ORBCOMM®

CONNECTING THE WORLD'S ASSETS

# GT 12

# Trailer and Container Installation Guide

GT0018, Version 0.06 BETA Dec 2018

# LEGAL NOTICE



# TRADEMARK NOTICE

# CONTACT INFORMATION

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# 1. SCOPE

# 2. INSTALLATION GUIDE

This document covers both container and trailer installations.

Refer to document AS058 prior to installation if using the Field Support Tool mobile app. Use the tool to ensure the ORBCOMM devices are associated and functioning correctly before starting this installation.

Select one of the following mounting options:

- Mount the GT 12 on a container or thin-walled trailer (section 1.1).
- Mount the GT 12 on a sheet and post trailer (section 1.2).

## 2.1 Mount the GT 12 on a Container or Thin-Walled Trailer

This procedure coves mounting with and without cables.

### 2.1.1 Gather the Required Tools and Materials

The following are required for this installation:

- GT 12 device, model number GT12 GL LTE4
- Magnetic drill template (provided by ORBCOMM, p/n ST100931)
- Duct tape (for non-ferrous assets)
- Rivet Gun
- Drill and the following drill bit sizes: ¼" and 0.196" (3⁄16" is an optional replacement for 0.196")
- Drill stops of the following sizes: ¼" and 3⁄16"
- 1-¾" diameter hole saw with a ¼" diameter pilot (Milwaukee Bi-Metal preferred)
- 7⁄16 socket extension
- Marker
- Alcohol based cleaner or wipes
- Rags or towels
- Silicone sealant (gray or black recommended)
- Dry graphite lube
- Deburring tool
- 6' (1.8 m) step ladder

### 2.1.2 Drill the Required Holes

CAUTION: If drilling on an asset (container or trailer) loaded with cargo, use drill stops.
- Attach the drill stop to the drill bit, the location of the stop on the bit will depend on the width of the asset wall.
- Use just enough force to slightly penetrate the asset wall. Going all the way through the asset wall may damage cargo.

1. Determine the appropriate location (vertically or horizontally) for the GT 12. Avoid mounting over weld seams or rivets. All measurements are made to the cargo sensor hole on the drill template.

Note: When mounting in a vertical configuration the solar panel should face down for optimal RF performance.

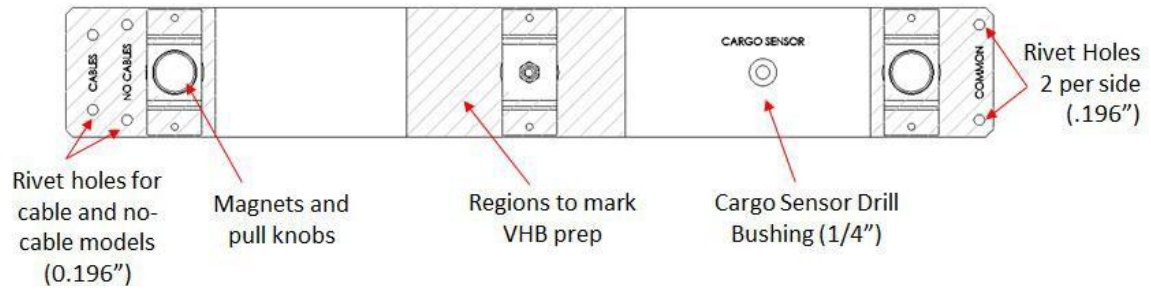
Note: When mounting is horizontal, the solar panel should face the side walls for optimal cargo detection.

2. Place the template, with the cargo sensor bushing, 14 to 24" (36 to 61 cm) to the left or right of the centerline (16 to 20" (41 to 51 cm) is ideal) and 28" to 38" (71 to 97 cm) from floor height (36"/91 cm is ideal). For non-ferrous containers or trailers, use duct tape to securely hold the template in place.


3. Spot drill through the cargo sensor bushing on the template with a ¼" drill bit. Spot drill the four (4) rivet holes using a 0.196" drill bit. A 3/16" drill bit may be used if a 0.196" drill bit is not available, however the holes may need to be opened to fit the rivets.

CAUTION: Be sure to select the correct pair of rivet holes depending on whether the GT 12 includes cables.

CAUTION: Do not drill all the way through the container wall with the template in place.




### 2.1.3 Prepare the Holes

CAUTION: DO NOT drill any holes in any loaded, placarded trailers.

1. Remove the template.

   CAUTION: Do not drill completely through the container or trailer with the template still attached. Only pilot holes should be drilled at this point and the template removed.

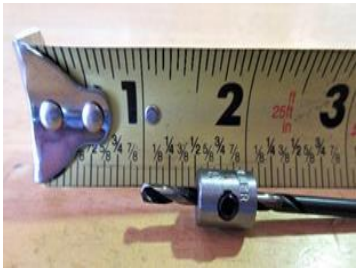
2. Secure a drill stop collar ⅛" to the drill bit when drilling each of the 0.196" holes.

For Container

Set the drill stop ⅛" from the tip of the drill bit.

For Thin-Walled Trailer

Set the drill stop ½" from the tip of the drill bit.



3. Drill the lower left drill hole location until the drill stop contacts the trailer or container surface.

a. Insert a probe through the drilled hole a minimum of 6” (15 cm) or until the probe comes into contact with freight.

CAUTION: If the minimum 6” (15 cm) is not attained when probing a drill hole location, DO NOT continue drilling holes. Any holes drilled should be filled with silicone sealant.

Note: If a minimum of 6” (15 cm) is attained when probing, continue with the next step.

4. Repeat step 3 for the remaining three (3) holes, and the cargo sensor hole.

Note: If a minimum of 6” (15 cm) is attained when probing the lower middle and lower left drill hole locations, continue this process with each of the top drill hole locations, completing one at a time.

CAUTION: If the minimum 6” (15 cm) is not attained when probing a drill hole location, DO NOT continue drilling holes. Any holes drilled should be filled with silicone sealant.

5. Drill the four (4) outer holes to 0.196” and drill the single center hole to ¼” diameter.
6. Spray the teeth of the 1-¾” hole saw with dry powder graphite lube before drilling the first cargo sensor hole to reduce sparking or heat.

Note: DO NOT spray directly on the asset surface because this may leave residue.

7. Use a 1-¾" diameter hole saw with a ¼" diameter pilot to cut a hole through the asset, through the predrilled ¼" diameter hole.

CAUTION: If at any time sparks or excessive heat cannot be avoided, STOP the install and call management.

Container View

8. Remove excessively sharp edges, large/hanging burrs or strips that are the results of using the hole saw, with a few quick passes of a deburring tool.

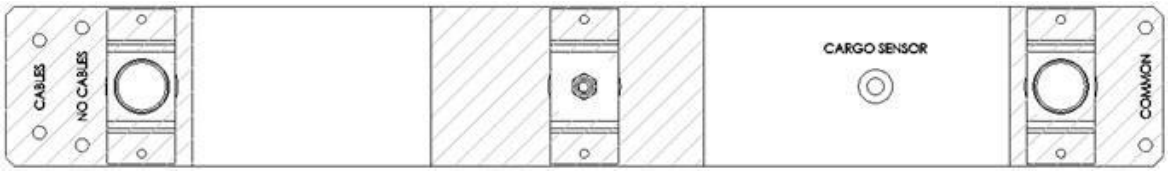
Note: Only edge deburring tools should be used. Straight files or hand files should never be used as they will distort the shape of the hole.

EXAMPLE OF A TYPICAL DEBURRING TOOL WITH A ROTARY STYLE HEAD

Note: If a container has a double wall with an air gap, as per the figure below, completely fill the air gap with a clean bead of caulking.

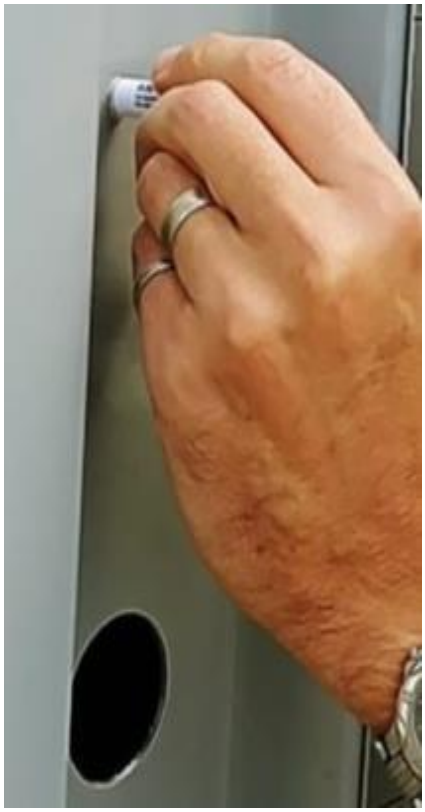

### 2.1.4 Prepare the Mounting Location

1. After the holes are drilled, prepare the three (3) areas indicated by the cross-hatch on the template:




   a. Use a scour pad to prepare the area.
   b. Clear the surface with an alcohol cleaner or wipe.

c. Apply 3M Primer to the areas and wait at least 30 seconds for the primer to dry.



### 2.1.5 Mount the GT 12 with or without Cables

- If mounting with cables, see section 1.1.5.1.
- If mounting without cables, see section 1.1.5.2.

#### 2.1.5.1 Mount the GT 12 with Cables

From the end of the GT 12, remove the red label, and then remove the magnet located under the label.


Remove the cable cover, nuts, and top VHB bracket from device.

Remove the liner from the top VHB bracket, and mount the bracket to the asset.

CAUTION: It is very important to use the two provided rivets as an alignment guide.

Press firmly to bond the bracket to the asset.

Remove the liner from the second and third VHB brackets, and the liner from the anti-tamper magnet.

CAUTION: Do not touch the VHB tape.

Insert one rivet through the bottom bracket and use the studs from the top bracket for alignment.

CAUTION: This step is critical to align the cargo sensor hole


Press firmly on the device, over all three (3) VHB brackets and the tamper magnet area, to bond the brackets to the asset.

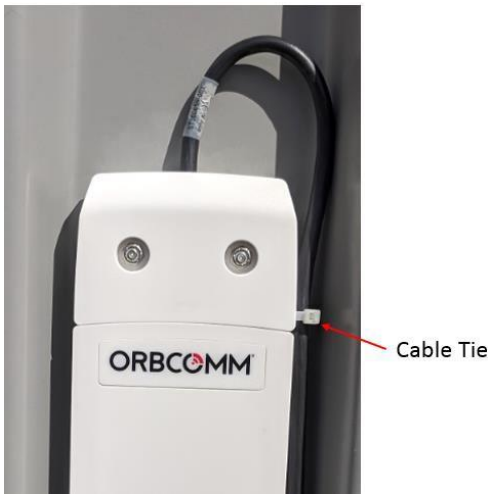
Assemble two (2) rivets on the top bracket and two (2) on the bottom bracket.

(optional) Add silicone around the rivets if additional sealing is required.


Connect the cable harness to the 16-pin connector. The latches on the cable harness provide an tactile click when engaged.

Reassemble the cable cover and the nuts removed in step 1. Secure the nuts, but do not overtighten (12 in-lb is ideal).

Dress the cable harness through one or more of the provide cable tie slots on the side of the GT 12.

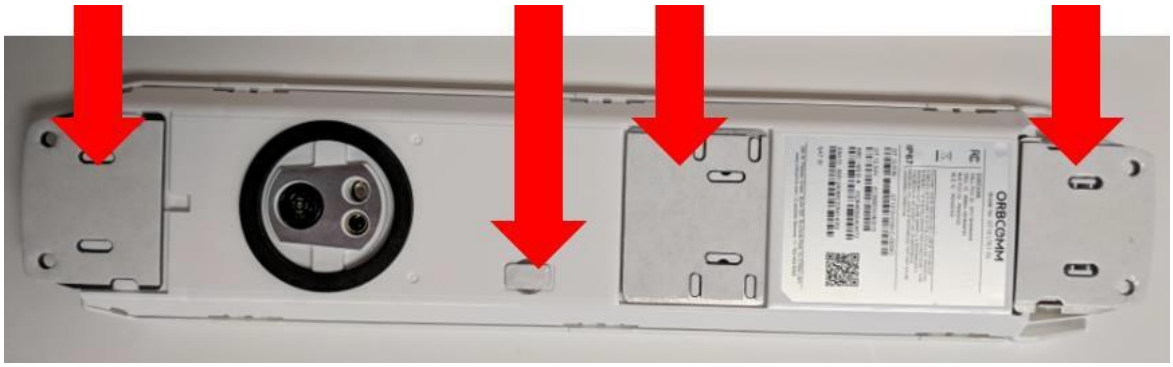


### 2.1.5.2 Mount the GT 12 without Cables

From the end of the GT 12, remove the red label, and then remove the magnet located under the label.


Remove the liner from the all three (3) VHB brackets and anti-tamper magnet.

CAUTION: Do not touch the VHB tape.



Mount the bracket to the asset.

CAUTION: It is very important to use the two provided rivets as an alignment guide.

It is very important to use two provided rivets as an alignment guide.

Insert one rivet through the bottom bracket and one rivet through the top bracket for alignment. CAUTION:

This step is critical to align the cargo sensor hole

Press firmly on the GT 12 over all three (3) VHB brackets and the tamper magnet area to bond the brackets to the asset.

Assemble two (2) rivets on the top bracket and two (2) on the bottom bracket.


(optional) Add silicone around the rivets if additional sealing is required.

## 2.2 Mount the GT 12 on a Sheet and Post Trailer

### 2.2.1 Gather the Required Tools and Materials

The following are required for this installation:

- GT 12 device
- Magnetic drill template (provided by ORBCOMM, p/n ST100965-001)
- Duct tape (for non-ferrous assets)
- Rivet Gun
- Drill and the following drill bit sizes: ¼" and 0.196" (3⁄16" is an optional replacement for 0.196")
- Drill stops of the following size: ¼"
- 1-¾" diameter hole saw with a ¼" diameter pilot (Milwaukee Bi-Metal preferred)
- 1-¼" diameter hole saw with a ¼" diameter pilot (Milwaukee Bi-Metal preferred)
- 7⁄16 socket extension
- Marker
- Alcohol based cleaner or wipes
- Rags or towels
- Silicone sealant (gray or black recommended)
- Dry graphite lube
- Deburring tool
- 6' (1.8 m) step ladder

### 2.2.2 Drill the Required Holes

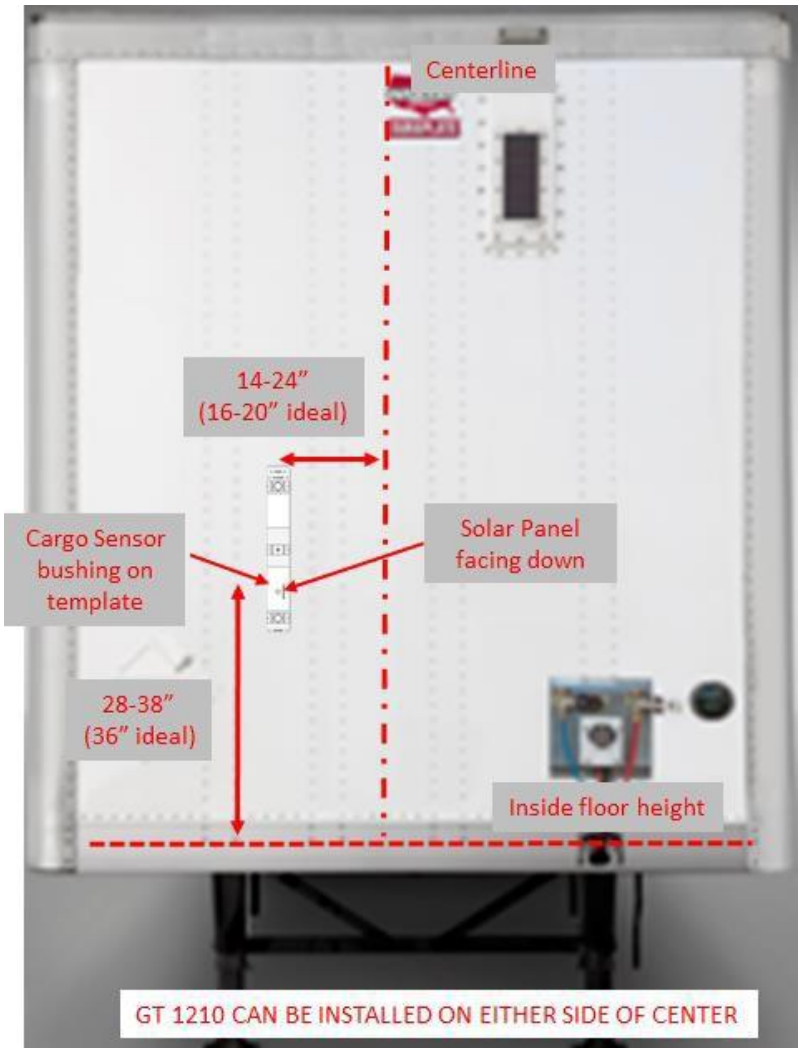
CAUTION: If drilling on an asset (container or trailer) loaded with cargo, use drill stops.
- Attach the drill stop to the drill bit, the location of the stop on the bit will depend on the width of the asset wall.
- Use just enough force to slightly penetrate the asset wall. Going all the way through the asset wall may damage cargo.

1. Determine the appropriate location (vertically or horizontally) for the GT 12. Avoid mounting over weld seams or rivets. All measurements are made to the cargo sensor hole on the drill template.

Note: When mounting in a vertical configuration the solar panel should face down for optimal RF performance.

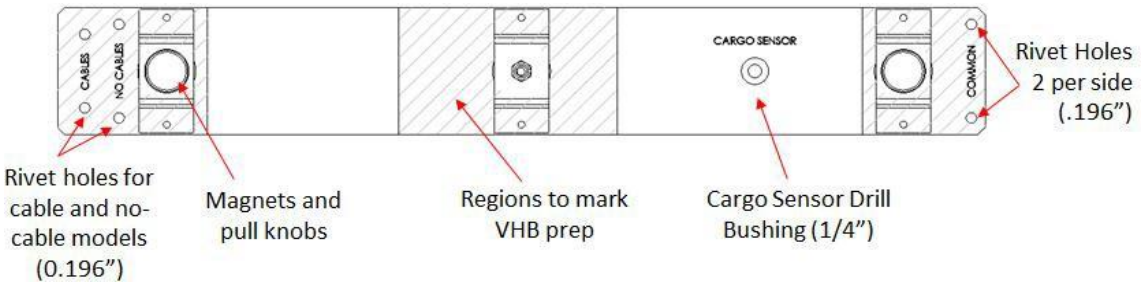
Note: When mounting is horizontal, the solar panel should face the side walls for optimal cargo detection.

2. Place the template, with the cargo sensor bushing, 14 to 24" (36 to 61 cm) to the left or right of the centerline (16 to 20" (41 to 51 cm) is ideal) and 28" to 38" (71 to 97 cm) from floor height (36"/91 cm is ideal). For non-ferrous trailers, use duct tape to securely hold the template in place.




3. Drill through the cargo sensor bushing on the template with a ¼" drill bit. Drill through both the outer skin and the inner liner of the sheet and post trailer using the template.

CAUTION: Failure to use the template will compromise the installation.




### 2.2.3 Prepare the Holes

CAUTION: DO NOT drill any holes in any loaded, placarded trailers.

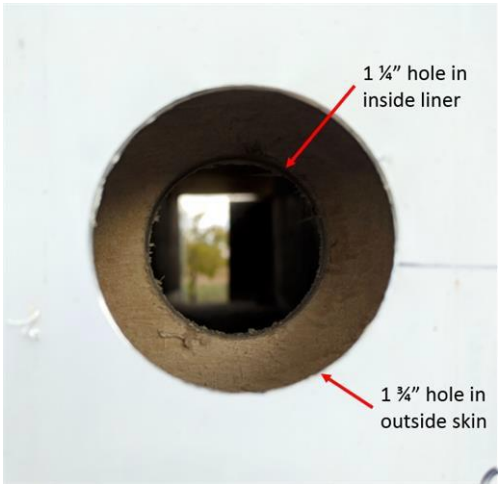
1. Remove the template.
2. Spray the teeth of the 1-¾" hole saw with dry powder graphite lube before drilling the first cargo sensor hole to reduce sparking or heat.

   Note: DO NOT spray directly on the asset surface because this may leave residue.
3. Use a 1-¾" diameter hole saw with a ¼" diameter pilot to cut a hole through the outer skin of the trailer, through the predrilled ¼" diameter hole.

   CAUTION: If at any time sparks or excessive heat cannot be avoided, STOP the install and call management.

   CAUTION: DO NOT drill a 01.75" hold in the inner liner. Change the hole saw prior to the next step.

4. Switch to a 1- ¼" diameter hole saw with a ¼" diameter pilot to cut a hole through the inner liner of the trailer, through the predrilled ¼" diameter hole.



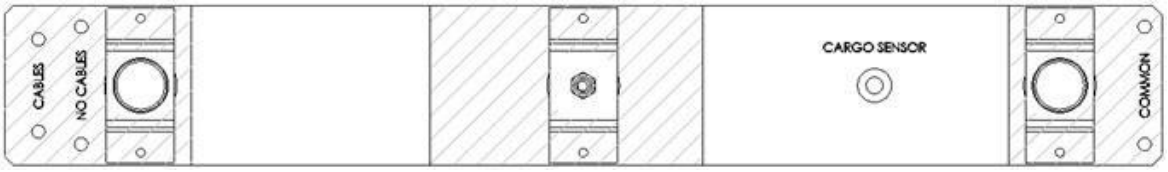

5. Remove excessively sharp edges, large/hanging burrs or strips that are the results of using the hole saw, with a few quick passes of a deburring tool.

   Note: Only edge deburring tools should be used. Straight files or hand files should never be used as they will distort the shape of the hole.

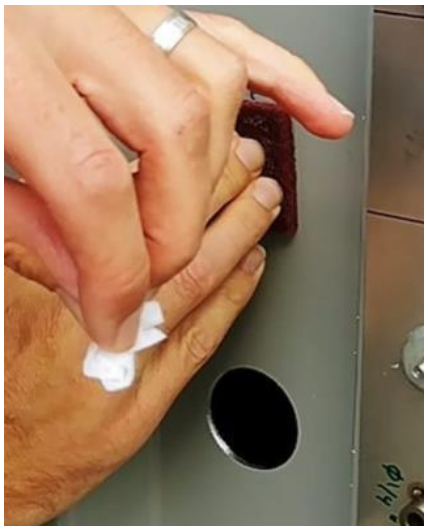
EXAMPLE OF A TYPICAL DEBURRING TOOL
WITH A ROTARY STYLE HEAD

### 2.2.4 Prepare the Mounting Location

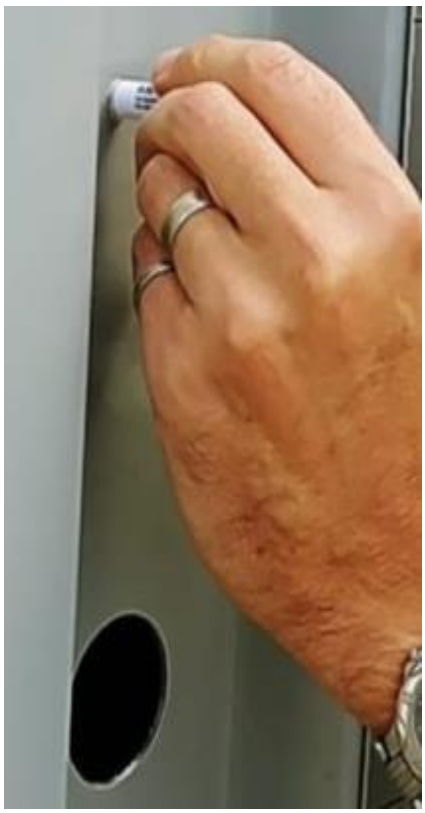
1. Prepare the three (3) areas indicated by the cross-hatch on the template:



a. Use a scour pad to prepare the area.
b. Clear the surface with an alcohol cleaner or wipe.



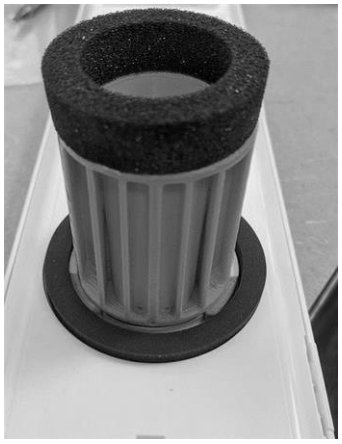
c. Apply 3M Primer to the areas and wait at least 30 seconds for the primer to dry.



### 2.2.5 Assemble the Sheet and Post Horn

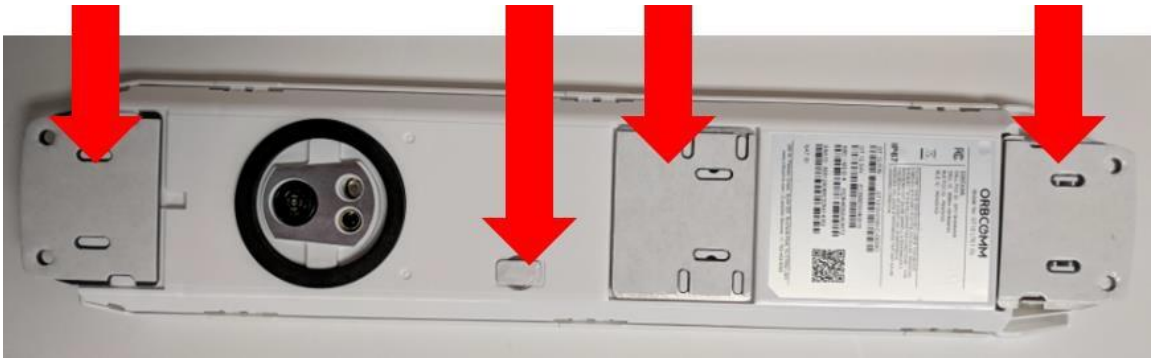
1. Remove the VHB liner from the sheet and post horn (ST100965-001).

2. Align the key features on the horn with the matching key features on the GT 12.
3. Press firmly to bond the horn to the GT 12.



4. Remove the liner from all three (3) VHB brackets and the liner from the anti-tamper magnet.

CAUTION: Do not touch the VHB tape.



5. Insert the horn through the 1-¾" hole in the outer skin of the asset until the foam at the end of the horn makes contact with the inside liner.

   Note: It is very important that the horn be inserted perpendicular to the outer skin or the foam could twist and block the horn.

6. Press firmly on the device over all three (3) VHB brackets and the tamper magnet area to bond the brackets to the asset.

### 2.2.6 Mount the GT 12 with or without Cables

- If mounting with cables, see section 1.2.6.1.
- If mounting without cables, see section 1.2.6.2.

#### 2.2.6.1 Mount the GT 12 with Cables

From the end of the GT 12, remove the red label, and then remove the magnet located under the label.


Remove the cable cover and nuts from the mounted GT 12.
Use a 0.196" drill bit to drill through the four (4) rivet holes on the top and bottom of the VHB bracket. A 3/16" drill bit may be used if a 0.196" drill bit is not available, however the holes may need to be opened to fit the rivets

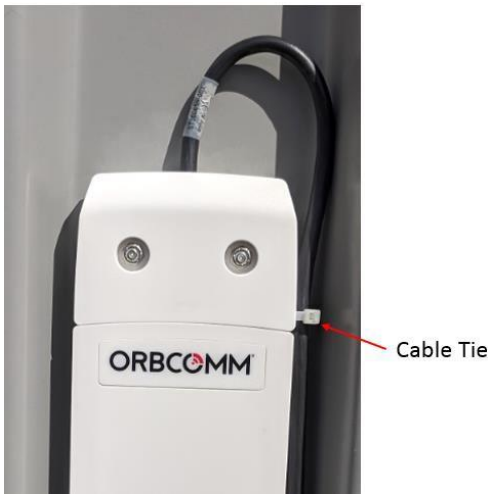
Assemble two (2) rivets on the top bracket and two (2) on the bottom bracket.

(optional) Add silicone around the rivets if additional sealing is required.


Connect the cable harness to the 16-pin connector. The latches on the cable harness provide an tactile click when engaged.

Reassemble the cable cover and the nuts removed in step 1. Secure the nuts, but do not overtighten (12 in-lb is ideal).

Dress the cable harness through one or more of the provide cable tie slots on the side of the GT 12.




### 2.2.6.2 Mount the GT 12 without Cables

From the end of the GT 12, remove the red label, and then remove the magnet located under the label.


Use a 0.196" drill bit to drill through the four (4) rivet holes on the top and bottom of the VHB bracket. A 3/16" drill bit may be used if a 0.196" drill bit is not available, however the holes may need to be opened to fit the rivets

Assemble two (2) rivets on the top bracket and two (2) on the bottom bracket.


(optional) Add silicone around the rivets if additional sealing is required.

## 2.3 (Optional) Assemble the Sealing Cap and Cable Cover

1. Assemble the 16-pin sealing cap (CON100378) if a cable harness is not connected to the 16-pin connector. The latches on the sealing cap provide a tactile click when engaged.

2. Assemble the cable cover using the provided nuts. Secure the nuts, but do not overtighten (12 in-lb is ideal)

# 3 CERTIFICATION

**FCC Compliance IDs**

FCC ID: XGS-GT12BT
Contains FCC ID: XMR202212EG21GL

**ISED Compliance IDs**

IC: 11881A-GT12BT
Contains IC: 10224A-2022EG21GL

**ISED/FCC Compliance Statement**

**ISED non-interference disclaimer**

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.

This device complies with the Canadian ICES-003 Class A specifications. CAN ICES-003(A) / NMB-003 (A).

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 exempt 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.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

**FCC Compliance Statement**

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.

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. Please note that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**ISED/FCC RF Exposure statement**

This equipment complies with FCC and ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. In order to avoid the possibility of exceeding the FCC and ISED RSS-102 radio frequency exposure limits, this equipment should be installed and operated with minimum distance 20 cm (7.9 inches) between the antenna and your body during normal operation. Users must follow the specific operating instructions for satisfying RF exposure compliance.

Cet équipement est conforme aux limites d'exposition aux rayonnements FCC et ISED CNR-102 établies pour un environnement non contrôlé. Cet émetteur ne doit pas être installé ou utilisé en conjonction avec une autre antenne ou un autre émetteur. Afin d'éviter la possibilité de dépasser les limites d'exposition aux radiofréquences FCC et ISED, cet équipement doit être installé et utilisé avec une distance minimale de 20 cm (7.9 pouces) entre l'antenne et votre corps pendant le fonctionnement normal. Les utilisateurs doivent suivre les instructions spécifiques d'utilisation pour respecter la conformité à l'exposition aux RF.

**CE Mark Compliance**

RED 2014/53/EU