User Manual

1. Functional Description

CD01HFS01X supports wireless communication technologies including WiFi 802.11ah, BLE, UWB, NFC, and RFID. It is also equipped with temperature and humidity sensors, as well as a motion sensor. By utilizing its RF communication capabilities, users can track the device's location or use it as a communication modem. The temperature and humidity sensors allow real-time environmental monitoring, while the motion sensor detects movements of the device. Additionally, the device features two buttons that allow users to change its operating mode, and a 3-color LED that visually indicates the device's operating status.

2. How to Use

The CD01HFS01X device is designed for use in environments where a WiFi 802.11ah repeater is installed. This device operates by receiving commands via WiFi 802.11ah communication and executing the corresponding functions. To ensure proper operation, a WiFi 802.11ah network must be set up.

2-1. Connecting to the Network

① Verify that a WiFi 802.11ah repeater is installed in the environment.
② Turn on the CD01HFS01X device.
③ The device will automatically connect to the WiFi 802.11ah network and begin operating once the connection is successfully established.

2-2. Key Features and Usage

The CD01HFS01X device supports the following features:

- RF Signal Reception
    - The GPS function enables tracking of the device's location.
    - The BLE (Bluetooth Low Energy) function allows detection and communication with low-power Bluetooth signals.
- Environmental Sensing
    - The built-in temperature and humidity sensors continuously measure the surrounding environment.
    - Users can access real-time temperature and humidity data via the network.

- Motion Detection
  - The built-in motion sensor detects movement in the surrounding area.
  - Users can configure the system to log motion data or trigger notifications when movement is detected.

2-3. Checking Data

When the WiFi 802.11ah network is active, users can connect to the device through a dedicated application or web interface to monitor the following information:

- Real-time temperature and humidity data
- Device location via GPS
- BLE signal detection status
- Motion detection status in the monitored area

All features require an active WiFi 802.11ah network to function properly, so please ensure network connectivity before use.

3. Features

- Location Tracking: Transmit location via GPS and WiFi HaLow
- Environmental Monitoring: Real-time temperature & humidity measurement
- Motion Detection: Detect motion and impact
- Proximity Tracking: Use BLE/UWB for precise locating
- User Interface: 2 buttons & 3-color LED

ITEM	Description
Model Name	CD01HFS01X
Wireless Technology	WiFi 802.11ah, BLE, UWB, NFC, RFID
Location Information	GPS Reception Supported
Sensors	Temperature,Humidity,Motion
Power	Replaceable Battery
Display	3-Color LED
ETC	2-Buttons

4. Electrical Characteristics

Item	Description

Size	78mm x182.5mm / H max: 35.5mm		
Supply voltage range	Replaceable 3.6V(TYP)		
Communication	Bluetooth Low Energy(BLE) 5.0		
	WiFi Halow(802.11ah)		
	GNSS(L1, L5)		
	UWB		
Operation Temp.	-20 ~ 70 ℃		
Weight	250g		
Display	3-Color LED		
ETC.	Button(2EA)		

5. RF Specifications

All measurements are made under nominal supply voltage, room temperature, and conducted conditions at each antenna port except antenna.

-. BLE RF Characteristics

ITEM	Parameter	SPEC			Unit	Condition
		MIN	TYP	MAX		
Rx	Frequency	2400	0	2483.5	MHz	
	Sensitivity		-85		dBm	PER<10%, Conduction

-. UWB RF Characteristics

ITEM	Parameter	SPEC			Unit	Condition
		MIN	TYP	MAX		
Tx	Frequency		6489.6		MHz	
	Power			-31	dBm/ MHz	Output Power Sectral Density (programmable)
	Center Frequency Tolerance	-25		+25	KHz	25℃
Rx	Frequency		6489.6		MHz	
	Sensitivity		-94.3		dBm	PER<10%, Conduction

"This equipment may only be operated indoors. Operation outdoors is in violation of 47 U.S.C. 301 and could subject the operator to serious legal penalties."

-. GPS RF Characteristics

ITEM	Parameter	SPEC			Unit	Condition
		MIN	TYP	MAX		
RX	Frequency		1575.4		MHz	L1 Band
			1176.4		MHz	L5 Band
	Frequency Offset	-3150		3150	Hz	
	CNR	45		55	dB	

-. WiFi(11ah) RF Characteristics

ITEM	Parameter	SPEC			Unit	Condition
		MIN	TYP	MAX		
Tx	Frequency	840		940	MHz	
	Power		13		dBm	MCS7, 4MHz BW
Rx	Frequency	840		940	MHz	
	Sensitivity		-79		dBm	PER<10%, Conduction MCS7, 4MHz BW

6. FCC

FCC Information to User

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 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

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

IMPORTANT NOTE : FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 of the device