BHTC02 User's Manual

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Version 1.1

Introduction

This sensor uses advance signal processing algorithms and novel biomechanical models of human motion to identify a complete physical activity map of the user from data measured by a single, lightweight, wearable motion sensor. This User's Manual will give you important information for using this motion sensor.

Intended Use

This sensor is intended for long-term monitoring of gait (number of steps) and falls (number of falls). It is neither offered, marketed nor intended for use as a medical device, as defined by the Food and Drug Administration. This sensor is intended and marketed solely for use in research settings.

Components of Your System

BHTC02 consists of a wearable motion sensor, lanyard, wristband, and a Micro USB charging unit for the sensor. The motion sensor can be worn around the neck or on the wrist using the provided lanyard or wristband attachment accessories respectively.

Safety Instructions

Make sure you have read and understood all the information listed in this document prior to using the motion sensor.

- If a motion sensor is used among numerous individuals and placed directly onto the patient (instead of over clothing) it should be cleaned and disinfected in an appropriate manner prior to re-use. Sensors can be cleaned using an alcohol swab.
- Ensure that motion sensor straps are not cutting off blood flow.
- Motion sensors should be charged only using the charger provided with your system.

Warning: The sensor contains a lithium polymer battery. Please follow local regulations regarding disposal or recycling of lithium-containing electronics. Do not throw the device away in the trash.

FCC Compliance Information

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 not expressly approved by Best Buy Co., Inc. could void the user's authority to operate the equipment.

This BHTC Research Device model BHTC02 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 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.

For this or other issues, please contact:

LRdevice@bestbuy.com

Best Buy Co., Inc
Boston Health Technology Center
42 Pleasant St, Suite 2
Watertown, MA 02472

WARNING!
FCC Exposure Statement

This portable equipment with its antenna complies with FCC's RF radiation exposure limits set forth for an uncontrolled environment. To maintain compliance, follow the instructions below:

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. Avoid direct contact to the antenna or keep contact to a minimum while using this equipment.

Getting to Know Your Motion Sensors

The motion sensor is intended to be worn around the neck or on the wrist. The side with the small square recessed Interaction Button should be facing away from the body. The sensor label is on the side of the motion sensor that should be facing the body.

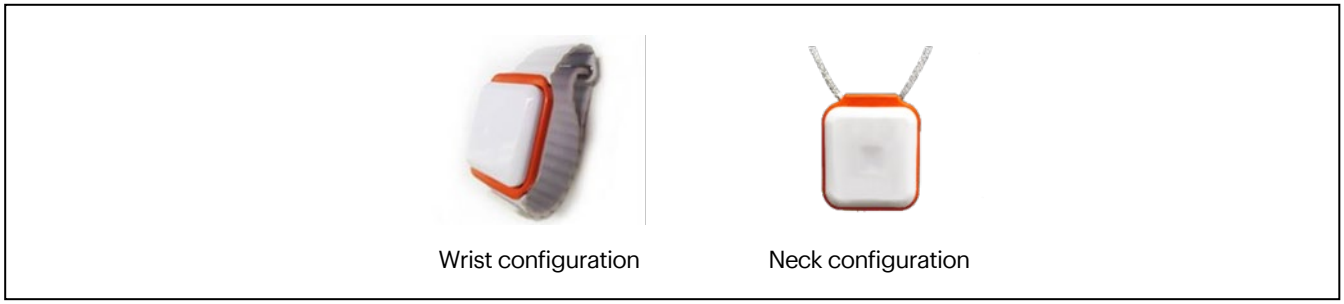

Figure 1. Sensor Placement in Attachment Accessories

Recharging the Sensor

The motion sensor is equipped with a rechargeable lithium battery. When recharging, please use only the supplied charging unit. If the sensor unit is powered off the unit will still be charging. If the sensor unit is powered on, the charger indicator will light up, indicating that the sensor unit has been correctly plugged in. When the battery is fully charged, the charger indicator turns steady green.

The normal charge time is about 1 hour. For a highly depleted battery, a longer recharge and battery conditioning period might be needed.

Accessing the Sensor's Charging Port

The micro-USB port located on the bottom side of the motion sensor is for recharging the sensor using the supplied charging unit.

Remove the orange cover to access the charging port. Remember the orientation of the sensor (USB port facing down) with respect to the attachment accessory before removing the orange cover. Pressing outward on the thickest part of the cover where the wrist strap or lanyard string is connected will allow the orange cover to pop off. Pay attention to the orientation of the sensor and replace the orange cover after charging is complete.

Storage and Maintenance

Motion Sensors should be stored in a cool dry place. Motion sensors should be fully charged prior to storage to maximize battery lifetime. If motion sensors become dirty, they can be cleaned using an alcohol swab. During cleaning be careful not to allow moisture into the USB port.

Sensor's Interaction Button

The recessed Interaction Button is used to power-on, power-off, or display the status of the motion sensor.

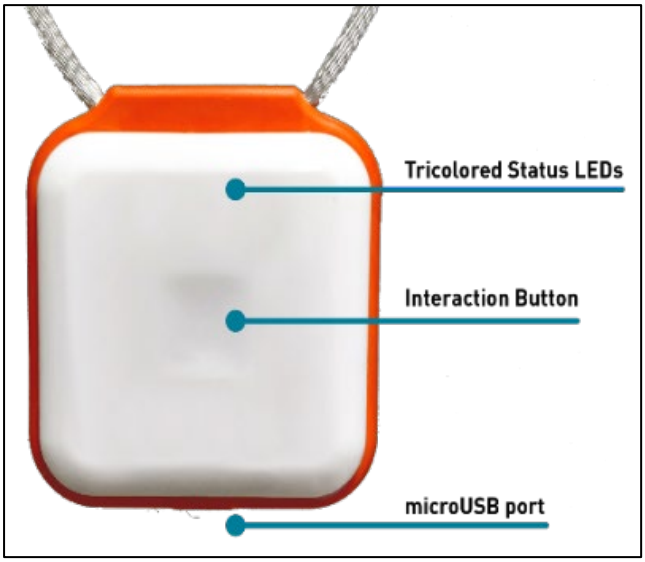

Figure 2. Interaction Button

LED Guide for Interaction Button

If the motion sensor's status LED is continually flashing yellow the battery is low and the sensor should be planned to be recharged soon. If the motion sensor status LED is continually flashing red the battery is critically low and the sensor should be recharged immediately.

The motion sensor should be recharged using the provided charger. The status LED will flash **green** during charging. When the battery is fully charged, the LED will become a steady **green**.

How To	Perform w/ Interaction Button	LED Feedback
Power sensor ON	Hold down for 3 seconds	3 quick **blue** LED flashes
Power sensor OFF		3 quick **red** LED flashes
Check if sensor is ON	One short press	1 quick **green** LED flash (Also indicates battery level of sensor is good)
Check if sensor if OFF		1 quick **red** LED flash

Figure 3. LED Interaction Guide

Data Collection

Sensor Placement (on the body)

The motion sensor is designed to be worn by the user around their neck or on their wrist using the provided lanyard or wristband attachments respectively. The recessed Interaction button should be facing away from the body.

Recording Data

To begin recording data, turn the motion sensor on by pressing and holding the Interaction button for 3 seconds. The LED will flash blue three times when the motion sensor is turned on.

The user should place the motion sensor around the neck or on the wrist using the provided lanyard or wristband attachment accessories. Once the motion sensor is in place, it is now ready to collect and record physical activity and fall data.

Data Transfer

Recorded data is transferred to a computer using the micro-USB cable provided with the motion sensor. In some cases, the motion sensor may be able to connect to a mobile device via Bluetooth in order to offload and visualize data.

Specifications

Condition	Specification
Waterproof rating	IPX7
Sampling Frequency	50 Hz
Accelerometer	± 2/4*g*
Motion Sensor Size	3.5 cm x 3.5 cm x 1.5 cm
Motion Sensor Weight	24 grams (0.85 oz)
Storage Temperature	-30 to 50 degrees C
Operating Temperature	10 to 40 degrees C
Battery Life	200 hours (upgradeable to 340 hours)
Bluetooth Radio	Bluetooth v4.2, Class II, FCC ID: UQ5BHTC02

Certifications

FCC ID: UQ5BHTC02

DISCLAIMER:

This platform and algorithms for physical activity measurement are protected by U.S. Patent No. 8,206,325, and other patents pending. This sensor is intended and marketed solely for use in research settings.

Information in this document is subject to change without notice