# Multifunctional IPQAM Modulator

# GQ-3670C User Manual



# GOSPELL Digital Technology Co., Ltd



- Read this manual carefully before start operating the device.
- Removal of device cover without permission may cause harm to human body and the maintenance bond to be invalidated.
- Handle the device with care to avoid crashing and falling, or otherwise it may cause hazards to the internal hardware parts.
- Keep all inflammable, metal and liquid materials from dropping into the device casing, or otherwise it may cause damages to the device.
- Avoid dusty places and places with heating resources nearby, direct projection of sunlight or instant mechanical vibrations for installation of the device.
- Connect the grounding connector on the rear panel to protective earth contact properly while in operation.
- Choose proper type of cable connectors for connecting network interfaces of the device.
- Avoid rapid and frequent power on/off, or it may cause damages to the semiconductor chipsets.
- U Keep proper direction of the power cord when plug into or out from a power socket.
- Connect the grounding pole and signal cable before connecting the power cord.
- Do not touch the power socket with wet hands to avoid electric shocks.
- Take off all jewelry or ornaments, such as ring, necklaces, watches, bracelets, etc., before operating the device, or otherwise the metal contact may possibly cause short circuit and result in components damage.
- Make sure the AC power is unplugged in case of operator services within the device casing or close to power supply are needed.
- Only GOSPELL trained and approved staff is permitted to perform live line operation and maintenance within the device casing.
- Ensure good ventilation when the device is in operation, or otherwise it may cause damages to the device due to overheating.



It is recommended to unplug the power cord from the socket if the device will not be used for a long period of time.



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## §1 Introduction

#### Functionality

GQ-3670C is a new generation of Multi-functional IP QAM modulator, which can receive TS from the two IP interfaces, and then multiplex, scramble and multi-channel modulate. It adopts our newly developed functions such as "Module Management", device scrambling, and channel modulation. The flexible customization and high expansibility can satisfy the user's current and future DTV system requirements. The module management opens the scrambling function and configures the numbers of output modulation channel through software authorization, as shown in the table below:

License	Functionality
License 1	8*modulation
License 2	8*modulation + scrambling
License 3	16*modulation
License 4	16* modulation + scrambling
License 5	24* modulation
License 6	24* modulation + scrambling
License 7	32* modulation + scrambling
License 8	32* modulation + scrambling

Table 1 License Type List

The product is mainly applied to the DTV network head end room, edge of DTV backbone network, and DTV branch head end room.

#### Main Features

This product has the following key features:

- Support ITU- T J.83 Annex A /B,/C modulation, output frequence range: 54MHz~860MHz
- **QAM** modulation: 16/32/64/128/256
- Support different configurations by software authorization
- Support up to 4 simul-crypt CAS and DVB-CSA scrambling
- Support SI/PSI auto-generation and manual uploading during re-multiplexing
- Support auto-generation or manual editing of network information, as well as local network information sectors uploading
- IP interface supports burst or uniform input bit stream, and reform them to increase efficiency of output bit stream
- Support PID filtering, mapping and pass-through
- Support PCR auto-correction
- Support 4-adjecent-channels RF output with output selector switch
- Output bitrate range: single channel 15.5~51.6Mbps
- RF output symbole rate range: single channel 4.2~7Mbaud/s
- Output electrical level range: 95dBuV~115dBuV (8 channels, step 0.25dB)



- Support gain tuning function, tuning range: -2.5~10.5dB
- Provide -20dB RF test interface
- Tracking filter circuit to ensure excellent external band suppression performance
- Support working parameter import and export
- Support Web-based network management, with online upgradable embedded programs
- Multi-lingual management user interface and documentation to suit both regional and overseas markets
- Support monitoring of operation temperature & power supplies

\* Please refer to Annex A for detailed technical specifications.

#### **Front Panel**

As shown in figure 1, there are one LCD display, one 6-key keypad and three LED indicators on the front panel of GQ-3670C.

The model type and logo information will be displayed on the LCD screen during the device initialization stage. User can check some major working status of the device, and configure some key parameters of GQ-3670C by exploring the operational menu using buttons and LCD screen after system initialization, see section §3.3 for details.

- 4 The POWER LED will be light if the device powers on successfully.
- 4 The STATUS LED will show some working status of the device, see section §3.3 for details.
- The ALARM LED will indicate warning messages of the device, if exists, see section §3.3 for details



**Fig.1** Front Panel View of GQ-3670C

### **Rear Panel**

As shown in figure 2, the rear panel of GQ-3670 consists of one power supply socket, one power switch, one RJ45 management port, one RS-232 serial interface, one SFP GbE port and two RJ45 GbE ports (selective) for high speed IP data input, two RF outputs (main+ test), and a grounding point.

- Power Input Port: To connect to 100~240V 50/60Hz AC input;
- Power Switch: To turn GQ-3670C on or off;
- Management Port: RJ45 interface, to connect to management workstation via 100BaseT or Gigabit Ethernet;
- IP Input: RJ45 interface, to connect to the ASI outputs of GC-1818's preceding devices via Cat5e cable or 6e cable;



- RF Outputs: to connect GQ-3670C's output signal to digital CATV system, HFC network or digital terrestrial transmission station via coaxial cables; -20dB port is used for monitoring.
- Grounding Point: it connects the device with conductive earth. Please make sure of proper grounding of the device before start operating it for the safety of the operators and the device itself!



Fig.2 Rear Panel View of GQ-3670C



## § 2 Before Use the Device

#### Operation Requirements

In order to ensure proper operation of GQ-3670C, there are some requirements for other digital TV and network devices, which will connect with GQ-3670C. Please see below for details:

#### § 2.1.1 Requirements for Digital TV Devices

The output signals of the GQ-3670C should comply with DVB-C modulation standard, and the signal frequency range is from 54MHz to 870MHz. The device which will receive output signal from GQ-3670C, should comply with the following standards:

**Transport Stream (TS):** This means that the TS stream with one or more channels of digital TV, digital audio broadcasting or any other digital TV services should comply with DVB standard; it must contain PAT and PMT tables, which can completely describe the services.

The TS stream could be transmitted through ASI/Ethernet interface. For output IP interface, the TS packets must be encapsulated into UDP datagram. Each output TS should have unique destination IP address (unicast or multicast) and port number. The length of the UDP payload must be 7\*188Byte (TS packets), and the payload must be synchronized by sync byte 0x47. The TS stream (except the stream with UDP format) also can be output from ASI interface, with standard format of 188 byte.

GQ-3670C may be able to receive multiple transport streams from any devices with the TS format complies with the above-mentioned format.

#### § 2.1.2 Requirements for Network Devices

The switch used to connect GQ-3670C's management port and the management workstation should be a 100BaseT or Gigabit switch, the maximum data exchange speed of each port must be higher than 40Mbps. For simplified installation, it can be the same switch of data inputs as well, but the two ports need to be configured in different VLANs.

#### System Requirements

Management workstation must have network connection and support TCP/IP protocol. Microsoft Windows 2000/XP (or higher versions) and Internet Explorer 6.0 (or higher version) are the recommended operating systems of the management workstation, and JavaScript must be supported by the web browser.



# § 3 Operating the Device

#### Quick Start

Please follow the procedures below if it is the first time for you to use GQ-3670C for constructing digital TV head-end system:

- Construct your hardware environment, including chassis installation, power supply system deployment, and connecting switches, GQ-3670C, the preceding device(s)(e.g. IRD, encoders, etc.), terminal receivers (DVB-C), TV monitors, management workstation and CAS server properly (refer to Fig. 3).
- 2. Plan for the IP addresses of management port and data port, the cable connectors (Cat5e cable, RF signal cable) of each preceding/succeeding devices; as well as number of digital TV transport streams, modulating frequency of each stream, symbol rates and modulation methods. It is strongly recommended to take remark of device addresses, port numbers and other configurations and keep it safely for checking purposes in future.
- Boot up each preceding devices of GQ-3670C and configure the operating parameters, in order to ensure the proper signal receiving/decoding or output of encoded digital TV transport streams. Please refer to the user manuals of preceding devices provided by their suppliers for detailed configuration.
- 4. Boot up GQ-3670C, If you have known the management port IP address of the GQ-3670C you are currently using, and it is in the same subnet with the management workstation, you may also start configuring GQ-3670C from the management workstation directly. Or otherwise you will need to configure the IP address of management port using front panel control (refer to section§3.3)
- Login to the web browser from the management workstation, key in the default user name "admin" and password "000000"; add and configure usernames and passwords of users allowed to access the device (refer to section§3.2.2)
- 6. Configure the data input/output ports, modulated output channels, QAM mode, RF output frequency, EPL and so on(refer to section§3.2.5)
- 7. Search for input programs tree (refer to section §3.2.6.5); configure the output program settings of GQ-3670C, including: select input program for output stream(refer to section §3.2.6.6), output program scrambling (refer to section §3.2.7); configure the ES PID, ECM/EMM PID, SI/PSI version number of each program, and configure the auto-generated SI parameters or upload SI segments output program parameter (refer to section §3.2.6.6); configure the PID mapping parameters if needed (refer to section §3.2.6.2).
- 8. If there are scrambled programs in the system, you need configure the CA operating parameters as well. (refer to section §3.2.7.2 ).
- Configure the signal receiving and demodulation settings of GQ-3670C's succeeding devices (e.g. DVB-C receivers) according to the user manuals provided by their suppliers
- 10. Make use of TS analyzer, QAM analyzer, spectrum analyzer, set-top box testing system, etc. to test the output TS in the head-end equipment room, if normal, then the signal is ready for transmission in the real network.



#### Web Management Operations of GQ-3670C

Monitoring and control of GQ-3670C can be performed through Web browser. We recommend you to use Microsoft Internet Explorer 6.0 or above and set your screen resolution to 1024 \* 768.

The default state of Web management page is in English. If you want to use Chinese, please set the language to Simple Chinese by changing the operation language in the pull-down list in the home page.

简体中文 Simple Chinese 💌
英文 English
简体中文 Simple Chinese

**Fig.3** Operation language pull-down list

When you set this to Chinese, if there isn't any Chinese font in your operation system, maybe some unreadable codes appear in your page.

#### § 3.1.1 User Login

Entering GQ-3670C' IP address in your URL bar after you open the browser, then you have the Web management page. The device will ask you to input your user name and password to ensure the safety, as shown in the figure below:

0		141
User name:	🖸 Admin	~
Password:		
	Remember my password	

Fig.4 Web User Login

There is a factory default administrator user "admin" in GQ-3670C with password of "000000". Please use this user and password to login to the system for the first time operation of GQ-3670C. But changing of password for this user is strongly recommended, and the new password should be kept safely. If you choose "remember my proof", you needn't input your user and password when you login in the next time. But to ensure the safety, please do not choose this option in the pulic server.

After successfully logging into the system, browser will display the default page of GQ-3670C, as shown in the figure below:



In	formation Monitor	I/O Configuration	Mux Setting	Scramble Setting	System Setting	
De	evice Information		li	ntroduction		
Device Model:	GQ-3670C	-				
Serial Number:	TC27A25FFF000008B1	-				
Soft Version:	01.00	-				
Hard Version:	01.00	-				
	2013-03-30	_				
Soft Release:		6				
Soft Release: FPGA Release:	2012-12-08	2				
Soft Release: FPGA Release: Manufacturer:	2012-12-08					
Soft Release: FPGA Release: Manufacturer: Official	2012-12-08			License		
Soft Release: FPGA Release: Manufacturer: Official Nebsite:	2012-12-08	License Status:		License Work Mode :	8	

#### Fig.5 Default Page

In the default page, there are the information of device(model, serial number, etc), authorization state, and some important specifications will be refreshed in real time. You could enter into the "monitor", "Input & Output configuration", "multiplex setting", "scramble setting", "system setting" page by clicking different hyperlinks in the area of main-menu across the top of this page.

#### [Remark]

Device will not auto-save your parameters. If the device restarts, the parameters will change to the state, which you saved last time. If you have never saved your parameters, all the parameters will change to

the default state. So if you want to save your own parameters, please click Save in lower right corner after you finish setting GQ-3670C



#### § 3.1.2 User Management

We recommend you to change the user and password after logging by the default user and password for the safety. You can edit your user information in the user management page.

Click "system setting" in the home page, and then you have the device-setting page, as shown in the figure below:

Select Items	System Basic Setting
E-System Setting	IP Setting
- Basic Setting - Advanced Setting	IPv4 Address:         120.120.120.20         Mask:         255.255.255.0         Gate:         120.120.120.1         Submit
L_D User Management	MAC Setting
	MAC Address: 00:5C:B1:00:08:B1 Submit
	NTP Setting
	Server Address: 120.120.120.1 Auto Sync Interval (s): 28800 Enable Auto Sync: OFF - Submit
	Time / Date (UTC)
	EMM Enhance Mode Setting
	ON 💌

#### Fig.6 System setting page



Click "user management"

in the "select items" area on the left side of this page, and

then you have the user management page, as shown in the figure below:



	User Ma	anagement		
Add New User	Index	User Name	Group	
User Name :	1	admin	Administrator	Modify Remove
Login Password :				
Confirm Password :				
Submit				
Modify Password				
Modify Password				
Modify Password User Name :				
Modify Password User Name : New Password : Confirm Password :				
Modify Password User Name : New Password : Confirm Password : Submit				
Modify Password User Name : New Password : Confirm Password : Submit				
Modify Password User Name : New Password : Confirm Password : Submit				
Modify Password User Name : New Password : Confirm Password : Submit				
Modify Password User Name : New Password : Confirm Password : Submit				

#### Fig.7 User management page

In this page, you could add new user, edit old users' information or delete an user.

#### [Remark]

Only "admin" user could enter into the user management page.

#### Add new user

In the area of "adding user", please input correctly users' name and password, and then confirm the password.

Jser
gospell
•••••
•••••

After finishing these steps, click "submit" to add a new user. If you add successfully a new user, there will show your user information on the right side, as shown in the figure below:



User Ma	anagement		
Index	User Name	Group	
1	admin	Administrator	Modify Remove
2	gospell	Operator	Modify Remove

Fig.8 New user information

#### [Remark]

All new users are normal users. They are only permitted to set different parameters, but they don't have the right to manage the other user or upgrade the system.

#### Edit users' information

In the user information list in this page, you can edit an user by clicking the "modify" button in the same row.

User Ma	inagement		
Index	User Name	Group	
1	admin	Administrator	Modify Remove
2	gospell	Operator	Modify Remove

That makes you edit your password, as shown in the figure below:

Modify Pass	sword
User Name :	gospell
New Password :	
Confirm Password :	
Submi	t

Fig.9 Edit users information

In this bar, you can edit your user's password and that will be accomplish by clicking "submit".

#### [Remark]

You could not delete the "admin" user, but you can change the password of this user.

When you use GQ-3670C for the first time, you should change admin's password at first and then save this password.

#### Delete an user

In the user information list in this page, click the "remove" button in the same row to delete this user.



User Ma	anagement		
Index	User Name	Group	
1	admin	Administrator	Modify Remove
2	gospell	Operator	Modify Remove

#### [Remark]

GQ-3670C will not permit you to delete admin user but the normal user.



#### § 3.1.3 Basic parameter setting

In the system setting page, click "basic setting" in the "select items" area



To enter basic parameter setting page, as shown in the figure below:

System Basic Setting	
IP Setting	
IPv4 Address: 120.120.120.20 Mask: 255.255.255.0 Gate: 120.120.120.1	Submit
MAC Setting	
MAC Address: 00:5C:B1:00:08:B1	Submit
NTP Setting	
Server Address: 120.120.120.1 Auto Sync Interval (s): 28800 Enable Auto Sync: OFF 💌	Submit
Time / Date (UTC)	
Get Browser UTC Time	Submit
EMM Enhance Mode Setting	
ON 💌	Submit
	Refresh

#### **Fig.10** Basic parameter setting page

In this page, you could accomplish the setting of IP address, MAC address, set the IP address of time synchronization server, open or close this service, and set the UTC time synchronization,etc.

#### IP parameter setting

In the page of figure 11, input a right IP address in the "IP setting" bar, then click "submit" to set GQ-3670C' network parameter.



IP Setting						
IPv4 Address:	120.120.120.20	Mask:	255.255.255.0	Gate:	120.120.120.1	Submit

#### [Remark]

To ensure the working of device, you should guarantee that the management port IP address and GQ-3670C' management server IP are in the same network segment

#### MAC address setting

In the page of figure 11, input a right MAC address in the "MAC setting" bar, then click "submit" to set GQ-3670C' MAC address.



#### [Remark]

The first three bytes of MAC Address 00:5C:B1 is Gospell's products' MAC Address, it couldn't be changed.

#### Parameter setting about system clock

**Set time synchronization server**: In the page of figure 11, you can set IP address of network clock server, auto synchronization time lag, auto synchronization switch in the "time synchronization protocol" bar.

NTP Settings						
Server Address:	120.120.120.1	Auto Sync Interval (s):	28800	Enable Auto Sync:	OFF 👻	Submit

#### [Remark]

When you set a right network clock server address, GQ-3670C will update his system clock with the period which the user sets if SNTP service and network clock server are enabled.

**Set system clock by manual operation:** In the page of figure 11, you can set manually the system clock in the "date/time(UTC)" bar. And you can also click "get UTC time", then click "submit" button to finish setting.



#### [Remark]

- 1. If the network clock server address has already configured and enabled, and the SNTP server works properly, the device will get the system clock from the network clock server, at this time, the manually configured clock will be invalid.
- Select the synchro-browser UTC clock to be the standard UTC(0zone) clock, and this clock may be different from the clock shown on server, e.g. if the server clock is UTC+8:00, the final clock will be differ about 8 hours.



#### § 3.1.4 Advanced Parameter setting

In the "system setting" page, click "Advanced setting" in the "select items" area



To enter the parameter setting page, as shown in the figure below:

arameter Import / Export / Reset 激光 Import Export Export XML Reset arameter Backup/Restore Enter Descriptions: Backup Current Backup Descriptions: Restore oftware Upgrade/Export Cense Cense 認光 Upgrade Backup cense SBE6D189DE20572FB294856738A75B8DF7B32CD66604E725A64F71AC2F1568C88D1CD06D30DC0C66C50144F442C300 2FBD1CD06D30DC0C66C50144F442C3002FBD1CD06D30DC0C66C50144F442C300 2FBD1CD06D30DC0C66C50144F442C3002FBD1CD06D30DC0C66C50144F442C300 2FBD1CD06D30DC0C66C50144F442C3002FBD1CD06D30DC0C66C50144F442C300 2FBD1CD06D30DC0C66C50144F442C3002FBD1CD06D30DC0C66C50144F442C3002F47F1A2A107FA920D9A55F6971EB1 70B7432060A6D10D5A5A0BED5BF1BB1B552E2ED6EA1719FB88EEEF58CBF3B5510296	Parameter Import / Export / R Parameter Backup/Restore	eset [浏览] Import	Export Export XML	Reset
御覚… Import Export Export XML Reset     arameter Backup/Restore     Enter Descriptions: Backup Current Backup Descriptions: Restore     oftware Upgrade/Export     阅覚… Upgrade Backup     cense     阅覚… Import Export     cense Application Code     SBE 6D189DE20572FB294856738A75B8DF7B32CD66604E725A64F71AC2F1568C8BD1CD06D30DC0C66C50144F442C300     ZFBD1CD06D30DC0C66C50144F442C3002F47F1A2A107FA920D9A55F6971EB1     70B7432060A6D10D5A5A0BED5BF1BB1B552E2ED6EA1719FB88EEEF58CBF3B5510296	Parameter Backup/Restore	浏览 Import	Export Export XML	Reset
arameter Backup/Restore Enter Descriptions: Backup Current Backup Descriptions: Restore oftware Upgrade/Export icense icense IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Parameter Backup/Restore			
Enter Descriptions:	Estas Deseriations			
oftware Upgrade/Export	Enter Descriptions.	Backup	Current Backup Descriptions:	Restore
國第二、Upgrade Backup     Idense     國第二、Import Export     Export     Openation Code     SBE6D189DE20572FB294856738A75B8DF7B32CD66604E725A64F71AC2F1568C88D1CD06D30DC0C66C50144F442C300     ZFBD1CD06D30DC0C66C50144F442C3002F8D1CD06D30DC0C66C50144F442C3002F47F1A2A107FA920D9A55F6971EB1     70B7432060A6D10D5A5A0BED5BF1BB1B552E2ED6EA1719FB88EEEF58CBF3B5510296     SBE510296     SBE510296	Software Upgrade/Export			
icense 阅览 Import Export icense Application Code 9BE6D189DE20572FB294856738A75B8DF7B32CD66604E725A64F71AC2F1568C88D1CD06D30DC0C66C50144F442C300 2F8D1CD06D30DC0C66C50144F442C3002F8D1CD06D30DC0C66C50144F442C3002F47F1A2A107FA920D9A55F6971EB1 70B7432060A6D10D5A5A0BED5BF1BB1B552E2ED6EA1719FB88EEEF58CBF3B5510296		浏览 Upgrade	Backup	
武党 Import Export     Export     Export     SBE6D189DE20572FB294856738A75B8DF7B32CD66604E725A64F71AC2F1568C88D1CD06D30DC0C66C50144F442C300     PBE6D1cD06D30DC0C66C50144F442C3002F8D1CD06D30DC0C66C50144F442C3002F47F1A2A107FA920D9A55F6971EB1     70B7432060A6D10D5A5A0BED5BF1BB1B552E2ED6EA1719FB88EEEF58CBF3B5510296	icense			
icense Application Code 9BE6D189DE20572FB294856738A75B8DF7B32CD66604E725A64F71AC2F1568C88D1CD06D30DC0C66C50144F442C300 2F8D1CD06D30DC0C66C50144F442C3002F8D1CD06D30DC0C66C50144F442C3002F47F1A2A107FA920D9A55F6971EB1 70B7432060A6D10D5A5A0BED5BF1BB1B552E2ED6EA1719FB88EEEF58CBF3B5510296		浏览 Import	Export	
9BE6D189DE20572FB294856738A75B8DF7B32CD66604E725A64F71AC2F1568C88D1CD06D30DC0C66C50144F442C300 2F8D1CD06D30DC0C66C50144F442C3002F8D1CD06D30DC0C66C50144F442C3002F47F1A2A107FA920D9A55F6971EB1 70B7432060A6D10D5A5A0BED5BF1BB1B552E2ED6EA1719FB88EEEF58CBF3B5510296	icense Application Code			
	9BE6D189DE20572FB29485673 2F8D1CD06D30DC0C66C501441 70B7432060A6D10D5A5A0BED	38A75B8DF7B32CD66604E7 F442C3002F8D1CD06D30DC 5BF1BB1B552E2ED6EA1719	25A64F71AC2F1568C88D1CD06D30DC0C 0C66C50144F442C3002F47F1A2A107FA 9FB88EEEF58CBF3B5510296	66C50144F442C300 *
				Ŧ
	Reboot			
Reboot				
Reboot				

Fig.11 Advanced setting page

In this page, you could import/export/reset the parameters, back-up/recover the parameters, upgrade/back-up the software, import the authorization file, restart the device, etc.

#### Import/export/reset the parameters

**Import the parameters**: In the page of figure 12, click "browse" button in the "import/export/reset the parameters" bar to choose the parameters' file of the device.

Parameter Import / Export / Reset			
	Browse	Export	Reset



	X
G → ↓ « WORK (D:) → 新建文件夹 → ↔	搜索 新建文件夹 👂
组织 ▼ 新建文件夹	:=
3 最近访问的位置 A 名称	修改日期    类型
▲ GQ-3670C_V01.00	2012/8/8 13:59 VLC med
<ul> <li>□</li> <li>□</li></ul>	
▼ <	4
文件名(N): GQ-3670C_V01.00 ▼	所有文件(*.*) ▼ 打开(O) 取消

Fig.12 Import/export/reset the parameters page

After choosing the parameters' file, click "Open" button. Then return to last page, click "import" button, system will change the page to uploading management page, as shown in the figure below:

	Upload	Management		
Upload Information				
Upload Status : 🛃	Upload Size (Bytes):	3131		
File Information				
File Validation : 🔀	File Description:	GQ-3670D Parar	meter Mode 5	

Fig.13 File upload management page

System will checkout the uploading file, if its format is right, there will appear a mark in the "upload status" bar and "file validation" bar. Click "submit" button, you'll have this dialog box:



Click "YES" button to import the parameters.

#### [Remark]

- 1. Please do not turn off the device or pull the power off when the device is importing the parameters.
- 2. The device will restart after importing the parameters.

Export the parameters: In the page of figure 13, click "export" button, then you'll have this dialog box:



文件下载
您想打开或保存此文件吗?
▲ 名称:3670C_Parameter_78787814_2013-4-9.bin 类型: VLC media file (.bin), 46.2KB 来源: 120.120.120.20
打开 (0) 保存 (S) 取消
来自 Internet 的文件可能对您有所帮助,但某些文件可能 危害您的计算机。如果您不信任其来源,请不要打开或保存 该文件。 <u>有何风险?</u>

Click "save" button to choose the path you wanted to save these parameters.

Reset the parameters: In the page of figure 13, click "reset" button, then you'll have this dialog box:



#### Back-up/recover the parameters

Back-up the parameters: In the page of figure 14, there is a "parameter back-up/recover" bar:

Parameter Backup/R	estore		
Enter Descriptions:	Backup	Current Backup Descriptions:	Restore

#### **Fig.14** "parameter back-up/recover" bar

Fill in the "input parameter description information" (just like 2012-08-22), click "back-up" button, you'll have this dialog box:

?	Generate new backup pa be overwrited! Proceed a	arameter, Current backup any way ?	parameter will
		ОК	Cancel

Click "YES" button, system will create a new back-up file. In the same time, "input parameter description information" will show you the new back-up file description, as shown in the figure below:



Parameter Backup/Restore			
Enter Descriptions:	Backup	Current Backup Descriptions:	GQ-3670C_BACKUF Restore

#### [Remark]

System could only save a unique back-up file each time, the new back-up file will cover the last one.

**Recover the parameters:** When the device has a back-up file, click "recover" button, you'll have this dialog box:



Click "YES" button to import the parameters.

#### Upgrade/back-up the software

As shown in the figur12, you e can choose the upgrade file in the "software upgrade/back-up" bar, then import it to upgrade the device.

Software Upgrade/Export			
0	Browse	Upgrade	Backup

Click "browse" button, you'll have this dialog box:



送择要加载的文件     受 ● ▼ ▲ WORK     WORK	(D:) ▶ 新建文件夹 🗸 😽		ρ
组织 ▼ 新建文件夹		:= • 🔟 🔞	)
📃 最近访问的位置 🥤	名称	修改日期 类型	
	🛓 GQ-3670C_V01.00	2012/8/8 13:59 VLC m	ied
一视频			
国際			
■ IT 异位 ▲ SYSTEM (C:)			
WORK (D:)			
👝 DATA (E:)			
			•
文件	-名(N): GQ-3670C_V01.00 ▼	所有文件(*.*) ▼	
		打开(O) 取消	

Select the upgrade file, click "Open" button, as shown below:

G GOSPELL

Software Upgrade/Export	
D:\新建文件夹\GQ-3670C_V01.00.bin	Backup

Click "upgrade" button, system will change the page to uploading management page, as shown below:



	Upload	Management		
Upload Information				
Upload Status : 🛜	Upload Size (Bytes):	3131	]	
File Information				
File Validation : 🔀	File Description:	GQ-3670D	Parameter Mode 5	

**Fig.15** File upload management page

System will checkout the uploading file, if its format is right, there will appear ark in the "upload status" bar and "file validation" bar. Click "submit" button, you'll have this dialog box:



Click "YES" button to upgrade the device.

After upgrading, you can check the device version information in the "device information" bar.

Soft Version:	01.00
Hard Version:	01.00
Soft Release:	2012-09-05
FPGA Release:	2012-07-23

#### [Remark]

- 1. Please do not turn off the device or pull the power off when the device is importing the parameters.
- 2. The device will restart after upgrading.



#### **Device authorization**

GQ-3670C has new build-in module management function; multi-configuration could be upgraded in the way of software authorization.

License			
	Browse	Import	Export

as shown in the table 1: GQ-3670C has 6 types of authorization, please verify the authorization type before you buy this device. After buying this device, if you want to get a higher configuration, you can also contact with our salesman to buy the authorization. For managing the authorization, you should give us the authorization applies code, as shown below:

Li	cense Application Code:	
	93792BB31A6AED6C406F2ED042E9C22221D45F7DD481F37A83D3CAD6360FB95C8D1CD06D30DC0C66C50144F442C300 2F8D1CD06D30DC0C66C50144F442C3002F8D1CD06D30DC0C66C50144F442C3002FF0101783EDF9AB9AFFD7AE75E647 9CDE432060A6D10D5A5A0BED5BF1BB1B552EA227CE8D640FFD3C1C2491D13D26C9BB	-
		-

After receiving the authorization applies code, we'll send you immediately the authorization file.

#### Device control

As shown in the figure 11, there is a "restart" option in the "device control" bar.

Device Control	
Reboot	

Click "restart" button, you'll have this dialog box:



Device will reboot after this procedure. Please do not turn the power off or pull out the power cord to Avoid Any Damage! Proceed any way ?

OK Cance	OK
----------	----

Fig.16 Device restart information

Click "YES" button, to restart the device.



#### § 3.1.5 Input/output configuration

Click "Input/output configuration" hyperlink in the navigation menu of the home page to input/output setting page of GQ-3670C, as shown in figure 17:

	Multifunction	nal IP QAM Modulator	英文 English 💌
Information M	I/O Configuration	Mux Setting Scramble Setting	System Setting
Select Items		Channel Setting 1-A	
☐ ∭ 1/0 Setting ☐ ∰ Module 1-A - IP QAM Module ☐ IOW Setting ☐ Iow Setting	Input Channel 01 ETH Setting: 88.88.82.11	Ethernet 255.255.255.0 - 120.120.120.1 - 00:	5C:B1:01:08:B1 - ON 💌
Channel 01 - Ethernet	Index TsIndex Protocol	DES Address	Status
Channel 02 - Ethernet	1 001 UDP 💌	224.10.10.10 5000	ON 💌 📤
H- Output Channel	2 002 UDP 💌	224.10.10.11 : 5000	ON 💌
	3 003 UDP 💌	224.10.10.12 5000	ON 💌
	4 004 UDP 💌	224.10.10.13 : 5000	ON 💌
	5 005 UDP 💌	224.10.10.14 : 5000	ON 💌
	6 006 UDP 💌	224.10.10.15 : 5000	ON 💌
	7 007 UDP 💌	224.10.10.16 5000	ON 💌
	8 008 UDP 💌	224.10.10.17 5000	ON 💌
	9 009 UDP 💌	224.10.10.18 5000	ON 💌
	10 010 UDP 💌	224.10.10.19 : 5000	ON 💌
	11 011 UDP 💌	224.10.10.20 : 5000	ON 💌
	12 012 UDP 💌	224.10.10.21 5000	ON 💌
	13 013 UDP 💌	224.10.10.22 5000	ON 💌
	14 014 UDP 💌	224.10.10.23 5000	ON 💌 🔻
	88.88.82.11 5000 1	16 Batch Set DES OFF  Batch Set S	tatus Submit Refresh
🔴 1-В 🌒	0.000 / 0.000 Mbps 2 -	B 🔴 🌒 0.000 / 0.000 Mbps 3- B 🌒	0.000 / 0.000 Mbps
2000-01-03 08:51:07 1 - A 🥥	0.000 / 0.000 Mbps 2 -	A 🌒 🌒 0.000 / 0.000 Mbps 3-A 🌒	0.000 / 0.000 Mbps

Fig.17 Input/output configuration page

The number and the name of input/output channel of the device are listed in the "Select Items" in the left side of this page, as shown below:



Fig.18 List of the input/output channel

#### Ethernet parameter Setting

Click "Channel 01- Ethernet" hyperlink as shown above, the configurable parameters are shown in the "channel setting", as shown below:



				Char	nnel Setting 1-A				
Input	Channel (	)1	Ethernet						
ETH	Setting:	88.88.82.11	- 255.255.255.0	-	120.120.120.1 -	00:5C:B1:01:08:B1	- ON 💌		
Index	Tsindex	Protocol	DES Address					Status	
1	001	UDP 💌	224.10.10.10	5000				ON 💌	*
2	002	UDP 💌	224.10.10.11	5000	1			ON 💌	
3	003	UDP 💌	224.10.10.12	5000				ON 💌	
4	004	UDP 💌	224.10.10.13	5000	]			ON 💌	
5	005	UDP 🔻	224.10.10.14	5000	]			ON 💌	
6	006	UDP 💌	224.10.10.15	5000	]			ON 💌	
7	007	UDP 💌	224.10.10.16	5000				ON 💌	
8	800	UDP 💌	224.10.10.17 :	5000	]			ON 💌	
9	009	UDP 💌	224.10.10.18	5000	]			ON 💌	
10	010	UDP 💌	224.10.10.19	5000	)			ON 💌	
11	011	UDP 💌	224.10.10.20	5000				ON 💌	
12	012	UDP 💌	224.10.10.21	5000	)			ON 💌	

#### Fig.19 Channel setting

#### Configuration of the Modulation channel

As shown in figure 20, click "modulator" hyperlink, the page of the configuration of Modulation channel is shown in "channel settings" page, as shown below:

Outp	ut Channel	01		N	lodu	lator											
QAM :	Setting: At	enuator (dB)		20.00	•												
ndex	TsIndex	ITU Coding		BW		Frequnce (MHz)	QAM Mo	de	SR (MBaud/s)	Spec	Inv	Modul	ation	Gain	(dB)	R	F
1	001	Annex A	•	8MHz	•	123.000000	256QAM	•	6.875000	OFF	•	ON	•	0.00	-	ON	-
2	002	Annex A	¥	8MHz	Ŧ	131.000000	256Q.A.M	-	6.875000	OFF	v	ON	-	0.00	-	ON	-
3	003	Annex A	¥	8MHz	*	139.000000	256QAM	*	6.875000	OFF	v	ON	-	0.00	-	ON	-
4	004	Annex A	Ŧ	8MHz	+	147.000000	256Q.A.M	-	6.875000	OFF	v	ON	-	0.00	-	ON	-
5	005	Annex A	•	8MHz	•	155.000000	256QAM	-	6.875000	OFF	•	ON	-	0.00	-	ON	-
6	006	Annex A	Ŧ	8MHz	Ŧ	163.000000	256QAM	*	6.875000	OFF	v	ON	•	0.00	-	ON	-
7	007	Annex A	¥	8MHz	Ŧ	171.000000	256QAM	Ŧ	6.875000	OFF	Ŧ	ON	•	0.00	-	ON	-
8	008	Annex A	+	8MHz	Ŧ	179.000000	256Q.A.M	*	6.875000	OFF	*	ON	-	0.00	-	ON	-
9	009	Annex A	•	8MHz	•	187.000000	256QAM	-	6.875000	OFF	•	ON	•	0.00	-	ON	-
10	010	Annex A	+	8MHz	-	195.000000	256QAM	-	6.875000	OFF	*	ON	-	0.00	-	ON	-
11	011	Annex A	+	8MHz	-	203.000000	256QAM	*	6.875000	OFF	*	ON	-	0.00	-	ON	-
12	012	Annex A	+	8MHz	-	211.000000	256QAM	*	6.875000	OFF	*	ON	-	0.00	-	ON	-
13	013	Annex A	•	8MHz	•	219.000000	256QAM	-	6.875000	OFF	-	ON	-	0.00	-	ON	-
14	014	Annex A	-	8MH7	-	[227.000000]	2560AM	-	6.875000	OFF	+	ON	-	0.00	-	ON	-



#### Fig.20 Configuration page of Modulation channel

**Channel parameters:** Standard of the ITU encoding, bandwidth, frequency, modulation module, symbol rate, inversion of spectrum, switch of the modulation, gain and switch of the RF can be set in this page of the "channel settings".

Index	TsIndex	ITU Coding	BW	Frequnce (MHz)	QAM Mode	SR (Baud/s)	Spect Inv	Modulation	Gain (dB)	RF
1	001	Annex A 💌	8MHz 💌	474.000000	64QAM 👻	6.875000	OFF 💌	ON 🔻	0.00 🔻	ON 🔻
2	002	Annex A 👻	8MHz 💌	482.000000	64QAM 💌	6.875000	OFF -	ON 💌	0.00 👻	ON 💌
3	003	Annex A 👻	8MHz 👻	490.000000	64QAM 👻	6.875000	OFF 👻	ON 💌	0.00 👻	ON 💌
4	004	Annex A 👻	8MHz 👻	498.000000	64QAM 👻	6.875000	OFF 🔻	ON 🔻	0.00 🔻	ON 💌

#### Range of the parameter settings:

Standard of the ITU Encoding: Annex A/B/C Frequency range: 54 – 860 MHz Bandwidth: 6/8MHz Modulation Module:16/32/64/128/256QAM Inversion of spectrum: ON/OFF Switch of Modulation: ON/OFF Gain: 0.00 – 20.00 (0.5 step size) Switch of RF: ON/OFF

#### [Remark]

- 1. J.83 Annex A is the standard of Europe, J.83 Annex B is the standard of North American; Annex C is the standard of Japan; at present Annex A is used in China.
- 2. The symbol rate of Annex B in ITU encoding standard is fixed at 5.057MBaud/s. For Annex A, the symbol rate is in the range from 4.200Mbaud/s to 7Mbaud/s, and it's in the range from 4.200Mbaud/s to 5.310Mbaud/s for Annex C, the minimum step size is 1KBaud.
- 3. The bandwidth is defined as 6MHz in Annex B and Annex C.
- 4. If the channel parameters are displayed as grey (as shown as the channel 2,3 and 4 in figure 21), it means your device is not authorized the corresponding functions.

After the configuration, click "Submit" button at right-bottom of the page to save the setting.



Outp	ut Channe	01		h	lodu	lator											
2AM S	Setting: At	tenuator (df	3)	20.00	•												
Idex	TsIndex	ITU Codir	19	BW		Frequnce (MHz)	QAM Mo	de	SR (MBaud/s)	Spect	t Inv	Modul	ation	Gain	(dB)	R	F
1	001	Annex A	-	8MHz	•	123.000000	256QAM	•	6.875000	OFF	•	ON	-	0.00	•	ON	•
2	002	Annex A	+	8MHz	+	131.000000	256Q.A.M	-	6.875000	OFF	v	ON	-	0.00	-	ON	-
3	003	Annex A	+	8MHz	*	139.000000	256Q.A.M	Ŧ	6.875000	OFF	v	ON	-	0.00	-	ON	-
4	004	Annex A	¥	8MHz	+	147.000000	256Q.A.M	*	6.875000	OFF	v	ON	-	0.00	-	ON	-
5	005	Annex A	-	8MHz	•	155.000000	256QAM	-	6.875000	OFF	•	ON	•	0.00	-	ON	-
6	006	Annex A	¥	8MHz	+	163.000000	256Q.A.M	*	6.875000	OFF	Ŧ	ON	•	0.00	-	ON	-
7	007	Annex A	¥	8MHz	+	171.000000	256Q.A.M	*	6.875000	OFF	Ŧ	ON	•	0.00	-	ON	-
8	008	Annex A	+	8MHz	+	179.000000	256Q.A.M	+	6.875000	OFF	*	ON	-	0.00	-	ON	-
9	009	Annex A	-	8MHz	•	187.000000	256QAM	-	6.875000	OFF	-	ON	-	0.00	-	ON	-
10	010	Annex A	+	8MHz	+	195.000000	256Q.A.M	*	6.875000	OFF	*	ON	-	0.00	-	ON	-
11	011	Annex A	-	8MHz	-	203.000000	256Q.A.M	+	6.875000	OFF	*	ON	-	0.00	-	ON	-
12	012	Annex A	-	8MHz	+	211.000000	256Q.A.M	*	6.875000	OFF	*	ON	-	0.00	-	ON	•
13	013	Annex A	-	8MHz	-	219.000000	256Q.A.M	-	6.875000	OFF	-	ON	-	0.00	-	ON	-
14	014	Annex A	-	8MH7	-	227.000000	2560AM	+	6.875000	OFF	-	ON	-	0 00	-	ON	-

Channel Setting 4 4



Submit Refresh

#### § 3.1.6 Multiplex setting

😐 🧰 Output Service Edit

0 11	5	1 0		0	010
GQ-3670C, as shown in	figure 21.				
Select Items		General Setting 1-A			
Multiplexer Configuration  Configur	Default Input/Output Charset Input Charset : ASCII Time Zone Select Time Zone : UTC +00:00	Output Charset : ASCII	•		
input Service Into	TOT TOT Setting				

TOT Enable : OFF 💌

TDT TOT Setting

Update Cycle (s) :

5

Click "MUX Setting" hyperlink in the navigation menu of the home page to Multiplexing setting page of

Fig 21	Multiplexing	setting	of programs
1 IY.Z I	multiplexing	Setting	or programs

The multiplex parameter configurations are listed in the "Select Items" in the left side of this page, including the general setting, manual PID map, manual PSI inserter, NIT edit, input service and output service.

Select Items
⊡… 🧭 Multiplexer Configuration □ Module 1-A - IP QAM Module General Setting Manual PID Map Manual PSI Inserter NIT Edit Input Service Info

Fig.22 List of the multiplex parameter configurations

#### General setting

Click "General Setting" hyperlink, the basic information of the system is displayed in the right side of the page, as shown below:



	General Settings	
Default Input/Output Charset		
Input Charset : LATIN	Output Charset : LATIN 💌	
Time Zone :		
Select Time Zone : UTC +00:00 -		
TDT TOT Settings :		
Update Cycle (s): 5	TOT Enable : OFF -	
		Submit Refresh

Fig.23 Base setting of program multiplexing

The default of input/output character-sets, time zone and TDT/TOT can be set in this page.

#### The setting of the default character-sets

The character-sets setting and transform functions built in GQ-3670C to ensure the received program information over transport stream can be displayed correctly, meanwhile ensure this information can be displayed correctly in the next device.

It can be set in the column of default character-sets of input/output.

Default Input/O	utput Charset			
Input Charset :	LATIN	Output Charset :	LATIN 💌	

There are 3 kinds of character-sets: LATIN、GB2312、UTF-8

LATIN	•
LATIN	
GB2312	
UIF-8	

#### [Remark]

In China, GB2312 is usually be used. If the input TS brings his own character-sets, this setting will be ignored

#### Setting of time zone

Setting of time zone affect TOT table, after analyze the TOT table at the receiver side, the receiver can get this time zone. It can be set in the column of Time zone:





#### [Remark]

In china, time zone is usually UTC + 8:00.

#### **TDT/TOT Setting**

The TDT table update cycle and TOT switch can be set in the column of TDT/TOT setting.



**TDT update cycle (per second):** update the TDT table with cyclical time. **TOT switch:** set it on, the device insert TOT table in the sent transport stream.

After the configuration, click "Submit" button at right-bottom of the page to save the setting.

#### [Remark]

Whether TDT/TOT is sended depends on the switch in Output setting, see section §3.2.6.6.1 for details.

#### PID mapping function

The system will discard the private PID, if it cannot be recognized. The needed private PID can be mapped by the PID mapping function, and mapped private PID can be passed through and transmitted by the device.

#### Add new PID mapping function

As shown in figure 24, click "Manual PID Map" hyperlink, the PID mapping setting page will display in the right side. The following figure shows the "PID mapping" page:



Index Input Ts Index Input PID Output Ts Index Output PID Enable								
Index Input Ts Index Input PID Output Ts Index Output PID Enable					Manual PID Map			
	Í		Enable	Output PID	Output Ts Index	Input PID	Input Ts Index	Index
Add Remove Submit	Refresh	t Re	Submit	Remove	Add			

Fig.24 PID mapping

Click "add" button in the bottom of this page, a new column of PID parameter setting will display, as shown below:

			Manual PID Map			
Index	Input Ts Index	Input PID	Output Ts Index	Output PID	Enable	
1	1	8191	1	8191	OFF 💌	
					OFF	

Input TS index: choose the input TS channel from 1 to 8.

Input PID: select the PID, which is needed to map.

Output TS index: choose the output channel from 1 to 4.

**Output PID:** set a PID number from the input PID.

Switch: switch on, the selected PID will map to selected channel.

After the configuration, click "Submit" button at right-bottom of the page to save the setting.

#### [Remark]

- 1. When the input TS index is out of the boundary of 1-500, the operation will failure.
- 2. When the output TS index is out of the boundary of 1-32, the operation will failure.
- 3. The input/output PIDs are decimal number

#### Delete PID mapping

			Manual PID Map		
Index	Input Ts Index	Input PID	Output Ts Index	Output PID	Enable 📃
1	1	1012	1	8191	ON 💌
2	1	4000	1	8191	ON 🗖 🖉

As shown above, select the check box in any column, after that click the "Delete" button in the bottom of



this page, then, click "Submit", the selected PID mapping will delete.

			Manual PID Map			
Index	Input Ts Index	Input PID	Output Ts Index	Output PID	Enable	
1	1	1012	1	8191	ON 💌	

As shown above, the second PID mapping has been deleted.

#### PSI information insertion

GQ-3670C support the PSI data update, i.e.: OTA file, BAT, SDT e.g.. The maximum size of the total updated file is 1024 Kbyte and the bandwidth of the updated data is smaller than 4096Kbps.

#### Add upload file

As shown in figure 25, click the "Manual PSI Inserter" hyperlink, the PSI information insertion page will display in the right side of the main page.

		Manu	ual PSI Inserter			
Index	Description	Size (Bytes)	Output Ts Index	Bitrate (Kbps)	Enable	
Used/Tota	I Space (KBytes):	0.000/1024.000	Used/Total E	litrate (Kbps):	0.000/4096.	000
		Browse Upload		Remo	ve Submi	Refresh

Fig.25 PSI information insertion

Click left- bottom "browse" and select the updating file.





Name	Time	Туре	
E CurEIT.ts	2012-08-24 09:50	TS 文件	
			+
•			

After select, click the "upload" bottom Upload

The system will automatically skip to the upload management page, as shown below:

	Upload Management		
Upload Information			
Upload Status : 🌄	Upload Size (Bytes): 2632		
File Information			
File Validation : 💟	File Description:	18	
			Submit Back

The system will adjust the uploaded PSI file, if the file is uploaded correctly and the file layout is correct,

the column of "upload status" and "file validation" will display this characteristic: Click the "Submit" button below, the upload will succeed, as shown below:



	Upload Manageme	ent	
Upload Information			
Upload Status : 🏹	Upload Size (Bytes): 2632		
File Information			
File Validation : 🛜	File Description:	18	
			Submit Back

Fig.26 The PSI file upload successfully



The "Switch"

,can set transmission of the PSI file.

#### Delete the upload file

As shown below, select the check box in any column:

Index	Description	Size (Bytes)	Output Ts Index	Bitrate (Kbps)	Enable	
1	TS 00016160	2632	1	0.000	OFF 💌	

Click the "Delete" button in the bottom of this page, then, click "Submit", the selected PSI information will be deleted.

#### NIT edit

The NIT of the transport stream of DTV support the information of the physical layer of the network, GQ-3670C support to edit NIT manually.

As shown in figure 27, click "NIT edit" button, the NIT edit page is shown in the right side of the main page:



			Net	vork Inf	oramtion Edi	tor			
Network ID:	0 Netv	work Name:			NIT Version	. 0	Enable: OFF	<ul> <li>Descripto</li> </ul>	r Edit
Index TS ID	ON ID F	Freq (MHz)	QAM Mode	SR (	(MBaud)	FEC Inner	FEC Oute	r Descriptor	
					(	Add	Remove	Submit	Refresh
Descriptor Type:	NIT Network D	escriptors							
Descriptor Type: Index	NIT Network D	escriptors De	escriptor Data (I	HEX)			Ena	ible 📃	
Descriptor Type: Index	NIT Network D	escriptors De	escriptor Data (I	HEX)			Ena	ible 📃	
Descriptor Type: Index	NIT Network D	escriptors De	escriptor Data (I	HEX)			Ena	ible 📃	
Descriptor Type: Index	NIT Network D	escriptors De	escriptor Data (I	HEX)			Ena	ible 📄	
Descriptor Type: Index	NIT Network D	escriptors De	escriptor Data (I	HEX)		Add	Ena	ble 🗖	Refresh

Fig.27 NIT edit

#### Add NIT information

Click "Add" button in the page, then the NIT can be edited, as shown below:

			r	Vetwork	Inforamtion B	ditor					
Network ID:	0	Network Name:			NIT Vers	ion: 0	E	nable: OFI	-	Descri	iptor Edit
Index TS ID	ON ID	Freq (MHz)	QAM Mode	e s	SR (MBaud)	FEC Inr	ner	FEC Ou	iter	Descripto	or 📃
1 1	1	474.000000	64QAM	-	6.875000	no conv.	-	no FEC	-		
						Add		Remove		Submit	Refresh
Descriptor Type:	NIT Netwo	rk Descriptors				Add		Remove		Submit	Refresh
Descriptor Type: 🗍 Index	NIT Netwo	rk Descriptors	escriptor Da	ta (HEX	)	Add		Remove	nable	Submit	Refresh
Descriptor Type:	NIT Netwo	rk Descriptors	escriptor Da	ta (HEX	)	Add		Remove	nable	Submit	Refresh
Descriptor Type:	NIT Netwo	rk Descriptors E	iescriptor Da	ta (HEX	)	Add		Remove	nable	Submit	Refresh
Descriptor Type: 🗍	NIT Netwo	rk Descriptors	escriptor Da	ta (HEX	)	Add		Remove	nable	Submit	Refresh

#### Fig.28 NIT information editing

The parameter of NIT including: network ID, network name, NIT version, frequency, modulation mode, symbol rate, FEC inner-coding, FEC outer-coding.

After the configuration, click "Submit" button at right-bottom of the page to save the setting.

GQ-3670C supports the edit of NIT Network Descriptor and NIT TS Descriptor.



#### [Remark]

The range of NIT version: 0-31

NIT Network descriptor edit: click	Descriptor Edit	button at the right-top of the page, the	box of
------------------------------------	-----------------	--	--------

the descriptor type will display below.

Descriptor Type:	NIT Network Descriptors		
Index		Descriptor Data (HEX)	Enable 📃
			Add Remove Submit Refresh

Fig.29 NIT Network descriptor edit

Click "Add" button, a new column of NIT network descriptor will display and can be edited, as shown below:

Descript	or Type: NIT Network Descriptor	S			
Index		Descriptor Data (HEX)		Enable	
1	04011F			OFF -	
			Add Remov	ve Submit	Refresh

"Switch" can control the transmission of the descriptor, and click "Submit" button to save the configuration.

Descriptor

Select the check box in any column, after that click the button in the bottom of this page, then, click "Submit", the selected NIT network descriptor will delete.

**NIT TS descriptor edit:** as shown in figure 30, click the corresponding "edit" button after the NIT information, the box of descriptor type display: NIT TS descriptor:

Descriptor Type:	NIT TS Descriptors				
Index		Descriptor Data (HEX)		Enable	
			Add	Remove Submit	Refresh



The edit of NIT TS descriptor is same as the NIT Network Descriptor, the detail please check the specification of the "edit of NIT Network Descriptor"

#### [Remark]

- 1. NIT descriptor utilize hexadecimal number.
- 2. Ensure the Descriptor meet the standard of DVB SI.



#### **Delete NIT information**

As shown below, select the check box in any column, after that click the "Delete" button in the bottom of this page, then, click "Submit", the selected NIT information will be delated.

				Netw	ork Inforamtion E	ditor			
Network	ID:	0	Network Name:		NIT Versi	on: 0	Enable: OFF	- Descript	or Edit
Index	TS ID	ON ID	Freq (MHz)	QAM Mode	SR (MBaud)	FEC Inner	FEC Outer	Descriptor	
1	1	1	474.000000	64QAM 💌	6.875000	no conv.	no FEC	▼ Edit	
						Add	Remove	Submit	Refresh

#### Overall switch

As shown in figure 28, there is a FFF button at the right top of the page. This button can

control the transmission of all the NIT information. In every output channel setting, NIT could be closed individually.

#### Input program

As shown in figure 31, click " $\pm$ " button, which at the left side of the "input program" hyperlink, the input program menu spread up, as shown below:



#### Fig.31 Input program menu

The type of the current input channel is displayed in the input program menu. As shown in figure 32, spread "channel 01" menu, the number of this type of channel can be checked.





🚍 🔚 Input Service Info
🗄 🔂 Channel 01 - Ethernet
TS 001
TS 002
TS 003
TS 004
TS 005
TS 006
TS 007
TS 008
TS 009
TS 010
TS 011

#### Fig.32 Input channel list

As shown in figure 33, click any hyperlink of channel (i.e.: "TS 016"), the input TS program information can be checked at the right side of the page.



Fig.33 Input TS program information

#### Program search

As shown in figure 34, click Service Analyse button at the bottom of the page, the system will search the corresponding channel automatically, and display the information, as shown below:



	outed To Output TS - 002	
TS ID - 1 ON ID - 1		
PAT Version - 0 CRC32 -	472CCFCD	
Descript	tor - O	
SDT Version - 🛛 🛛		
1838_1	Service ID - 1 Output TS - OFF	
1838_2	Service ID - 2 Output TS - OFF	
1838_3	Service ID - 3 Output TS - OFF	
1838_4	Service ID - 4 Output TS - OFF	
1838_5	Service ID - 5 Output TS - OFF	
1838_6	Service ID - 6 Output TS - OFF	
1838_7	Service ID - 7 Output TS - OFF	
÷- 🗀 1838_8	Service ID - 8 Output TS - OFF	
Analyse Timeout (ms): 1500 Default Batch Select Services Output TS:	Charset: ASCII  Keep Services : OFF	Submit Refresh

Fig.34 Input program information

#### Program information

The information of the TS is displayed above the program list, as shown below:



#### Fig.35 TS information

Click the "it " button at the right side of any program name, the details spread up below:



Fig.36 Program TS information

Single program multiplexing



When user multiplex the single program, the multiplexing output channel of this program can be chose, as shown below:

- Input TS Setting	
Ė. <mark>⊖</mark> TS 0002	
	6B6D8A5A
Descriptor -	0
SDT Version - 0	
<mark>  Cas</mark> (EMM) - <b>0</b>	
E-CTV-1	Number - 1 Output TS - OFF -
E CCTV-2	Number - 2 Output TS - OFF -
E-CTV-3	Number - 3 Output TS - OFF 👻
E-CTV-4	Number - 4 Output TS - OFF -
E-CTV-5	Number - 5 Output TS - OFF -
	Number - 6 Output TS - OFF -
E-CTV-7	Number - 7 Output TS - OFF 👻
	Number - 8 Output TS - OFF -
нво	Number - 9 Output TS - OFF 👻
E C SKY SPORTS	Number - 10 Output TS - OFF -
ESPN	Number - 11 Output TS - OFF 👻
E. DBC	Number - 12 Output TS - OFF -
	Number - 13 Output TS - OFF -
EBC	Number - 14 Output TS - OFF -
	Number - 15 Output TS - OFF -
	Number - 16 Output TS - OFF -

**Fig.37** Program TS information

After the configuration, click "Submit" button at right-bottom of the page to save the setting.

#### Batch program multiplexing

GQ-3670C support batch program multiplexing. It means multiplex all the programs of one channel to another selected channel. As shown below:

CAS	0	RMM.)	_		0	٦
	L.	cmm)			0	
E CCTV-1						_
E CCTV-2						
E CCTV-3						
E CCTV-4						
🗄 🗀 ССТV-5						
E CCTV-6						
🗄 🧰 ССТV-7						
E CCTV-8						
нво						
E 📋 SKY SPO	RTS					
ESPN						
E D NBC						
E BBC						
🕀 📋 NHK						
HINC TV						
_	_	-	-	-		-
alact Sanvisar Outo	+ TS-	001				



Open the drop-down list box of "the output location of the batch select program" and select the channel,



PAT Version - 7 CRC32 -	6B6D8A5A					
CAT Version - 0 Descriptor -	0					
SDT Version - 0				$\cap$		
CAS (EMM) - 0	-					
E CCTV-1	Number -	1	Output TS -	001 -		
± CCTV-2	Number -	2	Output TS -	001 -		
± CCTV-3	Number -	3	Output TS -	001 -		
	Number -	4	Output TS -	001 -		
	Number -	5	Output TS	001		
± CCTV-8	Number -	6	Output TS -	- 100		
	Number -	1	Output TS	001 ▼		
	Number -	8	Output IS	001 -		
	Number -	9	Output IS	001 -		
	Number -	11	Output TS	001 -		
	Number -	12	Output 15	001 -		
	Number	12	Output TS	001 -		
	Number -	14	Output TS	001		
	Number -	15	Output TS	001		
	Number -	16	Output TS	001		
-				0		

click the "Submit" button, the multiplexing sets successfully as shown below:

Fig.39 Batch multiplexing

#### Other function

As shown in figure 39, "Keep Services When Failed", "Default Charset" and "Analyze Timeout" are also in this page:

Analyse Timeout (ms)	1500	Default Charset:	LATIN	-	Keep Services When Failed:	OFF	-	

Search overtime: when the search time is over the user setting, the search will stop.

Default input character-sets: detail in 3.2.6.1.1

Switch of deletion after failure: when the search failure, switch on will delete all the information of current page.

#### Output service

As shown in figure 40, unfold "Output Service" to open the input program channel menu, shown as below:



#### Fig.40 Output Channel Menu

Output program channel will list the type of output channel. As shown in figure 41, unfold "channel 002" menu to check the number of channels, shown as below:



🗄 😋 Output Service Edit
🗄 😋 Channel O1 - Modulator
TS 001
TS 002
TS 003
TS 004
TS 005
TS 006
TS 007
TS 008
TS 009
TS 010
TS 011
TS 012

Fig.41 Output Channel List

Shown as figure 42, click a channel link, for example "TS001", to enter the output TS program information page, shown as below:

	Output TS Informations 1-A		
Output TS Setting      TS 001 - Service Count 17 -      TS ID - 1 ON ID - 0      PAT Version - 0 Interv      CAT Version - 0 Interv      SDI Version - 0 Interv      NIIT Interval (ms) - 1000 -      TDITOT Interval (ms) - 5000      SCS CAS (EMM) - 4	Routed From Input TS - 001 - 0N - ral (mz) - 100 - 0N - ral (mz) - 500 - 0N - ral (mz) - 500 - 0N - - User DefinedDescriptor - E00 - OFF - - OFF -		E
Tellux CAS (EMM) - 0         1888_1         1888_2         1888_3         1888_5         1888_5         1888_5         1888_5         1888_5         ServiceRemove MarkSelect All:	Service ID -         1         Remove Mark -           Service ID -         2         Remove Mark -           Service ID -         3         Remove Mark -           Service ID -         4         Remove Mark -           Service ID -         5         Remove Mark -           Service ID -         5         Remove Mark -           Service ID -         5         Remove Mark -	Submit	Refresh
Descriptor Type:	Descriptor Data (HEX)	Enable	
	Add	Submit	Refresh

Fig.42 Output TS information page

Output TS Information Monitoring and Configuration

Shown as figure 43, the output TS information page will display the TS related information, such as TS ID, PAT version, PMT version, SDT version, CAS, output programs, etc.

**Pass-through:** users can choose to pass through the input stream by turn on the pass-through switch, shown as below:



🗄 💼 TS 001 - Service Count 17 - Routed From Input TS - 001 💌 - ON 💌 -

Fig.43 Pass-through Selection

#### [Remark]

In pass-through mode, the TS is unable to be edited.

PSI/SI Information: users can manually configure the PSI/SI information of the output TS.

Configurable parameters includes:

 <ul> <li>TS ID</li> </ul>				
	1	ON ID -	0	

• PAT version, PAT sending interval

---- PAT Version - 0 -- Interval (ms) - 100 - ON 💌

• CAT version, CAT sending interval, CA descriptor

_		_							
1	CAT Version -	0	Interval	(ms) -	500	- ON	-	User DefinedDescriptor -	Edit

Click the "Edit" button, the "TS CAT Descriptors" box at the bottom of the page will be displayed, shown as below:

Descriptor Type:	TS CAT Descriptors		
Index		Descriptor Data (HEX)	Enable
			Add Remove Submit Refresh

#### Fig.44 CAT descriptor editing

The way to edit CAT descriptor is the same as the way to edit NIT descriptor, see section 3.2.6.4.1.

• SDT version, SDT se	ending int	terval				
SDT Version - 0	Interv	val (ms) - 50	0 -	ON	-	
]						
<ul> <li>NIT sending interval</li> </ul>						
NIT Interval (ms) -	1000 -	OFF 💌				
<ul> <li>TDT/TOT sending in</li> </ul>	torval					
	leivai		-			
TDTTOT Interval	(ms) - (	5000 - ON 💂	•			
• CA switch						
🚊 😋 SCS CAS (EMM) -	4					
CA System ID	0001	CA PID -	48	-	ON	-
CA System ID	0002	CA PID -	49	-	ON	-
	0003	CA PID -	50	-	ON	-
🔄 🗋 CA System ID -	0004	CA PID -	51	-	ON	-



#### [Remark]

PAT CAT SDT version range: 0 - 31.

#### Program Information Edit

GQ-3670C allows users to edit each individual program information. Click is button at the front of the program name to open the program information.



Editable information include program name, program number, PMT information, PCR PID, EIT information, CA related information, ES information, etc.

• TS information

Users can type the program name, program number, and provider in the corresponding boxes, and click "Submit" button to validate the setting.

• PMT information

Users can type the value of PMT PID, PMT version, sending interval in the corresponding boxes, and click "Submit" button to validate the setting.

PCR PID

Users can type the value of PCR PID in the corresponding box, and click "Submit" button to validate the setting.

• EIT information

Users can turn ON/OFF the EIT time table tag, EIT previous/succeeding information tag, and click "Submit" button to validate the setting.

CA information

Click E button in front of SCS CAS to open the CA information list.

Users can type the value of CA PID in the corresponding box and turn ON/OFF the CA channel, then click "Submit" button to validate the setting.

• PMT descriptor

To edit the PMT descriptors, click the "Edit", then the "Service PMT Descriptors" box at the bottom of the page will display Service PMT Descriptors, shown as below:

Descriptor Type: Service F	MT Descriptors	
Index	Descriptor Data (HEX)	Enable
		Add Remove Submit Refresh

The way to edit PMT descriptor is the same as the way to edit NIT descriptor, see section 3.2.6.4.1.





#### SDT descriptor

To edit the SDT descriptors, click the "Edit", then the "Descriptor Type" box at the bottom of the page will display Service SDT Descriptors, shown as below:

Descriptor Type:	Service SDT Descriptors			
Index	Descriptor Data (HEX)		Enable	
		Add	Remove Submit	Refresh

The way to edit SDT descriptor is the same as the way to edit NIT descriptor, see section 3.2.6.4.1.

• ES information

Click E button in front of the TS to open the TS information list.

Users can type the value of ES PID in the corresponding box and turn ON/OFF the sending switch. To edit ES descriptor, click "Edit" button, then the "Descriptor Type" box at the bottom of the page will display Service ES Descriptors, shown as below:

Descriptor Type:	ES PMT Descriptors		
Index	Descriptor Data (HEX)	Enable	

The way to edit ES PMT is the same as the way to edit NIT descriptor, see section 3.2.6.4.1.

#### Delete Program

To delete a program, check its corresponding service remove box, shown as below:

E-CTV-1		Number	- [	1	]	Remove Mark -	
E CCTV-5		Number	- [	5	]	Remove Mark -	
E C SKY SPORTS	[	Number	- [	10	]	Remove Mark -	
BBC		Number	- [	14	]	Remove Mark -	1
É C NHK		Number	- [	15	]	Remove Mark -	

#### Fig.45 Delete Single Program

Click "Submit" button to delete the program. To delete all programs, check the "Service Remove Mark Select All" box at the lower left corner, shown as below:

	Number		5	Remove Mark
SKY SPORTS	Number	- [	10	Remove Mark
E BBC	Number	-[	14	Remove Mark
É	Number	- [	15	Remove Mark

Fig.46 Delete All Programs

All programs' service remove mark will be automatically checked, then click "Submit" button to delete all programs.



#### § 3.1.7 Scramble Setting

JVV.	
Select Items	General Scramble Setting 1-A
Scramble Configuration	Default Crypto Period
General Setting	CP Duration (ms): 10000
CAS Configuration	Fixed CW
	CW (HEX): 1111113311111133 OFF
CAS 03	
🛓 🦳 Channel O1 - Modulator	
	Submit Refresh

Click "Scramble Setting" link in the navigation bar to enter the program scramble setting page, shown as below:

#### **Fig.47** Scramble Setting page

In "Select Items" column, there are scrambling configuration options including General Setting, CAS Configuration, and Services Scramble Setting.

Select Items
⊡…💋 Scramble Configuration
🚊 😋 Module 1-A - IP QAM Module
General Setting ⊕ CAS Configuration
⊡… Corvices Scramble Setting

#### Fig.48 Select Items

#### **General Scramble Settings**

Click "General Scramble Settings" link, it will show General Scramble Setting page, shown as below:



	General Scramble Settings	
Default Crypto Period		
CP Duration (ms): 10000		
Fixed CW		
CW (HEX): 1111113311111133	OFF 💌	

#### Fig.49 General Scramble Setting

In this page, users can configure the default crypto period and fixed control word (CW).

**Default Crypto Period:** the time period of changing the control word, range between 10000 – 60000 milliseconds. Click "Submit" button to validate the setting.

**Fixed CW:** when it is ON, CW will be a user-defined fixed value despite the default crypto period. Click "Submit" button to validate the setting.

#### CAS Configuration

#### CA Parameter Settings

GOSPELL

GQ-3670C support up to 4 CAS simul-crypt, with each CA channel can be configured independently. Shown as figure 50, unfold "CAS Configuration" menu to select the CA channel 1-4:



CAS Name:		GOSPELL CAS	5	CAS Enable: (	OFF 🔻		
Super CAS ID (	HEX):	54480010		EMMG Port:	5001		
ECMG IP:		120.120.120.242	2	ECMG Port:	3000		
ECM Channel I	D (HEX):	0000					
ıdex	NAME			Content (HEX)			
1	01		C54121F020000000	0000000011900010000FF	FF01FFFFFFFFFF	FFFFFFF	
2	02		C54121E020000000	00000001100001000055	FE02FFFFFFFFFFFF	FFFFFFF	1
			0.000				

Fig.50 CAS Configuration

Following items can be configured in the CAS configurations page: CAS Name, CAS Enable switch, Super CAS ID, EMMG Port, ECMP IP, ECMG Port. After the configuration, click "Submit" button to validate the settings.

#### [Remark]

CAS will work properly as well as the configurations of corresponding EMM PID and ECM PID only when the CAS is ON, see section 3.2.6.6.2.

#### ECMG IP: the IP address of the ECM generator;

ECMG Port (DEC): the port number of the ECM generator;

#### [Remark]

To ensure GQ-3670C can correctly receive the ECM data from the CAS, the value of ECMG IP and ECMG port on the GQ-3670C must be the same as their counterparts on the CAS server.

#### Super CAS ID (HEX): valid range between 0 – 0xFFFFFFF.

#### [Remark]

- 1. The super CASID for different CAS should not be the same;
- 2. Super CASID for each CAS company must be the legal value which is authorized by the DVB-CAS organization.

#### **EMMG Port**: the port number of the EMM generator;

#### [Remark]

To ensure GQ-3670C can correctly receive the EMM data from the CAS, the value of EMMG port on the



GQ-3670C must be the same as its counterpart on the CAS server.

After the configuration, users can check the communication status between GQ-3670C and CAS on the bottom of the page, shown as below:



Fig.51 Communication Status

As shown in figure 51, when the communication between GQ-3670C and CAS is valid, the status lights

for CAS display 🥯; otherwise, the light will be 🥌; if CAS is open but doesn't scramble, the light will



#### Edit AC Information

Access Criteria (AC) information is defined by CAS company. It is included in certain programs or programs' ECM. The data in AC includes information such as programs package properties, area lock information, etc.

Each AC information consists of AC index, name, and content.

As shown in figure 52, click "Add" button to add AC information:

Index	NAME	Content (HEX)	
1			

#### Fig.52 AC Editing Box

As shown in figure 52, users can type AC information's name and content. After the editing, click "Submit" button to validate the settings. To delete the AC, check the square box at the end of the AC information, click "Remove" button and then click "Submit" button to validate the setting,

#### [Remark]

- 1. AC information to be added should be provided by the CAS company.
- 2. When editing the AC content, it is suggested that users open the AC data in binary form provided by CAS company and copy/paste it into the editing box instead of manually typing.
- 3. When the AC information which being used is modified, the corresponding scrambled programs will temporarily de-scrambled; but the status of scrambling will be restored immediately once the modification is submitted.
- 4. AC information couldn't be deleted when it is being used.

#### Services Scramble Setting

As shown in figure 53, unfold "Services Scramble Setting" menu to configure the scrambling options for each programs:

			¥	
		Service Scr	ramble Configuration 1-A	
TS (	001			
Index	Service ID	Service Name	AC Selection	Enable
1	1	1898_1	002 💌 💌 💌	ON -
2	2	1898_2	002 💌 👻 👻	ON 🔽
3	3	1898_3	002 💌 👻 👻	ON 👻
4	4	1898_4	002 💌 👻 👻	ON 💌
5	5	1898_5	002 💌 👻 👻	ON 💌
6	6	1898_6	001 💌 👻 👻	ON 👻
7	7	1898_7	001 💌 👻 👻	ON 💌
8	8	1898_8	001 💌 👻 👻	ON 👻

Fig.53 Service Scramble Setting

To scramble the program, first choose AC information for it, shown as below:

Index	Service ID	Service Name	AC Selection	Enable
1	1	CCTV-1		OFF 🔻
2	5	CCTV-5		OFF -
3	10	SKY SPORTS		OFF -
4	14	BBC	▼ <u>▼</u> <u>▼</u> <u>▼</u>	OFF -
5	15	NHK	▼ <b>▼ ▼ ▼</b>	OFF -

Fig.54 Select AC

AC Selection will display 4 AC information for each CAS. After the selection, switch the "Enable" to be ON, then click "Submit" to validate the setting.

#### [Remark]

- 1. To scramble the encrypted programs (which already have CA descriptors in PMT), their CA original CA descriptors will be replaced by new CA descriptor which are generated by GQ-3670C. For pass-through mode, those original CA descriptors will be persisted.
- 2. GQ-3670C supports up to 4 CAS simul-crypt. The CAS's AC information is available for use only when the CAS is ON.
- 3. For different CAS, AC information may have different meanings.
- 4. To correctly scramble programs, the EMM PID of the transport stream and the ECM PID of the programs should be correctly configured, as well as other CA parameters (see section 3.2.7.2.2).



#### § 3.1.8 Monitor

Select Items Alarms 14 🕞 🎒 Monitor Items Index Description Status Counter Reset Details Index Description Trap Panel Log Level B - Main Module 1 Temperature Critical 0 Reset Detail 1 Temperature Critical Critical -Status Alarms 2 Hardware Error 0 2 Hardware Error Critical -Reset Detail - Module 1-A - IP QAM Module NTP Service Timeout 0 NTP Service Timeout Critical -3 Reset Detail 3 -D Status -D Alarms ETH Link Lost 0 Reset Detail ETH Link Lost Critical -🗄 🦲 Bitrate Monitor Index Log Time Detail Information Update Data Reset All Counter Submit Refresh

Click "Monitor" button in the navigation bar to enter the monitoring page, shown as below:

#### Fig.55 Monitoring Page

In the monitoring page, users can monitor the device temperature, working voltage, different bitrate informations and other alarming related information. In the "Select Items" column, there are two categories: Alarms and Bitrate Monitor, shown as below:

Select Items				
Monitor Items Main Module Status Alarms Module 1-A - IP QAM Module Status Module 1-A arms Module 1-A brains Module 1-A brains Module 1-A brains Bitrate Monitor				



#### Alarms

Unfold "Alarms" menu to open the alarming information page, shown as below:



Alarms Display



Index	Description	Status	Counter	Reset	Details	Index	Description	Trap	Pane	I Log Le	vel
1	Temperature Critical		0	Reset	Detail	1	Temperature Critical	1	V	Critical	-
2	Hardware Error		0	Reset	Detail	2	Hardware Error			Critical	-
3	EMM Error		0	Reset	Detail	3	EMM Error	1		Critical	-
4	ECM Error	•	0	Reset	Detail	4	ECM Error			Critical	-
5	ETH Link Lost		0	Reset	Detail	5	ETH Link Lost			Critical	-
6	PLL Lock Lost		0	Reset	Detail	6	PLL Lock Lost	Ø		Critical	-
7	Input Error		0	Reset	Detail	7	Input Error	7		Critical	
8	Output Error		0	Reset	Detail	8	Output Error	7		Critical	-
9	QAM CHN Overflow		0	Reset	Detail	9	QAM CHN Overflow	V	V	Critical	-
Index	< Log Time					Detail Inform	ation				
Index	< Log Time					Detail Inform	ation				
Upda	c Log Time	Counter				Detail Inform	ation		Subr	it	Refr
Upda	k Log Time	Counter	Fig	.58 /	Alarm Inforr	Detail Inform	astion		Subr	it	Refr
Upda as fi	ate Data Reset All	Counter	Fig	<b>.58</b>	Alarm Inforr device temp	Detail Inform	nd the right colum	nn di	Subm	it ys the	Refr
Upda as fi	te Data Reset All gure 58, left colu	Counter Imn di	Fig	<b>.58</b> /	Alarm Inforr device temp	Detail Inform	nd the right colum	n di	Subm	iit ys the	Refr
Upda as fi	<ul> <li>Log Time</li> <li>ate Data Reset All</li> <li>gure 58, left colu</li> <li>When there is r</li> </ul>	Counter Imn di	Fig splays rm, the	.58 / the c	Alarm Inforr device temp us light will	Detail Inform mation perature a be ; w	nd the right colum	nn dia	Subm spla	it ys the e status	Refr alar s lig
Upda as fig	te Data Reset All gure 58, left colu When there is r	Counter Imn di no alai	Fig splays rm, the	. <b>58</b> / s the c e state	Alarm Inforr device temp us light will	Detail Inform mation berature a be ; w	nd the right colum	ın di	Subr spla , the	it ys the	Refr alar s lig

Click "Display" button, the alarm display page will be shown as below:

9 QAM 01 Overflow 🔴 58 Reset

Shown as figure 60, for the alarm information setting on the right column, users can configure the Trap switch, Panel switch, and the log level.

Trap: when it is ON, GQ-3670C will send the trap information to server through SNMP.Panel: when it is ON, the alarm light on the front panel of GQ-3670C will display the alarm.Log Level: set level of severity for the alarm, from lowest to highest level: disable, info, warning, critical.SNMP will judge the severity of the alarm depending its log level.

When finish the settings, click "Submit" button to validate them.

#### [Remark]

The realization of Trap and log level is relate to the SNMP, for specific instructions, see the SNMP user manual.

The counter will automatically restore to zero even the error is cleared. Users need to click the "Reset"



button to reset the counter to zero.

#### [Remark]

The status light will stay red as long as the counter is not zero (though there may not be any real-time errors).

#### Alarm Setting

Click the "Setting" link to enter the alarm setting page, shown as below:

Simularypt Syn	chroniser	Alarms General Switch:	ON 💌
Crypto Period Duration(ms) :	0	Critical Temperature (10):	70
Crypto Period Number :	0	1	
1			
CAS 01			
ECM / EMM Status :			
EMM Bitrate (Mbps) :	0.000		
CAS 02	2	Temperature("C /"F):	34 0/93 2
ECM / EMM Status :			01.070.2
EMM Bitrate (Mbps) :	0.000	Ethion Status	
CAS 03	3	Eth 02 Status	
ECM / EMM Status :	🔿 / 🌑	3.3V :	
EMM Bitrate (Mbps) :	0.000	5V :	
CAS 04	ŧ	12V :	
ECM / EMM Status :		Inserter Bitrate (Mbps) :	0.000
EMM Bitrate (Mbps) :	0.000	1.	

#### Fig.59 Alarm Setting page

As shown in figure 60, the left column is for the temperature alarm setting and the right column is for other alarm information settings.

**General Switch:** choose between ON/OFF to enable/disenable the temperature alarms. Click "Submit" to validate the setting.

Critical Temperature: set the upper limit temperature, click "Submit" to validate the setting.

Temperature:current temperature of each module( $^{\circ}C/^{\circ}F$ )

Eth Status:current status of each cooling Fan

3.3V/5V/12V: real-time readings of each voltage detectors

Inserter Bitrate:current bitrate comes from core system of each module comes from core system

#### Bitrate Monitor

Unfold the "Bitrate Monitor" menu to select to monitor the input/output bit rate, shown as below:





Fig.60 Bitrate Monitor Menu

#### Input Channel Bit Rate

Unfold the "Input Channel" menu to enter the input channel bit rate monitoring page, shown as below:

		Bitrate Monitor /	Bitrat	te Alarm	Setting	1-A				05
Index	Sub Index	Bitrate (Mbps)			Index	Sub Index	Low (Mbps)	High (Mbps)	Enable	
1	001	0.000	-		1	01	0.000	55.000	OFF 👻	
2	002	0.000			2	02	0.000	55.000	OFF 👻	
3	003	0.000			3	03	0.000	55.000	OFF 👻	
4	004	0.000			4	04	0.000	55.000	OFF 👻	
5	005	0.000			5	05	0.000	55.000	OFF 👻	
6	006	0.000			6	06	0.000	55.000	OFF 👻	
7	007	0.000			7	07	0.000	55.000	OFF 👻	
8	008	0.000	н		8	08	0.000	55.000	OFF 👻	
9	009	0.000			9	09	0.000	55.000	OFF 👻	
10	010	0.000			10	10	0.000	55.000	OFF 👻	
11	011	0.000			11	11	0.000	55.000	OFF 👻	
12	012	0.000			12	12	0.000	55.000	OFF 👻	
13	013	0.000			13	13	0.000	55.000	OFF 👻	
14	014	0.000			14	14	0.000	55.000	OFF 🖵	
15	015	0.000		J	15	15	0.000	55.000	OFF 👻	
16	016	0.000	-		16	16	0.000	55.000	OFF 👻	
Up	date Data			Ι				Submit	Refres	h

Fig.61 Input Channel Bit Rate Monitoring

Shown as figure 62, the left column displays the real-time bit rate of each channel; the right column enable users to set the bit rate alarm setting, including lower limit, upper limit, and the enable switch.

Lower Limit: when the real-time bit rate is lower than this lower limit value, it will trigger an alarm. **Upper Limit:** when the real-time bit rate is higher than this upper limit value, it will trigger an alarm. Enable Switch: turn ON/OFF the alarm.

When finish the settings, click "Submit" button to validate them.

#### **Output Channel Bit Rate**

Unfold the "Output Channel" menu to enter the output channel bit rate monitoring page, shown as below:



		Bitrate Monitor	/ Bitra	ate Alarn	n Setting	1-A			05
Index	Sub Index	Bitrate (Mbps)			Index	Sub Index	Low (Mbps)	High (Mbps)	Enable
1	001	0.000			1	01	0.000	55.000	OFF 👻
2	002	0.000			2	02	0.000	55.000	OFF 👻
3	003	0.000			3	03	0.000	55.000	OFF 👻
4	004	0.000			4	04	0.000	55.000	OFF 👻
5	005	0.000			5	05	0.000	55.000	OFF 💌
6	006	0.000			6	06	0.000	55.000	OFF 💌
7	007	0.000			7	07	0.000	55.000	OFF 👻
8	008	0.000		8	8	08	0.000	55.000	OFF 🗸
9	009	0.000			9	09	0.000	55.000	OFF 👻
10	010	0.000			10	10	0.000	55.000	OFF 👻
11	011	0.000			11	11	0.000	55.000	OFF 👻
12	012	0.000			12	12	0.000	55.000	OFF 👻
13	013	0.000			13	13	0.000	55.000	OFF 👻
14	014	0.000			14	14	0.000	55.000	OFF 👻
15	015	0.000			15	15	0.000	55.000	OFF 👻
16	016	0.000		-	16	16	0.000	55.000	OFF 👻
Up	date Data			I				Submit	Refresh

Fig.62 Output Channel Bit Rate Monitoring

Shown as figure 63, the left column displays the real-time bit rate of each channel; the right column enable users to set the bit rate alarm setting, including lower limit, upper limit, and the enable switch

**Lower Limit:** when the real-time bit rate is lower than this lower limit value, it will trigger an alarm. **Upper Limit:** when the real-time bit rate is higher than this upper limit value, it will trigger an alarm. **Enable Switch:** turn ON/OFF the alarm.

When finish the settings, click "Submit" button to validate them.

#### System Bit Rate

Shown as figure 65, the lower right corner displays the system input, output, and insert bit rate, shown as below:

1 - B	۲	0.000/	0.000 Mbps
1 - A	۲	0.000/	0.000 Mbps

Fig.63 System Bit Rate Monitoring



#### Front Panel Operation of GQ-3670C

Front panel LCD display of GQ-3670C will show some initializing messages of the device at boot up stage, such as but not limited to company logo, model number, etc. If there is an error during boot up, then it will display the error message.

The front panel display will be locked if there is no key pressed within 60 seconds after device booting. System configuration and menu browsing cannot be performed through the front panel keypad while it is in LOCK status, and the LCD display will show current working status and alert messages (if available) alternately.

User may unlock the LCD display by pressing "UP" and "DOWN" key continuously while it is locked, in order to activate the front panel menu. After activating the menu, the LCD display will show the first sub-menu of the main menu (VIEW ALARMS), as shown in the figure below:



#### Fig.64 Front Panel Menu

When entering operating menu, user may switch between different sub-menus by pressing "LEFT" and "RIGHT" keys.

The front panel sub-menu items of GQ-3670C are shown in the below table:

Menu ID	Function	Operating Description	Remarks
1.0	Alarms	<ul> <li>Display the system alarm information if available.</li> <li>Use "↑" and "↓" keys to switch between alarms if there are more than one alarms.</li> </ul>	
2.0	Serial No.	Display serial number of the device	
2.1	Software Version	Display software version information.	Read-only
2.2	Hardware Version	Display hardware Version information.	
2.3	Software Release Date	Display software release date.	
2.4	FPGA Release Date	Display FPGA version information.	
3.0	Local IP	Set the management port IP address of GQ-3670C. Press "ENTER" key to remove cursor. Use " $\leftarrow$ " and " $\rightarrow$ " keys to switching	The IP address should be within the same subnet with the management



		between different digits of the IP address. Press "ENTER" key to apply changes	workstation.
3.1	Subnet Mask	Set the management port subnet mask of GQ-3670C. Press "ENTER" key to remove cursor. Use "←" and "→" keys to switching between different digits of the subnet mask. Press "ENTER" key to apply changes.	Default is 255.255.255.0
3.2	Default Gateway	Set the management port gateway of GQ-3670C. Press "ENTER" key to remove cursor. Use "←" and "→" keys to switching between different digits of the default gateway. Press "ENTER" key to apply changes.	
3.3	MAC Address	Display the MAC address.	Read-only
4.0	Factory reset	Execute a factory reset. Press "ENTER" key to enter the selection mode. Use "←" and "→" keys to select.	Select "Yes" to reboot the device.
4.1	Factory Defaults	Restore to factory defaults. Press "ENTER" key to enter the selection mode. Use "←" and "→" keys to select. Press "ENTER" key to apply changes.	Select "Yes" to reboot the device.
5.0	Language	Set the menu language on front panel. Press "ENTER" key to enter the selection mode. Use "←" and "→" keys to select. Press "ENTER" key to apply changes.	Support Chinese/English menu.

After complete menu operation, user may lock the front panel LCD display and keypad by Pressing "MENU" and "ENTER" key continuously.

# Annex A: Technical Specifications of GQ-3670C

Characteristic	Properties	Specifications
	AC Input Voltage	85~260VAC
Power Supply &	AC Input Frequency	50/60Hz
Consumption	Power Consumption	75W
	No. of Power Supply Modules	2 operation in parallel
	Operating Temperature	5°C ~40°C (41°F ~104°F)
Operating/Storage	Storage Temperature	-25°C ~70°C (-13°F~158°F)
Environment	Air Pressure	86~106KPa
	Humidity	10%~90%

A.1 Common Technical Specifications

A.2 Interfaces

Characteristic	Properties	Specification
	Connector	RJ45
	Quantity	2
Data Input	Data Format	TS OVER IP(UDP) Bytes packet
Interface	Impedance	75Ω
	MAC	IEEE 802.3 1000BASET
	Input Data Rate	0~800Mbps
	Connector	RJ45
	Quantity	1
Managamant	Functionality	Management and CAS
Port	MAC	IEEE 802.3 1000BASET
1 OIL	Network Protocol	TCP/IP
	Application	HTTP4.0/HTML1.1/XML/CGI(Web Management)
		NTP

A.3 Multiplexing Specifications

Characteristic	Properties	Specification
	Input TS number	0~500
TS input	Total services number(total)	0~512
	Service number per input TS	0~64
	Output TS number	0~16
TS output	Total services number(total)	0~512
	Service number per output TS	0~64
	Standard(syntax and cond poriod)	ISO/IEC 13818-1
	Standard(Syntax and Send Pendd)	DVB SI(ESI EN300468)
DSI for output TS		PAT/PMT: Generated automatically
		SDT: Generated automatically or use uploaded files
		NIT/BAT: Use uploaded files
		TDT/TOT: Optional



#### A.4 Scrambling & CAS interfaces

Characteristic	Properties	Specification
	Scrambling algorithm	DVB-CSA
Scrambling	Embedded scramblers number	4
	Table update	CAT/PMT
	Simul-Crypt CAS number	0~4
	SCS interface	ETSI TS 103 197
CAS Interface	ECMG interface	ТСР
	EMMG interface	TCP/UDP
	EMM bandwidth	0~1Mbps/TS

#### A.5 RF Output Technical Specifications

Characteristic	Properties		Specification		
RF Output	Output Frequency		54MHz~860MHz		
	Maximum Output EPL (main)		90-110dBuV (4 Channels, 0.5dB as step size)		
	Maximum Output EPL (monitoring)		70-90dBuV (4 Channels, 0.5dB as step size)		
	Impedance		75Ω		
	Reflection Loss		≥12dB		
	Carrier Suppression		>58dB		
	MER		≥38dB (QAM Constellation: 64QAM	Symbol Rate:	
			6.857MBaud)		
	SNR (Out of band)		≥50dB		
	Gain fine-tune		0.00~5.00dB (Step size is 0.25dB)		
	Phase Noise	@1KHz	≥90dBc/Hz		
		@10KHz	≥100dBc/Hz		
		@100KHz	≥105dBc/Hz		
	Accuracy of center frequency		±25KHz		



# Annex B: QAM Reference Information

J.83 Annex A: Table of constellation, bandwidth, symbol rate and bit rate.

Constellation	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM
Minimum bit Rate(Mbps)	2	4	5	6	7	8
Maximum bit Rate(Mbps)	14	28	35	42	49	56
Minimum Bandwidth(MHz)	1.15	1.15	1.15	1.15	1.15	1.15
Maximum bandwidth(MHz)	8.05	8.05	8.05	8.05	8.05	8.05
Minimum Symbol Rate(Mbaud)	1	1	1	1	1	1
Maximum Symbol Rate(Mbaud)	7	7	7	7	7	7

Channel Bandwidth = 1.15 \* Symbol Rate Symbol Rate = Output Bit Rate/m m = 2, 4, 5, 6, 7, 8 Corresponding: QPSK, 16QAM, 32QAM, 64QAM, 128QAM and 256QAM

8MHz Maximum Output Bit Rate

Constellation	C/N Threshold	Maximum Valid Bit Rate	Channel Utilization Ratio
16QAM	22dB	25.8Mbps	3.2 bit/Hz
32QAM	25dB	32.2Mbps	4.0 bit/Hz
64QAM	28dB	38.7Mbps	4.8 bit/Hz
128QAM	31dB	44.2Mbps	5.5 bit/Hz
256QAM	34dB	51.6Mbps	6.4 bit/Hz

Maximum Valid Bit Rate = Output Bit Rate \* 188 / 204

# Annex C: Frequently Asked Questions

Symptoms	Possible Causes	Recommended Solutions	
No display at boot up	The power supply cable is not plugged in	Plug in the power supply cable	
The error message " cannot find	Network connect error	Check if the manage computer and the manage port of GQ-3670C has been connected to a same network	
when access equipment by a web	IP address mismatch	Input correct IP address in URL bar	
browser	Subnet mismatch, i.e., manage port of GQ-3670C and computer locate in different subnet	Modify the manage port IP of GQ-3670C by front panel operations.	
Fail to econ any input programs	Improper connection of BNC cable at data input.	Check if the cable is properly connected.	
Fail to scall any input programs	BNC cable problem.	Check if the cable is properly worked, or change the cable.	
Fail to scan programs in specific input	Source device is not working properly	Check malfunction in the source device	
Succeeding device fails to receive	Improper connection of RF output cable	Connect the RF output cable properly.	
any program	Low EPL at RF output	Re-configure output EPL	
Succeeding device fails to receive data in specific output.	The succeeding device is not working properly.	Check malfunction in the succeeding device (e.g. DVB-C receiver)	
Serious mis-decoding occurs in all	Program data overflow. Reduce number of programs or s in order to maintain the total ou rate under the total modulated ou rate.		
programs.	EPL at RF output is too low or too high	Re-configure output EPL	
	There are other output frequencies in the system	Re-plan system resources with proper frequency arrangement.	
Serious mis-decoding occurs in specific program.	Preceding device of this program is not working properly.	Check the configuration errors and malfunction in the preceding device.	

# Postscript

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