BlackBerry Radar

# BLACKBERRY RADAR A2 CARGO ACCESSORY ITD100-1

March 2022

Dry Van, Insulated Trailers (Roll-Up Doors)

# Installation Guide

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# 1 Overview

This guide provides detailed instructions for installing and activating new BlackBerry Radar Cargo Accessory modules. It includes three main tasks:

Task 1: Get ready for installation (see Section 2)

Task 2: Install a BlackBerry Radar Cargo Accessory module (see Section 3)

- Match the module identifier with the asset identifier on the installation worksheet
- Install the module onto the trailer/container

Task 3: Uninstall a module (see Section 4)

Complete BlackBerry Radar documentation is available online when you log in to BlackBerry Radar Dashboard. For instructions on how to configure the BlackBerry Radar Dashboard or how to activate newly installed devices, see the online documentation.

## 2 Get ready for installation

To get ready for installation, you need to obtain a worksheet where you can record the pairing of each BlackBerry Radar Cargo Accessory module to its companion BlackBerry Radar H2 module and its asset (that is, the trailer/container that the modules will be installed on).

For detailed instructions, log in to the BlackBerry Radar Dashboard and access documentation from the main menu.

# 3 Installing BlackBerry Radar Cargo Accessory modules

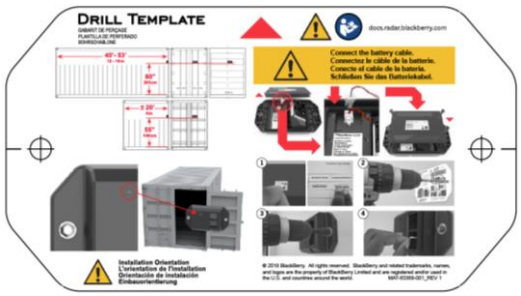
You may have a large number of BlackBerry Radar Cargo Accessory modules to install. Follow the instructions in this section to:

- Match each module identifier to its asset identifier
- Install the module to the asset you wish to track.

## 3.1 Prepare to install

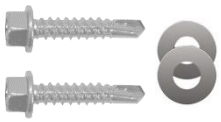
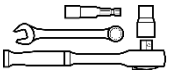
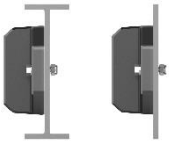
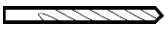
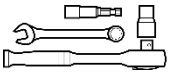
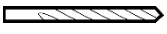
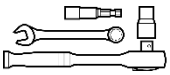
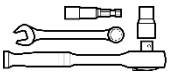
To complete the installation of the module to your assets, you will need the following components. The following components are contained in the module packaging.

Radar Cargo Accessory Module Package Contents

| | |
|---|---|
| Radar A2 Cargo Accessory Module | Drill Template   |
| Lithium Metal Battery | Fastener Bag<br>(4 screws per device) |

If you are missing any of the above components in your package, contact your BlackBerry Sales Representative.

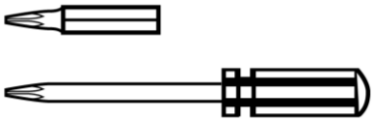
To attach the module to the asset you wish to track, you will need to supply your own fasteners. Depending on the construction of your mounting location, you may wish to use the following types of fasteners. Please Note: Your choice of fastener will influence the size of the tools required to create the mounting holes (i.e. drill bits) and install or remove the fasteners (i.e. wrenches/sockets/drivers). An example of this provided below. The actual length of the fasteners will be determined by the thickness of your mounting surface.

<table>
<tr><td colspan="3">IMPORTANT: The maximum fastener thread diameter supported by this product is ¼” or M6 (6 mm).<br>For most secure fastening, we do not recommend using fasteners with a diameter less than that of a ¼” or M6 fastener.</td><td>
</td></tr>
<tr><td>Box Section<br>(+3mm wall thickness)<br> </td><td>2 self-tapping screws and washers<br>(3/8” head, 1/4”-14 thread, 1-1/2” length)<br>  </td><td>Drill Bit<br> 3/16” (5mm)<br>Nut Driver/Socket/Wrench<br>  3/8” (10mm)</td></tr>
<tr><td>I-Beam/Panel Section<br>(with rear access)<br>  </td><td>2 hex bolts, nuts, and 4 washers<br>(7/16” head, 1/4”-20 thread, 1-1/4” length, 1/4”-20 nut)<br>(11mm head, M6 thread, 30mm length, M6 nut)<br> </td><td>Drill Bit<br>  1/4” (6mm)<br>Nut Driver/Socket/Wrench<br>  7/16” (11mm)</td></tr>
<tr><td>Panel Doors<br>(plywood/MDF/composite/<br>foam cores)<br> </td><td>2 hex bolts, nuts, and 4 washers<br>(7/16” head, 1/4"-20 thread, 2 1/2”-4” length, 1/4"-20 nut)<br>(11mm head, M6 thread, 65-120mm length, M6 nut)<br> </td><td>Drill Bit<br>  1/4” (6mm)<br>Nut Driver/Socket/Wrench<br>  7/16” (11mm)</td></tr>
<tr><td>Insulated Trailer Doors<br> </td><td>2 hex bolts, washers, and well nuts<br>Bolt: 7/16” head, 1/4”-20 thread, 1-1/2” length<br>Insert: 1/4”-20 thread<br> </td><td>Drill Bit<br> 1/2” (13mm)<br>Nut Driver/Socket/Wrench<br>  7/16” (11mm)</td></tr>
<tr><td colspan="3">Accessory Adhesive Kits<br>For installations where drilling is not desired.<br>Available from your BlackBerry Representative.</td><td>
</td></tr>
</table>

## 3.2 Installation tools

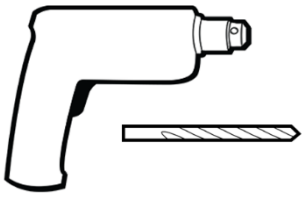
Required tools to complete the installation:

**Phillips (PH2) Screwdriver or Bit or Torx (T10) Screwdriver or Bit**



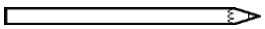
*Early production devices used Torx Screws for the battery door. Newer devices use Phillips Screws for the battery door.

**Drill and Drill Bits**

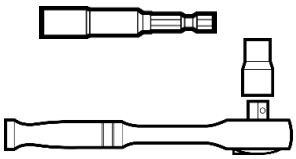


**Tape**

**Pencil or Non-Permanent Marker**



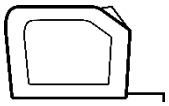
**Nut Driver or Socket Wrench with Socket***



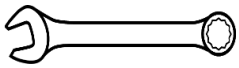
*Nut Driver + Drill offers fastest installation. If no Nut Driver is available, a socket wrench and socket may be used as a substitute.

**Safety Glasses**

**Tape Measure**



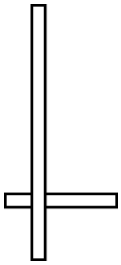
**Wrench**



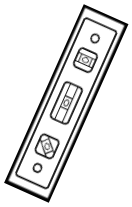
*Required only if nuts and bolts are used.

Recommended tools to complete the installation:

**T-Square**

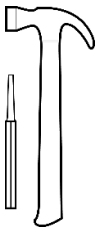


**Pocket Level**

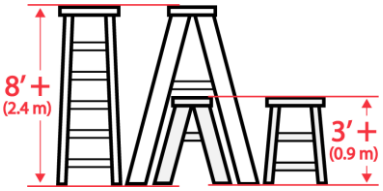


**Towel**

**Hammer and Punch**

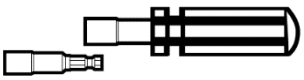


**Ladders***



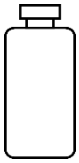

*Tall ladder for installation on taller vehicles and containers. Small ladder for installation inside of containers or the exterior of smaller vehicles.

**Torque Screwdriver with Socket***
(scale range of 0.4 N-m to 4.5 N-m, 4 in-lb to 40 in-lb)



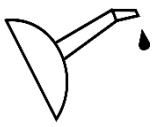
*To check compliance with torque specifications for fasteners.

**70% Rubbing Alcohol**



**File**

**Cutting Lubricant* (Recommended)**



*Recommended for faster drilling speed on thicker metals and longer drill bit life.

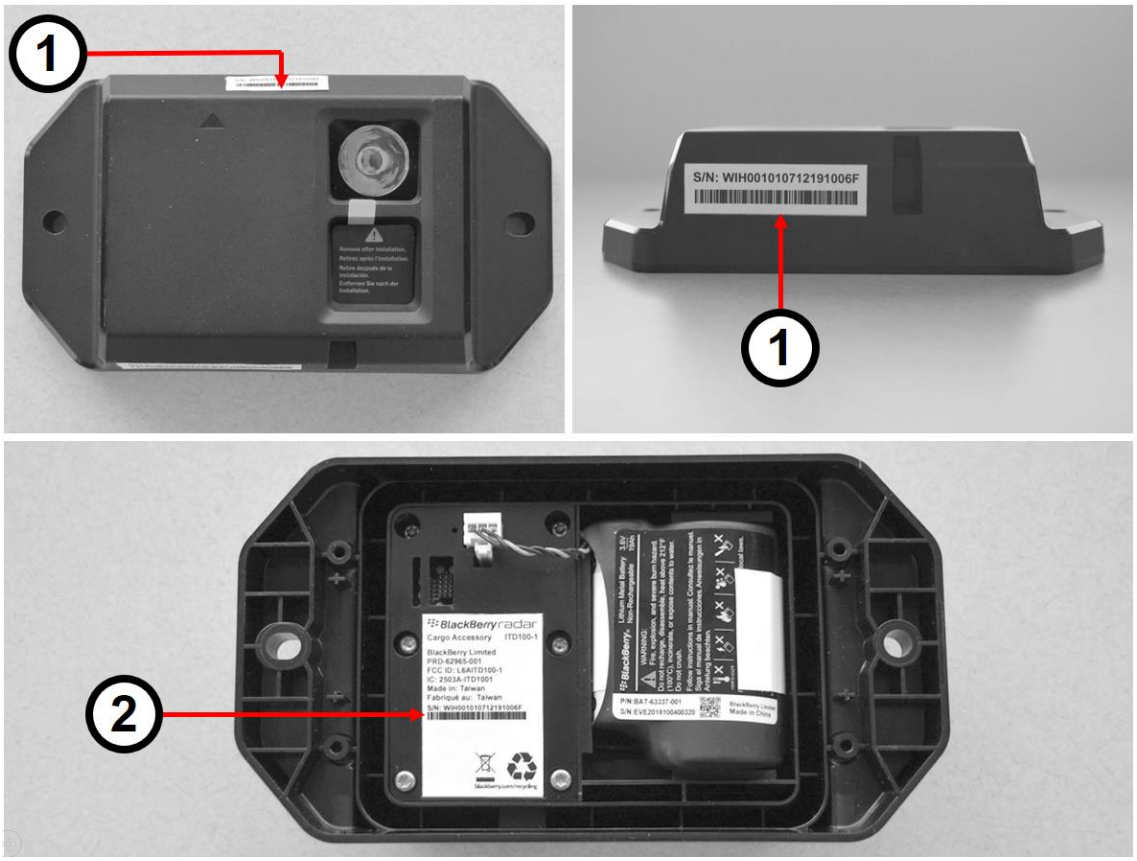
## 3.3 Matching a module identifier to an asset identifier

In order to track an asset, the BlackBerry Radar Cargo Accessory module that is installed on the asset must be associated with the asset in the BlackBerry Radar Dashboard. It is, therefore, very important to keep a clear record of which Radar Cargo Accessory module is installed on which asset.

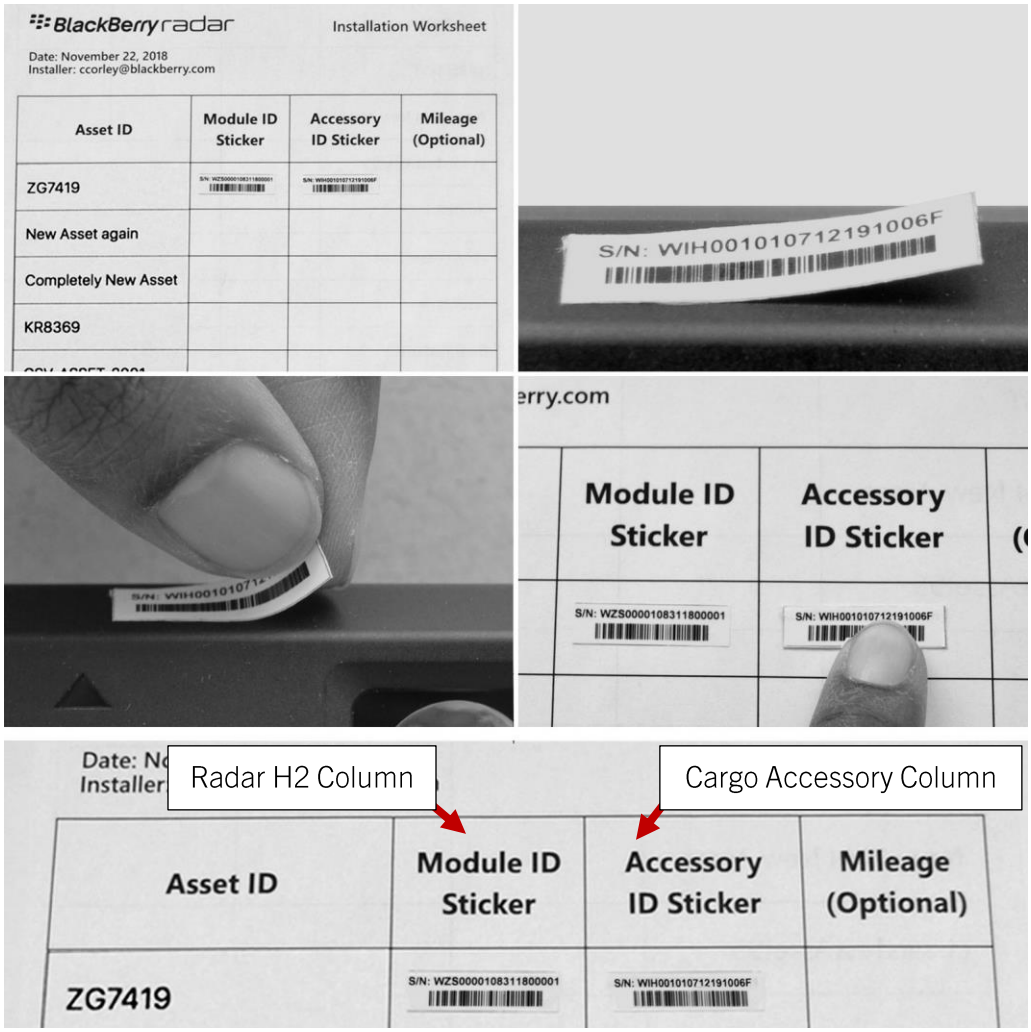
The Dashboard application tracks modules and assets using 'identifiers'. The asset identifier is the name or number of the asset you wish to track. The asset identifiers are entered into the application when you add the assets and will be listed on your installation worksheet. The identifier for each Radar Cargo Accessory module is printed on three labels—two attached to the front surface of the outer housing and the other in the battery compartment. The module identifier also serves as the serial number (S/N) for the module.

To match a module identifier with an asset identifier:

1. Locate the module identifier for your device. The module identifier is shown in two places.
    1. Externally—temporary S/N label and permanent exterior S/N label, attached to the front of the outer housing.
    2. Internally—permanent main product label, in the battery compartment.



2. Once you are ready to install the BlackBerry Radar Cargo Accessory module to the asset, remove the partially attached label from the front surface of the outer housing and place it on your worksheet, on the row with the asset that the Cargo Accessory will track and the BlackBerry Radar H2 module identifier that the sensor module will be paired with.



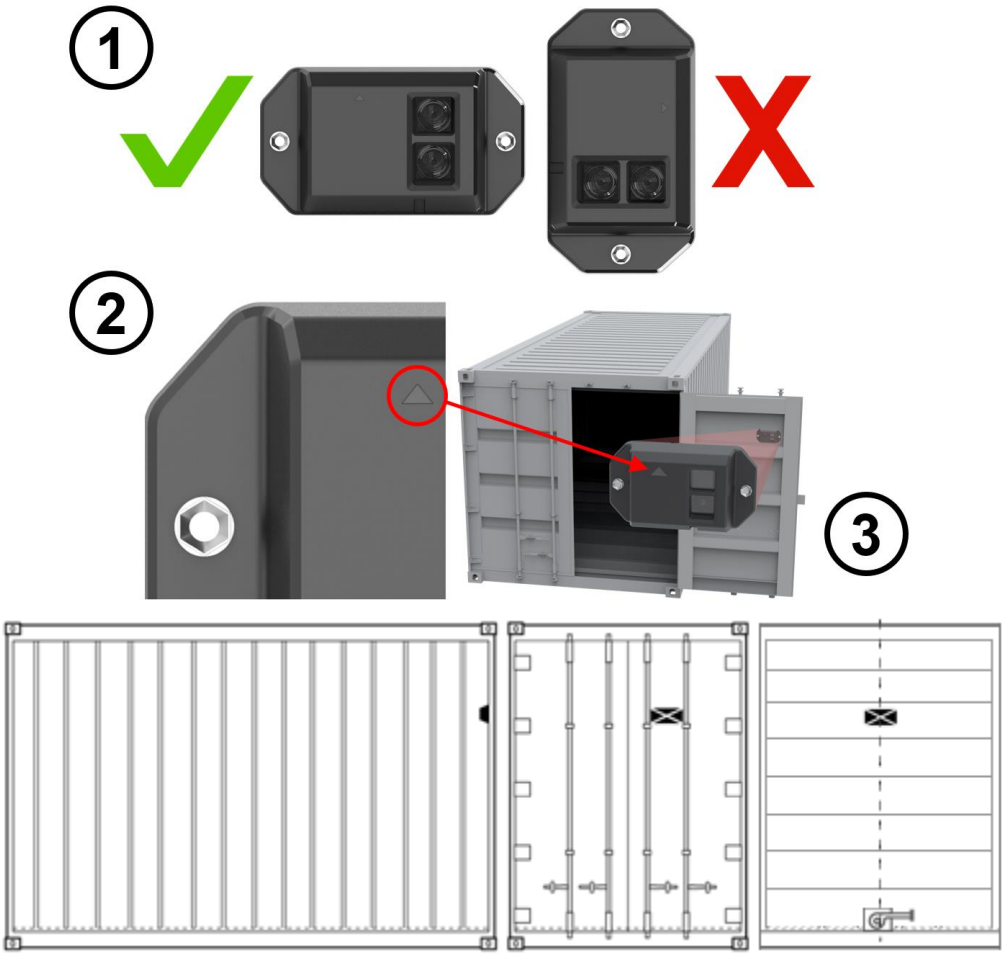
## 3.4 Module installation

To monitor cargo status and door events with your BlackBerry Radar Cargo Accessory, you must install the module on the door. When selecting a mounting location, carefully consider how the asset will be used during its normal, day-to-day operation.

**IMPORTANT:** For accurate monitoring, orientation matters.

1. You must install the module horizontally.
   **NOTE:** Vertically installed modules are not supported.
2. When mounting on a door, always ensure the module is installed with the triangle for your desired orientation, pointing up.
3. Device must be mounted on the door, facing the cargo area.
   - For assets with barn doors, the module must be installed on the **right-hand** door, as close to the inside edge of this door as the door construction allows.
   - For assets with roll-up doors, the module must be installed near the center of the door.

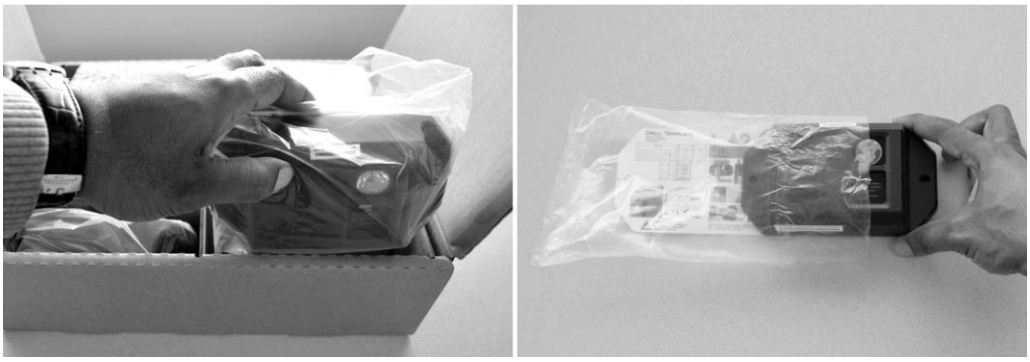
This diagram illustrates the supported installation orientations for the BlackBerry Radar Cargo Accessory module.



### 3.4.1 Prepare module for installation—Battery connection

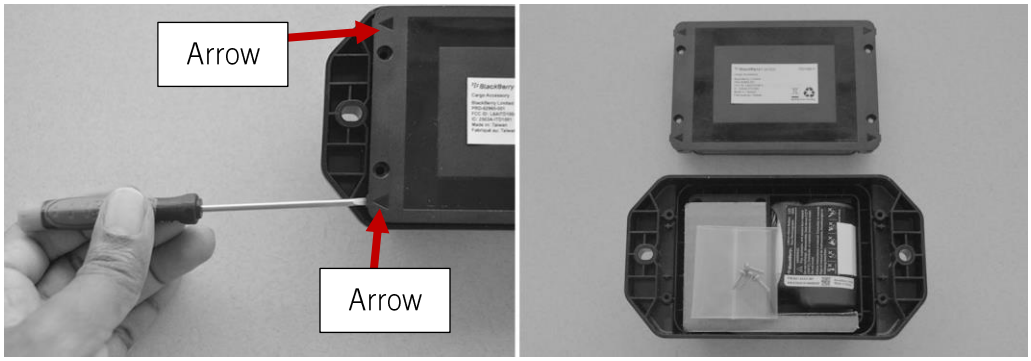
**IMPORTANT:** Please do not perform the battery connection process until you are ready to install and associate the BlackBerry Radar modules on your asset. Once the battery is connected, please complete the module installation and association, as soon as you can, to conserve battery life.

1. Remove the module from the package and from the plastic bag.

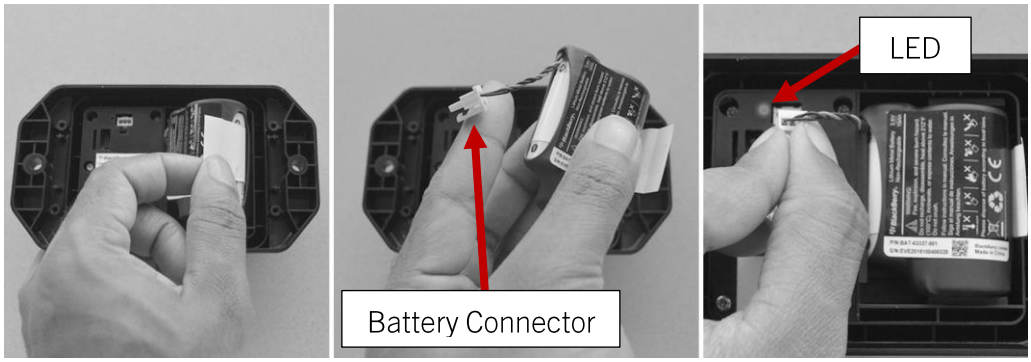


2. Remove the battery door from the rear of the device. Detach the fastener bag from the cardboard spacer and keep nearby. You will require these screws to secure the battery door to the outer housing and complete the module assembly process.

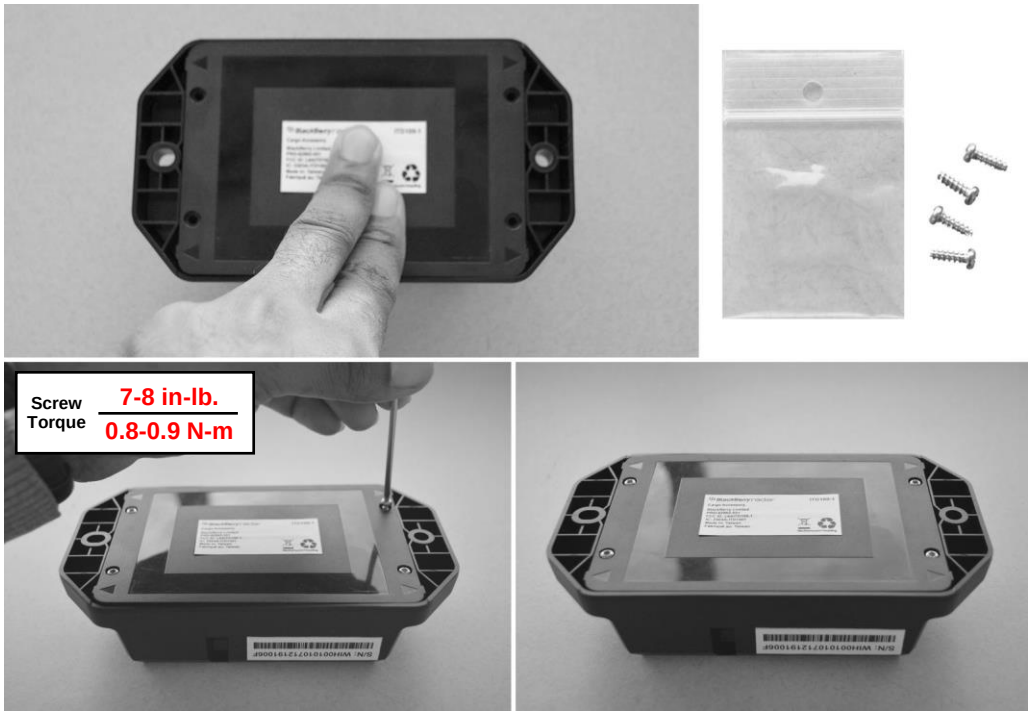
**Tip:** If you find it difficult to remove the inner housing from the outer housing, you may insert a tool--such as a screwdriver--near the arrows embossed into the door and lift to separate the door from the housing.



3. Remove the battery from the housing to reveal the battery cable connector. Return the battery to the housing and connect the battery cable to the battery connector. The LED will blink to indicate the module is active. NOTE: It can take up to 5 seconds for the blink sequence to begin. Please be patient. Once you see the LED blink, you may continue to the next step.




4. Fully install the battery door. Locate the Fastener Bag and remove the four screws. Using a screwdriver*, install the screws to secure the battery door.
**IMPORTANT:** Screw torque must be 7-8 in-lb. (0.8-0.9 N-m).



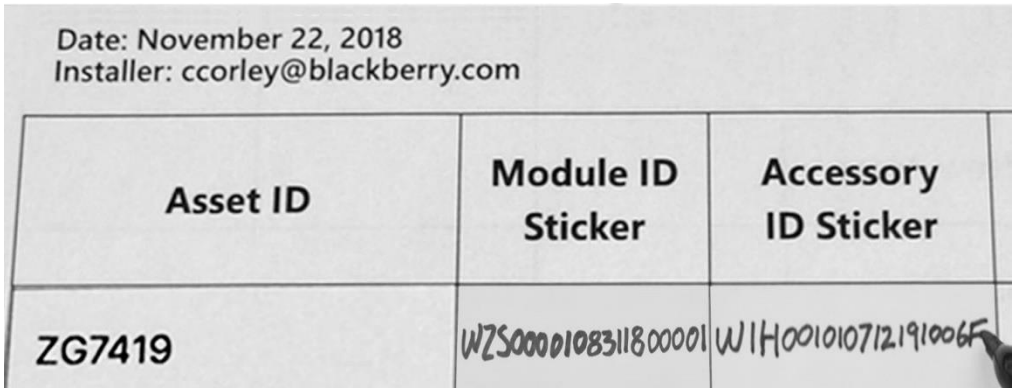

*Early production devices used Torx Screws for the battery door. Newer devices use Phillips Screws for the battery door.

**The module is prepared for installation on the asset.**

### 3.4.2 Installing the module on an asset

1. As indicated in Section 3.3 of this guide, record the module identifier and the asset identifier the module will be paired with. For your convenience, you may quickly create a record of the module and asset pairings by removing the partially attached label from the front of the module and placing it on the installation worksheet, next to the asset that will be tracked by the module.

**Tip:** For modules that have previously been transferred to new assets, the temporary S/N label may no longer be in place. If this is the case, you will need to write the module identifier (S/N) for each module on the installation worksheet.



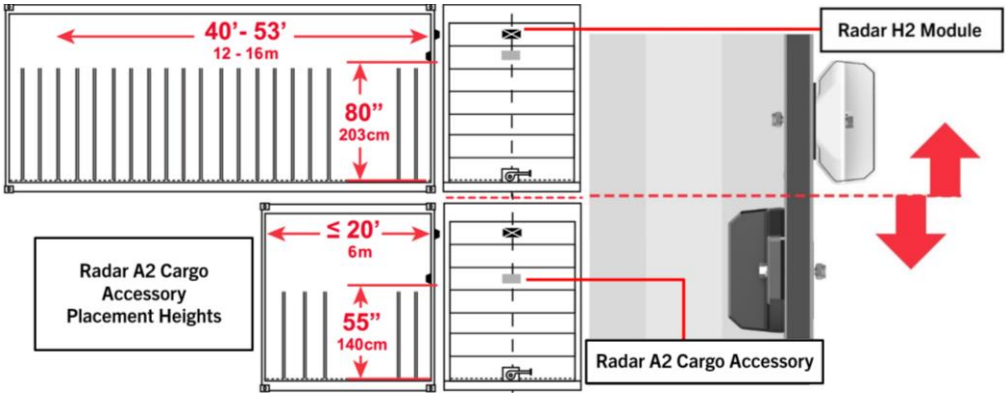

**The following sections of this guide will illustrate recommended installation methods for various asset scenarios.**

### 3.4.3 Roll-up door installation procedure

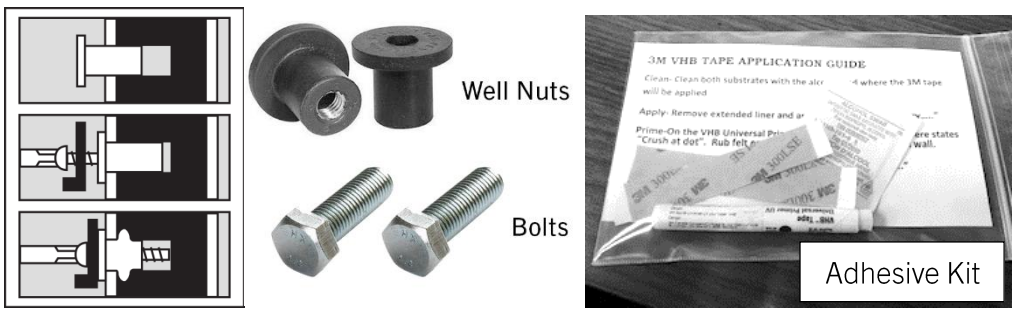
If you wish to monitor cargo load status or door events with your BlackBerry Radar Cargo Accessory module, you will need to mount it on the inside of the door. Recommended module placement on roll-up doors are as follows:

- The module should be installed as close to the center of the asset, as possible.
- The installation height will be determined by the length of the asset you would like to monitor. For assets with a length of 20' (6m) or less, we recommend installing the module 55" (140 cm) above the floor. For assets between 40'-53' in length, we recommend installing the module 80" (203 cm) above the floor. Following these placement recommendations is important for cargo detection accuracy. For assets, between 21'-39' in length, please contact BlackBerry for an install height recommendation.

**IMPORTANT:** When installing the BlackBerry Radar Cargo Accessory, please ensure you do not install the Cargo Accessory module directly behind the BlackBerry Radar H2 module. Staggering the installation height of the Radar H2 module and Cargo Accessory will avoid damaging the installed device, when installing the other device.

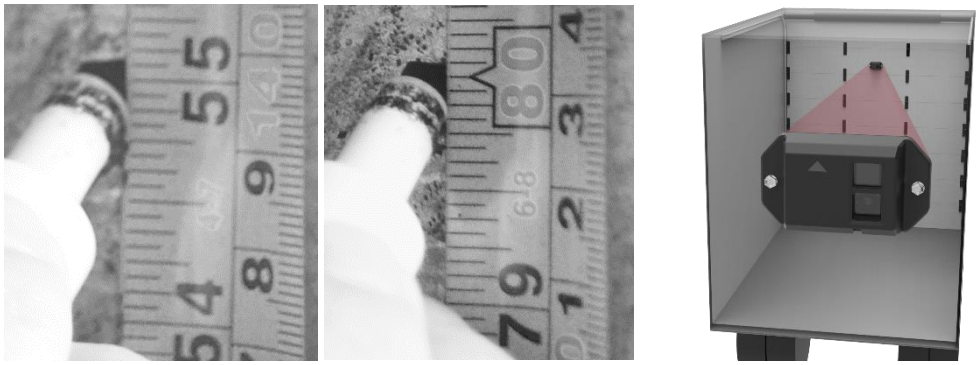



- If your trailer is insulated (i.e., a reefer or heater) and you wish to avoid thermal losses caused from drilling through the door completely, we recommend the following options:
  1) Limiting the depth of drilling and using Well Nuts, along with shorter bolts, to secure the device to the asset.
  2) Attaching to the asset using the accessory Adhesive Kit. Accessory Adhesive Kits are available from your BlackBerry representative.

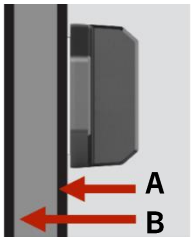


1. As indicated in Section 3.3 of this guide, record the module identifier and the asset identifier the module will be paired with. For your convenience, you may quickly create a record of the module and asset pairings by removing the partially attached label from the rear housing of the module and placing it on the installation worksheet, next to the asset that will be tracked by this module.

2. Mark the height where the device will be installed on the inside of the asset door.
   - If the container length is 20' or less, the bottom of the device should be 55" (140cm) * above the interior floor.
   - If the container length is between 40'-53', the bottom of the device should be 80" (203 cm) * above the interior floor.
   - The unit should be level.
   - The unit should be installed as close to the center of the container as possible.



3. Determine the attachment method you will use for your installation--fasteners or adhesive. The following pages will illustrate detailed installation methods for each.

| | |
|---|---|
| **IMPORTANT:** If you will use the adhesive kit for your installation, and the door you will mount to uses laminated construction, please ensure the mounting surface (A) is firmly laminated to the substrate (B). If the mounting surface is not firmly laminated to the door substrate, you may receive inaccurate door status readings. |   |

## Adhesive Mounting

Follow these instructions if you plan to install using the available accessory adhesive kit.
**NOTE:** Adhesive is not recommended for use on bare woods, like plywood.

1. Locate the alcohol pad that was included in your adhesive kit. Open the package and thoroughly clean both substrates where the 3M VHB tape will be applied (back of the device and the installation surface). Wipe dry with a clean cloth.

2. Locate the 3M VHB Universal Primer ampule that was included in your adhesive kit. Apply the primer to the back of the device, where the tape will be applied.
**IMPORTANT:** If the device will be installed on a plastic surface, also apply the primer to the installation surface. This will improve adhesion on plastic surfaces.

To apply the primer:

A) Crack the ampule at the "Crush at Dot" icon to release the primer and saturate the felt applicator tip, at the end of the tube.

B) Once the primer has saturated the applicator, rub the felt tip where the tape will be applied to the device. If installing the device on a plastic surface, apply primer to the installation surface.

**IMPORTANT:** Minimum application temperature for the tape is **0°C (32°F).** Initial tape application to surfaces at temperatures below this suggested minimum is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally good.

3. Remove the white extended liner from the back of the tape. Apply to the back of the device. Using firm pressure (minimum of 15 psi) to ensure adhesive bonds to battery door.

4. Remove the clear liner. Align the bottom edge of the module to the mark and place the module on the prepared mounting surface. Apply firm pressure (15 psi) to the module for 30-45 seconds to ensure adhesive bonds to the mounting surface.

5. Remove the overlay from the lens. Exit the trailer and close the door. Installation is complete.

## Fastener Mounting

1. Remove the liners from the rear of the template and place the template in the desired installation location, inside the asset. The adhesive at the back of the template ensures that it stays on the door surface for accurate drilling of your holes.

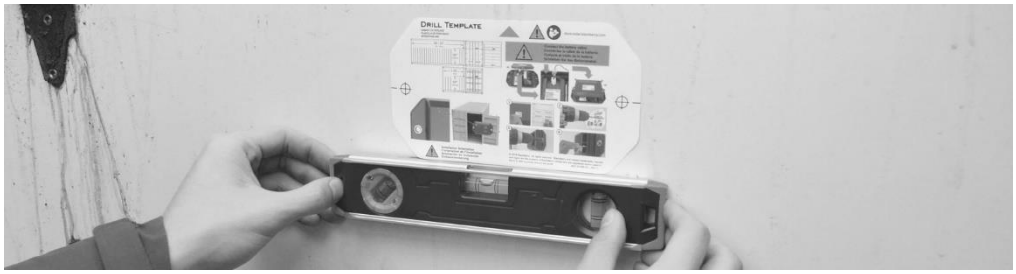
It is recommended that you install the module as level as possible on the asset. To help ensure the module is level, you may try one of the following techniques.

**Technique 1:**

- Make one mark at the desired placement height.
- Make a second mark, at the same height, approximately 4 inches (100mm) to the side of the first mark.
- Draw a straight line between the two points. This will help ensure your line is parallel to the bottom of the door.

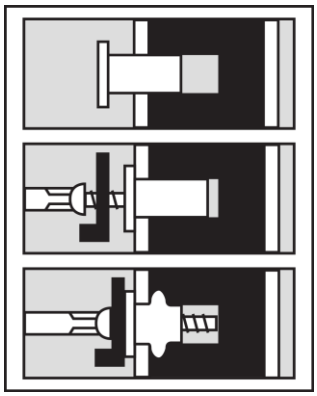
**Tip:** To avoid leaving a permanent mark on your trailer or container after the module installation is complete, we recommend using a pencil or non-permanent marker to create the guideline.

**Technique 2:** Visually, place the template in the desired installation location. Using a level, check that the template is level.



2. Using a drill bit, drill a hole through each of the cross hairs on the template. This will create two holes you will use to mount the module.

   **Tip:** If your asset is insulated (i.e., a reefer or heater) and you wish to avoid thermal losses caused by drilling through the door completely, we recommend limiting the depth of the drilling. This will require the use of well nuts to complete the fastening.

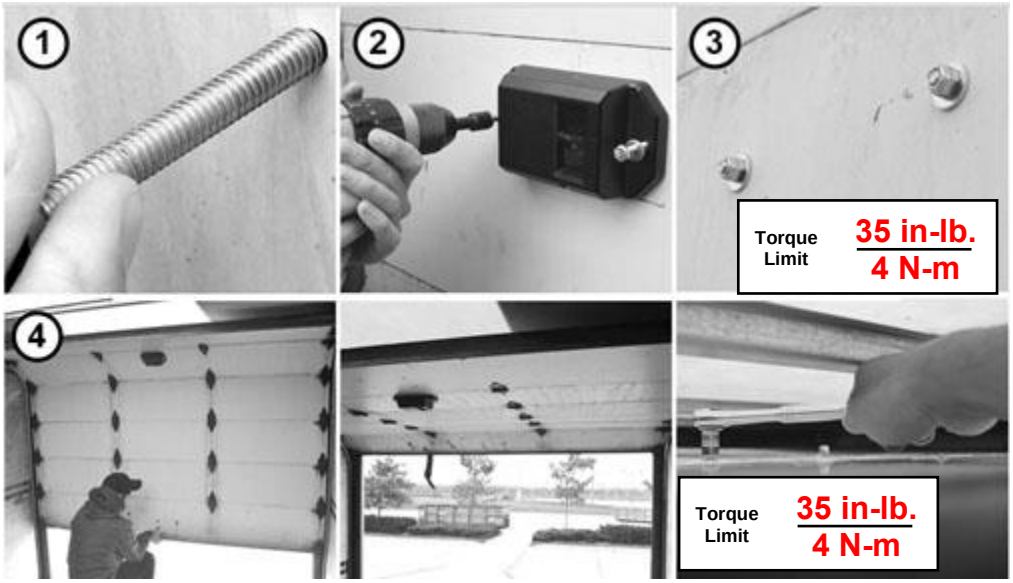


**Drilling tips for one-person installation on a roll-up door**

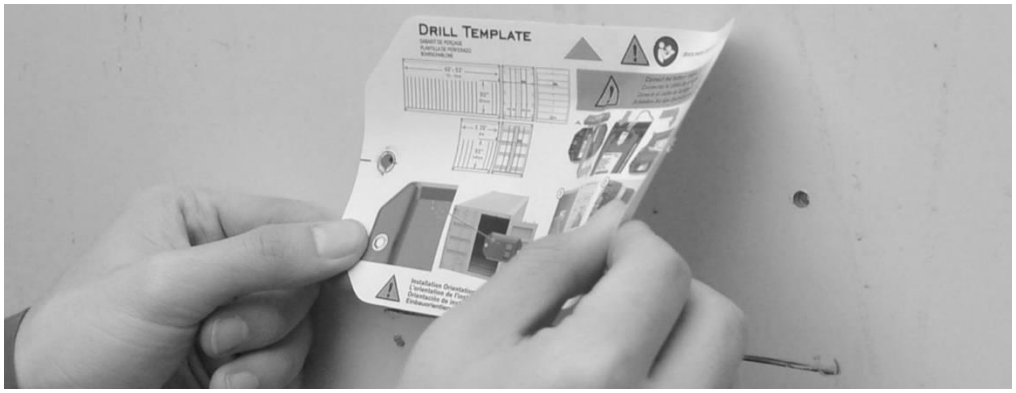
If you will not use well nuts and have elected to use nuts, bolts, and washers as your fasteners--you will need to install the bolt from the interior side, then exit the trailer to install the nut from the exterior side.

To help keep the device in place, while allowing a single installer to open the door and enter the trailer to install the nut, you may wish to:

1. Drill a hole one size below your fastener diameter.
2. Use a drill and nut driver to drive the bolt through the door. This will allow the threads to hold the device in place while you open the door.
3. Exit the trailer and install the nut and washer to the rear of the bolt.
4. Alternatively, you may remain inside the trailer and raise the door to install the nut on the rear of the bolt.



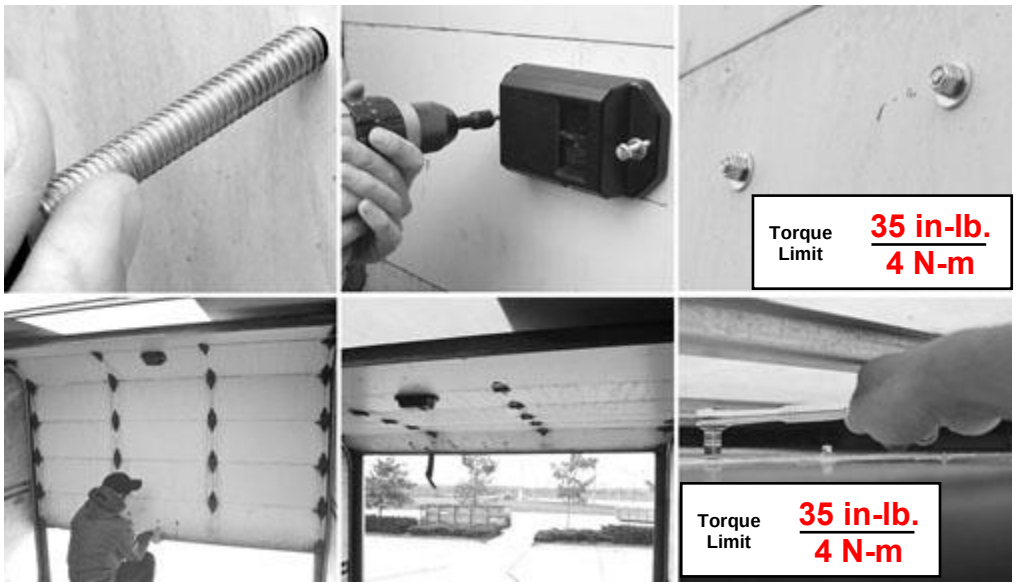
3. Remove the template. You now have two holes in the door. If there are any burrs around the holes, remove them at this time. Also, remove any dust or debris left over from the drilling or de-burring operations.




4. Insert your fastener of choice into the holes and fasten the module to the door using one of the approaches below.

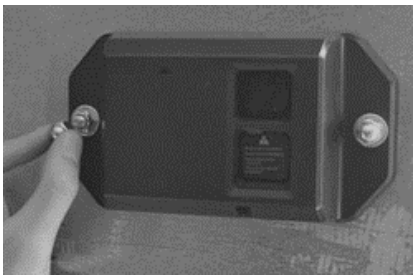
**Nuts, Bolts, and Washers**

- Having drilled a hole slightly smaller than your fastener, use a drill and nut driver to drive the bolt through the door. This will allow the threads to hold the device in place while you raise the door.
- Exit the asset and install the nut and washer to the rear of the bolt—using the appropriate tools to complete the fastening operation. Alternatively, you may remain inside the trailer and raise the door to install the nut on the rear of the bolt.
- Do not tighten fastener beyond 35 in-lb. (4 N-m) to avoid over damaging the mounting flange.



**Tip:** If you plan to use nuts and bolts for your installation, you may install the bolts with the threads facing the inside or the outside of your container. If your bolts have exposed threads once the nuts are installed, you may wish to cover the exposed threads with an acorn nut or cap to help prevent fastener corrosion.

Acorn Nuts



**Well Nuts**

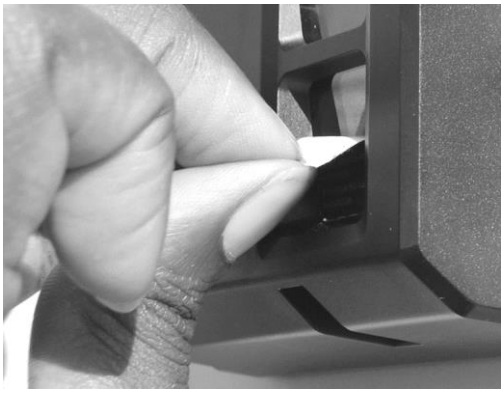
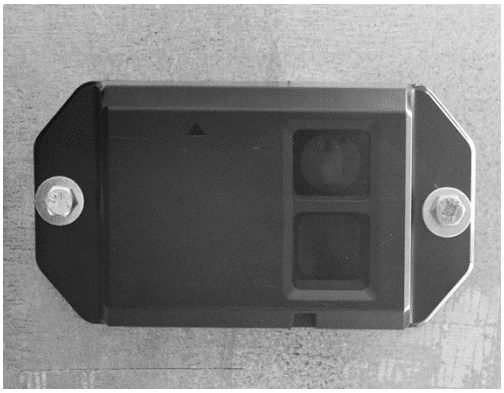
- Insert the Well Nuts into the holes. Align the holes on the module to the well nuts, then insert the fasteners. Secure the module to the asset.

**Tips for well nut installation**

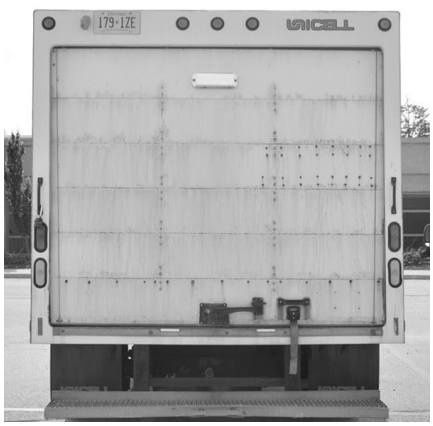
**Tip 1:** For fastest installation, we recommend using a drill and nut driver to install the bolt into the well nut. To avoid over tightening, use the lowest speed to install the bolt.

**Tip 2:** To avoid spinning the well nut during the install, we recommend pressing the module against the door while installing each fastener.

5. Remove the overlay from the lens.

6. Exit the asset and close the door.  Installation is complete.



# 4 Removing BlackBerry Radar Cargo Accessory modules

Use this procedure if you need to remove your BlackBerry Radar Cargo Accessory module for servicing or recycling.

For more information on obtaining service for your devices, or recycling and safe disposal of your devices and batteries, contact your BlackBerry representative, or visit the following:

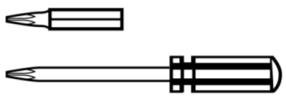
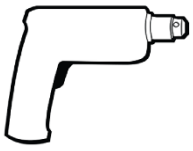
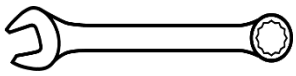
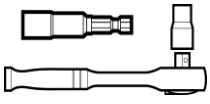
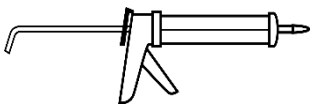
**blackberry.com/RadarSupport**--for information on service and the recycling and safe disposal of your device and battery.

**Note:** If you plan to ship your Radar Cargo Accessory module, or Radar Cargo Accessory battery, please be aware that the ***battery, and the module when shipped along with the battery***, is considered Fully Regulated Class 9 Dangerous Goods in all modes of transportation (Air, Ocean, and Ground) and must only be shipped in special UN certified Dangerous Goods packaging. If you are returning the battery, or battery with module to BlackBerry, you may request this UN-certified packaging from BlackBerry. The Radar Cargo Accessory module, when shipped ***without*** the battery, is not considered Dangerous Goods and can be shipped in any package.

Also, any person who handles, offers for transport, or transports Dangerous Goods must be adequately trained and hold a training certificate; or perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate.

Products that are considered Dangerous Goods can only move on carrier accounts that are approved for Dangerous Goods and are subject to Dangerous Goods surcharges. The Radar Cargo Accessory module, when shipped without the battery, are not subject to these surcharges.

## 4.1 Removal Tools

| | | |
|---|---|---|
| **Phillips (PH2) Screwdriver or Bit or Torx (T10) Screwdriver or Bit**<br>  <br>*Early production devices used Torx Screws for the battery door. Newer devices use Phillips Screws for the battery door. | **Drill**<br>  | **Wrench**<br>  <br>*Required only if nuts and bolts are used. |
| **Nut Driver or Socket Wrench with Socket***<br>  <br>*Nut Driver + Drill offers fastest removal. If Nut Driver is unavailable, a socket wrench and socket may be used. | **Safety Glasses**<br> | **Caulking Gun and Polyurethane Sealant**<br>  <br>*Recommended for sealing holes. |

## 4.2 Module removal

Module removal approach will be determined by the installation method used.

### Fastener Mounting Removal

1. Remove the module from the asset by removing the two fasteners from the ends of the module and remove the module.

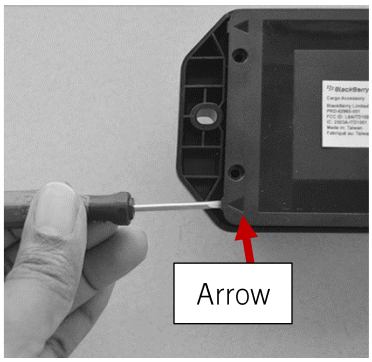
### Adhesive Mounting Removal

1. Insert a tool between the bottom edge of the module and the door surface. Apply gentle upward pressure on the tool to separate the module from the door.

## 4.3 Battery removal and replacement

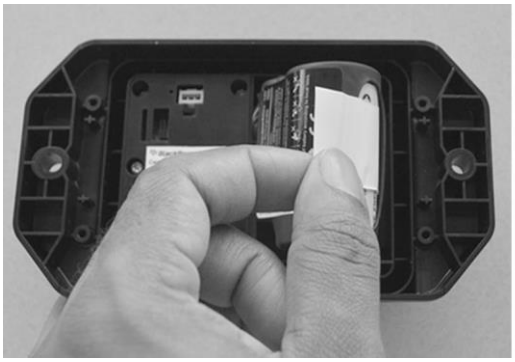
### Battery removal

1. To access the battery, remove the four screws from the battery door. Insert a tool at each arrow and lift upward to remove the battery door. Retain the screws as they will be required to re-secure the battery door to the rear housing.



2. Disconnect the battery cable from the battery connector.

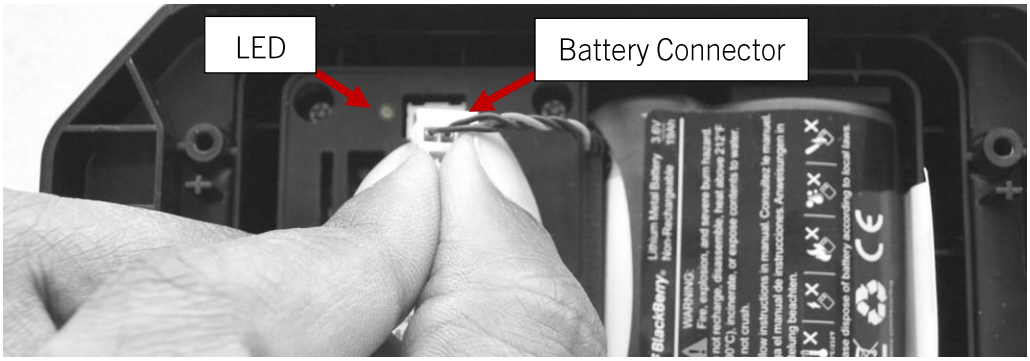
3. Remove the battery from the battery compartment by grasping the pull tab and lifting the battery out of the compartment.



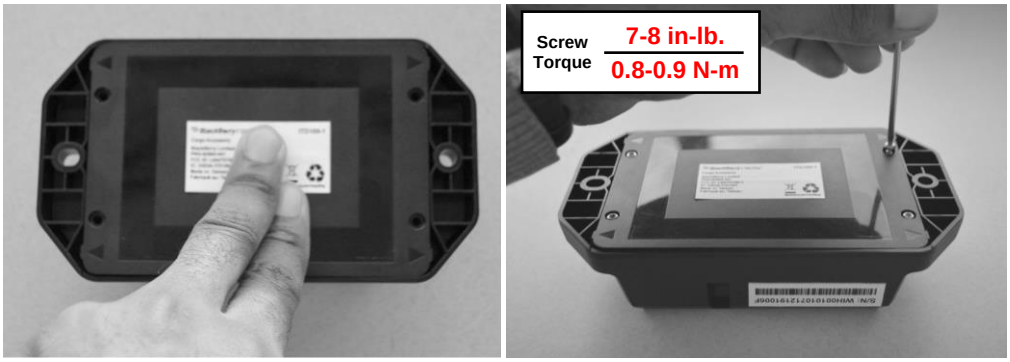
## Battery replacement

1. Place the battery into the battery compartment.

2. Connect the battery cable to the battery connector. The LED will blink to indicate the module is active. NOTE: It can take up to 5 seconds for the blink sequence to begin. Please be patient. Once you see the LED blink, continue to the next step.




3. Fully install the battery door. Locate the four battery door screws. Using a screwdriver*, install the screws to secure the battery door.
**IMPORTANT:** Screw torque must be 7-8 in-lb. (0.8-0.9 N-m).



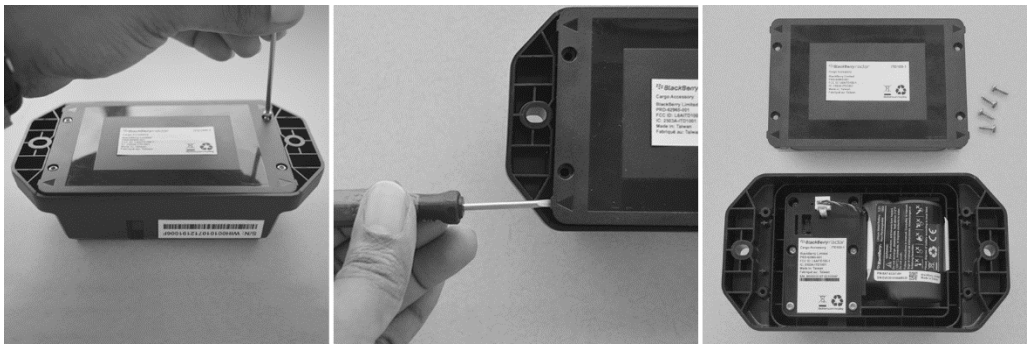

*Early production devices used Torx Screws for the battery door. Newer devices use Phillips Screws for the battery door.

## Preparing battery for shipment

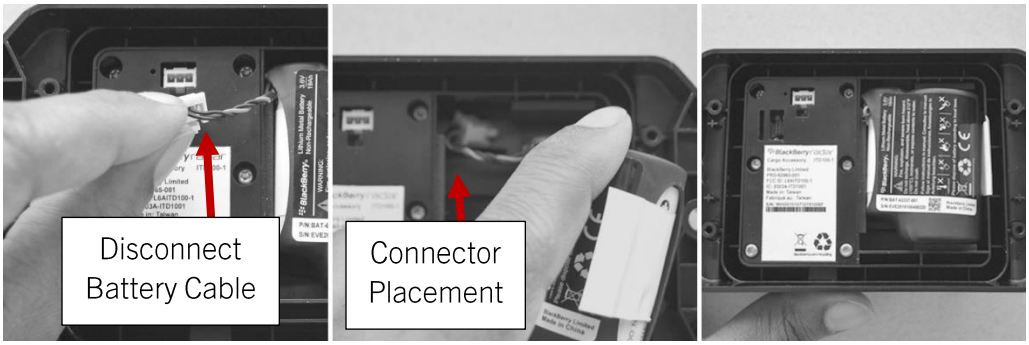
If you do need to ship the battery, along with the module, please follow this procedure.

> **IMPORTANT:** Never ship the module with the battery cable connected. Battery must be shipped inside the module with battery cable disconnected and the battery connector placed under the battery.

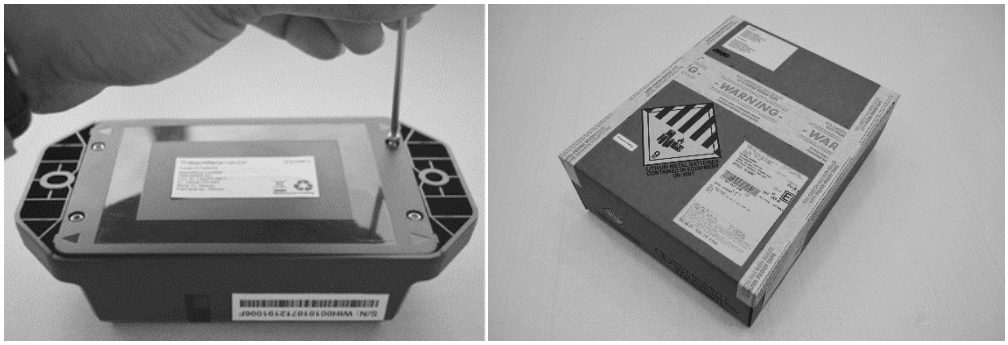
1. Remove the four screws from the battery door. Insert a tool at the arrows and lift upward to remove the battery door. Retain the screws as they will be required to re-secure the battery door to the rear housing.



2. Ensure the battery cable is disconnected from the battery connector. Lift the battery and tuck the connector under the battery. Return the battery to the battery nest.




3. Place the battery cover onto the module and install the screws. Module is now ready to be placed in the UN certified Dangerous Goods packaging.

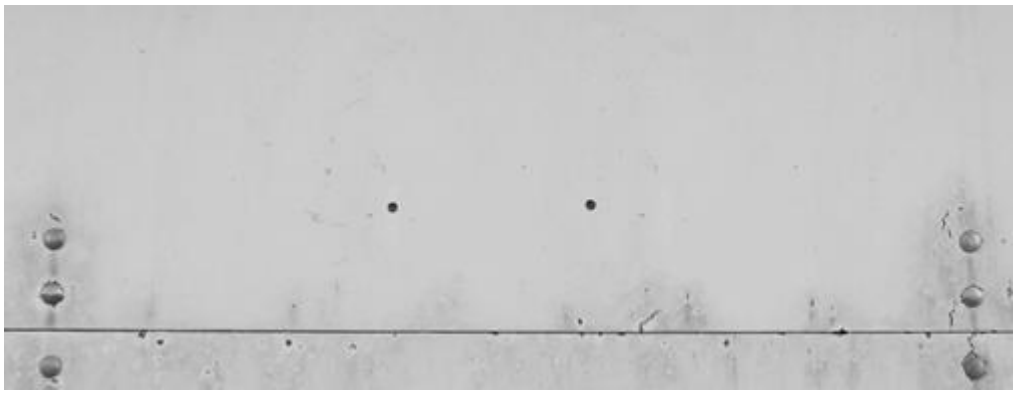


## 4.4 Door repair

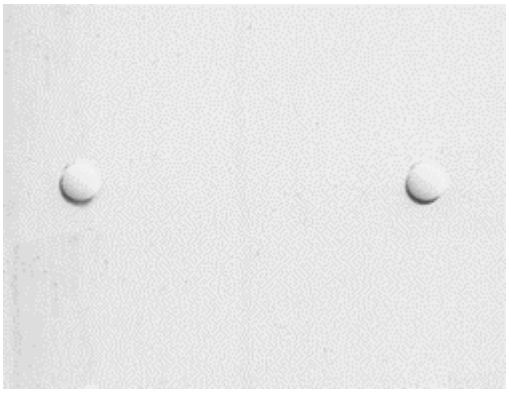
After the module has been removed from the door, there will be holes in the door. There are various techniques that can be used to repair the holes. This section will discuss some approaches you may wish to use.

**Method 1: Hole Plugs**

1. With the module removed, measure the size of the holes.



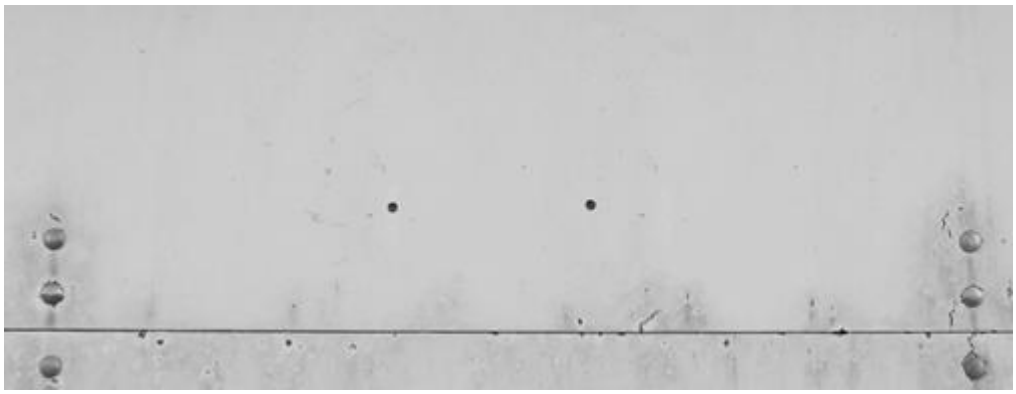
2. Source a set of nylon or rubber plugs, of the appropriate diameter, to fill the holes. These plugs can be sourced from hardware or auto supply stores. Insert the plugs into the holes. If desired, you may add 100% Silicone Exterior Grade caulk to the rear of the plug for extra protection to seal any gaps against water entry.



### Method 2: Sealant

**Note:** This method works particularly well with thicker doors like dry van and roll-up doors.

1. With the module removed, you'll have two holes.



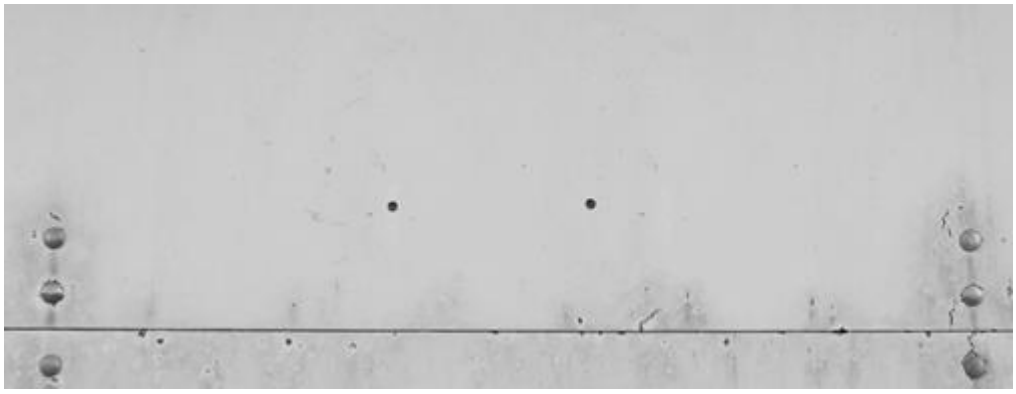
2. Fill the holes with a weatherproof sealant. If desired, you may use 100% Silicone Exterior Grade caulk or Polyurethane Sealant.

**Tip:** For an improved appearance, you may use a sealant that matches the door color.

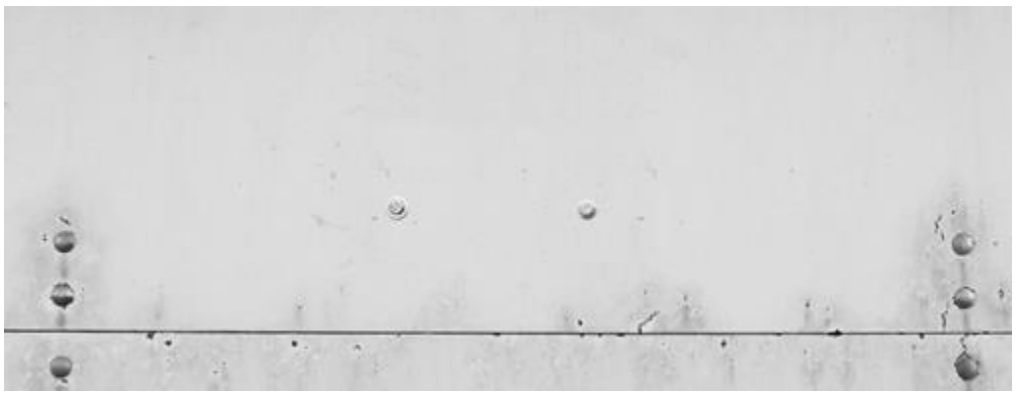
### Method 3: Fasteners

**Note:** This method works particularly well with thicker doors like dry van and roll-up doors.

1. With the module removed, you'll have two holes.



2. Insert the nuts and bolts into the holes. For added protection, place a washer between the bolt and the door surface.



# 5 Support

If you run into any problem during the installation process, contact the BlackBerry Radar support team at 1-844-RADAR-BB.

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Published in Canada