



XT4392 User Guide

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This user guide contains supplemental information about the XT4392.

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1. FUNCTIONAL DESCRIPTION

1.1. OVERVIEW

The XT4300 is used for asset tracking and tire monitoring services for fleets. The tire pressure monitoring capabilities reduce tire-related costs, which subsequently reduces fleet costs from tire replacement and expensive roadside service. The design engages the challenging industrial vehicle environment, minimizing downtime and avoiding replacement expenses. The XT4300 features a powerful 32-bit microprocessor and flexible power management algorithm, providing the capability of periodic reporting of tire health, status, and location of remote assets. The device is designed to allow GPS tracking under extreme conditions and leverages the latest tire pressure monitoring technology. The weatherproof case (meets IEC 68-2-27 environmental standard and is IP67 certified) allows the XT4300 to be used for a multitude of applications.

1.2. MECHANICAL



Mechanical

Dimensions	2.07" x 2.46" x 7.6" (52.7 x 62.6 x 193 mm)
Weight	TBD
Operating Temperature	-22 to 158 degrees Fahrenheit (-30 to 70 degrees Celsius)
Charging Temperature	32 to 140 degrees Fahrenheit (0 to 60 degrees Celsius)
Supported MNO	AT&T, Verizon

2. GENERAL OPERATION

The XT4300 is connected to the vehicle and communicates to the server via the cellular network in one of two operating modes: tracking and snapshot.

While in tracking mode, the device operates in a continuous integration mode where it is receiving GNSS solutions at a rate of 1Hz. When in tracking mode the device default state is ACTIVE, and the device will enter HIBERNATE as a secondary state for low power.

While in snapshot mode, the device enables the GNSS receiver to obtain a 2D positional fix and then turns off the GNSS receiver. This mode will have the GNSS off, the cellular modem off, and the microprocessor in a deep sleep or hibernate mode of operation.

When in snapshot mode the device default state is HIBERNATE and the device will enter ACTIVE to capture the state of the system, environment, and report that data along with data recorded from sensors while in HIBERNATE to the customer's application server

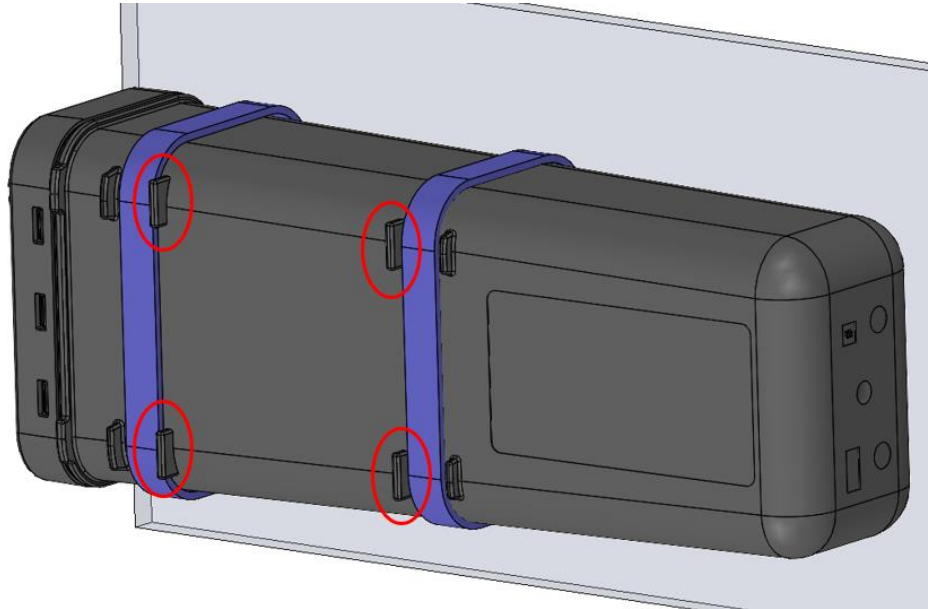
2 INSTALLATION PROCEDURE

2.1 TERMINOLOGY

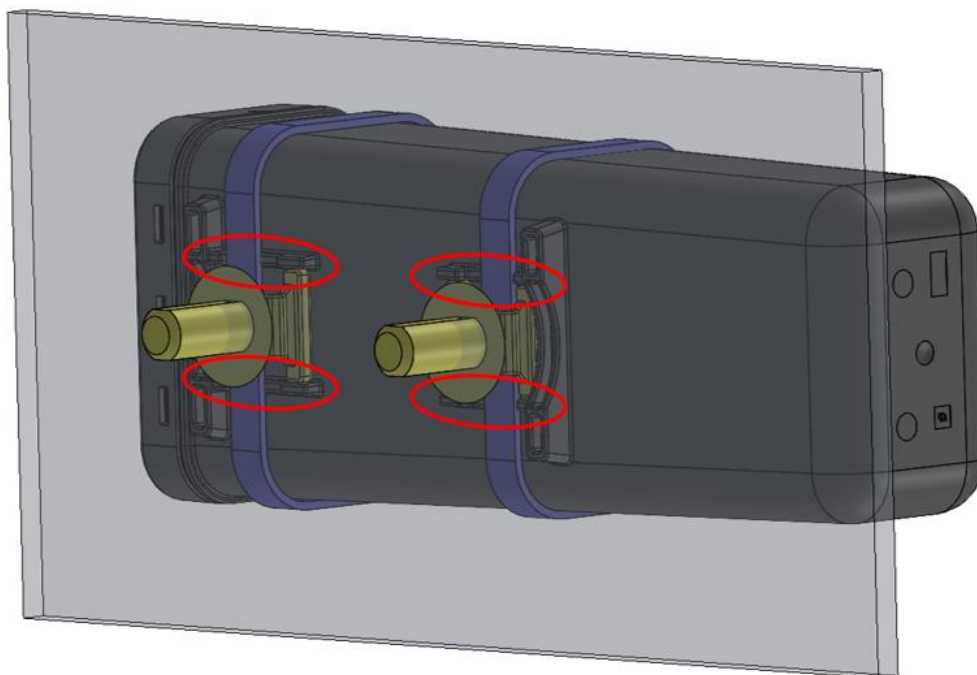
Term	Description
Unit	Xirgo XT6264
Asset	Customer product that the XT6264 is mounted to.

2.2 INSTALLATION

The Unit can be wire-tied to the Asset under the trailer chassis beam with its own Wiring Harness Connected. The Label Side must look away from the metal while its being installed. The Zip tie must pass through inside the holding features of the Unit.



On the other side, there are ribs to hold the unit on the underside to mount on the asset.



3. ELECTRICAL CHARACTERISTICS

3.1. MAXIMUM RATINGS

The maximum ratings are the limits to which the device can be subjected without permanently damaging the device. Device reliability may be adversely affected by exposure to absolute-maximum ratings for extended periods.



NOTE: The device is not guaranteed to operate properly at the maximum ratings.

Parameter	Parameter Name	Min	Max	Unit
V_IN	V_IN supply voltage	8.0	30.0	V

Current Consumption (Measured when supplied 12V)	min(mA)	max(mA)
Idle	31	52
Active Network	68	91
Active Network - GPS Off	58	81
Battery Charging - FAST MODE	365	380

3.2. CHARGING CIRCUIT

At 12 V the device may draw up to 380 mA from power supply.

This device uses a Synchronous Step-Down Battery charger with switchable charge rates:

Fast charge

Fast charge is enabled when Main Voltage is above 9.0 V and the temperature is above 0 degrees Celsius (32°F). If Main voltage drops below 9 V, it needs to raise back up to 9.25 V to begin fast charging. Expect to see up to 140 mA from Main Voltage Power supply (At 12.0 V).

Slow charge

Slow charge is enabled when Main Voltage is below 9.0 V or the temperature is between 0 and -20 degrees Celsius (32° to -4°F). The device will enter a No Charge state if the voltage goes below 4.4 V. Expect to see up to 50 mA from Main Voltage Power supply (At 8.0 V).



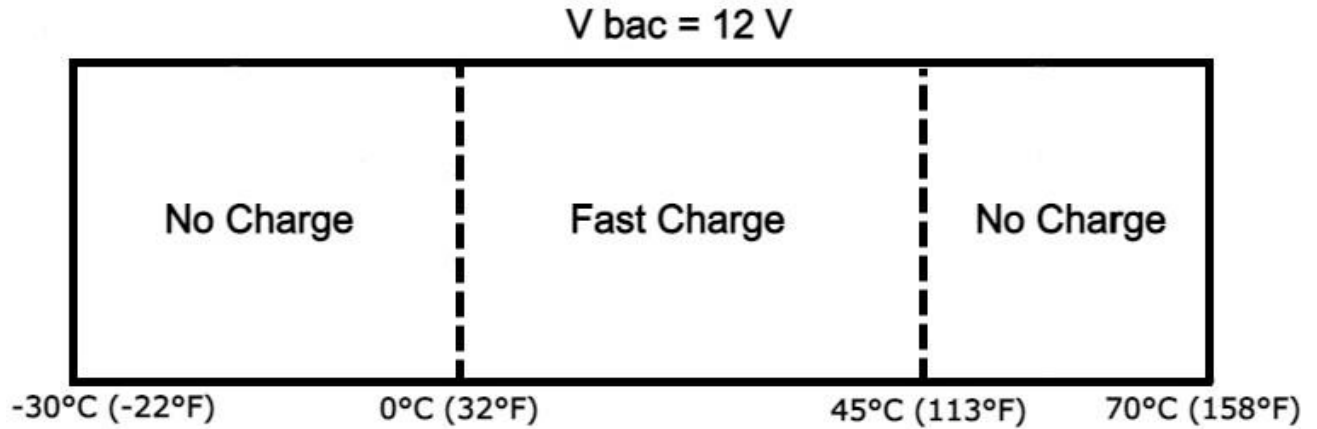
NOTE: Slow charging *may* lead to an insufficient charge for long-term operation.

No Charge

The XT4300 battery cannot charge outside of their charging temperature ranges. The device charges between 0 to 45 degrees Celsius (32° to 113°F).

Once the battery charge drops below 3.4 V, the device will enter low battery where it will retain any unsent events but will not generate any new ones. Once the device is charged to 3.6 V or greater, it will publish events retained prior to low battery state and begin generating new ones.

XT4300 Charging Graph



4 REGULATORY STATEMENTS

4.1 FCC:

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

Changes or modifications made to this equipment not expressly approved by Xirgo Technology may void the FCC authorization to operate this equipment.

NOTE: 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.

4.2 RADIOFREQUENCY RADIATION EXPOSURE INFORMATION:

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

4.3 INDUSTRY CANADA

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 applicables 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 onctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This radio transmitter (IC:10281A-XT4392, Model Number: XT4392) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Cet émetteur radio (identifier le périphérique par numéro de certification, ou le numéro de modèle si Catégorie II) a été approuvé par Industrie Canada pour fonctionner avec les types d'antennes énumérées ci-dessous avec le gain maximal admissible et l'impédance d'antenne requise pour chaque antenne type indiqué. Types d'antennes ne figurent pas dans cette liste, ayant un gain supérieur au maximum gagner indiqué pour ce type, sont strictement interdites pour une utilisation avec cet appareil.

GNSS Antenna Specifications ; Receive Only

Parameter	Description
Band Support	GPS, SBAS: 1575.42 MHz ± 1.02 MHz GLONASS: 1575.42MHz, 1602MHz
Peak Realized Gain	GPS: ≤ 2.5 dBi GLONASS: ≤ 3.0 dBi

UHF Antenna Specifications

Parameter	Description
Frequency (GHz)	433.92 Mhz ± 0.5 MHz
Peak Gain (dBi)	≤(-)5 dBi

¹Gain measured with all the Mechanical Elements with 3D printed Enclosures

2.45 GHz Antenna Specifications

Parameter	Description
Frequency (GHz)	2.4 - 2.48
Peak Gain (dBi)	≤2.6 dBi

¹Gain measured with all the Mechanical Elements with 3D printed Enclosures

4G LTE Antenna Specifications

Specification Description	Band 12		Band 13		Band 4	
Channel	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink
Frequency (MHz)	699-716	729-746	777-787	746-756	1710-1755	2110-2155
Peak Gain [dBi]	<1	<1.9	<1.1	<1.9	<5.6	<3.2
Specification Description	Band 20		Band 28		Band 2	
Channel	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink
Frequency (MHz)	832-862	791-821	703-748	758-803	1850-1910	1930-1990
Peak Gain [dBi]	<0.2	<0.2	<1.9	<0.35	<5.0	<3.8

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