



U5000-ID Positioning Device

User Manual V1.0

Editorial Notes

This manual has been prepared to help customers understand and use the wireless positioning system provided by our company. This manual will be continuously updated. Please contact after-sales support to ensure you have the latest version of the manual.

Intended Audience

RTLS system users.

Thank you very much for purchasing our product. If you have any questions or require assistance, please feel free to contact us.

This manual may contain technical inaccuracies, discrepancies with product functionality or operation, or printing errors.

Our company will update this manual based on changes in product functionality and will periodically improve or update the products or procedures described herein. Updated content will be included in a new version of this manual without further notice.



Safety Information

The purpose of this section is to ensure the user operates this product correctly to avoid hazards or property damage. Please read this manual carefully before using this product and keep it for future reference.

Precautionary measures are divided into two categories: "Warning" and "Caution":

Warning: Ignoring items labeled as Warning may result in death or serious injury.

Caution: Ignoring items labeled as Caution may result in injury or property damage.



Warning items alert users to potential risks of death or serious injury.



Caution items alert users to potential risks of injury or property damage.



Warning:

- Use a power supply that meets SELV (Safety Extra Low Voltage) requirements, and supply a DC power source rated at 24V that complies with IEC 60950-1 Limited Power Source (for detailed power supply requirements please refer to the manual).
- If the device is not functioning properly, contact the manufacturer. Do not disassemble or modify the device in any way (unauthorized modifications or repairs are at your own risk).
- To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.
- Installation should be performed by qualified service personnel and in accordance with local regulations.
- A readily accessible disconnect device should be incorporated into the building wiring.
- For instructions on ceiling mounting: after installation, ensure the connection can withstand a downward pull of at least 50 newtons (N).



Caution:

- Before operating the positioning device, check whether the power supply is correct.
- Do not drop the product or expose it to strong impact.
- Avoid placing the device in damp, dusty, extremely hot or extremely cold environments (operating temperature range: -20°C to +75°C).
- Ensure the installation location is at a sufficient distance from electromagnetically sensitive equipment to avoid potential electromagnetic interference.
- Ensure there are no electromagnetic shielding or jamming devices around the installation location (for example, mobile phone jammers or Wi-Fi jammers).
- Avoid heat accumulation; ensure adequate ventilation around the positioning device.
- Do not allow water or any liquids to enter the positioning device during use.
- When transporting the positioning device, it is recommended to use the original factory packaging for protection during shipment.

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1. Positioning Device Overview

1.1. Product Introduction

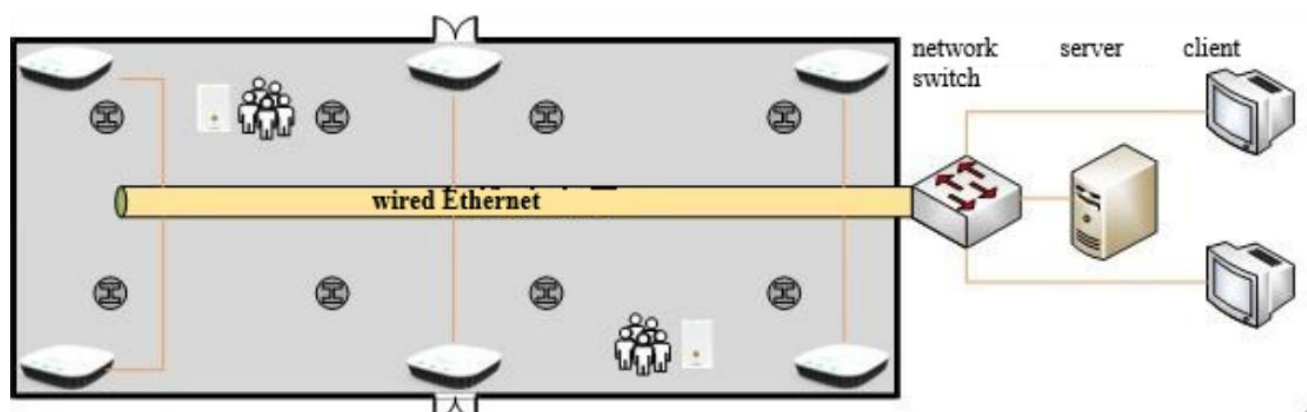
The U5000-ID UWB base station is a new wireless-pulse, high-precision positioning acquisition device designed to provide indoor positioning coverage in industrial environments. The device uses a built-in omnidirectional antenna and supports PoE power supply technology. It is easy to install and convenient to operate. Typical applications include industrial workshops, warehouses, smart buildings, and other sectors where real-time collection and upload of positioning tag signals are required.

1.2. Product Features

- High-precision positioning: ranging accuracy can reach the 10 cm level;
- Built-in antenna with ceiling-mounted installation for convenient and rapid deployment;
- Supports 10/100 Mbps adaptive Ethernet port;
- IP43 protection rating, suitable for long-term operation in industrial environments;
- Supports online firmware upgrades.

1.3. Typical Applications

Factory workshop



2. Structure of the Positioning Device

2.1. Positioning Device Front Panel

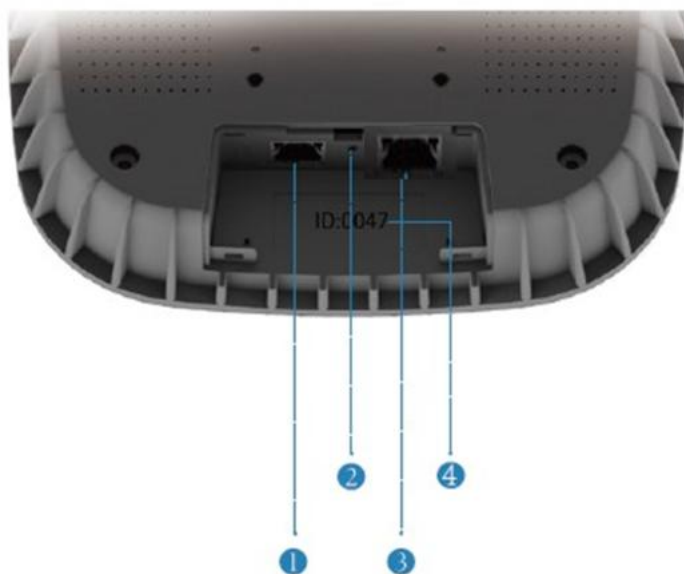
The U5000-ID device front panel contains three green LED indicators with the following meanings:



LED Number	Meaning	Status Description
1	Network communication indicator	Steady on: no network communication or communication fault Blinking: network communication is normal
2	Power indicator	Steady on: power is normal Long off: power supply abnormal
3	Positioning communication indicator	Steady on: no communication with tags or communication fault Blinking: tag communication is normal

2.2.Positioning Device Rear Panel

The rear panel of the U5000-ID device includes PoE network ports, a reset button, and the nameplate, with the following descriptions:



Number	Meaning	Description
1	RJ45 network port	PoE power input and network data interface.When the device is powered by DC, this port connects to a regular switch. When powered by PoE, this port connects to a standard PoE switch.
2	Reset button	When powered on, use a pin to press and hold for 15 seconds then release; the device will restore factory settings and reboot.
3	RJ45 network port	PoE power output and network data interface.
4	Nameplate	Device information, including the device serial number/ID.

3.Installation and Power Supply of the Positioning Device

3.1.Device Installation

The U5000-ID positioning device is typically ceiling-mounted; depending on the actual ceiling structure it may also be installed as a pendant (suspended) mount or wall mount. Typical installation methods include:

Ceiling mount



Bracket pendant mount



Bracket wall mount



Because the positioning device collects time-of-flight timestamp signals from positioning tags, installation position and the surrounding environment have higher requirements, including the following:

- The device should be installed in the correct orientation, facing downward. The device should not be installed vertically or at an incline.
- The device must not be obstructed and should maximize its visible coverage area. It is prohibited to install the device above ceiling panels (including metal aluminum panels and non-metal materials such as gypsum board or glass), weak-current cable trays, fire pipes, air-conditioning ducts, indoor plants and other obstructive items.
- The mounting location should avoid objects that may cause signal reflection, including large metal surfaces and large display screens.

3.2.Device Power Supply

The U5000-ID uses PoE for power supply.

PoE power must use Category 5e (CAT5e) or better network cable and connect a standard PoE switch to the device to complete the device power supply. Note that the PoE power transmission distance must not exceed 100 meters; an engineering control limit of 80 meters is recommended.

4. Network Connection of the Positioning Device

4.1.Wired Network

There are two common methods to connect the positioning device to a computer, as shown in Figures 1.1.1 and 1.1.2:

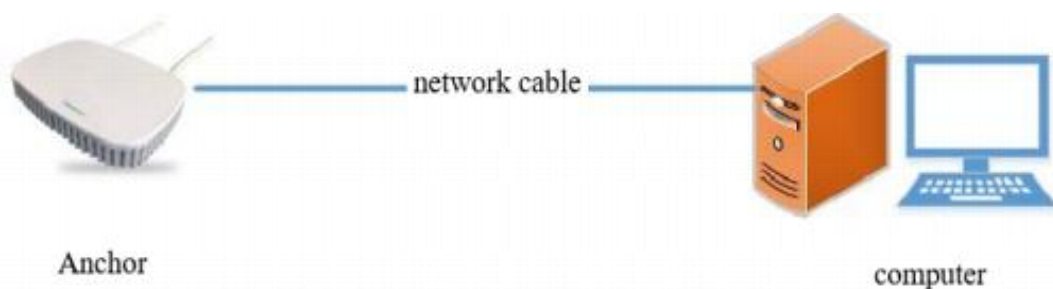


Figure 1.1.1 Direct connection via network cable

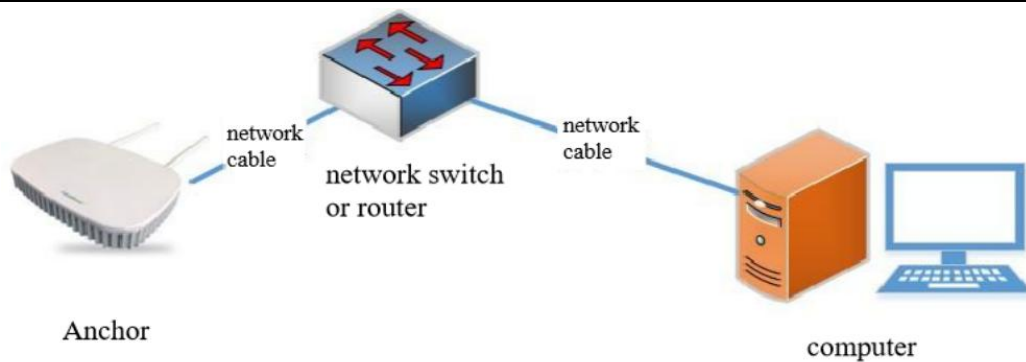


Figure 1.1.2 Connection via switch or router

4.2. Network Configuration

The U5000-ID positioning device uses a fixed (static) IP address to access the network and does not support DHCP functionality. The factory default IP address is "192.168.1.X" and the port is "48200". The value of X varies based on the device ID and is calculated as follows:

$$X = (\text{Device ID} + 11) \% 256$$

For example, if the device ID is 10000, then $X = (10000 + 11) \% 256 = 27$, so the device's default IP address is: 192.168.1.27.

Note! Special IP address rules/explanations:

1. If the host IP you set is the same as the server IP, the host IP's fourth octet will be forcibly modified to 7; if the server IP's fourth octet is 7, then the host IP will be changed to 6.
2. If the host IP's fourth octet is 1 or 255, the host IP's fourth octet will be changed to 7.
3. If the host IP is 192.168.1.12, the host IP's fourth octet will be changed to 11 + the host device ID.

Before modifying the device's network configuration, first modify the computer's IP address so that it is in the same subnet as the device. It is recommended to configure the computer's network settings as follows:

The screenshot shows the 'General' tab of a network configuration window. It contains instructions about automatic IP assignment and two main sections for manual configuration. The first section, 'Use the following IP address:', has three input fields: 'IP address' (192 . 168 . 1 . 11), 'Subnet mask' (255 . 255 . 255 . 0), and 'Default gateway' (192 . 168 . 1 . 1). The second section, 'Use the following DNS server addresses:', has two input fields: 'Preferred DNS server' and 'Alternate DNS server', both containing three dots. At the bottom, there is a checkbox for 'Validate settings upon exit' and an 'Advanced...' button. The 'OK' button is highlighted with a blue border.

Field	Value
IP address:	192 . 168 . 1 . 11
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	192 . 168 . 1 . 1
Preferred DNS server:	. . .
Alternate DNS server:	. . .

Run the Localsense device configuration tool on the computer as shown in the figure. The top section displays devices that can be detected by the computer. The bottom section shows details of the selected device, including server address and device address. Modify the device server IP, local IP, subnet mask, and default gateway as needed, and click "Save this device" to complete the modification for the selected device.

4.3. Server and Backup Server IP

The U5000-ID device supports uploading data to two IP addresses simultaneously, typically used for dual-server hot-standby systems. The backup server IP address is the server IP address with the last octet decreased by 1. For example, when the server IP address is 192.168.1.11, the backup server IP address will automatically be 192.168.1.10.

Appendix: Technical Specifications

UWB Frequency Range	7163--8812MHz
UWB Transmit Power Density	≤-41dBm/Mhz
BLE Frequency Range	2.4-2.4835GHz
BLE Transmit Power	≤20dBm(EIRP)
Interface Type	Wired Ethernet
Interface Rate	100Mbps
Interface Protocol	TCP/IP
Transmission Distance	100m
Transmission Medium	Category 5 or better network cable
Dimensions	200mmx200mmx40mm
Weight	400g
Protection Rating	IP43
Mounting Method	Ceiling mount
Power Interface	Standard POE
Supply Voltage	48V
Supply Current	0.5A
Operating Temperature	-20-70℃
Storage Temperature	-40-85℃
Operating Humidity	10%-90% (non-condensing)
Storage Humidity	5%-95% (non-condensing)
Synchronization Mode	Wireless synchronization

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.

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.

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.