

ORBCOMM®

CONNECTING THE
WORLD'S ASSETS



TripLINK(CT4000)

Overview and Hardware Guide

W01-ECert, Version 0.05

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1. OVERVIEW

The CT 4000 (TripLINK 12LB) is a low-cost device capable of tracking, monitoring, and controlling refrigerated containers both on land and at sea for total intermodal asset visibility. The CT 4000 also integrates with standard refrigerated container microcontrollers for monitoring and control. It pairs this information with data from onboard sensors such as location and temperature and sends messages over one of three communication channels: Cellular, LoRAWAN, or local BLE Mesh.

The CT 4000 uses a rugged, IP67 enclosure that houses all electronics, power control, and antennas. External interfaces are available through a rugged external connector.

The device can be powered externally through the main connector or through the internal rechargeable battery. The batteries are charged through the external connector. While operating on battery, the CT 4000 is capable of powering the refrigerated container microcontroller to read critical information even when the container is not connected to external power.

1.1 Device Features

Product Features

- LTE Cellular transceiver with 2G/3G fall-back
- LoRaWAN transceiver
- BLE transceiver
- Tri-color LED working status indication
- Accelerometer
- Temperature sensor, serial port interface, factory installed chip SIM
- 12V DC Power output
- I/O interface

2. COMPLIANCE

2.1 FCC/IC Certification

FCC ID: XGS-RL76052

IC ID: 11881A-RL76052

The device contains the following FCC ID and IC ID:

FCC ID: XPY1EHM44NN and XGS-UNNB30

IC ID: 8595A-1EHM44NN and 11881A-UNNB30

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.

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.

RF Exposure statement

This equipment complies with the radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 30cm between the radiator and any part of the human body.

Non-modification Warning statement

Equipment changes or modifications not expressly approved by the party responsible for FCC compliance, could void the user's authority to operate the equipment and could create a hazardous condition.

2.2 CE Certification

CE Mark RED 2014/53/EU

Declaration of Conformity

Hereby, ORBCOMM declares that the radio equipment type [designation of type of radio equipment] is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www2.orbcomm.com/eudoc>.

Transmitting power max.

Radio System	Operation Frequency (MHz)	Max Power (dBm)	Tolerance(dB)
Cellular	850 (GSM)	33	+/- 1
	850/900/1900/2100 (UMTS)	23	+/- 1
	700/850/1700/1900 (LTE)	22	+/- 1
LoRa	868/915	13	+/- 1
	434/470*	19	+/- 1
Bluetooth	2400-2480	9	+/- 1

Note *. Operation at 434/470MHz band is only for countries or range where the band is available.

2.3 Other Certification

International certification

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

Industrial Certificate: PTCRB

REACH

Registration, Evaluation, Authorization, Restriction of Chemicals

Ingress Protection: IP67

2.4 Environmental

Parameter	Description
Altitude	The device meets all of its specifications after a nonoperating 12,000 ft. altitude test at -40°C
Salt Spray Atmosphere	The device meets all of its specifications after a salt spray test as detailed in ASTM 117B.
Exposure to Chemicals and Oils	The device meets all of its specifications after a light to moderate splash test as detailed in SAE J1455 section 4.4.3.2, for the following chemicals: HCl, strong; Dilute acids (Sulfuric); Dilute bases (Sodium Hydroxide); Moderately strong acids (sulfuric & phosphoric 5 and 20%); Spray lubricates LPS/WD40/CRC, etc.; Ethylene Glycol; POE Oil; Mineral Oil; Diesel Exhaust; Diesel Engine Oil; Engine Oils and Additives; Refrigerant / Oil mixes with 5% H2O; Transmission Oil; Rear Axle Oil; Power Steering Fluid; Brake Fluid; Axle Grease; Window Washer Solvent; Gasoline; Diesel Fuel; Fuel Additives; Alcohol; Antifreeze Water Mixture; Degreasers; Soap and Detergents; Steam; Waxes; Kerosene; Freon; Spray Paint; Paint Strippers; Ether; Dust Control Agents (magnesium chloride); Moisture Control Agents (calcium chloride); Ammonia; Aluminum brightener (acid wash)
Vibration	The device meets ± 1.8 G testing for 2.1 million cycles in vertical direction, ± 1.4 G testing for 2.1 million cycles in the fore/aft, and side to side directions, 5-100 Hz (excursion not exceeding 1" peak to peak) in any direction.
Humidity	The device meets all its specifications during exposure to 90% relative humidity at +85°C, per the test methodology of SAE J1455, section 4.2.3 (8 hour humidity cycle per figure 4a).
Steam Cleaning and Pressure Washing	The device meets all of its specifications after a steam cleaning and pressure wash test as detailed in SAE J1455, section 4.5.3.
Mechanical Shock	Non-operational: The device meets all its specifications after five (5) consecutive impact events of 100 G for 18-25ms, half sine pulse in three mounting planes of the assembly. Operational: The device meets all its specifications after five (5) consecutive impact events of 15 G for 18-25ms, half sine pulse in three mounting planes of the assembly.
Dust and Sand Bombardment	The device meets all of its specifications after a dust and sand bombardment test as detailed in SAE J1455, section 4.7.3.

3. SPECIFICATIONS

3.1 Temperature

Parameter	Value
Operating Temperature	-40° to +85°C (-40° to +185°F) Temperatures below -20°C (-4°F) or above +60°C (140°F) result in a limited functionality.
Storage Temperature	-40° to +85°C (-40° to +185°F)

3.2 Input Range

Parameter	Value
Power Supply Voltage	24 VAC Nominal 60 Hz 20 VAC Nominal 50 Hz Nominally 1A

3.3 Current Consumption

Parameter	Value
Maximum Current (typical - power voltage from 11 to 32 V)	1400

3.4 Mechanical

The device's mechanical enclosure is a rugged, impact, and chemical resistant plastic material.

Parameter	Value
Dimensions (LxWxH)	11.5 x 2 x 2 in. (29 x 5 x 5 cm)
Mass	~450 g



<second back view image>

4. INSTALLATION

For installation instructions, refer to documents 98-02703-00 and 98-02704-00.

4.1 Battery Safety Warnings

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

CAUTION: **DONOT** 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.

