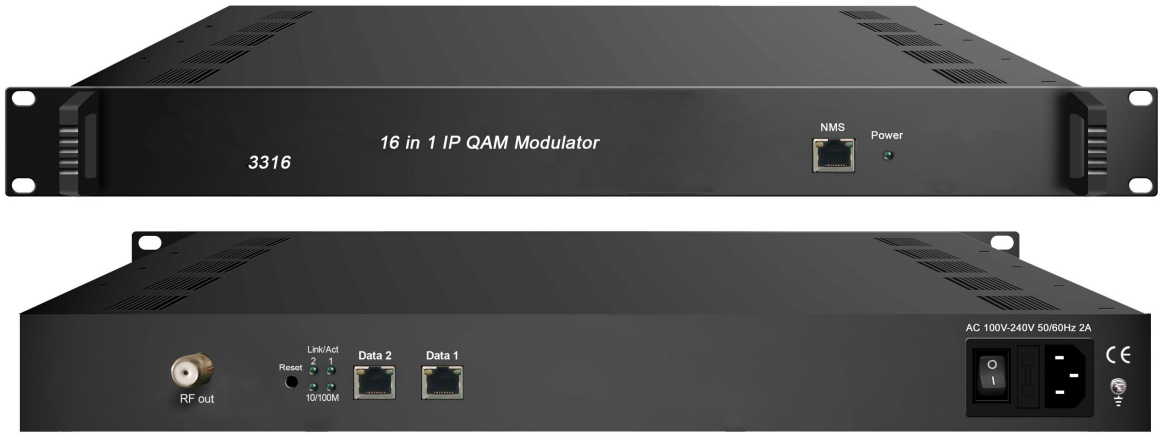
SOFTEL

SFT3316 16 in 1 IP QAM Modulator User Manual



About This Manual

Intended Audience

This user manual has been written to help people who have to use, to integrate and to install the product. Some chapters require some prerequisite knowledge in electronics and especially in broadcast technologies and standards.

Disclaimer

The contents of this document are subject to revision without notice due to

continued progress in methodology, design and manufacturing. SOFTEL shall have no liability for any error or damage of any kind resulting from the use of this document.

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Directory

Chapter 1 Product Overview

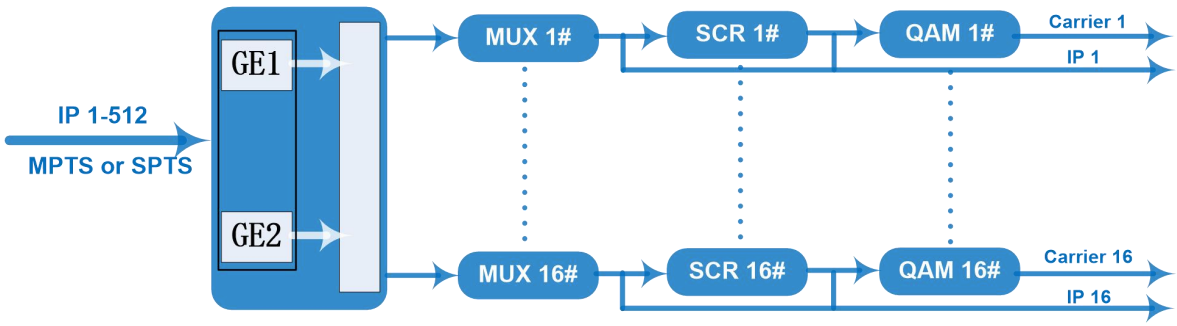
1.1 Outline

SFT3316 16 in 1 IP QAM modulator is the latest generational Mux-scrambling-modulating all-in-one device developed by SOFTEL. It has 16 multiplexing channels, 16 scrambling channels and 16 QAM (DVB-C) modulating channels, and supports maximum 512 IP input through the GE port and 16 non-adjacent carriers (50MHz~960MHz) output through the RF output interface. The device is also characterized with high integrated level, high performance and low cost. This is very adaptable to newly generation CATV broadcasting system.

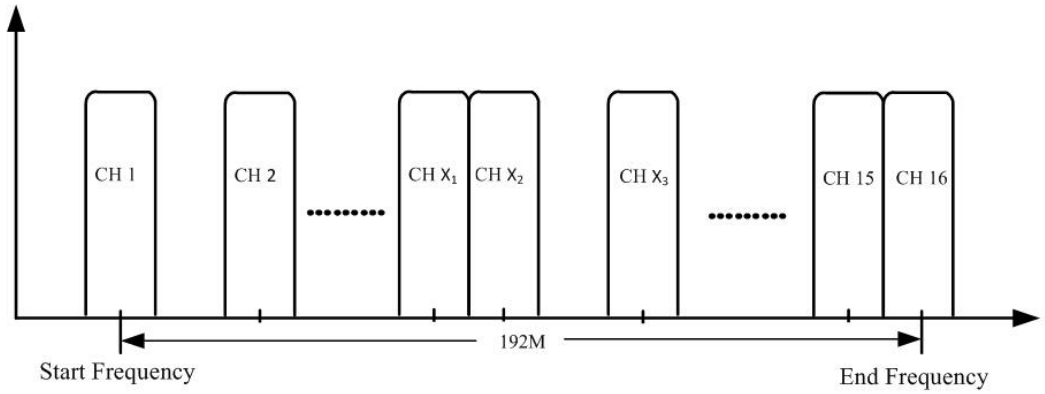
1.2 Key Features

- 2 GE input, Data 1 and Data 2
- Support up to 512 channels TS over UDP/RTP, unicast and multicast, IGMP v2\v3
- Max 840Mbps for each GE input
- Support accurate PCR adjusting
- Support CA filtering ,PID remapping and PSI/SI editing
- Supports up to 180 PIDS remapping per channel
- Support DVB general scrambling system (ETR289), simulcrypt standards ETSI 101 197 and ETSI 103 197
- Support 16 multiplexed or scrambled TS over UDP/RTP/RTSP output
- 16 non-adjacent QAM carriers output, compliant to DVB-C (EN 300 429) and ITU-T J.83 A/B
- Support RS (204,188) encoding
- Support Web-based Network management

1.3 Inner Structure



1.4 Carrier Setting Illustration



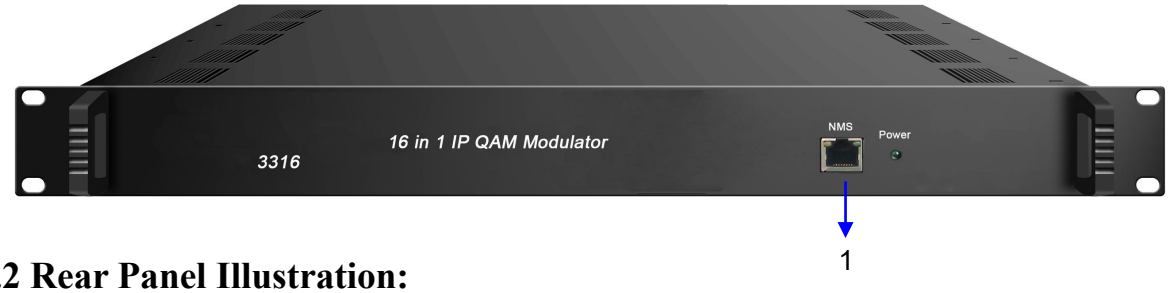
1.5 Specifications

Input	Input	512 IP input, 2 100/1000M Ethernet Port(SFP optional)	
	Transport Protocol	TS over UDP/RTP, unicast and multicast, IGMP V2/V3	
	Transmission Rate	Max 840Mbps for each GE input	
Mux	Input Channel	512	
	Output Channel	16	
	Max PIDs	180 per channel	
	Functions	PID remapping(auto/manually optional)	
		PCR accurate adjusting	
		PSI/SI table automatically generating	
Scrambling Parameters	Max simulscrypt CA	4	
	Scramble Standard	ETR289, ETSI 101 197, ETSI 103 197	
	Connection	Local/remote connection	
Modulation Parameters	DVB-C Modulator Sectioon	J.83A	Constellation : 16/32/64/128/256QAM
			Bandwidth :8M

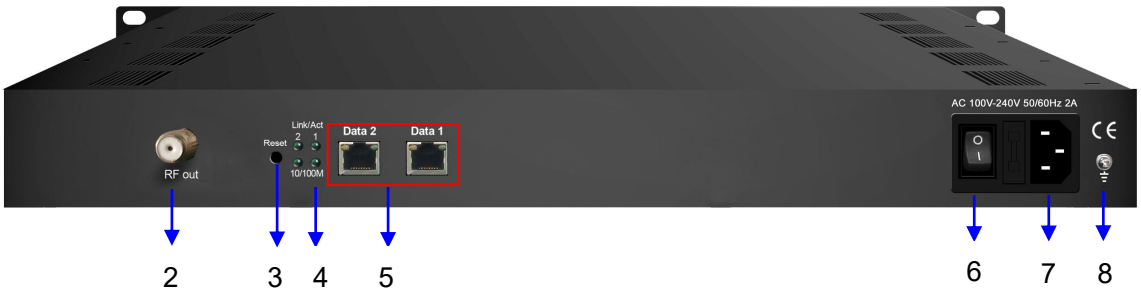
		J.83B	Constellation : 64QAM/ 256QAM
			Bandwidth :6M
	QAM Channel	16 non-adjacent carrier	
	Modulation Standard	EN300 429/ITU-T J.83A/B(DVB-C)	
	Symbol Rate	5.0~7.0Msps, 1ksps stepping	
	FEC	RS (204, 188)	
RF Output	Interface	1 F typed output port for 16 carriers, 75Ω impedance	
	RF Range	50~960MHz, 1kHz stepping	
	Output Level	-20dBm~+10dBm(87~117dbμV), 0.1dB stepping	
	MER	≥ 40dB	
TS output	16 IP output over UDP/RTP/RTSP, unicast/multicast, 2 100/1000M Ethernet Ports		
System	Network management software (NMS) supporting		
General	Demission	420mm×440mm×44.5mm (WxLxH)	
	Temperature	0~45℃(operation), -20~80℃(storage)	
	Power Supply	AC 100V±10%, 50/60Hz or AC 220V±10%, 50/60Hz	

Chapter 2 Physical Presentational Statement

2.1 Front panel Illustration:



2.2 Rear Panel Illustration:



1	NMS/CAS: network management port and CA data port
2	RF output port
3	Reset IP: Reset webmaster IP address, recover it to default IP address
4	Link/Act Indicators
5	Data Input/Output 1/2
6	Power switch
7	AC Power Socket
8	Grounding

Chapter 3 Installation Guide

3.1 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:

- SFT3316 16 in 1 IP QAM Modulator
- User's Manual
- Power Cord

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

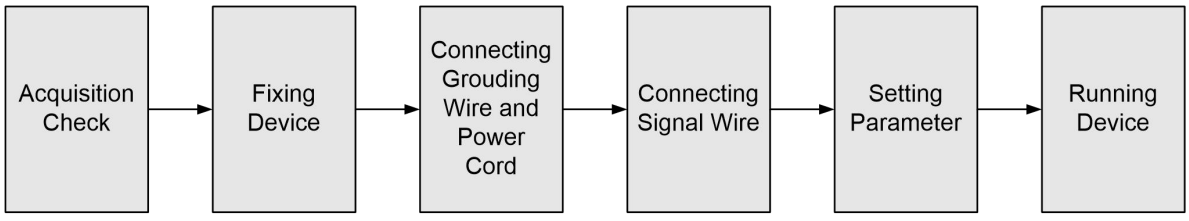
3.2 Installation Preparation

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 steps of the installation include:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing SFT3316 16 in 1 IP QAM Modulator
- Connecting signal cables
- Connecting communication port (if it is necessary)

3.2.1 Device's Installation Flow Chart Illustrated as follows:



3.2.2 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: 1M (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 ±10% 50/60Hz or 110V ±10% 50/60Hz. Please carefully check before running.

3.2.3 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^2.

3.2.4 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^2.

3.2.5 Device Grounding

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

3.3 Wire's Connection

3.3.1 Power cord connection

The power socket is located on the right of rear panel, and the power switch is on the left of front panel. User can plug one end of the power cord to the socket and insert the other end to AC power. 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 SFT3316 16 in 1 IP QAM Modulator, user should set the power switch to "OFF".

3.3.2 Signal and NMS Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable.

Chapter 4 Web NMS Management

User can only 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's IP address; otherwise, it would cause IP conflict.

4.1 Login

The factory default IP address please check the rear panel of the device (Usually 1.0.0.101/102/103), if no IP address on rear panel, the default IP address should be 192.168.0.136, and users can connect the device and web NMS through this IP address.

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

Launch the web browser an input the device 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.

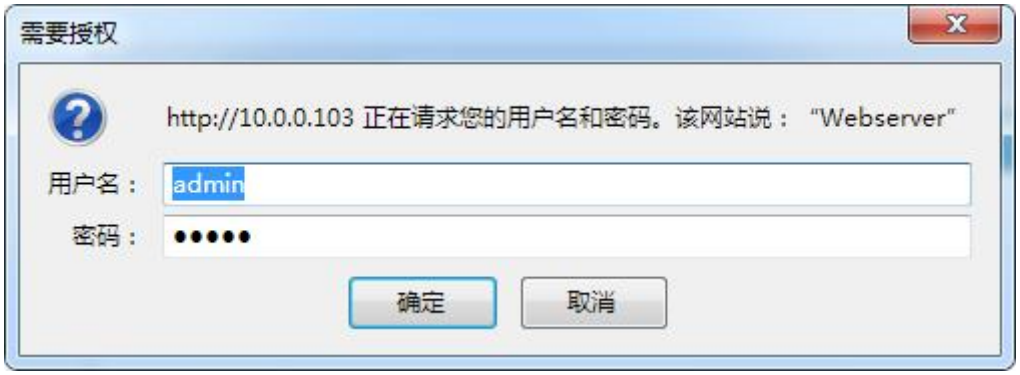


Figure-1

4.2 Operation

4.2.1 Summary

When we confirm the login, it will display the summary interface as Figure-2 where users have an

over view of the system information.

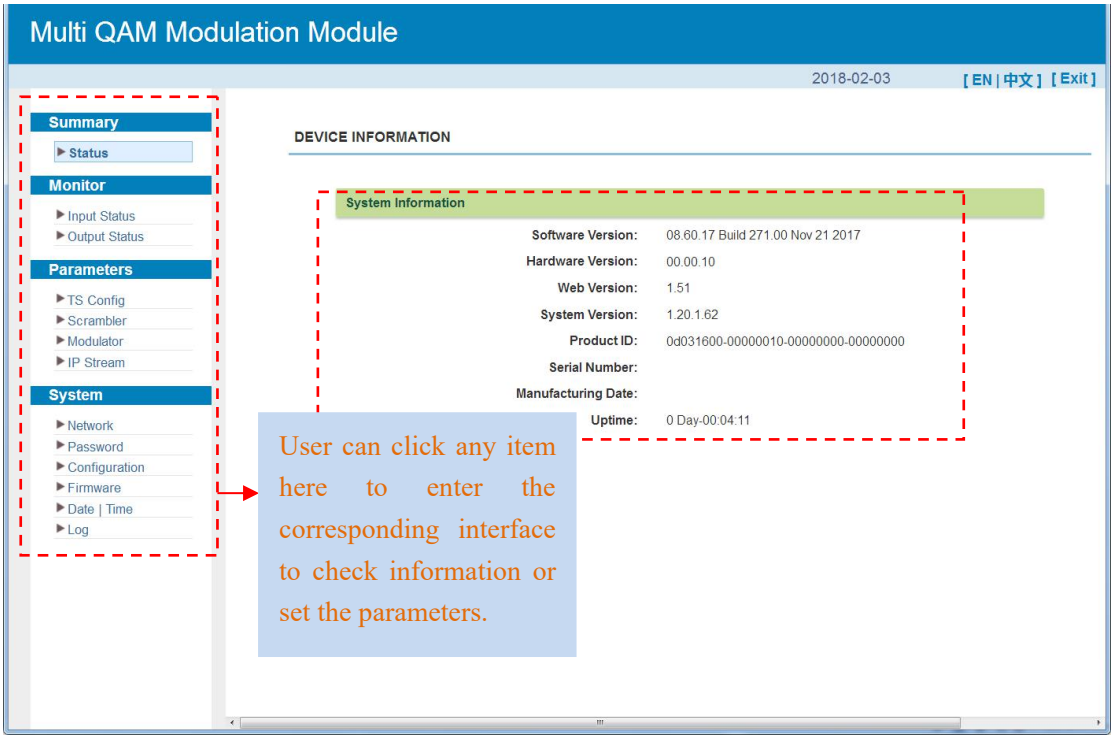


Figure-2

4.2.2 Monitor

Monitor → Input Status:

Clicking “Input Status”, it will display the interface as Figure-3 where users can monitor the input status of Data1 and Data 2.

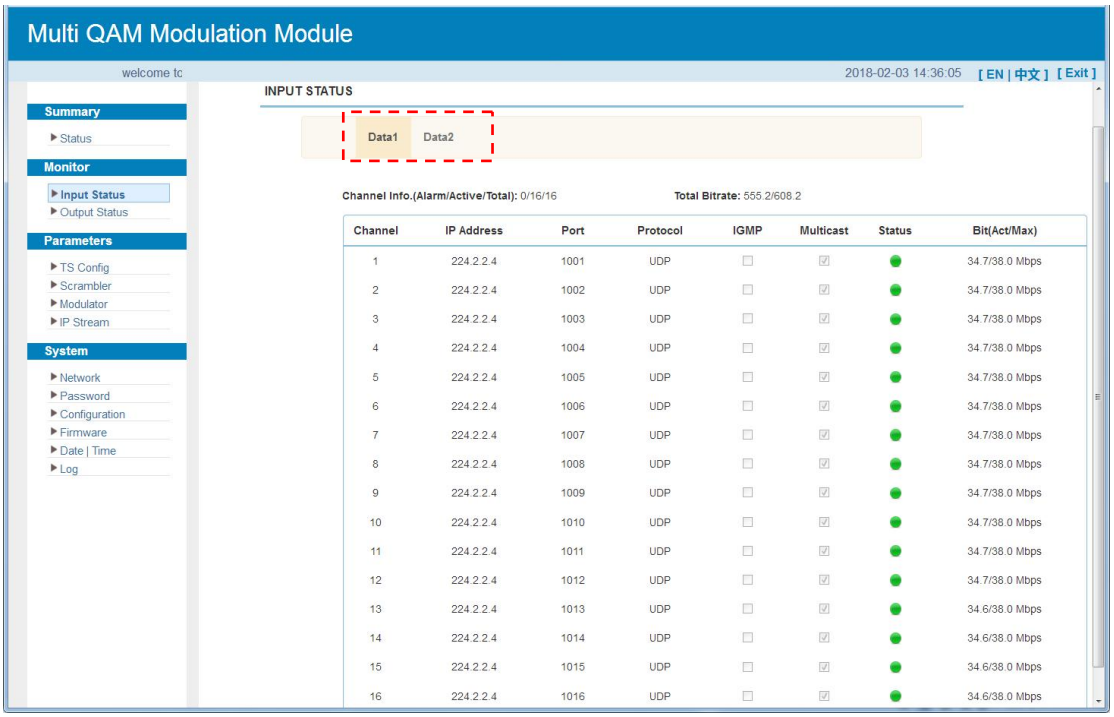


Figure-3

Monitor → Output Status:

Clicking “Output Status”, it will display the interface as Figure-4/5 where users can monitor output status of the 16 IP and 16 QAM.

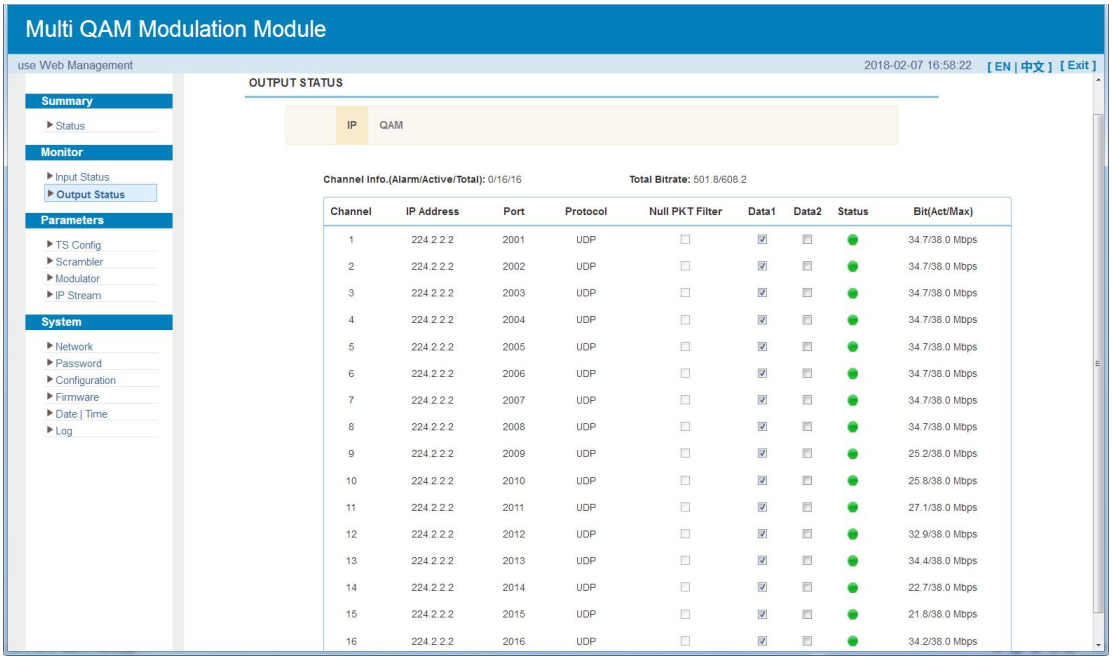


Figure-4

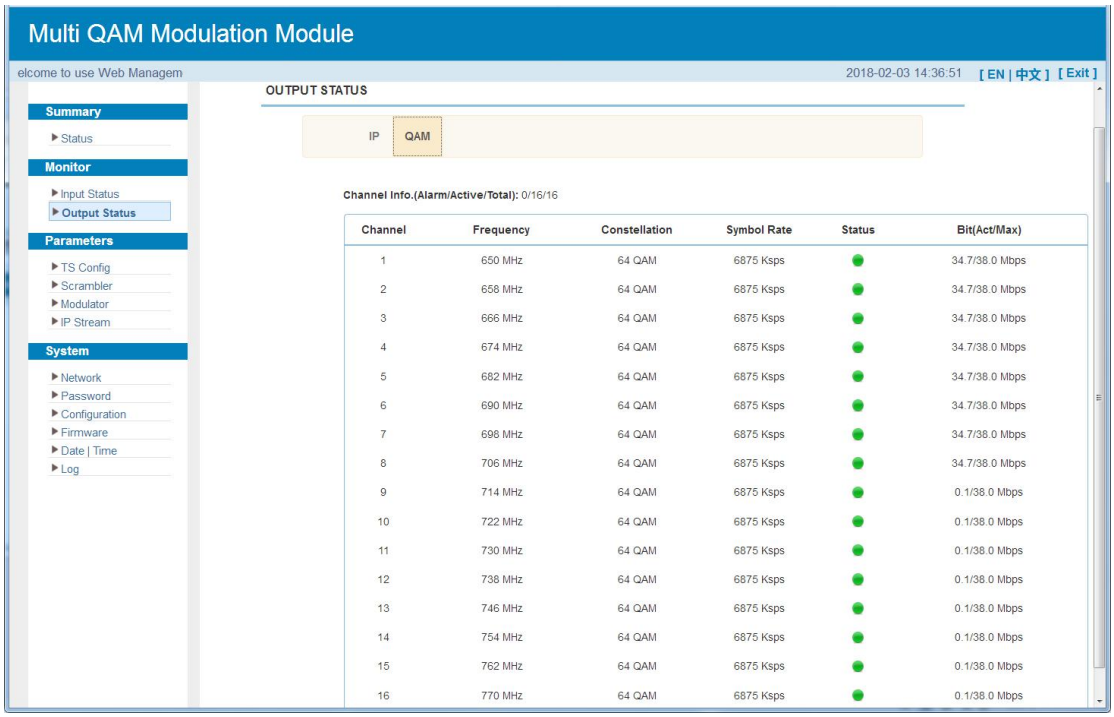


Figure-5

4.2.3 Parameters

Parameters → TS Config:

Clicking “TS Config”, it will display the interface where users can configure the output TS parameters in this interface.

➢ Output TS X

Clicking “Output TS X”, it will display the interface as Figure-6 where users can select the output TS channels.

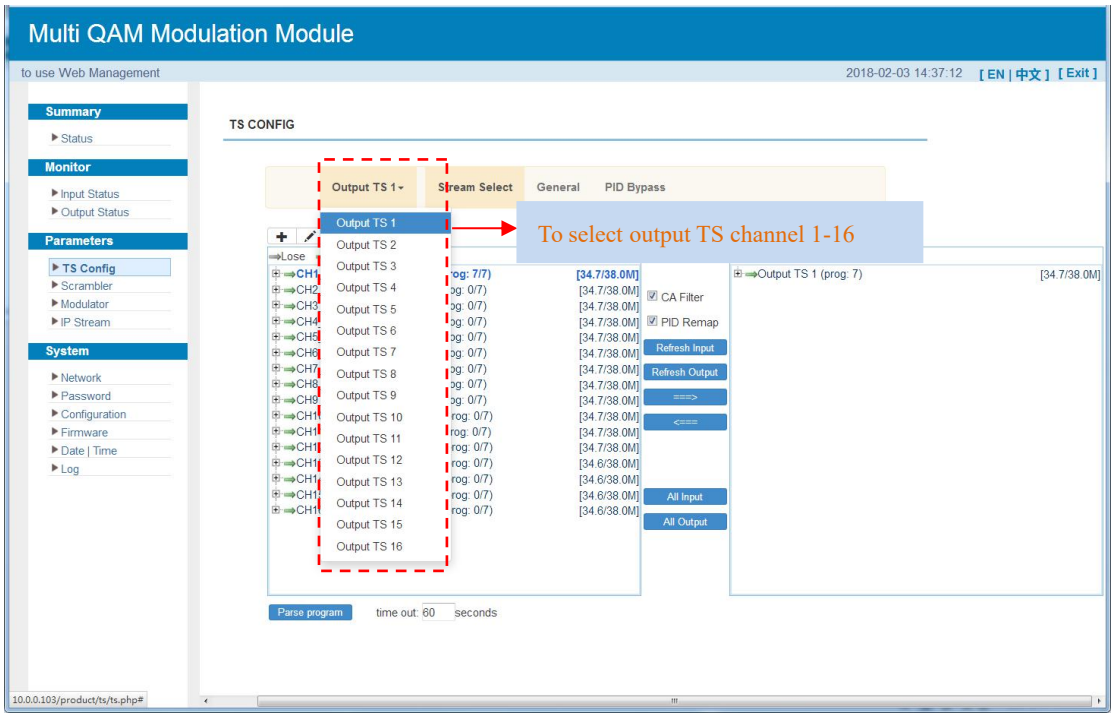


Figure-6

➢ Stream Select

Clicking “Stream Select”, it will display the interface where users can choose the programs to Mux out. (Figure-7)

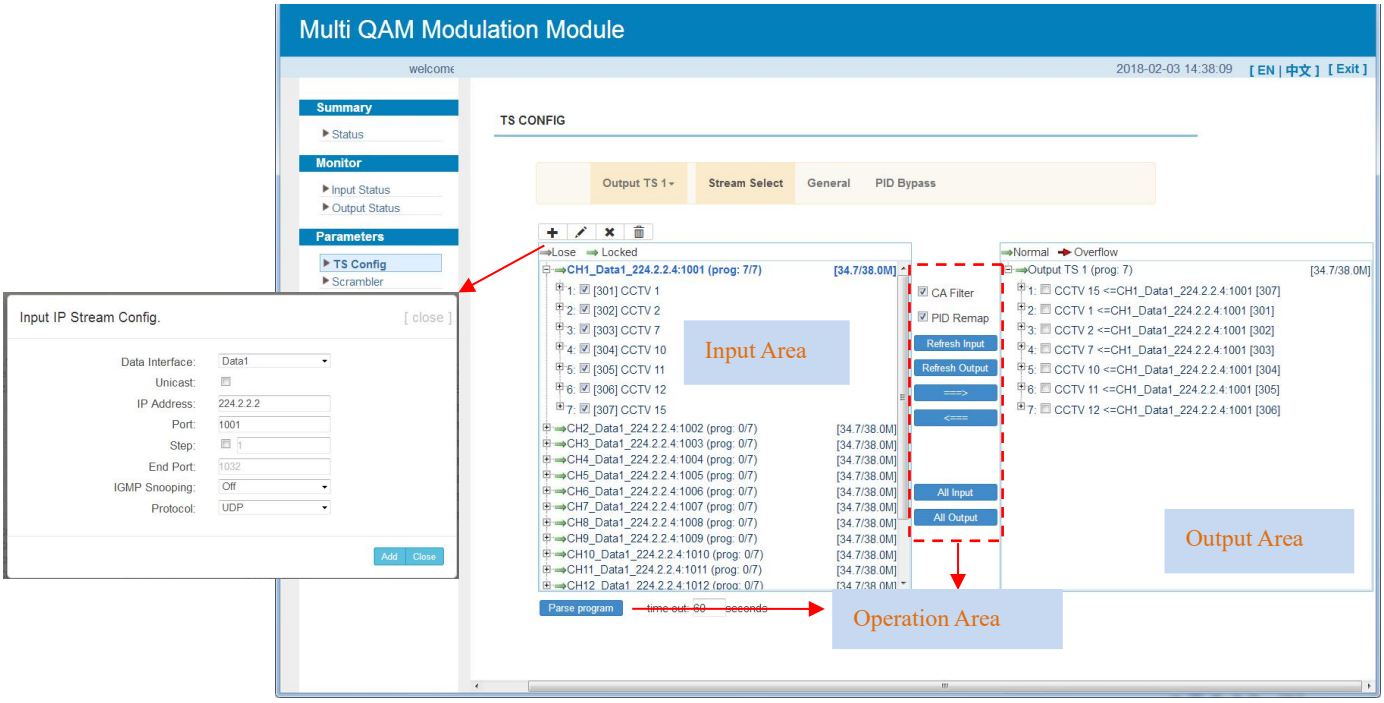


Figure7

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

: To add input channel which come from Data1and Data 2

: To edit the input channel

: To delete the input channel

: To delete all inputs channel

Lose Locked : To check input IP lock or not, green means current IP locked

Normal Overflow : To check current TS overflow or not, red color means current TS overflow, need reduce program

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

===> 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: 60 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 15 <=CH1_Data1_224.2.2.4:1001 [307] , it triggers a dialog box (Figure-8) where users can input new information.

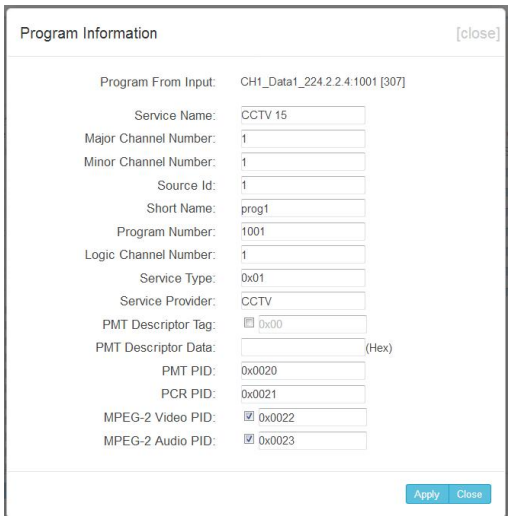


Figure-8

➢ General

Clicking “General”, it will display the interface where users can set parameters for each output channel. (Figure-9)

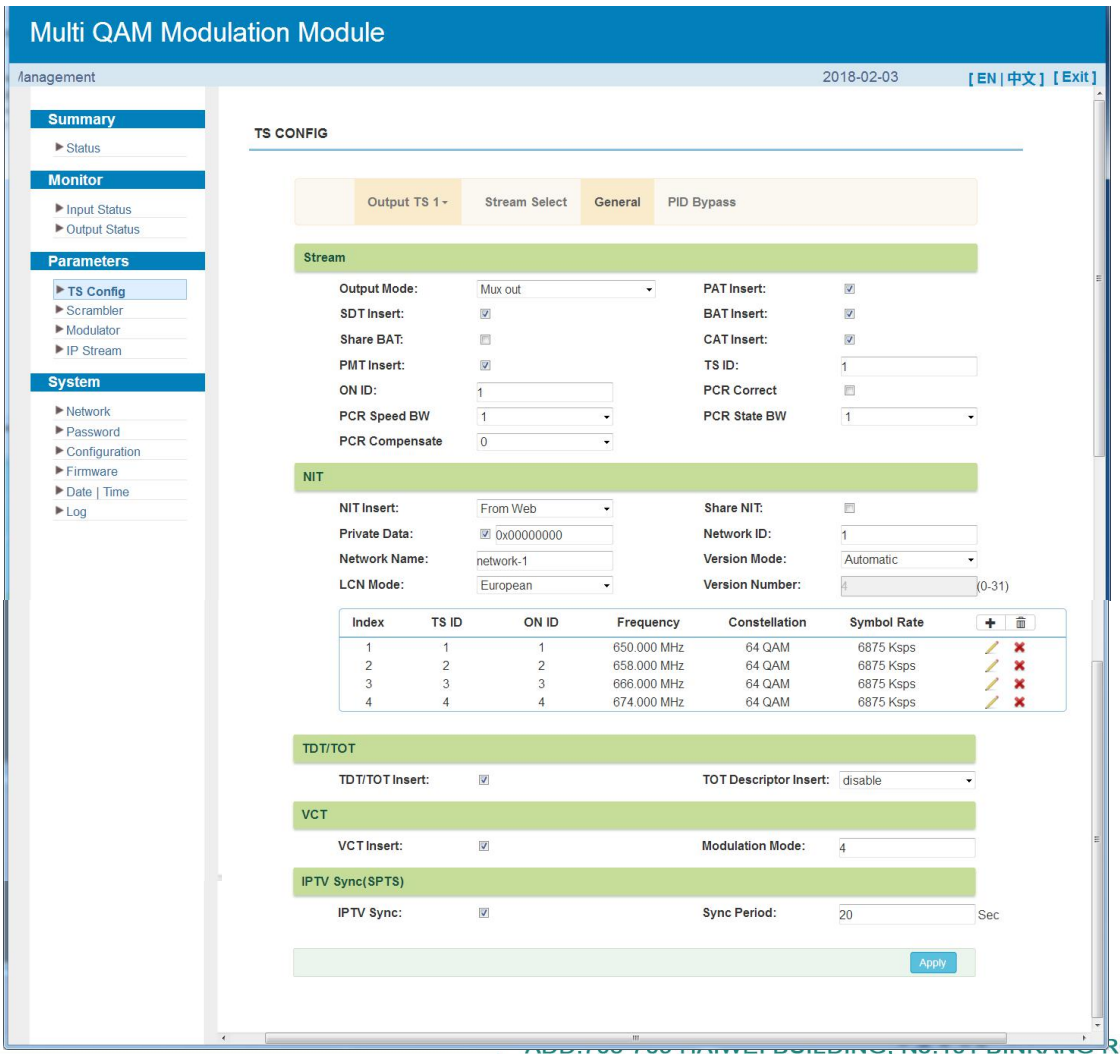


Figure-9

Users click + the interface is display as below, and click Add to apply the modified parameters. (Figure-10)

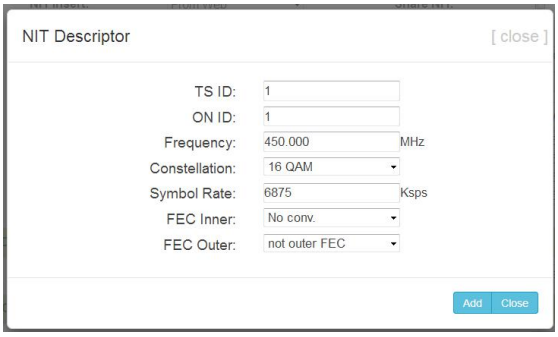


Figure-10

➢ PID Pass

Clicking “PID Bypass”, it will display the interface as Figure-11 where user can add PIDs to be passed, click the “+” symbol, input current IP channel number, then input current IP source PID and output PID which is customer needed , then click “set” to apply the parameters.

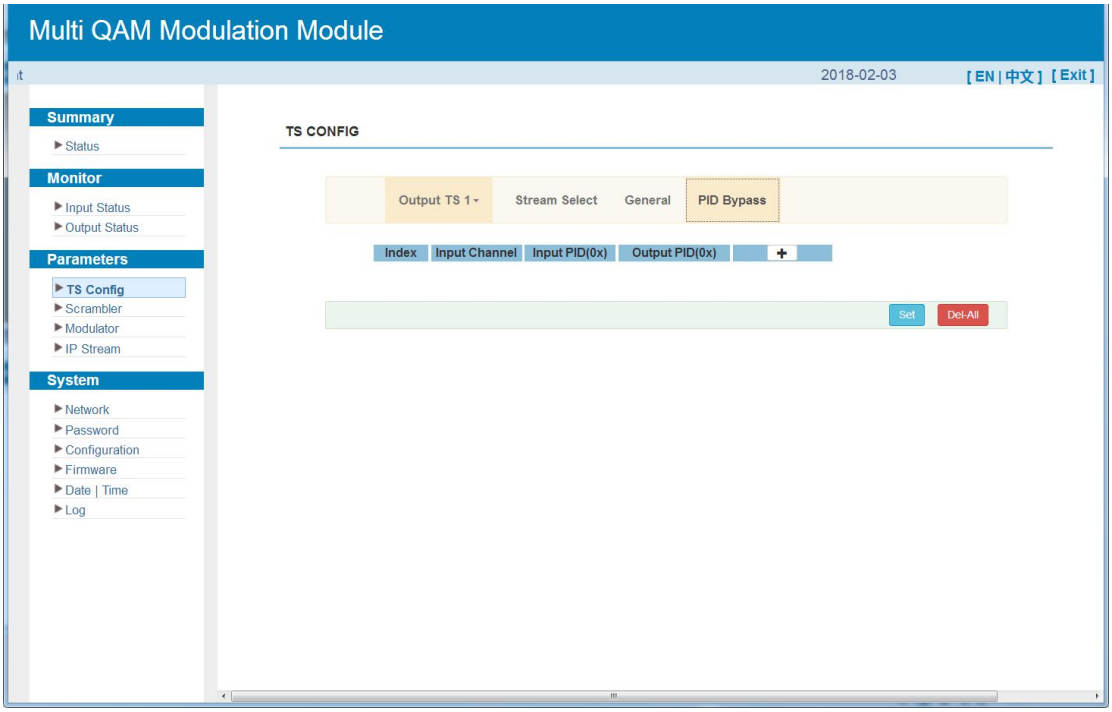


Figure-11

Parameters → Scrambler:

Clicking “Scrambler”, it will display the interface where users can choose the programs to

scramble. (Figure-12)

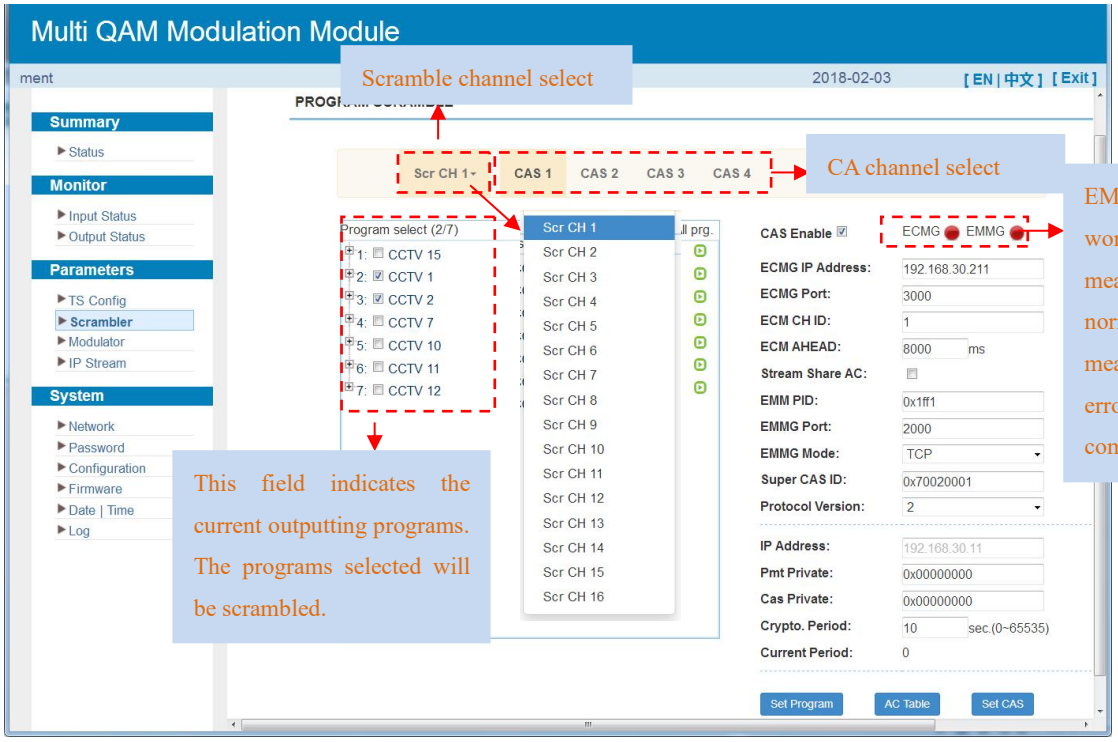


Figure-12

Parameters → Modulator:

Clicking "Modulator", it will display the interface as Figure-13 where to set RF output parameters.

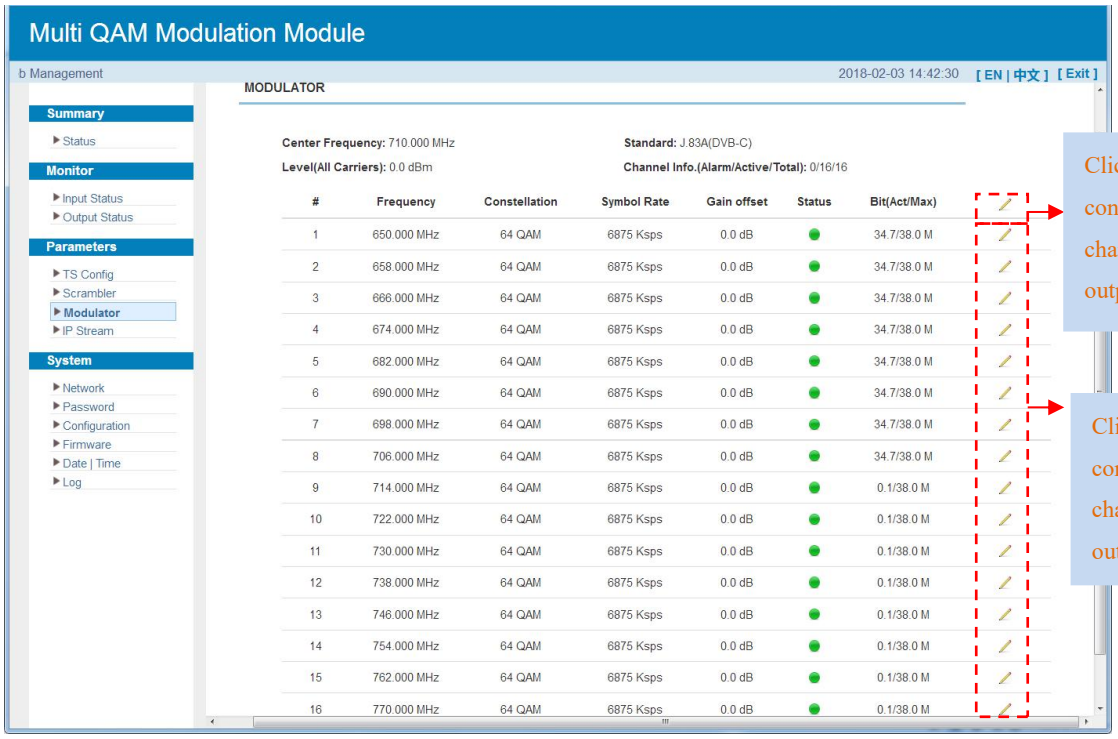
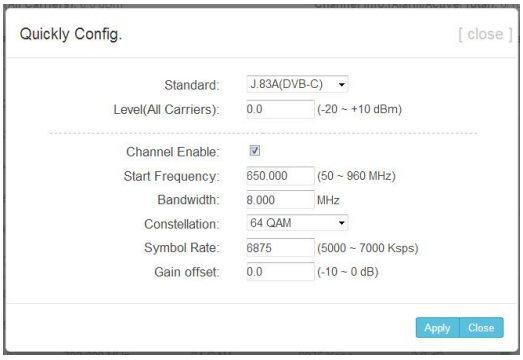
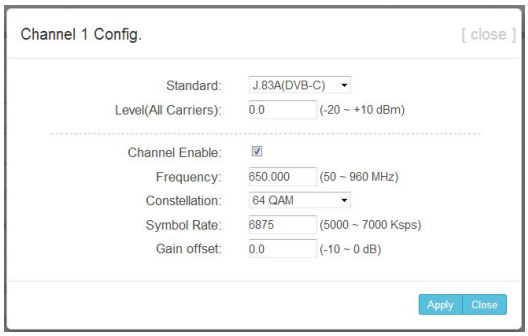


Figure-13

When users click “quickly config” button, it triggers a dialog box as follow where users can set all channels configration.



When users click “Channel config” button, it triggers a dialog box as follow where users can set the corresponding channel configration.



Parameters → IP Stream:

SFT3316 supports TS to output in IP (16*MPTS) format through the DATA port.

Clicking “IP Stream”, it will display the interface as Figure-14 where to set IP out parameters.

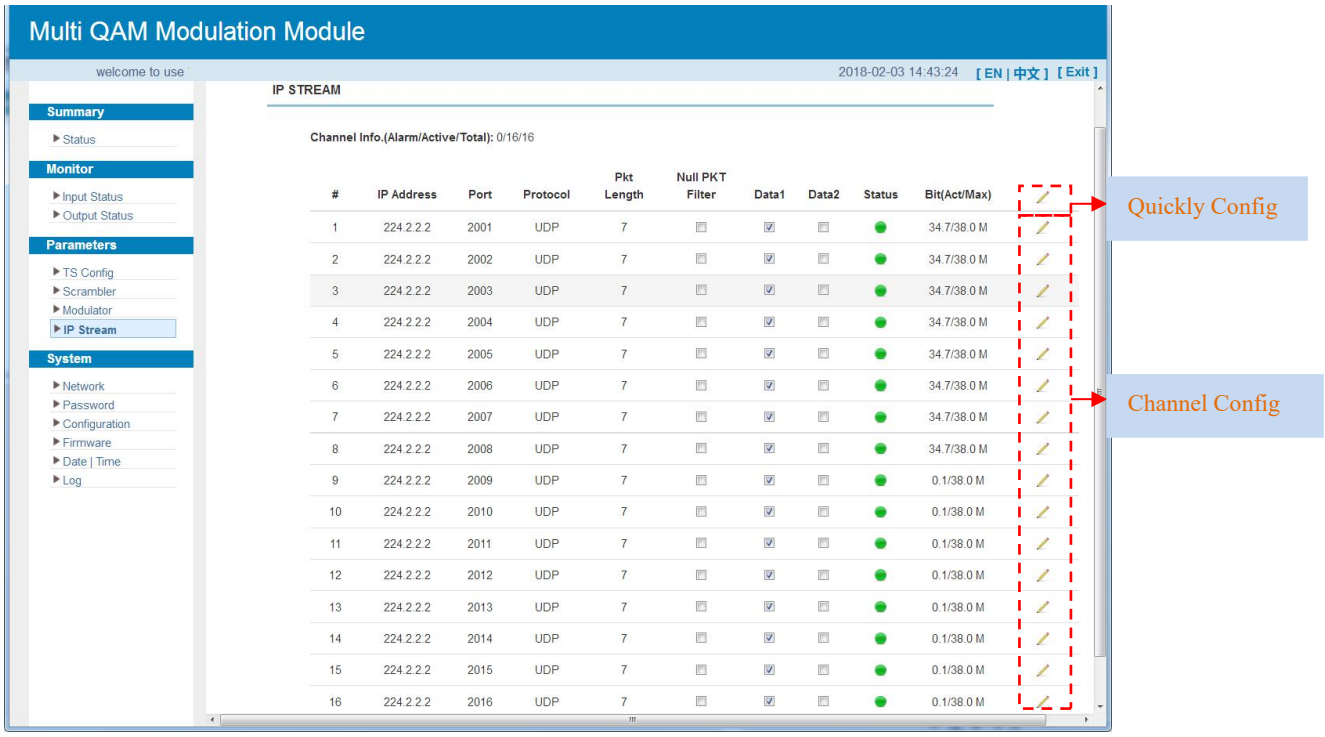
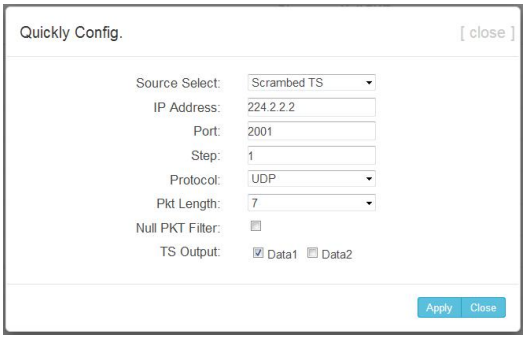
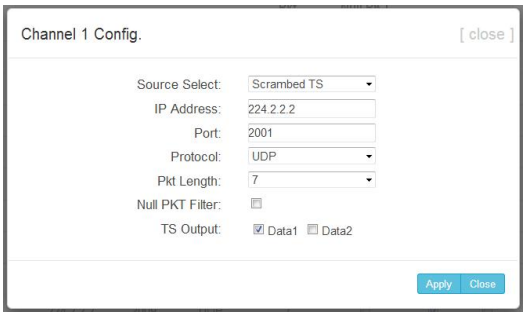


Figure-14

When users click “Quickly Config” button, it triggers a dialog box where users can set all channels MPTS configration simultaneously.



When users click “Channel Config” button, it triggers a dialog box where users can set corresponding MPTS channel configration.



4.2.4 System

System → Network:

Clicking “Network”, it will display the interface as Figure-15 where to set network parameters.

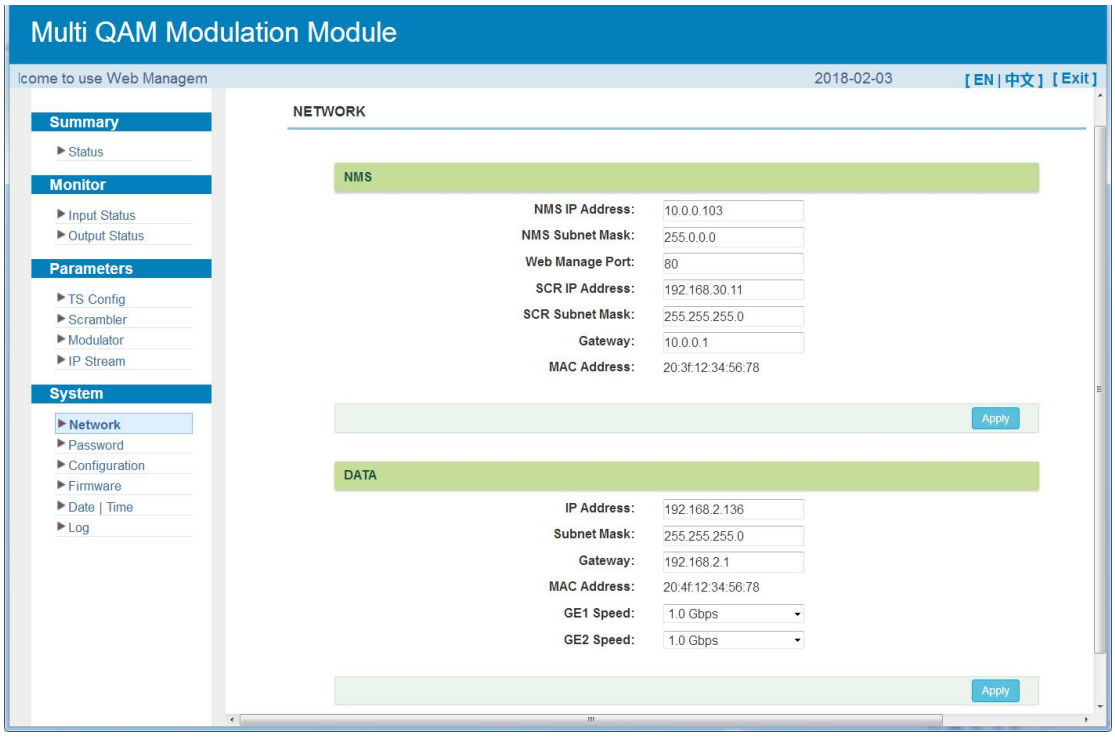


Figure-15

System → Password:

Clicking “Password”, it will display the screen as Figure-16 where to set the login account and password for the web NMS.

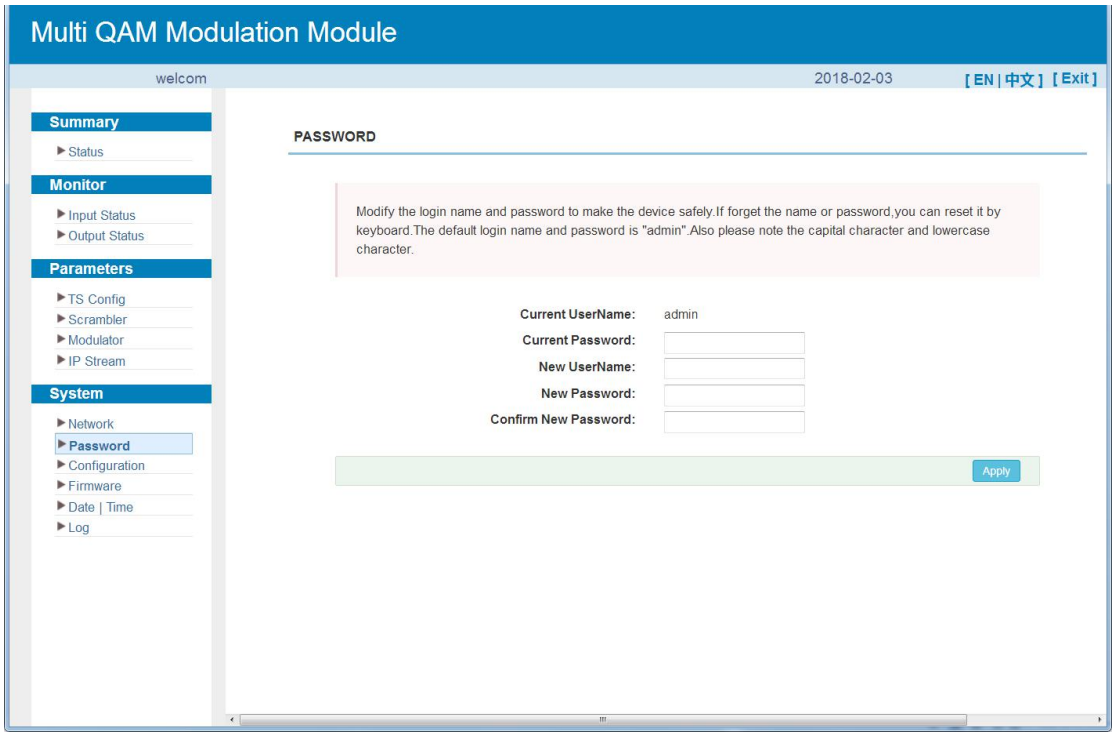


Figure-16

System → Configuration:

Clicking "Configuration", it will display the screen as Figure-17 where to set your configurations for the device.

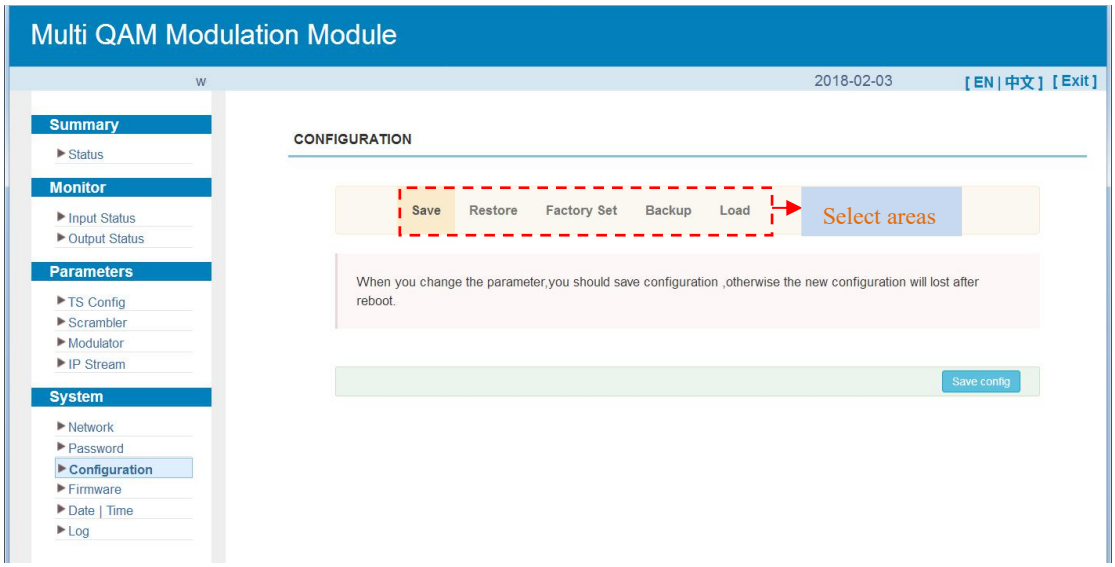


Figure-17

System → Firmware:

Clicking "Firmware", it will display the screen as Figure-18 where to update firmware for the device.

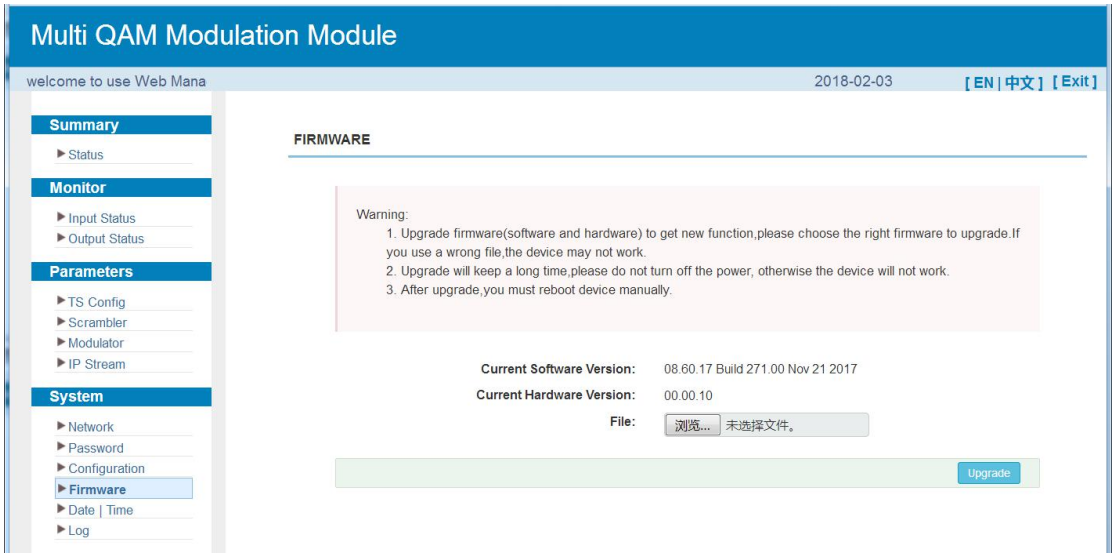


Figure-18

System → Date/Time:

Clicking "Date/Time", it will display the interface as Figure-19 where users can set date/time for this device.

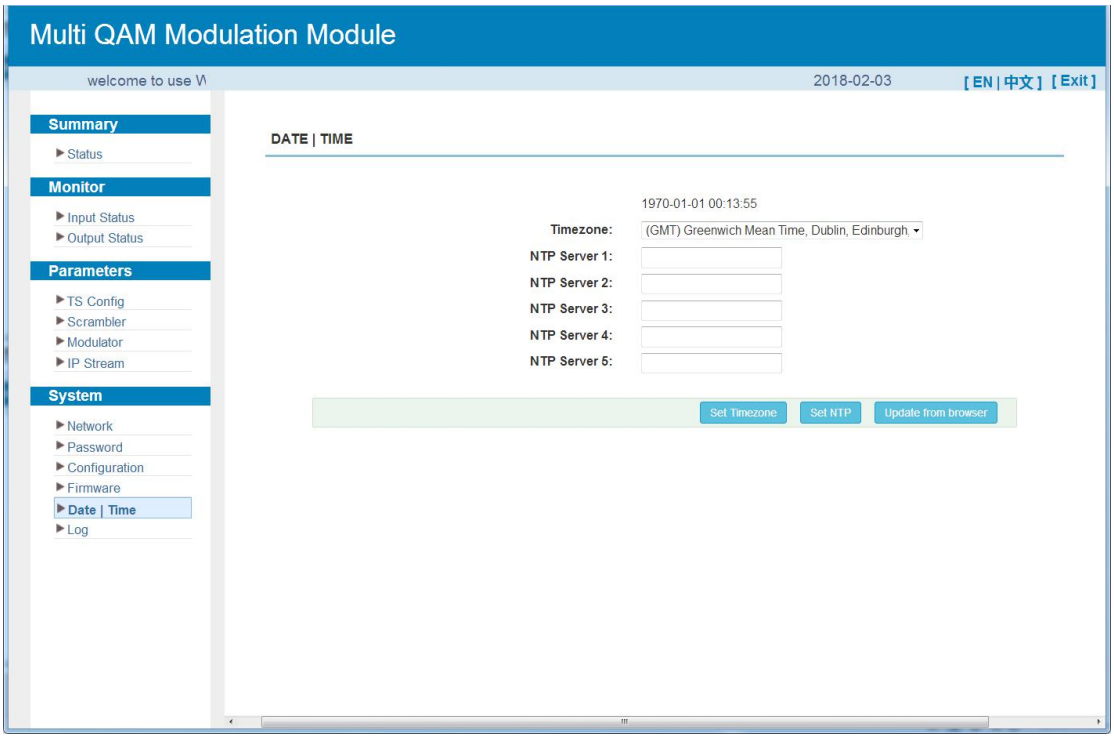


Figure-19

System → Log:

Clicking "Log", it will display the screen as Figure-20 where to check the "Log".

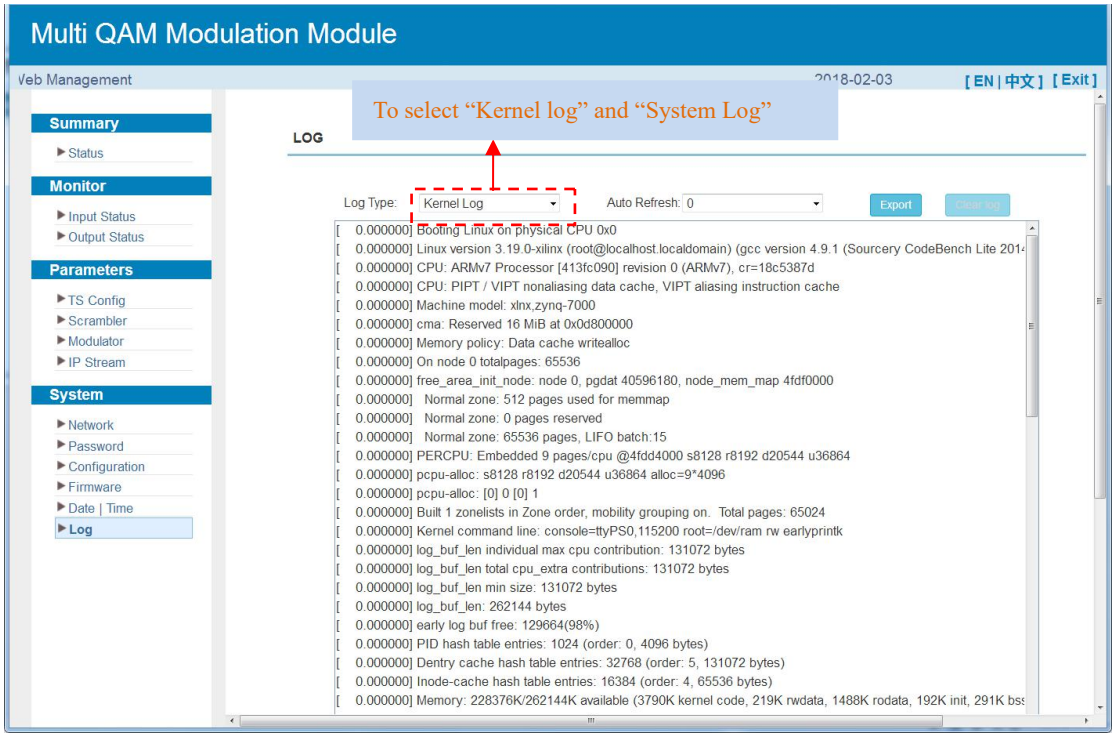


Figure-20

Chapter 5 Troubleshooting

SOFTEL’s ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products’ quality, reliability and stability. All SOFTEL 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

SOFTEL. 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

Chapter 6 Packing list

- SFT3316 16 in 1 IP QAM Modulator 1 pc
- User's Manual 1 pc
- Power Cord 1 pc