

Wireless communication gateway(INS-LGW-100)



User Manual



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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
INS-LGW-100	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at InSynerger.com for the latest version of this document.

Warning Statements

Any changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

RF exposure statements

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. 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 or nearby persons.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references.

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls.
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running.
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
17. If any of the following situations arises, please contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - iv. Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device
18. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES TO PREVENT DAMAGE.**
19. **RECOMMENDATION: THE WALL INSTALLATION HEIGHT SHOULD NOT EXCEED 2 METERS.**

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1. Introduction

1.1. Introduction and features of wireless communication gateway

Wireless communication gateway (hereinafter referred to as WiFi Gateway) It is an all-in-one device, and the MCU used by the WiFi GATEWAY is MT7688, which can connect the computer to the WiFi GATEWAY through the WiFi connection, and then connect to the Internet through the WiFi GATEWAY as a routing device. WiFi GATEWAY can also use RS485 communication (Modbus) to read device data and report it to the server as a small gateway that can be used for monitoring, Manage energy use or event control

WiFi GATEWAY supports WiFi network, Ethernet, 4G network, DHCP server, Client, and fixed IP functions.

WiFi GATEWAY provides basic network security, first of all, it masks the IP address of the LAN, making it unsearchable by external users on the network. Secondly, certain ports can also be blocked and redirected to limit services accessible to external users. To ensure that certain network programs run properly, specific ports can also be opened for external users to access internal services on the network

WiFi GATEWAY supports WPA's 802.11n wireless AP, through the 802.11n wireless access point integrated in the MT7688, which provides quick and easy access between wired networks, wireless networks, and broadband connections, simplifying individual devices and providing mobility for users. In addition to the 802.11n data rate of 300 Mbps, it is also interoperable with existing 802.11g and 802.11b devices. Wi-Fi

Protected Access (WPA) and Wired Equivalent Confidentiality (WEP) support enhance the security level of data protection and access control through wireless LAN.

It has DHCP client and server services, allowing multiple users to automatically obtain IP addresses when connecting to the gateway. Just set the computer to DHCP to accept and use the IP dynamically assigned from the DHCP server.

Firewall NAT technology supports easy firewall setup and provides options to block access from external networks such as Telnet, FTP, TFTP, WEB, SNMP and IGMP.

Dynamic Domain Name System (DDNS) allows you to rename a dynamic IP address to a static hostname, this dynamic IP location is the IP location of the WAN, if you want to use this service, you must first apply for an account from the DDNS service, supported 3322.org, afraid.org, changeip.com, cloudflare.com, core-networks.de, ddns.de, dhis.org, dnsdynamic.org, dnsexit.com, dns, home.de, dnsmax.com, dnsomatic.com, dnspark.com, do.de, dtdns.com, duckdns.org, duiadns.net, dy.fi, dyndns.org, dyndns.net, dyns.net, dynsip.org, dynu.com, dynv6.com, easydns.com, editdns.net, goip.de, google.com, he.net, joker.com, loopia.se, mydns.jp, myonlineportal.net, mythic-beasts.com, namecheap.com, nettica.com, no-ip.com, no-ip.pl, nsupdate.info, nubem.com, ovh.com, regfish.de, schokoheks.org, selfhost.de, sitelutions.com, spdyn.de, strato.com, system-ns.com, thatip.com, twodns.de, variomedia.de, zerigo.com, zoneedit.com, zzzz.io

The settings of the WiFi GATEWAY can be modified and configured through the WEB GUI

1.2. Product specification

Product Name	WiFi communication gateway
model	INS-LGW-100
standard	WiFi (802.11 b/g/n)
	Ethernet LAN (10/100M)
	WiSun wireless transmission, supports automatic frequency hopping technology, transmission distance of 100 meters
	RS-485 Communication Interface (Master)
	Micro SD Card storage interface, which can be connected to an external Micro SD card as data storage space
	DI/DO each, optocoupler isolation (LTV-357T)
	DC input (5~12v)
	Operating temperature 0~55°C
	LENGTH/WIDTH/HEIGHT (MM): 115 x 75 x 35

2. Product Overview

2.1. WiFi GATEWAY Precautions

2.1.1. Notes

1. Please regularly dust the circuit board and plug-ins with dust removal tools such as brushes, and turn off and unplug the power supply before cleaning the machine
2. Do not disassemble, repair, or replace parts of this equipment yourself. If the machine cannot be used normally, please contact the supplier or the purchasing merchant, we will provide assistance in the shortest possible time.
3. Installation of this device If you have external equipment such as sensors installed outdoors, it is best to ground the WiFi GATEWAY body screws to prevent static electricity generated by lightning from burning the main unit.

2.1.2. Usage environment

1. Please place and use this product at a temperature of 0°C~55°C, away from direct sunlight or near heat sources
2. Do not install this device in a humid environment; Do not expose this device to a smoky and dusty environment
3. avoid strong collisions, do not drop the machine; Install in a stable environment to prevent this product from falling
4. Please install in a well-ventilated place to avoid affecting the sensor value

5. Use this device within the rated current and voltage input and output ranges
6. This equipment is an engineering electronic equipment that can be used for a long time, so please do not place flammable and explosive materials next to the equipment. To avoid potential safety hazards

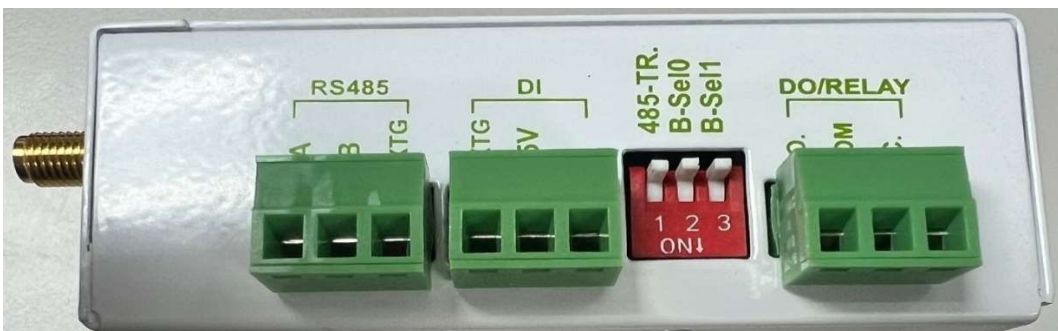
2.2. Device description

Side view 1



1	WAN/LAN	RJ45 network interface, default to WAN (DHCP client), connected to the computer can be configured using 10.10.10.1 connection, or it can be set as LAN (DHCP server)
2	DC	Power interface, DC supports 5 ~ 12V, note that there is a positive and negative pole: (left + right-).

Side view 2



1	RS485	Controlled by the MCU as Modbus Master
2	DI	It can receive DI signals

3	DO/RELAY	Can be used as a relay
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Side view 3



1.	WiFi	WiFi antenna
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2.3. LED Description



1	Dev.	Constant darkness: All RS485 devices are connected normally. Constant brightness: All RS485 device connections are abnormal. Flickering: Some RS485 devices are abnormal.
2	4G	Heng Dark: 4G is not connected. Hengliang: 4G is connected. Flickering: Data in transit.
3	WIFI	Constant darkness: Not connected to other WIFI. Hengliang: Connected to other WIFI. Flickering: Data in transit.
4	WiFi	Flickering: Data in transit.
5	Power	Constant darkness: The power supply is not overpowered. Hengliang: The power supply is overpowered. Note: When turning on, it will light up first - > dim - > and then turn on constantly.
6	Cloud	Constant darkness: Unable to connect to the Internet.

		Hengliang: There is a connection to the cloud platform. Flashing: There is an Internet connection, but not a cloud platform.
7	System	Constant darkness: Abnormal programming. Constant Liang: The program is abnormal. Flashing: The program is working properly.
8	DO	Constant darkness: DO output is 0. Constant brightness: DO output is 1.

3. Basic installation

This section describes the basic settings and basic configurations

3.1. Installation instructions

3.1.1. WiFi GATEWAY standard accessory

❶ One body:

2P terminal head*1 (for power supply)

3P Terminal Head*3 (RS485 Loop, DI Contact, Do Contact)

❷ WiFi dedicated antenna (shorter)



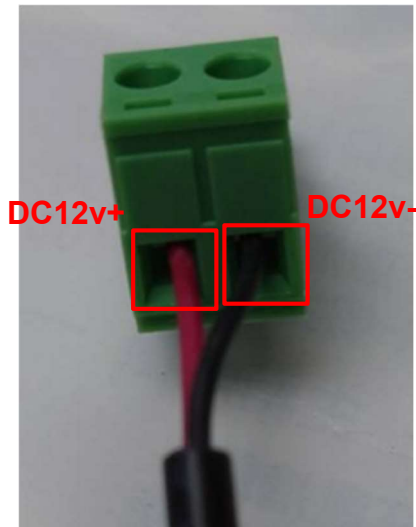
3.1.2. WiFi GATEWAY installation steps

1. Power supply:

- Note: **There are positive and negative distinctions**, and the wrong connection will cause damage to the machine (as shown below).

When distributing/distributing power, it is necessary to double-check whether the positive and negative wiring is correct.

Connect the terminals first, and then transmit power after all are connected to avoid electric shock



2. Network:

When setting up, connect directly to the laptop

When actually running, you need to connect to a router that can access the Internet (as shown below).



3. Antenna:

Connect to a WiFi antenna

Connect to a WiFi antenna

4. RS485:

If you need to connect the device, then wire it

3.2. Connect to WiFi GATEWAY

※Please note that some shipped firmware will be differentiated depending on the actual case

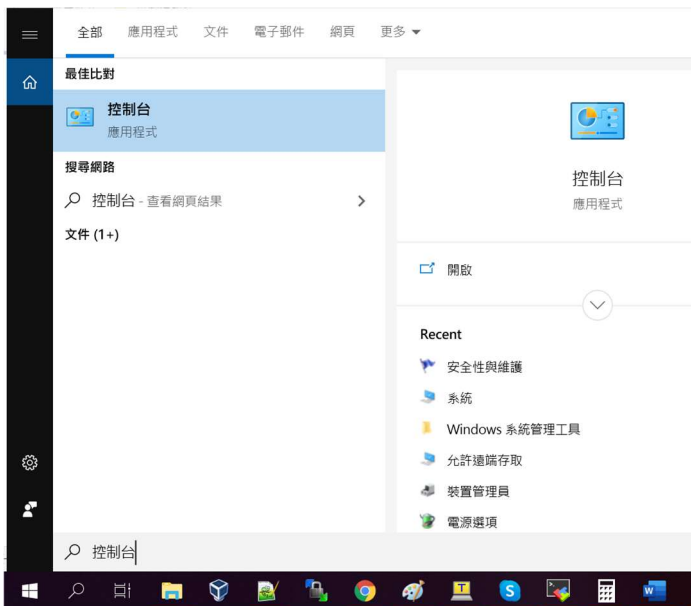
There are three ways to connect to a WiFi GATEWAY via a wired network (**GatewayID is required**), via WiFi connection (**You need to know MAC**Or docking with a network cable, which can be set in different ways according to different environments °

3.2.1. Connect to the WiFi GATEWAY via a wired network to set it up

1. Connect the computer to the WiFi GATEWAY and be on the same network segment

*Confirm the current computer domain:

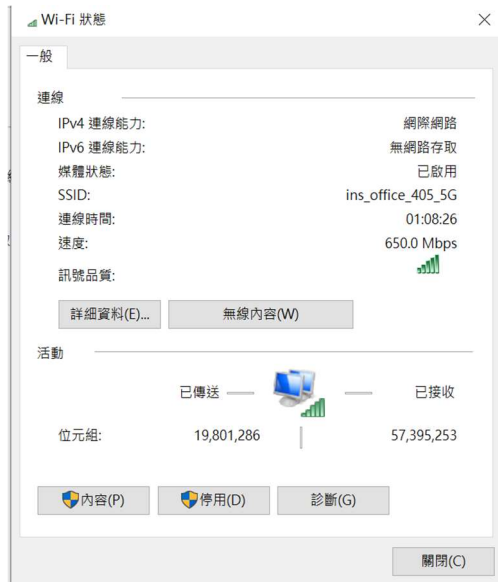
Click Search-> Input Control Panel



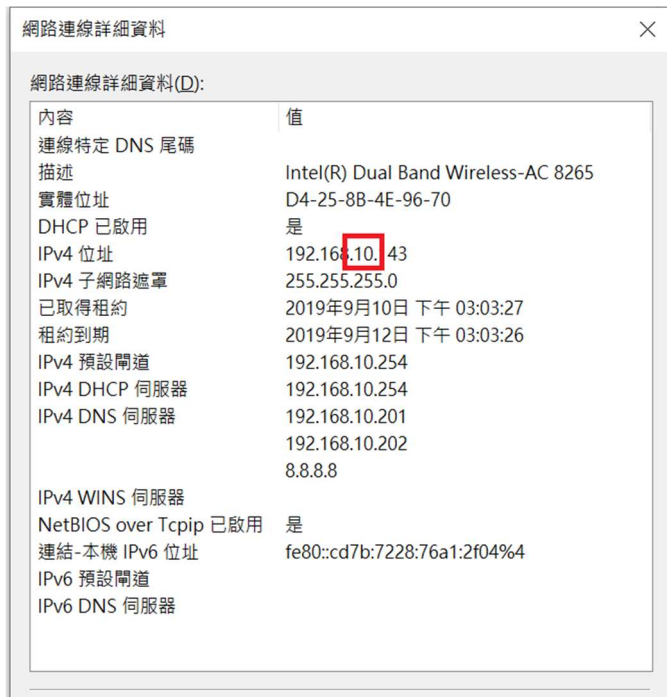
Click on the Internet and the Internet-> network and sharing center



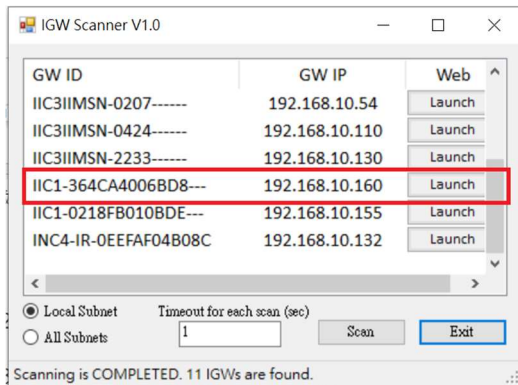
Click the icon next to the connection to enter the XX state, and then click Details



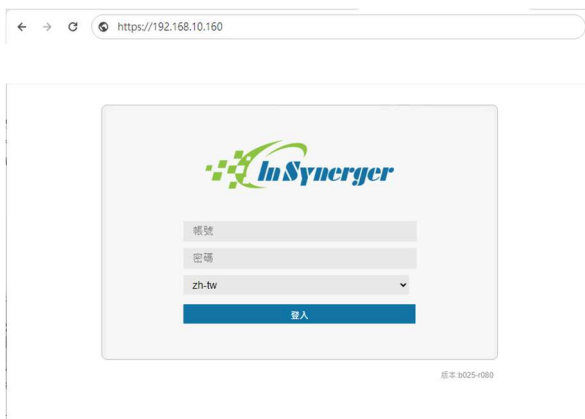
The red box represents your network segment (example 10)



2. After opening [the IgwScanner.exe](#), click Scan (the red box is the example WIFI GATEWAY).



Enter the IP address bar, followed by **8080** (ex. 192.168.10.160:8080), and the following screen will appear to indicate that the connection to the WiFi GATEWAY is successful



3.2.2. Connect to WiFi GATEWAY via WiFi to set it up

Click on the network symbol in the lower right corner of the screen

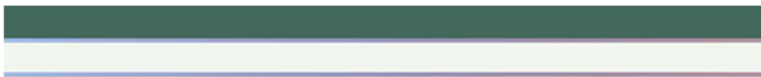


Click LGW_XXXXXX (6 yards after the MAC of the LAN, the example is LGW_01FD0C).

Password entry: **insynerger@tw**



After waiting for the connection, search for 192.168.30.1:8080 on the URL page, and the following screen will appear to indicate that the connection is successful



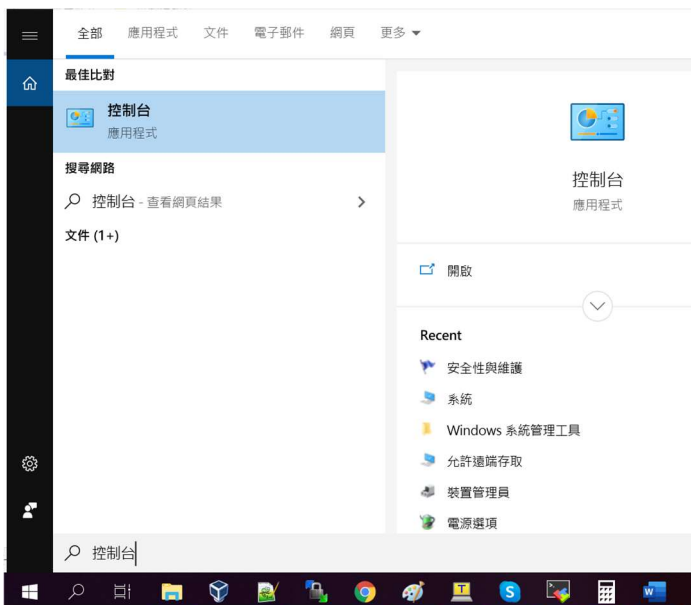
版本 b025-r052

3.2.3. Connect to the WiFi GATEWAY by connecting to the network cable

1. Connect the computer to the WIFI GATEWAY to the network cable, the following is a schematic diagram



2. Click on the Search→ Input Control Panel



3. Click on Network & Internet –> Network & Sharing Center



4. Click the icon next to the connection, you will enter the XX state, and then

click Content



5. Click Internet Protocol Version 4 (TCP/IPv4), and then click Content



The automatically obtained IP address will be modified to use the following IP address:

The IP location is changed to: 10.10.103

The subnet mask is changed to: 255.255.255.0

When you're done, press OK, then press OK again

網際網路通訊協定第 4 版 (TCP/IP v4) - 內容

一般

如果您的網路支援這項功能，您可以取得自動指派 IP 設定。否則，您必須詢問網路系統管理員正確的 IP 設定。

☐ 自動取得 IP 位址(O)

☒ 使用下列的 IP 位址(S):

IP 位址(I): 10 . 10 . 10 . 3

子網路遮罩(U): 255 . 255 . 255 . 0

預設閘道(D): . . .

☐ 自動取得 DNS 伺服器位址(B)

☒ 使用下列的 DNS 伺服器位址(E):

慣用 DNS 伺服器(P): . . .

其他 DNS 伺服器(A): . . .

☐ 結束時確認設定(L)

進階(O)...

確定 取消

After waiting for the connection, enter 10.10.10.1:8080 in the address bar, and the following screen will appear to indicate that the connection is successful

https://10.10.10.1

← → ↻ 🏠 ⚠ 不安全 | https://10.10.10.1



帳號

密碼

Zh-Tw

登入

版本 4.025-052

3.3. The default configuration of the factory network

Before setting up a WiFi GATEWAY, you need to know the following defaults

- WiFi GATEWAY hardware WEB configuration Port: 8080
 - ▶Username : Provided at the time of shipment
 - ▶Password : Provided at the time of shipment
- Gateway software WEB setting Port: 80
 - ▶Username : Provided at the time of shipment
 - ▶Password : Provided at the time of shipment

3.3.1. LAN and WAN parameters

The parameters for LAN and WAN ports are factory defaulted. The default values are shown below

	LAN Port(WiFi)	LAN1 Port(eth0)	WAN Port(WiFi)	WAN2 Port(eth0)
IP address	192.168.30.1	10.10.10.1	Enable the DHCP feature to automatically obtain the WAN port configuration from the ISP	
Subnet masking	255.255.255.0	255.255.255.0		
DHCP server Function	The default is in WiFi mode	No DHCP server		
IP address assigned to the	There are 50 positions	not		

PC	from 192.168.30.10 0 to 192.168.30.15 0		
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3.3.2. IPS message

Before configuring this device, you must confirm with your ISP (Internet Service Provider) what services are provided, such as PPPoE, automatic IP address, fixed IP address. The information is collected as shown in the table below for reference.

PPPoE	Username, password, service name, and Domain Name System (DNS) IP address (can be automatically assigned by ISP when connected, or set manually).
Automatically get IP location	DHCP client (can be automatically assigned by ISP or set manually when connected).
Fixed IP location	IP address, subnet mask, default gateway, and Domain Name System (DNS) IP address (it is a fixed IP address).

3.4. WiFi network configuration

1. After connecting to the WiFi GATEWAY web page, enter the account number and password, click Login, and you will enter the following screen



2. Move the mouse to the network settings, LAN1 port (eth0) block, set the IP acquisition method (DHCP or fixed IP), and press Send after the setting is completed. ◦



3. Go to Advanced, click Restart startup page, select Gateway Software Restart, click Submit, and a waiting window pops up to indicate success.





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