

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

No part of this document may be reproduced in any form without the written permission of the copyright owner.

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.

Copy Warning

This document includes some confidential information. Its usage is limited to the owners of the product that it is relevant to. It cannot be copied, modified, or translated in another language without prior written authorization from SOFTEL.

Directory

Chapter 1 Product Overview	1
1.1 Outline	1
1.2 Inner Structure	1
1.5 Specifications	2
Chapter 2 Physical Presentational Statement	2
2.1 Front panel Illustration:	4
2.2 Rear panel Illustration:	4
Chapter 3 Installation Guide	5
3.1 Acquisition Check	5
3.2 Installation Preparation	5
Chapter 4 Web NMS Management	8
4.1 Login	8
4.2 Operation	8
Chapter 5 Troubleshooting	22
Chapter 6 Packing list	23

Chapter 1 Product Overview

1.1 Outline

SFT3316 16 in 1 IP OAM 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.

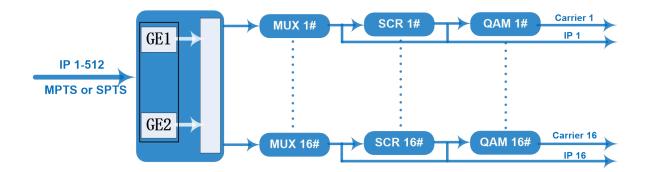
1.2 Key Features

- 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

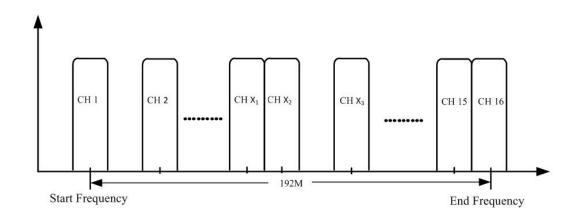
J.83 A/B

- Support RS (204,188) encoding
- Support Web-based Network management

1.3 Inner Structure



1.4 Carrier Setting Illustration



1.5 Specifications

	Input	512 IP in optional)	put, 2 100/1000M Ethernet Port(SFP			
Input	Transport Protocol	TS over U V2/V3	DP/RTP, unicast and multicast, IGMP			
	Transmission Rate	Max 840Mb	ops for each GE input			
	Input Channel	512				
	Output Channel	16				
Maar	Max PIDs	180 per channel				
Mux		PID remapping(auto/manually optional)				
	Functions	PCR accurate adjusting				
		PSI/SI table	automatically generating			
	Max simulscrypt CA	4				
Scrambling Parameters	Scramble Standard	ETR289, ETSI 101 197, ETSI 103 197				
rarameters	Connection	Local/remote connection				
Modulation	DVB-C Modulator	1.02 4	Constellation : 16/32/64/128/256QAM			
Parameters	Sectioon	J.83A	Bandwidth :8M			

HANGZHOU SOFTEL OPTIC CO., LTD

ADD:708-709 HAIWEI BUILDING, No.101 BINKANG ROAD ,BINJIANG DISTRICT, HANGZHOU,ZHEJIANG,CHINA TEL:+86 571 88989381 FAX:+86 571 88983280 Web : www.softel-optic.com

			Constellation : 64QAM/ 256QAM					
		J.83B	Bandwidth :6M					
	QAM Channel	16 non-adja	acent carrier					
	Modulation Standard	EN300 429	/ITU-T J.83A/B(DVB-C)					
	Symbol Rate	5.0~7.0Msp	ps, 1ksps stepping					
	FEC	RS (204, 18	38)					
	Interface	1 F typed o	utput port for 16 carriers, 75Ω impedance					
DE Output	RF Range	50~960MHz, 1kHz stepping						
RF Output	Output Level	-20dBm~+10dBm(87~117dbµV), 0.1dB stepping						
	MER	\geq 40dB						
TS output	16 IP output over UDF	16 IP output over UDP/RTP/RTSP, unicast/multicast, 2 100/1000M Ether						
TS output	Ports							
System	Network management so	oftware (NM	S) supporting					
	Demission	420mm×44	0mm×44.5mm (WxLxH)					
General	Temperature	0~45°C(operation), -20~80°C(storage)						
General	Power Supply	AC 100V	±10%, 50/60Hz or AC 220V±10%,					
	Power Supply	50/60Hz						

Chapter 2 Physical Presentational Statement

16 in 1 IP QAM Modulator

2.1 Front 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.

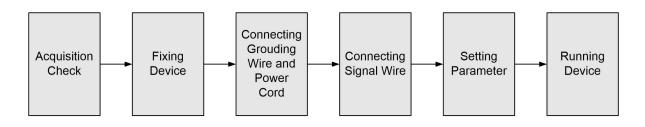
3.2 Installation Preparation

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
	When user installs machine frame array in one machine hall, the
Machine Hall Space	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.
	Electric Isolation, Dust Free
Machine Hall Floor	Volume resistivity of ground anti-static material: $1X10^7 \sim 1X10^{10 \Omega}$,
	Grounding current limiting resistance: 1M (Floor bearing should be
	greater than 450Kg/m ²)
Environment	5~40°C(sustainable), 0~45°C(short time)
Temperature	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
Door & window	for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
	Requiring device power, air-conditioning power and lighting power
Derver	are independent to each other. Device power requires AC power
Power	220V $\pm 10\%$ 50/60Hz or 110V $\pm 10\%$ 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 25mm².

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 25mm².

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.

?	http://10.0.0.103 正在请求您的用户名和密码。该网站说:"Webserver"
用户名:	admin
密码:	•••••

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

		2018-02-03	[EN 中文][Exit
Summary ▶ Status	DEVICE INFORMATION		
Monitor Input Status	System Information		
► Output Status	Software Version:	08.60.17 Build 271.00 Nov 21 2017	
Parameters	Hardware Version:	00.00.10	
►TS Config	Web Version:	1.51	
Scrambler	System Version:	1.20.1.62	1
► Modulator	Product ID:	0d031600-00000010-00000000-00000000	
► IP Stream	Serial Number:		i i
System	Manufacturing Date:		
 Network Password Configuration Firmware Date Time Log 	User can click any item here to enter the corresponding interface to check information or set the parameters.	0 Day-00:04:11	_2

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.

welcome to						201	18-02-03 14:36:05	[EN 中文][Exi
	INPUT STATUS							
Summary								
▶ Status	Data1	Data2						
Monitor								
▶ Input Status	Channel Info.(A	larm/Active/Total): 0/	16/16	Total E	Bitrate: 555.2/6	08.2		
▶ Output Status								
Parameters	Channel	IP Address	Port	Protocol	IGMP	Multicast	Status	Bit(Act/Max)
TS Config	1	224.2.2.4	1001	UDP		1	•	34.7/38.0 Mbps
▶ Scrambler	2	224.2.2.4	1002	UDP				34.7/38.0 Mbps
Modulator	3	224.2.2.4	1003	UDP		7		34.7/38.0 Mbps
▶ IP Stream							8	
System	4	224.2.2.4	1004	UDP		V	•	34.7/38.0 Mbps
Network	5	224.2.2.4	1005	UDP		1	•	34.7/38.0 Mbps
▶ Password	6	224.2.2.4	1006	UDP		1		34.7/38.0 Mbps
Configuration Firmware	7	224.2.2.4	4007	UDD		1		0.1 7/00 0 Million
Date Time			1007	UDP				34.7/38.0 Mbps
▶ Log	8	224.2.2.4	1008	UDP		V	•	34.7/38.0 Mbps
	9	224.2.2.4	1009	UDP		\bigtriangledown	•	34.7/38.0 Mbps
	10	224.2.2.4	1010	UDP		1	•	34.7/38.0 Mbps
	11	224.2.2.4	1011	UDP		7		34.7/38.0 Mbps
								11
	12	224.2.2.4	1012	UDP		1	•	34.7/38.0 Mbps
	13	224.2.2.4	1013	UDP		\square	•	34.6/38.0 Mbps
	14	224.2.2.4	1014	UDP		\bigtriangledown		34.6/38.0 Mbps
	15	224.2.2.4	1015	UDP		V		34.6/38.0 Mbps
	10	224.2.2.4	1015	OUP			-	54.0/30.0 Mbps
	16	224.2.2.4	1016	UDP		1	•	34.6/38.0 Mbps

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.

gement	OUTPUT STATUS							2018	8-02-07 16:58:22
	IP Q	AM							
tus	Channel Info	(Alarm/Active/Total): 0/16/16		Total Bitrate: 501.8/60	8.2			
us	Channel	IP Address	Port	Protocol	Null PKT Filter	Data1	Data2	Status	Bit(Act/Max)
	1	224.2.2.2	2001	UDP			2	•	34.7/38.0 Mbps
	2	224.2.2.2	2002	UDP				•	34.7/38.0 Mbps
	3	224.2.2.2	2003	UDP			23	•	34.7/38.0 Mbps
	4	224.2.2.2	2004	UDP		V			34.7/38.0 Mbps
	5	224.2.2.2	2005	UDP			2		34.7/38.0 Mbps
	6	224.2.2.2	2006	UDP		7	8		34.7/38.0 Mbps
	7	224.2.2.2	2007	UDP		7			34.7/38.0 Mbps
	8	224 2 2 2	2008	UDP		1			34.7/38.0 Mbps
	9	224.2.2.2	2009	UDP					25.2/38.0 Mbps
	10	224 2 2 2	2010	UDP					25.8/38.0 Mbps
	11	224.2.2.2	2011	UDP					27.1/38.0 Mbps
	12	224.2.2.2	2012	UDP				•	32.9/38.0 Mbps
	13	224.2.2.2	2013	UDP			277	•	34.4/38.0 Mbps
	14	224.2.2.2	2014	UDP		7		•	22.7/38.0 Mbps
	15	224.2.2.2	2015	UDP			20	•	21.8/38.0 Mbps
	16	224.2.2.2	2016	UDP		7			34.2/38.0 Mbps

Figure-4

o use Web Managem	OUTPUT STATUS				2018-02-03	14:36:51 [EN 中文]
nmary Status nitor	Q	AM				
nput Status	Channel Info.	(Alarm/Active/Total): 0/16/16				
ameters	Channel	Frequency	Constellation	Symbol Rate	Status	Bit(Act/Max)
Config	1	650 MHz	64 QAM	6875 Ksps	٠	34.7/38.0 Mbps
ambler	2	658 MHz	64 QAM	6875 Ksps		34.7/38.0 Mbps
lator	3	666 MHz	64 QAM	6875 Ksps		34.7/38.0 Mbps
	4	674 MHz	64 QAM	6875 Ksps		34.7/38.0 Mbps
k	5	682 MHz	64 QAM	6875 Ksps		34.7/38.0 Mbps
vord	6	690 MHz	64 QAM	6875 Ksps		34.7/38.0 Mbps
ration	7	698 MHz	64 QAM	6875 Ksps		34.7/38.0 Mbps
īme	8	706 MHz	64 QAM	6875 Ksps		34.7/38.0 Mbps
	9	714 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps
	10	722 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps
	11	730 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps
	12	738 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps
	13	746 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps
	14	754 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps
	15	762 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps
	16	770 MHz	64 QAM	6875 Ksps		0.1/38.0 Mbps

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.

	S CONFIG			2018-02-1	03 14:37:12
Monitor					
► Input Status	Output TS 1-	Stream Select	General PID Bypass		_
Output Status Parameters	Output TS 1	•	To select output TS	S channel 1-16	
Starmbler Scrambler Modulator Hodulator PStream Syatem Network Password Configuration Firmware Date Time Log	B→OH1 Output TS 3 B→OH2 Output TS 4 D→OH2 Output TS 4 B→OH4 Output TS 6 B→OH4 Output TS 6 B→OH4 Output TS 7 B→OH4 Output TS 8 B→OH6 Output TS 8 B→OH6 Output TS 8 B→OH6 Output TS 10 B→OH6 Output TS 11 B→OH7 Output TS 12 B→OH7 Output TS 13 B→OH7 Output TS 13 B→OH7 Output TS 13 B→OH7 Output TS 13 B→OH1 Output TS 14 B→OH1 Output TS 15 Output TS 14 Output TS 14 B→OH1 Output TS 14	rog: 0/7) rog: 0/7) rog: 0/7) rog: 0/7)	[34,738,0M] ☑ CA Filter [34,738,0M] ☑ CA Filter [34,738,0M] ☑ PID Remap [34,738,0M] Refeash Input [34,738,0M] Refeash Input [34,738,0M] Refeash Input [34,738,0M] Refeash Input [34,738,0M] (34,738,0M) [34,738,0M] (34,738,0M) [34,738,0M] (34,738,0M) [34,738,0M] (34,638,0M) [34,638,0M] (34,638,0M) [34,638,0M] (34,638,0M) [34,638,0M] (34,040,000)		[34.7/38.)
	Parse program time o	ut: 60 seconds			

Figure-6

Stream Select

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

▶ Scrambler ut IP Stream Config. uti IP Stream Config. uti IP Stream Config. uti IP Stream Config. Unicast: IP Address: IP Address: IP Address: IP Address: IP Address: IP Control IGMP Snooping: Off Protocot: UDP Comm Add Comm Add Comm Add Comm Comm Protocot: Didde Interface: Protocot: Didde Interface:		V	velcome				2018-02-03 14:38:09 [EN	4 中文] [Exit]
Virgut TS 1- Stream Select General PID Bypass Virgut TS 1- <th></th> <th>Summary</th> <th>TS CONFIG</th> <th></th> <th></th> <th></th> <th></th> <th></th>		Summary	TS CONFIG					
Imput Status Output Status Parameters Is Config Scrambler Output Status It IP Stream Config. Close Data Interface: Data Interface: IP Address: 242222 Port. 1001 Step: 1 Const Voluput Status Port. 1001 Step: 1 Const Voluput Status Port. 1001 Step: 1 16MP Snooping: Coff Coff Coff Protocot: UDP Coff		► Status						
Pindu Status • Ordpu Status Parameters • Scrambler t IP Stream Config. Close Data Interface: Unicast. IP Address: 224222 Port. 1001 Stop: 1 IP Address: 224222 Port. 1001 Stop: 1 IGMP Snopping: 0 Vertice 1001 Stop: 1 IGMP Snopping: 0 Vertice 1001 Stop: 1 ICMI Contri 0 Vertice 1001 Stop: 1 IGMP Snopping: 0 Vertice 1001 Stop: 1 <th></th> <th></th> <th></th> <th>Output TS 1 - Stream S</th> <th>elect General PID I</th> <th>Bypass</th> <th></th> <th></th>				Output TS 1 - Stream S	elect General PID I	Bypass		
Image: Scandler						-,,		
Image: Scrambler Image: Scrambler <td< th=""><th></th><th>Parameters</th><th>+ /</th><th>× mm</th><th></th><th></th><th></th><th></th></td<>		Parameters	+ /	× mm				
P Stream Config. [close] Data Interface: Data1 Unicest: [close] IP Address: 224222 Pot: 1001 Step: 1 IP Address: 224222 Pot: 1001 Bed Pot: 1002 IGMP Snooping: 0ff Protocol: UDP Add Coord			→Lose →	Locked			Normal 🔸 Overflow	
t IP Stream Config. close Data Interface: Data Interface: Unicest: Impati (Stream Config). IP Address: 224 22.2 Port: 1001 Step: Impati (Stream Config). IP Address: 224 22.2 Port: 1001 Step: Impati (Stream Config). IGMP Snooping: Off Protocol: UDP Add Cone					7) [34.7/38.0M]			[34.7/38.0]
IP Sitean Colling. Ipport Sitean Colling. Ippor		· Octambler				CA Filter		
Data Interface: Data 1 Unicast: □ iP Address: 224222 Port: 1001 Step: □ Consol 0 IGMP Snooping: Off Protocot: UDP Add Consol Add Consol Mata 12422241006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH4, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH4, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH4, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH4, Data1 224224 1006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 24 1006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 24 1006 (prog. 07) 194 7788 0MI 0 + CH4, Data1 224224 24 1006 (prog. 07) 194 7788 0MI 0 + CH2, Data1 224224 24 1006 (prog. 07) 194 7788 0MI <	IP Stream Config.	[]				PID Remap		
Data Interface: Data1 Unicast: Imput Area IP Address: 224222 Port: 1001 Step: 1 End Port: 1002 IGMP Snooping: Off Protocol: UDP Add Close						Refresh Innut		
Unicast: □ IP Address: 224.22.2 Port: 1001 Step: 1 End Port: 1002 IGMP Snooping: Off Protocol: UDP Add Chase	Data Interface:	Data1 •		304] CCTV 10 Input	Area			
IP Address: 224222 Port: 1001 Step: 1 End Port: 1002 IGMP Snooping: 0ff • Protocot: UDP						Refresh Output		
Port: 1001 Step: ■ End Port: 1032 IGMP Snooping: Off Protocol: UDP Add Close		224 2 2 2		A 172 A 161 (161 (161 (161 (161 (161 (161 (16		=>		
Step: □ End Port: 1002 IGMP Snooping: Off Protocol: UDP Add Close						<====	7: CCTV 12 <= CH1_Data1_224.2.2.4:1001 [30]	/6]
End Port: 1032 IGMP Snooping: Off - Protocol: UDP - Add Clove Add Clove								
IGMP Snooping: Off •								
Protocol: UDP • 0 = 0.076 Utal = 224.22 + 1000 (prog 07) [34,738 UM] All input Protocol: UDP • 0 = 0.076 Utal = 224.22 + 1000 (prog 07) [34,738 UM] All Output B = 0.076 Utal = 224.22 + 1000 (prog 07) [34,738 UM] All Output All Output B = 0.076 Utal = 224.22 + 1000 (prog 07) [34,738 UM] All Output All Output B = 0.076 Utal = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.076 Utal = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.0710 Data = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.0710 Data = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.0710 Data = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.0710 Data = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.0710 Data = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.0710 Data = 224.22 + 1010 (prog 07) [34,738 UM] All Output All Output B = 0.0710 Data = 224.22 + 1010 (prog 07) [34,738 UM] All Out						J)		
Add Clone Add Clone						All Input		
Add Cloude th ⇒ O-CH ⁰ Data1_224.22.2.4.1009 (prog. 0/7) [34.778.8.0M] th ⇒ O-H10_Data1_224.22.4.1010 (prog. 0/7) [34.778.8.0M] th ⇒ O-H11_Data1_224.22.4.2.4.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_224.22.4.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_224.22.4.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_224.22.4.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_224.22.2.4.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_224.22.2.4.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_224.22.4.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_224.24.1011 (prog. 0/7) [34.778.8.0M] th ⇒ O-H12_Data1_	Protocol:	UDP •				All Output		
Add Circse IP ⇒CH10_Data1_224.22.41010 (prog: 0/7) [34.738.0M] IP ⇒CH11_Data1_224.22.41011 (prog: 0/7) [34.738.0M] IP IP ⇒CH12_Data1_224.22.41012 (prog: 0/7) [34.738.0M] IP						1	Output A	Irea
B → CH12 Data1 224 2.2.4.1012 (oros: 0.7) (34 7/38 0.M) *		Add						
Dura provinci di anti 20 conceda						. 🚽 🗌		
Parse program time out: 60 seconds					7) 1.34 77.38 UMI			
Operation Area			Parse prog	am time out: 60 secor	Oner	ration Area		
operation nea					oper	anon nea		

Figure7

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

+ : To add input channel which come from Data1 and Data 2

X : To delete the input channel

i : 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.

^{IV} 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 $\frac{1}{11} \equiv CCTV 15 <=CH1_Data1_224.2.2.4:1001 [307]$, it triggers a dialog box (Figure-8) where users can input new information.

Program From Input:	CH1_Data1_224.2	.2.4:1001 [307]
Service Name:	CCTV 15	
Major Channel Number:	1	
Minor Channel Number:	1	
Source Id:	1	
Short Name:	prog1	
Program Number:	1001	
Logic Channel Number:	1	
Service Type:	0x01	
Service Provider:	CCTV	
PMT Descriptor Tag:	0x00	
PMT Descriptor Data:		(Hex)
PMT PID:	0x0020	
PCR PID:	0x0021	
MPEG-2 Video PID:	☑ 0x0022	
MPEG-2 Audio PID:	☑ 0x0023	
		Apply

General

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

ment				1	2018-02-03	[EN 中文][Exi	it]
mmary							â
Status	TS CONFIG						
onitor							
Input Status	Output TS 1-	Stream Select	General PID) Bypass			
Output Status							
rameters	Stream						
TS Config	Output Mode:	Mux out		PAT Insert:			
Scrambler	SDT Insert:			BAT Insert:			
Modulator	Share BAT:			CAT Insert:	V		
P Stream	PMT Insert:			TS ID:	1		
stem	ON ID:	1		PCR Correct			
Network	PCR Speed BW	1		PCR State BW	1	-	
Password				FCR State BW	3	•	
Configuration	PCR Compensate	0					_
Firmware	NIT						
Date Time	NIT Insert:	From Web	•	Share NIT:			
_0g	Private Data:	☑ 0x00000000		Network ID:	1		
	Network Name:			Version Mode:	Automatic	-	
	LCN Mode:	network-1		Version Number:	Automatic		
	ECN Mode.	European	•	version number.	25	(0-31)	
	Index TS ID	ON ID	Frequency	Constellation	Symbol Rate	+ 💼	
	1 1	1	650.000 MHz	64 QAM	6875 Ksps	/ ×	
	2 2	2	658.000 MHz		6875 Ksps	Z ×	
	3 3 4 4	3 4	666.000 MHz 674.000 MHz	64 QAM 64 QAM	6875 Ksps 6875 Ksps	/ ×	
	4 4	4	074.000 MI12	04 QAW	0075 Ksps	2.	
	TDT/TOT						
	TDT/TOT Insert:	V		TOT Descriptor Insert	disable	~	
	VCT						
	VCT Insert:	V		Modulation Mode:	4		E
	IPTV Sync(SPTS)						
	IPTV Sync:			Sync Period:	20	Sec	
					Apply		

HANGZHOU SOFTEL OPTIC CO., LTD

DISTRICT, HANGZHOU,ZHEJIANG,CHINA TEL:+86 571 88989381 FAX:+86 571 88983280 Web : www.softel-optic.com

Figure-9

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

TS ID:	1			
ON ID:	1			
Frequency:	450.000	M	Hz	
Constellation:	16 QAM	•		
Symbol Rate:	6875	K	sps	
FEC Inner:	No conv.	•		
FEC Outer:	not outer FEC	•		

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.

Multi QAM Modula	ation Module				
ıt				2018-02-03	[EN 中文][Exit]
Summary	TS CONFIG				
► Status	IS CONFIG				
Monitor			T		
► Input Status	Outpu	It TS 1 - Stream Select	General PID E	Bypass	
Output Status			L		
Parameters	Index	Input Channel Input PID(0x) Output PID(0x)	+	
► TS Config					
► Scrambler				Set	Del-All
Modulator					
► IP Stream					
System					
► Network					
▶ Password					
Configuration					
► Firmware					
Date Time					
► Log					
•			m		,

Figure-11

Parameters → **Scrambler:**

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

scramble.	(Figure-12)	

ent	Scramble cha	nnel select		2018-02-0	3 [EN 中文][¹	Exit]
Summary Status Monitor Input Status Output Status Parameters TS Config Scrambler Modulator IP Stream System Network Password Configuration Firmware Date Time Log	Ser CH 1-	CAS 1 CAS 2 Ser CH 1 Ser CH 2 Ser CH 3 Ser CH 4 Ser CH 5 Ser CH 6 Ser CH 7 Ser CH 7 Ser CH 9 Ser CH 9 Ser CH 10 Ser CH 11 Ser CH 13 Ser CH 13 Ser CH 14 Ser CH 15	CAS 3 CAS	A CA Ch CAS Enable CA Ch ECMG IP Address: ECMG Port: ECM CH ID: ECM AHEAD: Stream Share AC: EMM PID: EMMG Port: EMMG Port: EMMG Mode: Super CAS ID: Protocol Version: IP Address: Pmt Private:	ECMG EMMG	EMMG and ECM working state, gre means it wo normally, while r means communicati error or communication.
	be scrambled.	Scr CH 16		Cas Private: Crypto. Period: Current Period:	0x00000000 10 sec.(0~65535) 0 AC Table Set CAS	

Figure-12

Parameters \rightarrow **Modulator:**

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

anagement	MODULATOR					20	018-02-03 14:42:30	[EN 中文]	[Exit]
Summary									
▶ Status	Center Fre	quency: 710.000 MHz		Standard: J	.83A(DVB-C)				
Monitor	Level(All C	arriers): 0.0 dBm		Channel Int	fo.(Alarm/Active/T	otal): 0/16/16			Click "quickly
Input Status	#	Frequency	Constellation	Symbol Rate	Gain offset	Status	Bit(Act/Max)	2	config" to set al
 Output Status 	1	650.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	34.7/38.0 M	1	-
Parameters	2	658.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	34.7/38.0 M	1	channels RF QAM
TS Config Scrambler	3	666.000 MHz	64 QAM	6875 Ksps	0.0 dB		34.7/38.0 M		output parameters
▶ Modulator		000.000 MH2	64 QAM	0075 KSpS	0.0 dB	•	34.7/30.0 M	1	· F - · · F - · · · · · · · · · · ·
▶ IP Stream	4	674.000 MHz	64 QAM	6875 Ksps	0.0 dB	٠	34.7/38.0 M	1	
System	5	682.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	34.7/38.0 M	1	
Network	6	690.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	34.7/38.0 M	1	
 Password Configuration 	7	698.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	34.7/38.0 M		Click " Channel
 Firmware 		000.000 11112	01000	001010000	0.0 00		01.1700.0 M	2	
Date Time	8	706.000 MHz	64 QAM	6875 Ksps	0.0 dB	۲	34.7/38.0 M	1	config" to set each
▶ Log	9	714.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	0.1/38.0 M	12	-
	10	722.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	0.1/38.0 M	1	channel RF QAM
	11	730.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	0.1/38.0 M	1	output parameters
	12	738.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	0.1/38.0 M	1	
	13	746.000 MHz	64 QAM	6875 Ksps	0.0 dB		0.1/38.0 M	1	
	14	754.000 MHz	64 QAM	6875 Ksps	0.0 dB		0.1/38.0 M	1	
	15	762.000 MHz	64 QAM	6875 Ksps	0.0 dB	•	0.1/38.0 M	1	
		102.000 mill2		001010995	0.0 0.5			-	
	16	770.000 MHz	64 QAM	6875 Ksps	0.0 dB	۲	0.1/38.0 M		-

ADD:708-709 HAIWEI BUILDING, No.101 BINKANG ROAD ,BINJIANG DISTRICT, HANGZHOU,ZHEJIANG,CHINA TEL:+86 571 88989381 FAX:+86 571 88983280 Web : www.softel-optic.com When users click "quickly config" button, it triggers a dialog box as follow where users can set all channels configration.

Standard:	J.83A(DVE	B-C) 👻
Level(All Carriers):	0.0	(-20 ~ +10 dBm)
Channel Enable:	7	
Start Frequency:	650.000	(50 ~ 960 MHz)
Bandwidth:	8.000	MHz
Constellation:	64 QAM	▼
Symbol Rate:	6875	(5000 ~ 7000 Ksps)
Gain offset:	0.0	(-10 ~ 0 dB)

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

Standard:	J.83A(DV	B-C) 🔹
Level(All Carriers):	0.0	(-20 ~ +10 dBm)
Channel Enable:	V	
Frequency:	650.000	(50 ~ 960 MHz)
Constellation:	64 QAM	+
Symbol Rate:	6875	(5000 ~ 7000 Ksps)
Gain offset:	0.0	(-10 ~ 0 dB)

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.

welcome to use	IP STREAM							20	018-02-03	14:43:24 [EN	中文] [Exit]	
Summary											-	
▶ Status	Channel	Info.(Alarm/Activ	e/Total): 0/	(16/16								
Monitor					Pkt	Null PKT						
▶ Input Status	#	IP Address	Port	Protocol	Length	Filter	Data1	Data2	Status	Bit(Act/Max)		Quickly Con
Output Status	1	224.2.2.2	2001	UDP	7		V			34.7/38.0 M		Quickly Coll
Parameters												
▶ TS Config	2	224.2.2.2	2002	UDP	7				٠	34.7/38.0 M	<u>Z</u>	
Scrambler	3	224.2.2.2	2003	UDP	7	[]]			٠	34.7/38.0 M	12	
▶ Modulator	4	224.2.2.2	2004	UDP	7		V			34.7/38.0 M	1	
► IP Stream												
System	5	224.2.2.2	2005	UDP	7		\checkmark		•	34.7/38.0 M	1	
Network	6	224.2.2.2	2006	UDP	7		$\mathbf{\nabla}$			34.7/38.0 M	1	
Password	7	224.2.2.2	2007	UDP	7					34.7/38.0 M		Channel Con
Configuration Firmware												
Date Time	8	224.2.2.2	2008	UDP	7		V			34.7/38.0 M	Z	
▶ Log	9	224.2.2.2	2009	UDP	7		V			0.1/38.0 M	12	
	10	224.2.2.2	2010	UDP	7		V			0.1/38.0 M	12	
	11	224.2.2.2	2011	UDP	7	[2]		(T)	•	0.1/38.0 M	1	
	12	224.2.2.2	2012	UDP	7		V	(1 ¹)	•	0.1/38.0 M	12	
	13	224.2.2.2	2013	UDP	7					0.1/38.0 M		
	14	224.2.2.2	2014	UDP	7		V			0.1/38.0 M		
	15	224.2.2.2	2015	UDP	7					0.1/38.0 M		
	15	227.2.2.2	2010	ODE	1			623		0.1/30.0 W		

Figure-14

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

Source Select:	Scrambed TS		
IP Address:	224.2.2.2		
Port:	2001		
Step:	1		
Protocol:	UDP	*	
Pkt Length:	7	•	
Null PKT Filter:			
TS Output:	🗹 Data1 🔲 Data2		

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

		[close]
Scrambed TS	•	
224.2.2.2		
2001		
UDP	•	
7	*	
🗷 Data1 🔲 Data2		
		Apply Close
	224.2.2.2 2001 UDP 7	224.2.2.2 2001 UDP • 7 •

4.2.4 System

HANGZHOU SOFTEL OPTIC CO., LTD

ADD:708-709 HAIWEI BUILDING, No.101 BINKANG ROAD ,BINJIANG DISTRICT, HANGZHOU,ZHEJIANG,CHINA TEL:+86 571 88989381 FAX:+86 571 88983280 Web : www.softel-optic.com

System → Network:

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

ne to use Web Managem				2018-02-03	[EN 中文][E
Summary	NETWORK				
► Status					
Monitor	NMS				
Input Status		NMS IP Address:	10.0.0.103		
► Output Status		NMS Subnet Mask:	255.0.0.0		
Parameters		Web Manage Port:	80		
		SCR IP Address:	192.168.30.11		
 TS Config Scrambler 		SCR Subnet Mask:	255.255.255.0		
 Modulator 		Gateway:	10.0.0.1		
▶ IP Stream		MAC Address:	20:3f:12:34:56:78		
System			20.01.12.01.00.10		
					Apply
Network Password					A PEOL
 Configuration 					
▶ Firmware	DATA				
Date Time		IP Address:	192.168.2.136		
▶ Log		Subnet Mask:	255.255.255.0		
		Gateway:	192.168.2.1		
		MAC Address:	20:4f:12:34:56:78		
		GE1 Speed:	1.0 Gbps	•	
		GE2 Speed:	1.0 Gbps	-	
		GE2 Speed.	1.0 0005		
					Apply

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.

welcom	2018-02-03	[EN 中文][Ex
Summary ▶ Status	PASSWORD	
Monitor Input Status Output Status Parameters	Modify the login name and password to make the device safely. If forget the name or password, you c keyboard. The default login name and password is "admin". Also please note the capital character and character.	
TS Config Scrambler Modulator IP Stream System	Current UserName: admin Current Password: New UserName: New Password:	
Network Password Configuration Firmware	Confirm New Password:	Apply
▶ Date Time ▶ Log		

Figure-16

System → Configuration:

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

lulti QAM Modu	ulation Module
W	2018-02-03 [EN 中文][E
Summary	CONFIGURATION
▶ Status	
Monitor	
Input Status	Save Restore Factory Set Backup Load - Select areas
► Output Status	
Parameters ▶TS Config	When you change the parameter, you should save configuration ,otherwise the new configuration will lost after reboot.
Scrambler	
Modulator	
► IP Stream	Save config
System	Jane comp
▶ Network	
▶ Password	
► Configuration	
► Firmware	
Date Time	
▶ Log	

Figure-17

System → Firmware:

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

come to use Web Mana		2018-02	2-03 [EN 中文][E
Summary > Status	FIRMWARE		
Monitor			
▶ Input Status	Warning:		
Output Status	1. Upgrade firmware(software and hardware)	o get new function,please choose the	right firmware to upgrade.If
	you use a wrong file, the device may not work.		
Parameters	Upgrade will keep a long time, please do not		e will not work.
►TS Config	After upgrade, you must reboot device manual	ally.	
► Scrambler			
► Modulator			
▶ IP Stream	Current Software Version:	08.60.17 Build 271.00 Nov 21 2017	
System	Current Hardware Version:	00.00.10	
System			
► Network	File:	浏览 未选择文件。	
Password			
Configuration			Upgrade
► Firmware			
Date Time			

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.

Multi QAM Modula	ation Module				
welcome to use V				2018-02-03	[EN 中文][Exit]
Summary	DATE I TIME				
► Status	DATE TIME				
Monitor					
Input Status			1970-01-01 00:13:55		
Output Status		Timezone:	(GMT) Greenwich Mean Ti	me, Dublin, Edinburgh, -	
		NTP Server 1:			
Parameters		NTP Server 2:			
► TS Config		NTP Server 3:			
► Scrambler					
► Modulator		NTP Server 4:			
▶ IP Stream		NTP Server 5:			
System					
			Set Timezone	Set NTP Update f	rom browser
► Network					
Password					
 Configuration Firmware 					
Date Time					
► Log					
		1	1		•

Figure-19

System → Log:

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

Multi QAM Mod	ulation Module		
o Management	2018-02-03 [EN 中文][Exi		
	To select "Kernel log" and "System Log"		
Summary	Log		
Status			
Monitor	Log Type: Kernel Log V Auto Refresh: 0 V Export Clear of		
Input Status			
Output Status	[0.00000] ຍັດວັນກຽງ ເກັນ ຈັດ ອີກຮູ້ຮູເຊັ່ມ CPU 0x0		
	[0.000000] Linux version 3.19.0-xilinx (root@localhost.localdomain) (gcc version 4.9.1 (Sourcery CodeBench Lite 2014		
Parameters	 0.000000] CPU: ARMv7 Processor [413fc090] revision 0 (ARMv7), cr=18c5387d 0.000000] CPU: PIPT / VIPT nonaliasing data cache. VIPT aliasing instruction cache 		
TS Config	0.000000 CPO. PIPT / VIPT nonaliasing data cache, VIPT allasing instruction cache 0.000000] Machine model: xlnx.zyng-7000		
▶ Scrambler	0.000000 machine model. xinx_2ynq-7000		
Modulator	0.000000 Memory policy: Data cache writealloc		
▶ IP Stream	0.000000] On node 0 totalpages: 65536		
	0.000000] free_area_init_node: node 0, pgdat 40596180, node_mem_map 4fdf0000		
System	[0.000000] Normal zone: 512 pages used for memmap		
Network	[0.000000] Normal zone: 0 pages reserved		
Password	[0.000000] Normal zone: 65536 pages, LIFO batch:15		
Configuration	[0.000000] PERCPU: Embedded 9 pages/cpu @4fdd4000 s8128 r8192 d20544 u36864		
 Firmware 	[0.000000] pcpu-alloc: s8128 f8192 d20544 u36864 alloc=9*4096		
Date Time	[0.000000] pcpu-alloc: [0] 0 [0] 1		
► Log	 0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 65024 0.000000] Kernel command line: console=ttyPS0 115200 root=/dev/ram rw earlyprintk 		
P LOG	0.000000 log buf len individual max cpu contribution: 131072 bytes		
	0.000000 log but len total cpu extra contributions: 131072 bytes		
	0.000000 log buf len min size: 131072 bytes		
	0.000000 log buf len: 262144 bytes		
	0.000000] early log buf free: 129664(98%)		
	[0.000000] PID hash table entries: 1024 (order: 0, 4096 bytes)		
	[0.000000] Dentry cache hash table entries: 32768 (order: 5, 131072 bytes)		
	[0.000000] Inode-cache hash table entries: 16384 (order: 4, 65536 bytes)		
	0.000000] Memory: 228376K/262144K available (3790K kernel code, 219K rwdata, 1488K rodata, 192K init, 291K bst		

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