



NW-100 Integrated Reader

User Manual



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1. Technical Specifications

1.1 Features

The NW-100 is a cost-effective integrated UHF RFID reader that supports the ISO18000-6C protocol. Operating frequencies include the China standard frequency 920MHz~ 925MHz, FCC 902MHz ~ 928MHz and ETSI 865MHz ~ 868MHz.

Output power from 0 ~ 33dBm adjustable, it features cost-effectiveness, high speed, anti-interference capabilities, and shock resistance.

1.2 Main Functions and Technical Performance

1.2.1 Product Features

- ✧ Protocol Support: ISO18000-6B/C EPC C1G2
- ✧ Communications Interface : TCP/IP, RS232,RS485
- ✧ Support tag data filtering
- ✧ Support Custom Data Format Output
- ✧ RSSI Support: Signal strength detection.
- ✧ Adjustable RF Output Power
- ✧ Working Mode: fixed frequency/frequency hopping optional
- ✧ Support Online Upgrade
- ✧ Inputs/Outputs:1 optocoupler input (0-24V, Voltage < 1V = Low; Voltage > 1V = High),
2 IO outputs (shared with Wiegand, low level 0V, high level 5V)

1.2.2 Performance Parameters

- ✧ Working frequency: GB:920MHz~925MHz,840MHz~845MHz, FCC:902MHz~928MHz ,
ETS:865MHz~868MHz
- ✧ RF output power (port): 33dBm±1 (MAX)
- ✧ Output power adjustment: 0-33dBm (1dBm step)
- ✧ Reading distance: 0m~15m (related to factors such as transmitting power, tag type and
application environment)
- ✧ Channel occupied bandwidth: <200KHz
- ✧ RS232 interface communication rate: 115200bps(default),19200 bps,9600bps
- ✧ Power Consumption: < 10W (reading tags at 33dB maximum power)
- ✧ AC-DC power adapter: AC input 100V~240V,50Hz~60Hz DC output 9-30V
- ✧ Standby current: 24V/60mA

1.2.3 Environmental Parameters

- ◇ Working temperature: $-20^{\circ}\text{C}\sim+70^{\circ}\text{C}$
- ◇ Working humidity: 5%~90%RH ($+25^{\circ}\text{C}$)

2. Hardware Overview

2.1 Hardware Design

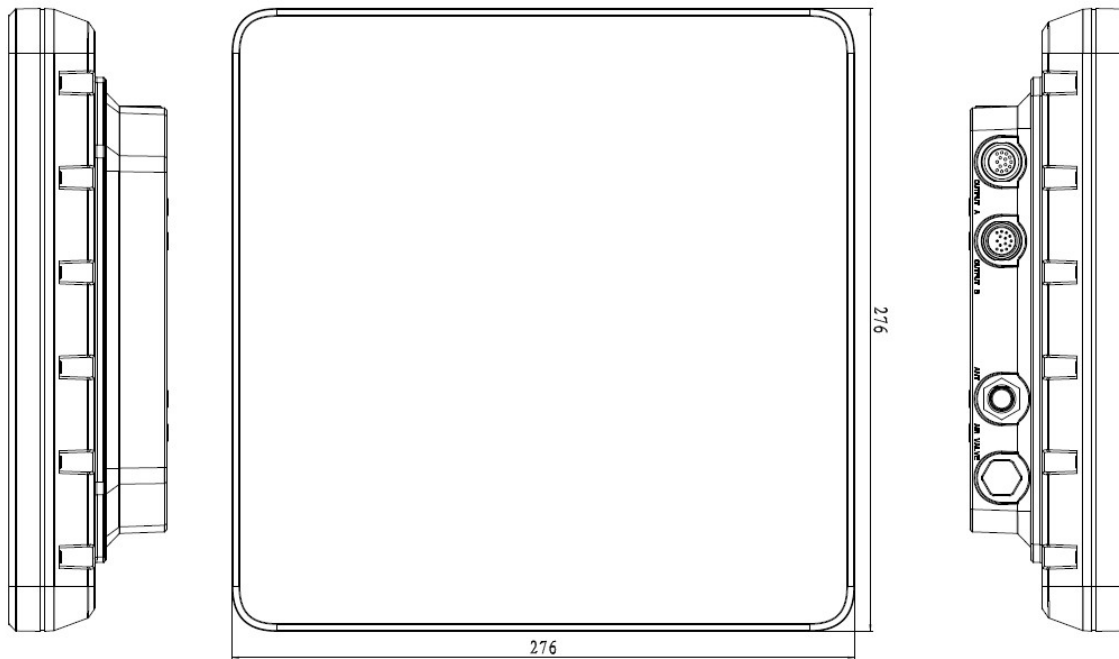


Figure 2-1 Structure diagram of NW-100 integrated reader

Dimensions

276mm×276mm×70mm (without accessories)

2.2 Net Weight

1.76Kg

2.3 I/O Interface Definition

This reader uses a cable with DC power terminal, network port, serial port and two 4PIN Phoenix terminals, the Phoenix terminals are defined as follows.

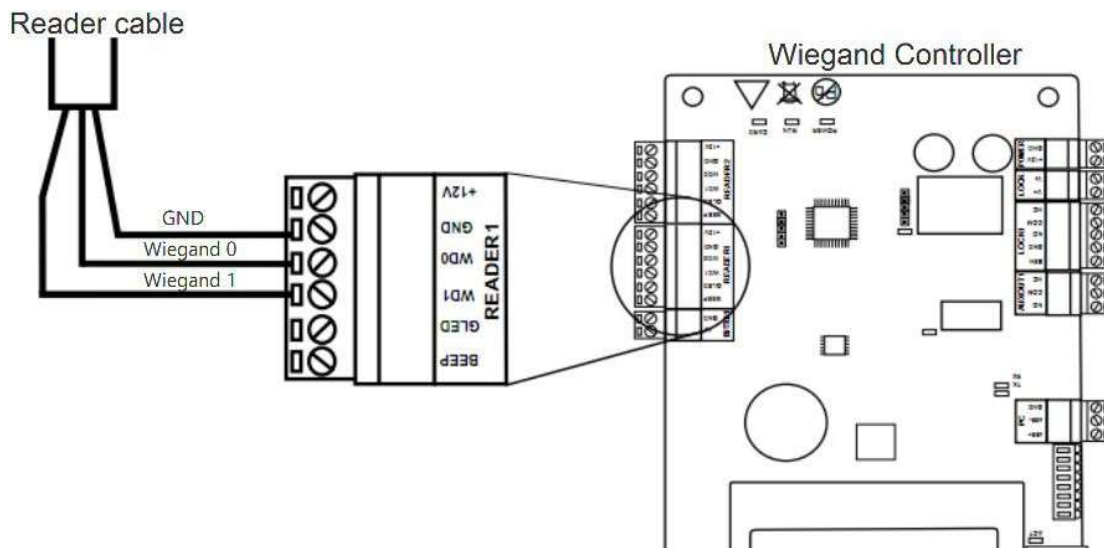
4Pin Connector	Mark	Definition
Yellow	Tx	GPO1/wiegand 0
	+	GPI
	-	GPO2/wiegand 1
	Rx	GND
Black	Tx	Reserved
	+	RS485 +
	-	RS485 -
	Rx	Reserved

Wiegand Connection Instructions

Reader Wiegand 0 connects to Control Board WD0

Reader Wiegand 1 connects to Control Board WD1 Reader

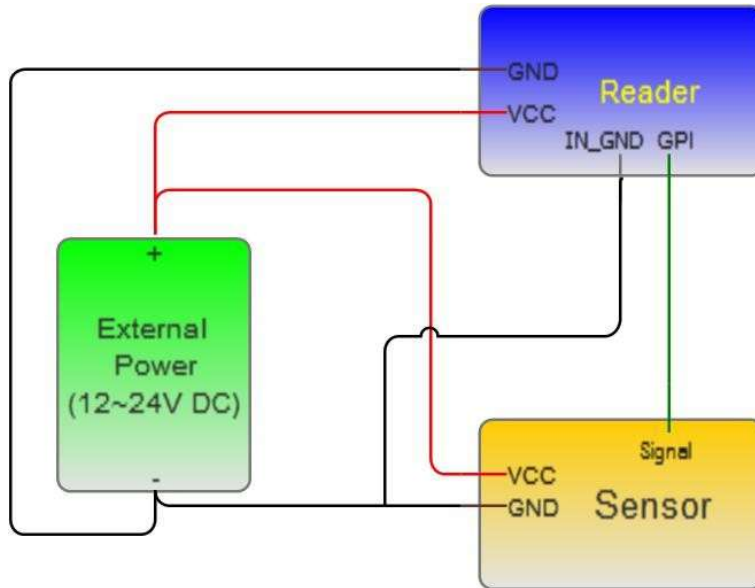
GND connects to Wiegand control board GND



Note: Wiegand 1/Wiegand 0 must not be exposed to voltages higher than 5V, as this may damage the components.

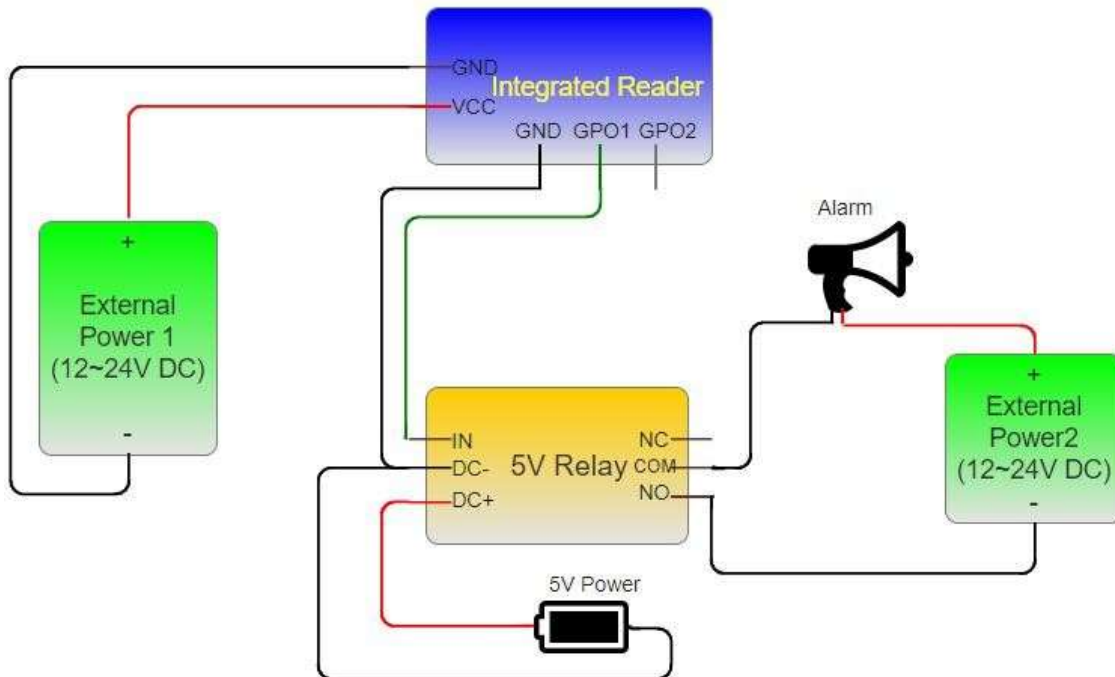
GPI Usage Example

GPI: Optocoupler input, DC, 0~24V, higher than 1V is high level, lower than 1V is low level
 Infrared sensor selection: Choose PNP NO type, which means that the infrared is normally low, when the object is detected, the signal line outputs a positive voltage signal.



GPO Usage Example

The GPO of the NW-100 is a 5V GPO shared with Wiegand, Wiegand 0 is GPO1, and Wiegand 1 is GPO2. GPO needs to be used in combination with GND. When GPO is set to high level, GPO will output a high level of 5V /10mA, which can drive an external relay to



work.

3. Installation Guide

3.1 Precautions

To ensure normal and stable operation of the equipment and your personal and property safety, please carefully read the following notes before installing NW-100 integrated reader:

1. First, ensure the outlet is grounded, and check if the local power supply voltage meets reader voltage requirements.
2. Check if the device is connected tightly;
3. Pay attention to the network cable and serial cable type selection and length restrictions;
 - Serial port cable length 5m maximum.
 - RS485 length 80m maximum.
 - Ethernet length 80m maximum.
4. When installing multiple readers, the antenna position and the antenna spacing should be appropriate to avoid interference with each other.
5. Please test & ensure the reader can work normally before using it.
6. **Disconnect the power supply before wiring. Do not perform installation on live circuits.**

3.2 Installation conditions

Before installing the reader, please carefully check and confirm the product is intact, the accessories are complete, if there is any damage or missing items, please contact your supplier.

3.3 Device connection

3.3.1 Power Supplies

Plug one end of the power adapter into the AC power supply socket, and then connect the DC end of the power adapter to the power interface of the reader; the reader will enter the standby state after powering on the reader.

3.3.2 Connecting to a PC

- ☆ Reader cable interface includes all signal cords in the interface definition table.
- ☆ RS-232 interface is used for short-range communication (less than 5m), can be connected to a PC via DB9 connector for communication.
- ☆ RS485 port is used for longer range serial port communications (less than 80m);
- ☆ Ethernet port is used for longer range communications (less than 80m).

3.4 Installation

The reading and writing range of the reader depends on the on-site application, the tilt angle of the antenna is adjusted to achieve the best reading and writing performance.

3.5 Installation steps

3.5.1 Horizontal pole installation

(1)Align the L-shaped mounting bracket against the screw poles on bottom of reader housing, then install the rubber and screw the M6 nuts, refer to Figure 3-1.

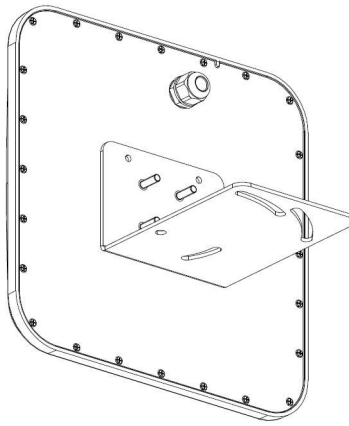


Figure 3-1 L-shaped mounting bracket installation

(2) Using two U-bolts and two toothed installation bracket to fix the reader on vertical rod through the L-bracket, refer to Figure 3-2.

Note: This installation method is suitable for cross bars with a diameter of 30mm ~ 50mm.

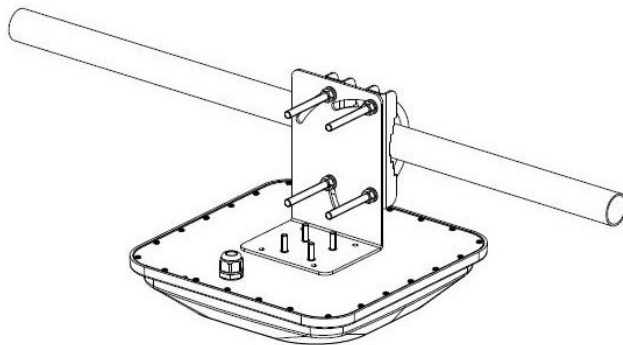


Figure 3-2 Horizontal pole installation

3.5.2 Vertical pole installation

(1)Align the L-shaped mounting bracket against the screw poles on bottom of reader housing, then install the rubber and screw the M6 nuts, refer to Figure 3-3:

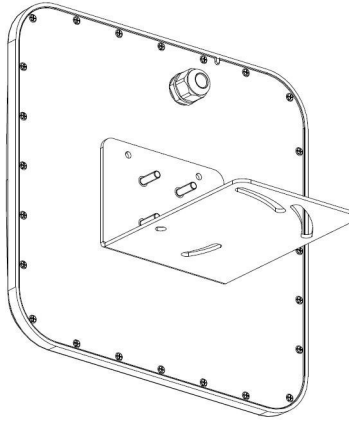


Figure 3-3 L-shaped mounting bracket installation

(2) Use two U-bolts and two toothed installation brackets to fix the reader on vertical rod through the L-bracket, refer to Figure 3-4.

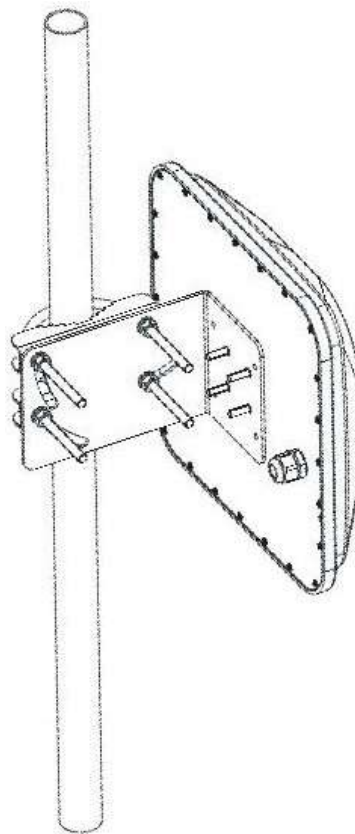


Figure 3-4 Vertical pole installation

3.5.3 Optional bracket installation

If the L-shaped mounting bracket cannot be used for installation in the actual scene, the following bracket accessories can be used. It is necessary to remove the 8 screws of the bottom plate, and then install the bracket after connecting it, as shown in the figure below

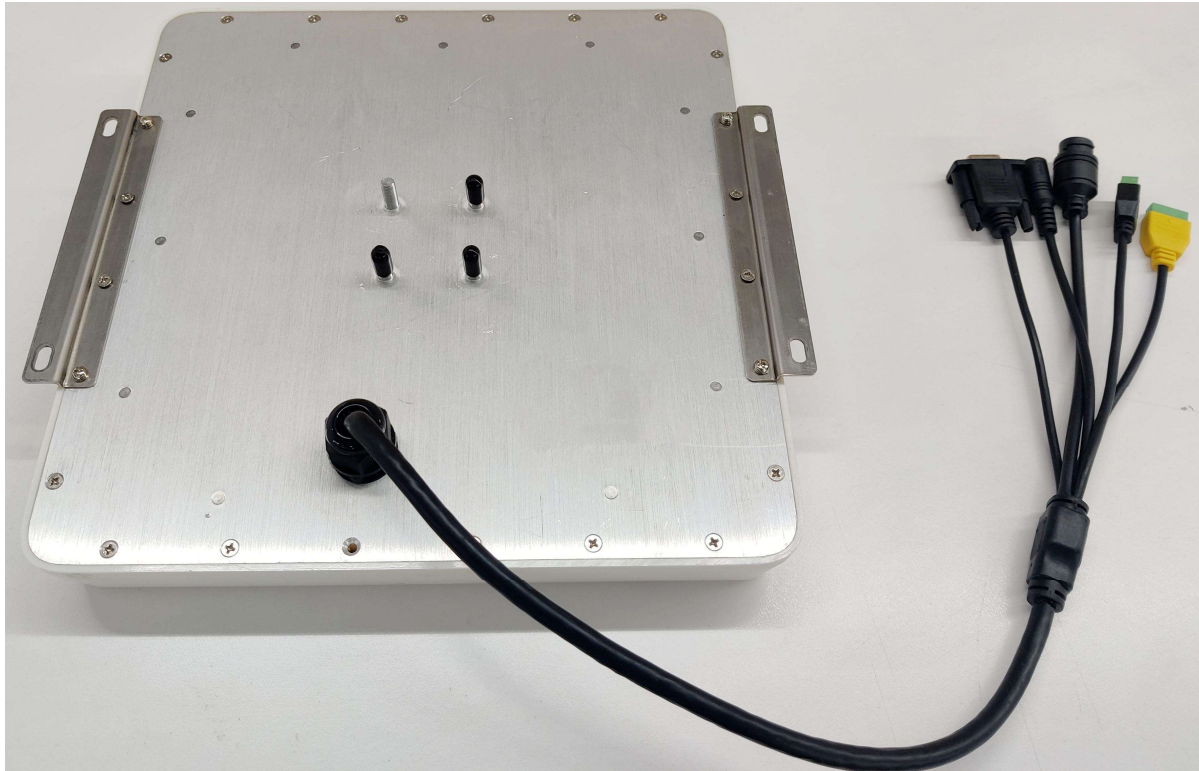


Figure 3-5 Optional bracket installation

3.6 Acceptance

The acceptance criteria are mainly given from two aspects: structure and performance.

3.6.1 Structural Acceptance

- ◇ Verify the reader is fixed safely.
- ◇ Verify cables are connected securely.
- ◇ Verify screws are screwed firmly.

3.6.2 Performance Acceptance

- ◇ Check & confirm the reader is working normally.
- ◇ Check & confirm the reading range is set properly.

4. Troubleshooting

4.1 Routine Maintenance

- ✧ Ensure all wires are securely connected.
- ✧ Ensure the power supply cable is connected well.

4.2 4.Troubleshooting Analysis and Solutions

✧ **Power supply system failure:**

- Check whether the power supply of the power adapter is normal and whether the AC power supply voltage is between 100V and 240V

✧ **Problem: Unable to connect via serial port. Possible causes:**

- Serial cable is disconnected or loose
- Incorrect baud rate
- Incorrect COM port selected

✧ **The network cannot be connected:**

- The network cable is not connected or not firmly connected
- The default IP address and port number of the NW-100 integrated reader is 192.168.1.116:9090. Make sure that the IP address of the PC and the IP address of the reader are in the same network segment, such as "192.168.1.XXX". If you forgot the IP address of the reader, you can reset the IP address of the reader through demo software via the serial connection.

✧ **The reader cannot read tags**

- Check if the tag is damaged
- Check whether the tag placement position is within the effective reading and writing range of the reader
- Check whether there is electromagnetic interference between readers or other devices
- For problems that users cannot solve by themselves, please contact after-sales service.

5. Packaging Accessories and Storage

5.1 Package

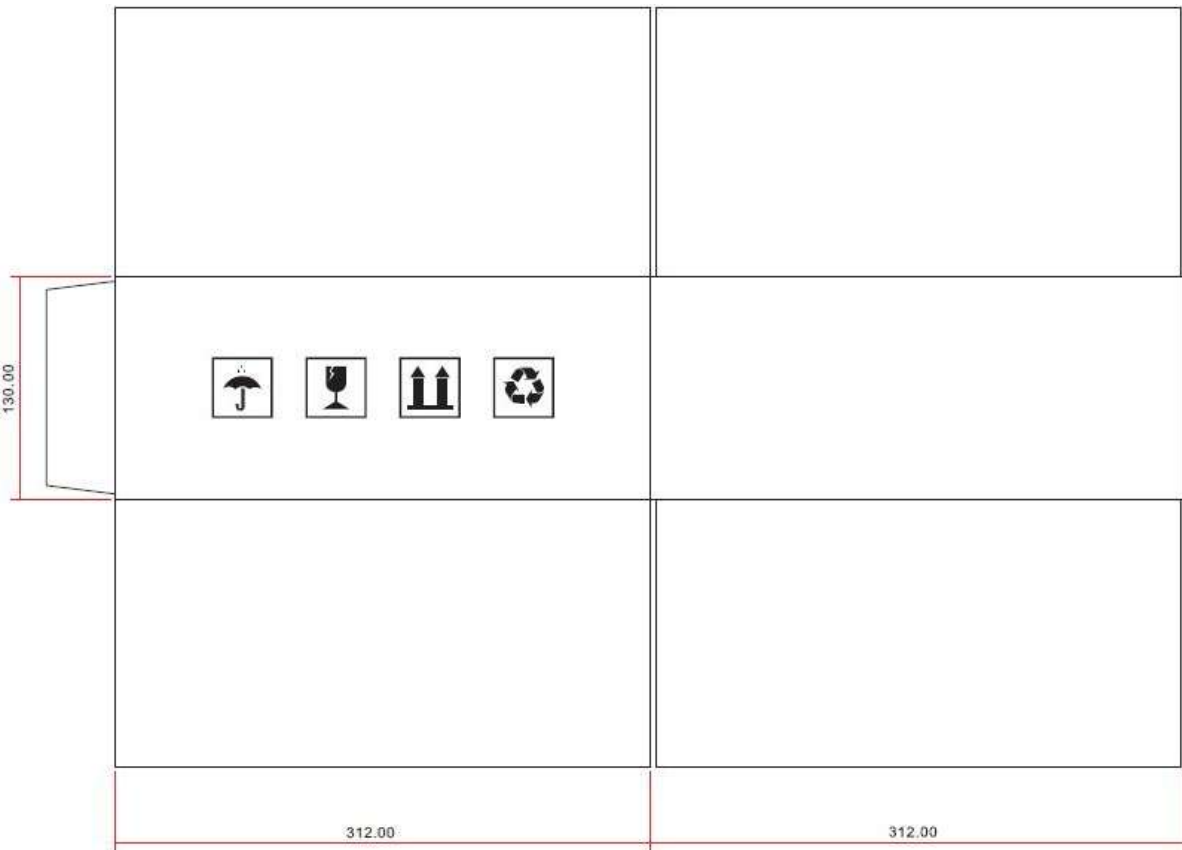


Figure 5-1 Package dimensions

Carton box size: 312 mm×312 mm×130mm

5.2 Accessories

Please retain the box and packaging materials for future storage or transportation. In addition to the reader, the box also includes the accessories required for the use of the product. Please confirm whether the product and accessories are complete according to the product packing list. If there is any discrepancy or damage, please contact the after-sales service in time. The specific packing list is shown in Table 5-1:

Table 5-1 Packing list

No	Name	Unit	Quantity	Remarks
1	NW-100 integrated reader	Set	1	Included
2	Power adapter 24V/2.5A	Pcs	1	Optional
3	AC power cord	Pcs	1	Optional
4	bracket	Pcs	1	Included
5	warranty card	Pcs	1	Included
6	Certificate of Conformity	Pcs	1	Included

5.3 Storage Requirements

NW-100 integrated readers should be stored in the conditions below:

- ✧ Environmental temperature: -40°C ~ +85°C
- ✧ Relative humidity: 5% RH ~ 90%RH