ZEROKEY QTM-DWR10 Quantum RTLS Wristband Mobile Node User Manual

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Contents

Important Information

05-01-0002
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October 2021

MANUAL, INCLUDING THE PRODUCTS AND SOFTWARE DESCRIBED IN IT.

Revision Tracking

Rev	EC	Author	Reviewer	Approver	Change Notes	Date
V1.0.0	N/A	C. Lem mon	J. Wolf		Initial Release	**2023/01/06**
V1.0.1	N/A	J. Wolf			• Updated Operational temperature to – 10 to +60C	**2023/04/26**
V1.0.2	N/A	J. Wolf			• Updated statements for Class B device • Update operation distance to 5mm	**2023/04/27**
V1.0.3	N/A	J. Wolf			• Updated wording of FCC and IC statements	**2023/05/08**
V1.0.4	N/A	J. Wolf			• Updated FCC statement as per TUV r ecommendation	**2023/06/21**
V1.0.5	N/A	J. Wolf			• Updated FCC and ISLED wording as per TUV recommendation	**2023/07/12**

Certification and Compliance

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

FCC Regulatory Statement

Model: QTM-DWR 10, FCC ID: 2X6 QTMB WR10

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 to 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.

Changes or modifications to this product not authorized by Zerokey could void the electromagnetic compatibility (EMC) and wireless compliance and negate your authority to operate the product.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Part 18

Model: QTM-DWR10, FCC ID: 2AX6LQTMDWR10

This device complies with part 18 of the FCC Rules.

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 to 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.

Responsible party (contact for FCC matters only):
Zerokey Inc.
3120 – 12 St NE
Calgary, Alberta T2E 8T3
Canada
https://zerokey.com/contact/

ISED Regulatory Statement

Model: QTM-DWR 10, IC: 26679-QTMB WR10

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.

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

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

PREFACE

ABOUT THIS GUIDE

This guide contains the information you will need to operate a QTM-DWR10 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-DWR 10 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

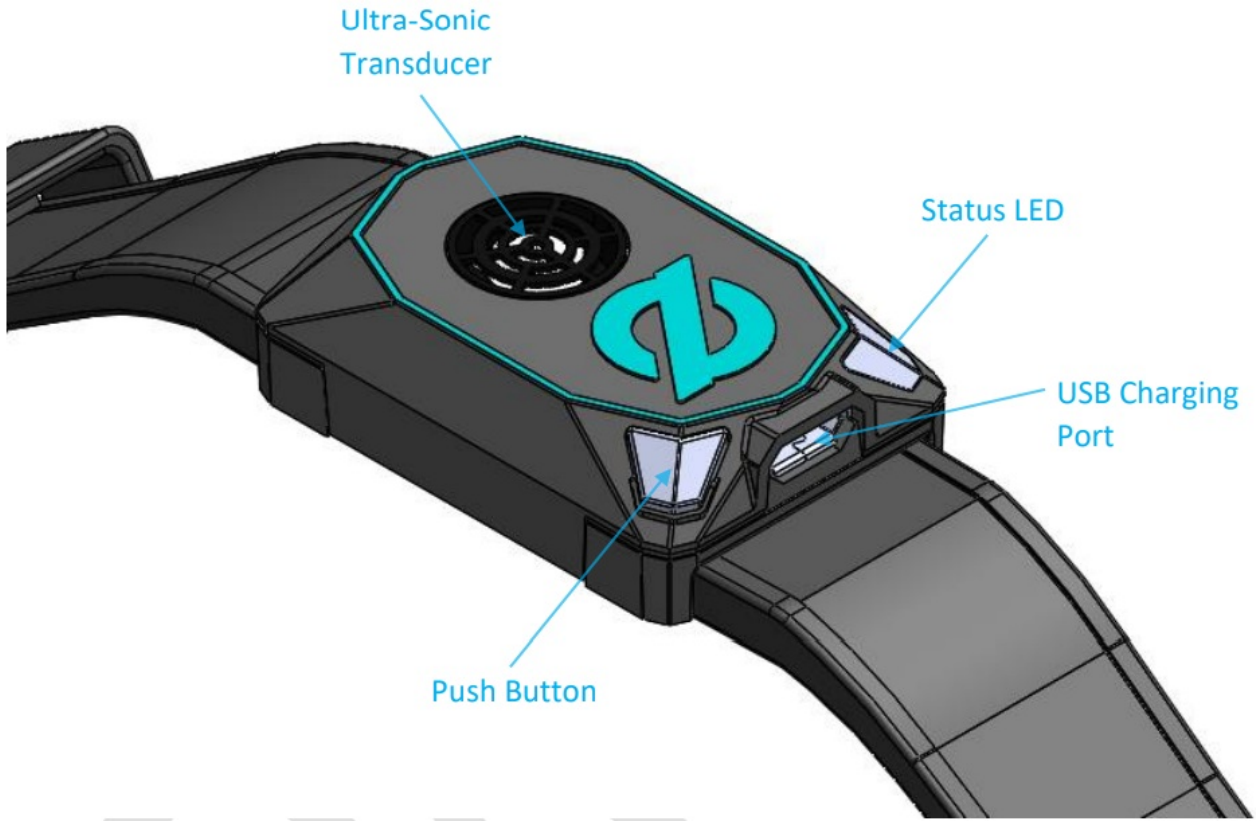
 **CONFIG:** Critical setup information that MUST be followed prior to operation of the system.

TYPOGRAPHY

Bold text: Indicates the name of a menu item, field, or important variable.
Italics: Emphasizes a word or a phrase.

PRODUCT OVERVIEW

The QTM-DWR 10 is a wearable, compact, Mobile node for ZeroKey's Quantum RTLS (real-time location system). A Mobile node is a tracking reference and should be attached to the person or object of interest in the tracking system. The QTM-DWR 10 is designed to be a comfortable, wearable option for tracking of human-centric processes in both complex, small-scale workflows and wide-area tracking.



PHYSICAL CHARACTERISTICS

SIZE

Excluding wristband: 37.5 mm tall, 25.5 mm wide and 13 mm deep. Standard wristband suitable for circumferences: 155mm – 210mm

WEIGHT

With Included standard band: 28 grams. Excluding wristband: 12 grams.

POWER

The QTM-DWR10 is battery powered with an integral rechargeable internal battery. ONLY use the supplied charger and cable to recharge the unit.

CAUTION: Use of another charger could cause damage or impair your ZeroKey device.

CONNECTOR(S)

A micro-USB type connector is used to connect to an external AC adapter for charging the battery. Although possible, it is not recommended to establish a USB connection between the device and a PC unless directed by a ZeroKey support member.

ALERTS, WARNING AND INDICATORS

BATTERY LEVEL INDICATOR

- Battery level for the unit can be viewed when the unit is connected to the in a network, through the Network tab in the ZeroKey Config Tool.

LIGHT ALERT

Upon boot-up, the QTM-DWR 10 LED will turn solid white for 1 second, then turn solid red for 1 second before entering idle state.
Upon boot-up of the QTM-DWR10, the LED will turn solid white for 1 second, then turn solid red for 5 seconds before entering idle state.

COLOUR & PATTERN	MEANING
Blinking green	On, normal operation – idle or positioning
Solid red	Low battery warning – running on battery Charging – connected to power
Solid white	DFU mode – receiving firmware update

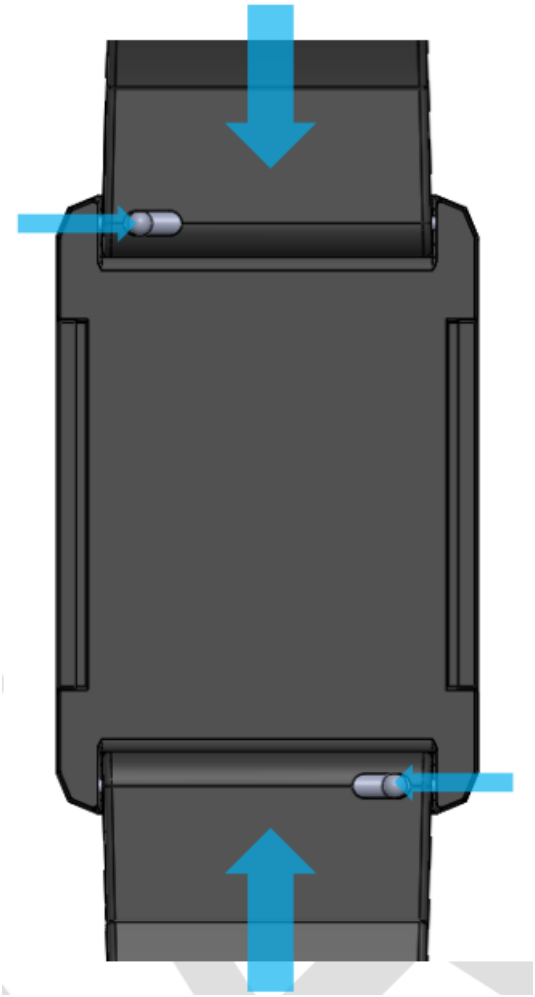
BUTTON FUNCTIONALITY

FUNCTION	ACTION
Turn on	Tap (<0.5 seconds) while device is off
Reset	Tap (<0.5 seconds) while device is on
Turn off	Hold 2 seconds

INSTALLATION

MOUNTING THE QTM-DWR 10

NSTALLING/REMOVING INCLUDED WRISTBAND



- Pull the small metal pin to the side
- Pull the wristband away from the device

PUTTING ON THE STANDARD WRISTBAND

- Wrap the band around the wearer’s wrist
- Slip the end of the rubber band through the buckle until the band is snug but not uncomfortable for the wearer
- Secure any excess scrap with the attached loops.

PUTTING ON THE MAGNETIC BREAKAWAY BAND

- Place the breakaway strap around the user’s wrist at the desired tightness.
- The magnetic strap will automatically clasp itself together.

CONNECTING

The QTM-DWR10 features an internal rechargeable lithium-ion battery. Once charged and powered on, the device will appear in the Quantum RTLS network and can be configured further via software. chain.
For best outcomes, consider the following recommendations:

- Ensure the unit is in clear line of sight to at least 4 anchors while configuring.
- Ensure the unit is in clear line of sight to the Gateway

- Ensure the unit is on the same channel as the Gateway and Quantum RTLS System.

Once power has been supplied to the system, refer to section 2.3.1 to verify that all devices are on and on and have entered idle state. Before affixing the QTM-DWR 10, ensure that the device is detected by the ZeroKey Spatial Intelligence platform.

NOTE: For more information on anchor network and placement requirements, see ZeroKey Support Materials at **zerokey.com**.

CALIBRATION

The QTM-DWR10 is one component of a greater positioning system. To calibrate the ZeroKey Quantum RTLS for tracking the QTM-DWR 10, see the ZeroKey Quantum RTLS System Guide.

NOTE: For more information on system calibration, see ZeroKey Support Materials at **zerokey.com**.

OPERATION

The QTM-DWR10 is a Quantum RTLS Mobile node. In Quantum RTLS, the mobile node is a tracking reference and should be attached to the person or object of interest in the tracking system. In regular operation the user attaches the mobile node to their clothing, equipment or asset in an outward-facing manner. The user then goes about their standard day to day activities. The QTM-DWR 10 will provide updated location data to the Zero Key Spatial Intelligence Platform whenever the unit detects that it is moving.

PRODUCT CARE

GENERAL CARE

CLEANING

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

OPERATING TEMPERATURE

This device is designed to operate from -10°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. Operating the unit below 0°C may result in degraded battery performance.

CAUTION: The device will NOT charge the temperature is below 0°C or above 45°C.

REPAIRS AND DISPOSAL

FIRMWARE UPDATES

The QTM-DWR10 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.

OPERATION LOGS

The QTM-DWR10 updates and maintains information concerning its operation and activities as it is being used around the site. This information is used to the monitor the health of the unit and improve the device performance. The information collected does not contain any personal information from the user.

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 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 to begin the RMA process.

DISPOSAL OF DEVICE

The QTM-DWR10 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.

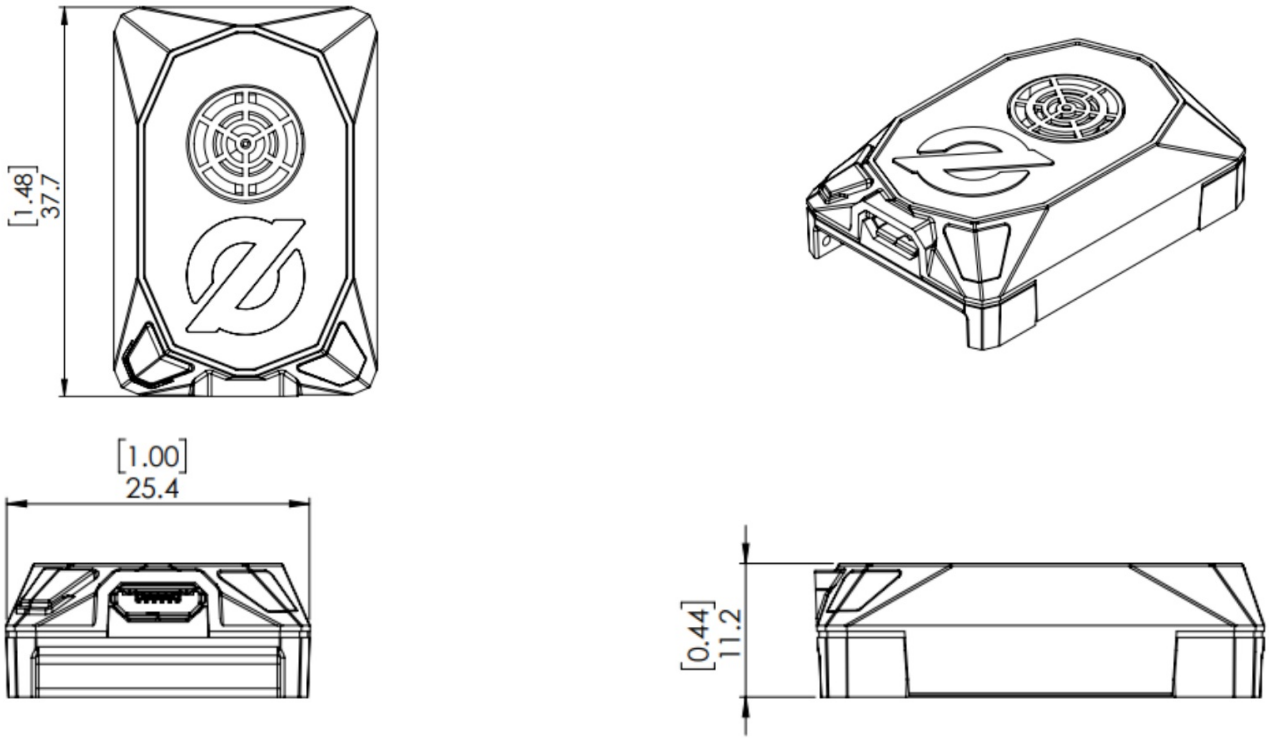
APPENDIX A – SPECIFICATIONS

Dimensions	37.5 x 25.5 x 13 mm
Weight	12g (sensor)
Accuracy	1.5mm[1]
Update Rate	20 Hz
Battery Power	Rechargeable Li-ion Polymer Battery
Battery Life	Up to 24 Hours[2]
Maximum Range	20m
Wi-Fi Coexistence	Yes
Bluetooth Coexistence	Yes
Operating Temperature	-10 to 60 ºC[3]
Operating Humidity	5 to 95% Non-condensing
Shock	200g (max)
Vibration	3g (max)
Interfaces	Status LED, Push Button
Mounting Options	Watch Strap, Break-away Strap
RF Band	2.4 GHz ISM
RF Modulation	GFSK
RF TX Power	0-8 dBm
RF RX Sensitivity	-90 to -97 dBm
RF TX Burst Duration	2.8 – 3.2 ms
Ultrasonic Frequency Band	50.0KHz +/- 0.1KHz
Ultrasonic Output	96 dB SPL (max)
Ultrasonic Duty Cycle	2.8% (min) 3.2% (max)
Certifications	FCC (US) / IC (Can) / CE (EU) / JRL (JP) / KC (KR)

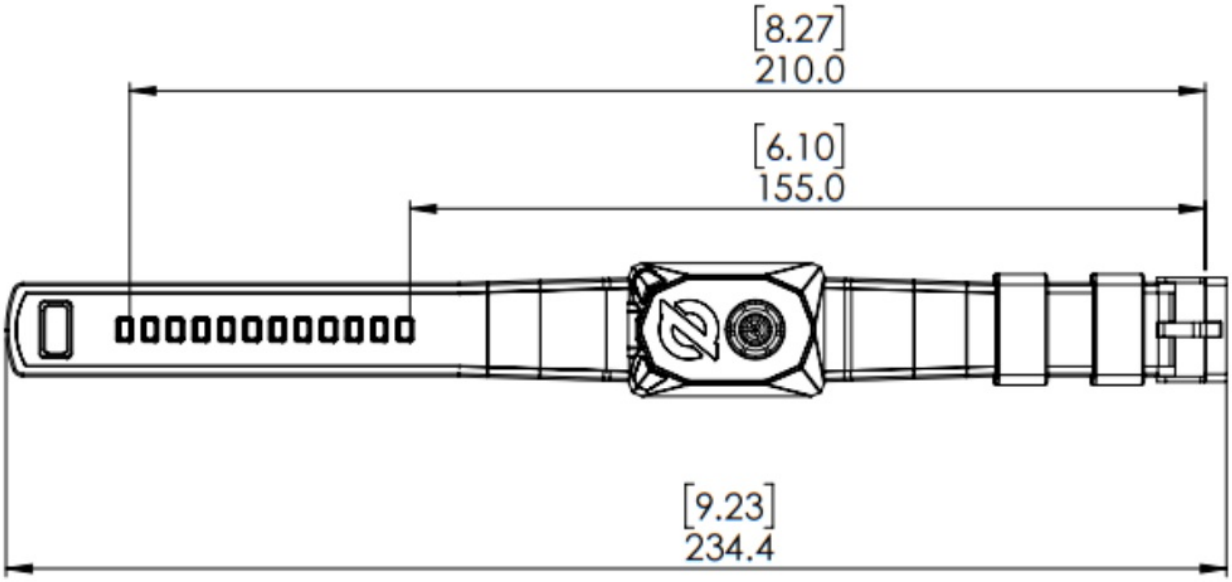
1. Under unobstructed conditions with view to 6 anchor nodes with ideal geometry.
2. Depending on firmware version and operating environment.
3. Operation below 0 OC will result in degraded battery performance.

APPENDIX B – MECHANICAL DRAWINGS

QTM-DWR 10



WITH WRISTBAND



APPENDIX C – OPTIONAL BREAKAWAY WRISTBAND

ZERØKEY

SPATIAL INTELLIGENCE

Documents / Resources

	ZEROKEY QTM-DWR10 Quantum RTLS Wristband Mobile Node [pdf] User Manual QTMDWR10 2AX6LQTMDWR10 2AX6LQTMDWR10, QTM-DWR10 Quantum RTLS Wristband Mobile Node, QTM-DWR10, Quantum RTLS Wristband Mobile Node, RTLS Wristband Mobile Node, Mobile Node, Node

References

- ZeroKey Quantum RTLS™ - Home
- ZeroKey Quantum RTLS™ - Home
- ZeroKey Quantum RTLS™ - Home
- ZeroKey - Contact
- User Manual