
IDH2-9200

Multi-channel 4K/HEVC Encoder

User's Guide



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1. Introduction

Telelynx introduces a high-performance, high-density Ultra-High-Definition (UHD) encoder with a modular design based on advanced H.265 (HEVC) compression. It incorporates the state-of-the-art hardware compression technologies to deliver multi-standard, multi-profile and multi-channel capabilities for cable, satellite, and terrestrial broadcasting applications.

IDH2-9200 series of encoder features a high density to allow for 5 encoding modules, where each module has one 4K(UHD), or four SD/ HD encoding channels. This makes one chassis to support 4 to 20 channels of H.265/HD encoding, or 1 to 5 channels of H.265/HEVC encoding, depending on the number of plug-in modules. It supports SDI inputs, PSI/SI processing, multiplexing and re-multiplexing TS outputs over DVB-ASI and IP.

This encoder also supports Web browser and management for local and remote management and maintenance. User can browse the basic information and modify the system configuration via the front panel. User can configure all parameters via the IE Browser.

It also supports dual power supply.

- Number of HD encoders: 4,8,12,16, or 20.
- Number of UHD encoders: 1,2,3,4, or 5.
- Number of multiplexer: 1 (default).
- 1RU modular design, supporting up to FIVE pluggable encoding modules
- Supports SDI input
- Supports dual power supplies
- H.264, H.265, MPEG-2, UHD, HD, SD video encoding
- MPEG-1 Layer II, MPEG-2 AAC, Linear PCM encoding
- MPEG TS-over-UDP/RTP output, supporting SPTS/MPTS mode
- MPEG TS re-multiplexing, PCR and PSI/SI processing
- Supports VBR/CBR video encoding
- Up to 80Mbps of video encoding rate for each channel
- Web management for remote management and maintenance

2. Products Illustration

2.1 The front panel:

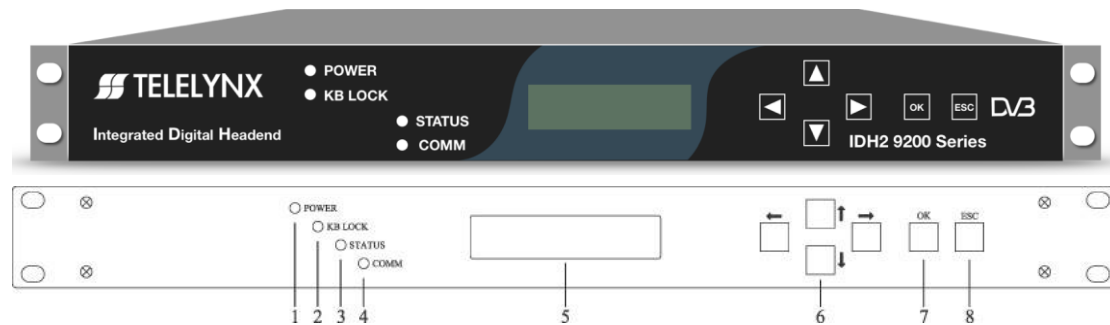


Fig. 2.1 Front Panel

- 1 — Indicator of Power
- 2 — Indicator of Keyboard Lock
- 3 — Indicator of Status
- 4 — Indicator of Network Communication
- 5 — LCD display
- 6 — Direction Key
 - ↑ Up or Increase
 - ↓ Down or Decrease
 - ← Left
 - Right
- 7 — Ok to confirm
- 8 — ESC to exit or cancel

2.2 The rear panel:

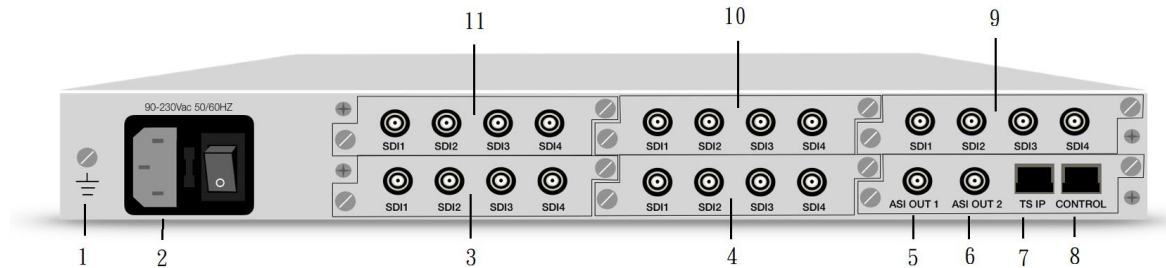


Fig. 2.2 Rear Panel

- 1 — Grounding point
- 2 — Power socket and switch
- 3 — SLOT 4, 2 Channel HD Encoder Card
- 4 — SLOT 5, 2 Channel HD Encoder Card
- 5 — ASI Output 1
- 6 — ASI Output 2
- 7 — TS IP Port, RJ45, 100 Base-T Ethernet connection port
- 8 — Control Port, RJ45, 100 Base-T Ethernet connection port
- 9 — SLOT 3, 2 Channel HD Encoder Card
- 10 — SLOT 2, 2 Channel HD Encoder Card
- 11 — SLOT 1, 2 Channel HD Encoder Card

2.3 Installation

- 1、 This product should be mounted horizontally, and grounding or earthing mounted devices should be maintained reliably.
- 2、 Exactly connect your power supply, signal source and other equipment to this product.
- 3、 If you want to use the Head-end Netmanager, Please connect RJ45 to your network.
- 4、 Please check out the standard of power before you power on this product.

3. Operations via Keyboard

3.1 Basic Operations

Turn on the power switch after checking the system connections. The following information will be displayed on screen:

IDH2-9200 V3.60 SN:131003602001

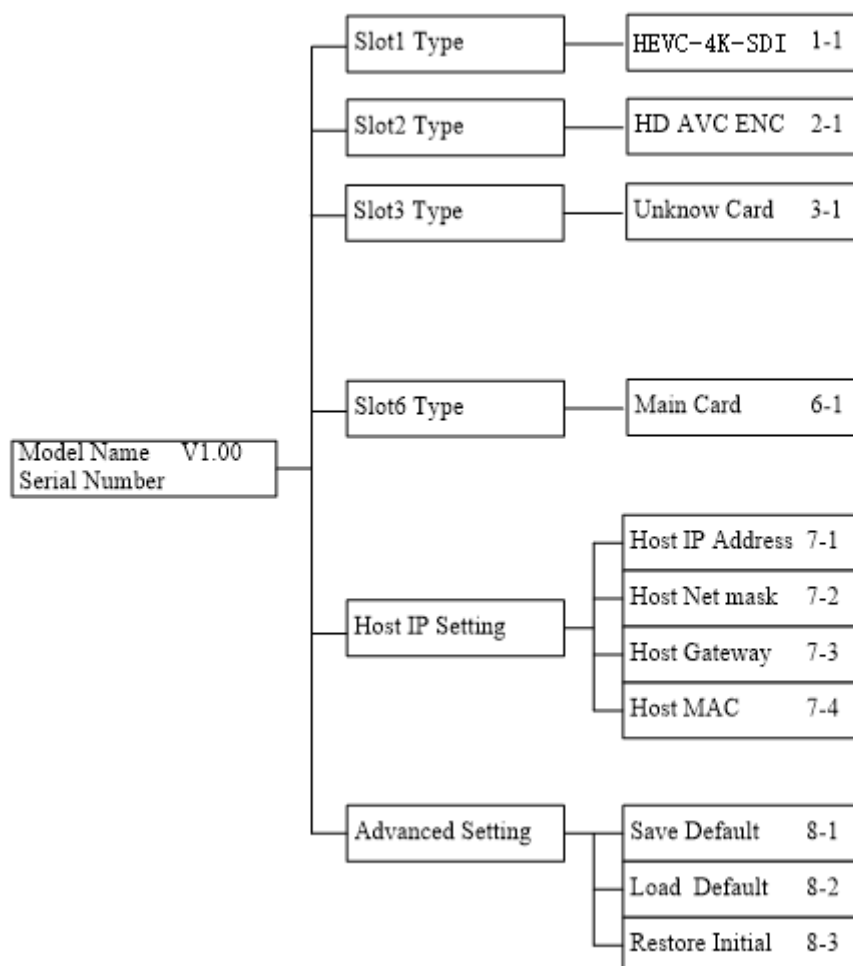
The initial status of the keyboard is locked, and you have to unlock it before operation. To unlock it, please press "OK" key, "OK" key, "ESC" key and "ESC" key sequentially and promptly. The keyboard may also be locked after it has not been operated for a certain period of time.

After unlocking, press "↑", "↓" keys to move around the main menu. Press "←", "→" keys to move around the sub-menu. Press "OK" key to enter the selected sub-menu. Press "OK" key to modify parameters of the selected item.

Available values of parameter will be flashing and can be selected by "←", "→" keys when you modify the item. In case of a continually changeable parameter, use "←", "→" keys to move the cursor and press "↑", "↓" keys to change the value. Press "ESC" key to give up the modification.

After modification, press "OK" key to confirm it.

3.2 Menu Structure



The above chart illustrates the device menu tree. Parameters of Encoder, IP Setting, Communication and Advanced Setting can be modified. Alarm Info and Serial Number cannot be modified. You can browse and operate it via keyboard of the front panel.

3.3 Menu Definition

3.3.1 Slot Type

“Slot n Type n-1”: n from 1 to 5, means slot 1 to slot 5, it will display the card type. Now it support H.265/HEVC digital encoder card, H.264 HD digital encoder card, MPEG-2 SD analog encoder card, H.264 SD digital encoder card, H.264 SD analog encoder

card. If there is no any card inserted, it will display “Unknown Card”.

“Slot 6 Type 6-1”: Slot 6 is only support main card.

3.3.2 Host IP Setting

“IP Address 7-1” : IP Address setting.

“Subnet Mask 7-2” : Subnet Mask setting.

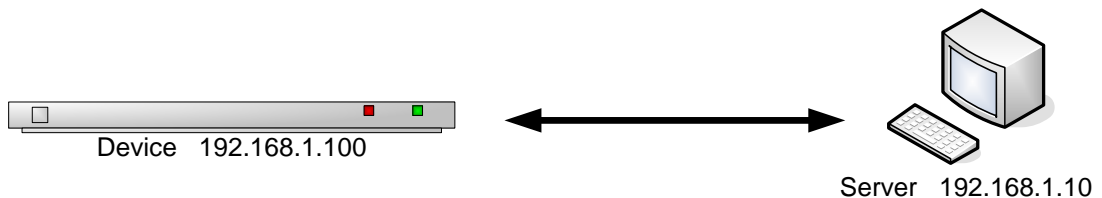
“Default Gateway 7-3” : Default Gateway setting. If your server which installed the head-end manager and the device are not in the same subnet, the device need transmit any data to server through the gateway.

“Server Address 7-4” : Server IP Address setting. The device will auto send the alarm info to this server.

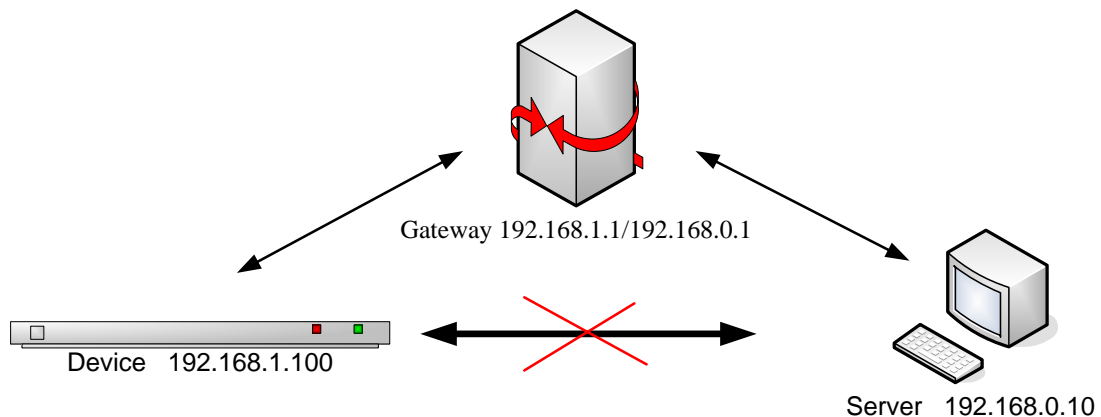
“Physical Address 7-5” : Physical Address setting. It is a unique value in any network.

For examples:

1. The device and the server are in the same subnet:



2. The device and the server are not in the same subnet:



3.3.3 Advanced Setting

“Save Default configuration. 8-1”: Save the current configuration as default configuration.

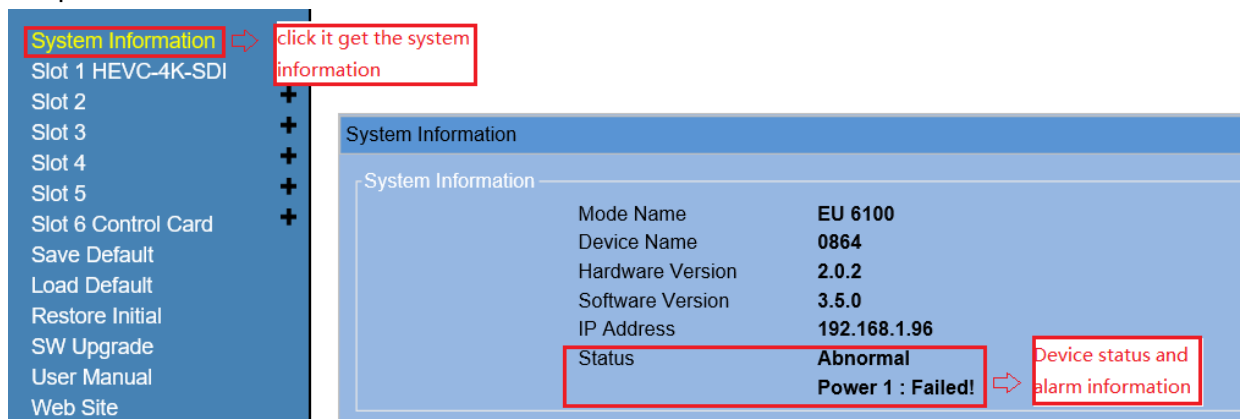
“Load Default saved. 8-2”: Recall the default configuration which has been saved.

“Restore initial configured by manufactory. 8-3”: Recall the original configuration which was configured by manufactory.

4. Operations via IE Browser

4.1 Browse Device

Type the host IP Address in IE Browser, the manager will display. The Device Status, Name, hardware version, software version and IP Address are also showed as the picture.



The screenshot displays the 'System Information' page in the IE Browser. On the left, a menu tree lists various options, with 'System Information' selected. The main content area shows the following details:

Mode Name	EU 6100
Device Name	0864
Hardware Version	2.0.2
Software Version	3.5.0
IP Address	192.168.1.96
Status	Abnormal Power 1 : Failed!

The left menu tree shows all slot card type and some advanced menu.

4.2 HEVC encoder card

Slot 1 to slot 5 are encoder cards. The left window will display the card type. It supports H.265H/HEVC digital encoder card, H.264 HD digital encoder card, MPEG-2 SD analog encoder card, H.264 SD digital encoder card, H.264 SD analog encoder card. If there is no any card inserted, it will display blank. Now let us see the H.265/HEVC encoder card setting.



The screenshot displays the configuration interface for a HEVC encoder card. The interface is divided into several sections: System Parameters, Video Parameters, Audio Parameters, and TS IP Parameters. A left sidebar shows system information and navigation options.

Channel A [Apply] [Reset]

System Parameters

Mux Output Enable	<input type="checkbox"/>	Encoder Mode	4K ULL	Encoder Type	HEVC
Input Port	SDI1-SDI4	System Bitrate	70000	TS ID	1
Service ID	11	PCR PID	112	AUD PID	114
PMT PID	111	Service Provider Name	ProviderName		
VID PID	113				

Video Parameters

Input Resolution	No Signal	Input Framerate	60Hz
Output Resolution	3840x2160-SQD	Output Framerate	60Hz
Frame Format	Progressive	Bit Depth	10
Chroma Format	4:2:2	AVG Bitrate	60000
Output Mode	CBR	Min Bitrate	0
Max Bitrate	10000	IP Period	8
GOP Size	64		

Audio Parameters

Audio Bitrate(kbps)	128	Audio Format	MPEG-1 Layer II
Sample Rate	48kHz		

TS IP Parameters

Output Enable	<input checked="" type="checkbox"/>	Protocol	UDP
Source IP	192.168.2.96	Source Port	2234
Source NetMask	255.255.255.0	Source Gateway	192.168.2.1
Destination IP	226.1.1.2	Destination Port	1234

Left Sidebar:

- STATUS
- System Information
- Slot 1 HEVC-4K-SDI
- Channel A
- Channel B
- Channel C
- Channel D
- Slot 2
- Slot 3
- Slot 4
- Slot 5
- Slot 6 Control Card
- Save Default
- Load Default
- Restore Initial
- SW Upgrade
- User Manual
- Web Site

4.2.1 System Parameters

System Parameters			
Mux Output Enable	<input type="checkbox"/>	Encoder Type	HEVC
Encoder Mode	4K ULL	System Bitrate	70000
Input Port	SDI1~SDI4	TS ID	1
Service ID	11	PCR PID	112
PMT PID	111	AUD PID	114
VID PID	113	Service Provider Name	ProviderName
Service Name	ServiceName11		

Mux Output Enable: User can select whether the program would be in mux channel. When the Checkbox is checked, this program would be in mux channel.

Encoder Mode: Specify Encoder Mode , support 4K ULL, 4K, 2K*4.

Notice: only Channel A can set this parameter

- ①4K ULL: 4K Ultra low-latency Mode, only support one channel Encoder.
- ②4K: 4K Mode, only support one channel Encoder of HEVC or AVC.
- ③2K*4: 4Channel of 2K Mode, up to support 2K (1920*1080) .

Encoder Type: Specify Encoder Type, support HEVC, AVC and MPEG2.

Notice: only Channel A can set this parameter

- ①HEVC: H.265/HEVC Encode
- ②AVC: H.264/AVC Encode
- ③MPEG2: MPEG-2Encode, up to support 1920×1080×60i

Input Port: Input port, support SDI, can not be set.

System Bitrate: The range is from 800 to 160000Kbps.

Service ID: Specify the Service ID(Program number)of the Program.

TS ID: Specify the Transport stream ID.

PMT PID: Specify PMT PID.

PCR PID: Specify PCR PID.

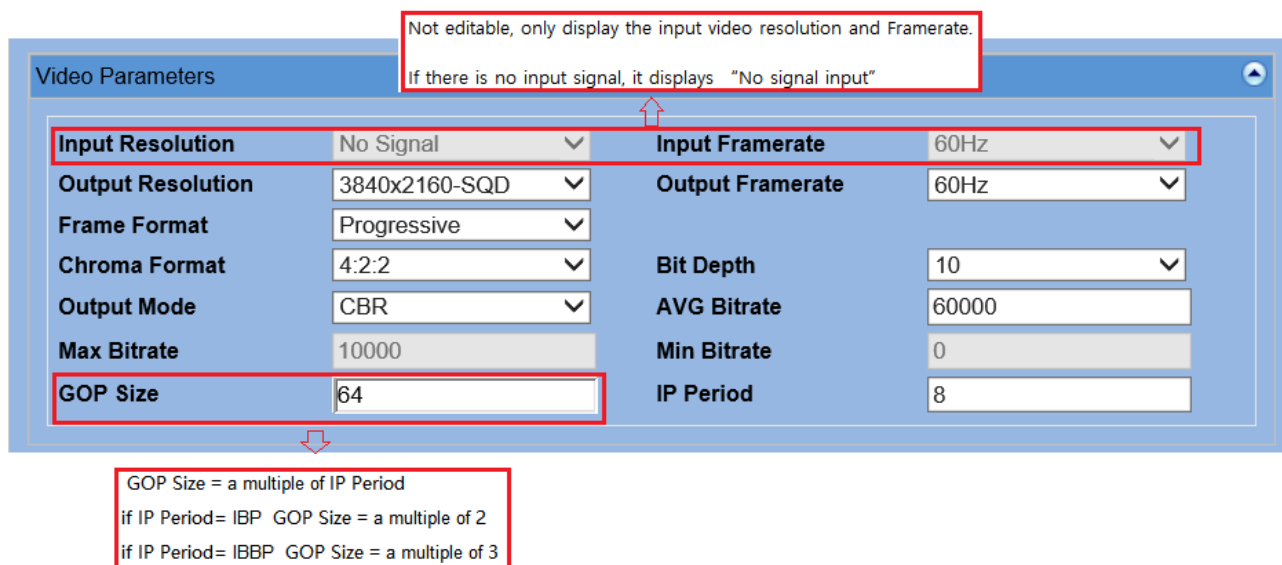
VID PID: Specify video PID.

AUD PID: Specify Audio PID.

Service Name: Specify Service Name ,The max length is 20 Bytes.

Service Provider Name: Specify Service Provider Name, the max length is 20 Bytes.

4.2.2 Video Parameters



Input Resolution	No Signal	Input Framerate	60Hz
Output Resolution	3840x2160-SQD	Output Framerate	60Hz
Frame Format	Progressive	Bit Depth	10
Chroma Format	4:2:2	AVG Bitrate	60000
Output Mode	CBR	Min Bitrate	0
Max Bitrate	10000	IP Period	8
GOP Size	64		

Not editable, only display the input video resolution and Framerate.
If there is no input signal, it displays "No signal input"

GOP Size = a multiple of IP Period
if IP Period= IBP GOP Size = a multiple of 2
if IP Period= IBBP GOP Size = a multiple of 3

Input Resolution: Not editable, only display the input video resolution. If there is no input signal, it displays "No signal input".

Input Framerate: Not editable, only display the input video Framerate.

Output Resolution: Specify the resolution of output video.

Output Framerate: Specify the framerate of output video.

Frame Format: Specify the frame format ,support Progressive and Interlace.

Chroma Format: Specify the Chroma Format, support 4:2:2 and 4:2:0.

Converting from 4:2:0 to 4:2:2 isn't supported.

Bit Depth: Specify Number of quantizing bits, support 8bit and 10 bit.

8->10bit are not supported.

Output Mode: Specify the control method of the video rate control, support VBR and CBR.

AVG Bitrate: Specify the average video bitrate. The range is from 1000 to 40000Kbps.

Max/Min Bitrate: The maximal/minimal video bitrate, only valid in VBR mode. The maximal video bitrate is from 1500 to 80000Kbps, the minimal video bitrate is from 600 to 30000Kbps.

GOP size: Specify the length of each GOP.

GOP Size = a multiple of IP Period

if IP Period= IBP GOP Size = a multiple of 2

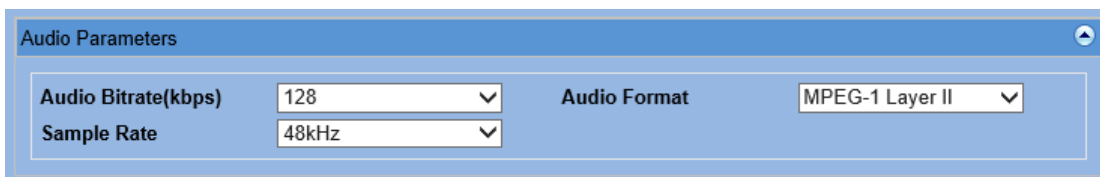
if IP Period= IBBP GOP Size = a multiple of 3

IP Period: Specify the period of I,P picture.

If Encoder Type=HEVC,IP Period is set as an integer.

If Encoder Type=AVC or MPEG2, support IBBP(3)、IBP(2)、IPPP(1).

4.2.3 Audio Parameters

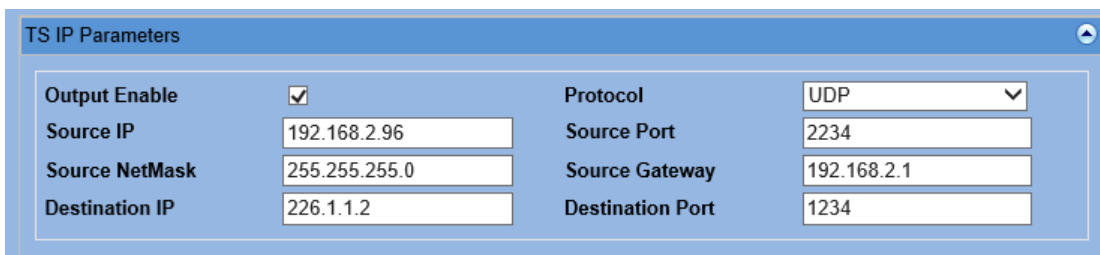


Audio Bitrate: Specify the audio bitrate. There are 6 types of audio bitrate: 64, 128, 192, 256, 320, 384Kbps.

Audio Format: Specify the audio format. There are 3 types of formats: MPEG-1 Layer II, AAC-LC and LPCM.

Sample Rate: Specify the audio sampling rate, only support 48KHz.

4.2.4 TS IP Parameters



Output Enable: “Not Used” means disable this IP channel. Otherwise pass through the encoder channel. Only support SPTS.

Protocol: The protocol of IP packet. There are two types, one is UDP, and the other is RTP.

Source IP: A parameter of IP packet. It means the local IP address for this IP channel.

Source Port: A parameter of IP packet. The value is from 1024 to 65534.

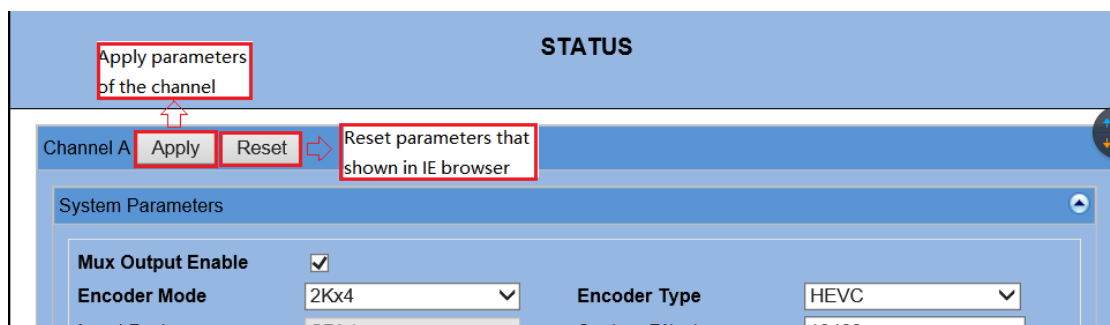
Source Netmask: A parameter of IP packet. It means the NetMask for this IP channel.

Source Gateway: if the source and the destination are not in the same subnet, this parameter should be set correctly.

Destination IP: A parameter of IP packet. Specify destination ip address of the IP packets.

Destination Port: A parameter of IP packet. The value range is from 1024 to 65534.

4.2.5 Apply Parameters

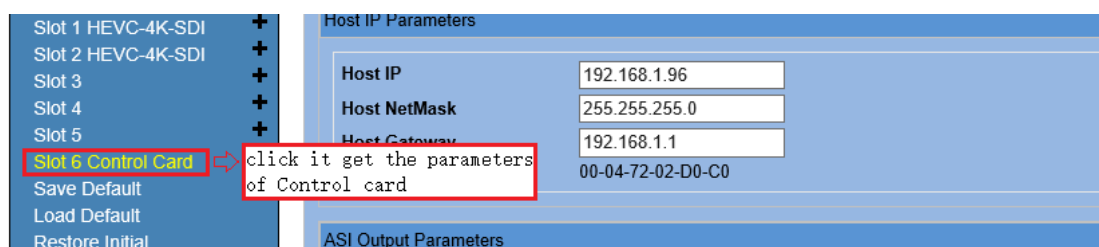


Apply Parameters: click the Apply button to apply the Parameters of this channel.

Reset: click the reset button to reset the parameters that shown in IE Browser.

4.3 Main Slot Setting

Set the parameters of main control card, click 'Slot 6 control Card' to get the parameters of control card.



Basic Parameters

Host IP Parameters

Host IP	192.168.1.96
Host NetMask	255.255.255.0
Host Gateway	192.168.1.1
Host MAC Address	00-04-72-02-D0-C0

ASI Output Parameters

ASI OUT 1	MUX
ASI OUT 2	MUX

MUX Output Parameters

TS ID	1
ON ID	1
Output Bitrate	38000

MUX TS IP Parameters

Output Enable	<input checked="" type="checkbox"/>	Protocol	UDP
Source IP	192.168.2.96	Source Port	2234
Source NetMask	255.255.255.0	Source Gateway	192.168.2.1
Destination IP	226.1.1.11	Destination Port	1234

4.3.1 Host IP Parameters

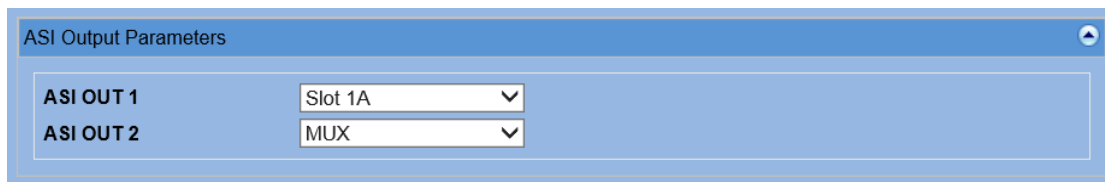
Host IP Parameters: Means net manager controller port, including Host IP Address, subnet mask, gateway IP address and host Mac address.

Host IP Parameters

Host IP	192.168.1.96
Host NetMask	255.255.255.0
Host Gateway	192.168.1.1
Host MAC Address	00-04-72-02-D0-C0

4.3.2 ASI Output Parameters

User can select the source of the ASI output port. “Slot n-ChannelA/B/C/D” means SPTS, Mux means MPTS.

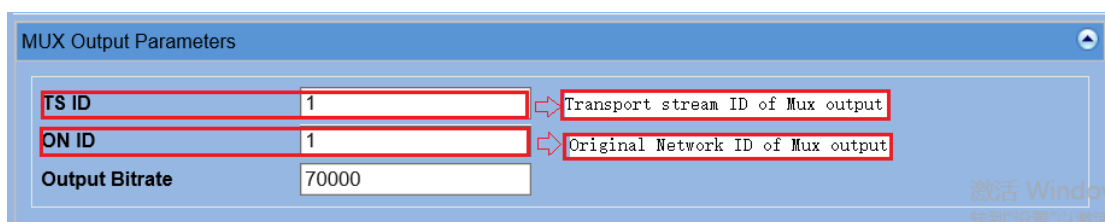


The screenshot shows a dialog box titled "ASI Output Parameters". It contains two rows of configuration: "ASI OUT 1" with a dropdown menu set to "Slot 1A", and "ASI OUT 2" with a dropdown menu set to "MUX".

4.3.3 MUX Output Parameters

Specify the parameters of multiplexer channel.

The mux channel parameters are same as ASI output port and IP output port.



The screenshot shows a dialog box titled "MUX Output Parameters". It contains three fields: "TS ID" with a value of "1", "ON ID" with a value of "1", and "Output Bitrate" with a value of "70000". Red boxes highlight the TS ID and ON ID fields, with arrows pointing to their respective descriptions: "Transport stream ID of Mux output" and "Original Network ID of Mux output". A watermark "激活 Windows" is visible in the bottom right corner.

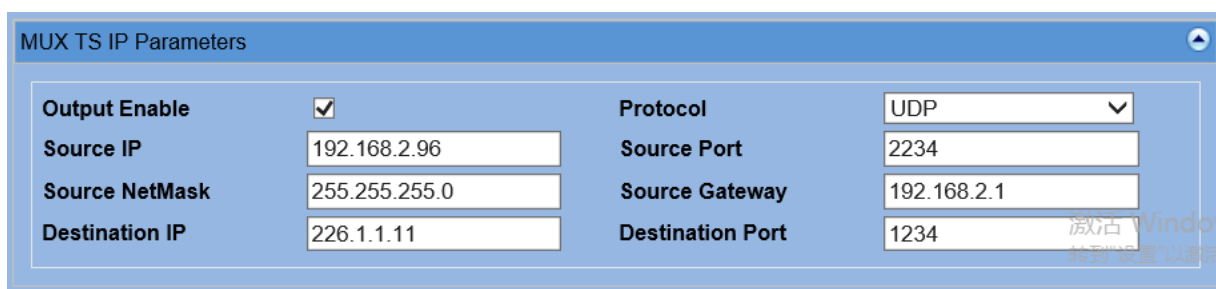
TS ID: Transport Stream ID of mux channel. The value range is from 1 to 65534.

ON ID: Original Network ID of mux channel. The value range is from 1 to 65534.

Output Bitrate: It means the output bitrate of multiplexer channel. It is same for ASI port and IP port.

4.3.4 Main TS IP Parameters:

This tab would display the IP parameters of multiplexer channel.



The screenshot shows a dialog box titled "MUX TS IP Parameters". It contains several fields: "Output Enable" (checked), "Source IP" (192.168.2.96), "Source NetMask" (255.255.255.0), "Destination IP" (226.1.1.11), "Protocol" (UDP), "Source Port" (2234), "Source Gateway" (192.168.2.1), and "Destination Port" (1234). A watermark "激活 Windows" is visible in the bottom right corner.

Output Enable: “Not Used” means disable this IP channel. Otherwise the multiplexed stream will be output by IP. user can edit it in “Mux output Parameters”.

Protocol: The protocol of IP packet. There are two types, one is UDP, and the other is RTP.

Source Port: A parameter of IP packet. The value is from 1024 to 65534.

Source Netmask: A parameter of IP packet. It means the NetMask for this IP channel.

Source Gateway: if the source and the destination are not in the same subnet, this parameter should be set correctly.

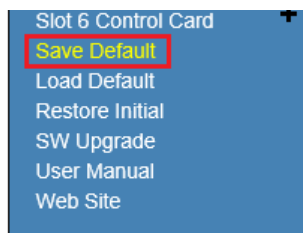
Destination IP: A parameter of IP packet. Specify destination IP address of the IP packets.

Destination Port: A parameter of IP packet. The value range is from 1024 to 65534.

4.4 Advanced Operations

4.4.1 Save Default

Save current parameters to device as default parameters.

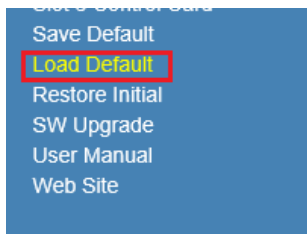


Are you sure to save default?

Save

4.4.2 Load Default

Load default parameters as current parameters of device.

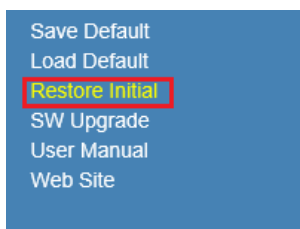


Are you sure to recovery?

Reset

4.4.3 Restore Initial

Restore device to initial parameters setup when delivery.

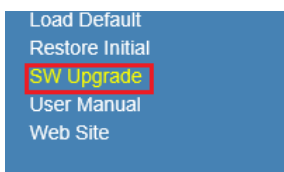


Are you sure to restore initial?

Restore

4.4.4 SW Upgrade

Update device's firmware to add new functions or fix bugs.



File 浏览...
Submit

5. Technical specification

IDH2-9200 Series Specifications

Input	SDI Input	up to 20 x SDI Input, BNC-Female SMPTE-435M/SMPTE ST2036-3/SMPTE 424M (3G-SDI)/SMPTE 274M/SMPTE 292M (HD-SDI)/SMPTE 259M-C(SD-SDI)
	Module	1*Main Module for Management, TS IP, ASI outputs. 4*SDI Input per Module up to 5 slots of pluggable encoding modules
Output	IP Output	1 x 100/1000 Base-T Ethernet (RJ-45) IP output bit rate: Up to 80 Mbps/CH@UHD 20 Mbps/CH@HD
	ASI Output	2*ASI OUT ASI output bit rate: Up to 160 Mbps
	IP Encapsulation	MPEG TS-over-UDP/RTP
	MPEG TS Mode	SPTS/MPTS
Video Encoding	Encoding Formats	H.264(AVC), H.265(HEVC), MPEG-2 Resolution: 3840x2160x60p/50p (4K/UHD) , 1920 x 1080 x 60p/50p , 1280 x 720 x 60p/50p , 1920 x 1080 x 60i/50i(AVC, MPEG2) , 720 x 480 x 60i , 720 x 576 x 50i
	Encoding Rate Mode	CBR, VBR
	Video Encoding Rate	Up to 80 Mbps/CH@UHD, 20 Mbps/CH@HD
Audio Encoding	Encoding Standards	MPEG-1 Layer 2, MPEG-2 AAC , Linear PCM
	Operation Mode	Stereo
	Sample Rate	48 kHz
	Audio Encoding Rate	64/96/128/192/256/384 kbps
Network Management	Interface	1 x 100/1000 Base-T Ethernet (RJ45)
	Management	Web management
Physical and Power	power Supply	110 - 240 VAC, 50/60Hz, dual power supply 20W to 50W (one to five modules)
	Operating Temperature	0°C to +45°C
	Storage Temperature	-10°C to +70°C
	Product Dimensions	48.3 cm (W) x 33.0 cm (D) x 4.4 cm (H)
	Product Weight	Approx. 7Kg