



Focus on industrial connectivity and intelligence

# F40L Reader Product Manual

V 1.0

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## Preface

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This manual is applicable to

### **F40L reader**



CNNT Corporation reserves the right to correct or modify the information and explanations in this manual without prior notice. CNNT Company does not assume any responsibility for improper use of this manual

Antennas are permanently fixed to the product with glue and cannot be disassembled.

## Safety Instructions

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Warning sign

If not operated correctly, it may cause damage to the equipment.

If not operated correctly, it may pose a threat to personnel health.



Pay attention to labeling

If ignored, it may prevent your operation from proceeding smoothly.

If ignored, it may lead to undesirable outcomes.

# **Pre use instructions**



## **Warning:**

Before using the F40L reader/writer, please read this document carefully. Improper use may result in serious personal injury or equipment damage.

To ensure the safety of personnel, please ensure that all antenna positions comply with the regulatory requirements of the regulatory area.

Unauthorized modification of equipment, as well as the use of spare parts and additional equipment that have not been approved or recommended by the manufacturer, may cause fire, electric shock, or personal injury. Such unauthorized operations will exempt the manufacturer from any liability.

The manufacturer shall not be held legally responsible for any inaccuracies, errors, or omissions in the manual, as well as for any parameters automatically set for the equipment or due to improper use of the equipment.

Only manufacturers are allowed to repair the equipment.

The use and installation of equipment must comply with national legal requirements and local electrical regulations.

Effective safety regulations must be followed when operating equipment.

This device is not suitable for places where children are present. To prevent children from coming into contact with equipment.

The device is only suitable for restricted access areas.

Ensure that the equipment operates under the specified working voltage, temperature, humidity, and other environmental conditions, otherwise it may cause abnormal operation or permanent damage to the equipment.

## **Special advice for pacemaker wearers:**

Although the electromagnetic field of this device does not exceed the effective limit, you should maintain a distance of at least 34 centimeters from the pacemaker and not stay in close proximity to the device antenna for a long time.

The device must only operate under frequency adjustments approved by its deployment country.



This manual provides a detailed introduction to the features, installation, debugging, operation, and troubleshooting steps of the F40L reader/writer.



Only qualified personnel are allowed to perform transportation, installation, commissioning, and maintenance tasks. National accident prevention regulations must be followed, and electrical installation must be carried out in accordance with relevant regulations and standards (such as protective grounding connections, wire cross-sectional area, etc.). When connecting the power supply, make sure the polarity is correct.



## **Warning sign:**

### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

### **FCC Warning**

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.

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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

# **Product Overview**

## **Product Introduction**

F40L is a four channel ultra-high frequency RFID reader/writer. Supports EPC Class 1 Gen 2 (ISO 18000-6C) protocol, all aluminum alloy exterior design, compact size, supports Ethernet and drive free USB communication, and has strong anti-interference ability. It is mainly used in medical, industrial and other fields.

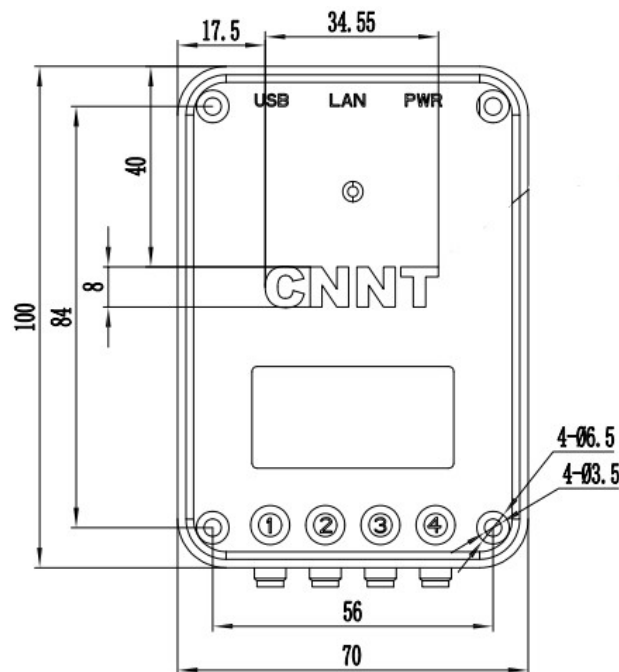
## **Function and performance parameters**

### **Main functions**

1. Able to emit the microwave energy required to activate the tag operation;
2. Able to receive tag reflection signals, demodulate and decode them to generate message information;
3. The frequency and power of the RF carrier signal can be set;
4. Able to communicate with external devices through network or serial ports and report the read tag data;
5. Equipped with RSSI detection function for tag reflection signal strength;
6. Support internal firmware program upgrades;

### **Overall Dimensions**

- 1) Size:100\*70\*21.0mm;
- 2) Weight: Approximately 150g;



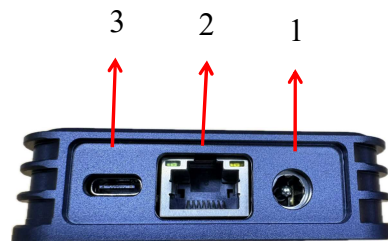
## environmental parameters

- 1) Working temperature: -25 °C~+70 °C;
- 2) Storage temperature: -40 °C~+85 °C;
- 3) Environmental humidity: The monthly average maximum relative humidity is not greater than 95% (the monthly average minimum temperature is 25 °C), and there is no condensation;
- 4) Power supply requirement: 9-36V;

## RF parameters

- 1) Working frequency range: 860-960MHz; Supports both frequency hopping and fixed frequency operating modes
- 2) RF output power: adjustable from 5dBm to 30dBm (+/-1dBm)
- 3) Antenna port impedance matching: 50  $\Omega$ ;
- 4) Air interface protocol: capable of recognizing tags encoded in ISO18000-6C;
- 5) Receiver sensitivity: -75dBm;

## Four Interface Description



According to the numerical identification in the above figure, they are:

1. PWR -2.5mm diameter power female connector;
2. LAN Ethernet interface;
3. USB-Type-C interface;

## LED indicator light



F40L has three color status indicator lights to indicate the working status. The indicator definitions are as follows:

| LED Serial Number | LED Definition | Description                                                                                                                                                                      |
|-------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Red light         | system         | System operation indication<br>System abnormality: The red LED is flashing<br>The system is functioning normally, and the red LED light is off                                   |
| green light       | power supply   | Power indicator light, constantly on indicates normal power supply                                                                                                               |
| Lantern           | signal         | Signal indicator light:<br>1、 When it is constantly on, it indicates that the tag signal has not been read;<br>2、 When flashing, it indicates that the tag signal has been read; |

## Installation Instructions

Reader fixing: 4 M3.5 screws are used for the inner hole

PWR connection: Use a 9-36V DC power adapter with a 2.5mm male connector for connection

Communication method:

1. LAN communication: Connect to the upper computer using Ethernet cables
2. USB Communication: Type-C to USB Connection Cable

 **Attention:** When using USB communication, it is recommended that the power not exceed 20dBm

# **Communication Programming Instructions**

- 1、 Directly interact with the reader through the communication protocol of the reader/writer;
- 2、 Can interact with readers through SDK secondary development;
- 3、 Interaction between the supporting upper computer Demo and the reader/writer;

Upper computer testing steps:

- 1) After connecting the device, click on "Network Port Configuration" - find the selected network adapter port - click on "Search Device".
- 2) After searching for the device, double-click to change the "IP address", "network mode", "target IP", etc. of the device.
- 3) After configuring the IP address, turn off the network port configuration, select "192.168.1.210" in the "serial port" bar, then change it to your own IP address, and click the "open button".
- 4) If the connection is successful, the lower left corner will prompt that obtaining the firmware version is successful.
- 5) Parameter setting:
  - (1) Antenna working settings: Select the working channel that opens the antenna.
  - (2) Power: Read and write power of 5-30dBm.
  - (3) Regional settings: frequency bands that are not very localized, (USA: 902~928MHz) (China: 920~925MHz) (Europe: 865~868MHz) (Korea: 910~914MHz)
  - (4) Inventory mode: Select the working mode of the reader/writer - it is recommended to use the fast read mode.
- 6) After setting the working status of the reader/writer, click the continuous inventory button to perform card reading operation.
- 7) For more advanced feature settings, please refer to the UHF RFID Demo software operation manual.

## **Common troubleshooting**

- 1) The power on indicator light is not on - first check if the power supply is reversed and if the voltage input is within the range of 9-36V DC.
- 2) Network connection failure - First check if the network port is connected, then search for the correct IP address input (see step 2 of the testing steps). If the input is correct but still cannot be opened, close the demo and try again.
- 3) Read card with no data thrown up - check if the antenna channel is opened correctly; Adjust the power level.

If the above issues cannot be resolved, please contact the relevant technical personnel.