IoT Edge Mini a technical manual

[S2K-MN-001 v.1.0 version]

KOUNOSoft

1. The names of each part..... 3
2. Mainboard Specifications..... 5
3. Sensor Specifications..... 5
3-1. Temperature/humidity sensor..... 5
3-2. Motion sensor..... 5
3-3. Flame detection sensor..... 6
3-4. Dust sensor..... 6
3-5. CO2 sensor 7
4. F/W update 8
4-1. IoT Edge Mini Check connection port..... 8
4-2. Unzip the attached file..... 8
4-3. Windows Run Command Prompt..... 8
4-4. Move to uncompressed folder..... 8
4-5. Update Command execution..... 9
4-6. Check the operation of the equipment..... 11

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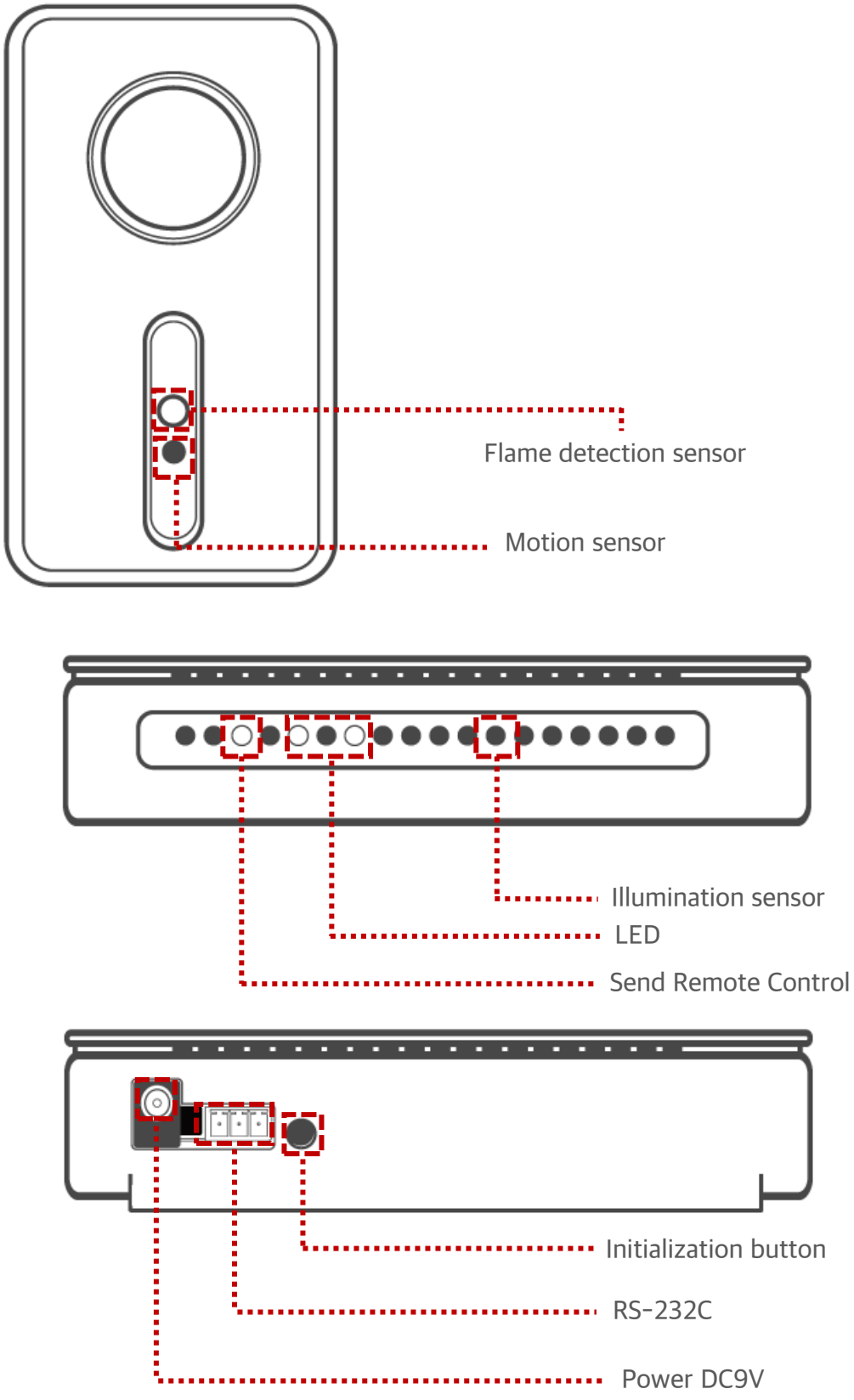
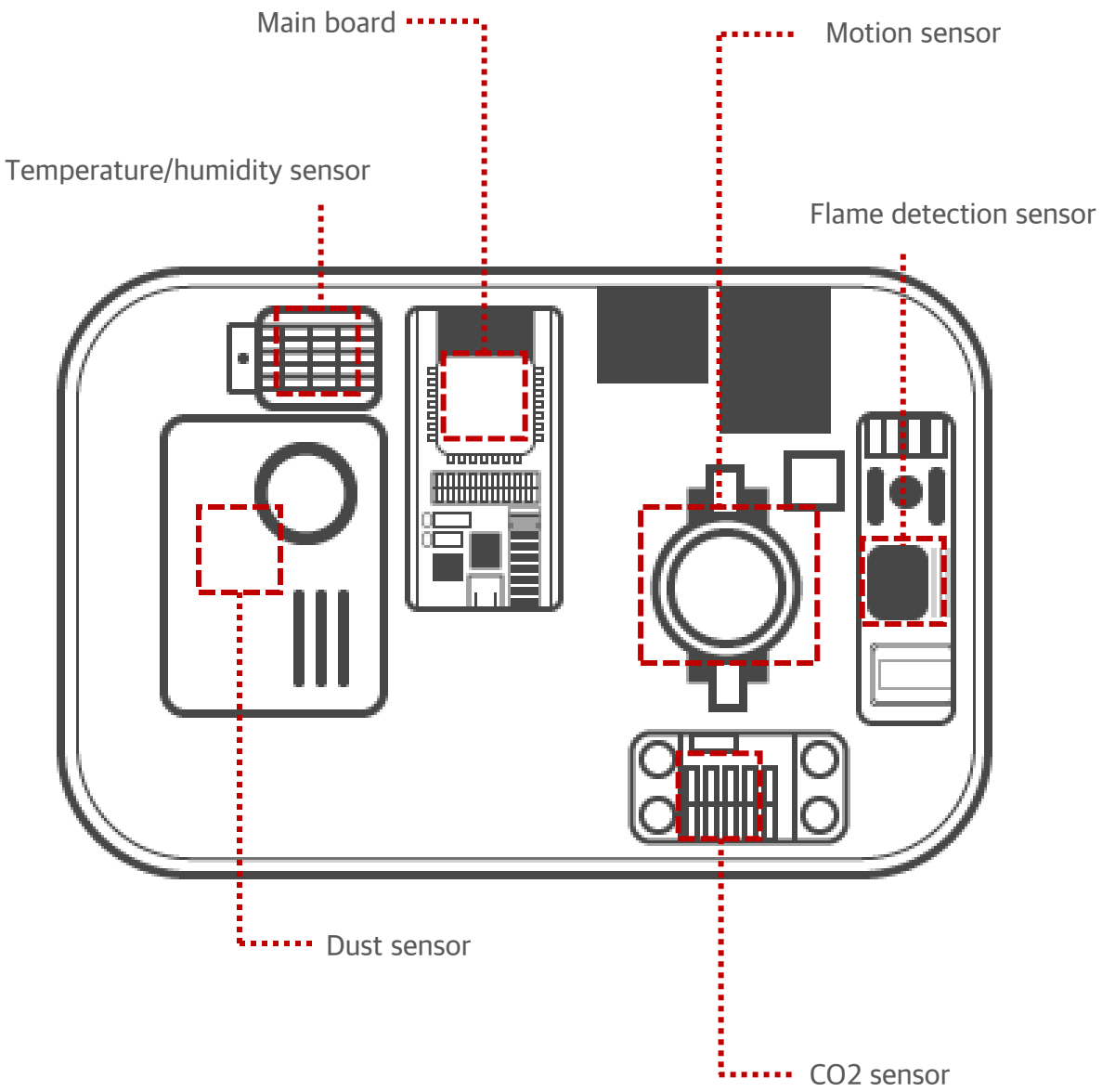
1. The names of each part

The IoT Edge Mini is configured as follows.




Main board
Motion sensor
Temperature/humidity sensor
Flame detection sensor
Dust sensor
CO2 sensor

2. Mainboard Specifications

Category	Items	Specifications
Wi-Fi	Protocols	802.11 b/g/n (802.11n up to 150 Mbps)
	Frequency range	2.4 GHz ~ 2.5 GHz
Bluetooth	Protocols	Bluetooth v4.2 BR/EDR and BLE specification
Hardware	Integrated crystal	40 MHz crystal
	Integrated SPI flash	4 MB
	Operating voltage	3.0 V ~ 3.6 V
	Operating current	Average: 80 mA
	Minimum current by power supply	500 mA
	Operating Temp.	–40 °C ~ +85 °C
	Moisture sensitivity level	Level 3

3. Sensor Specifications

3-1. Temperature/humidity sensor

Category	Specifications
Input Voltage	5V
Power consumption	300mA
Output current	8mA
Sampling period	2 sec
Interface	I2C
Temperature Range	-40-80 ℃ ± 0.5 ℃
Humidity Range	20~90% RH ± 2 % RH

3-2. Motion sensor

Category	Specifications
Size	30*21*12mm
Fixing hole	3mm
Hole distance	15mm
Input voltage	5V
Output	3V
Output current	1ma
Output delay	about 3 seconds
Sensing angle	100°
Sensing distance	about 6m

3-3. Flame detection sensor

Category	Specifications
Spectrum range	760nm ~ 1100nm
Detection angle	0 - 60 degree
Power	3.3V ~ 5.3V
Mounting hole	3.1mm
Weight	2g
Package size	8.0 * 6.0 * 1.0cm

3-4. Dust sensor

Category	Specifications
Particle size range	0.3μm ~ 10μm
Measurement range	0 ~ 1,000μg/m³
Resolution	1μg/m³
Respond time	1sec
Time to first reading	≤ 8 seconds
Working condition	-10~ 60°C, 0 ~ 95%RHnon-condensing
Storage condition	-30~70°C,0~95%RHnon-condensing
Working current	≤100mA
Standby current	≤200μA
MTTF	37,297hr(continuous turn on)

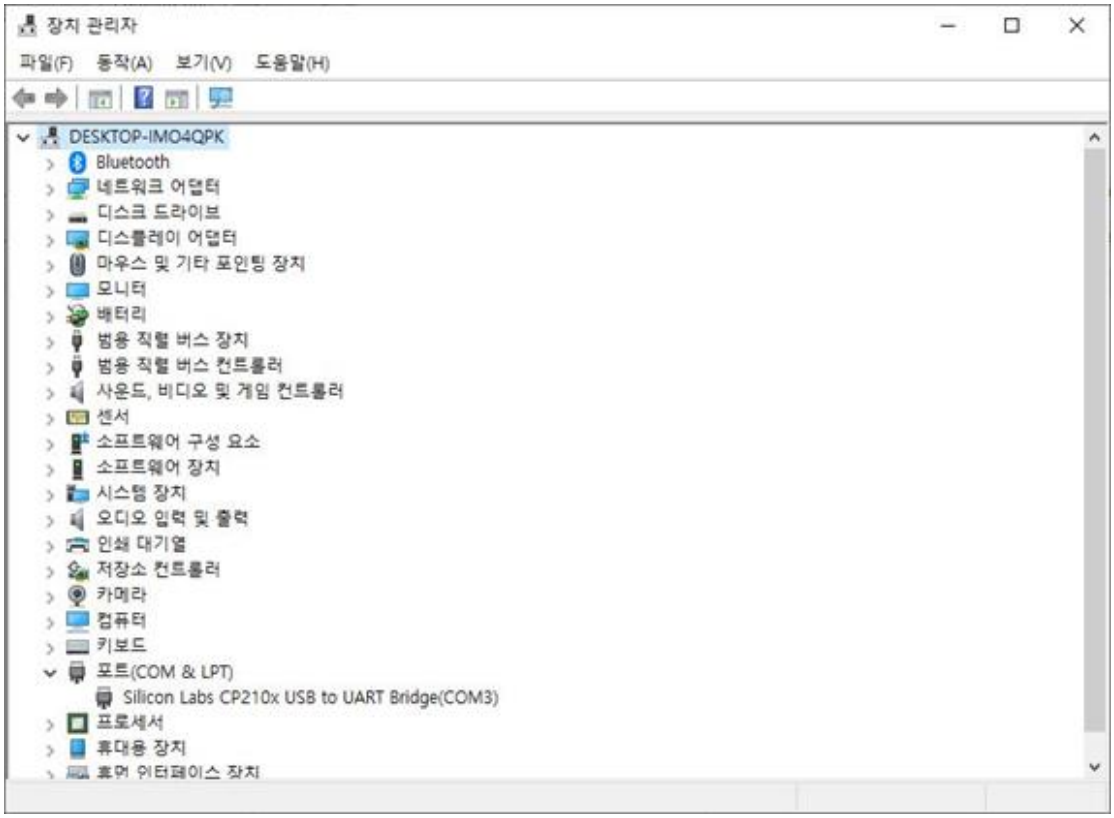
3-5. CO2 sensor

Category		Specifications
power consumption		48 mA at 1.8V
Interface		I2C
Output		TVOC and CO2eq
Measurement range	-	0 ppm to 1000 ppm
Specified range	Ethanol signal	0.3 ppm to 30 ppm
	H2 signal	0.5 ppm to 10 ppm
Accuracy	Ethanol signal	typ.: 15% of meas. value
	H2 signal	typ.: 10% of meas. value
Long-term drift3,4	Ethanol signal	typ.: 1.3% of meas. value
	H2 signal	typ.: 1.3% of meas. value
Resolution	-	0.2 % of meas. value
Sampling frequency	-	Max. 40 Hz

4. F/W update

4-1 IoT Edge Mini Check connection port

Run the Windows Device Manager.



If you look at the Device Manager port (COM & LPT), the IoT Edge Mini is shown.
You can see the connected port is COM3.

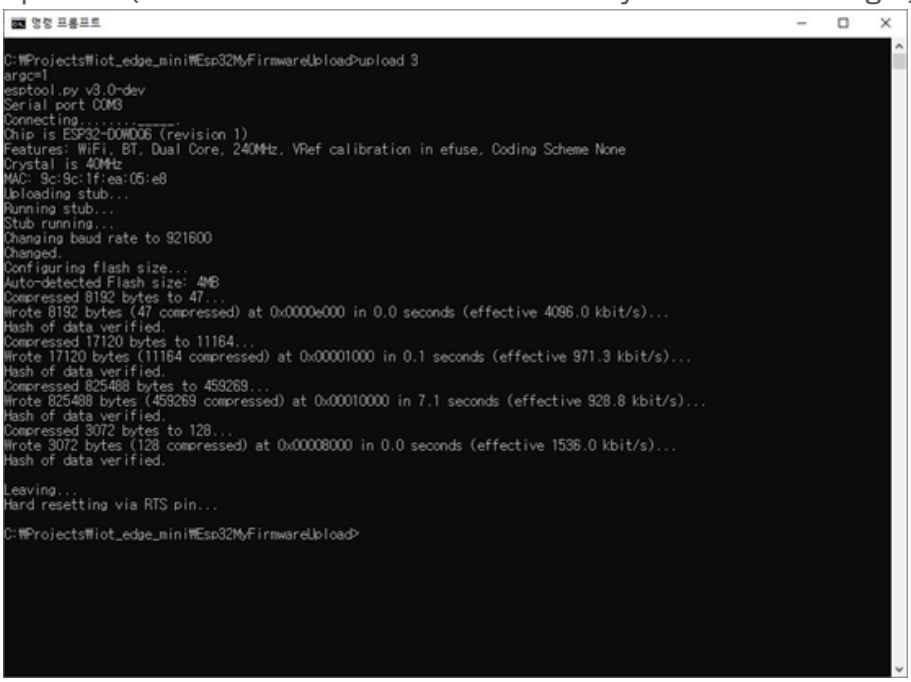
4-2. Unzip the attached file

4-3. Run Windows Command Prompt

4-4. Move to uncompressed folder

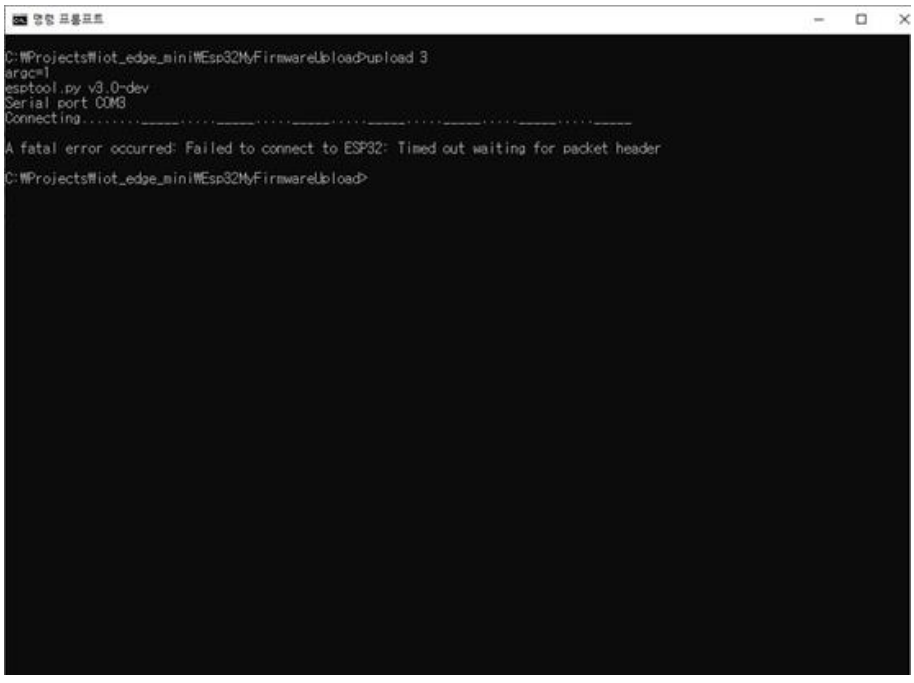
4-5. Run the Update command

upload 3 (3 is the COM Port number verified by the Device Manager)



<Figure 1> F/W Update Success Screen

If the update fails or fails as shown in the attached image below,



<Figure 2>F/W Update Failure Screen

As shown in yellow above, when searching for ESP32 Board, you can find the items on the ESP32 Board F/W Update starts when the boot button is pressed.

4-6. Check the operation of the equipment

Run Terminal Emulator (Terminal or other) to connect to F/W Update above
Open COM Port on 115200bps to view equipment activity logs.

<Figure 3> Equipment Operation Log Screen

As shown on the screen above, the values read from each sensor are displayed, and if you check this value, you can know whether the sensor is operating normally.

cds : Illumination sensor value
pir : Motion detection sensor value
fire : Flame detection sensor value
co2, tvoc : co2 sensor value
pm__: Dust sensor value
temp : Temperature sensor value
humi : Humidity sensor value

IoT Edge Mini User's Guide

[S2K-MN-002 v.0.5 draft version]

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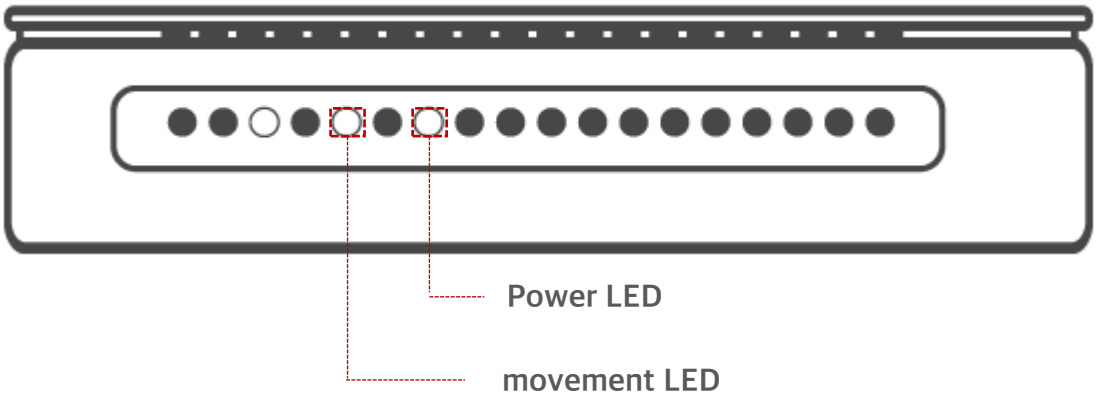
1. LED Explanation..... 3
2. Button Description..... 3
3. Connecting Devices..... 4
4. Behavior Description..... 6
4-1. Select Mode (WiFi Mode, Bluetooth Mode)..... 6
4-2. WiFi Mode..... 6
4-3. Bluetooth Mode..... 6
4-4. System reboot..... 6
5. Server Description..... 7
5-1. Connection screen..... 7
5-2. Home screen..... 8
5-3. Integrated Dashboard Screen..... 8
5-4. IoT Monitoring Screen..... 9
6. App Description..... 10
6-1. Installing the app..... 10
6-2. Start the app..... 11
6-3. Start the app..... 11
6-4. IoT Edge Mini Equipment Discovery..... 12
6-5. IoT Edge Mini (KOUNO_MINI) Connection..... 12
6-6. IoT Edge Mini Remocon Function..... 13
6-7. IoT Edge Mini Server Connection function..... 13
6-8. IoT Edge Mini RFID Function..... 14
6-9. IoT Edge Mini setting..... 14
6-10. IoT Edge Mini Disconnecting..... 15
7. precautions..... 16

1. LED Explanation



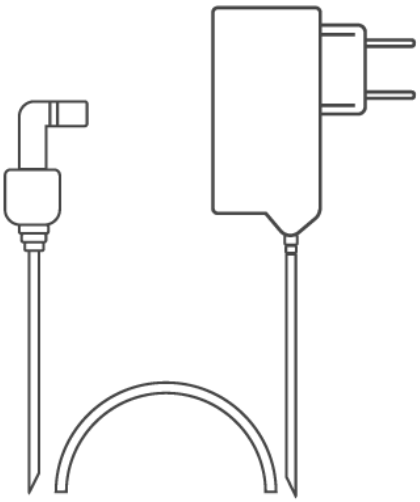
Power LED : LED indicating power status
movement LED : LEDs indicating the operational status of the IoT Edge Mini

- Mode Selection Notification : LED blinks fast for 10 seconds (Blink)
- WiFi connection notification: LED flashes every 0.5 seconds (Blink)
- WiFi Data Transfer Notification: LED flashes every 1 second (Blink)
- Bluetooth operation notification: LED flashes twice quickly every 1 second (Blink)

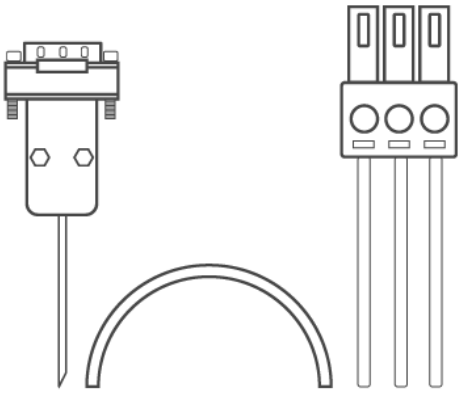
2. Button Description

Initialization button : System reboot, button used to select mode

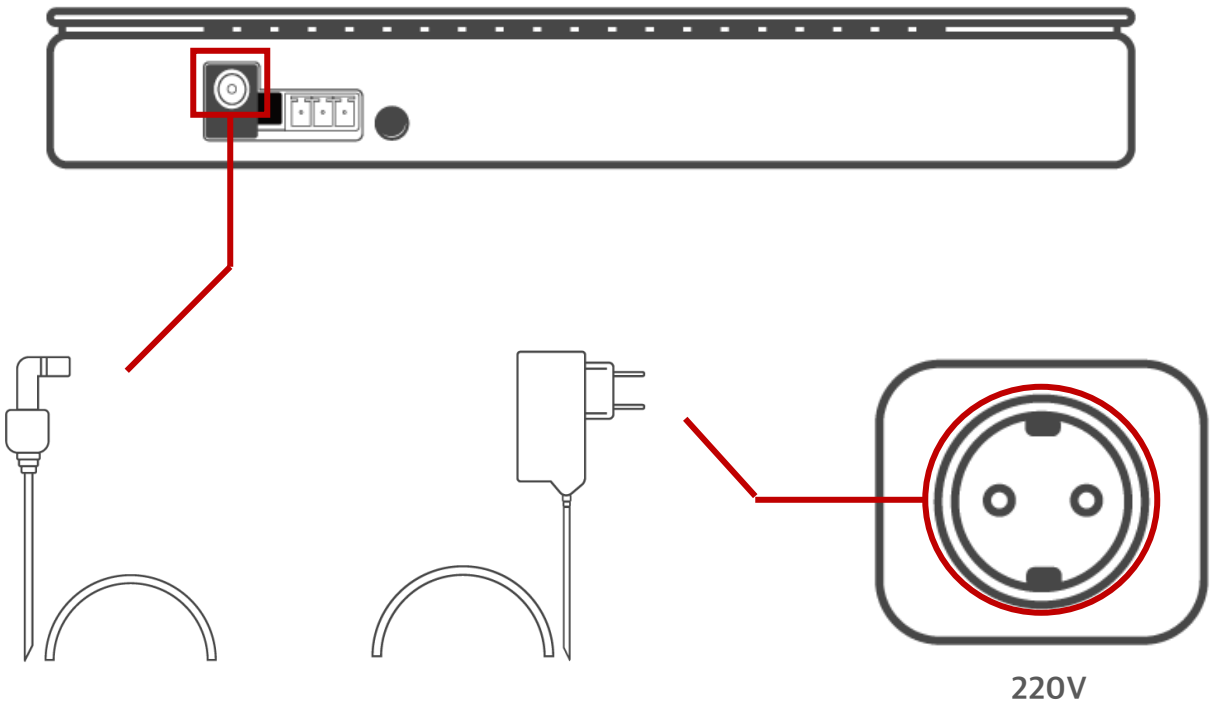
3. Connecting Devices



Power DC 9V

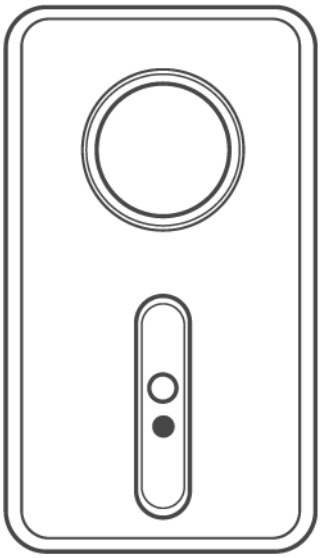


RS-232C



220V

Plug the jack into the back cable of the IoT Age mini and connect it to an outlet.



Install the IoT Edge mini application on your smartphone and connect to Bluetooth or Wi-Fi.

4. Behavior Description

4-1. Select Mode (WiFi Mode, Bluetooth Mode)

When the power is first turned on, the power LED is on, and the motion LED flashes quickly for 10 seconds. Press the "Initialize button" on the back within 10 seconds to operate in Bluetooth mode. After 10 seconds without pressing the "Initialize Button", the device will operate in WiFi mode.

4-2. WiFi Mode

Attempt to connect to the configured router and send sensor data to the server when the connection is complete.

Router connection stage: The operation LED flashes every 0.5 seconds.

Data transfer step : The action LED flashes every 1 second.

4-3. Bluetooth Mode

Use the smartphone app to set up router information for WiFi access.

Bluetooth operation: The operation LED flashes twice quickly every 1 second..

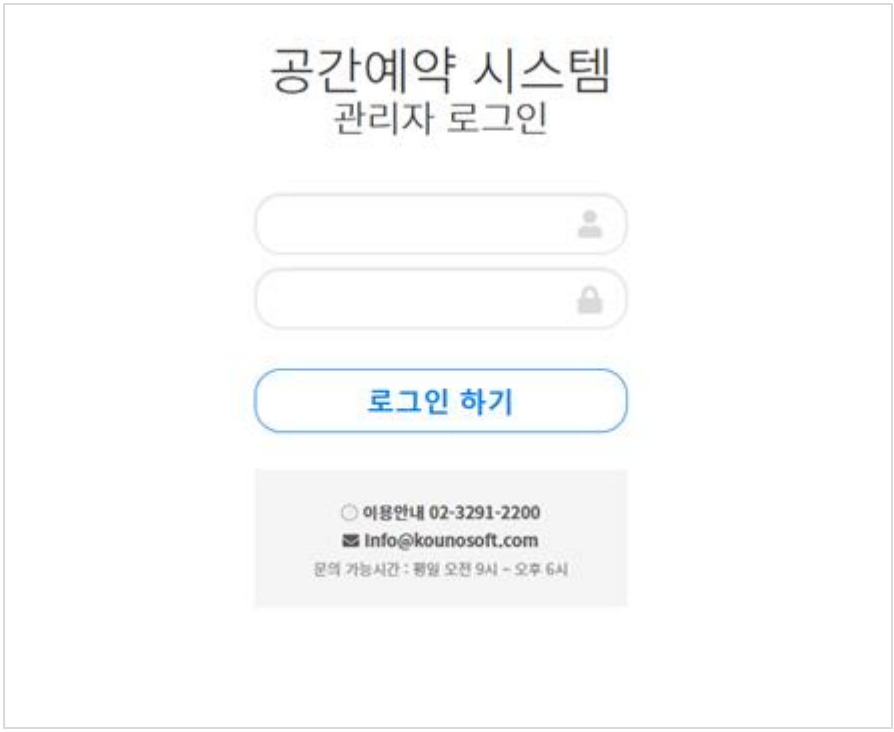
4-4. System reboot

Press "Initialize Button" at any time during WiFi or Bluetooth mode operation. The system will reboot and "Select 3-1 mode" will start.

5. Server Description

The Server receive data from Iot Edge Mini device when operating in Wifi mode. The connection information of the server is preset in the IoT Edge Mini App.

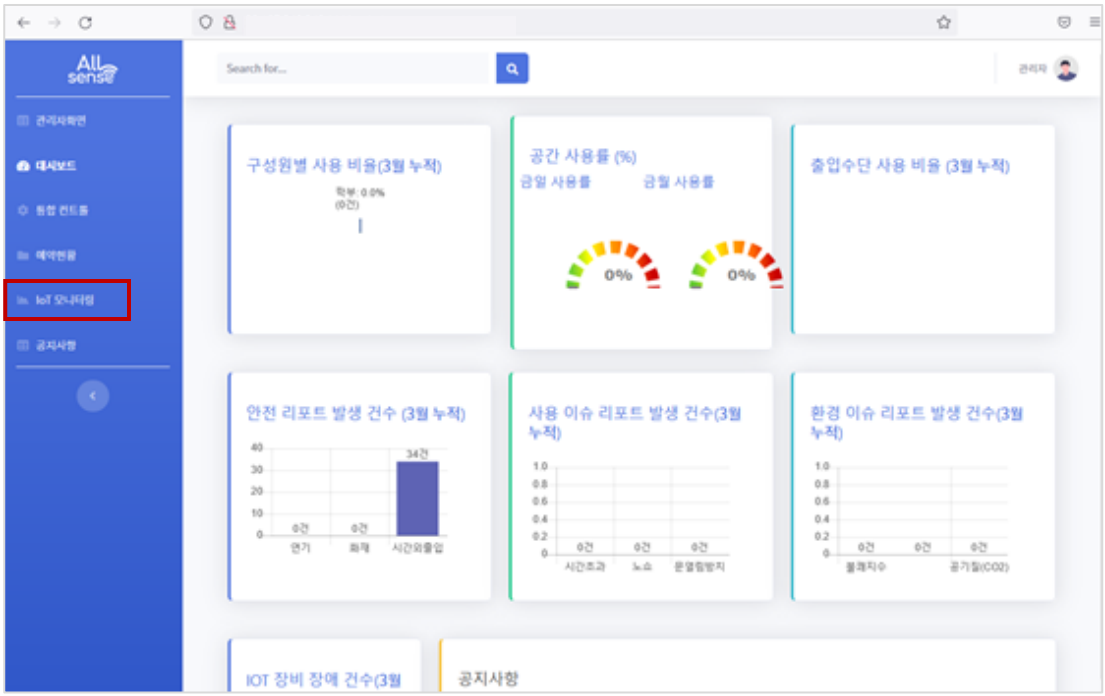
5-1. Connection screen



5-2. Home screen

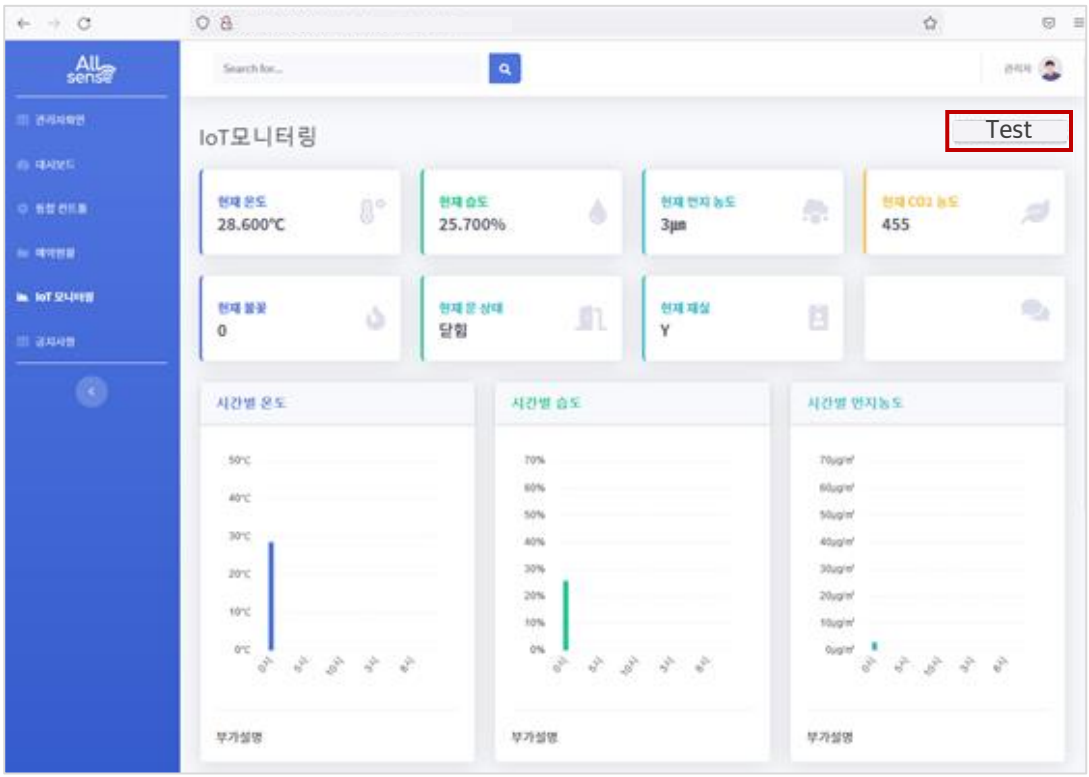
Click "Integrated Dashboard" from the menu..

5-4. Integrated Dashboard Screen



Click "IoT Monitoring" from the menu.

5-4. IoT Monitoring Screen



Click "Test" in the list box on the right.

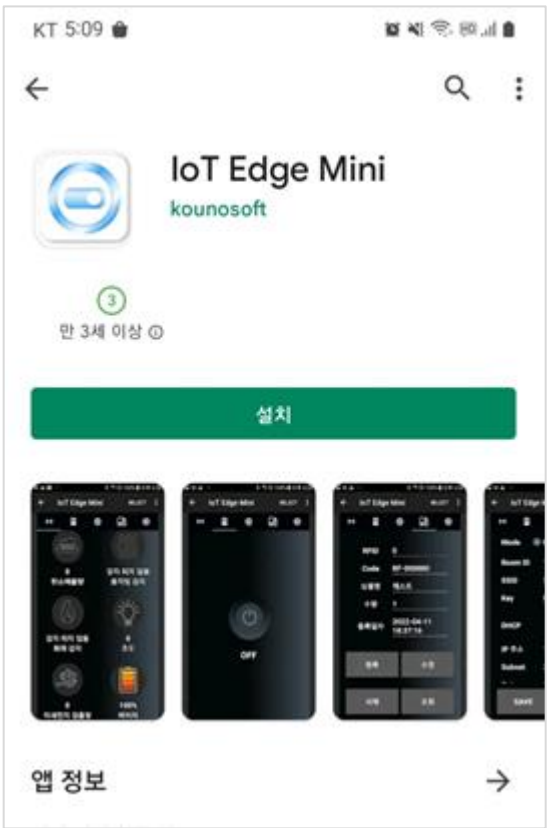
Sensor data information transmitted from IoT Edge Mini equipment in graph format is displayed on an hourly basis.

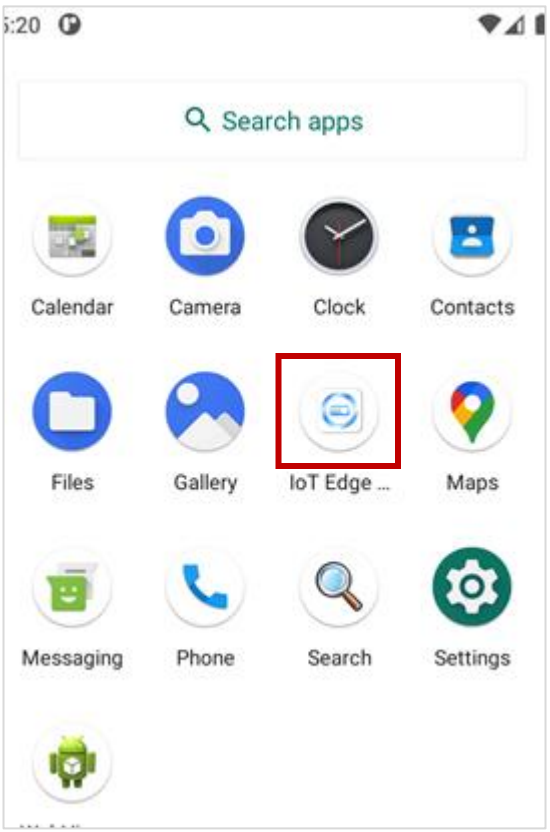
6. App Description

The app for iOS is currently under development. The android app is mainly discussed here.

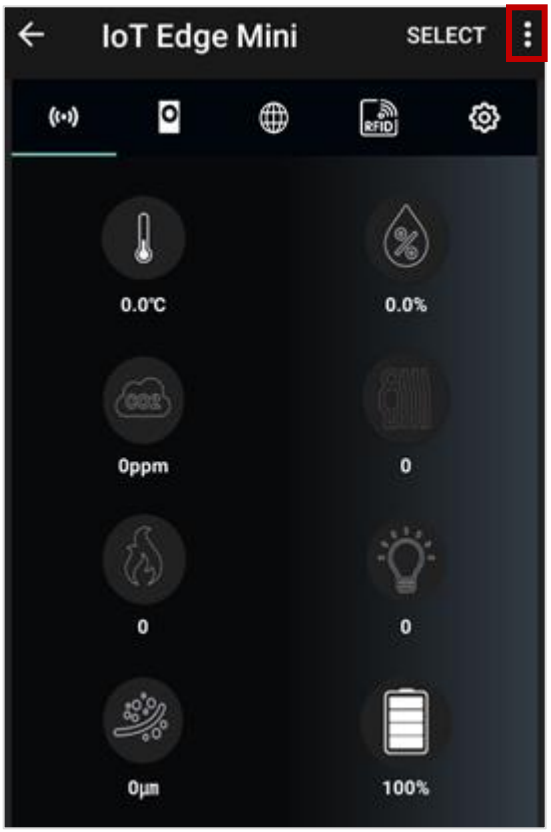
6-1. Installing the app

You can access the Google Playstore, search with the "IoT Edge Mini" and install it.



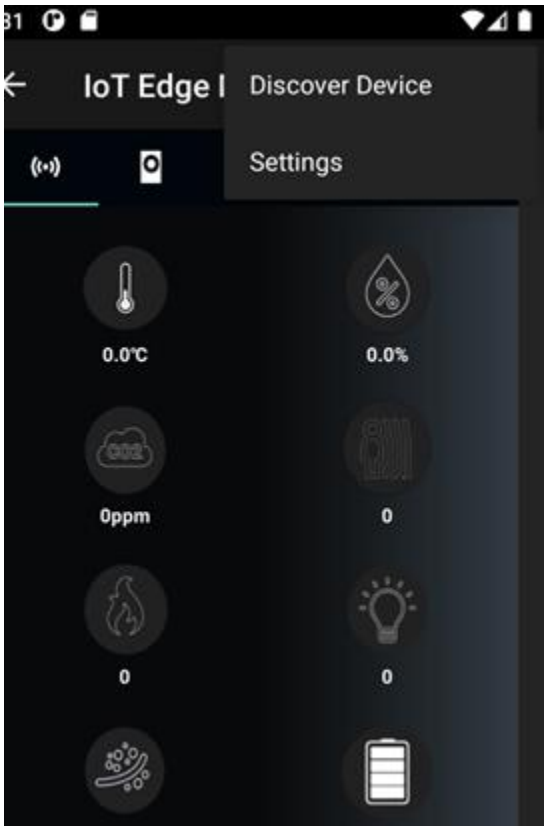


6-2. Start the app



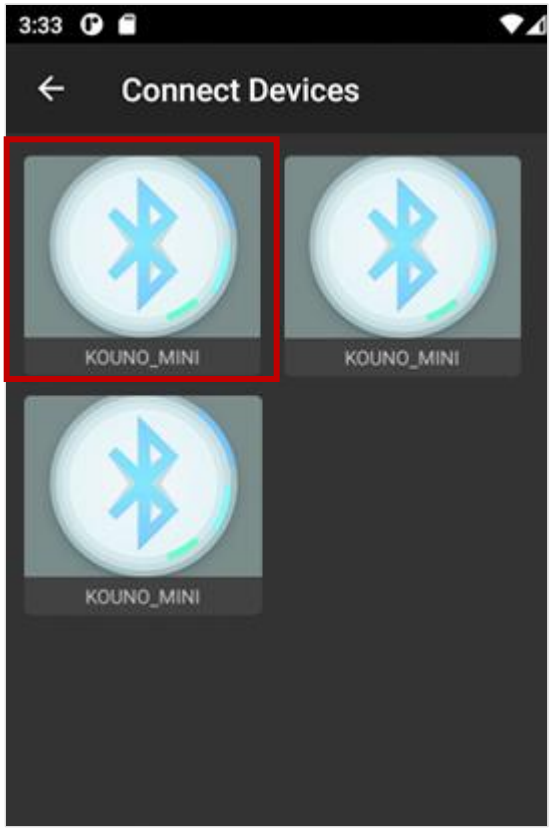
Launch the app and use Bluetooth to get IoT Edge Mini. Touch the menu icon to connect.

6-3. Start the app



After running the app, touch the menu icon to connect to the IoT Edge Mini with Bluetooth.

6-4. IoT Edge Mini Equipment Discovery



when the Bluetooth Equipment Discovery screen is displayed, Search for "KOUNO_MINI" among the devices that were searched. Once the device is found, touch it and Connect it..

6-5. IoT Edge Mini (KOUNO_MINI)

When connected to IoT Edge Mini equipment normally, sensor data from IoT Edge Mini is received It is displayed on the screen. The time displayed on the screen is the sensor data collection status of the IoT Edge Mini So it might take a few seconds.

6-6. IoT Edge Mini Remocon Function

The IoT Edge Mini offers infrared transmission capabilities

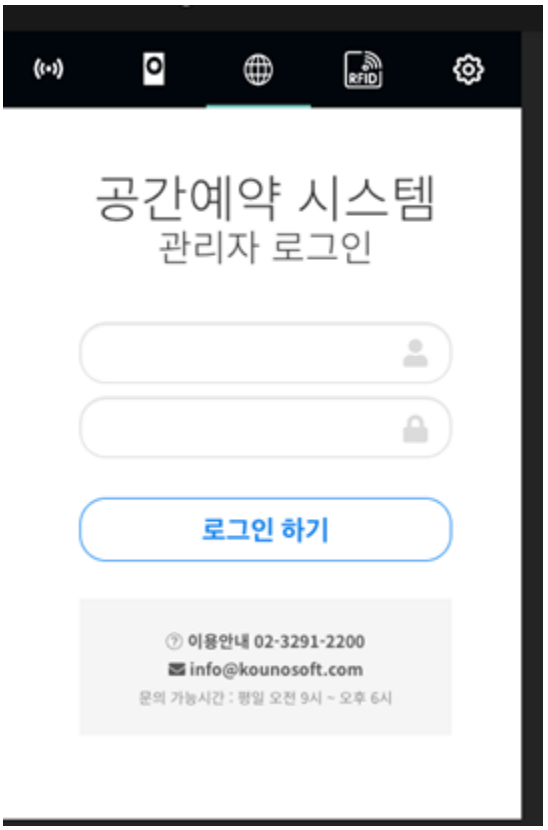
Use to turn on/off external equipment

As a function, this function is an option.

(To turn on and off external equipment, the remote control protocol of external equipment is used by IoT Edge Mini

It needs to be implemented in firmware, but the remote control protocol varies from device to device, so you need to update the firmware for each device you want to control.).

6-7. IoT Edge Mini Server Connection function



This page is for accessing the Kounosoft AllSense server from the Iot Edge Mini.

6-8. IoT Edge Mini RFID Function

When connecting RFID Reader to an external Serial Port on the IoT Edge Mini, the data of the RFID Tag can be found
It can be processed.
(This function is optional.).

6-9. IoT Edge Mini setting

The setup screen is a screen that sets the WiFi settings of the IoT Edge, and sets the SSID and connection key of the router you want to connect to and saves it.
The saved settings are rebooted by the instrument

(The IoT Edge Mini supports WiFi 2.4 Ghz only. WiFi 5Ghz is not detected and connected.)

The SSID and access key can be set up to 13 digits.

6-10. IoT Edge Mini Disconnecting

The red part of the figure above shows the connection status of the IoT Edge Mini equipment. When connected, touch this button to disconnect the IoT Edge Mini and the name of the disconnected device will be displayed. (KOUNO_MINI in this case)

If the name of the machine is displayed, touch it again to reconnect.

(If the app was first launched, the connection information for the IoT Edge Mini is missing, so it is displayed as "SELECT").

7. precautions

Do not spray or soak the product.
Causes product damage.

When pets eat products,
Don't let it be used as a toy.

Do not damage the power plug.
Causes product damage.

Do not expose yourself to
heat for a long time.
Causes product damage.

220V rated at least 15A
Please plug it into a
dedicated outlet.

Volatile solvents such as alcohol
or with organic solvent
Don't wipe the product.
Causes product damage.

You can modify the product at
your discretion Do not remove or
repair. If reassembled
The manufacturer's warranty is
invalidated
Service may be denied.

electrical appliances such as
heaters and televisions
Don't put it on top.
It causes fire, electric shock,
and breakdown.

beyond the reach of children
Please keep it.

a water bowl, medicine, etc,
on top of the product
Food, small metals,
flammable substances
Don't put your back on it.

If you put too much pressure
on the product,
Don't shock me.
There is a risk
of product damage.