

WIREPATH SURVEILLANCE



WPS-300-ENC-4IP

4 Channel Encoder

Installation and User's Manual

*Review manual thoroughly before installation.
Retain for future reference.*

1- Important Safety Instructions

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

1. Read and follow all instructions and warnings in this manual. Keep for future reference.
2. Do not use this apparatus near water.
3. Clean only with a dry cloth.
4. Do not block any ventilation openings. Install according to manufacturer's instructions.
5. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
6. Do not override the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades - one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
7. Protect the power cord from being walked on or pinched particularly at plug, convenience receptacles, and the point where it exits from the apparatus.
8. Only use attachments/accessories specified by the manufacturer.
9. Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
10. Unplug this apparatus during lightning storms or when unused for long periods of time.
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
12. DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT.
13. TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE.
14. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.

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



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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2- Manual Overview

We recommend that this document is read in its entirety before proceeding with system design, installation, or operation of the WPS-300-ENC-4IP Encoder. When viewing this document electronically, the content identified within references can be easily located by clicking on the reference. These references have been formatted as a standard hyperlink so that they can be easily identified with exception to the TOC which can also be used to link to sections.

3- Required Items for Installation

The following items are required during the installation of a Wirepath™ IP Encoder. It is recommended that these items are prepared in advance to ensure that the installation can be performed smoothly.

- **All Encoders to be installed in the system**
- **All Analog Cameras that will be installed in the system**
- **NVR that will be installed in the system (Optional)**
- **Network Connection near the location of the Encoder**
- **Administrator rights to the computer that will be used to access the Encoder(s)**
- **Router / Switch Details – Contact the network admin to obtain**
 - Admin Rights – Required to setup the network and port forwarding for remote access.
 - Static IP to assign to the Encoder
 - Default gateway
 - Net Mask Address
 - DNS Address
- **Installation Manual for all the Wirepath™ Surveillance Encoders being installed**
- **Quick Start Guide and Installation Manual for all the Wirepath™ Surveillance Encoders being installed**
- **Quick Start Guide and Installation Manual for all the Wirepath™ Surveillance Analog Cameras being installed**
- **CD Rom supplied with the Encoder**

4- Package Contents

- (1) WPS-300-ENC-4IP
- (1) 12V DC 1.5A Power Supply
- (1) Alarm and Relay Connectors
- (1) Quick Start Guide
- (1) CD Rom containing documents and setup software

5- Optional Accessories

Wirepath Surveillance offers a wide range of accessories that provide power to the Encoders, and make connection to the head end quick and easy.

5.1-Power Supplies

Remote Power Supplies

Use these remote power supplies to power all the Encoders in the system from a remote location.

- **WPS-PS9-12VDC-10A**
9 Output Power Supply - 12V DC, 10A - PTC Fuses
- **WPS-PS9-24VAC-12A**
9 Output Power Supply - 24V AC, 12A - PTC Fuses
- **WPS-PS18-12VDC-18A**
18 Output Power Supply - 12V DC, 18A - PTC Fuses

5.2-Wiring Accessories

In addition to mounts and power supplies, Wirepath offers a full line of accessories to easily send power, audio, and video over 2 conductors of Cat5 wiring back to the head end.

Visit www.snapav.com for a complete listing of accessories.

- **WPS-BAL-V-PIGTAIL**
Mini Passive Video Balun with Pigtail and Screw Terminals
- **WPS-BAL-V-MINI**
Mini Passive Video Balun with Pigtail and Screw Terminals
- **WPS-BAL-V-COMBO**
Mini Passive Video Balun with Screw Terminals Combo Pack
Contains: 1 WPS-BAL-V-PIGTAIL and 1 WPS-BAL-V-MINI
- **WPS-BAL-VP**
Passive Video and Power Balun with RJ45
- **WPS-BAL-VPA**
Passive Video, Power, Audio Balun with RJ45
- **WPS-BAL-VPD**
Passive Video, Power, PTZ Balun with RJ45
- **WPS-ACC-PWR-F & WPS-ACC-PWR-M**
DC Power Plug with Screw Terminals
Available in Male and Female version 10packs.
- **WPS-ACC-PWR-1X2**
DC Power Splitter Cable - 1 Female to 2 Male Connectors
- **WPS-ACC-PWR-1X4**
DC Power Splitter Cable - 1 Female to 4 Male Connectors
- **WPS-ACC-MIC**
Mini Microphone 12V DC Amplified
- **WPS-ACC-GND-ISO**
Ground Loop Isolator Male to Female BNCs

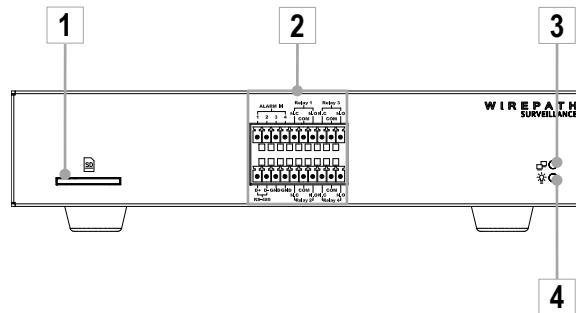
6- Encoder Overview

6.1-Features

- **H.264/ MJPEG/MPEG4 Quadruple Stream Optimization**
Simultaneously stream the compression that makes sense for the application:
 - H.264 - most efficient / highest compression
 - MPEG4 – mobile streaming compression
 - MJPEG - Each frame is encoded separately like a series of snapshots
 - MJPEG for control systems
- **SD Card Backup (Card Not Included)**
Video can be recorded based on:
 - Motion Detection
 - IP check (built in auto ping feature in the Encoder/Encoder)
 - Network disconnect
 - Schedule
 - Digital Input trigger
- **Alarm input and outputs**
4 In /4 Out
- **Motion Detection**
Define areas of interest like a door, driveway or window, to start recording video.
- **Privacy mask**
Block out sensitive or privileged areas by placing rectangular blocks or "masks" over up to three installer-defined areas.
- **Remote Access**
Use your computer, or FREE iPhone®, native iPad®, and Android to view Encoders while at the office or on the go.
- **PTZ Camera Control via RS485**

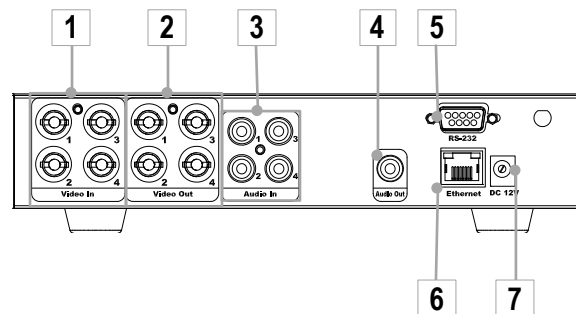
6.2-Encoder Connections and Controls

6.2.1- Front Panel



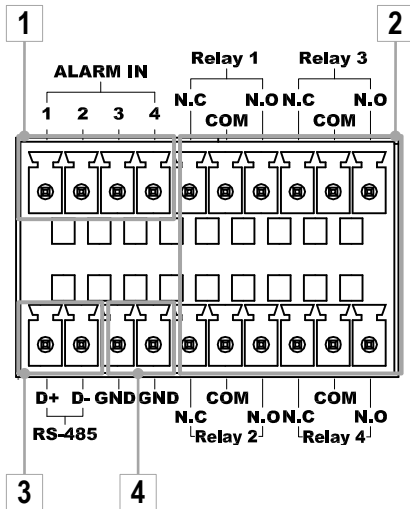
1. **SD Card Slot**
Insert an SD Card for Recording Video Events.
2. **Alarm In, RS485, and Relay Connections**
Connections for Alarm IN, RS485 control, and Relay In & Out.
3. **Network LED**
Flickers indicating Network activity.
4. **Power LED**
Illuminates when Encoder is powered On.

6.2.2- Rear Panel



1. **Video Out (1 to 4)**
Connect to the Video In of an analog DVR, Monitor, or other device with a Coax input.
2. **Video In (1 to 4)**
Connect to the Video Out of an analog Encoder.
3. **Audio In (RCA Mono)**
Connect to the Audio Out of an Analog Camera or Microphone.
4. **Audio Out (RCA Mono)**
Connect to the Audio In of an analog DVR, Amplifier, or other device with a Coax input.
5. **RS232 Connection**
This connection is used to restore the Encoder to factory defaults. See section [6.3-Factory Reset](#).
6. **Ethernet Port (10/100Mbps)**
Connect to a 1Gbps router or switch.
7. **DC Power Connection**
Connect to the included 12V DC 1.5A Power Supply.

6.2.3- Control Connections



1. Alarm Connections

Connect to motion sensors, or door switches or other devices to trigger an event for a particular camera.

Configuration is required; see section [12.11-I/O Settings](#).

Max Voltage: 33v DC 50mA

2. Relay Connections

Connect to devices to control from the GUI, or when an event occurs.

Configuration is required; see section [12.11-I/O Settings](#).

3. RS-485 PTZ Connections

Connect to a PTZ camera to control the PTZ functions. If multiple PTZ are being used, they can be daisy chained to this connection.

4. Ground (GND)

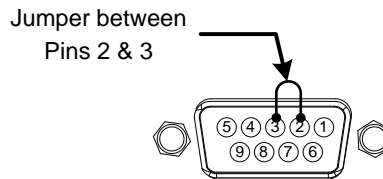
Ground connection for Alarm Connections

6.3-Factory Reset

The Encoder can be reset to Factory Defaults when communication is lost or if all settings need to be cleared.

Note: *This will erase all setting on the Encoder, we recommend that a backup file of the settings be saved prior to performing a reset.*

1. Unplug power from the Encoder
2. Connect a jumper between Pins 2 & 3 on the RS232 port.



3. Apply power to the Encoder, and wait 30 seconds.
4. Once the Encoder appears in the IP Installers device list, remove the jumper from Pins 2 & 3.
5. The Encoder is now reset with DHCP enabled, reconfigure the Encoder.

6.4-Main Encoder Interface

Note: The Encoder requires configuration before accessing for the first time.

See sections [9-IP Installer Software](#) and [10-Initial Configuration](#) before opening the browser.

6.4.1- Accessing the Encoder

Note: IE 8.0 or higher is required to access the Encoder; other browsers are not supported at this time.

- A. Open the web browser, and enter the IP Address that was assigned to the Encoder. The address should include the port number assigned to the Encoder. Note that access varies between local network and remote access through a DDNS.

Local Network Example: `http://192.168.1.56:8056`

Remote Access (DDNS) Example: `http://JonesIPEncoder.wirepathdns.com:8056`

- B. A window will open asking for a username and password.

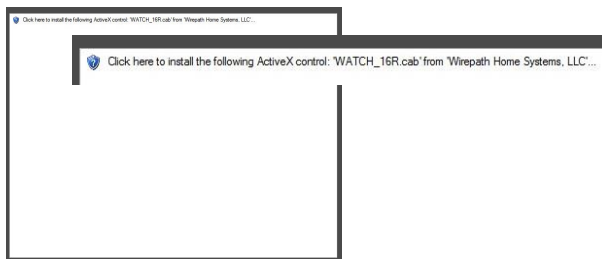
Default Username and Password:

Username: admin

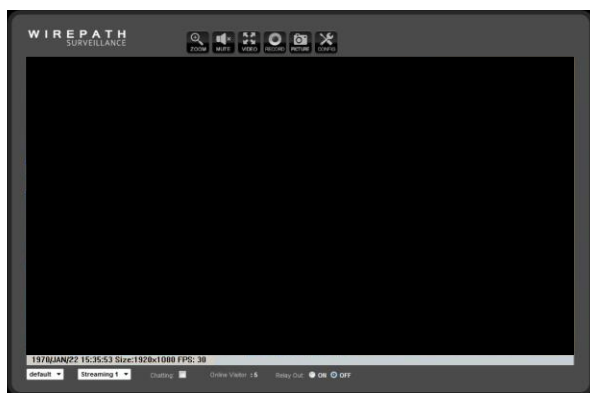
Password: admin

Recommendation: After initial setup of the Encoders, we recommend that the password be changed to avoid unwanted access.

- C. Install the ActiveX control if prompted to do so.



- D. After installing the ActiveX the Encoder should be visible in the web browser, if the Encoder does not appear, verify the IP address by using the IP Installer.



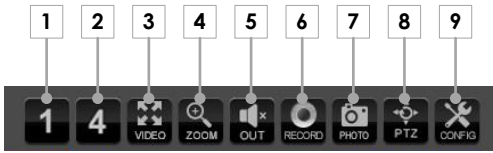
6.4.2- Recommendations for Best Performance

As the number of open browser windows or tabs increases, the risk of slowed response time to the Encoders increases. We recommend that open browser windows or tabs be limited to no more than 4 to avoid interruption in communications or reduced response time with the Encoders.

Due to the limited upload speeds set by ISP (Internet Service Provider) we recommend that Streaming 2 is selected when viewing the Encoders remotely (outside the local network) as the lower resolution provides better frame rates allowing for a smoother video stream.

6.4.3- Live View Controls

6.4.3.1- Top of Screen



8. Single Image View

Displays the stream from the Encoder that is currently selected in Grid view.

1. 4 Encoder Grid

Displays the streams from 4 Encoders as a grid.

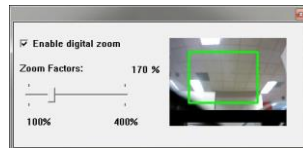
2. Video

Expands the Encoders image to Full Screen, Press ESC or Double click on Full Screen image to return to Live View screen.

3. Digital Zoom

Opens the Digital Zoom window.

- A. Select the checkbox to Enable Digital Zoom.
- B. Move the slider to the desired zoom level.
- C. Click and hold on the green box in the preview window to select a desired location to view.
- D. Click on the X in the upper right hand corner to close the Digital Zoom window.



4. Audio Out

Mutes or Un-Mutes Audio from a local microphone to the Encoders location.

5. Record

Records the currently playing image to the location selected in the proceeding window. Press Record again to stop the recording.

6. Photo

Takes a snapshot of the current image that can be saved to the PC.

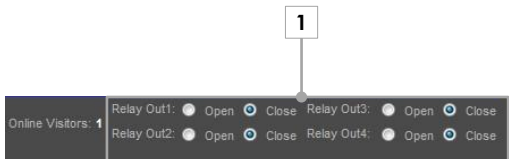
7. PTZ

Opens the PTZ controls for the selected PTZ Encoder. This button has no operation if the currently selected Encoder is not PTZ.

8. Config

Opens the Encoders configuration menu.

6.4.3.2- Bottom of Screen



1. Relay Out Open and Close

Select Open to open, and Close to close the appropriate relay.

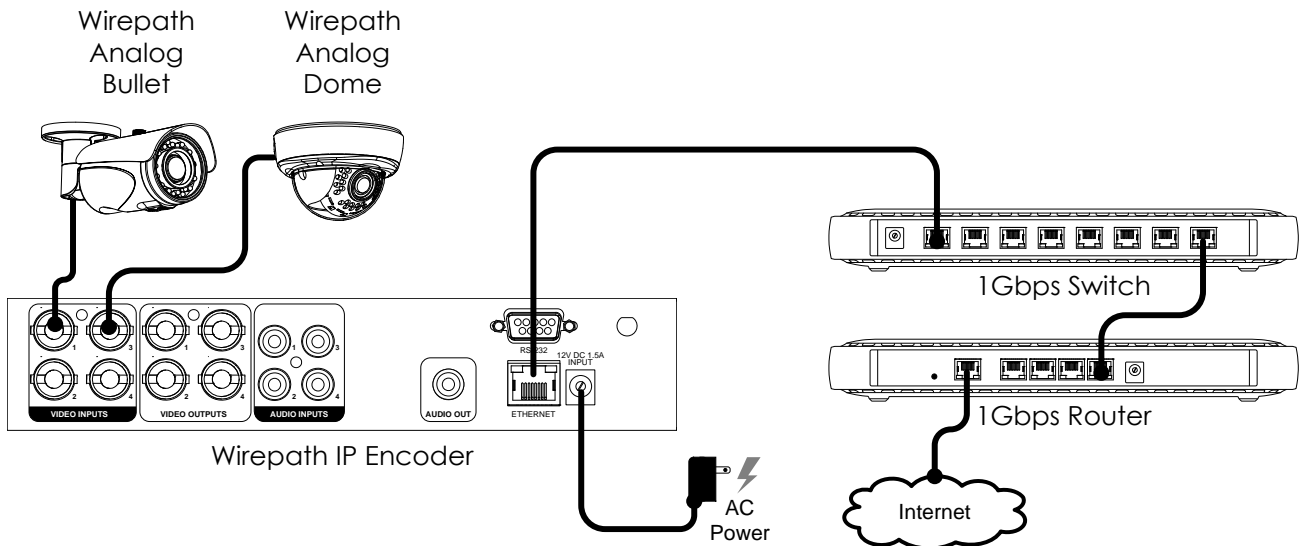
7- System Diagram Considerations

7.1-Recommended Equipment

7.1.1- Networking Devices

Streaming content from IP Encoders requires bandwidth greater than most devices. We recommended the use of 1Gbps routers and switches in order to maintain a high quality streaming image. Additionally, to reduce traffic on the overall network, we recommend that all IP Surveillance devices be connected to a dedicated 1Gbps switch or dedicated VLAN.

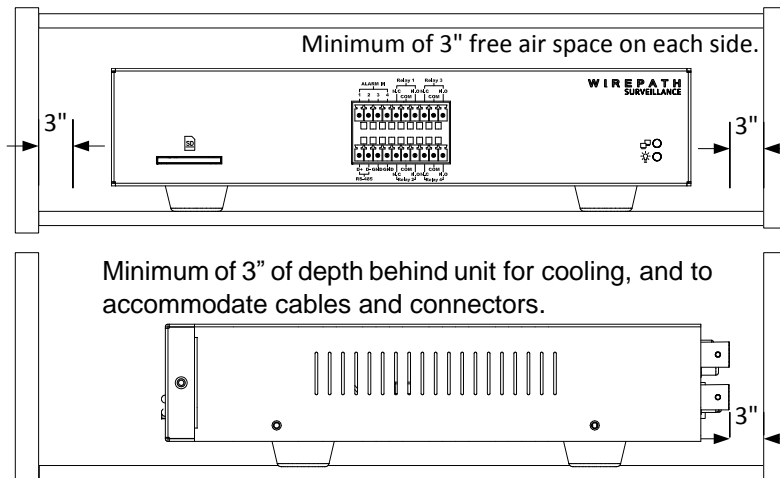
7.2-Basic System Diagram



7.1-Placing the Encoder

The WPS-300-ENC-4IP Encoders contain vents for cooling; these vents should not be blocked in order to maintain proper device operation.

A minimum of 3" of free space is required on the sides and rear of the unit to maintain proper air flow.



8- Installation

1. Place the Encoder

See section [7.1-Placing the Encoder](#) for important guidelines on placing the encoder.

2. Install the SD Card (Optional)

The SD Card slot is located on the front of the encoder.

3. Connect The Encoder to the System

Recommended Cabling

Ethernet Cat5e/Cat6

DC Power 16/2 (if using a remote power source other than a PoE switch)

Audio In/Out 16/2

- A. Connect the Ethernet connection to a Cat5e/Cat6 cable. The opposite end of the Cat5e/Cat6 will be connected to the network switch.
- B. Connect the analog camera.
Recommendation: *The analog camera should be installed and configured prior to completing the installation of the encoder.*
- C. Connect the DC Power In to a 12V DC 1.5A power supply.
- D. Connect the Audio In to a microphone feed from the camera, and the Audio Out to the input of an amplifier or PC. (Optional)
- E. Connect the RS485 D+ and D- to a PTZ analog camera. (Optional)
See section [6.2.3-Control Connections](#) for pin-outs.
- F. Connect an Alarm output or input to the connecting block located on the front of the encoder. If no alarm functions are being used, this step can be omitted.
See section [6.2.3-Control Connections](#) for pin-outs.
- G. Connect the relay In and Out to control or be controlled by encoder functions.
See section [6.2.3-Control Connections](#) for pin-outs.

9- IP Installer Software

The IP Installer software provides a quick view of Wirepath™ IP Surveillance devices connected to local network. This software is required for initial setup of any Wirepath™ IP Surveillance device.

Recommendation: Before starting any configuration or service of Wirepath™ IP devices, we recommend that the latest version of the IP Installer is downloaded from www.SnapAV.com to ensure that all functionality is available.

VPN Important Note: The IP Installer is not able to locate IP Devices if VPN connections are active. Close all VPN connections before running the IP Installer.

4. Install the IP Installer

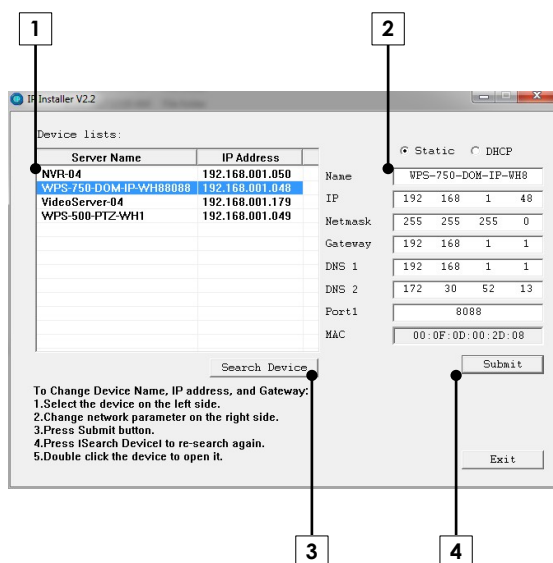
- A. Copy the WPS IP Installer from the CD-ROM or download it from www.SnapAV.com to a PC.

Note: The WPS IP Installer is a native executable application and does not require installation on the PC. We recommend that it be manually copied to a known location on your work/install computer/laptop for easy access.

5. Open the WPS IP Installer.

Once open, the installer will scan the network for Wirepath™ IP Encoders, NVRs, and Cameras that are connected to the network. If no devices appear, select **Search Devices** button to initiate a scan of the network.

9.1-IP Installer Operation



2. Connected Device List

Displays a list of all connected Wirepath™ IP surveillance device names, and IP address.

3. Device Name and Network Settings

Used to configure the devices network settings. MAC address cannot be changed.

See section [10-Initial Configuration](#)

4. Search Devices

When selected, the IP Installer will scan the network for connected devices that are powered on.

5. Submit

Select to submit changes made to the network and name settings for the selected device.

10- Initial Configuration

1- Assign a Static IP address

By default the Encoder will receive an IP address via DHCP; however, it is recommended that the Encoder is assigned a static IP address, and given a 4 digit port. Using a static IP address ensures that the address will not change due to changes to the router.

Note: *The static IP used should be outside the DHCP range of the router to avoid conflicts with other devices on the network.*

- A. Open the IP Installer, and select the Encoder from the list of devices. The Encoder name will highlight Blue in the list.
- B. Select Static at the top of the right side column. This will allow for manual entry of the network configuration settings.
- C. Enter the IP address issued by the network admin.
- D. Enter the Net Mask assigned by the network admin.
- E. Enter the default Gateway assigned by the network admin.
- F. Enter the DNS 1 address assigned by the network admin.
- G. Enter the DNS 2 address assigned by the network admin. If only 1 DNS address is used, this must be "0.0.0.0".

Note: *Any data displayed in these fields should be replaced with information obtained from the network admin to ensure they are set properly.*

- H. Assign a name to the Encoder that will identify it easily when using the IP Installer or configuring a Wirepath™ NVR, and for recordings, or captured images.

Example: FrontDoor1

2- Enter a Port to uniquely identify and remotely access the Encoder.

Recommended Port Numbering

Each Encoder must have a unique port number for Remote Access from outside the local network. To make port numbering consistent, and easy to remember we recommend that the ports be 4 digits, and contain the IP address of the Encoder starting with 8.

Example:

IP Address	Port
192.168.1.050	8050
192.168.1.100	8100

3- Verify Access through the Main Encoder Interface

Once the IP Address has been set, the Encoder can be accessed through the web browser. Note that on initial access to each Encoder, ActiveX controls will need to be installed on each PC that is used to access the Encoder.

See section [6.4.1-Accessing the Encoder](#) for details on how to access the Encoder via a web browser.

4- Update to the Latest Firmware

While the Encoder is shipped with the latest firmware available at the time, newer firmware may be available with improvements.

Recommendation: *We recommend that you check for the latest firmware version on www.SnapAV.com and update if needed before proceeding. See step [1-Upgrade the Firmware](#) in section [11-Additional Configuration](#) for details.*

5- Configure the Date and Time

To ensure that recordings and photos are accurately time stamped, the Date and Time of the Encoder need to be set to the correct time for the location of the Encoder.

See section [12.1.2-Time Settings](#) for details on the features used in this step.

- A. Select Config Button in the upper right hand corner of the Main Encoder Interface.
- B. Select System Information in the left side menu.

Tip: *Using an NTP server, and setting the time zone, and enabling DST is the best method for maintaining accurate time. We recommend that pool.ntp.org is used as it pulls time from a range of time servers that provide backup to each other in the event of server outage.*

6- Change the Administrator Password

Now that the Encoder is visible on the network, we recommend that the administrator password is changed from the default to prevent unwanted access.

See section [12.2-User Management](#) for details on the features used in this step.

- A. Select Config Button in the upper right hand corner of the Main Encoder Interface.
- B. Select User Management in the left side menu.
- C. Select Edit next to the admin username in the user list at the bottom of the screen to open the User Setup window.
- D. Edit the Username (if desired) and New Password, confirm the new password.
- E. After selecting OK, the user login window will open. Enter the new password to continue.

7- Configure User Accounts to Access the Encoder

There are 2 levels of users, Administrator which is the default admin account, and Guest accounts. The admin account is the only account that can be set as an administrator. An unlimited number of Guest accounts can be added that can view and control the function of the Encoder, but will not be able to access or modify any of the Encoders settings.

Access to the Encoder varies based on the level:

Administrator Has access to all functions of the Encoder including configuration.

Guest Has access to view the Encoder, and has limited control for saving recordings, and photos. No configuration is allowed for the guest level. Guests attempting to access to the Encoder configuration will be prompted for the Admin username and password.

Note: Once a username is created it cannot be edited, only the password can be changed. If a username needs to change, it will need to be removed, and a new name created.

See section [12.2-User Management](#) for details on the features used in this step.

- A. Select Config Button in the upper right hand corner of the Main Encoder Interface.
- B. Select User Management in the left side menu.
- C. Enter a Username and Password for a new user.
- D. Re-Enter the password in the Confirm field, and select Add to confirm the addition.

8- Set the Video Orientation

By default, the Encoder is configured for mounting on the ceiling, or under an eave (dome facing down). This allows for the image to be right side up when viewing. Installations where the Encoder is mounted on a shelf or other flat surface (dome facing up), the video image must be flipped.

See section [12.7-Image Settings](#) for details on the features used in this step.

- A. Select Config Button in the upper right hand corner of the Main Encoder Interface.
- B. Select **Image Setting** under A/V Setting on the left side Menu.
- C. Select Flip and/or Mirror checkbox next to Video Orientation as required, and then select save.

9- Configure User Accounts to Access the Encoder

There are 2 levels of users, Administrator which is the default admin account, and guest accounts. The name of the admin account cannot be changed, and is the only account that can be set as an administrator. An unlimited number of guest accounts can be added that can view can control the function of the Encoder, but will not be able to modify any of the Encoders settings.

Access to the Encoder varies based on the level:

Administrator Has access to all functions of the Encoder including configuration.

Guest Has access to view the Encoder, and has limited control for saving recordings, and photos. No configuration is allowed for the guest level.

Note: Once a username is created it cannot be edited, only the password can be changed. If a username needs to change, it will need to be removed, and a new name created.

- A. Select Config Button in the upper right hand corner of the Main Encoder Interface.
- B. Select User Management in the left side menu.
- C. Enter a Username and Password for a new user.
- D. Re-Enter the password in the Confirm field, and select Add to confirm the addition.

11- Additional Configuration

Recommendation: While the Encoder can be configured remotely from outside the local network, operation can be slow. We strongly recommend that the bulk of configuration be performed via the local network to avoid slow response times.

1- Upgrade the Firmware

See section [12.3-System Update](#) for details on the features used in this step.

- A. Download the latest firmware from www.SnapAV.com.

Note: If no firmware appears on the products support tab, there have been no updates to the firmware since the initial release.

- B. Select Config Button in the upper right hand corner of the Main Encoder Interface.
- C. Select System Update in the left side menu.
- D. If the firmware version listed is below the version on the site, then firmware should be updated.
- E. Select Browse, navigate to the folder containing the firmware, select the latest firmware file, and select Open.
- F. Select Upgrade to start the update process.

WARNING: Firmware upgrade must be performed from a wired connection on the local network. While it is possible to recover from an update that fails due to a lost connection, the Encoder will be inoperable until a successful upgrade is performed from a reliable connection.

2- Configure Motion Detection Areas

Motion Detection allows for specific areas of the image to be used for triggering the recording of video, an alarm, or sending a notification. When an area is defined, motion in that area will trigger the predefined action; this is useful to avoid unwanted events from being triggered due to motion in areas of no concern.

Note: Motion for the entire viewable area is set by default; we recommend that smaller areas be defined unless this is desired result.

See section [12.10.1-Motion Detection](#) for details on the features used in this step.

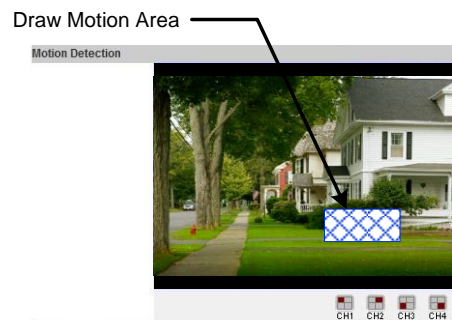
- A. Select Event Setting under Event on the left side Menu.
- B. Select Ch1 under the image.
- C. Select the Enable CH1 checkbox.
- D. Select the Actions to perform when motion is detected by selecting the checkboxes next to Enable Ch1.
- E. Select the Area for Motion Detection.

- E.1- Select Set next to Area1.
- E.2- Place the mouse at the upper left hand corner of the area to mask, hold down the left mouse button and drag the box over the area to mask and release the mouse button.
- E.3- Select the Sensitivity level in the drop down box under the Area. (Range 1 Low to 10 High).
- E.4- Set the Interval between motion events (the minimum time to wait before triggering subsequent motion events).
- E.5- Repeat Steps E1 to E4 for Area 2 & 3 if more areas are needed.

- F. Select the File Format from the dropdown list.
- G. Select the time to Start and Stop the recording.
- H. Select Action to Perform when Connection is Lost.

Note: If Save to SD Card is selected, the Encoders must have a SD Card installed.

- I. Select Apply at the bottom of the screen to save the settings.
- J. Repeat Steps A to I for the other channels as needed.



3- Configure Encoder for Remote Access

Access to the Encoders from outside the local network requires configuration of individual ports for each Encoder, a Dynamic DNS name from a DDNS service provider be assigned, and the router setup for port forwarding. Follow the steps within this section to configure the Encoder(s) for Remote Access.

Our free Wirepathdns service is fast to set up right through the Encoder interface – no PC required – and it provides maximum uptime thanks to redundant USA-based servers located across the country.

Recommendation: *If an NVR is being used in the system, we recommend that remote access is handled through the NVR. Only configure remote access for Encoders that must be accessed directly from outside the local network.*

A. Enter a port for the Encoders

Note: *Port configuration is part of initial setup and is included here to verify that a unique port has been configured.*

See section [12.4.2-Port Assignment](#) for details on the features used in this step.

A.1- Select IP Setting under the Network section of the left side Menu.

A.2- Next to Web Page Port, enter a port number to identify the Encoders.

Note: *This port number should not be assigned to other devices on the network.*

A.3- Click on HTTPS Setting to open the settings menu.

A.4- In the check box at the bottom of the screen, select the type of access that is desired. We recommend that HTTP&HTTPS be selected as this will allow for access from both types of connection.

A.5- If HTTPS access is desired, repeat step B entering a port next to HTTPS Port.

A.6- Click Apply at the bottom to save the settings.

B. Select a DDNS Service

See section [12.6.1-DDNS Settings](#) for details on the features used in this step.

B.1- Select PoE & DDNS under the Network section of the left side Menu.

B.2- Under DDNS Setting, Select Enabled.

B.3- Select the DDNS Provider in the dropdown list.

B.4- Enter a Hostname to use for Remote Access to the Encoders(s).

Example: JonesHouse

B.5- Click Apply at the bottom to save the settings.

Note: *If installing multiple Encoders, this step only needs to be completed once. After that, each Wirepath™ Surveillance Encoder can be accessed using the same Hostname and each Encoder's uniquely assigned port number.*

Example: joneshouse.Wirepathdns.com:8201 accesses one Encoder, joneshouse.Wirepathdns.com:8202 accesses another, etc.

C. Configure Router for Port Forwarding.

In order to access the Encoder(s) from outside the network, the assigned port must be forwarded within the network's router. User interfaces and methods for port forwarding varies from router to router, refer to the manual for the router being used for information on how to forward ports. If the router supports UPnP Port Forwarding, the Encoder can be configured to use this feature from the Encoder interface. See section [12.4.2-Port Assignment](#) and section [12.4.3-UPnP Settings](#).

12- Configuration Menu Operation

12.1- System Information

This menu displays important information about the Encoder's network settings, and allows for setting items such as language, Date, and Time.



12.1.1- Server Information

Displays information about the Encoder's MAC Address, allows for entering a name to easily identify the Encoder, and selecting a language for the GUI.

MAC Address	Displays the MAC Address of the Encoder. This cannot be adjusted, and will appear grayed out.
Server Name	Name for the Encoder (limited to 31 characters) that will appear in the IP Installer, and GUIs.
Language	Select the language to use for the Main Encoder Interface.

12.1.2- Time Settings

Proper time settings are important for producing accurate time stamps for events, recorded video, and captured snapshots.

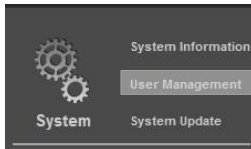
Server Time	Displays the Current Time and Date for the Encoders
Date Format	Select the desired format to display the Date.
Time Zone	Time Zone can only be adjusted when NTP, or Manual are selected.
Enable Daylight Savings	When enabled, Daylight Saving Time Start and Stop parameters can be configured. By default this is set to On.
NTP	Keeps Encoder time synchronized with a Network Time Server. <i>Recommendation: We recommend that the default (pool.ntp.org) be used as it pulls from multiple redundant servers.</i>
Synchronize With PCs Time	Sets the Encoder date and time to that of the local PC, and then shifts to the Encoder's internal clock. After applying, Time Setting is indicated as Internal Clock.
Manual	Allows for manual entry of the date and time, then shifts to the Encoder's internal clock.
Internal Clock	Shifts the Encoder to using the Internal Clock only. Automatically selected after using Synchronize with PC's time or Manual time settings.

12.1.3- OSD Setting

Allows for enabling the Time Stamp feature for captured Snapshots, and streamed and recorded video.

Display	Enables or Disables a date and time stamp in snapshots, and streamed and recorded video.
----------------	--

12.2- User Management



There are 2 levels of users: Administrator which is the default Admin account, and Guest accounts. The Admin account is the only account that can be set as an administrator. An unlimited number of guest accounts can be added.

Anonymous User Login: When Yes is selected the Encoders can be accessed without the use of login credentials. These users have the ability to:

- View Video
- Use Zoom, Mute, Video (Full), Record, and Picture
- Change the GUI size

Recommendation: To avoid unwanted access to the Encoders we recommend that this feature be set to NO.

Add User: Usernames can only contain Letters and Numbers. Spaces and special characters such as underscores will not be accepted.

Note: Only 1 Administrator account can be created.

User List: User passwords can be changed by selecting Edit. Names cannot be changed. To change a Username, the account must be deleted and recreated.

Note: The Administrator account cannot be removed.

12.3- System Update

Important Note:

Updating Firmware MUST be performed over a wired IP connection to the device. While it is possible to recover from an upgrade that fails due to a lost or intermittent connection, the Encoder will be inoperable until it is recovered via a reliable connection.



Recommendation: Before performing a Firmware update, we recommend that the Encoders configuration be saved to a file in the event that any settings are changed by the upgrade.

Firmware Version Current firmware version of the Encoders.

New Firmware Select Browse to open a new firmware file stored on the PC. After selecting the file, select the Upgrade button to begin the firmware update process. Software Updates can be downloaded from www.SnapAV.com.

Reboot System Select the Start button to reboot the Encoders.

Factory Default Select the Start button to reset the Encoders to factory defaults.

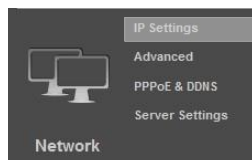
Recommendation: This will erase all Encoder settings with the exception of network configuration and User accounts. However, as a precaution we recommend that the settings are saved prior to performing a factory default.

Load Settings File Allows for a previously saved setting file to be uploaded to the Encoders.

Note: This will overwrite any existing settings once Apply is selected.

Backup Settings Saves the current settings to a backup file. Select the Download button and select the desired file path and name.

12.4- IP Settings



12.4.1- IP Assignment

Allows for configuration of the Encoder's network settings for IP communication. We recommend that this information is provided by the network administrator to avoid address conflicts with other devices on the network.

Note: The IP settings received via DHCP will be displayed in all fields after selecting Static IP. These settings should be changed to those assigned by the network administrator to ensure compatibility and prevent conflicts with existing devices on the network.

IP Type	By Default the Encoders are set to DHCP, which will pull network settings from the Router. We recommend that static IP addresses are used to ensure that the Encoder will remain accessible during setup and use.
IP Address	Current IP Address of the Encoder. If DHCP is selected, this cannot be configured, and will appear Grayed out. Note: The static IP used must be outside the DHCP range of the router to avoid conflicts with other devices on the network.
Subnet Mask	Usually 255.255.255.0 but dependent on the network. . Check with the network administrator.
Gateway	This is usually the same address used to access the router. Check with the network administrator.
DNS 0	As provided by the ISP/network administrator. If not known, the default Gateway can usually be used.
DNS 1	As provided by the ISP/network administrator. If only one DNS address is known or provided, enter "0.0.0.0".

12.4.2- Port Assignment

Recommended Port Numbering

Each Encoder must have a unique port number in order to access from outside the local network. To make port numbering consistent, and easy to remember we recommend that the ports be 4 digits, and contain the last octet of the IP address of the Encoder preceded by an 8. This will also ensure that a port that is commonly used for another well-known service is not assigned to the Encoder.

Example:

IP Address	Port
192.168.1.050	8050
192.168.1.100	8100

Note: Accessing the Encoder remotely requires additional configuration of other settings. See step [3-Configure Encoder for Remote Access](#) in section 12 Advanced Configuration for details.

HTTP Port	Port used by the Encoder on the network.
------------------	--

12.4.3- UPnP Settings

When enabled, UPnP (Universal Plug and Play) allows the Encoder to appear under the PC network devices. To use this feature, UPnP must be enabled on the PC. Also contains settings for UPnP Port forwarding for use with compatible routers.

UPnP	Select Enabled to allow the Encoder to be detected by computers using UPnP.
UPnP Port Forwarding	Select Enabled to automatically configure port forwarding on compatible routers.
External Web Port	External network port to be configured by a compatible router to access the Encoder through HTTP. When available, router status will be displayed to the right of this field.
External RTSP Port	External network port to be configured by a compatible router to access the Encoder through RTSP. Also requires the configuration of RTSP. When available, router status will be displayed to the right of this field.

12.4.4- RTSP Settings

The Encoder has the ability to work as an RTSP (Real Time Streaming Protocol) server to provide multiple user access. Configuration is not required for normal Encoder operation. This is an advanced feature that is used for access by some third-party interfaces.

See section [18.2-RTSP \(Real Time Streaming Protocol\)](#) for more details.

12.4.5- Multicast Setting

Multicasting delivers a single stream to multiple network recipients simultaneously. Configuration is not required for normal Encoder operation. This is an advanced feature that is used for access by some third-party interfaces.

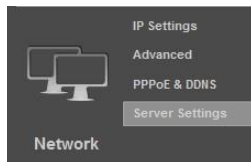
12.4.6- ONVIF

The ONVIF (Open Network Video Interface Forum) standard is used by IP surveillance for communication across devices from various manufacturers. This setting does not require configuration when being used with Wirepath™ IP surveillance devices.

See section [18.3-ONVIF \(Open Network Video Interface\)](#) for more details.

ONVIF:	Disables and selects the version of ONVIF to use.
Security:	When enabled, the security features of the selected ONVIF version are used, ensuring secure connections.
RTSP Keep Alive:	Enable if ONVIF is being used, and RTSP has been configured to ensure that the connection is kept alive.

12.5- Server Settings

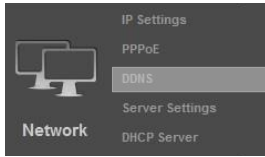


12.5.1- FTP Settings

When an FTP server is configured, recorded video and snapshot files can be stored on the server for later access. Contact the network administrator for FTP server information.

FTP Server	FTP Site address. This is usually the same as one would use to access the FTP site from a browser or FTP client.
Username	Username used to log into the FTP Site.
Password	Password used for the Username account on the FTP.
Port	Port to use for FTP connection. This is usually 21.
Path	Directory on the FTP site to store content. <i>Note: We recommend using path names containing only letters, numbers and underscores to ensure reliable communications. Example: /ALARM/, /ALARM123/ or /ALARM_123/.</i>
Mode	Data channel method to use when logging into the FTP. This is an advanced setting and should not be changed from PORT unless instructed to by the network administrator.
Create the Folder	When set to YES, a folder will be created on the FTP site with the same name as the content file.

12.6- DDNS



12.6.1- DDNS Settings

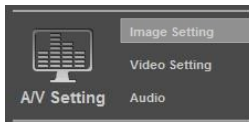
DDNS (Dynamic DNS) maps Internet Domain Names to an IP through services like Wirepathdns.com. When configured, the Encoder is available remotely via a simple easy to remember name such as JonesIPEncoder.Wirepathdns.com

Configuring DDNS is not required for remote access, but avoids having to pay for and remember a static IP address from the ISP.

See Section [3- Configure Encoder for Remote Access](#) for details on configuring remote access.

DDNS	Enable to allow configuring and using a DDNS service.
Provider	Name of the DDNS service provider.
Hostname	Name to use when accessing the Encoder remotely. Example: JonesIPEncoder.
State	Current connection status of the DDNS service. This field will update automatically shortly after entering and applying a Hostname.

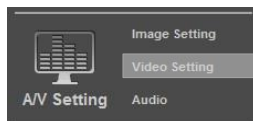
12.7- Image Settings



While the default settings will work in most cases, the conditions at the location of the Encoder may require tweaking to ensure that the image is clear and accurate. Use this menu to adjust the image for daytime, or nighttime, and adjust the image parameters.

Brightness	Controls the overall brightness of the image. Low brightness levels result in a darker image; high levels result in a brighter image. Setting too low or high can result in loss of detail in dark or brightly lit areas.
Contrast	Controls the apparent difference between shades of colors for the image.
Hue	Also known as tint, adjusts the overall color tone of the image by shifting all pixels toward a particular color Lower values shift all colors closer to Blue; lower values shift all colors closer to Red.
Saturation	Adjusts the overall intensity of color within the image. Higher values increase the intensity of colors; lower values decrease the intensity of colors.

12.8- Video Settings



The Encoder supports up to 4 streams that can be used for streaming to a mobile device, network recorder, control system GUI, or the browser GUI simultaneously. While the highest quality is desired, it may not be supported by the network or device, and will also have a larger storage size. Use this menu to adjust the resolution, and the amount of streams available.

Channel	Selects the channel to configure.
Video System	Sets the type of video format of the BNC Video Inputs and Outputs, NTSC or PAL. Note: Changing this setting will cause the picture to be lost if the selected format is not supported by the display method. Do not change this setting unless it is a requirement of the system.
Streams	Select Single or Dual streams.

12.8.1- Streaming 1 & Streaming 2

Resolution	Available Resolutions (High to Low Quality): <table border="0"> <tr> <td>D1</td> <td>720x480</td> </tr> <tr> <td>4CIF</td> <td>704x480</td> </tr> <tr> <td>CIF</td> <td>352x240</td> </tr> <tr> <td>QCIF</td> <td>176x144</td> </tr> </table>	D1	720x480	4CIF	704x480	CIF	352x240	QCIF	176x144
D1	720x480								
4CIF	704x480								
CIF	352x240								
QCIF	176x144								
Bitrate Control	<p>CBR (Constant Bitrate) Bit rate of the image will remain constant regardless of the complexity of the image. Allows for a fixed, known bandwidth use.</p> <p>VBR (Variable Bitrate) Bit rate of image increases and decreases based on the complexity of the image maintaining a higher quality image during complex scenes but reducing bandwidth use during less-complex scenes.</p> <p>See section 18.1-Constant vs. Variable Bit Rate for details on the benefits and tradeoffs between the settings.</p> <p>Note: This setting will change to CBR whenever the Encoder is enabled or modified from an NVR.</p>								
Video Quality	<p>Changes the range of VBR bitrate change based on a level from Low to High. In Basic mode the options range from Low (slowest) to Best (fastest) bitrates, while in advanced mode the options range from 1 (slowest) to 9 (fastest).</p> <p>When this setting is changed, Bitrate Control Mode automatically changes to VBR, and the bitrate will increase or decrease depending on the select option.</p> <p>Note: This setting will change whenever the Encoder is enabled or modified from a Wirepath™ NVR.</p>								
Video Frame Rate	<p>Higher FPS (Frames Per Second) provides a smoother image, however some display interfaces or devices may not be able to support the higher frame rates.</p> <p>The available frame rates change based on the number of streams:</p> <table border="0"> <tr> <td>Streaming 1</td> <td>3 to 25 FPS (Single Stream)</td> </tr> <tr> <td>Streaming 1 & 2</td> <td>3 to 12 FPS (Dual Streams)</td> </tr> </table> <p>Recommendation: We recommend using the default FPS unless problems displaying video occur.</p>	Streaming 1	3 to 25 FPS (Single Stream)	Streaming 1 & 2	3 to 12 FPS (Dual Streams)				
Streaming 1	3 to 25 FPS (Single Stream)								
Streaming 1 & 2	3 to 12 FPS (Dual Streams)								

Video Format While the default of H.264 is most efficient and will work in most cases; some devices that access Streaming 1 or Streaming 2 video streams may not support this format. For example, mobile devices, and automation system GUIs sometimes do not support H.264. Adjust the format to suit the system requirements and intended use of the streams.

Available Formats

- H.264
- MJPEG

RTSP Path Enter the name of RTSP (Real Time Streaming Protocol) path if RTSP has been configured.

12.8.2- Streaming 3

Video Quality Changes the video bitrate based on a level from Low (slowest) to Best (fastest) bitrates.

12.8.3- Streaming 4

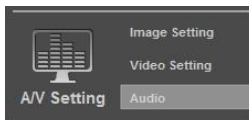
3GPP Enable if mobile 3GPP streaming is desired.

This stream provides a fixed, 176x144 resolution, 5 FPS MPEG4 video stream for use by mobile devices.

3GPP Path Enter the name of 3GPP (3rd Generation Partnership Project) path if 3GPP has been configured.

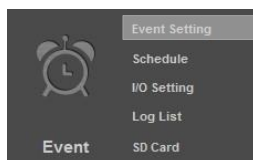
12.9- Audio Settings

Use this menu to configure Audio if the Encoder has a microphone installed.



Encoder to PC When enabled, allows audio from a microphone (ex: WPS-ACC-MIC) installed at the Encoder to be heard at the PC.

12.10- Event Settings



12.10.1- Motion Detection

Provides up to 3 areas to select for detecting motion on the Encoder. When configured, an action such as recording video, taking a snapshot or series of snapshots, and/or sending email notification can be performed after the motion is detected.

See Section [2- Configure Motion Detection Areas](#) for detail on how to configure motion detection.

Enable Ch 1 to 4	Select the channel to activate the configuration for the channel, when activated the selected events next to the channel will be performed.
FTP	Saves record file to a configured FTP server
SD Card	Saves record file to an installed SD Card
Relay 1 to 4	Activates a device connected to the relay outputs

12.10.2- Area 1,2,3

Set	Select the area to activate the configuration for the area, when activated the selected events next to the area will be performed.
Clear	Clears the area set for motion detection.
Sensitivity	Adjustable from 1 (Requires higher amount of motion to trigger) to 10 (Requires low amount of motion to trigger).
Interval	Selects the time between motion events within the image to stop recording.

12.10.3- Record File

File Format	Selects the file type to create when the event occurs.
AVI File	Creates a short .AVI format video file.
JPEG Files (Streaming 1 must be set MJPEG)	Creates a series of JPEG files at about 1 FPS.
JPEG File (Single JPEG at Interval)	Creates a single JPEG image file at time of event.

12.10.4- Record Time Setting

Pre Alarm	Amount of time prior to the event to start the recording, from 0-5 seconds.
Post Alarm	Amount of time after to the event to stop the recording, from 0-10 seconds.

Note: The Encoder cannot currently record for the entire time of a motion event. Each recording generated by the Encoder will be no more than about 15 seconds long. For motion events lasting longer than the time set for Interval above, multiple recordings will be saved. In such cases there may be a gap of several seconds between recordings.

12.10.5- Network Disconnected

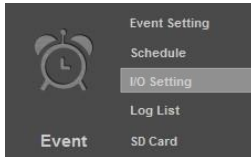
Disconnected	Select to save recordings to a SD Card installed in the Encoder when connection to the network is lost. A SD Card (not included) must be installed for this feature to function.
---------------------	--

12.10.6- Network IP Check

IP Check	When enabled, the Encoder will periodically ping the address entered into the IP Address box below.
IP Address	Enter an IP Address or website URL to ping for checking connectivity.
Interval	Select the time between pings to the entered IP Address or URL.
Log	Select to save a log file to the SD Card when the IP Address does not respond.

12.11- I/O Settings

Use this menu to configure the Encoders Contact & Relay connections.



12.11.1- Input Settings

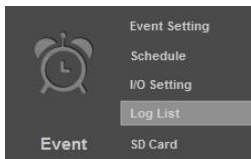
Input Sensor Check Box	N.O	Encoder expects contact closure connected to the relay input to be normally Open. An Event is triggered when the contact is closed.
	N.C	Encoder expects contact closure connected to the relay input to be normally Closed. Event is triggered when the contact is open.
Send To	If notification or logging is desired, select the destination to send it to when the relay input event is triggered.	
Interval	Selects the time to wait between input events before another event can be triggered.	

12.11.2- Output Settings

Mode Setting	Open/Close Manually	Device connected to the relay output can be triggered from the browser GUI or configured Events only.
	Open/Close at Interval	Relay output will be cycled between Open and Closed at the Interval configured below.
Interval	Select the interval between relay output Open and Close when Mode Setting is "Open/Close at Interval".	

12.12- Log List

Access to the logs for various actions of the Encoder.



System Log

Displays System level events such as logins and configuration changes. This log is maintained even through loss of power.

Motion Detection Log

Displays Motion Detection events. This log is NOT maintained when power is lost.

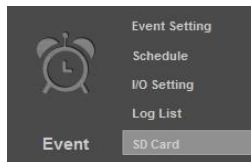
Input Trigger Log

Displays Motion Detection events. This log is NOT maintained when power is lost.

All Logs

Displays a combined list of all currently available log files.

12.13- SD Card



Use this menu to set the amount of days of recording to store on an installed SD Card.

Auto Deletion	Off	No data on the SD Card will be deleted by the Encoder. If the SD Card becomes full, no further data can be recorded.
	1st to 30th Day	SD card will contain only the selected number of day's data. Data older than the selected number of days will be deleted.

13- Mobile App Access

Use your computer, or FREE iPhone®, native iPad®, or Android, Smartphone Apps to view cameras connected to the Encoder while at the office or on the go. Details on setup and operation can be found @ www.SnapAV.com.

14- Specifications

System	
Video Resolution	NTSC: 720x480, 704x480, 352x240, 176x144
Video In	BNC x 4
Video Looping Input	BNC x 4
Audio In	4
Audio Out	1
I/O	4 in/ 4 Relay out (COM. & N.O. & N.C.)
	Relay Out: DC 24V@1A AC 120V@0.5A
RS-485	1 for PTZ control
RS-232	1

Network	
Ethernet	10/ 100 Base-T
Network Protocol	HTTP, TCP/ IP, UDP, SMTP, FTP, PPPoE, DHCP, DDNS, NTP

Technology	
Image Adjustment	Brightness, Contrast, Saturation, Hue
Quad Streaming	Yes
Image Snapshot	Yes
Full Screen Monitoring	Yes
Video Compression Format	H.264/MJPEG/MPEG4
Video Bitrates Adjust	CBR(Up to 2.5Mbps), VBR
Motion Detection	Yes
Triggered Action	Mail, FTP, Save to SD storage, Relay, Samba
Pre/ Post Alarm	Yes
Security	Password protection
Simultaneous Connection	Up to 10
Audio	Yes, 2-way

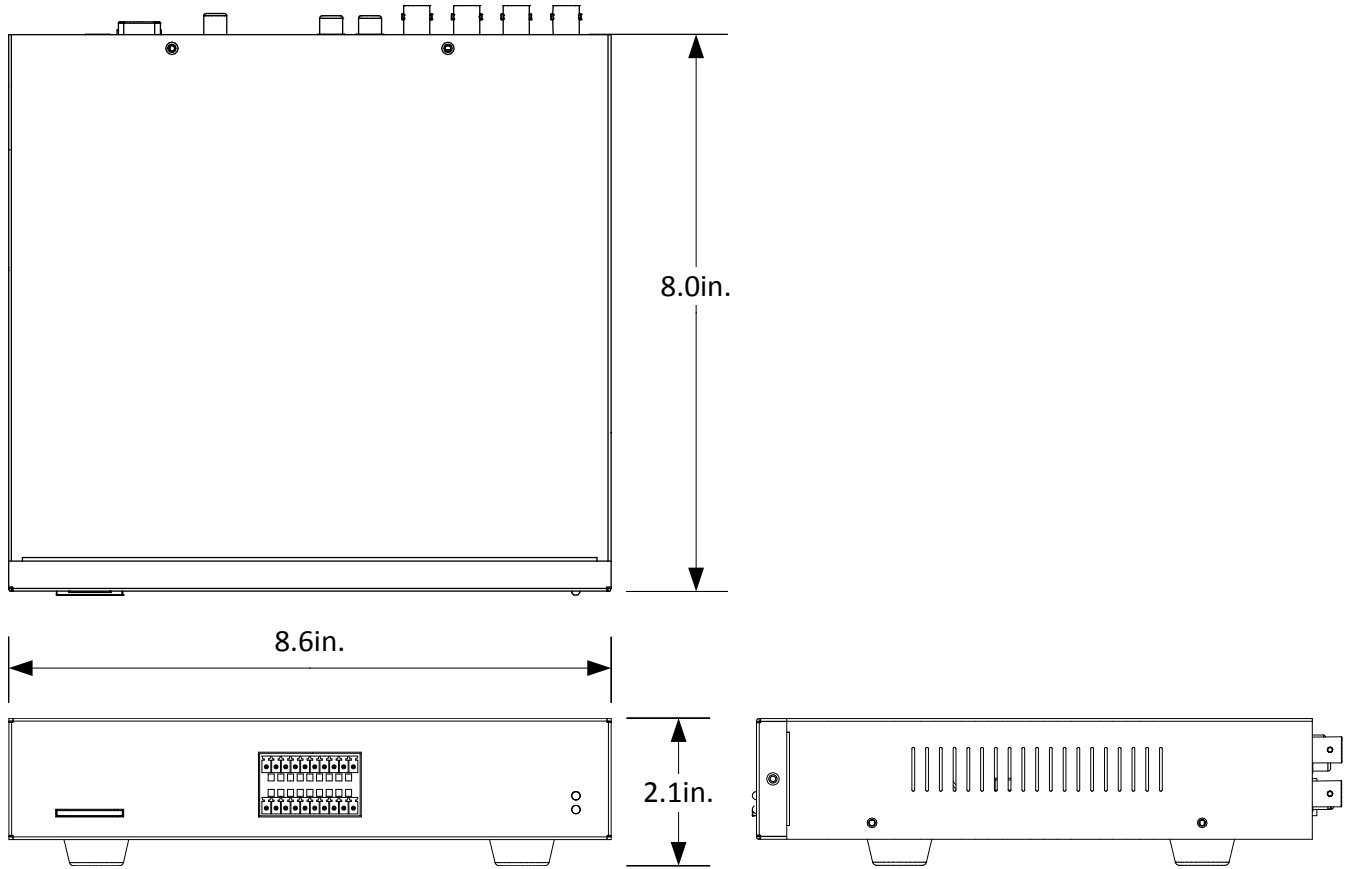
Backup Management	
Recording Trigger	Motion Detection, IP Ping failure, Network disconnect, Relay
SD Card Support	Yes, up to 32GB(Class 10)

Client System Requirement		
OS	Windows 7, 2000, XP, 2003, Microsoft IE 6.0 or above	
Mobile Support	iOS 4.3 or above, Android 1.6 or above.	
Hardware	Suggested	Intel Dual Core 2.53G, RAM: 1024MB, Graphic card: 128MB
	Minimum	Intel-C 2.8G, RAM: 512MB, Graphic card: 64MB

Housing & Power	
Power and Consumption	12V DC 7.56W
Dimensions	8.58" (W) x 2.11" (L) x 7.95" (D)
Weight	2.87 lbs

External Power Supply(included)	
External Power Supply	12VDC 1.5A
Operating Voltage	100-240VAC 0.7A 50-60Hz
Operating Temperature	32 - 113 F
Ratings / Certifications	UL FCC CE
Dimensions	L: 2.86in. W: 1.34in. H: 1.83in. (power supply only)

15- Dimensions



16- Warranty

3-Year Limited Warranty

This Encoder has a 3-Year Limited Warranty. The warranty includes parts and labor repairs on all components found to be defective in material or workmanship under normal conditions of use. This warranty shall not apply to products which have been abused, modified, disassembled or improperly installed. Products to be repaired under this warranty must be returned to Wirepath™ Surveillance or a designated service center with prior notification and an assigned return authorization number (RA).

17- Contacting Technical Support

Phone: (866) 838-5052
Email: Techsupport@snapav.com

18- Technical Information Glossary

18.1- Constant vs. Variable Bit Rate

IP cameras record light from a scene coming through a lens focused onto a sensor, and the image is converted into a digital format by a processor to be streamed out over a network for viewing or recording. The amount of information converted by the processor increases as the image becomes more complex.

For example, a camera recording a hallway or room where there is little activity and consistent lighting will be converting much less information to stream out than a camera that is recording a crowded store where there is constant movement and a lot of changes in lighting throughout the image. The camera can be set to handle the conversion in one of two ways, at a constant bit rate or a variable bit rate.

Constant bit rate means that no matter the amount of information coming from the image sensor, the same amount of bandwidth is being used to transmit the video feed. This means that image quality from a camera set to "CBR" may vary depending on the complexity of a scene. CBR is useful when you want to conserve the amount of bandwidth being transmitted. This could be due to slow network or internet speeds, or for conserving recording space when you are recording a scene where the clearest image quality isn't necessary.

Variable bit rate means that the amount of bandwidth being used to transmit video varies with how much information is being sent. Recording an empty, well lit hallway will yield a very low bandwidth signal. A camera installed outside with moving trees or cars constantly passing by would transmit a very high bandwidth screen. Variable bit rate will always send the best quality image it can, with no regard to the bandwidth used. This is optimal for situations where the high quality is required but be sure the network can handle the extra traffic.

18.2- RTSP (Real Time Streaming Protocol)

RTSP, or Real Time Streaming Protocol, is a network protocol designed to allow media devices to stream content over Ethernet to devices on the same network or even to devices over the Internet. Instead of using a separate server or video recorder to control the video feed to remote devices, using RTSP in our IP cameras allows the direct control of the stream from within the camera. This technology enables Wirepath™ products to stream video to devices even if they can't support any of our remote viewing apps.

18.3- ONVIF (Open Network Video Interface)

ONVIF stands for Open Network Video Interface Forum. "ONVIF is an open industry forum for the development of a global standard for the interface of IP-based physical security products. ONVIF is committed to the adoption of IP in the security market. The ONVIF specification will ensure interoperability between products regardless of manufacturer. The cornerstones of ONVIF are:

- Standardization of communication between IP-based physical security
- Interoperability between IP-based physical security products regardless of manufacturer
- Open to all companies and organizations

The ONVIF specification defines a common protocol for the exchange of information between network video devices including automatic device discovery, video streaming and intelligence metadata." (excerpt from ONVIF.org)

So, basically, ONVIF is an organization known as a forum where all of its members collaborate and discuss the protocols and technologies that IP based surveillance hardware implement for operation and communication.

What does this mean for dealers and end users? Devices built to the standards of ONVIF have been designed with seamless integration and communication in mind. ONVIF certified equipment is guaranteed to operate together regardless of the brand of equipment. These makes it easier for installers to get new jobs done with no unexpected incompatibilities and install more equipment as needs increase and change over time without having to match exactly what is already installed. End users have the benefit of having uniform methods of using the equipment, and the comfort of knowing they are buying something that is expandable and well known. Any dealer can come in and change a job as needed even if they don't know what is in place, as long as the equipment is ONVIF compatible.

