



XIRGO XT1520-1 Bluetooth Beacons with Single Chip Bluetooth 5 + ARM User Manual

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XT1520-1 Product Manual
Firmware Version: NV11.1125AA1
Revised August 02, 2021

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FUNCTIONAL DESCRIPTION

OVERVIEW

The XT1520-1 series are Bluetooth beacons with a single chip Bluetooth 5 + ARM. The beacons allow the user to quickly identify a cart's location if it is within proximity of an XT49xx to determine whether a cart is at a distribution center or en route. Each device broadcasts a UID frame payload with a MAC address to an XT49xx at a 1 Hz frequency. This frequency, along with the namespace, is only configurable at the factory. The device is expected to last the duration of the cart's life.

MECHANICAL

Mechanical	
Dimensions	4.0 x 2.2 x 1.3 in (10.16 x 5.59 x 3.30 cm)
Weight	3.8 oz
Case Material	PC+PBT
IP Rating	IP67
Vibration	Mil. Std. 202G, SAE J1455

GENERAL OPERATION

The XT1520-1 attaches to Amazon carts and is used in conjunction with an XT49xx mounted on an Amazon trailer. The XT49xx periodically captures the unique device IDs at a configurable rate of all beacons in range. The XT49xx then sends the information over the cellular network, which is received by AWS.

INSTALLATION

The XT1520-1 offers two different means of mounting: zip ties, or 3M VHB tape. The back of the device casing is flat so the VHB tape can adhere. The holes and zip ties are indicated below.

BLUETOOTH (BLE)

The XT1520-1 uses Bluetooth 5 network, utilizing the Eddystone™ message protocol from Google. This protocol has four frame types: UID, URL, TLM, and EID; however, URL and EID frames are not utilized in this application. In-depth information on Eddystone(™) can be found here: <https://developers.google.com/beacons/eddystone>

UID FRAME

This frame type is very important in the XT15 as it comprises the primary functionality of the device. The UID is a unique 16-byte ID with a 10-byte namespace and a 6-byte instance ID. The namespace portion is used to group sets of XT15s and the instance ID is used to identify individual devices.

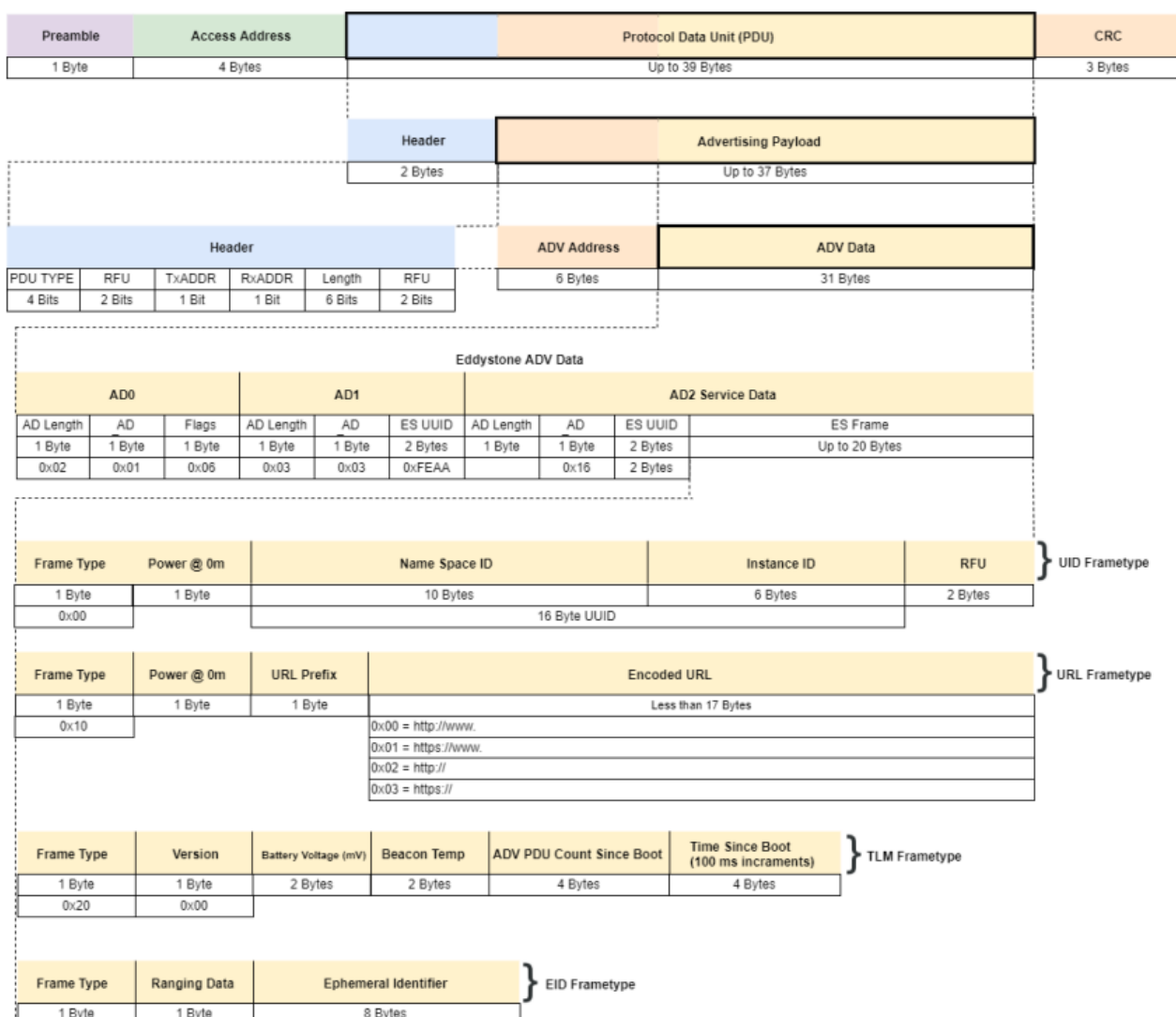
UID Frame		
Frame Type	Power at 1 M	Namespace ID
1 byte	1 byte	10 bytes

TLM FRAME

The TLM frame type is used to display telemetry data about the operations of the clients in use. It can be used to monitor beacons in the field. The frame is paired with an identifier frame because TLM has no beacon ID. This frame broadcasts at a 1/10 Hz frequency.

TLM Frame					
F r a m e T y p e	V e r s i o n	Battery Voltage (mV)	Beacon Temperature	ADV PDU Count Since Boot	Time Since Boot (100ms increments)
		2 bytes	2 bytes	4 bytes	4 bytes

BLUETOOTH PROTOCOL DIAGRAM



REGULATORY STATEMENTS

FCC

This equipment with FCC-ID: GKM-XT1520-1 and IC-ID: 10281A-XT15201, Model: XT1520-1 is subject to the Federal Communications Commission (FCC) and Industry Canada (IC) rules.

NOTICE:

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

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.

Changes or modifications made to this equipment not expressly approved by Xirgo Technologies, LLC 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.

Radiofrequency radiation exposure Information:

This equipment, XT1520-1, complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated with a minimum distance of 20cm between the XT1520-1 and your body.

IC

Antenna Statement

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.

This device complies with Industry Canada licence-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.

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



WARNING: This product can expose you to chemicals including Nickel (Metallic), which is known to the State of California to cause cancer, and Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

CONFIDENTIAL AND PROPRIETARY

Documents / Resources

	XIRGO XT1520-1 Bluetooth Beacons with Single Chip Bluetooth 5 + ARM [pdf] User Manual 1520-1, 15201, GKM-1520-1, GKM15201, XT1520-1, Bluetooth Beacons with Single Chip Bluetooth 5 ARM
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References

-  P65Warnings.ca.gov
-  p65warnings.ca.gov/
-  [Home - Xirgo® Technologies, LLC.](#)
-  [Home - Xirgo® Technologies, LLC.](#)