

# User Manual

**STE211**

Serial to Ethernet Interface Converter



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# Introduction

STE211 Serial to Ethernet Interface Converter provides the ways of connecting serial devices to Ethernet. It is designed to operate serial ports through Ethernet (10/100Mbps) over TCP/IP network. As the data is transmitted via TCP/IP protocol, therefore data acquisition and controlling are available to go through Intranet and Internet. There are two serial ports as one is a RS-232 and other one is RS-422/485. Configuration is easy to operate via web page setup.

STE211 Serial to Ethernet Converter is high performance design consisting of carefully selected and qualified components from reliable and certified sources. This operation manual will guide you to configure functions step by step.

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Hardware Specifications**
- **Web Browser Configurations**

# Overview

STE211 (hereunder called “This Device”) Serial to Ethernet Converter provides a perfect solution to make your industrial Serial devices connect to Internet instantly via Ethernet LAN.

This device embedded with the powerful chipset is the ideal device for transmitting the data from your RS-232 or RS-422/485 Serial interface devices, such as PLCs, Meters or Sensors to an IP-based Ethernet host, and makes it possible to access Serial interface devices anywhere and anytime via your software.

STE211 provides TCP Server Mode, TCP Client Mode, and UDP Mode for selection. It also supports manual configuration via web browser and support various protocols including HTTP, DHCP, ICMP, and ARP. These are the best solution to coordinate your Serial interface devices.

## Package Checklist

- 1 unit of STE211 device
- 1 unit of Power Adaptor (12V DC, 1A)

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***NOTE: Inform your sales representative if any of the above items is missing or damaged.***

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# Product Specifications

## System

- ✧ CPU: MT7688AN MIPS CPU, 580 MHz
- ✧ RAM: 128M Bytes DDR2 RAM
- ✧ ROM: 32M Bytes Flash ROM
- ✧ OS: OpenWrt Linux OS

## Ethernet

- ✧ Port Type: RJ-45 Connector
- ✧ Speed: 10 /100 M bps (Auto Detecting)
- ✧ Protocol: ARP, IP, ICMP, UDP, TCP, HTTP, DHCP
- ✧ Protocol: NTP, FTP
- ✧ Mode: TCP Server / TCP Client / UDP
- ✧ Setup: HTTP Browser Setup (IE, Chrome, Firefox)
- ✧ Security: Setup Password
- ✧ Protection: Built-in 1.5KV Magnetic Isolation

## Serial Ports \*2

- ✧ Port: RS-232 \*1 (RS-232 with RX/TX/GND only)
- ✧ Port: RS-422 / 485 \*1 (Surge Protection)
- ✧ Speed: 300 bps ~ 921.6 K bps
- ✧ Parity: None, Odd, Even, Mark, Space
- ✧ Data Bit: 5, 6, 7, 8
- ✧ Stop Bit: 1, 2
- ✧ RS-232 Pins: Rx, Tx, GND
- ✧ RS-422: Rx+, Rx-, Tx+, Tx- (Surge Protection)
- ✧ RS-485: Data+, Data- (Surge Protection)
- ✧ 15KV ESD for all signals

## Power

- ✧ DC 9~32 V, 1000mA@12V
- ✧ Support DC Jack & Terminal Block Input
- ✧ Power Consumption: 2W

## **Mechanical and Environment**

- ✧ Operating Temperature: -20°C~70°C
- ✧ Storage Temperature: -25°C~80°C
- ✧ Dimensions: 110mm (W) \* 90mm (D) \* 26 mm (H)
- ✧ Weight : 110 ± 5gm
- ✧ Housing: plastic

## **Other Features**

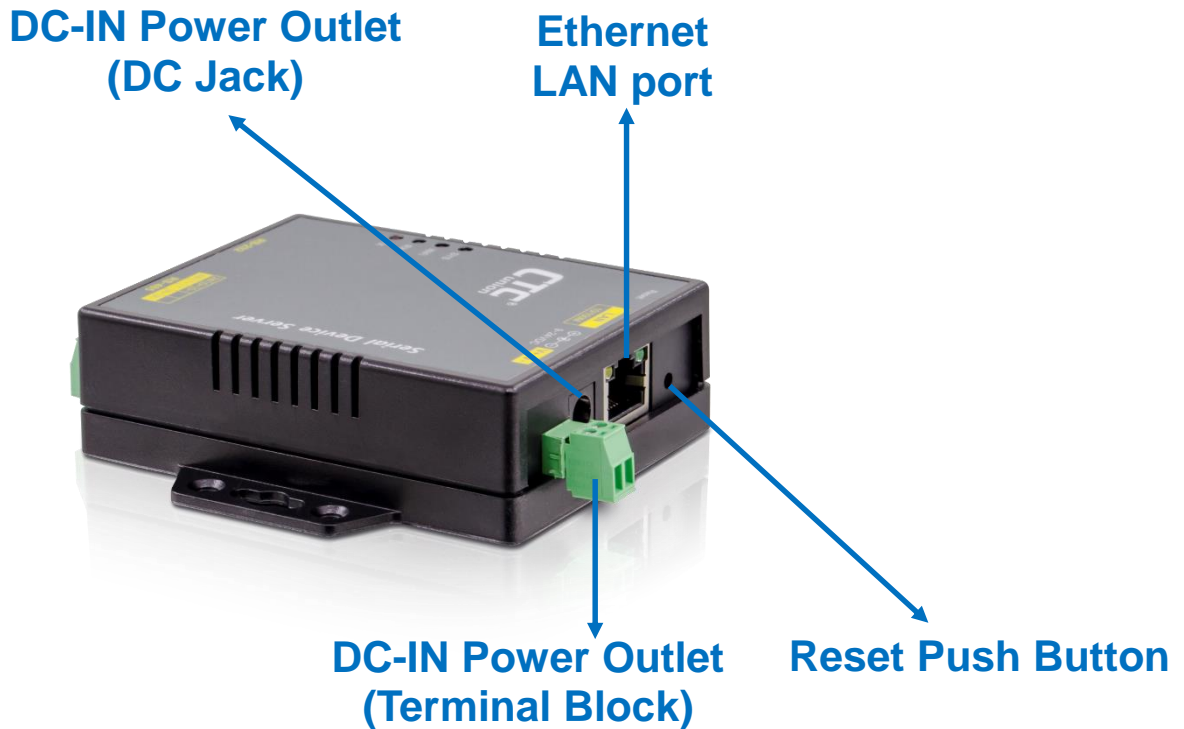
- ✧ LED Indicators: SYS, WiFi, RX, TX, LAN
- ✧ RTC: Real Time Clock
- ✧ Watch Dog Function

## **MTBF (MIL-HDBK-217)**

- ✧ 60,000 Hours

# Product Panel Views

## Antenna Side



### ***Ethernet Port***

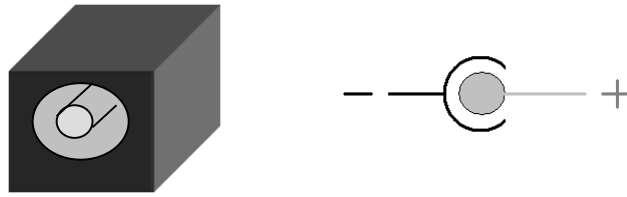
The connector for network is the usual RJ45. Simply connect it to your network switch or Hub. When the connection is made, the green color LED of Ethernet port will blink. When data traffic (Rx/Tx) occurs on the network, yellow color LED will blink during data transferring.

### ***DC-IN Power Outlet***

The Device is powered by a 12V DC (Inner positive, outer negative), 1.0A power supply. Plugging the power adaptor to the AC power socket and put the DC Jack plug into the outlet of the Device. The "SYS" green color LED will be ON when power is properly supplied. Terminal Block 2 wires power supply is an option.



## DC Power outlet



## Reset Button

- (1) Press reset key after 5 seconds until SYS LED flash then release the key will reset network default IP and gateway IP back to default. The other parameters keep same as last confirmation.
- (2) Press reset key after 5 seconds until both SYS LED and WiFi LED flash then release the key will make all parameters back to factory default.
- (3) Press reset key within 5 seconds without LED flash will reboot the equipment. Last configuration no change.

## Serial Interface Side



## Serial Port of RS-232/RS-422/RS-485

Connect the Serial data cable between the device and the Serial interface device. Follow the procedure of web page configuration to set up parameters.

# LED Indicators



**SYS (Green):**

Power indicator. When the power is on, the LED will be lit and blink per second.

**WiFi (Red):** (WiFi is only for WiFi models.)

WiFi indicator. When the WiFi is working, this LED blinks.

**Tx (Green):**

Data sending indicator. When data sends to the device from LAN, this LED blinks.

**Rx (Red):**

Data received indicator. When data sends to the device from Serial ports, this LED blinks.

# Wiring Architecture

## 1. RS-232

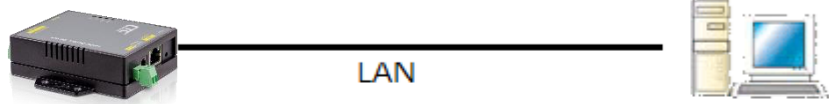
RS-232 Wiring  
Serial Device



## 2. RS-422/RS-485

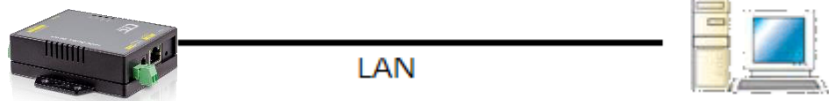
RS-422 Wiring  
Serial Device

T- ————— R-  
T+ ————— R+  
R- ————— T-  
R+ ————— T+



RS-485 Wiring  
Serial Device

D+ ————— D+  
D- ————— D-



When you complete the steps mentioned above, the LED indicators will be lit. This means that the converter is connected and installed correctly. To proceed with the parameters setup, please use a web browser (IE or Chrome) to configure the detailed settings.

# Configuration

When setting up your converter for the first time, the first thing you should do is to configure the IP address. You can use IP Device Search tool to find the IP or simply use the default IP to login to the device.

The following topics are covered in this chapter:

- IP Search Utility Setup
- Web Browser Configuration

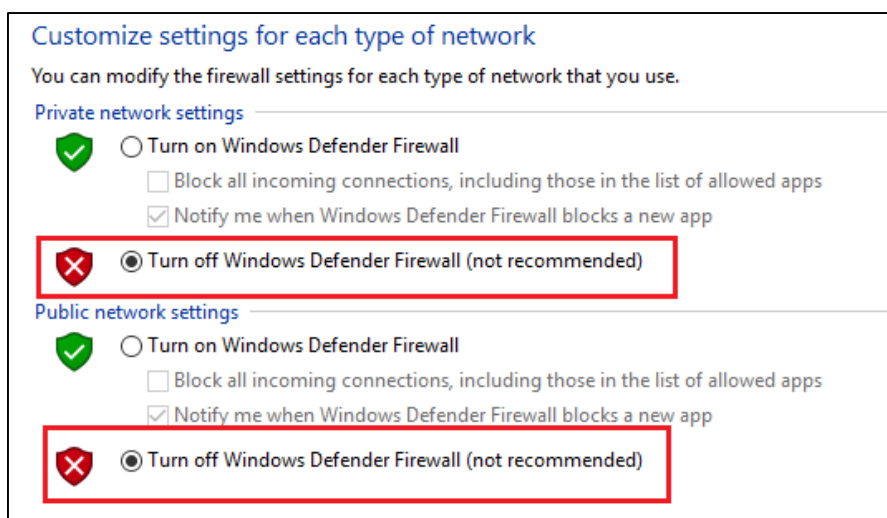
## IP Search Utility Setup



1. Copy “Device Search Setup” to your host computer.
2. “Device Search” is a self-extract-install program. Double click it to install this Wi-Fi IP Searching tool into host computer.



3. Upon running IP search tool (Device Search), if a firewall warning pops up, please click to accept the program pass through firewall.



4. “Device Search” will pop up on the screen after installation or you may double click the icon on desk top of host computer to open this tool.

Find Clear

### Devices

Product	Version	Name	Description	IP & MAC	Go To

- Click on “**Find**” button. It will scan the network and show up the IP of the converter.

Find Clear

### Devices

Product	Version	Name	Description	IP & MAC	Go To
Serial Over TCPIP	1.0.21	Device Name	Device Description	192.168.1.100 9c:65:f9:21:0f:cd	Go To Setup

- Click “Setup” button will pop up a window. You may change Name, Description, IP, Netmask of device. Click “Setup” to save setup. The device’s IP must be same subnet with host PC/NB enable to use web browser open configuration page.

Setup

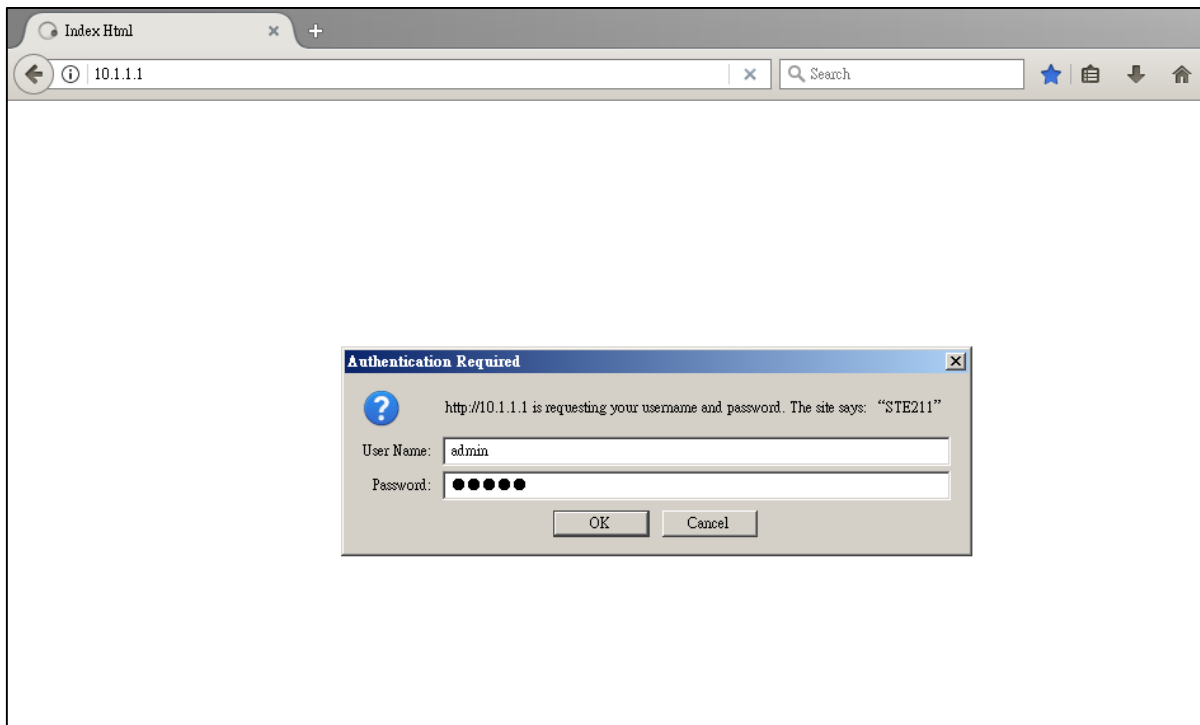
MAC	Name & Description	IP & Netmask
9c:65:f9:21:0f:cd	Device Name Device Description	192.168.1.199 255.255.255.0

USERNAME: admin  
PASSWORD:

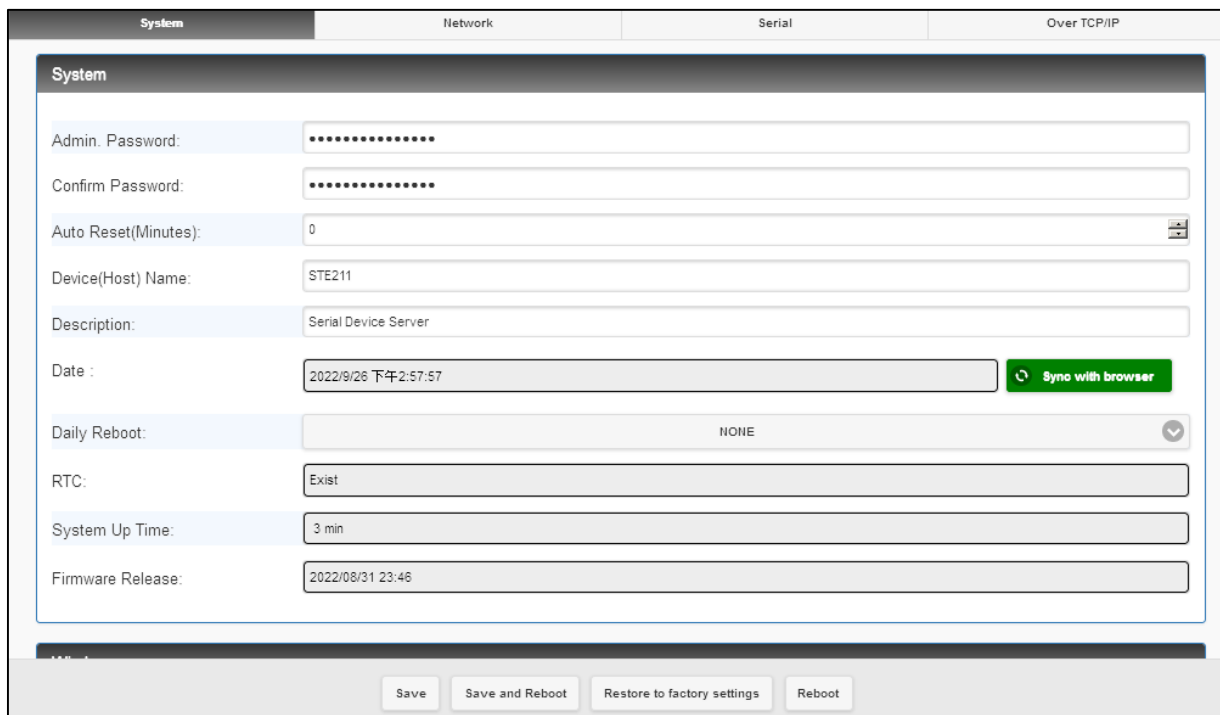
Setup Close

- Click “Goto” button will open a web page of configuration. (Default Username: **admin**; Default Password: **admin**).

8. You can also use the default IP address (**10.1.1.1**) to login to the configuration webpage with the default Username: **admin** and Password: **admin**.



9. When you successfully login to the device, the following main screen will pop up.



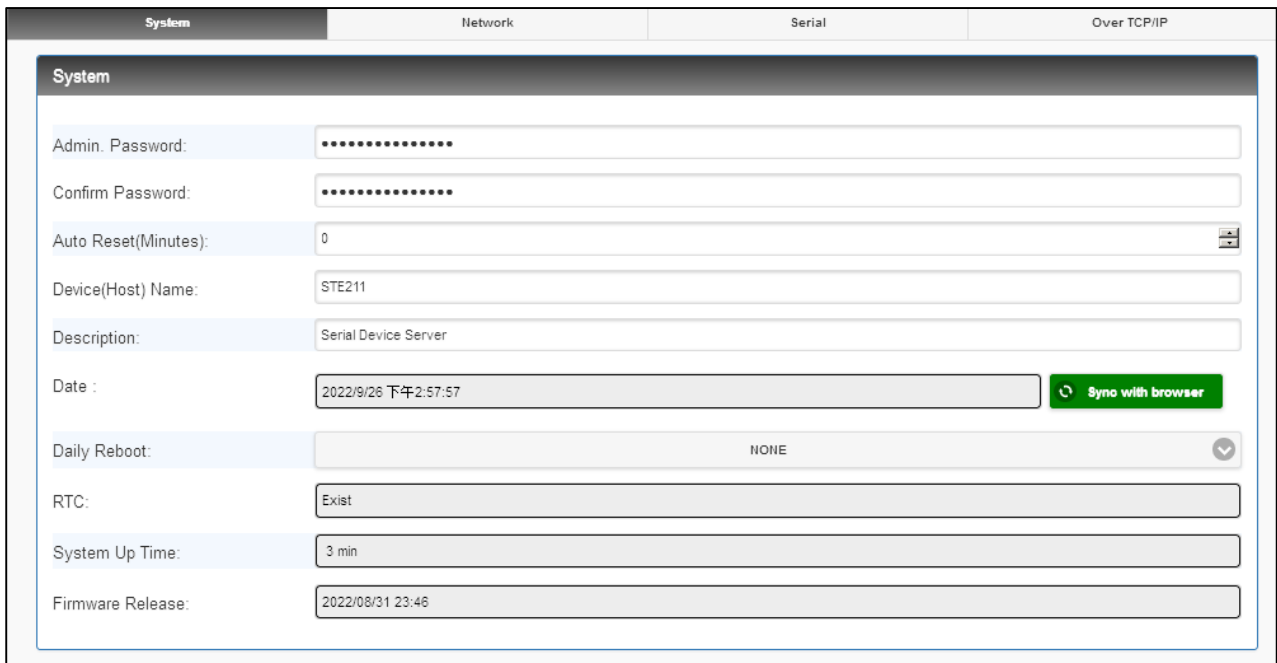
# Web Browser Configuration

There are 4 setup pages as “System”, “Network”, “Serial” and “Over TCP/IP”.



## System Setup

1. System: where you can change Password, set up Auto Reset time and modify Device Name, Description of device.

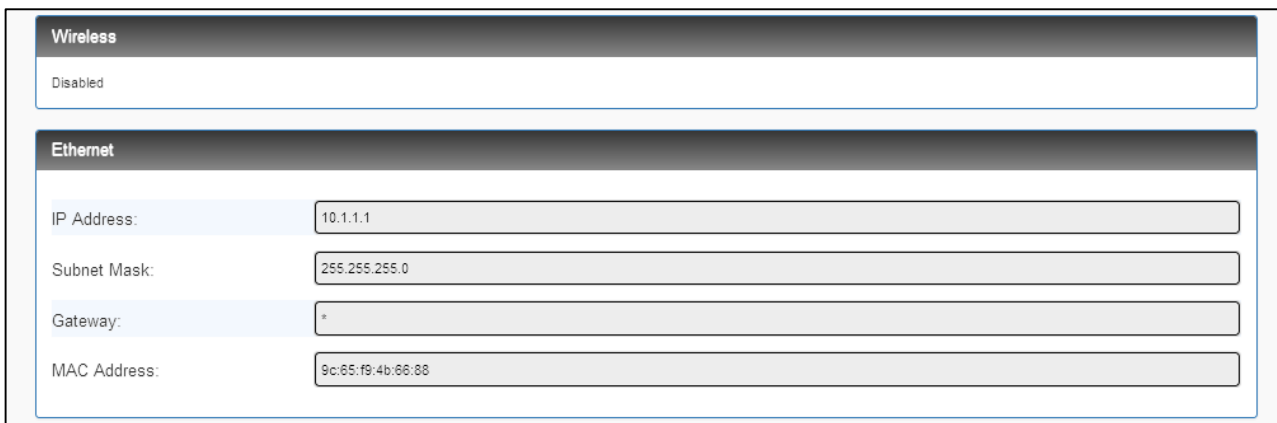


The screenshot shows the "System" configuration page. It includes the following fields and controls:

- Admin. Password: [Masked]
- Confirm Password: [Masked]
- Auto Reset(Minutes): 0
- Device(Host) Name: STE211
- Description: Serial Device Server
- Date: 2022/9/26 下午2:57:57
- Daily Reboot: NONE
- RTC: Exist
- System Up Time: 3 min
- Firmware Release: 2022/08/31 23:46

A green button labeled "Sync with browser" is located next to the Date field.

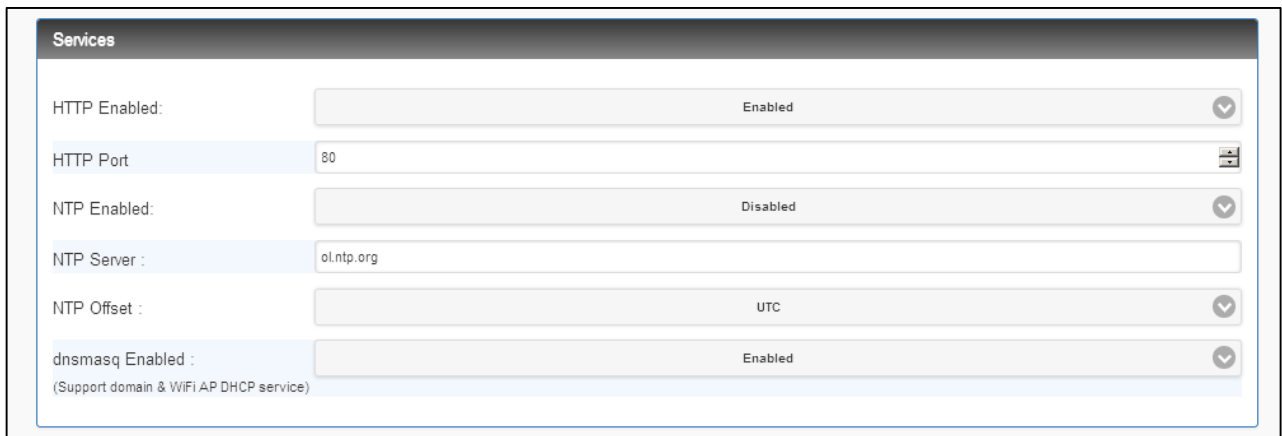
2. Appearance of Wireless and Ethernet setup.



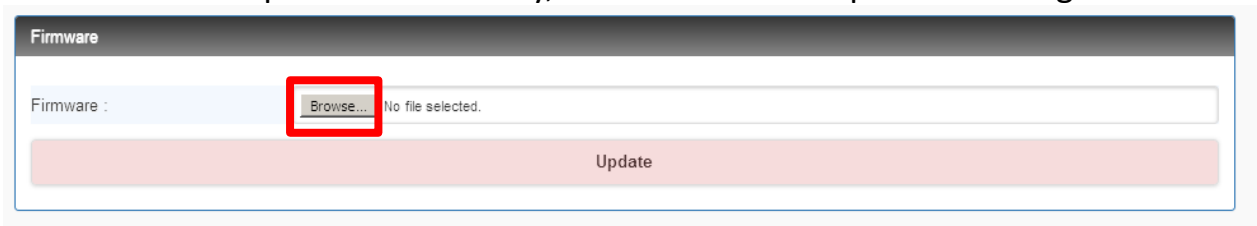
The screenshot shows two configuration sections:

- Wireless:** Disabled
- Ethernet:**
  - IP Address: 10.1.1.1
  - Subnet Mask: 255.255.255.0
  - Gateway: \*
  - MAC Address: 9c:65:f9:4b:86:88

3. HTTP & NTP: Enable / Disable HTTP or NTP function; Set up NTP server and Time Zone.

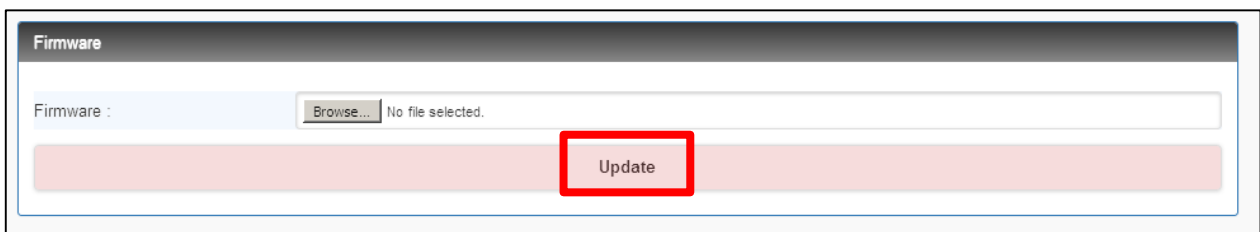


4. Firmware update: If necessary, click “Browse” to open file manager.

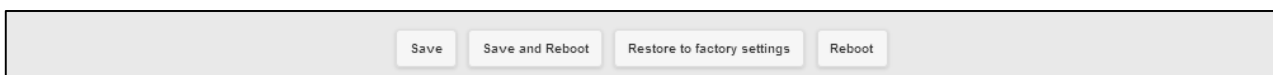


Then, select the file with specified version and click “open” button.

When the selected file name appears on the input column, click “Update” button.



5. Up to now, Setup is successfully configured. Please click “Save” and go to other pages for configuration or click “Save and Restart” to run the device with new configurations.





## Network Setup

The screenshot displays the 'Network' configuration page with the following sections:

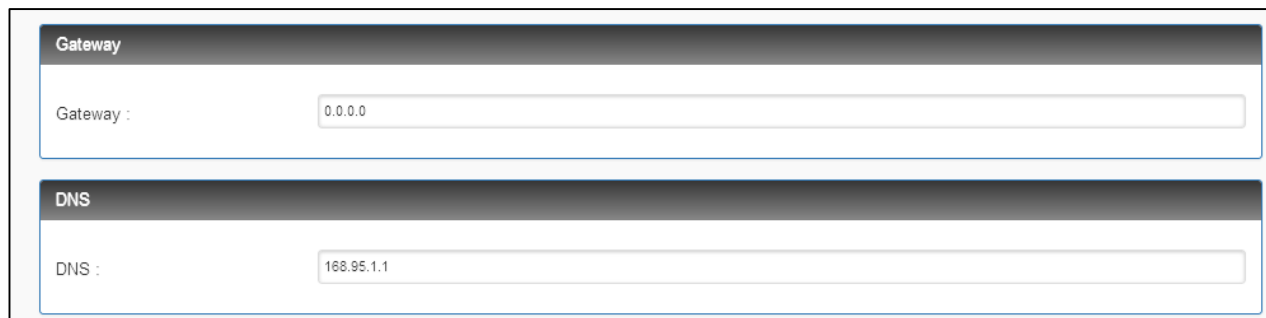
- Wireless:** Type is set to 'DISABLED'.
- Ethernet:** Mode is set to 'STATIC'. IP Address is '10.1.1.1' and Subnet Mask is '255.255.255.0'.
- Gateway:** Gateway is set to '0.0.0.0'.
- DNS:** (Section header only, no input fields visible).

Buttons at the bottom: Save, Save and Reboot.

1. Ethernet section: Select "STATIC" or "DHCP" to assign IP address.

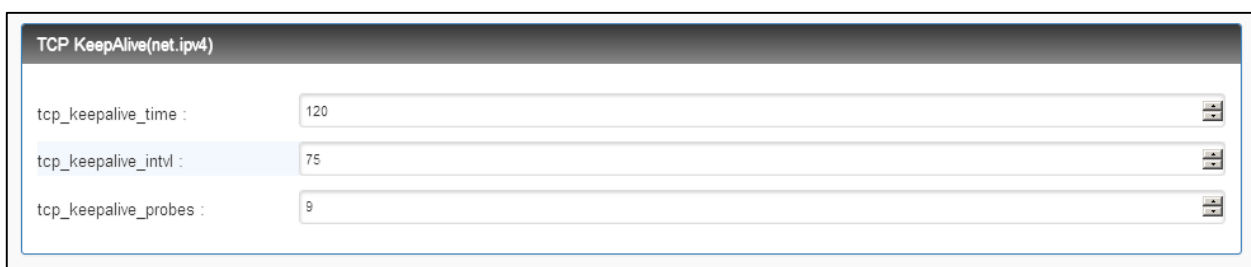
This close-up shows the 'Ethernet' section with the 'Mode' dropdown menu open. The menu options are 'STATIC' and 'DHCP', with 'DHCP' currently selected. The IP Address field contains '10.1.1.1' and the Subnet Mask field contains '255.255.255.0'. The Gateway section below shows '0.0.0.0'.

2. Gateway and DNS: To check with MIS for right IP address.



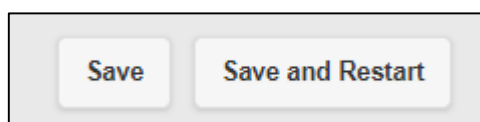
The screenshot shows two configuration sections. The first section, titled "Gateway", has a text input field labeled "Gateway :" containing the value "0.0.0.0". The second section, titled "DNS", has a text input field labeled "DNS :" containing the value "168.95.1.1".

3. TCP Keep Alive: Set up TCP keepalive time, interval and probes.



The screenshot shows the "TCP KeepAlive(net.ipv4)" configuration section. It contains three text input fields: "tcp\_keepalive\_time :" with the value "120", "tcp\_keepalive\_intvl :" with the value "75", and "tcp\_keepalive\_probes :" with the value "9". Each field has a small arrow icon on the right side.

4. Up to now, Setup is successfully configured. Please click “Save” for this page temporarily and go to other pages for configuration or click “Save and Restart” to run this Device with new settings.



The screenshot shows two buttons side-by-side. The left button is labeled "Save" and the right button is labeled "Save and Restart". Both buttons are light gray with a slight shadow.

## Serial Port Setup

Please correctly input each parameter to match with the remote terminal unit.

System	Network	Serial	Over TCP/IP
<b>Serial 1</b>			
Baud Rate:		19200	▼
Parity:		None	▼
Data Bits:		8	▼
Stop Bits:		1	▼
Flow Control:		None	▼
RxDelay(ms) :	0		⌵
TxDelay(ms) :	0		⌵

Baud Rate: 300 bps to 921.6K bps

Parity: None, Even, Odd

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 2

Flow Control: None, XON/XOFF

RxDelay(ms)

TxDelay(ms)

Up to now, Setup is successfully configured. Please click "Save" for this page temporarily and go to other pages for configuration **or click "Save and Restart" to run this device with new settings.**

Save	Save and Restart
------	------------------

## Over TCP/IP Setup

1. There are 3 TCP modes available for selection: TCP Server/ TCP Client/ UDP.

The screenshot shows the 'Over TCP/IP' configuration page with the following settings:

Serial Port	Mode	Port	Inactive Timeout (Minutes)
Serial 1	TCP Server	100	10
Serial 2	TCP Server	101	10

Buttons: Save, Save and Reboot

2. TCP Server: Configure TCP server port number and message time out period. At this mode, this device will wait for client connection.

The screenshot shows the 'Serial 1 Over TCP' configuration page with the 'Mode' dropdown menu open. The menu options are:

- TCP Server
- TCP Client
- UDP
- DISABLED

3. TCP Client: Allow to configure 4 remote destination host IP addresses and port numbers. At TCP client mode, this device establishes a connection with remote host and sending data to remote host actively.

The screenshot shows the configuration interface for 'Serial 1 Over TCP' in 'TCP Client' mode. The 'Mode' dropdown is set to 'TCP Client'. The 'Inactive Timeout (Minutes)' is set to 10. Below this is a table with 4 rows for destination configurations. The first row is filled with '10.1.1.101' for the Destination IP and '100' for the Port. The other three rows are empty.

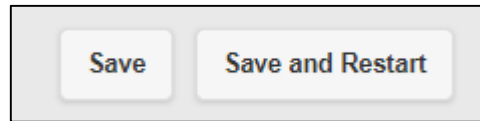
No.	Destination IP	Port
1	10.1.1.101	100
2		
3		
4		

4. UDP: Allow to configure 4 remote destination host IP addresses and port numbers. At UDP mode, this device establishes a connection with the remote host and sends data to the remote host actively.

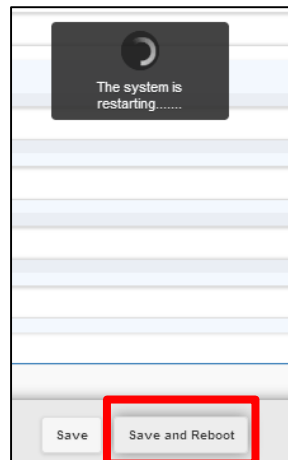
The screenshot shows the configuration interface for 'Serial 1 Over TCP' in 'UDP' mode. The 'Mode' dropdown is set to 'UDP'. The 'Port' is set to 100. Below this is a table with 4 rows for destination configurations. The first row is filled with '10.1.1.101' for the Destination IP and '100' for the Port. The other three rows are empty.

No.	Destination IP	Port
1	10.1.1.101	100
2		
3		
4		

5. Up to now, Setup is successfully configured. Please click “Save” and go to other pages for configuration or click “Save and Restart” to run new configuration.



6. After configuring all parameters, click “Save and Restart” to reboot system.



# Reset Push Button

- (1) Press reset key for 5 seconds or longer until SYS LED flash. Then, releasing the reset key will reset network default IP and gateway IP back to default settings. The other parameters remain the same as the last confirmation.
- (2) Press reset key for 5 seconds or longer until both SYS LED and WiFi LED flash. Then, releasing the key will make all parameters back to factory default settings.
- (3) Press reset key within 5 seconds without LED flash will reboot the equipment. Changed settings of the last confirmation will have no change.



