User Manual

of

UHF Bib Tag Reader

TUHF-READER-3920

FCC ID: 2AGTK3920

FCC Section 15.19

This device complies with Part15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) thisdevice must accept any interference received,including interference that may not cause undesired operation.

Information to User (FCC section 15.105)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense

Information to User

The user is cautioned that any changes or modifications not expressly approved by IPICO or authorized representative could void the user's authority to operate the equipment.

CHAPTER 1
Introduction

This *User Manual*provides instructions for installing and operating theTUHF-READER-3920

Photo of TUHF-READER-3920

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-3920.
- ■ *Reader Interface Guide* – an overview of the communication interfaces for TUHF-READER-3920.
- ■ *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-3920 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.
- *SIM*–Not Used.
- *Buzzer Port* – connect to 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-3920 has 4 pcsnon-standard Reversed TNC ports, which support 4 pcs TUHF Timekeeping Antenna Units.

The total maximum EIRP is less than 10dBm. The attenuator's value is 10dBi.
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-3920 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.

Specifications

Name	UHF Bib Tag Reader
Model Number	TUHF-READER-3920
Operating Frequency	912.5MHz ~ 917.5MHz
Hopping List	912.5MHz, 913MHz, 913.5MHz, 914MHz, 914.5MHz, 915MHz, 915.5MHz, 916MHz, 916.5MHz, 917MHz, 917.5MHz
Internal Battery	12V 7.2Ah sealed lead-acid battery
Dimensions	20cm x 20cm x 15cm
Weight	4.4kg
Operating Environment	Operating Temperature: -20 ~+70℃ Storage Temperature: -30 ~ +75℃ Operating Humidity: 5% ~ 95% RH
antenna type	UHF RFID Plate Antenna
antenna gain	5 dBi

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 120V 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 before switching on the reader. The tail of antenna hasthe non-standard Reversed TNC end connector. As shown in figure below, fasten the Reversed TNC connector to the reader on the "ANT1" port

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The antenna could be as figure below.
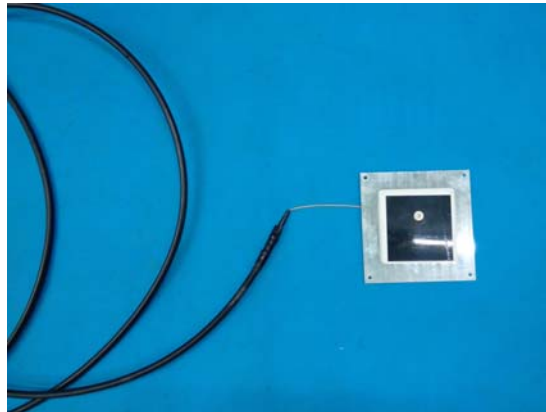
Start-up

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-3920 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.