

H1 UHF RFID Backclip Reader

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.

(2) This device must accept any interference received including interference that may cause undesired operation.



Front - RFID Reading Side

The product manual contains important information. Before using the product, please read the instruction manual carefully and keep it in a safe place. The product is intended for safe use in non-tropical climates only.

The H1 UHF RFID Backclip Reader is equipped with the 3rd-generation X3M1 reader chip, featuring a maximum transmit power of 33dBm and a receiving sensitivity of <-86dBm. Combined with a 3.5dBi circularly polarized antenna, it achieves a reading rate of over 500 tags/second and a reading range of more than 10 meters. It adopts a 4500mAh standard packaged battery (model INR21700), allowing users to replace the standard battery by themselves to ensure long-lasting battery life. Optional Zebra E4107 and Newland N1 2D barcode scanners are available to meet diverse scanning needs. The LED status indicators provide clear visibility, enabling real-time monitoring of battery level, Bluetooth, RFID, and barcode scanning status.

Illustrations



Packaging List

To facilitate future storage and transportation, please properly keep the packaging box and materials after opening the reader package. In addition to the reader, the package includes accessories required for product use. Please check whether the product and accessories are complete according to the packaging list. If there is any discrepancy or damage, please contact after-sales service in time.

Number	Description	Unit	QTY	Remarks
1	H1 UHF RFID Backclip Reader	Pc(s)	1	Standard Config
2	USB Cable	Pc(s)	1	Standard Config
3	21700 Battery	Pc(s)	1	Standard Config
4	Product Certificate	Pc(s)	1	Standard Config
5	Product Manual	Pc(s)	1	Standard Config
6	Screw	Pc(s)	1	Standard Config

7	Lanyard	Pc(s)	1	Standard Config
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Specification Parameters

1. Physical Parameters

- ① Dimensions: 174.6mm × 80.5mm × 135mm
- ② Weight: < 750g (depending on device function configuration)
- ③ Battery Capacity: 4500mAh standard packaged battery (model INR21700); customers can purchase standard batteries for replacement by themselves
- ④ LED Indicators: Battery level, Bluetooth connection status, RFID reading/writing indicator, barcode scanning indicator
- ⑤ Communication Interfaces: BLE5.0 Bluetooth interface, USB 2.0 HID driver-free interface
- ⑥ Side Buttons: Bluetooth switch button, power on/off button

2. Barcode Scanning

- ① 2D Engine: Optional support for Zebra E4107 and Newland N1 2D barcode scanners
- ② Supported 1D Barcodes: UPC/EAN, Code128, Code39, Code93, Code11, Interleaved 2 of 5, Discrete 2 of 5
- ③ Barcode Types: USPS Planet, USPS Postnet, China Post, Korea Post, Australian Postal, Japan Postal, Dutch Postal (KIX), Royal Mail, Canadian Customs, etc.
- ④ Supported 2D Barcodes: PDF417, MicroPDF417, Composite, RSS, TLC-39, Datamatrix, QR code, Micro QR code, Aztec, MaxiCode, HanXin, etc.

3. UHF RFID

- ① Engine: National RFID 3rd-generation X3M1 Chip
- ② Frequency: 902-928MHz
- ③ Protocol Standards: Supports EPC C1 GEN2 / ISO18000-6C
- ④ Antenna Parameters: Circularly polarized antenna (3.5dBi)
- ⑤ Working Distance: > 10 meters
- ⑥ Multi-tag Reading: >500 tags per second (circular polarization)
- ⑦ Transmit Power: 24.794dBm
- ⑧ Output Power Adjustment: 1dB step
- ⑨ Receiving Sensitivity: ≤ -83dBm

4. Protection Standards

① Protection Level:

IP32

② Drop Specification: Within the operating temperature range, all 6 surfaces can withstand a drop from a height of

1.2 meters

③ Rolling Test: Stable operation after continuous rolling on

6 contact surfaces from a height of 0.5 meters

5. Working Environment

① Operating Temperature: $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$

② Storage Temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

③ Operating Humidity: $10\% \sim 95\%$ RH (non-condensing)

Description of Function

Buttons/Indicators

1. Power Button

① In the normal shutdown/power-on state, press and hold the power button at the bottom right for 2 seconds until the buzzer emits a beep, then release the power button to power on/off normally.

② When the H1 device has not performed any data interaction for five minutes and has not established a

Bluetooth connection, it will automatically enter sleep mode, with the overall power consumption at only microampere

level. To power on normally at this time, simply press the power button for more than 20ms, release the button when the buzzer emits a beep, and it will power on normally.

③ In the normal operating state, when the battery level

indicator is off, press the power button for more than 20ms to turn on the battery level indicator.

2. Bluetooth Switch

Press the Bluetooth switch for more than 500ms, and the buzzer will emit a short beep to turn Bluetooth on/off.

3. Battery Level Indicator

① During charging, a green light indicates the battery is fully charged, and a yellow light indicates it is being charged.

② During normal use, a green light indicates the battery level is above 3%, and a yellow light indicates the battery

4. Bluetooth Indicator

- ① Light flashing indicates Bluetooth is enabled but not connected;
- ② Constant light indicates Bluetooth is on and connected
- ③ Lights off indicates Bluetooth is disabled

5. 2D Scanning Trigger

Press and hold to maintain 2D scanning, and release to exit 2D scanning.

6. Reading/Stop Trigger

Press for more than 20ms to start/stop inventory.

7. Power + Button

When the power has not reached the maximum value, press for more than 20ms to increase the power by 1dB, with the green indicator flashing briefly and the buzzer emitting a short beep; when the power has reached the maximum value, pressing for more than 20ms will not increase the power, and the buzzer will emit a fixed-frequency beep with the red indicator flashing periodically.

8. Power - Button

When the power has not reached the minimum value, press for more than 20ms to decrease the power by 1dB, with the green indicator flashing briefly and the buzzer emitting a short beep; when the power has reached the minimum value, pressing for more than 20ms will not decrease the power, and the buzzer will emit a fixed-frequency beep with the red indicator flashing periodically.

Safety and Maintenance Tips

Frequent use keeps the battery's electrons in optimal motion. If you plan to store the device for an extended period, charge it to about 50 % first. For occasional use, be sure to run a full charge - discharge cycle at least once every three months. All products—especially electronics—must be used properly in a safe environment; always follow electrical-safety practices. If the power indicator becomes inaccurate, recalibrate it by

fully discharging, fully charging, fully
discharging again, and then recharging.

Charging H1

A TYPE-C charging cable can be used; insert it into the device's TYPE-C input port for charging. The battery level indicator shows yellow when not fully charged and green when fully charged.

Mobile Phone Operation Instructions

Demo Software Description

The demo software mainly performs functions such as system control, communication mode selection, parameter setting and query, tag reading/writing, and data display for the reader device.

Currently, the mobile-side software includes RFID 小灵通 (Android and iOS), RFID 小灵通 (WeChat Mini Program), and RFID Reader Management Software (Android).

The Android applications "RFID Reader Management Software" and "RFID 小灵通" can be downloaded and installed from major Android app markets; the iOS application "RFID 小灵通" can be downloaded and installed from the App Store (scan the QR code below to quickly access the download interface for Android and iOS apps).



RFID 小灵通 APP Download

The WeChat Mini Program can be directly accessed by searching for "RFID 小灵通" in WeChat (scan the Mini Program code below to quickly enter the Mini Program interface).



RFID 小灵通Mini Program

Before using the demo software, check whether the reader hardware connection is complete, focusing on ensuring the following:

- ① The reader has been powered on and started successfully;
- ② Turn on the Bluetooth button to connect to the mobile phone or connect to the mobile phone via a USB cable (USB connection only supports Android APP).

Demo Software Operation

Connect the reader, all functions can only be operated after a successful connection.

1. Bluetooth Connection

After pressing the device's Bluetooth button, when the device's Bluetooth indicator starts blinking (the indicator will keep blinking when Bluetooth is not connected and stay steady on after successful Bluetooth connection), click the "Search" button, find the corresponding Bluetooth name, and click "Connect".



2. Inventory and Card Writing

Click the "Read/Write" button on the main interface to enter the "Inventory & Card Writing" interface.

2.1. Inventory

① Inventory : Click the "Start Inventory" button to read cards (card reading is performed according to the configuration in the "Settings" interface; by default, only EPC codes are read; refer to section 5 for settings to read other areas).

② Export: Export the data of the read tags in xls format.



2.2. Bind

① Bind: After inventorying tags, select a tag and fill in the item information to be bound to complete the binding.

② Clear Binding: Clear all stored tag binding information.



2.3. Find

Scan: Click "Find" in the "Scan" interface to start searching for tags and query the bound information.



2.4. Card Writing

① **Select Tag:** Match the tag for the following operations. If the EPC has been modified, re-inventory to specify the tag for card writing; otherwise, the matched tag will not exist.

② **Card Writing:** Perform card writing operations by selecting the writing area, address, password, and writing content.

③ **Lock:** Lock the tag by selecting the locking area, locking type, and access password. Before locking, fill in the password in the access password area, then execute the locking.

④ **Kill:** Before killing, fill in the password in the kill password area, then execute the killing.

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Accounting	Sub account	Unit
Accounting	000	0
Accounting 0	Accounting 000000	000000

Accounting 000000

0000

Accounting	000000	0
Accounting	000000	0
Accounting 000000		

0000

Account 000000

0000

2.5. Setting

Check the configurations in the "Setting" interface, and the inventory operation in the "Inventory" interface will be performed according to these configurations.

- ① Matching Reading: Select the corresponding matching area, fill in the matching content, and perform matching.
- ② TID Reading: Configure TID parameters required for inventory operations.
- ③ User Area Reading: Configure user area parameters required for inventory operations.
- ④ Reserved Area Reading: Configure reserved area parameters required for inventory operations.



3. Light-up Reading

Click the "Light-up Reading" button on the main interface to enter the "Light-up Reading" interface. Click the "Start Inventory" button to light up the light-up tags and display tag information on the interface.



4. Temperature Reading

Click the "Temperature" button on the main interface to enter the "Light-up Reading" interface. Click the "Start Inventory" button to measure the temperature of temperature tags and display tag information on the interface.

- ① Tag Type: Select the type of temperature tag to be read.
- ② Designated Tag: Specify the EPC value of the temperature tag to be read.



5. Card Issuer Configuration

Click the "USB Setting" button on the main interface to enter the "Keyboard Configuration" interface.

USB Hardware

Type: Vendor: ID:
 Product: Rev:
 Path: Speed:
 BULK: Mode:
 MaxPower:
 SuspendTime: Sec
 WFI: WUP:
 WU: WUP:

5.1. Keyboard Report: Configure keyboard report functions and content.

① **Prefix and Suffix:** Prefix and suffix for each read tag text output, which can be set according to needs; the default prefix is a space, and the default suffix is Enter.

- ② Sleep Time: In seconds, default is 0; 0 means the keyboard mode is always on; when there is a value, it means the keyboard mode will be turned off after no character output through the USB keyboard for that duration.
- ③ Ready Wait Time: In milliseconds, default is 200ms; it is the delay waiting time before outputting a string after each initialization of the USB keyboard. If this time is less than the time for the host to recognize keyboard initialization, the keyboard output will lack the first few characters.
- ④ Auto-read on Power-up: Quickly configure the card reading command when the device's card reading trigger is pressed, such as EPC, EPC+TID, or turn off auto-read.

5.2. Notes

- ① Before cursor output, switch the input method to English mode; otherwise, cursor output involving English characters may cause Chinese garbled characters.
- ② In iOS and some Android systems, more than one keyboard is not allowed. Therefore, when the USB keyboard mode is enabled, the system's built-in keyboard will be disabled. At this time, the sleep time can be adjusted according to the input frequency to ensure that the mobile phone's built-in keyboard can be used when no characters are input through the simulated keyboard.

6、Device Info

Click the "Device Infor" button on the main interface to query the current device's hardware and software information.



7、RFID Configuration

Click the "RFID Setup" button on the main interface to enter the "RFID Configuration" interface.



① Baseband Configuration: Changing baseband parameter configurations can change the actual reading and writing effect (configure reasonably according to application scenarios; it is not recommended to configure independently without understanding the specific air interface protocol principles; consult our technical support staff).

② Power Configuration: Intensity of the transmitted carrier signal, in dBm.

③ Frequency Band Configuration: Frequency range of the carrier transmitted by the radio frequency module.

④ Upload Configuration: Filter time means that during a card reading command execution cycle, the same tag content is uploaded only once within the specified repeated filter time, ranging from 0 to 65535, with the time unit: 10ms; RSSI threshold means that tag data will not be uploaded and will be discarded when the tag RSSI value is lower than the threshold.

⑤ Auto Idle: Auto idle mode means that when the reader continuously reads tags and no tags are identified on all used antennas for three consecutive rounds, the reader automatically enters an idle state for a period of time to save power. After the idle time expires, the reader automatically re-enters card reading mode.



⑥ Dwell Time: Used to specify the maximum dwell time of the reader on a single antenna or a single frequency point, ranging from 0 to 65535, with the time unit: 10ms; 0 means the reader configures automatically.

8、Special Functions

Click the "H1 Search" button on the main interface to enter the "H1 Search" interface.

① Host Remote Alarm: Click "Enable H1 Host Search", and the device will enter the remote alarm state. At this time, the device's buzzer will emit a fixed-frequency beep, and the red light on the side will flash periodically. The "Enable H1 Host Search" button will change to "Disable H1 Host

Search"; click this button to turn off the buzzer and red indicator.



② 2D Scanner Data Display: Press and hold the scanning button above the device handle, and the device will enter the 2D scanner reading state. The front scanning searchlight and the red working light on the side will turn on. When the QR code data is successfully scanned, the device will beep once and the green light on the side will flash once. Release the scanning button at this time, and a pop-up window displaying the scanned data will appear in the middle of the Mini Program interface.



Other

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To learn how we protect your personal information, please visit <https://www.nationrfid.com/privacy-policy/rfid-a7> to read our privacy policy.

Customer Service and Support

Dear User,

Shenzhen Nation RFID Technology Co., Ltd. is committed to providing you with excellent products and services. We always adhere to the concept of continuous innovation and product improvement to ensure that our products remain industry-leading in performance.

Please note that the product features, composition, design, and other information described in this user manual may differ from the actually provided product.

We promise to update this information in a timely manner to ensure you can obtain the latest product materials. If any updates fail to reach you in time, we recommend you contact our after-sales service team for assistance.

The following are our contact details:

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Official Website: www.nationrfid.net

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We look forward to every communication with you and are dedicated to providing professional services.

Thank you for choosing Nation RFID. Let us work together to create a better future!

Sincerely,

Shenzhen Nation RFID Technology Co., Ltd. Team



Official Website QR Code

FCC Statement

This device 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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Specific Absorption Rate (SAR) information:

This device meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. FCC RF Exposure Information and Statement the SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue. Device types: This device has also been tested against this SAR limit.

This device was tested for typical body-worn operations with the back of the This device kept 0mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain an 0mm separation distance between the user's body and the back of the This device. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.