



# CT 1000

## User Guide

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## CONTACT AND LEGAL INFORMATION

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## PREFACE

### Purpose

This guide contains product information for the CT 1000, including product description and specification, installation guide, certification content and regulation warning etc.

### Notation

Hardware components and hardware labels in this document might not be exactly as shown and are subject to change without notice.

**CAUTION: This safety symbol warns of possible hazards to personnel, equipment, or both. It includes**

**hazards that will or can cause personal injury, property damage, or death if the hazard is not avoided.**

**Note:** A note indicates information with no potential hazard. A note indicates points of interest or provides supplementary information about a feature or task.

Numbered lists indicate a series of steps required to complete a task or function.

Bulleted lists highlight information where order or sequence is not crucial.

### Battery Safety Warnings

**CAUTION: Always follow local disposal guidelines to properly dispose of the Lithium-ion battery and the device.**

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

### 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. PRODUCT OVERVIEW

The CT 1000 is a cellular, self-contained tracking solution principally designed for tracking and monitoring globally roaming assets such as shipping containers. The CT 1000 interfaces with wireless sensors through Bluetooth Low Energy and integrated internal sensors to monitor the status and condition of the asset.

The CT 1000 is powered through an internal battery that is recharged using an integrated solar panel.

**Figure 1: CT 1000**



## 2. SPECIFICATIONS

### 2.1. Temperature

Parameter	Value
Operating Temperature Range	-20° to +70°C (-4° to +158°F)
Storage Temperature Range	-40° to +80°C (-40° to +176°F)
Battery Charging Temperature Range	-20° to +50°C (-4° to +122°F)

### 2.2. Power

The CT 1000 is powered through the internal battery that is recharged using an integrated solar panel.

### 2.3. RF Specifications

#### 2.3.1. Cellular Communication

The device includes a module capable of global cellular communications over LTE, 3G, and 2G networks.

Parameter	Value
LTE Category	Cat 1
LTE Bands	1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 25, 26, 28, 38, 39, 40, 41
UMTS/HSPA+ Bands	1, 2, 4, 5, 6, 8, 19
GSM Bands	2, 3, 5, 8

#### 2.3.2. BLE RF Interface

The device includes an internal BLE antenna.

#### 2.3.3. GNSS RF Interface

The GNSS system includes an internal antenna. The GPS provides unassisted cold start in <35 seconds and assisted in <20 seconds. The 3D, aided position accuracy is <10 m CEP.

## 2.4. Battery

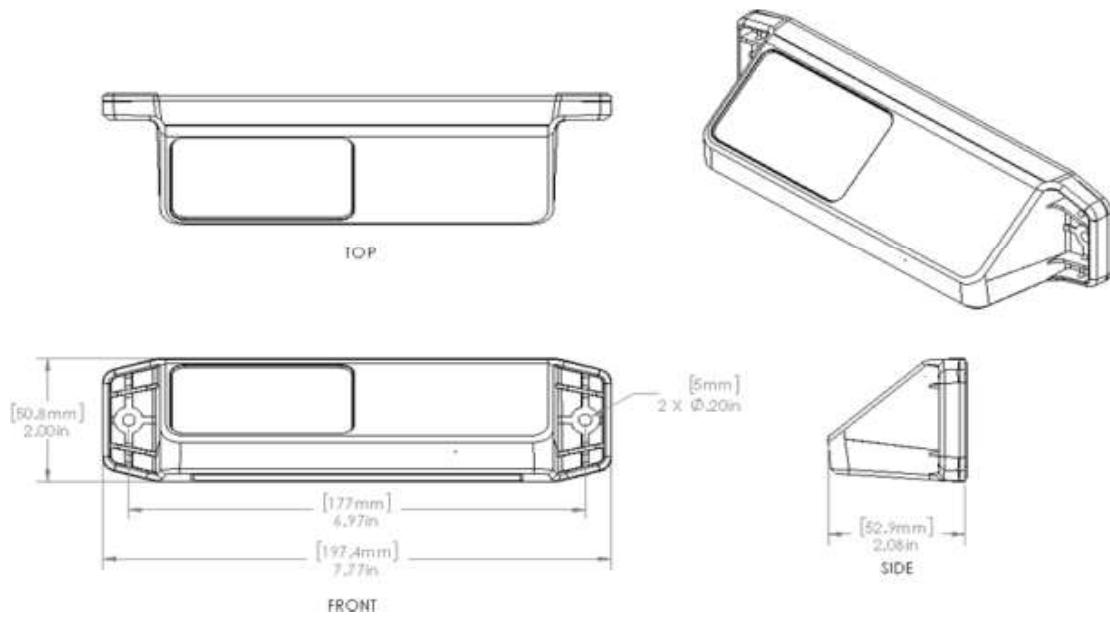
The CT 1000 includes a rechargeable long life, industrial grade 3.6V nominal battery able to supply the current necessary for all operational modes. The battery pack is within the enclosure without causing any interference.

The CT 1000 is charged with an integrated solar panel that provides power to the battery charging system.

PARAMETER	MIN	TYP	MAX	UNITS
<b>Battery</b>				
Capacity	330	-	-	mAh
Voltage (nominal)	-	3.6	-	V
Maximum Current output	2.0	-	-	A
Maximum Charge current	100	-	-	V
<b>Battery Charging</b>				
Solar Open Circuit Voltage	4.84	-	-	V
Solar Power	400	-	-	mW
Charge Current	1	-	90	mA

## 2.5. Mechanical

The device's mechanical dimensions are shown below.



### 3. COMPLIANCE

Certifications for the following are pending, unless noted otherwise.

#### CE Mark (Europe)

RED 2014/53/EU

##### Declaration of Conformity

Hereby, ORBCOMM declares that the radio equipment type CT1000 is in compliance with Directive 2014/53/EU.

The DOC (Declaration of Conformity) is either included in the packaging or can be found at the following link:

The full text of the EU declaration of conformity is available from <http://www2.orbcomm.com/eudoc>.

IEC 60079-22, Explosive Atmospheres Part 11: Equipment Protected by Intrinsic Safety, June 2011.

IEC 60529 rev 2.1, Degrees of protection provided by enclosures (IP code), February 2001.

**ISED (Canada)** IC ID: 11881A-BTCT1, & Contains IC: 10224A-201906EG21G.

CAN ICES-3 (A)/NMB-3(A)

##### Innovation, Science and Economic Development Canada Compliance Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) L'appareil ne doit pas produire de brouillage;

(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ICES-003 Issue 7, October 2020, Interference-Causing Equipment Standard, Information Technology Equipment (including Digital Apparatus)

RSS-102 Issue 5, March 2015, Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

RSS-247 Issue 2, February 2017, Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm (7.9 inches) between the radiator and any part of your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Pour se conformer aux exigences de conformité ISED RSS-102 RF exposition, une distance de séparation d'au moins 20 cm doit être maintenue entre l'antenne de cet appareil et toutes les personnes. Lanceurs ou ne peuvent pas coexister cette antenne ou capteurs avec d'autres.

**FCC (United States of America)**

FCC ID: XGS-BTCT1, & Contains FCC ID: XMR201906EG21G.

##### 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.

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

In order to comply with FCC RF Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.

**Ingress Protection** Device enclosure: IPx7, IPx9k, and IP6x

**RHoS**

Restriction of Hazardous Substances (RoHS)

**International / EU certification**

- Compliant with UN 38.3 – International/EU certification for battery cell/pack transportation.

**PTCRB****ATEX**

Zone 2 – Hazardous Location Standards, II 3 G Ex ic IIB T6 Gc

**Global Market Access**

USA, Canada, EU, Japan, Korea, Brazil, Australia, New Zealand, Mexico, UK, Taiwan, etc

**Brazil**

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

Este produto não é apropriado para uso em ambientes domésticos, pois poderá causar interferências eletromagnéticas que obrigam o usuário a tomar medidas necessárias para minimizar estas interferências". • Para maiores informações, consulte [www.gov.br/anatel/pt](http://www.gov.br/anatel/pt)

**Japan**

Bluetooth: MIC 218-22017

Cellular: JATE AD 19 0099 201/00

当該機器には電波法に基づく、  
技術基準適合証明等を受けた特定無線設備を装着している。

**Korea:** KC Certificate Registration Number: R-R-OBC-CT1000

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

## 4. INSTALLATION INSTRUCTIONS

### 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.
- The manufacturer and / or distributors do not accept responsibility for third party charges, labor, and or third part replacement modifications. Some modifications 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.

**CAUTION: While ORBCOMM provides mounting hardware to assist with installations, it is the responsibility of the installer to select the proper mounting hardware for the asset's surface material where an ORBCOMM device or accessory will be mounted.**

### 4.1. Mount the CT 1000

#### 4.1.1. Gather the Required Tools and Materials

The following are required for this installation:

- CT 1000 includes
  - Alcohol based cleaner or wipes
  - Scour pad
  - 0.196" (5 mm) drill bits and 0.196" (5 mm) drill stop
  - 3/16" diameter x 3/16" - 1/4" grip range (4.8 mm x 4.8 to 6.4 mm) stainless rivets
- Cordless drill and cordless rivet gun
- Tape measure
- Mobile phone with the ORBCOMM app

#### 4.1.2. Prepare for the Installation

1. Remove the CT 1000 from the packaging.
2. Install the provided 0.196" (5.0 mm) drill bit into the drill.
3. Assemble the provided drill stop, located 3/8" (10 mm) from the end of the drill bit.



#### 4.1.3. Prepare the Mounting Location

1. Determine the mounting location for the CT 1000 following the guidelines below:
  - 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
2. Remove the large serial number label from the CT 1000, and then place the label next to the container number.
3. Mark the location of the corners of the CT 1000 on the asset. This is recommended for accurate prepping the asset surface.
4. Clean the surface of the corrugation (at the tape locations on the CT 1000).

#### 4.1.4. 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: Ensure the device is placed near the bottom of the corrugation, with the solar panel facing up.**

3. Press firmly on the entire top surface of the CT 1000 (7 kg (15 pounds) for 10 seconds) to bond the tape to the asset.

#### 4.1.5. Install the Rivets

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

1. Use the CT 1000 as a guide, and drill through two (2) 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.

#### 4.1.6. Associate the Device

Use the ORBCOMM Field Support Tool (FST) mobile app to take a picture of the CT 1000, including the asset ID and the CT 1000 serial number label.