

The ORBCOMM logo is displayed in white, bold, sans-serif capital letters on a red rectangular background. The letter 'O' is stylized with a small satellite dish icon inside it.

ORBCOMM®

CONNECTING THE
WORLD'S ASSETS



DS 310

User Guide

GJD143-ECert, Version 1.1

Oct 2025

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TABLE OF CONTENTS

Contact and Legal Information	2
Contact Support	2
TABLE OF CONTENTS	3
Preface.....	4
Purpose	4
WEEE Statement.....	4
Cautions Concerning Servicing the DS 310.....	4
Battery Safety Warnings.....	4
1 Product Overview	5
2 Compliance.....	6
3 Specifications	7
3.1 Temperature	7
3.2 Operation Frequency and Channel Bandwidth	7
3.3 Battery	7
3.4 Antenna	7
3.5 BLE	7
3.6 Environmental	8
3.7 Mechanical	8
4 Installation	10
4.1 Review the Mounting Guidelines	10
4.2 Install on a Swing Door	10
4.2.1 Gather the Required Tools and Components.....	10
4.2.2 Activate the Sensor	11
4.2.3 Register the DS 310 (AG 400 only)	12
4.2.4 Mount the Sensor.....	12
4.2.5 Test the DS 310 (excludes AG 400).....	14
4.2.6 Associate the DS 310 (excludes the AG 400).....	15

PREFACE

Purpose

This guide contains product information for the DS 310 (model number DS310) (wireless door sensor). The intended audiences for this guide include field support personnel, product evaluators, and certified third-party personnel. It is particularly intended for personnel who are responsible for system installation and activation. In addition, and as is appropriate, this guide may be used for training purposes.

WEEE Statement

Disposal of this product should be handled according to all national laws and regulations.

The mark shown to the right is in compliance with Waste Electrical and Electronic Equipment Directive 2002/96/EC (WEEE). The mark indicates the requirement NOT to dispose of the equipment as unsorted municipal waste but use the return and collection systems according to local law.



Cautions Concerning Servicing the DS 310

CAUTION: Be aware of your working environment. The DS 310 is a fully sealed unit with no user serviceable parts inside. The DS 310 contains a Lithium battery with a minimum life expectancy of 5 years.

Battery Safety Warnings

CAUTION: Always follow local disposal guidelines to properly dispose of the Lithium Thionyl Chloride battery and the device.

CAUTION: Store in a cool, well-ventilated area. Elevated temperatures will result in shortened battery life.

CAUTION: DO NOT replace the battery. Changing the battery without ORBCOMM's permission could violate regulatory conformity.

CAUTION: DO NOT throw the internal battery or the device into fire.

1 PRODUCT OVERVIEW

The DS 310 (model number DS310) is a wireless door sensor. It is a BLE enabled sensor that communicates to BLE enabled ORBCOMM devices. It is designed for use on a variety of asset types, including dry van trailers, ISO containers, intermodal containers, and refrigerated containers.



2 COMPLIANCE

ISED (Canada)

- **IC compliance statement**

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 applicable 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.

FCC (USA)

- FCC Part 15 and ICES Digital Device Class B Statement.

- **FCC compliance statement**

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."

§ 15.105 (b) For class B digital device

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.

CE MARK (Europe)

- RED 2014/53/EU
- EU Declaration of Conformity

Hereby, ORBCOMM Inc. declares that the radio equipment types listed in this document comply with Directive 2014/53/EU

The full text of the EU declaration of conformity is available from [http://www2.orbcomm.com/eud oc](http://www2.orbcomm.com/eud_oc).

RoHS

- Restriction of Hazardous Substances (RoHS) ¹



WARNING:

- The minimum 20 cm (8 in.) separation distance from the device is required for RF exposure safety for all persons.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Ingress Protection

- IP67

¹European Union's (EU) Directive 2002/95/EEC "Restriction of Hazardous Substances" (RoHS) in Electronic and Electrical Equipment.

3 SPECIFICATIONS

3.1 Temperature

Parameter	Value
Operating Temperature Range	-40°C to +85°C (-40°F to +185°F)
Storage Temperature Range	-40°C to +85°C (-40°F to +185°F)

3.2 Operation Frequency and Channel Bandwidth

Parameter	Value
Operating Frequency Band	2402 MHz to 2480 MHz
Channel Bandwidth	2MHz

Radio System	Operation Frequency (MHz)	Max. Power (dBm)	Tolerance (dB)
BLE	2400 to 2480	10	±1

3.3 Battery

The DS 310 uses an internal primary lithium battery as its only power source.

The battery characteristics are:

Parameter	Min.	Typical	Max.	Units
Nominal voltage		3.6		V
Capacity		1650		mAh
Self-discharge				% / year
Continuous current	30			mA
Pulse current	70			mA
Discharge temperature	40		85	°C

3.4 Antenna

The antenna is housed within the enclosure.

Parameter	Value
Peak Gain	1.8 dBi
Polarization	Linear

3.5 BLE

The BLE system allows the DS 310 to communicate as a peripheral with an ORBCOMM device, mobile phone or other BLE enabled host for configuration and debug logging.

The BLE characteristics are:

Parameter	Min.	Typical	Max.	Units
Frequency	2360		2500	MHz
BLE Version Compliance		5.2		
Receive Sensitivity	96			dBm
Transmit Power	8			dBm

3.6 Environmental

Parameter	Description
Humidity	The device meets all its specifications during exposure to 90% relative humidity at+ 70°C (158°F), per the test methodology of SAE J1455, section 4.2.3 (8-hour humidity cycle per figure 4a)
Vibration	The device meets all its specifications during exposure to random vehicular vibration levels per AAR-S-9401, section 3.2.4.2 4hr/axis, 10-200Hz, 2Grms, 3-axis.
Mechanical Shock	The device meets all its specifications after exposure to positive and negative saw tooth shock pulses with peaks of 40 G and durations of 11 ms as specified in MIL-STD-81 OH, section 516.8, Procedure 1.
Thermal Shock	The device meets all its specifications after a thermal shock test as detailed in SAE J1455, section 4.1.3.2
Drop Test	The device meets all its specifications after a handling drop test as specified in SAE J1455, section 4.11.3.1.
Salt Spray Atmosphere	The device meets all its specifications after a salt spray test as detailed in SAE J1455, section 4.3.3.1.
Immersion	The device meets all its specifications after a 6-hour alternating hot/cold salt-water immersion test as detailed in SAE J1455, section 4.3.3.2.
Exposure to Chemicals and Oils	The device meets all its specifications after a light to moderate splash test as detailed in SAE J1455 section 4.4.3.2, for the relevant chemicals.
High Pressure Wash	The device meets all its specifications after a pressure wash test as detailed in ISO 20653 Table 7, IPx9k.
Fungus	The device meets all its specifications after a fungus test as detailed in SAE J1455, section 4.6.3.
Ingress	
Dust and Sand	The device meets all its specifications after a dust and sand bombardment test as detailed in SAE J1455, section 4.7.3.
Water	The device meets all its specifications after an ingress test per IEC 6052914.2.7 (IPx7).

3.7 Mechanical

Parameter	Value.
Weight (DS 310 excludes the magnet)	100 g (3.5oz)

Mechanical Dimensions

Figure 1: DS 310

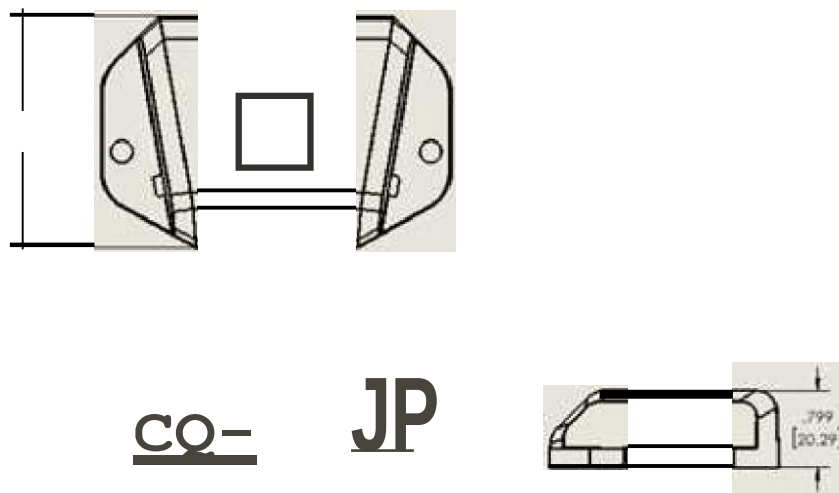
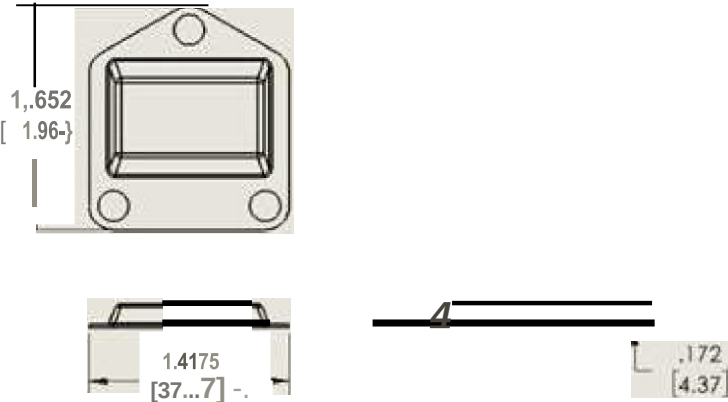


Figure 2:Actuator Magnet



4 INSTALLATION

IMPORTANT

READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLING. FAILURE TO DO SO MAY CAUSE PERSONAL INJURY OR DAMAGE TO PRODUCT AND/OR PROPERTY.

• Review the product package and contents prior to beginning the installation. Take care when opening the packaging and removing items. If a return is needed, you will want to return the product in its original packaging if possible. • This instruction guide is provided as a GENERAL installation guide; some assets vary dimensionally and may require additional steps. • ORBCOMM has a policy of continuous development and improvements. Therefore, products, guides, and technical information are subject to change without prior notice. • The manufacturer and/ or distributors do not accept responsibility for third-party charges, labor, and/ or third-party replacement modifications that are not ORBCOMM approved. Some modifications may void the factory warranty. • ORBCOMM does not accept any responsibility for installations performed by installers/ third parties not approved and / or authorized by ORBCOMM. Some installations may void the factory warranty. • Exercise due diligence when installing this product. ORBCOMM does not accept any responsibility for asset damage or personal injury resulting from the installation of this product. Careless installation and operation can result in serious injury or equipment damage. • All liability for installation and use rests with the owner/ operator. • Always make sure you have a clean, dry, and well-lit work area. • Always ensure products are secure during disassembly and installation. • Always take steps to protect yourself when drilling, cutting, and grinding because this may create flying particles that can cause injury. • Thoroughly inspect the area to be drilled, on both sides of material, prior to modification, and relocate any objects that may become damaged. • Always route electrical cables carefully. Avoid moving parts, parts that may become hot and rough, or sharp edges. • Make sure to fully understand the product, its intended use, and operation prior to use.

4.1 Review the Mounting Guidelines

The DS 310 includes an integral antenna.

Consider the following guidelines when determining where to mount the DS 310.

- The DS 310 may be mounted under/behind non-metallic structures such as plastic, fiberglass, wood, or glass. These materials may introduce some degradation of performance depending on the material and material thickness.
- Mount the DS 310 as far as physically possible from any other antennas that may be present on the asset. Note that some antennas may be embedded, so some knowledge of the asset is helpful. Mounting the DS 310 closer than 1 m (3 ft.) to other antennas may allow interference to hinder or block the DS 310 from proper operation.
- The DS 310 registers the truck to a trailer mounted device/recorder using signal strength measurement. Only permanently install the DS 310 after you have successfully verified reception of the DS 310
- **DO NOT** mount the DS 310 in a location that will exceed the maximum +85°C (+185°F) temperature rating.
- DO NOT mount the DS 310 where water may build-up or collect.
- DO NOT mount the DS 310 close to an exhaust pipe due to the excessive heat.
- DO NOT mount the DS 310 close to air horns or any tractor roof hardware (for example, emergency lights) that could interfere with wireless communications.
- DO NOT paint non-metallic structures such as plastic, fiberglass, wood, or glass with metallic or metal-flake paints.

4.2 Install on a Swing Door

4.2.1 Gather the Required Tools and Components

Swing Door for Dry Trailer and Dry Containers.

The following required components are available from ORBCOMM:



- DS 310 (part number ST101746-007)
 - Includes #10 Hex head drilling screws (Qty 5)
 - Includes 4.8 mm ($\frac{3}{16}$ ") diameter stainless rivets (6.35 to 9.5 mm ($\frac{7}{16}$ to $\frac{3}{8}$ ") grip range) (Qty 6)



- (Optional) Wireless door sensor assembly drill template (part number MD702619)
- An installed and working ORBCOMM device/recorder/accessory that supports the DS 310 (for example, a GT 12xx, AG 400, or ST 91xx)

The following (customer supplied) are required for this installation:

Quantity	Description
	Drill and a #20 drill bit for screw installs or #9 (5 mm) drill bit for rivet installs
	Marker
	Apple (iOS version 7.0 or higher) or Android (version 7.0 or higher) device (not required if using the DS 310 with an AG 400)

4.2.2 Activate the Sensor

1. Remove the label (and magnet underneath) to activate the door sensor as it is currently in ship mode.



CAUTION: The antenna is located under the "O" in the ORBCOMM name. Ensure that you DO NOT cover this location, or the transmission signal will be impacted.

CAUTION: The DS 310 must be more than 15 cm (6") away from any magnet (and other packaged

door sensors) for >1 minute or it will not wake up.



4.2.3 Register the DS 310 {AG 400 only}

The steps in this section are only required if you are using a DS 310 with an AG 400, otherwise, if using a different ORBCOMM device, continue to the next section.

1. Follow the steps in f0005 *MX2 Installation and Operation Guide* to register the DS 310 with the AG 400.

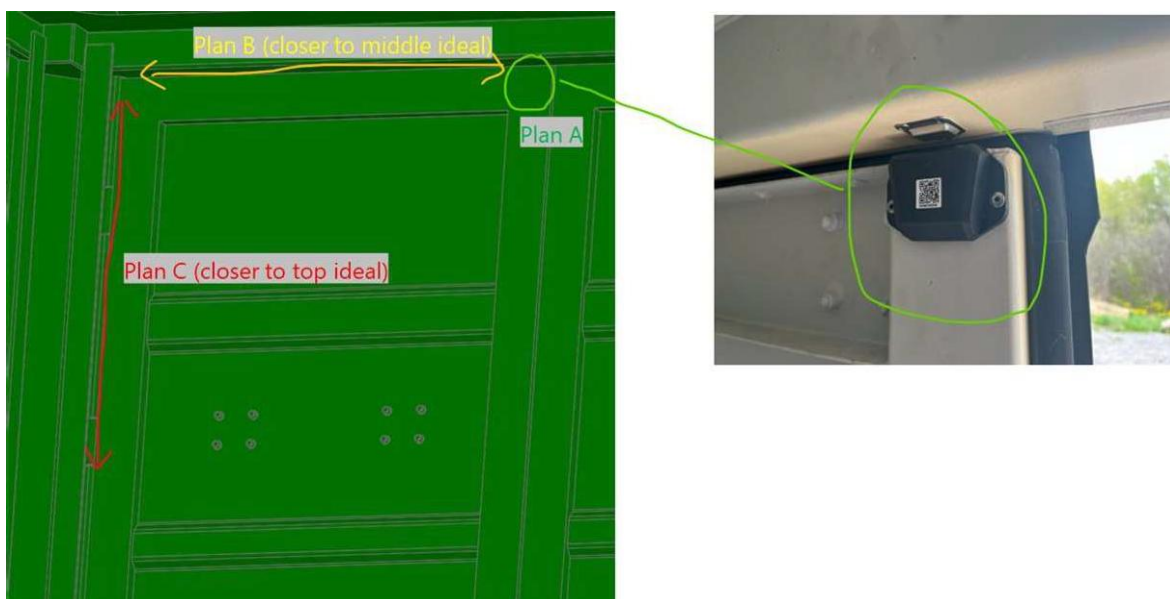
CAUTION: When registered to an ORBCOMM device/recorder via the secure method, the chosen pass code is permanently associated with the sensor and cannot be changed.

2. When registered, choose a mounting location on the vehicle (refer to section 4.1 for guidelines), and then temporarily fasten the DS 310 to the vehicle using double-sided tape.
3. Check the reception. When you verify that the sensor is transmitting correctly, continue with section 4.2. 4.

4.2.4 Mount the Sensor

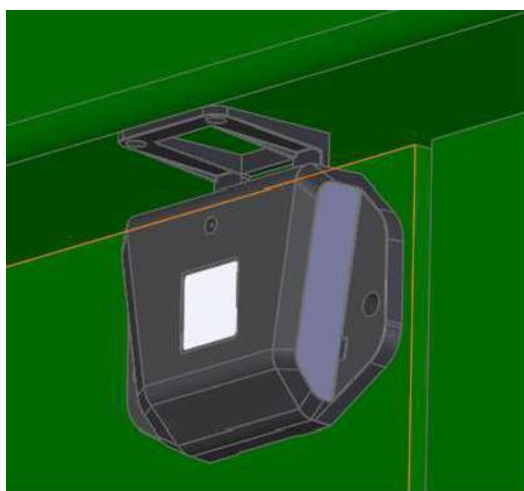
1. Identify a location for the DS 310 on the middle edge of the curbside door and centered on the vertical door section (primary location). Ensure that the DS 310 device is on the door and the magnet is on the door frame.

Note: If there is any damage in the primary installation location, if possible, move the device closer to the hinge on the top edge of the door (Option B). If that is not an option, install the device on the hinge side of the door (Option C).

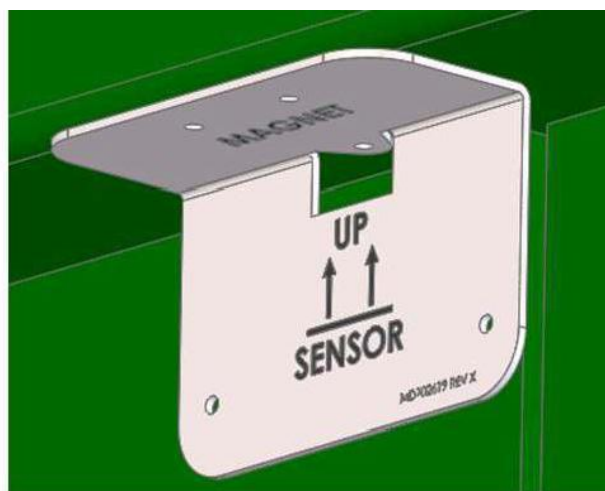


2. Use the template to mark the drill holes in the mounting location you identified.

Note: If using the device integrated template, ensure that the device is held against the door, if using the metal template, ensure the side marked "sensor" is against the door.



Integrated Template



Metal Template

3. Move the template and spot drill the marked mounting holes.
 - a 4 mm (#20) drill bit, if using the provided #10 hex head drilling screws
 - OR
 - a 5 mm (#9) drill bit, if using the provided 4.8 mm (3/16") diameter stainless rivets (9.5 to 12.17 mm (3/8 to 1/2") grip range)

Note: A 5 mm (0.196") diameter hole is required.

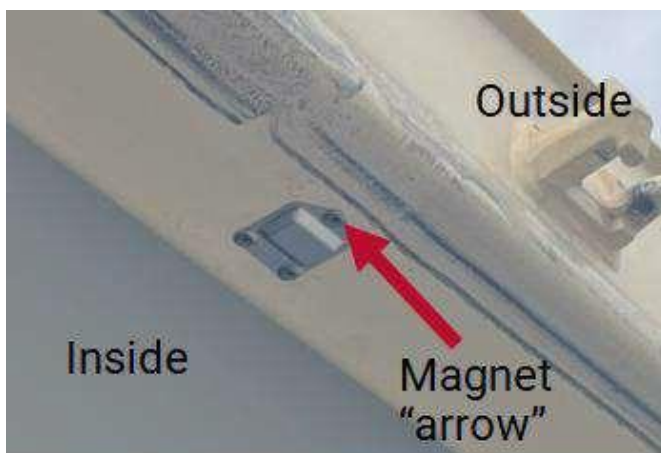
4. After drilling the holes, snap off the integrated template before installing the device. The door sensor is on the door and the magnet is on the door jamb.

CAUTION: DO NOT drill completely through the door.

5. Place the door sensor on the door, over the drilled holes, with the alignment line facing up. and the magnet on the jamb.



6. Assemble the device to the door by either using the provided #10 hex head drilling screws installed at a low RPM and just enough torque to seat the device against the door, or the provided 4.8 mm (3/16") diameter stainless rivets (9.5to 12.17 mm (3/8to 1/2") grip range).
7. Place the magnet on the jamb with the arrow indicator pointing out of the container (asset).



8. Assemble the magnet housing to the jamb using either the provided screws installed at a low RPM and just enough torque to seat the magnet housing against the jamb, or by using the provided 4.8 mm (3/16") diameter stainless rivets (9.5to 12.17 mm (3/8to 1/2") grip range).

4.2.5 Test the DS 310 (excludes AG 400)

This section applies to ORBCOMM devices that use the DS 310, except for the AG 400. If using an AG 400, this step is not required.

1. Use either the Field Support Tool (for GT 12xx devices) or the ST Support Tool (for ST 91xx devices) (these are ORBCOMM mobile apps, also referred to as "the app" in this document) to verify that the door sensor repeatedly

generates door open and closed events. Refer to *MA002 Field Support Tool User Guide* or *MA003 ST Support Tool User Guide*, available from ORBCOMM [Contact Support](#), if you require details on how to download or use the app

Note: ORBCOMM recommends that you first use the Field Support Tool or ST Support Tool to connect only to the door sensor and test the door states before connecting the app with the device (for example, GT 12xx or ST 91xx). Connecting only to the door sensor provides real-time door state changes, without the 1-minute delay by first pairing to the device (for example, GT 12xx). Refer to the app user guide for details.

- a. Connect the door sensor with the app.
- b. Verify that the status displayed, on the app, for the door sensor is correct (Door Closed or Door Open).
- c. Open or close the door to see the change in the status of the door sensor. If necessary, remove the magnet bracket from the door, reposition it, and then check the status again.

4.2.6 Associate the DS 310 (excludes the AG 400)

This section applies to ORBCOMM devices that use the OS 37 0, except for the AG 400. If using an AG 400, this step is not required. In some cases, the OS 37 0 may ship already paired with your device.

For GT 7 2xx devices:

- Refer to *MA002 Field Support Tool (FST) User Guide* for details.

For ST 97 xx devices:

- Refer to *MA003 ST Support Tool User Guide* for details.

