WICON

WFS-205BW [IIoT WiFi Gateway]

USER MANUAL

FCC ID: 2AO6A-WFS-205BW

ulala lab
www.ulalaLAB.com

Safety Precautions

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 generate, 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 technical for help.
- Only shielded interface cable should be used.

Finally, any changes or modifications to the equipment by the user not expressly approved by the grantee or manufacturer could void the users authority to operate such equipment.

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 this device.

RF Exposure "This equipment complies with FCC radiation exposure limits set forth for an uncontrolled envi-ronment. This equipment should be installed and operated with minimum distance 20cm be-tween the radiator and your body. This transmitter must not be co-located or operating in con-junction with any other antenna or transmitter."

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1. Summary

1.1 System summary

- This product is for Smart Factory. It collects analog and digital signals and sends them to the cloud server. Users can analyze sensor data on cloud servers through WIM-X(trend, alarm, report....). Thus, the improvement of the production quality can be expected.

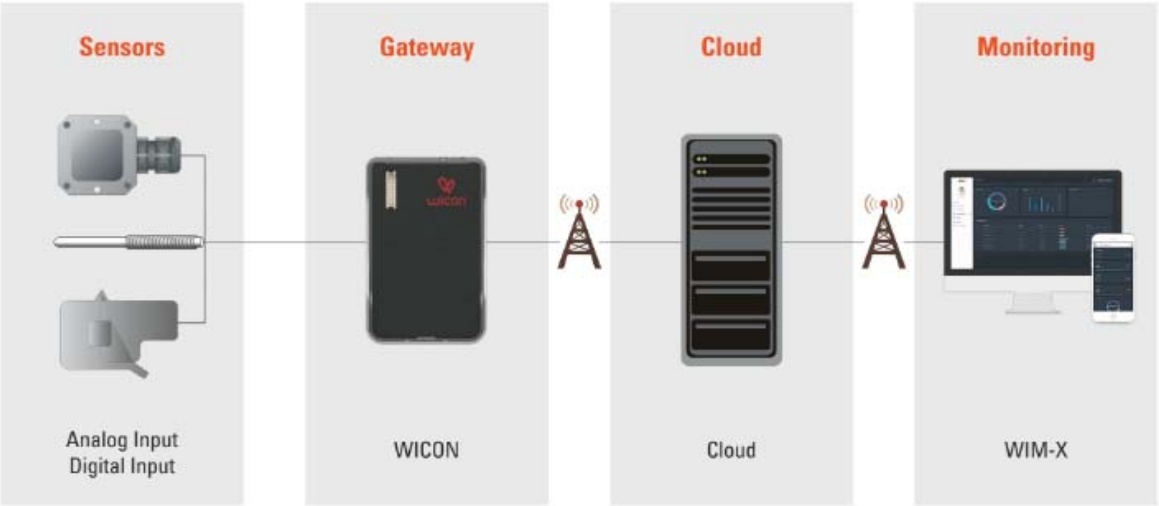
The device consists of three modules. (Bluetooth module-for setting, WiFi module-for transmission, Sensor connection module-for sensor)

The device supports four types of analog input and three types of digital input (Thermocouple, volt, current, resistance / NPN, PNP, dry contact).

Compared to other company devices, it is compact and easy to install (Settings can be made using a smartphone). The magnet mounted cradle will make installation comfortable. This is a good choice when you need to install a small number of sensors.

WimFactory Process

WimFactory easily transforms any existing facilities into a Smart Factory by using IoT device WICON and cloud based platform Wim-X. Depending on factory requirements various sensors are connected to WICON in order to gather a necessary measurement data. WICON then transmits the actual facility data to the cloud, allowing data monitoring via Wim-X platform, remotely from anywhere and anytime.



1.2. Device specification

Specification	value	Remark
Input Voltage	USB power supply DC 5V / 1A	
Power Consumption	10W Under	Except Sensor
Operation temperature	-30℃~ 75℃	
Processor	ARM Cortex-M3 / M4	BLE / Wifi
Clock	48Mhz / 80Mhz	BLE / Wifi
RAM	28kByte / 256kByte	BLE / Wifi
ROM	128Kbyte / 4Mbyte	BLE / Wifi
Bluetooth	BLE only 4.0	
WiFi	802.11 b/g/n (20Mhz only)	
Security	WPA	
WiFi Max Throughput	13Mbps	Application level
WiFi RX Sensitivity	–95.7 dBm / –74.0 dBm	1 DSSS / 54 OFDM
Antenna gain	Chip antenna 1.9dBi	

1.3 Sensor input specification

Input	Type	Measurement Range	Remark	Order Number
Analog	Thermocouple K-type	0~1000℃	+-2℃ Accuracy Range 0~250℃ (within Reference Junction 25~100℃)	"K"
	Volt	0~10 V	16it Resolution	"V"
	Current	0~20 mA	16it Resolution	"C"
	Resistance	50~10kΩ	Not support 3-wire RTD, But if you want to use it, short the calibration line and use it.	"O"
Digital	DC	12~24V	3kv isolation NPN, PNP, Dry contact	"D"
Unused				"X"

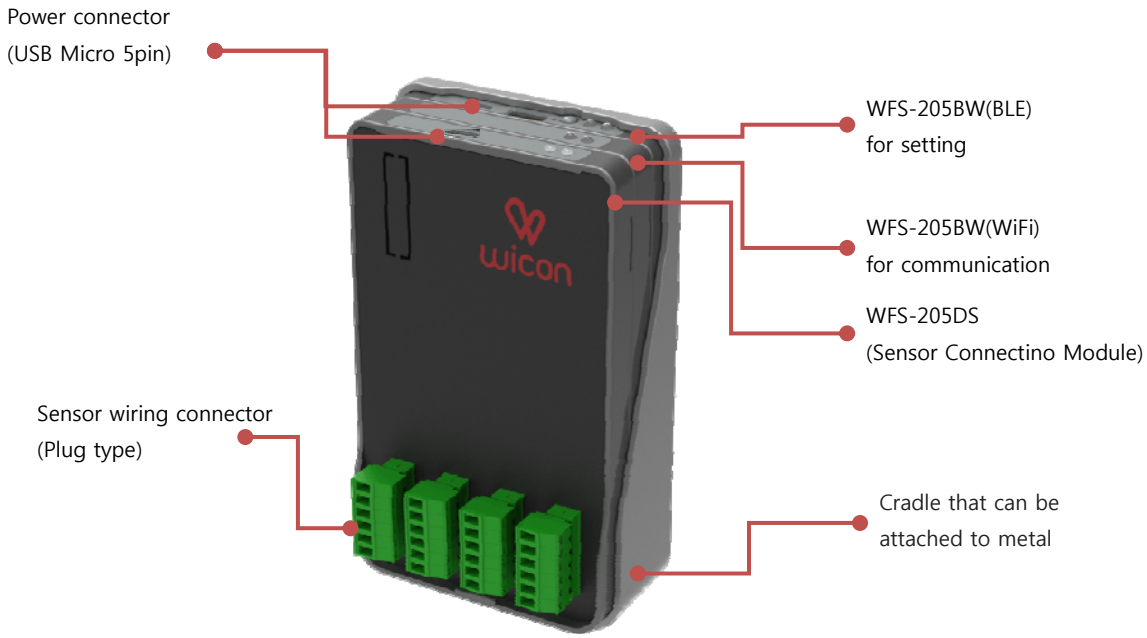
1.4 Device order number- example

- You should check the order number when ordering the product.
  > WFS-205DS-KKKK -> thermocouple (total 4ch)
  > WFS-205DS-VXXX -> analog volt input (total 1ch)
  > WFS-205DS-VCDX -> analog volt,currnet input, digital input (total 3ch)

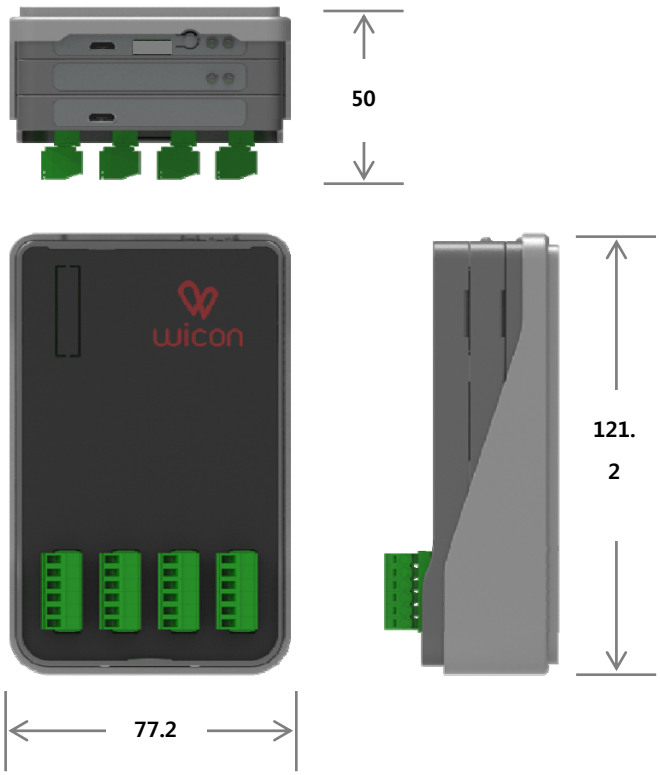
2. Product outline

2.1 View

- To protect the product, you must use the cradle when using the product.



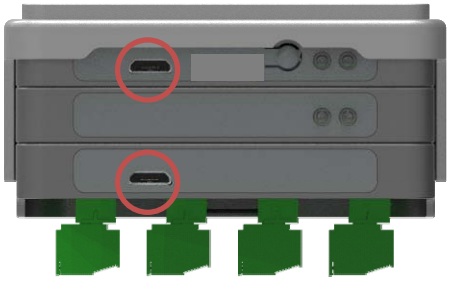
2.2 Size (unit : mm)



3. Device detail description

3.1 Power port

- Connect the 5V 1A power supply with the enclosed cable.



3.1 LED

- Display device status

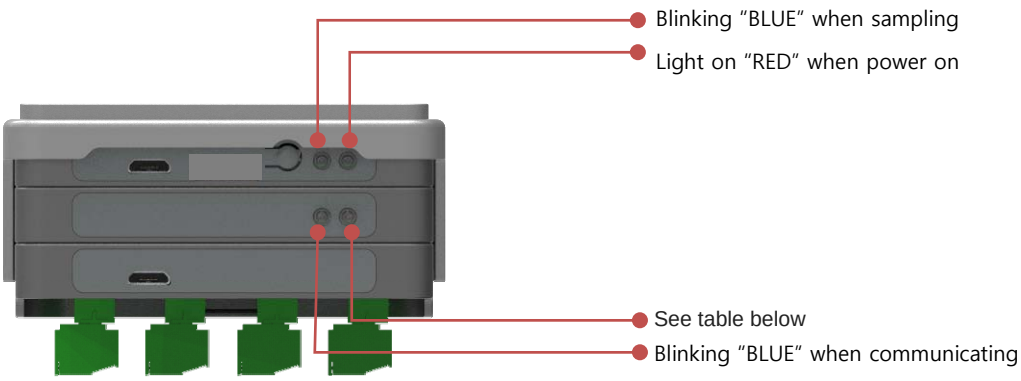


Table 1 WFS-205BW(WiFi) RED LED status

LED status	Device status	Remark
Fast blink	AP connection attempt	250msec
Light on	AP connection completed	
Slow Blink	AP connection Fail	1sec
Very Slow Blink	Server connection Fail	10sec

- LED status afer power on (Normal setting status)
  ① WFS-205BW (BLE, WiFi) RED LED on
  ② WFS-205BW (WiFi) RED LED fast blink (250msec)
  ③ WFS-205BW (WiFi) RED LED light on
  ④ WFS-205BW (WiFi) BLUE ELD blink (every 1sec)

3.3 Reset button

- Reset or initialization.(Each click should be within 0.5 seconds.)
  > 1 click is device reset.
  > 2 click is device hibernation.
  > 3 click is device device initialization.

3.4 Sensor connector

- No.1 and No.2 are default. But There are differences between sensor types.

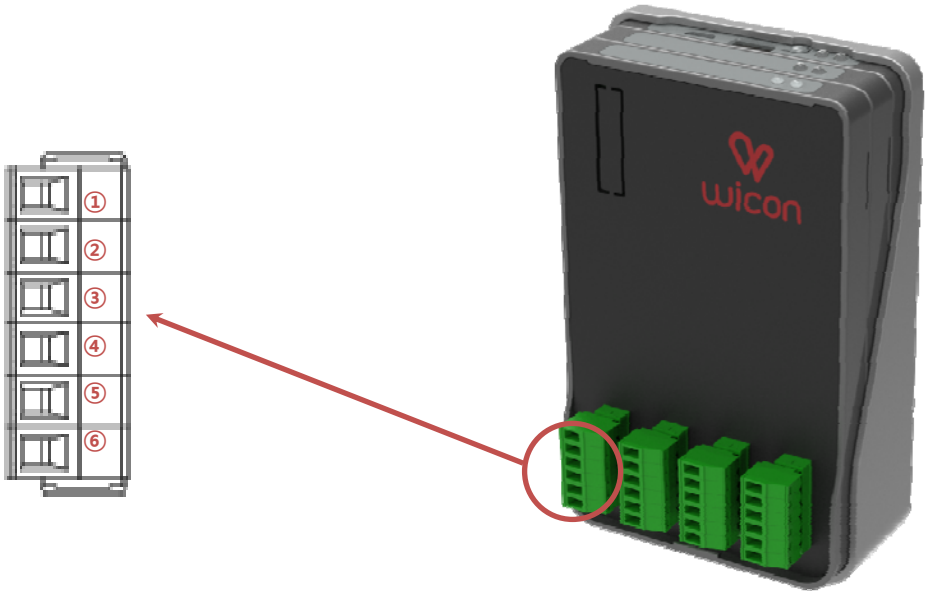


Table 2 Connector pin map

NO	TH-K	AI-V	AI-C	AI-O	DI-D
1	Thermocouple +	Volt (0~10V)	Current (0~20mA)	Register +	DC + (12~24V)
2	Thermocouple -	GND	GND	GND	DC -
3	GND	GND	GND	GND	GND
4	Reserved	Reserved	Reserved	Reserved	Reserved
5	+24V	+24V	+24V	+24V	+24V
6	+5V	+5V	+5V	+5V	+5V

4. Sensor wiring example

4.1 Thermocouple sensor wiring (only K-type)

- Default port number is 1,2 (No.1 + No.2 –)
- If not connected, the temperature is 1000℃
- You wind the sensor cable 2~3 times to the ferrite core for data reliability and electromagnetic shielding.

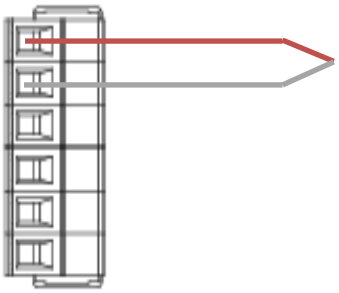


Figure 1 Thermocouple wiring

4.2 Analog input wiring (volt, current, resistance)

- Default port number is 1,2
- Power supply No.3(GND), No.5(+24V), No.6(+5V)
- You wind the sensor cable 2~3 times to the ferrite core for data reliability and electromagnetic shielding.

> Example. Voltage output Sensor (MM2001 Humidity Red:+5V, Black:GND, Yellow:Signal)

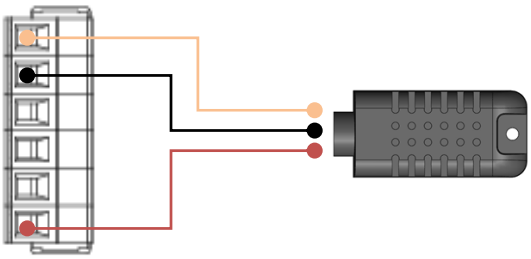


Figure 2 Voltage output sensor Example

> Example. Current output Sensor (Calex PC151HT Red:+24V, Black:Signal)

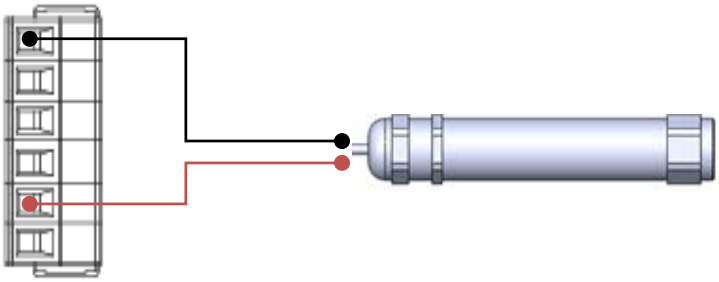


Figure 3 Current output sensor example

> Example. Resistance output Sensor (PT100), Not support 3-wire RTD, but if you want to use it, short the calibration line and use it.

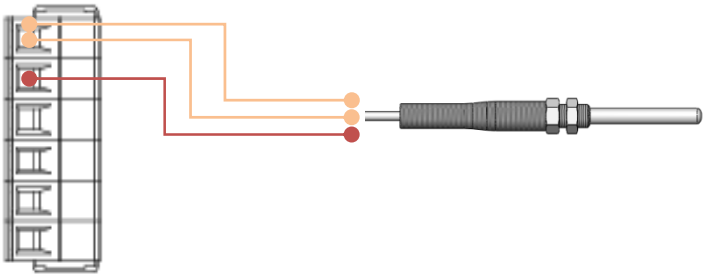


Figure 4 Resistance output sensor

4.3 Digital input wiring

- Depends on type (NPN, PNP)
- You wind the sensor cable 2~3 times to the ferrite core for data reliability and electromagnetic shielding.

> Example. NPN Proximity sensor (Brown : +24, Blue : GND, Black : Signal)

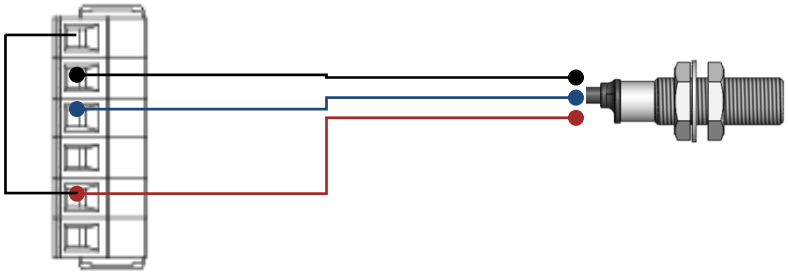


Figure 5 NPN-sensor, Need for wiring(1-5)

> Example. PNP Proximity sensor (Brown : +24, Blue : GND, Black : Signal)

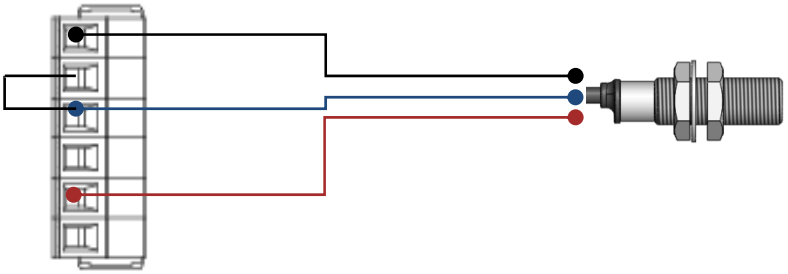


Figure 6 PNP-sensor, Need for wiring(2-3)

> Example. Dry contact (General purpose relay contact)

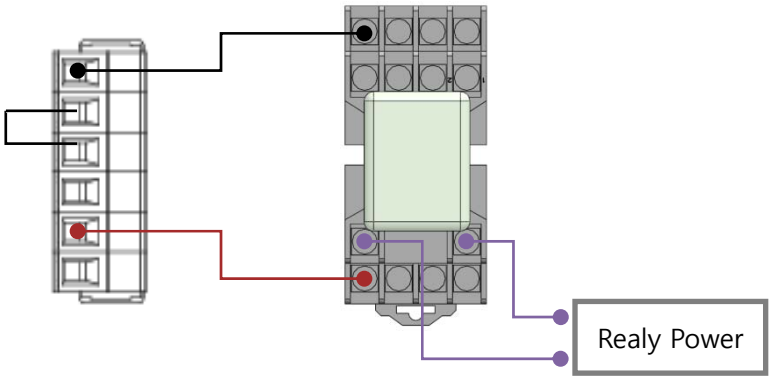


Figure 7 General purpose relay, Need for wiring(2-3)

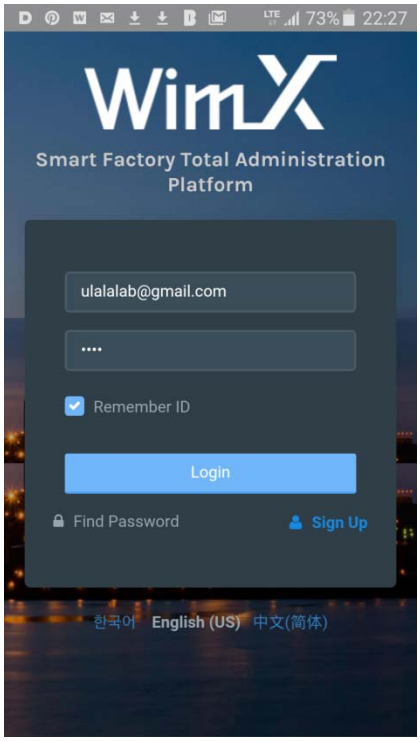
5. WICON Setting

5.1 Wicon manager download

Connect to "www.wim-x.com" by smartphone and download "wicon manager"

(Membership required)

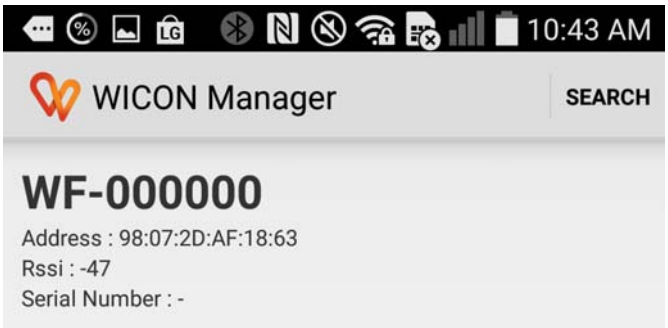
#Note: Wi-Fi data transfer (cloud server transfer) is not performed when wicon is in configuration mode during operation.5.1 Wicon manager download.



5.2 Search device

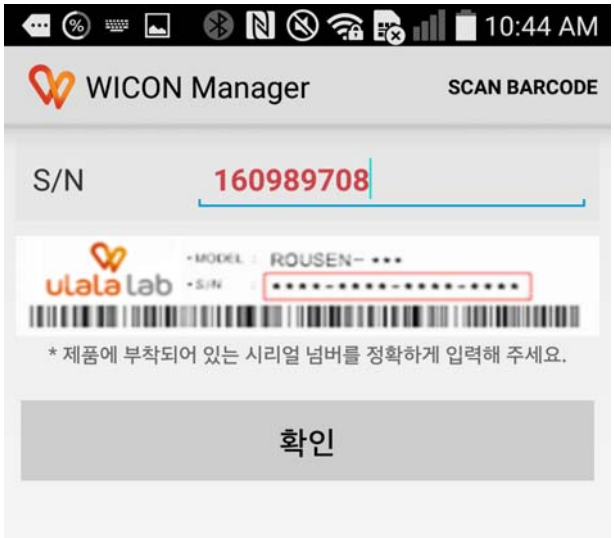
Connect the power of the product, run Wicon manager and select "WF-000000".

If you can not find "WF-000000", press the search button.



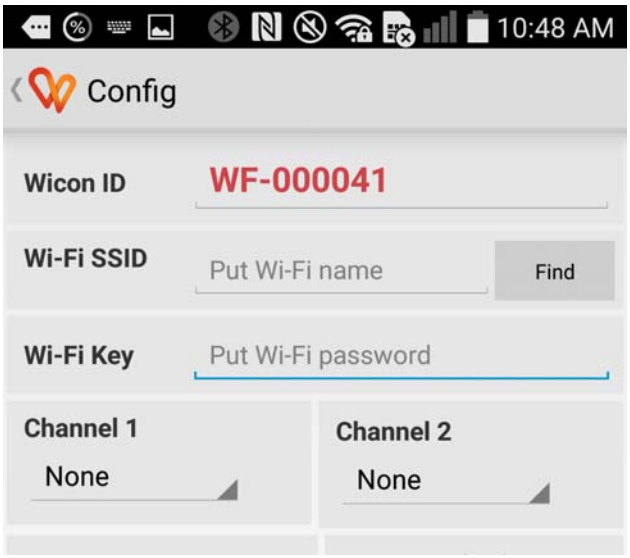
5.3 Serial number

Enter the serial number directly or enter it as a barcode scan. If the serial number is entered correctly, proceed to the next step.



5.4 Device information

If the smartphone and the BLE module are connected, the following screen will be displayed. Led of WiFi module alternately blinks blue and red. Enter the SSID, password, and sensor type, and then click B. In normal cases, the LED will flash quickly and then reset. If the reset does not work or the screen seems to be frozen, start from 5.2 again. (Connection Fail- > Attempt to reconnect)



5.5 View Wim-X

Access “www.wim-x.com” to register categories and devices. Then set up the dashboard. Check the WIM-X manual for details.