

Realtek EPON SFU Products

4FE/4FE+CATV/4GE/4GE+CATV

User Manual

Version: V1.1

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1 Note

1.1 Installation Precautions

- Do not place the equipment near flammable or conductive items, high temperatures (such as direct sunlight) or in wet conditions, or on a PC chassis, and check that the surrounding appliances are stable.
- Check the cable for aging. Check and verify that the AC or DC input voltage is within the permissible range of the device and that the polarity of the DC is correct.
- Unless the manufacturer permit, use the type of power indicated on the label and the adapter supplied with the product.
- To prevent damage to the product from lightning, make sure that the ground of the power outlet and the power adapter is securely grounded. In the thunderstorm, be sure to unplug the power and all the connections.
- Equipment input voltage fluctuation should be less than 10%, the power plug, refrigerators, hair dryer and iron should not use the same socket.
- To avoid electric shock or fire due to overload of the power outlet, damage to the cord or damage to the plug, check the power cord regularly. If damage is found, replace it immediately.
- Please place the device on a flat surface and can not place items on the device.
- Equipment is easy to produce heat when working, should maintain the appropriate cooling space to avoid damage caused by overheating products. The elongated hole on the shell is designed for heat dissipation. Keep the ventilation clean and avoid falling from the heat sink into the equipment. Otherwise, the equipment may be damaged or fire. Do not spill liquid onto the surface of the equipment.

1.2 Precautions for Use

- Please read the user manual carefully before using the equipment and follow all the precautions on the user manual and the product.
- Avoid eye looked at the optical interface directly, so as to avoid the laser beam emitted by the interface damage the eyes. Please try to wear safety glasses to effectively protect your eyes

from damage. It is best to plug in the fiber optic interface jacket when the optical interface is not in use .

- Turn off the power when the device is not in use
- Before plugging the power supply, make sure that the power switch is turned off to avoid surge. Be careful when unplugging the power supply and the transformer temperature may be high.
- To ensure safety, do not open the enclosure of the device, especially when the device is powered up.
- Unplug the power supply before cleaning the equipment. Use a soft dry cloth to clean the equipment to avoid the use of liquids or sprays.
- Do not connect this product to any electronic product unless it is instructed by our customer engineer or your broadband supplier, as any incorrect connection may cause power or fire hazard.

2 Brief

Realtek EPON SFU series of terminal equipment is based on EPON technology based on the broadband access market, to meet the broadcaster operators broadband access and FTTH, and design passive optical network terminal products that integrate CATV optical receiver and achieve broadband, CATV dual network integration. It is based on mature and stable, cost-effective Gigabit EPON technology and integrate Gigabit Ethernet switching technology, WDM technology and HFC light reception technology, with high reliability, easy management and good quality of service (QoS) and so on. Technical performance of equipment meet the IEEE802.3ah, China Telecom EPON equipment technical requirements (V2.1 / V3.0) and other requirements.

EPON technology is a combination of PON technology and Ethernet technology advantages of emerging technologies, is a point to multi-point networking technology , with high bandwidth, high efficiency, large coverage, rich user interface and many other advantages, is the operator to achieve access network business broadband, integrated transformation of the ideal technology.

The Realtek EPON SFU series terminal devices are equipped with 1-4 10M / 100M / 1000M adaptive interface and a CATV interface. The equipment has been implemented with EPON central office equipment (Huawei / ZTE / FiberHome / Alcatel-Lucent) OLT) interoperability, composed of Gigabit systems, to meet access needs of the two-in-one video, data services, FTTH / FTTO.

2.1 Product Feature

- Dual-fiber access, providing broadband, CATV, Wi-Fi, IPTV service access, and so on.
- Equipment technical performance meets IEEE802.3ah, China Telecom CTC 2.1 & CTC3.0 standard
- Support VLAN Transparent、Tag、Trunk、Translation、QinQ function
- Support up and down bandwidth limit function
- Support port loop detection / port link status detection
- Support upgrade through the OLT remote / local ONU WEB
- Support broadcast storm suppression
- Different data ports are isolated from each other
- Support port flow control
- Support multiple multicast forwarding mode: igmp snooping, igmp proxy
- Support OLT as SNMP-agent way of the unified management of the network management, easy to install and maintain
- Provide a variety of fault alarm function, easy to fault diagnosis
- Support AES-128 decryption, support key generation and switching
- Support DBA technology and priority based on the dual management model to ensure that the user's minimum specified bandwidth requirements
- QoS guarantee for different priority services through SLA constraint, Policing, queue management scheduling / congestion avoidance, discard management
- Supports entry-based traffic control, we can select Pause frame to limit.
- Support HQoS Function
- Support CATV service remote shutdown function
- Operating wavelength: 1100 - 1600nm
- Light reflection loss: >45dB
- Input optical power: -18dBm~0dBm

2.2 Product Specification

Ambient temperature: 0°C~50°C

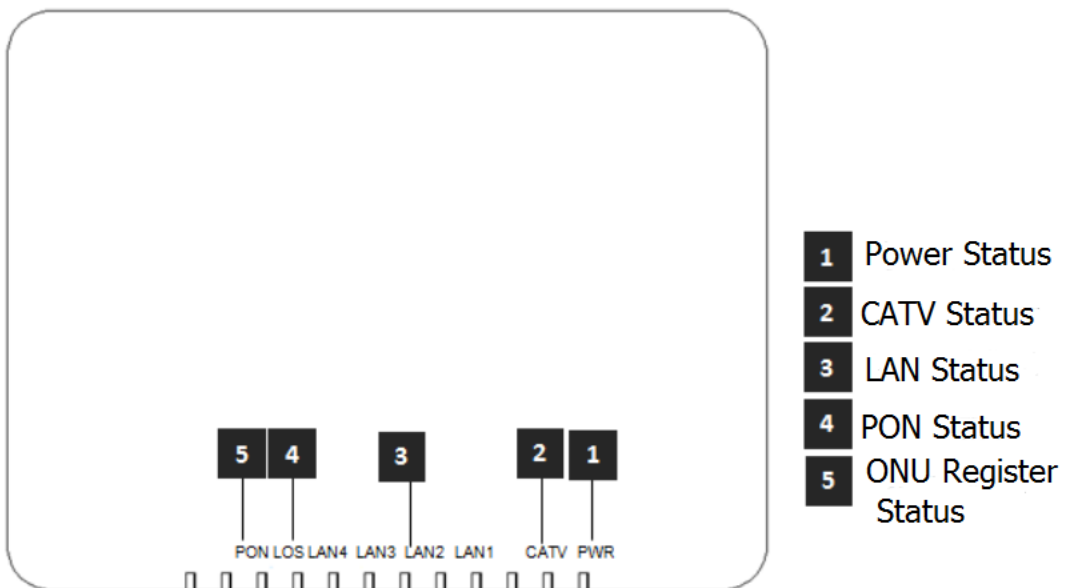
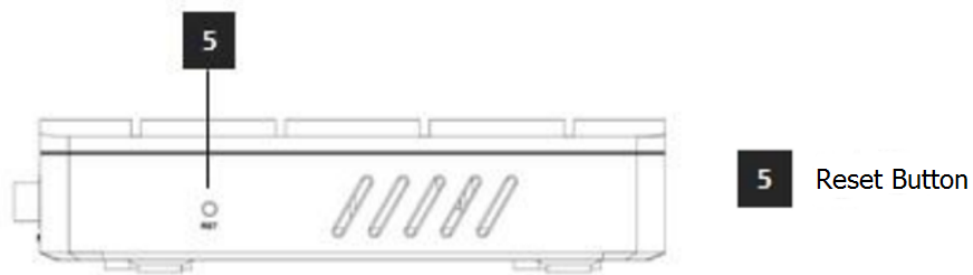
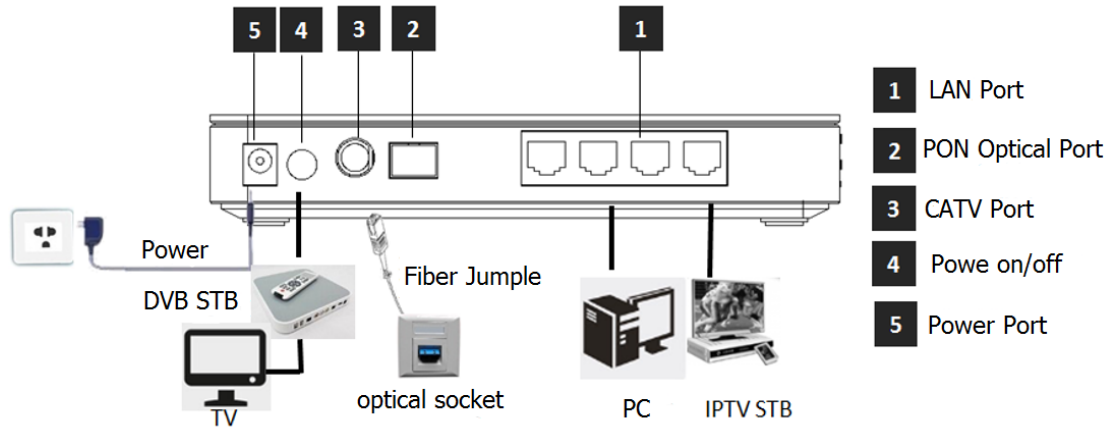
Relative humidity: 10% to 90% (non-condensing)

Power adapter input: 12 V/1A

TX Optical Power: 0~4dBm

RX Optical Power: -3~-27dBm

2.3 Device Interface Definition

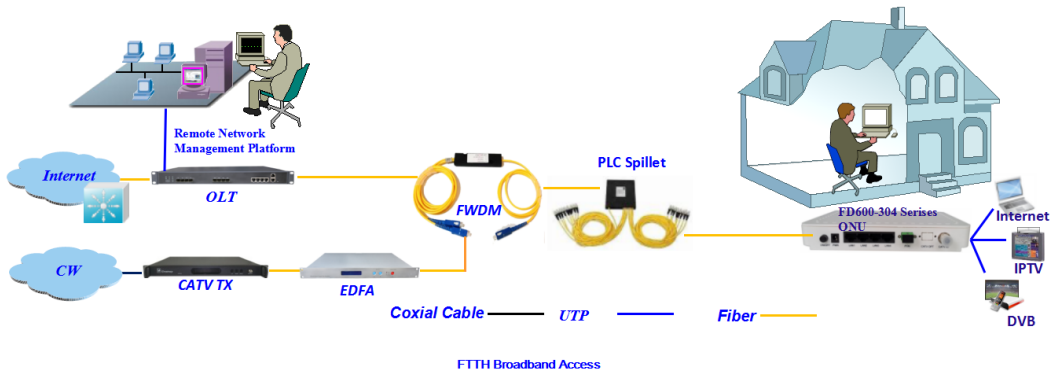


Indicator			Description
1	PWR	Power status	On: The ONU is power on; Off: The ONU is Power off;
2	CATV	CATV port status	On: CATV optical normal (>-9dBm) Off: The CATV signals are not received or low (<-9dBm)
3	LANn	LAN port status	On: Ethernet connection is normal but no traffic; Blinking: Data is being transmitted through the Ethernet port; Off: Ethernet connection is not set up or abnormal;
4	LOS	EPON optical signals	On: Optical power lower than receiver sensitivity or no optical signal; Off: Optical in normal
5	PON	ONU Register	On: Success to register to OLT; Blinking: In process of registering to OLT; Off: In process of registering to OLT failed or no normal signal input;

2.4 Device Connection

- Connect the fiber: Insert the SC fiber connector into the PON connector on the rear panel of the ONU.
- Connect the Ethernet cable: Connect the RJ-45 Ethernet cable to any LAN port and each home device, that is, the computer, IPTV set-top box, and so on.
- Connect the AC adapter: Plug the AC / DC adapter into the AC wall jack and the ONU 12V DC power jack.
- Press power switch. The equipment can provide business services if the lights are normal after power supply for the ONU.

2.5 Applications



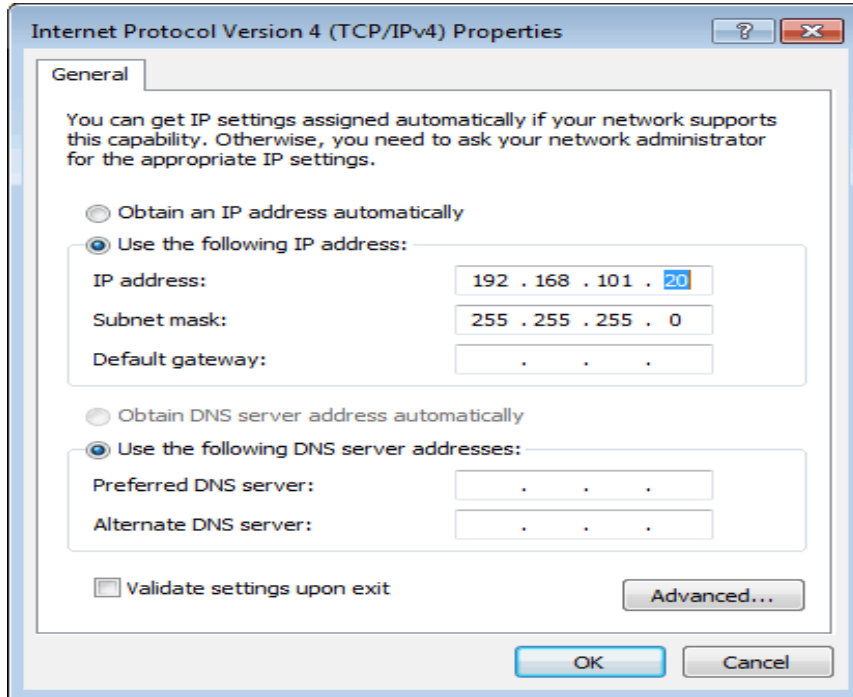
2.6 ONU Instructions

Realtek EPON SFU ONU is mainly work in the bridge mode, all the configuration of ONU (ONU port vlan, ONU port speed limit, etc.) are basically configured through the OLT, but also through the OLT and EMS network management to manage, It does not need to be configured on the ONU's local WEB. The configuration manual is to guide customers to do some basic view and configuration operation for Realtek EPON SFU ONU. Other configurations of the ONU can be configured according to each manufacturer's OLT configuration manual.

3 Login Web Management Locally

3.1 Physical Connection of ONU and PC

- a) Local NIC of PC connects to LAN port or ETH port of ONU via wires.
- b) Set the IP address of PC's local NIC as **192.168.101.X (X: 2-254)**.



- c) Open cmd windows and make sure that PC can ping the management IP (192.168.101.1) of ONU.

```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\tc11>ping 192.168.101.1

Pinging 192.168.101.1 with 32 bytes of data:
Reply from 192.168.101.1: bytes=32 time=2ms TTL=64
Reply from 192.168.101.1: bytes=32 time=1ms TTL=64
Reply from 192.168.101.1: bytes=32 time=1ms TTL=64
Reply from 192.168.101.1: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.101.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\Users\tc11>
```

3.2 PC Access the WEB of ONU

Make sure you can ping the ONU like #3.1. Open the IE Web browser (IE, Firefox, Google), copy and paste URL: <http://192.168.101.1>, the following pop-up Prompt landing page:

Authentication Required ✕

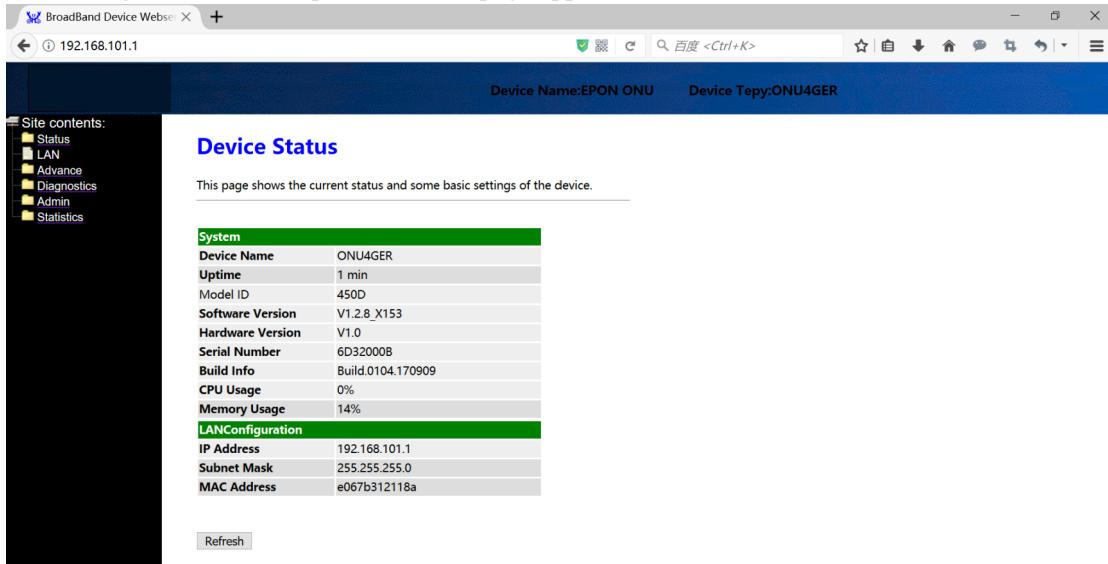
http://192.168.101.1 requires a username and password.
Your connection to this site is not private.

User Name:

Password:

Input UserName: **adminisp** Password: **adminisp**

Click “**Login**” button. The product basics page appears, as follows:



The screenshot shows a web browser window with the address bar displaying '192.168.101.1'. The page title is 'BroadBand Device Webse'. The main content area is titled 'Device Status' and includes a navigation menu on the left with options: Status, LAN, Advance, Diagnostics, Admin, and Statistics. The 'Device Status' page displays the following information:

Device Name: EPON ONU Device Tepty: ONU4GER

Device Status

This page shows the current status and some basic settings of the device.

System	
Device Name	ONU4GER
Uptime	1 min
Model ID	450D
Software Version	V1.2.8_X153
Hardware Version	V1.0
Serial Number	6D32000B
Build Info	Build.0104.170909
CPU Usage	0%
Memory Usage	14%

LANConfiguration	
IP Address	192.168.101.1
Subnet Mask	255.255.255.0
MAC Address	e067b312118a

You can start further configuration.

4 View ONU System Status

4.1 View ONU Device Information

Login ONU WEB. Click **Status** → **Device**, we can view the **Device Name**, **Uptime**, **Model ID**, **Software Version**, **Hardware Version**, **Build Information**, **IP Address**, **MAC Address** and so on.

Device Name:EPON ONU Device Tepty:ONU4GER

Site contents:

- Status
 - Device
 - PON
 - CATV
 - LAN INFO
- LAN
- Advance
- Diagnostics
- Admin
- Statistics

Device Status

This page shows the current status and some basic settings of the device.

System	
Device Name	ONU4GER
Uptime	15 min
Model ID	450D
Software Version	V1.2.8_X153
Hardware Version	V1.0
Serial Number	6D32000B
Build Info	Build.0104.170909
CPU Usage	0%
Memory Usage	14%

LANConfiguration	
IP Address	192.168.101.1
Subnet Mask	255.255.255.0
MAC Address	e067b312118a

4.2 View ONU PON Status

Login ONU WEB. Click **Status** → **PON**, we can view the **Register Status**, **Rx Power** and **Tx Power** and so on.

Site contents:

- Status
 - Device
 - PON
 - CATV
 - LAN INFO
- LAN
- Advance
- Diagnostics
- Admin
- Statistics

PON Status

This page shows the current system status of PON.

PON Status	
Temperature	25.753906 C
Voltage	3.289900 V
Tx Power	2.227700 dBm
Rx Power	-5.341712 dBm
Bias Current	13.950000 mA

EPON LLID Status	
index	Status
0	1

4.3 View ONU CATV Status Information

Login ONU WEB. Click **Status** → **CATV**, we can view the CATV information.

Site contents:

- └─ Status
 - └─ Device
 - └─ PON
 - └─ CATV
 - └─ LAN
- └─ Advance
- └─ Diagnostics
- └─ Admin
- └─ Statistics

CATV Status

This page shows the current system status of CATV.

CATV Status	
Vcc	N/A (Unit: 0.1V)
Temperature	N/A (Unit: 0.1C)
RfOutputPower	N/A (Unit: 0.1dBuV)
InOpticalPower	N/A (Unit: 0.1dBm)
VccAlarmState	N/A
TempAlarmState	N/A
RfAlarmState	N/A
InpwrAlarmState	N/A
VccDead	N/A (Unit: 0.1V)
VccLow	N/A (Unit: 0.1V)
VccHigh	N/A (Unit: 0.1V)
TempDead	N/A (Unit: 0.1C)
TempLow	N/A (Unit: 0.1C)
TempHigh	N/A (Unit: 0.1C)
RfDead	N/A (Unit: 0.1dBuV)
RfLow	N/A (Unit: 0.1dBuV)
RfHigh	N/A (Unit: 0.1dBuV)
InOptPwrDead	N/A (Unit: 0.1dBm)
InOptPwrLow	N/A (Unit: 0.1dBm)
InOptPwrHigh	N/A (Unit: 0.1dBm)
Channel	N/A
AgcLowLimit	N/A
AgcHighLimit	N/A
OnOff	on

5 Configure Management IP Address of ONU

Login ONU WEB. Click **LAN**, we can change IP address and subnet mask of local management and remote management. Normally, we can configure the remote management IP via OLT, which is convenient for manager to access the ONU WEB from OLT side.

Site contents:

- Status
- LAN
- Advance
- Diagnostics
- Admin
- Statistics

LAN Interface Settings

This page is used to configure the LAN interface of your Device. Here you may change the setting for IP addresses, subnet mask, etc..

InterfaceName: **br0**

IP Address: → Local Management IP Config

Subnet Mask:

Enable remote management

IP: → Management IP and vlan id for remote

Mask:

Gaway:

Cvlan: (0~4095)

Svlan: (0~4095)

Priority: (0~7)

6 View ONU LAN Information

6.1 View ONU LAN User

Login ONU WEB. Click **Advance** → **ARP Table**, we can view the **IP Address** and **MAC Address** of every user that connect to the lan port of ONU.

Site contents:

- Status
- LAN
- Advance
 - ARP Table
 - Print Server
- Diagnostics
- Admin
- Statistics

User List

This table shows a list of learned MAC addresses.

IP Address	MAC Address
192.168.101.11	e0-67-b3-0d-0e-01

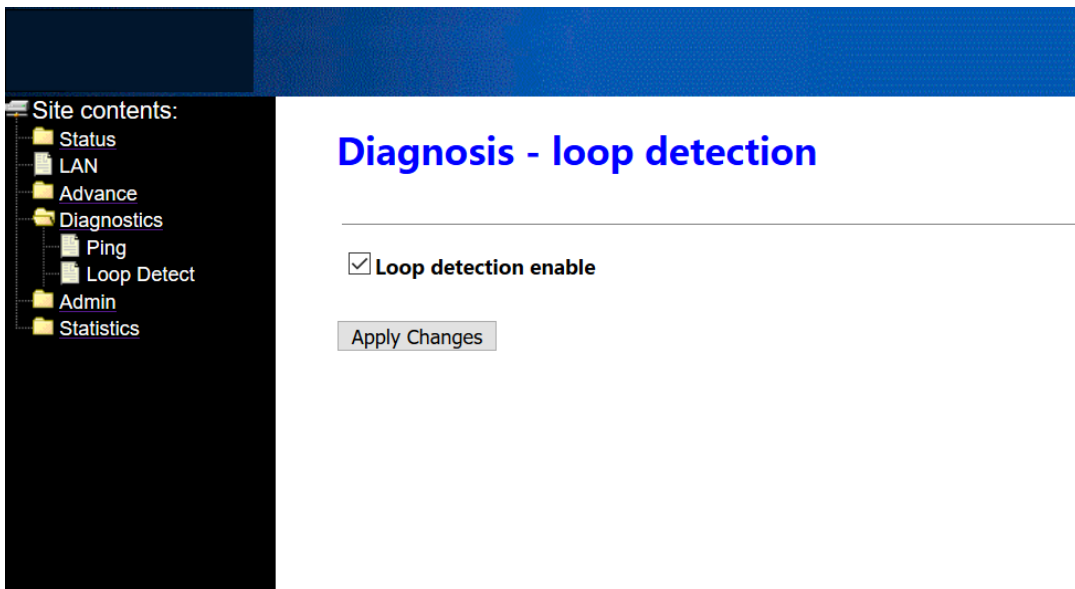
Note: Don't care the **Print Server** option. This function is unavailable.

7 ONU Diagnostic

7.1 ONU Loop Diagnostic

Login ONU WEB. Click **Diagnostics** → **Loop Detect**, we can enable or disable loop detect function of ONU.

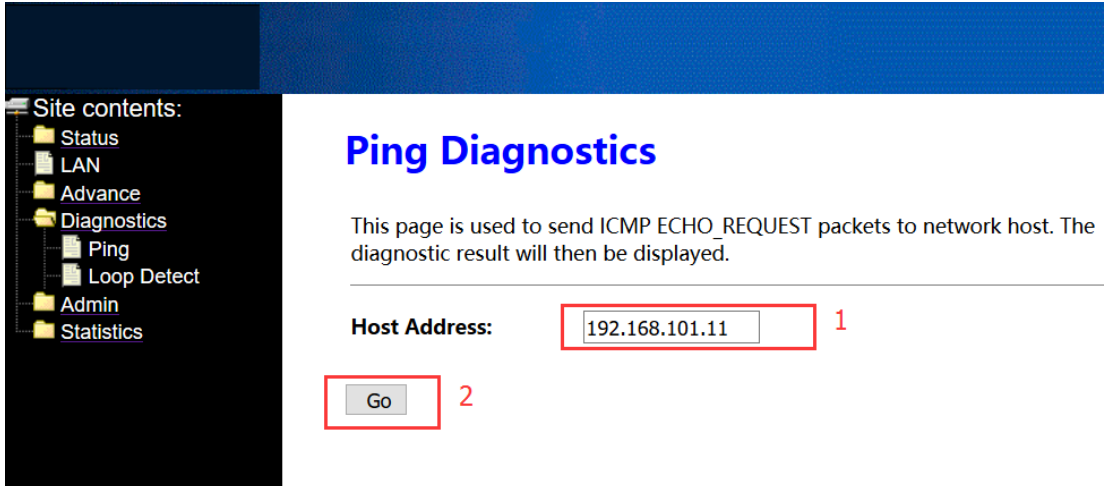
Note: Configured the loop detect function, we have to pay attention to configuration of this function that configured via OLT. Some kinds of OLT will disable loop detect function by default.



7.2 Ping Diagnostic

Ping diagnostic of Realtek SFU ONU is mainly used to test connectivity between ONU and client devices

Login ONU WEB. Click **Diagnostics** → **Ping**, type terminal IP address that connect to the ONU lan port, and click 'GO' button to test the connectivity



Site contents:

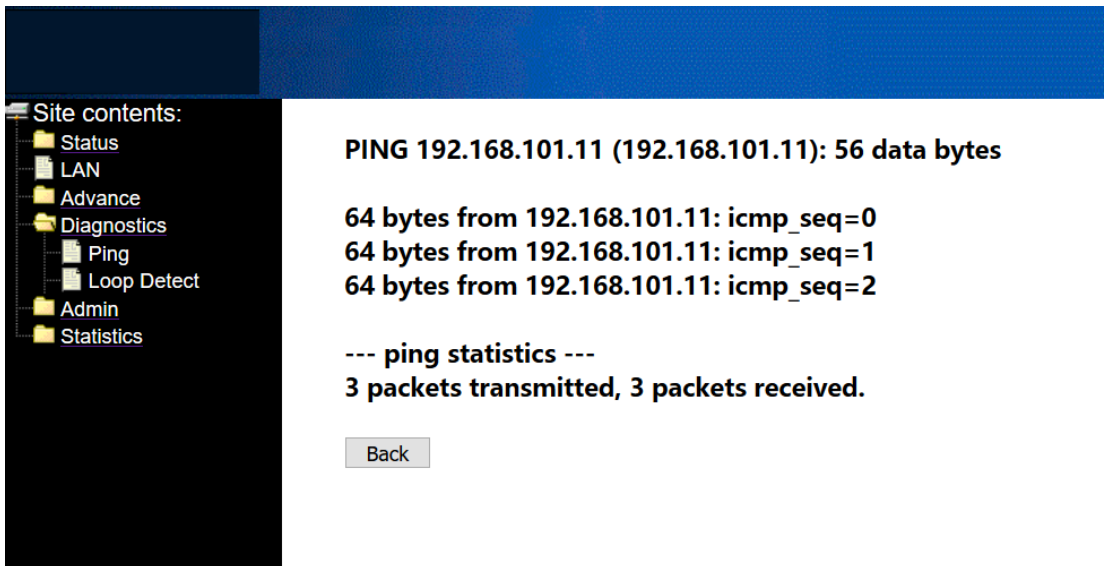
- Status
- LAN
- Advance
- Diagnostics**
 - Ping**
 - Loop Detect
- Admin
- Statistics

Ping Diagnostics

This page is used to send ICMP ECHO_REQUEST packets to network host. The diagnostic result will then be displayed.

Host Address: 1

2



Site contents:

- Status
- LAN
- Advance
- Diagnostics**
 - Ping**
 - Loop Detect
- Admin
- Statistics

PING 192.168.101.11 (192.168.101.11): 56 data bytes

64 bytes from 192.168.101.11: icmp_seq=0
 64 bytes from 192.168.101.11: icmp_seq=1
 64 bytes from 192.168.101.11: icmp_seq=2

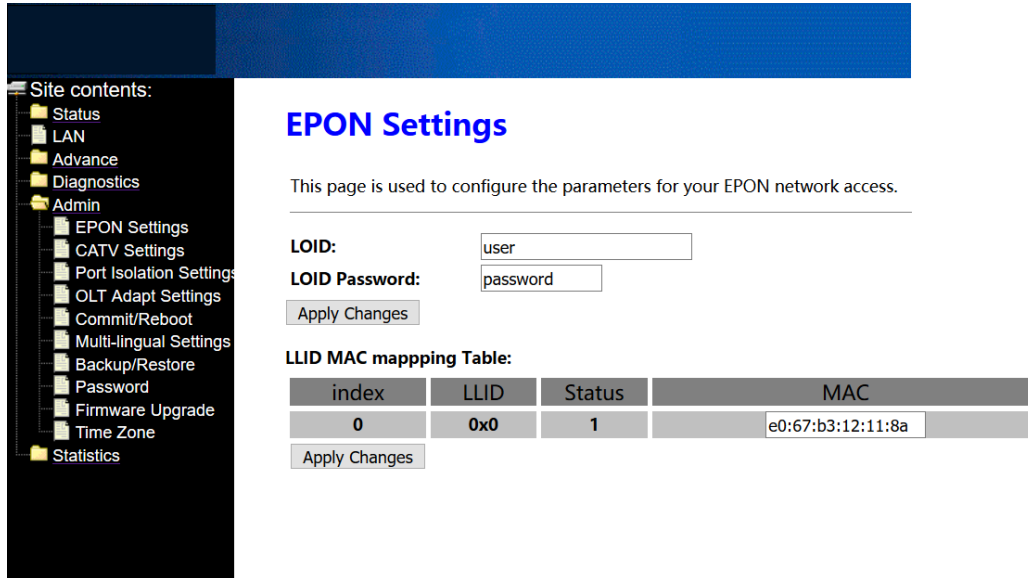
--- ping statistics ---
 3 packets transmitted, 3 packets received.

8 ONU System Management

8.1 Register LOID of ONU Config

The LOID of ONU is mainly used for the authentication of LOID and LOID+Password from OLT. By default, EPON ONU register to the OLT by MAC address but less LOID so that we needn't configure the LOID. But the way to configure the LOID is as below

Login ONU WEB. Click **Admin** → **EPON Settings**, we can configure the LOID and LOID password, and click '**Apply Changes**' button to finish the settings.



Site contents:

- Status
- LAN
- Advance
- Diagnostics
- Admin
 - EPON Settings
 - CATV Settings
 - Port Isolation Settings
 - OLT Adapt Settings
 - Commit/Reboot
 - Multi-lingual Settings
 - Backup/Restore
 - Password
 - Firmware Upgrade
 - Time Zone
 - Statistics

EPON Settings

This page is used to configure the parameters for your EPON network access.

LOID:

LOID Password:

LLID MAC mapping Table:

index	LLID	Status	MAC
0	0x0	1	e0:67:b3:12:11:8a

8.2 CATV Settings

Login ONU WEB. Click **Admin** → **CATV Settings**, we can enable or disable CATV port and configure other parameters of CATV, and click '**Apply Changes**' button to finish the settings.

Site contents:

- Status
- LAN
- Advance
- Diagnostics
- Admin
 - EPON Settings
 - CATV Settings
 - Port Isolation Settings
 - OLT Adapt Settings
 - Commit/Reboot
 - Multi-lingual Settings
 - Backup/Restore
 - Password
 - Firmware Upgrade
 - Time Zone
- Statistics

CATV Settings

This page is used to configure the CATV

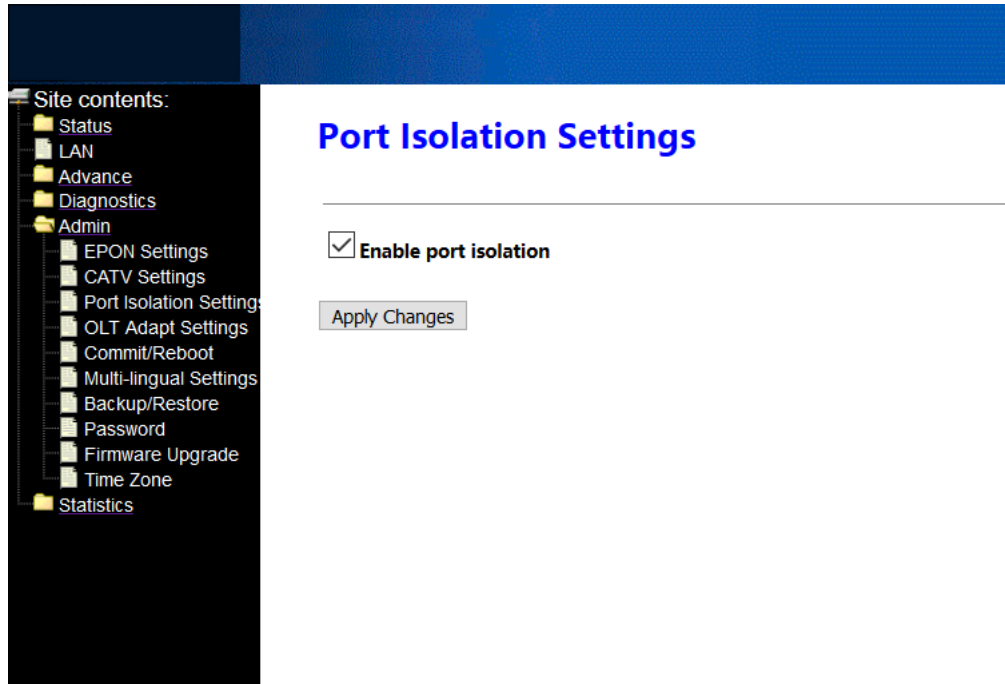
CATV Status		
Vcc	N/A (Unit: 0.1V)	
Temperature	N/A (Unit: 0.1C)	
RfOutputPower	N/A (Unit: 0.1dBuV)	
InOpticalPower	N/A (Unit: 0.1dBm)	
VccAlarmState	N/A	
TempAlarmState	N/A	
RfAlarmState	N/A	
InpwrAlarmState	N/A	
VccDead	N/A	(0~50 Unit: 0.1V)
VccLow	N/A	(0~200 Unit: 0.1V)
VccHigh	N/A	(0~200 Unit: 0.1V)
TempDead	N/A	(0~50 Unit: 0.1C)
TempLow	N/A	(-300~1000 Unit: 0.1C)
TempHigh	N/A	(-300~1000 Unit: 0.1C)
RfDead	N/A	(0~50 Unit: 0.1dBuV)
RfLow	N/A	(500~1000 Unit: 0.1dBuV)
RfHigh	N/A	(500~1000 Unit: 0.1dBuV)
InOptPwrDead	N/A	(0~50 Unit: 0.1dBm)
InOptPwrLow	N/A	(-600~100 Unit: 0.1dBm)
InOptPwrHigh	N/A	(-600~100 Unit: 0.1dBm)
Channel	N/A	(0~100)
AgcLowLimit	N/A	
AgcHighLimit	N/A	
OnOff	on	

Enable CATV

8.3 Port Isolation Settings

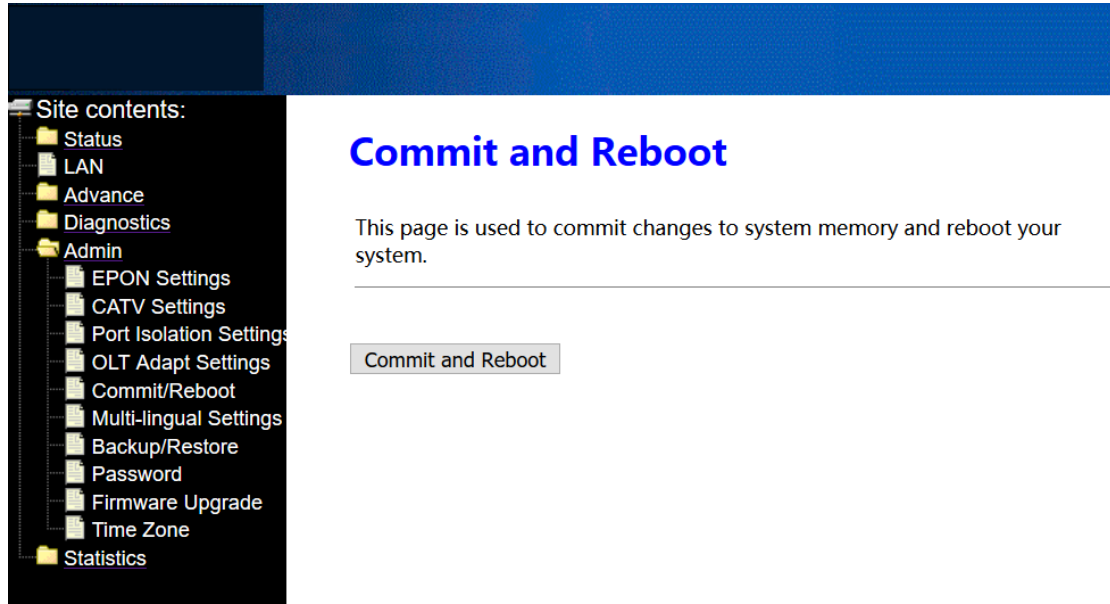
ONU ports isolation is mainly used to the terminal that connect to the ONU can communicate with each other or not.

Login ONU WEB. Click **Admin** → **Port Isolation Settings**, we can enable or diable port Isolation function in here, and click '**Apply Changes**' button to finish the settings.



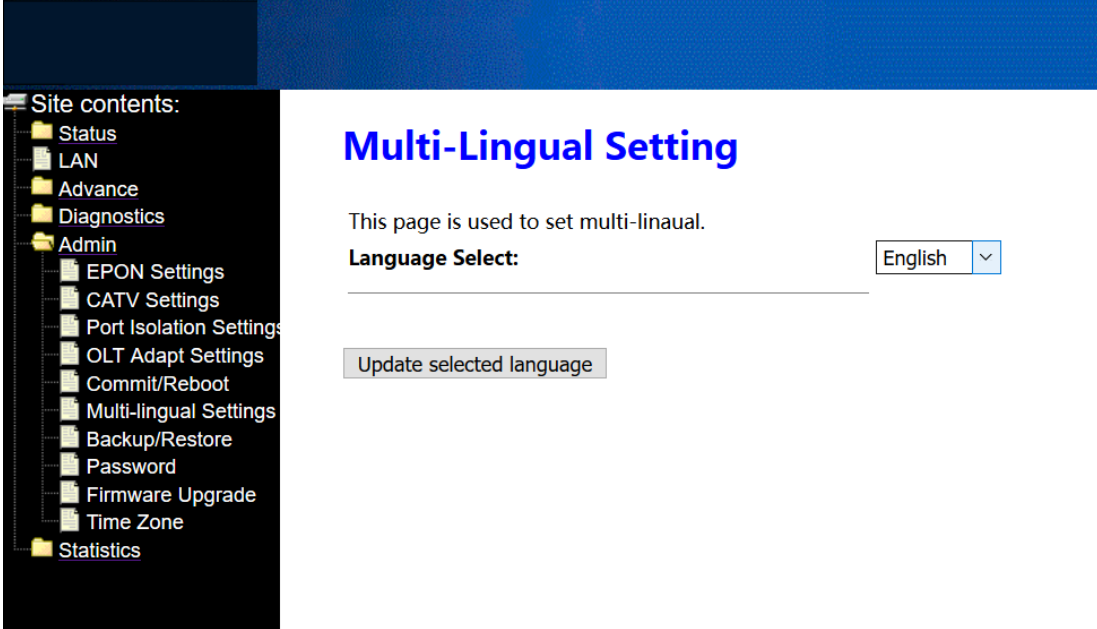
8.4 Reboot ONU

Login ONU WEB. Click **Admin** → **Commit/Reboot**, click ‘**Commit and Reboot**’ button to save the configuration and reboot the ONU.



8.5 ONU Chinese and English Interface Switch

Login ONU WEB. Click **Admin** → **Multi-lingual Settings**. In here, we can change the language to Chinese or English, click ‘**Update selected language**’ button to finish the settings.



Site contents:

- Status
- LAN
- Advance
- Diagnostics
- Admin
 - EPON Settings
 - CATV Settings
 - Port Isolation Settings
 - OLT Adapt Settings
 - Commit/Reboot
 - Multi-lingual Settings
 - Backup/Restore
 - Password
 - Firmware Upgrade
 - Time Zone
- Statistics

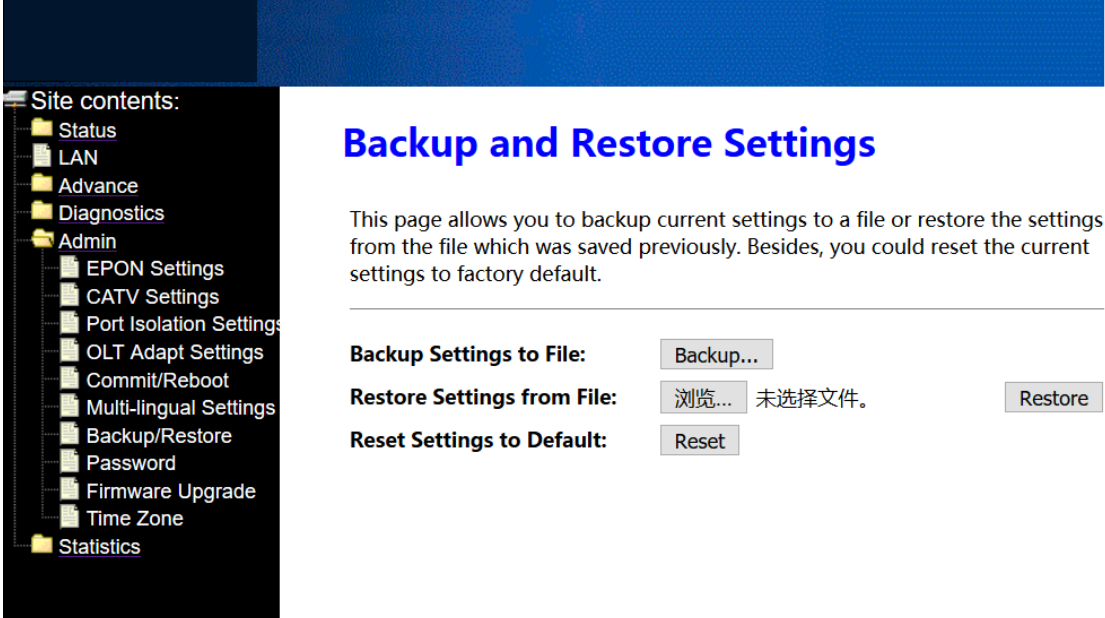
Multi-Lingual Setting

This page is used to set multi-lingual.

Language Select:

8.6 Reset Settings to Default

Login ONU WEB. Click **Admin** → **Backup/Restore**. In here, we can backup and restore settings, and click ‘**Reset**’ button to restore the ONU settings to default.



Site contents:

- Status
- LAN
- Advance
- Diagnostics
- Admin
 - EPON Settings
 - CATV Settings
 - Port Isolation Settings
 - OLT Adapt Settings
 - Commit/Reboot
 - Multi-lingual Settings
 - Backup/Restore
 - Password
 - Firmware Upgrade
 - Time Zone
- Statistics

Backup and Restore Settings

This page allows you to backup current settings to a file or restore the settings from the file which was saved previously. Besides, you could reset the current settings to factory default.

Backup Settings to File:

Restore Settings from File:

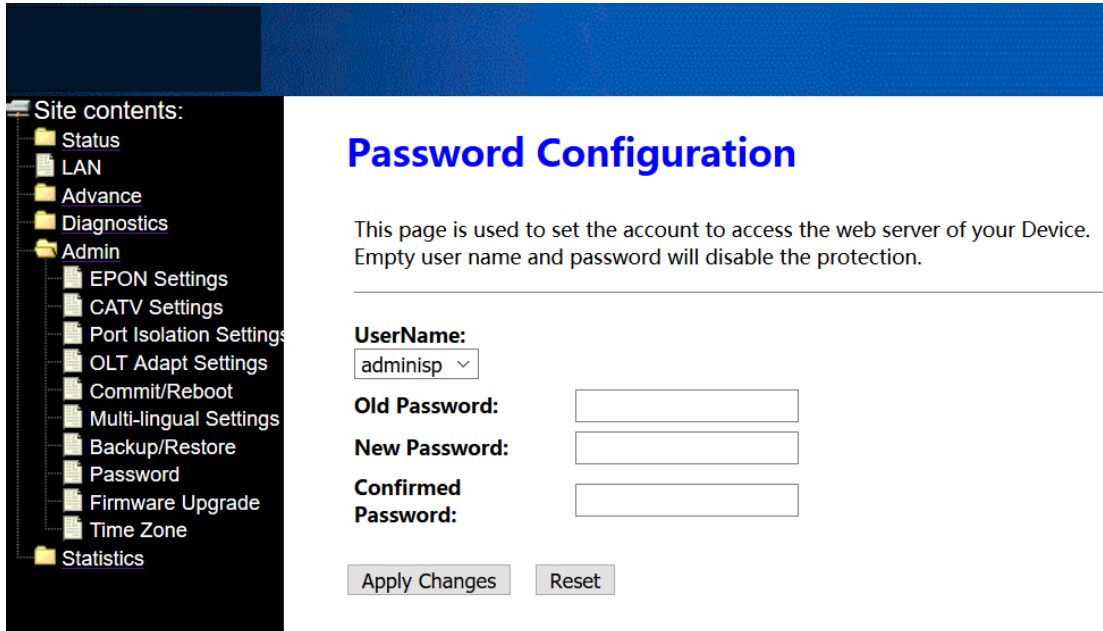
Reset Settings to Default:

8.7 Modify the Account and password

Default system management account and password are [adminisp/adminisp](#)

Default system common account and password are [admin/admin](#)

Login ONU WEB. Click **Admin** → **Password**. In here, we can change the password for management account and common account, and click ‘**Apply**’ button to finish the settings.



Site contents:

- Status
- LAN
- Advance
- Diagnostics
- Admin
 - EPON Settings
 - CATV Settings
 - Port Isolation Settings
 - OLT Adapt Settings
 - Commit/Reboot
 - Multi-lingual Settings
 - Backup/Restore
 - Password
 - Firmware Upgrade
 - Time Zone
- Statistics

Password Configuration

This page is used to set the account to access the web server of your Device. Empty user name and password will disable the protection.

UserName:

Old Password:

New Password:

Confirmed Password:

8.8 Upgrade the ONU

Firstly, we have to get a newest firmware from provider.

Login ONU WEB. Click **Admin** → **Firmware Upgrade**. In here, click **Select file** button to select a upgrade file, and click **Upgrade** button to upgrade the ONU.

Note: We needn't extract Realtek project production's firmware, just upgrade the .tar file. It will take 4 minutes to upgrade. After upgrading, the ONU will reboot automatically. We needn't reboot it by manual.



Site contents:

- Status
- LAN
- Advance
- Diagnostics
- Admin
 - EPON Settings
 - CATV Settings
 - Port Isolation Settings
 - OLT Adapt Settings
 - Commit/Reboot
 - Multi-lingual Settings
 - Backup/Restore
 - Password
 - Firmware Upgrade
 - Time Zone
- Statistics

Firmware Upgrade

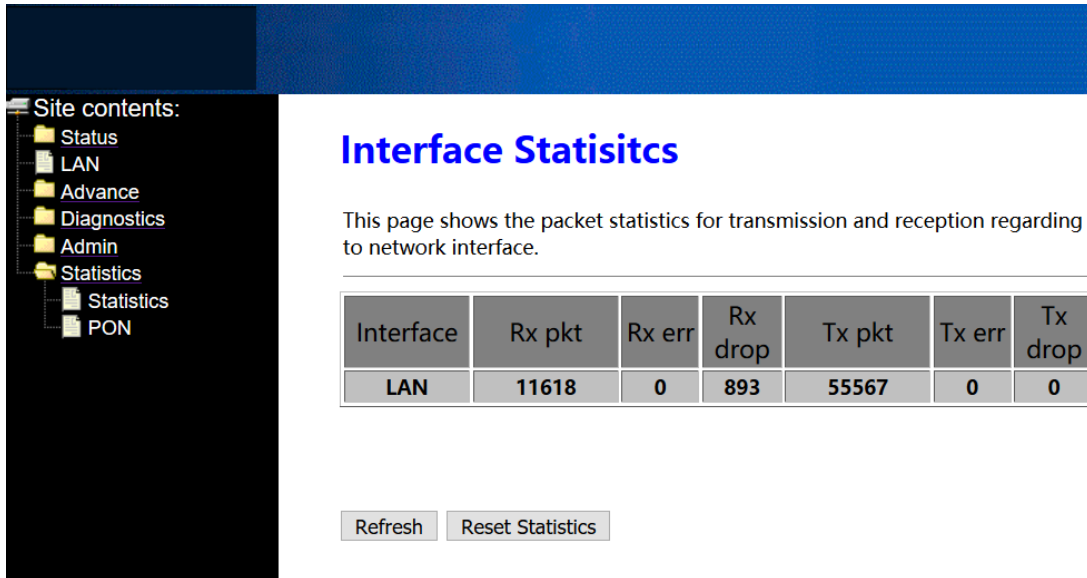
This page allows you upgrade the firmware to the newer version. Please note that do not power off the device during the upload because this make the system unbootable.

未选择文件。

9 ONU Interface Traffic Statistics

9.1 ONU LAN Interface Traffic Statistics

Login ONU WEB. Click **Statistics** → **Statistics**. In here, we can view the information of transmitted and received packets of ONU lan ports.



The screenshot displays the 'Interface Statistics' page. On the left is a navigation menu with 'Site contents:' and sub-items: Status, LAN, Advance, Diagnostics, Admin, Statistics, and PON. The main content area has a blue header and a title 'Interface Statistics'. Below the title is a descriptive text: 'This page shows the packet statistics for transmission and reception regarding to network interface.' A table follows, showing statistics for the LAN interface. At the bottom, there are two buttons: 'Refresh' and 'Reset Statistics'.

Interface	Rx pkt	Rx err	Rx drop	Tx pkt	Tx err	Tx drop
LAN	11618	0	893	55567	0	0

9.2 PON Statistics

Login ONU WEB. Click **Statistics** → **PON**. In here, we can view the information of transmitted and received packets of ONU PON port.

Site contents:

- └─ Status
- └─ LAN
- └─ Advance
- └─ Diagnostics
- └─ Admin
- └─ Statistics
 - └─ Statistics
 - └─ PON

PON Statistics

Bytes Sent	2764576
Bytes Received	1870018864
Packets Sent	37458
Packets Received	85178
Unicast Packets Sent	6997
Unicast Packets Received	6650
Multicast Packets Sent	29199
Multicast Packets Received	64134
Broadcast Packets Sent	1262
Broadcast Packets Received	14394
FEC Errors	0
HEC Errors	0
Packets Dropped	0
Pause Packets Sent	0
Pause Packets Received	0

Concluding Remarks

Thanks for using products of Wodaplug Technology Corp.

Contact Information:

EU worldwide distribution:

Tomorrow systems s.r.o.

Karlstejska 323

252 25 Orech - Prague west

Czech Republic

GSM: +420 608 262 004 , +420 775 262 900

Tel. : +420 257 211 010 (store, service)

Email: info@wodaplug.com

Website: www.wodaplug.com

www.524wifi.com / www.compexshop.com