



User Manual

TONU-1010 GE ONU + CATV

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1 Safety Instructions



Read these instructions carefully before connecting the unit

ATTENTION

- Failure to comply with the specified precautionary measures may cause serious injury to persons or damage to property.
- The assembly, installation, additional electrical wiring, servicing and commissioning may only be performed by suitably qualified persons, technicians or installers in compliance with safety regulations.
- Damage due to improper installation and commissioning, defective connectors on cables, or any other incorrect handling will void the warranty.

CAUTION

- The safety requirements are according to the standards EN 62368-1 respectively EN 60728-11 and must be observed, especially concerning equipotential bonding and earthing.
- Observe the relevant country-specific standards, regulations and guidelines on the installation and operation of antenna systems.
- Before starting installation or service work disconnect the receiving system from the power supply.
- Installation or service work should NEVER be undertaken during electrical / thunderstorms.
- Avoid short circuits!
- To ensure electromagnetic compatibility, make sure all connections are tight and that the covers are screwed on securely.
- Take action to prevent static discharge when working on the device!
- Due to the risk of fires caused by lightning strikes, we recommend that all mechanical parts (e.g. distributor, equipotential bonding rail, etc.) be mounted on a non-combustible base. Wood panelling, wooden beams, plastic covered panels and plastic panels are all examples of combustible bases.



To prevent fire, short circuit or shock hazard:

- Do not expose the unit to rain or moisture.
- Install the unit in a dry location without infiltration or condensation of water.
- Do not expose it to dripping or splashing.
- Do not place objects filled with liquids, such as vases, on the apparatus.
- If any liquid should accidentally fall into the cabinet, disconnect the power plug.



To avoid any risk of overheating:

- Install the unit in a well aired location and keep a minimum distance of 5 cm around the apparatus for sufficient ventilation.
- Do not place any items such as newspapers, tablecloths, curtains, on the unit that might cover the ventilation holes.
- Do not place any naked flame sources, such as lit candles, on the apparatus.
- Do not install the product in a dusty place.
- Use the apparatus only in moderate climates (not in tropical climates).
- Respect the minimum and maximum temperature specifications.



To avoid any risk of electrical shocks:

- Connect apparatus only to a power socket with a protective earth connection.
- The mains plug shall remain readily operable.
- Pull out power plug to make the different connections of cables.
- To avoid electric shock, do not open the housing of the product.



Warning

CLASS 1 LASER PRODUCT

To avoid exposure to laser radiation from optical fibre or active optical devices like transmitters or receivers which pose a hazard to your health, you should:

- Never look into an exposed end of an optical fibre or mirror surfaces that could reflect light from an open optical fibre.
- Never look into an optical fibre connected with the radiation source with optical instruments (magnifying glass, microscope, etc...).
- Use an approved fibre optic cable to maintain conformity with applicable laser safety requirements.

Concerning fibre optic cables:

- Wearing protective goggles is recommended.
- You should handle fibre optic cables with extreme caution, particularly when unbundling or terminating a cable. The internal glass core of a fibre optic cable is brittle when the shielding and buffer material is removed. It will easily disintegrate into small pieces which may cause injury to the human body.
- Remove all filings immediately using tweezers, place them in a tightly sealed dustbin and dispose in accordance with local regulations.



Maintenance



Only use a dry soft cloth to clean the cabinet.



Do not use solvent.



For repairing and servicing, refer to qualified personnel.



Dispose according to your local authority's recycling processes

Electronic devices should never be disposed of in the household rubbish. In accordance with directive 2002/96/EC of the European Parliament and the European Council from January 27, 2003 which addresses old electronic and electrical devices, such devices must be disposed of at a designated collection facility. At the end of its service life, please take your device to one of these public collection facilities for proper disposal.

2 Introduction

2.1 Product description

With the added feature of a CATV Output, the TONU-1010 (XPON 1GE ONU) is specially designed to meet the needs of telecom operators for FTTO (office), FTTD (desktop), FTTH (home), SOHO broadband access, video surveillance, etc. The ONU is based on high performance chip technology solutions and supports Layer 2/Layer 3 functions, providing data services for carrier-grade FTTH applications.

The ONU has high reliability and can be applied to a wide temperature environment and has a powerful firewall function, which is easy to manage and maintain. It can provide QoS guarantee for different services. The ONU complies with international technical standards such as IEEE802.3ah and ITU-T G.984.

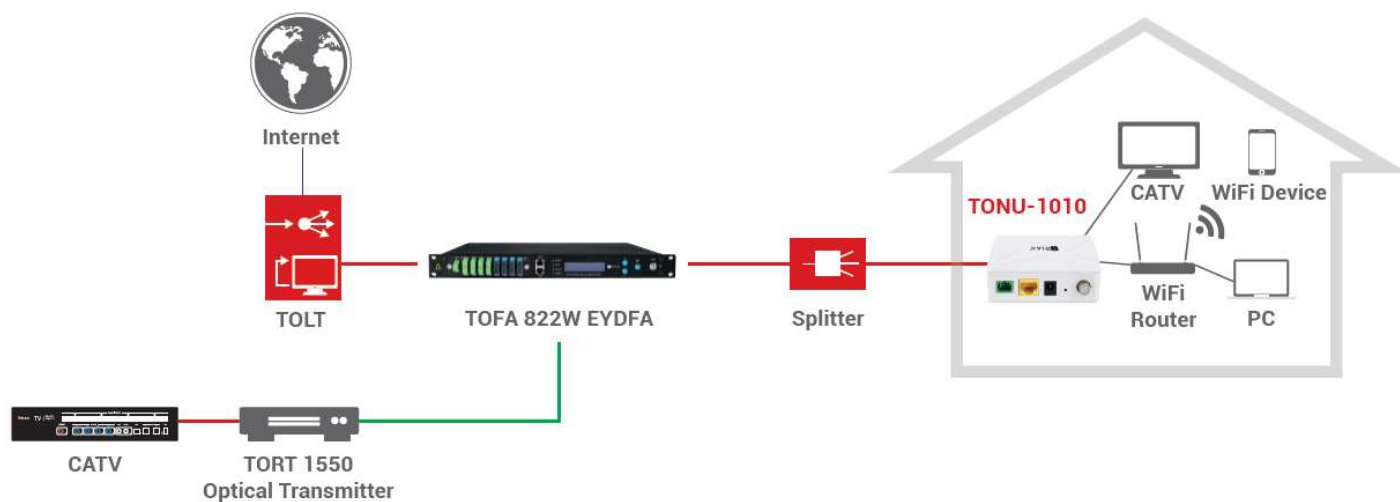
2.2 Detailed features

- Integrated auto detecting, auto configuration and auto firmware upgrade technology
- Supports remote configuration and maintenance
- Supports rich VLAN, DHCP server and IGMP snooping multicast feature
- Supports NAT, firewall function
- Supports bridge and router mode
- XPON Dual Mode, automatically access to EPON/GPON
- Detecting rogue ONU
- Powerful firewall
- Wide working temperature: -25°C ~+55°C

2.3 Ordering information

Product Name	Article No.	Product Description	Accessories
TONU-1010	308701	1*GE + CATV (AGC)	AC-DC power adapter, DC12V/0.5A

2.4 Installation schematic example



2.5 Front & rear panels



2.6 Panel description



Name	Function
PON	Connect to OLT by SC/APC type fibre connector, single mode optical fibre cable.
LAN	Connect PC or other devices with Ethernet port by Cat5/6 cable, RJ-45 connector.
DC 12V	Connect with supplied power supply DC 12V, 0.5A.
RST	Press RST button over 10 seconds, ONU restores factory default and reboot.
RF OUT	Connect to STB or TV.

2.7 LEDs



LED	Mark	Status	Description
Power	POWER	ON	The device is powered up.
		OFF	The device is powered down.
Registration	PON	ON	The device is registered to the PON system.
		OFF	Device is not registered to the PON system.
		Blink	Device registration is incorrect.
Optical signal loss	LOS	Blink	Device does not receive optical signals.
		OFF	Device has received optical signal.
Interface	GE	ON	Port is connected properly (LINK).
		Off	Port connection exception or not connected.
		Blink	Port is sending or/and receiving data (ACT).
CATV	CATV	ON	CATV is working.
		Off	CATV is turned off.
		Blink	CATV signal is abnormal.

2.8 First installation

- Connect the optical fibre cable to the unit:
 - Remove the protective cap of the optical fibre
 - Clean the end of the optical fibre with an optical fibre end cleaner
 - Remove the protective cap of the ONU optical interface (PON interface)
 - Connect the fibre to the PON port on the unit

Note: When measuring the optical power before connecting to the ONU, it is recommended to use a PON Inline Power Meter.

While connecting, please note:

- Keep the optical connector and the optical fibre clean
 - Make sure there are no tight bends in the fibre and that the bending diameter is greater than 6cm
 - Otherwise, the optical signal loss may be increased, to the extent that signal may be unavailable
 - Cover all optic ports and connectors with protective cap to guard against dust and moisture when the fibre is not used
- Apply power to the unit, push the power button
 - After the ONU is powered ON, indicators should light up as for normal operation. Check whether the PON interface status LED (PON) is ON continuously. If it is, the connection is normal; otherwise, there is either problem of the physical connection or the optical level at either end. This may be caused by either too much or too little attenuation over the optical fibre. Please refer to the Layout Description section of this installation manual for normal LED activity

4. Check all signal levels and services on all the ONU communication ports

Unit Installation Adjustment:

- ONU installed on a horizontal surface (Bench top):
 - put the ONU on a clean, flat, sturdy bench top. You must keep the clearance for all sides of the unit to more than 10cm for heat dissipation

- ONU installed on a vertical surface (Hanging on a wall):
 - you can install the ONU on a vertical surface by using the mounting holes on the bottom of the ONU chassis and two flat-head wood screws
 - Insert the screws into the wall. The screw positions must be in the same horizontal line and the distance between them must be 145mm. Reserved at least 6mm between the screw caps and the wall
 - Hang the ONU on the screws through the mounting holes

3 Configuration

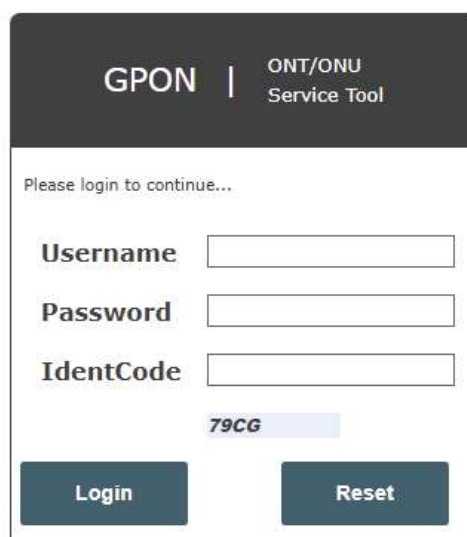
After finishing the basic connection configuration, you can use its basic function. To satisfy individuation service requirements, this charter provides the user parameter modification and individuation configuration description.

This model of ONU is designed as SFU (single family unit, bridge mode), there is no bridge mode WAN in ONU. When it works on bridge mode, VLAN of LAN port should be configured by OLT. When it works on router mode, you may configure through its web management.

3.1 Login

The device is configured by the web interface. The following steps will enable you to login:

1. Confirm "2.2 Quick Installation" to install
2. The device default IP is 192.168.1.1
3. Open your web browser, type the device IP in address bar
4. Entry of the username and password will be prompted. Enter the default login username and password that are given on the product label. By default, there are two user levels for management. Administration level username and password are given on the product label. Normal level username is "user", password is "user".

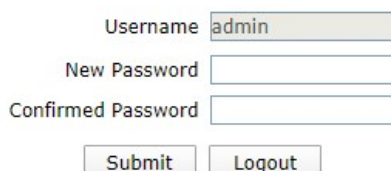


The image shows a web interface for the GPON ONT/ONU Service Tool. At the top, it says "GPON | ONT/ONU Service Tool". Below this, it prompts the user to "Please login to continue...". There are three input fields: "Username", "Password", and "IdentCode". Below the "IdentCode" field, there is a small box displaying "79CG". At the bottom, there are two buttons: "Login" and "Reset".

Figure 3-1: Login

For security, you will be asked to modify password after you logged in by default password. The new password must meet the requirements that display on the webpage. After submitted, it requires you to login by new password.

1> The password must contain at least 6 characters.
 2> The password must contain at least two of the following combinations:
 0-9, a-z, A-Z, Special characters (. _ / @ ! ~ # \$ % ^ * () + = ?).
 Input Max 16 characters, then click "submit" to change password. Note: Password should not contains space.



The image shows a "Change Password" form. It has three input fields: "Username" (with the value "admin" entered), "New Password", and "Confirmed Password". Below these fields are two buttons: "Submit" and "Logout".

Figure 3-2: Change Password

3.2 Status

This part shows the main information of product.

3.2.1 Device Information

This page shows the device basic information, such as Device Model, Hardware Version, Software Version, PON SN, PON mode and so on.

Status Network Security Application Administration Legal Info	
Model	TONU-1010
Serial Number	-
Hardware Version	V4.1
Software Version	V6.1.2P1T8 250617101735
Boot Loader Version	V6.1.2P1T8
PON Serial Number	TPON9a7e2969
PON Mode	GPON

Logout

Figure 3-3: Device Information

3.2.2 Network Interface

3.2.2.1 WAN Connection

This page shows WAN connection information you have configured.

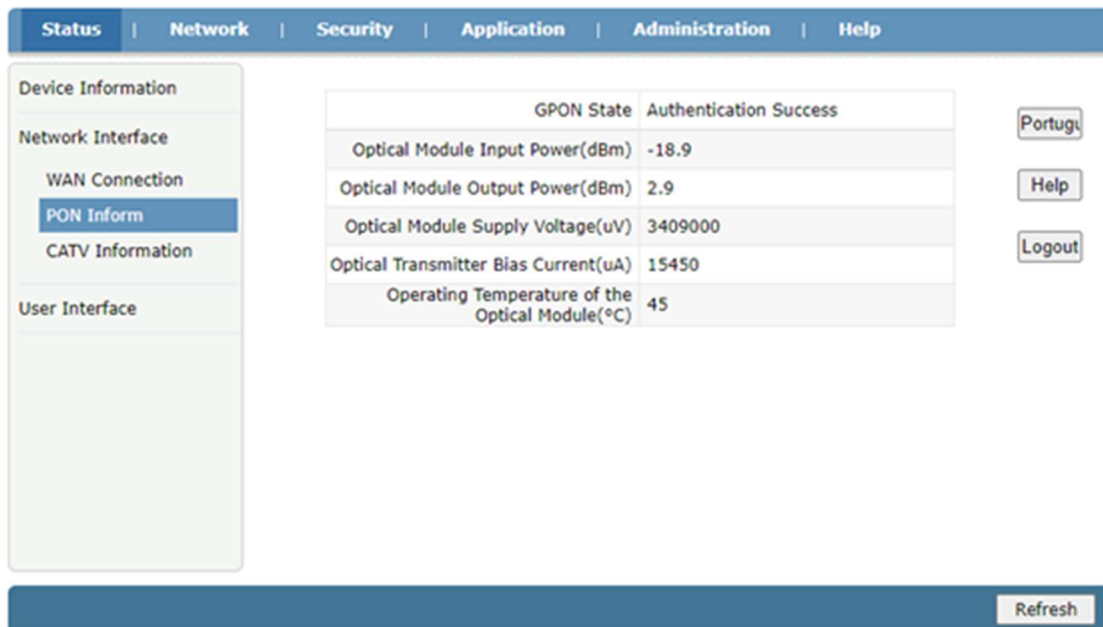
Status Network Security Application Administration Help	
Type	Static
Connection Name	test
IP Version	IPv4
NAT	Enabled
FullconeNat	Disabled
IP	192.168.6.189/255.255.255.0
DNS	8.8.8.8/0.0.0.0/0.0.0.0
IPv4 Gateway	192.168.6.1
IPv4 Connection Status	Connected
IPv4 Disconnect Reason	None
WAN MAC	00:6d:61:de:3c:79

Portugu Help Logout Refresh

Figure 3-4: WAN Connection

3.2.2.2 PON Information

This page shows the PON information, such as PON state, input power, output power, and optical module voltage, current, temperature.



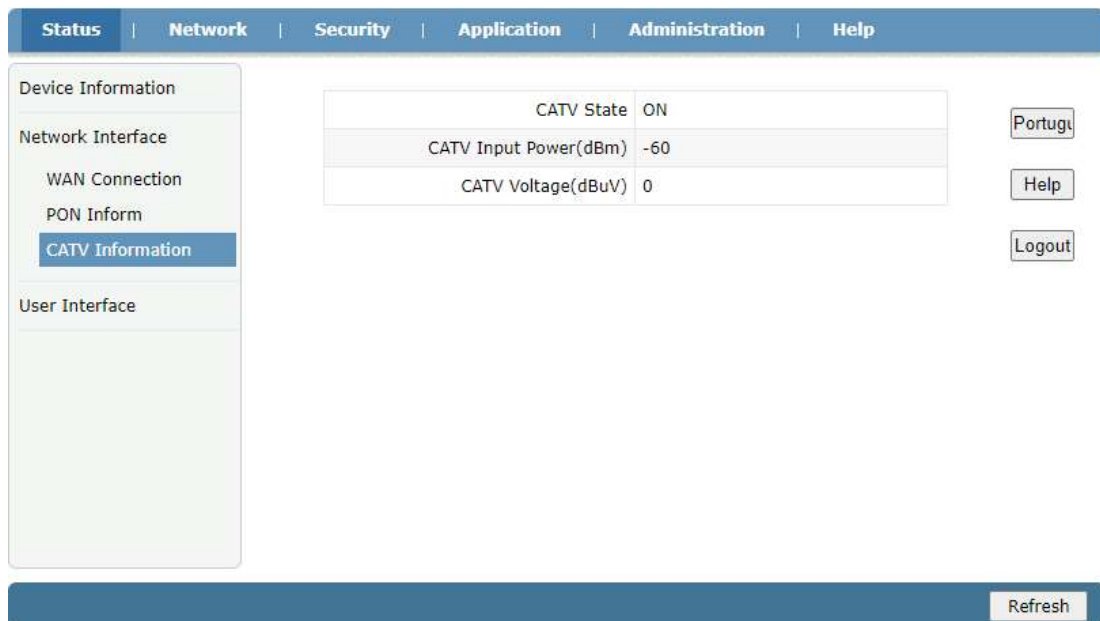
The screenshot shows the 'PON Inform' page. The left sidebar has a menu with 'PON Inform' selected. The main content area displays a table with PON-related metrics. On the right, there are buttons for 'Portugu', 'Help', and 'Logout'. At the bottom right, there is a 'Refresh' button.

GPON State	Authentication Success
Optical Module Input Power(dBm)	-18.9
Optical Module Output Power(dBm)	2.9
Optical Module Supply Voltage(uV)	3409000
Optical Transmitter Bias Current(uA)	15450
Operating Temperature of the Optical Module(°C)	45

Figure 3-5: PON Information

3.2.2.3 CATV Information

This page shows CATV information, including CATV status, input power and voltage. There is no such page in hardware V3.0.



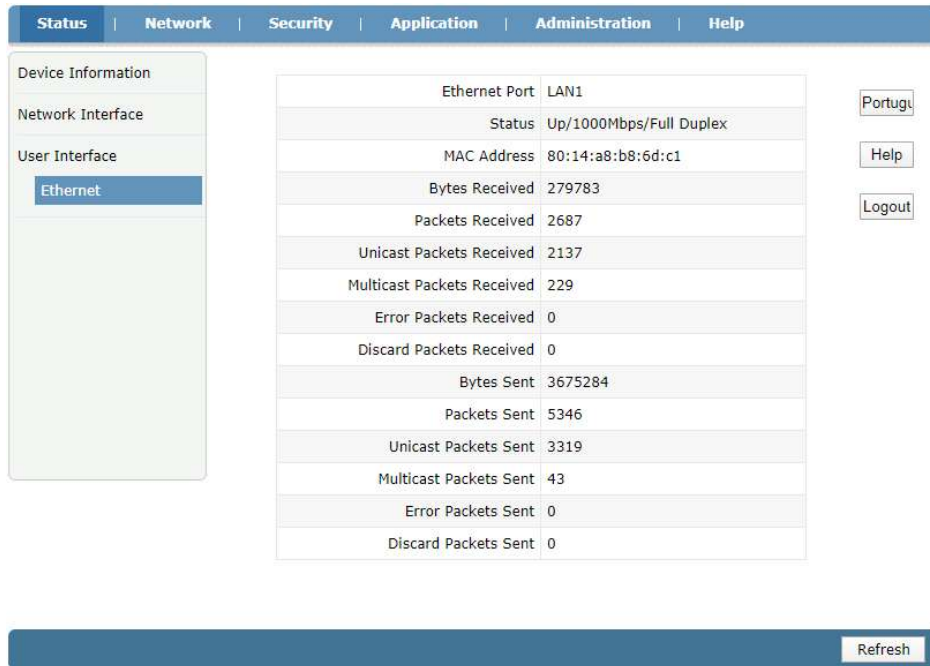
The screenshot shows the 'CATV Information' page. The left sidebar has a menu with 'CATV Information' selected. The main content area displays a table with CATV-related metrics. On the right, there are buttons for 'Portugu', 'Help', and 'Logout'. At the bottom right, there is a 'Refresh' button.

CATV State	ON
CATV Input Power(dBm)	-60
CATV Voltage(dBuV)	0

Figure 3-6: CATV Information

3.2.3 User Interface

This page shows the Ethernet port information, including port status, MAC address and statistics.



Ethernet Port	LAN1
Status	Up/1000Mbps/Full Duplex
MAC Address	80:14:a8:b8:6d:c1
Bytes Received	279783
Packets Received	2687
Unicast Packets Received	2137
Multicast Packets Received	229
Error Packets Received	0
Discard Packets Received	0
Bytes Sent	3675284
Packets Sent	5346
Unicast Packets Sent	3319
Multicast Packets Sent	43
Error Packets Sent	0
Discard Packets Sent	0

Figure 3-7: Ethernet Information

3.3 Network

3.3.1 Internet

This page allows user to configure router mode WAN connection. You can only configure route mode WAN connections here. The device default settings is bridge mode (without any WAN).

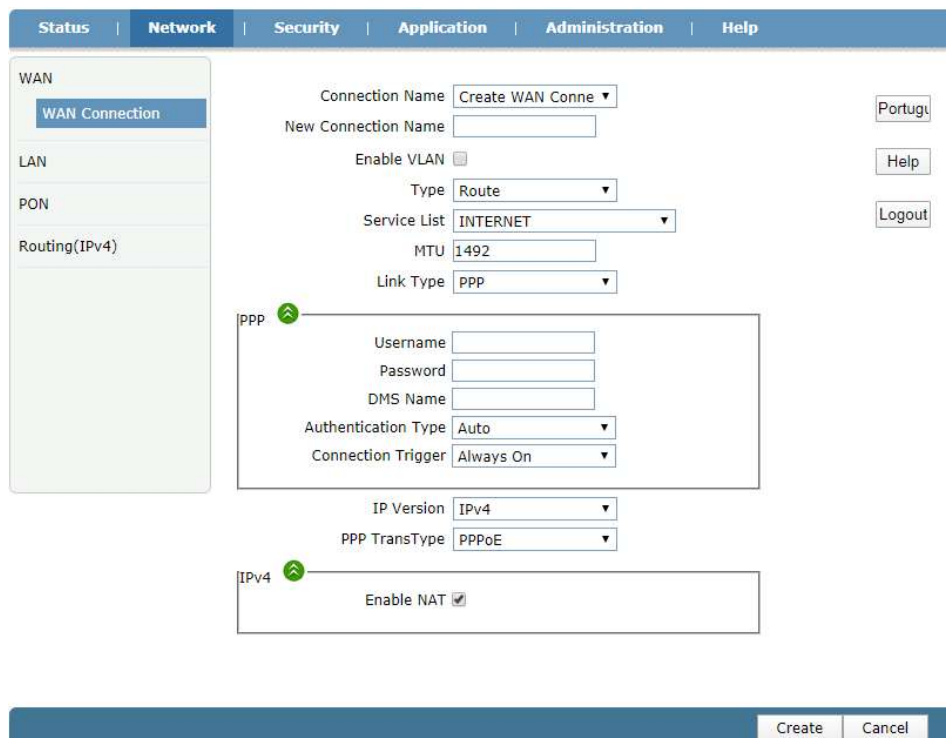


Figure 3-8: WAN Connection

Parameter		Illustration
Connection Name		List of WAN connection name that has been created: - to create a new WAN connection, please select “Create WAN Connection” and input other Parameter at the same time and then click “Create” button. - to edit WAN connection, please select the wan connect name you want to edit and change some Parameter and then click “Modify” button - to delete one connection, please select the wan connection you want to delete and then click “Delete” button
New Connection Name		Name of new connection that you want to create
VLAN	Enable VLAN	- Checked indicates the packets are transmitted by the PON port take VLAN tag - Unchecked indicates the packets are transmitted by the PON port don't take VLAN tag
	VLAN ID	Input the VLAN ID you want to set. Range is 0~4094. Input 0 means don't use any VLAN
	802.1P	Select VLAN priority you want to set. Range is 0~7
Type		Bridge/Route. There is only Route mode can be selected: - The device works on route mode with this WAN connection - To work on bridge mode, don't configure any WAN connection
Service List		Service mode indicates what the wan connection is used for. There is only INTERNET can be selected
MTU		Max transfer unit. Default Value (in Byte): 1500(static/DHCP) or 1492(PPPoE)
Link Type		PPP/IP. PPP is used for PPPoE, and IP is used for static IP or DHCP
PPP	Username	PPPoE account
	Password	PPPoE password
	DMS name	Server name
	Authentication Type	PPPoE authentication type, including Auto, PAP and CHAP
	Connection Trigger	The trigger of PPPoE connection after disconnected: - Always On: once PPPoE disconnected, ONU will connect again automatically - On Demand: ONU will connect again if there is data traffic - Manual: ONU will connect again after submitted the configurations
IP Version		IPv4/IPv6
Enable NAT		- Checked indicates NAT function is enabled - Unchecked indicates NAT function is disabled. Only IPv4 has this option
IP Type/PPP TransType		Method of WAN connection Obtains IP address: - If link type is PPP, PPP TransType will be PPPOE - if link type is IP, IP Type will be static or DHCP
IPv6	IPv6 Info Get Mode	Method of WAN connection obtains IPv6 address, including Manual Mode and Auto Mode
	GUA From	Method of WAN connection obtains Global Unique IPv6 Address
	DNSv6 From	Method of WAN connection obtains DNSv6
	Prefix Delegation From	Method of prefix delegation.

3.3.2 LAN

This page supports the management of the ONU's IP address, dynamic address management, including dynamic address distribution and relevant parameters distribution, such as lease time, address range, DHCP Proxy, etc.

3.3.2.1 DHCP Server

This page contains LAN IPv4 address and LAN DHCP server configurations.

Figure 3-9: LAN IPv4 Address Settings

Parameter		Illustration
LAN IP Address		LAN IPv4 address.
Subnet Mask		LAN IPv4 mask.
Enable DHCP Server		Switch of ONU DHCP server.
Start IP Address		The start IP address of DHCP IP pool.
End IP Address		The end IP address of DHCP IP pool.
DNS	Assign ISP DNS	Checked indicates LAN DHCP will use ISP DNS Unchecked indicates LAN DHCP use DNS that set in the textbox.
	DNS Server IP Address	DNS server addresses for LAN DHCP.
Default Gateway		Default gateway of LAN DHCP. It should be the same as LAN IPv4 IP address.
Lease Time		Lease time of the IP address.

3.3.2.2 RA Service

This page show RA configuration.

Status | Network | Security | Application | Administration | Help

WAN

LAN

DHCP Server

RA Service

DHCP Server(IPv6)

Prefix Management

Port Service(IPv6)

PON

Routing(IPv4)

Minimum Wait Time 198 (3 ~ 1350)

Maximum Wait Time 600 (4 ~ 1800)

M ☐

O ☒

Portugu

Help

Logout

Submit

Cancel

Figure 3-10: RA Configuration

3.3.2.3 DHCP Server (IPv6)

This page contains LAN IPv6 address and LAN DHCP server configurations.

Status | Network | Security | Application | Administration | Help

WAN

LAN

DHCP Server

RA Service

DHCP Server(IPv6)

Prefix Management

Port Service(IPv6)

PON

Routing(IPv4)

LAN IP Address fe80::1 / 64

Enable DHCP Server ☒

DNS Refresh Time 86400 sec

Portugu

Help

Logout

Allocated Address

DUID	IP Address	Remaining Lease Time
There is no data.		

Submit

Cancel

Figure 3-11: LAN IPv6 Address Settings

3.3.2.4 Prefix Management

This page is used to configure IPv6 prefix parameters.

The screenshot shows the 'Prefix Management' configuration page. The left sidebar contains a tree view with 'Prefix Management' selected under the 'LAN' section. The main content area has a top navigation bar with 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. Below this, there are input fields for 'WAN Connection', 'Prefix Source', 'Prefix', 'Preferred Lifetime', 'Valid Lifetime', and 'Prefix Delegation' (with checkboxes for RA and DHCPv6). On the right, there are buttons for 'Portuguese', 'Help', and 'Logout'. At the bottom, there is a table with columns: 'WAN Connection', 'Prefix Source', 'Prefix', 'Preferred/Valid Lifetime', 'Prefix Delegation', and 'Modify'. The table body contains the text 'There is no data.'.

Figure 3-12: Prefix Management

3.3.2.5 Port Service (IPv6)

This page is used to configure DHCPv6 and RA function of LAN port.

The screenshot shows the 'Port Service (IPv6)' configuration page. The left sidebar contains a tree view with 'Port Service(IPv6)' selected under the 'LAN' section. The main content area has a top navigation bar with 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. Below this, there is a warning icon and a message: 'The IPv6 address assign service will be opened on the port which is checked. The Router Advertisement will be opened on the port which is checked.' Below the message, there is a section for 'LAN1' with checkboxes for 'DHCPv6' and 'RA', both of which are checked. On the right, there are buttons for 'Portuguese', 'Help', and 'Logout'. At the bottom, there is a blue bar with 'Submit' and 'Cancel' buttons.

Figure 3-13: Port Service(IPv6)

3.3.3 PON Settings

3.3.3.1 LOID

This page allows user to configure LOID and password which are used for registering to OLT.

The screenshot shows the 'LOID' configuration page. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. On the left, a sidebar menu lists 'WAN', 'LAN', 'PON', 'LOID' (selected), 'SN', 'PON MODE', and 'Routing(IPv4)'. The main content area has two input fields: 'LOID' with the value '123456789' and 'Password' with the value '123456'. To the right of these fields are three buttons: 'Portug', 'Help', and 'Logout'. At the bottom right, there are 'Submit' and 'Cancel' buttons.

Figure 3-14: LOID settings

3.3.3.2 SN

This page allows user to configure GPON SN and password which are used for registering to OLT.

The screenshot shows the 'SN' configuration page. The top navigation bar is the same as in Figure 3-14. The sidebar menu on the left has 'SN' selected. The main content area features a yellow warning icon with the text 'Configure password take effect after rebooting the device.' Below this, there are two input fields: 'SN' with the value 'MONU00b86dc1' and 'Password' with the value '123456'. To the right are 'Portug', 'Help', and 'Logout' buttons. At the bottom right, there are 'Submit' and 'Cancel' buttons.

Figure 3-15: GPON SN Settings

3.3.3.3 PON Mode

This page allows user to configure PON mode when connected to corresponding system:

- AUTO: ONU will detect PON mode and shift to proper PON mode
- GPON: ONU will work on GPON mode
- EPON: ONU will work on EPON mode

The screenshot shows the 'PON MODE' configuration page. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The left sidebar lists 'WAN', 'LAN', 'PON', 'LOID', 'SN', 'PON MODE' (highlighted), and 'Routing(IPv4)'. The main content area features a warning icon and text: 'Configure PON MODE take effect after rebooting the device.' Below this, the 'PON MODE' is set to 'AUTO' in a dropdown menu. On the right, there are buttons for 'Portugu', 'Help', and 'Logout'. At the bottom, there are 'Submit' and 'Cancel' buttons.

Figure 3-16: PON Mode

3.3.4 Routing (Ipv4)

3.3.4.1 Default Gateway

This page allows user to configure default gateway of ONU. Just need to specify the WAN connection that connected to the gateway.

The screenshot shows the 'Default Gateway' configuration page. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The left sidebar lists 'WAN', 'LAN', 'PON', 'Routing(IPv4)', 'Default Gateway' (highlighted), 'Static Routing', and 'Routing Table'. The main content area shows 'WAN Connection' set to 'test' in a dropdown menu. On the right, there are buttons for 'Portugu', 'Help', and 'Logout'. At the bottom, there are 'Submit' and 'Cancel' buttons.

Figure 3-17: Default Gateway

3.3.4.2 Static Routing

This page allows user to specify a WAN connection as the Route Interface, and then configure destination IP, mask and gateway.

Status | Network | Security | Application | Administration | Help

WAN

LAN

PON

Routing(IPv4)

Default GatewayStatic RoutingRouting Table

WAN Connectiontest

Network Address

Subnet Mask

Gateway

Add

Network Address	Subnet Mask	Gateway	WAN Connection	Status	Modify	Delete
There is no data, please add one first.						

Portugu

Help

Logout

Figure 3-18: Static Routing

Parameter	Illustration
WAN Connection	Select WAN connection as static routing interface.
Network Address	Destination network address.
Subnet Mask	The Mask of destination network address.
Gateway	Gateway IP address of static routing.

3.3.4.3 Routing Table

This page displays IP routing rules.

Status | Network | Security | Application | Administration | Help

WAN

LAN

PON

Routing(IPv4)

Default GatewayStatic RoutingRouting Table

Network Address	Subnet Mask	Gateway	Interface
0.0.0.0	0.0.0.0	192.168.6.1	test
192.168.1.0	255.255.255.0		LAN
192.168.6.0	255.255.255.0		test

Portugu

Help

Logout

Refresh

Figure 3-19: Routing Table

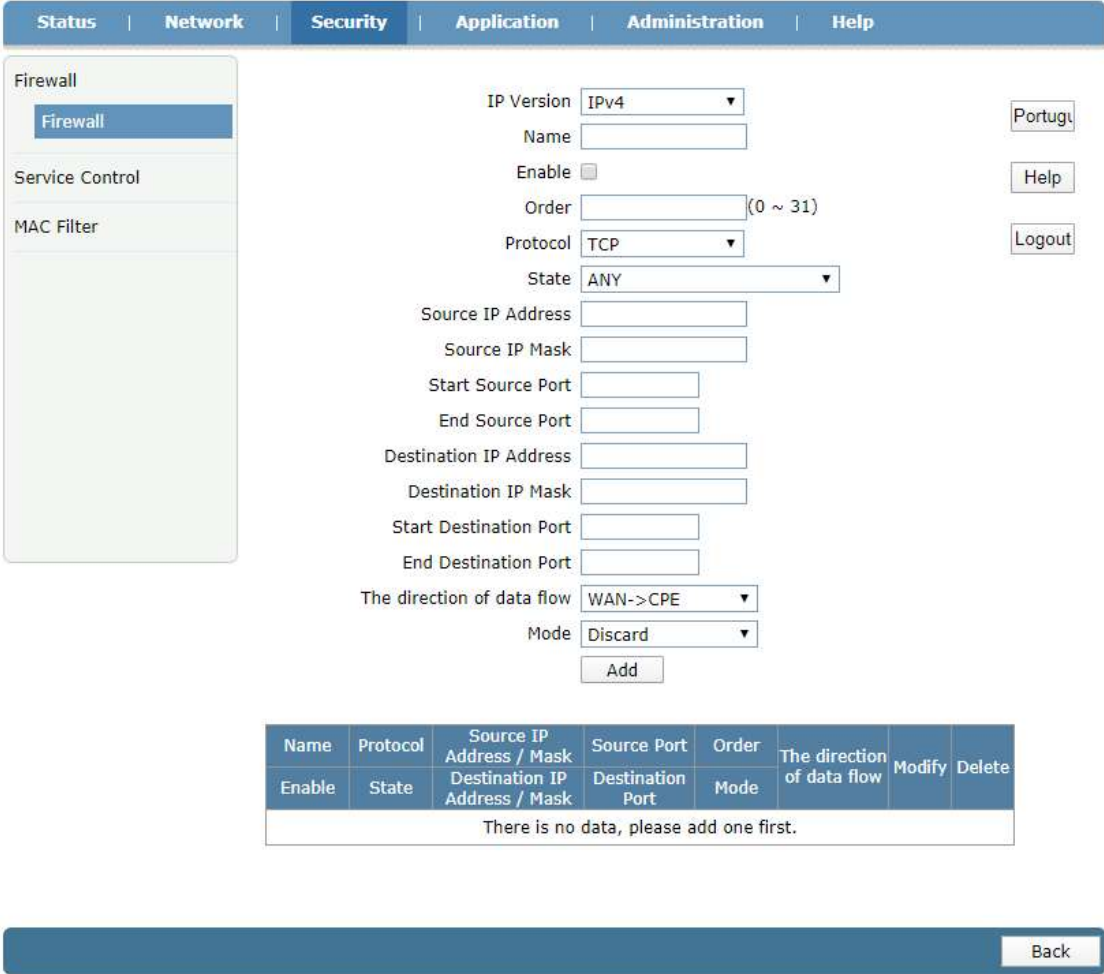
3.4 Security

3.4.1 Firewall

This page allows user to set anti-hacking protection and the level of the firewall (IPv4). User also can set custom firewall rules.

Figure 3-20: Firewall Level

Parameter	Illustration
Enable Anti-Hacking Protection	Anti-Hacking Protection switch.
Firewall Level	- Low: Allow all inner or outer hosts to access - Middle: Allow inner or outer hosts which are limited by the rules that have been created to access. - High: Forbid ICMP Input, Forbid Port Scan, Denial of Service protections.



Name	Protocol	Source IP Address / Mask	Source Port	Order	The direction of data flow	Modify	Delete
Enable	State	Destination IP Address / Mask	Destination Port	Mode			

There is no data, please add one first.

Figure 3-21: Custom Firewall Rule

Parameter	Illustration
IP Version	Select IPv4 or IPv6.
Name	Firewall rule name.
Enable	Enable or disable the rule.
Order	Order of the rule.
Protocol	Select protocol which the rule used for. There are only several protocols can be selected.
State	Select data traffic state. Suggest using ANY.
Source IP Address	Source IP address of traffic that matches the rule.
Source IP Mask	Mask of source IP address.
Start Source Port	Start source TCP or UDP port. The protocol must be TCP or UDP.
End Source Port	End source TCP or UDP port. The protocol must be TCP or UDP.
Destination IP Address	Destination IP address of traffic that matches the rule.
Destination IP Mask	Mask of destination IP address.
Start Destination Port	Start destination TCP or UDP port. The protocol must be TCP or UDP.
End Destination Port	End destination TCP or UDP port. The protocol must be TCP or UDP.
The direction of data flow	Direction of data flow that matches the rule. In the option, CPE indicates CPU of ONU.
Mode	Data forward mode of the rule, including discard and permit.

3.4.2 Service Control

This page allows user to set IP filter rules.

Status | Network | **Security** | Application | Administration | Help

Firewall

Service Control

Service Control

MAC Filter

IP Version

IPv4

Enable ☐

Ingress

Start Source IP Address

End Source IP Address

Mode

Discard

Service List

HTTP

TELNET

Add

Enable	Ingress	Start Source IP Address	End Source IP Address	Mode	Service List	Modify	Delete
☒	LAN			Discard	TELNET		

Note: If you need to configure the above remote access ports, please click on the hyperlinks below.

[Modify Remote Access Port](#)

Portugu

Help

Logout

Figure 3-22: Service Control

Parameter	Illustration
IP Version	Select IPv4 or IPv6.
Enable	Enable or disable IP filter rule.
Ingress	Ingress interface of data traffic.
Start Source IP Address	Start source IP address of data traffic.
End Source IP Address	End source IP address of data traffic.
Mode	Data transfer mode, including discard or permit.
Service List	Service list for IP filter.

User also can configure remote access port for different service, such as http and telnet.

Status | Network | **Security** | Application | Administration | Help

Firewall

Service Control

Service Control

MAC Filter

Service

Port

(1 ~ 65535)

Service	Port	Modify
HTTP	80	
FTP	21	
SSH	22	
TELNET	23	
HTTPS	443	

Portugu

Help

Logout

Back

Figure 3-23: Remote Access Port

3.4.3 MAC Filter

This page allows user to set the relevant parameters of the MAC filter function. The table will display the MAC Filter rules after setting completed.

Status | Network | Security | Application | Administration | Help

Firewall

Service Control

MAC Filter

MAC Filter

1. If you choose the Permit mode, please add the MAC address of your PC first, otherwise internet access is not allowed.

2. Enable switching or Mode switching will take effect immediately.

Portugu

Help

Logout

Enable ☐

Mode

Discard

Type

Bridge

Protocol

IP

Source MAC Address

:

:

:

:

Destination MAC Address

:

:

:

:

Add

Type Protocol Source MAC Address Destination MAC Address Modify Delete

There is no data, please add one first.

Figure 3-24: MAC Filter

Parameter	Illustration
Enable	Enable or disable the rule.
Mode	Data transfer mode, including discard or permit.
Type	Select ONU working mode that the rule takes effect.
Protocol	Select protocol of data traffic.
Source MAC Address	Source MAC address of data traffic.
Destination MAC Address	Destination MAC address of data traffic.

3.5 Application

3.5.1 Multicast

3.5.1.1 IGMP Mode

This page allows user to enable or disable IGMP snooping.

The screenshot shows the 'Application' tab selected in the top navigation bar. On the left, a sidebar menu under 'MultiCast' has 'IGMP Mode' highlighted. The main content area shows 'Multicast Mode' set to 'Snooping Mode' in a dropdown menu. On the right, there are buttons for 'Portugu', 'Help', and 'Logout'. At the bottom right, there are 'Submit' and 'Cancel' buttons.

Figure 3-25: IGMP Mode

3.5.1.2 Basic Configuration

This page allows user to configure IGMP basic configuration, including multicast aging time and non-fast leave.

The screenshot shows the 'Application' tab selected. In the left sidebar, 'Basic Configuration' is highlighted under the 'MultiCast' section. The main content area shows 'Aging Time' set to '300' with a range '(1-604800) sec' and 'Non-fast Leave' set to an unchecked checkbox. On the right, there are buttons for 'Portugu', 'Help', and 'Logout'. At the bottom right, there are 'Submit' and 'Cancel' buttons.

Figure 3-26: IGMP Basic Configuration

3.5.1.3 VLAN Configuration

This page allows user to configure multicast VLAN for the port. If WAN VLAN is not the same as LAN VLAN, it means multicast VLAN will be translated.

Status | Network | Security | Application | Administration | Help

MultiCast

IGMP Mode

Basic Configuration

VLAN Configuration

Tag Configuration

Maximum Address Configuration

BPDU

DNS Service

CATV

Port Forwarding

VLAN Configuration only takes effect in IGMP Snooping and IGMP Proxy modes.

Port

LAN1

WAN VLAN

(1-4094)

LAN VLAN

(1-4094)

Add

Port	WAN VLAN	LAN VLAN	Delete
LAN1	100	100	

Portugu

Help

Logout

Figure 3-27: Multicast VLAN

3.5.1.4 Tag Configuration

This page allows user to configure multicast VLAN untag mode.

Status | Network | Security | Application | Administration | Help

MultiCast

IGMP Mode

Basic Configuration

VLAN Configuration

Tag Configuration

Maximum Address Configuration

BPDU

DNS Service

CATV

Port Forwarding

Tag Configuration takes effect in IGMP Snooping modes.

Port	Untag
LAN1	☒

Portugu

Help

Logout

Submit

Cancel

Figure 3-28: Tag Configuration

3.5.1.5 Maximum Address Configuration

This page allows user to configure maximum multicast address.

The screenshot shows the 'Maximum Address Configuration' page. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The left sidebar lists 'MultiCast', 'IGMP Mode', 'Basic Configuration', 'VLAN Configuration', 'Tag Configuration', 'Maximum Address Configuration' (highlighted), 'BPDU', 'DNS Service', 'CATV', and 'Port Forwarding'. The main content area features a warning icon and the text 'The Maximum Number of Addresses is 1024.' Below this is a table with two columns: 'Port' and 'Maximum Number of Addresses'. The table has one row for 'LAN1' with the value '1024' in the second column. The right sidebar contains 'Portugu', 'Help', and 'Logout' buttons. At the bottom, there are 'Submit' and 'Cancel' buttons.

Port	Maximum Number of Addresses
LAN1	1024

Figure 3-29: Maximum Address Configuration

3.5.2 BPDU

This page allows user to enable or disable RSTP BPDU (Bridge Protocol Data Unit) forwarding.

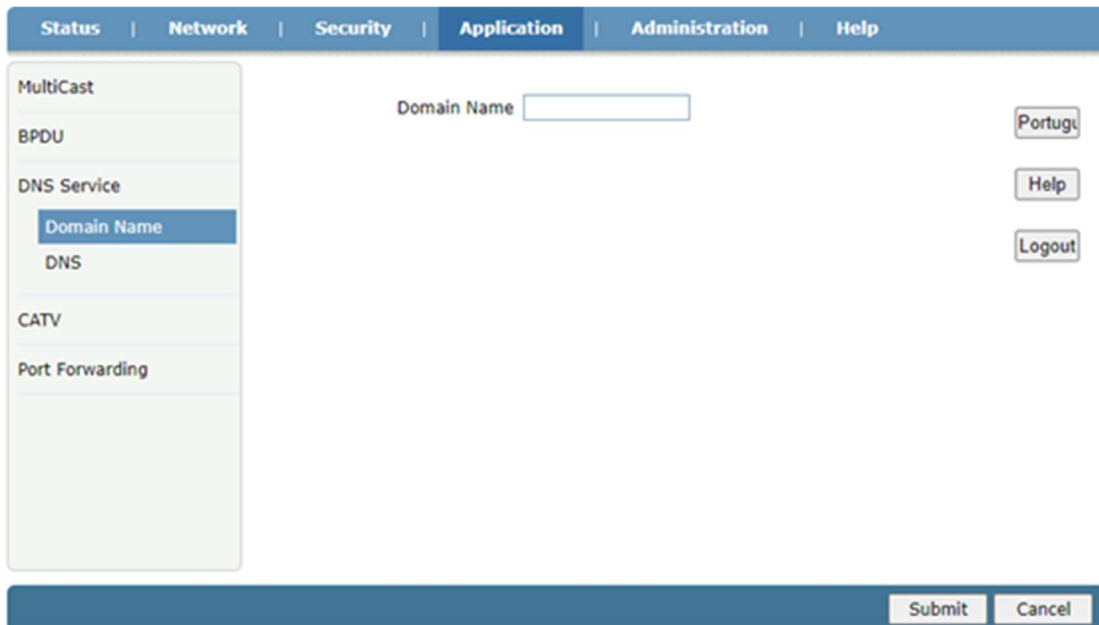
The screenshot shows the 'BPDU Forwarding' page. The top navigation bar includes 'Status', 'Network', 'Security', 'Application', 'Administration', and 'Help'. The left sidebar lists 'MultiCast', 'BPDU' (highlighted), 'DNS Service', 'CATV', and 'Port Forwarding'. The main content area features a checkbox labeled 'Enable BPDU Forwarding' which is checked. The right sidebar contains 'Portugu', 'Help', and 'Logout' buttons. At the bottom, there are 'Submit' and 'Cancel' buttons.

Figure 3-30: BPDU Forwarding

3.5.3 DNS Service

3.5.3.1 Domain Name

This page allows user to configure domain name of ONU. Users can access ONU webpage by this domain name.

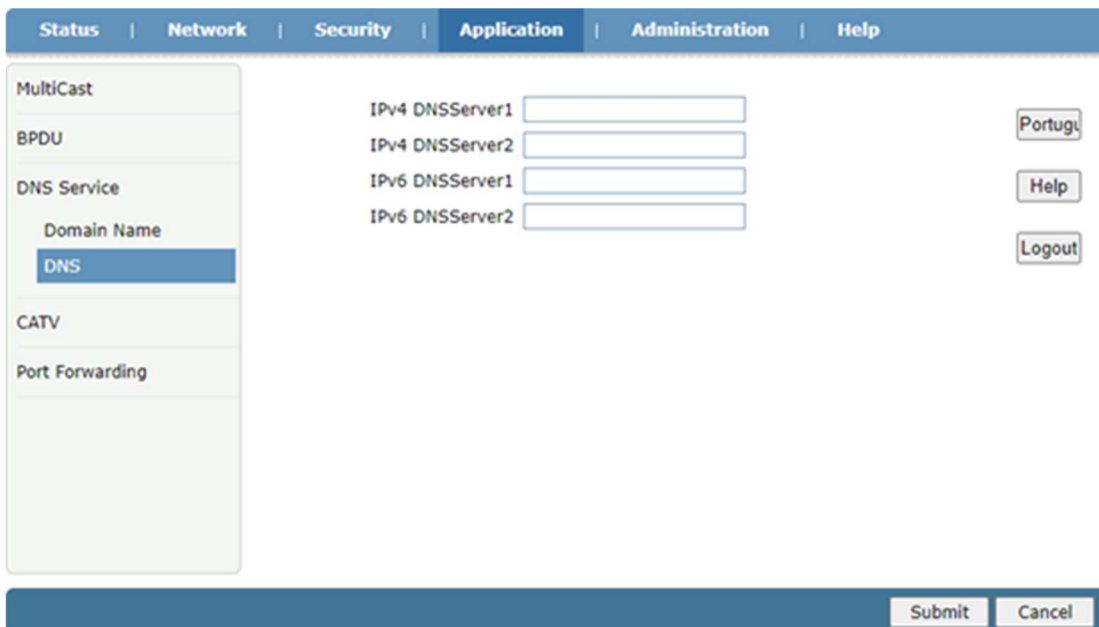


The screenshot shows the 'Domain Name' configuration page. At the top is a navigation bar with tabs: Status, Network, Security, Application (selected), Administration, and Help. On the left is a sidebar menu with options: MultiCast, BPDU, DNS Service (expanded), Domain Name (selected), DNS, CATV, and Port Forwarding. The main content area has a 'Domain Name' label followed by a text input field. To the right of the input field are three buttons: 'Portugu', 'Help', and 'Logout'. At the bottom right of the page are 'Submit' and 'Cancel' buttons.

Figure 3-31: Domain Name

3.5.3.2 DNS

This page allows user to configure DNS server. DNS request will be sent to these DNS servers.



The screenshot shows the 'DNS' configuration page. It has the same navigation bar and sidebar menu as Figure 3-31, but the 'DNS' option in the sidebar is selected. The main content area contains four labels with corresponding text input fields: 'IPv4 DNSServer1', 'IPv4 DNSServer2', 'IPv6 DNSServer1', and 'IPv6 DNSServer2'. To the right of these fields are the same three buttons: 'Portugu', 'Help', and 'Logout'. At the bottom right are 'Submit' and 'Cancel' buttons.

Figure 3-32: DNS

3.5.4 CATV

This page allows user to enable or disable CATV function and configure AGC level. There is no such page in hardware V3.0.

Figure 3-33: CATV

3.5.5 Port Forwarding

This page allows user to configure port forwarding.

Enable	Name	WAN Host Start IP Address	WAN Start Port	LAN Host Start Port	WAN Connection	Modify	Delete
	Protocol	WAN Host End IP Address	WAN End Port	LAN Host End Port	LAN Host Address		

There is no data, please add one first.

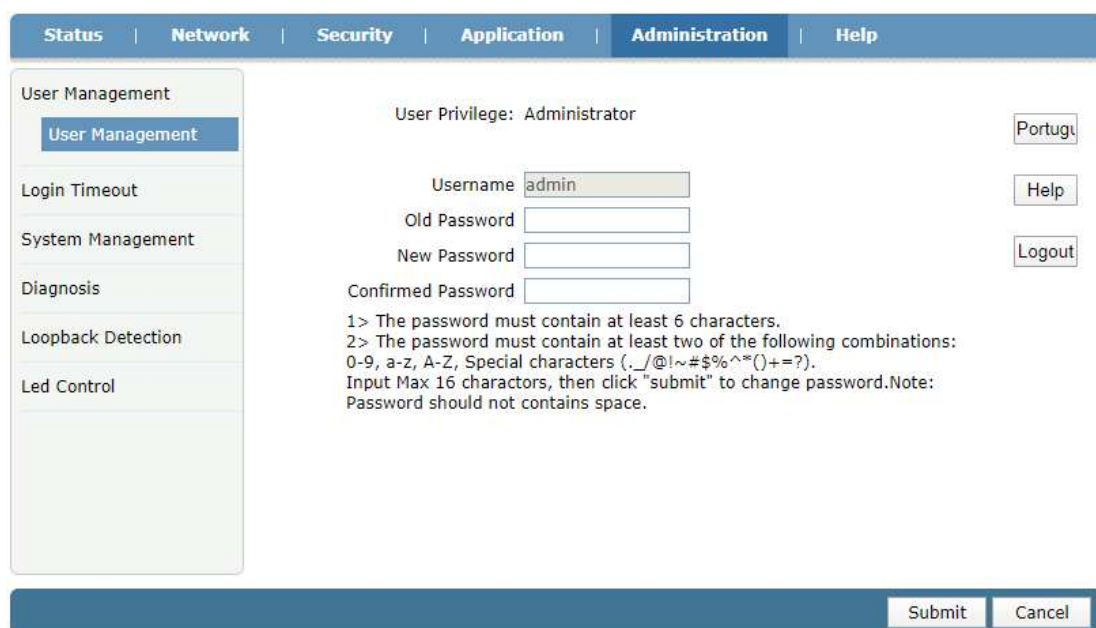
Figure 3-34: Port Forwarding

Parameter	Illustration
Enable	Enable or disable port forwarding rule.
Name	Name of the port forwarding rule.
Protocol	Protocol of the port forwarding rule, including TCP and UDP.
WAN Host Start/End IP Address	Specify WAN host IP range for the port forwarding rule. Only in the range, the host of WAN side can work with the rule.
WAN Connection	Select WAN connection.
WAN Start/End Port	TCP or UDP port range of WAN side host.
LAN Host IP Address	Specify host IP address of LAN side.
LAN Host Start/End Port	TCP or UDP port range of LAN side host.

3.6 Administration

3.6.1 User Management

This page allows user to change password of current login username.



The screenshot shows the 'Administration' tab selected in the top navigation bar. On the left, a sidebar menu lists 'User Management' (highlighted), 'Login Timeout', 'System Management', 'Diagnosis', 'Loopback Detection', and 'Led Control'. The main content area is titled 'User Privilege: Administrator'. It contains a 'Username' field with 'admin' entered, and three password fields: 'Old Password', 'New Password', and 'Confirmed Password'. To the right of these fields are buttons for 'Portugu', 'Help', and 'Logout'. Below the password fields, there are two lines of instructions: '1> The password must contain at least 6 characters.' and '2> The password must contain at least two of the following combinations: 0-9, a-z, A-Z, Special characters (. _ / @ ! ~ # \$ % ^ * () + = ?)'. A note states: 'Input Max 16 characters, then click "submit" to change password. Note: Password should not contains space.' At the bottom right, there are 'Submit' and 'Cancel' buttons.

Figure 3-35: User Management

3.6.2 Login Timeout

This page allows user to set webpage login timeout. If don't operate the webpage for the time out, the account will logout automatically.

The screenshot shows the 'Administration' tab selected in the top navigation bar. On the left sidebar, 'Login Timeout' is highlighted under the 'User Management' section. The main content area features a warning icon and two instructions: '1.Any value between 1 minute and 30 minutes is allowed.' and '2.The changes of Timeout take effect after re-login.' Below this, there is a 'Timeout' label followed by a text input field containing the number '5' and the unit 'minute(s)'. To the right of the input field are three buttons: 'Portugu', 'Help', and 'Logout'. At the bottom right of the page, there are 'Submit' and 'Cancel' buttons.

Figure 3-36: Login Timeout

3.6.3 System Management

3.6.3.1 System Management

This page allows user to reboot the device, restore factory default and restore backup configuration. The process of reboot will take several minutes.

The screenshot shows the 'Administration' tab selected in the top navigation bar. On the left sidebar, 'System Management' is highlighted under the 'System Management' section. The main content area features three warning icons with instructions: 'Click this button to reboot the device.' (with a 'Reboot' button), 'Click this button to restore the configuration to factory default settings. The device will reboot after operating.' (with a 'Restore Default' button), and 'Click this button to restore the configuration to backup settings. The device will reboot after operating.' (with a 'Restore Backup configuration' button). To the right of the instructions are three buttons: 'Portugu', 'Help', and 'Logout'. At the bottom of the page, there is a solid blue bar.

Figure 3-37: System Management

3.6.3.2 Software Upgrade

This page allows user to update software of the device. Click the “Choose File” button to select the software and then click the “Update” button to update.

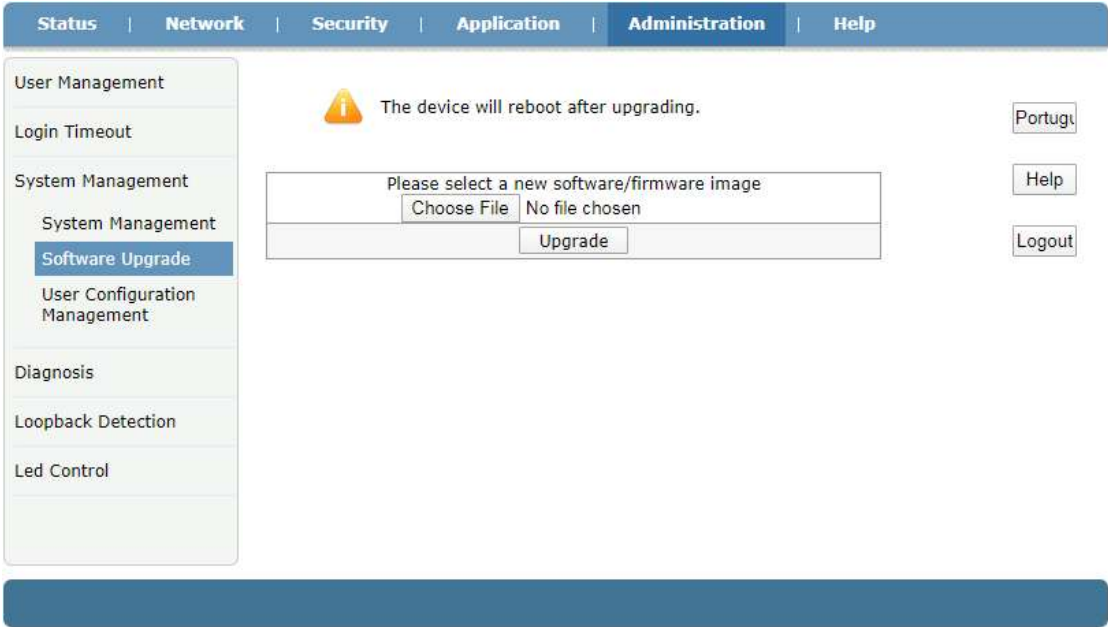


Figure 3-38: Software Upgrade

3.6.3.3 Configuration Management

This page allows user to backup and restore configuration.

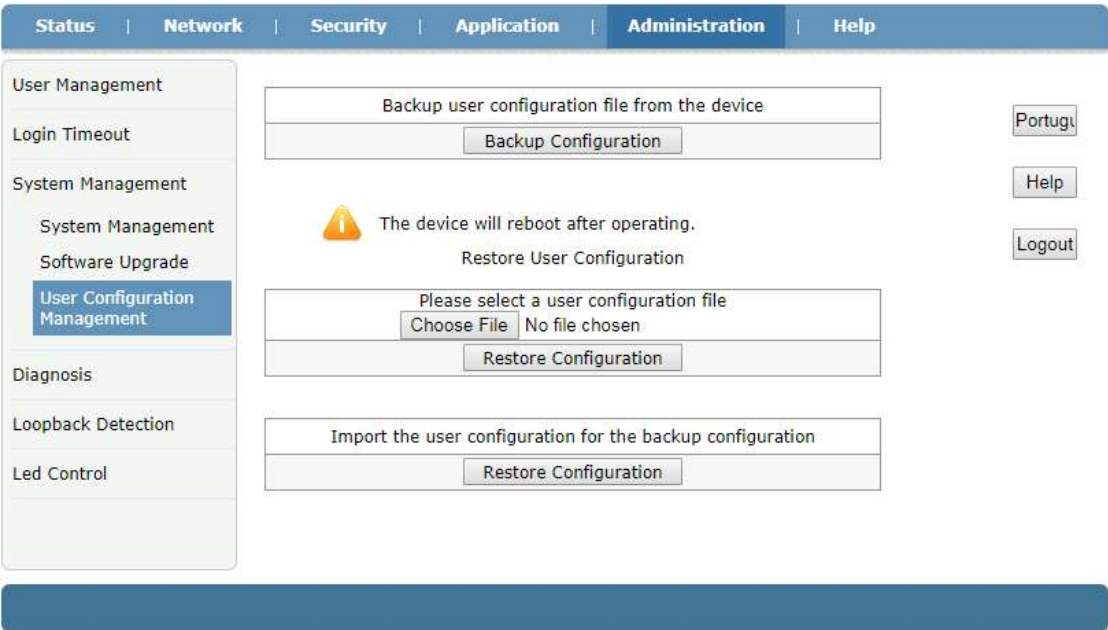


Figure 3-39: Configuration Management

3.6.4 Diagnosis

3.6.4.1 PING Diagnosis

This page shows about the ping test. You can diagnose connection status between ONU and other devices.

Figure 3-40: PING Diagnosis

Parameter	Illustration
IP Address or Host Name	Input the destination IP you want to ping.
Egress	Select the egress interface you want to ping.

3.6.4.2 Mirror Configuration

This page allows user to set port mirror for troubleshooting. After configured port mirror, the traffic of WAN connection will be copied and sent to LAN port.

Figure 3-41: Port Mirror

Parameter	Illustration
Source	Select WAN connection as mirrored interface.
Destination	The LAN port is mirroring interface.

3.6.5 Loopback Detection

3.6.5.1 Basic Configuration

This page allows user to set basic parameters of loopback detection.

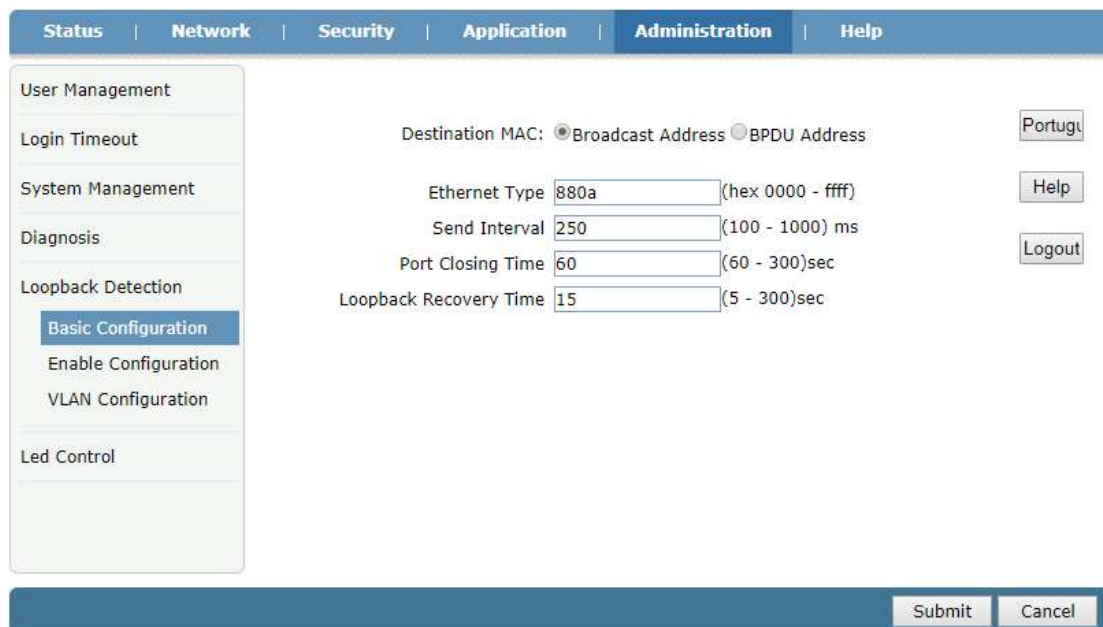


Figure 3-42: Basic Configuration

Parameter	Illustration
Destination MAC	Select the destination MAC of loopback packet.
Ethernet Type	Set the Ethernet type of loopback packet.
Send Interval	Set sending Interval time of loopback packet.
Port Closing Time	Set how much time the port will be closed once detected loopback.
Loopback Recovery Time	Set loopback recovery time.

3.6.5.2 Enable Configuration

This page allows user to enable or disable LAN port loopback feature.

Port	Loopback Enable	Alarm Enable	Portdislooped Enable
LAN1	☒	☒	☒

Figure 3-43: Enable Configuration

Parameter	Illustration
Loopback Enable	Enable or disable LAN port loopback detection.
Alarm Enable	Enable or disable LAN port loopback alarm.
Port dislooped Enable	Enable or disable LAN port automatic recovery.

3.6.5.3 VLAN Configuration

This page allows user to set VLAN of loopback detection packet. After added VLAN, ONU will send out loopback detection packets with the VLAN.

Port	VLAN	Modify	Delete
There is no data, please add one first.			

Figure 3-44: VLAN Configuration

3.6.6 LED Control

This page allows user to turn off or turn on the LED indicators.

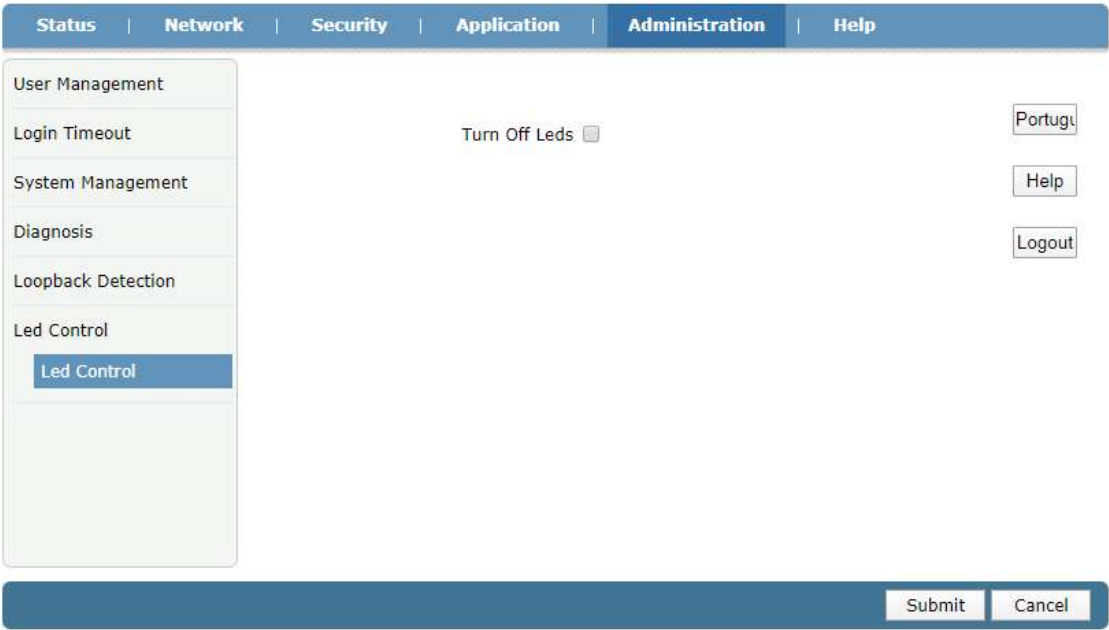


Figure 3-45: LED Control

3.7 Help

The Help information of ONU displays instruction and prompt of each web UI.



Figure 3-46: Help information

4 Technical Specifications

Item Name	TONU-1010
Art. Number	308701
Interface	
PON	1 XPON port (EPON PX20+ & GPON Class B+)
	SC single mode, SC/APC connector
	TX optical power: 0~+4dBm
	RX sensitivity: -27dBm
	Overload optical power: -3dBm (EPON) or -8dBm (GPON)
	Transmission distance: 20KM, Wavelength: TX 1310nm, RX 1490nm, CATV 1550nm
LAN	1*GE, Auto-negotiation, RJ45 connector
CATV	RF Optical power: +2~-18dBm
	Optical receiving wavelength: 1550±10nm
	RF frequency range: 47~1000MHz
	RF output impedance: 75Ω
	RF output level: ≥ 70dBuV(0~-15dBm)
	AGC range: 0~-15dBm
	MER: ≥32dB (-14dBm optical input)
Function data	
PON mode	XPON Dual Mode
Uplink Mode	Bridging and Routing Mode
	Well connect with OLTs of mainstream
CATV	Support CATV Remote management
Standard	Support CTC OAM 2.1 and 3.0
	Support ITUT984.x OMCI
Layer 2	802.1D & 802.1ad bridging
	802.1p CoS
	802.1Q VLAN
Layer 3	IPv4
	DHCP Client/Server
	PPPoE, NAT, DMZ, DDNS
Multicast	IGMP v2/v3, IGMP snooping
Security and Firewall	Prevent Rogue ONU
	DDOS, Filtering Based on ACL/MAC/URL
O&M	Support EMS\WEB\Telnet\CLI and unified network management of VSOL OLT
Electrical	
Power adapter	DC 12V, 0.5A, external AC-DC power adaptor, ≤4.2W
Indicators, Interfaces	POWER, LOS, PON, LAN, CATV / 1*GE + 1*CATV
Interfaces	1GE + CATV
Operating condition	Operating temperature: -10 ~ +55°C
	Operating humidity: 5 ~ 95% (non-condensing)
Storage condition	Storage temperature: -40 ~ +70°C, Storage humidity: 5~95% (non-condensing)
Packaging size (L x W x H) / Net weight	100 x 92 x 30mm / 0.140Kg

5 EU Declaration of Conformity

The product Declaration of Conformity can be downloaded from the product page at www.triax.com

6 Conditions of warranty

TRIAX UK warrants the product as being free from defects in material and workmanship for a period of 24 months starting from the date of production indicated on it. See note below.

If during this period of warranty, the product proves defective, under normal use, due to defective materials or workmanship, TRIAX UK, at its sole option, will repair or replace the product. Return the product to your local dealer for reparation.

THE WARRANTY IS APPLIED ONLY FOR DEFECTS IN MATERIAL AND WORKMANSHIP AND DOES NOT COVER DAMAGE RESULTING FROM:

- Misuse or use of the product outside of its specifications,
- Installation or use in a manner inconsistent with the technical or safety standards in force in the country where the product is used,
- Use of non-suitable accessories (power supply, adapters...),
- Installation in a defective system,
- External cause beyond the control of TRIAX UK such as drop, accidents, lightning, fire, ...

THE WARRANTY IS NOT APPLIED IF

- Production date or serial number on the product is illegible, altered, deleted or removed.
- The product has been opened or repaired by a non-authorized person.

NOTE

Date of production can be found in the product's serial number code. The format is "YYWW1234567 (YEAR, WEEK, 123456 product unique number), e.g. 25320000020 = year 2025 week 32, product No.20 of this batch.

