



# User Manual



**8 Ch DVB ASI Multiplexer**

**H-8ASI-MUX**

# DIRECTORY

<b>Chapter 1 Product Outline.....</b>	<b>1</b>
1.1 Outline.....	1
1.2 Features .....	1
1.3 Principle Chart .....	2
1.4 Technical Specifications.....	2
1.5 Appearance and description .....	3
<b>Chapter 2 Installation Guide.....</b>	<b>4</b>
2.1 Acquisition Check .....	4
2.2 Installation Preparation .....	4
2.3 Wire's Connection.....	6
2.4 Signal Cable Connection .....	6
<b>Chapter 3 Web-based NMS Management.....</b>	<b>8</b>
3.1 login.....	8
3.2 Operation.....	8
<b>Chapter 4 Troubleshooting .....</b>	<b>17</b>

# Chapter 1 Product Outline

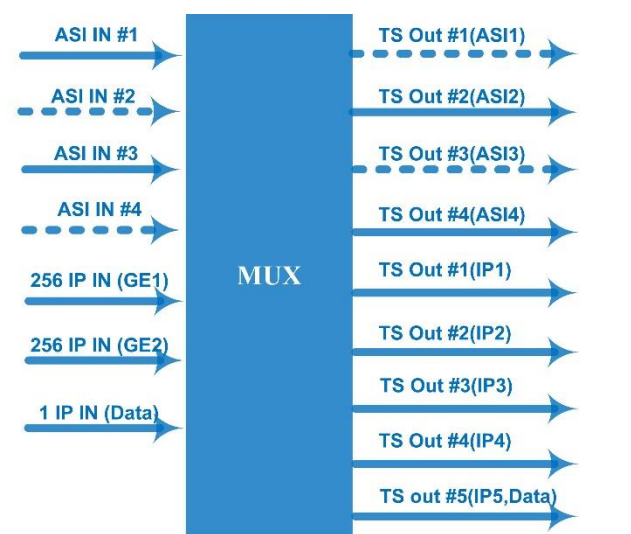
## 1.1 Outline

H-8ASI-MUX IP Multiplexer is Thor's latest multiplexing device for digital TV broadcasting head-end system with TS output through 4 bi-direction ASI and 3 bi-direction IP ports. It can multiplex up to 4 ASI and 513 IP input to 5 MPTS, and the amount of ASI output should based on ASI input (ASI port can be used as input or output). H-8ASI-MUX IP multiplexer has the functions of supporting auto-generation of PSI/SI information, PID re-mapping, service filtering and PCR adjusting. In conclusion, its high integration and cost effective design make this device widely used in the CATV Broadcasting system.

## 1.2 Features

- **ASI in/out: max 4 ASI input/output thru 4 bi-direction ASI ports (ASI direction can be defined as input or output manually)**
- **IP input: 513 IP in over UDP/RTP (256×2 IP in thru GE1 and GE2, 1 IP in thru Data port)**
- **IP output: 5 IP (MPTS) out over UDP/RTP (4 MPTS out thru GE1 and GE2, 1 MPTS out thru Data port)**
- **Support all input programs output bypass**
- **Support accurate PCR adjusting, PID filtering, re-mapping and PSI/SI rebuilding and editing**
- **Huge buffer memory for saving the overflowing code stream**
- **Web-based NMS management**

## 1.3 Principle Chart



ASI direction can be defined as input or output manually

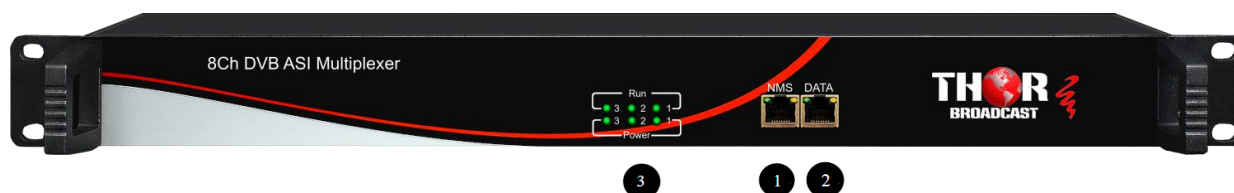
Support all input programs output bypass

## 1.4 Technical Specifications

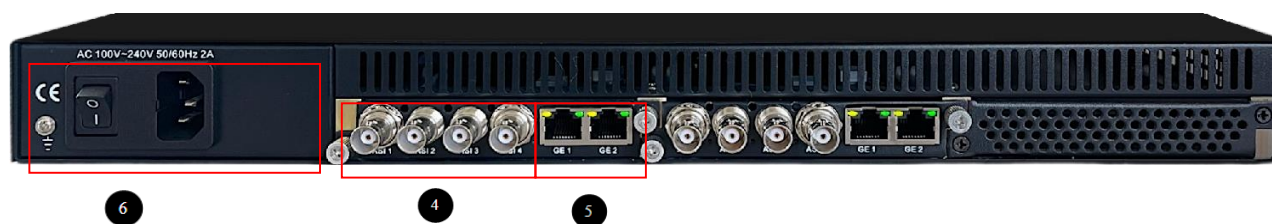
<b>Input / Output</b>	4 bi-direction ASI ports: max 4 ASI input/output, BNC 75Ω	
	3 bi-direction Data ports (RJ45):	
	513 IP input over UDP/RTP (256×2 IP in thruGE1 and GE2, 1 IP in thru Data port)	
	5 IP (MPTS) output over UDP/RTP (4 MPTS out thru GE1 and GE2, 1 MPTS out thru Data port)	
	100/1000Mbps self-adaption	
<b>Re-multiplex</b>	Packet format	204/188 self-adaption
	Max PIDs	512 output per channel
	Functions	PID re-mapping
		PCR accurate adjusting
<b>System</b>	Automatic generating PSI/SI table	
	PID transparent	Any PID transparent and mapping achievable
	Web management:10/100M NMS port	
<b>General</b>	Language: English and Chinese	
	Ethernet software upgrade	
	Dimensions	482mm×300mm×44mm (W×L×H)
	Weight	3.5kg
	Temperature	0~45℃(operation), -20~80℃(storage)
	Power supply	AC 110V±10%, 50/60Hz Or AC 220V±10%, 50/60Hz
	Consumption	≤40W

## 1.5 Appearance and description

Front Panel Illustration:



Rear Panel Illustration



1	NMS port for network management connection
2	Data port for IP input and output
3	Run and Power Indicators
4	4 ASI input/output Interfaces (Bi-direction interface)
5	GE1, GE2 (IP stream input and output interface)
6	Power switch/Fuse/Socket/ Grounding Wire

## Chapter 2 Installation Guide

### 2.1 Acquisition Check

When user opens the package of the device, it is necessary to check items according to packing list. Normally it should include the following items:

- H-8ASI-MUX IP Multiplexer 1pc
- User's Manual 1pc
- Power Cord 1pc

If any item is missing or mismatching with the list above, please contact.

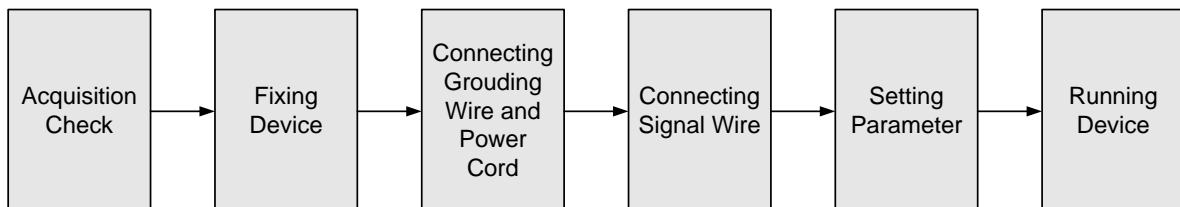
### 2.2 Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter including:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing modulator
- Connecting signal cables
- Connecting communication port (if it is necessary)

#### 2.2.1 Device's Installation Flow Chart Illustrated as following:



#### 2.2.2 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1 \times 10^7 \sim 1 \times 10^{10} \Omega$ , Grounding current limiting resistance: 1M (Floor bearing should be greater than 450Kg/m <sup>2</sup> )
Environment Temperature	5~40°C(sustainable), 0~45°C(short time), installing air-conditioning is recommended
Relative Humidity	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 100-240V 50-60Hz. Please carefully check before running.

### 2.2.3 Grounding Requirement

- All function modules' good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- Coaxial cables outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.

- Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than 25mm<sup>2</sup>.

### 2.2.4 Frame Grounding

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm<sup>2</sup>.

### 2.2.5 Device Grounding

Connecting the device's grounding rod to frame's grounding pole with copper wire.

## 2.3 Wire's Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just beside ,whose order goes like this, power switch is on the left ,power supply socket is on the right and the fuse is just between them.

#### ● Connecting Power Cord

User can insert one end into power supply socket, while insert the other end to AC power.

#### ● Connecting Grounding Wire

When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω.

---

#### ⚠ Caution:

**Before connecting power cord to H-8ASI-MUX IP Multiplexer, user should set the power switch to “OFF”.**

## 2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable. The details are as follows:



### 2.4.1 H-8ASI-MUX IP Multiplexer Cable Illustration:

- **IP Output Cable Illustration:**



- **ASI Input /Output Cable Illustration:**



## Chapter 3 Web-based NMS Management

Users can only control and set the configuration with the web Brower in the PC (Personal Computer). Connect the PC and the device with net cable, and use ping command to confirm they are on the same network segment.

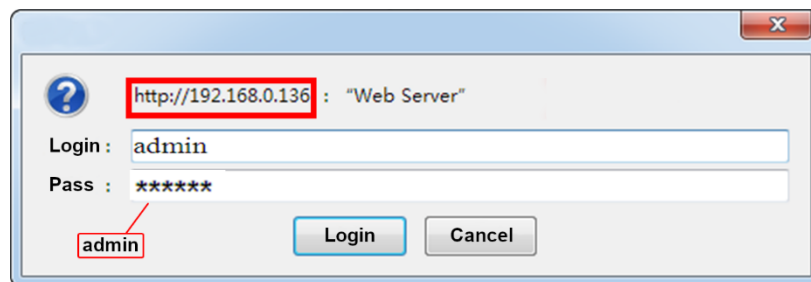
### 3.1 login

The default IP address of this device is **192.168.0.136**.

I.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the IP Multiplexer's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both are defaulted as "admin".) and then click "LOGIN" to start the device setting.



### 3.2 Operation

#### 3.2.1 Summary

When we confirm the login, it displays the WELCOME interface as Figure-2 where users can have an overview of the device's system information and working status.

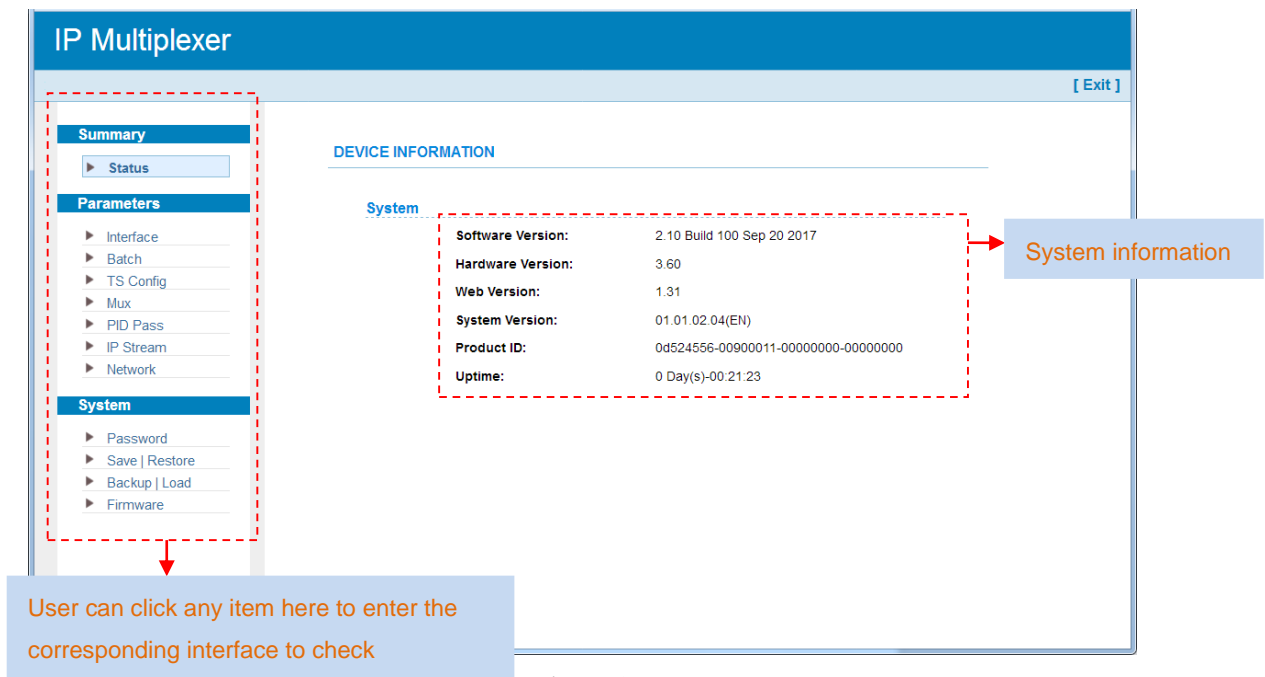


Figure-2

## 3.2.2 Parameters

### Parameters → Interface

Clicking “Interface”, it displays the interface where users can configure the input parameters. (Figure-3) Users can choose ASI or IP as the input source, and select ASI direction and set IP input address.

When select ASI/IP (front data port) interface:

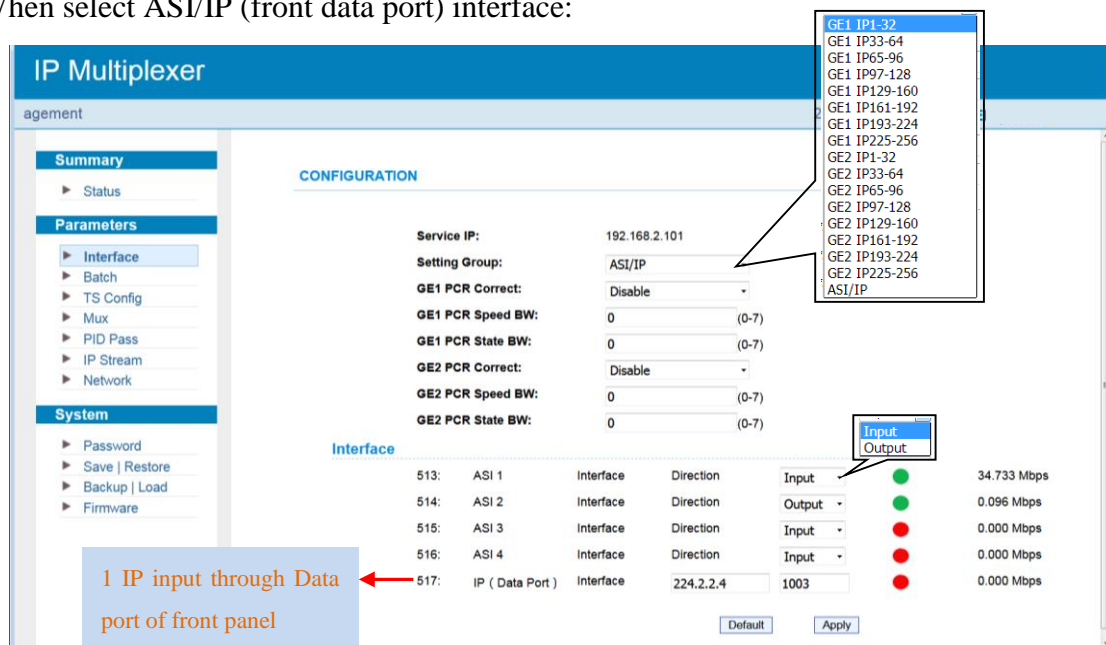


Figure-3

When select IP input from 2 GE ports, users can set IP input parameters as below. Each port can input 256 IP. (Figure-4)

IP Multiplexer

Web Management

2019-03-18 09:53:40 [Exit]

Summary

Status

Parameters

Interface

Batch

TS Config

Mux

PID Pass

IP Stream

Network

System

Password

Save | Restore

Backup | Load

Firmware

CONFIGURATION

Service IP: 192.168.2.101

Setting Group: GE1 IP1-32

GE1 PCR Correct: Disable

GE1 PCR Speed BW: 0 (0-7)

GE1 PCR State BW: 0 (0-7)

GE2 PCR Correct: Disable

GE2 PCR Speed BW: 0 (0-7)

GE2 PCR State BW: 0 (0-7)

IP Input

Index	Multicast	IGMP	Protocol	Input IP	Input Port	TS Lock	Bitrate(Mbps)
1:	<input checked="" type="checkbox"/> GE1 IP1	V2	UDP	224.2.2.4	1001	●	0.000 Mbps
2:	<input checked="" type="checkbox"/> GE1 IP2	V2	UDP	224.2.2.2	4002	●	0.000 Mbps
3:	<input checked="" type="checkbox"/> GE1 IP3	V2	UDP	224.2.2.2	4003	●	0.000 Mbps
4:	<input checked="" type="checkbox"/> GE1 IP4	V2	UDP	224.2.2.2	4004	●	0.000 Mbps
5:	<input checked="" type="checkbox"/> GE1 IP5	V2	UDP	224.2.2.2	4005	●	0.000 Mbps
6:	<input checked="" type="checkbox"/> GE1 IP6	V2	UDP	224.2.2.2	4006	●	0.000 Mbps
7:	<input checked="" type="checkbox"/> GE1 IP7	V2	UDP	224.2.2.2	4007	●	0.000 Mbps
8:	<input checked="" type="checkbox"/> GE1 IP8	V2	UDP	224.2.2.2	4008	●	0.000 Mbps
9:	<input checked="" type="checkbox"/> GE1 IP9	V2	UDP	224.2.2.2	4009	●	0.000 Mbps
10:	<input checked="" type="checkbox"/> GE1 IP10	V2	UDP	224.2.2.2	4010	●	0.000 Mbps
11:	<input checked="" type="checkbox"/> GE1 IP11	V2	UDP	224.2.2.2	4011	●	0.000 Mbps
12:	<input checked="" type="checkbox"/> GE1 IP12	V2	UDP	224.2.2.2	4012	●	0.000 Mbps
13:	<input checked="" type="checkbox"/> GE1 IP13	V2	UDP	224.2.2.2	4013	●	0.000 Mbps
14:	<input checked="" type="checkbox"/> GE1 IP14	V2	UDP	224.2.2.2	4014	●	0.000 Mbps
15:	<input checked="" type="checkbox"/> GE1 IP15	V2	UDP	224.2.2.2	4015	●	0.000 Mbps
16:	<input checked="" type="checkbox"/> GE1 IP16	V2	UDP	224.2.2.2	4016	●	0.000 Mbps
17:	<input checked="" type="checkbox"/> GE1 IP17	V2	UDP	224.2.2.2	4017	●	0.000 Mbps
18:	<input checked="" type="checkbox"/> GE1 IP18	V2	UDP	224.2.2.2	4018	●	0.000 Mbps
19:	<input checked="" type="checkbox"/> GE1 IP19	V2	UDP	224.2.2.2	4019	●	0.000 Mbps
20:	<input checked="" type="checkbox"/> GE1 IP20	V2	UDP	224.2.2.2	4020	●	0.000 Mbps
21:	<input checked="" type="checkbox"/> GE1 IP21	V2	UDP	224.2.2.2	4021	●	0.000 Mbps
22:	<input checked="" type="checkbox"/> GE1 IP22	V2	UDP	224.2.2.2	4022	●	0.000 Mbps
23:	<input checked="" type="checkbox"/> GE1 IP23	V2	UDP	224.2.2.2	4023	●	0.000 Mbps
24:	<input checked="" type="checkbox"/> GE1 IP24	V2	UDP	224.2.2.2	4024	●	0.000 Mbps
25:	<input checked="" type="checkbox"/> GE1 IP25	V2	UDP	224.2.2.2	4025	●	0.000 Mbps
26:	<input checked="" type="checkbox"/> GE1 IP26	V2	UDP	224.2.2.2	4026	●	0.000 Mbps
27:	<input checked="" type="checkbox"/> GE1 IP27	V2	UDP	224.2.2.2	4027	●	0.000 Mbps
28:	<input checked="" type="checkbox"/> GE1 IP28	V2	UDP	224.2.2.2	4028	●	0.000 Mbps
29:	<input checked="" type="checkbox"/> GE1 IP29	V2	UDP	224.2.2.2	4029	●	0.000 Mbps
30:	<input checked="" type="checkbox"/> GE1 IP30	V2	UDP	224.2.2.2	4030	●	0.000 Mbps
31:	<input checked="" type="checkbox"/> GE1 IP31	V2	UDP	224.2.2.2	4031	●	0.000 Mbps
32:	<input checked="" type="checkbox"/> GE1 IP32	V2	UDP	224.2.2.2	4032	●	0.000 Mbps

Default

Apply

Figure-4

## Parameters → Batch

Clicking “Batch”, users can batch process IP input parameters and program mux parameters.(Figure-5)

Parse program: parse all the program at rang of setting. The range is 1-517 (513 IP & 4 ASI).

If you set the range as 1 to 32 and click “Apply”, it will parse the programs of IP 1-32.

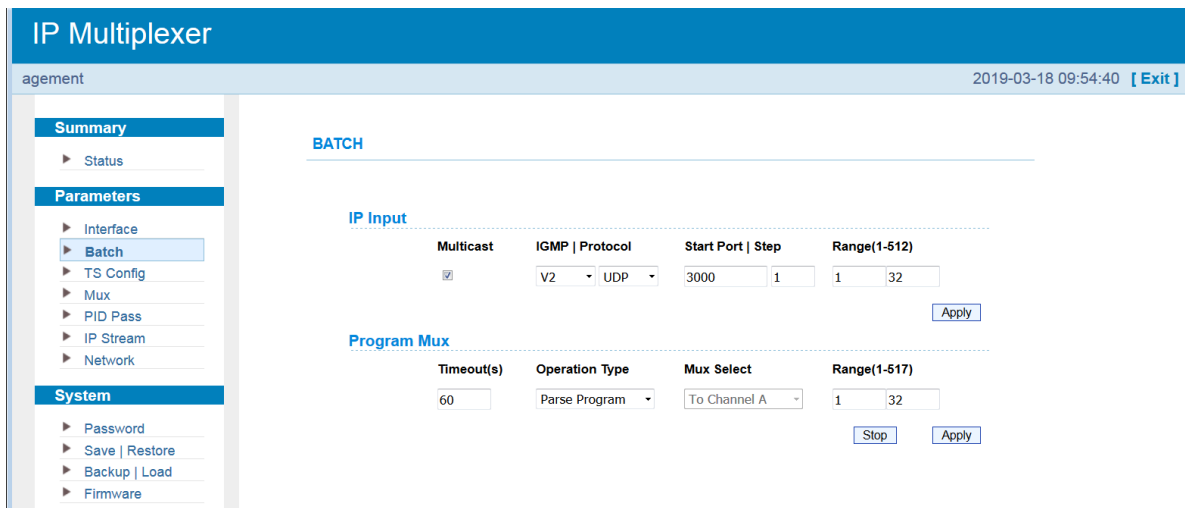


Figure-5

Mux: multiplex program to out at rang of setting. Select the output channel (Channel A-E) and set the range. If you set the range as 1 to 32, select “to Channel A” and then click “Apply”, it will output all the multiplexed programs (IP 1-32) to output channel A. (Figure-6)

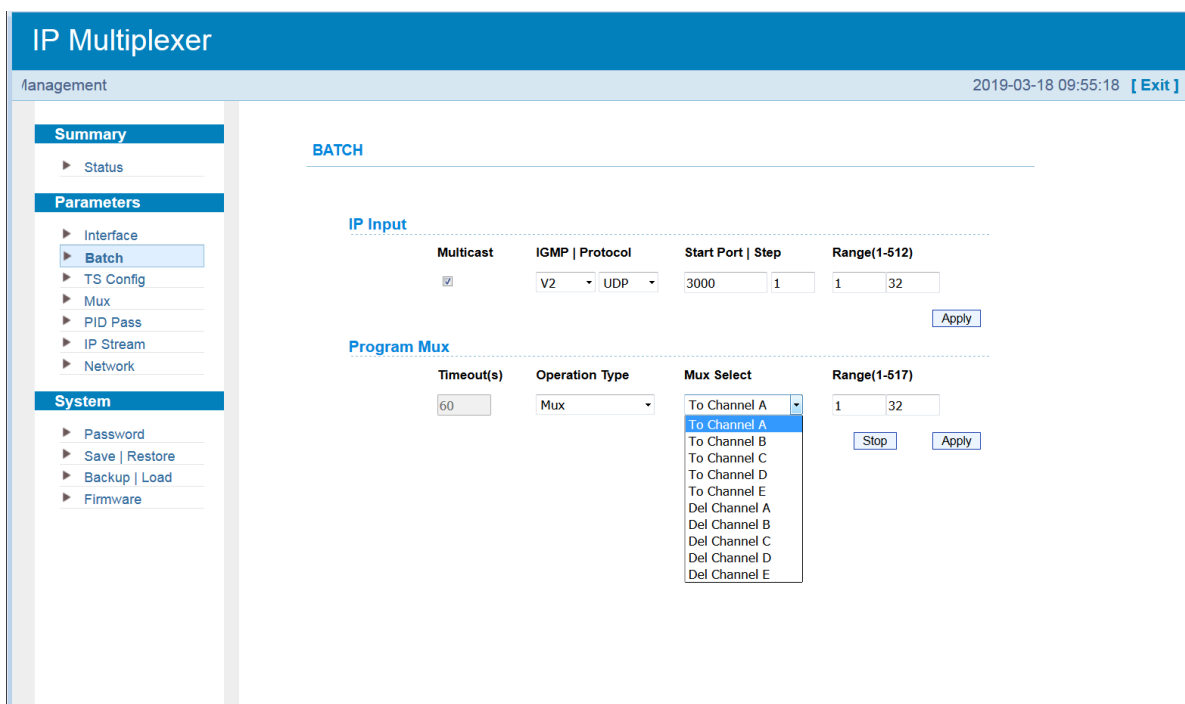


Figure-6

## Parameters →TS Config

Click “TS Config”, it displays the interface where users can configure the 5 output TS channels and select output mode with multiplex out or out bypass. (Figure-7)

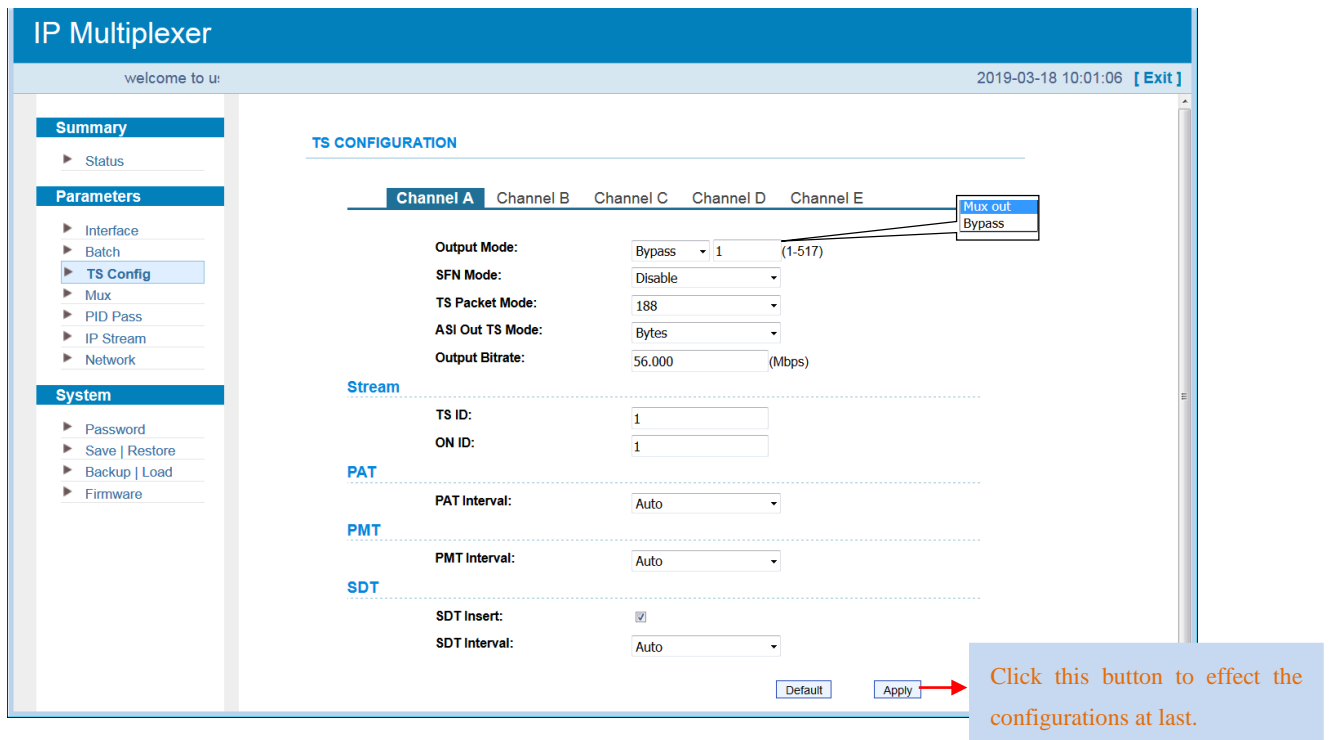


Figure-7

## Parameters → Mux

Click “Mux”, it displays the interface where users can configure the 5 output channels parameters separately. (Figure-8)

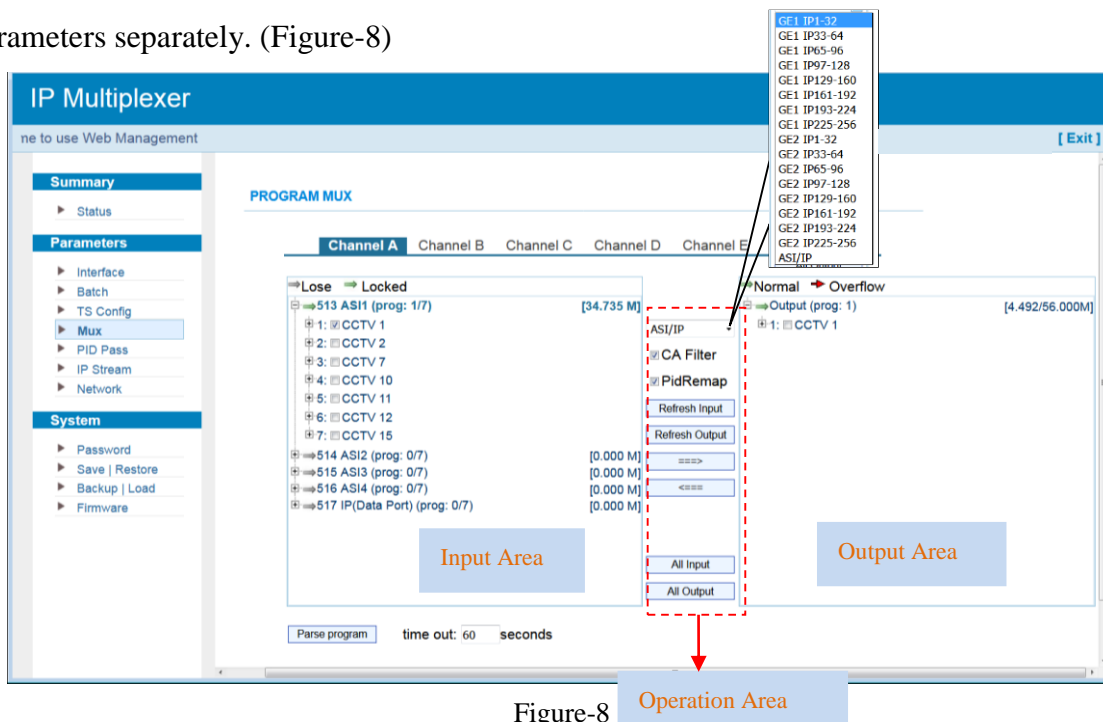


Figure-8

Configure ‘Input Area’ and ‘Output Area’ with buttons in ‘Operation Area’. Instructions are as below:

☒ **PID Remap**: To enable/disable the PID remapping

**Refresh Input** To refresh the input program information

- Refresh Output** To refresh the output program information
- ====>** Select one input program first and click this button to transfer the selected program to the right box to output.
- <===** Similarly, user can cancel the multiplexed programs from the right box.
- All Input** To select all the input programs
- All Output** To select all the output programs
- Parse program** To parse programs time out:  seconds time limitation of parsing input programs

## Program Modification:

The multiplexed program information can be modified by clicking the program in the ‘output’ area. For example, when clicking **1: CCTV 1**, it triggers a dialog box (Figure 9) where users can input new information.

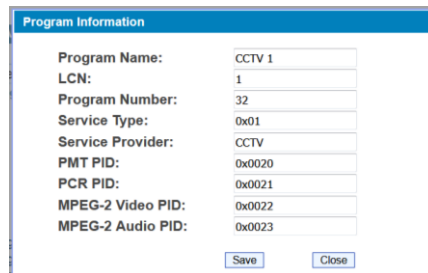


Figure-9 shows a 'Program Information' dialog box with the following fields:

Program Name:	CCTV 1
LCN:	1
Program Number:	32
Service Type:	0x01
Service Provider:	CCTV
PMT PID:	0x0020
PCR PID:	0x0021
MPEG-2 Video PID:	0x0022
MPEG-2 Audio PID:	0x0023

Buttons: Save, Close

Figure-9

Input new data and click ‘Save’ button at last to confirm the modification.

## Parameters →PID Pass

Click “PID Pass”, it will display the interface as Figure-10 where to set the PID PASS. The total number of mapping PID is 748 per output channel.

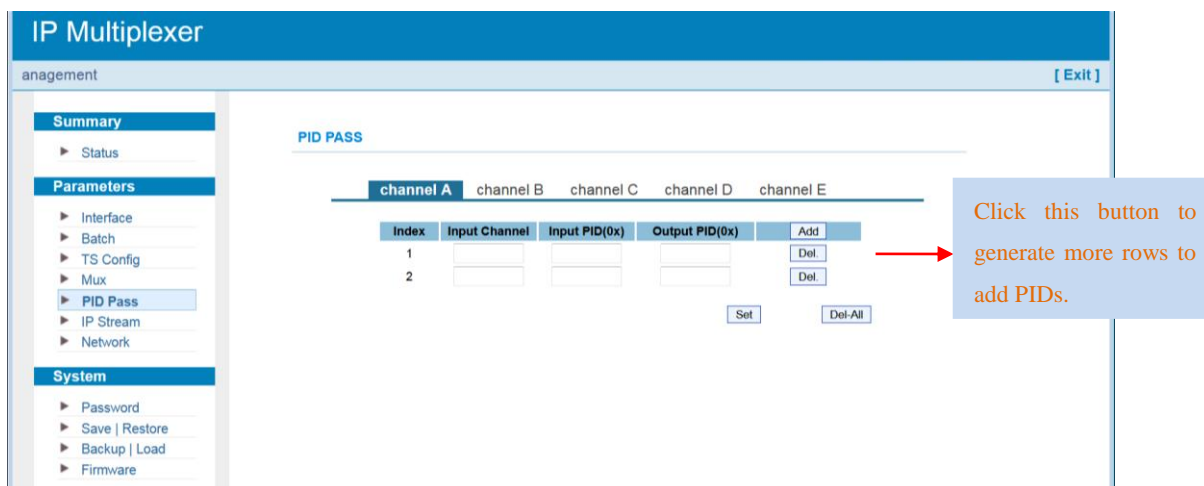


Figure-10 shows the 'IP Multiplexer' interface with the 'PID PASS' tab selected. The interface includes a sidebar with 'Summary', 'Parameters', and 'System' sections. The 'PID PASS' section displays a table for mapping input channels to output channels.

Index	Input Channel	Input PID(0x)	Output PID(0x)	Add	Del.
1					
2					

Buttons: Set, Del-All

Annotation: Click this button to generate more rows to add PIDs.

Figure-10

## Parameters →IP Stream

Click 'IP Stream', it will display the interface as Figure-11 where to set IP out parameters.

**IP Multiplexer**

welcome to u 2019-03-18 09:57:57 [Exit]

**Summary**

- ▶ Status

**Parameters**

- ▶ Interface
- ▶ Batch
- ▶ TS Config
- ▶ Mux
- ▶ PID Pass
- ▶ **IP Stream**
- ▶ Network

**System**

- ▶ Password
- ▶ Save | Restore
- ▶ Backup | Load
- ▶ Firmware

**IP STREAM**

Stream Enable:  
If not set, the following parameters will be no use, the IP Output will not work.

Output IP:  
The IP Output data receive address. The format is xxx.xxx.xxx.xxx (like 224.2.2.2). After set the Output IP address, you must use the new address to receive IP Output data.

Output Port:  
The UDP protocol port (like 8001), you should use Output IP and new port to receive IP Output data (like udp://@224.2.2.2:8001).

Service IP:  
The IP Output port address. The format is xxx.xxx.xxx.xxx (like 192.168.2.137).

Subnet Mask:  
General is 255.255.255.0, it must be the same in a local area network.

Gateway:  
If the device is in different net segment, you must set the gateway.

Service IP: 192.168.2.101

Subnet Mask: 255.255.255.0

Gateway: 192.168.2.0

Output Protocol: RTP

**MPTS**

Enable	Null PKT Filter	Output IP	Port
<b>GE1</b>			
A: <input checked="" type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	1001
B: <input checked="" type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	1002
C: <input type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	2003
D: <input type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	2004
<b>GE2</b>			
A: <input type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	2005
B: <input type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	2006
C: <input checked="" type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	1003
D: <input checked="" type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	1004
<b>Data Port</b>			
E: <input checked="" type="checkbox"/>	<input type="checkbox"/>	224.16.16.16	1005

Default Apply

Figure-11

## Parameters → Network

Click "Network", it will display the interface as Figure-12 where to set network parameters.

**IP Multiplexer**

welcome to use [Exit]

**Summary**

- ▶ Status

**Parameters**

- ▶ Interface
- ▶ Batch
- ▶ TS Config
- ▶ Mux
- ▶ PID Pass
- ▶ IP Stream
- ▶ **Network**

**NETWORK**

IP Address: 192.168.0.136

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Web Manage Port: 80

MAC Address: 72-09-37-7a-01-02

Apply

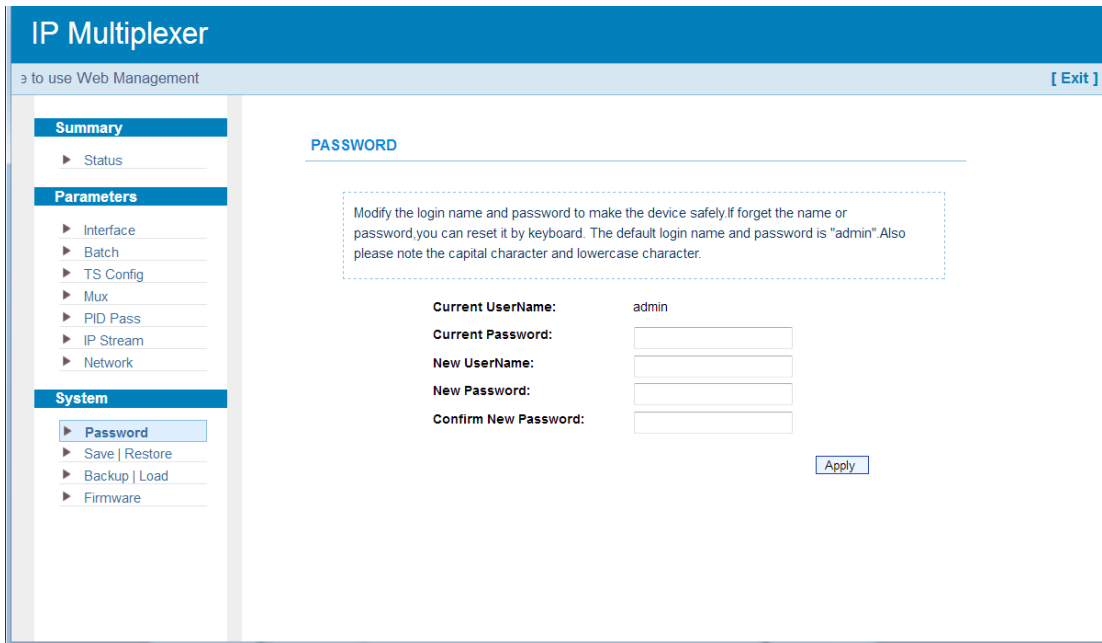
Figure-12

## 3.2.3 System

### System → Password



Click “Password”, it will display the screen as Figure-13 where to set the login account and password for the web NMS.

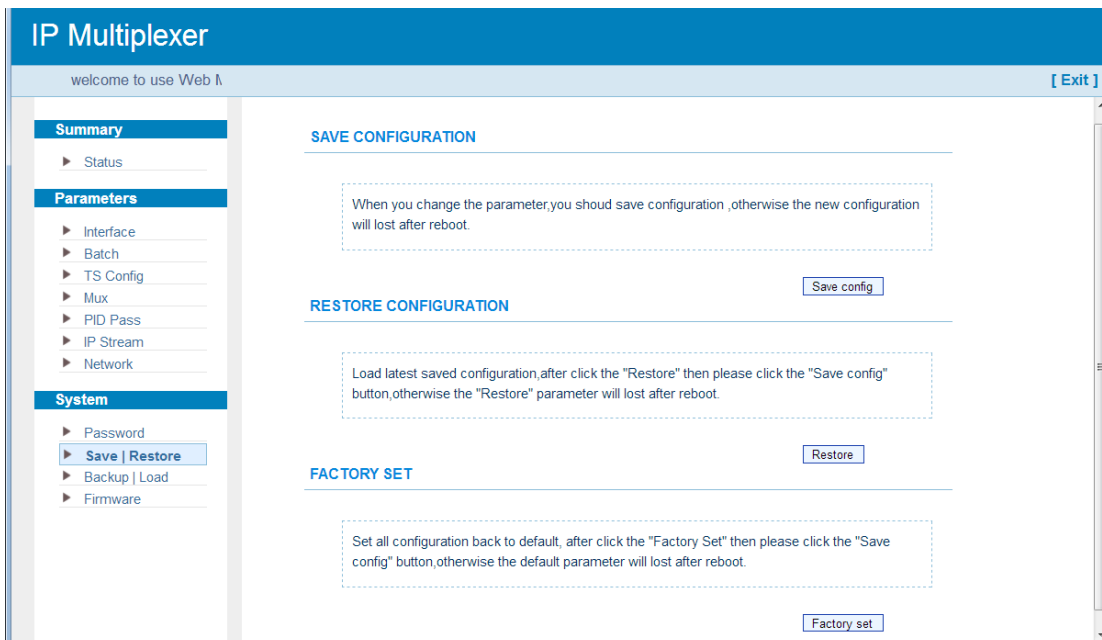


The screenshot shows the 'IP Multiplexer' web interface. The left sidebar contains a menu with 'Summary', 'Parameters', and 'System'. Under 'System', 'Password' is selected. The main content area is titled 'PASSWORD' and contains a text box with instructions: 'Modify the login name and password to make the device safely. If forget the name or password, you can reset it by keyboard. The default login name and password is "admin". Also please note the capital character and lowercase character.' Below this, there are four input fields: 'Current UserName' (pre-filled with 'admin'), 'Current Password', 'New UserName', and 'New Password'. A 'Confirm New Password' field is also present. An 'Apply' button is at the bottom right.

Figure-13

## System → Save/Restore

Click “Save/Restore”, it will display the screen as Figure-14 where to save or restore your configurations.



The screenshot shows the 'IP Multiplexer' web interface. The left sidebar contains a menu with 'Summary', 'Parameters', and 'System'. Under 'System', 'Save | Restore' is selected. The main content area is titled 'SAVE CONFIGURATION' and contains a text box with instructions: 'When you change the parameter, you should save configuration, otherwise the new configuration will lost after reboot.' Below this, there is a 'Save config' button. The next section is 'RESTORE CONFIGURATION' with instructions: 'Load latest saved configuration, after click the "Restore" then please click the "Save config" button, otherwise the "Restore" parameter will lost after reboot.' Below this, there is a 'Restore' button. The final section is 'FACTORY SET' with instructions: 'Set all configuration back to default, after click the "Factory Set" then please click the "Save config" button, otherwise the default parameter will lost after reboot.' Below this, there is a 'Factory set' button.

Figure-14

## System → Backup/Load

Click “Backup/Load”, it will display the screen as Figure-15 where to backup or load your configurations.

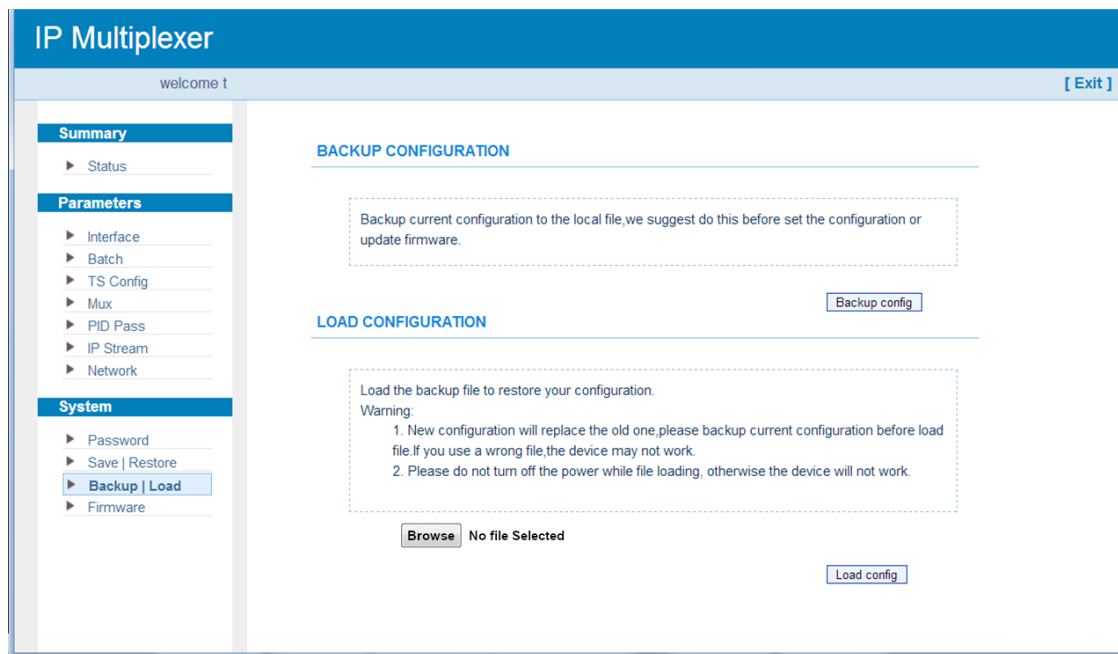


Figure-15

## System → Firmware

Click “Firmware”, it will display the screen as Figure-16 where to update firmware for the device.

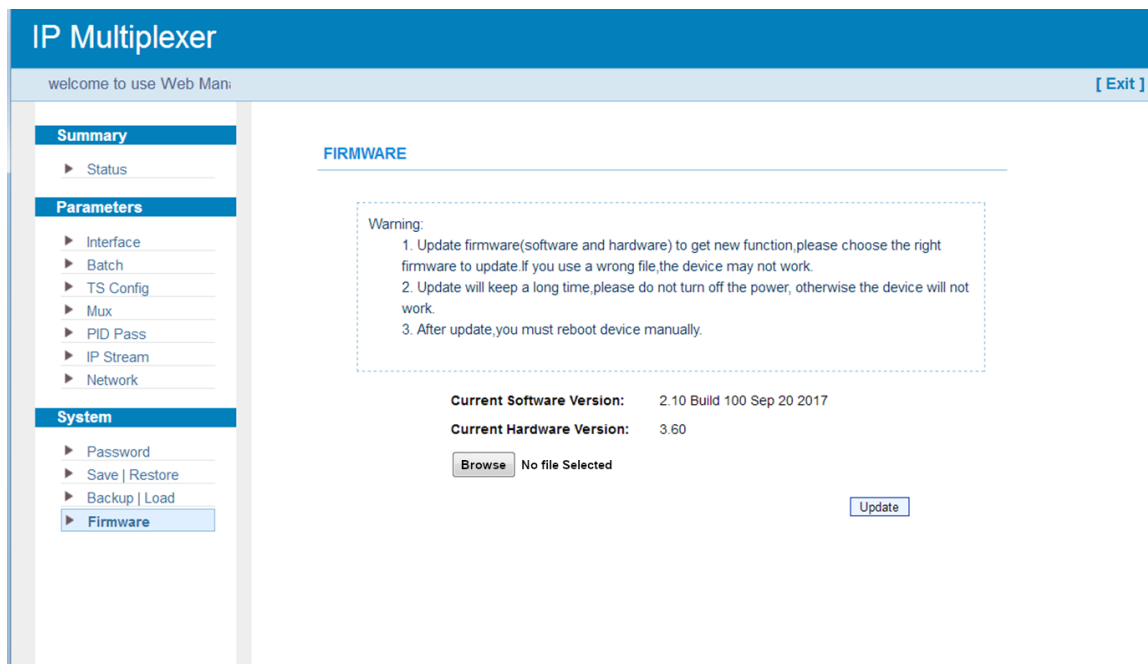


Figure-16

## Chapter 4 Troubleshooting

THOR's ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products' quality, reliability and stability. All THOR products have been passed the testing and inspection before ship out factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by THOR. To prevent potential hazard, please strictly follow the operation conditions.

### Prevention Measure

- Installing the device at the place in which environment temperature between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking the input AC voltage within the power supply working range and the connection is correct before switching on device
- Checking the RF output level varies within tolerant range if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.

### Conditions need to unplug power cord

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed