![XtendLan logo]

XL-PBW-350C
EoC bridge master

User Manual

Preface

The development of information society is continuously changing and People are increasingly depending on network technology convenience .For radio &TV carriers, it is a great challenge and a good chance to utilize the original network source to the greatest extend and small investment to rapidly expand subscribers and grab wideband market.

This solution is based on the original HFC connectivity without affecting the present CATV operating. The solution adopts the latest Modulation technology to consolidate Ethernet and CATV signals to transmit and complete the triple play: voice, video and data over a single coaxial cable. The solution can use less reconstructing cost and smaller project job to change the original unidirectional CATV network into a bi-directional and multi –service broadband network platform. It is unnecessary to reconstruct the original CATV network. It possesses good adaptability and flexible connectivity and brings a brand-new concept for radio & TV system.

Contents

User Manual

Product series include XL-PBW350C (master device) shortened as Master afterwards, XL-PB350C (slave device) shortened as Slave.

1. Function

(1) Able to send and receive Ethernet signal over the coaxial cable without affecting sending and receiving TV signal

(2) Master bandwidth can be up to 350Mbps, and support 253 Slaves at most.

(3) Multiple slaves can share bandwidth of Master, i.e., the bandwidth of the slave can be adjusted automatically under the circumstances of master connecting a certain number of slaves. Could set slave bandwidth by QOS.

(4) Bridge can extend CATV transmission distance of CATV signal; can bridging all kinds of CATV signal amplifiers so as to realize the bidirectional transmission of IP data.

(5) Truly achieve to transmit data and CATV signals over one coaxial cable.

(6) Master support SNMP network management.

2. Specification

Port	Content	Parameters

type		
RF	Channel frequency	7.5～65MHz
	Output Power	≥105dBμV
	Receive Sensitivity	25-30dBμV
	Connector	F type Female socket(metric system) F type Female socket(English system)
	Output impedance	75Ω
	Modulation mode	OFDM
	Data rate	500Mbps
	Throughput rate	350Mbps
Ethernet	Connector	RJ-45
	Standard	IEEE802.3,IEEE802.3af, 10/100/1000Base-T
	Smart bit	64Byte～1518Byte
others	Power supply	Master: AC220V/AC60V/DC12V Slave:DC12V

	Operating Temp.	-20℃～＋70℃
	Power consumption	<10W
	Relative Humidity	Less than 95%
	Gas pressure	70kpa~106kpa
	No causticity gas, no dust, no magnetic field disturb	
	In the real operation, there is no filter noise problem. when working at －20℃～＋70℃, no hang.	

3. **Feature**

(1) EOC Slave provides two or four Eth ports for internet access at home, and Eth port supports auto-adaptive for both cross connection and direct connection.

(2) EOC slave provides one TV port for watching TV

(3) EOC master provides one or multiple cable ports for sending and receiving Ethernet and TV signals at the same time.

(4) Support point to multipoint. At most 1 to 128

(5) Connect CATV signal amplifiers through a bridge.

(6) Plug-and-play operation for easy setup and installation

(7) Able to directly login IE browser to manage equipments. Convenient to maintain equipment.

(8) The master supports multiple coaxial cables at downlink port through bridge.

4. **The sketch map of device**

4.1 **The sketch map of master**

4.1.1 Indoor master

The front panel

LED indicator light

PWR: Be ON when be powered normally

CAB: Be ON when data is being transmitted

LINK1: Be ON when Eth1 is connected

LINK2: Be ON when you manage master by Eth 2

The real panel
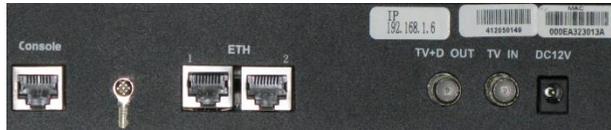
Port

Console: Standby for equipment maintenance

Eth1: Eth signal Input, 1000M

Eth2: Management port, 100M

CAB: Mixed (TV and Eth) signal Output

TV: TV signal Input

DC12V: Power supply port

Label

IP: IP address of master

MAC: MAC address of master

S/N: The serial number of supplier

4.1.1 The sketch map of outdoor master

The front panel
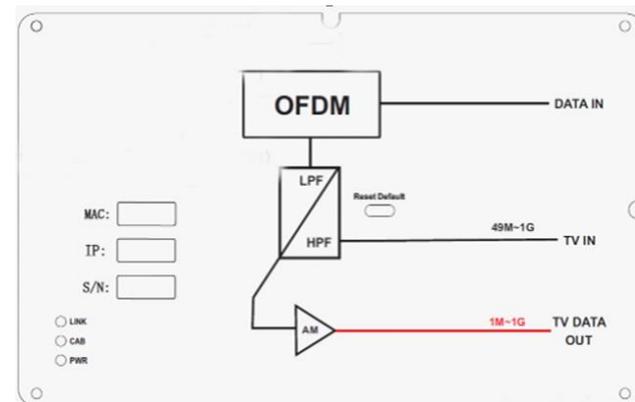
MAC: MAC address of the device

S/N: The serial number of supplier

IP: IP address of master

LED indicator light

LINK: ON when Eth is connected

PWR: The indicator light of power supply

CAB: Be ON when data is being transmitted

Reset

When pressing the button for above 4 seconds, resetting master will be available. After resetting master, the default IP address is 192.168.1.6, and at this moment the unit is default to be set as master.

4.2 **The sketch map of slave**

4.2.1 **The front panel (with slave having two Eth ports as an example)**

LED indicator light

PWR: Be ON when power supply works normally

ACT: Be ON when master is connected with slave successfully

SYS: Be Flash when data is being transmitted

LINK 1: Be ON when Eth1 is connected

LINK 2: Be ON when Eth2 is connected

LINK3-LINK4: Empty

4.2.2 **The real panel**

Two Eth ports
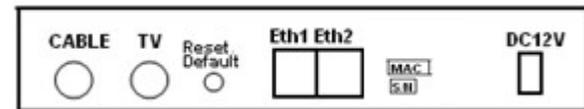
Port

Cable: Upstream port receiving the mixed signal (Ethernet and CATV signals)

TV: Downstream port, used to connect TV set or set-top box

Eth 1-Eth 2: To connect Ethernet

DC12V: Power supply port

Label

MAC: MAC address of the device

S/N: the serial number of supplier

Reset

Reset Default button is used to restore the default setting. Slave will be restarted and the unit is default to be set as slave

5. WEB Network Management

5.1 System Configuration

The default IP address of master is 192.168.1.6, connect Ethernet port on master with the internet line, and click IE browser. Input IP address 192.168.1.6 to login with the default username and password **admin, admin**.

5.1.1 System Information

Showing the current software version, IP address and MAC address about master

Function Explanation: The used software version is the running software currently in the master system. Master IP address includes master IP, subnet mask, gateway, SNMP information, MAC address in the Eth layer, and in the coaxial layer

The settings for master include network configuration, function configuration, port configuration, MAC filtering and Trap management.

5.1.2 Master Flow Statistics

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **Flow Statistics**

Function Explanation: Master flow statistics shows the receiving and sending data information, and obtains communication information of the Ethernet layer by the number of the received and transmitted bytes and the number of packets.

5.1.3 Master Network Configuration

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **Network**

| System Information | Flow Statistics | Network | Function |

Network Management

IP Address	192. 168. 1. 6
Subnet Mask	255. 255. 255. 0
Gateway	192. 168. 1. 1
Vlan	0

Set

The range of vlan is 0~4095, 0 indicates to cancel vlan.
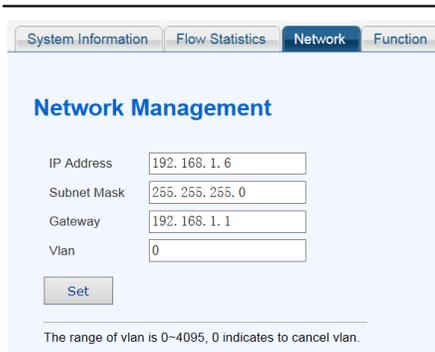
Enter the master network configuration interface, the user can set master IP address and management Vlan. Input IP address, subnet mask and gateway, and click **Set**. The settings would be effective after rebooting.

Function Explanation: IP address must be unique, otherwise it will lead to IP conflict. After setting IP address, login again by IP address in IE browser. The master must be connected with vlan switch when management Vlan takes effective, and then the user can manage master by it. This function helps the clients to manage Eoc equipments.

5.1.4 Master Function Configuration

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **Function.**

| System Information | Flow Statistics | Network | Function |

Function Management

Loopback Detection	Enable
Active Learning Enable	Default
Slave Permission To Access Master	Disable
Loopback Detection Automatic Recovery Enable	Enable
SSH Enable	Disable
Command Configuration Cycle (s)	60

Set

The effective range of command configuration cycle is the integer which is not less than 60.

Enter the master function configuration interface, the user can set Loopback Detection enable, MAC Filtering Enable, Active learning enable, the slave permission to access master, loopback detection automatic recovery enable, Coax loopback enable and command configuration cycle, then click "**Set**". Only command configuration cycle will be effective after rebooting master.

Function Explanation: When **enable Loopback Detection**, the slave will send outgoing broadcast packet automatically to detect whether there is loopback at its ports. If has loopback the slave will be set as the unauthorized one and all ports of the slave will be blocked, so won't cause broadcast storm; The slave won't send outgoing broadcast packet automatically if not **enable Loopback Detection**. It will cause broadcast

storm when the slave is loopback.

When **Active Learning enable** is set as Active learning and Active learning gateway by default, master would send outgoing Active learning packet automatically, and so as to let ONU, SWITCH, ROUTER in the upper layer to learn our master as quickly as possible; When close Active learning enable, our master won't send outgoing ARP packet, the time of learning our master by ONU, SWITCH, ROUTER in the upper layer depends on their learning time.

Slave Permission To Access Master means to control the permission of slave to access master, so to ensure master safety and stability. The function need be used with MAC filtering enable together, namely need open MAC filtering enable simultaneously.

Loopback Detection Automatic Recovery Enable, master would automatically set slave as "Authorization Status" in the white list; If disable this function, the user need set the authorization status of slave manually when slave loopback is restored.

Coax Loopback Enable, when the operator begin to open the business, and need confirm TX, RX, ATT,etc, information of the link, they could get the information by enable this function. If the user enable this function when the business works normally, it will affect the business transmission.

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Command configuration cycle: when telnet login equipment, and not any operation for at least 60 seconds, it'll exit from telnet automatically.

5.1.5 Master Port Configuration

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **Port Configuration**
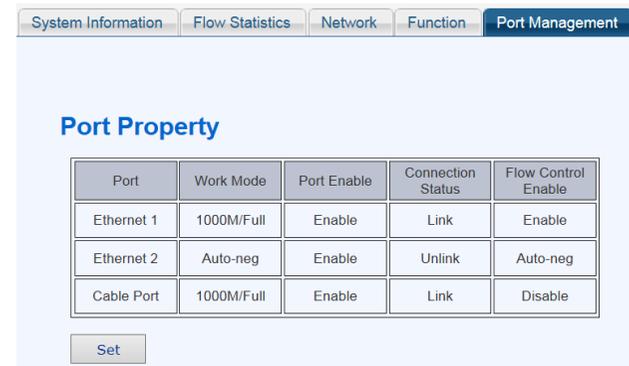
Enter port configuration interface, it display all ports' Work mode, Port Enable, Connection Status and Flow Control Enable, when the user want to change the configuration, click **Set** to enter the configuration interface.

1 6

Port Management

Configure Work Mode, Port Enable and Flow Control Enable. If the user wants to check the configuration, please click **Back** or **Port Configuration**.

Function Explanation: Work Mode set the work status of this port, such as 10M/full duplex, 100M/half duplex or 1000M/half duplex; Port Enable indicates to open port or close port; Flow control function settings of the master need be the same with the equipment connected to this master, such as ONU or fiber media converter.

Note: Please note don't close the port you are using, otherwise the communication between master and slave will be disconnected.

5.1.6 Master Broadcast Storm Management

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **Broadcast Storm**

Enter into Broadcast storm configuration interface, could configure broadcast storm suppression information. After open suppression enable, configure the suppression number, click **Set**.

Function Explanation: While opening suppression enable, can suppress broadcast packet and multicast packet simultaneously.

5.1.7 Port Mirroring

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **Port mirroring**

Enter into **Port Mirroring** interface to configure this function. When open port mirroring function, the user could change the source port, the source port direction and the destination port.

Click **Set** to complete the configuration.

Function Explanation: When enable **Port Mirroring**, the user could check all data packets of the source port from the destination port.

5.1.8 MAC Filtering

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **MAC Filtering**
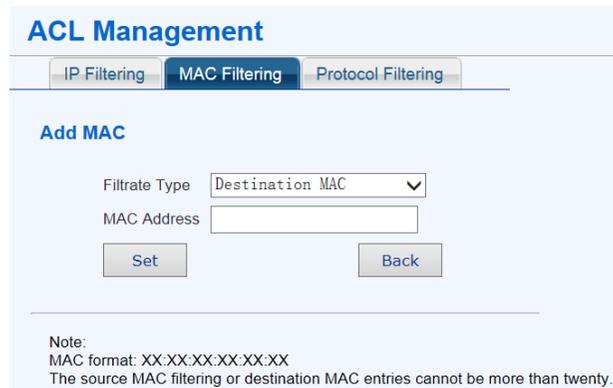
Enter into MAC filtering interface, could delete and add MAC address.

Function Explanation: Firstly open **MAC Filtering Enable** in **Function Configuration**, and then the data frames of which the destination MAC existed in MAC filtering table would be limited to forward at the master side and slave side.

5.1.9 Trap Management

Instruction: Click **System Configuration** in the longitudinal left side, and then in horizontal items **Trap Management**

Enter into Trap IP management interface to manage Trap IP (Modify, add and delete)

Function Explanation: It's effective to manage Trap sending destination by this function. When enable this function, master would send a Trap to this IP and automatically inform the real-time situation of master and slave when there is a Trap.

5.2 Card Management

5.2.1 Check network status of all connected slaves

Instruction: Click **Card Management** in the longitudinal left side, and then in horizontal items **Slave Online List**

Slave Online List | White List Info | Add White List

System Management
Card Management
Slave Management
System Log
System Software

Slave Link Information List

Choose Card: All [ ] Refresh

Card No.	CNU No.	MAC	ATT(dB)	SNR(dB)
1	1	00:0e:a3:f1:02:80	0	0.0
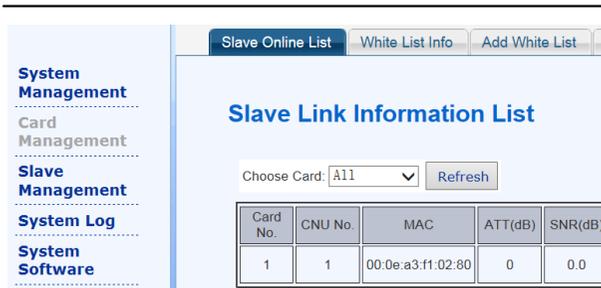
Show the link information of all slaves connected with this master, includes attenuation, TX, RX, software version, the supplier's information, and the online time of the slave. If there are many slaves, you could display the slaves by sorting card.

Note: If master only provide 1 channel CAB signal, it's unnecessary to choose the card, because there is only one main card. This function is used for multi-card master. One card indicates one master module.

Function Explanation: Can know the slave bandwidth at TX and RX (unit: Mbps), and the current software version.

5.2.2 The white list information under master
Instruction: Click **Card Management** in the longitudinal left side, and then in horizontal items **White List Info**

Slave Online List | White List Info | Add White List | Card Upgrade | Card Function Management

White List Info

Choose Card: All [ ] Refresh

Click MAC, modify the corresponding MAC's white list attribution

Card No.	CNU No.	MAC	Authorization	Online	RF Output Power(dBuv)	MAC Limitation	Multicast Enable	Coax Loopback	Po... E...
1	1	00:0e:a3:f1:02:80	Authorization	Online	120	0	Enable	Disable	D

Check each configuration of the white list and the online status. Click MAC address to change its white list configuration or delete this MAC address from the white list.

Function Explanation: Can know the slave information by the white list. And the slave can work correctly after it's authorized.

5.2.3 Add White List
Instruction: Click **Card Management** in the longitudinal

left side, and then in horizontal items **Add White List.**

Choose the card which need add the white list, and then input MAC address, click **Add**

Function Explanation: The slave could communicate with master after be joined in the white list.

5.2.4 Firmware Upgrade

Instruction: Click **Card Management** in the longitudinal left side, and then in horizontal items **Card Upgrade**

Set IP address of FTP server (Ensure FTP server has been installed in PC and put the upgrade file into the shared folder of FTP server). To ensure the upgraded software version is not the running one in the system. Choose the upgraded file name, IP address of FTP server and the card you plan to upgrade, Click **Upgrade**. Please note the prompt while upgrading and check whether it's upgraded successfully.

Function Explanation: Provide the precondition for the equipment upgrade.

5.3 Slave Management
5.3.1 Service Configuration

Instruction: Click **Slave Management** in the longitudinal left side, and then in horizontal items **Service Configuration**

The user can add, change and delete the service.

Function Explanation: Provide the rate-limiting and priority configuration for the slave by **Service Configuration**. So it's unnecessary to configure the rate limiting and priority for each port, just need choose the corresponding service.

5.3.2 Slave Service Configuration

Instruction: Click **Slave Management** in the longitudinal left side, and then in horizontal items **Slave Service**

Function Explanation: Choose slave MAC which need be set the business, click Check. It will display the detailed configuration interface. The first item is **Port Status** of the slave, including Connection Status, Work Mode, Vlan Mode, Vlan ID and Flow Information.

The second item **Slave Configuration**, the user could set Port Enable, Port Mode, Work Mode, self-loop Enable, Flow Control, Service Name, Port Priority, Vlan ID and the slave whole bandwidth.

Port Status | Slave Configuration | Broadcast Storm | Firmware Upgrade | Reboot

Port priority range is 0~3, PVID range is 0~4095, The whole bandwidth range is 0~102400.
Note:Bigger the priority number, higher the priority. It indicates no rate limit when the whole bandwidth is set as 0. Port mode--Access is a business untag mode, Transparent is the business pass-through mode. Bandwidth must be a multiple of 64.

Slave Vlan

Port	Port Enable	Port Mode	Work Mode	Self-loop Enable	Flow Control	Service Name	Port Priority	Vlan ID
Port 1	Enable	Transparent	Auto-neg	Disable	Enable	No Service	0	1
Port 2	Enable	Transparent	Auto-neg	Disable	Enable	No Service	0	1
Port 3	Enable	Transparent	Auto-neg	Disable	Enable	No Service	0	1

Slave Whole Bandwidth

Upstream Bandwidth(kbps) | 0
Downstream Bandwidth(kbps) | 0

Modify

interface.

Port Status | Slave Configuration | Broadcast Storm | Firmware Upgrade | Reboot

Broadcast Packet Suppression	Multicast Packet Suppression	Unknown Packet Suppression	The Number Of Suppression(pps)
Disable	Disable	Disable	80

Modify

The fourth item **Firmware Upgrade** to enter its configuration

interface.

Port Status | Slave Configuration | Broadcast Storm | Firmware Upgrade

FTP Server

FW File	PIB File

Upgrade

The fifth item **Reboot** to reboot the slave

Port Status | Slave Configuration | Broadcast Storm | Firmware Upgrade | Reboot

This operation will reboot slave   Reboot

5.4 System Log Management

5.4.1 System Log Information

Instruction: Click **System Log** in the longitudinal left side, and then in horizontal items **System Log**

System Log | System time

System Management
Card Management
Slave Management
System Log
System Software
Configuration Management
Exit

Log Information

Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 1, reg = 00000678, value = 0014007B
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 0, reg = 00000984, value = 000000C2
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 1, reg = 00000984, value = 000000C2
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 0, reg = 00000684, value = 00140077
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 1, reg = 00000684, value = 00140077
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 0, reg = 0000098C, value = 000000C2
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 1, reg = 0000098C, value = 000000C2
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 0, reg = 00000690, value = 0014006F
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 1, reg = 00000690, value = 0014006F
Jan 1 00:49:51 scr310_eoc_master user.warn syslog: flag = 0, reg =

Function Explanation: To know the latest log information by refreshing the log.

5.4.2 Set System Time

Instruction: Click **System Log** in the longitudinal left side, and then in horizontal items **System time**
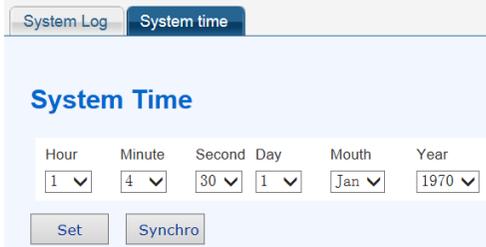
After modifying the time, click Set to complete the settings.

Function Explanation: Update the time of master by check PC time.

5.5 System Software Management

5.5.1 Reboot

Instruction: Click **System Software** in the longitudinal left side, and then in horizontal items **Reboot**
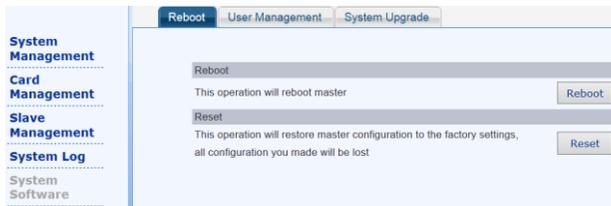
Function Explanation: Reboot master remotely by this button. **Master can be restored to the factory setting, and then master will reboot again, and clear away the white list configuration, port configuration (service vlan, Qos,**

rate limiting). Management Vlan also be restored into the original state. Master IP is 192.168.1.6.

5.5.2 User Management

Instruction: Click **System Software** in the longitudinal left side, and then in horizontal items **User Management**
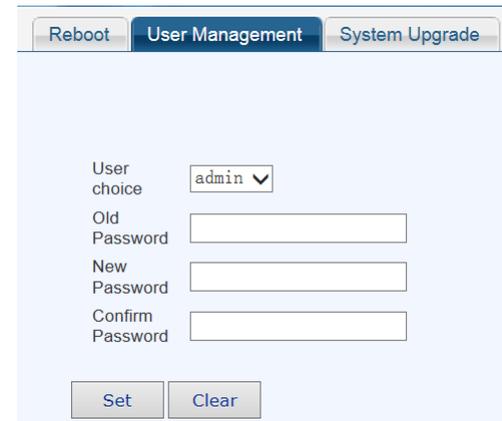
Function Explanation: Mainly change password of Admin user.

5.5.3 System Upgrade

Instruction: Click **System Software** in the longitudinal left side, and then in horizontal items **System Upgrade**
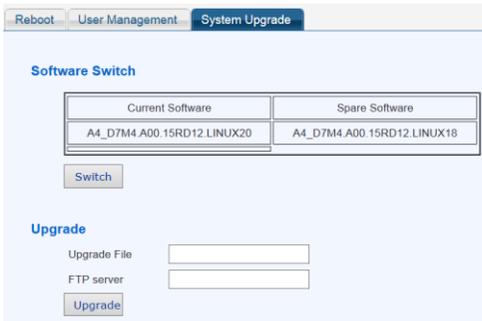
Enter the software upgrade interface, can switch master software version.

Master software upgrade:

(Install FTP server correctly, and ensure the upgraded file is placed into the shared folder of FTP server.)

To ensure the upgrading software is not the running one in the system, fill in the upgraded file name and IP address of FTP server.

Click **Upgrade**. Please note the prompt while upgrading and check whether it's upgraded successfully.

Function Explanation: Provide the precondition for upgrading master and improving master functions. And switching software function makes it possible to use two different softwares.

3 1

5.6 Configuration Management

5.6.1 Save

Instruction: Click **Configuration Management** in the longitudinal left side, and then in horizontal items **Save**

Function Explanation: Save all master configurations and won't be deleted if power failure.

5.6.2 Backup

Instruction: Click **Configuration Management** in the longitudinal left side, and then in horizontal items **Backup**
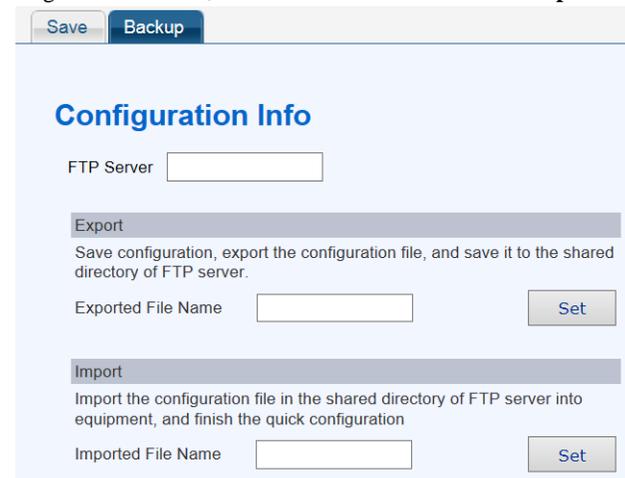
Function Explanation: Export the configuration template of the certain master (Master IP, Management Vlan, the white list information, the service information of the slave, the configuration information of the slave) to the server, and then transmit this configuration template to other master. It's convenient to operate equipment.

6. Typical Application

6.1 Diagram 1
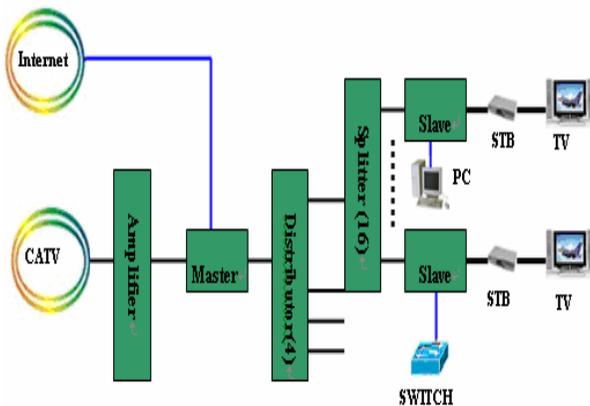
6.2 Diagram 2
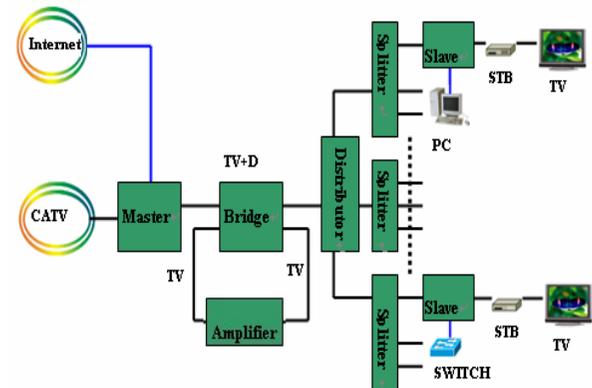
Attachment

Clauses of Maintenance for Communication Series Products.

If you buy the communication series products manufactured by our company, we'll provide free maintenance service of three years to you.

If inconsistent with the specific warranty terms, subject to contract:

1. Within one year exchange guaranteed. If the product is applied correctly according to the operation manual, but appears failures under the normal application condition, we will reduce maintenance and inspection fees, only charge the cost of the device.

2. In the following cases, some maintenance cost will be charged:

    a. Stricken by thunder high voltage, watering.
    b. Damage caused by accidents.
    c. Product exceeds the warranty period.

3. Manufacture declaration:

After receiving your goods, please check them and send back the receipt to our company. We will keep it in the archives as equipment warranty proof. Otherwise, our company will deem that the customers give up warranty right.