

User Manual
of
UHF Bib Tag Reader

TUHF-READER-9407

CHAPTER 1

Introduction

This *User Manual* provides instructions for installing and operating the TUHF-READER-9407



Photo of TUHF-READER-9407

This document is designed for use by the timekeeping system integrators and software developers – those who wish to develop extended systems that take full advantage of the UHF BIB TAG READER's capabilities.

The following help documents are available,

- *Quick Installation Guide* – a quick start guide for installing and running the TUHF-READER-9407.
- *Reader Interface Guide* – an overview of the communication interfaces for TUHF-READER-9407.
- *Demo Software Guide* – details installing and operating the TUHF Timekeeping Demo Software.
- *Registration Guide* – a quick reference guide to register the UHF bib tags.

UHF Bib Tag Reader Overview

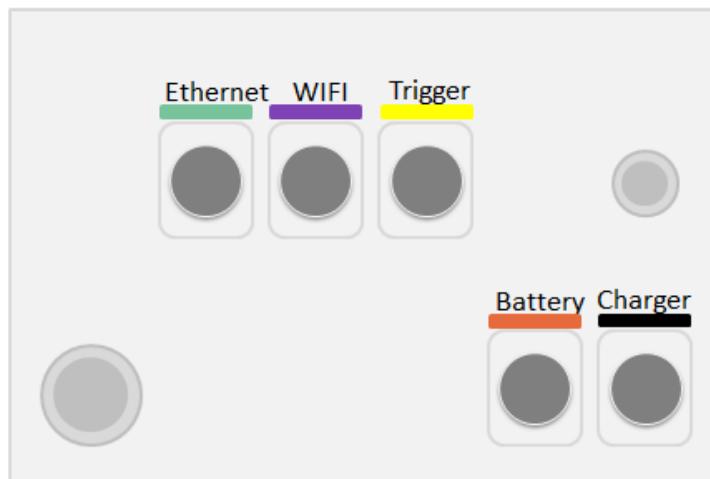
TUHF-READER-9407 is an UHF RFID Reader specially designed to read the UHF Bib Tags.



*UHF Bib Tags are made by **ACTIVE NETWORK**. They are based on ISO 18000-6C protocol and programmed according to DES algorithm.*

Connected with the TUHF Timekeeping Lines, the reader reads contactless all the bib tags that being worn by the runners when they are running across the timekeeping line.

Reader Panel



The reader panel (shown above) houses the following: (from left to right)

- *Power ON/OFF Button* – a self-locking switch which switch on/off the power of the reader.
- *Ethernet Port* – provide LAN communication for tags' data and configuration.
- *WIFI Port* – Not Used. Will provide Wireless communication for tags' data and configuration.
- *Trigger Port* – connect to external trigger button or external

beeper.

- *Battery Port* – connect to external battery for the power backup.
- *Charger Port* – socket for charging the internal battery.
- *Trigger Button* – generate a time stamp.

Antenna Ports

The TUHF-READER-9407 has 4 pcs TNC ports, which support 4 pcs TUHF Timekeeping Antenna Units.



The 4 ports are distributed in trapezoid. Such structure makes it easier to assemble cables and to be distinguished by LED indicators.

LEDs

TUHF-READER-9407 uses LEDs to indicate the status of the reader, the tags read, the antennas connected and the battery capacity.



- *Four Antenna LEDs* are distributed in a ladder type on the cover. It is a very easy way to match the ports.
- *Smart LEDs*
 - Power ON: 6 LEDs lighten ascendingly for 0.5s.
 - Trigger: All 6 LEDs lighten together for 0.5s.
 - Reading bib tags: number of LEDs indicates the amount of bibs passing the timekeeping line
- *Battery Indicator*, to indicate the remaining capacity of the 12V 7.2AH battery.

CHAPTER 2

Installation and Operation

This chapter provides the installation and operation information.

Charging

The reader is powered by an internal 12V sealed lead-acid battery. If the battery indicator shows the remaining capacity is less than 5%, the reader need to be charged to avoid damaging battery.

As shown in figure below, insert the round plug of the charger into “Charger” socket. After a click, the plug will be well locked. The other side of charger is 110/220V AC plug.



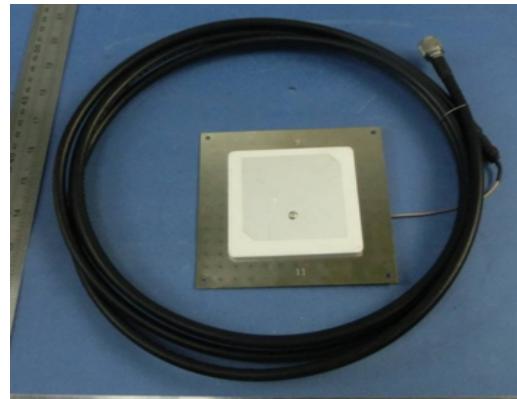
It is recommended to switch off the reader while charging. Full charge will cost 3~4 hours. Please push the “push” bar before detaching the plug.

Connect to Antenna

Antennas should be connected by RF cables before switch on the reader. As shown in figure below, fasten the connector to connect the cable to the reader on the “ANT1” port



The other end of the cable is connected to Antenna through connector as figure below.



Start-up

Press the “*Power ON/OFF*” button, and then the smart LEDs will lighten ascendingly. If the start-up process goes well, all of the smart LEDs will lighten for 0.5 seconds, and the antenna LEDs correspond to the connected antennas will lighten. Meanwhile the battery indicator shows the current battery capacity.



Trigger

The trigger function could be achieved by “*internal trigger button*” or “*external trigger port*”. Press the trigger button, then all of smart LEDs will lighten for 0.5s, system re-scan the antenna ports, and record the time of pressing the button.

Read Tags

There are two UHF tags pasted on each bib. They have the same EPC memory and are considered as one “Bib Tag”.

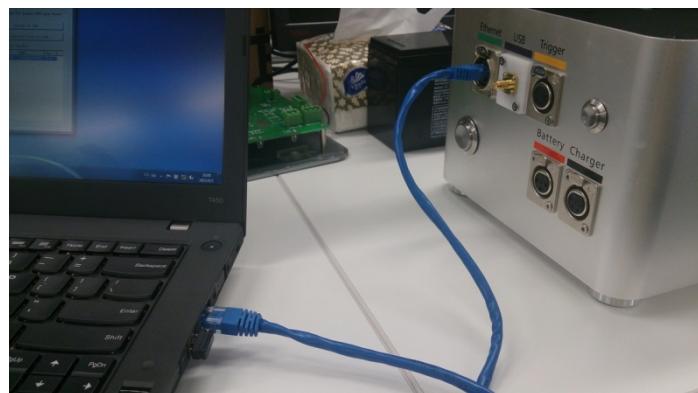
TUHF-READER-9407 records all the bib tags that are going across the timekeeping line connected. As soon as the bib tags enter the reading area, the smart LEDs lighten to show the number of tags.

- *Reading 1,2,3,4,5 bib tags leads to 1,2,3,4,5 smart LEDs lighten;*
- *Reading 6 or more than 6 bib tags leads to 6 smart LEDs lighten.*

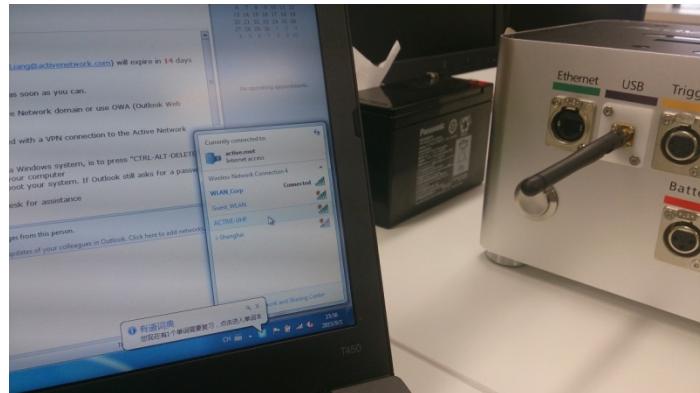
All the read data are sent out and saved in the internal memory.

Data transmission

UHF Bib Tag Reader is configured to be TCP Server (default IP address = 192.168.1.108; Port = 10000). Connect the reader with PC through Ethernet cable, all the tag data and timestamps when reading them will be obtained.



Enable wireless connection and access “Active-UHF” network, then PC will connect to the reader by WIFI. The 2.45GHz antenna needs to be assembled on the WIFI port at this time.



FCC Information and Copyright

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.

15.19 Labelling requirements.

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 the party responsible for compliance could void the user's authority to operate the equipment.