WFCT-960s

RF Gateway

User Manual

www.wasion.com

Revision History

Date	Version	Author	Description of changes	Affected Section
2023-12-08	0.1		Initial version	

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1. General Introduction

Wi-SUN (Wireless Smart Ubiquitous Network) technology is based on the open standards of IEEE 802.15.4g, IEEE 802, and IETF IPv4 standards. Wi-SUN FAN is a mesh network protocol with self-organizing network function and self-healing function. Each device in the network can communicate with neighboring devices, and messages can be transmitted very long between each node in the network. Wi-SUN communication technology has the characteristics of long-distance transmission, security, high scalability, interoperability, and low power consumption. It is widely used in the field of AMI smart meter reading.

The Wi-SUN communication gateway is the key bridge between the WAN and the local NAN in the AMI system, and it is the key node to solve the "last mile" problem.

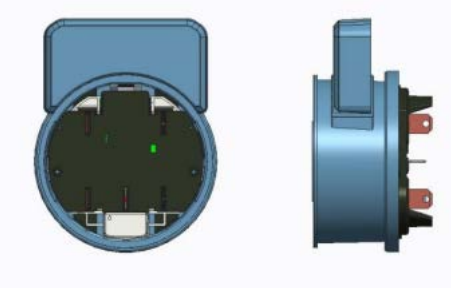


Figure 1. Wi-SUN Gateway Outline

2. Technical Parameters

2.1. Appearance and Dimension

The Wi-SUN gateway supports pole-mounted or wall-mounted type. The product shell is made of environmentally friendly materials that are insulated, flame-retardant, and UV-resistant. The dimensions are 226x158x82mm.

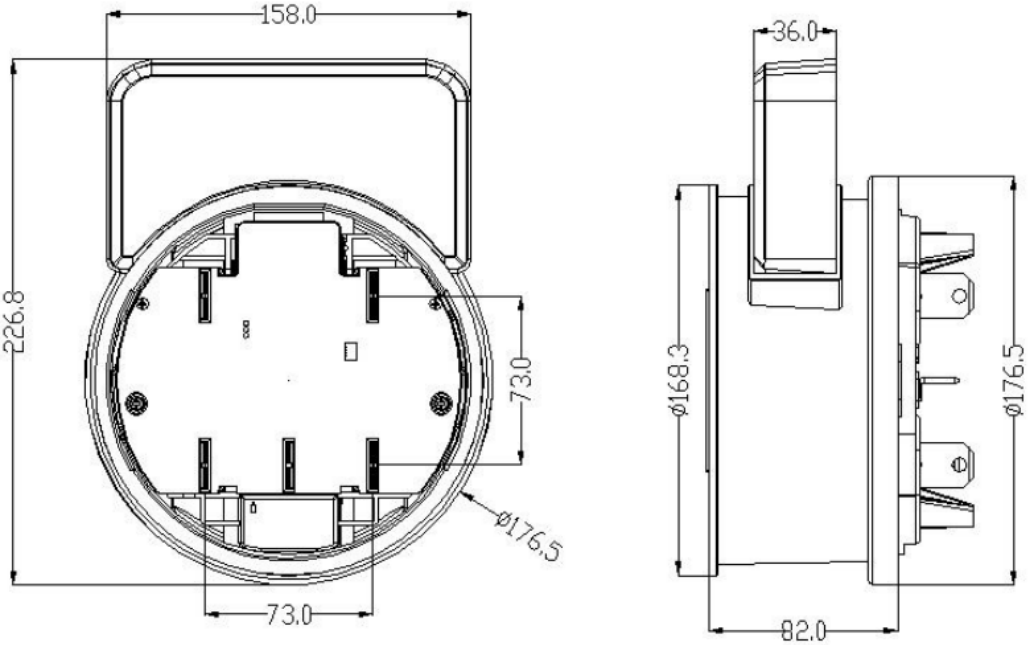


Figure 3-Gateway Appearance and Dimension

2.2. Electrical Parameters

Electrical Parameters		Specification
Mechanical	Dimension	226x158x82mm
Power	Power Supply	AC 100~300V
	Battery	AC/DC adapter embedded battery Backup >1hours, Option Type for Normal and Wide temperature range
Power &Physical & Environmental	Limit Operating temperature range	-10 ~ +85°C, Normal temperature Product version -40 ~ +85°C, Wide temperature Product version
	Operating humidity	10 to 90%, noncondensing
	Life time	≥ 10 years
	Clock accuracy	Error ≤ 0.5 sec/day
	Installation type	Pole Mounting; Wall mounting
Communication Interface	WAN Interface	GPRS、4G
	FAN Interface	Wi-SUN FAN Frequency band：Supports the regional frequency profile defined for Wi-SUN Alliance such as US 902-928 MHz, Brazil 902-907.5MHz、915-928MHz etc.

		Conducted output power：500-1000mW Data rate：50-300kbps
	Maintenance Interface	Wi-Fi
	Private net	Freewave FAN
	Capacity	Manages up to 1,000 smart meters for AMI implementation
Protocol	WAN Protocol	Application Layer DLSM/COSEM
	FAN Meter Protocol	Application Layer DLMS46，DLMS47
	Network Protocol	Support IPV4，SNMP V2
Security	Cover Open Detect	Alarm active report when cover open
	Data Storage	AES256 for key data
	WAN communication with application system	SHA-256，AES-256
	FAN communication with smart meter	AES128 Green book 8（DLMS Suit 0）

Table3 Gateway Electrical Characteristic

3. User Interfaces

3.1 Power Interface

AC 100~300V.

3.2 Wi-SUN Antenna Interface

Power :5v ,One Wi-SUN is used for downlink communication.

3.3 Wi-Fi Interface

Power :3.3v ,One channel of Wi-Fi is used for debugging, the rate is> 10Mbps, the communication distance is> 10 meters, the frequency is 2.4G,

3.4 4G antenna Interface

Power :4v ,One 4G module is used for uplink communication,4G module supports 4G full Netcom system.

3.5 Freewave Interface

Power :5~12V,One Freewave module is used for uplink communication.

4. Product Assembly Drawing

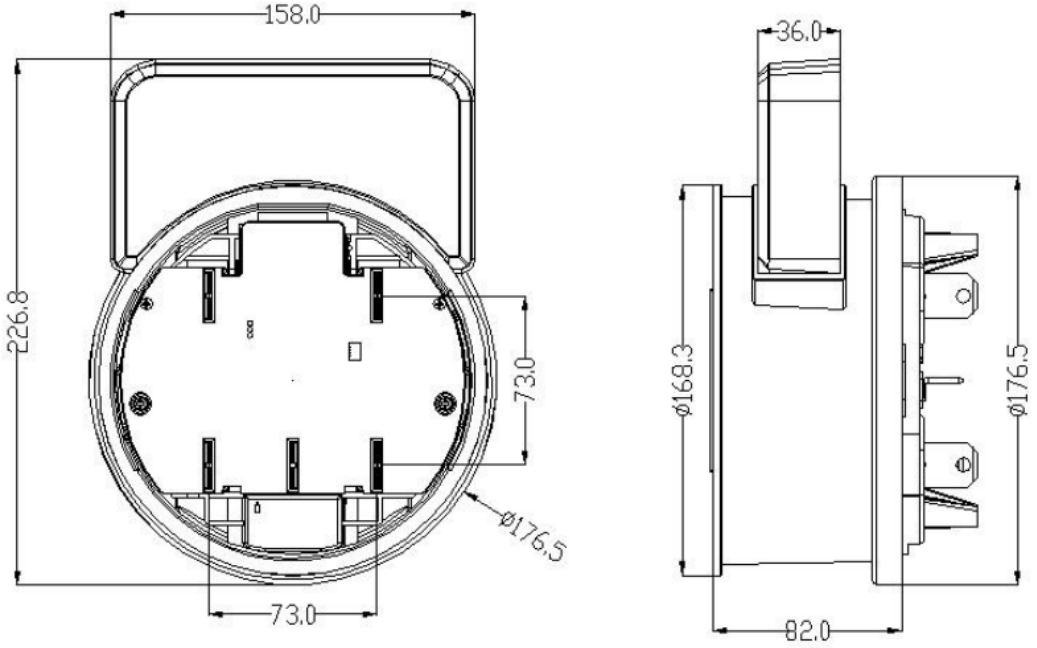


Figure 4-Product Outline

4.1 Packing List

There are various interfaces in RF Module to connect Meter and Antenna.

Item	Name	Quantity	Remark
1	Wi-SUN Gateway	1pcs	
2	Installation Brackets for the Gateway	1set	

Figure/Table 10- Packing materials list

5. Web Portal

The Gateway has an internal web user portal that can be accessed through the ethernet or 4G connection. The web interface can be used to check, configure, diagnostics, a single gateway. It is recommended to use the Wifi interface for access, because the communication speed using the 4G interface is affected by the local telecommunications operator. The compatible web browsers have been tested include Google Chrome (version 60 and above) and Microsoft IE browser (version 7 and above).

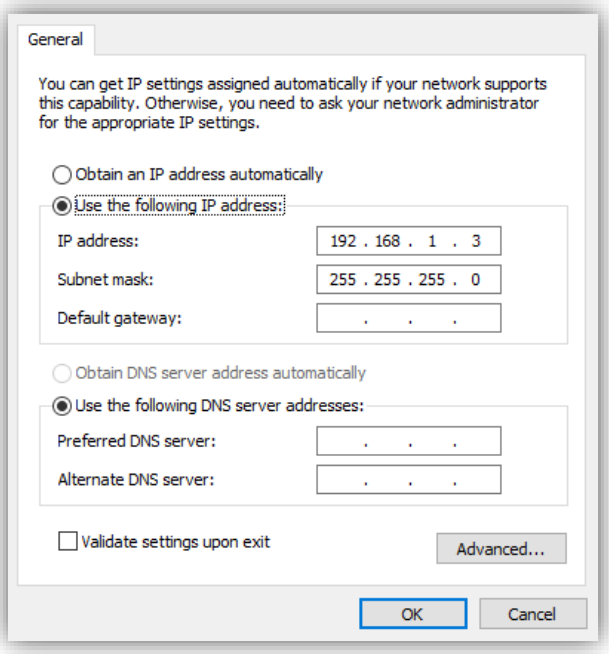
5.1 Connecting to the gateway locally through ethernet

The parameterization via point-to-point connection by Wifi Interface, you need:

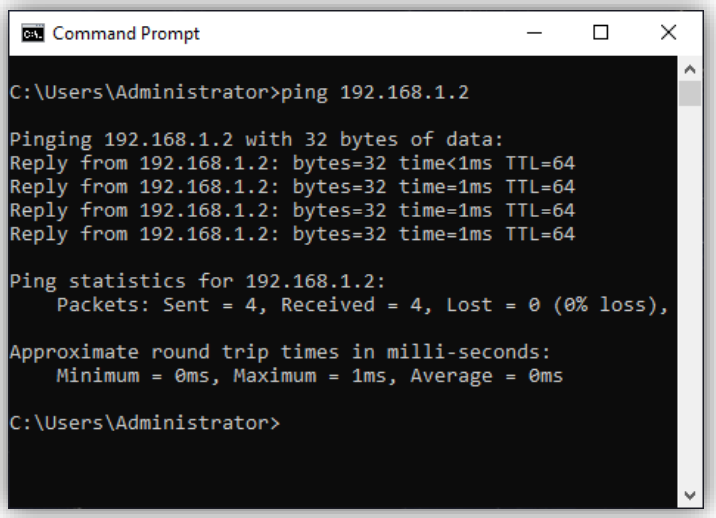
- A laptop computer with an Wifi adapter.

Creating the connection:

1. Connect to the Gateway Wifi ,which SSID is “WS+terminalID”,default password is 12345678.
2. The concentrator’s default IP address is 192.168.1.2. Configure your laptop IP address to be in the same network, e.g. 192.168.1.3 with subnet mask 255.255.255.0. Check your operating system manual for instructions on how to define IP addresses.

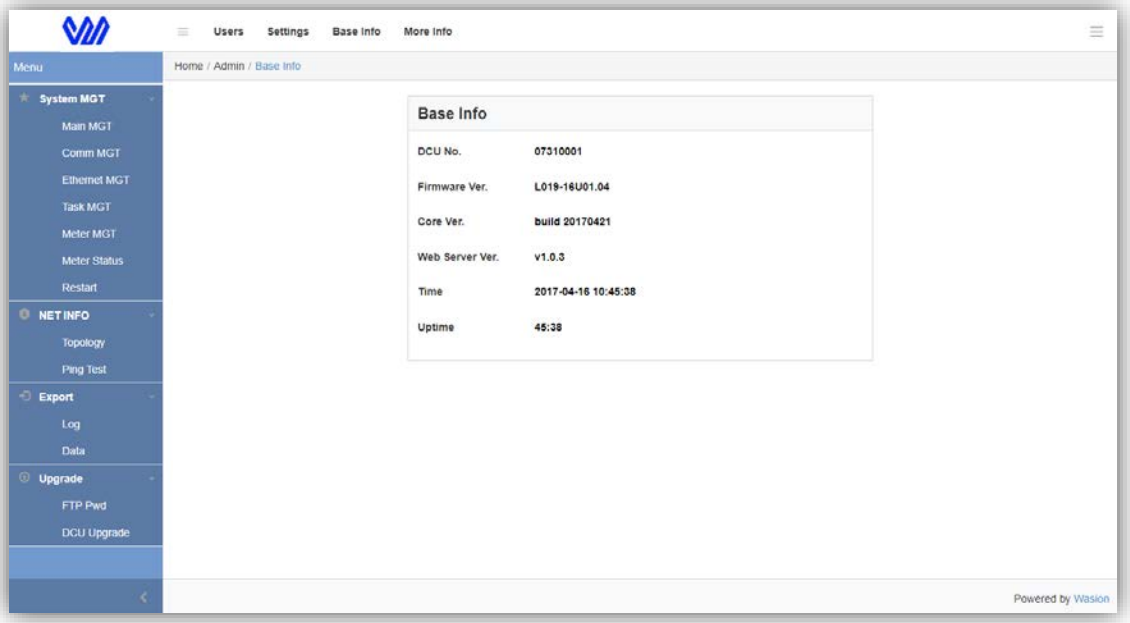


3. Try to use ping command for testing whether the connection between laptop and Gateway established well or not.



4. Open the web browser and enter the Gateway IP address to the address row.
5. The browser opens an authentication window. Enter the username and password provided by manufacturer.
6. The main page of the Gateway's web interface is opened in your browser.

5.2 Web main page

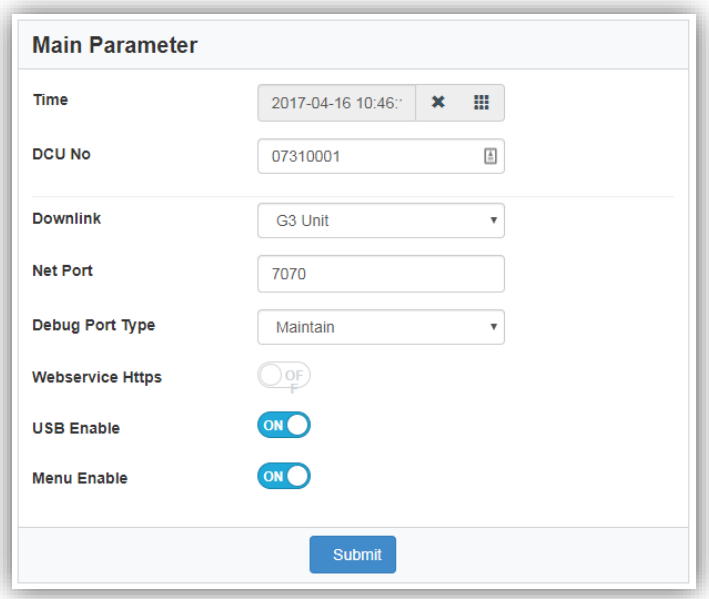


The Gateway Web main page as shown. Basic information about the Gateway is in the middle of the page. It includes information such as Gateway serial number, firmware version, kernel version, web server version, local time and the uptime (actually operates time). The operation menu list is on the left side of the page, the following web portal pages are available to users.

Heading	Menu	Information
System MGT	Main MGT	Time: DCU local time DCU No: DCU serial number Downlink: DCU downlink communication type Net Port: DCU listen port for web service Debug Port Type: Choose whether the port is used as (Maintain)serial port debugging and maintenance or (IrSev)infrared port debugging Webservice Https: Enable webservice https or not USB Enable: Enable USB interface or not Menu Enable: Enable Menu on the DCU or not
	Comm MGT	Uplink Channel: Choose whether the upstream interface is Ethernet or Cellular Main IP: The IP address of HES server Main Port: The listen port of HES server Back IP: The backup IP address of HES server Back Port: The backup listen port of HES server Heart: The heartbeat interval between DCU and HES APN: The APN of SIM card User: The APN user of SIM card Password: The APN password of SIM card
	Ethernet MGT	IP Address: The IP address of DCU Subnet Mask: The ethernet subnet mask of DCU Gateway: The ethernet gateway address of DCU
	Task MGT	Manage the DCU schedule reading task
	Meter MGT	Manage the meter list in the DCU
	Meter Status	Check the meter NAN online/offline status
	Restart	Restart the DCU
Net INFO	Topology	Show the NAN topological graph
	Ping Test	Ping test with meters
Export	Log	Export the DCU log file
	Data	Export the DCU database
Upgrade	FTP Pwd	Manage the DCU FTP client login password
	DCU Upgrade	Manage the DCU firmware upgrade

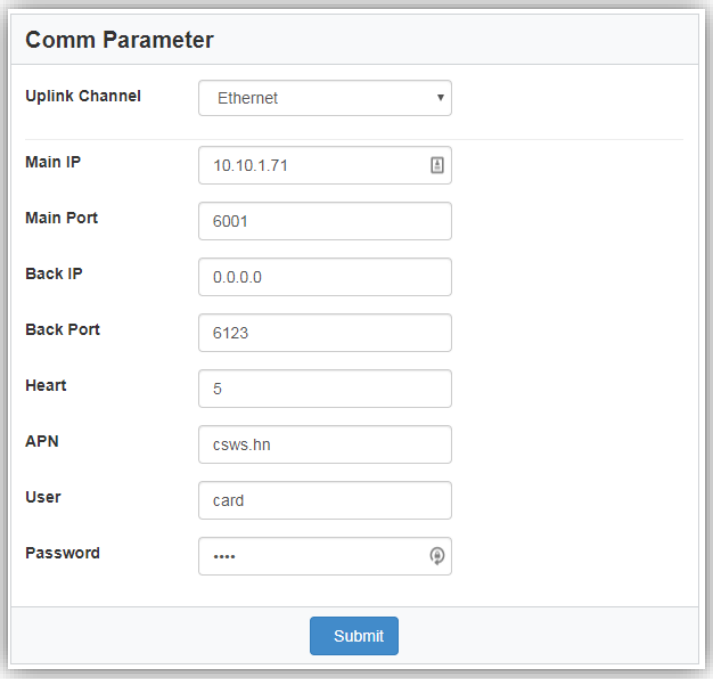
Note: Many parameters setting need to restart the device to take effect.

5.3 Main Management



Through this web page, the user can change the gateway local time, gateway serial number, downlink field area network type and so on.

5.4 Communication Management



The web page communication management mainly related to uplink communication. Users set these parameters according to the actual local network environment, which has achieved the purpose of gateway and HES communication.

- Firstly, user needs to decide whether to choose Ethernet or 4G to communicate with HES by select Uplink Channel.

- Then user should set the correct HES static IP address and listen port, the gateway as a TCP/IP client connects to the HES through this port.
- If the gateway cannot connect the HES main IP and port, gateway will try to connect the backup HES IP and port.
- The default heartbeat cycle for keep alive is 5 mins, user can change the value according the local network environment.
- If the uplink type is 4G, user should set the correct APN address for the SIM card.

6 Precautions

1. It is forbidden to power on the unconnected antenna, and it is forbidden to replace or remove the antenna with power on;
2. Make sure all connections are good before power on;
3. Please take lightning and rainproof measures for outdoor installation;

7 Troubleshooting

If the node cannot communicate with the gateway normally, please check as follows:
1. Check whether the power supply and network are normal;
2. Confirm that the nodes and gateways work in the corresponding frequency table;
3. Confirm whether the server is normal;
4. Confirm that the server has been added to the gateway and the parameters are the same as the server;
5. Confirm that the server has been added to the node and the parameters are the same as the server;

8 Package, Transportation and Storage

1. Avoid direct rain and snow during transportation and unpacking to prevent severe impact and vibration.
2. Inventory and storage should be stored on the rack under the original packaging conditions, and the stacking height should not exceed 5 layers.
3. Do not store after unpacking.
4. Storage conditions: The ambient temperature does not exceed -20 ° C to + 75 ° C, and the relative humidity does not exceed 95%. The place to be stored should be clean and free of harmful substances sufficient to cause corrosion in the air.

FCC Compliance Statements

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.

Note: 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.

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The device shall be operated with minimum distance 30cm between the radiator and your body.

Disclaimer of Liability

Although we have carefully checked the contents of this publication for conformity with the hardware and software described, we cannot guarantee complete conformity since errors cannot be excluded.

The information provided in this manual is checked at regular intervals and any corrections that might become necessary are included in the next releases. Any suggestions for improvement are welcome.

Subject to change without prior notice.

Issuing date

8th Dec 2023

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