



QTM-AGP10 Device Manual

v1.0.7

Quantum RTLS Gateway

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Revision Tracking

Rev	EC	Author	Reviewer	Approver	Change Notes	Date
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V1.0.1	N/A	K. Fulton			Update to Regulatory Statements Add revision history table Add device specifications Add system diagram	2021/12/10
V1.0.2	N/A	K. Fulton			-Add power supply usage statement -Update incorrect namings	2022/01/27
V1.0.3	N/A	K. Fulton			- Updated wordings for cables and power supplies used. -Removed reference to Output Voltage in Appendix A	2022/02/07
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V1.0.7	N/A	J. Wolf			-Added product name to title page	2022/11/01

Certification and Compliance

The radio used in this device has been certified for use according to Federal Communications Commission (FCC), Industry Canada (IC) and Conformité Européenne (CE) rules and regulations.

FCC Regulatory Statement

Model(s): QTM-AGP10
FCC ID: 2AX6LQTMAGP10

Caution: Changes or modifications to this unit 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.

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.

This equipment must be installed and operated with a minimum distance 20 centimeters between the radiator and user's body. This equipment has been evaluated to meet general RF exposure requirement at 20 centimeters distance.

ISED Regulatory Statement

Model: QTM-AGP10

IC: 26679-QTMAGP10

CAN ICES-003(B)/NMB-003(B)

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.

CAN ICES-003(B)/NMB-003(B)

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) il ne doit pas produire de brouillage et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 rf, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de rf.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment must be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

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1 PREFACE

ABOUT THIS GUIDE

This guide contains the information you will need to operate the QTM-AGP10 with the Quantum RTLS system.

WHERE TO FIND MORE INFORMATION

Refer to the following sources for additional information and for product and software updates.

- **QTM-AGP10 Resources**
For more information and the most up to date user manual please visit our website (<https://zerokey.com>) which contains additional product specifications, user documentation, and notices.
- **Included product documentation**
Your product package includes documentation detailing the setup, configuration and operation of the Quantum RTLS system.

CONVENTIONS USED IN THIS GUIDE

Take note of these symbols which indicate important information within this manual.



CAUTION: Important instructions to prevent damage or improper operation of the Smart Space system.



NOTE: Key information and helpful tips that



CONFIG: Critical setup information that **MUST** be followed prior to operation of the system.

TYPOGRAPHY

Bold text

Indicates the name of a menu item, field, or important variable.

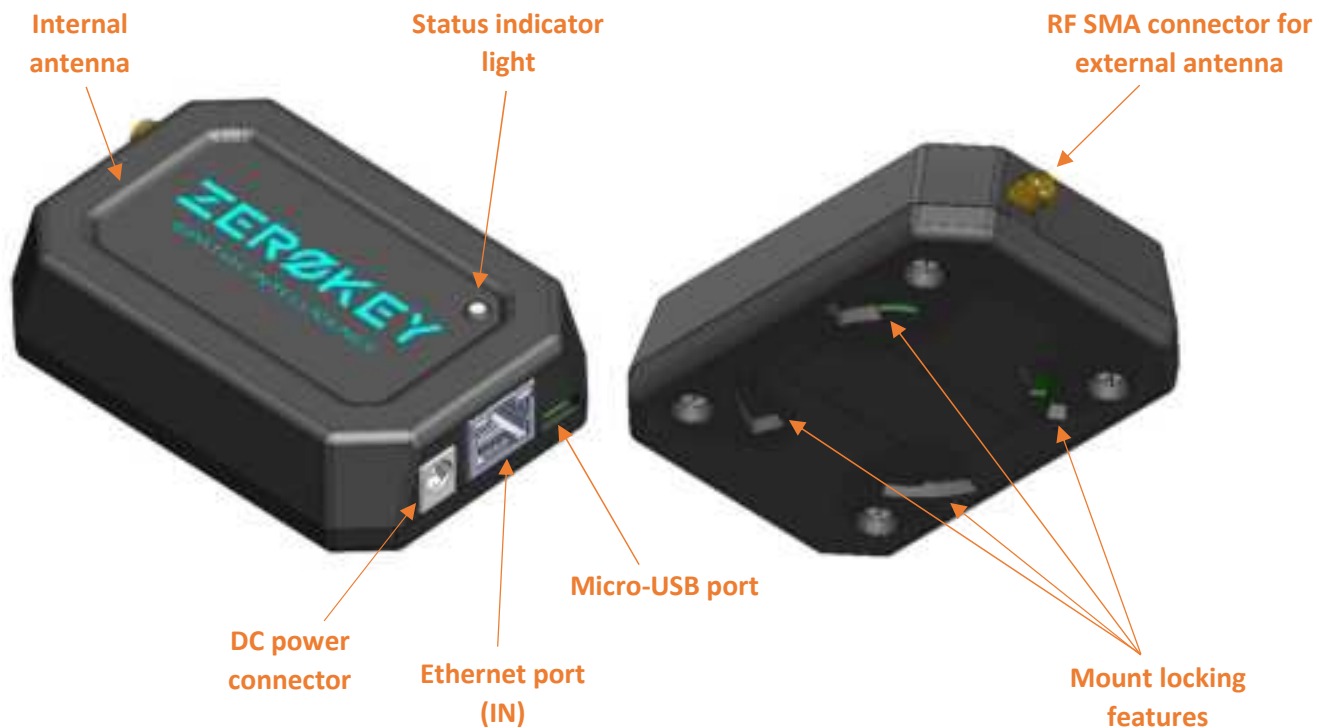
Italics

Emphasizes a word or a phrase.

2 QTM-AGP10 UNIT

This ZeroKey device acts as a communications gateway between the Quantum RTLS system and outside computing resources.

2.1 DEVICE COMPONENTS



2.2 PHYSICAL CHARACTERISTICS

2.2.1 SIZE

Without mount: 24 mm tall, 97 mm wide and 65 mm deep.

With mount: 27 mm, 121 mm wide and 114mm deep.

2.2.2 WEIGHT

Without mount: 76 g

With mount: 94 g

2.2.3 COMMUNICATION / POWER CONNECTORS

The unit requires active connection to power for operation, and can be powered over micro-USB, ethernet, or DC power.

USB

The QTM-AGP10 can be connected to a PC or server via. USB connection to communicate with and supply power to the device. It is recommended to use a different method of connection if permanently installing the device on the roof.



CAUTION: Use only manufacturer/dealer specified USB Cable to power device.

POE

The QTM-AGP10 features an ethernet port which can be used for both Power over Ethernet (PoE) and communications. This port only supports power input. It is recommended to use a PoE-specific cable if using this method to power the device. For best outcomes, use a PoE-specific cable with 24 AWG conductor.

This device conforms to 802.3at Type 2 “PoE+” (30.0W).



CAUTION: Use only manufacturer/dealer specified PoE capable cabling and power ports.

DC POWER CONNECTOR

If communicating with the QTM-AGP10 via. ethernet cable that does not support PoE, the device can be powered using the DC power connector.



CAUTION: Use only manufacturer/dealer specified power supply (Phihong Technology Co., Ltd. Type: PSAC30U-560L6 or equivalent).

2.2.4 WIRELESS ANTENNA

In order to communicate with the rest of the Quantum RTLS system, the QTM-AGP10 features two wireless antenna options.

INTERNAL

The QTM-AGP10 contains an internal antenna with an effective range of 150 meters for short-range applications.

EXTERNAL

The QTM-AGP10 features an RF SMA port to connect a high-gain external antenna. The external antenna has an effective range of 300 meters for long-range applications and wide-area installations.

2.3 ALERTS, WARNINGS, AND INDICATORS

2.3.1 LIGHT ALERT

Upon boot-up, the QTM-AGP10 LED will turn solid white for 1 second, then turn solid red for 1 second before entering idle state.

COLOUR & PATTERN	MEANING
------------------	---------

Blinking green, every 2 seconds	On, normal operation
Solid white	DFU mode - receiving firmware update
Blinking green	Serial data in
Blinking red	Serial data out

3 INSTALLATION

3.1 MOUNTING THE QTM-AGP10

3.1.1 UNIVERSAL MOUNT



To use the universal mount:

- Line up the notches on the mount with the mounting locking features on the bottom of the device
- Twist the mount in a clockwise direction until it clicks into place



- Adjust the universal mount to fit the installation location. For additional fitment options, the mount can be left flat, the sides can be removed using snips or side cutters, or the sides can be folded along the edge. If all edges are folded in, they can interlock with one another at the corners to assemble a universal shape. There are holes on the sides and along the edges so that the unit can be secured with materials such as cable ties, Velcro, or wire.



- Mount the QTM-AGP10 in a secure location where it will maintain connection to power and the PC or data center.



CAUTION: Ensure the device is mounted in a location where all nodes in the Quantum RTLS system will be within range and have line-of-sight.

If not attaching an external antenna, the QTM-AGP10 has an effective range of 150 meters. If using the high-gain external antenna, effective range is extended to 300 meters. Effective range is greatly influenced by structures and objects in the transmission path.

3.2 CONNECTING

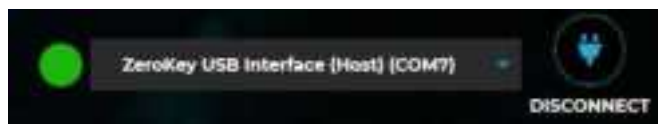
Open the ZeroKey Configuration Tool on a PC. Using any of the methods mentioned in Section 2.2.3, power up the device and connect it to the PC. Upon successful boot up, the LED will turn solid white for

1 second, then turn solid red for 1 second before entering idle state. Once it is in idle state, the LED will blink green every 2 seconds. If powering the device over PoE or USB and the LED does not turn on, ensure the cable supports power delivery.

Upon successful connection, the connection dropdown in the top right corner of the Configuration Tool will automatically populate with the COM port of the device.



Click the **Connect** button to establish connection in the Configuration Tool and start system configuration.



See the ZeroKey Configuration Tool manual for more information on Quantum RTLS system configuration, setup, and usage.

4 OPERATION

In Quantum RTLS, the QTM-AGP10 is used for communication from the Quantum RTLS system, including anchor and mobile nodes. In regular operation the device is mounted in a location where its connection to power and communications will not be disrupted.

Whenever a mobile unit is within Radio range of the device, the mobile will relay positioning information, which can be fed into external applications for real-time logistics, analytics, alerting and more.

5 PRODUCT CARE

5.1 GENERAL CARE

5.1.1 CLEANING

The device can be cleaned using a moistened soft cloth and nonabrasive hand/dish soap. DO NOT IMMERSE. Wipe dry to prevent any moisture build up.

5.1.2 OPERATING TEMPERATURE

This device is designed to operate from -20°C to +60°C ambient. Do not place the unit in direct sun for extended periods without proper ventilation as the unit may exceed the +60°C temperature.

6 REPAIRS AND DISPOSAL

6.1 FIRMWARE UPDATES

The QTM-AGP10 can be updated with new firmware through our over-the-air reprogramming application to correct, improve, or add new features to enhance the unit's performance. Details on how to perform these updates is included with each update installation package.

6.2 OPERATION LOGS

The QTM-AGP10 updates and maintains information concerning its operation and activities as it is being used around the site. This information is used to monitor the health of the unit and improve the device performance. The information collected does not contain any personal information from the user.

6.3 REPAIRING DAMAGED DEVICE

Units that have been damaged or have failed to operate in the field can be returned for repair or replacement with a few exceptions. If the battery has been physically compromised or has been found to be defective, the unit can NOT be legally shipped by any carrier. If the unit is intact but has ceased to operate, it can be returned via an RMA request to our repair center. Please contact your plan administrator for more information and an RMA form.

6.4 DISPOSAL OF DEVICE

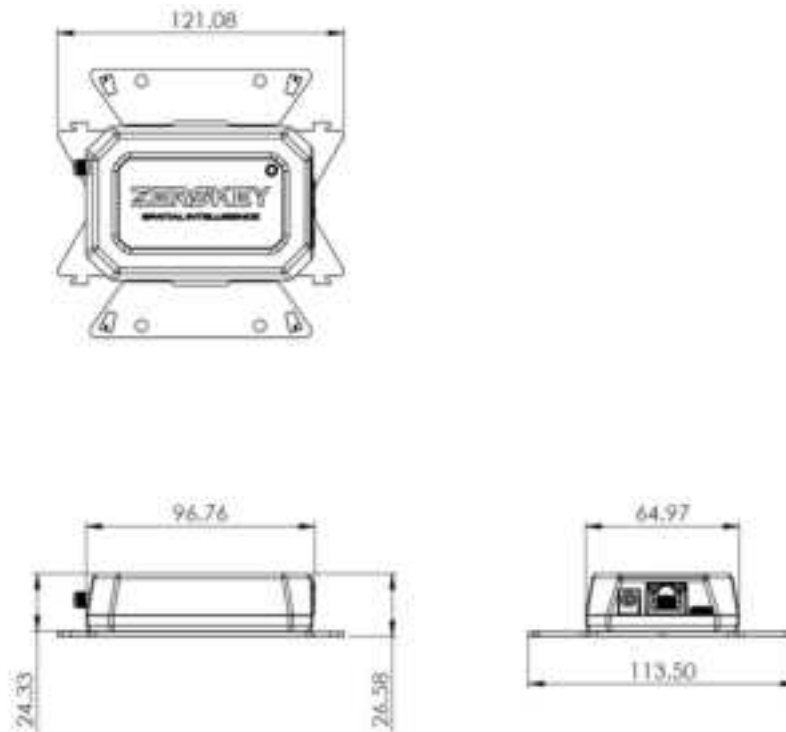
The QTM-AGP10 must be sent to an electronics recycling depot to reclaim the electronics. Please contact your nearest electronics recycling company for details on their collection requirements.

APPENDIX A – SPECIFICATIONS

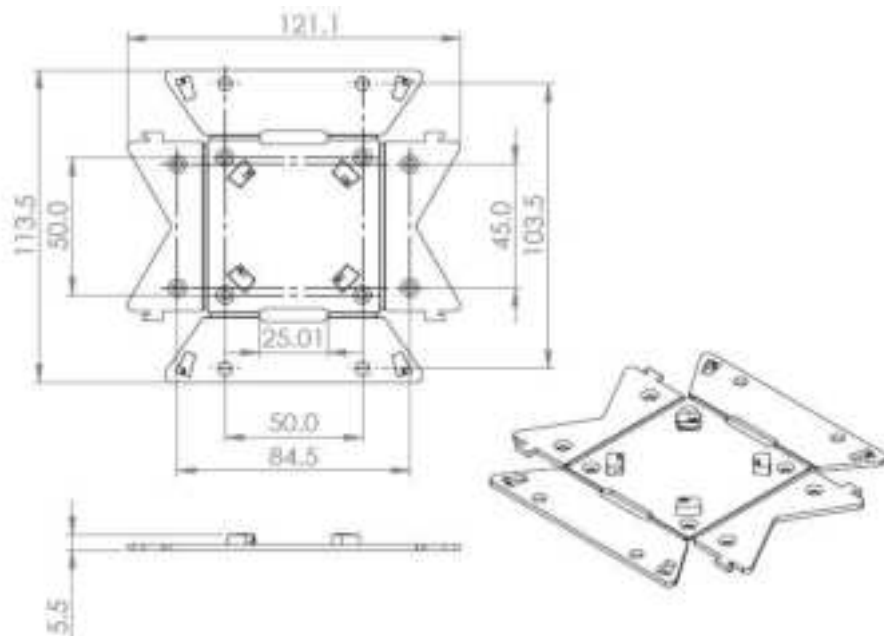
Dimensions	96.8 x 65 x 24.3 mm
Weight	76 g
Input Voltage	50.0-57.0v DC
Input Current	50 mA max
Quiescent Current	0.25 to 0.50 mA
Power-over-Ethernet	802.3at type 2 “PoE+”
Ethernet Speed	10/100 Mbps
Microcontroller	ARM Cortex-M4F @ 64MHz
Ethernet Port	RJ45
USB	USB 2.0 (12Mbps)
DC Power Connector	2.10mm ID 5.5mm OD, center positive.
Peripherals	Status LED, RF SMA connector
Mounting Options	Universal Mounting Plate, 2 sided tape
Operating Temperature	-20 to 60°C
Operating Humidity	5 to 95% Non-Condensing
RF Modulation	GFSK
RF TX Power	0-8 dBm
RF RX Sensitivity	-90 to -97 dBm
Certifications	FCC (US) / IC (Can) / CE (EU) / JRL (JP) / KC (KR)

APPENDIX B – MECHANICAL DRAWINGS

QTM-AGP10



UNIVERSAL MOUNT



APPENDIX C – SYSTEM DIAGRAM

