

The background of the top half of the page is a complex, abstract digital visualization. It features a dark blue and black space filled with glowing red and blue lines, dots, and hexagonal patterns, suggesting a data network or a futuristic cityscape. Several semi-transparent rectangular boxes containing numerical data are overlaid on the scene.

# TECHNICAL PUBLICATIONS

## CT 1000 Installation Guide

GJD115, Version 03  
Jul 2025

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# 1 INSTALLATION

This guide includes instructions for container and dry van (nose) installations.

## 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.

### Environmental Protection

Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with our local authority or retailer for recycling advice.

## 1.1 Battery Warnings

**CAUTION:** Follow local disposal guidelines to properly dispose of the lithium-ion battery and the CT 1000.

**CAUTION:** DO NOT throw the internal battery or the CT 1000 into fire.

## 1.2 Wake Up the CT 1000

The CT 1000 ships in a non-transmitting mode. Prior to installation on an asset, you **must** wake up the device by exposing it to bright light.

**Note:** Pairing the CT 1000 with an asset is not possible without waking up the device. Expose the CT 1000 to bright light at the beginning of the day to ensure it has time to wake up and transmit critical information before you install it.

**Note:** Generally, the CT 1000 is registered to the appropriate web application (platform) prior to shipping. Once the device wakes up, a message is sent to the web application.

1. Remove the CT 1000 from the shipping packaging, and then wake up the device in one of two ways:
  - Bring the CT 1000 outside during daylight, with the solar panel facing the sky, for a minimum of 5 minutes.
  - OR
  - Use another bright light source to wake up the device. Use a light meter or a mobile phone app to find a light source with a minimum 600 Lux light intensity, the higher the Lux value, the better. Position the CT 1000 solar panel directly facing the light source for at least one minute.

**CAUTION:** When using a hot light source (for example, halogen or incandescent), ensure that the solar panel does not become hot to the touch.

**Note:** The CT 1000 solar panel does not charge with typical indoor office lighting.

## 1.3 Install the CT 1000

### 1.3.1 Review the Inclement Weather Guidelines

The primary means of securing the device to an asset is to use rivets. In some cases, VHB can support the installation. For good tape adhesion, the tape must be kept warm, and the container surface must be clean and dry.

#### Mandatory Guidelines for Installation in Wet Weather

The installation location on the container must be completely clean and dry for the tape to bond. In wet weather conditions, a dry rolled up towel may be pressed onto the door directly above the installation location to temporarily prevent water from running down the door and allow the installation location to be properly dried.

#### Mandatory Guidelines for Installation in Cold Weather

Below 0°C (32°F) the tape starts becoming firm which makes it more difficult to bond to the container.

**CAUTION:** For installations at or below 0°C (32°F), a tape primer kit (ORBCOMM p/n ST101505) **MUST** be used.

**CAUTION:** The CT 1000 **MUST NOT** be installed at temperatures below -20°C (-5°F).

- At or below freezing temperatures (0°C or 32°F), the tape primer kit **MUST** be used, and both the CT 1000 device and the tape primer kit must be kept warm (room temperature), for example, inside an idling vehicle or a warm building.
- Keep the primer warm (room temperature) until it is ready to apply. The primer will not dry quickly at cold temperatures however, in this situation the tape should be applied when the primer is still wet, as it improves initial bond.

- Keep the CT 1000 device warm (room temperature) until it is time to mount it to the container.
- Press firmly on both sides of the CT 1000 device (for 10 seconds) to bond the tape to the container.

Failing to follow these guidelines will compromise the installation

### 1.3.2 Gather the Required Tools and Materials

Ensure you have the following for this installation:

- CT 1000 device that includes:
  - Alcohol based cleaner or wipes
  - Scour pad
  - 3/16" diameter x 3/16" - 1/4" grip range (4.8 mm x 4.8 to 6.4 mm) stainless rivets



- Cordless drill
- Cordless rivet gun
- Tape measure
- Marker
- Ladder (that reaches the installation location)
- 0.196" (5 mm) drill bit
- Recommended - 0.196" (5 mm) drill stop
- To use the Field Support Tool (FST) to pair the CT 1000 with the asset, you require:

**Note:** These items are only required if your organization uses the ORBCOMM Field Support Tool (FST) to pair devices with assets.

- Android or iOS device with Wi-Fi or cellular connectivity
- User / customer credentials (your credentials must authorize you to pair and unpair devices), for the platform where the CT 1000 is registered / hosted. Contact your company administrator or [Support](#) if you require credentials.



### 1.3.3 Pair the CT 1000 with the Asset

**Note:** If your organization does not use the ORBCOMM Field Support Tool (FST) to pair devices with assets, skip to section [1.3.4 Prepare for the Installation](#).

1. Record the serial number of the of the CT 1000 and the associated asset identification number / name.
2. Use the ORBCOMM Field Support Tool (FST), **before** installing the CT 1000, to pair the CT 1000 with the asset. Refer to the *MA002 Field Support Tool User Guide* for download instructions.

**Note:** Before you can pair the CT 1000 with the asset, it must be registered with the platform.

### 1.3.4 Prepare for the Installation

1. Install the provided 0.196" (5.0 mm) drill bit into the drill. **Note that only a 5.0 mm (0.196") drill bit should be used.**
2. A drill stop is recommended, located 10 mm to 20 mm (3/8" to 3/4") from the end of the drill bit.



### 1.3.5 Prepare the Mounting Location

1. Determine the mounting location for the CT 1000 following the guidelines below based on the type of installation:

**CAUTION:** Never install the CT 1000 over (on top of) any asset text or decals.

For Dry Van Nose Installations:

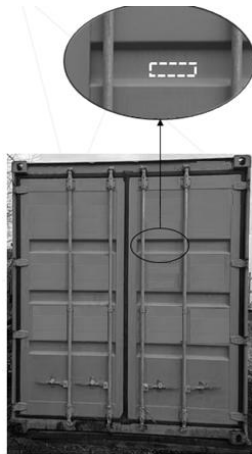
**CAUTION:** The mounting location described below is only appropriate if a DS 300 sensor is not required. If a DS 300 sensor is required, use a door mount location to ensure the CT 1000 and the DS 300 are in BLE range, and follow the installation instructions in *AC006 DS 300 Installation Guide*, available from ORBCOMM.

- As high as possible on the front of the asset.
- Avoid mounting on the curbside to minimize branch strikes.
- Surface must be flat, undamaged, and not have any peeling paint.



**For Container Installations:**

- Within the top corrugation on the right-side door.
- Centered between the locking bars.
- Surface must be flat, undamaged, and not have any peeling paint.
- If the top corrugation on the right-side door is damaged or has container text, install the CT 1000 within the top corrugation on the left-side door.



2. Mark the location of the CT 1000 on the asset. This is recommended for accurate preparation of the asset surface.
3. Prepare the surface of the asset (at the tape locations on the back of the CT 1000) in the following sequence:
  - a. Use the provided scour pad to remove debris from the surface.
  - b. Clean the surface with an alcohol cleaner and clean lint free cloth or the provided wipes. **Allow the cleaned surface to dry completely** before proceeding to the next step.

**1.3.6 Tape the CT 1000 to the Asset**

1. Remove the tape liners from the back of the CT 1000 (two locations).

**CAUTION: DO NOT touch the tape.**





2. Immediately place the CT 1000 onto the asset, being careful to place it on the previously marked corner locations from an earlier step.

**CAUTION:** For Container Installations - Ensure the device is placed near the bottom of the corrugation, with the solar panel facing up (towards the sky).

For Dry Van Installations - Ensure the solar panel is facing up (towards the sky).



3. Press firmly on both mounting flanges of the CT 1000 (7 kg (15 lbs) for 10 seconds) to bond the tape to the asset.



### 1.3.7 Install the Rivets

**CAUTION:** DO NOT drill holes in placarded containers that are loaded.

1. Use the CT 1000 as a guide, and drill through the two (2) mounting holes with the provided 0.196" (5 mm) drill bit.



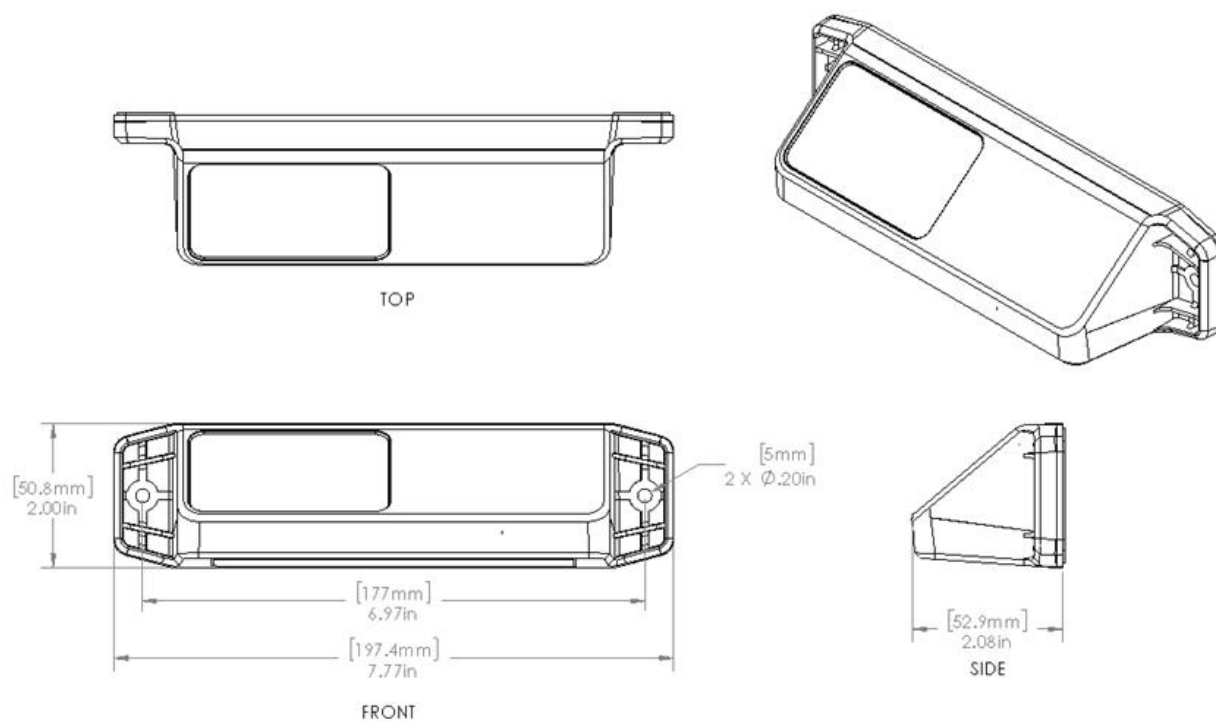
2. Assemble two (2) provided rivets through the drilled holes and install them using a rivet gun.

**Note:** Installing the rivets seals the drilled holes, so no additional sealant is required.



## APPENDIX A MECHANICAL

The device's mechanical dimensions are shown below.



### Labeling

The device enclosure provides a location for the placement of a manufacturing label. Refer to [APPENDIX 1](#) for ATEX labeling requirements.

## APPENDIX B ATEX SAFE USE GUIDANCE

This section provides information, specific to the ATEX Category 3G certification, for safe use of the CT 1000 device.

### Marking Label Information

The CT 1000 device is provided with marking label information specific to ATEX Category 3G certification:



### Applicable Standards

A list of standards with which the equipment is declared to comply:

- Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive (ATEX) 2014/34/EU
  - EN 60079-0:2018, Explosive atmospheres–Part 0: Equipment – General requirements
  - EN 60079-11:2012, Explosive atmospheres–Part 11: Equipment protection by intrinsic safety "i"
- Radio Equipment Directive (RED) 2014/53/EU, EN 62311: 2020, EN 62368-1: 2020+A1:2020
- Radio Equipment Directive (RED) (EMC) 2014/53/EU, EN 301 489-1 V 2.2.3(2019-11), EN 301 489-17 V 3.2.4 (2020-09), EN 301 489-52V 1.1.2(2020-12), EN 55032:2015/A11:2020, EN 55035: :2017/A11:2020
- Radio Equipment Directive (RED) (Radio Spectrum) 2014/53/EU, EN 301 511 V12.5.1, EN 301 908-1 V13.1.1, EN 301 908-2 V13.1.1, EN 301 908-13 V13.1.1, EN 303 413 V1.1.1, EN 300 328 V2.2.2 (1019-07)
- Restriction of Hazardous Substances Directive (RoHS) 2015/863/EU Article 4.1, EN50581:2012

### Electrical Parameters

Parameter	Max	Units
Voltage (nominal)	4.1	V
Current	3.4	A
Power Dissipation	13.94	W
Energy Harvesting	480	mW

### Specific Conditions of Use:

There is a risk of potential electrostatic charge build-up on the plastic enclosure. The instructions shall be referenced for safe use and techniques to reduce the potential for electrostatic charge build-up:

*In Zone 2 Hazardous Locations, insulating solid materials are allowed to be used if charging processes capable of generating hazardous potentials are unlikely to occur during normal operation including maintenance and cleaning. Synthetic fabrics used in cloths for cleaning or wiping can develop sufficient static electric charge to produce discharges capable of igniting solvent vapors. Typically, charge generation increases with the speed and vigor of the wiping action. The material being cleaned or wiped, if insulating, also can accumulate sufficient charge to produce an incendive discharge. Cotton or synthetic fabric treated with a static dissipative compound may be*

*required if static electric charge generation needs to be controlled, especially if flammable insulating solvents are being used for cleaning or wiping.*

**"WARNING** – Clean with a damp cloth only and allow to dry naturally"

#### **Special Instructions**

The CT 1000 device is meant for fixed installation only. Temporary installation, including installation using magnets is not permitted.

The CT 1000 device does not require any maintenance.