Marshall Electronics

VS-103E-3GSDI

HD H.264 Encoder

User Manual

Firmware Version v1.0

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Safety Precaution

We appreciate your video encoder purchase.
Before installing the product, please read the following with care.

- ✧ Make sure to turn off the power before installing video encoder.
- ✧ Do not install under direct sunlight or in dusty areas.
- ✧ Make sure to use the product within the temperature and humidity specified.
- ✧ Do not operate the product in presence of vibrations or strong magnetic fields.
- ✧ Do not put electrically conducting materials in the ventilation hole.
- ✧ Do not open the top cover of the products. It may cause a failure or electric shock on the components.
- ✧ Make sure to leave a space of at least 10 cm from the ventilation hole in order to prevent overheating.
- ✧ Check voltage and current requirements before connecting a power supply.

1. Introduction

1.1 About this Manual

This User Manual provides information on installation setup, operation of the video encoder, as well as troubleshooting tips.

1.2 Features

Video Encoder is a video and audio transmission system that provides broadcast quality audio and video, based on IP network through LAN, ADSL/VDSL, and wireless LAN. An Encoder System compresses and transmits media data, while a Decoder System receives and decompresses media data.

Video

- Highly Efficient Compression Algorithm; H.264 & MJPEG support
- Wide range of Transmission Rates: 32kbps ~ 16mbps
- Various Transmission Modes: CBR or VBR
- Motion Detection

Audio

- Multi-Transmission Mode: Uni-Directional Mode (IP Encoder to Client PC or Decoder/ Client PC or Decoder to IP Encoder), Bi-Directional Mode

Network

- Fixed IP & Dynamic IP (DHCP) support
- 1:1, 1:N support
- Multicasting
- Automatic Transmit Rate Control according to network conditions
- OnVIF, PSIA compliant

Serial Data

- RS-485 support
- Data Pass-Through Mode: Serial Data Communication between IP Encoder and Decoder
- Data Pass-Through Mode: Serial Data Communication between Encoder-Decoder

Sensor and Alarm

- Supports direct connections of External Sensor and Alarm Devices
- Event Alarm

USB

- Connection to internal or external USB storage for remote access, recording and playback

User Interface

- Diagnose and upgrade through dedicated program called VS Manager
- System Configuration using Internet Explorer

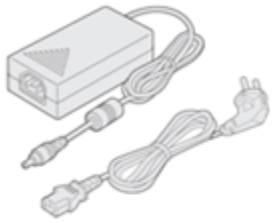
High Reliability

- Reliable Embedded System
- System Recovery by Dual Watch-Dog Functions

1.3 Products and Accessories

Video Encoder

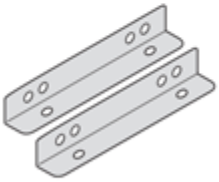
User Manual



Power Adapter & Cable

Software CD

Screws



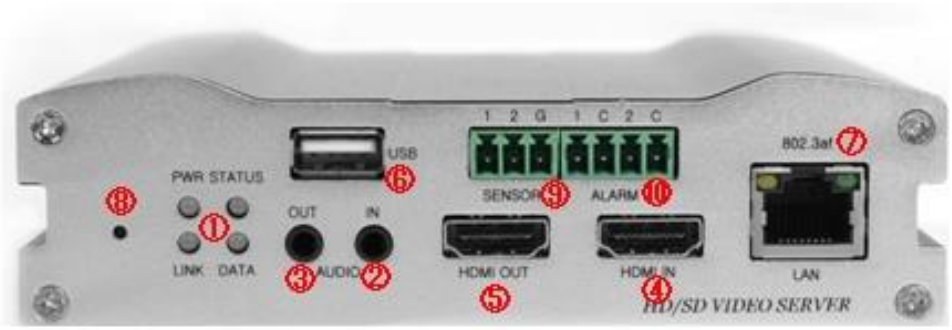
Brackets

1. Introduction

Part Names and Functions

Front View

No.	Parts	Function
1	LED	Display System Status
2	Audio Input	Audio Input
3	Audio Output	Audio Output
4	HDMI Input	HDMI Video & Audio Input
5	HDMI Output	HDMI Video & Audio Output
6	USB Port	USB 2.0
7	LAN	1000/100/10MB Base-T Ethernet
8	Reset Button	Initialization of Network Setting
9	Sensor	Sensor Input
10	Alarm	Alarm or Relay Output



1. Introduction

Rear View

No.	Parts	Function
1	Power	DC +12V Power Input
2	RS-422/485	Serial Port for PTZ Control
3	RS-232	Serial Port for PTZ Control
4	Composite In/ Output	Composite Video Input / Output
5	3G/HD/SD-SDI In/Output	3G/HD/SD-SDI Video & Audio Input / Output

1.4 System Connections

Video Encoder operates as one mode; **Encoder.** Video Encoder Systems can be connected in either **1-to-1** where one encoder is connected to one decoder or **1-to-multiple** where one encoder connected to many decoders.

The following chart shows status of video, audio and serial data on each mode:

System Mode	Video	Audio	Serial Data
Encoder	Transmit	Transmit/Receive	Transmit/Receive
Decoder	Receive	Transmit/Receive	Transmit/Receive

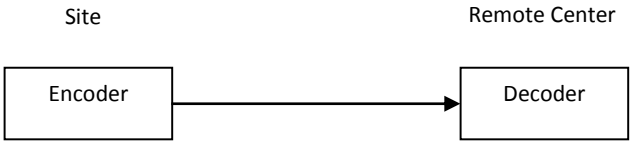
The system mode is defined by the video communication and this system mode is capable of single directional transmission of audio and/or bi-directional serial data.

1. Introduction

Topology

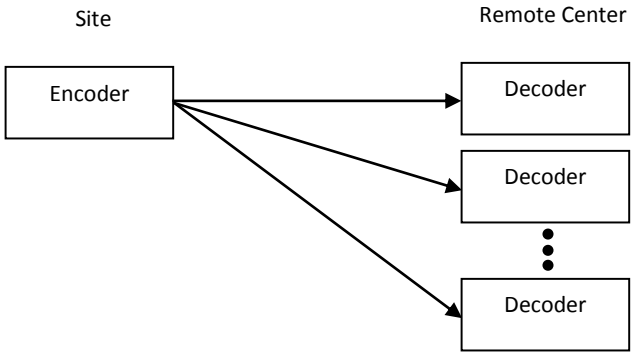
Generally, the Encoder and Decoder are connected in 1-to-1 mode. To support this specific situation, 1-to-multiple connection is also supported.

- **1:1 Connection (Unidirectional Transmission)**



The most commonly used configuration is 1-to-1 connection. An Encoder is installed at a site where video images can be transmitted and a Decoder is installed at a center location to receive and view the video images on monitors. Audio and Serial data are transferred in either direction. An Encoder and Decoder can be connected by setting the Encoder's Address for the Decoder's Remote IP.

- **1:N Connection (Uni-Directional Transmission)**



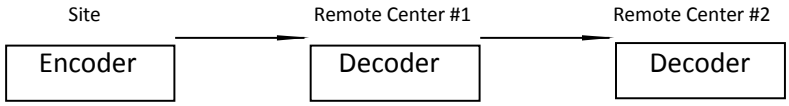
In this configuration, a site can be monitored from many remote center locations. Maximum connections would be limited by the network bandwidth.

Functionally, the VMS (Video Management System) software can replace the decoder.

Multicast Mode

In the Network Supporting Multicast Mode, if **Multicast** is setup as a system protocol, you can use bandwidth efficiently regardless of the number of decoders. In the 1:N connection, a large number of decoders can receive audio and video data from an encoder by using a single streaming transmission.

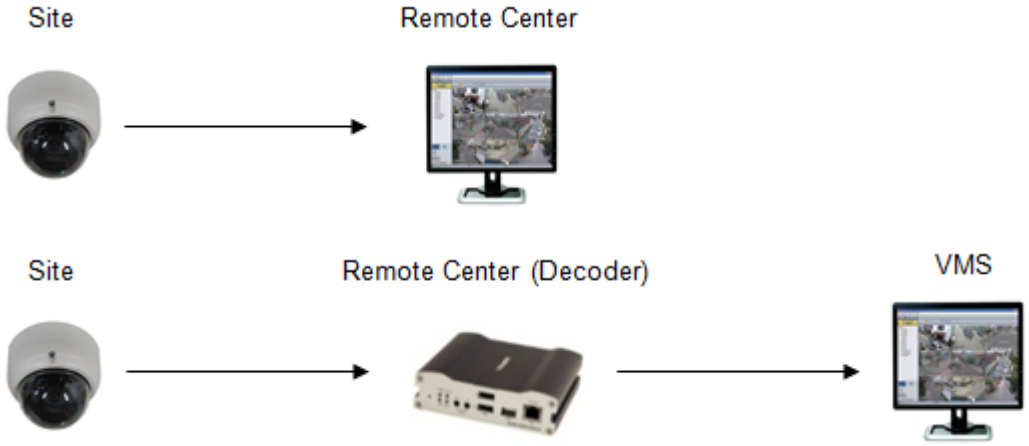
- **Relaying**



In this arrangement, video and audio can be re-transmitted from one center to another center. The arrangement is useful when the network bandwidth at the site is limited while there is more than one center wanting to monitor the site.

1. Introduction

- **VMS (Video Management System)**



VMS (Video Management System) is a Windows based remote monitoring program to access multiple encoders for real-time monitoring or control of the encoders and connected cameras. Please refer to the VMS User Manual for more information on VMS.

2. Installation

2.1 Connecting Video

- **Encoder System**
  Connect a video encoder video output line to the encoder video input port.

- **Connecting with Megapixel Encoder**
  Connect a video encoder which supports HDMI or HD-SDI output to the HDMI or HD-SDI Input port of video encoder accordingly.

- **Connecting with D1 Resolution Encoder**
  Connect a video encoder to the video input port of video encoder accordingly.

- **Decoder System**
  Connect a monitor to either the HDMI or COMPOSITE (HD-SDI) Output port of video encoder accordingly.

2.2 Connecting Audio

Audio is **Full-Duplex**. It is possible to set the mode as **Tx-only**, **Rx-only,** or **Tx-Rx**.

- Connect audio input and output ports to audio devices accordingly.
- The Audio signal required is line level, so audio equipment with an amp, mixer or other amplifier should be used.

2.3 Connecting Serial Ports

For encoder control, the PTZ Controller (keyboard) and Receiver can be connected to Serial Ports. Two corresponding Serial Ports in the Encoder and Decoder which are connected 1-to-1, works in Pass-Through Mode. This means that commands at a local system's COM1 Port will be transparently passed to the remote system's COM1 Port. Commands at a local system COM2 Port will pass to the remote system's COM2 Port.

2.4 Connecting Sensor and Alarm

Connect Sensor and Alarm Devices to corresponding terminals accordingly.

2.5 Connecting Power

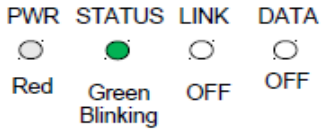
After confirming the Power Source, connect Power Adaptor and connect the 12VDC Connector to the System.

2.6 Check If It Works

Once the power is supplied to the encoder, it will start booting. The system will boot up to operation mode after approximately 40-60 seconds. The green LED on the Ethernet Port will flash indicating the system is ready.

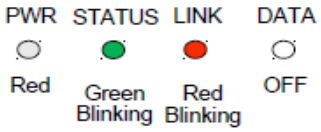
Software provided on the disc called **VS Manager** allows you to check the IP address and other network details of the video encoder. Please refer to the VS Manager manual for instructions on how to find the IP address of the video encoder and to make necessary changes.

- **Encoder LED Display**



The LED's above show that the **Encoder is connected but a Decoder is not.** Once an Encoder is connected to a Decoder, the color of the "LINK" LED Display will turn green and the "DATA" LED will blink as video or audio transmissions occur.

- **Decoder LED Display**



These LED's above show that the **Decoder has started without connecting to an Encoder**. Once an Encoder is connected, the color of "LINK" LED Display will turn green and the "DATA" LED will blink as video or audio data transmissions occur.

2. Installation

- **Description of LED**

System Status can be monitored with the LED Display:

LED	State	Description
PWR	OFF	Power OFF
	Red	Power ON
STATUS	Green Blinking	Normal Operation
	Red	System Failure: Needs Diagnostics
	Constant Change between Red and Green	NTSC/PAL setting does not match with Input Video Signal
	Red Blinking	Failed to obtain IP Address in DHCP Mode
	Constant Change between Green Blinking 2 Times and Red Blinking Once	Failed to Register on DDNS Encoder
	Green Blinking, Red Blinks Once every 5 Seconds	Video Loss in Encoder System
	Constant Change between Green, Orange, and Red	Formatting USB Storage Device
LINK	OFF	No Connection to Remote System
	Green	Connected to a Remote System
	Red Blinking	Decoder Only: trying to connect to an Encoder
	Orange	Illegal Connection (unsupported combination of system modes)
DATA	Green	Data Transmission in Progress
	Red	Data Loss
	OFF	No Data Transmission

3. System Operation

3.1 Remote Video Monitoring

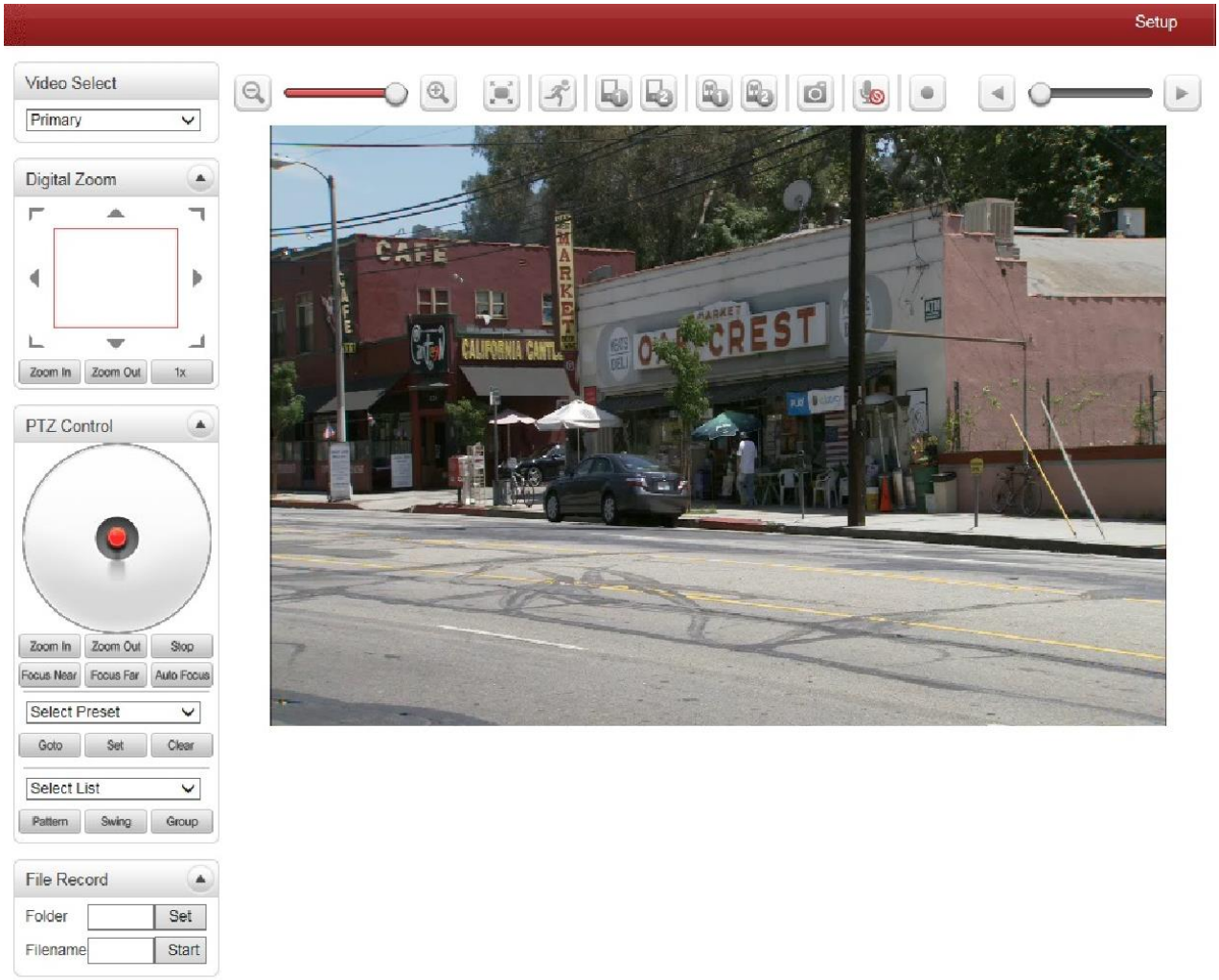
There are two ways to monitor video when the VMS (Video Management System) and Video Encoder are connected. In order for a proper operation, an IP Address must be set accordingly. Please refer to the **VS Manager Manual** enclosed with product for further details.

Default ID: admin	Default Password: 1234

Video Monitoring using Internet Explorer

Open Internet Explorer and enter the Video Encoder's IP Address. The system will ask for confirmation to install Active-X Control. Once authorized, Internet Explorer will begin to display video images from the Encoder as shown below:

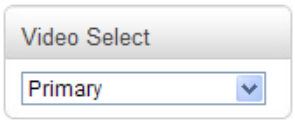
Default IP Address : http://192.168.10.100



3. System Operation

- **Video Select**

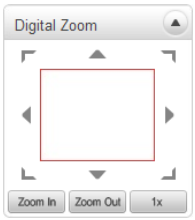
Select the Video Stream to be viewed: **Primary, Secondary, Tertiary** or **Quartic Streaming**
This video encoder is capable of **Dual Streaming**; Primary Streaming and Secondary Streaming. Video will be displayed according to the resolution set on video configuration. If Dual Streaming (**"Use Dual Encode" Menu in Video page**) is not activated, Secondary Videos are not available.



- **View Size**

Adjust the Screen Size. Screen size is initially adjusted according to the **Compression Resolution.** If you click 50% icon, the whole screen size will be reduced to half size.

- **Digital Zoom**



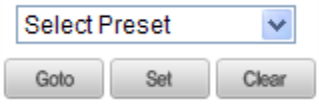
Control the Digital Zoom on the screen. The more the encoder zooms in, the smaller the square of control panel is. Position of the image can be changed by moving position of the square. If you press "**1x"**, the screen will return to the normal size.

- **PTZ Control (Optical Zoom & Digital Zoom Built-In Encoder)**

PTZ Control Panel is used for controlling External PTZ devices when the External PTZ devices are connected through a special Serial Port. It is possible to control zooming by using the **Zoom In/Out** buttons of PTZ Control Panel. In order to use Digital Zoom, select **Digital Zoom "ON"** in the **Encoder Tab**)

- **"Stop"**
  Stop on-going PTZ action.
- **"Focus Near", "Focus Far", "Auto Focus"**
  Adjust the focus of the lens.

- **Select Preset**



Set preset position and move to the specific preset position.
- **GoTo**: After set up, move to the selected preset entry.
- **Set**: Set the current position to the selected preset entry.
- **Clear**: Delete the selected preset entry.

- **Sensor Input and Alarm Input**

Displays the status of the sensor in real time. This video encoder supports **One Sensor Input**. When the sensor of the encoder is working, the sensor light turns red. Operate the Alarm Device by pressing the number icon. This encoder supports **One Alarm Output**. A number icon indicates the status of the alarm device.

3. System Operation

- **Snapshot**

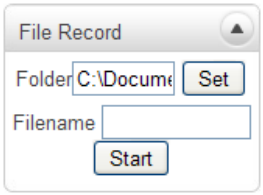
Capture video images and save them as BMP or JPEG files. 

- **Talk**

Transfer audio from the PC microphone to the encoder. 

- **File Record**

Recording to an AVI file on Live View page is available. AVI files are generated in the specified folder or in specified file name on the PC where the web browser is running.



1. Press "**Set**" button to select folder or create a new folder. Enter the file name on Filename field.
2. Press **"Start"** button to start recording.
3. Press **"Stop"** button to end recording.
4. AVI file named "**IP address_hh_mm_ss"** or "**File name_IP address_hh_mm_ss"** will be generated in the specified folder depending on whether the path specified a folder or a prefix of the file name.

- **Display Buffer**

Set the number of video frames to be buffered before being displayed on web browser. Larger values result in smoother video by sacrificing the latency. A setting of 10 ~ 15 frames can be generally used for most situations.

Video Monitoring with Decoder System

When the Video Encoder's IP Address is set in the Remote IP Address section of the Decoder, the Decoder System will connect to the Encoder and start receiving the video images. Normally, a monitor connected to the decoder will display video images.

3.2 Initialization of IP address

If a System IP Address is lost, the system can be reset to the System Default IP Address using the Reset Button to the left of the LED lights.

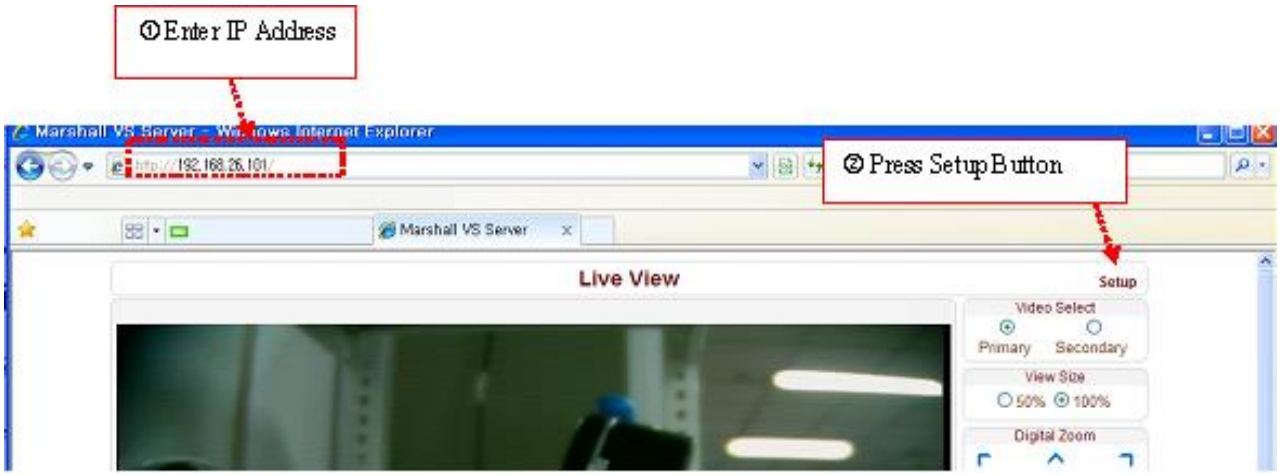
1. While system is in operation, press the reset button for more than 5 seconds.
2. The system will reboot automatically.
3. Once the system reboots, IP Address will be set to the System Default as below:

IP Mode	**Fixed IP**	**IP Address**	**192.168.10.100**
Subnet Mask	**255.255.255.0**	**Gateway**	**192.168.10.1**
Base Port	**2222**	**HTTP Port**	**80**

4. Remote Configuration

4.1 System Configuration

Remote Setting is available by using web browser. Enter IP Address of the Video Encoder and a Live View screen appears (see below). Press the **Setup** button located in the upper right area of the monitoring screen for Encoder Setup. For Remote Setting, the user should have manager-level authority or higher.

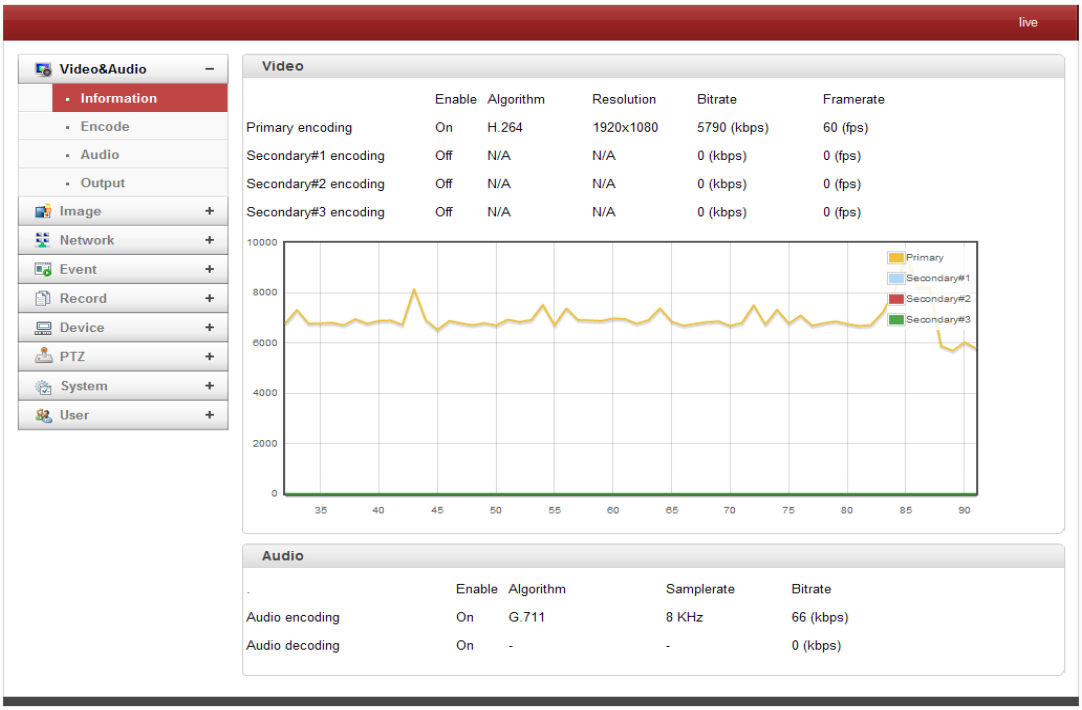


The configurations are grouped into 9 categories: **Video & Audio, Image, Network, Event, Record, Device, PTZ, System, and User.** To save configuration changes, click "**Apply"**. Leaving the page without clicking "**Apply"** will discard any new changes.

4. Remote Configuration

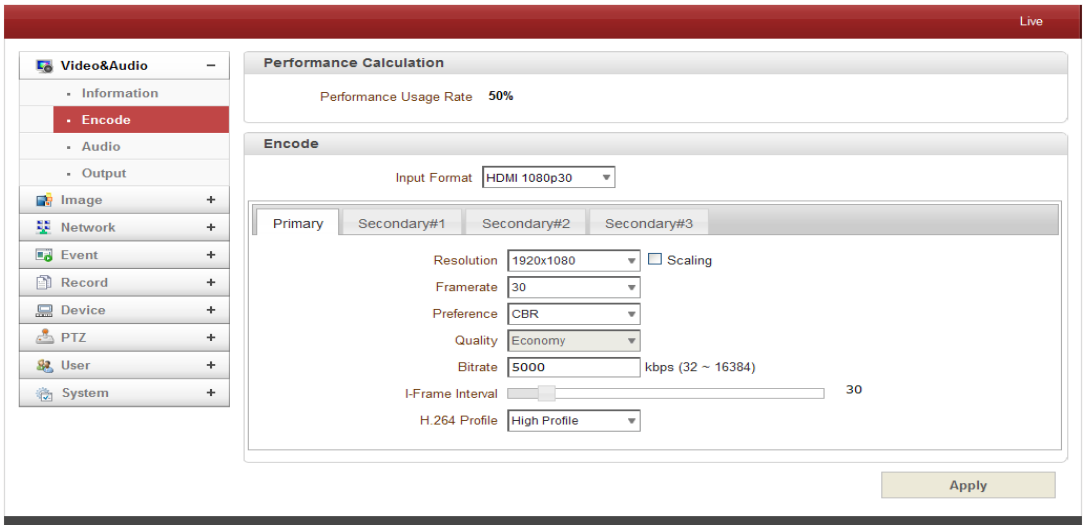
4.2 Video & Audio Configuration

Information



The information provides current information for Video and Audio Settings.

Encode



- **Performance Calculation**

Shows the performance usage rate according to the value set at **Encode** mode.

- **Input Format**

Choose the appropriate Input Format from the list provided.

4. Remote Configuration

- **Resolution**

Select the appropriate **Video Encoding Resolution**. The **Scaling** option is used when the Encoding Resolution is different from Input Resolution. Without Scaling, the input video will be cut according to the encoding resolution. If Scaling is selected, the input video will be adjusted according to encoding resolution.

- **Framerate**

Determine the maximum number of frames per second for the video stream. 1,2,3,4,5,6,8,10,15,20,25,30 and 60 frame rate can be selected. The actual frame rate of the video can be less than the maximum frame rate set due to the network bandwidth limitation.

- **Preference**

Select Encoding Mode to control the video quality or bitrate: **Quality (VBR)** or **Bit Rate (CBR)**. If Bitrate is selected, the video encoding will be prompted by the Bitrate value entered. Therefore, the Bitrate mode corresponds to CBR (Constant Bit Rate) encoding. If Quality is selected, the video encoding will be prompted by the quality of image selected. Therefore, Quality mode corresponds to VBR (Variable Bit Rate) encoding.

- **Quality**

Select Quality Level: 7 Levels of Quality are available. **Quality Mode (VBR Encoding)** encodes every frame in a constant quality. Therefore, resulting bitrate may vary a lot depending on the complexity or activity changes in the input video. Quality Mode is preferred when constant video quality is required and the network bandwidth is enough for delivering the stream of highly varying bitrate.

- **Bitrate**

Bitrate value ranges between 32 and 16Mbps. **Bitrate Mode (CBR Encoding)** allows you to set a fixed target bitrate that consumes a predictable amount of bandwidth. In order to stay within the bitrate limit, video quality is controlled dynamically according to the complexity or activity changes in the input video.

- **I-Frame Interval**

I-Frame Interval ranges between 1 and 255.

- **H.264 Profile**

Select the H.264 Profile : **High Profile** or **Baseline Profile**

1. **High Profile**

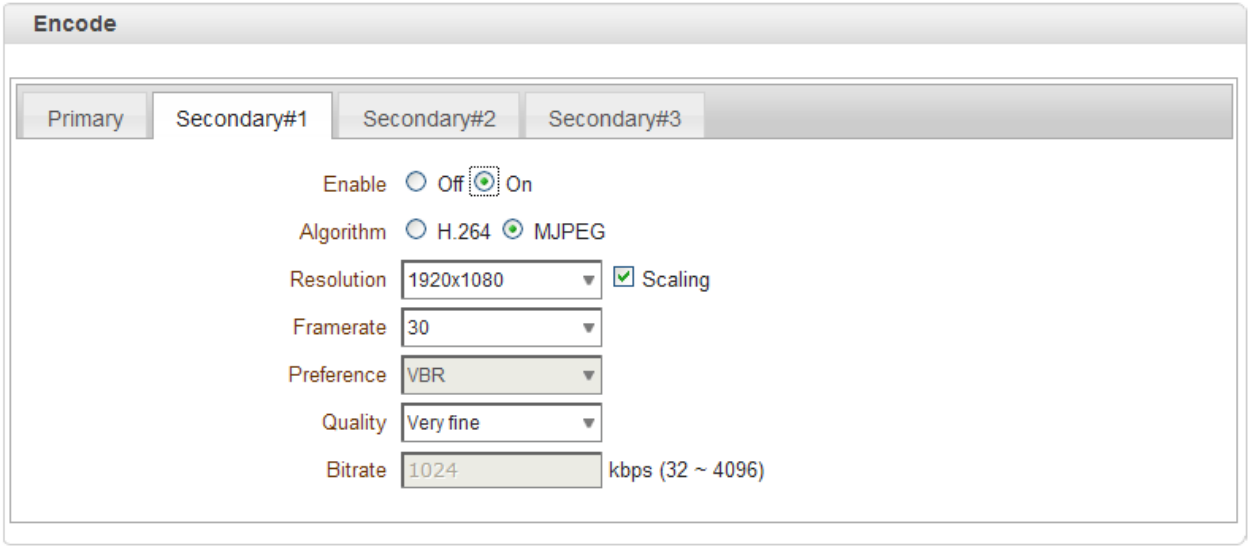
High Profile is the primary profile for broadcast and disc storage applications; particularly for high-definition television application.

2. **Baseline Profile**

Baseline Profile is for low-cost applications that require additional data loss robustness used in some videoconferencing and mobile application. This profile includes all the features that are supported in the constrained baseline profile, plus three additional features that can be used for loss robustness.

4. Remote Configuration

- **Secondary 1, Secondary 2, Secondary 3**



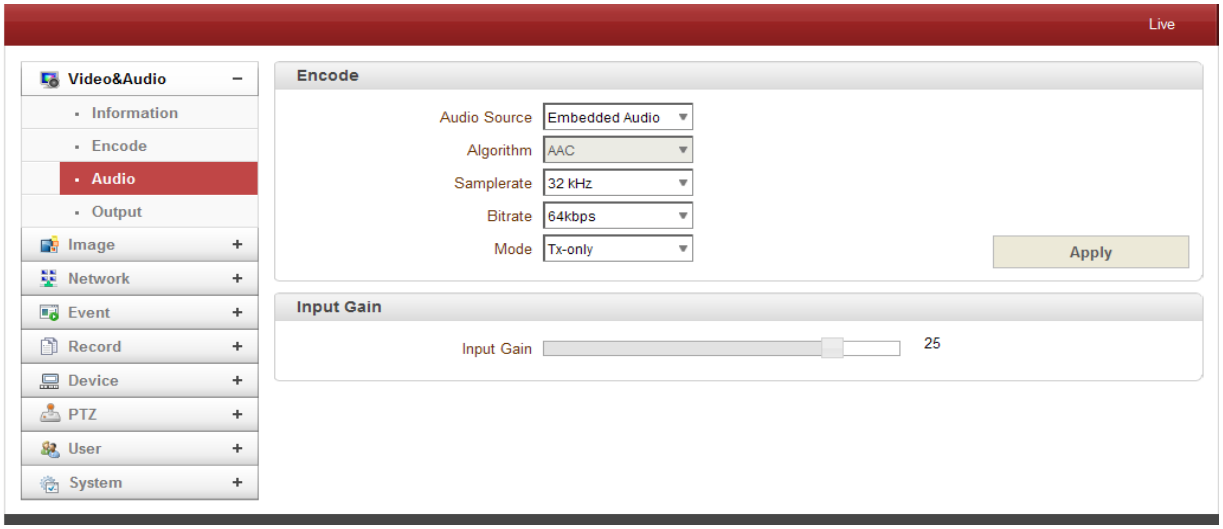
- **Use Dual Encode**

Select **ON** to Enable and use **Secondary 1-3**.
The Secondary 1-3 video can be viewed on **Live View** window by selecting **Stream Number** on the Video Selection

- **Algorithm**

Select **H.264** or **MJPEG** for the Secondary, Tertiary or Quartic Streaming.
When **H.264** is chosen, Wither Bitrate Mode or Quality Mode can be selected for Preference Mode IN. **MJPEG** supports Quality Mode only.

Audio



- **Audio Source**

Select the Audio Source: **Embedded** or **Analog Stereo**.

4. Remote Configuration

- **Algorithm**

Select the Audio Algorithm: **G.711** or **AAC.** G.711 and AAC from client to encoder direction are supported. Thus, bi-directional audio communication is supported.

- **Sample Rate**

The Sample Rate defines the number of samples per unit of time taken from a continuous signal to make a discrete signal.

- **Bitrate**

Bitrate ranges from 64Kbps and 128kbps when AAC is selected. The sample rate is fixed to 8KHz and 32KHz for G.711 and AAC respectively. Note: when the video encoder is connected to a decoder, the decoder's audio algorithm should be set identically to transmit the audio properly.

- **Mode**

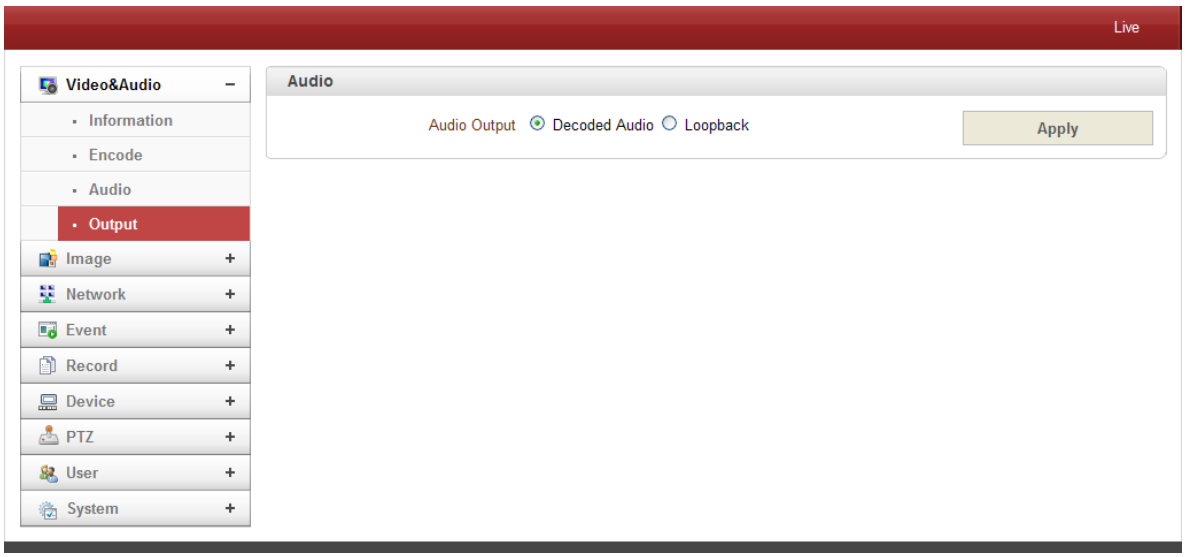
Select the Audio Operation Mode:

Mode	Action
Off	No Operation
Tx-Only	Transmit Only
Rx-Only	Receive Only
Tx & Rx	Transmit and Receive

- **Input Gain**

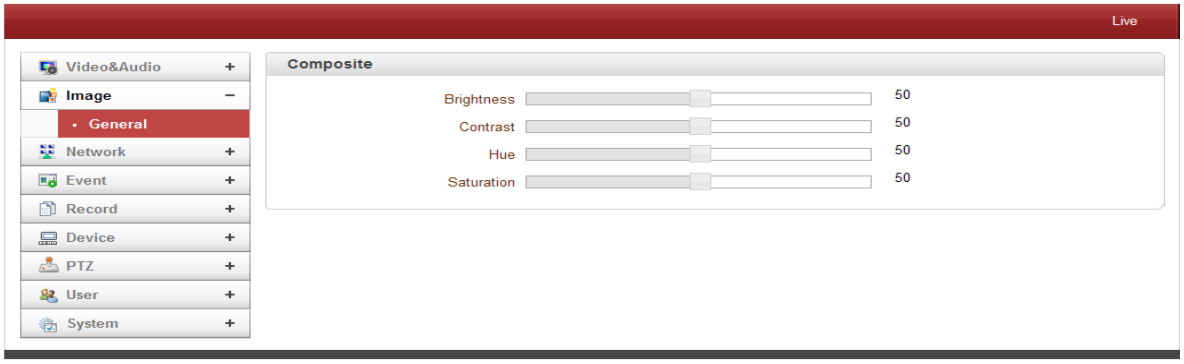
Audio Input Gain ranges from 0 to 31.

Output



4. Remote Configuration

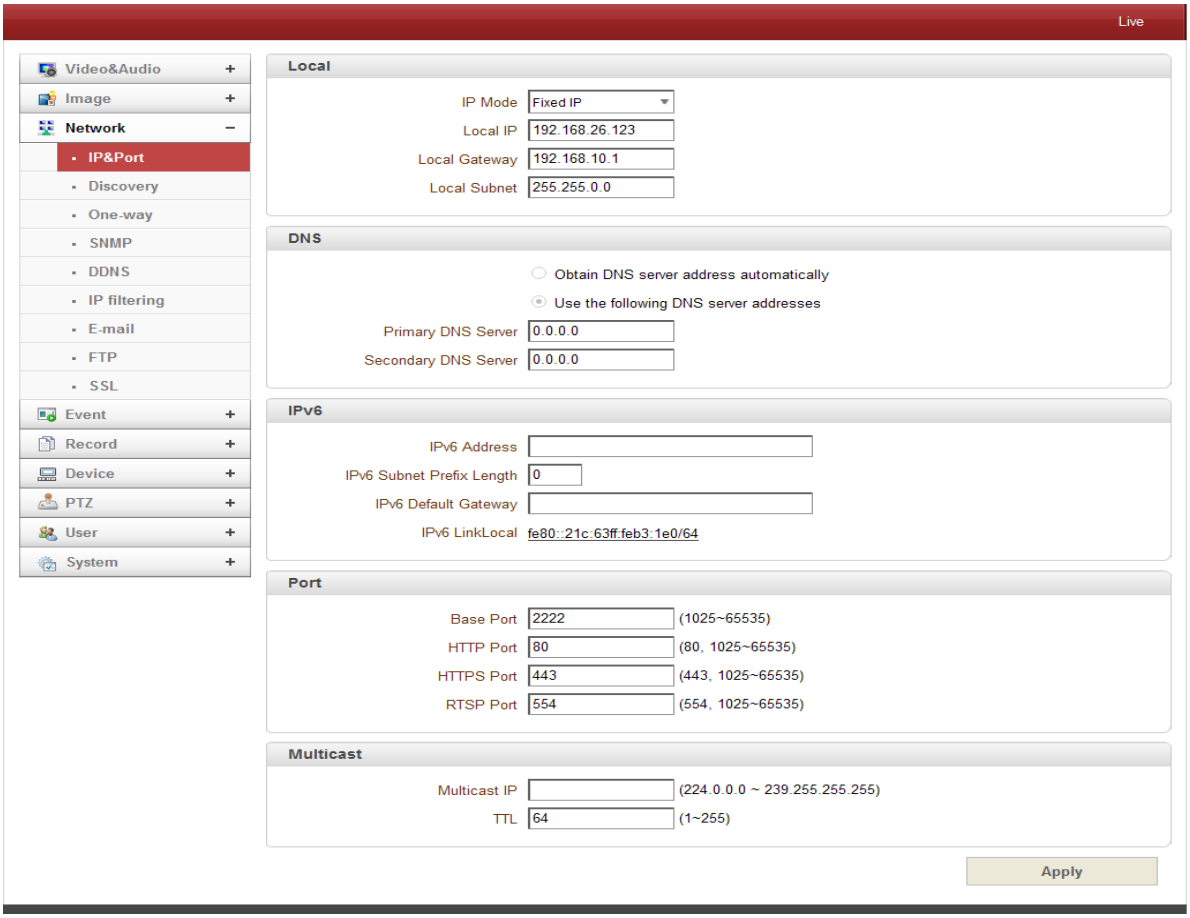
4.3 Image Configuration



Codec

- **Brightness:** Controls input video brightness by selecting values between 0 and 255.
- **Contrast:** Controls input video contrast by selecting values between 0 and 255.
- **Hue:** Controls input video hue by selecting values between 0 and 255.
- **Saturation:** Controls input video saturation by selecting values between 0 and 255.

4.4 Network IP & Port Configuration



4. Remote Configuration

- **Local**

Select the IP Mode: **Fixed IP** or **DHCP**
Depending on the selected mode, the following configuration applies:

IP Mode	Selection	Description
Fixed IP	Local IP	Fixed IP Address
	Local Gateway	Gateway IP Address
	Local Subnet	Subnet Mask
DHCP	N/A	

Contact your ISP provider or network manager for IP address information.

- **DNS**

- **Obtain DNS Encoder Address automatically**

Find DNS Encoder Address automatically when IP Mode is set to DHCP.

- **Use the following DNS Encoder Address**

Enter the DNS Encoder IP Address: **Primary** or **Secondary DNS Encoder**

Domain Name System (**DNS**) is a database system that translates a computer's fully qualified domain name into an IP address. Networked computers use IP addresses to locate and connect to each other, but IP addresses can be difficult for people to remember. For example, on the web, it's much easier to remember the domain name www.amazon.com than it is to remember its corresponding IP address (207.171.166.48). Each organization that maintains a computer network will have at least one server handling DNS queries. That server, called a name server, will hold a list of all the IP addresses within its network, plus a cache of IP addresses for recently accessed computers outside the network.

- **IPv6**

- **IPv6 Address:** Enter the designated Ipv6 address.
- **IPv6 Subnet Prefix Length:** Enter the bit number for the Ipv6 subnet.
- **IPv6 Default Gateway:** Enter the designated Ipv6 gateway.
- **IPv6 Link Local:** Display the Ipv6 link local.

- **Port**

- **Base Port (1025 - 65535)**

Enter the Base Port Number: Network Base Port is used for communication with remote clients. In order for the video encoder and remote systems to be connected, the port number must be identically configured for the video encoder side and client side.

- **HTTP Port (80, 1025 - 65535)**

Enter HTTP port used for a web-based connection.

- **HTTPS Port (443, 1025 - 65535)**

Enter HTTPS port used for a secured HTTP connection.

- **RTSP Port (554, 1025 - 65535)**

Enter RTSP port used for RTSP-based connection. The default TRSP port is 554.

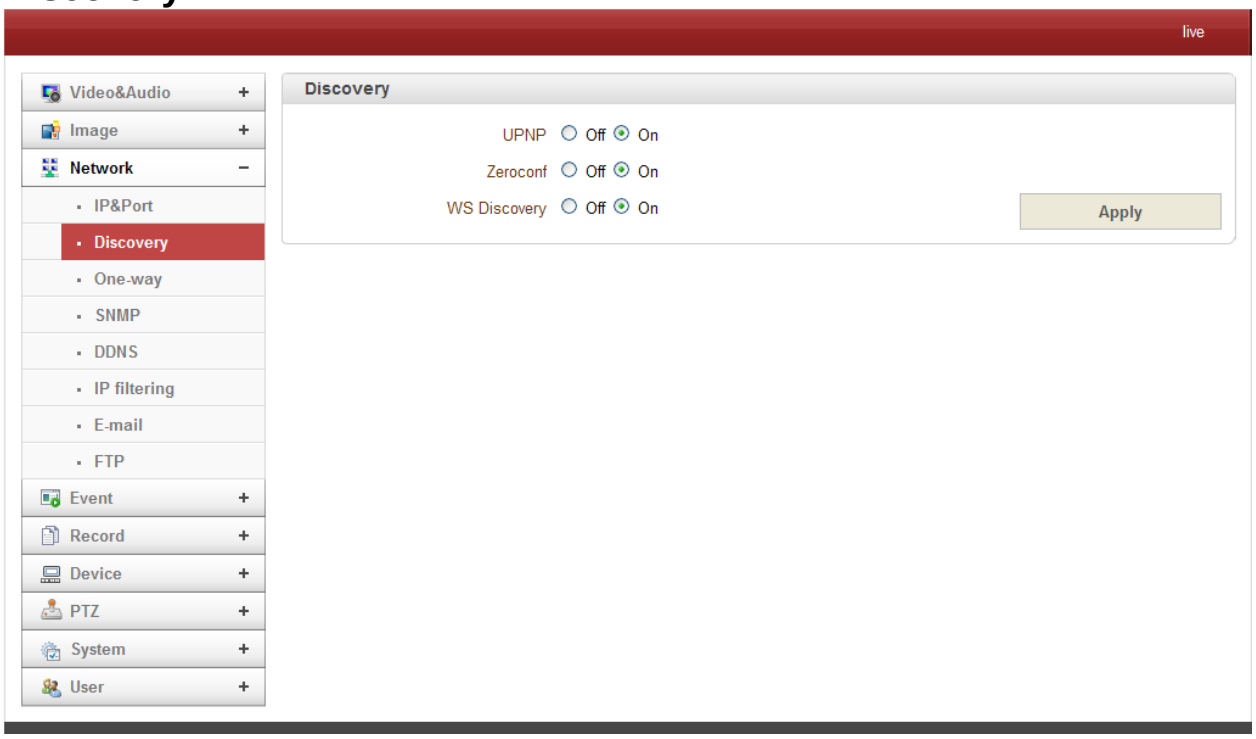
- **RTSP (Real Time Streaming Protocol)** is a standard for media streaming between encoder and client.

4. Remote Configuration

- **Multicast**

The Multicast menu is used for configuring the Multicast IP Address where the media stream is delivered when a Decoder, VMS or NVR software is connected in the Multicast Mode. The Multicast IP Address selection range is between 224.0.0.0 and 239.255.255.255. The selection can be used only when the media protocol is set to Multicast.

Discovery



- **UPNP**

When **UPNP** is ON, it allows the discovery of the client according to UPNP (Universal Plug and Play) Protocol.

- **Zeroconf**

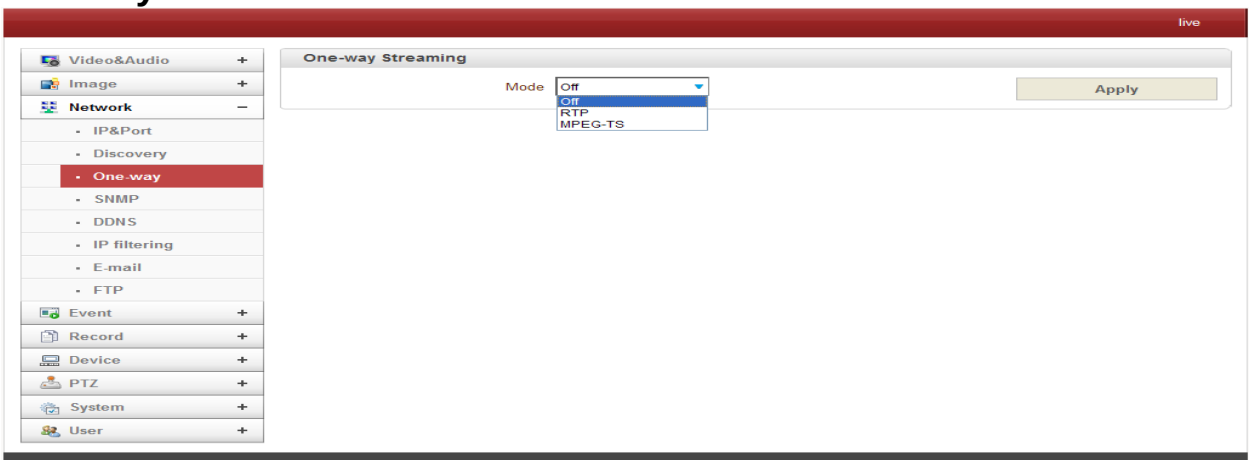
When **Zeroconf** is ON, it allows the discovery of the client according to Zeroconf Protocol.

- **WS Discovery**

Discovery function based on web service is enabled. It allows the discovery by the client SW which is supporting Onvif.

4. Remote Configuration

One Way



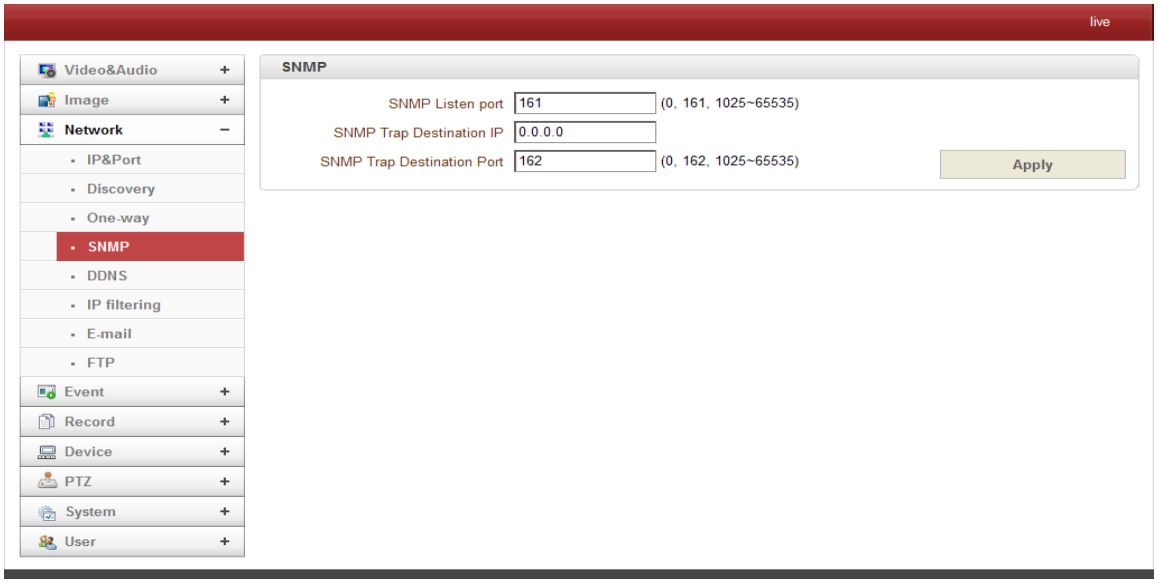
- This IP Video Encoder provides two kinds of one-way (unidirectional) streaming based on UTP to clients: **RTSP** and **MPEG-TS**. Both are types of broadcasting where traffic from clients to an encoder is not generated at all.

- **RTP (Real-Time Transport Protocol)** is an Internet Protocol used for transmitting single real-time multimedia data such as audio and video to a select group of connected clients. Normally RTSP uses RTP to format packets of multimedia content. The **RTP** menu is used when the RTP only is streaming without an RTSP connection. RTP stream will be transmitted to the destination set. The **SDP** (Session Description Protocol) file can be found in the encoder and a client can retrieve it using the http connection.
  - **Destination IP:** Set the IP Address of the destination system receiving the RTP Stream. If the system is a decoder, RTSP authentication information can be found in the middle of the RTSP URL: rtsp://**admin:1234**@192.168.10.100:554/video1
  - **Destination Port:** Set the port of the destination system receiving the TRP stream.
  - **User Name:** Enter the user name that will be used as a session name in the SDP file.
  - **File Name:** Enter the file name that will be used as the name of the SDP file. When this is entered, it can be accessed through **http://ServerAddress/filename**

- **MPEG-TS** is the standard format for the transmission and storage of audio, video, and data, and is used in broadcast systems such as DVB and ATSC. **Transport Stream** is specified in MPEG-2 Part 1 Systems (formally known as ISO/IEC standard 13818-1 or ITU-T Rec. H.222.0). Transport Stream specifies a container format encapsulating packetized elementary streams with error correction and stream synchronization features for maintaining transmission integrity when the signal is degraded. Although MPEG-TS supports AAC as the audio algorithm, only video is streamed when audio algorithm is set to G.711.
  - **Destination IP:** Set the IP Address of the Destination System which will receive MPEG-TS stream.
  - **Destination Port:** Set the Port of the Destination System which will receive MPEG-TS stream.

4. Remote Configuration

SNMP

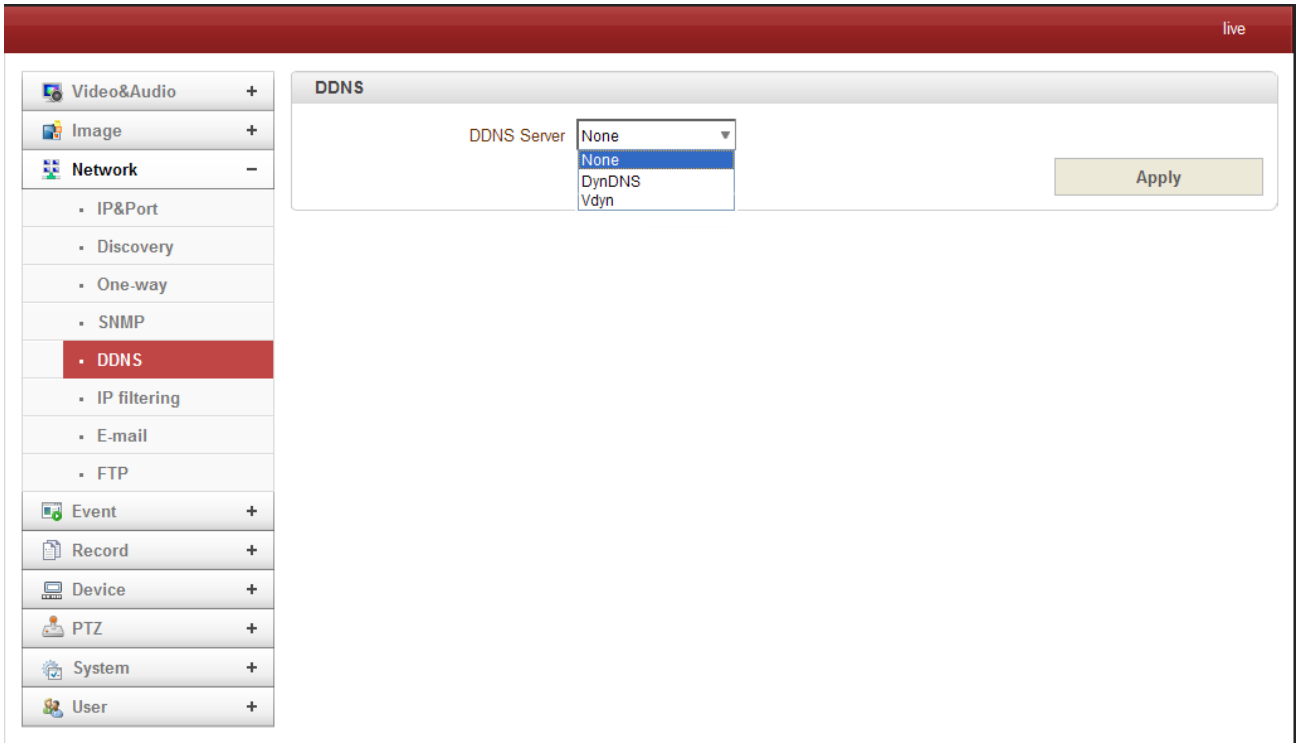


SNMP (Simple Network Management Protocol) is compatible with both **SNMPv1** and **SNMPvec**. Settings for using SNMP are as follows:

- **SNMP Listen Port (0, 161, 1025 - 65535)**
  This port is for connecting an external device as an SNMP client. SNMP is not used when the value is 0.
- **SNMP Trap Destination IP**
  Set the SNMP Trap Destination IP.
- **SNMP Trap Destination Port (0, 162, 1025 - 65535)**
  Set the SNMP Trap Destination Port. SNMP is not used when the value is 0.

Simple Network Management Protocol (SNMP) is used by Network Management Systems to communicate with network elements. SNMP lets TCP/IP-Based Network Management clients use a TCP/IP-Based internetwork to exchange information about the configuration and status of nodes. SNMP can also generate trap messages used to report significant TCP/IP events asynchronously to interested clients. For Example: a router could send a message if one of its redundant power supplies fails or a printer could send an SNMP trap when it is out of paper

4. Remote Configuration



DDNS
Select DDNS (Dynamic DNS) Encoder to use. One of the two can be selected.

- **DynDNS**
  DynDNS service is used in this mode. Refer to www.dyndns.org for details.
  ID, Password and Domain name are needed when DynDNS is set.

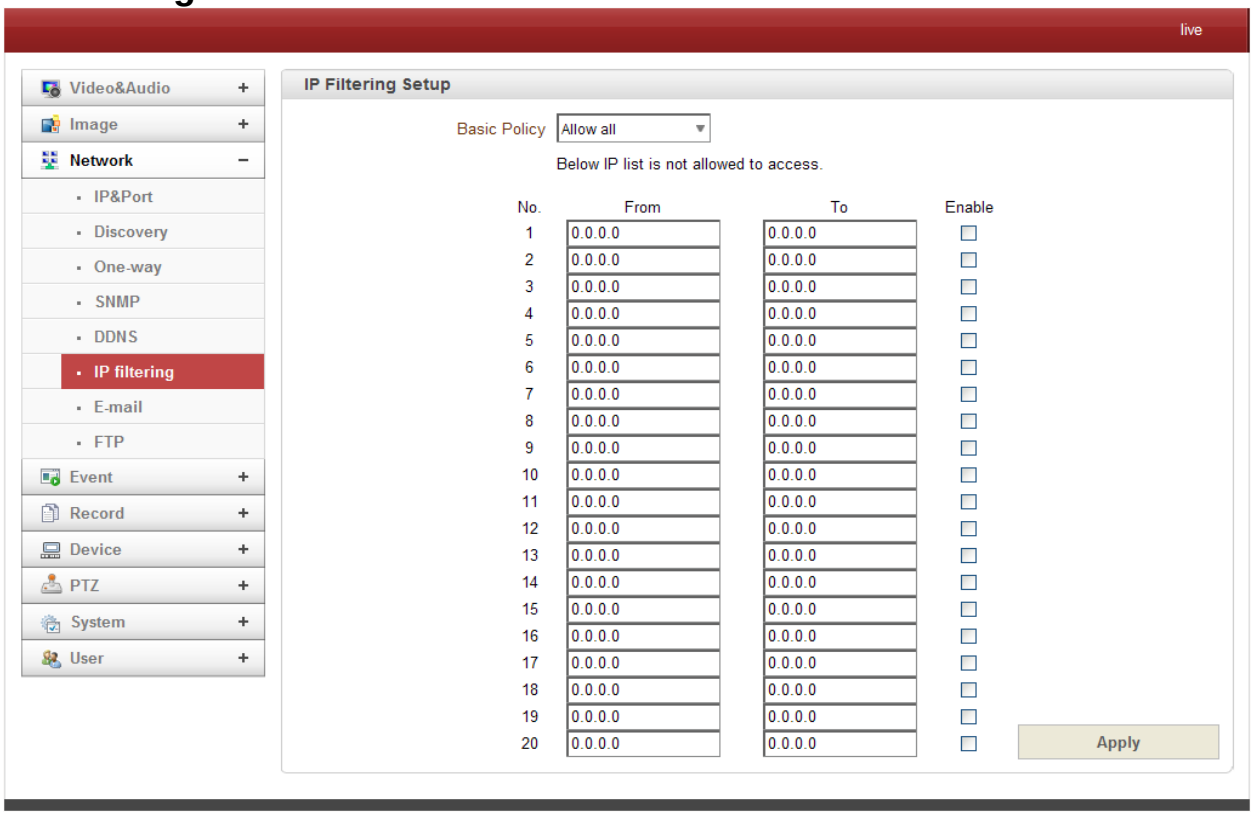
> **Dynamic DNS** is a method, protocol, or network service that provides the capability for a networked device, such as a router or computer system using the Internet Protocol Suite, to notify a domain name server to change, in real time (ad-hoc) the active DNS configuration of its configured hostnames, addresses or other information stored in DNS.

- **Vdyn**
  Vdyn is a DDNS service provided by Visionica (http://visionica.com). No further configuration is required for using this service. It internally uses the MAC address for the registration. When it succeeds, the domain name of the form **001C63A607EC.visionica.info** is displayed on Current Domain entry of the Network page. Email setting is not mandatory.

- **Check IP Disable**
  If "Check IP Disable" is selected, it will skip to check it's own IP. In **Fixed IP Mode**, the set IP will be registered on the DDNS Encoder. In **DHCP Mode**, a dynamically assigned IP will be registered on the DDNS Encoder. Normally Check IP Disable should be unchecked in order to obtain the public IP in the network.

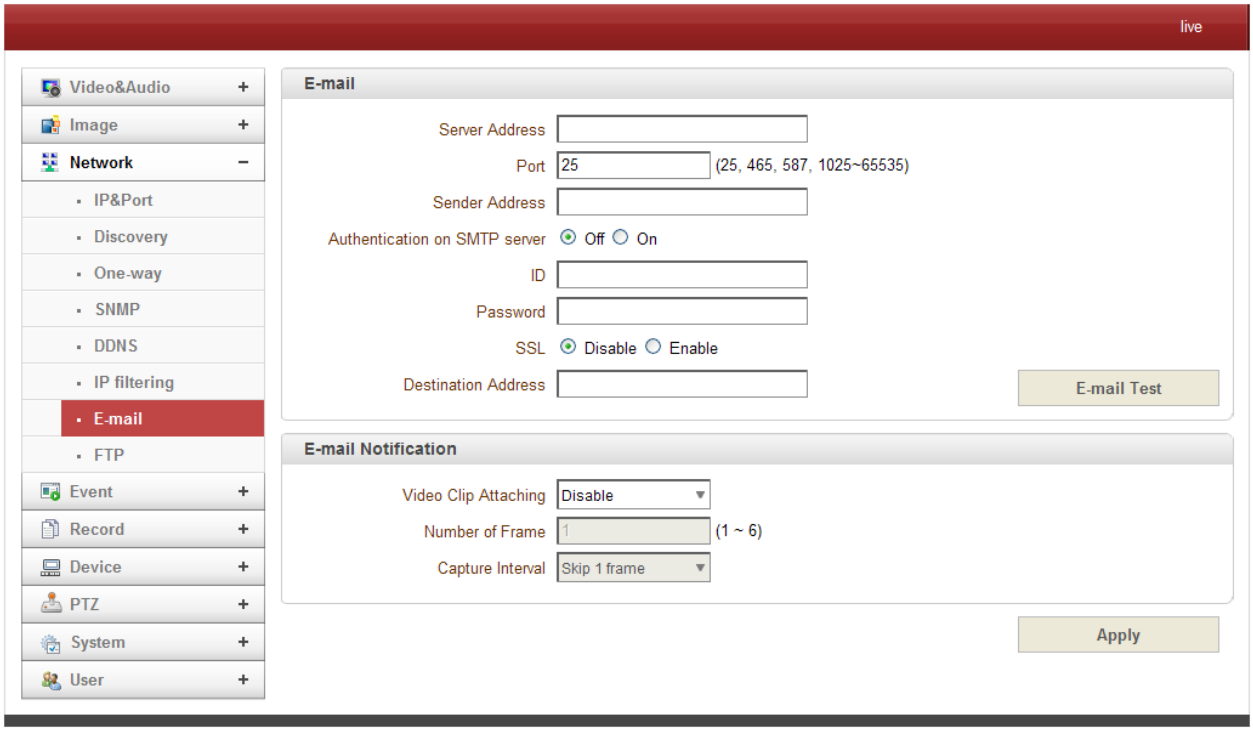
4. Remote Configuration

IP Filtering



IP filtering is simply a mechanism that decides which types of IP datagrams will be processed normally and which will be discarded.

Email



Select the following when **Email** is selected as an Event Action:

- **Encoder Address**

Enter an address of mail (SMTP) Encoder

- **Port**

Specify a port for SMTP operation (**Port 25 is the default port in SMTP operation**). If a port other that the default is configured in the SMTP Encoder, this port needs to be changed accordingly.

- **Sender Address**

Enter an account registered the in SMTP Encoder.

- **Authentication on SMTP Encoder**

This function is applicable when the Email Encoder requires authentication for sending Email.

- **ID & Password**

When the Encoder requires authentication, ID and Password of an email account need to be entered.

- **Destination Address**

Enter Destination address. More than one address can be entered by delimiting comma (,) or semi-colon (;). Destination addresses can take up to 63 characters.

- **Email Test**

Email sending can be tested with this button. Please note that configured settings should be saved first by pressing the **Apply** button before using the Email Test Function. One of the following messages will appear as a result of the test:

Message	Description
E-mail sent successfully	Test E-mail has been sent successfully. Reception in the client can be checked.
Failed to connect SMTP server	Connection to the SMTP server failed. It is necessary to check if the server is reachable and server address and port are correct.
Authentication failed	The server is reachable but authentication failed. ID and/or password need to be checked.
SMTP server rejected the mail	The server is reachable, but mail sending failed due to a reason other than authentication. This error happens often when the server authenticates according to its own rule. For example, IP addresses of a specific range or addressed of a specific suffix are allowed.

- Email Notification

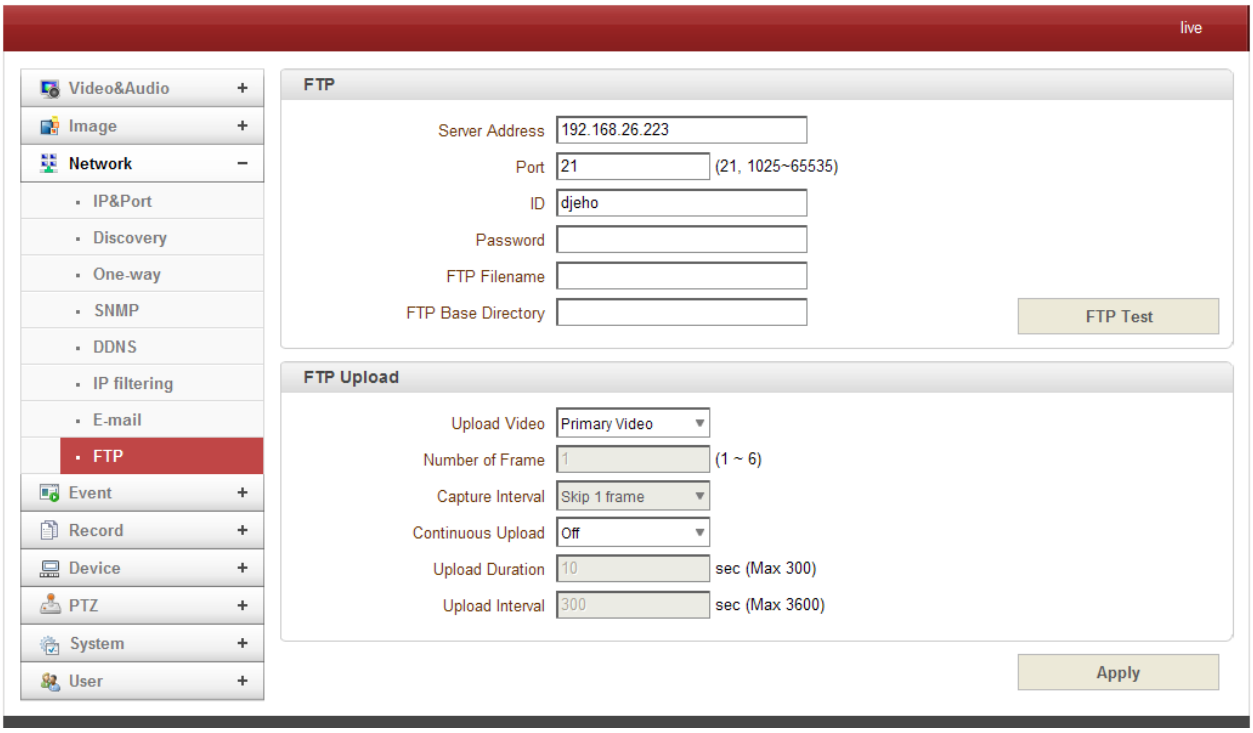
- **Video Clip Attaching**

Video clips can be saved and attached as an AVI or JPEG file. When dual encoding is enabled, **Primary Video, Secondary Video** (H.264 only) or **JPEG Capture** can be selected. The number of JPEG frames is configured appropriately. This setting is applicable only when JPEG Capture is selected.

- **Capture Interval**

Select the interval of the captured frame.

4. Remote Configuration



- **FTP**

When **FTP** is selected, specify the following:

- **Encoder Address**

Enter an RTP Encoder Address to receive video files.

- **Port**

Specify a Port for the FTP operation (Port 21 is the default port in the FTP operation). If a port other than the default is configured in the FTP Encoder, this port needs to be changed accordingly.

- **ID & Password**

Enter ID and Password to access the FTP Encoder.

- **FTP File Name**

The File Names uploaded by FTP can be specified by the user. If a fixed name is specified, the file is overwritten repeatedly. Max length of a file name is 60 characters. If the name is left blank, file name is determined according to the internal rule implemented in the firmware. The following macros are supported to form variable parts of file names. These strings are case-sensitive.

- %YYYY: year
- %MM: month
- %DD: day
- %hh: hour
- %mm: minute
- %ss: second
- %EVENT: event type (Sensor1, Motion, ...)
- %ADDR: address of the encoder (Domain name when DDNS is used; otherwise IP address)
- ".avi" or ".jpg" will be added automatically to the filename depending on the video file type

- **FTP Base Directory**

Specify the name of the directory to be created in the FTP Encoder. It is valid only when **Record** is set to **Use** on the Record Session.

- **FTP Test**

The FTP upload function can be tested with this button. Please note that the configuration settings should be saved first by pressing the **Apply** button before using the FTP Test Function. One of the following messages will appear after testing:

Message	Description
FTP connection tested successfully	The connection to the FTP server is successful.
Failed to connect FTP server	The connection to the FTP server failed. It is necessary to check if the server is reachable and server address and port are correct.
Authentication failed	The server is reachable but authentication failed. ID and/or password need to be checked.
Failed to upload file	File upload failed. The user of the ID is not allowed for writing into the directory or FTP server can be full.
Failed to erase file	Failed to delete the test file. The user of the ID doesn't have the privilege for file deletion.

- **FTP Upload**

- **Upload Video**

When using Primary, Secondary, Tertiary or Quartic Video (H.264 only), JPEG capture can be selected for uploading.

- **Number of Frame**

Enter the frame number of the JPEG capture. (1 - 10)

- **Capture Interval**

Select the interval of captured frame.

- **Continuous Upload**

Continuous Upload **ON** allows video clips to be transmitted regularly regardless of the event occurrence. When this mode is activated, the FTP upload by event is suppressed.

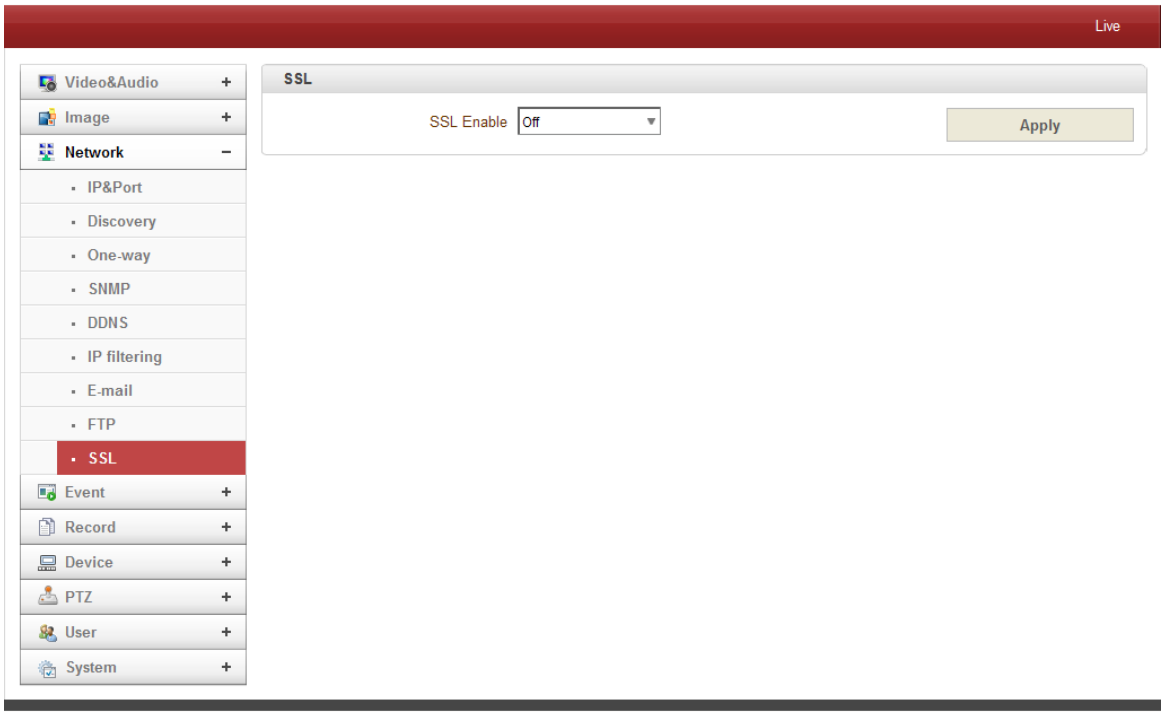
- **Upload Duration**

Specify the recording duration of the video clip to be transmitted (max 300 sec).

- **Upload Interval**

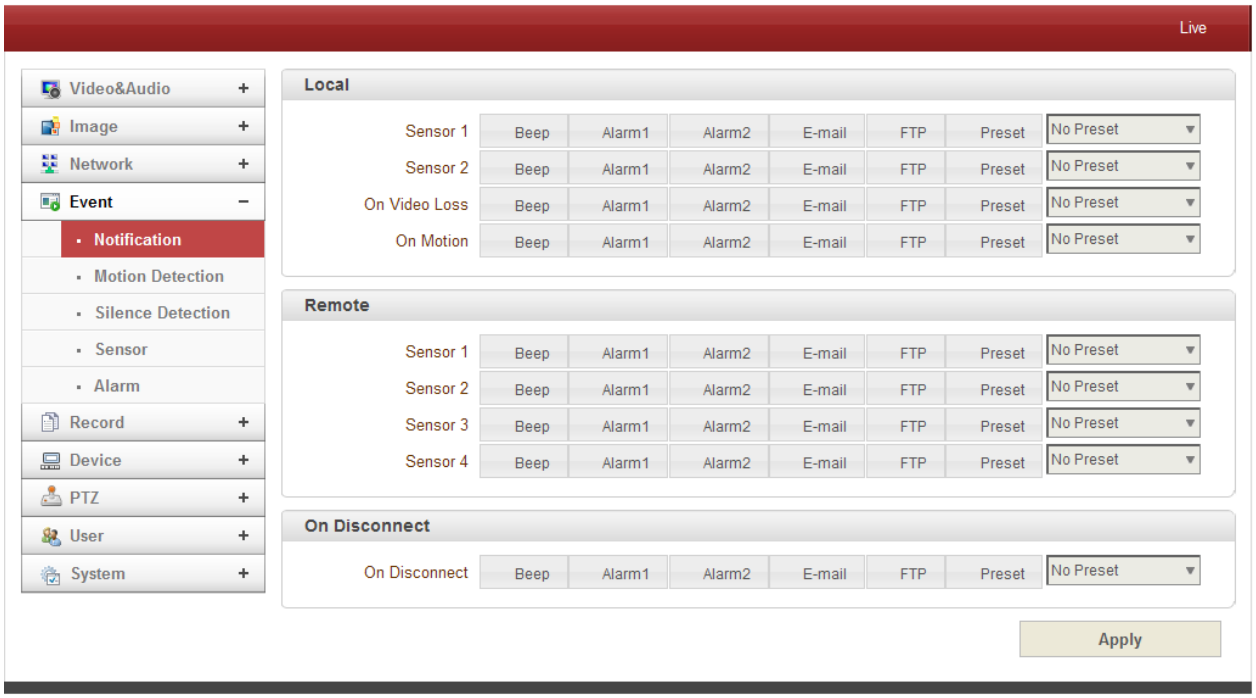
Specify the transmission interval (max 3600 sec). Upload duration is not included in the upload interval. For Example: if the upload interval is 60 sec and the upload duration is 20 sec, a video clip for 20 sec is transmitted every 80 sec.

4. Remote Configuration



This function is applicable when the E-mail Encoder requires encryption for sending emails.

4.5 Event Configuration



4. Remote Configuration

- **Local**

When a Decoder is connected to a Video Encoder, one system becomes a Local System and the other a Remote System (generally a system which is being used by the user is called as Local System). Event Actions can be configured from the Remote System as well as the Local System. For Example: it is possible to turn on an alarm device in the Local (center) Decoder System when a sensor device in Remote (site) Video Encoder is triggered. The Local section configures the actions for the events from the Local (self) System and the configuration activates the local devices and the Remote sections configure the actions for events from Remote (peer) System.

The following table lists the possible actions for the events:

Action	Description
Beep	Triggers Beep Port
Alarm out	Triggers Alarm (Relay) Port
Email	Sends Email to the specified Email Address; AVI File can be attached
FTP	Upload AVI File to a specified FTP Encoder
Preset	Move to the Preset Position

- **Sensor1 / Sensor2**

Configure the actions when the sensor is activated. Multiple actions can be set for a single event.

- **On Video Loss**

Configure the actions when video input signal is lost. Multiple actions can be set for a single event.

- **On Motion**

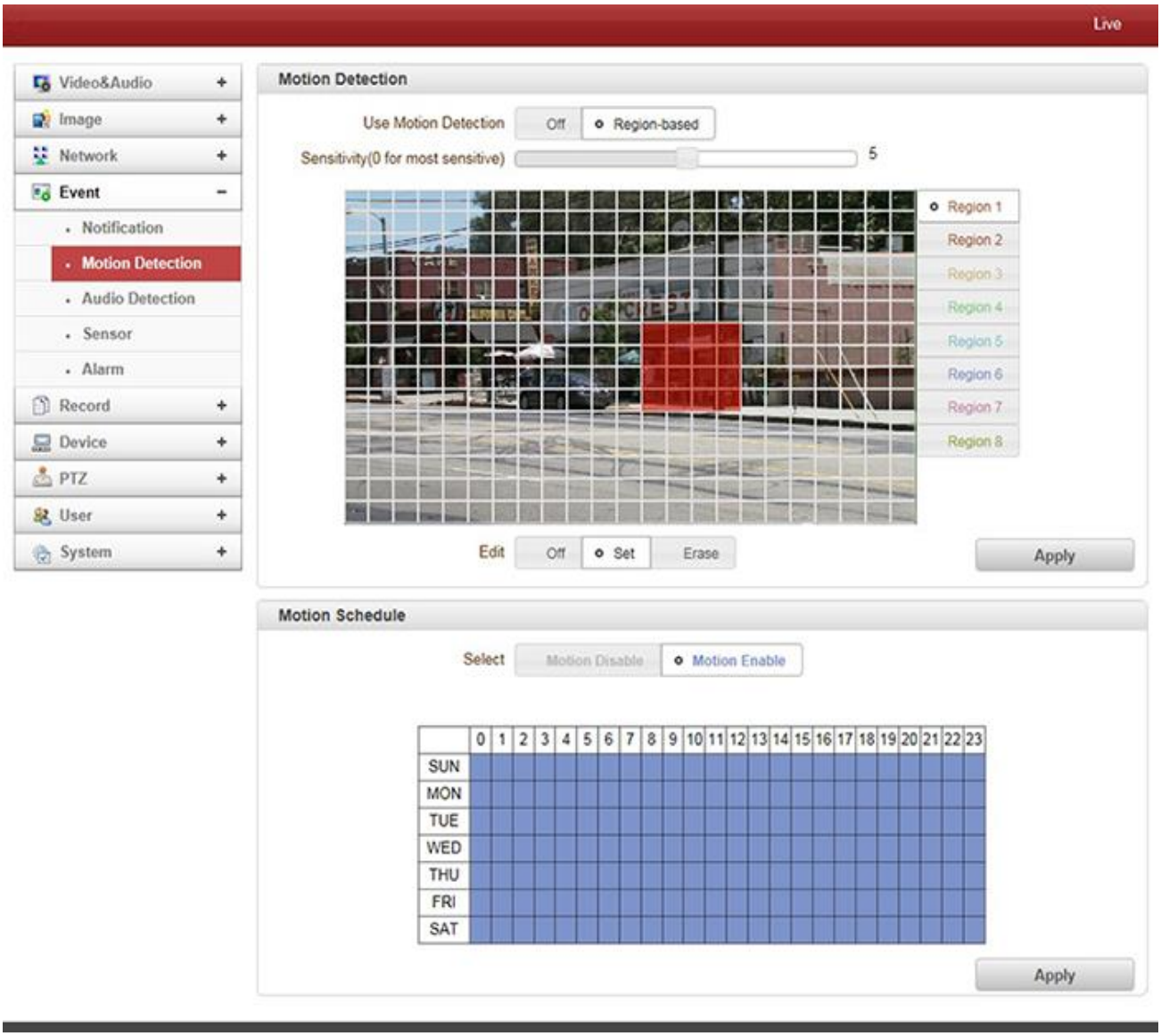
Configure the actions when motion is detected. Multiple actions can be set for a single event.

- **On Disconnect**

Configure the actions when the link (connection) with peer system is disconnected. Multiple actions can be set for a single event. This event happens when the last client which has been receiving video from the video encoder loses the connection.

4. Remote Configuration

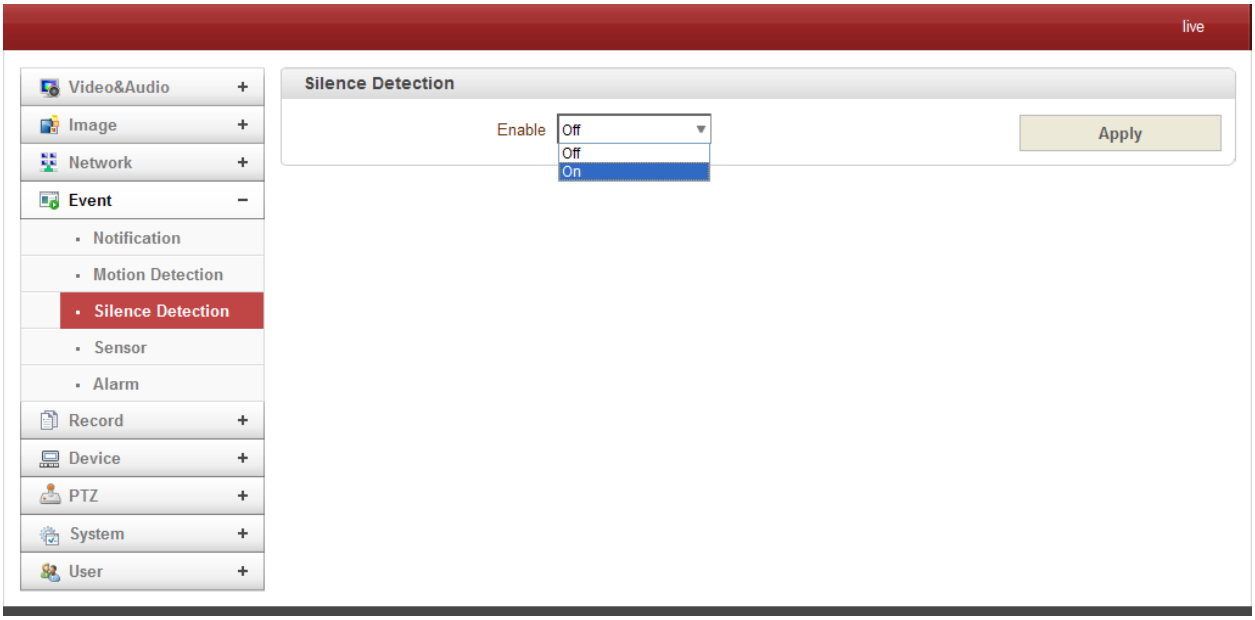
Motion Detection



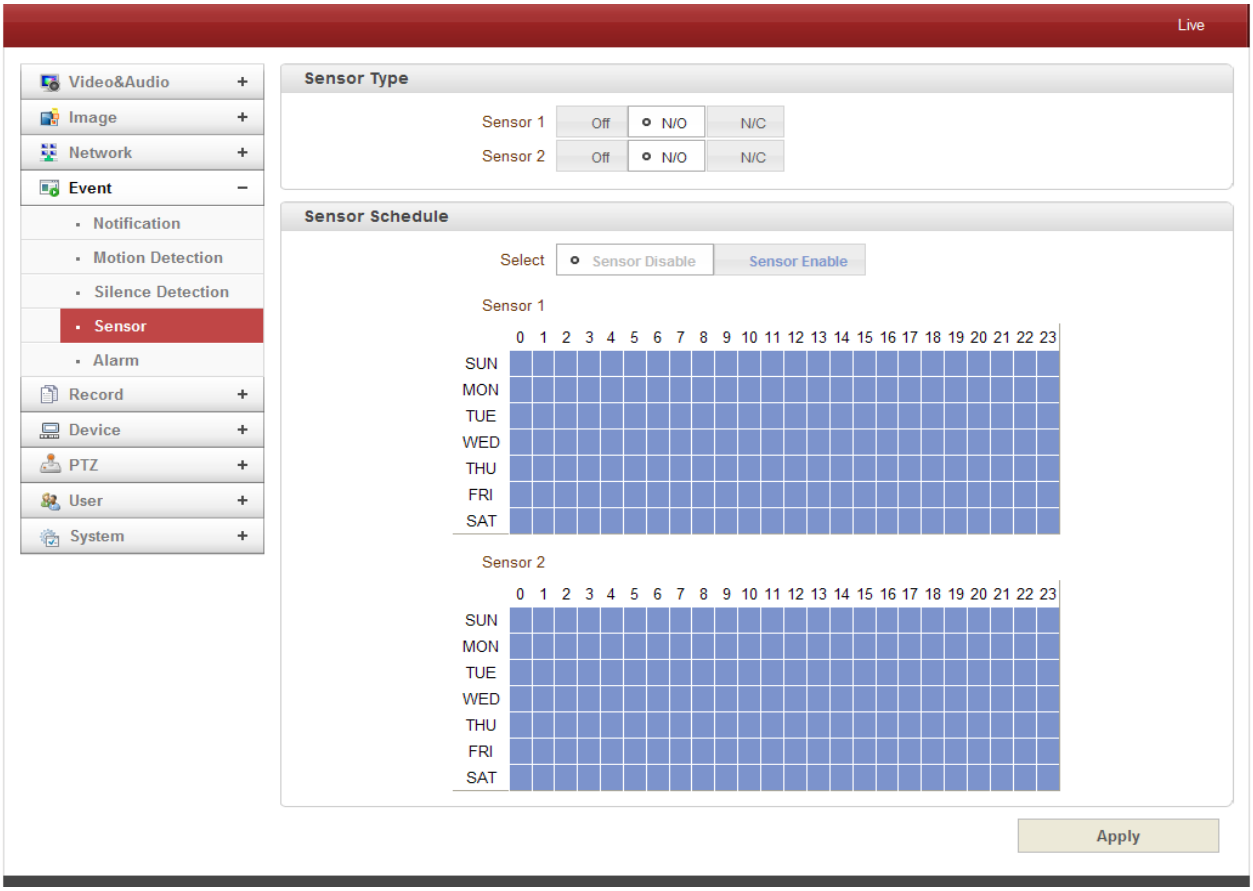
- Select the **Use Motion Detection** function

- **Motion Detection Area Editing**
  Configure the region for Motion Detection. Regions of arbitrary shapes can be configured by the following steps:
  1. Select **Enable** on Edit Tab.
  2. When selecting Editing Mode, **Set** includes the motion detection region cell and **Erase** is for excluding cells.
  3. Select cells by right clicking. Multiple cells can be selected by selecting and dragging.
  4. **Press Apply Edit Area** to save the selection.

4. Remote Configuration



When the Encoder can detect **Audio Silence**, the audio silence state is delivered to the VMS as **Audio Loss**.



4. Remote Configuration

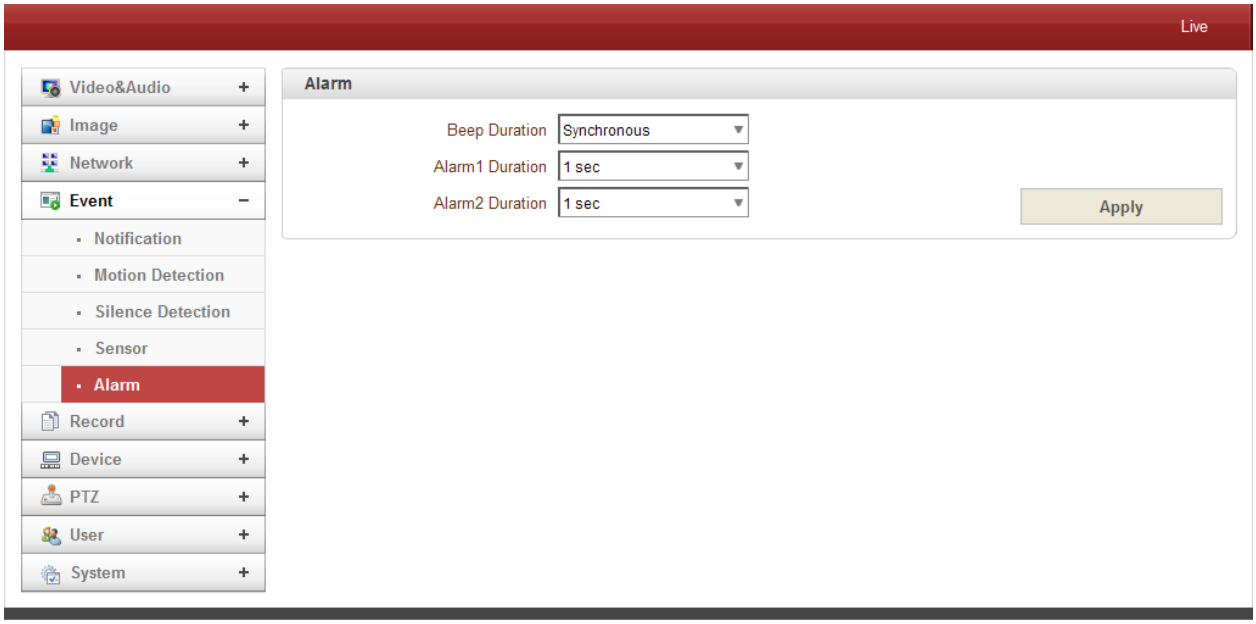
- **Sensor Type**
  There are two **Sensor Input Ports** on the Video Encoder. Each Sensor Port can be configured as follows:

Function	Operation
OFF	Not used
NO (Normally Open)	The port is normally open and activated when closed
NC (Normally Closed)	The port is normally closed and activated when opened

The function of the sensor port is set based on the type of the sensor connected.

- **Sensor Schedule**
  Choose **Sensor OFF** or **Sensor ON** and make a selection on the Sensor Schedule Table to schedule according to day and time.

Alarm

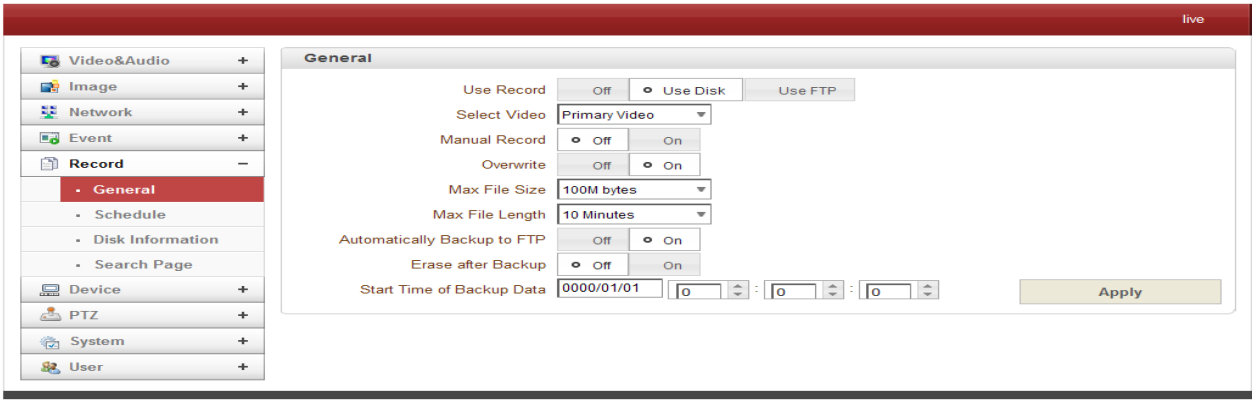


Set the duration of the Alarm or Beep Activation in case of an event. If **Continuous** is selected, the alarm will be in an active state until the operator resets it manually.

4. Remote Configuration

4.6 Record Configuration

General



- **Use Record**
  - **Off:** Recording function will not be used when **OFF** is selected.
  - **Use Disk:** When the Use Disk function is on, the default setting for the **Schedule Table** is **Record Off**.
  - **Use FTP:** Recording will be enabled and data will be **uploaded to an FTP Encoder**. In this mode, the FTP Upload by Event is automatically disabled.

- **Select Video**
  Select the **Video Stream** to record.
- **Manual Record**
  When **ON** is selected, record is initiated regardless of Schedule.

- **Overwrite**
  When the disk becomes full, the oldest data files are deleted automatically. This is valid only when **Use Record** is set to **Use Disk**.

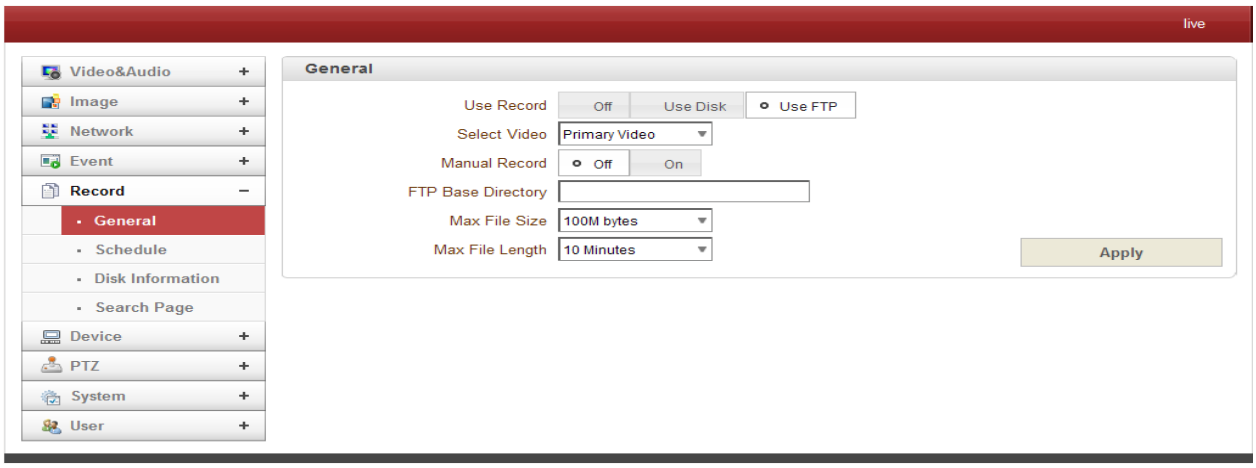
- **Max File Size / Max File Length**
  Max File Size option is for limiting the size of the AVI file. If **Small File Size** is selected, the file is generated but the number of small files will be increased. When limiting the time length of the AVI file, the **Max File Length** option is used. If the file size becomes the Max File Size or the duration of the recording reaches Max File Length, a new file is created.

- **Automatically Backup to FTP**
  Data recorded in the disk can be uploaded to an **FTP Encoder** automatically for backup. FTP Encoder is configured on the **Event** page. This is valid only when **Use Record** is set to **Use Disk**.

- **Erase After Backup**
  Data is deleted automatically after being uploaded to the FTP Encoder. This is valid only when **Automatically Backup to FTP** is selected.

4. Remote Configuration

- **Start Time of Backup Data**
  Specify the time when the data backup occurs. Select **Backup to FTP Disk**. This time is changed automatically with the **Backup to FTP Encoder**. Check current backup status on a regular basis. This is valid only when **Automatically Backup to FTP** is selected.

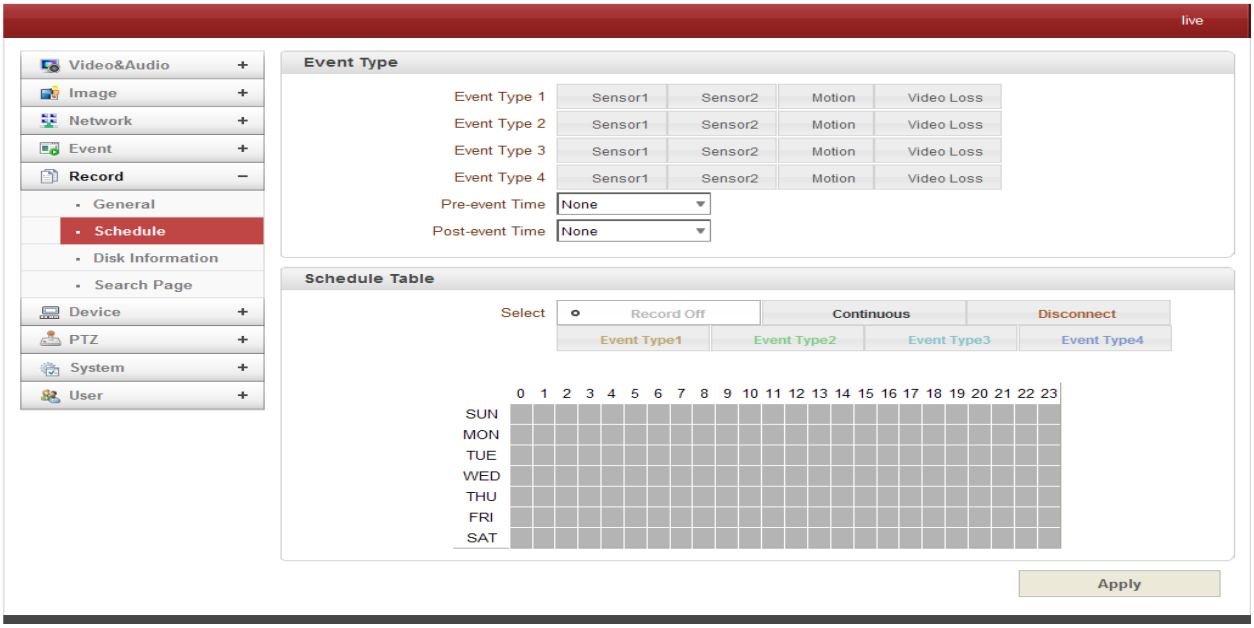


- **FTP Base Directory**
  Specify the name of the directory to be created in the FTP Encoder. This is valid only when **Use Record** is set to **Use FTP**.

Checking Status of Recording

Recording Status can be checked on the main view page.

4. Remote Configuration



- **Event Type**

  Three recording modes are supported: **Continuous, Event,** and **Disconnect**. When using Event Recording, Event Types can be selected among several Events. **Selected Event Type** is used for configuring the Schedule Table. Up to 4 Event Types can be configured and each Event Type can be a combination of **Sensor, Video Loss** and **Motion Event**.

  - **Pre-Event Time**

  Specify the duration of recording before an Event happens.

  - **Post-Event Time**

  Specify the duration after the Event is cleared.

- **Schedule Table**

  Actual **Recording Mode** is determined by **Schedule Table**, where the Recording Mode is configured by Day and Hour. Recording Modes are configured as follows:

  - **Record Off**

  No Recording.

  - **Continuous**

  Records continuously.

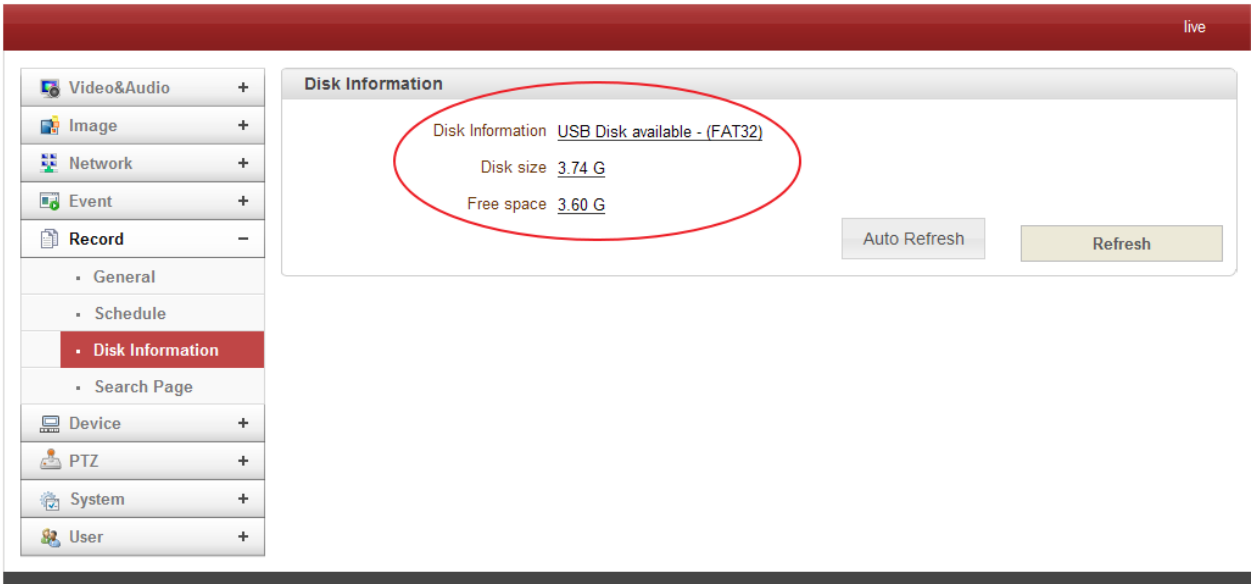
  - **Disconnect**

  Recording is started when the system loses connection to the last client (Decoder, VMS/NVR) etc. When there are multiple clients and only one is disconnected, the recording is not started.

  - **Event Type**

  A recording is started when an Event is configured in the Event Type.

4. Remote Configuration



When SD Memory is used, at least 1GB is recommended. An **EXT3** or **FAT32** File System can be used. EXT3 or FAT32 can be read in Linux PC. However, only disks with FAT32 file system can be read in Windows PC. Less than 4Mbps of video bit rate is recommended when you record and monitor video simultaneously since frame dropping may occur due to performance limitation.

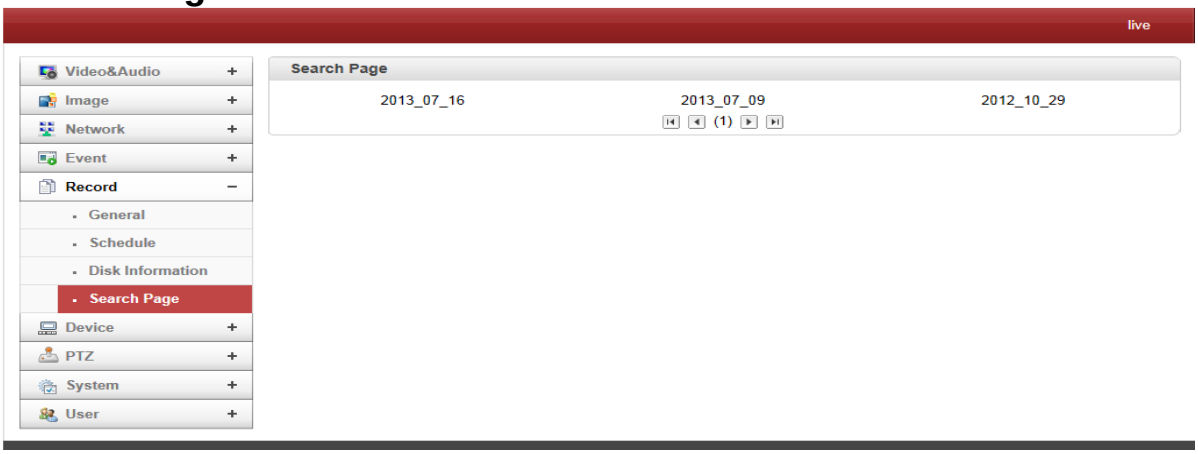
Restart the system after connecting an SD card. The system reads the disk status and initializes during reboot. Once the disk initialization is finished, the disk status is shown on the **Record** page of the web-based setup.

Refer to this chart for checking the disk status:

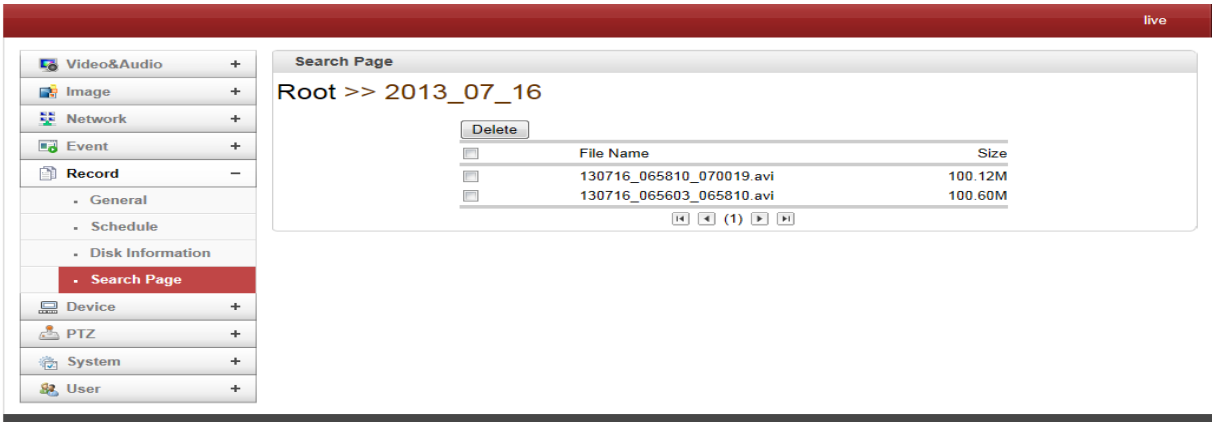
Disk status	Description
Disk error detected	Error
No disk	Disk is not connected to the system.
Searching Disk information	Checking the status of disk. Refresh the page and wait until the status is changed.
Mounting and Recovering Disk...	Performing recovery process when disk damage is found. It takes from seconds to minutes for recovering.
Disk format needed	Disk is attached, but the type of the file system is unknown or damaged.
Unknown disk type detected	
USB Disk available	Available to be used for recording
Disk removed or in abnormal state	Disk is detached during operation or there is damage on the file system. If it happens while disk is connected, it is recommended to format the disk.

4. Remote Configuration

Search Page

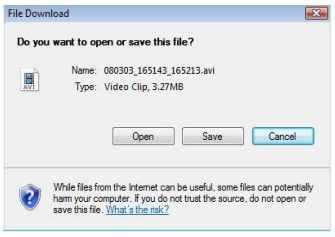


Recorded Video and Audio Data can be saved in **AVI Format**. In general, one AVI file is created for an **Event-Based Recording**. However, it is possible that a **Series of Events** can be recorded continuously and merged into a single AVI file depending on **Pre/Post Event Time Setting**. The size of file is limited to 10-2GB. With **Continuous Recording**, AVI files are created in a series and each size is limited to 10-2GB.

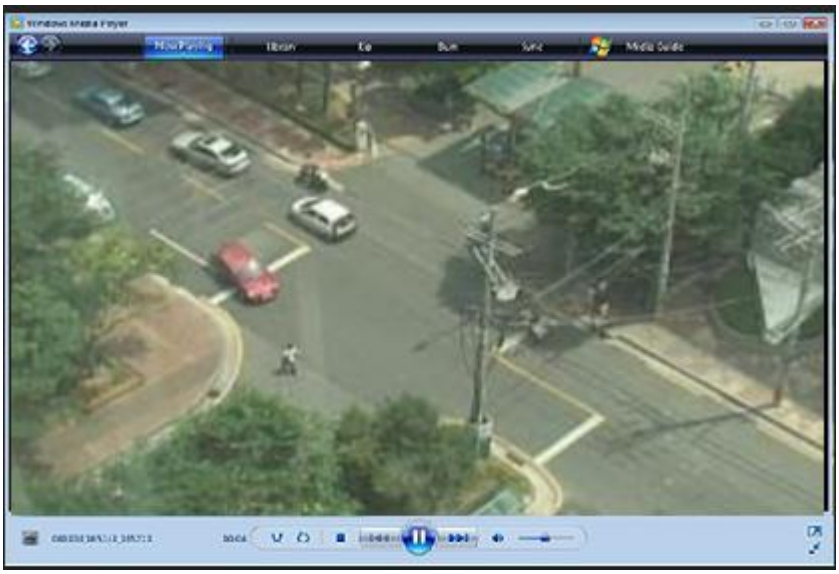


- **Playback**
  1. When selecting an AVI file, a window will appear for opening or saving the file.
  2. The **Save** button will store the file in the PC. The AVI file can be played with Windows Media Player.

3. The **Open** button will download and automatically play with Windows Media Player.

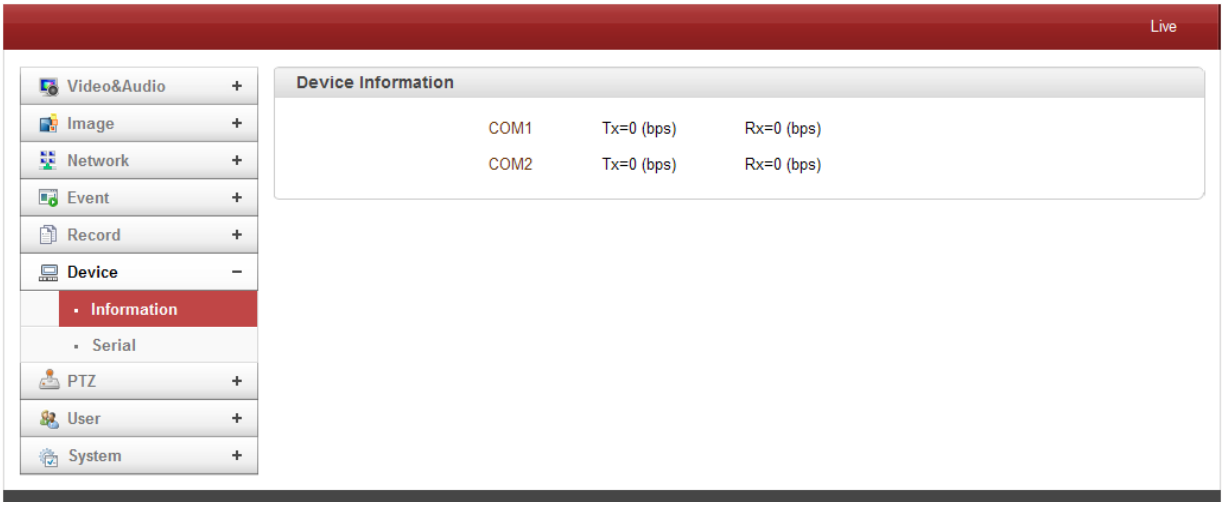


4. The internet connection is disabled during downloading. Two AVI files cannot be download at the same time.



4.7 Serial Device Configuration

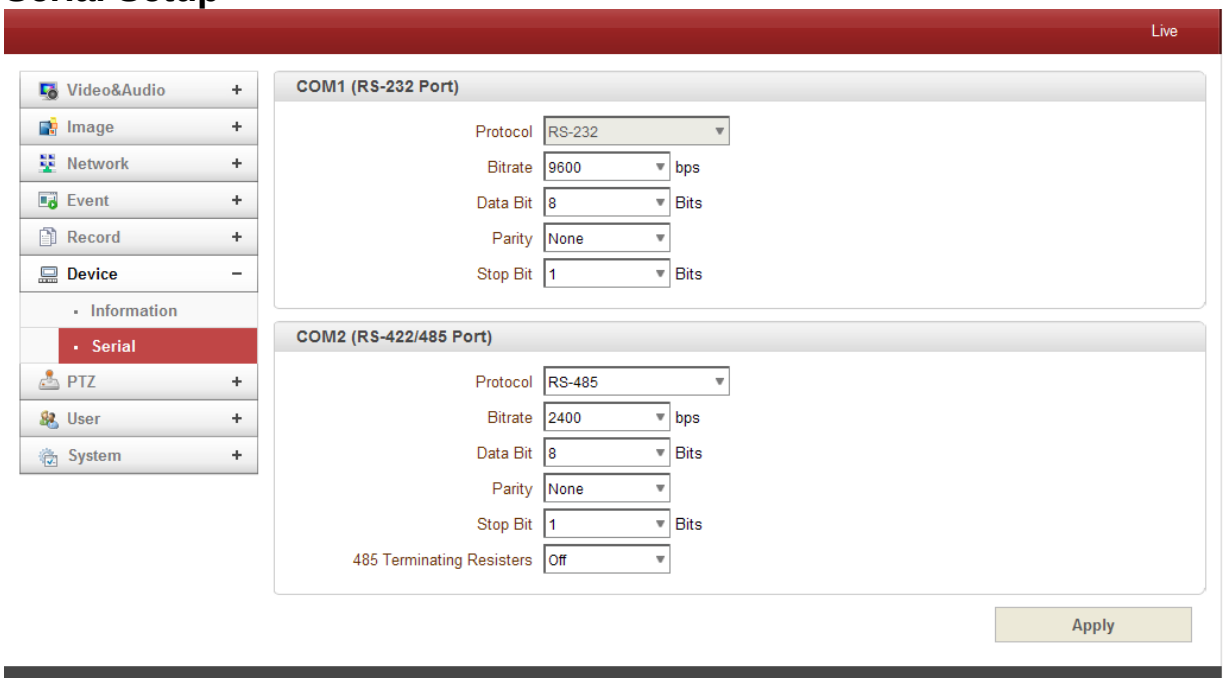
Information



This information provides current serial communication status.

4. Remote Configuration

Serial Setup



- **Serial Protocol:**

Choose Video Encoder Serial Port: **RS-232** or **RS-422/485**; Select RS-422 or RS-485 for the RS-422/485 port.

- **Serial Port Configuration:**

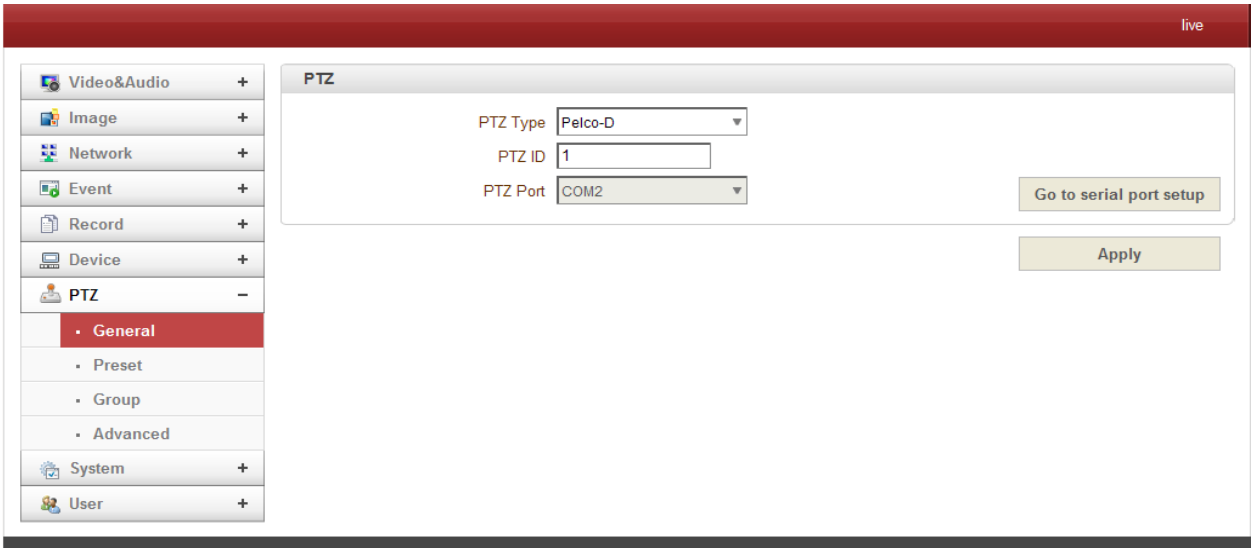
The Serial Port configuration is as follows (must be same as the connecting device):

Mode	Selection
Bitrate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Data Bits	5, 6, 7, 8 bits
Parity	NONE, EVEN, ODD bit
Stop Bit	1, 2 bit

4. Remote Configuration

4.8 PTZ Configuration

General



- **PTZ Type**

Select the type of PTZ Encoder or Receiver.

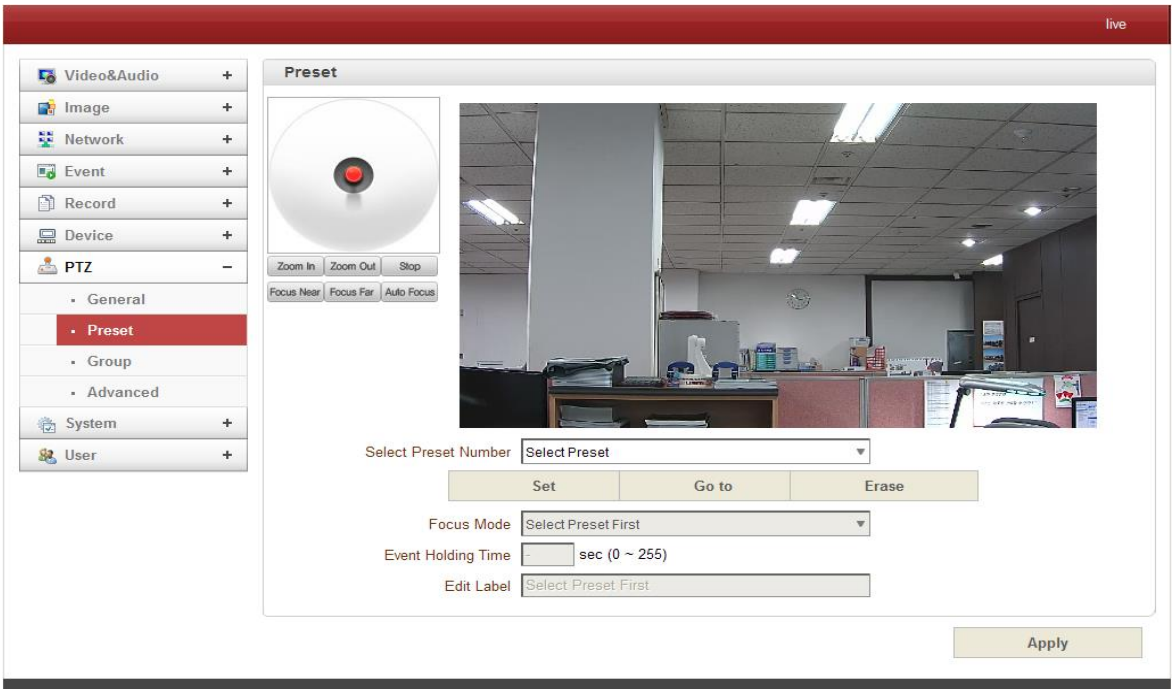
- **PTZ ID**

Since it is possible to control multiple PTZ Encoders or Receivers with a single control line, each Encoder or Receiver will be assigned with a unique ID. Enter the PTZ ID for control. The ID value range can be between 0 and 255.

- **PTZ Port**

Select the Serial Port for PTZ Encoder control.

Preset



4. Remote Configuration

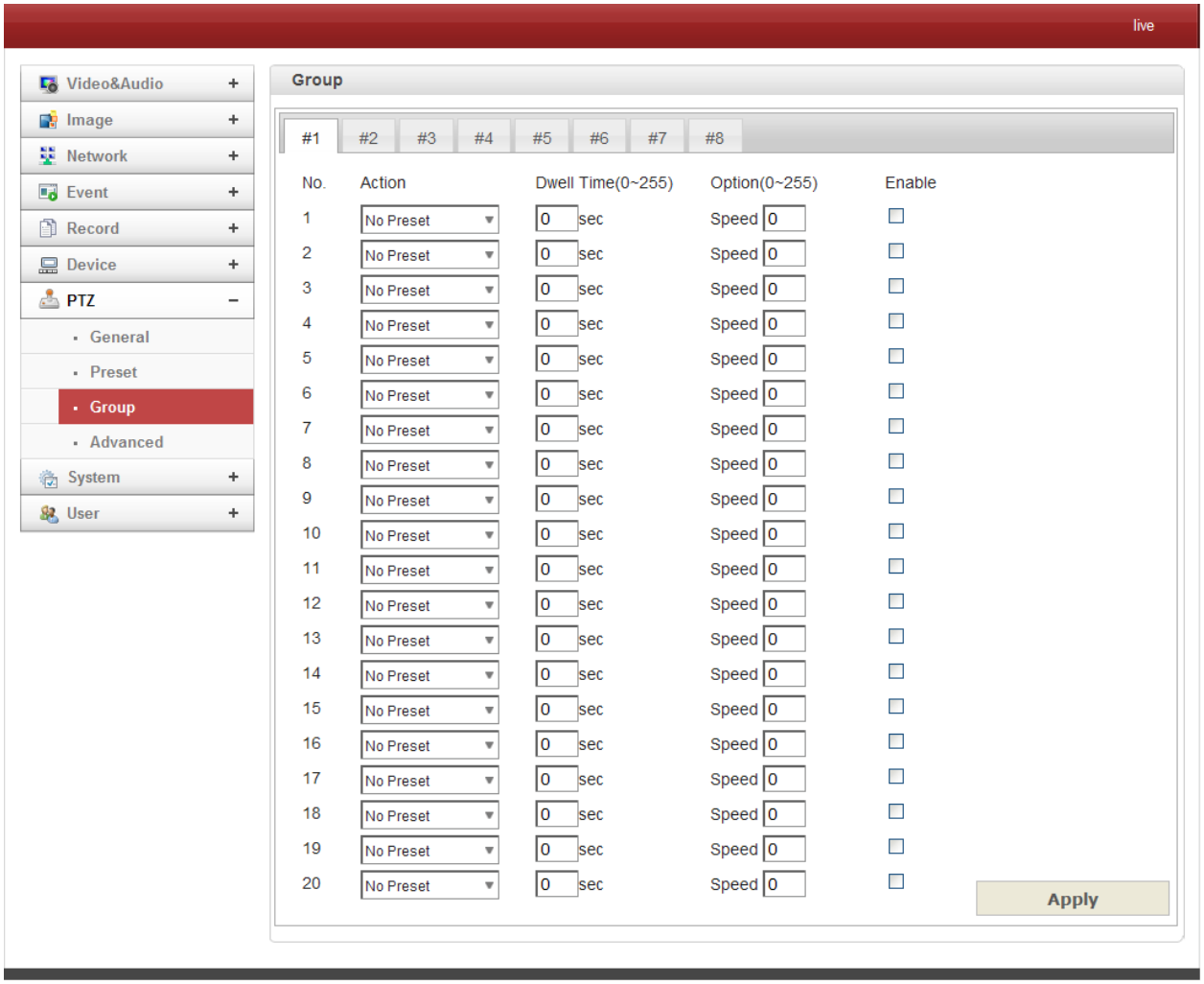
128 Preset Positions max can be defined.

- **Select Preset Number**: Select entry to be assigned to the current encoder position.

- **Focus Mode**: Select the Focus Mode after Preset Go To is selected.
  - **Do Not Change**: The current Focus Mode is not changed.
  - **Focus Auto**: Auto-focusing is selected after the Preset is moved.
  - **Focus Manual**: The current Focus Position is saved when Preset is set.

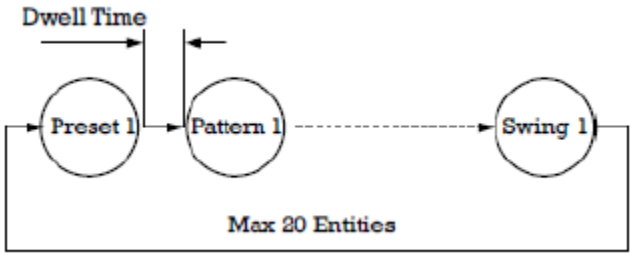
- **Event Holding Time**: Set the time to stay at the Preset Position when the Preset is moved by the Event. **If it is set to 0, the Encoder doesn't return to the original position after moving to the Preset Position by Event.**

- **Edit Label**: Assign a Label to the Preset Position. Only the first 15 Preset Entries can have Assigned Labels (Preset-1 - Preset-15).

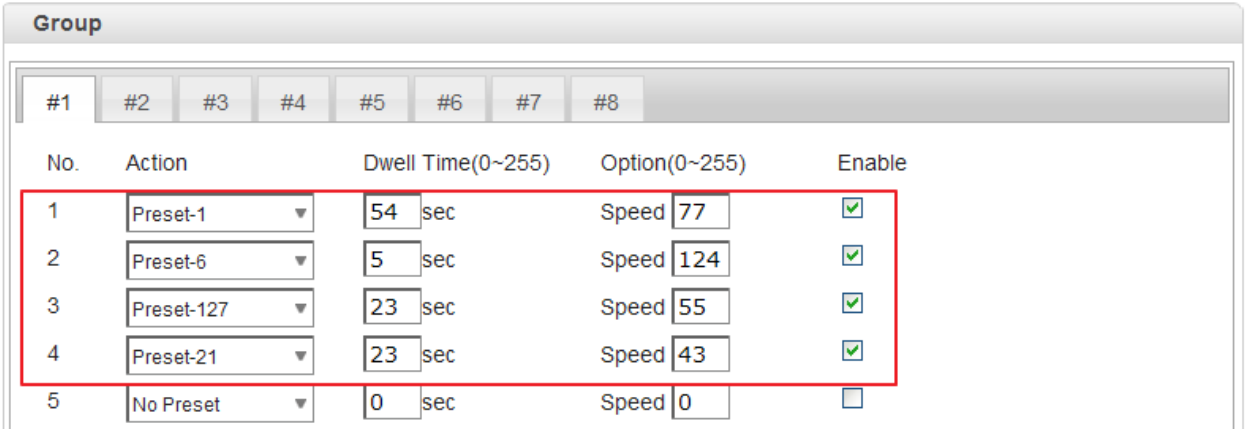


4. Remote Configuration

The Video Encoder memorizes the combination of **Presets, Pattern** and/or **Swings** sequentially and runs **Presets, Pattern** and/or **Swings** repetitively on activation. A max of 8 Groups are programmable. Each Group can have a max of 20 actions which are the combinations of Preset, Pattern and Swing. The Option field is different for Preset and Pattern/Swing. For **Preset**, it configures the Preset Speed. For **Pattern/Swing**, it configures the number of repetitions. Dwell time between actions can be set up as well.

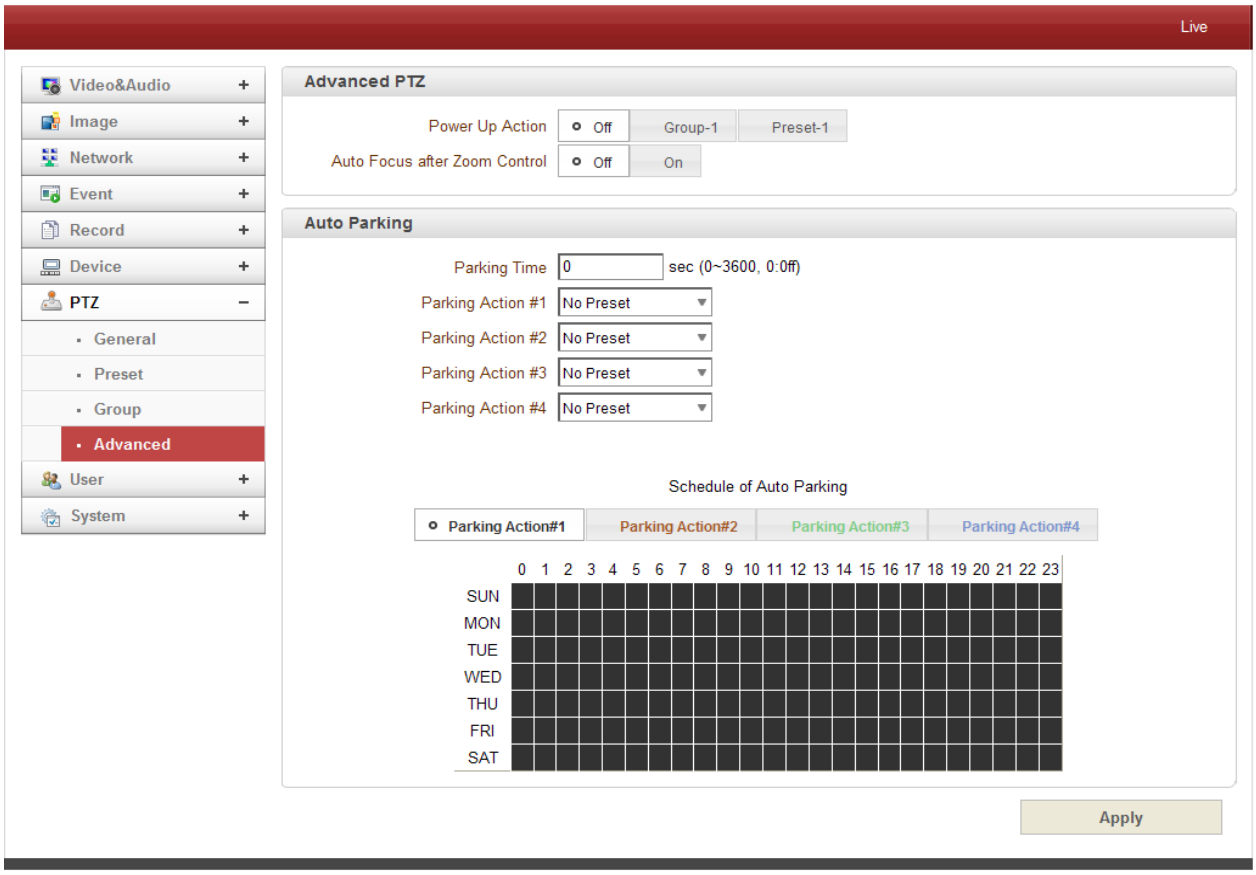


1. Select one Entry within **Group.**
2. Select the **Modify Group** button. The following window will appear.
3. Set **Action, Dwell Time** and **Option** and click **Enable**.
4. Press **Apply** button and the **Group** can be used on the **Live View Page.**



4. Remote Configuration

Advanced



- **Advanced PTZ**
  Specify if the Video Encoder will continue the Previous Action such as Pattern, Swing or Group after reboot.

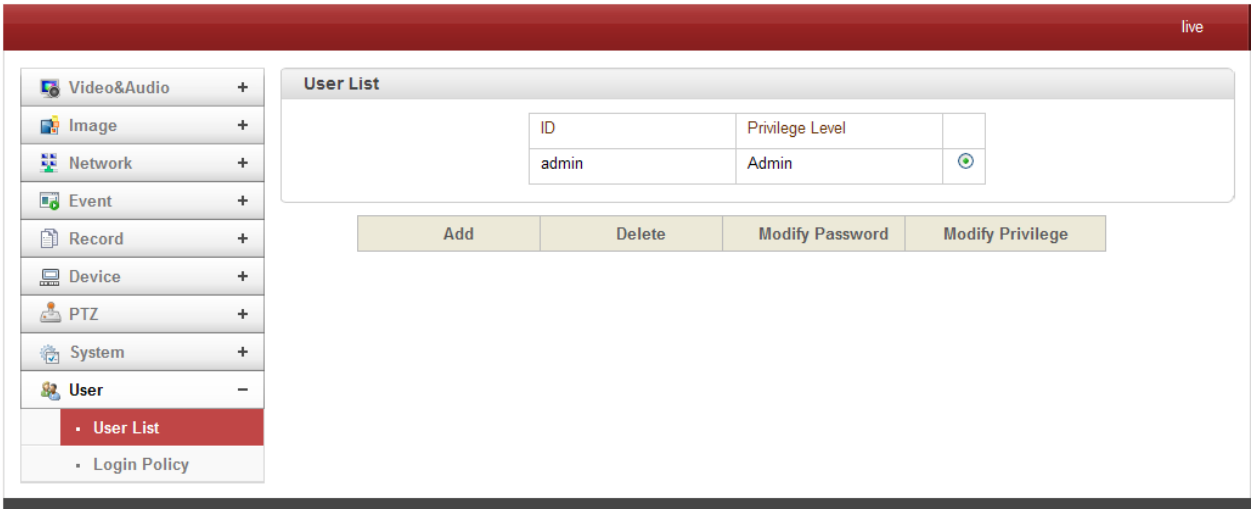
  - **ON**: If Pattern, Swing or Group was running before rebooting, the Action is resumed. If it was in the stopped state, it moves to the last position.
  - **OFF**: Moves to the initial position after rebooting.

- **Auto Parking**
  Auto Parking returns to the previous Preset Position or resumes the operation such as Pattern, Swing or Group when a specified time expires after the PTZ control is stopped. Parking Time can be set from 0 to 3600 seconds and “0” means that the Auto Parking function is turned Off.

4. Remote Configuration

4.9 User Configuration

User List

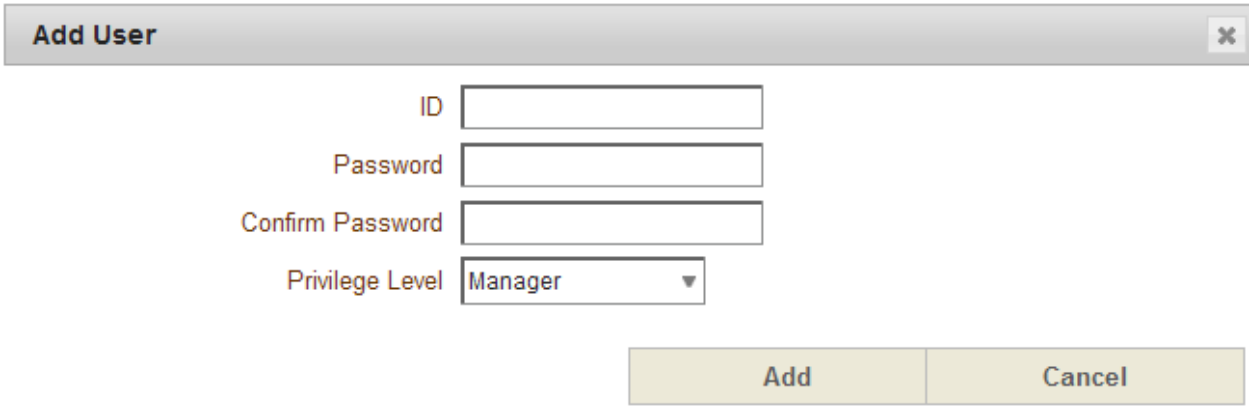


User can be registered and privilege level of a user can be specified. User configuration is allowed only to admin user. Max 16 users can be registered and each user can have one of four privileges.

Privilege	Allowed Operations	Remarks
Admin	All Operations	User ID = admin
Manager	All Operations except for User Configuration	
User	Live Viewing and PTZ Control	
Guest	Live Viewing Only	

- **Add User**

  Press **Add** button. The following window will appear.

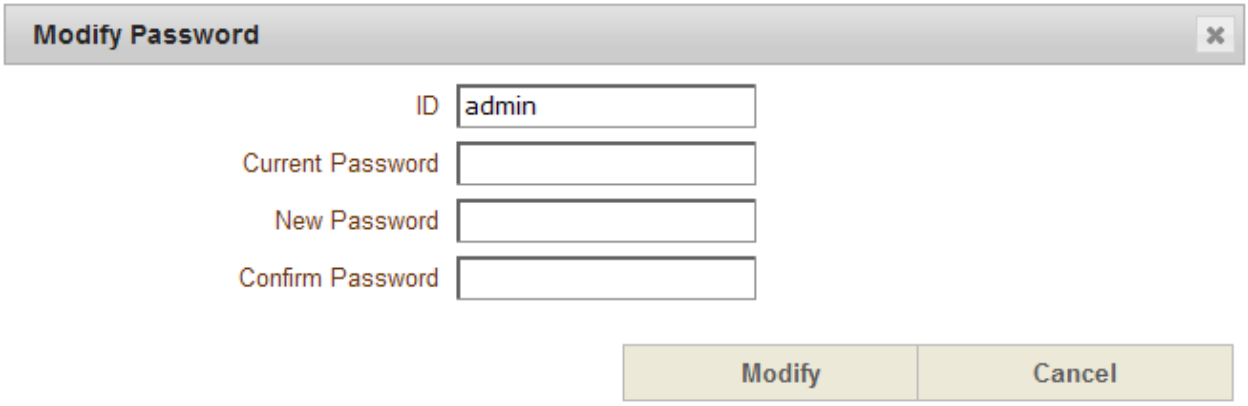


  Enter User ID and password (Up to 15 characters) and select **Privilege Level.**

4. Remote Configuration

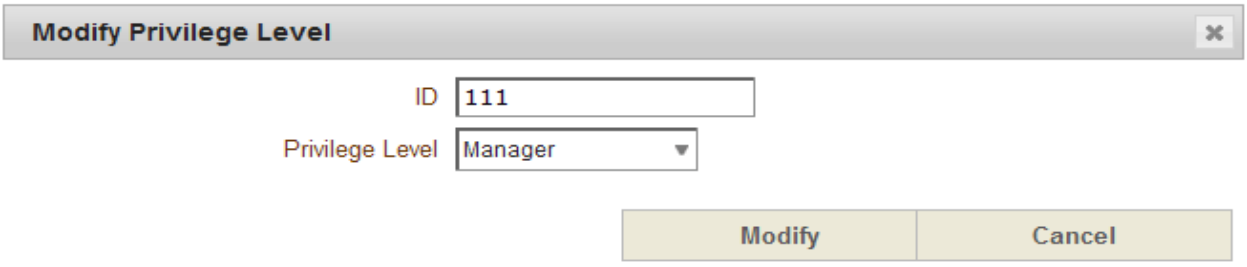
- **Delete User**
  Select the User to be deleted and press **Delete** button.

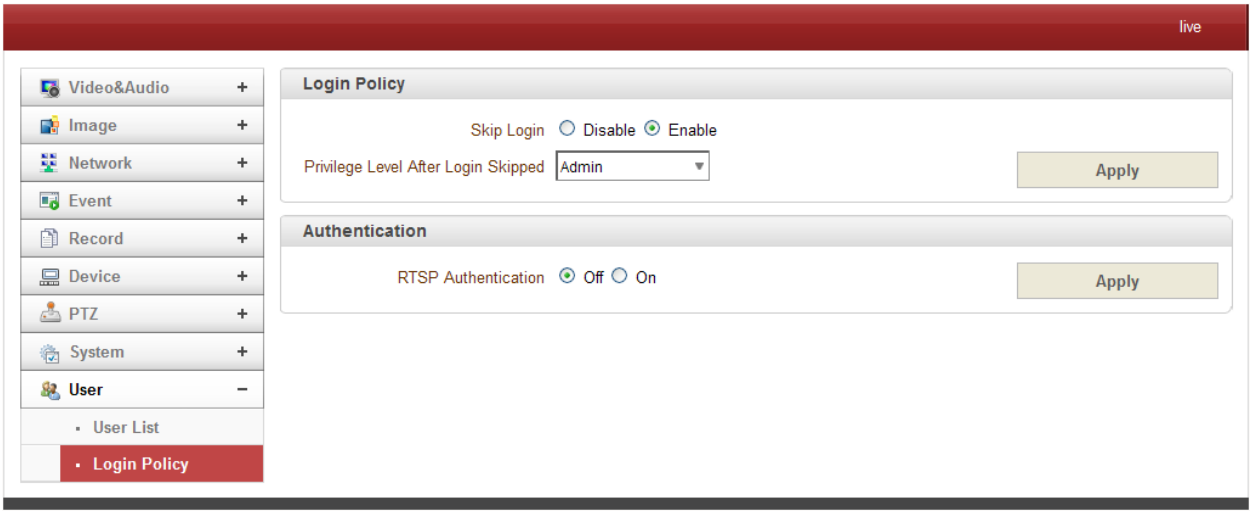
- **Change Password**
  Press **Modify Password** button. The following window will appear.



  Enter the current password and then set a new password.

- **Modify Privilege Level**
  Press **Modify Privilege** button to change User level. It is not allowed to change the privilege level of admin user.



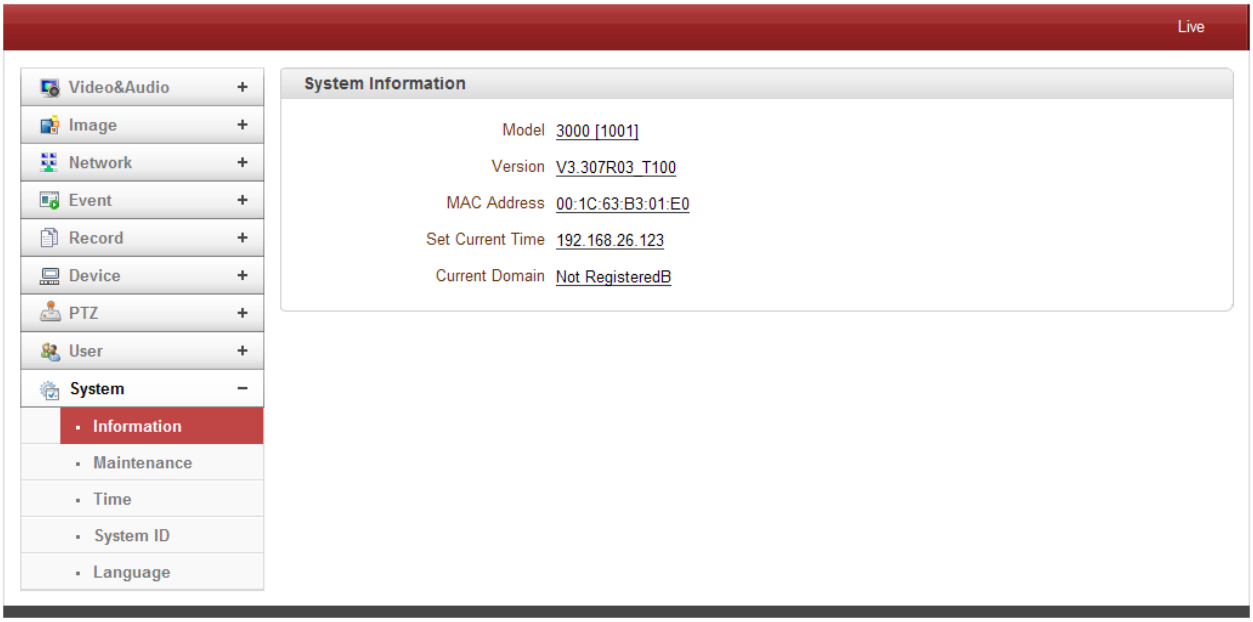


4. Remote Configuration

- **Login Policy**
  Skip Login provides for convenient access to the encoder when authentication is not required. When Skip Login is set to **Enable**, login step is skipped. The privilege level after login in this way is determined by the setting of **Privilege Level After Login Skipped**.

- **Authentication**
  HTTP authentication based on RFC 2617(HTTP Authentication: Basic and Digest Access Authentication) is supported.

4.10 System Configuration



- **System information**
  This following Network Information is displayed (Read Only):
  - **Model**

  Display the model name.
  - **Version**

  Display the current firmware version.
  - **Mac Address**

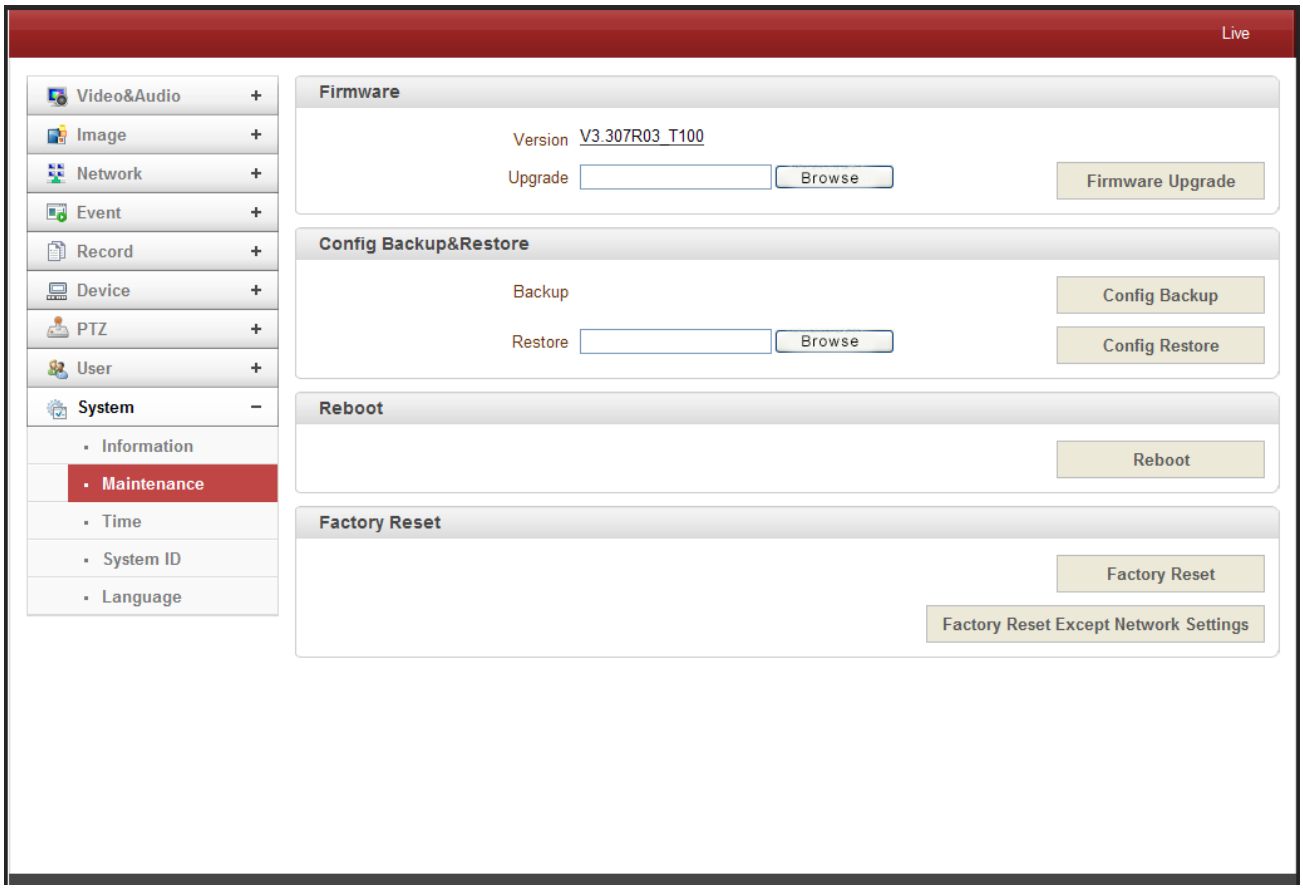
  Display the MAC address of the encoder. In case the video encoder is registered at DDNS Encoder, the MAC address is used in DDNS registration.
  - **Set Current Time**

  Display Current Date and Time
  - **Current Domain**

  In case the encoder is registered at DDNS Encoder, the registered domain name is displayed.

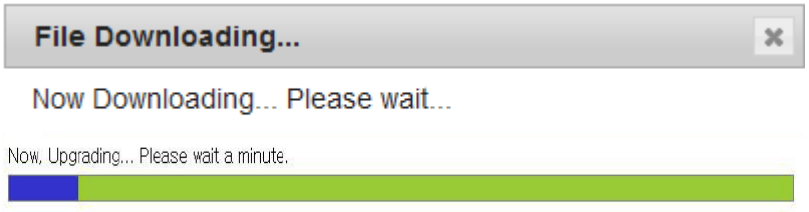
4. Remote Configuration

Maintenance



- **Firmware**
  - **Version**: Displays the current firmware version.
  - **Upgrade**: Complete the following to upgrade the firmware:
    1. Press **Browse** button to select a firmware file from PC.
    2. Press **Firmware Upgrade** button to start upgrading.
    3. A message for showing status (downloading / upgrading) will be displayed.
    4. The video encoder will reboot automatically after completing upgrade.

  Do not turn off the encoder during upgrading.



- **Config Backup & Restore**
  - **Backup:** All the setting of configuration can be stored.
  - **Restore:** Stored configuration can be browsed and restored. The encoder is rebooted once the **Config Restore** button is selected.

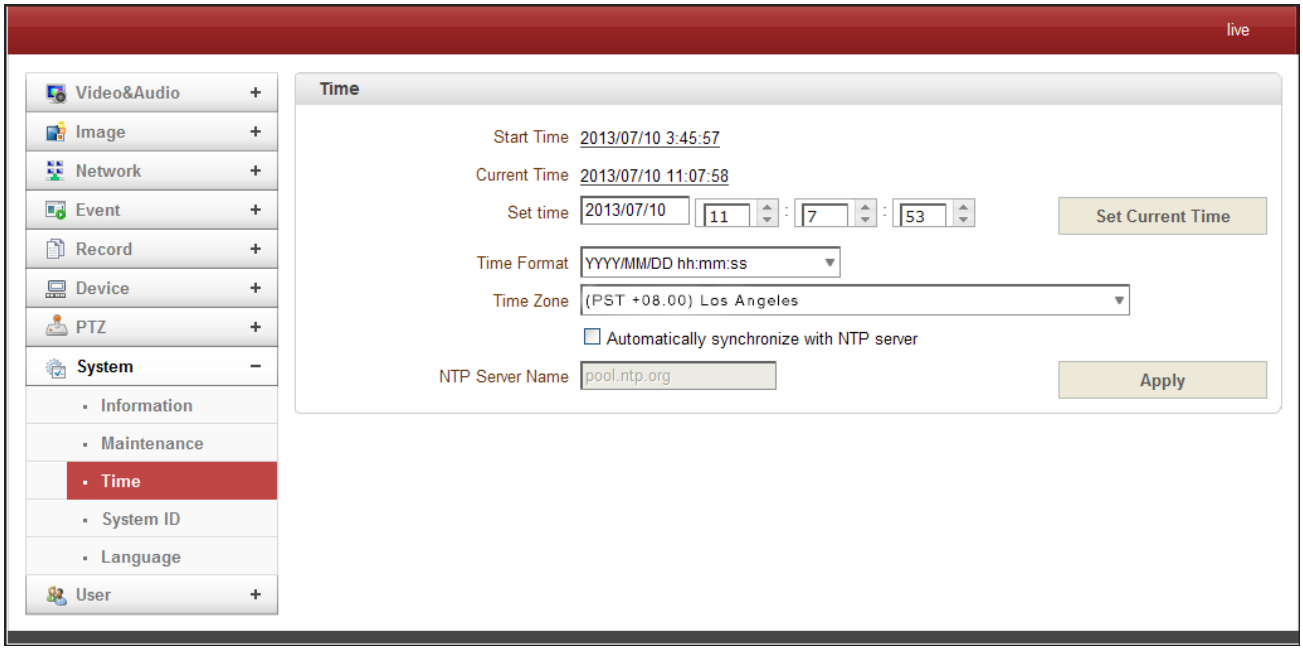
4. Remote Configuration

- **Reboot**
  - **Reboot the Encoder**: Do not press the Reboot button unless the encoder needs a reboot.

- **Factory Reset**
  All settings including user accounts and logs are cleared.

- **Factory Reset Except Network Settings**
  All settings except for current network settings are changed to the default values.

Time



- **Start Time**

The latest encoder's booting date and time.

- **Current Time**

Current date and time.
Enter a new date and time then press **Set Current Time** button to update date & time.

- **Time Format**

Change the time format. The selectable time formats are as below;

1. YYYY/MM/DD hh:mm:ss (Eg. 2012/10.30 12:30:45)
2. DD/MM/YYYY hh:mm:ss (Eg. 10/30/2012 12:30:45)
3. MM/DD/YYYY hh:mm:ss (Eg. 30/10/2012 12:30:45)

4. Remote Configuration

- **Time Zone**

Select time zone of where the encoder is installed.
Depending on the time zone, Daylight Saving Time will work automatically

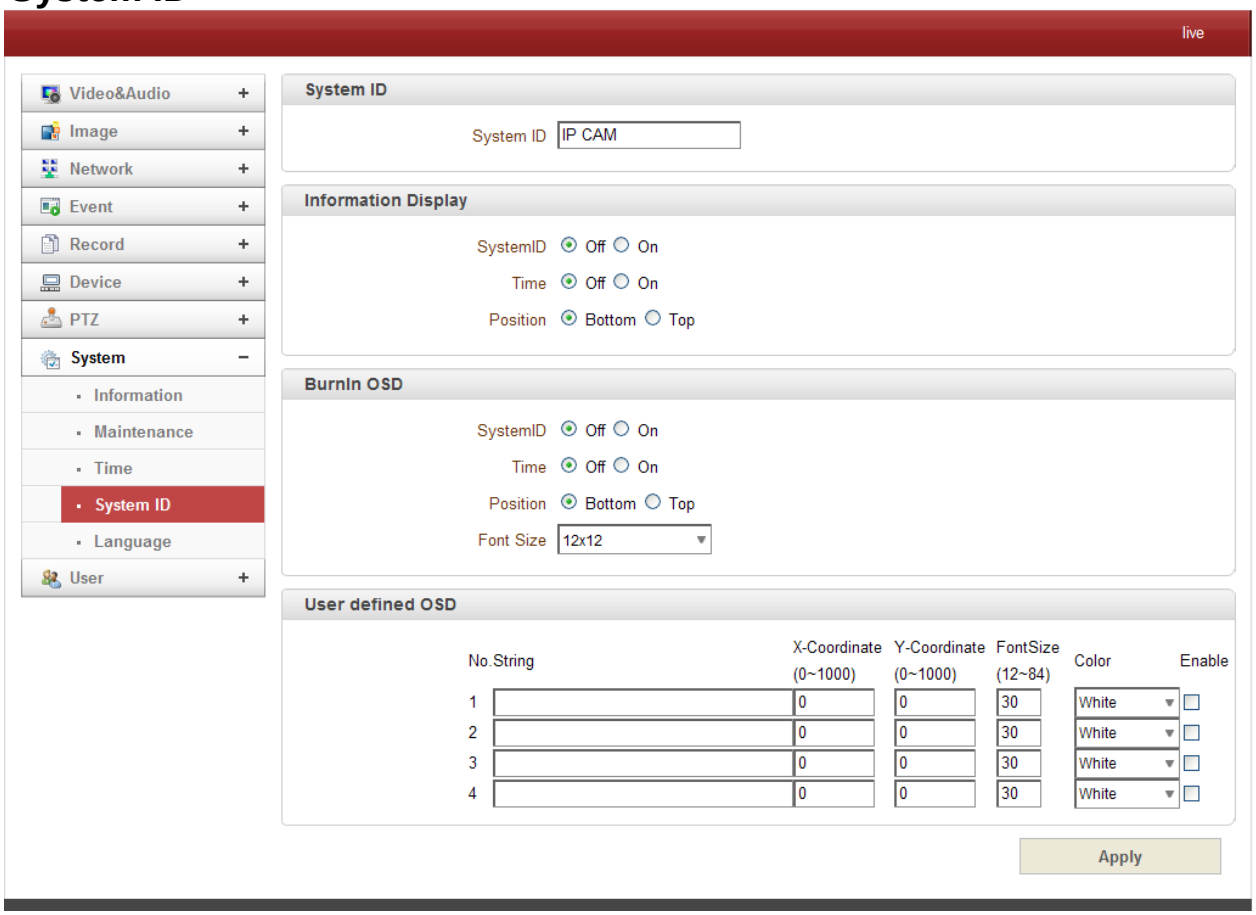
A **Time Zone** is a region of the earth that has uniform standard time, usually referred to as the **Local Time**. By convention, time zones compute their local time as an offset from UTC (Coordinated Universal Time). In casual use, GMT (Greenwich Mean Time) can be considered equivalent to UTC. Local time is UTC plus the current time zone offset for the considered location

- **Automatic Synchronize with NTP Encoder**

Synchronize the encoder time with an NTP Encoder using NTP (Network Time Protocol). Name of the NTP Encoder should be registered on NTP Encoder Name.

The **Network Time Protocol** (**NTP**) is a protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. It is designed particularly to resist the effects of variable latency by using a jitter buffer.

System ID



4. Remote Configuration

- **System ID**
  Enter System ID that is used as a video encoder title.
  The set System ID is displayed with video image on a Web Browser. The System ID is also transferred to remote software, such as VMS, and displayed on it.

- **Information Display**
  System ID and/or Video Encoder time can be display over the video window in Internet Explorer. Each item can be turn on or off separately, and position also can be configured. This information is displayed **after the video is decompressed**.

- **Burn In OSD**
  Insert system ID and date/time **in the compressed video**. System ID and time respectively can be turned on or off in the video. Position and Font size can be configured also. System ID for BurnIn OSD exists independently from normal System ID.

  Note that size of Burnin OSD display varies according to the encoding resolution setting. This is inevitable because Burnin OSD is inserted to the frames before encoding is performed. The following table describes the rule for BurnIn OSD display.

Resolution	Small (8x8)	Middle (16x16)	Large (32x32)
352x480 / 352x240 / 352x576 / 352x288	2	1	0
720x480 / 720x240 / 720x576 / 720x288 / 640x480 / 800x600	2	2	1
1024 x 768 / 1280x720 / 1280 x 960 / 1280x1024 / 1440x900 / 1600x900 / 1680x1050 / 1920x1056 / 1920x1080 / 2048x1536 / 2560x1600 / 2592x1936	2	2	2

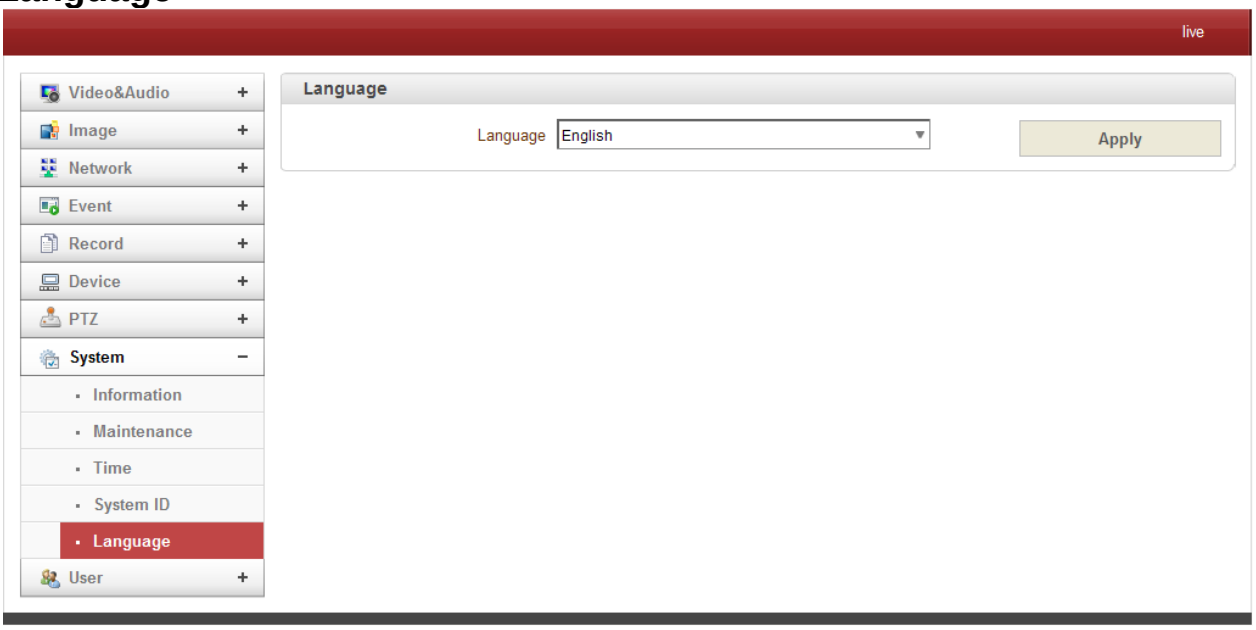
  - **2**: Both System ID and Time are displayed.
  - **1**: Either System ID or Time can be displayed. When both are enabled, System ID is displayed.
  - **0**: No items are displayed. This is because video area is too small to display OSD text in large text.

- **User Defined OSD**
  You can enter any text you like independent.
  - **X-Coordinate** or **Y-Coordinate**

  For example, if you enter 500, 500 values, OSD is placed in center of images.

4. Remote Configuration

Language



- **Language**
  Select the Language to be used for Web-Based Configuration.

5. Using a VS-102 as a Decoder with VS-103

You can use the VS-102 as a Decoder but the Decoder will need to have V1.305R01-T660_MEI.tus firmware installed at no charge for audio on the Decoder to perform properly.

6. VS Manager

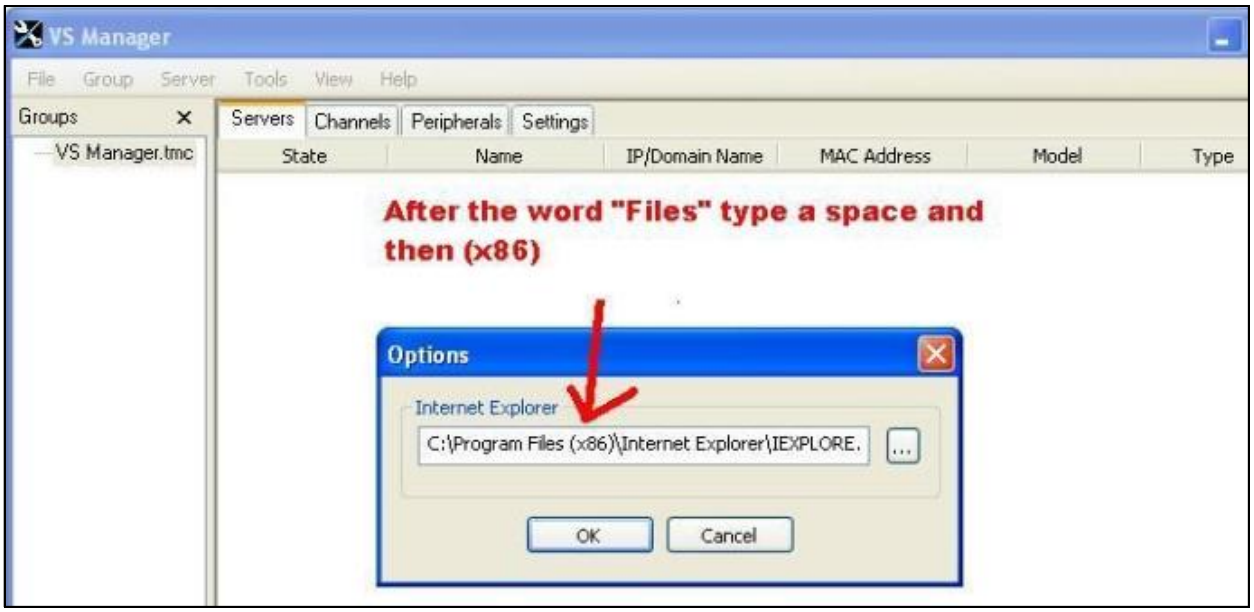
VS Manager is a program used for basic configuration, diagnostics and firmware upgrade of video encoders or IP Encoders. **VS Manager** provides the following features:

- Finding Encoders on the LAN and assigning IP Addresses.
- Monitoring Server Status: Encoding/Decoding, Serial, Sensor, etc.
- Diagnostic Function: PING, Network Bandwidth Measurement, Video/Audio Output, Port Check, Serial Port Check.
- Firmware Upgrade.

VS Manager Software Download:
http://www.lcdracks.com/servers-cameras/software/software.php

1. Create a folder on your 'C' drive and download the file into that folder using the link above.
2. Copy and paste the link above into an Internet Explorer address window.
3. Right mouse click on the file and make a shortcut on your desktop (using "send to command")
4. Launch the application by double clicking on the desktop icon.
5. Login = admin, Password = 1234.

For Windows 7, 64 bit ONLY:
Once VS Manager installed, select IP Discovery, create servers.
On main page go to Tools, Options and change to this path below.
In the address window, after the word "Files" type a space then (x86).



7. Data Sheet

VS-103E-HDSDI
1080p60 Full HD Video Encoder

Features

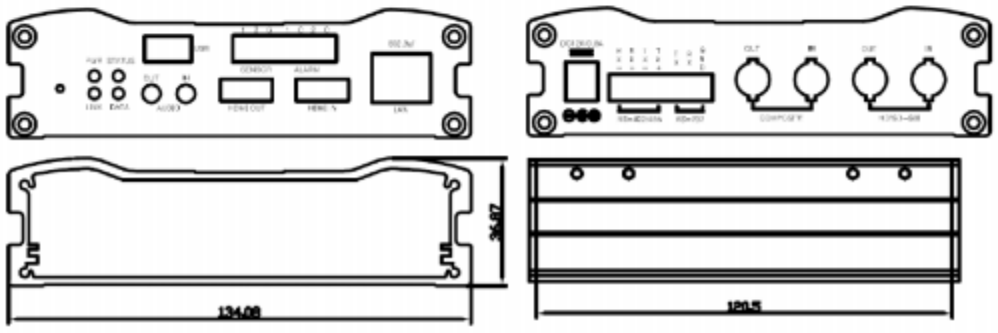
- **Max. 60fps at 1920 x 1080**
- Quad Streaming (H.264/H.264, H.264/MJPEG)
- **MPEG2-TS Supported**
- Two Way Audio Communication (G.711, AAC)
- **3G/HD/SD-SDI, HDMI, & CVBS I/O**
- **Audio Embedded in 3G/HD/SD-SDI & HDMI**
- Over 30 Types of PTZ Protocol Supported

FRONT

REAR

- PoE (Power Over Ethernet)
- USB Recording
- Watchdog for System Recovery
- RS-232, RS-422/485 Communication
- Motion Detection
- 2CH Sensor Input / 2CH Alarm Output
- Adjustable Video Bitrate:
  32Kbps ~16Mbps for Primary Video,
  32Kbps ~1Mbps for Secondary Video
- Adjustable Serial Data I/O
- Various Protocols:
  TCP/IP, Multicast, UDP, HTTP, SMTP, FTP, DHCP, DNS, Dynamic DNS, RTP, RTSP, SNMP
- Full Technical Support with SDK & API

Measurements in mm



7. Data Sheet

VS-103E-HDSDI specifications

System	System Mode	Encoder
Video	Compression	H.264, MJPEG
	Framerate	Max 60fps @ 1920x1080
	Bitrate	Primary: 32Kbps ~ 16Mbps, Secondary: 32Kbps ~ 4Mbps
	Resolution	352x240 ~ 1920x1080
	Streaming	Primary: H.264, Secondary x 3: H.264/MJPEG
	Burn-in OSD	Multi-lingual
	Input	1 x HDMI (Type A) 1 x Composite (BNC) 1 x 3G-SDI (BNC)
	Output	1 x HDMI (Type A), Input Loop-Through 1 x CVBS (BNC), Input Loop-Through 1 x 3GSDI (BNC), Input Loop-Through
Audio	Compression	G.711 / AAC
	Sample rate	G.711: 8KHz, AAC: 32/44.1/48KHz
	Bitrate	G.711: 64Kbps, AAC: 64Kbps/128Kbps
	Streaming	Full duplex
	Input	1 x Line-In (stereo, mini-stereo type)
	Output	1 x Line-Out (stereo, mini-stereo type)
Network	Interface	Ethernet 10/100/1000 base-T (RJ-45)
	Protocol	IPv4/v6, TCP, UDP, IGMP (Multicast), ICMP, DHCP, HTTP, HTTPS, RTP, RTSP, FTP, SNMP, SMTP, UPnP, WS-Discovery, Zero Configuration, NTP, DDNS
	Security	Password protection, IP address filtering, HTTPS encryption
	Application Programming Interface	MEI Protocol/SDK, ONVIF, PSIA, MPEG-TS
General	Event sources	Motion, Sensor input, Video loss, Client disconnection
	Event actions	Notification (E-mail), FTP, PTZ preset, Alarm control, Recording
General	Housing	Aluminum
	Certifications	CE, FCC, KC, ROHS
	External devices	2 x Sensor-In (dry contact, NO/NC) 2 x Alarm-Out (dry contact, NO) 1 x RS-232 port 1 x RS-422/485 port 1 x Buzzer (88dB min)
	Edge storage	1 x USB 2.0 port
	Power Supply	Min DC12V/1.0A, PoE (Power over Ethernet): 802.3af
	Power Consumption	DC12V/PoE: Max 9.6W
	Operating Temp.	-10°C ~ 50°C (14°F ~ 122°F) / 20% ~ 80% RH
	Dimension	134.08(W) X 125.5(D) X 36.87(H)mm
	Weight	470g

7. Data Sheet

ACCESSORIES:

VS-TRM-200 / VS-TRM-202 / VS-TRM-204
Rack mount holder for mounting up to 16 VS Encoder / Decoders in a 5 RU space

Operating Conditions
- Temp: 41-122° F / 5-50° C

Connections
- Power: 100-240 VAC, 50/60 Hz, 1.6 A

Dimensions and Weight
- Height: 8.3 in / 210 mm (5 RU)
- Width: 19 in / 482.8 mm
- Depth: 5.7 in / 145 mm
- Weight: 14.8 lbs

*Shown with optional modules installed.

VS-TRM-200	Rack mount holder for 16 pcs of VS-11
VS-TRM-202	Rack mount holder for 16 pcs of VS-102
VS-TRM-204	Rack mount holder for 16 pcs of VS-14

8. Appendix

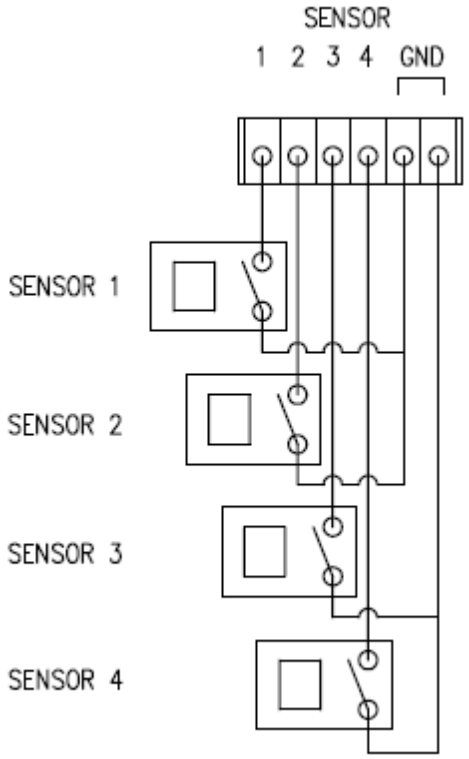
Appendix A: Sensor and Alarm Port

Sensor Port

- **Terminal Type**
- Voltage Rating: 150VAC
- Current Rating : 2A
- Color : Red

- **Sensor Signal Input Type**
- NO Contact Signals

- **Connection to External Device**



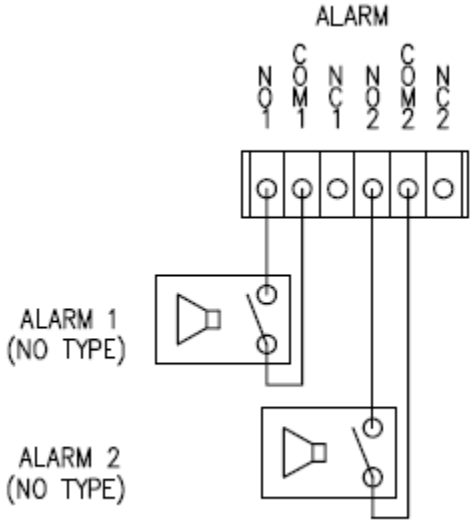
Alarm Port

- **Terminal Type**
- Voltage Rating: 150VAC
- Current Rating : 2A

- **Relay Type**
- Contact Rating : 1A 30VDC
- Switching Power : Max 30W 62.5VA
- Switching Voltage : Max 60VDC

- **Alarm Signal Output Type**
- NO/NC Contact Signals

- **Connection to External Device**

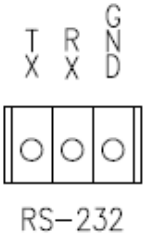


8. Appendix

Appendix B: Serial Port

RS-232 Port

- **Terminal Type**
- 3 PIN
- Pin Arrangement

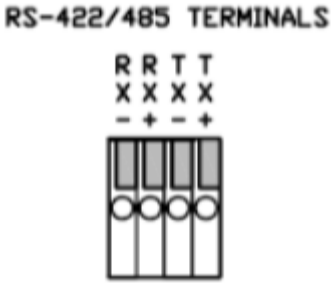


Pin Description:

Pin NO	Pin Name	Description
1	TX	RS232 TX(Transmit)
2	RX	RS232 RX(Receive)
3	GND	Ground

RS-422/485 Port

- **Port Type**
- 4 PIN
- Pin Diagram



Pin Description:

Pin No.	Pin Name	Description
1	RX-	RS422 RX-
2	RX+	RS422 RX+
3	TX-	RS422 TX- or RS485 TRX- It is selectable by S/W Setup
4	TX+	RS422 TX+ or RS485 TRX+ It is selectable by S/W Setup

For Warranty information please refer to Marshall website page:

https://marshall-usa.com/company/warranty.php

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