4G Modem

IDG400-0TE01 (LTE cat. 4)

User Manual

4G Modem

Chapter 1 Introduction

1.1 Introduction

Congratulations on your purchase of AMIT's IDG400 M2M Cellular Modem. With this AMIT cellular modem you have made a great first step in the world of connected Internet of things (IOT) by simply inserting a SIM card from the local mobile carrier into this device to get things connected. This section gives you all the information you need to set up your device.

Main Features:

- Provide 3G/4G WAN connection.
- Provide one Ethernet port for comprehensive LAN connection.
- Simple Web GUI is used for basic setting and check the 3G/4G status.
- Designed easy-to-mount metal body for business and M2M environment to work with a variety M2M (Machine-to-Machine) applications.
- Optional GNSS function for location service.

Before you install and use this product, please read this manual in detail for fully exploiting the functions of this product.

1.2 Contents List

1.2.1 Package Contents

#Standard Package

Items	Description	Contents	Quantity
1	**IDG400-0TE01 4G Modem**		1pcs
2	**Cellular Antenna**		2pcs
	MicroUSB Cable		1pcs
4	**RJ45 Cable**		1pcs

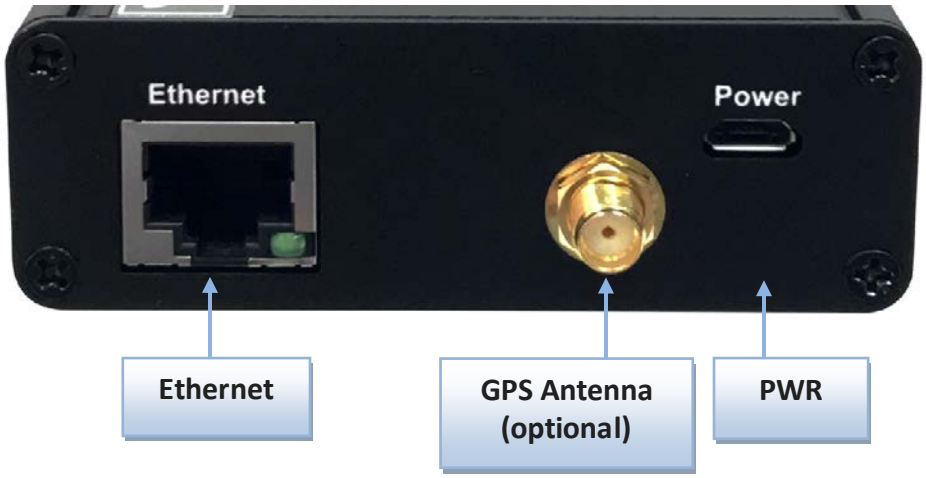
#Optional Package

Items	Description	Contents	Quantity
1	**Extender**		1pcs or 2 pcs (1 pcs needed for din-rail and 2 pcs needed for wall-mount)
2	**DIN-Rail Bracket**		1pcs
3	**WALLMOUNT**		2pcs/set
4	**DC TO Micro USB**		1pcs

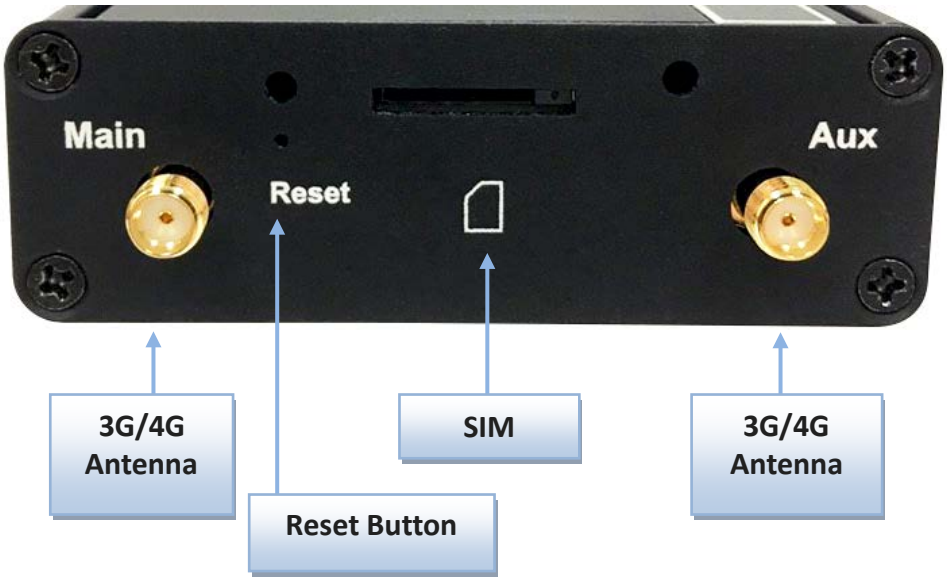
5	**Power Adapter**		1pcs
6	**Plug(US/EU/AU/UK)**		1PCS

1.3 Hardware Configuration

- Left View



- Right View



4G Modem

※Reset Button

The RESET button provides user with a quick and easy way to resort the default setting. Press the RESET button continuously for 6 seconds, and then release it. The device will restore to factory default settings.

※ GPS Antenna

GNSS function is not available in some models/ SKUs. For models/ SKUs with GNSS function the GPS Antenna is an optional accessory and not included in the standard package. If you intend to use GNSS function, please purchase additional GPS antenna (passive-type) and install it to the corresponding SMA connector.

1.4 LED Indication

Indication	LED Color	Description
Power	Blue	**Steady On**: Device power is on **Off**: Device power is off
Status	Blue Red	**Red Steady on**: Cellular is not ready or no cellular signal. **Red Flash**: Cellular is ready but regiister status is not ready. **Blue Steady On**: The signal is ready and regists to operator. **Blue Fast Flash**: State on LTE. **Blue Slow Flash**: State on 3G .

1.5 Installation & Maintenance Notice

1.5.1 SYSTEM REQUIREMENTS

Network Requirements	• A fast Ethernet RJ45 cable • 3G/4G cellular service subscription • 10/100 Ethernet adapter on PC
Web-based Configuration Utility Requirements	**Computer with the following:** • Windows®, Macintosh, or Linux-based operating system • An installed Ethernet adapter **Browser Requirements:** • Internet Explorer 8.0 or higher • Chrome 2.0 or higher • Firefox 3.0 or higher • Safari 3.0 or higher

1.5.2 WARNING

Attention

- Only use the power adapter that comes with the package. Using a different voltage rating power adaptor is dangerous and may damage the product.
- Do not open or repair the case yourself. If the product is too hot, turn off the power immediately and have it repaired at a qualified service center.
- Place the product on a stable surface and avoid using this product and accessories outdoors.

Federal Communication Commission Interference Statement

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.

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FOR PORTABLE DEVICE USAGE (<20m from body/SAR needed)

Radiation Exposure Statement:

The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

FOR MOBILE DEVICE USAGE (>20cm/low power)

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FOR COUNTRY CODE SELECTION USAGE (WLAN DEVICES)

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must fixed to US operation channels only.

1.5.3 HOT SURFACE CAUTION

CAUTION: The surface temperature for the metallic enclosure can be very high!

Especially after operating for a long time, installed at a closed cabinet without air conditioning support, or in a high ambient temperature space.

DO NOT touch the hot surface while servicing!!

1.5.4 Product Information for CE RED Requirements

The following product information is required to be presented in product User Manual for latest CE RED requirements. [1]

(1) Frequency Band & Maximum Power

1.a Frequency Band for Cellular Connection (for EC25-E version)

Band number	Operating Frequency	Max output power
LTE FDD BAND 1	Uplink: 1920-1980 MHz Downlink: 2110-2170 MHz	23.1 dBm
LTE FDD BAND 3	Uplink: 1710-1785 MHz Downlink: 1805-1880 MHz	23.0 dBm
LTE FDD BAND 7	Uplink: 2500-2570 MHz Downlink: 2620-2690 MHz	22.8 dBm
LTE FDD BAND 8	Uplink: 880-915 MHz Downlink: 925-960 MHz	23.2 dBm
LTE FDD BAND 20	Uplink: 832-862 MHz Downlink: 791-821 MHz	23.5 dBm
LTE FDD BAND 38	Uplink: 2570-2620 MHz Downlink: 2570-2620 MHz	21.7 dBm
LTE FDD BAND 40	Uplink: 2300-2400 MHz Downlink: 2300-2400 MHz	21.5 dBm
WCDMA BAND 1	Uplink: 1920-1980 MHz Downlink: 2110-2170 MHz	23.3 dBm
WCDMA BAND 8	Uplink: 880-915 MHz Downlink: 925-960 MHz	
E-GSM	Uplink: 880-915 MHz Downlink: 925-960 MHz	32.9 dBm
DCS	Uplink: 1710-1785 MHz Downlink: 1805-1880 MHz	29.9 dBm

1.b Frequency Band for Cellular Connection (for EC25-EU version)

Band number	Operating Frequency	Max output power
LTE FDD BAND 1	Uplink: 1920-1980 MHz Downlink: 2110-2170 MHz	23.1 dBm
LTE FDD BAND 3	Uplink: 1710-1785 MHz Downlink: 1805-1880 MHz	23.0 dBm
LTE FDD BAND 7	Uplink: 2500-2570 MHz Downlink: 2620-2690 MHz	22.8 dBm
LTE FDD BAND 8	Uplink: 880-915 MHz Downlink: 925-960 MHz	23.2 dBm
LTE FDD BAND 20	Uplink: 832-862 MHz	23.5 dBm

1 The information presented in this section is ONLY valid for the EU/EFTA regional version. For those non-CE/EFTA versions, please refer to the corresponding product specification.

	Downlink: 791-821 MHz	
LTE FDD BAND 28A	Uplink: 704 -723 MHz Downlink: 759 - 778MHz	23 dBm
LTE FDD BAND 38	Uplink: 2570-2620 MHz Downlink: 2570-2620 MHz	21.7 dBm
LTE FDD BAND 40	Uplink: 2300-2400 MHz Downlink: 2300-2400 MHz	21.5 dBm
WCDMA BAND 1	Uplink: 1920-1980 MHz Downlink: 2110-2170 MHz	23.3 dBm
WCDMA BAND 8	Uplink: 880-915 MHz Downlink: 925-960 MHz	
E-GSM	Uplink: 880-915 MHz Downlink: 925-960 MHz	32.9 dBm
DCS	Uplink: 1710-1785 MHz Downlink: 1805-1880 MHz	29.9 dBm

(2) DoC Information

You can get the DoC information of this product from the following URL:
http://www.amit.com.tw/products-doc/

(3) RF Exposure Statements

To comply with RF exposure limits established in FCC, the distance between the antenna or antennas and the user should not be less than 20 cm (7.87”).

(4) Unit Mounting Notice

The product is suitable for mounting at heights <= 2m (approx. 6 ft), or in a cabinet.
Ensure the unit is fixed tightly to reduce the likelihood of injury due to exposure to mechanical hazards if dropped.

(5) Manufacture Information

Manufacture Name: AMIT Wireless Inc.
Manufacture Address: No. 28, Lane 31, Sec. 1, Huandong Rd., Sinshih Dist., Tainan 74146, Taiwan

1.6 Hardware Installation

This chapter describes how to install and configure the hardware

1.6.1 Mount the Unit

The IDG400 series can be placed on a desktop, or use extender to place on DIN-Rail bracket or mount on the wall.

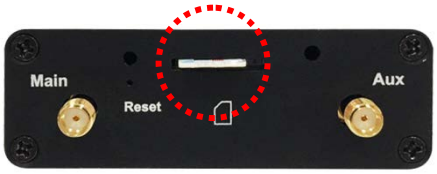
1.6.2 Insert the SIM Card

WARNING: BEFORE INSERTING OR CHANGING THE SIM CARD, PLEASE MAKE SURE THAT POWER OF THE DEVICE IS SWITCHED OFF.

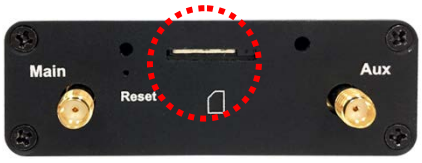
SIM card slot is located in the middle area of IDG400 series. You need to remove the outer SIM card cover before installing or removing an inserted SIM card. Please follow below instructions to install or remove a SIM card. After SIM card is well installed or removed, put back the outer SIM card cover.

Step 1: Remove SIM cover
Remove the SIM cover from left side.

Step 2: Remove SIM
Push the inserted SIM card to eject the SIM card.



Step 3: Insert a SIM
Push the SIM card into the SIM slot.



Step 4: Put Back SIM cover
Put back the SIM cover

1.6.3 Connecting to the Network or a Host

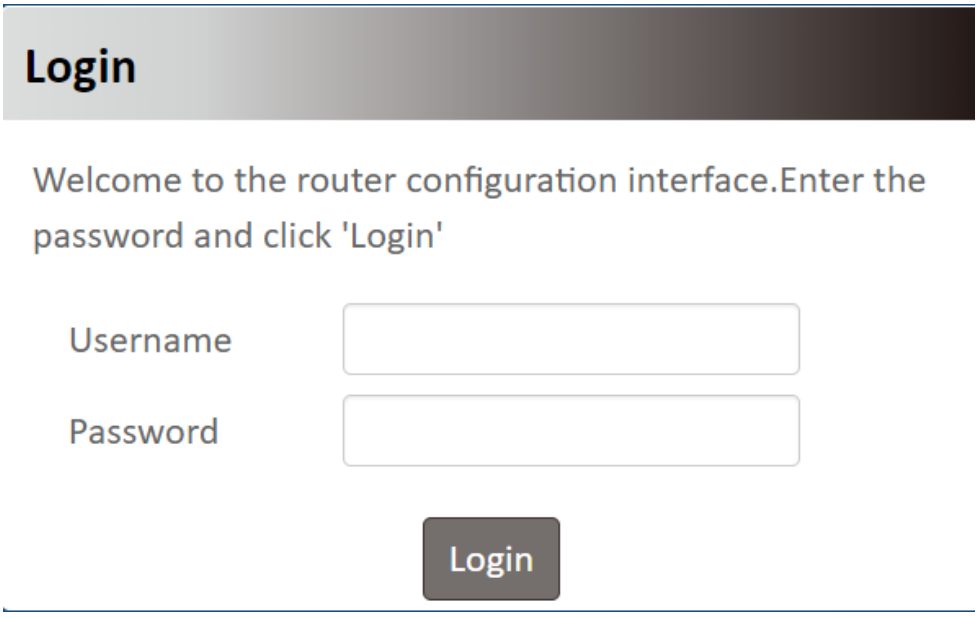
The IDG400 series provides one RJ45 port to connect to 10/100Mbps Ethernet. It can auto detect the transmission speed on the network and configure itself automatically. Connect one Ethernet cable to the RJ45 port (LAN) of the device and plug another end of the Ethernet cable into your computer's network port to connect this device to the host PC for device configuration.

1.6.4 Setup by Configuring WEB UI

You can browse web UI to configure the device.

Type in the IP Address (**http://192.168.123.254**)[2]

When you see the login page, enter the user name and password and then click **'Login'** button.
The default setting for both username and password is **'admin'** [3].



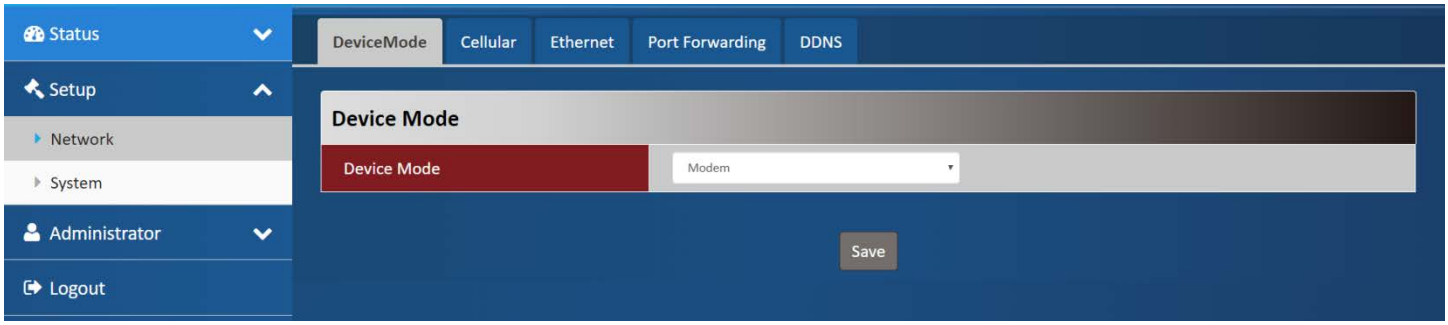
2 The default LAN IP address of this gateway is 192.168.123.254. If you change it, you need to login by using the new IP address.

3 For security concern, you are strongly recommended to change the login username and password from default after your first logged-in. Please refer to Section 3.1.2 for instruction on changing your username and password.

Chapter 2 Setup

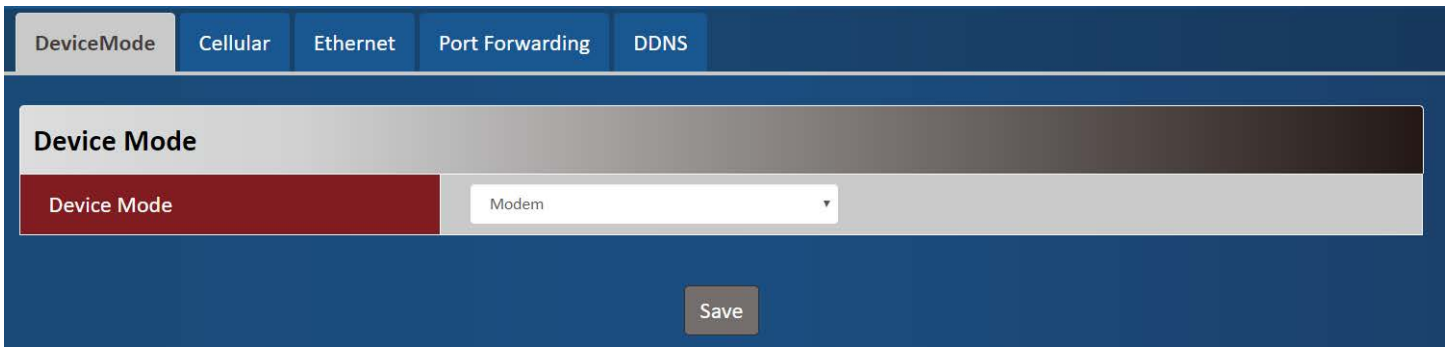
The IDG400 series connect to a machines via the 10/100 fast ethernet interface for 3G/4G network connection. IDG400 series also provides another function with NAT router. It can help the network application more flexible. Also an optional GNSS function is supported to provide the location service.

2.1 Network



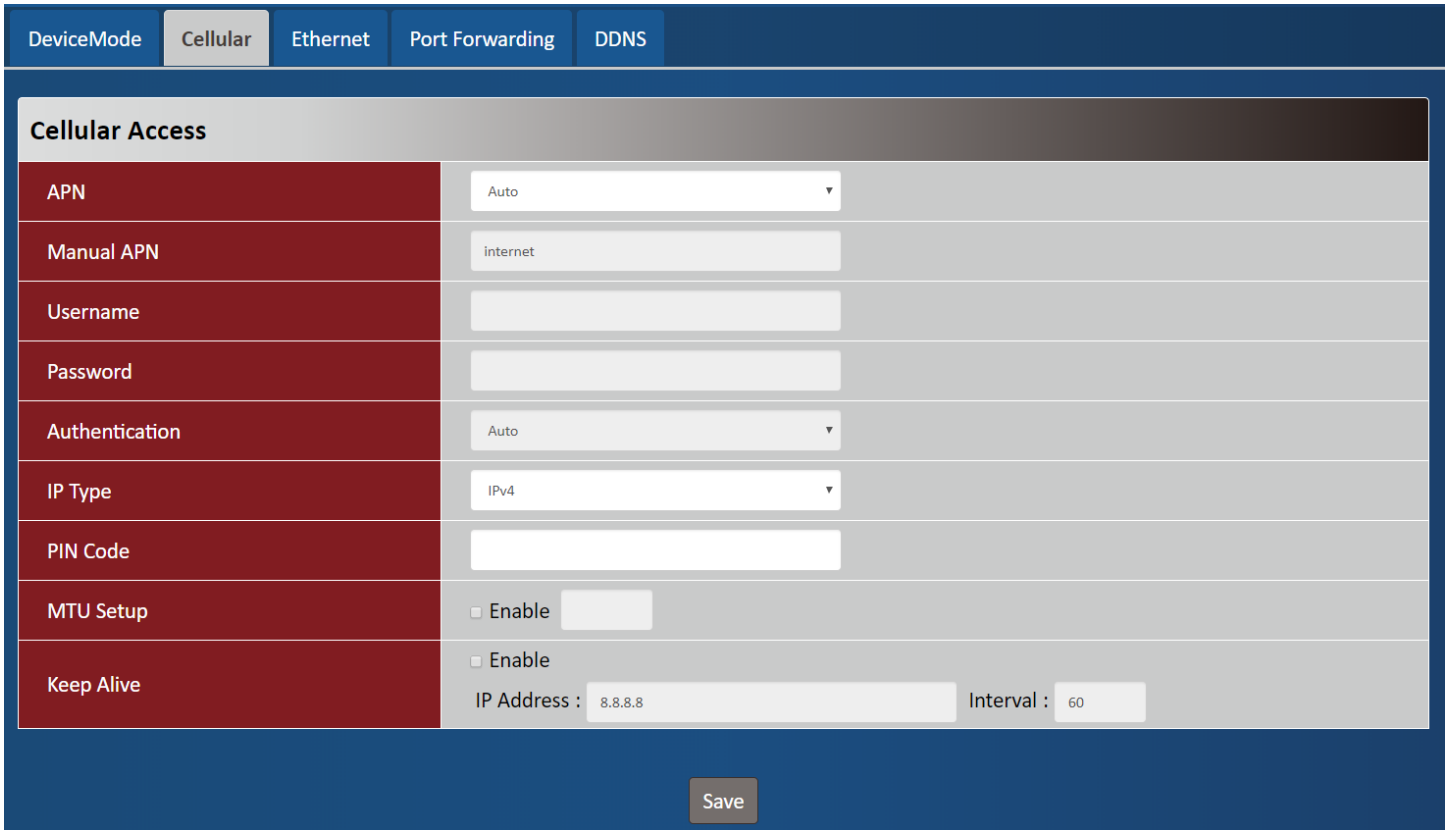
Network Page	
Item	**Description**
Device Mode	Set the unit operating mode
Cellular	Set the parameter for cellular network.
Ethernet	Set the IP of Ethernet and DHCP service
Port Forwarding	Enable specified port or protocol for service on connected device.
DDNS	Register a dynamic host name for the unit.

2.1.1 Device Mode



Device Mode		
Item	**Value setting**	**Description**
Device Mode	1. A Must filled setting 2. By default **NAT** is selected	**NAT** The unit will provide a NAT service and provide a simple firewall for the connected device. **Modem** The unit will pass the cellular IP to connected device via ethernnet

2.1.2 Cellular

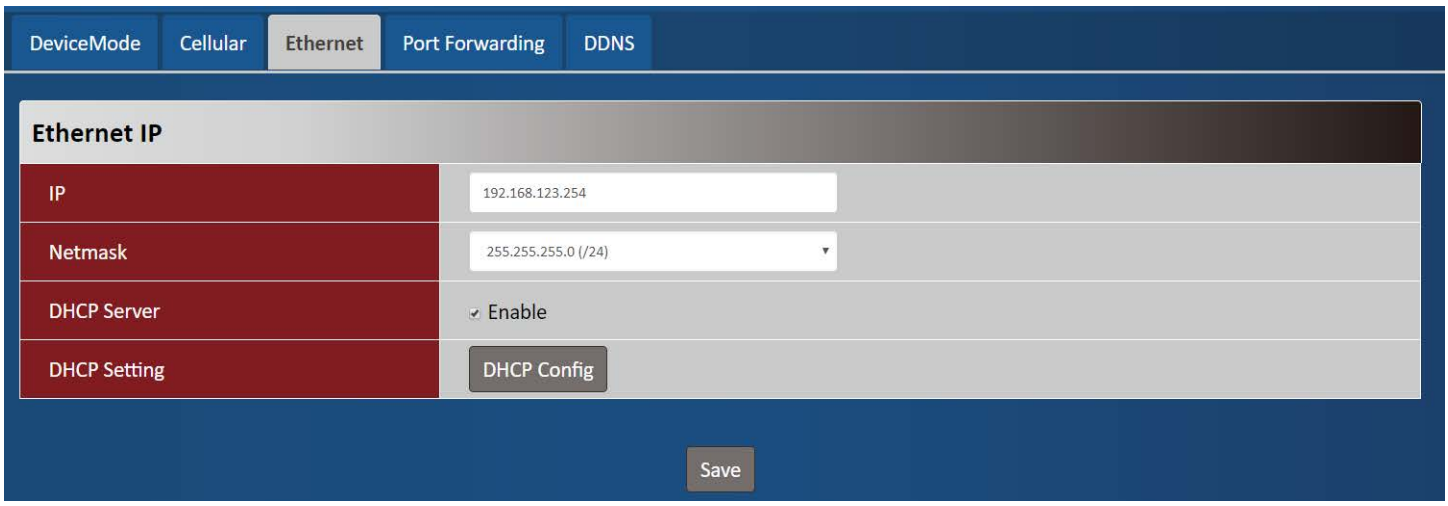


Device Mode Item	Value setting	Description
APN	1. A Must filled setting 2. By default **Auto** is selected	**Auto** The unit will detect the SIM and set an APN from internal database. **Manual** User must set APN manually.
Manual APN	1. A Must filled setting 2. String format : any text	Enter the **APN** you want to use to establish the connection. This is a must-filled setting if you selected **Manual APN** as APN scheme.
Username	1. An Optional setting 2. String format : any text	Enter the optional **username** settings if your ISP provided such settings to you.
Password	1. An Optional setting 2. String format : any text	Enter the optional **Password** settings if your ISP provided such settings to you.
Authentication	1. A Must filled setting 2. By default **Auto** is selected	Select **PAP** (Password Authentication Protocol) and use such protocol to be authenticated with the carrier's server. Select **CHAP** (Challenge Handshake Authentication Protocol) and use such protocol to be authenticated with the carrier's server. When **Auto** is selected, it means it will authenticate with the server either **PAP** or **CHAP**.
IP Type	1. A Must filled setting 2. By default **IPv4** is selected	Specify the IP type of the network service provided by your 3G/4G network. It can be **IPv4**, **IPv6**, or **IPv4v6**.

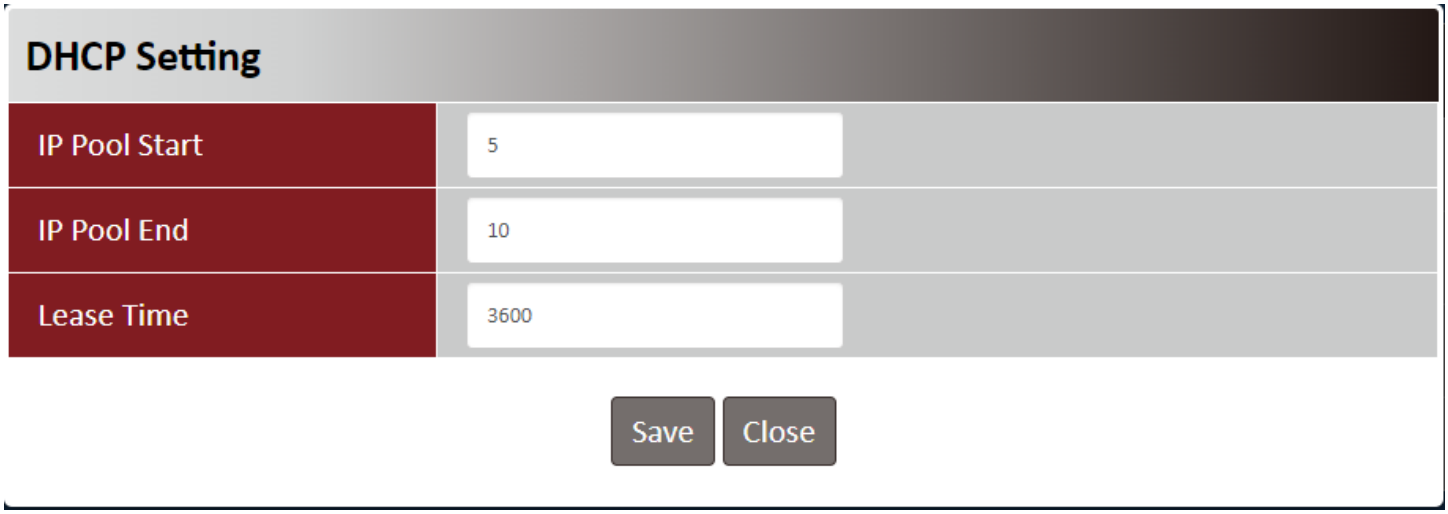
4G Modem

PIN Code	1. An Optional setting 2. String format : interger	Enter the PIN (Personal Identification Number) code if it needs to unlock your SIM card.
MTU Setup	1. An Optional setting 2. **Uncheck** by default	Check the Enable box to enable the MTU (Maximum Transmission Unit) limit, and specify the **MTU** for the 3G/4G connection. **MTU** refers to Maximum Transmission Unit. It specifies the largest packet size permitted for Internet transmission. ***Value Range***: 68 ~ 1500.
Keeo Alive	1. An optional setting 2. Box is unchecked by default	Check the **Enable** box to activate the keep alive function. Input **IP Address** and **interval** to send an ICMP packet to check the network status.

2.1.3 Ethernet

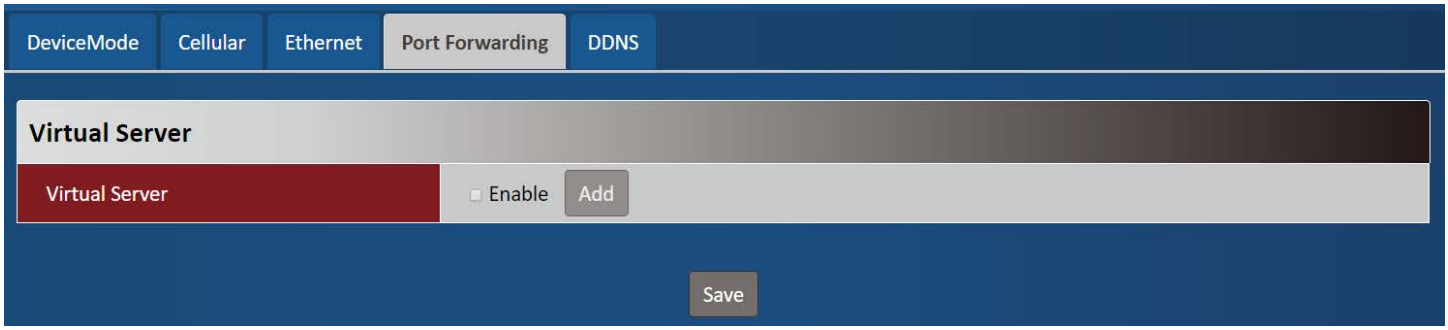


Ethernet IP Item	Value setting	Description
IP	1. IPv4 format. 2. A Must filled setting	The LAN IP Address of this unit.
Netmask	255.255.255.0 (/24) is set by default	The Subnet Mask of this unit.
DHCP Server	The box is unchecked by default.	Click **Enable** box to activate DHCP Server.
DHCP Setting	N/A	Click **DHCP Config** button to pop-up the **DHCP Setting** page.

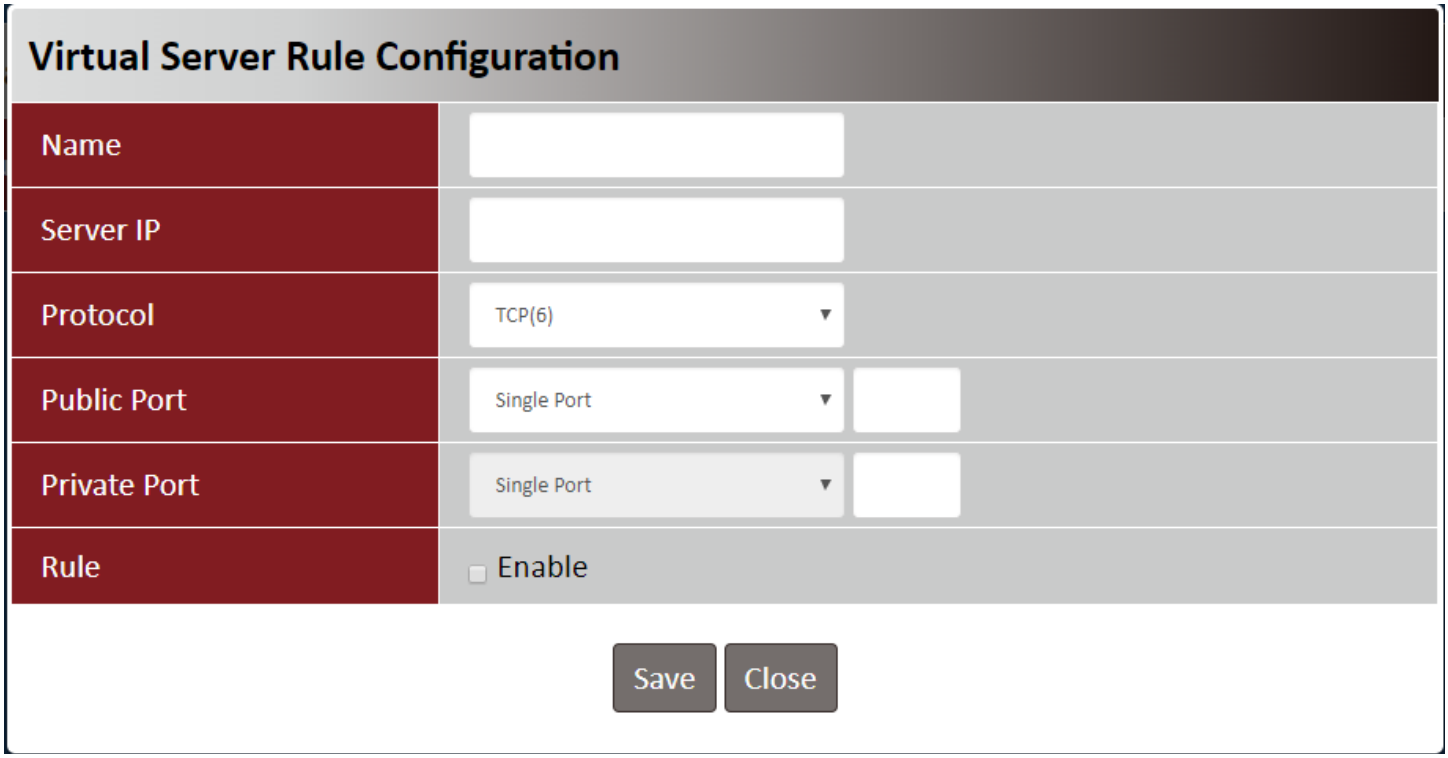


DHCP Setting Item	Value setting	Description
IP Pool Start	1. Numberic string format. 2. A Must filled setting	The IP Pool of this DHCP Server. It is Starting Address entered in this field.
IP Pool End	1. Numberic string format. 2. A Must filled setting	The IP Pool of this DHCP Server. It is Ending Address entered in this field.
Lease Time	1. Numberic string format. 2. A Must filled setting	The Lease Time of this DHCP Server. ***Value Range***: 300 ~ 604800 seconds.

2.1.4 Port Forwarding



Virtual Server Item	Value setting	Description
Virtual Server	The box is unchecked by default	Check the **Enable** box to activate this port forwarding function Click **Add** will pop-up **Virtual Server Rule Configuration** page.

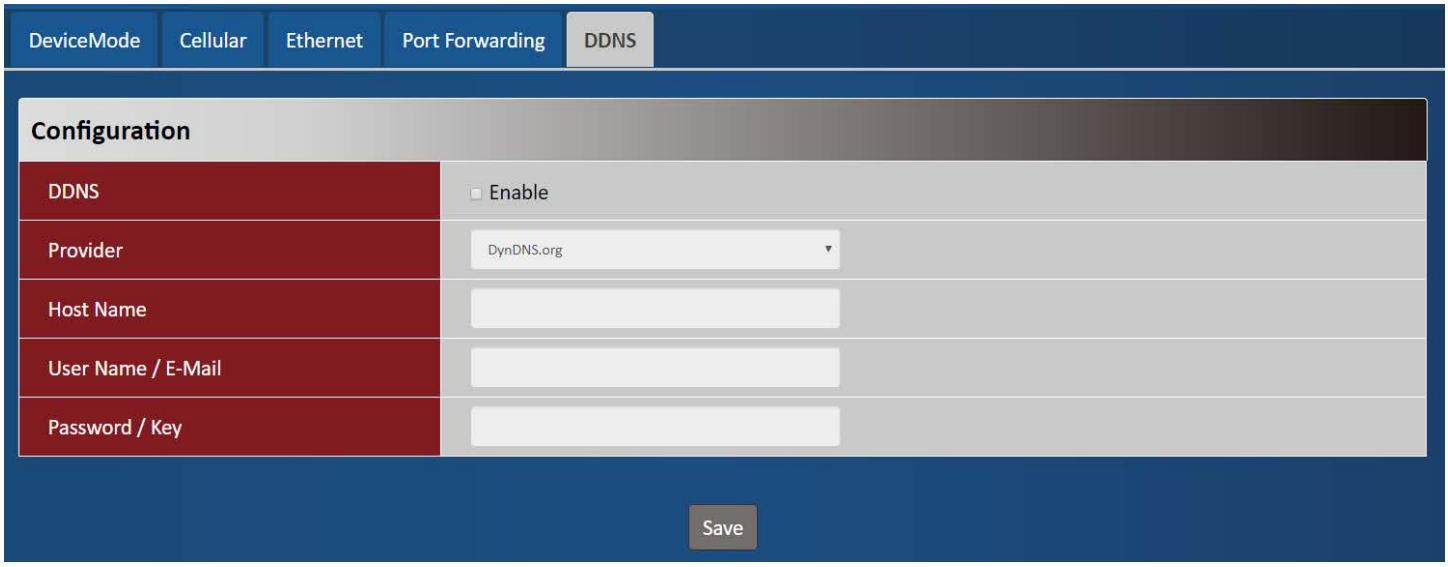


Virtual Server Rule Configuration		
Item	**Value setting**	**Description**
Name	1. String format can be any text 2. A Must filled setting	The name of current rule
Server IP	A Must filled setting	This field is to specify the IP address of the interface selected in the WAN Interface setting above.
Protocol	A Must filled settin	When **"TCP(6)"** is selected It means the option "Protocol" of packet filter rule is TCP. **Public Port** selected a predefined port from **Well-known Service**, and **Private Port** is the same with **Public Port** number. **Public Port** is selected **Single Port** and specify a port number, and **Private Port** can be set a **Single Port** number. **Public Port** is selected **Port Range** and specify a port range, and **Private Port** can be selected **Single Port** or **Port Range**. *Value Range*: 1 ~ 65535 for Public Port, Private Port. When **"UDP(17)"** is selected It means the option "Protocol" of packet filter rule is UDP. **Public Port** selected a predefined port from **Well-known Service**, and **Private Port** is the same with **Public Port** number. **Public Port** is selected **Single Port** and specify a port number, and **Private Port** can be set a **Single Port** number. **Public Port** is selected **Port Range** and specify a port range, and **Private Port** can be selected **Single Port** or **Port Range**. *Value Range*: 1 ~ 65535 for Public Port, Private Port.

		When **"TCP(6) & UDP(17)"** is selected It means the option "Protocol" of packet filter rule is TCP and UDP. **Public Port** selected a predefined port from **Well-known Service**, and **Private Port** is the same with **Public Port** number. **Public Port** is selected **Single Port** and specify a port number, and **Private Port** can be set a **Single Port** number. **Public Port** is selected **Port Range** and specify a port range, and **Private Port** can be selected **Single Port** or **Port Range**. *Value Range*: 1 ~ 65535 for Public Port, Private Port. When **"User-defined"** is selected It means the option "Protocol" of packet filter rule is User-defined. For **Protocol Number**, enter a port number.
Rule	1. An optional filled setting 2.The box is unchecked by default.	Check the Enable box to activate the rule.

Virtual Server – Rule Name		
Item	**Value setting**	**Description**
Rule name	N/A	Clicl "**Edit**" button to pop-up **Virtual Server Rule Configuration** page to edit the rule. Click "**Delete**" button to delete this rule

2.1.5 DDNS



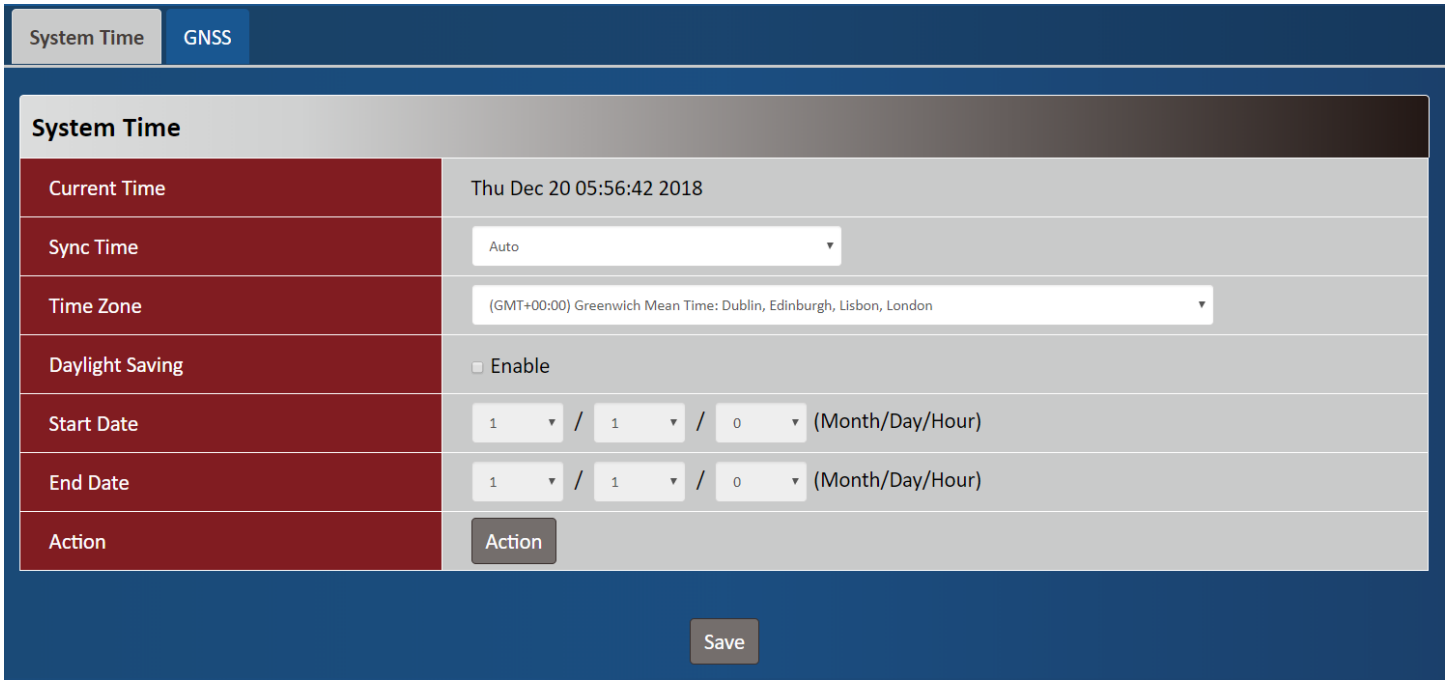
4G Modem

DDNS Item	Value setting	Description
DDNS	The box is unchecked by default	Check the **Enable** box to activate this function.
Provider	**DynDNS.org** is set by default	Select your DDNS provider of Dynamic DNS. It can be **DynDNS.org**, **NO-IP.com**, **TZO.com** etc...
Host Name	1. String format can be any text 2. A Must filled setting	Your registered host name of DDNS Service. ***Value Range*:** 0 ~ 63 characters.
User Name / E-Mail	1. String format can be any text 2. A Must filled setting	Enter your User name or E-mail addresss of DDNS Service.
Password / Key	1. String format can be any text 2. A Must filled setting	Enter your Password or Key of DDNS Service.

2.2 System

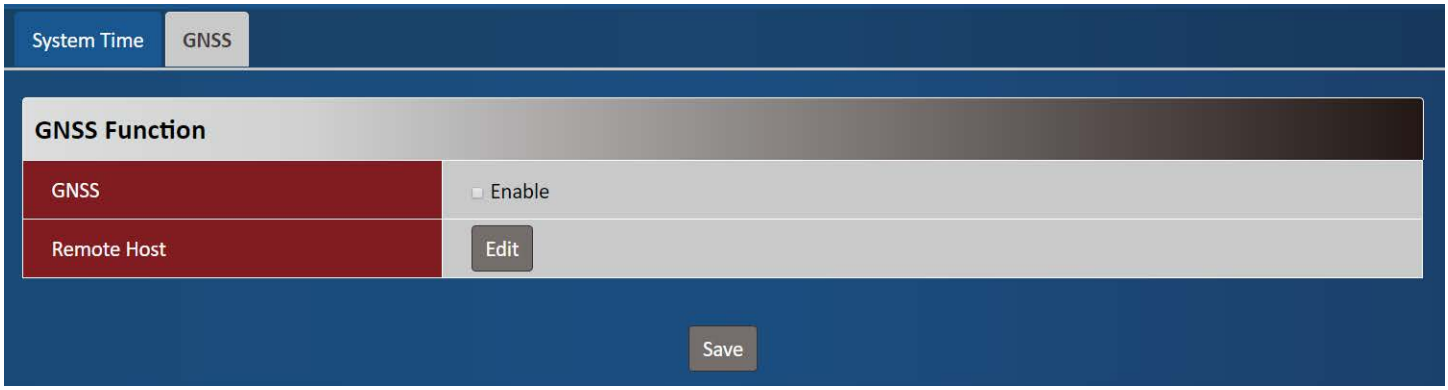
This section provides the configuration of LAN and VLAN. VLAN is an optional feature, and it depends on the product specification of the purchased gateway.

2.2.1 System Time

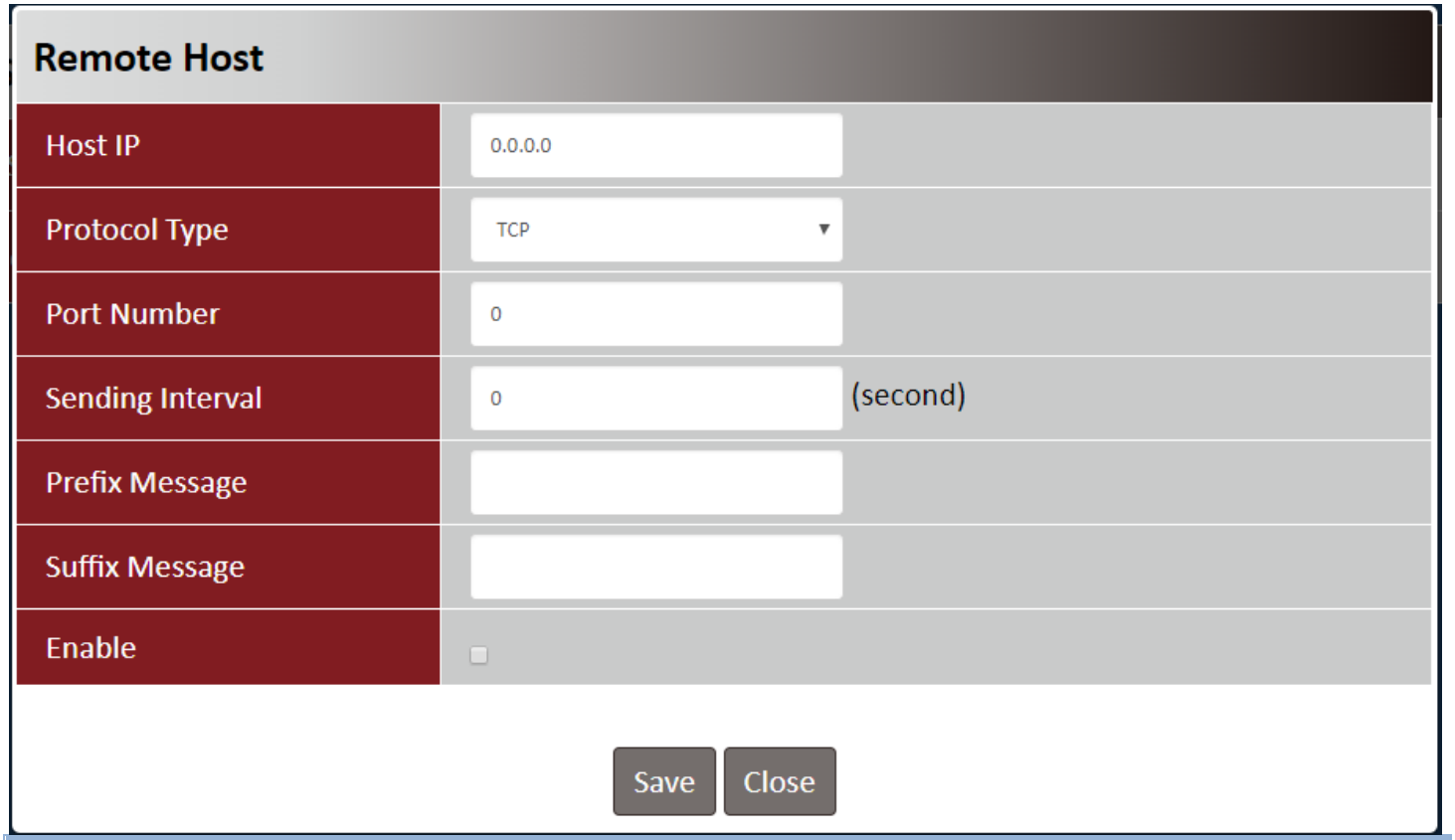


Device Mode Item	Value setting	Description
Current Time	N/A	Show the current time of the unit.
Sync Time	1. A Must-filled item. 2. **Atuo** is selected by default.	When select **Auto**, unit will sync the time via cellular cell, and then try to use NTP if cellular cell doesn't provide time information. When select **NTP**, the unit will sync time via ntp service.
Time Zone	1. A Must-filled item. 2. **GMT+00 :00** is selected by default.	Select a time zone where this device locates.
Daylight Saving	1. It is an optional item. 2. Un-checked by default	Check the **Enable** button to activate the daylight saving function. When user enabled this function, user has to specify the **Start Date** and **End Date** for the daylight saving time duration.
Start Date	N/A	Start time for Daylight Saving.
End Date	N/A	End Time of Daylight Saving.
Action	N/A	Click **Action** to sync time immediately

2.2.2 GNSS



GNSS		
Item	**Value setting**	**Description**
GNSS	The box is unchecked by default	Check **Enable** box to activate GNSS functions.
Remote Host	N/A	Click **Edit** button will pop-up the remote host setting page.



Remote Host		
Item	**Value setting**	**Description**
Host IP	A Must filled setting	Specify the **IP Address** of remote host. It will be use as destination IP for sending NMEA packets.
Remote Host	N/A	Click **Edit** button will pop-up the remote host setting page.
Port Number	A Must filled setting	Specify a **Port Number** as destination port for sending NMEA packets.

		Value Range: 1 ~ 65535.
Sending Interval	A Must filled setting	Specify the time **interval** (seconds) between two NMEA packets. ***Value Range***: 1 ~255 seconds.
Prefix Message	String format: any text	Specify optional prefix string with specific information if your backend server can recognize. For example, you can input the IMEI code of this device here, and then your backend server can recognize this GPS data is sent from this device. You can also leave this field blank.
Suffix Message	String format: any text	Specify optional suffix string with specific information if your backend server can recognize.
Enable	The box is unchecked by default	Check **Enable** box to activate this remote host rule.

Chapter 3 Administrator

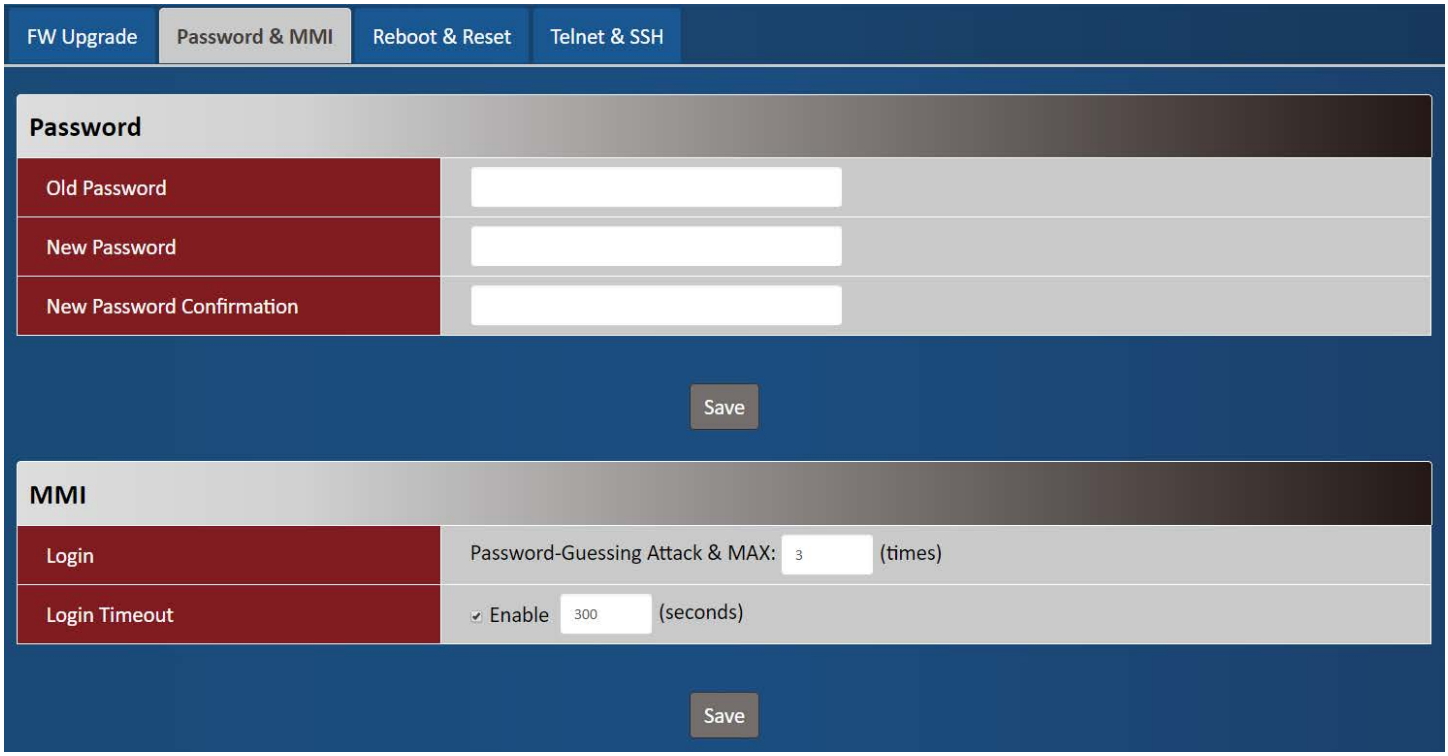
3.1 Manager

3.1.1 FW Upgrade

Firmware Information		
Item	**Value setting**	**Description**
FW Version	N/A	It displays the firmware version of the product
FW Date	N/A	It displays the build time of the firmware

Firmware Upgrade		
Item	**Value setting**	**Description**
FW Path	N/A	Select firmware file to be upgraded
Upgrade Action	N/A	Click **Upgrade** button to start upgrade process with selected FW

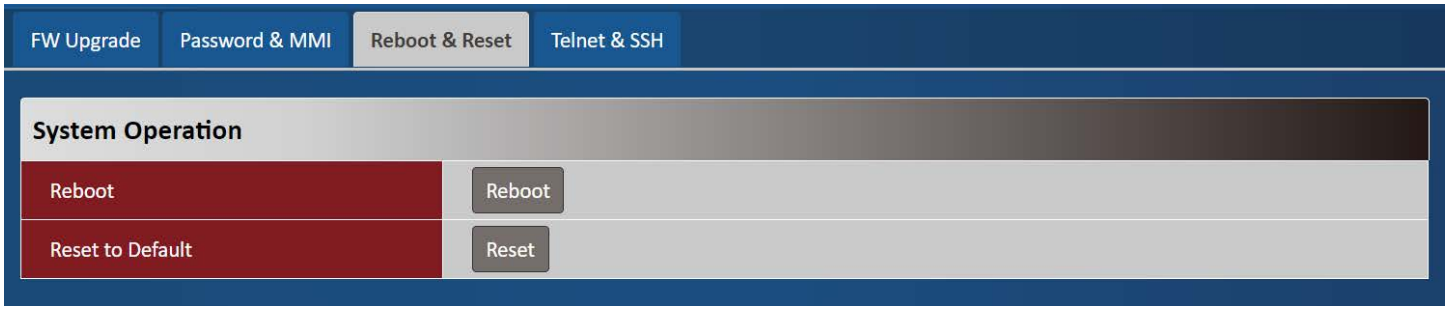
3.1.2 Password & MMI



Password Item	Value setting	Description
Old Password	1. String: any text **2. The default password for web-based MMI is 'admin'.**	Enter the current password to enable you unlock to change password.
New Password	String: any text	Enter new password
New Password Confirmation	String: any text	Enter new password again to confirm
Save	N/A	Click **Save** button to save the settings

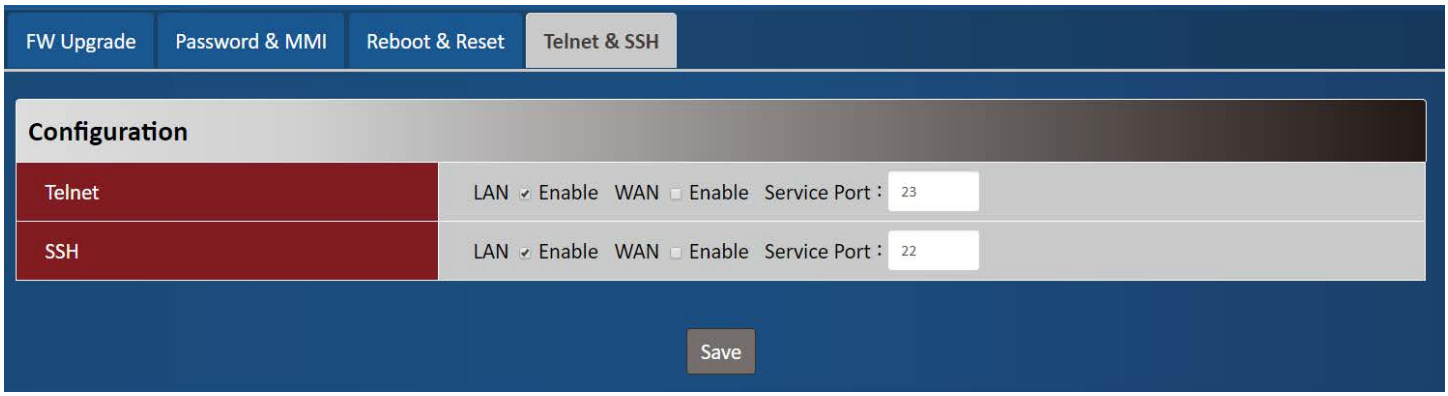
MMI Item	Value setting	Description
Login	3 times is set by default	Enter the login trial counting value. ***Value Range***: 3 ~ 10. If someone tried to login the web GUI with incorrect password for more than the counting value, an warning message "***Already reaching maximum Password-Guessing times, please wait a few seconds!***" will be displayed and ignore the following login trials.
Login Timeout	The Enable box is checked, and 300 is set by default.	Check the Enable box to activate the auto logout function, and specify the maximum idle time as well. ***Value Range***: 30 ~ 65535.

3.1.3 Reboot & Reset



Device Mode		
Item	**Value setting**	**Description**
Reboot	N/A	Chick the **Reboot** button to reboot the unit immediately
Reset to Default	N/A	Click the **Reset** button to reset the device configuration to its default value.

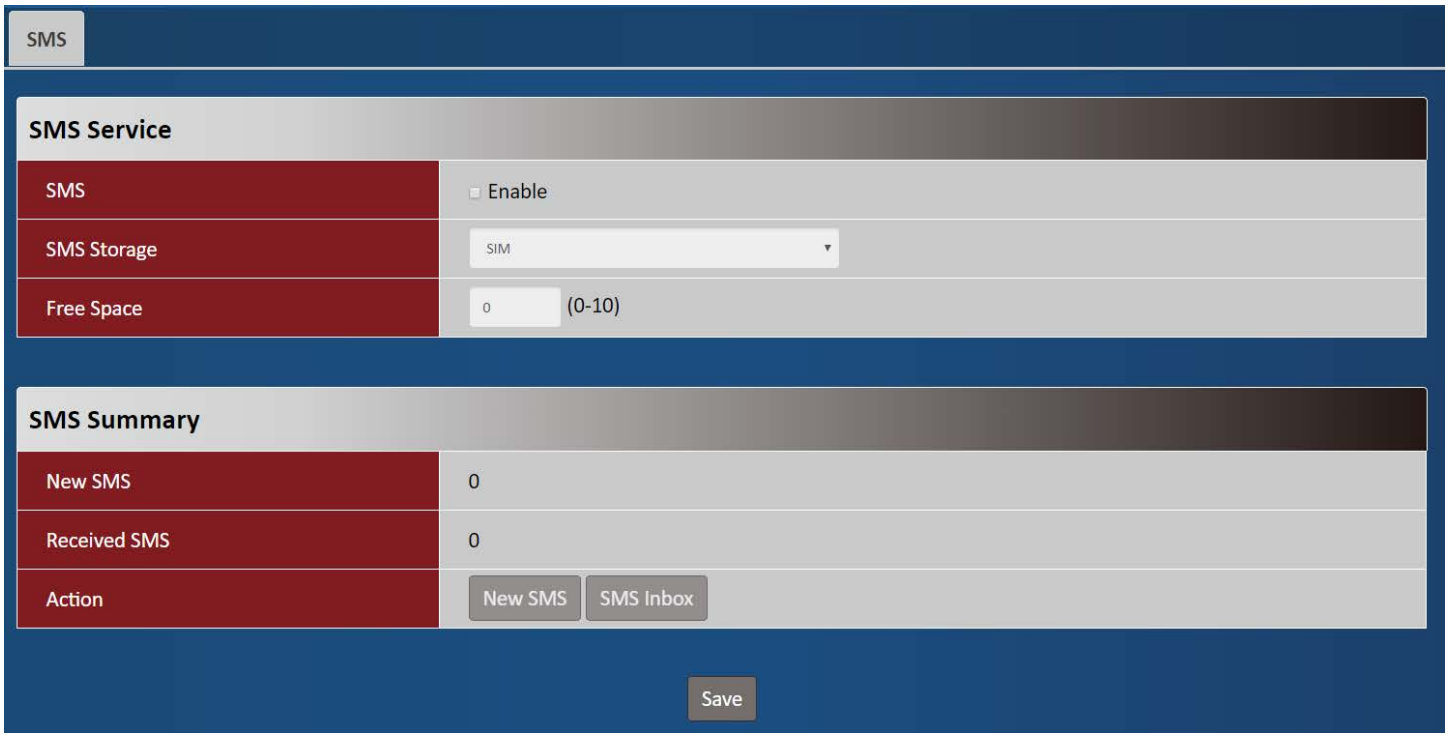
3.1.4 Telnet & SSH



Telnet & SSH		
Item	**Value setting**	**Description**
Telnet	1. The LAN Enable box is checked by default. 2. By default **Service Port** is 23.	Check the **Enable** box to activate the Telnet function for connecting from LAN or WAN interfaces. You can set which number of **Service Port** you want to provide for the corresponding service. ***Value Range***: 1 ~65535.
SSH	1. The LAN Enable box is checked by default. 2. By default **Service Port** is 22.	Check the **Enable** box to activate the SSH Telnet function for connecting from LAN or WAN interfaces. You can set which number of **Service Port** you want to provide for the corresponding service. ***Value Range***: 1 ~65535.

3.2 Utility

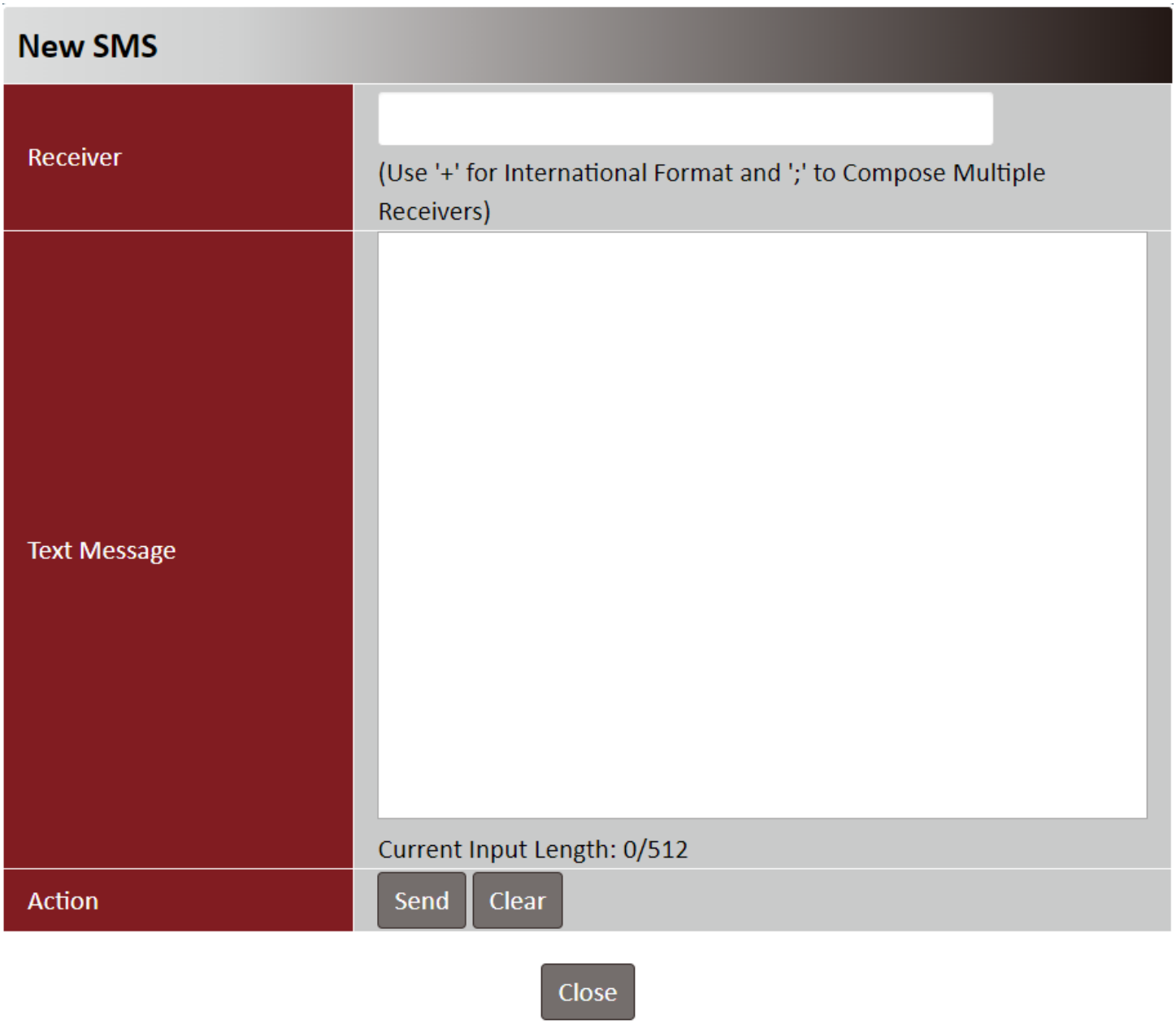
3.2.1 SMS



SMS – SMS Service		
Item	**Value setting**	**Description**
SMS	The box is unchecked by default	This is the SMS switch. If the box checked that the SMS function enable, if the box unchecked that the SMS function disable.
SMS Storage	The box is **SIM** by default	The storage location of SMS. **SIM** means to store SMS in SIM card and **Modem** means to store SMS in the unit.
Free Space		Specify a number (1-10) for message count to reserve some available storage space and prevent it from run out of storage.The oldest message(s) will be deleted when the SMS storage is going to full.0 means the function is ignored.

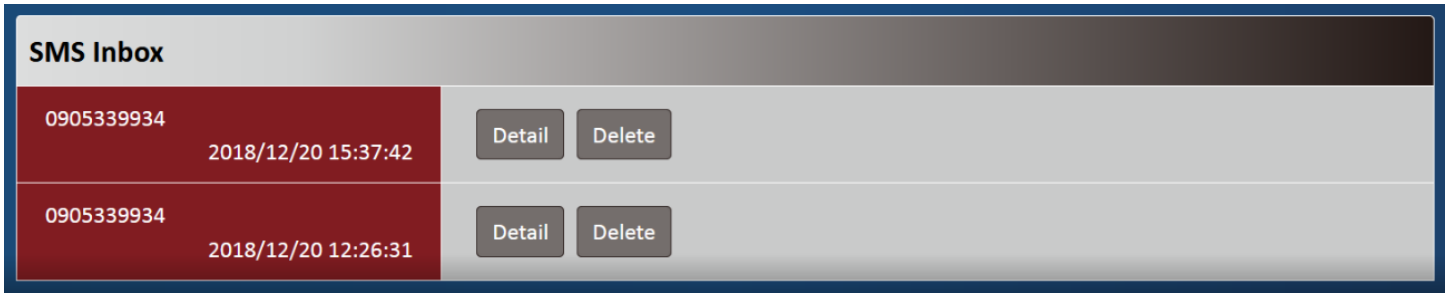
SMS – SMS Summary		
Item	**Value setting**	**Description**
New SMS	N/A	If SIM card inserts to unit first time, New SMS value is zero. When received a new SMS but didn't read, this value will plus one.
Received SMS	N/A	This value records the existing SMS numbers. When received the new SMS, this value will plus one.
Action	N/A	**New SMS** When press this button, it will pop-up a page to let user write an SMS and can send it out. **SMS Inbox** When press this button, SMS inbox table will show to user.

4G Modem

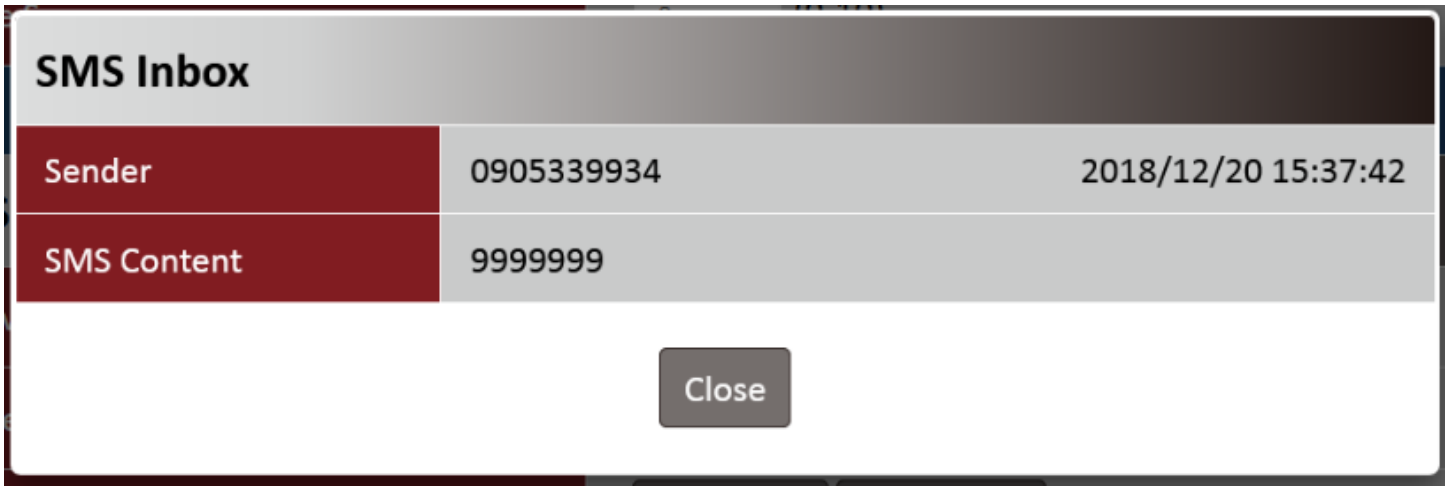


New SMS		
Item	**Value setting**	**Description**
Receiver	N/A	Write the receivers to send SMS. User need to add the semicolon and compose multiple receivers that can group send SMS
Text Message	N/A	Write the SMS context to send SMS. The router supports up to a maximum of 512 characters for SMS context length.
Action	N/A	Click **Send** to send current content of **Text Message** to **Receiver** Click **Clear** to clear current **Text Message.**

4G Modem



SMS Inbox		
Item	**Value setting**	**Description**
SMS Inbox	N/A	Show the phone number and timestamp of the SMS **Detail:** Click this button will pop-up the SMS Inbox to show the content. **Delete:** Click this button will delete the SMS.



SMS Inbox		
Item	**Value setting**	**Description**
Sender	N/A	Show the phone number and timestamp of the SMS
SMS Content	N/A	Show the content of the SMS