User Manual

8 Ch DVB ASI Multiplexer

H-8ASI-MUX

DIRECTORY

Tel: (800) 521-8467 Email: sales@thorfiber.com http://www.thorbroadcast.com

Chapter 1 Product Outline

1.1 Outline

H-8ASI-MUX multiplexer is an enhanced TS re-multiplexer for digital TV broadcasting head-end system. It can multiplex up to 8 ASI and 512 IP input and output TS through 2 groups of separate ASI output port and two GE port for two separate IP outputs. The multiplexer has all the functions of normal TS multiplexer, including programs multiplexing, PID re-mapping etc. Also the multiplexer can insert EPG (Electronic Program Guide), and data casting information into each output stream. In conclusion, its high integration and cost effective design make this device widely used in the CATV Broadcasting system.

1.2 Features

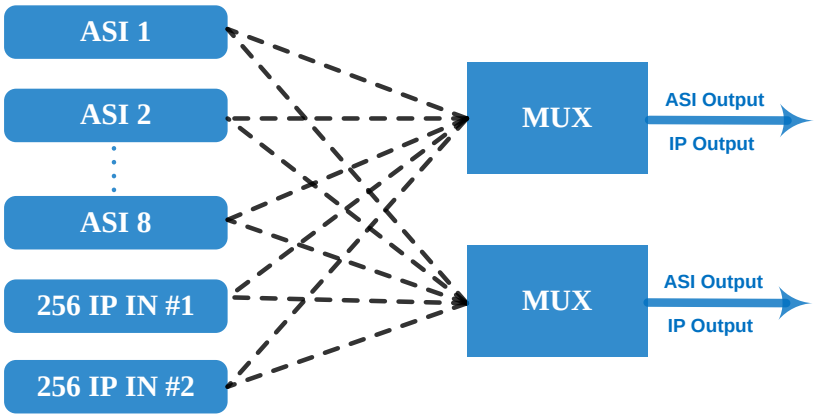
- **Fully complying with ISO13818 and EN300 468 standard**
- **Support 8 ASI input for re-multiplexing**
- **Support 512 IP input through DATA 1 and DATA 2 over UDP protocol**
- **Support accurate PCR adjusting/ PID re-mapping/PSI/SI rebuilding and editing**
- **Two groups (each group has 2 channels)separate ASI outputs**
- **IP (2 MPTS) over UDP, RTP/RTSP output as mirror of ASI output (RJ45), GE Port, DATA 1 and DATA 2**
- **Huge buffer memory for saving the overflowing code stream**
- **Support to multiplex one program to all outputs**
- **LCD/keyboard and Web-based NMS management**

1.3 Specifications

Input	8 ASI input+512 IP input DATA 1 and DATA 2 over UDP protocol	
Re-multiplex	PID re-mapping	
	PCR accurate adjusting	
	PSI/SI (PAT, PMT) tables auto generation and edition	
Output port	ASI	2 groups separate outputs (each group has 2 channels)
	IP	MPTS over UDP, RTP/RTSP output (RJ45), 1000Mbps Ethernet, DATA 1 and DATA 2
PID	Output range	0x0000—0x1FFF
	PID transparent	Any PID transparent and mapping achievable

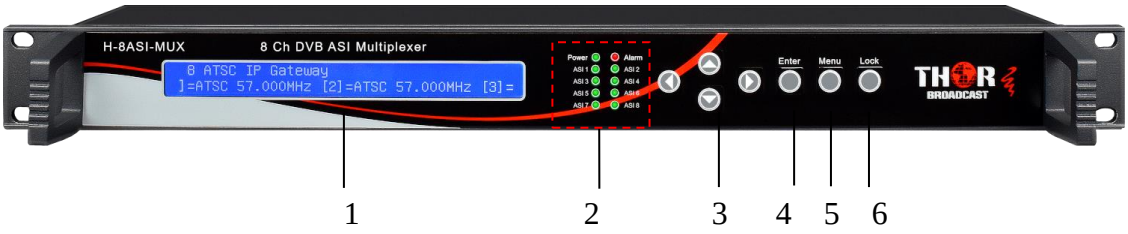
	Amount of output PID	180
NMS port	Ethernet port	10/100M/1000M self adaption
General	Dimensions	482mm×300mm×44mm (WxLxH)
	Weight	3.5kg
	Temperature	0~45℃(operation), -20~80℃(storage)
	Power supply	AC 110V±10%, 50/60Hz Or AC 220V±10%, 50/60Hz

1.4 Principle Chart



1.5 Appearance and Description

Front panel Illustration:



Indicator area: All the indicators will light on when H-8ASI-MUX multiplexer works at its current mode.

1	LCD Display
2	Power Indicator
	Alarm Indicator
	ASI 1~ASI 8: when the input signal of ASI is locked, the light is green.

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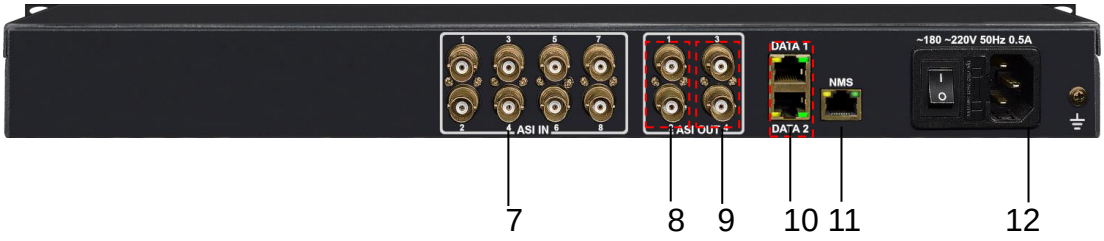
	Otherwise it becomes red.
3	UP/ DOWN /LEFT/RIGHT Key
4	Enter: Confirmation key
5	MENU Key
6	LOCK Key

Rear panel Illustration:



7	ASI IN1~8: TS input
8	ASI OUT 1: TS output
	ASI OUT 2: TS output (as mirror of ASI 1)
	ASI OUT 3: TS output
	ASI OUT 4: TS output(as mirror of ASI 3)
9	NMS Ethernet Port (10/100/1000Mbps)
10	Data port: two Gigabits IP outputs port
11	Power switch, fuse, socket
12	Grounding pole

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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 Multiplexer
- User's Manual
- ASI Cable
- Power Cord

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

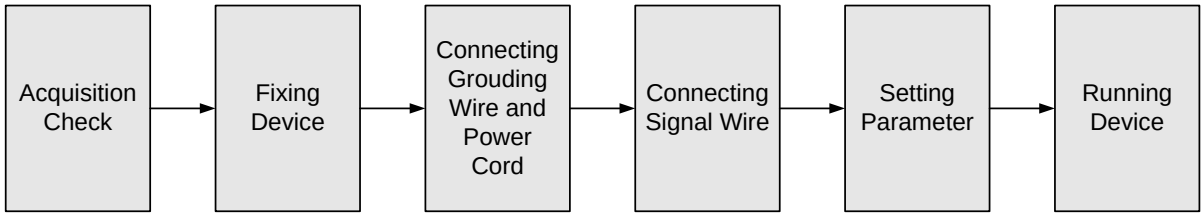
2.2 Installation Preparation

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 includes:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing multiplexer
- 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: $1X10^{7}$~$1X10^{10}\Omega$, Grounding current limiting resistance: 1MΩ (Floor bearing should be greater than 450Kg/㎡)
Environment Temperature	5~40℃(sustainable) , 0~45℃(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 220V 50Hz. 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.
- ASI cable's 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 $25mm^2$.

2.2.4 Frame Grounding

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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^2.

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 is solely connected 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 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 ASI In and ASI out connection:

- ASI Input Connection

User can find ASI input port on the device according to connector mark described in the rear panel illustration, and then connect the ASI cable (in the accessories). One end is connected to the Multiplexer's ASI input port, while the other end is connected to Encoder's ASI output port or ASI output port of other equipment.

- ASI Output Connection

User can find ASI output port on the device according to connector mark described in the rear panel illustration, and then connect the ASI cable (in the accessories); one end is connected to the Multiplexer's ASI output port and the other end to the Modulator's ASI input port or ASI input of other equipment. Multiplexer's ASI cable illustrated as follows:

2.4.2 Network cable (Category 5) illustration:

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Chapter 3 Operation

H-8ASI-MUX multiplexer's front panel is user operation interface. The detailed operations go as follows:

Keyboard Function Description:

MENU: Canceling presently entered value, resuming previous setting; Return to previous menu.

ENTER: Activating the parameters which need modifications, or confirming the change after modification.

LEFT/RIGHT: To choose and set the parameters.

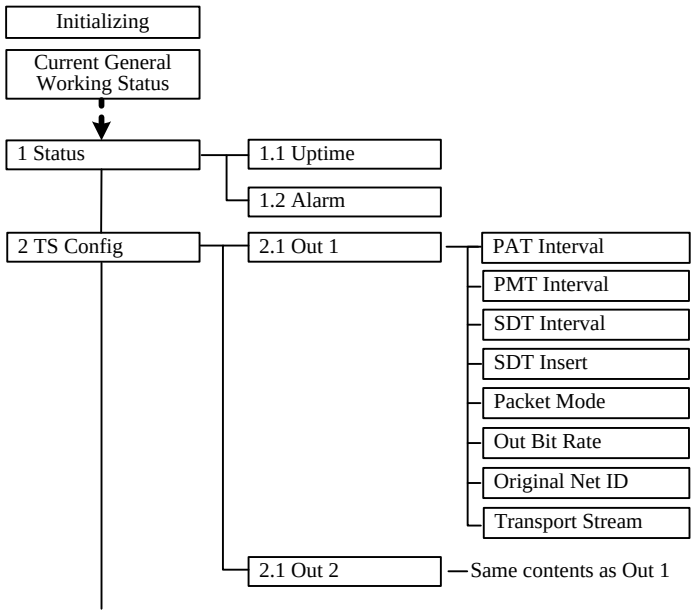
UP/DOWN: Modifying activated parameter or paging up/down when parameter is inactivated.

LOCK: Locking the screen / canceling the lock state. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.

At the page of 5.2 "Load default CFG", user can firstly press "ENTER" key, consequently system resumes factory parameter setting.

3.1 LCD Menu

An overview of the LCD menus:



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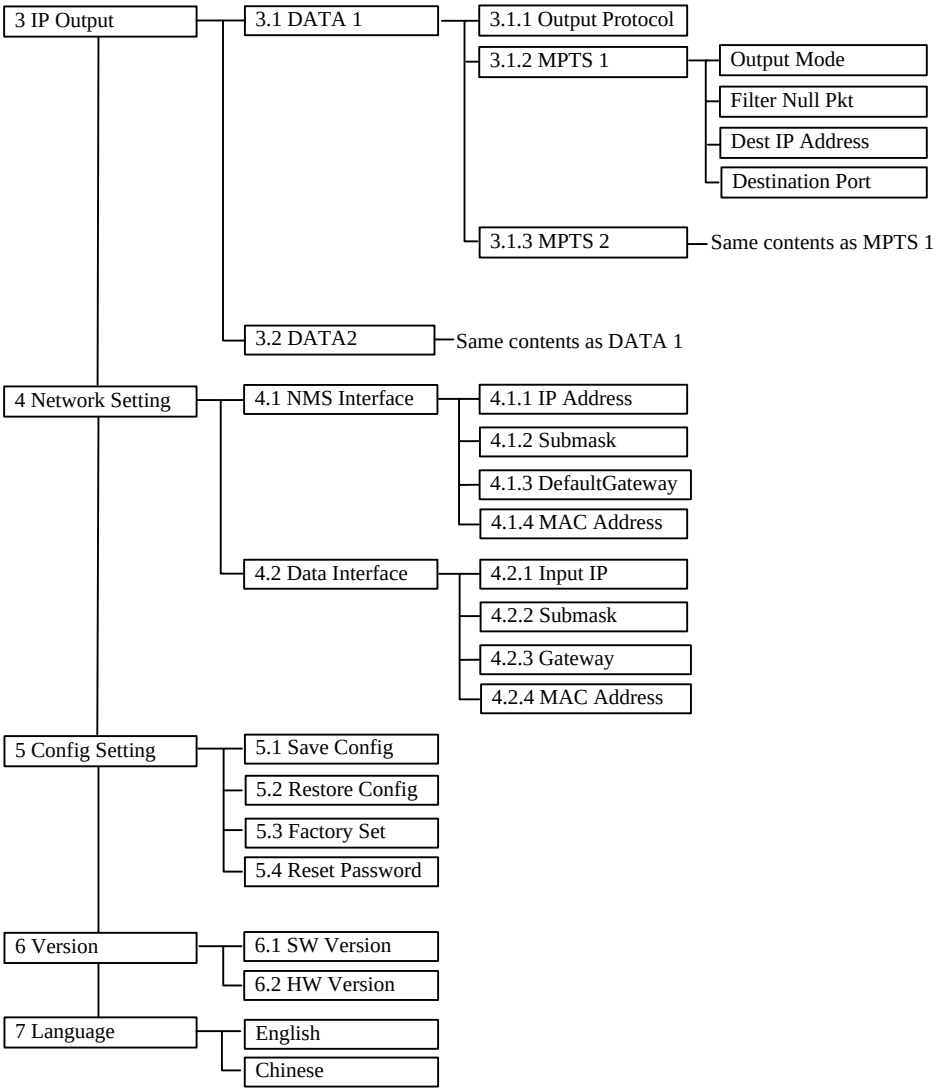

3.2 Initial Status

After powering on the device it will take a few seconds to initialize the system, and then the LCD will show the device name and output valid and total bit-rate in the first row, while the 8 channels' respective serial number, input real-time encoding bit-rate in the second row in turn. It shows as below:

P1:55.999Mbps	P2:55.999Mbps

3.3 General Settings

By pressing LOCK key, users can enter in the main menu and set the input and output parameters in the following editing interfaces, the LCD will display the following pages:

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►1. Status	2. TS config
3. IP output	4. Network Setting

►5. Config setting	6. Version
7. Language	

The option with "►" is the current selection, users can press the ENTER key to enter the specified submenu to modify the parameters.

3.3.1 Run Status

- **Alarm status**

The alarm indicator will turn on if there is no A/V signals inputting or outputting bit rate overflows. User then can enter this menu to check the error type. Otherwise it shows the 'No warning'.

Alarm status
No warning

- **Up time**

Press Enter to enter "Up time" and it displays the working time duration of the device. It times upon power on.

Uptime
00:37:54 up

3.3.2 TS Config

H-8ASI-MUX is equipped with 2 groups of ASI output, each groups have 2 channels. Under this menu, users can enter the corresponding channels to set the relevant ASI output parameters. The setting principle is the same for out 1 and 2, so here this manual just takes one channel as the example to explain. After pressing the enter key, the LCD will display the following pages:

2.2.1 PAT Interval	2.2.2 PMT Intervel
2.2.3 SDT Interval	2.2.4 SDT Insert

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2.2.5 Packet Mode	2.2.6 Out Bit rate
2.2.7 Original Net ID	2.2.8 Transport Stream ID

3.3.3 IP output

H-8ASI-MUX supports 2 MPTS output through Data1 and Data2, the setting principle is the same for Data1 and Data2, so here this manual just takes Data1 setting as the example to explain. After pressing the enter key, the LCD will display the following pages:

3.1 DATA1	3.2 DATA2

3.1.1 Output Protocol	3.1.2 MPTS1
3.1.3 MPTS2	

3.1.1.1 Output Mode	3.1.1.2 Filter Null PKT
3.1.1.3 Reset IP Address	3.1.1.4 Destination Port

3.3.4 Network Setting

After enter Network Setting, users can set the parameters of NMS interface and DATA interface parameters, the setting principle is the same for NMS interface and DATA interface, so here this manual just takes one as the example to explain, and the submenus shows as the following LCD displays.

IP Addr 192.168.000.136

Submask 255.255.255.000

Default Gateway 000. 000.000.001

MAC Address 02:A1:A2:A3:A4:A5

3.3.5 Config Setting

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- **Save Config**

Users can enter Saving Configuration submenu for saving settings. Choose yes and press ENTER to confirm.

```
Save Configuration
  ►YES      NO
```

- **Restore Configuration**

At this menu, user can choose yes to restore the device into the last saved configuration.

```
Restore Configuration
  ►YES      NO
```

- **Factory Set**

Choose yes to restore the device into factory's default configuration.

```
Factory Configuration
  ►YES      NO
```

- **Reset Web Login Password**

Choose yes to reset the web login password.

```
Reset Web Login Password
  ►YES      NO
```

- **Version**

User can check the software version and hardware version of this equipment under this submenu.

```
  SW:X.XX                    HW:X.X
```

- **Language**

User can select the needed language under this submenu for the system:

```
Set Chinese/English
  ►YES      NO
```

Chapter 4 WEB NMS Operation

User not only can use front buttons to set configuration, but also can control and set the configuration in computer by connecting the device to web NMS Port. User should ensure that the computer's IP address is different from this device IP address; otherwise, it would cause IP conflict.

4.1 login

The default IP address of this device is 192.168.2.136. (We can modify the IP through the front panel.)

Connect the PC (Personal Computer) and the device with net cable, and use ping command to confirm they are on the same network segment.

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 0 to 255 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the Encoder'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 the default Username and Password are "admin".) and then click "LOGIN" to start the device setting.

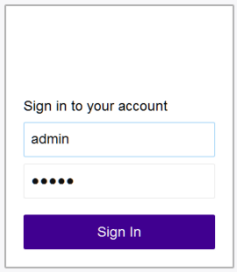

Figure-1

4.2 Operation

When we confirm the login, it displays the WELCOME interface as Figure-2.

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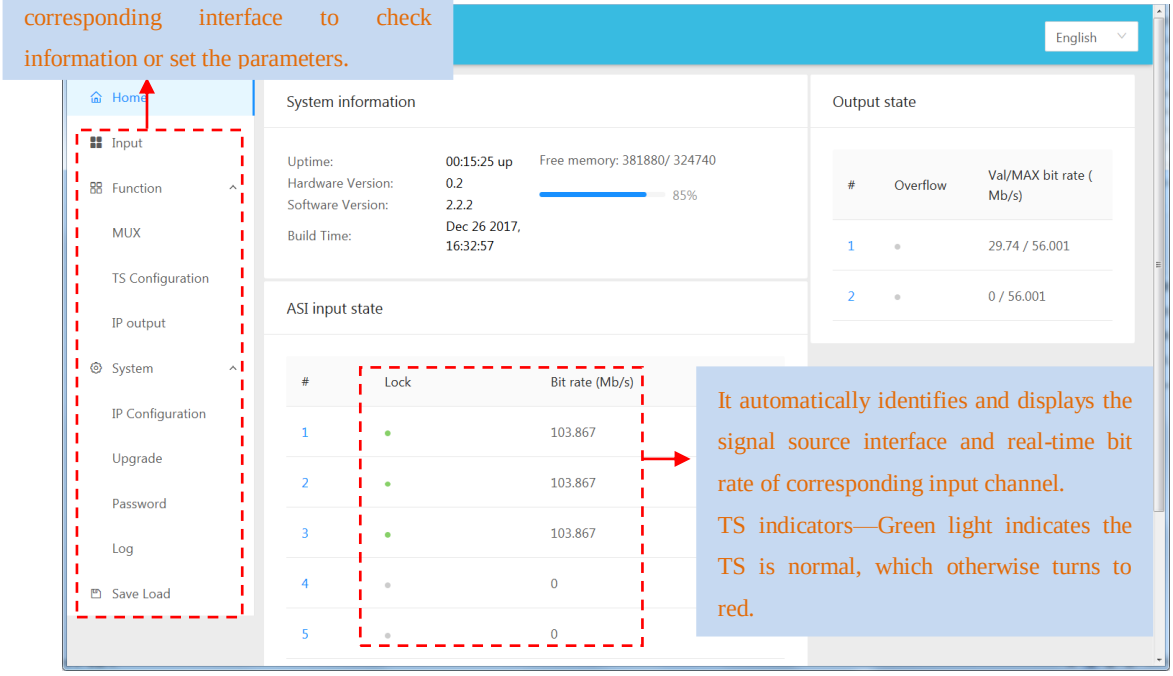

Figure-2

Input:

From the menu on left side of the webpage, clicking "Input", it displays the interface where users can configure the 512 IP input parameters of DATA 1 and DATA 2. (Figure-3)

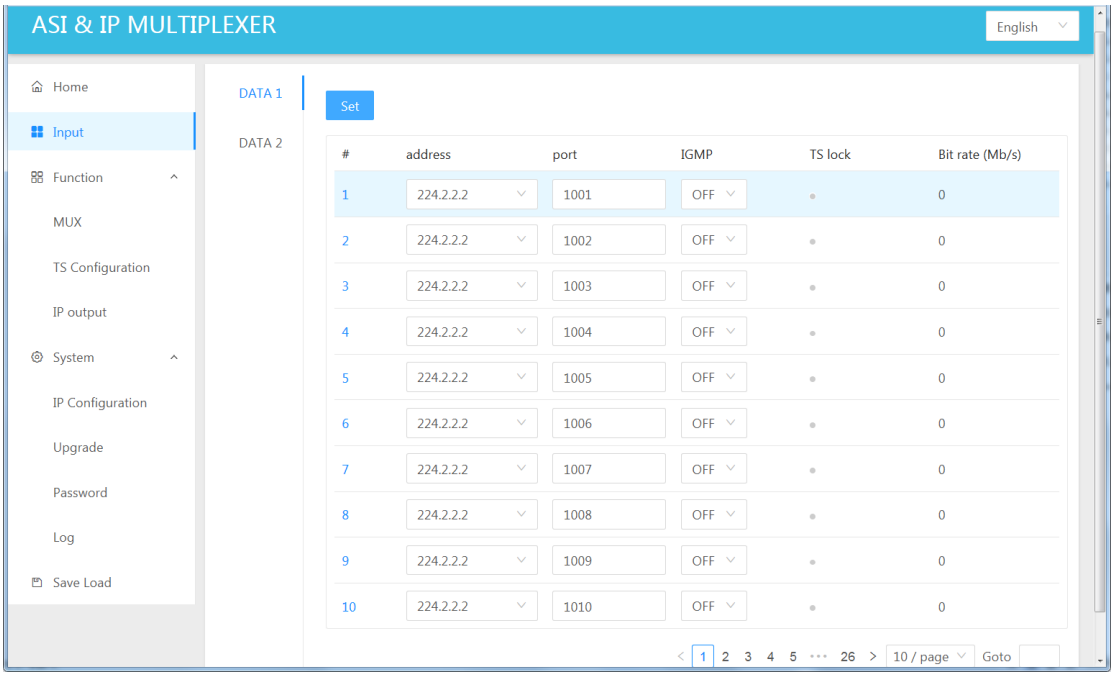

Figure-3

Function→ Mux:

From the menu on left side of the webpage, clicking "Mux", it displays the interface where users can choose the input programs to mux out separately. (Figure-4)

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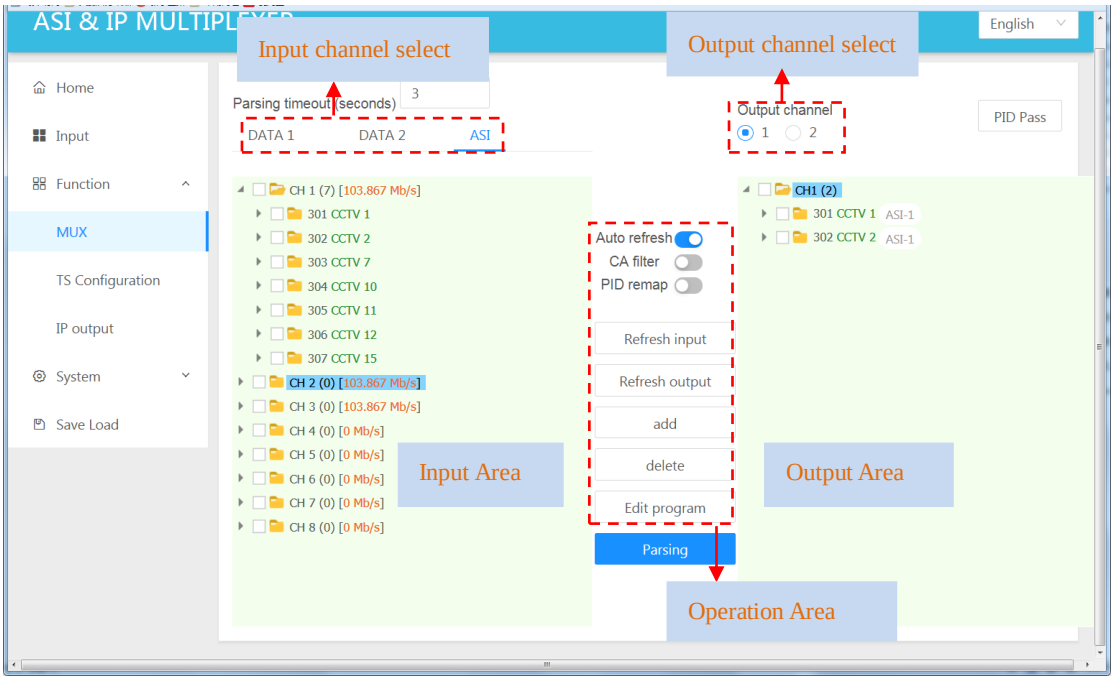

Figure-4

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

Auto refresh : To automatically refresh the input and output program information

CA filter : Enable/disable the CA Filter function. Clicking the box, user can filter the input CA to avoid disturbing with the device scrambling function.

PID remap : To enable/disable the PID remapping

Refresh input To refresh the input program information

Refresh output To refresh the output program information

add Select one input program first and click this button to transfer the selected program to the right box to output.

delete Similarly, user can cancel the multiplexed programs from the right box.

Parsing To parse programs Parsing timeout (seconds) 3 time limitation of parsing input programs

Program Modification:

The multiplexed program information can be modified by clicking Edit program, it triggers a dialog box (Figure-5) where users can input new information.

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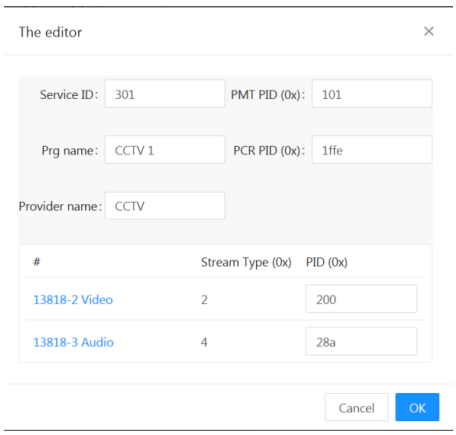

Figure-5

Input new data and click 'OK' button at last to confirm the modification.

Function → TS Config:

Clicking "TS Config", it displays the interface where users can configure the output TS. (Figure-6)

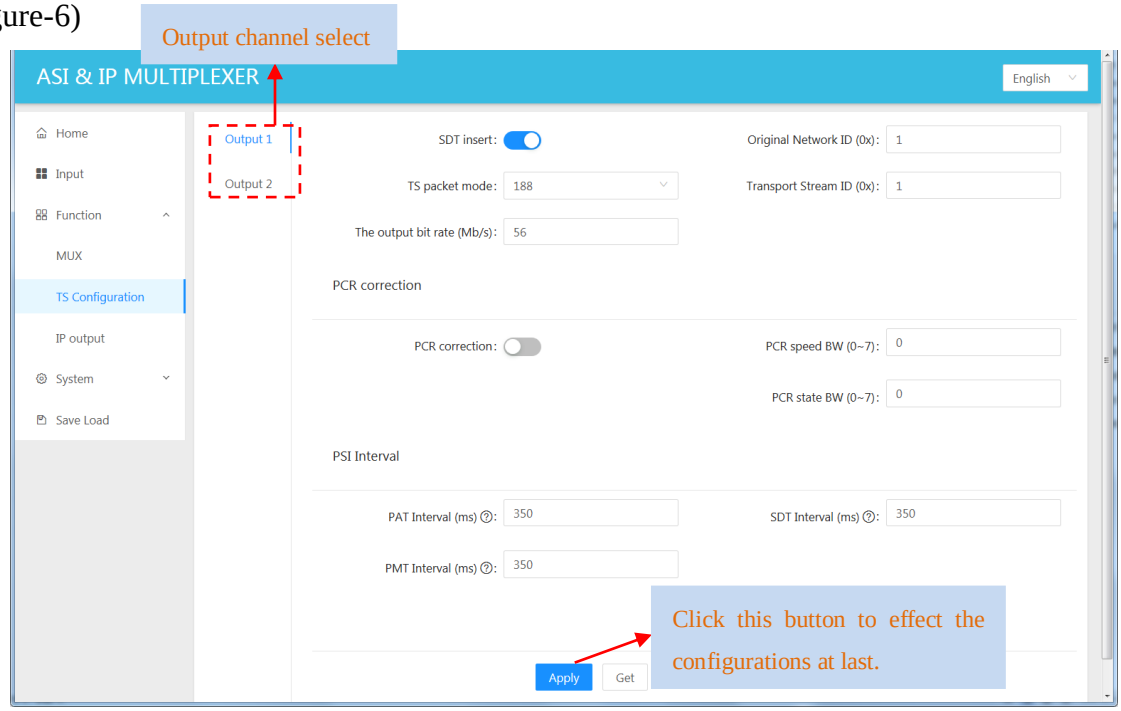

Figure-6

Function → IP Output:

H-8ASI-MUX supports TS output in IP (2*MPTS) format through the DATA port. The 2*MPTS mirror the two ASI output.

Click 'IP Stream', it displays the interface as Figure-7 where to set IP out parameters.

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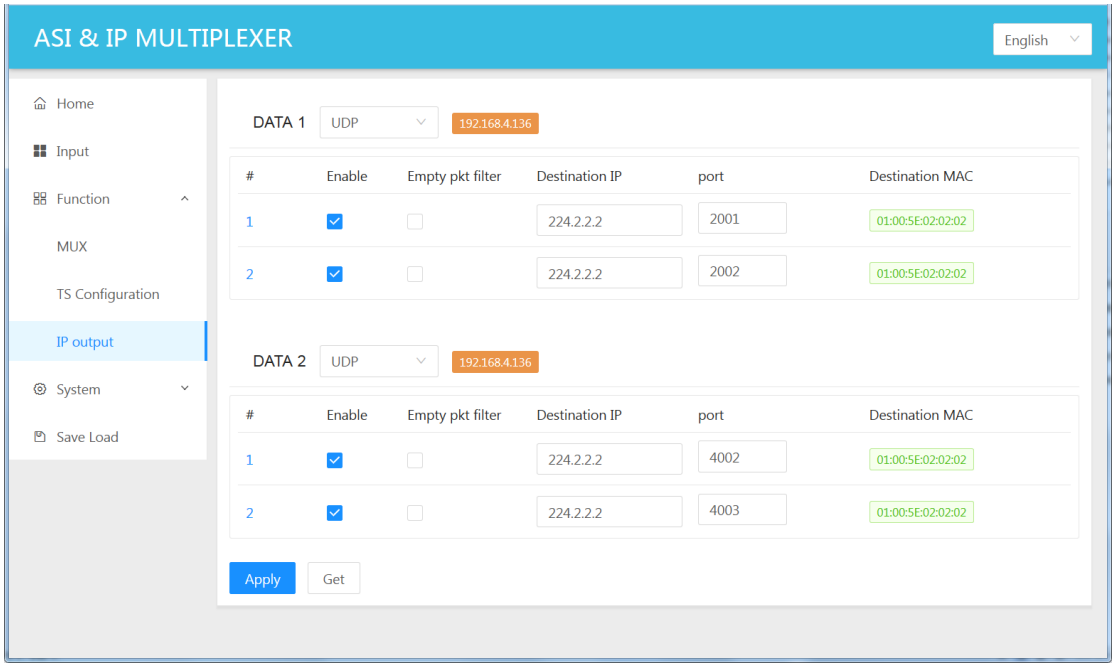

Figure-7

System → IP Configuration:

Click 'IP Configuration', it displays the interface as Figure-8 where to set NMS and DATA port parameters.

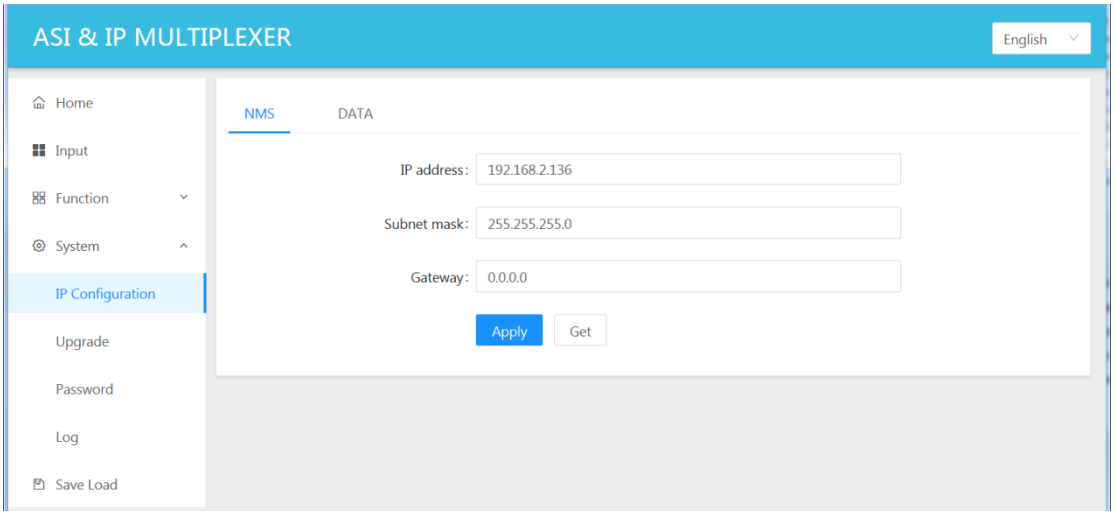

Figure-8

System → Upgrade:

Clicking "upgrade", it displays the screen as Figure-9 where to update the device by using the update file. After updating the device, user needs to restart the device by using Reboot option.

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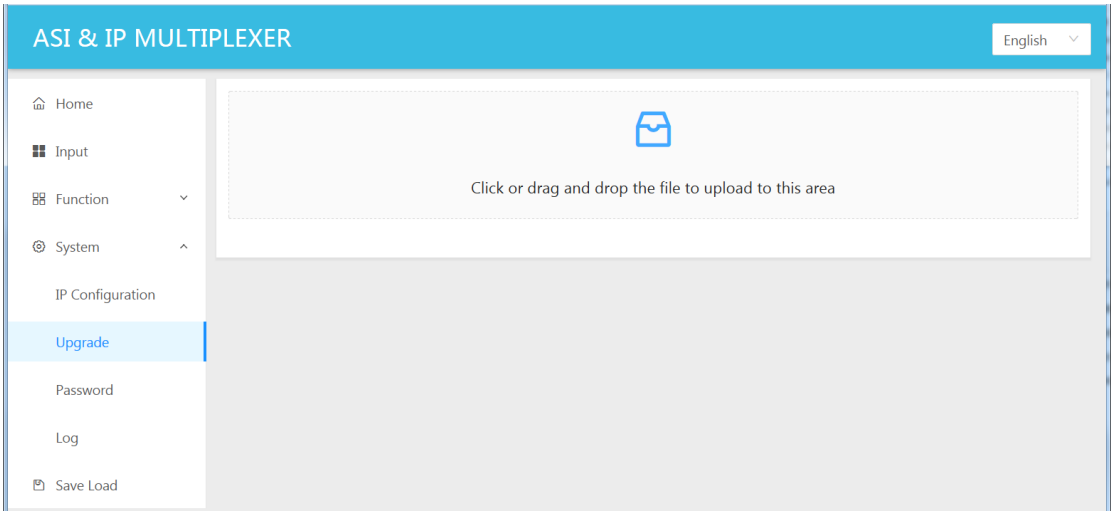

Figure-9

System → Password:

Clicking "Password", it displays the screen as Figure-10 where to set the login account and password for the web NMS.

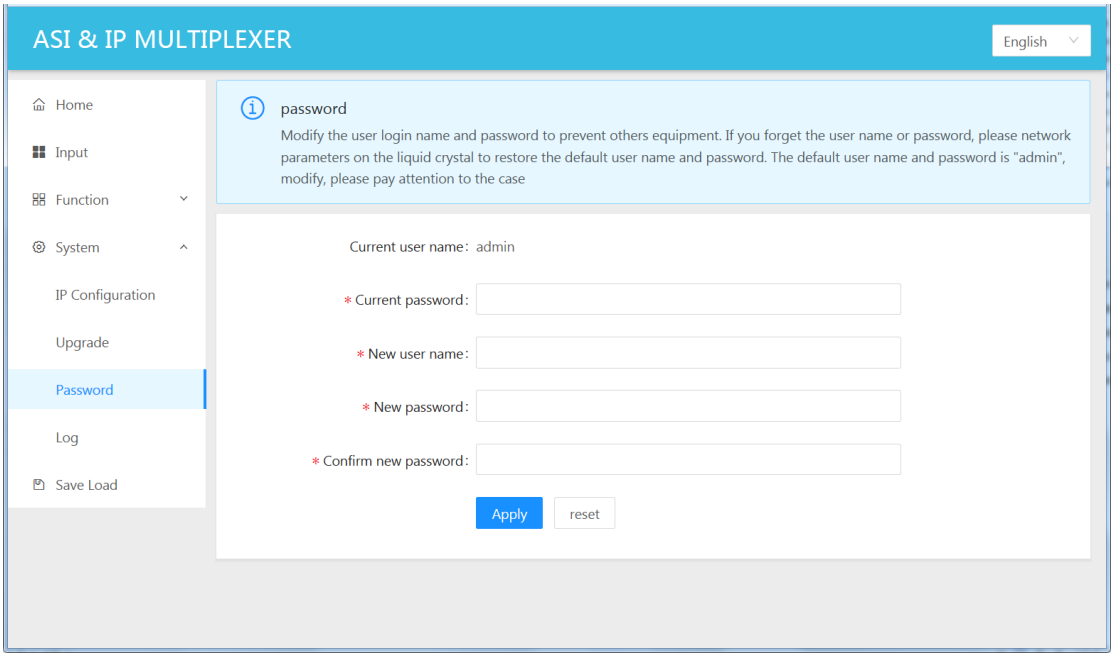

Figure-10

System → Log:

Clicking "Log", it displays the screen as Figure-11 where to check the log of this device.

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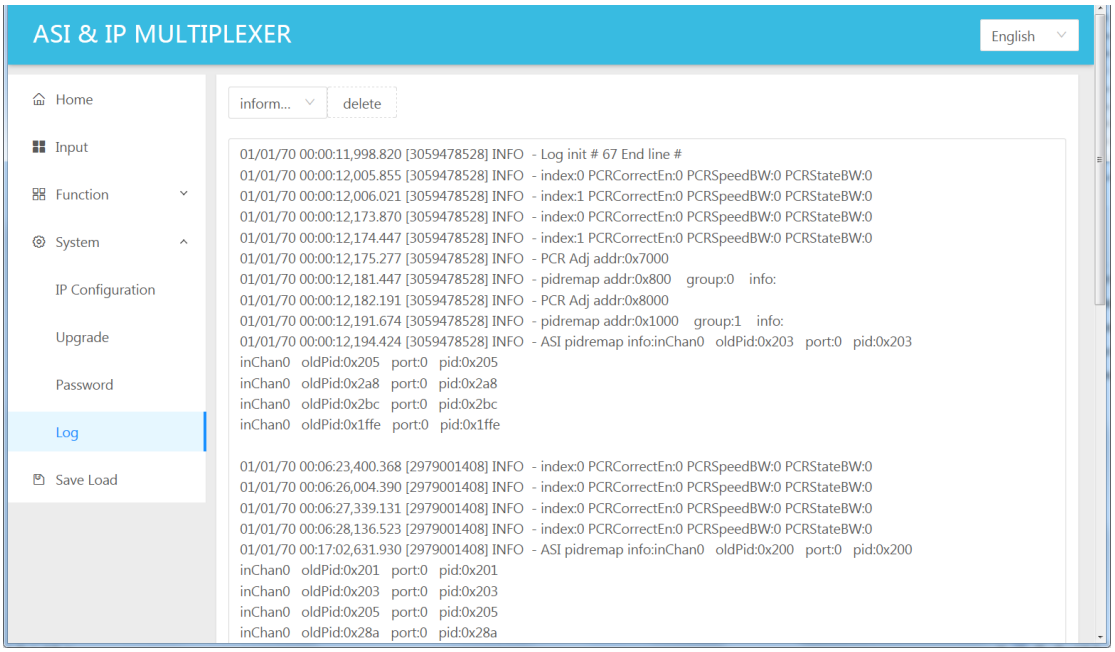

Figure-11

Save Load:

From the menu on left side of the webpage, clicking “Save Load”, it displays the screen as Figure-12 where to save/ restore/factory setting/ Remove/backup/ load your configurations.

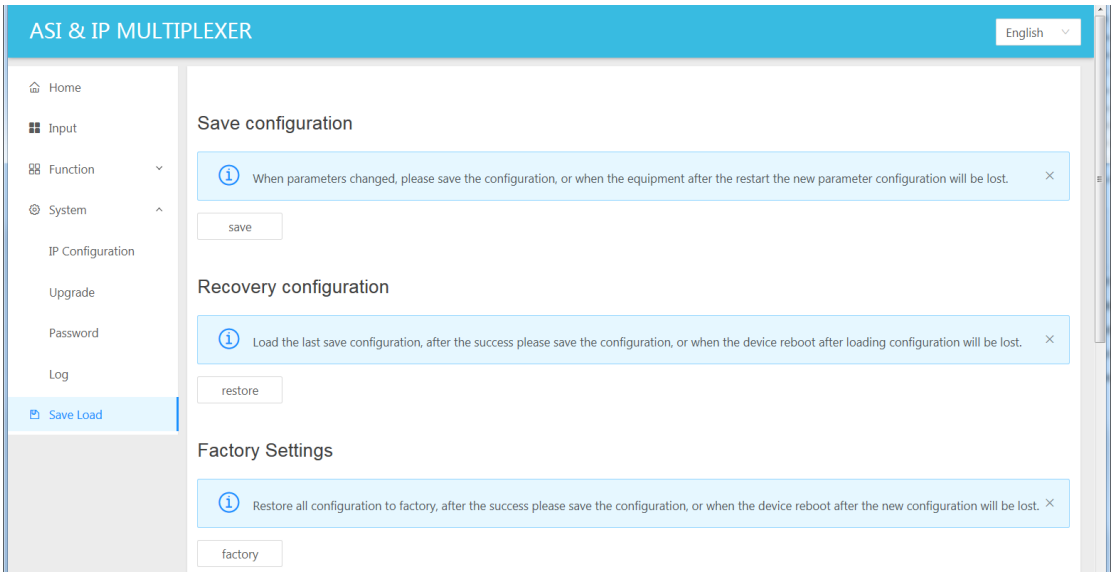

Figure-12

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Chapter 5 Trouble Shooting

THOR's ISO9001 quality assurance system has been approved by CQC organization. For guaranteeing the products' quality, reliability and stability, all THOR products pass the testing and inspection before products are shipped 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.

Preventive Measures

- Installing the device at the place in which environment temperature is between 0 to 45 ℃
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking the input AC 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 be greater than 10 seconds.

Conditions need to unplug the 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

Chapter 6 Packing list

- H-8ASI-MUX Multiplexer 1pcs
- User Manual 1pcs
- ASI Cable 8pcs
- Power Cord 1pcs

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