I. QUICK GUIDE

1.1 Introduction

PineX is an industrial-grade outdoor LoRaWAN® Gateway, designed to operate reliably in the harshest environments—from scorching deserts to freezing Arctic conditions, and even hurricane-force winds up to 200 km/h. With IP67-rated waterproof and dustproof protection, an extended temperature range of -40°C to +70°C, and Dual LoRa Antennas for extended coverage, PineX ensures uninterrupted, long-range connectivity even in extreme weather conditions. Supporting all global LoRaWAN frequency bands, PineX integrates a built-in Network Server, Node-RED, and VPN security, enabling fast, cost-efficient, and secure IoT deployments. Designed for Smart Cities, Industrial Facilities, Smart Agriculture, and remote IoT applications, PineX is the ultimate rugged, high-performance LoRaWAN Gateway for mission-critical operations.

1.2 Application Notes

For Applications

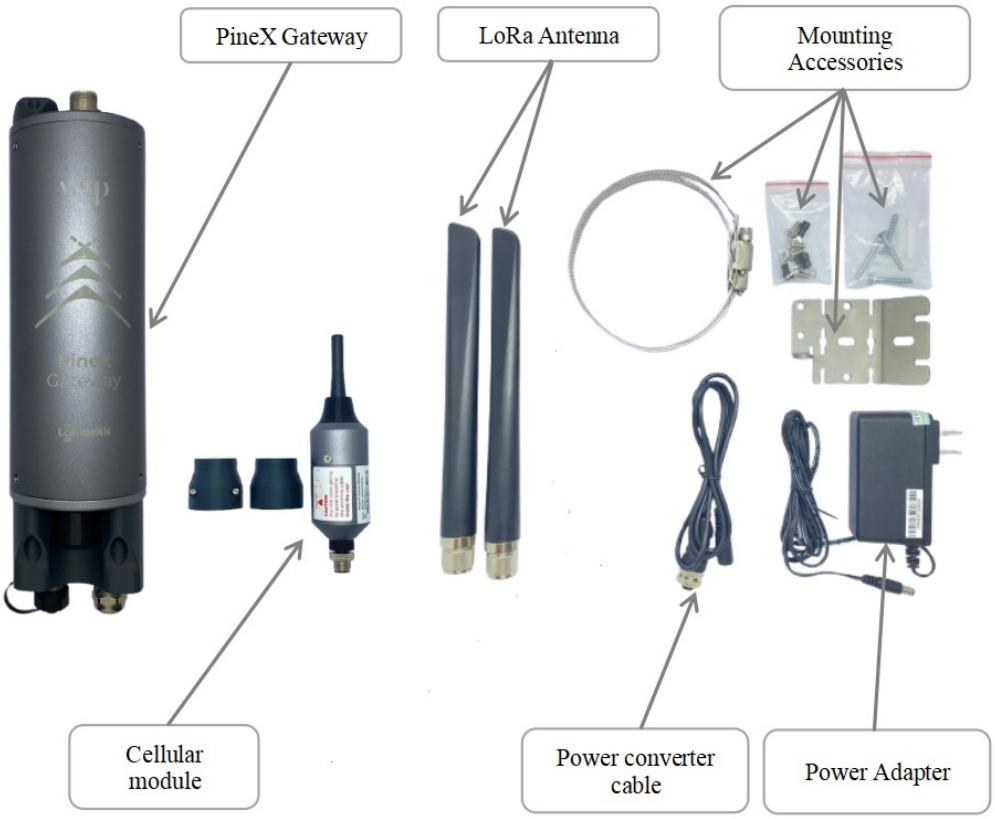
Ambient Air Quality Monitor, Indoor Air Quality Monitor, Gas Analyzing, Warehouse Monitoring, Gas Leakage Detection

Notes

When selecting a LoRaWAN gateway, it is essential to choose the correct frequency band based on your region (e.g., 920–925 MHz or 863–870 MHz depending on local regulations). Ensure the gateway supports suitable network connectivity options such as Ethernet, Wi-Fi, or 4G/LTE, depending on the availability and reliability of internet access at the installation site. Also, consider whether the deployment is indoor or outdoor. The indoor gateways are compact and economy, while outdoor gateways should be weatherproof (e.g., IP67-rated) and capable of wider coverage. Choosing the right version ensures stable performance and long-term reliability.

1.3 What's in the Package?

1.3.1 Advanced version



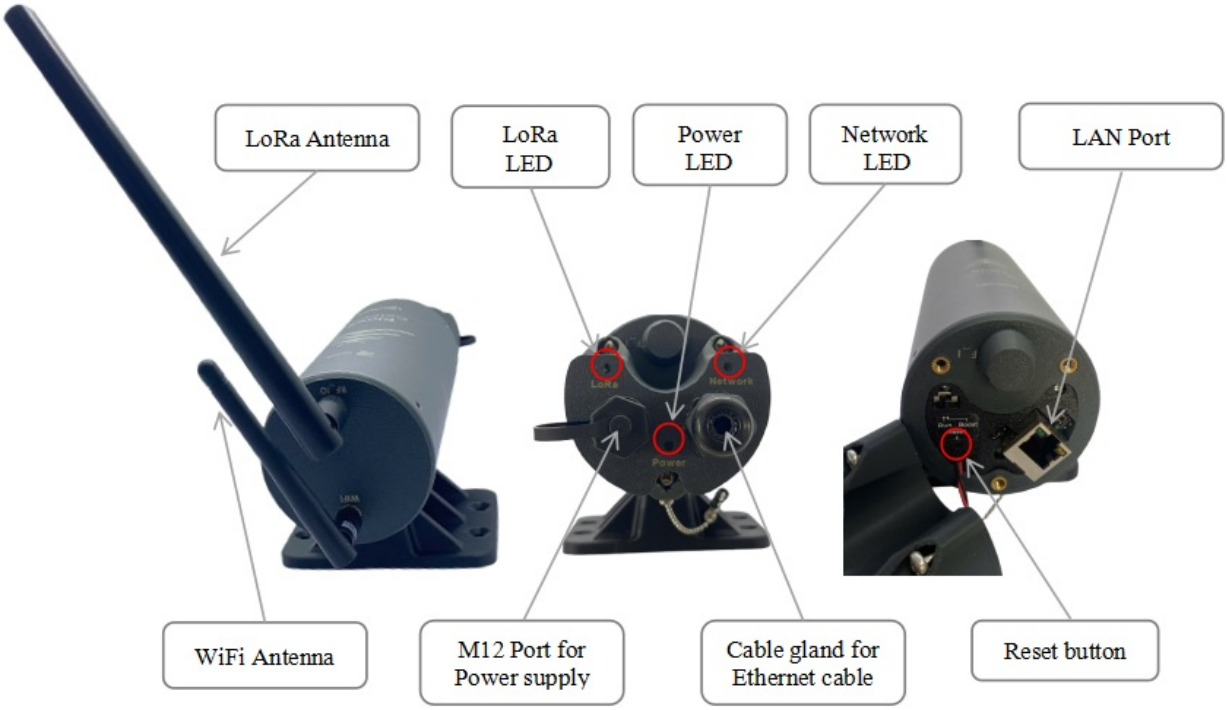
The package includes:
01 x LoraWAN PINEX Gateway
02 x Lora Antenna
01 x Cellular & GPS module (optional)
01 x Power Adapter
01 x Converter cable
01 x Mounting Accessories

1.3.2 Economy version



The package includes:
01 x LoraWAN PINEX Gateway
01 x Lora Antenna
01 x WiFi Antenna (optional)
01 x Power Adapter
01 x Converter cable
01 x Mounting Accessories

1.4 Product Overview



- **LED Functions**

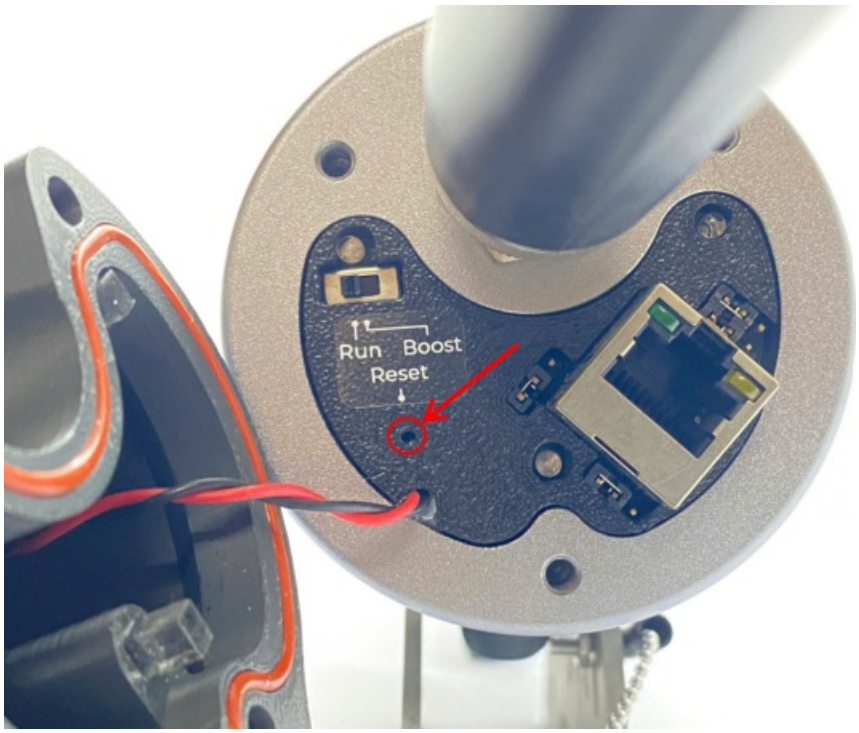
LED Functions	Constant	Flashing	Off
Power	Power On	None	OFF
Network	Initializing, High network traffic	Internet Available	Disconnected
LoRa	LoRa Working	Initializing	LoRa Not Working

- **RESET Button**

⚠ Some configuration such as Packet Forwarder settings, VPN settings, WAN settings will be restored to factory defaults when reset process completely taken.

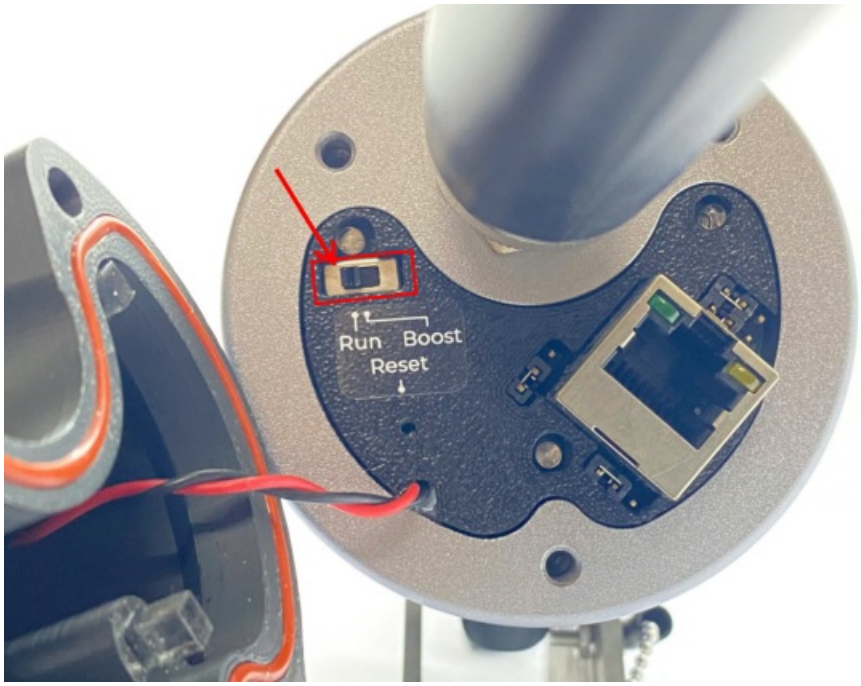
ℹ Use a pointed stick to poke the button inside the hole and hold for 5 seconds. The gateway will automatically perform reset process. The whole process will take a few minutes.

⚠ Reset the device only when absolutely necessary



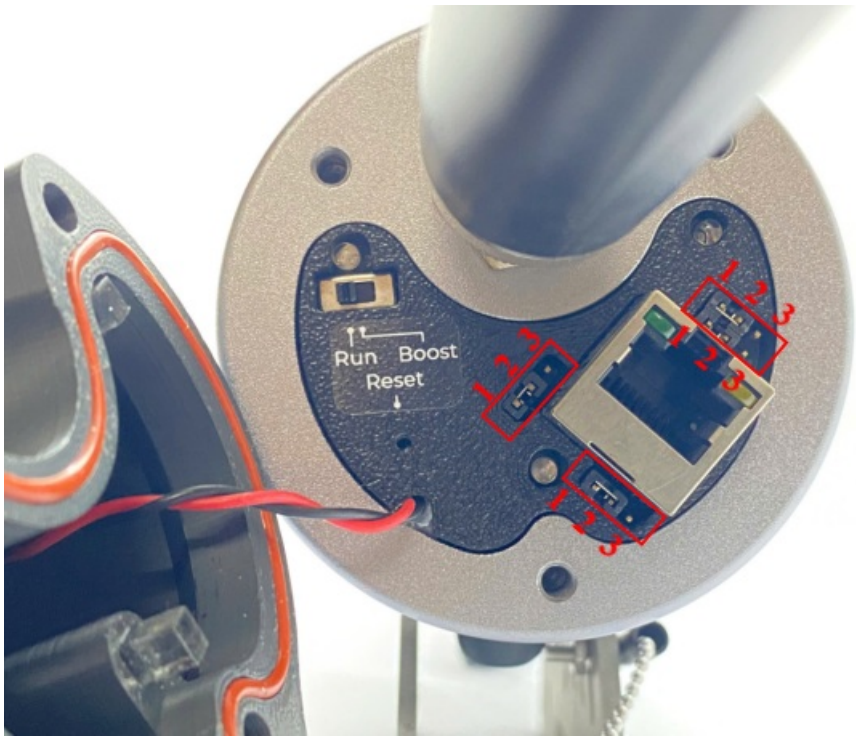
- **Function switch**

> The switch have to be in **Run** position in normal operation. **Boost** mode uses for firmware update.



- **Jumpers**

> There are four jumpers. Default position of four is connecting pin 1 and pin 2.



1.5 Power Supply

> There are two ways to power the PineX Gateway. It is recommended to use the included power adapter (12VDC@2A) to power the gateway.

- **Power the PineX gateway through the M12 Port**



1.6 Guide for Quick Test

Startup the LoraWAN Gateway through the following steps

Step 1: Install the antenna of the LoRaWAN Gateway

Install the Lora antenna and WiFi antenna (optional) in the correct position. Make sure the antenna and Gateway are tightly connected.

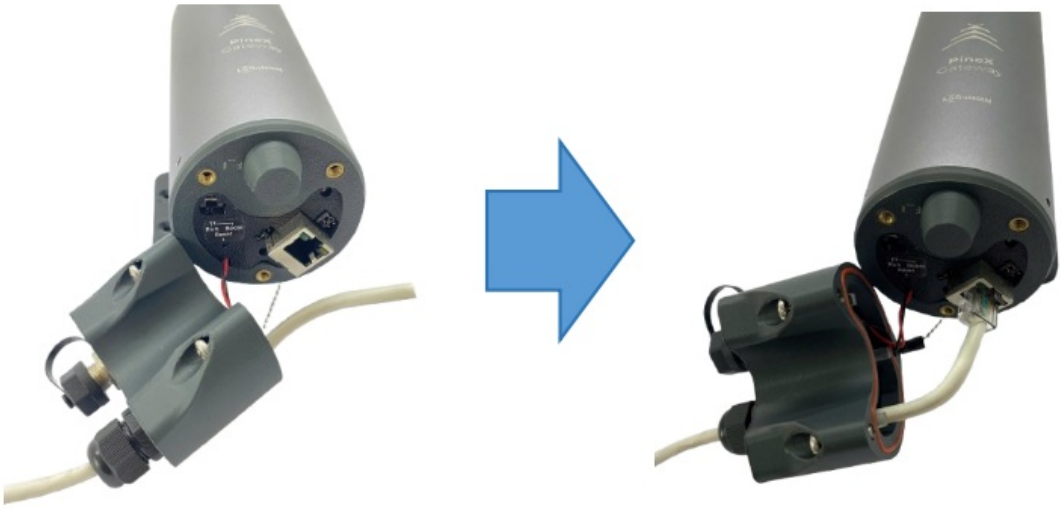


Step 2 :Use the screw driver to remove the three screws, then open the gateway cover.



Step 3: Connect the Ethernet cable to the Gateway

Connect the Ethernet cable into LAN port.



Step 4: Close the gateway's cover, then use the screw driver to lock the 3 screws.

Step 5: Install the SIM card to Cellular module (optional)

- Use the screw driver to remove the screw in the module, then carefully open the cap



- Insert the SIM card into the slot, pay attention to the direction of the Sim card

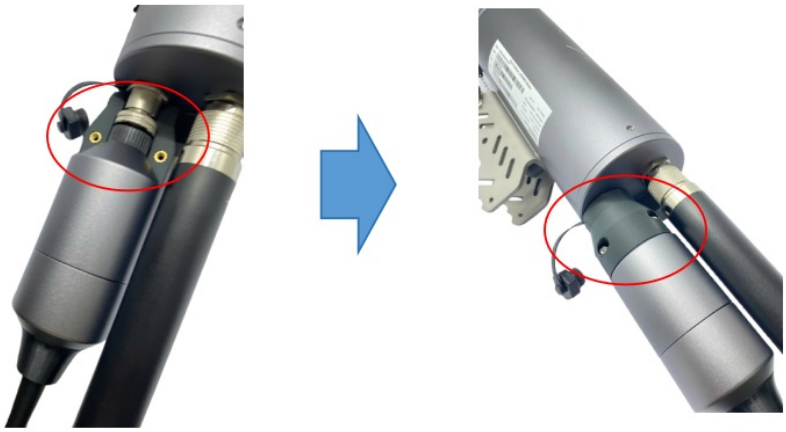


Step 6: Install the Cellular module to the gateway (optional)

Plug the Cellular module to the M12-FM port at the top of the gateway, then tighten the connector



- Install the connection protection accessories



Step 7 : Power up the Gateway through M12 port



Step 8 : Access Gateway'sGUI

Default mode of Daviteq Gateway is DHCP. Once gateway is turned on through plugging in the DC adapter, it will automatically link to available servers. Gateway’s IP address can be found from the DHCP server. Access Gateway Web UI via the DHCP IP on browser. The default username is “admin”, and the password can be found on the inside label.

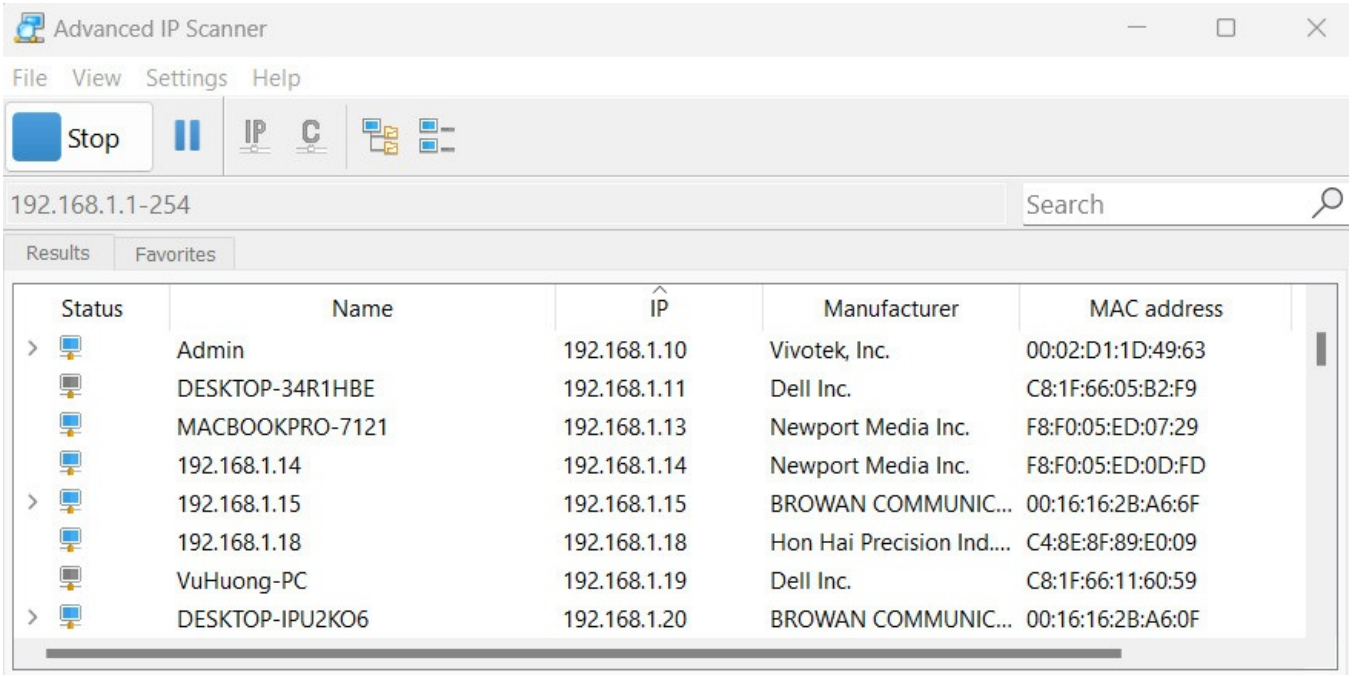
> ⚠ By default, the gateway is configured to use DHCP. Therefore, it must be connected to a network with an active DHCP server in order to access the Web GUI.

If the gateway is to be used in a static IP network without DHCP, it must firstly be connected to another active DHCP server to access the configuration interface to configure static IP for the gateway. Once the initial configuration is complete, the gateway can then be moved to the static IP network. Details of static IP configuration for the gateway are in sub-section of **WAN SETTINGS** in section of **2.2.6.2 Network WAN configuration**

In some company with strict IT regulations, the gateway MAC address must be added to company network white list for proper connection.

- Use a computer to connect to the network that the gateway is connected. The computer can connect to that network via WiFi or Ethernet.
- Use the IP scanning software to find the **IP address** of the gateway based on its **Mac address** that can be found on the back label.

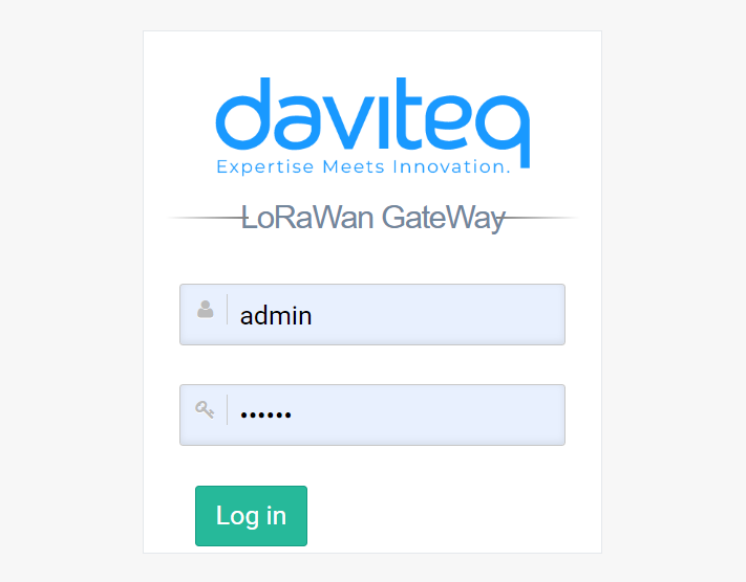
Access this link to get a free IP scanning software on the internet



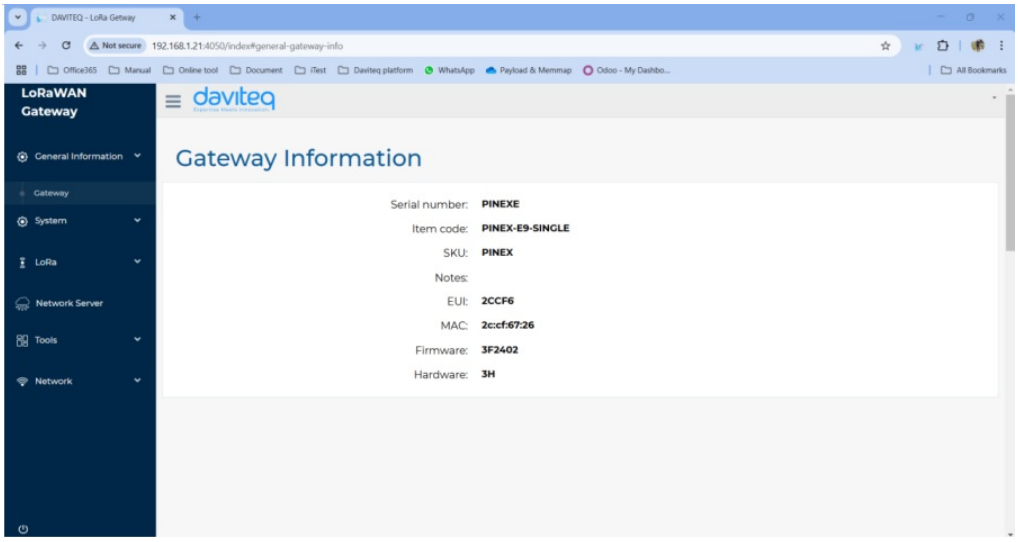
- Enter the **IP address** of the gateway in the web browser to access the configuration interface.

Must add port 4050 after the IP address. For example, If the IP address of the Gateway is **192.168.1.21** , you have to enter **192.168.1.21:4050** in web browser, then the GUI will be displayed.

The default username is admin and default password is public. Please check updated username and password on the gateway label.



After login successfully, the general information of the gateway will be display at**general information** tab.



Step 9: Lora Settings

The LoRa menu consists of the following categories: Package Forwarder and Logs. Configure some basic fields for the gateway operation.

Package Forwarder

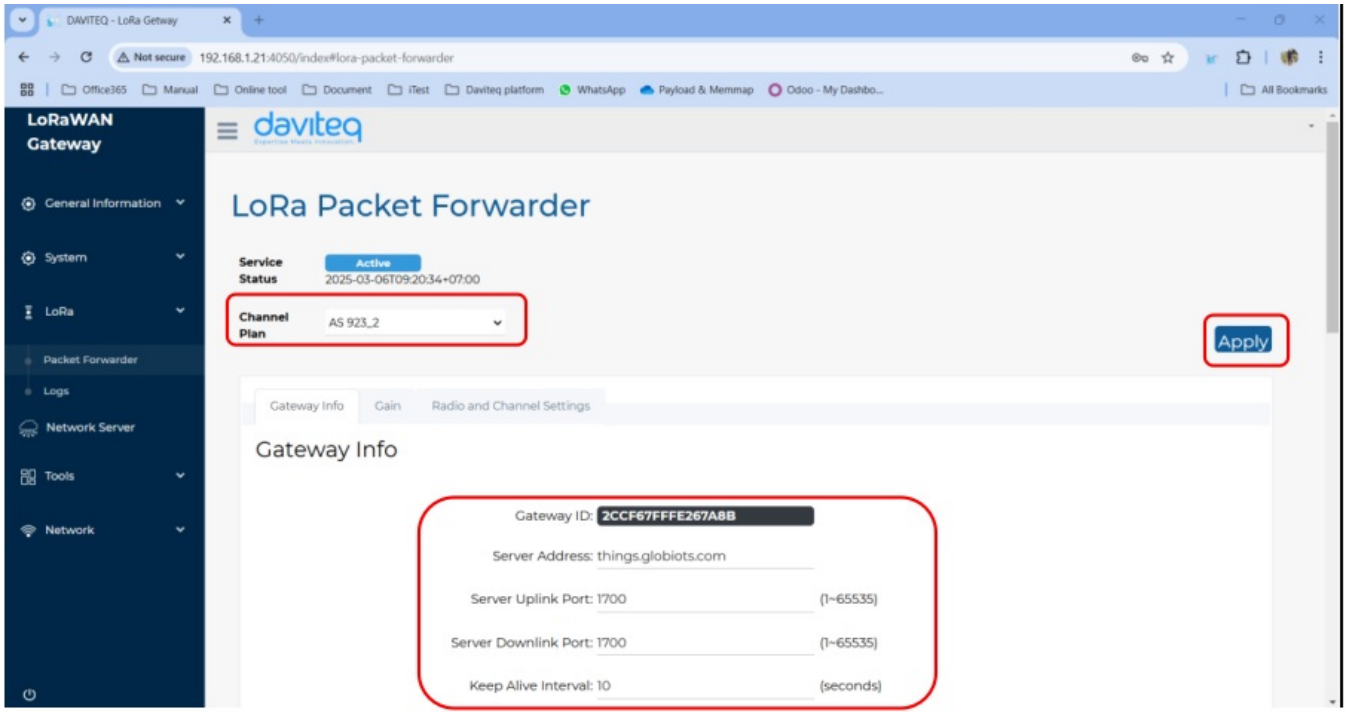
Select Packet Forwarder in the left menu, then choose Gateway Info. This page is for setting up the LoRa configuration including Channel Plan, Gateway ID, Server Address, Server Uplink Port, Server Downlink Port, Keep-Alive Interval, Statistics Display Interval, and Push Timeout

Need to properly configure the Server Address, Server Uplink Port, and Server Downlink Port fields. These information depend on the Network server.

Choose the channel plan for the gateway, then choose the**Apply button** at the bottom right to save the current configuration.

Parameter name	Description	Default value
Channel Plan	The region refers to the specific geographical area where the gateway operates, following the LoRaWAN Regional Parameters defined by the LoRa Alliance	EU868
Gateway ID	The Gateway ID (also known as DevEUI) is a unique identifier assigned to a LoRaWAN gateway.	Unique value

Server Address	The server address in a LoRaWAN gateway refers to the network server's IP address or domain name that the gateway connects to for data transmission and management	localhost
Server Uplink Port	The server uplink port in a LoRaWAN gateway refers to the port number used to send uplink packets	1680
Server Downlink Port	The server downlink port in a LoRaWAN gateway is the port number used for receiving downlink packets	1680
Keep alive interval	The keep-alive interval is the time interval at which a LoRaWAN gateway sends periodic status messages (heartbeats) to the network server to indicate that it is active and connected.	30



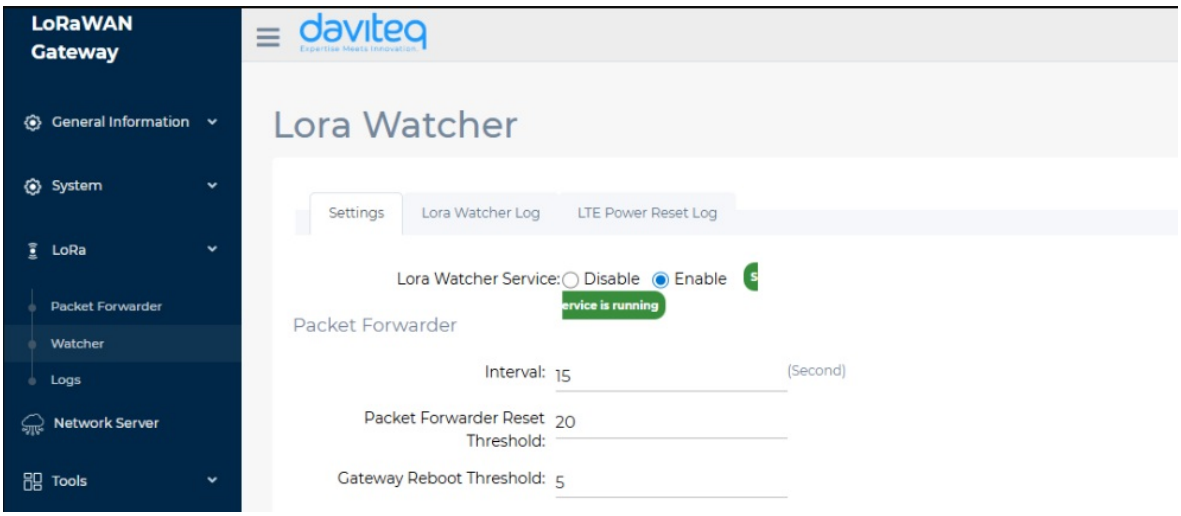
Watcher

- **Packet Forwarder:**

- Interval: Interval for checking the system log to verify successful uplink to the network server.

- Packet Forwarder Reset Threshold: Number of consecutive uplink failures before resetting the packet forwarder

- Gateway Reboot Threshold: Number of packet forwarder resets before resetting the gateway.



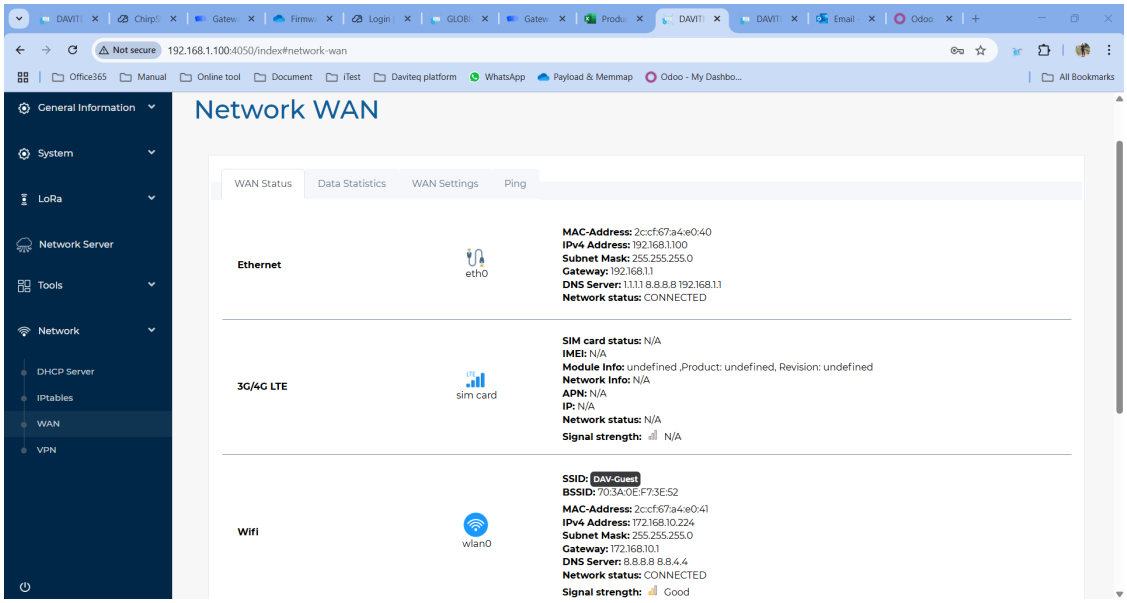
Step 10: Network WAN configuration

This category shows current WAN settings. This category is further divided into three sectors: WAN Status, Data

Statistics and WAN Settings.

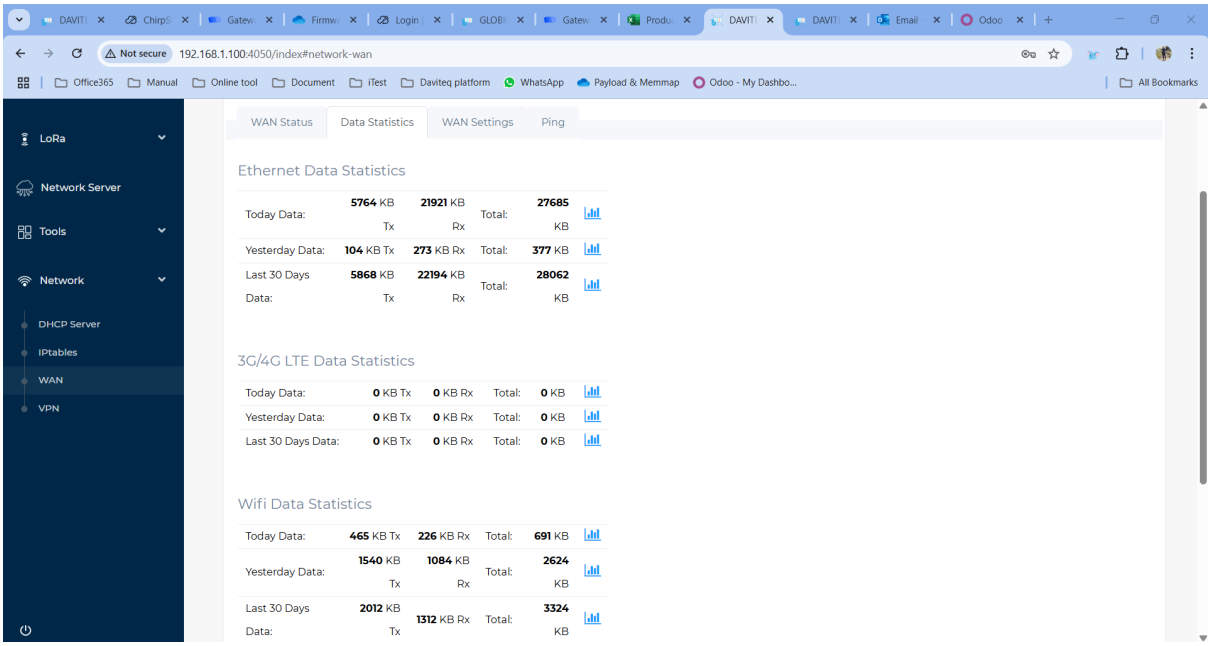
- **WAN Status**

The current network status will be shown on this page.



- **WAN Statistics**

Statistics on the gateway's used data capacity are shown in this section



- **WAN Settings**

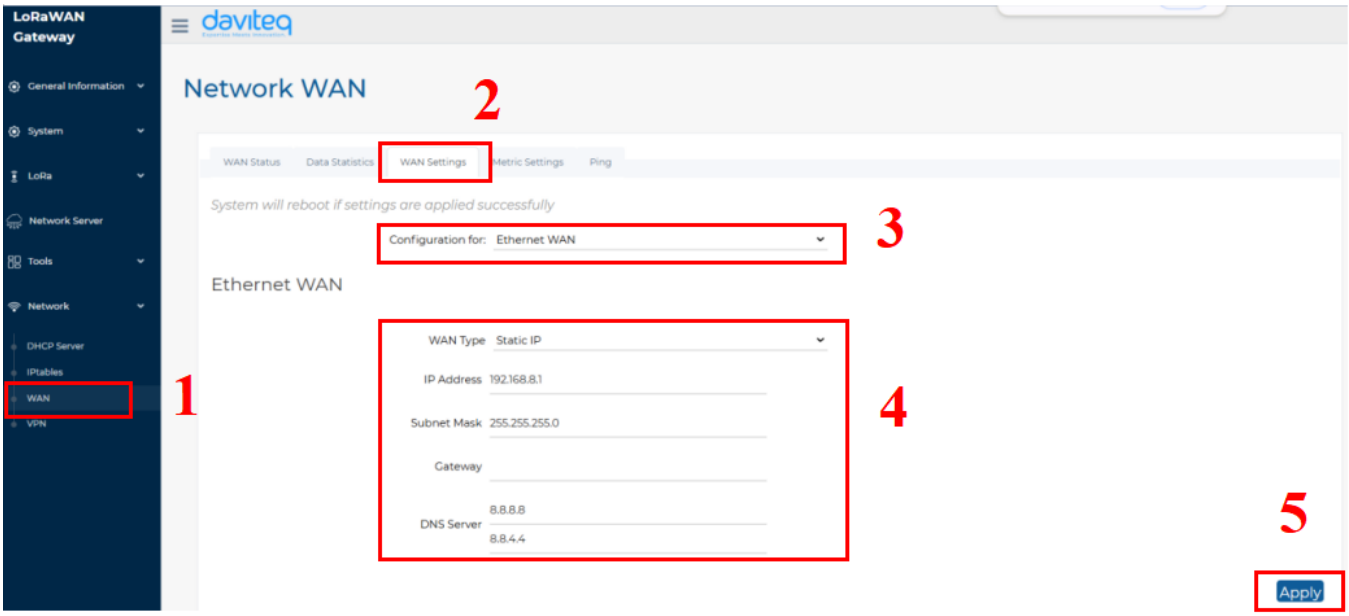
Daviteq Gateway supports internet connectivity via both Ethernet , Wi-Fi (optional) or Cellular (optional).

> The default Ethernet mode is DHCP.

- **Follow the steps below to set up the Ethernet network to static mode.**

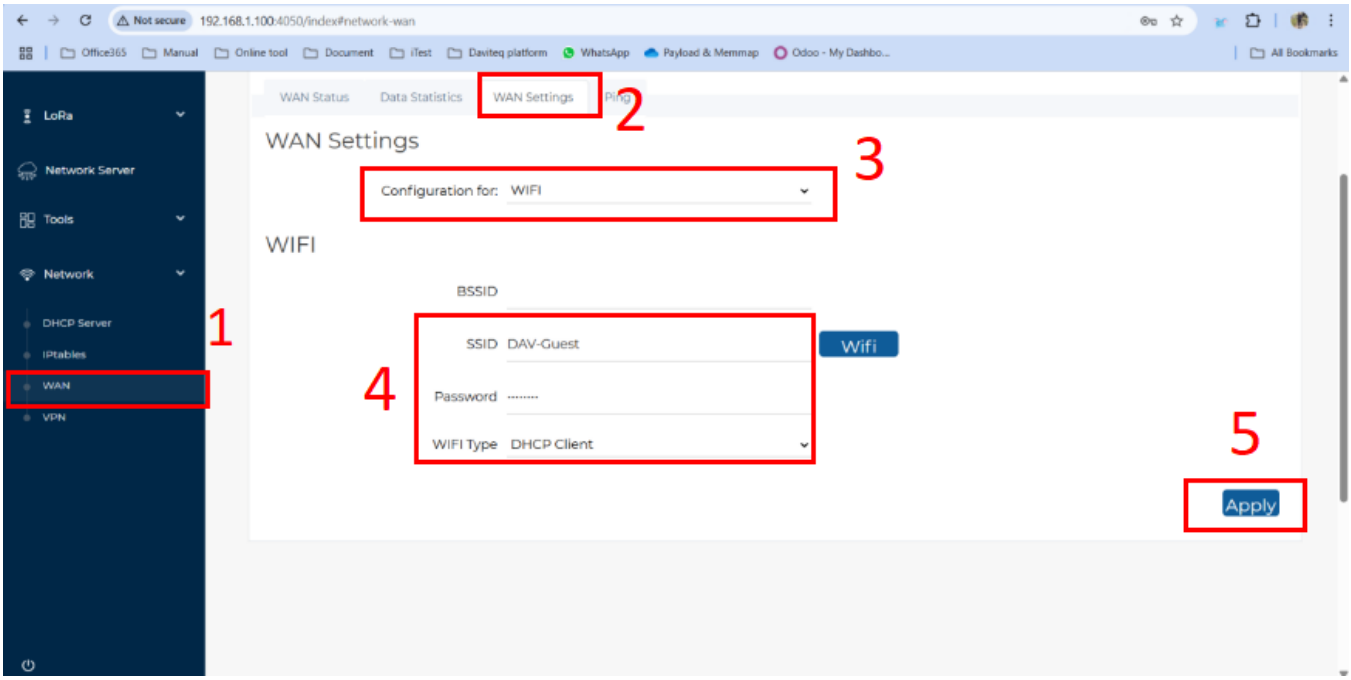
> **Step 1:** In the Network section, select WAN.
> **Step 2:** Click on the WAN Settings tab at the top.

Step 3: In the Configuration field, select Ethernet WAN
Step 4: Enter the Ethernet WAN information, including WAN Type, IP address, Subnet Mask, Gateway and DNS server
Step 5: Click the Apply button to save and apply the new configuration.



- **Follow the steps below to set up the Wi-Fi network for the gateway:**

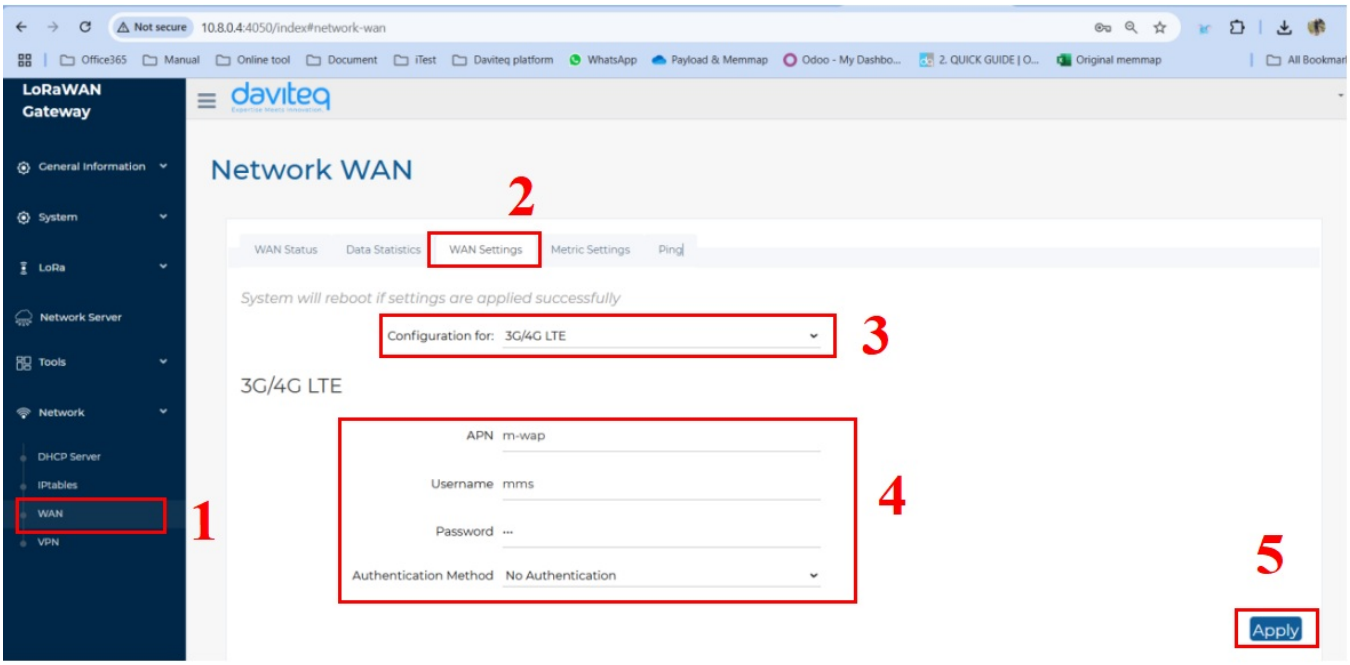
Step 1: In the Network section, select WAN.
Step 2: Click on the WAN Settings tab at the top.
Step 3: In the Configuration field, select Wi-Fi.
Step 4: Enter the Wi-Fi information, including SSID (Wi-Fi name), Password, and Wi-Fi Type (default: DHCP Client).
Step 5: Click the Apply button to save and apply the new configuration.



- **Follow the steps below to set up the Cellular network for the gateway:**

Step 1: In the Network section, select WAN.
Step 2: Click on the WAN Settings tab at the top.
Step 3: In the Configuration field, select 3G/4G LTE
Step 4: Enter the 3G/4G LTE information, including APN, Username, Password, and Authentication Method (base

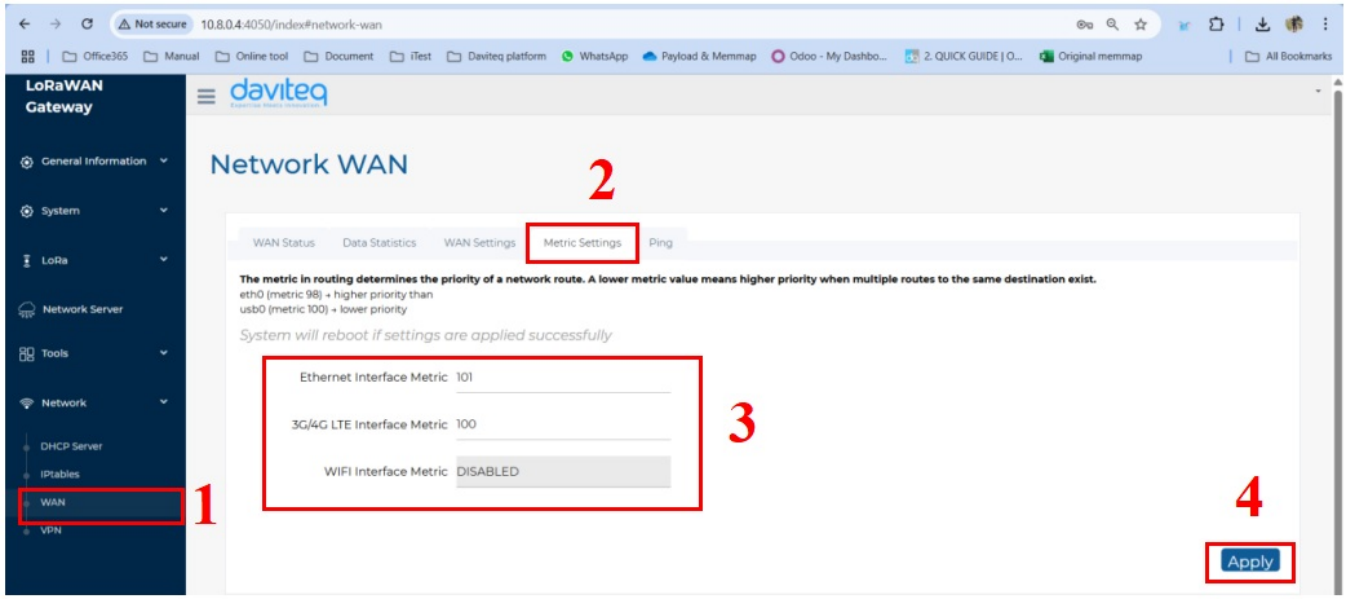
on the SIM card provider).
Step 5: Click the Apply button to save and apply the new configuration.



- **Follow the steps below to set up network priority**

The metric in routing determines the priority of a network route. A lower metric value means higher priority when multiple routes to the same destination exist. For example, 100 is higher priority than 101.

Step 1: In the **Network** section, select **WAN**.
Step 2: Click on the **Metric settings** tab at the top.
Step 3: Enter the the metric factor for available network.
Step 4: Click the **Apply** button to save and apply the new configuration.



1.7 Gateway Communication

1.7.1 Gateway communication to LoRaWAN device

1.7.2 Gateway communication to Network Server

1.7.2.1 Add the LoraWAN Gateway to Embedded Chirp Stack Network Server

Please follow instruction at link:

Instruction to configu... | Online Product Manuals & Datasheets

2.7.2 Add the LoraWAN Gateway to External LoRaWAN Network Server

To give an example, please follow the instructions in**this link** to add LoraWAN gateway to The things Stack network server

1.7.3 Activate and configure the embedded Node RED development tool

Prerequisite:

The Embedded Chirp Stack Network Server in the PINEX gateway must be active and configured properly to forward data to embedded Node RED development tool. Details to activate and configure embedded Chirp Stack are at the link: https://daviteq.com/en/manuals/books/manual-for-lorawan-sensor/page/instruction-to-configure-embedded-chirpstack-network-server-in-pinex-firmware-6

Please refer the below link for instruction to add the embedded Node RED development tool:

Instructions to config... | Online Product Manuals & Datasheets

To give an example, please follow the instructions in**this link** to add LoraWAN gateway to The things Stack network server

1.8 Default Communication

Configuration	Default value
Time zone	UTC
LoRaWAN Frequency plan	EU868
Network Server host	localhost
NS uplink port	1700
NS downlink port	1700
Network Server Settings description	OFF
NS integration descriptions	OFF
NodeRED Settings descriptions	OFF
IP forwarding	OFF
WAN Ethernet Settings	DHCP Client
VPN setting	OFF
Ethernet Interface Metric	100
3G/4G LTE Interface Metric	101
WIFI Interface Metric	DISABLED
Lora Watcher Service	ENABLE
Packet Forwarder Interval	15
Packet Forwarder Reset Threshold	20
Gateway Reboot Threshold	5

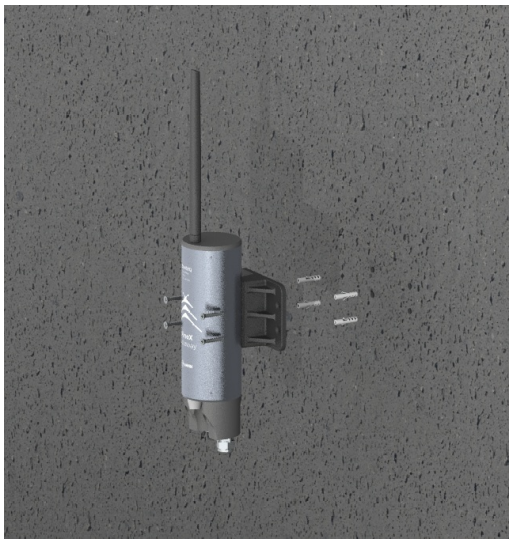
1.9 Installation and Wiring

- **Economy version**

Step 1: Select the installation location. The surface must be flat.

Step 2: Based on the dimensions of the gateway's base, drill four holes into the wall. Then, insert wall anchors into the drilled holes.

Step 3: Use screws to secure the gateway onto the drilled surface.



Advanced version

> **There are two methods for mounting the gateway**
> 1. Mount the gateway to the steel pole with a hose clamp
> 2. Attach the bracket to the wall, then mount the gateway on the bracket.





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