



**Garrison Rugged 2.4GHz  
RFID Active Tag  
(Model: HKRAT-RT02)**

# User Manual

Update



**By Hong Kong RFID Ltd.**

New Product Development Team

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## FCC Compliance

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

## CE Compliance

### CAUTION:

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

### Disposal:

All electrical and electronic products including batteries should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.



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## Contents

|                                                              |    |
|--------------------------------------------------------------|----|
| Disclaimer .....                                             | 2  |
| Enterprise License.....                                      | 2  |
| Important Notice .....                                       | 2  |
| FCC Compliance .....                                         | 3  |
| CE Compliance .....                                          | 4  |
| Introduction .....                                           | 7  |
| Feature .....                                                | 7  |
| Applications.....                                            | 8  |
| Vehicle management .....                                     | 8  |
| Warehouse management .....                                   | 8  |
| Heavy dusty, harsh environment applications.....             | 8  |
| Battery Installation and Power On .....                      | 9  |
| Method to Read Tag ID .....                                  | 12 |
| Empress™ EM02 Handheld .....                                 | 13 |
| PC with Empress™ EM02 Reader.....                            | 14 |
| Problem Shooting .....                                       | 15 |
| Signal Unstable .....                                        | 15 |
| No signals after battery installation or replacement.....    | 15 |
| Case Damaged .....                                           | 15 |
| Contact plate of the battery rusted .....                    | 16 |
| Part or the whole of the case body turns yellow .....        | 17 |
| Can't purchase the proper battery .....                      | 17 |
| Contact plate of the battery is deformed or floated up ..... | 17 |
| Sticker fall off.....                                        | 17 |

---

|                                                         |           |
|---------------------------------------------------------|-----------|
| Problems about reading range.....                       | 17        |
| Specification.....                                      | 18        |
| Technological Specification .....                       | 18        |
| Power Supply Specification .....                        | 18        |
| <i>Environmental &amp; Hardware Specification .....</i> | <i>18</i> |
| Product Dimension .....                                 | 19        |
| Maintenance .....                                       | 20        |
| Contact Information .....                               | 21        |
| DISCLAIMER.....                                         | 21        |

## Introduction

The **RT02** Active Tag provides excellent reading range and reliability for industrial applications in extreme or harsh environments like construction sites and tunnels.

With its robust design, it is durable performs reliably in environments with metal and other non-RF-friendly items. This ensures an accurate readability. It is also suitable for working under heavy duty environment.

RT02 enables the most cost effective operation in the long term. Unlike other active RFID tags, RT02's battery is replaceable but the tag is still waterproof and dust-proof. Operators can replace a new battery when it runs out.

RT02's mounting design allows users to fix it on various items easily. It is user-friendly and convenient to install.

## Feature

- ✓ Waterproof, Dust proof, Shock proof, IP65
- ✓ Replaceable Battery
- ✓ Convenient Mounting Design
- ✓ Stable Performance
- ✓ Durable with special plastic

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## Applications

The active RT02 provides excellent RF performance, compact in size and convenient to be used together with keychain. With relatively low cost, RT02 also has excellent reading range and reliability for industrial applications such as Vehicle management, Warehouse management and so on.

### *Vehicle management*

With RT02's mounting design, RT02 can be fixed on vehicle easily. When the vehicles go in or out a zone, reader will read the tag and the vehicle information will be shown in the system simultaneously. It can make the vehicle management more convenient.

### *Warehouse management*

With RT02's excellent anti-collision function, reader can read more than 100 tags simultaneously. When a load of goods go in or out a warehouse, reader will read the tags simultaneously and the goods' information will be recorded immediately. It makes a warehouse management much easier.

### *Heavy dusty, harsh environment applications*

RT02 is waterproof, dust proof and shock proof. It makes RT02 can work in a heavy dusty and harsh environment such as construction site.

**Application cases are endless. Please send E-mail to [sales@hk-rfid.com](mailto:sales@hk-rfid.com) if you are interested.**

## Battery Installation and Power On

- i. Loosen the two screws



- ii. Remove the battery cover.



- iii. Insert the CR2450 battery from the side with its positive pole upward and negative pole downward.  
(Please do not use other battery model)



- iv. Lay the battery cover flat on the compartment that has installed battery and put the two screws into the holes.



- v. Screw the nuts tightly.



- vi. Check if latches are in right place or so long as the whole cover is not deformed, it's OK
- vii. Finish installation, RT02 start work

Because RT02 has factory default setting when delivery, customers simply install the battery according to above steps and the tag will start communication with readers.

## Method to Read Tag ID

Hong Kong RFID Limited provide two device for reading active Tag which include RR02. One of them can be used for using RR02 Tag ID.

1. Use Empress™ EM02 Handheld



2. Use PC with Empress™ EM02



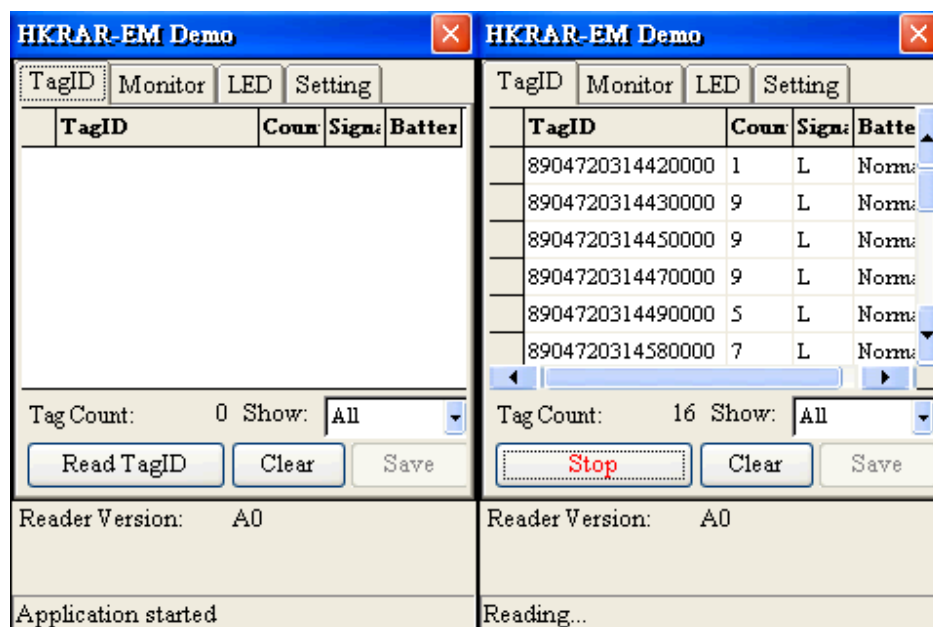
## Empress™ EM02 Handheld

(Please reference to Empress™ EM02 Handheld User Manual for Detail)

1. Open the apps on the Handheld



2. Click “Read TagID” to discover surrounding all active Tag with include RR02



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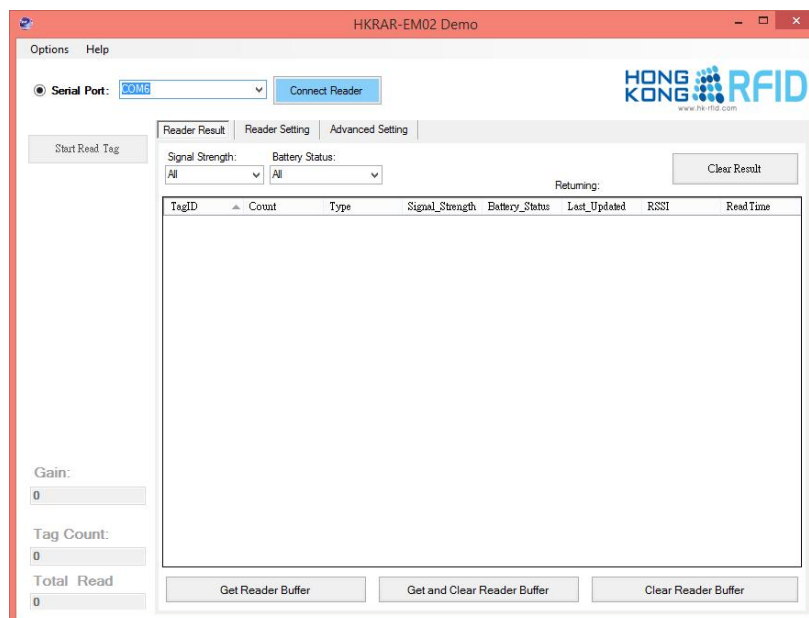
## PC with Empress™ EM02 Reader

(Please reference to Empress™ EM02 User Manual for Detail)

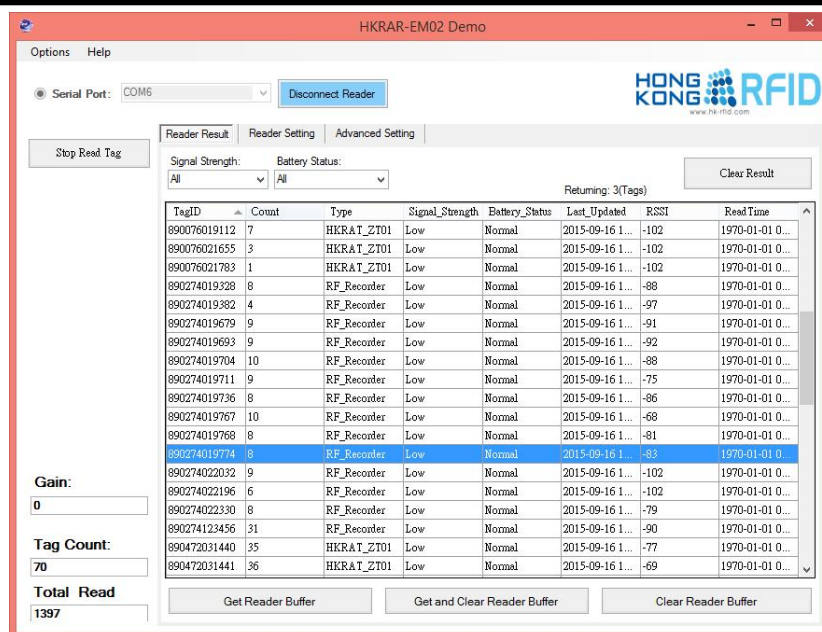
1. Connect Empress™ EM02 to PC (Comport/Ethernet)



2. Open the software on PC



3. Click “Start read” to discover surrounding all active Tag with include RR02



## Problem Shooting

### *Signal Unstable*

| Possible Cause              | Solutions                                                     |
|-----------------------------|---------------------------------------------------------------|
| Interfered by metal objects | Check all objects around the tag and remove all metal objects |
| Low battery                 | Replace Battery. ( Refer to <i>Battery Installation</i> )     |

### *No signals after battery installation or replacement*

| Possible Cause                | Solutions                                                        |
|-------------------------------|------------------------------------------------------------------|
| Improper battery installation | Check battery status                                             |
| Low battery                   | Replace battery (Refer to <i>Battery Installation</i> )          |
| Reader installed wrongly      | Check the reader installation (Refer to EMWF reader User Manual) |

### *Case Damaged*

| Possible Cause                          | Solutions                                    |
|-----------------------------------------|----------------------------------------------|
| Improper storage or hit by hard objects | Please contact your supplier for replacement |

|  |                                                                |
|--|----------------------------------------------------------------|
|  | provided that is non-artificial damage during Guarantee Period |
|--|----------------------------------------------------------------|

*Contact plate of the battery rusted*

| Possible Cause                           | Solutions                                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------------------|
| Improper storage or affected by moisture | 1) Please contact your supplier to purchase a new tag.<br>2) Put it in dry and airy place |

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*Part or the whole of the case body turns yellow*

| Possible Cause                                            | Solutions                                                                                                                               |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Improper storage or under direct sunlight for a long time | 1) Please contact your supplier to purchase a new tag.<br>2) Keep it in shady, cool and airy place<br>3) Avoid direct sunlight exposure |

*Can't purchase the proper battery*

| Possible Cause                    | Solutions                    |
|-----------------------------------|------------------------------|
| Can't purchase the proper battery | Please contact your supplier |

*Contact plate of the battery is deformed or floated up*

| Possible Cause                   | Solutions                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------|
| Battery is installed incorrectly | 1) Please Refer to <i>Battery Installation</i> .<br>2) Please contact your supplier to purchase a new tag. |

*Sticker fall off*

| Possible Cause                           | Solutions                                                                               |
|------------------------------------------|-----------------------------------------------------------------------------------------|
| Improper storage or affected by moisture | 1) Please contact your supplier to purchase new tags<br>2) Put it in dry and airy place |

*Problems about reading range*

| Possible Cause                                                                                                            | Solutions                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Affected by environmental condition such as ambient humidity, surrounded by water-rich objects or metal objects and so on | 1) Check ambient conditions, try to avoid water-rich objects or metal objects<br>2) Use it in dry and airy open space |
| The direction of antenna of the reader                                                                                    | Adjust the direction of the antenna                                                                                   |

## Specification

### *Technological Specification*

|                    |                                                                                                                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency          | 2.4GHz ~2.5GHz ISM                                                                                                                                                                              |
| RF Power Output    | 0dBm (1mW)                                                                                                                                                                                      |
| Power              | 16~18μA, 3V                                                                                                                                                                                     |
| Reading Range      | 30~ 50m ( Line of Sight)                                                                                                                                                                        |
| Modulation         | GFSK                                                                                                                                                                                            |
| Data Rate          | 1 Mbps                                                                                                                                                                                          |
| Communication Mode | Once every second, with low voltage warning signal, only can send out signals (Empress Reader is required to receiving ID and low voltage warning signals, please contact sales representative) |
| Anti-collision     | In general, 100 tags can be read simultaneously, depends on reader. Longer reading time can read more than 100 tags. 500 tags can be read within 10 seconds.                                    |
| Operation          | Read Only, with Unique ID                                                                                                                                                                       |

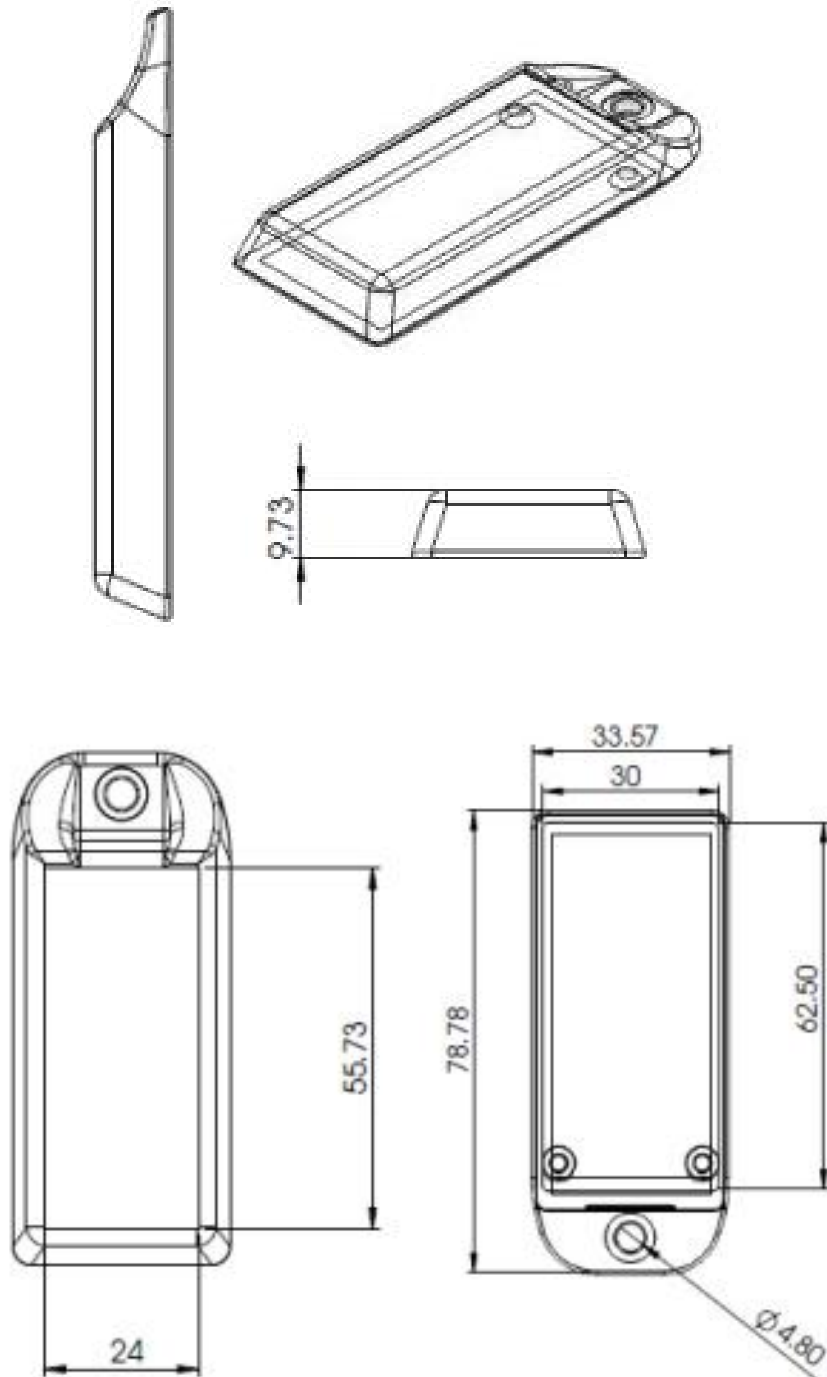
### *Power Supply Specification*

|                            |                                        |
|----------------------------|----------------------------------------|
| Battery                    | CR 2450 (Battery Replaceable)          |
| Battery Life for Operation | About 1-3 year, depends on Tx interval |

### *Environmental & Hardware Specification*

|                     |                         |
|---------------------|-------------------------|
| Working Temperature | -20°C to 60°C           |
| Case Material       | Plastic                 |
| Case Dimension      | 78.8mm x 33.6mm x 9.7mm |

## Product Dimension



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## Maintenance

### **Warranty for RFID Device (Consumables)**

#### **TERMS and CONDITIONS**

HK-RFID warrants RFID Devices (Consumables) sold to customers (the “Device(s)”) against defects in workmanship and materials for a period of **three (3) months** from the original date of delivery under the following conditions:

- (1) Customer's sole and exclusive remedy and the entire liability of HK-RFID under this warranty will be, at HK-RFID's option, repair or replacement of the product if reported within **the period of warranty** after the defect.
- (2) The warranty card must be presented together with the official purchase receipt or dealer's invoice when warranty service is rendered. Otherwise, HK-RFID reserves the right to refuse the provision of free warranty during the warranty period.
- (3) All sales are final. In no event does HK-RFID warrant or accept the return of Device is error free or that customer will be able to operate the product without problems or interruptions.
- (4) Customers may return defective Devices to HK-RFID for **one-to-one replacement within three (3) months** under the terms and conditions set forth in this warranty.
- (5) Before returning any Device for replacement, be sure to back up data and remove any confidential, proprietary, or personal information from the Device. HK-RFID is not responsible for the damage to or loss of any data which the customer do not back up.
- (6) The customer is responsible for returning the defective Device at his/her own expense.
- (7) A fee (excluding material fee) will be charged at the HK-RFID's discretion for any out-of-warranty service under the circumstances described in (9) below.
- (8) For any uncertain or doubtful occasion, after examination, HK-RFID has the right to alter or refuse to issue or to cease this warranty.
- (9) Restrictions. The warranty does not apply if the product has been (a) explicitly or implicitly altered or repaired in any way by anybody other than qualified technical people of HK-RFID. (b) damaged due to failure to follow installation or operation instruction, abuse, negligence, fire, flood, acts of God (including, but not limited to, lightning strikes), natural calamities, electrostatic discharge damage, failure to provide a suitable operating environment, improper transportation and storage or other events beyond HK-RFID control and damage that is caused during shipping for warranty and maintenance services and any Device that

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- (10) HK-RFID reserves the rights to alter the terms and conditions each year. The terms and conditions are subject to change without prior notice.

**Please feel free to contact the Customer Support for any difficulty in usage or technical support, or if there's any advice for products.**

## Contact Information

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