Hussar™ Slim 2.4GHz RFID Active Tag
(Model: HKRAT-NT02)
&
Hussar™ Slim Plus Duel Frequency RFID Tag
(Model: HKRAT-NT02+)

User Manual

Version 2.1R
(2012/08/01)

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Content

1 Introductions

The **NT02** Active Tag provides excellent reading range and reliability for high value applications such as people or asset tracking, inventory management and supply chain management and so on.

It is small in size, and is easy to carry around with its key fob design. It has great RFID performance but of low cost. This makes Hussar™ the best choice for Customer Relationship Management (CRM) applications.

Knowing your customers well would eventually lead to better customer services. NT02 tags could be mapped with customer information stored in the database and such information could be retrieved instantly when the customer visits. Customer behavior like visiting frequency could be gathered with the help of Hussar™ tags. Such information could be used for reference in developing future product or service launch.

With its small size, stable and impressive performance along with our active readers, NT02 would make an excellent and extendable CRM system.

1.1 Product Appearance

NT02 and NT02+ have the same appearance. A white case with a keychain hole on the left corner of the tag, customer can also stick different stickers on their own willing. On the back of the case, there's a bar code and battery cover.

1.1.1 NT02 appearance

NT02 Front view

NT02 Back view

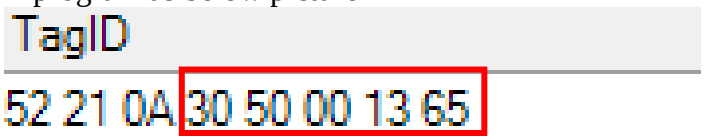
1.1.2 NT02+ appearance

NT02+Front view

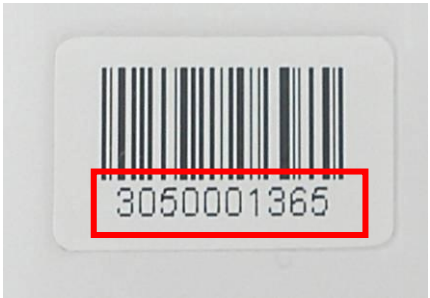
NT02+Back view

1.2 Method to Read Tag ID

i. Connect the reader and open the application program. A 16 digits number will be shown in the application program as below picture



ii. Take above picture as an example, the tag ID of *52210A3050001365* is scanned by the reader, and the last ten digits *3050001365* represents the shorten tag ID which is matched with the bar code sticker of the tag.



Note: length of the tag ID is 64bit, it's unique and cannot be edited or changed.

1.3 Accessories

NT02 and NT02+ can be associated with various accessories as shown in below pictures.

Key Chain

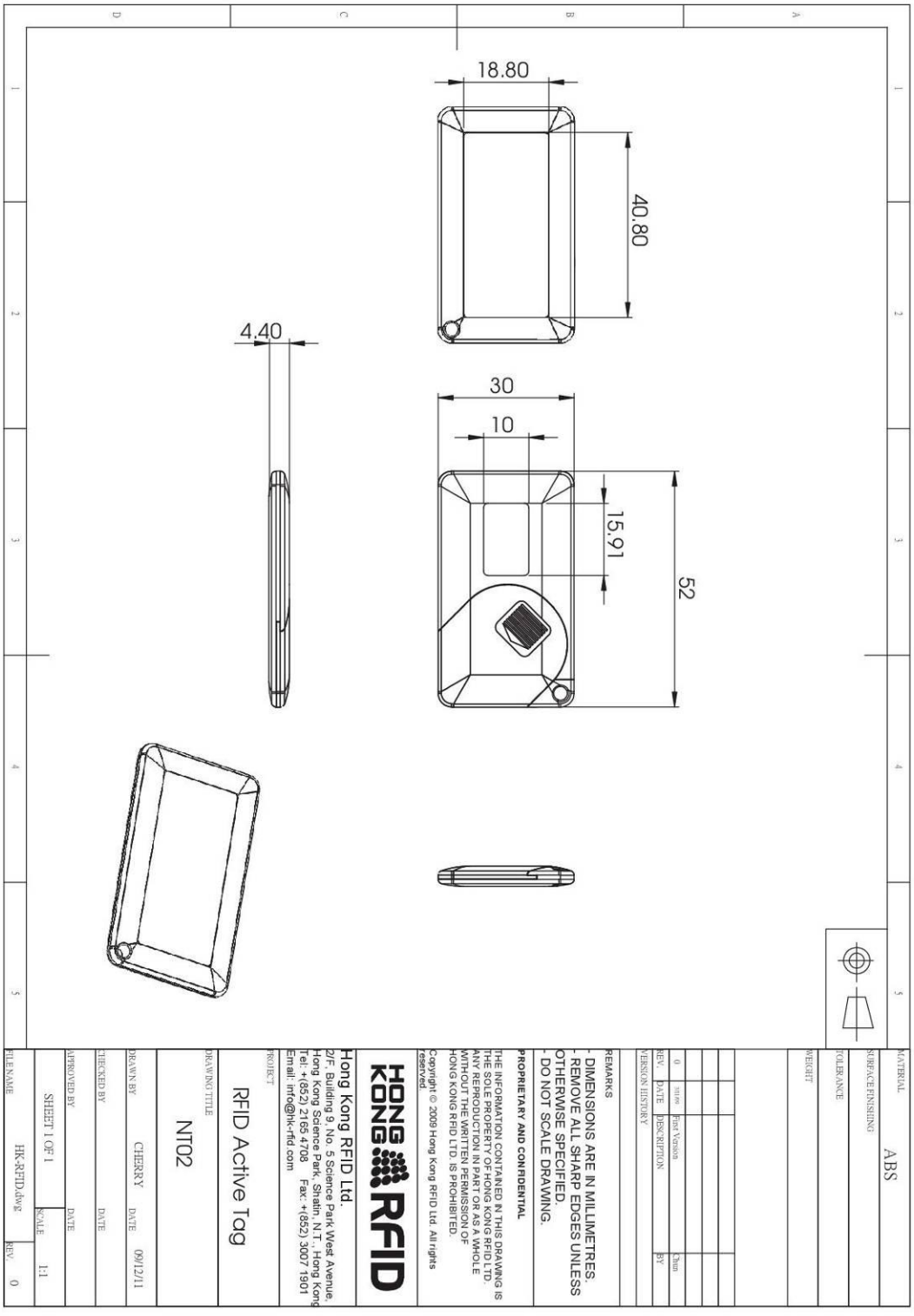
Climbing Buckle

CR2325 Battery

Card Holder/ Badge

Silicon Case

1.4 Dimension Details (Apply to both NT02 and NT02+)



1.5 Specifications (Apply to both NT02 and NT02+)

Frequency:

2.4GHz ~2.5GHz ISM
13.56Mhz (**Only for NT02+**, please contact sales representatives for chip selection)

RF Power output:

0dBm (1mW)

Power:

16~18μA, 3V

Modulation:

GFSK

Data rate:

1Mbps

Communication Mode:

Once every second, with low voltage warning signal, only can send out signals.
(Empress Reader is required for receiving ID and low voltage warning signal, please contact sales representatives)

Anti-collision:

In general, 100 tags can be read simultaneously, depending on readers. Longer reading time can read more than 100 tags. 500 tags can be read within 10 seconds

Read/write mode:

Read only

Battery:

CR2325

Battery life for Operation:

About 1 year (battery replaceable)

Reading range:

30~ 50 meters
(Depending on the antenna model of the reader and enviromental conditions)

Size:

52mm x 30mm x 4.4mm

Working temperature:

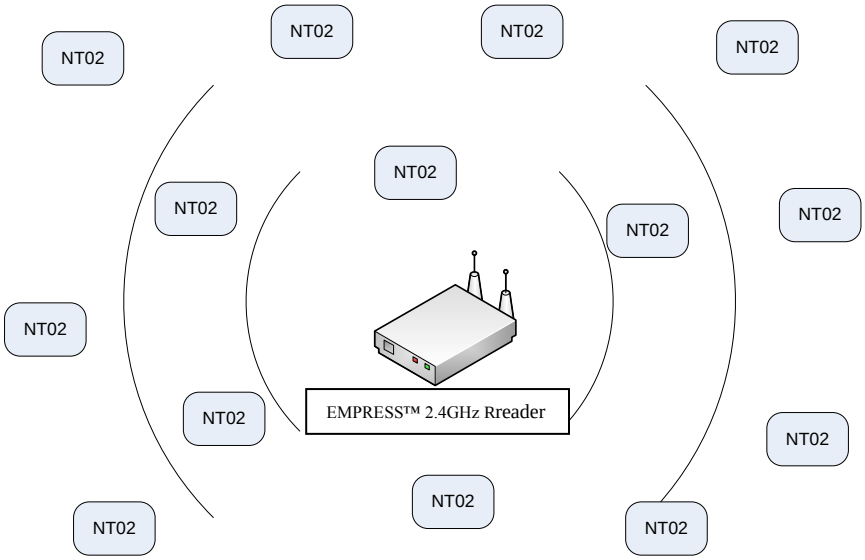
-20℃ to 60℃

IP level:

IP54
(Must be used with the silicon case)

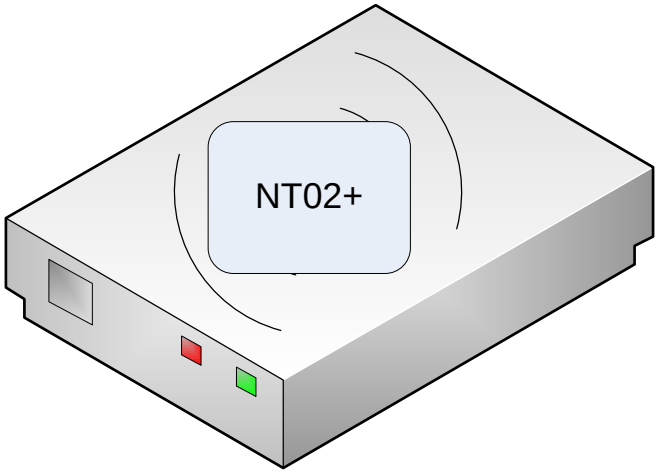
1.6 NT02 Schematic Diagram

With our EMPRESS™ 2.4GHz reader, 100pcs NT02 tags can be read within 30m to 50m.



1.7 NT02+ Schematic Diagram

Apart from all features of NT02, NT02+ tag is additionally embedded with a 13.56MHz passive tag. Place NT02+ close to corresponding reader and the information of NT02+ can be read.



13.56MHz Reader

1.8 Applications

The active NT02 provides excellent RF performance, compact in size and convenient to be used together with keychain. With relatively low cost, NT02 also has excellent reading range and reliability for various high value applications such as asset management, logistics management, and supply chain management and so on.

1.8.1 Customer relationship management

When customers visit with NT02, the reader will read the tag and customer's information will be shown in the system simultaneously, so that we can provide suitable services and make our customers feel more convenient. The system can also simultaneously record and update customer's information such as visiting frequency and so on.

1.8.2 Human resource management and internal management

NT02 can provide excellent human resource management system together with our readers. Workers are assigned a NT02 so that the system can record data such as workers' in/out time, frequency and the time they stay in a specific area. Those data provide a great support for human resource management.

1.8.3 Emergency applications

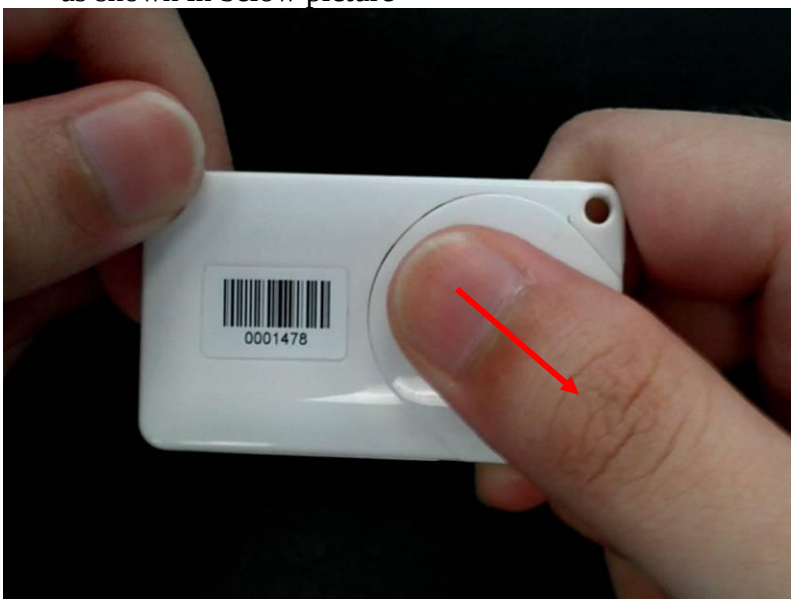
NT02 and readers can be used to set up a location tracking system, effectively respond to emergencies. Just imagine how much labor is required if your child is missing within a 7000 square meters' area. If every person who enters the area has a NT02 with him, the location system can easily find your child within a short time. It not only saves a lot of labor, material and time but also enhance security.

Application cases are endless, please send E-mail to sales@hk-rfid.com if you are interested.

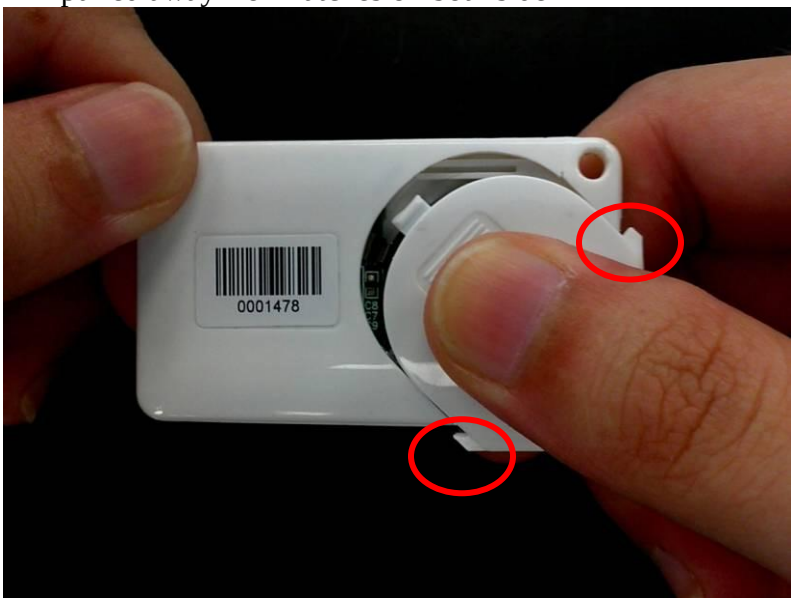
2 Getting Start

2.1 Battery Installation and Power On

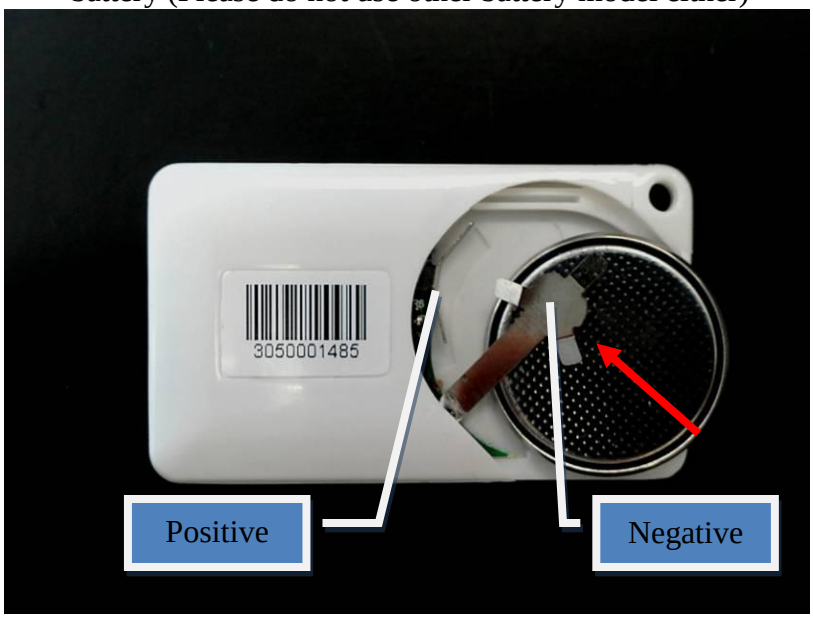
i. Gently push and open the battery cover in the direction as shown in below picture



ii. Battery cover can be removed once the corners are pulled away from latches on both side

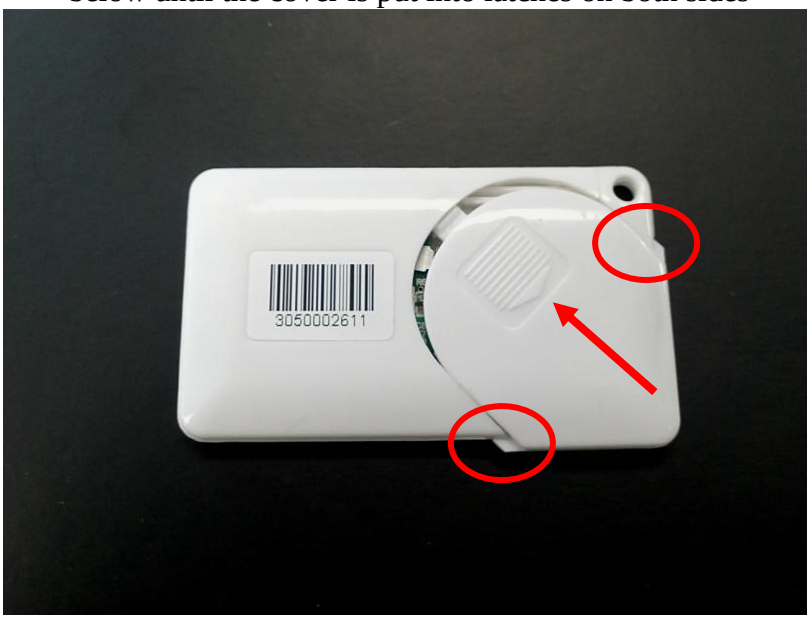


iii. Insert the CR2325 battery from the side with its negative pole upward and positive pole downward. Take care and do not fracture the contact plate of the battery (Please do not use other battery model either)



iv. Lay the battery cover flat on the compartment that has installed battery as shown in below picture

v. Slightly press in the cover in the direction as shown below until the cover is put into latches on both sides



vi. Check if latches are in right place or so long as the whole cover is not deformed, it's OK

vii. Finish installation, NT02 and NT02+ start work

Because NT02 and NT02+ has factory default setting when delivery, customers simply install the battery according to above steps and the tag will start communication with readers.

2.2 Accessories Installation

Since the accessories and installation steps for NT02 as well as for NT02+ is the same, we take NT02 as example.

2.2.1 Silicon case

i. Put NT02 in the silicon case as shown in below picture

ii. Aim the keychain hole and push it in leftwards

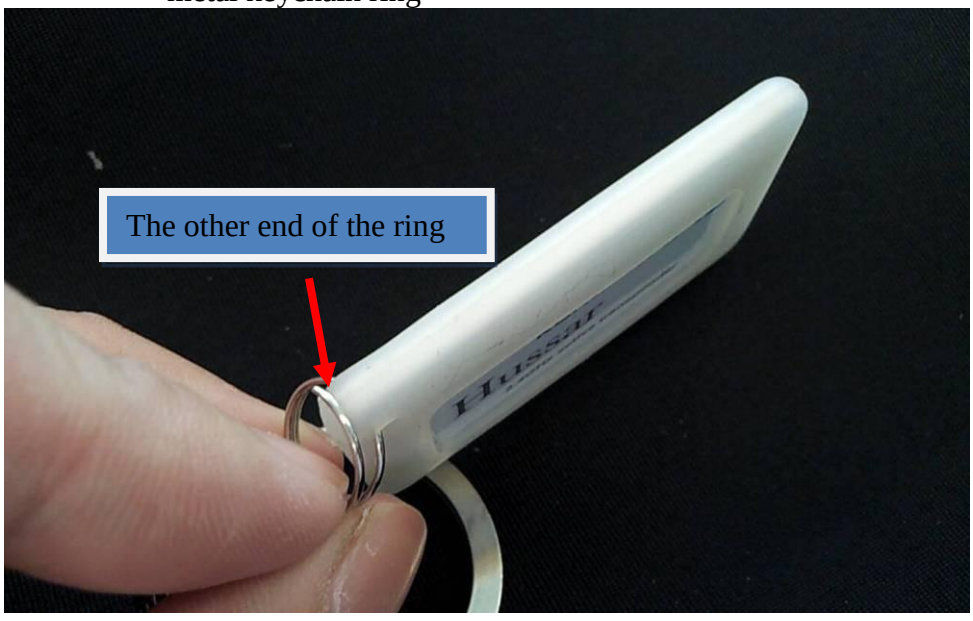
iii. Gently open the other side of the silicon case and put the whole NT02 into the case as shown in below picture

iv. Check if the hole of the silicon case is completely in alignment with the keychain hole on the left, if there's no deformation then it is ready for use

2.2.2 Keychain

i. Lever the metal keychain ring and insert one end of it through the keychain hole (If the tag is covered by silicon case, please make sure the metal keychain ring has go through the keychain hole on both the silicon case and the tag)

ii. Rotate the metal ring until to the other end of the metal keychain ring

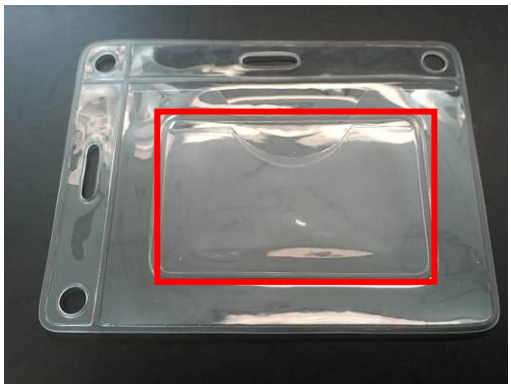


iii. The tag is ready for use if the metal ring can turn around smoothly

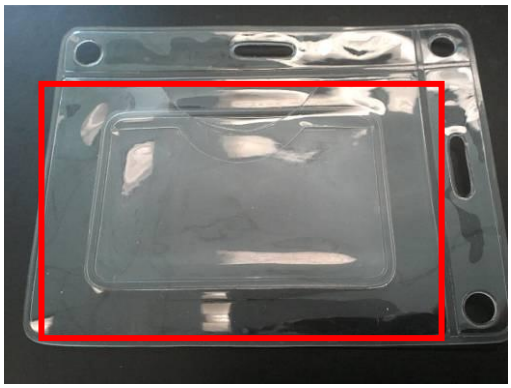
iv. For tags without silicon case, installation steps are the same. Repeat steps from step (i) to step (iii)

2.2.3 Card holder

i. A card holder has two sides of pocket, one for NT02 and the other for the name card

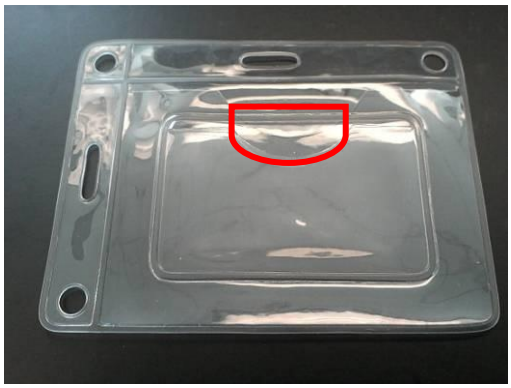


For NT02

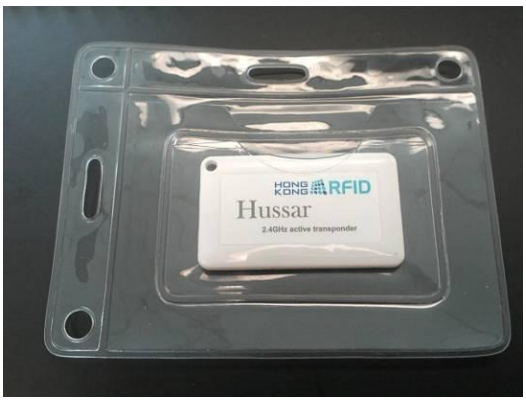


For name card

ii. Gently lift the upper side of the semicircular part, and then insert the NT02



iii. It is finished if the semicircular part covers the tag and the card holder is not deformed



3 Trouble Shooting

i. Signal unstable

Possible causes: 1) Interfered by metal objects
2) Low battery

Solutions: 1) Check all objects around the tag and remove all metal objects
2) Replace battery (Refer to *2.1 Battery Installation and Power On*)

ii. No signals after battery installation or replacement

Possible causes: 1) Improper battery installation
2) Low battery
3) Reader installed wrongly

Solutions: 1) Check battery status
2) Replace battery (Refer to *2.1 Battery Installation and Power On*)
3) Check the reader installation (Refer to EMWF reader User Manual)

iii. Case damaged

Possible causes: 1) Improper storage or hit by hard objects

Solutions: 1) Please contact your supplier for replacement provided that it is non-artificial damage during Guarantee Period

iv. Contact plate of the battery rusted

Possible causes: 1) Improper storage or affected by moisture

Solutions: 1) Put it in dry and airy place
2) Please contact your supplier to purchase new tags

v. Part or the whole of the case body turns yellow

Possible causes: 1) Improper storage or under direct sunlight for a long time

Solutions: 1) Keep it in shady, cool and airy place
2) Avoid direct sunlight exposure
3) Please contact your supplier to purchase new tags

vi. Can't purchase the proper battery
Solutions: 1) Please contact your supplier

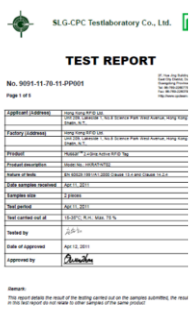
vii. Contact plate of the battery is deformed or floated up
Possible causes: 1) Battery is installed incorrectly
Solutions: 1) Please refer to *2.1 Battery Installation and Power On*
2) Please contact your supplier to purchase new tags

viii. Sticker fall off
Possible causes: 1) Improper storage or affected by moisture
Solutions: 1) Put it in dry and airy place
2) Please contact your supplier to purchase new tags

ix. Problems about reading range
Possible causes: 1) Affected by environmental conditions such as ambient humidity, surrounded by water-rich objects or metal objects and so on
2) The direction of the antenna of the reader
Solutions: 1) Check ambient conditions, try to avoid water-rich objects or metal objects
2) Use it in dry and airy open space
3) Adjust the direction of the antenna of the reader

4 Certificates

4.1 IP54 Certificates


SLG-CPC Testlaboratory Co., Ltd.
TEST REPORT


SLG-CPC Testlaboratory Co., Ltd.
TEST REPORT


SLG-CPC Testlaboratory Co., Ltd.
TEST REPORT

5 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

is returned with the security seal broken; or (c) The product model number label or serial number label has been effaced or altered.

(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.

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