

Changes or modifications not expressly approved by Hum Industrial Technology Inc. could void the user's authority to operate the equipment.

This device complies with Part 15 of 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: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

6.8.3 ISED Canada Compliance Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: 1. This device may not cause interference. 2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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; 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

7. REVISION HISTORY:

REV	DATE	DISCRIPTION	CHKD	APRVD
A	03/15/2025	Document created	DAL	LC
B	07/30/2026	ADDED SECTION 6.8	LC	