XT6264 User Guide

Revised July 19, 2019

This user guide contains supplemental information about the XT6264.

1 CONTENTS

2 INSTALLATION PROCEDURE

2.1 TERMINOLOGY

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

2.2 INSTALLATION

Figure 1: Hole Location

Figure 2: Size of hole – 19mm

1. Install the unit bracket.
2. Secure the unused high voltage communication connector into unit bracket.
3. Install the unit into the bracket.
    a. Push the unit into the bracket
    b. Secure the two torx screws
    c. Push the ON/OFF switch
4. Connect the 3 and 7 pin connectors to the unit.
5. Connect the unit ribbon harness to the controller.

Figure 3: Ribbon Harness

6. Attach the TK bracket to the unit.
7. Fit the unit with the bracket TK controller and tighten the upper screws.
8. Connect the Power Cable Harness X1 RED wire to the Transformer X1 tap, and X2 BLACK wire (with ground terminal) to the Controller Chassis.

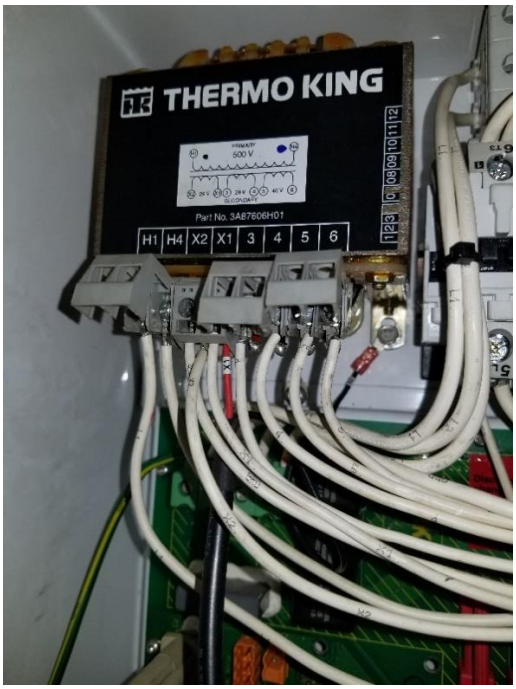

Figure 5: X1 red to X1 tap

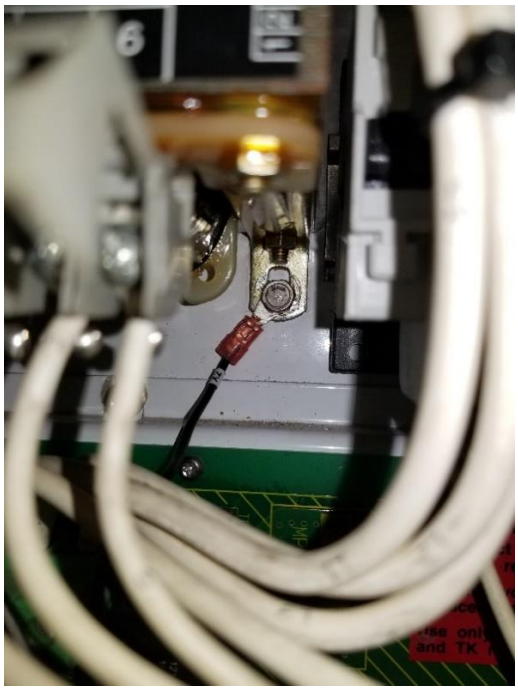

Figure 6: X2 Black to ground chassis

9. Connect the 7 pin from the unit ribbon harness to the unit.

10. Bundle the cable by using cable ties and fix them to the unit.

11. Close the asset door. The device should be oriented as pictured below:

2.3 TESTING AFTER INSTALLATION

1. Connect the power plug to the power source.
2. Put the unit into install mode (ON/OFF button) – see Enter Install Mode for further description.
3. Observe installer LED for green pass – see observe Install LED below for further description.

NOTE: if installer LED fails, refer to the trouble shooting guide and fix the issue.

4. Take the unit out of installer mode.
5. Close the controller door.

NOTE: at this time, installation should be completed.

3 LED BEHAVIOR

3.1 TEST MODE

When the device is in Active mode (i.e., not in ship mode or low power sleep mode), a push and release of the button when the green LEDs start blinking will cause the device to display status using LEDS as described below. LEDs will stay off in the normal device operation.

NOTES:

- The push and release of the button when blue LEDs start blinking will put the device in INSTALL mode. The LED behavior in INSTALL mode is covered in Install Mode section.
- If the button remains pushed until blue LEDs go off and then the buttons are released, device will enter Ship Mode.
- Pushing and releasing the button when the device is in ship mode will wake the device up like in RCD2 and will not initiate LED status indication mode.

3.1.1 LED Color Table

LED Color	Description
Blue	GPS Status
Green	Cellular Status
Purple	Cellular RAT Status
Yellow	Battery Status
Red	Backend, AC, Reefer, Zigbee, and Bluetooth

3.1.2 RCD3 LED Status Indication Mode

When the device enters install mode, it will display all LED status updates. The LEDs will provide updates in the following order: Blue, Green, Purple, Yellow, and then Red.

GPS Status (Blue)

- All five LEDs will flash blue for two seconds to indicate the device is providing GPS status.
- From left to right, GPS status is provided with a solid blue LED and the value is held for five seconds.

LED Status	Description
GPS Lock	Left-most LED ON means GPS is locked
GPS Number	Each LED following the left most LED represents three GPS satellites. Satellite numbers in between groups of three will be rounded up; e.g., four or five satellites in view will be represented with two LEDs.
No Lock	Left most LED blinking means no lock and no satellite in view

Cellular Status (Green)

- Four LEDs will flash green for two seconds, indicating the device is providing cellular signal strength. The left most LED will be used to indicate cellular RAT.
- From left to right, LEDs indicate received signal strength value using solid green LEDs and will hold the value for five seconds.

RSSI Level	LED Number
1	One LED
2	Two LED
3	Three LED
4	Four LED

Cellular RAT Status (Purple)

- All five LEDs will flash purple for two seconds to indicate the device will be providing cellular RAT status.
- From left to right, the cellular RAT is indicated using solid purple LEDs held for five seconds.

Cellular RAT	LED Number
Connection Failure	Left most LED blinking
2G Registered	One LED
3G Registered	Two LEDs
LTE Registered	Three LEDs

Battery Status (Yellow)

- All five yellow LEDs will flash yellow for two seconds to indicate the device will provide battery status.
- From left to right the backup battery value is indicated using solid yellow LEDs, which are held for five seconds.

LED	Voltage
Left most LED (blinking)	Volt < 2.9
One LED	2.9 < Volt < 3.2
Two LEDs	3.2 < Volt < 3.5
Three LEDs	3.5 < Volt < 3.8
Four LEDs	3.8 < Volt < 4.0
Five LEDs	4.0 < Volt

Backend, AC, Reefer, Zigbee, and Bluetooth (Red)

- All five LEDs will flash red for two seconds to indicate the device is providing miscellaneous status.
- LEDs are displayed from left two right and held for five seconds.

LED Position	Description
First	Backend connectivity status: Green if data session active or no messages queued. Red if messages queued and no data session active.
Second	AC Status: Green if AC applied, Red if no AC.
Third	Reefer Connectivity: Green if last communication with reefer was successful, Red otherwise.
Fourth	Zigbee Status: Green if device is in network otherwise Red.
Fifth	BLE Status: To be determined.

NOTE: Test mode should now be complete, and all LEDs will turn off.

3.2 INSTALL MODE

3.2.1 Entering Install Mode

The device must be active, i.e., either on battery hold off period or external power. This is not applicable during battery profile wakes (periodic, listen, motion start/stop).

Press and hold the button until the blue LED is blinking; release the button. The device will reboot into install mode indicated by the fast blinking green LED.

3.2.2 Install Mode Operation and Status

Install mode is a special test mode which does not provide normal operations. Test in progress is indicated by a fast blinking green LED. At the end of the Install mode test, the following test result status would be displayed through solid LED indication. LED1 is the left most LED and LED2 is next to LED1 and so on.

AC Power Connection

- Green LED1: AC power detected
- Red LED1: Failed AC power detection

RS232 physical connection

- Green LED2: Physical RS232 detected
- Red LED2: Failed RS232 detection

Reefer Communication

- Green LED3: Successful communication with controller
- Red LED3: Failed communication with controller

3.2.3 Exiting Install Mode

- Push the button and hold for approximately five seconds any time after install mode status indication.
- OR, timeout for fifteen minutes from the start of LED status indication.

NOTE: either of the above will cause a reboot of the device to the normal operation mode.

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-XT6264, Model Number: XT6264) 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

Parameter	Description
Band Support	GPS: 1575.42 MHz ± 1.02 MHz GLONASS: 1601.72 MHz ± 8.76625 MHz
Peak Realized Gain	GPS: ≤ 3.0 dBi GLONASS: ≤ 3.0 dBi

2.45 GHz Antenna Specifications

Parameter	Description
Frequency (GHz)	2.4 - 2.48
Peak Gain (dBi)	1.5 dBi

[1]Efficiency measured on Johanson's evaluation board PN 2450AT18D0100-EB1SMA

2G/GSM LTE Antenna Specifications

Parameter	Band 5		Band 2	
Channel	Uplink	Downlink	Uplink	Downlink
Frequency (MHz)	880-915	925-960	1710.2-1785.2	1804.8-1879.8
Peak Gain (dBi)	<2	<-5.9	<3.7	<2.8

3G/UMTS LTE Antenna Specifications

Parameter	Band 5		Band 2		Band 8		Band 1	
Channel	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink
Frequency (MHz)	824-849	869-894	1850-1910	1930-1990	880-915	925-960	1920-1980	2110-2170
Peak Gain (dBi)	5.0	2.6	4.0	4.1	<2	<-5.9	<2.8	<1.4

4G LTE Antenna Specifications

Parameter	Band 12		Band 5		Band 4		Band 2	
Channel	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink
Frequency (MHz)	699-716	729-746	824-849	869-894	1710-1755	2110-2155	1850-1910	1930-1990
Peak Gain (dBi)	3.5	4.5	5.0	2.6	3.9	3.5	4.0	4.1

4G LTE Antenna Specifications (continued…)

Parameter	Band 28		Band 20		Band 8		Band 3	
Channel	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink
Frequency (MHz)	703-748	758-803	832-862	791-821	880-915	925-960	1710-1785	1805-1880
Peak Gain (dBi)	<2.3	<2.44	<1.3	<2	<2	<-5.9	<3.7	<2.8

4G LTE Antenna Specifications (continued…)

Parameter	Band 1		Band 40		Band 7		Band 38	
Channel	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink	Uplink	Downlink
Frequency (MHz)	1920-1980	2110-2170	2300-2400	2300-2400	2500-2570	2620-2690	2570-2620	2570-2620
Peak Gain (dBi)	<2.8	<1.4	<1.4	<1.4	<1.75	<1.3	<1.2	<1.2

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