ООО «ТЛК Трейд», Санкт-Петербург
+7 812 64 99 888
mail@tlct.ru

DXP-5410/5411EM

4-Channel Integrated H.264 HD Encoder-Modulator

Contents

Notices

WARRANTY

This warranty does not cover parts which may become defective due to misuse of the information contained in this manual.

Read this manual carefully and make sure you understand the instructions provided. For your safety, be aware of the following precautions.

WARNING! IMPORTATNT SAFETY INSTRUCTIONS

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING

- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- To avoid explosion danger, do not dispose of batteries in an open fire.

CE MARK FOR EUROPEAN HARMONISED STANDARDS

The CE mark which is attached to these products means it conforms to EMC Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC).

IMPORTANT INFORMATION

Please retain the original packaging, should it be necessary at some stage to return the device.

Disposal of Old Electrical and Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources.

For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service, or the shop where you purchased the product.

COPYRIGHTS

Television programs, movies, video tapes, discs, and other materials may be copyrighted. Unauthorized recording of copyrighted material may be against the copyright laws in your region. Also, use of this product with cable television transmissions may require authorization from the cable television operator or transmitter/owner.

VENTILATION

- Do not expose the product to high temperatures, such as placing it on top of other product that produce heat or in places exposed to direct sunlight or spot lights.
- The ventilation slots on top of the product must be left uncovered to allow proper airflow into the device.
- Do not stand the product on soft furnishings or carpets.
- Do not stack electronic equipment on top of the product.
- Do not place the product in a location subject to extreme changes in temperature. The temperature gradient should be less than 10 degrees C/hour.
- Place the product in a location with adequate ventilation to prevent the build-up of heat inside the product. The minimum ventilation space around the device should be 7 cm. The ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, table cloth, curtains, etc.

POWER SOURCES

- The product is not disconnected from the AC power source (mains) as long as it is connected to the power outlet or wall socket, even if the product is turned off.
- If the product will not be used for a long period of time, disconnect it from the AC power outlet or wall socket.

Before Using the Device

Thank you for purchasing the DXP-5410/5411EM 4-Channel Integrated Encoder-Modulator. This User Manual is written for operators/users of the DXP-5410/5411EM to assist in installation and operation. Please read this user manual carefully before installation and use of the device.

FOR YOUR SAFETY

This equipment is provided with a protective earthing ground incorporated in the power cord. The main plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the device, is likely to make the device dangerous. Do not remove the covers of this equipment. Hazardous voltages are present within this equipment and may be exposed if the covers are removed. Only Beijing Jaeger trained and approved service engineers are permitted to service this equipment.

The supplied AC power cable must be used to power the device. If the power cord becomes damaged it must be replaced. No operator serviceable parts inside. Refer servicing to Beijing Jaeger trained and approved service engineers. For the correct and safe use of the device, it is essential that both operating and servicing personnel follow generally accepted safety procedures in addition to the safety precautions specified in this manual. Whenever it is likely that safety protection is impaired, the device must be made in-operative and secured against unintended operation. The appropriate servicing authority must be informed. For example, safety is likely to be impaired if the device fails to perform the intended measurements or shows visible damage.

WARNINGS

- The mounting environment should be relatively dust free, free of excessive vibration and the ambient temperature between 0C° to 40C°. Relative humidity of 20% to 80% (non-condensed) is recommended.
- Avoid direct contact with water.
- Never place the equipment in direct sunlight.
- The outside of the equipment may be cleaned using a lightly dampened cloth. Do not use any cleaning liquids containing alcohol, methylated spirit or ammonia etc.
- For continued protection against fire hazard, replace line fused only with same type.
- Air intake for cooling is achieved via holes at the side of the device and the fans inside. The air flow should not be obstructed. Therefore, the device has to be placed on a flat surface, leaving some space at the sides of the device.
- When in operation, the internal temperature should not exceed the limit of 70C°.

DXP-5410/5411EM 4 Channel Integrated Encoder-Modulator

1 Overview

DXP-5410EM/5411EM is an integrated 4-channel real-time encoder re-multiplexer modulator. Four sets of A/V inputs are encoded and generated 4 Transport Streams (TS) independently. TS streams from the internal encoders, ASI input and TS/IP (TS_over_IP) input (duplex mode only) could be re-multiplexed into one MPTS (Multiple Program TS), then modulated onto one DVB RF carrier, QAM or COFDM. This MPTS is also available at the ASI output & TS/IP output simultaneously. There are up to 5 streams encapsulated onto TS/IP output when TS/IP is configurated as Multi-output mode. In this mode, all 4 TS streams from internal encoder could be sent through the TS/IP port while the fifth IP slot could be fed with the internal re-multiplexer or ASI input. With a built-in RF back-up relay switch, any external RF signal could be fed to the main output for back-up in cases of internal malfunction (main RF level < 75dBuV) or power supply lost.

DXP-5410EM/5411EM series are accommodated in 1U x 19” standard chassis with 2 redundant power supply modules.

2 Features

- Comply with H.264/AVC HP@L4.1
- 4 independent real-time encoders
- Integrated 6-input TS reMUX, (4 for encoders, 1 for ASI in, 1 for TS/IP in)

- ASI & TS/IP outputs
- Up to 5 TS/IP output streams (200Mb/s Max.)(4 for encoders, 1 for ASI mirrored or reMUX)
- 480i/NTSC, 576i/PAL, 720p,1080i & 1080p
- Constant Bit Rate (CBR) & Variable Bit Rate (VBR)
- DVB-C/QAM (ITU J.83 Annex A/C) or DVB-T/COFDM RF out, selectable
- 50MHz ~ 996MHz RF carrier output frequency adjustable
- 120dBμV Total Output Level
- RF Back-up loop through input (RF relay)
- SNMP & HTTP remote control & monitor
- Software could be upgraded with Web interface
- EIA 1U x 19" standard chassis with 2 redundant power supply modules

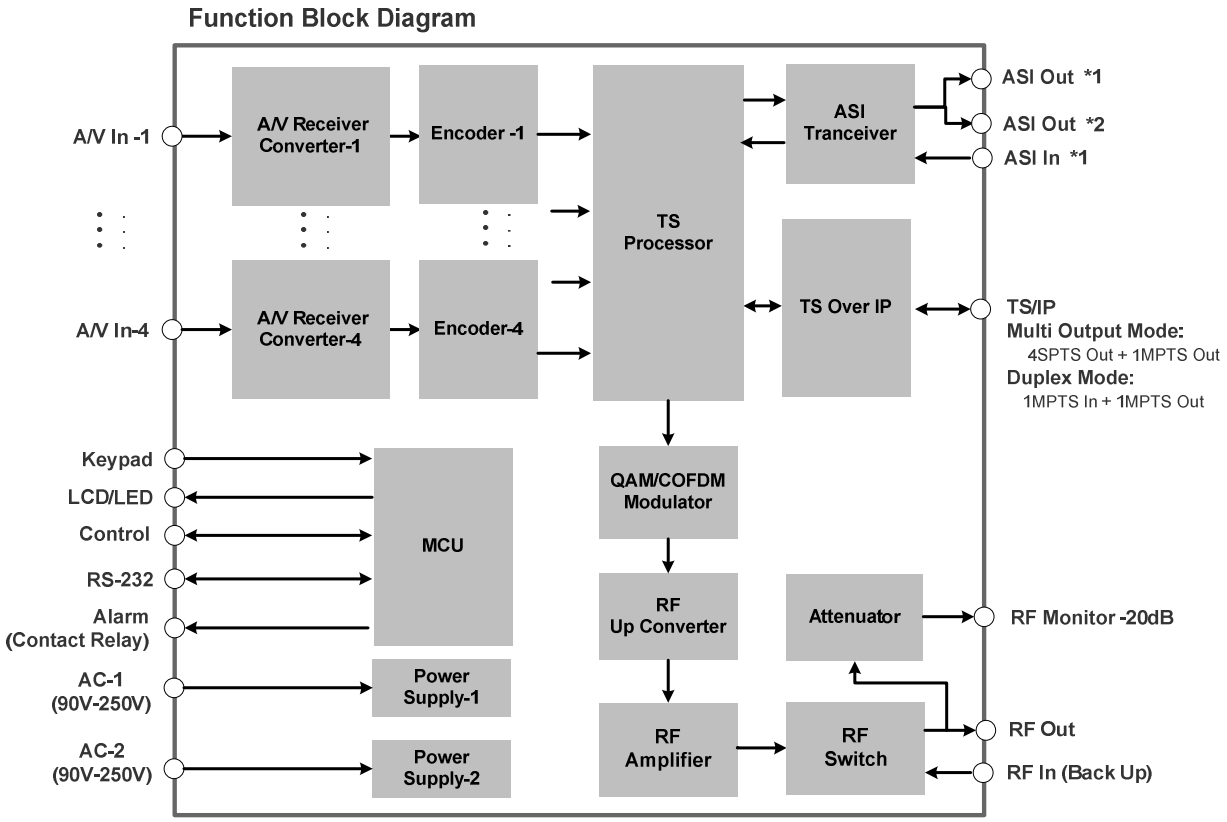
3 Technical Specifications

Video Input & Encoding	
Input type	CVBS x 4 BNC Female 75Ω, HDMI x 4 A-type Sockets or HD-SDI x 4 BNC Female 75Ω (see ordering info.)
Encoding Standard	H.264/AVC High Profile, up to Level 4.1
Y/Cb/Cr Sampling Format	4:2:0
Video Resolution & Recommended Bit Rate (see ordering info.)	1080p (1920x1080) @25Hz, 29.97Hz, 30Hz:SMPTE274M: 6~40Mb/s 1080i (1920×1080) @25Hz, 29.97Hz, 30Hz:SMPTE274M: 6~20Mb/s 720p (1280×720) @25Hz, 29.97Hz, 30Hz:SMPTE296M: 6~20Mb/s 480i (720×480) @29.97Hz:BT.656: 2~15Mb/s 576i (720×576) @25Hz: BT.656: 2~15Mb/s
Other Video Resolution & Down Scaler	Full D1,Half D1,SIF,QSIF Vertical & Horizontal Pixel down scalable respectively (with frame rate not changed)
Aspect Ratio	4:3 or 16:9 adjustable
Audio Input & Encoding	
Audio Input type	Analog Stereo x 4 pairs of BNC Female, HDMI Embedded or HD-SDI Embedded (see ordering info.)
Standard & Recommended Bit Rate	MPEG1 Layer II, Mono: 32~192Kb/s, Stereo: 64~384Kb/s
	AAC-LC 2ch, Stereo: 128 ~ 512Kb/s (DXP-5410EM-X only)
Sampling Rate	48KHz
DVB-ASI Input	
Interface Type	BNC Female, 75Ω

Maximum Effective Bit Rate	200 Mb/s
Data type	Byte
Packet Length	188/204 Bytes
Valid Receiving Amplitude	200 ~ 880mVp-p
DVB-ASI Output	
Interface Type	BNC Female, 75Ω
Maximum Effective Bit Rate	200Mb/s
Data type	Byte
Packet Length	188/204 Bytes
Output Waveform Level	800±80mVp-p
TS/IP Gigabit Ethernet (Duplex mode)	
Physical Layer Standard	IEEE 802.3, 10/100/1000 Base-T
Maximum Effective Bit Rate	Input: 200Mb/s, Output: 200Mb/s
Data Encapsulation	UDP, RTP, SPTS, MPTS
Other Protocols	ICMP, ARP, IGMPv2
TS/IP Multiple Stream, Output Only	
Physical Layer Standard	IEEE 802.3, 10/100/1000 Base-T
Maximum Effective Bit Rate	Output: 200Mb/s
Data Encapsulation	UDP, RTP, SPTS, MPTS
Other Protocols	ICMP, ARP, IGMPv2
QAM Modulation	
Standard of System	ETSI EN300 492, ITU J.83, Annex A/C: 16/32/64/128/256QAM
Symbol Rate	3~7.2MS/s
I/Q Amplitude Error	≤ 0.1%
I/Q Phase Error	≤ 0.1%
Phase Jitter	< 0.5°RMS
MER	36dB min., 42dB typ. (with tester equalizer “off ”)
COFDM Modulation	
Standard of System	ETSI EN 300 744
Constellation	QPSK/16QAM/64QAM
Bandwidth	5/6/7/8MHz
FTT carrier number	2K, 8K

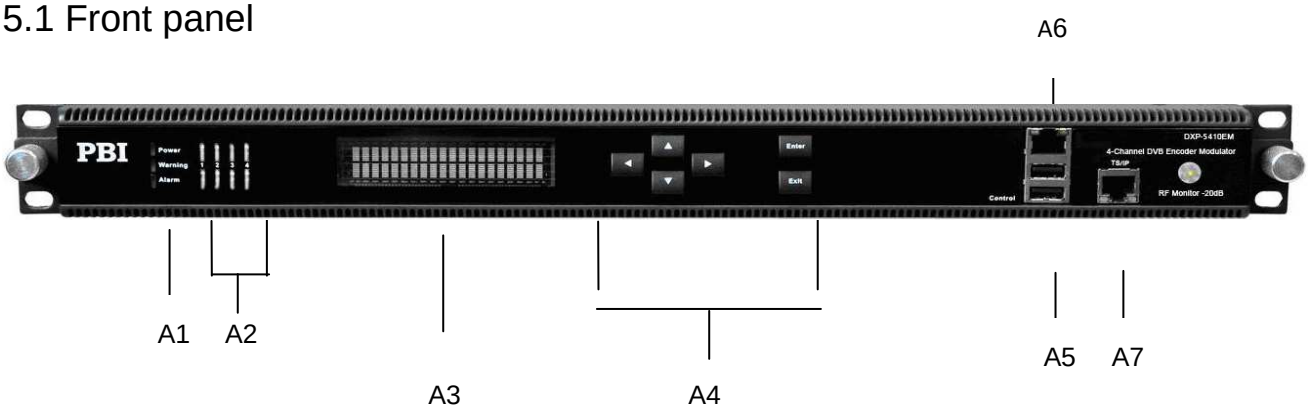
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC rate	1/2, 2/3, 3/4, 5/6, 7/8
MER	36dB min., 40dB typ.
RF Output	
Interface	F-type Female, 75Ω
Carrier Central Frequency	50~996MHz adjustable, step by 10 KHz
Output Level	90~120dBμV, step by 1dB
Spurious	≥60dBc @ 120dBuV
Return Loss	≥12dB（typ.）
Rear Panel	
ASI In	1 x BNC Female, 75Ω
CVBS In (option, see order info.)	4 x BNC Female, 75Ω (for DXP-5410EM/5411EM-C only)
Audio In	(4X2) x BNC Female, 75Ω (DXP-5410EM/5411EM-C only)
HDMI In	4x HDMI A-type Sockets (DXP-5410/5411EM-H only)
HD-SDI In	4x x BNC Female, 75Ω (DXP-5410/5411EM-S only)
ASI Out	2 x BNC Female, 75Ω (mirrored contents)
RF Out	1x F Type Female, 75Ω
Back-up RF In	1x F Type Female, 75Ω
Front Panel	
Control	1×RJ-45, 10/100 Base-T
TS/IP	1× IP (GbE), RJ-45, 10/100/1000 Base-T
Display	20 x 2 character VFD
RF Monitor -20dB	1x F Type Female, 75Ω
Others	
Operating Input Voltage	AC100~260V 50/60Hz
Operating Temperature	0 ~ 40℃
Storage Temperature	-10 ~ 60℃
Operating Humidity	10 ~ 90%, Non-condensed

4 Block Diagram



5 Front panel and rear panel instructions

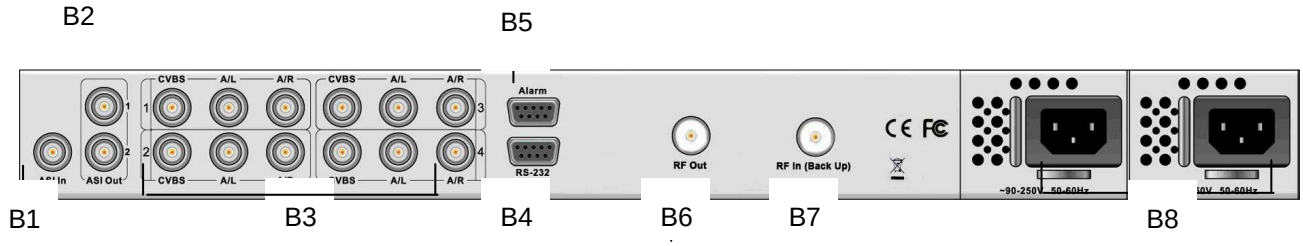
5.1 Front panel



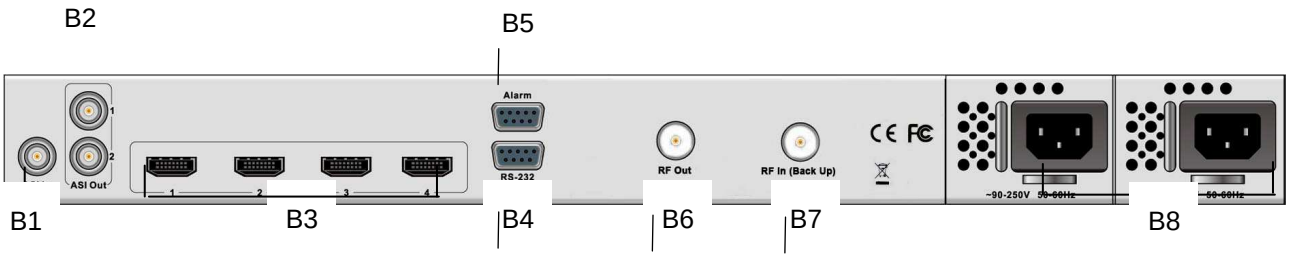
A1 Status LEDs	Power: green when power is on, red when one of the power supply unit malfunction Warning: red when function faulty Alarm: red when function critical
A2 Encoder Status	Encoder 1~4 working status, green light indicates the corresponding encoder module is under working, red when the corresponding encoder module malfunction or stop or input is invalid (the other 4 LEDs are not used)
A3 VFD Panel	Menu display
A4 Keypad	6 keys for local control
A5 USB	Used to upgrade software version of this device
A6 Management	Ethernet (10/100 LAN) control port
A7 TS/IP	TS over IP input and output port

5.2 Rear panel

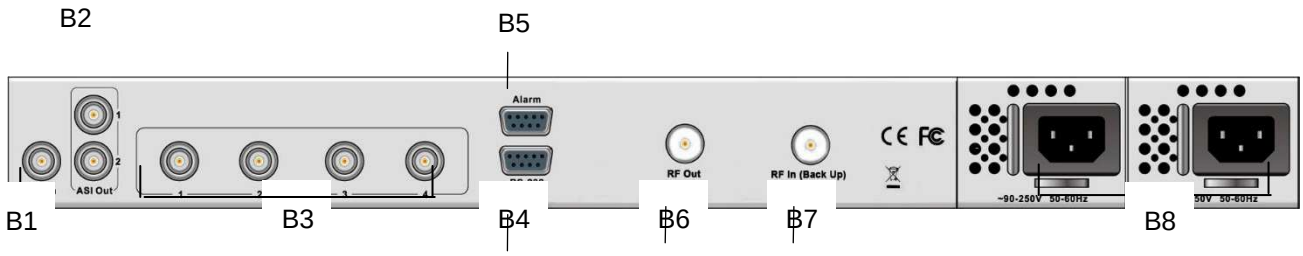
DXP-5410EM/5411EM-C



DXP-5410EM/5411EM-H



DXP-5410EM/5411EM-S



B1 ASI IN	ASI input interface
B2 ASI OUT	2 ASI output interface (output in mirror)
B3 Audio Video Input	CVBS and Audio input interface
B4 RS232	Reserved for factory use
B5 Alarm	Alarm relay interface
B6 RF Out	Main RF output port
B7 RF In (Back Up)	Backup RF signal input port
B8 Power Socket	AC Power Input

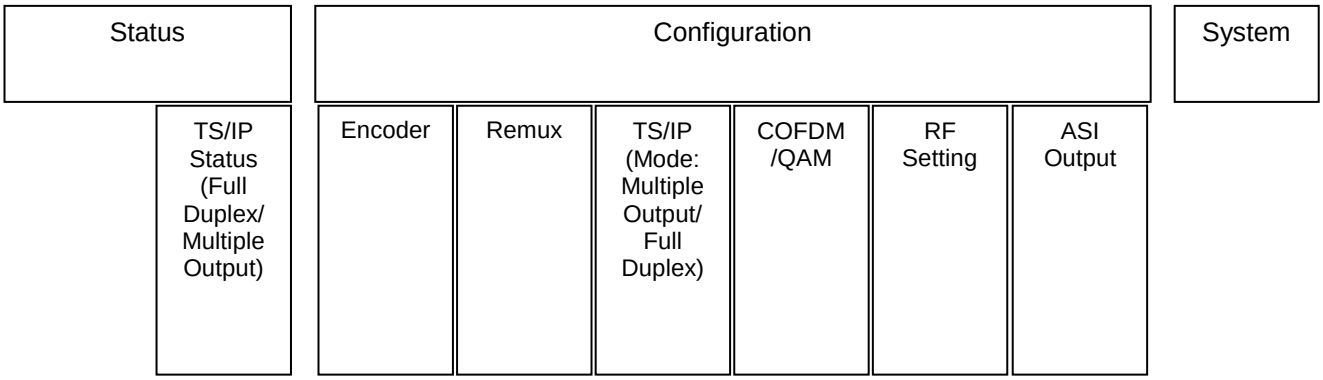
6 Control with Front Panel

With the keypad and display panel on the front panel, user can configure the device locally.

6.1 Overview of the Menu

Power on the device and wait for initialization complete, the Local IP address will be displayed on the VFD panel. Press〔ENTER〕to get into the main menu.

Main Menu
I/O Status



6.2 Description of menu

The main menu items can be selected with the keypad. By pressing the [Enter], the user navigates to the submenus, which are selected in the same manner.

6.2.1 Status

Submenu Layer 1	**Submenu Layer 2**	**Parameters**	**Description**
I/O Status	Input Bit Rate	Encoder 1 Bit Rate	Display encoder 1 bitrate
		Encoder 2 Bit Rate	Display encoder 2 bitrate
		Encoder 3 Bit Rate	Display encoder 3 bitrate
		Encoder 4 Bit Rate	Display encoder 4 bitrate
		ASI Input Bit rate	Display the input ASI signal bitrate
		TS/IP Input Bit Rate	Display the TSoverIP input bitrate
	Output Status	Display the work status of modulator part	
TS/IP Status (Full Duplex)	Link Status	Display IP link status:10M/100M/1000M/Disconnect	
	Gigabit Output Status	UDP Packets/s	Display IP out UDP packet rate
		Column FEC Pkts/s	Display IP out column FEC packet rate
		Row FEC Pkts/s	Display IP out row FEC packet rate
	Gigabit Input Status	IP Input Status	Display IP in lock/unlock status
		IP Input Protocol	Display the protocol of IP input
		Column/Row FEC	Display the mode of column FEC and row FEC
		Pkts per UDP Frame	Display the packets per UDP frame
		Received TS Frames	Display the received TS frames
		Fixed RTP Frames	Display the fixed RTP frames
		FEC Counter	Display the FEC packets that has been received

		FEC Counter Reset	Reset the FEC packets counter
TS/IP Status (Multiple Output)	Link Status		Display IP link Status: 10M/100M/1000M/Disconnect

6.2.2 Config – Encoder

Submenu	**Parameters & Description**	**Default Value**
Encoder Select	**Encoder Select:** **Encoder 1:** the encoder 1 is active for configuration **Encoder 2:** the encoder 2 is active for configuration **Encoder 3:** the encoder 3 is active for configuration **Encoder 4:** the encoder 4 is active for configuration	
Video Settings	**Video Rate Ctl:** **CBR:** set constant bit rate mode **VBR:** set variable bit rate mode **Input Video Format:** 1920x1080i 29.97 / 1920x1080i 25 / 1440x1080i 29.97 / 1440x1080i 25 / 1280x720p 59.94 / 1280x720p 50 / 720x480i 29.97 / 720x576i 25 / 1920x1080p 59.94 / 1920x1080p 50 **Video Bit Rate:** **300~45000Kb/s:** set the video bit rate **Aspect Ratio:** **4:3:** set video aspect ratio to 4:3 **16:9:** set video aspect ratio to 16:9	Video Rate Ctl: VBR Input Video Format: 1920x1080i 29.97 Video Bit Rate: 3000Kb/s Aspect Ratio: 4:3

Audio Settings	**Audio Format:** **MPEG1 Layer2:** set the audio compression format MPEG-1 Layer II *MPEG2 AAC-LC, MPEG4 AAC-LC can be selected on DXP-5410EC series only* **Audio Bit Rate:** 32k bps /48k bps /56k bps /64k bps /80k bps /96k bps /112k bps128k bps /160k bps /192k bps /224k bps /256k bps /320k bps /384k bps **Audio Channel Mode:** **Stereo:** set stereo mode **Mono:** set mono mode. NOTE: only Left audio channel will be encoded **Audio Level:** **+12dB~-17dB:** set the gain of output volume **Mute:** mute the output audio **Audio SDI EMB:** (the menu is displayed on DXP-5410/5411EC-S only) **EMB1/EMB2/EMB3/EMB4:** select the group of embedded audio from input SDI signal	Audio Format: MPEG1 Layer2 Audio Bit Rate: 128 Kbps Audio Channel Mode: Stereo Audio1 Level: 0dB Audio SDI EMB:EMB1
Encoder Bit Rate	**Encoder Bit Rate:** 600~48000Kbps. set the output bit rate of the selected encoder.	Encoder Bit Rate: 5000Kb/s
Advanced Settings	**PMT PID:** set PMT PID, valid range from 32 to 8190 decimal	Output PMT PID: 43
	Video PID: set Video PID, valid range from 32 to 8190 decimal	Output Video PID: 4001
	Audio PID: set audio PID, valid range from 32 to 8190 decimal	Output AudioPID:4002
	PCR PID: set PCR PID, valid range from 32 to 8190 decimal	Output PCR PID:8004
	Service PID: set Service PID, valid from 32 to 8190 decimal	Output Service PID:4000
	Service Name: set the service name	Output Service Name: Encoder Video
	Scale: **Disable:** video resolution is the same as input **Enable:** rescale the video resolution of the output manually	Scale: Disable
	Scale Vertical: set the resolution in vertical	576
	Scale Horizontal: set the resolution in horizon	720

6.2.3 Config – Remux

Submenu	Parameters & Description	Default Value
Program List	**Program List:** select the programs to remux. Click on Enter to select, double click to cancel. (The program(s) will be marked with an asterisk (*) once be selected) **Encoder 1:** select the program from encoder 1 **Encoder 2:** select the program from encoder 2 **Encoder 3:** select the program from encoder 3 **Encoder 4:** select the program from encoder 4 **ASI Input:** select the program(s) inputted via ASI input port. **IP Input:** select the program(s) inputted via IP input port. (Note: this submenu is displayed only when the IP I/O is configured as full-duplex mode.)	
Bit Rate	**Output Bit Rate:** key in the bit rate of the new generated MPTS, valid range from 100~216000 Kb/s	Output Bit Rate: 38015Kb/s
Packet Size	**188 Byte / 204 Byte**	188 Byte
TS ID	**TS ID:** key in the TSID of the new generated transport stream, valid range from 0 to 65535 decimal	TS ID:00008
Remove CA	**ON:** remove the CA descriptors that are carried within the inputted TS over ASI or IP **OFF:** keep the CA descriptors	OFF
Insert EIT	**ON:** insert EIT into the output stream, EIT data may come from ASI or IP input port **OFF:** do not insert EIT into the output stream.	OFF
Output Program	Display the selected program names	

6.2.4 Config – TS/IP (Multiple Output Mode)

Submenu	Parameters & Description	Default Value
Channel 1~4 (*the streaming comes from Encoder 1~4 correspondingly.*) Channel 5 (*the streaming comes from ASI input.*)	**Mux/ASI Out:** set the source for the IP output *(This menu is only valid for IP Channel 5)*	Mux/ASI Out: Mux
	Uni/Multi IP Address: set the destination IP address for the IP output	Uni/Multi IP Address: 238.069.070.001
	Uni/Multi UDP Port: set the destination port number, valid range from 1~65535	Uni/Multi UDP Port: 01234
	Target MAC Address: set the destination port number MAC Address	Target MAC Address: 00:00:24:56:12:67

	Gigabit Out Switch: **ON/OFF:** to switch on/off the current channel	Gigabit Out Switch: ON
Gigabit Local	**Gigabit Address:** set the IP address of the IP port	IP Board IP Address:10.10.10.10
	Gigabit Subnet Mask: set the net mask of the IP port	IP Board Net Mask:255.255.255.0
	Gigabit Gateway: set the gateway of the IP port	IP Board Gateway:10.10.10.1
	Gigabit MAC Address: display the MAC address of the IP port	
	Protocol: **UDP:** set UDP protocol to IP output **RTP:** set RTP protocol to IP output	Protocol: UDP
	TS Pkts Per UDP: set the number of TS packets that can be carried by each UDP packet, valid range from 1~7	TS Pkts Per UDP: 7
	Time To Live: set TTL to the output IP packets, valid range from 1~255	Time To Live: 255
	Type Of Service: Min Delay/Max Reliability/Max Throughput/Min Monetary Cost/Normal	Type Of Service: Min Delay
	Gateway MAC Address: set the MAC address of the gateway under which the device is connected	Gateway MAC Address: ff:ff:ff:ff:ff:ff

6.2.5 Config – TS/IP (Full Duplex Mode)

Submenu	**Parameters & Description**	**Default Value**
Gigabit Output	**Gigabit Out Switch: Enable/Disable**	Gigabit Out Switch: ON
	Source: set the source for the IP output	Remux
	Protocol: **UDP:** set UDP protocol to IP output **RTP:** set RTP protocol to IP output	Protocol: UDP
	TS Pkts Per UDP: set the number of TS packets that can be carried by each UDP packet, valid range from 1~7	TS Pkts Per UDP: 7
	Time To Live: set TTL to the output IP packets, valid range from 1~255	Time To Live: 1~255
	Type Of Service: Min Delay/Max Reliability/Max Throughput/Min Monetary Cost/Normal	Type Of Service: Min Delay

	Uni/Multi IP Address: set the destination IP address	Uni/Multi Address: 238.069.070.001
	Uni/Multi UDP Port: set the destination port number, valid range from 1~65535	Uni/Multi UDP Port: 01234
	ProMPEG FEC Switch: Enable/Disable	ProMPEG FEC Switch: Disable
	ProMPEG FEC Mode: 1D,5x5/1D,5x20/1D,10x10/2D,5x5/2D,5x20/2D,10x10	**ProMPEG FEC Mode** : 1D,5x5
	FEC Alignment: Annex A/Annex B	**FEC Alignment:** Annex A
Gigabit Local	**Gigabit Address:** set the IP address of the IP port	Gigabit Adress: 010.010.010.010
	Gigabit Subnet Mask: set the net mask of the IP port	Gigabit Subnet Mask: 255.255.255.000
	Gigabit MAC Address: display the MAC address of the IP port	
	Gigabit Gateway: set the gateway of the IP port	Gigabit IP Gateway: 010.010.010.001
	Gateway MAC Address: set the MAC address of the gateway under which the device is connected	Gateway MAC Address: ff:ff:ff:ff:ff:ff
Gigabit Input	**Uni/Multi Address:** set the uni/multicast target address of the IP input	Uni/Multi Addres:238.069.070.002
	Uni/Multi UDP Port: set the target port number of the uni/multicast IP input, valid range from 1~65535	Uni/Multi UDP Port: 01234
	TS Clock Recovery: **Auto:** it is suggested to set Auto when there is accurate PCR carried by the inputted TS/IP **Fixed Rate:** when fixed rate is selected, user has to configure a bit rate to regenerate the TS clock. The configured fixed bit rate has to be a little bit higher than the bit rate of the inputted TS/IP.	TS Clock Recovery: Auto

6.2.6 Configuration – Modulation (QAM)

Submenu	**Parameters & Description**	**Default Value**
Modulator Output	**ON/OFF:** put OFF to switch off the QAM carrier	ON
Output Source	**Encoder1/Encoder2/Encoder3/Encoder4:** the stream output from the corresponding encoder will be delivered to modulator directly. **Remux:** the stream from built-in remux will be delivered to	REMUX

	modulator **IP In:** the stream from IP input will be delivered to modulator **ASI Input:** the stream from ASI input will be delivered to modulator	
Constellation	**16QAM/32QAM/64QAM/128QAM/256QAM**	64QAM
Symbol Rate	**valid range from 782~12500**	6875
Spectral Invert	**Yes:** the spectrum is inverted **NO:** the spectrum is normal	NO

6.2.7 Configuration – Modulation (COFDM)

Submenu	**Parameters & Description**	**Default Value**
Modulator Output	**ON/OFF:** put OFF to switch off the QAM carrier	ON
Output Source	**Encoder1/Encoder2/Encoder3/Encoder4:** the stream output from the corresponding encoder will be delivered to modulator directly. **Remux:** the stream from built-in remux will be delivered to modulator **IP In:** the stream from IP input will be delivered to modulator **ASI Input:** the stream from ASI input will be delivered to modulator	REMUX
Constellation	**APSK/16QAM/64QAM**	64QAM
Bandwidth	**5M/6M/7M/8M**	8M
Guard Interval	**1/32, 1/16, 1/8, 1/4**	1/32
Code Rate	**1/2, 2/3, 3/4, 5/6, 7/8**	7/8
Spectral Invert	**Yes:** the spectrum is inverted **NO:** the spectrum is normal	NO
TMS	**2K IFFT DM/8K IFFT DM/4K IFFT DM**	8K IFFT DM

6.2.8 Configuration – RF Setting

Submenu	**Parameters & Description**	**Default Value**
RF Frequency	valid range from 30,000~1,000,000KHz	474000
RF Level	valid range from 90~120dBuV	100
RF Level adjust	(-1dBuV~4dBuV)	0 dBuV
Backup Switch	**Auto:** automatically output the RF signal inputted via Backup RF input port when the built-in modulator is down **Main:** always output from the built-in modulator	Auto

	Spare: always output from the backup RF input	
RF Out Restore (the submenu displays only when Auto mode is selected.)	**Spare to Main:** switch to Main source (the built-in modulator) **Main to Spare:** switch to Backup RF source	

6.2.9 Configuration – ASI Output

Submenu	**Parameters & Description**	**Default Value**
ASI Output	**ASI Output Source:** select the source for ASI output Encoder1 / Encoder2 / Encoder3 / Encoder4 / Remux / IP In / ASI Input	Remux

6.3 System

Network Setting	**IP Address:** set the IP address of the device, valid range from 0.0.0.0~255.255.255.255	IP Address: 10.10.70.48
	Subnet Mask: set the net mask of the device, valid range from 0.0.0.0~ 255.255.255.255	Net Mask: 255.255.255.0
	Gateway: set the gateway of the device, valid range from 0.0.0.0~255.255.255.255	Gateway: 10.10.70.1
	MAC Address: to display the MAC address	
Remote Setting	**Trap IP Address:** set the IP address of the SNMP Trap server, valid range from 0.0.0.0~255.255.255.255	Trap IP Address: 10.10.70.25
Product Name	**Edit Product name:** user allows to rename the device, press Enter and key in the name of the device, then press Enter to confirm the setting or press Exit to cancel.	
Software Version	**Software Version:** display the software version	
Factory Default	**Factory Default:** **Enter = Yes:** press Enter to recall the factory default settings. **Exit = No:** press Exit to cancel	Note: the IP address of the device is not reset to the factory setting!
Machine Type (Reserved for factory setup)	**MAC Address:** to Modify the MAC address	
	S/N: display the serial number of the device	
	Gigabit MAC Address: to Modify the Gigabit MAC address	
	Detail Version: Display the detail version of MCU,FPGA,LINUX OS	
WEB Login ID	**Edit Login ID:** press Enter and key in the login ID for WEB management	Default Login ID: root

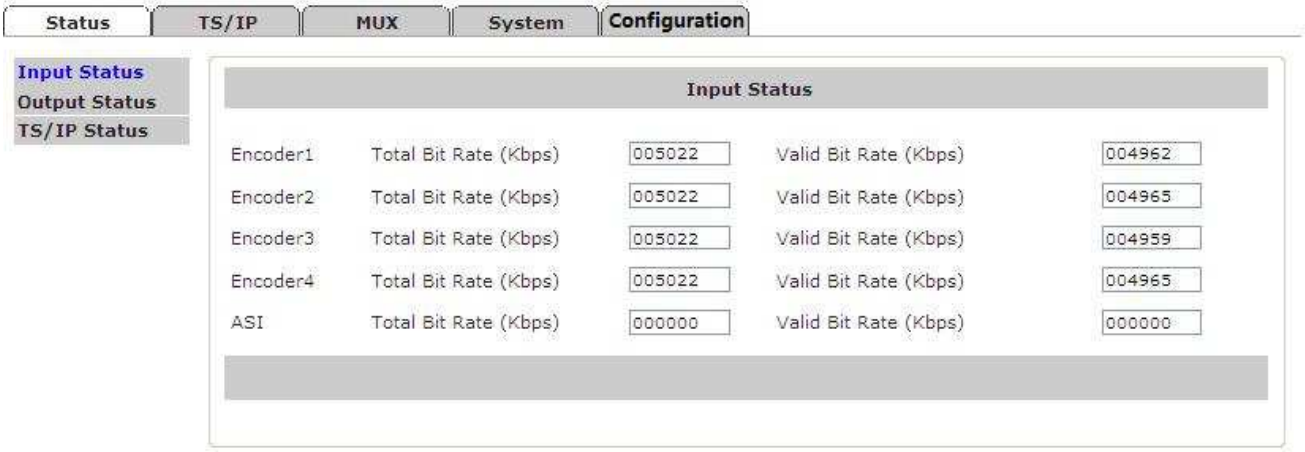
WEB Login Password	**Edit Login Password:** press Enter and key in the password for WEB management	Default Login Password: 12345
Gigabit Mode	**Gigabit Mode:** **Multiple Output:** the IP I/O is configured as multiple uni/multicast output mode, which delivers up to 5 streams over IP. There are 4 stuffed or un-stuffed SPTS (lower bit rate but less PCR accurate than normal SPTS, from local encoders) and 1 MPTS from built-in remultiplexer over the IP with different Unicast or Multicast IP addresses. **Full Duplex:** the IP I/O is configured as full duplex mode, which allows only one MPTS or SPTS over IP input and output in uni/multicast at the same time. *Note: the device will reboot after modification.*	Gigabit Mode: Multiple Output

7 Control with Web Server

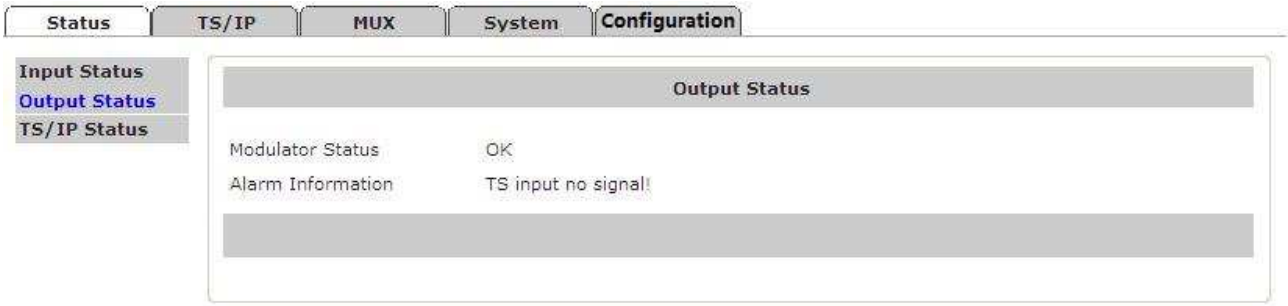
DXP-5410/5411EM has an integrated web server. This web server allows the configuration and status requests with a standard web browser. To operate a DXP-5410/5411EM, first make sure the Ethernet control port is well connected in the network and could be pinged by the host PC, and then enter the IP address of the DXP-5410/5411EM into the browser, there will be a pop-up showed asking for login user and password. After login the device can be operated. The default user name is “root” with password “12345”. The username and password can be modified via front panel webpage. A new user and password can be set via front panel in case of the user name and password are forgotten.

7.1 Status

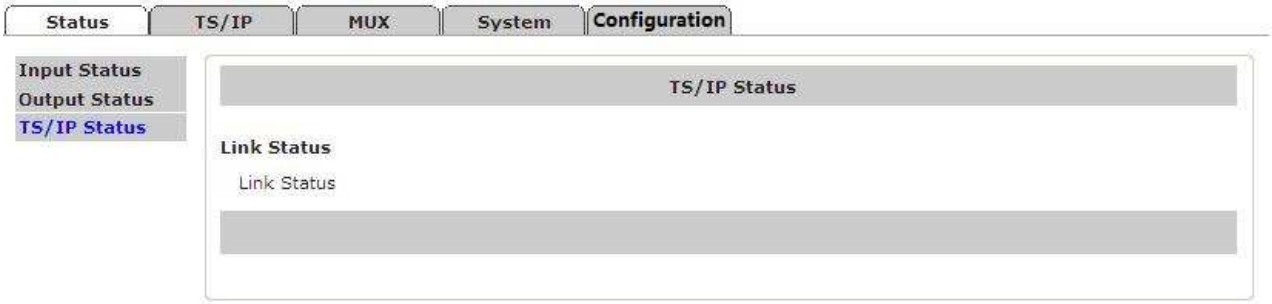
Via the status page, user can have an overview of the current status of the connected DXP-5410/5411EM.



Status of Encoders and ASI input



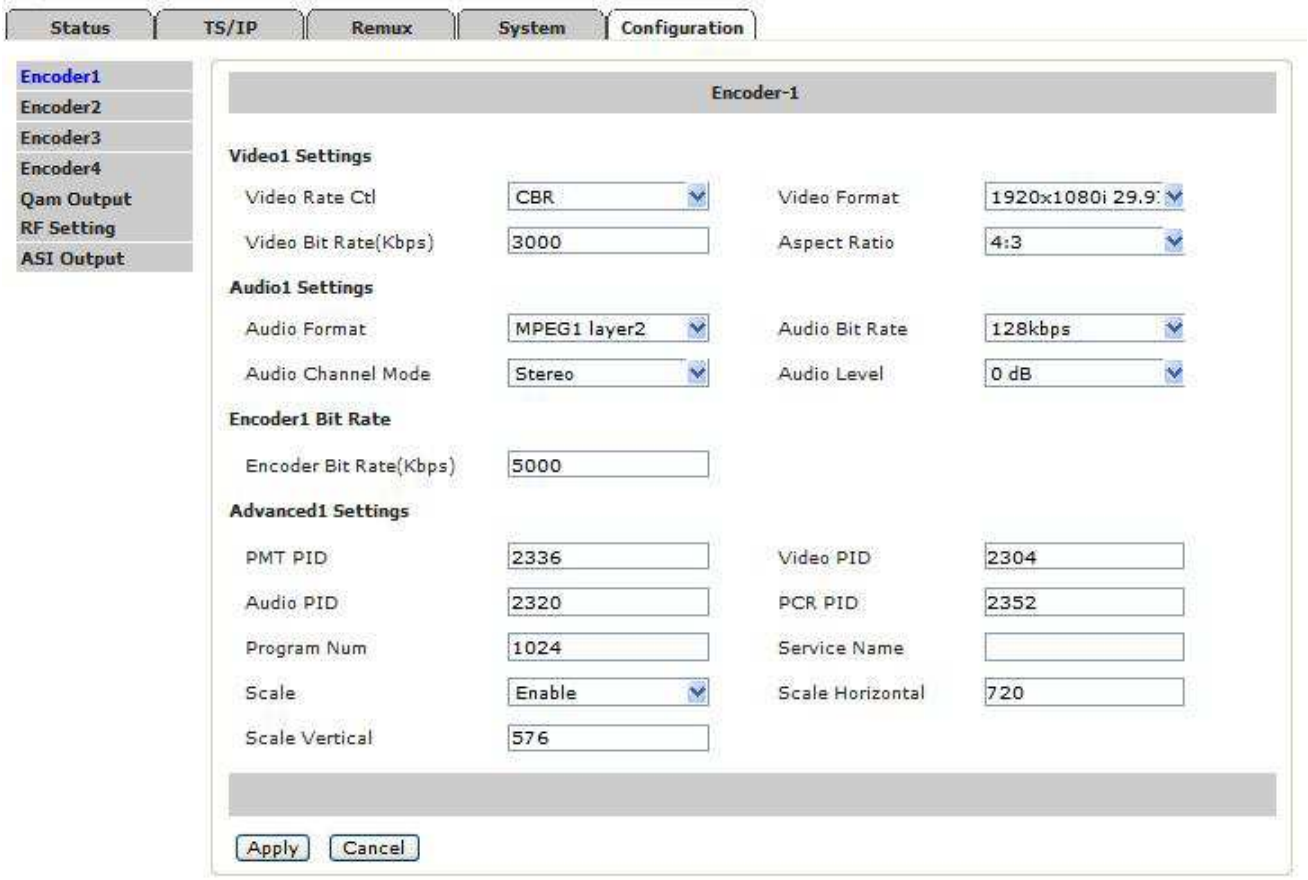
Status of Output



Status of TS/IP Linkage

7.2 Configuration

All parameters for encoding, TS/IP I/O, built-in Remux, modulation and RF output can be found under the page “Configuration”. Click the button "Apply" to submit your configuration or click the button "Cancel" to cancel and restore the previous settings.



Encoder-1~4

There are four encoders, each encoder works independently. Click on the **Encoder-1** to configure the Encoder 1, and the same for the rest.

Video Settings

Video Rate Ctl: set constant bit rate mode or variable bit rate mode for the selected encoder

Input Video Format: select the resolution for the encoded video in the dropdown list.

Video Bit Rate: set the video bit rate. The setting is valid only when the Video Rate Ctl is CBR.

Aspect Ratio: set the aspect ratio for the encoded video, 4:3 or 16:9.

Audio Settings

Audio Format: set the audio compression format MPEG-1 Layer II or MPEG2 AAC-LC. (MPEG4 AAC-LC can be selected on DXP-5410EC series only)

Audio Bit Rate: set the audio bitrate.

Audio Channel Mode: set the audio in stereo or mono. NOTE: only Left audio channel will be encoded when Mono mode is on.

Audio Level: set the gain of output volume.

Audio SDI EMB: select the group of embedded audio from input SDI signal (the menu is displayed on DXP-5410/5411EC-S only).

Encoder Bit Rate: set the output bit rate of the current encoder. Encoder bit rate must greater than the sum of video bit rate + audio bit rate + PSI (150Kbps) + buffering (100Kbps) + encoder error (150Kbps), valid range from 300 to 99999Kb/s

Advanced Settings

PMT PID: set PMT PID, valid range from 32 to 8190 decimal

Video PID: set Video PID, valid range from 32 to 8190 decimal

Audio PID: set audio PID, valid range from 32 to 8190 decimal

PCR PID: set PCR PID, valid range from 32 to 8190 decimal

Service PID: set Service PID, valid from 32 to 8190 decimal

Service Name: set the service name for the encoded channel. The length should be less than 24 characters.

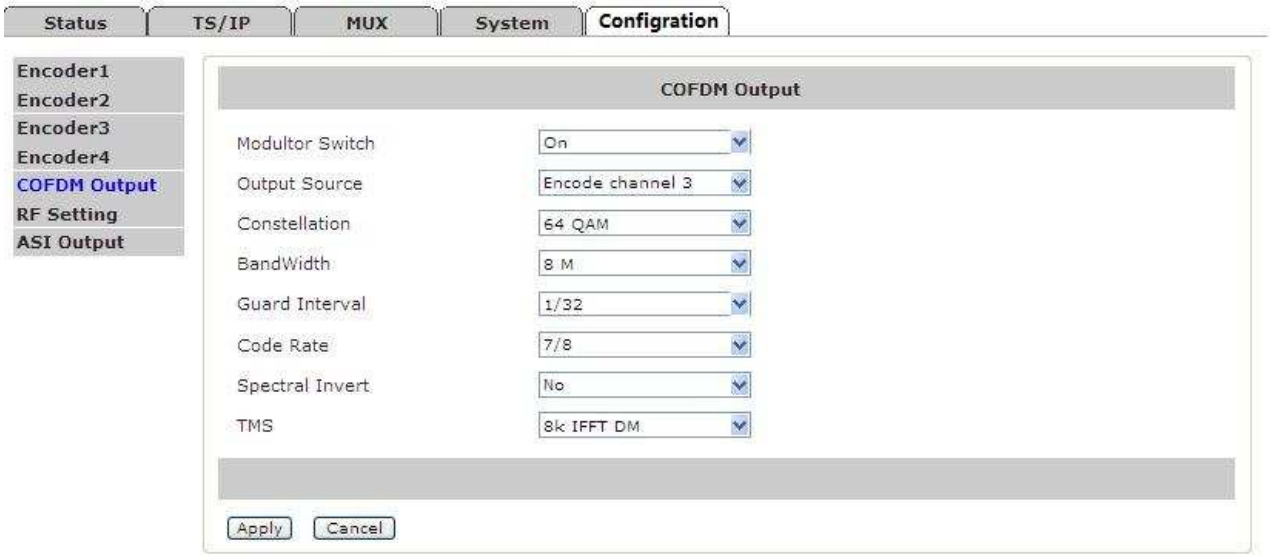
Scale: Enable or Disable the output video resolution rescaling. The following two parameters have to be set manually if the Scale is enabled.

Scale Vertical: set the resolution in vertical

Scale Horizontal: set the resolution in horizon

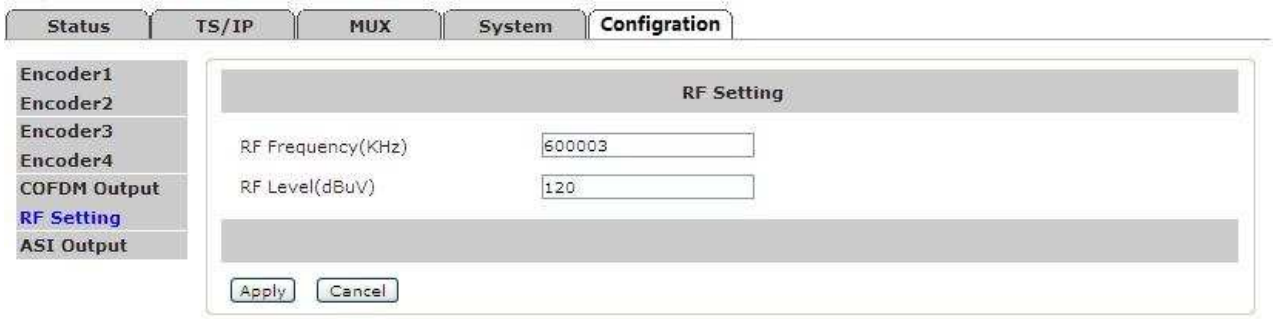
Modulation

In the page user can set up the parameters for the built-in modulator. DXP-5410/5411EM support QAM and COFDM modulation upon user's configuration. The tag name COFDM Output will change following the change of the modulation mode. To change the modulation mode please refer to ***Chapter 7.6.***



RF Setting

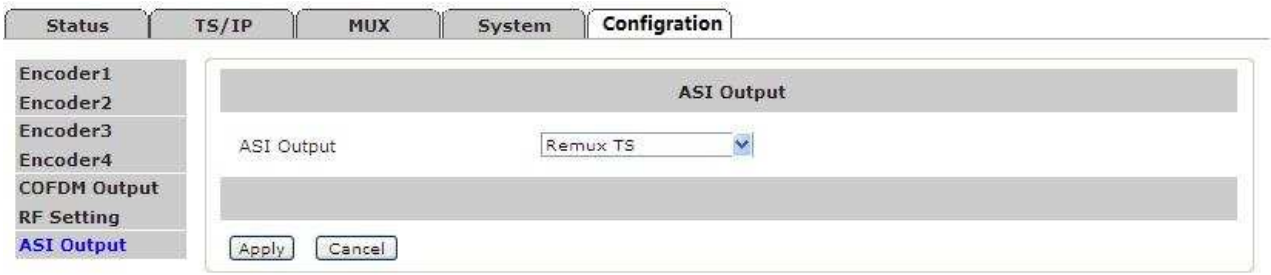
Set up the RF parameters in the page "RF setting". The output RF frequency ranges from 30,000 to 1,000,000 KHz, and output RF level ranges from 90~120dBuV.



ASI Output

Under ASI Output page, select the source for ASI output, there are 7 sources can be selected in the dropdown list which are:

Encoder1 / Encoder2 / Encoder3 / Encoder4 / Remux / IP In / ASI Input



7.3 MUX

In the “MUX” page, select the program(s) that to be remultiplexed and configure the necessary parameters for the new generated transport stream.

Packet Size:

188 Byte / 204 Byte

Bit Rate (Kbps):

Set the bitrate for the new generated MPTS, valid range from 100~216000 Kb/s. The bitrate should be at least bigger than the total bitrate of selected programs, otherwise, packets may dropout.

TS ID:

Set the TSID of the new generated transport stream, valid range from 0 to 65535 decimal

Insert EIT:

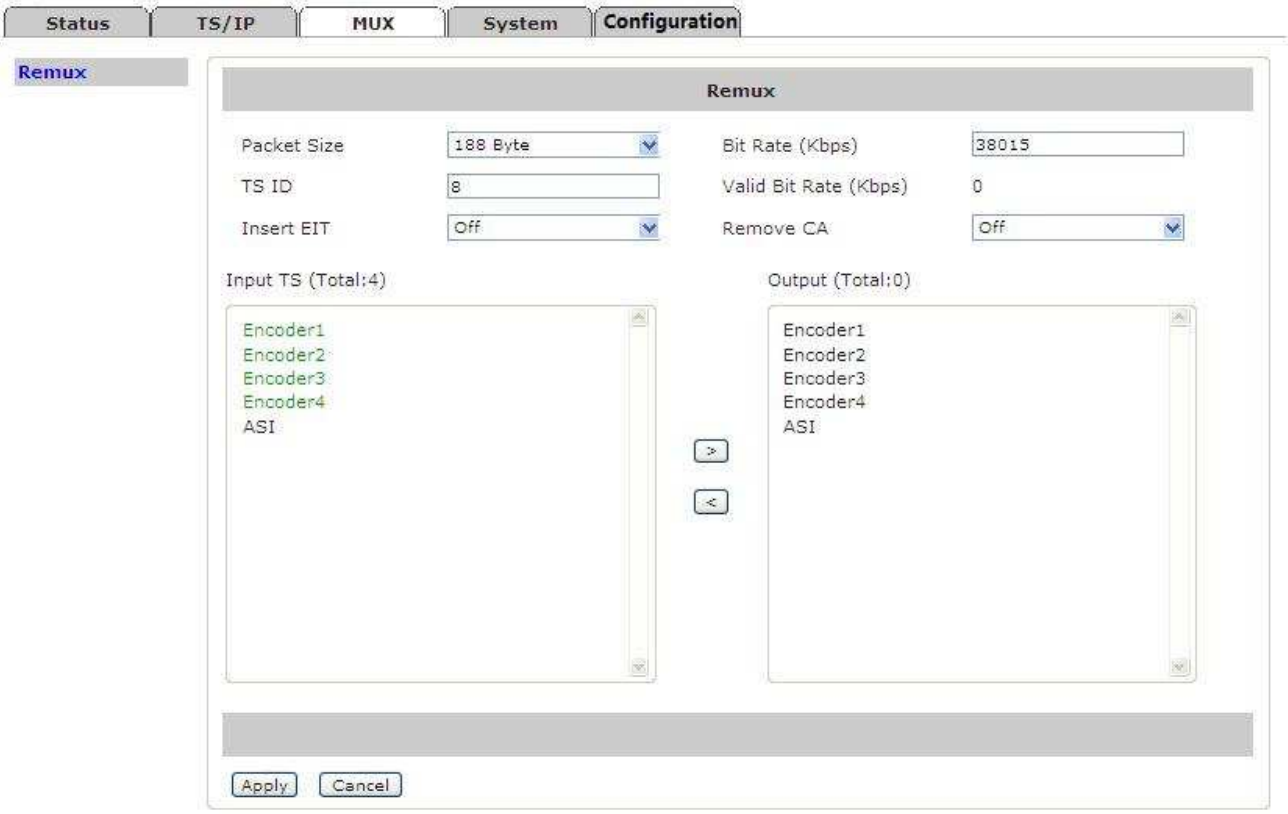
ON: insert EIT into the output stream, EIT data may come from ASI or IP input port

OFF: EIT will not be inserted into the output stream.

Remove CA:

ON: remove the CA descriptors that are carried within the inputted TS over ASI or IP

OFF: keep the CA descriptors



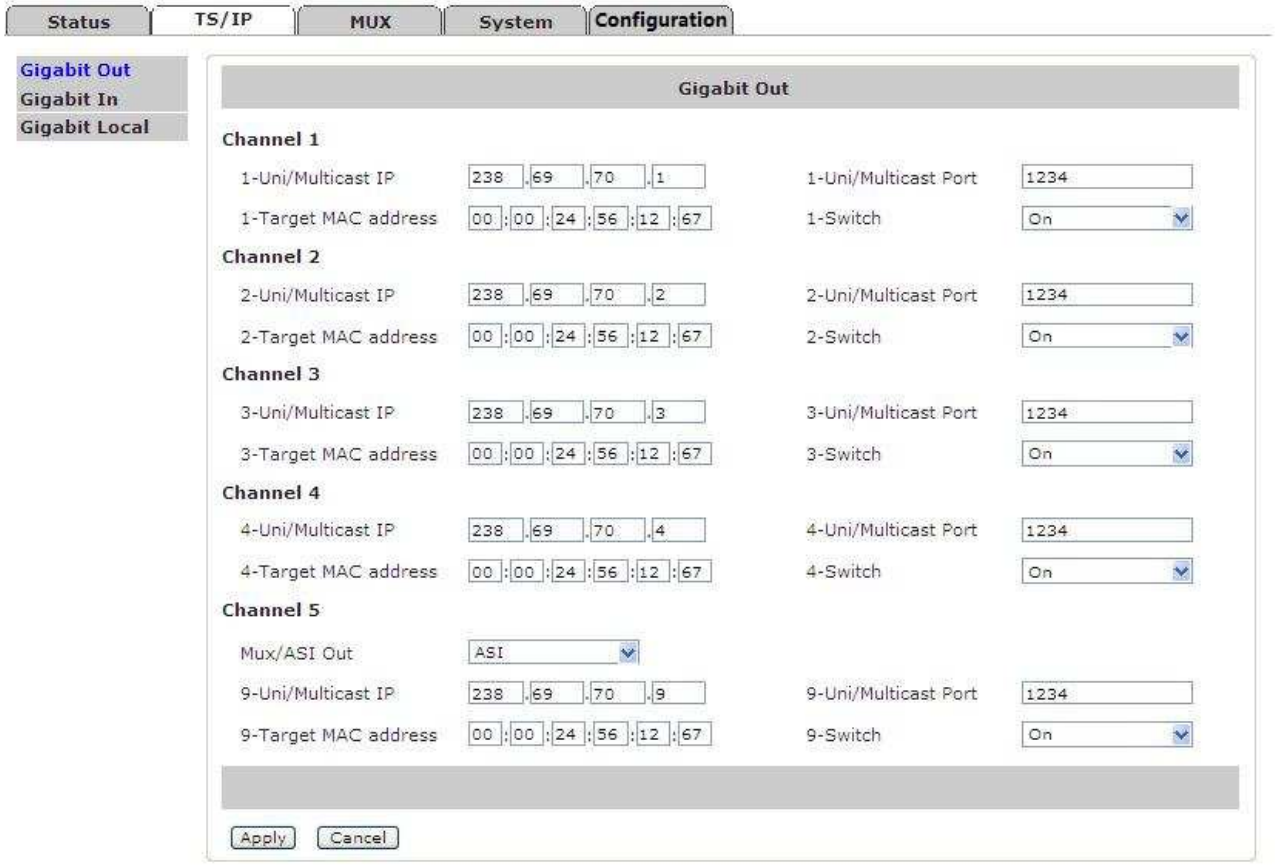
7.4 TS/IP

DXP-5410/5411EM support two TS/IP operation mode, which are respectively Multiple Output Mode and Full Duplex Mode. To switch between the two mode please refer to ***chapter 7.6.***

7.4.1 Multiple Output Mode

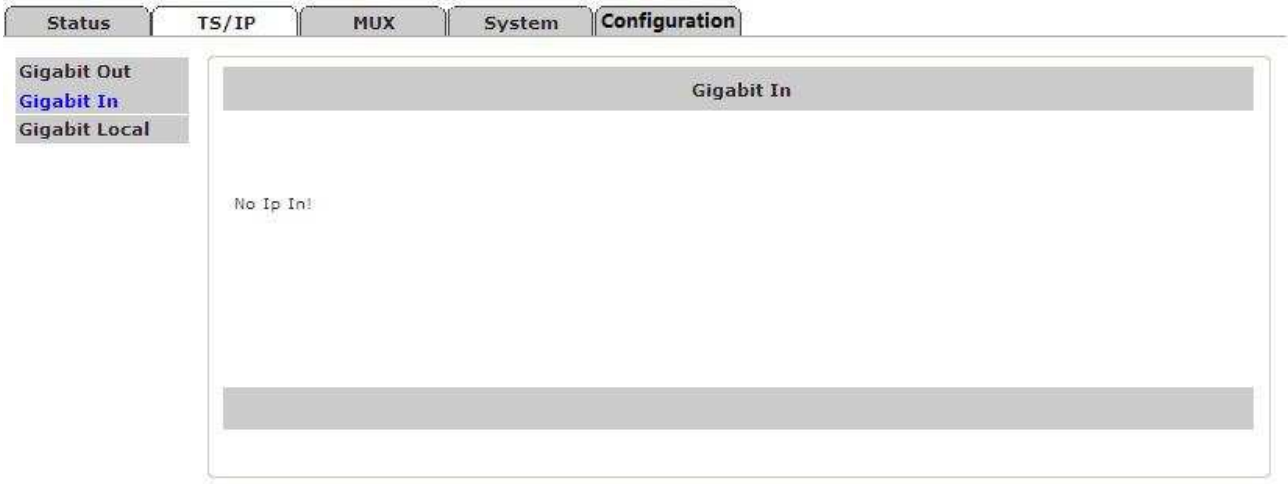
Gigabit Out

There are up to 5 streams encapsulated onto TS/IP output when TS/IP is configured as multiple output mode. In this mode, all 4 TS streams from internal encoder could be sent through the TS/IP port while the 5th IP slot could be fed with the internal re-multiplexer or ASI input.



Gigabit In

IP in is not supported under multiple output mode



Gigabit Local

Gigabit Address: set the IP address of the IP port

Gigabit Subnet Mask: set the net mask of the IP port

Gigabit MAC Address: display the MAC address of the IP port, cannot be modified by user

Gigabit Gateway: set the gateway address under which the IP port is connected

Gateway MAC Address: set the MAC address of the gateway under which the device is connected, this is necessary when the IP streaming is needed to pass through the gateways

Protocol: select UDP or RTP protocol for the IP output

TS Pkts Per UDP: set the number of TS packets that can be carried by each UDP packet

Time To Live: set TTL to the output IP packets

Type of Service: select the service type for the outputted IP streaming.

7.4.2 Full Duplex Mode

In this mode, the DXP-5410/5411EM supports single uni/multicast input and output in parallel. Set the IP I/O parameters in following pages.

Gigabit Out

IP Out Switch: Enable or Disable the IP output

Source: select the source for the IP output in the dropdown list

Protocol: select UDP or RTP protocol for the IP output

TS Pkts Per UDP: select the number of TS packets that can be carried by each UDP packet

Time To Live: set TTL to the output IP packets

Type of Service: select the service type for the outputted IP streaming

Uni/Multi IP Address: set the unicast or multicast address for the output IP streaming

Uni/Multi UDP Port: set the destination port number, valid range from 1~65535

ProMPEG FEC Switch: Enable or Disable the ProMPEG FEC

(**Note:** *the two submenus below are available only when the ProMPEG FEC is switched on and has be applied)*

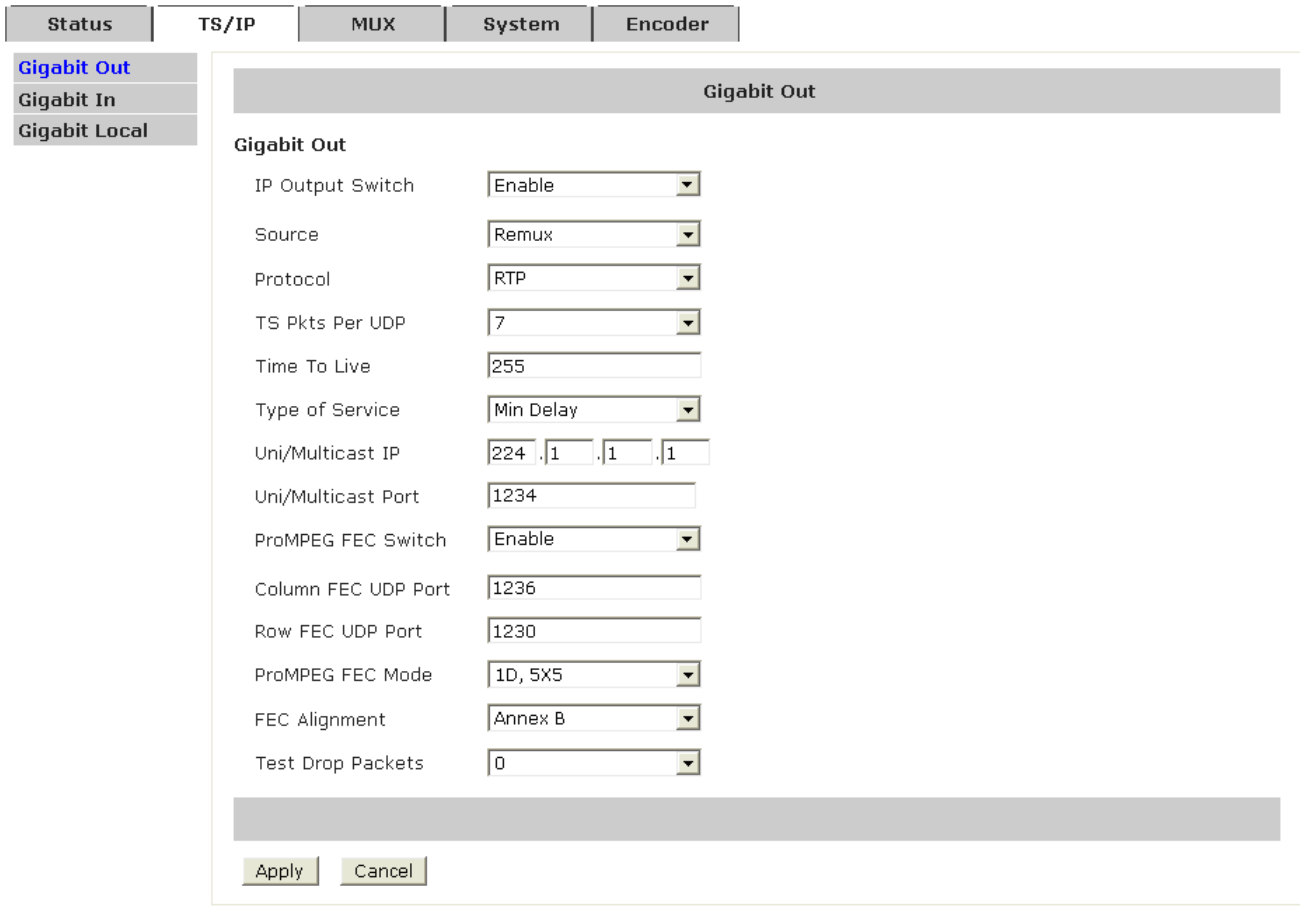
ProMPEG FEC Mode: select the mode of ProMPEG FEC from the dropdown list

Column FEC UDP Port: set the port number for column FEC

Row FEC UDP Port: set the port number for row FEC

FEC Alignment: set the alignment for FEC

Test Drop Packets: set the test drop packets



Gigabit Input

Note the Column and Row FEC UDP ports have to be configured if Pro-MPEG protocol is used in the IP signal inputted.

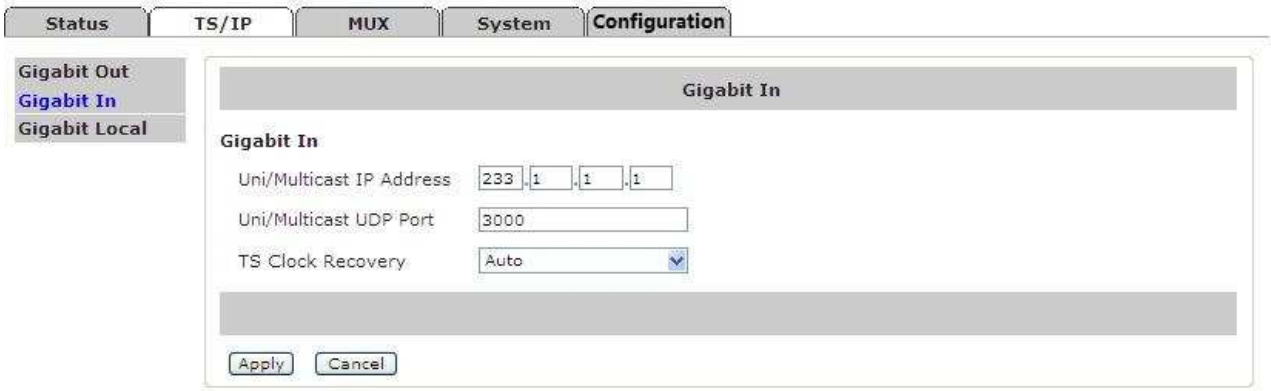
Uni/Multicast IP Address: set the multicast address for the incoming IP streaming. To receive a unicast streaming, the submenu can be ignored.

Uni/Multicast UDP Port: set the port number for the incoming IP streaming.

TS Clock Recover:

Auto: it is suggested to set Auto when there is accurate PCR carried by the inputted TS/IP

Fixed Rate: when fixed rate is selected, user has to configure a bit rate to regenerate the TS clock. The configured fixed bit rate has to be a higher than the bit rate of the inputted TS/IP.



Gigabit Local

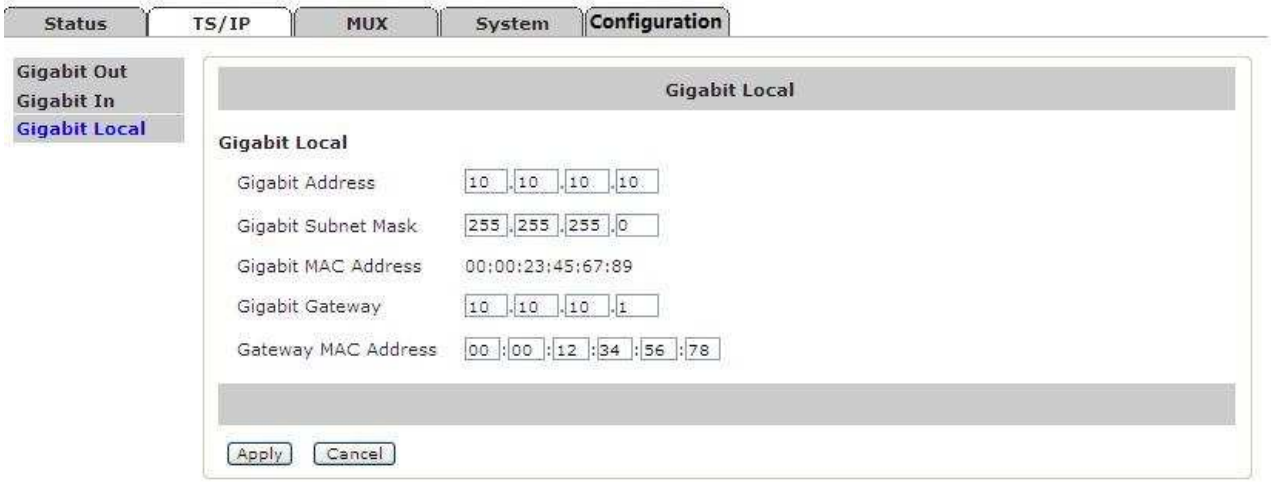
Gigabit Address: set the IP address of the IP port

Gigabit Subnet Mask: set the net mask of the IP port

Gigabit MAC Address: display the MAC address of the IP port, cannot be modified by user

Gigabit Gateway: set the gateway address under which the IP port is connected

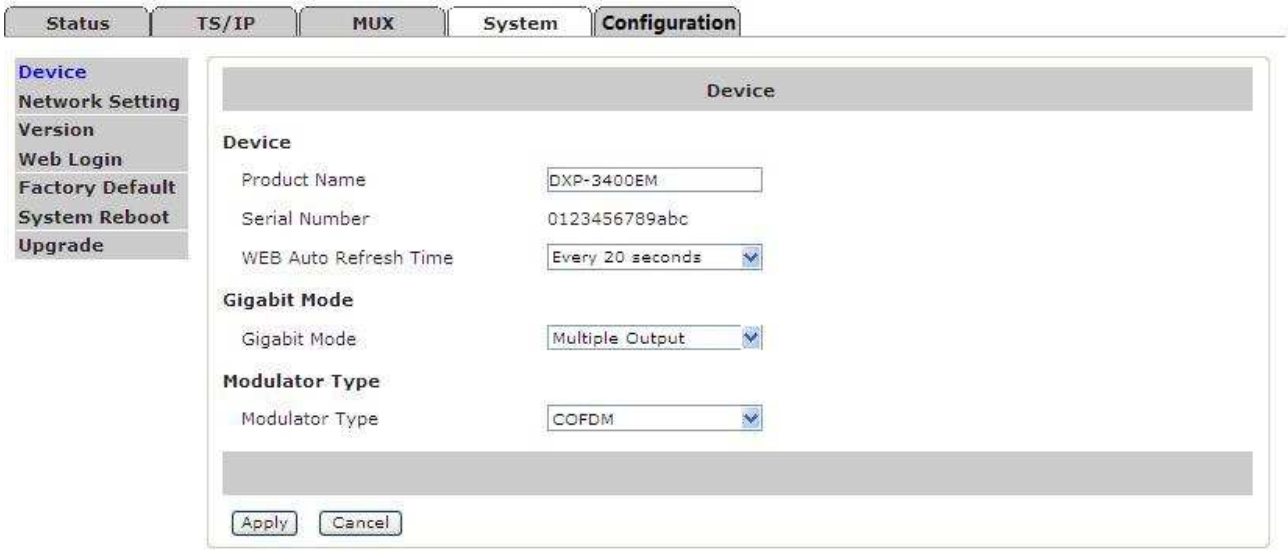
Gateway MAC Address: set the MAC address of the gateway under which the device is connected, this is necessary when the IP streaming is needed to pass through the gateways



7.5 System

The system page shows all information of this device including device name, serial number, software version, and so on. User can implement the local network settings, TS/IP operation mode, modulation mode, software upgrade, remote reboot and so on.

Device



Device name: Check the name and the serial number of this device. User can resign this product name at will, the device name should be less than 24 characters. The serial number is read-only.

Serial Number: show the serial number for the device, cannot be modified by user.

WEB Auto Refresh Time: set the interval of webpage refresh.

Gigabit Mode: switch the TS/IP operation mode between “Multiple Output” and “Full duplex”. The device will reboot after change.

Modulator Type: switch the modulator to COFDM or QAM.

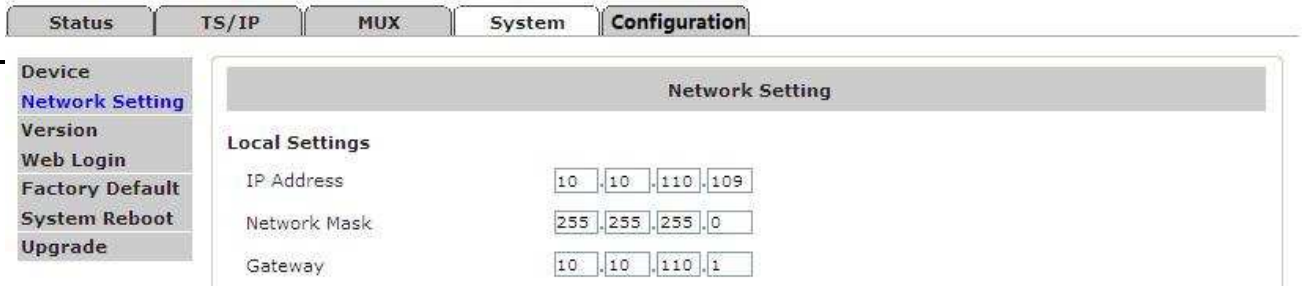
Network Setting

IP Address: set the device’s IP address

Network Mask: set the net mask of the device

Gateway: set the gateway address of the device

MAC: display the MAC address of the device, cannot be modified by user



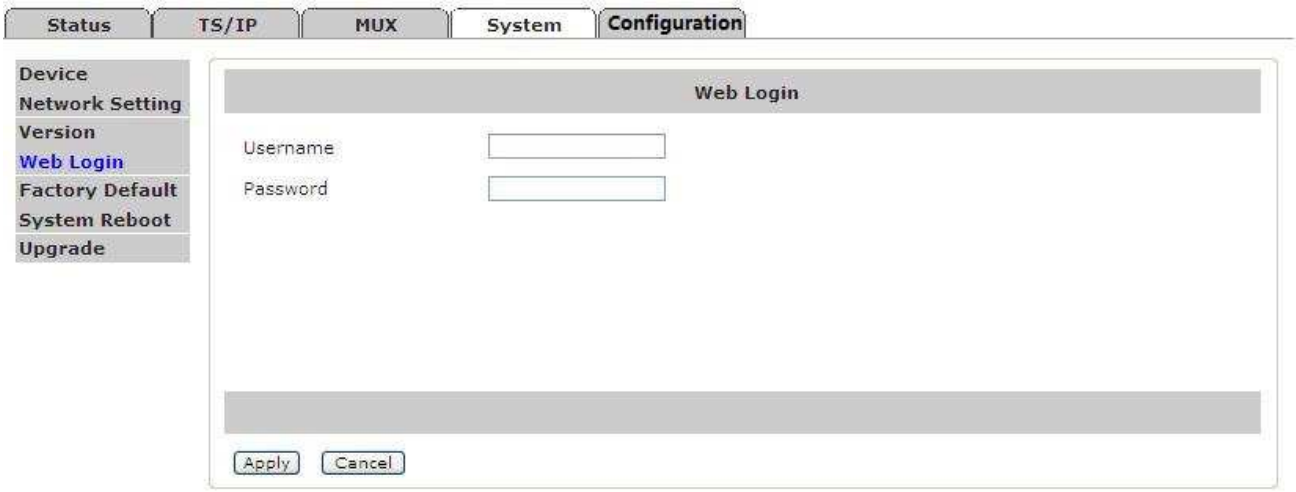
Version

User can check versions of the device, as shown in the picture below.

Web Login

Username: set the username for webpage login

Password: set the password for webpage login



Factory Default

Click the button “Default” to restore the factory default settings to the device.

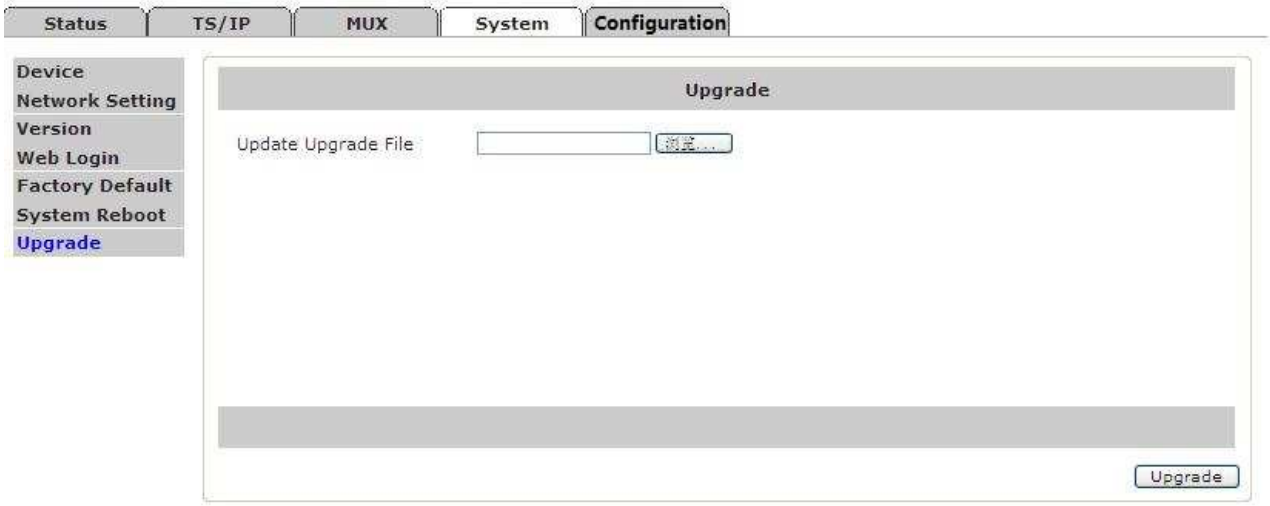
Note: the IP address of the device and the operation mode of the Gigabit board will not be restored.

System Reboot

User can reboot this device by clicking the button “Reboot”.

Upgrade

DXP-5410/5411EM support online firmware upgrade. To upgrade the device, load the upgrade file first by clicking on “Browse…”, in the opened window select the correct upgrade file, then click on “Upgrade”, wait the device complete the upgrade procedure. It is recommended to restore the factory default settings after firmware upgrade.



8 Installation

It is highly recommended to fix the DXP-5410/5411EM be mounted in EIA standard 19” rack, any other mounting method may lead to damage to the device.

- Open the box and take out the device with care. Inspect if there is any damage to the appearance of the device.
- Fix the device into the standard EIA 19” rack.
- Connect the input and output cables.
- Plug the power cable into the AC Power input socket. The POWER Indicator LED (A4) should be green and always light on during working. The DXP-5410/5411EM needs 1.5-2 minutes to boot up completely.
- Configure the network settings of the device via front panel.
- Make the settings of Encoder, Remux, Modulator and RF output step by step following the instruction written in the user manual.

9 Ordering Information

Model / Function	DXP-5410EM-C	DXP-5410EM-H	DXP-5410EM-S	DXP-5411EM-C	DXP-5411EM-H	DXP-5411EM-S

Video Compression		H.264 / AVC	H.264 / AVC	H.264 / AVC	H.264 / AVC	H.264 / AVC	H.264 / AVC
Audio Compression		MPEG + AAC	MPEG + AAC	MPEG + AAC	MPEG	MPEG	MPEG
Input	CVBS & Audio x4 （BNC）	●			●		
	HDMI x4 (A type)		●			●	
	HD-SDI x 4 （BNC）			●			●
	ASI (BNC)	●	●	●	●	●	●
	TS/IP (GbE, RJ45)	●	●	●	●	●	●
	Back-up RF In (F-female)	●	●	●	●	●	●
Output	ASI x2 (BNC)	●	●	●	●	●	●
	TS/IP (GbE, RJ45)	●	●	●	●	●	●
	RF Out QAM/COFDM	●	●	●	●	●	●
	RF Monitor -20dB	●	●	●	●	●	●
Alarm (Contact Relay)		●	●	●	●	●	●
IP Control port (RJ45)		●	●	●	●	●	●
RS-232		●	●	●	●	●	●

10 Accessories

CD-ROM	1PC
RCA to BNC adaptor	12 PCS
Certificate of quality /Guarantee card	1PC
AC Power cord	2 PCS
75Ohm F type load	1PC

No.3 Feng Zhi East Road, Xi Bei Wang Town,
Hai Dian District, Beijing, 100094, China

Tel：+86 10-82617178

Fax：+86 10-82610263