




# User Manual

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Title [ASN400M] User Manual					

ASN-400M User Manual



	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 2(13)
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## 1. Contents

This document is a user manual designed to help using the ASN-400M correctly. Please read and understand it carefully before use.

Document specifications may be changed without notice as necessary. For any other questions, please contact LDT Co., Ltd.

Please read the safety precautions carefully before use our device.

### 1.1. Purpose of document

This document is a manual for using ASN-400M. ASN-400M is a sensor network-based fire detection device.

This document describes the structure and usage method of ASN-400M.

### 1.2. Cautions

#### ► Precautions for installation and operation

- This product uses a lithium-polymer battery. Do not disassemble the product or touch it with wet hands. There is a risk of electric shock.
- If this product is not used for a long period of time, the device's battery efficiency may decrease.
- If the remaining battery charge is less than 10%, the battery must be replaced immediately. The manufacturer is not responsible for device malfunctions that occur due to low battery. You can check the remaining battery capacity in the monitoring program.
- Install and store the device indoors at room temperature, avoiding direct sunlight, high temperature and humidity.

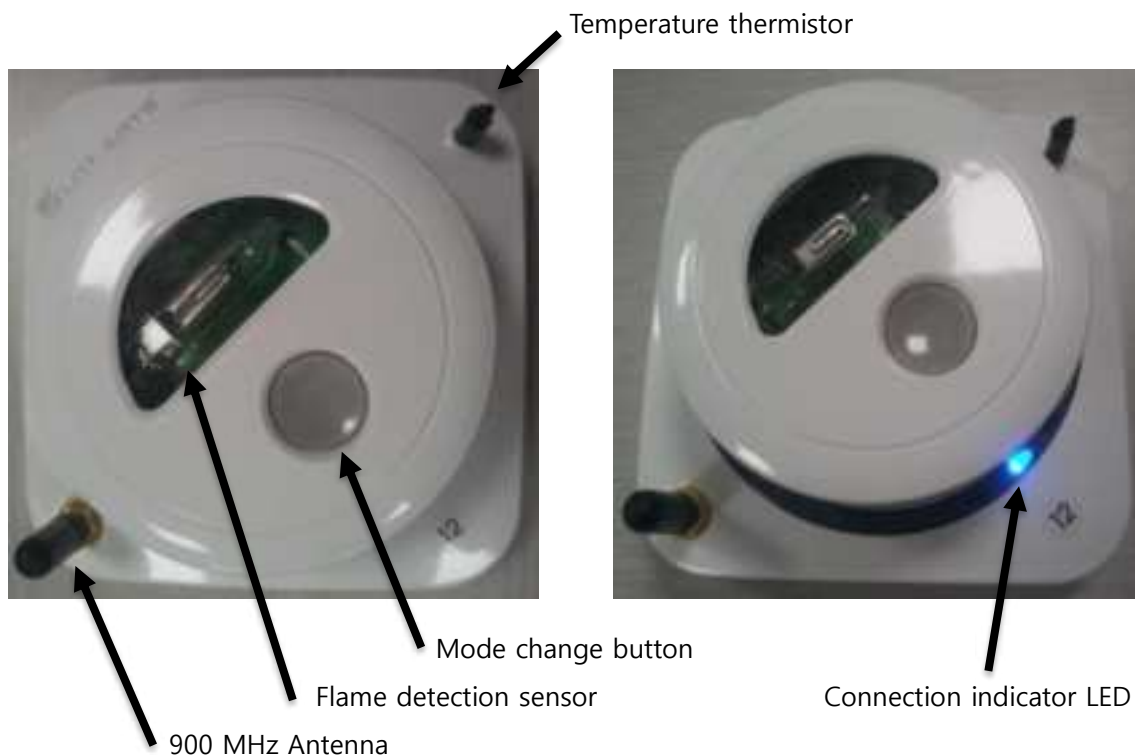
	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 3(13)
---	--------------------------	--------	----------------	----------------	---------------


- ▶ Precautions in management
  - Do not subject the product to strong impact or pierce it with a sharp object. If you throw or drop it, the impact may cause damage or shorten the lifespan of the product.
- ▶ Precautions when disassembling
  - Never disassemble, repair or modify the product except for the administrator. The manufacturer is not responsible for any problems caused by arbitrary disassembly.
- ▶ Precautions in installation environment
  - This device uses LoRa(900MHz) based communication. Depending on the surrounding environment, the device's communication status may deteriorate.

## 2. Device Structure

### 2.1. ASN-400M Part Names and Functions

#### 2.1.1 Front part

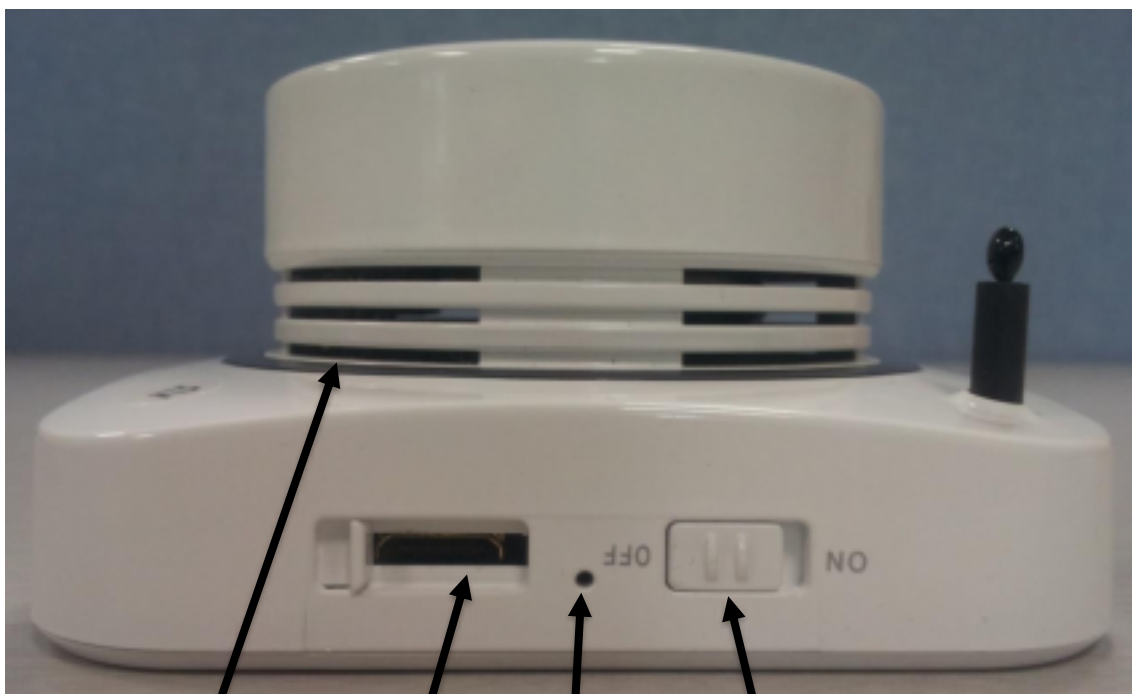


	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 4(13)
---	--------------------------	--------	----------------	----------------	---------------

► The front part of this product consists of the following items as shown in the picture.

- 903~919MHz Antenna
- Temperature Thermistor
- Flame detection sensor
- Connection indicator LED
- Mode change button

### 2.1.2 Side Part



Smoke detection chamber

Connector (HDMI)

Buzzer

Power ON/OFF Switch

► The side part of this product consists of the following items as shown in the picture.

- Power On/Off switch
- Buzzer
- Connector (HDMI)
- Smoke detection chamber

	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 5(13)
---	--------------------------	--------	----------------	----------------	---------------

## 2.2. ASN-400M detailed features

### 2.2.1 LED & Buzzer

▶ ASN-400M consists of 4 LEDs, one of the LED is located in the center of the product and the other 3 are located below the mode change button. Each LED has the following functions:

▶ Blue LED in center of the product

- Blinks during normal operation, turns off when wireless communication is not connected

▶ BLUE LED on mode change button


- Installation Mode : Communication Sensitivity (LQI > 40)
- Operation Mode : Blink when smoke is detected.



▶ Green LED on mode change button

- Installation Mode : Communication Sensitivity (40 > LQI > 10)
- Operation Mode : Blink when flame is detected.



	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 6(13)
---	--------------------------	--------	----------------	----------------	---------------

- ▶ Red LED on mode change button
  - Installation mode : Communication sensitivity (10 > LQI)
  - Operation mode : blink when temperature threshold is detected.



- ▶ In two or more alarms



<Smoke & Flame>



<Flame & temperature>




<smoke & temperature>

- ▶ In three alarms



- ▶ Buzzer
  - Notifies alarms and status of ASN-400M

	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 7(13)
---	--------------------------	--------	----------------	----------------	---------------

### 2.2.2 Power Source

- ▶ POWER
  - The power on/off switch controls the power of this product.
- ▶ BATTERY
  - This product has a built-in Li-Polymer battery.

### 2.2.3 External Interface

- ▶ mini HDMI connector
  - The HDMI connector is used for product updates and settings. (For administrators)


## 2.3. Installation considerations

- ▶ When installing the product, place it in the center of the communication network to ensure optimal network management and communication. Communication performance may be affected depending on the interior or product placement.
- ▶ The product is placed in an open space and install after checking the surrounding area for metal objects that may interfere with communication. If multiple metal objects are placed around the product, communication may not occur smoothly.
- ▶ If you have any questions regarding system operation or use, please contact the manufacturer.

## 2.4. Product specifications

	Specification	
MCU	STM32L071CZT6	
MEMORY	FLASH	192 KB
	SRAM	20 KB
RF Transceiver	Frequency	903 ~ 919 MHz
	Modulation	LORA
	Channels	33 ch
	Tx Power	94 dBμV/m



	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 8(13)
---	--------------------------	--------	----------------	----------------	---------------

Interface	Antenna	SMA
	Update connector	mini HDMI
Smoke Sensor	Sensitivity	1.2 ± 0.3V
Flame Sensor	Sensing range	5m
	Sensing Angle	120° @ 2m
Temperature Thermistor	Temperature range	-10 ~ 50°C
Power	Li-Polymer	4,200mA (3.7V)
Product case	Material	ABS(Flame retardant)
Product size	100 x 100 x 51.3 mm	
Operating Environment	Temperature	-10 ~ 50°C
	Humidity	20 ~ 85%


### 3. Setup Mode

This product's operation functions can be modified through the setting mode (buzzer, flame sensitivity). Setting mode is operated using the button, and when the button is pressed, the button LED lights up in blue. Therefore, if a different LED is displayed when you operate the button, the LED color may look different.

#### 3.1 LQI(Link Quality Indicator) test mode

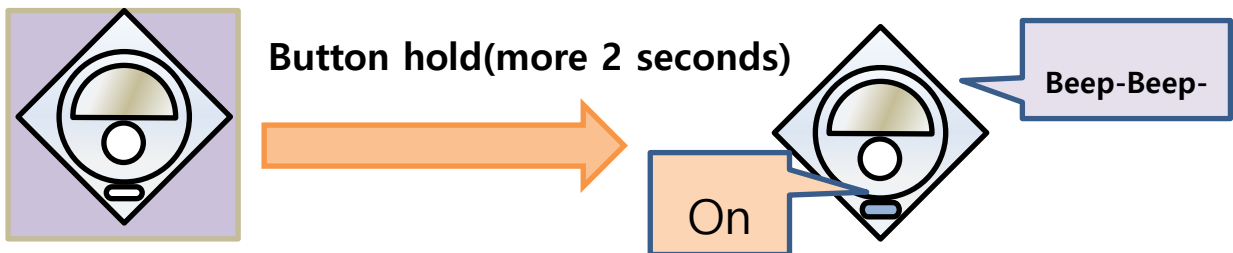
You can test the LQI by briefly pressing the button while the product is communicating with the gateway. Since the LQI test is tested through communication with the gateway, there is no response if communication fails. The status of LQI is indicated by LED and its status is as follows.

BLUE LED	->	LQI > 40
GREEN LED	->	40 > LQI > 10
RED LED	->	10 > LQI
No Response	->	Communication fail

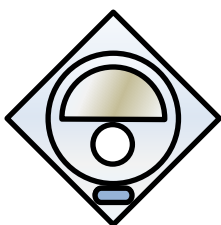
	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 9(13)
---	--------------------------	--------	----------------	----------------	---------------

### 3.2 Configuration Mode

ASN-400M can set up simple functions through Configuration Mode. To enter configuration mode, press and hold the button (more than 2 seconds) and the buzzer will sound twice and the [Connection confirmation LED] will turn on.

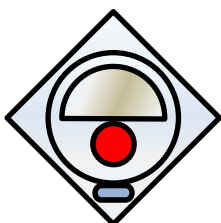


If no operation is performed for 1 minute in configuration mode, the configuration mode will end. **Additionally, the product cannot enter configuration mode after 2 minutes of communication.** Therefore, in order to proceed with the configuration mode again, you must change the product switch to OFF -> ON. If you press and hold the button in configuration mode, the state is released with a long buzzer sound. Also, if you press the button briefly in Configuration mode, the mode changes with a single buzzer sound, and there are a total of 3 types of setup modes. The LED display method for each mode is as shown below, and entering the mode is done by pressing Long button.



► Configuration mode

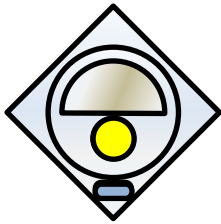
This is the mode when entering the configuration mode. If you press long in this state, you will exit the setup mode.



► Buzzer configuration

This mode allows you to turn the use of the buzzer on or off. In this state, press and hold the button to enter [Buzzer setting mode].

	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 10(13)
---	--------------------------	--------	----------------	----------------	----------------



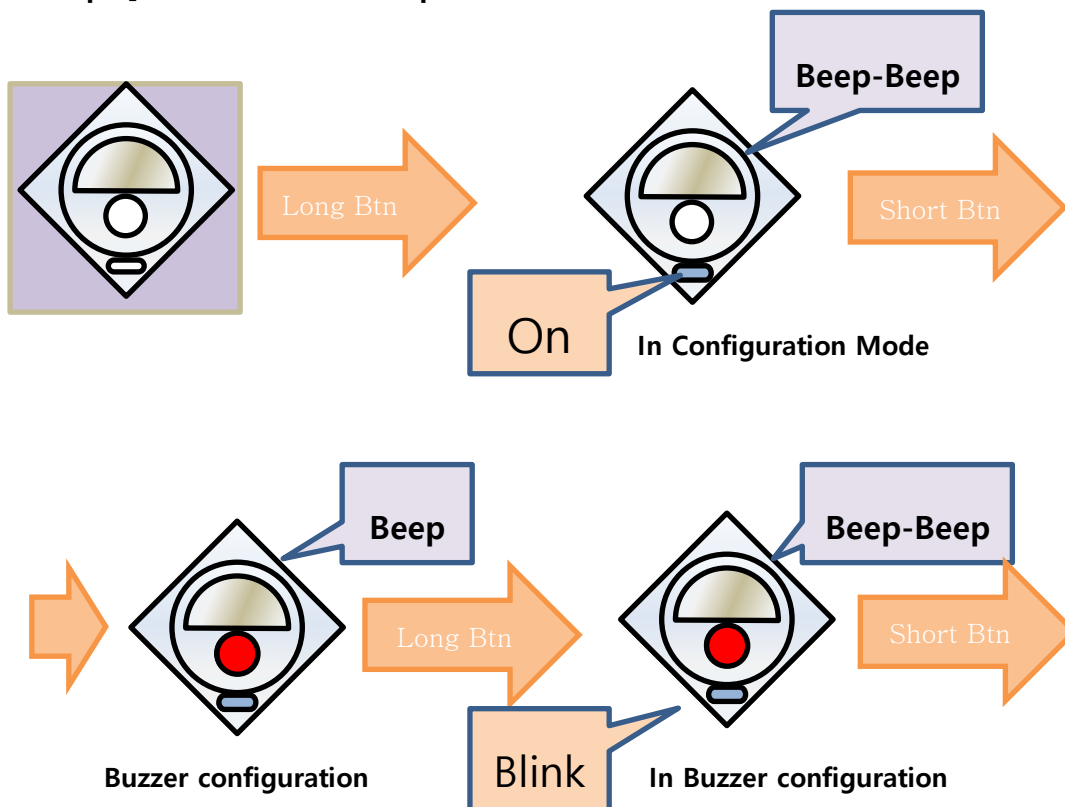
#### ► Flame sensitivity configuration


This mode can adjust flame sensitivity. In this state, press and hold the button to enter [Flame sensitivity setting mode].

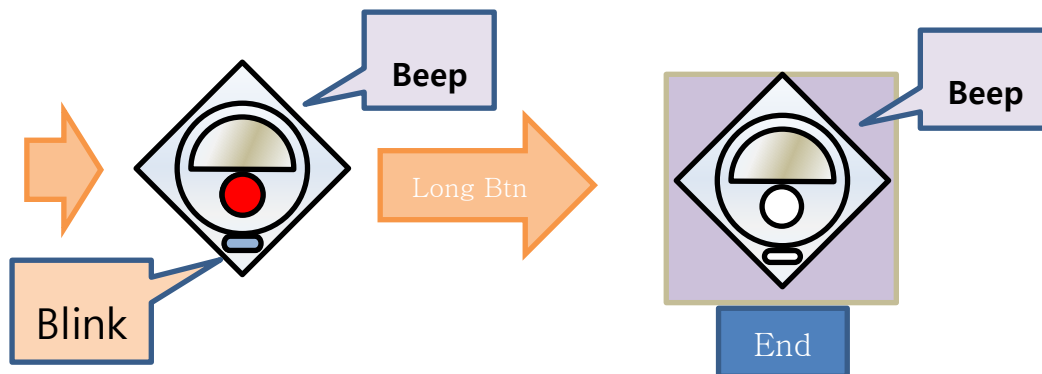
### 3.3 Buzzer Configuration

In buzzer configuration state, press long button to enter buzzer setting mode. When entering [Buzzer setting mode], you can hear the buzzer sound to know whether the product is currently using the buzzer. **If the buzzer sounds twice with a single tone, it is in the On state. Conversely, if it sounds once with a single tone, it is in the Off state.** In [Buzzer setting mode], you can change on/off by pressing short button. In that state, if you press long button, the current buzzer settings are saved and the configuration mode is exited.

#### Example] Buzzer On/Off setup.




	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 11(13)
---	--------------------------	--------	----------------	----------------	----------------



### 3.5 Flame sensitivity configuration

In flame sensitivity Configuration state, press and hold the button to enter flame sensitivity setting mode. When entering [Flame Sensitivity Setting Mode], you can know the current flame sensitivity of the product by the buzzer sound. If the buzzer beeps once with a single tone, the flame sensitivity is set to 1. Also, If the buzzer sounds with a single tone twice, the flame sensitivity is set to 2. In [Flame Sensitivity Setting Mode], you can change the flame sensitivity by briefly pressing the button. If you press long button in this state, the current flame sensitivity is saved and the setting mode is exited.

	YYYY/MM/DD 2024/08/28	Number	Version 1.0	File/Reference	Page 12(13)
---	--------------------------	--------	----------------	----------------	----------------

## 4. Device Installation


This product is installed using a product installation bracket. To install the product, attach the bracket to the installation location with screws. Then, the product installation is completed by fixing it to the bracket connection on the back of the product.



## 5. Notice

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

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.

	<b>YYYY/MM/DD</b> 2024/08/28	<b>Number</b>	<b>Version</b> 1.0	<b>File/Reference</b>	<b>Page</b> 13(13)
---	---------------------------------	---------------	-----------------------	-----------------------	-----------------------

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.