

NV9311P, NV9411P Mobile NVR NV9311P-M12, NV9411P-M12 User's Manual

H.265/H.264 Codec • 802.3af/at PoE • HDMI/VGA • G-sensor • GPS • 8/16 CH • -40°C ~ 55°C • EN50155 Solid Connection for Shock & Vibration • SATA or SSD • Programmable Delay ON/Off



Rev. 1.1

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WARNING:

- No storage system is completely fail-safe. Damage to data might occur due to file system corruption, operating system malfunction, virus infection, HDD component failures, and so on. Therefore, it is highly recommended to regularly back up your data, and VIVOTEK disclaims responsibilities of data loss or recovery.
- 2. Always power off the system using the power down button on system desktop. Do not disconnect the power cord while the system is still operating. Doing so will result in data inconsistencies. The normal power-off procedure allows cached data to be written to disks.

Revision History

* Rev. 1.0: Initial release.

Note that the Settings pages on the web console has been changed to that identical to the local console.

* Rev. 1.1: Added the description for the M12 models, NV9311P-M12 and NV9411P-M12.

Also added new system LED definitions for system troubleshooting when unable to power up. See page 36.

The limitations on text entry length is listed below:

- User account: 64 alpha-numeric characters
- Account password: 64 alpha-numeric characters
- Path name: 256 alpha-numeric characters
- IP domain name: host.xxx.yyy.zzz–63 bytes; total: 253 bytes
- Email account: local@domain_name_part–local -63bytes; domain_name_part–253 bytes.
- Do not use < >)("%; #& +-\

Symbols and Statements in this Document



INFORMATION: provides important messages or advices that might help prevent inconvenient or problem situations.

NOTE: Notices provide guidance or advices that are related to the functional integrity of the machine.

• **Tips**: Tips are useful information that helps enhance or facilitate an installation, function, or process.

WARNING! or **IMPORTANT**: These statements indicate situations that can be dangerous or hazardous to the machine or you.



Electrical Hazard: This statement appears when high voltage electrical hazards might occur to an operator.

Read Before Use

The use of surveillance devices may be prohibited by law in your country. The Network Camera is not only a high-performance web-ready camera but can also be part of a flexible surveillance system. It is the user's responsibility to ensure that the operation of such devices is legal before installing this unit for its intended use.

It is important to first verify that all contents received are complete according to the Package Contents listed below. Take note of the warnings in the Quick Installation Guide before the Network Camera is installed; then carefully read and follow the instructions in the Installation chapter to avoid damage due to faulty assembly and installation. This also ensures the product is used properly as intended.

The Network Camera is a network device and its use should be straightforward for those who have basic networking knowledge. It is designed for various applications including video sharing, general security/surveillance, etc. The Configuration chapter suggests ways to best utilize the Network Camera and ensure proper operations. For creative and professional developers, the URL Commands of the Network Camera section serves as a helpful reference to customizing existing homepages or integrating with the current web server.



The operating system and management software are installed on a flash memory mounted on the main board. Except for running the plug-ins for the onscreen control on a web console, there is no need to install software.

Package Contents

- 1. Mobile-NVR
- 2. DC Power cable
- 3. QIG
- 4. HDD screws
- 5. GPS receiver
- 6. MIC in/Line out cable
- 7. HDD lock keys (two packs)
- 8. Network Cable retention bracket set (RJ45 version) and screws.

Optional Accessories:

- 1. Wi-Fi module & antenna
- 2. 4G module & antenna

Chapter One Hardware Installation and Initial Configuration

Introducing the Network Video Recorder

The NV9311P/ NV9411P is a mobile NVR designed for the transportation surveillance that provides powerful 1080p 8-CH or 16-CH real-time live display and recording using the advanced H.265 video compression technology. The 8 802.3at PoE ports provide the ease of connections with cameras. The NVR comes in a rugged design that is compliance with EN 50155/ MIL-STD-810G standard.

Embedded with G-sensor and GNSS module to provide information such as G-sensor event and speed event, and have multiple Network interfaces as LAN, WiFi and LTE for different Network connection requirements. Implemented with VIVOTEK's VAST2 software, the GPS tracking locations are instantly displayed on GoogleMap. Live videos can also be displayed remotely allowing instant access for a complete safety control.

For the installation on vehicles, the NVR supports ignition startup, delay start and shutdown, scheduled start/shutdown. The NVR also features as wide range of power input, aluminum diecase chassis, built-in heater, surge protection, and the protection for shock and vibration.

Special Features

- Runs on embedded Linux
- 1 x HDMI and 1 x VGA for local display
- 1 x HDD bay, for a max. capacity of 2TB
- 1 x Gigabit RJ45 Ethernet port;
- 3 x USB Ports (USB 2.0)
- Size: 284 mm (W) x 267.4 mm (D) x 90 mm (H). Weight: 4.12kg.
- 8- or 16-CH Live View & 4-CH Synchronous Playback (web console)
- H.265 / H.264 / MJPEG
- PTZ Support
- Snapshot / Export Media
- Digital zoom Video Control
- Terminal block pins for DI/DOs.
- Configuration Backup / Restore
- Compatible with VIVOTEK VAST Central Management Software*
- Integration with VIVOTEK Network Cameras
- VIVOTEK iViewer Support (iOS/Android cellphone/hand-held devices)

*The VIVOTEK VAST Central Management Software is not included in the package.

Safety

- This product is connected to a fuse box in the passenger compartment before it is connected to the vehicle battery, and the fuse in a fuse box is UL listed as an automotive fuse.
- Use the appropriate flexible and SAE wiring to connect to a fuse box.
- This product is installed in the passenger compartment.
- This product must be installed and maintained by qualified service personnel.
- Never open the housing of the power supply unit.
- Install and operate the system only in a dry, weather-proof location.
- Observe the following safety factors:
 - · Is there visible damage to the system or power cord
 - Is the system operating correctly.
 - · Has the system been exposed to rain or moisture
 - Has the system been in a long storage under harsh conditions or exposed to unconforming stress.
- The relevant electrical engineering regulations must be complied with at all times during installation.
- Ensure that all maintenance and repair work is handled by qualified personnel such as electrical engineers or network specialists.
- Read this manual before installing or operating the system. The documentation contains important safety instructions about permitted uses.
- The rated DC input is: **10~48V, maximum 15A**@ input 10V; the PoE output: **802.3af or 802.3at,** up to **30W** per channel, total budget is **64W**.
- If a fault occurs, disconnect the power cord from the power supply.
- Do not install the system close to heaters or other heat sources. Avoid locations with direct sunlight.
- Use only the cables shipped with system or use appropriate cables that can withstand electromagnetic interference.

セキュリティ基準(新規則第34条の10)

「本製品は 電気通信事業者(移動通信会社、固定通信会社、インターネットプロバイダ等) の通信回線(公衆無線LANを含む) に直接接続することができません。本製品をインターネットに接続する場合は、必ずルータ等 を経由し接続してください。」

Installation Instructions



Warning:

This equipment is intended to be used in a Restricted Access area, such as a cabinet or a dedicated computer room. Access should only be allowed to SERVICE PERSONS or USERS who have been instructed on proper handling of the device's metal chassis, which may become hot during operation. Further, access should be restircted through the use of a key or secure identity system, to ensure only qualified personnel have access to the restricted access area.



Warning:

Read the installation instructions before connecting the system to the power source.



Warning:

Calculate the maximum possible electric current on each power wire and common wire. Observe all electrical codes indicating the maximum current for each wire size. If a current goes above the maximum ratings, the wiring can become overheated, causing damages to your equipment.



Warning:

Do not run signal or communications wiring and power wiring in the same routing conduit. Wires with different signal characteristics should be separately routed.



Warning:

The product is intended to be mounted on a properly grounded mounting surface, such as a metal equipment panel.



Warning:

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.



Warning:

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.



Warning:

Installation of the equipment must comply with local and national electrical codes.



Warning:

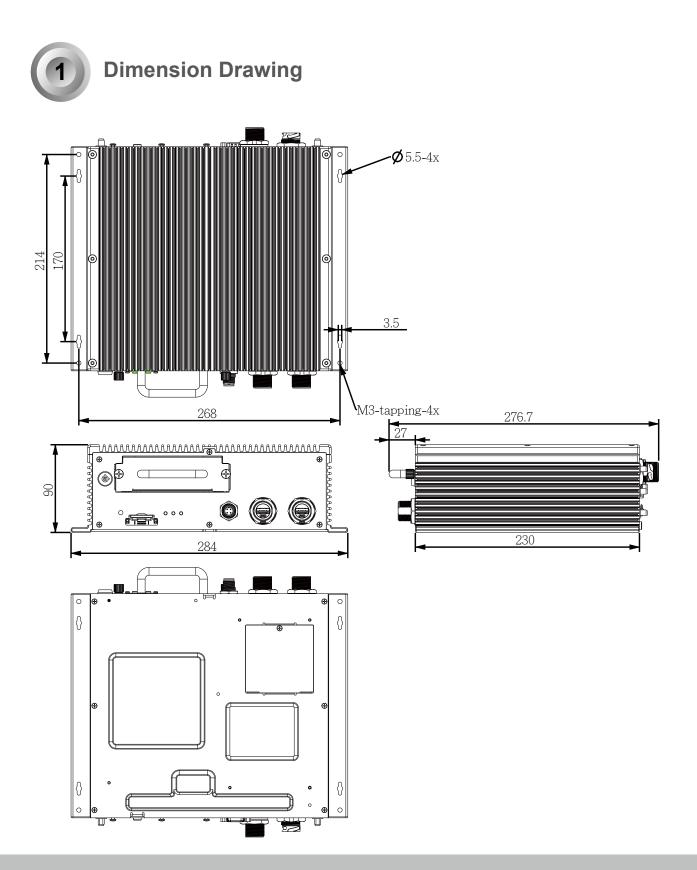
Ultimate disposal of this product should be handled according to all national laws and regulations.



Warning:

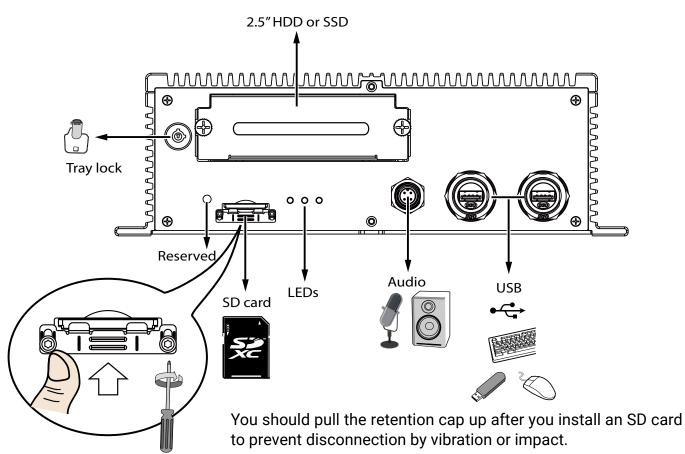
The product is designed to perform without a cooling fan. It is recommended that the product is installed with at least a 5mm clearance on all sides for heat dissipation.

Chapter 1 Hardware



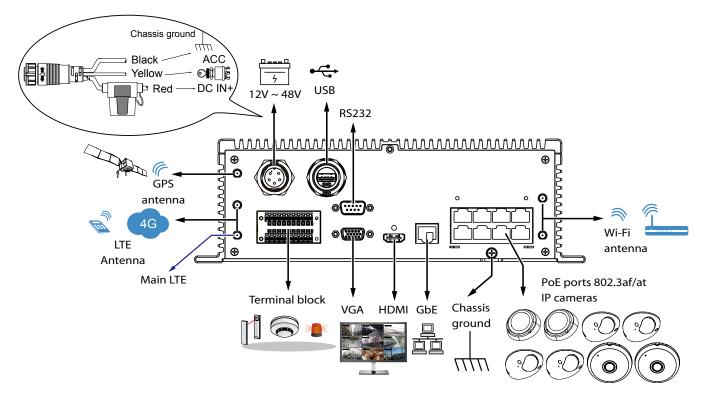


Front Panel



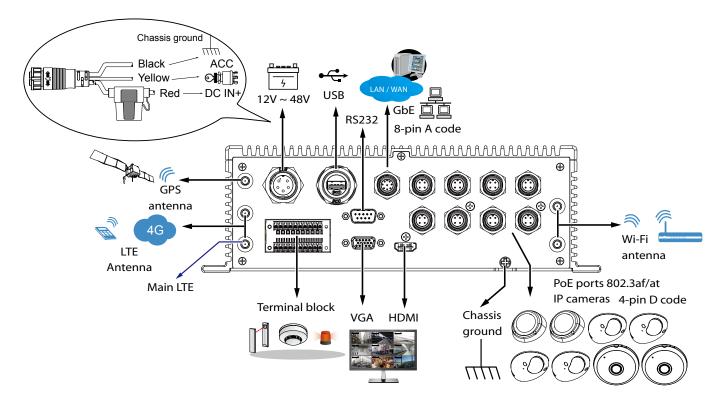
Note that the front panels of the NV9311P/NV9411P and the M12 version (NV9311P-M12/ NV9411P-M12) are identical.

Rear Panel - NV9311P & NV9411P



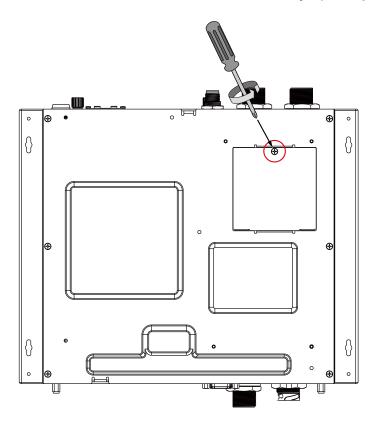
802.3af/at, total power budget is 64W.

Rear Panel - NV9311P-M12 & NV9411P-M12

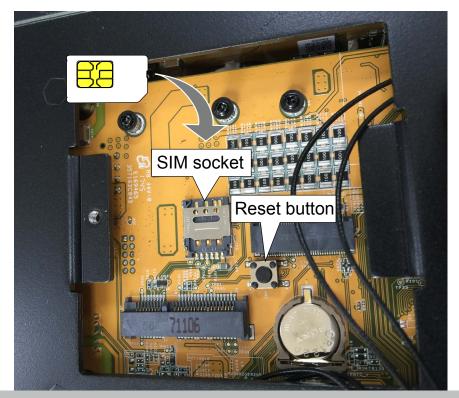


SIM card: Access from the Bottom

The GPS (Global Positioning System) connectivity can apply for speed and route tracking data on video streams. For specialized wireless transmission, a SIM card is necessary for the LTE module. The SIM card can be installed by opening a small cover from the bottom of the NVR.

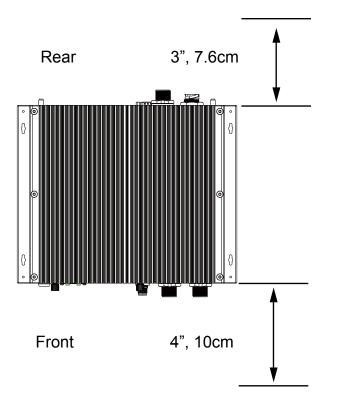


The SIM socket.



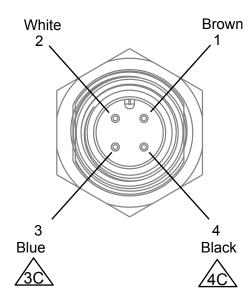
Cabling Clearance

It is recommended to have a clearance for making the cabling connections at the front and the the rear of the chassis. Front: 4", Rear: 3".



Connector Pinouts-Front Panel

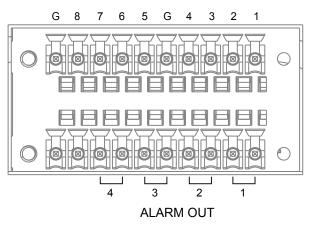
Audio IN/OUT-M12



Wire Color	NOTE
Brown	GND
White	GND
Blue	Line out
Black	MIC in

Connector Pinouts-Rear Panel

Terminal Block



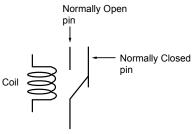
10	8	8	7	6	5	4	3	2	1
DI GND	DI8	DI7	DI6	DI5	DI GND	DI4	DI3	DI2	DI1
20	19	18	17	16	15	14	13	12	11
N/A	N/A	DO4_	DO4_	DO3_	DO3_	DO2_	DO2_	DO1_	DO1_
		СОМ	NO	СОМ	NO	СОМ	NO	СОМ	NO

Terminal Block Connections

The terminal block pinouts is shown as follows:

Connect your relay or external devices' signal wires to the system, the system will automatically detect the current signal status. You can then trigger the external devices using the DI/DO panel on the live view.

You can also configure the system alarm setting for the system to automatically trigger a DO on the occurrence of system events. See Alarm settings on page 107.

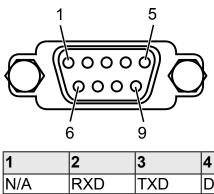


Common pin

The pins are listed and described from left to right as shown in the drawing above.

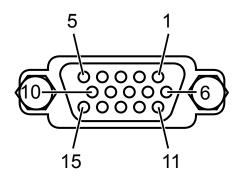
Pin	Description	NOTE
DI no. 1 ~ 8	Open/short to GND	
G	Pins #1~4 share a common ground.	
	Pins #5~8 share a common ground.	
NO	Normally open. Use the DO trigger	
	buttons on the live view window to	
	trigger the digital output.	
СОМ	Common pin	

RS232



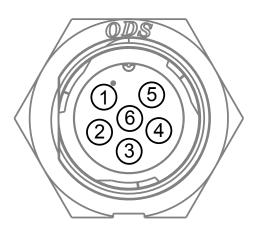
	2	3	4	5	6	7	8	9
Ά	RXD	TXD	DTR	GND	DSR	RTS	CTS	N/A

VGA



5	4	3	2	1
GND	GND	В	G	R
10	9	8	7	6
GND	VGA_5V	GND	GND	GND
15	14	13	12	11
SCL	Vsync	Hsync	SDA	GND

Power Input



1	2	3	4	5	6
DC IN+	DC IN+	ACC	DC IN-	DC IN-	DC IN-

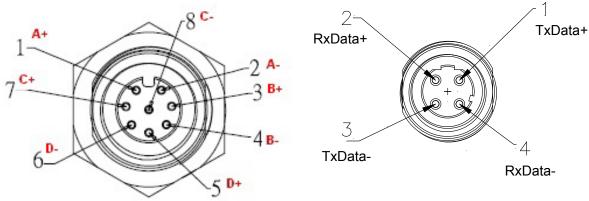
The Red DC IN+ connects to the vehicle battery positive.

The Black DC IN- connects to the vehicle battery negative or chassis ground.

The Yellow ACC connects to the ACC pin of the vehicle ignition key switch.

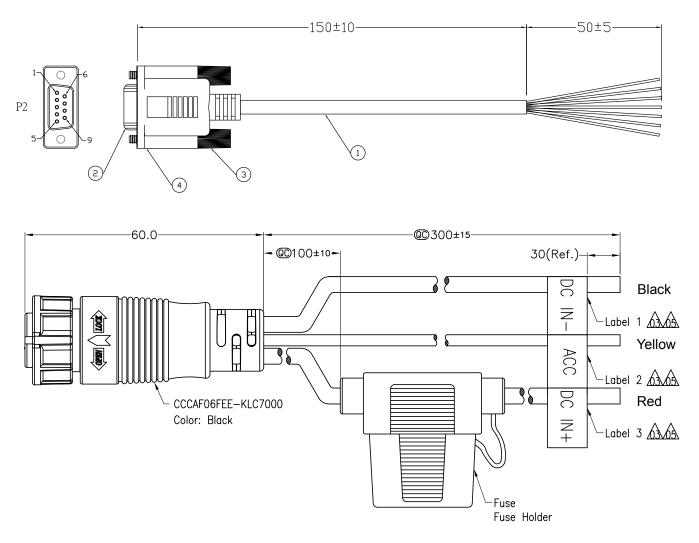
M12 8-pin A code Ethernet

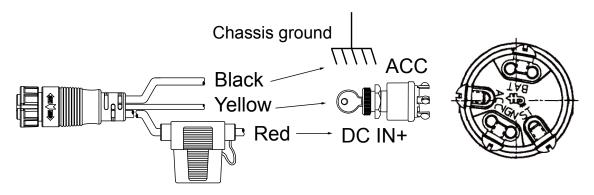




While routing the cables, the possible damage caused by impact, friction, and vibration should be taken into consideration.

Cable Pinouts

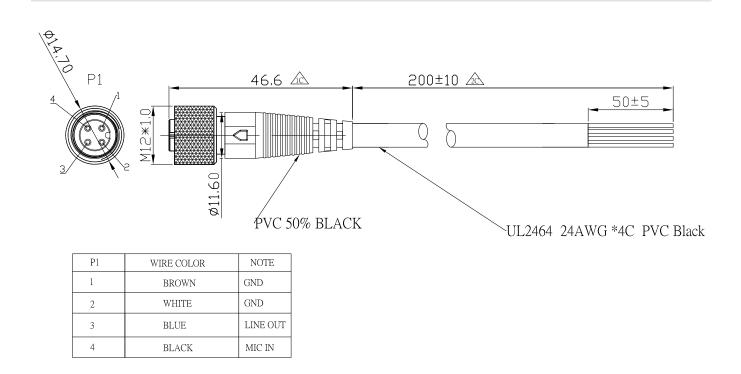




Connect the yellow wire to a vehicle's ignition switch's ACC pin. Red wire to the vehicle battery output, and the Black wire to the chassis ground.

You can connect the wiring through the vehicle electrical panel. When connecting to the chassis ground, it is important that you are connecting to a grounding point that is not rusted. If connecting to a non-steel ground screw, resistance can be high causing problems with voltages supply.

Do not make ground connections to screws with thread locker compounds. They are insulated from the chassis. Screws with thread sealers or those mounted on gaskets are not the good choice for grounding.



RF Antenna Connector

3

The NVR has 3 antenna connectors, one of which is the GSM/UMTS/LTE main antenna connector, the others are UMTS/LTE auxiliary antenna connector and GPS/GLONASS antenna connector. The Rrcommended antenna characteristics are described by the 2 following tables.

Passive	Recommended standard
Direction	omnidirectional
Gain	>-3dBi (avg.)
Input impedance	50 ohm
Efficiency	>50%
VSWR	<2

Recommended Passive Antenna Characteristics

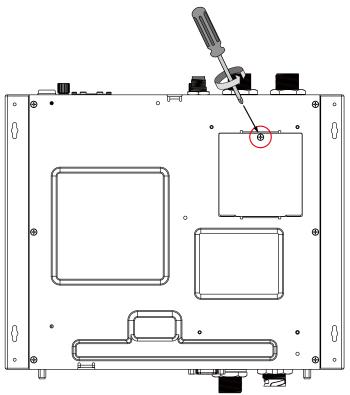
Recommended Active Antenna Characteristics

Band	Performance	Performance				
	TRP	TIS				
GSM850	≥ 29dBm	≤ -104dBm				
EGSM900	≥ 29dBm	≤ -104dBm				
DCS1800	≥ 26dBm	≤ -104dBm				
PCS1900	≥ 26dBm	≤ -104dBm				
WCDMA B1	≥ 19dBm	≤ -104dBm				
WCDMA B2	≥ 19dBm	≤ -104dBm				
WCDMA B5	≥ 19dBm	≤ -104dBm				
WCDMA B8	≥ 19dBm	≤ -104dBm				
LTE B1	≥ 18dBm	≤ -92dBm				
LTE B2	≥ 18dBm	≤ -90dBm				
LTE B3	≥ 18dBm	≤ -89dBm				
LTE B4	≥ 18dBm	≤ -92dBm				
LTE B5	≥ 18dBm	≤ -90dBm				
LTE B7	≥ 18dBm	≤ -90dBm				
LTE B8	≥ 18dBm	≤ -89dBm				
LTE B13	≥ 18dBm	≤ -89dBm				
LTE B17	≥ 18dBm	≤ -89dBm				
LTE B18	≥ 18dBm	≤ -92dBm				
LTE B19	≥ 18dBm	≤ -92dBm				
LTE B20	≥ 18dBm	≤ -89dBm				
LTE B38	≥ 18dBm	≤ -92dBm				
LTE B39	≥ 18dBm	≤ -92dBm				
LTE B40	≥ 18dBm	≤ -92dBm				
LTE B41	≥ 18dBm	≤ -91dBm				



Install a SIM card

Open the small maintenance panel at the bottom of the NVR. You should subscribe to a service with a wireless service provider and obtain a SIM card.



Refer to page 134 for the Network IP and the default gateway configuration.

Install a SIM card to the SIM socket. The reset button is also located in here.



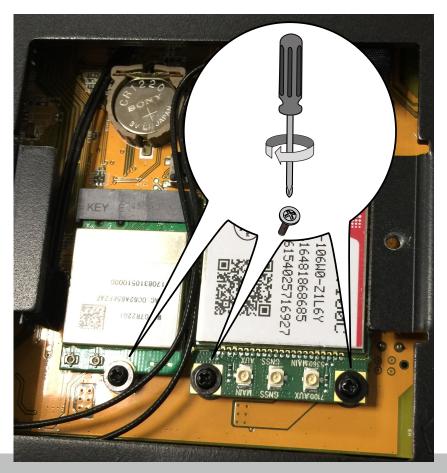
20–User's Manual

Install an LTE and Wi-Fi module

Depending on the country/region of your operation, you may need to install different wireless WAN modules. Install an LTE and Wi-Fi module by lowering and inserting them into socket.



Secure the installation by driving 3 screws.



Connect the antenna cables (provided with the NVR) to the corresponding connectors on the module. Note that only the **Main** and **AUX** connectors on the PCI-E 4G communication module need to be connected. The NVR comes with another embedded GPS module. Connect the antenna cables to the Wi-Fi module.

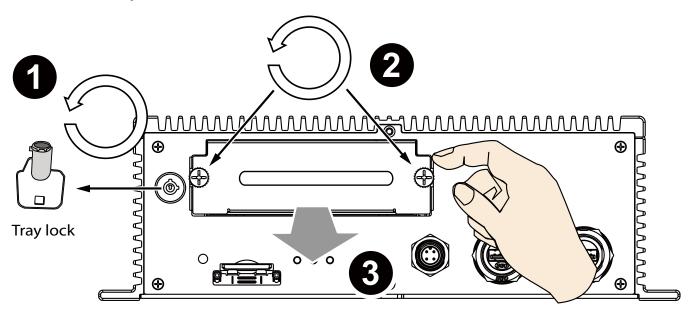
The SIM7100C PCI-E 4G communication module is shown here as an example.

Note that the Wi-Fi and 4G network configuration windows will only be available when the associated modules are installed in the NVR. See page 134 for information of the configuration.

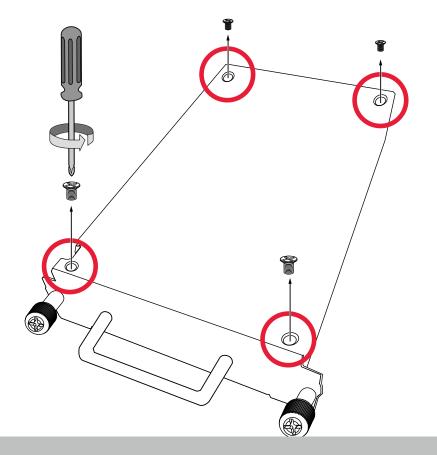
Intall a 2.5" hard disk or SSD

Note the choice with HDD or SSD is relted to operating temperature: $-40^{\circ}C \sim 55^{\circ}C(SSD)$, $0^{\circ}C \sim 55^{\circ}C$ (surveillance HDD).

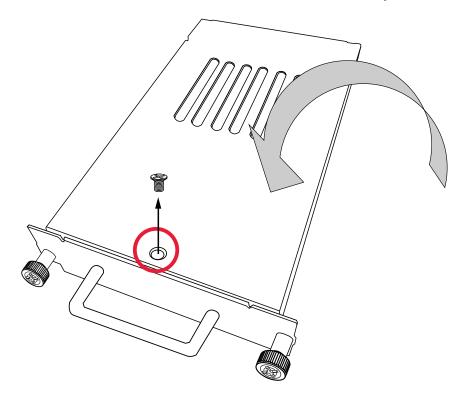
- 1. Use the bezel key to unlock the bezel lock.
- 2. Loosen the hand screws.
- 3. Remove the tray box.



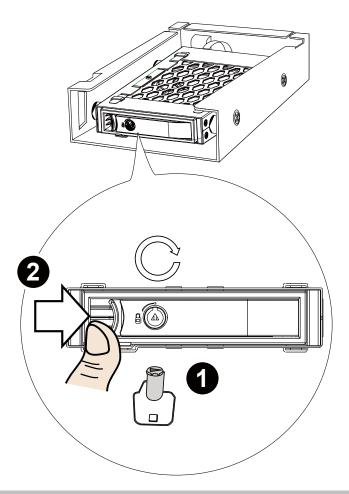
4. Remove 4 flat sunk-head screws from the top of the tray box.



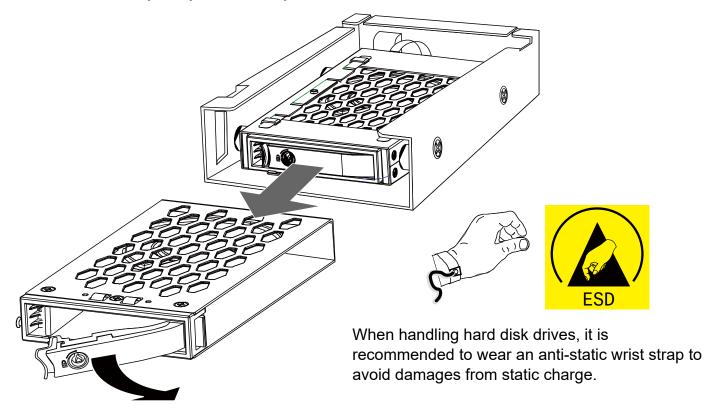
5. Remove another screw from the bottom of the tray box.



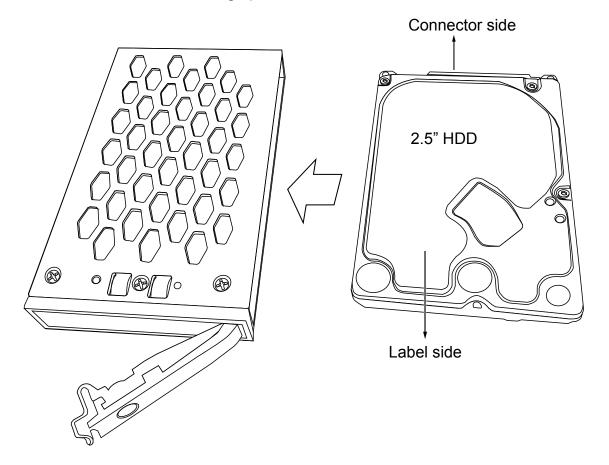
6. The interior of the box is revealed. Remove the drive tray by unlocking the tray lock and press lever to the right.



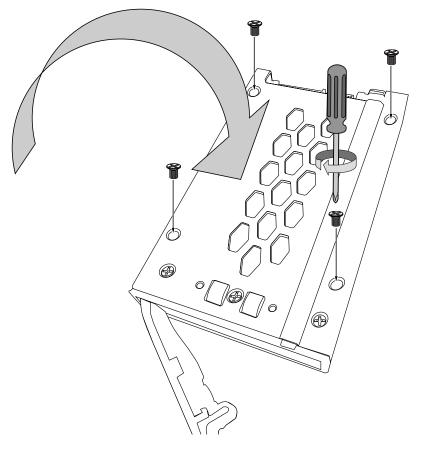
7. Pull the drive tray away from the tray box.



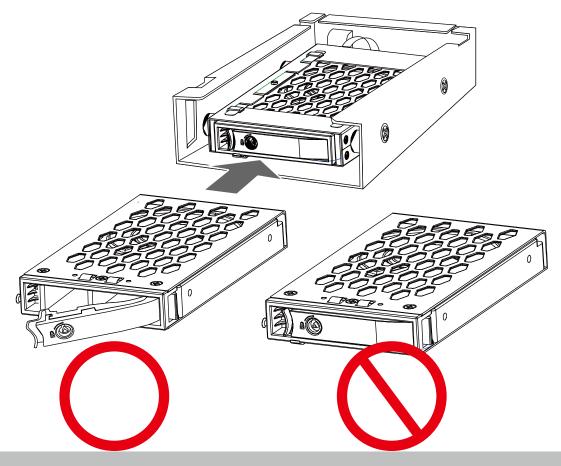
8. Insert the 2.5" hard disk or SDD into the drive tray through the side opening. Note that the hard disk label side is facing up and the SATA connector is at the rear side.



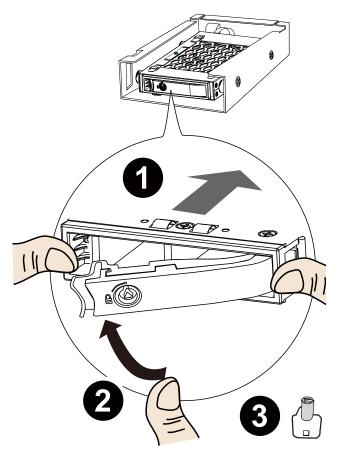
9. Flip the drive tray over, and secure the hard drive using 4 included sunk-head screws.



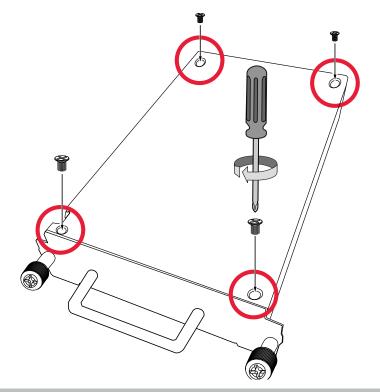
10. When done, install the drive tray into the tray box. Note that the lever should be in the open position when you insert the drive tray.



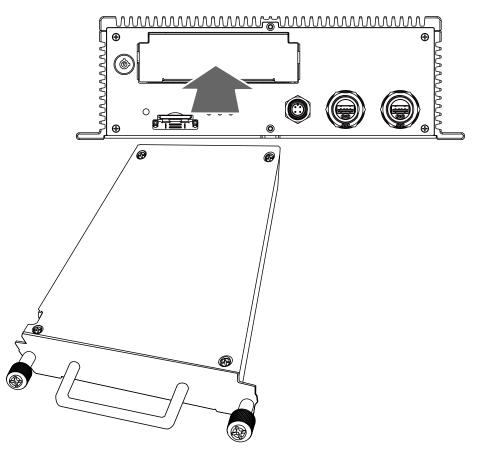
- 10-1. Press the drive tray firmly into the unit bay. Contact resistance can be felt during the process.
- 10-2. Close the front lever.
- 10-3. Secure the installation using the tray lock. Keep the tray lock key safe for later use.



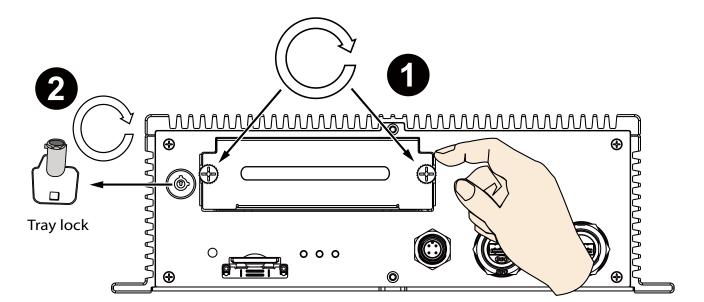
11. Install the tray box cover by fastening 5 screws you just removed.



12. Install the tray box back into the NVR.

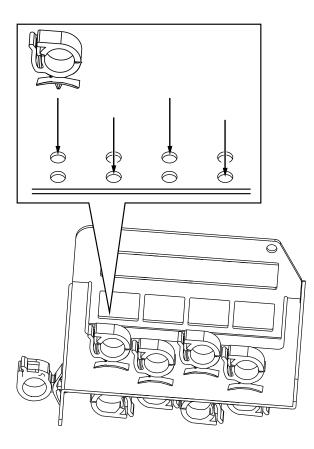


13. Secure the installation by fastening hand screws and lock the tray lock on the front panel. **NOTE that you cannot power up the device unless the tray lock is locked!**

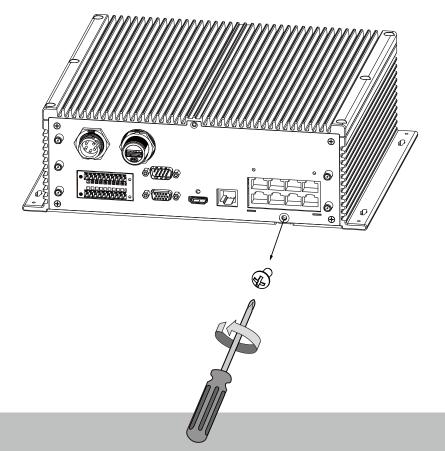


14. Skip this section (steps #14 to #17) if you install the NVR with the M12 connectors.

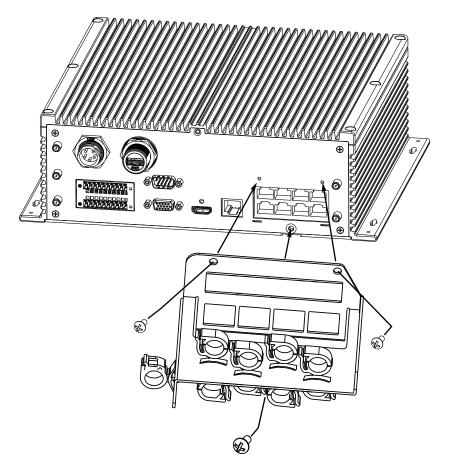
Install the cable clamps to the cable retention bracket. Note that the positions of every two cable clamps should be one in the back and the other in the front. The same applies to the holes at the bottom.



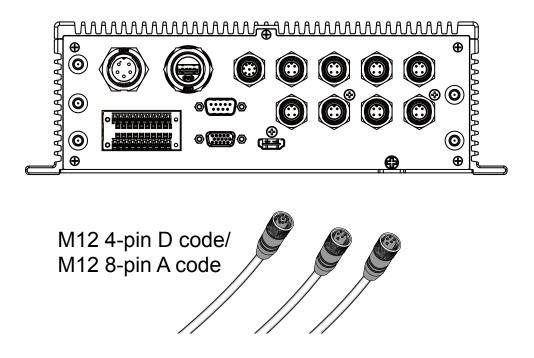
15. Remove the grounding screw. Keep it for later use.



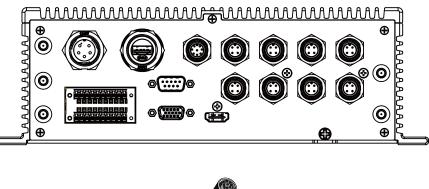
16. Secure the bracket to chassis using two screws at the top, and the grounding screw at the bottom.



17. Connect cables to ports and secure their connections using the cable clamps.

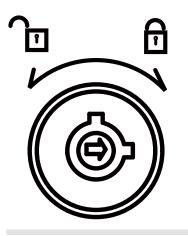


Shown below is the M12 rear panel connection.

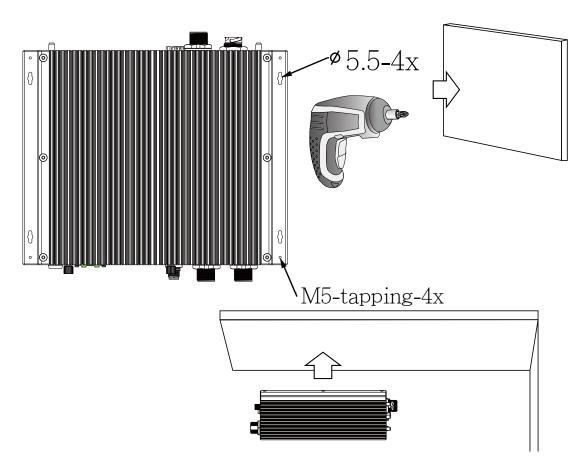


M12 4-pin D code/ M12 8-pin A code

The tray lock must be in the locked position before the NVR can be powered on. Make sure you keep your tray keys for access to the onboard disk drive.



18. Use four self-tapping screws to secure the NVR to a metal panel. If the need should arise to install the NVR on a ceiling, use the M5 self-tapping screws and drive them through the smaller holes on the four corners of the NVR.





Initial Configuration-via a Local Console

A local console requires the following:

- 1. A monitor is connected via an HDMI or VGA cable.
- 2. A mouse and/or a keyboard are connected to the system.
- 3. It is presumed that the system has not been configured yet.

Follow the onscreen messages to complete the initial configuration:

1. The NVR is started when the vehicle engine is started. When started for the first time, you will be required to configure a system password. Jot down the password, and enter it twice to access the system.

Hello, Adm	Hello, Administrator					
Set up password before	lanuching NVR.					
	h no space, 1 alphabet cł e), and 1 numeric charact					
Username	admin					
New password	•••••					
Confirm password	•••••					
	È					
	Apply					

2. Select the UI language, Time zone, and current date and time. Click on the Continue button to proceed.

	O Setup	Insert cameras	
Langua; Time zo		 ▶ ▶ 10 : 59 : 13 	
Skip setup	4	Camera list will be cleared after auto setup	Continue

Except in the initial setup, changing system time can produce disruptions to the existing recordings. Turning the current system time back to a time when video recording was taking place can generate duplicate files. And those files may not be playable.

3. The system will then start to scan the local subnet for connected cameras.

Setup	O Insert cameras
Search for cam	eras
С	0%

4. All cameras detected on the network will be automatically selected. If necessary, deselect the cameras you want to exclude from the configuration. Click **Finish** to proceed.

cameras fou	Ind				
	Ind	MAC Y	Model v	Port v	Channel
Cameras fou		MAC ∨ 00-02-D1-39-6A-BA	Model V FD9171-HT	Port ~ 80	Channel
Unselect all	IP v				
Unselect all	IP ↓ 169.254.106.186	00-02-D1-39-6A-BA	FD9171-HT FE9391-EV MD8565-N	80	1
Unselect all	IP ~ 169.254.106.186 169.254.33.11	00-02-D1-39-6A-BA 00-02-D1-5C-1A-84	FD9171-HT FE9391-EV	80 80	1

🖉 NOTE:

 1. The maximum recording bandwidth is 1920x1080 @ 480 fps (16-CH)
 Max. Decoding streaming resolution: 8192x8192

 Display resolution:
 for H.264/MJPEG , 4096x4096 for H.265

 HDMI: 3840x2160, 1920x1080,1280x720(P2)
 VGA:1920X1080 ,1280x720(P2)

When cameras are recruited into the configuration, their stream 1 is used as the recording stream.

The resolution and fps (frame rate per second) of stream 1 may vary depending on the specifications of different cameras.

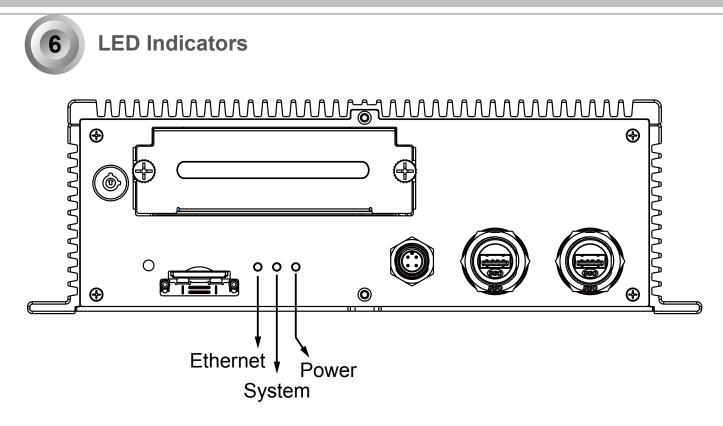
2. If there are more than 16 or 32 cameras in your local network, you will need to manually select cameras.

If there are less than 8 or 16 cameras, the Auto Setup will automatically move to the next configuration step.

- 3. The maximum streaming bandwidth is 96Mbps. If multiple web consoles, VAST, or iViewer connections are being made and the threshold is exceeded, the new connection requests will be rejected.
- 5. The system will automatically create a volume from the installed disk drive. If your cameras come with preset password, enter "root" as the user name, and the preset password in order to join the cameras to your configuration.

		Setup		O Insert cameras		
IP ~ 169.254.106.186 169.254.33.11 169.254.102.8	Status V	13	Username: Password:	root Apply to all cameras	Apply	
K						Finish

6. When done, the next screen will be the NVR's liveview page.



Name	Be	havior	Definitions			
Power LED	1	Solid Green	Power on			
	2	Green OFF	Power off			
	3	Blinking Green every 1 second	The delay shutdown is taking place.			
4		No ACC	LED is off			
	* B	* Below is used when unable to power up				
	5	HDD tray unlocked	LED blinks every 2 seconds.			
	6	Low voltage	LED blinks twice 0.5 sec. apart. Repeats after 2 sec.			
	7	Power on delay	LED blinks 3 times 0.5 sec. apart. Repeats after 2 sec.			
	8	Heater on	LED blinks 4 times 0.5 sec. apart. Repeats after 2 sec.			
	9	Abnormal temperature	LED blinks 5 times 0.5 sec. apart. Repeats after 2 sec.			
Status LED	1	Solid Green	System is ready.			
	2	Blinking Green every 1 second	Updating firmware or device pack.			
	3	Solid Red	S.M.A.R.Trelated disk errors, or a configured H.D.D. is missing, or H.D.D. is full. Buzzer will also be sounded. When buzzer is turned off, LED will return normal.			
NET LED	1	Blinking Orange	Transmitting and receiving data.			
	2	OFF	Ethernet is disconnected.			

Power Up and Power Down

To power up and power down,

On the initial configuration:

The NVR is started when the vehicle ignition is started sensing the voltage. The NVR supports configurable power ON/OFF delay time. Low power protection is also supported. See page 125 for the delayed ON/OFF configuration (see Settings > System > Power management).

After the initial connection,

When the vehicle engine stops, the system should start flushing the cached contents in system memory and gracefully shut down. The NVR can be configured to power down later than the engine stop using the battery power.

Press the Reset button for longer than **5** seconds can restore system defaults.

	Min. power on voltage (A)	Min. operating voltage (B)
Disabled (default)	9	9
12V	11.5~12.5, default 12	10.5~11.5, default 11
24V	23.5~24.5, default 24	22.5~23.5, default 23
36V	35~37, default 36	34~35, default 34.5
48V	47~49, default 48	46~47, default 46.5

The NVR supports low battery power detection and automatic power-down when voltage drops below a configurable threshold.

See page 125 for information about Power management.

ه)		NVR power delay				
\$		Start NVR power after ignition is	on for seconds	C Enable		
				5 ~		
		Shut down NVR power after ignit	tion is off for minutes	Enable		
				10 🗸		
	Information	Low voltage protection				
÷	Maintenance	0 - p				
		Enable protection				
	Display	Input voltage	12 ~			
Optimized in the second sec	PoE management		NVR will be shut dow	n automatically when battery	voltage is lower	than 9V.
		Minimum power-on voltage	12 🗸			
4	Power management		Minimum power-on v	oltage has to be lower than	current voltage (5	i4.5V)
i	UPS	Minimum operation voltage	11 ~			
			After minutes	2 ~		
È	Log					
					Apply	Cancel

When a camera is included into the NVR configuration, the video recording automatically starts. The red dot indicates the recording is taking place.



For making Internet connection via the NAT-traversal over the OpenVPN tunnel, see page 141 for details. You can also refer to VAST2 User Guide for details.

To enable VPN tunneling, when you install VAST2, select VAST server with OpenVPN.

VIVOTEK VAST Setup: Installation Options							
Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.							
Select components to install:	 ✓ VAST LiveClient ✓ VAST Playback ✓ VAST2 Client ✓ VAST Server ✓ VAST Server with OpenVPN 						
Space required: 1009.0MB							
Cancel VAST v1.1	4.0.3 < Back Next >						

DOTE:

If system buzzer is sounded, move your mouse cursor to reveal the main screen portal, and then click on the **Stop buzzer** button.

Serious system faults, such as a missing volume, can trigger the system buzzer. Verify the cause of system fault and turn off the buzzer.

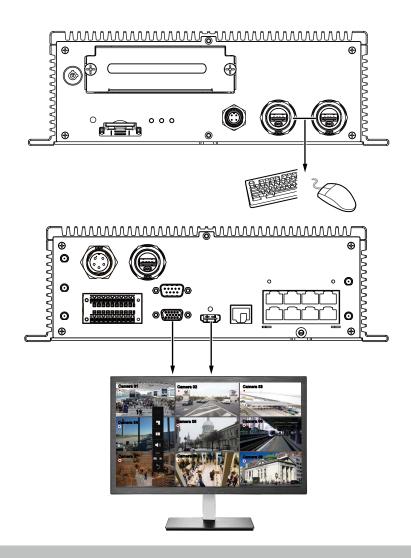


Section One

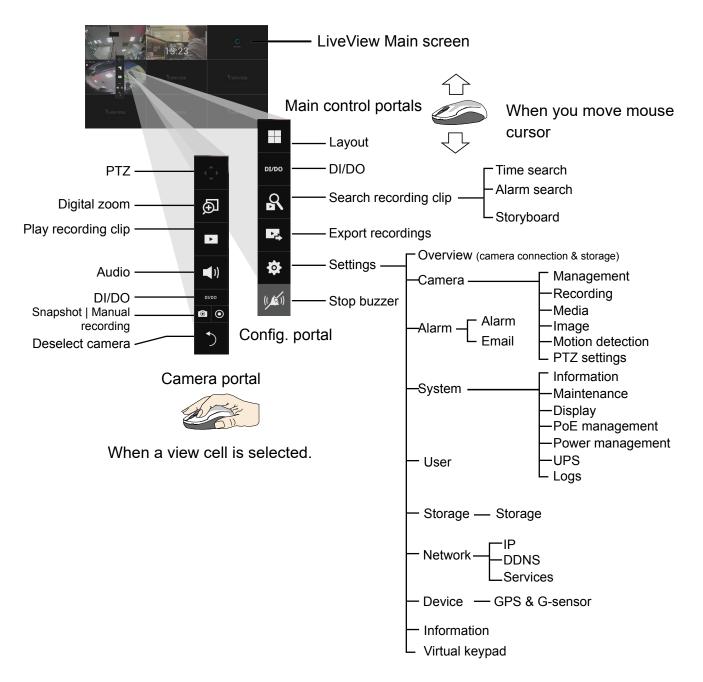
Management over a Local Console

Chapter Two

Introduction to the Local Console Interface



By default, a live view appears on an HDMI monitor. The interface architecture of the local console is illustrated as follows:



After you finish configuring using a Camera portal, click again on the camera view cell to reveal the main control portals.

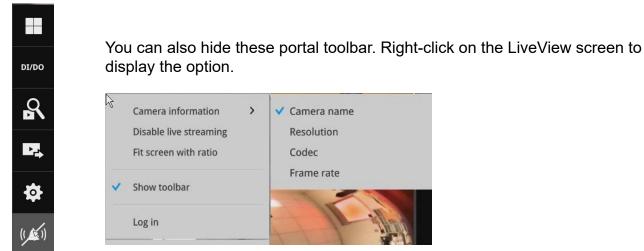
Due to the limitation of system resources, the fisheye dewarp (1R, 1P, 1O3R, 1O8R modes) can only take place on one view cell, for one fisheye camera.

For the Export recordings function, refer to page 85.

2-1. How to Begin

1. How to access the Configuration Portal?

Make sure a mouse is attached to your NVR. Move your mouse cursor, and the Configuration Portal will appear on screen. For all the configurable options available through this portal, please refer to Chapter 3 on page 73.



2. How to access the Camera Portal?

Ð

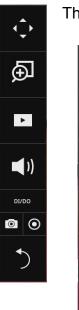
•

()

DI/DO

00

Single click to select a view cell, the Camera Portal will appear. The system automatically detects the characteristics of an individual camera when you select a view cell.



This portal appears with a camera that supports mechanical PTZ.

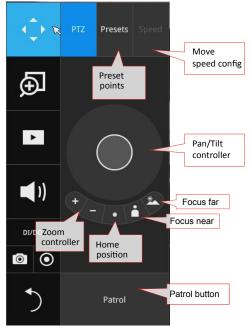
This portal appears with a camera that does not support mechanical PTZ.

-ồ́- Tips:

Here are some operation steps using the tool bar:

- 1. Single-click to select a view cell and bring out the tool bar.
- 2. Double-click to expand a view cell to the full view.
- 3. Double-click again to shrink the view cell to the original size.

PTZ control panel for joystick type PTZ



PTZ control panel for ordinary PTZ type



PTZ presets: If your PTZ cameras have preset locations, click on the button to unfold the preset menu. Click on any of the preset locations to move to the area of your interest.

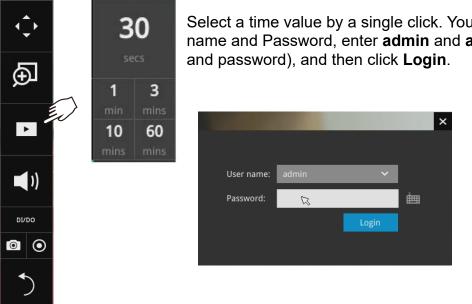
Pan/Tilt controller: Pull the inner circle to the direction you prefer. Release the mouse button to stop moving.

Zoom controller: The zoom controller buttons only apply to cameras that come with an optical zoom module, such as a speed dome camera.

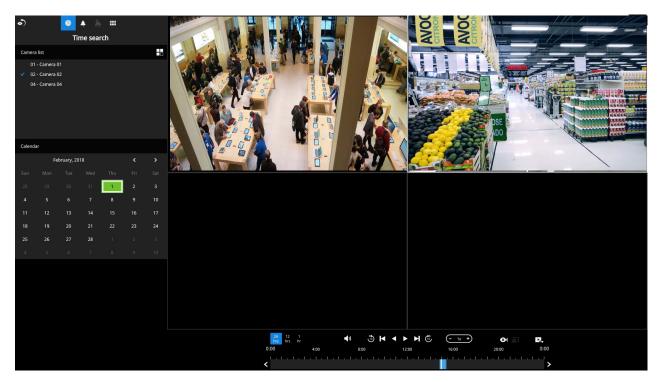
Focus controller: The focus controller buttons apply to cameras that come with focus control over its lens module, such as a speed dome camera.

3. How to retrieve and access recorded videos?

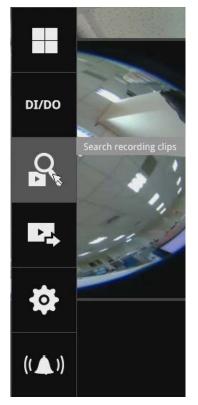
3-1. One is to access the video clips taken within 2 hours. Left-click to select a view cell, and then click on the Recording clips button.



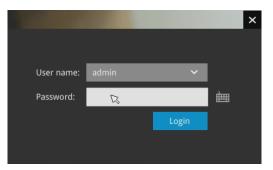
Select a time value by a single click. You will be prompted for User name and Password, enter admin and admin (the default user name The **Playback** window will prompt, and a playback begins from the point in time you selected, e.g., 30 seconds ago. This function allows you to quickly review what has just happened.



3-2. Another way to access past videos is to open the **Search recording clips** window. Move your mouse cursor to display the **Configuration Portal** (without selecting any view cell). Click on the Search recording clips button. Please refer to page 74 for more information about the search functions.



You will be prompted for User name and Password, enter **admin** and **admin** (the default user name and password) and click Login. It is highly recommended to change the password after you log in.



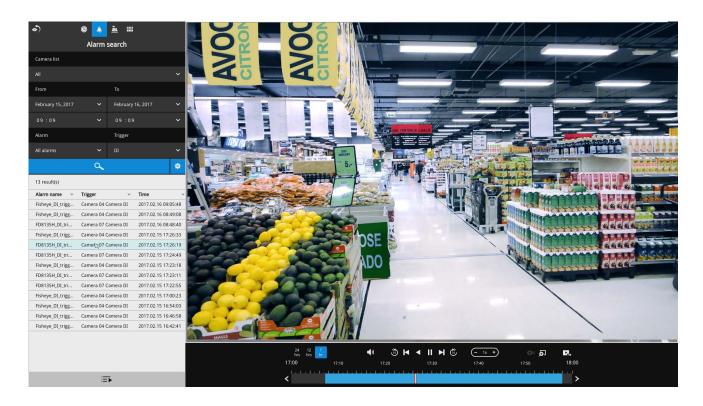
4. How to recieve system alarm?

Please refer to page 107 for how to configure system alarm triggers. When the alarm is triggered, e.g., by digital inputs or motion detection, an alarm message will prompt on the screen.

Click on the Alarm icon for an instant review of the event occurrences.



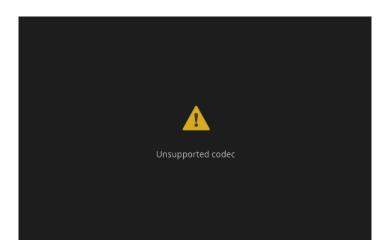
If the alarm is configured with video recording as the responding action, you can click on the alarm entry. The Playback window will appear, allowing an instant playback of the alarm-related footage. You will enter the "Search alarm results" page even if the alarm does not trigger a recording action.



5. Why live view is unavailable?

The default live view receives a camera's stream #1. If a camera's stream #1 is configured using **MPEG-4** as the video codec, the following message will prompt.

You can go to the Settings > Camera > Media > Video window to configure the video codec of stream #1 into H.264 or H.265.

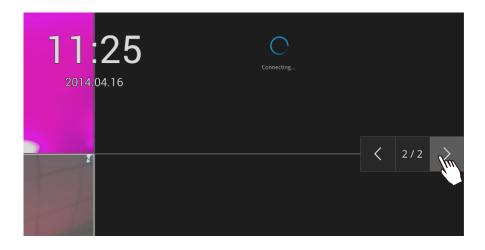


ه) ح			Stream management Video Audio
\$		01 - Camera 01	
-	Management	02 - Camera 02	Stream 1 Stream 2 Stream 3 Stream 4
	Recording	03 - Camera 03 04 - Camera 04	Codec: H.264 ~
	Media	05 - Camera 05	Frame size: 1280x1280 ~
i	Image	06 - 07 -	Maximum frame rate: 12 fps Intra frame period: 1 S
9	Motion detection	08 -	Video quality: Fixed quality 👻
۲	PTZ settings		Quality: Good Maximum bit rate: 6Mbps
٩			
i			
曲		× •	Apply.

6. How do I move to another layout page?

Move your cursor to the right-center side of your screen. The page turner buttons will appear as shown below.

For example, if you have 8 cameras placed on 2 2x2 layout pages, use these buttons to visit different pages.



7. Why the onscreen tool bars disappear after some time?

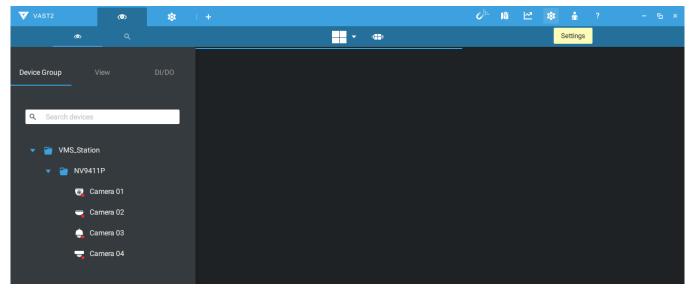
The system comes with idle modes. Below are the applicable conditions:

- 1. Live view: if no management activities occur for 5 seconds, the tool bars disappear from screen. When in the idle mode, mouse cursor and tool bars will disappear. Moving the mouse cursor will re-activate the screen.
- 2. **Settings page**: If left unattended for 10 minutes, system will automatically log out. The system will prompt for user credentials if a user tries to access the Settings page again.
- 3. **Search recording clips** window: If currently there is a video playback, the system will not enter the idle mode.

2-2. Tracking and Viewing the Mobile NVR Videos on VAST2

2-2-1. Adding NVR as a VAST2 Sub-station

1. From the Live view page, click 🔯 Settings.



2. Click **Sites** from the Device pane.

e. <		((_))	(Ŵ)		N
Device	Recording	Alarm	User	System	E-Map
Cameras	Recording options	Add & Delete	Add & Delete	License	Import & Setup
Sites	Backup			SMTP	
POS	Failover			Preferences	
DI/DO devices				Feedback and bugs	

3. In the **Site management** window, click the Add Sites , button.

VAST2	O	\$	
🔊 Settings	1		Site management
-	Q Searc	h devices	
Cameras	▼ ■ ∨	MS_Station	
Sites			
POS			
I/O			
DI/DO devices			

4. You can manually enter the IP address or use the **Search** button to locate your NVR.

Q Search devices	New sites Search
▼	IP
	Port 3443 SSL only
	Add as a redundant server
	CMS password

5. Once the NVR is found, enter the CMS access password to authenticate the connection.

		×
Q Search devices	Add 1 sites 🔯	
VMS_Station	Q Search sites	Authorize A
	Status Name IP Port Model	
	☑	

Note that the CMS password is configured on the NVR, in the **Settings** > **Network** > **Service** page.

ه)		Service port	:						
4		HTTP		80					
		HTTPS		443					
-1		RTSP		554					
		CMS & iViev	ver						
		🔽 Allow a	ccess						
_		Port	VAST & i	Viewer		3454			
i			VAST2 (same a	s HTTPS)		443			
		CMS	Set up pa	assword for VAST & \	/AST2				
	10		Confirm	password					
	IP		VAS	T2 remote connection	on				
٩	DDNS		IP		nv9411	p.dnset.com			
			API	service port	3443		VAST2	- NVR	
i	Service			ername ministrator)	admin				
È			Acc	ount password	•				
									Apply

6. A check mark will appear on the NVR entry. Click the **Apply** button to complete the configuration.

Search devices	Add 1 sites Q	Authorit
VMS_Station	Status Name IP Port Model	
	✓ 2→ NV9411P 192.168.4.118 443 NV9411P	

2-2-2. Configuring GPS and E-Map

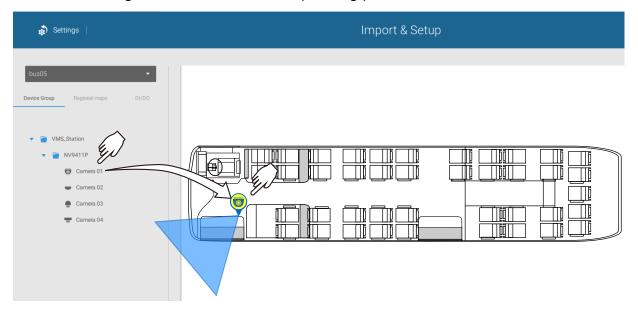
1. Open the **E-Map** configuration page, and click on the **E-Map** import button. Select a graphic file of your vehicle.

VAST2		\$		ć ^{i≞} IN 🗠 🕸 📩 ? – ™ ×
🔊 Settings			Import & Setup	
	All N Google I	G		

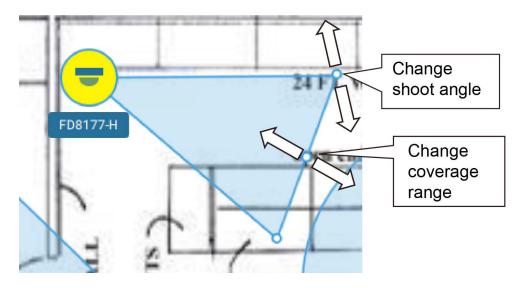
2. An exmaple of a bus is shown here. Double-click to edit the E-Map.

VAST2		\$				୦ ^ଲ 10 🗠 🕸 ଲି ? – ଲ	
🔊 Setting	js			Impo	ort & Setup		
	All	Maps				🙀 🔍 E Solene mape	
	5	G	2				
	Google	map		bus05			

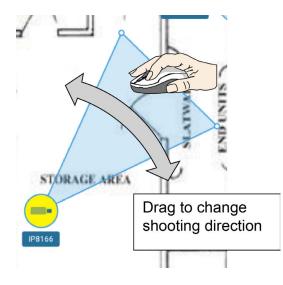
3. Click and drag cameras to their corresponding positions on the vehicle.



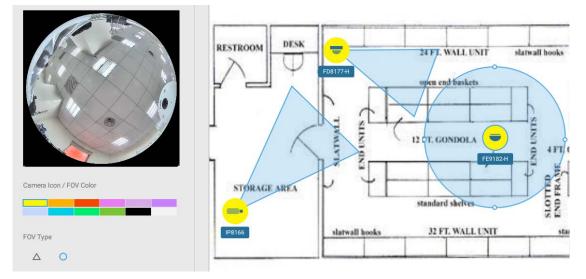
When the camera is in place, drag the FOV indicators on the edge to change the shoot angle and the coverage range.



Drag the FOV to change the shooting direction to match the actual installation.



Click on the camera icon. You can also change the color of camera icon and the FOV type. Fisheye cameras, when ceiling mounted, have a round shape coverage.

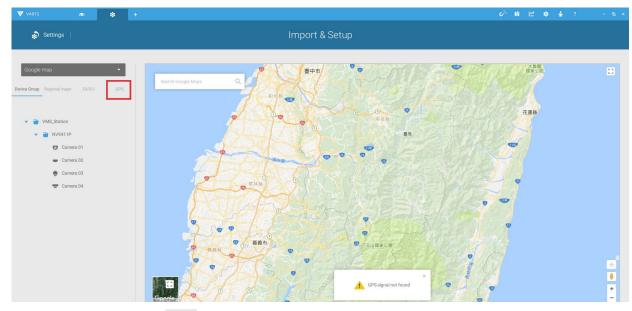


When your E-Map configuration is completed, click the Done button at the lower-right of the screen.

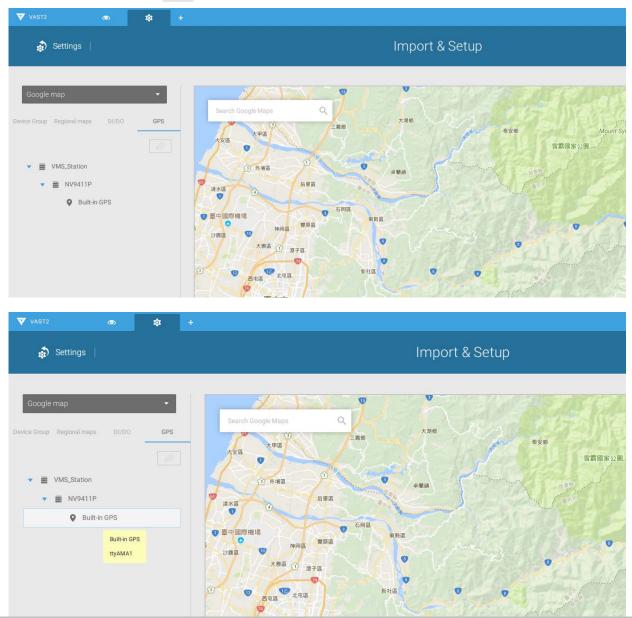
4. Double-Click the **Google map** icon.

VAST2	O	\$			6 ¹ 18	l≌ 1	ê mî	
à Settings			Imp	ort & Setup				
	All	Maps			R 04	ê be	in mape	
		G						
	Google	map	bus05					

5. The Google map window appears. Click on the GPS tab.

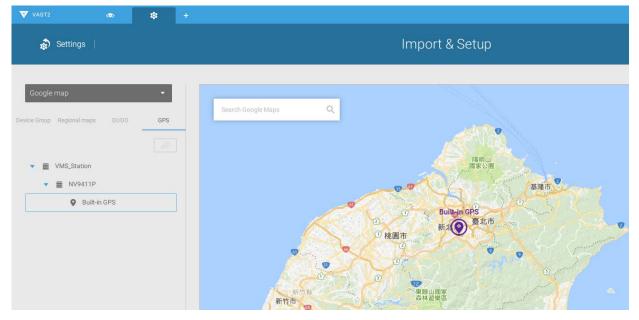


6. Click the Add GPS 💀 button. The GPS device on the NVR will be listed.



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7. Your GPS location should be found on the Google map. Double-click the Built-in GPS found under the NVR to display the current position.



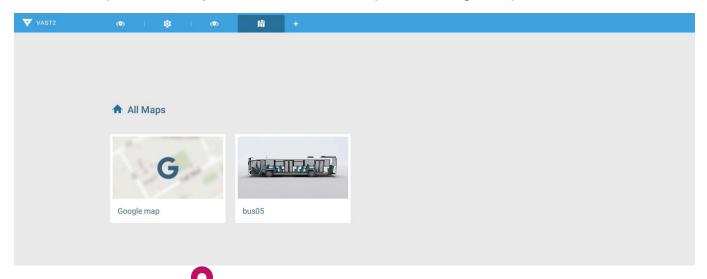
8. Select the "Show e-maps while selecting GPS on google map" checkbox. Select the E-Map configured for your vehicle from the pull-down menu. Click the **Apply** button, and then click the **Done** button at the lower-right corner of the screen.

VAST2	۲	\$	+	
🎝 Settings				Import & Setup
*)				全國加油站 建二路 BMW汽車依德 晶雲會館中和館 Search Google Maps 好市多Costco 中和店 家樂福中和店Carrefour Jong Ho Store
NV9411P			D	建六路 光寶科技設份有限公司
Built-in GPS			2 新生田	
ttyAMA1		: 19200		□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
Show e-maps while s map	electing GPS	S on google		
Select one map		*		道東世紀廣場 通東世紀廣場 西田田田子 Builtain GPS
🕅 Google map			新生結	臺灣銀行 四天 新发生排 一 中部公司
₩ bus05			第 909巻	
			th Dia we are	
				和城路一段 Expressway 64 小北百貨

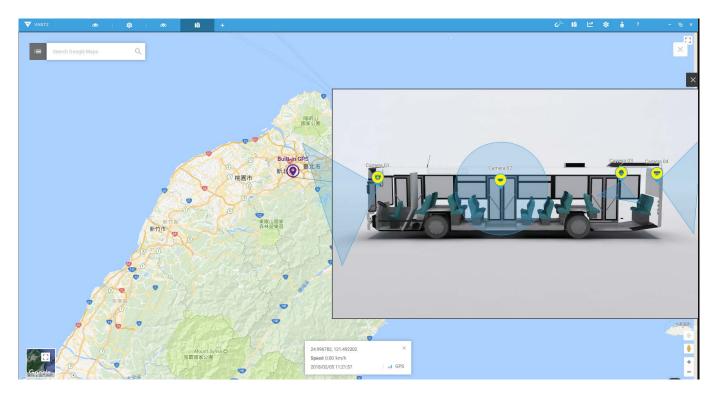
9. On the VAST live view, click the **E-Map** button to create an E-Map view. Click the E-Map tab on the left to open the E-Map window.

VAST2	୦୦ । ହା ା ୦୦	18		V	C		\$ ŵ		
			11			VXII			
						/ייי/			

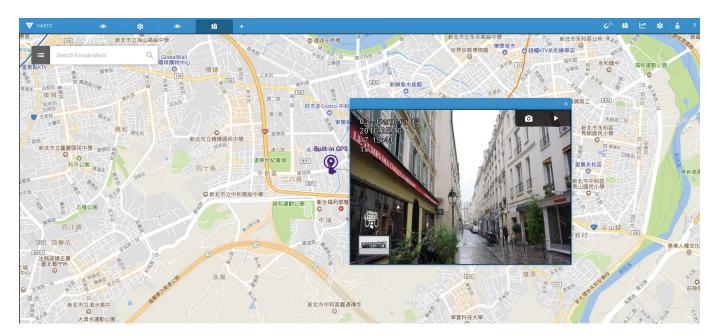
10. Click to open the **E-Map** view. Double-click to open the Google map.



11. A GPS location mark V will appear on the E-Map showing the location of vehicle. Singleclick on the location mark to display the associated vehicle's E-MAP.



12. You can click on any of the camera icons placed on the vehicle to display an instant live view. Note that one live view can display at a time.



Alarm

You can let a VAST server receive an event from NVR. The Alarms can be configured to perform a series of actions when different events occur. Alarms can be used to automatically react to possible threats. For example, the VAST server can start a recording or send an Email notification when Motion detection is triggered.

🔊 Settings		A	arm manag	ement			
)		Q, Search alar	m(s)
	VAST server + Add source	Do Select triggers + Addactor +	Select	+ Add a se Always Customize Office	Nedular Alarm		Auto Cancel
No.	Name	If the following is triggered By ADAM	Box DI	Do	On/to	At	

A wide variety of triggering conditions can be applied, including:

1. Camera triggers Motion detection Field detection (VCA) • • Camera DI Loitering (VCA) • Camera DO Camera disconnected • • Tampering detection Recording error • Temperature Stop recording • Video loss (Video server only) IR (Infrared) • . PIR (Passive infrared) Line crossing (VCA) •

Note that some of the triggers require that you open a web console to individual cameras. For example, Motion detection windows have to be manually configured on each camera before they can be configured in the Alarm settings.

2. \	/AST server and NVR trigg	ers 🖵
•	Network disconnection	These can be used to send maintenance notifications.
•	Storage failure	
•	Storage full	
•	Fan status	
•	GPS disconnected	The GPS and G-sensor related options apply to the Mobile NVR
	(Mobile NVR)	that comes with the GPS and G-sensor. GPS can be used to track
•	Abnormal G-sensor	the speed and location of a vehicle, while the G-sensor can be
	motion (Mobile NVR)	used to detect abnormal impact or traffic accidents.
•	Speeding (Mobile NVR)	

* Note that you should use the pull-down menu to select a triggering condition, and then click to select a mobile NVR.

letwork disconnected		
Storage failure	^	
Storage full		
Fan status		
GPS disconnected (Mobile N		
Abnormal G-sensor motion (
Speeding (Mobile NVR)		

The available actions include:

•	Start to record video	•	Send HTTP requests
•	Set DO status	•	Send live streaming
•	Go to camera presets	•	Send email

The Start to record video will record a video clip of the length of 10 seconds on the occurrence of an event.

The Set DO status will activate a DO connection. For example, to light an illuminator or sound an alarm.

The Send live streaming action will bring up a video prompt on the live view, showing the realtime video feed from a specific camera.



The Go to camera presets requires you to configure preset points on a PTZ camera before the Alarm configuration, such as a speed dome. Once triggered, the PTZ camera lens will move to a preset.

The VAST server automatically disables unavailable options. For example, when the DO option is selected, the cameras that do not support DO connections will be hidden.

The Send email opens a configuration page where you should enter valid email addresses as sender and recipients. It is required that you configure an SMTP server for mail delivery in Settings > SMTP. Enter Subject and contents. Select the checkbox for including a snapshot of the event. When done, click Add to enable the action. A reachable Mail server and Email accounts must be provided before you can apply the settings.

	Sele	ct actions	×
Send email	•		on Settings > System > SMTP
From:	abc@mail.com		
Subject:	Alarm Notification		
Content:	Device: \$(DeviceName) Trigger: \$(TriggerType) Time: \$(EventTime)		+
	Snapshot image	Test	
			Add Cancel

On the **Schedule** page, you can select to activate or de-activate alarm triggers throughout a specific timeline. For example, in some situations you can disable the alarm triggers during the office hours, and choose to enable the triggers only during the off-office hours.

			Edit so	chedule template			
emplate name	Office						
:00		Mon	Tue	Wed	Thu	Fri	Sat
2:00							
1:00 1:00							
5:00 5:00 7:00							-
2:00 3:00 9:00							
9:00 0:00							
0:00 1:00 2:00 3:00							
5:00							
7:00							
2:00 8:00 9:00							
2:00 3:00 9:00 0:00 1:00							
4.00 5:00 6:00 7:00 8:00 9:00 0:00 1:00 2:00 3:00							

Click on any of the options on the Schedule panel for the alarm to take effet: Customize, Always, or Add a schedule.

You can manually create an effective time template using the New template Save as a template...



Click and hold down on the time cells, and drag the mouse to include the time span of your preferrence. The minimum selectable unit is half an hour. You can select multiple time spans on the template. Enter a name for the template, and click Add to save your template.

The same configuraion window apply to both the Schedule template and the customize schedule windows.

Make sure a Schedule mode is selected when you leave this configuration step.

Enter a name and instructions for users to follow, and then click Add to complete the Alarm setting.

All configured alarms will be listed on the Alarm settings page.

2-2-3. Playback Videos on the NVR H.D.D. from the VAST2 CMS Software

Since the NVR runs on Linux, you have to install the Ext2 File System Driver for Windows to access the recording files from a NVR hard disk.

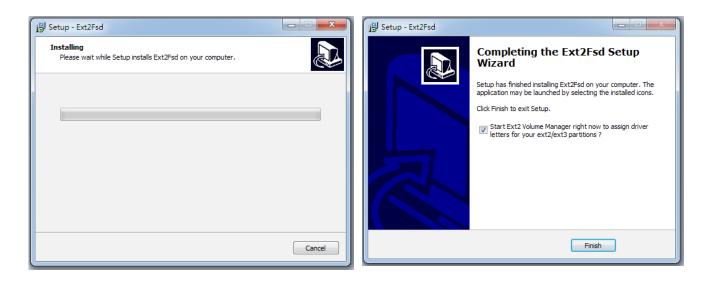
The file system driver can be found here: https://sourceforge.net/projects/ext2fsd/?source=typ_

redirect

Run and install the Ext2fsd-0.xx.exe. Follow the onscreen instructions to complete the installation. .

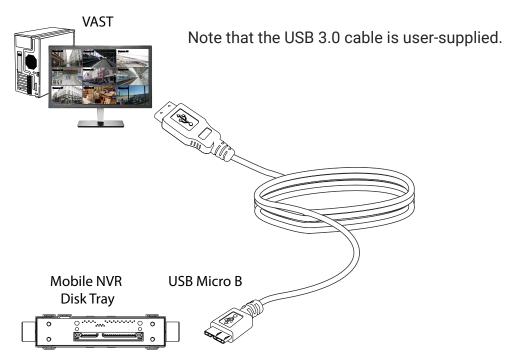
開啟檔案 - 安全性警告	📴 Setup - Ext2Fsd	
是否要執行這個檔案? ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●		Welcome to the Ext2Fsd Setup Wizard This will install Ext2Fsd 0.69 on your computer. It is recommended that you close all other applications before continuing. Click Next to continue, or Cancel to exit Setup.
Select Destination Location Where should Ext2Fsd be installed?	Setup - Ext2Fsd Select Components Which components should	be installed?
Setup will install Ext2Fsd into the following folder. To continue, dick Next. If you would like to select a different folder, dick Browse. C:\Program Files\Ext2Fsd Browse	Select the components you install. Click Next when you I Ext2 File System Drive	
At least 10.7 MB of free disk space is required.	Current selection requires	at least 10.7 MB of disk space.

JSJ Setup - Ext2Fsd	📳 Setup - Ext2Fsd
Select Start Menu Folder Where should Setup place the program's shortcuts?	Select Additional Tasks Which additional tasks should be performed?
Setup will create the program's shortcuts in the following Start Menu folder. To continue, click Next. If you would like to select a different folder, click Browse.	Select the additional tasks you would like Setup to perform while installing Ext2Fsd, then click Next. Make Ext2Fsd automatically started when system boots
Browse	 Enable write support for Ext2 partitions Enable force writing support on Ext3 partitions
Don't create a Start Menu folder	
< Back Next > Cancel	< Back Next > Cancel



Volume	Туре	File system	Total size	Used size	Codepage	Physical object
~	Basic	BAW	128 MB	128 MB		\Device\HarddiskVolume1
\$	Basic	FAT32	99 MB	99 MB		\Device\HarddiskVolume2
🧼 (C:)	Basic	NTFS	916 GB	916 GB		\Device\HarddiskVolume3
<u>م</u>	Basic	NTFS	499 MB	499 MB		\Device\HarddiskVolume4
🧼 (D:)	Basic	NTFS	916 GB	916 GB		\Device\HarddiskVolume5
<u>م</u>	Basic	NTFS	29 GB	29 GB		\Device\HarddiskVolume8
\$	Basic	RAW	128 MB	128 MB		\Device\HarddiskVolume7
🛥 <u>IGA</u>	Basic	NTES	1862 GB	1862 GB		\Device\HarddiskVolume8
•			III			4
	Туре	File system	Total size	Used size	Codepage	Partition type
DISK 0						
	Basic	BAW	128 MB	128 MB		GPT
	Basic	FAT32	99 MB	99 MB		GPT
(C:)	Basic	NTFS	916 GB	916 GB		GPT
	Basic	NTFS	499 MB	499 MB		GPT
(D:)	Basic	NTFS	916 GB	916 GB		GPT
	Basic	NTFS	29 GB	29 GB		GPT
DISK 1						
	Basic	BAW	128 MB	128 MB		Microsoft reserved partiti
(G:)	Basic	NTES	1862 GB	1862 GB		Basic data partition

- 1. Remove the disk tray box from a mobile NVR.
- 2. Connect the disk tray box to your VAST server using a USB 3.0 type A to Micro B cable.



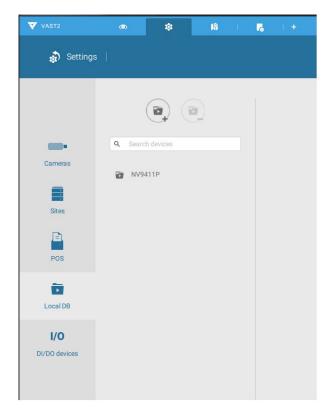
- 3. From VAST, enter Settings > Device > Locabl DB.
- 4. There are 3 import types:
 - 1. **NVR disk**: the drive tray box removed from a mobile NVR.

2. **NVR backup**: the recorded videos exported from an NVR using a USB thumb disk or portable drive.

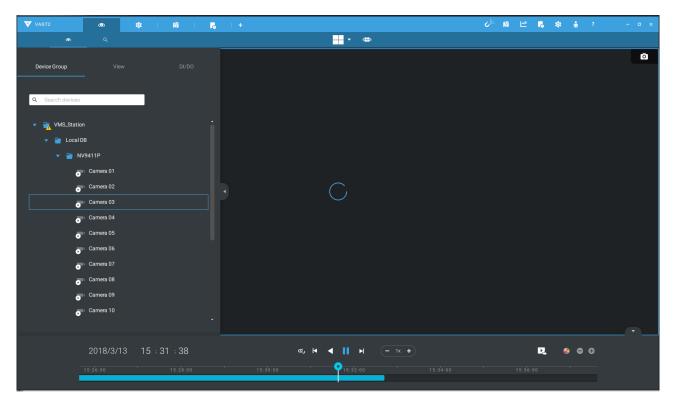
3. VAST backup: scheduled backup from the local machine.

VAST2	ه \$	🔊 i 🌄 i +					¢ ⁱⁿ M	2 6	🅸 🖞 🤉	
🔊 Settings			Loca	al DB managemei	nt					
										-
		a_								
-	Q Search devices		Add local DB							
Cameras			Туре	💿 NVR disk 🛛 NVR back	up 🜑 VAST t	e el un				
			Source			ασκαμ				
Sites		♥ 選擇資料夾						x		
POS			樂磁碟 (E:) ▶			• • , [<i>授尋 本機磁碟 (E:)</i>	P		
		. 😁 AT 88 15	名稱 ^	修改日期	頭型	大小	8≡ •	•		
Local DB		▶ 🗈 文件 ▶ 🎝 音樂	DB Iost+found REC-0	2018/2/2 上午 11 2018/1/25 下午 1 2018/2/27 下午 0	檔案資料夾					
1/0		▷ 🔛 圖片	REC-1 REC-2	2018/3/13 上午 0 2018/3/13 上午 0	檔案資料夾					
I/O DI/DO devices		⊿ :➡ 電腦	REC-3 REC-4 REC-5	2018/3/13 上午 0 2018/3/12 下午 0 2018/2/21 下午 0	檔案資料夾					
		→ 👝 本機磁碟 (E:)	REC-6 REC-7 REC-8	2018/1/25 下午 1 2018/1/27 上午 1 2018/2/3 下午 03	檔案資料夾					
		▶ 🕞 新増磁碟區 (G:) ▶ 💷 Apple iPhone	REC-9 REC-10	2018/2/3 下午 03 2018/2/3 下午 03	檔案 資料夾 檔案資料夾					
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		資料夾:	本機磁碟 (E:)				選擇資料夾 彫			
-										

- 5. Taking a mobile NVR's disk drive as an example, click the 🔎 Source select button to locate the disk drive.
- 6. The NVR will be mounted as a local DB.



7. A Local DB sub-tree will be listed under your server, and you can view the existing recordings on the NVR's disk drive.



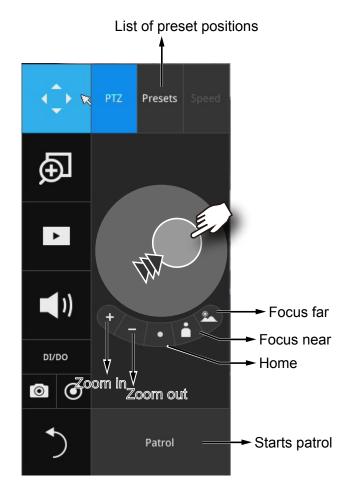
2-3. Operation on Camera View Cell

2-3-1. PTZ Panel

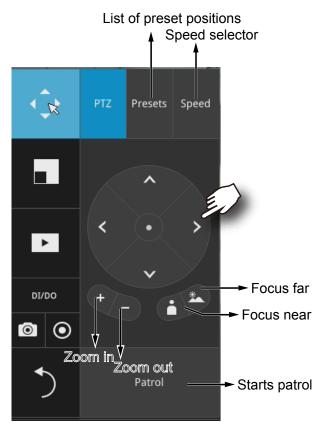
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Once you selected a camera, click on the PTZ button on a camera portal.

The PTZ panel will prompt. Below are the description of its functions:



- 1. PTZ control: Click and drag the nudget in the center towards the direction you wish to move to.
- 2. Focus: Click on the Focus near and Focus far buttons to adjust camera focus.
- 3. Home: Click to move the camera lens towards the default home position.
- 4. Zoom: Use the Zoom in and Zoom out buttons to adjust the camera's zoom ratio.
- 5. Presets: If you configured preset positions, a list of preset positions will appear.
- 6. Patrol: If you configured preset positions into a patrolling tour, click on this button and the camera will proceed with patrolling through preset points. Note that on a speed dome camera, the farther you pull the nudget away from the center, the faster the lens moves. This works like speed control.



Below is the PTZ panel that appears with ordinary PTZ cameras.

- 1. PTZ control: Click on the arrow buttons to move towards the direction you wish to move to.
- 2. Focus: Click on the Focus near and Focus far buttons to adjust camera focus.
- 3. Zoom: Use the Zoom in and Zoom out buttons to adjust the camera's zoom ratio.
- 4. Presets: If you configured preset positions, a list of preset positions will appear.
- 5. Speed: Adjusts the speed when moving across the field of view.
- 6. Patrol: If you configured preset positions into a patrolling tour, click on this button and the camera will proceed with patrolling through the preset points.

This portal appears with a fisheye camera. The PiP and PTZ buttons will then be disabled.

IMPORTANT:

Due to the limitation of system resources, the fisheye dewarp (1R & 1P) can only take place on one view cell, for one fisheye camera.

Joystick support



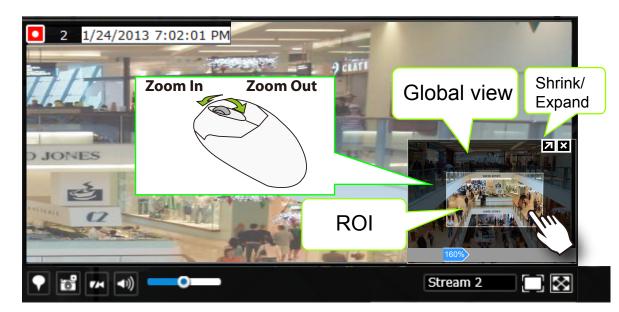
The joystick related operations are listed below:

- 1. Pan: Continuous move is supported. (joystick X-axis movement)
- 2. Tilt: Continuous move is supported. (joystick Y-axis movement)
- 3. Zoom: Continuous move is supported. To zoom in, move joystick Z-axis clockwise (or use button #2). To zoom out, move joystick Z-axis counter-clockwise (or use button #3)
- 4. Home: joystick button #1.
- 5. Auto Pan: joystick button #5.
- 6. Patrol: joystick button #7. Preset positions must be pre-configured for the camera.
- 7. Stop: Stops auto pan or patrol. Joystick button #6.

2-3-2. Digital zoom Panel

Digital zoom is a function that provides digital zoom into a live video. Be sure you place your mouse cursor inside the Global view window for the zoom function to take effect.

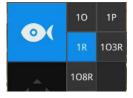
When activated, a Global view window will appear at the lower right of the view cell as shown below. You can display only a portion of the complete video frame as an area of your interest. Using a click and drag on the ROI window, you can instantly move to other areas within the video frame. Use the zoom ratio pull bar at the bottom to change the zoom ratio. You may also move the ROI around by click and drags.



Note that not every camera supports the PiP function.

NOTE:

Please refer to page 163 for the description of fisheye display modes. The working theory on fisheye modes is identical for use on both local and web consoles. The fisheye mount type setting is found in the **Settings** window.



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DI/DO

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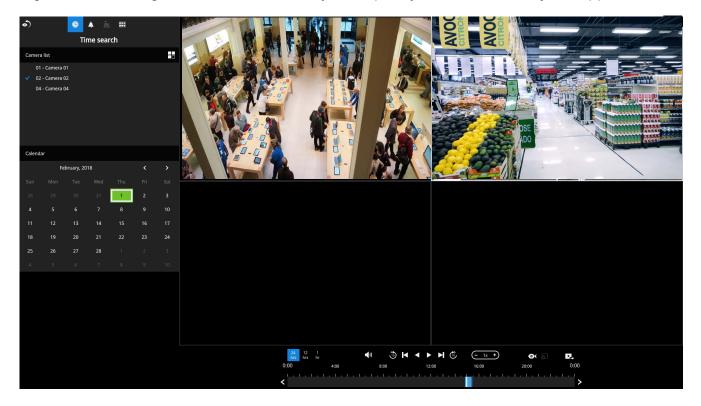
2-3-3. Play Recording Clips Panel

The Play Recording Clips function provides a shortcut to the latest recordings on the system. You can select 30 secs, 1 min, 3 mins, 10 mins, and 60 mins for an immediate playback.

For security reasons, using this function requires users to enter his/her credentials.



The **Playback** window will prompt, and a playback begins from the point in time you selected, e.g., 30 seconds ago. This function allows you to quickly review what has just happened.



2-3-4. DI/DO



The DI/DO panel provides a glimpse of all DI and DO signal statuses from the connected cameras. You can manually trigger a digital output by clicking on its indicators.

When a digital input is triggered, its status will also be indicated on the panel.

Please note that DO is triggered by one click. You should then click again to disable the DO. Otherwise, the DO signal will be continuously triggered. As the result, if the DO is configured as an alarm trigger, many alarm messages will be generated.

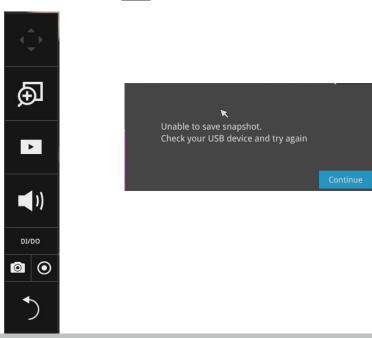
2-3-5. Others

1. Snapshot 1. Snapshot is used to take a snapshot from the camera currently selected. Note that this function only saves the snapshot (in JPEG) to a USB thumb drive.

MIMPPORTANT:

The USB thumb drive has to be one that is formatted in FAT format.

- 2. Manual Recording O: Press the button to start a manual recording from a selected camera. Click again to stop the recording.
- 3. Return button : Click to return to the LiveView window.



2-3-6. Right-click Commands

Left-click to select a camera. Right-click to display the selection menu.

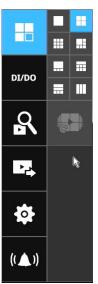
- 1. **Camera information**: Click to display camera name, resolution, codec, or frame rate on the view cell. The information will display on the upper left corner of a view cell.
- 2. **Disable live streaming**: Select to display snapshots on screen instead of constantly streaming live videos.
- 3. **Fit screen with ratio**: The NVR server automatically optimizes the display of camera view cells. However, you can still select this option to display the camera's original aspect ratio: for example, the original video feed can be 4:3. Without the fit screen, every camera's image will be expanded to fill the view cell.
- 4. Show tool bar: You can hide the tool bars by deselecting this option.
- 5. Log in/Log out: Log in to enable system configuration.

Camera information	>	✓ Camera name	
Disable live streaming		Resolution	
Fit screen with ratio		Codec	
Show toolbar		Frame rate	
Log in			
	Disable live streaming Fit screen with ratio Show toolbar	Disable live streaming Fit screen with ratio Show toolbar	Disable live streaming Resolution Fit screen with ratio Codec Show toolbar

Chapter Three Configuation Using the Local Console

The Main Control Portal

3-1. Layout



Move your mouse cursor across the screen to display the portal.

The first functional button is Layout. You can select the 1x1, 1x3, 2x2, 3x3, 1+5, 1+6, 2+3, 1+3, layout as the screen display. If you select the single view layout, the rotation button will appear. Click the rotation button below to let the system swap the display of different cameras by every 10 seconds. The rotation speed is configurable via Settings > System > Display.

For NV9411P, the 1M+12 and 4x4 layouts are available.

3-2. DI/DO



Click on the DI/DO button to display the full list of all DI and DO signals (whether they are connected or not) from all cameras in the configuration. If a digital input signal is triggered, e.g., the DI-4 on the left, its indicator will turn solid white.

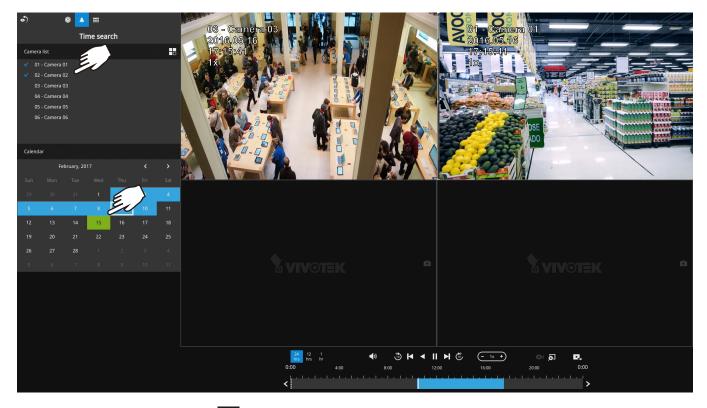
3-3. Search recording clips

3-3-1. Time Search

		Click the butt prompt. Ente				•	A confirm b	ox will
DI/DO					×			
S	Search recording clips							
		User name:	admin	~				
		Password:	R		È			
\$				Login				
((🔔))	The energy and a		vill enneer	Coloctor	day on th		where the	

The search and calendar view will appear. Select a day on the calendar when the recordings took place (the days with recorded clips will be highlighted in blue and green). Single-click on a day to begin playback and search.

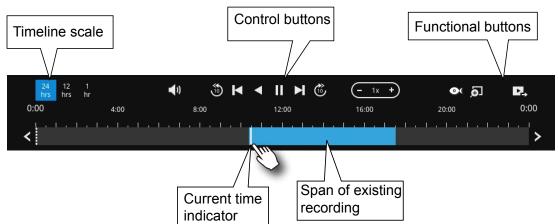
The date highlighted in green indicates today, and the green indicator does not necessarily mean that there are recorded videos today.



Use the layout button **H** to adjust view cell arangement on screen. You can retrieve the recorded videos from a max. of 4 cameras at the same time.

Once you select to playback multiple cameras, the playback window will automatically turns into the 2x2 layout. Up to 4 cameras' recording can be played back simultaneously. This enables the synchronized playback of video produced by multiple cameras. Users do not need to switch from one camera to another when searching for forensic evidences.

The timeline bar enables quick skimming through the recording. Its functions are described as follows:

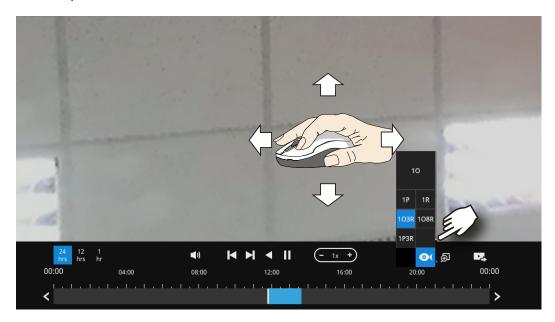


Duttono	Description
Buttons	Description
24	Time scale selector. Use the buttons to select the span of time displayed or
hrs	the tool bar.
1	Audio volume tuner.
1	Plays back from 10 seconds ago.
K	Previous frame. (I-frame only)
	Next frame. (I-frame only) After you paused a playback, use this button to
	browse video frame by frame.
$\overline{}$	Play backwards.
\mathbf{A}	Play. This button is available after you paused a playback.
	Pause.
(- (+)	Each click on it speeds down by 1/2. The slowest speed is 1/16.
+	Each click on it speeds up by 2x. The fastest speed is 16 times.
	The current playback status is indicated on the screen.
O (This button appears when you select to playback a fisheye camera's
	recording. This avails the selection of dewarp modes usable during the
	playback.
ล	Digital zoom. This applies when a camera is displaying the full of its field of
θ	view. You can use the Digital zoom function to zoom in on the field of view.
F .	Export clips. Use this function to select a span of time you want to export to
	other medias.

By default, the playback starts from the beginning of a day's recording. While playing the recorded video, click on the timeline to replay a point in time in the video.

\odot	Snapshot. Takes a snapshot of the current FOV. The Snapshot button has
	been moved to the right-hand side of each view cell.

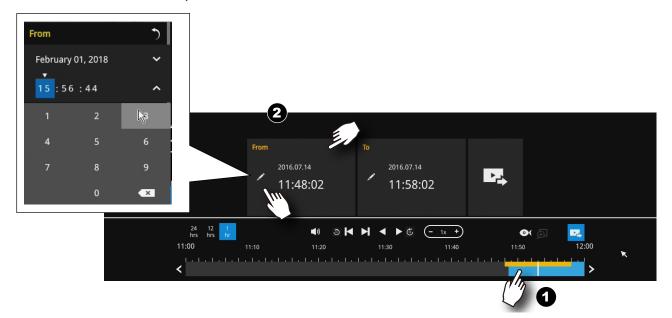
When playing the video recorded by a fisheye camera, the fisheye display options will be available on screen. You can click to select the 10, 1P (Panoramic), 1R (Regional), 103R (1 Original and 3 Regional), or 108R modes. If 1P, 1R, 103R, or 108R mode is selected, you can exert the mouse control on screen, such as swiping the view, or hold down the mouse button and swipe the field of view.



Please refer to the User Manuals that came with fisheye cameras, or page 163 for description of fisheye display modes.

Note that to export a video segment from the playback timeline,

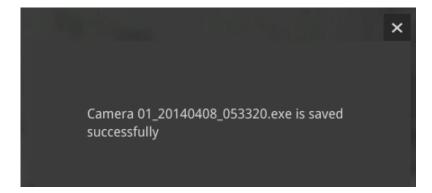
- 1. Click on the Export button
- 2. Insert a USB drive formatted in the FAT format.
- 3. Select the "From time" by clicking on the timeline. You can also manually enter the "From time" and the "To time."
- 4. Click on the "From time" tab using a single click.
- 5. Repeat steps 3 and 4 to configure the To time.
- 6. Click on the Export button.



The export process is indicated on the right. Depending on the length of footage to be exported, this process can take minutes.

	 Image: Image: Im	▶ ◄ ▶ ⓓ	(- 1x +)	Exporting 47	% 🔉
11:10	11:20	11:30	11:40	11:50	12:00
<u></u>		<u> , , </u> , , ,			>

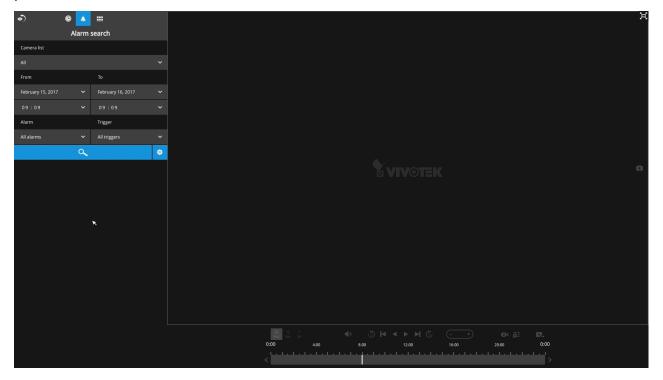
When completed, a message will display on screen.



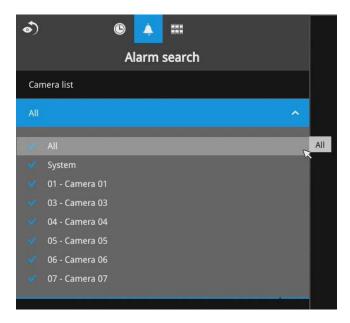
The default for export is 5 minutes before and 5 minutes after the point in time that is currently selected.

3-3-2. Alarm Search

Click on the Alarm search button on the upper left of the screen to enter the Alarm Search panel.



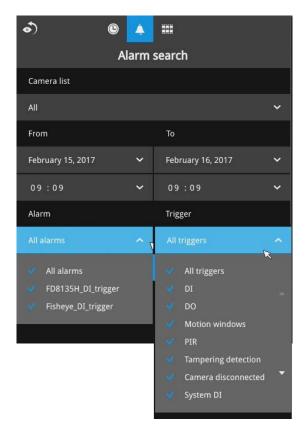
You can specify the search criteria by selecting the devices to be involved in the Alarm search. The default is All.



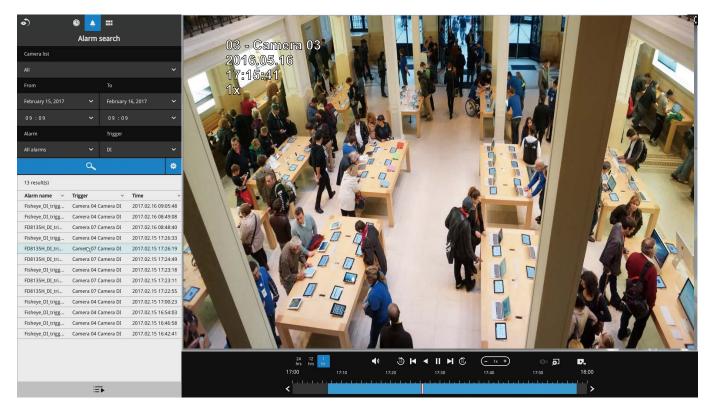
You can then specify the start time and end time to configure a span of time to be searched. Click to expand the calendar view and keypad to specify the From and the To time to cover the possible time of occurrences.

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Fr	om						То	
Fe	brua	ry 15,	2017	2		ŝ	Select a starting date	~
Sun		ruary, 2 Tue	2 017 Wed	Thu	< Fri		09:09	~
5				2 9			Trigger	
12 19 26				16 23			All triggers	~
20						~		\$
0	9 : C)9				^		
	1		2		3	*		
			0		2	3		

You can also determine what types of alarms will be included in the search. Select the preconfigured Alarms or select the Trigger types from the pull-down menus.



When done with the selection, click on the Search button. In the sample screen below, a list of alarms is displayed, and you can click on any of them to replay the moment when the alarm was triggered. The alarm-related recording will typically include a length of 5 seconds of pre-alarm and 20 seconds of post-alarm footage.



Up to 200 search result entries will appear. If more than 200 entries have been found, click on the New results button on the last entry page.

If two cameras participate in the recording of an alarm-related event, the footage of one camera will be played first, and then that of the other.

If user's operation takes place (pause, rewind, etc.) during the playback, the system will stop the consecutive playback of multiple alarm footages.

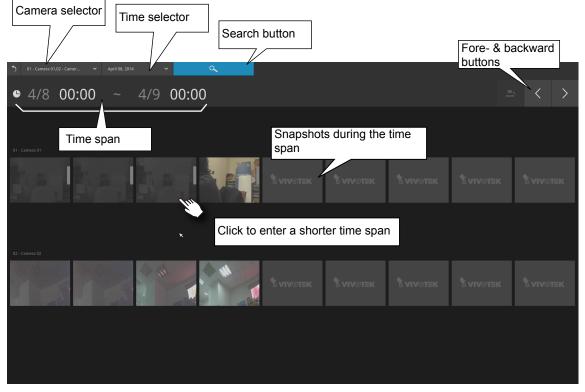
NOTE:

When the Search window is left unattended for 10 minutes, the NVR will return to the live view display. To enter the Search window, you will have to enter the user credentials again.

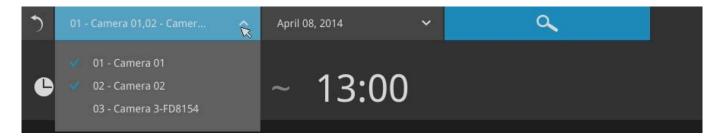
3-3-3. Storyboard

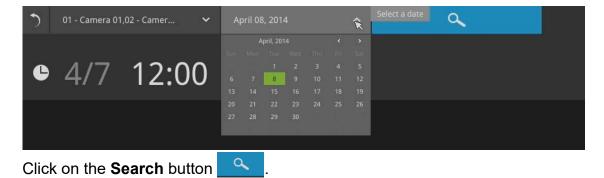
The Storyboard interface provides a glimpse of past recordings over a timeline. It looks like doing the film editing after a film was shot.

To enter the Storyboard window, click on the Storyboard shortcut on the upper-left of screen. Below are the screen elements of the Storyboard window:

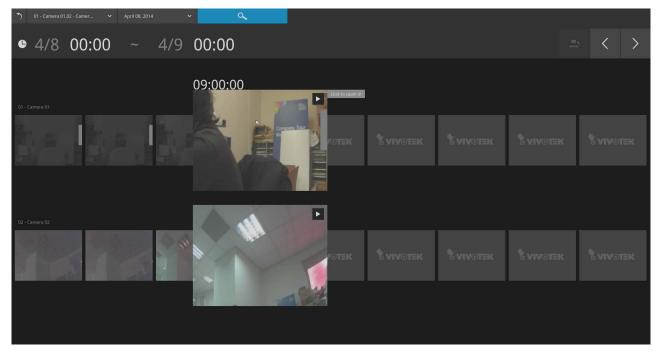


To search for a particular video footage, select the target cameras and the time of recording. On the Storyboard, the timelines of up to two cameras can be displayed.





Mouse over the line of snapshots to display its time of recording. Click on a snapshot of your interest. The time of recording is immediately displayed on top of it.



The detailed search is based on a narrow-down criteria. The search begins from a 24-hour time span, and then moving in to a 4-hour, 1-hour, 10-minutes, and 2-minutes span. When the screen displays a 24-hour span, each snapshot represents a 3-hour time span.

Each click on a snapshot brings you deeper into the timeline.

24 hour
4 hour
4 hour
1 hour
10 mins
2 mins

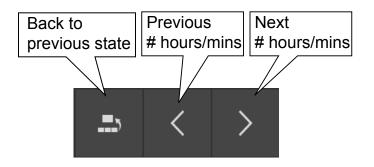
Below is a sample screen showing the screen of a one-hour time span. Each snapshot represents a point in time 7.5 minutes apart. Click on a snapshot of your interest to get deeper into the timeline.
Time span:

1 hour
10 mins
2 mins

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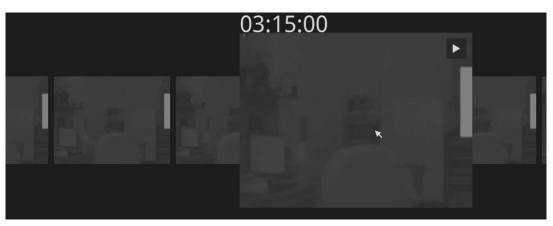
If you find yourself in the wrong segment on the timeline, use the buttons on the upper-right of the screen to travel.

The definitions of these buttons depend on the time span of your current position. For example, if you are in a 4-hour time span, the "Back to previous state button" will bring you back to the 24-hour time span.

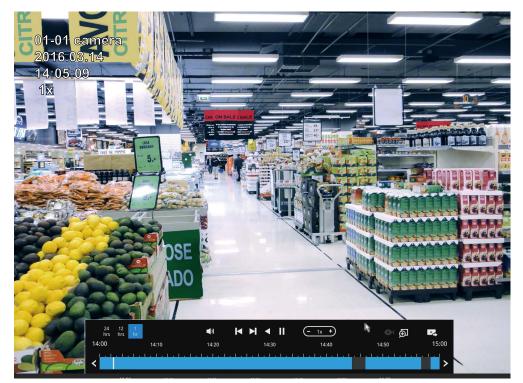


The smallest time span is 2 minutes. And on the screen of 2-mins span, each snapshot represents a 15 seconds video footage.

You can then click on the Play button log to playback the recorded footage.



The playback window will appear. Please refer to page 75 for the operation details.



To return to the Live View window, click on the Back to Search recording clips button \bigcirc and the Back to Liveview button \bigcirc on the upper-left of the screen.

3-4. Export recordings

DI/DO

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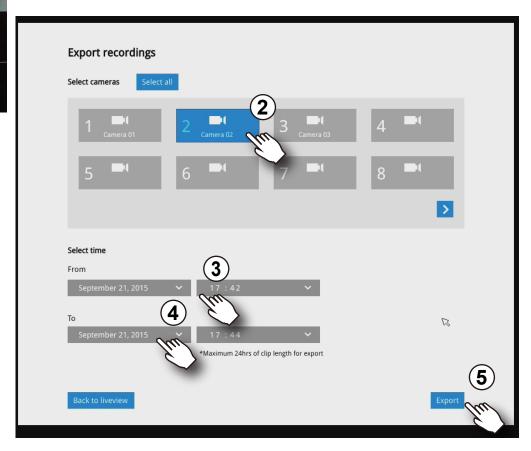
0

The Export recordings button allows users to directly select a piece of recordings by a specific camera, and export that to a USB thumb drive. Users can select one or multiple cameras, select a period of time in which the recording took place, and then click export.

The max. length of recording export is 24 hours. To export recordings:

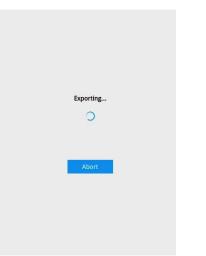
1. Attach a USB thumb drive formatted in FAT format to the NVR's USB port.

2. Select one or multiple cameras from the list.



- 3. Select the start time of the period of recording time.
- 4. Select the end time of the period of recoding time.
- 5. Click the Export button.

6. The Export progress will be shown.



7. When the Export process is done, select to resume another export or go back to the live view.

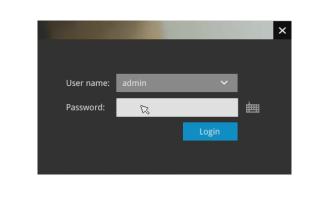
Expo	ort successfully	
Back to liveview	Export another recording	

Note that the Export process can take a long time if the time span of the selected video is very long.

3-5. Settings

3-5-1. Settings–Overview

Click the Settings button to start the camera and system settings window. A confirm box will prompt. Enter User name and Password to proceed.



The system will default to the overview page displaying the camera connection and storage statuses. An empty position will be left in blank, and a disconnected camera will

be indicated as *the used and unused spaces.*

The **Reboot** button is also available on this page. There are critical conditions that can sound the system buzzer, such as a disk failure.

ৰু ক	Camera connection			
-1	1 🔸	2 📲	3 🗖	4 •
▲ _ ∎	5	6	7	8
	Storage			
8 1	Remaining:924 GB			
<i>i</i>	Total: 929 GB			
				Reboot 🍄

The Camera menu provides access to **Management**, **Recording**, **Media**, **Image**, **Motion detection**, and **PTZ settings** pages.

3-5-2. Settings–Camera–Management

Management Recording Media Image Motion detection	 Recruit or dis Create a can Assign User your configur Change the last 	 On the camera Management page, you can configure the following: 1. Recruit or disband cameras. 2. Create a camera name. 3. Assign User name and Password, or apply the credentials to all cameras in your configuration. 4. Change the Network settings. 5. Change the cameras' positions on the layout screen. 							
PTZ settings	ন) ক	0	Add/edit Netwo	rk Wi-Fi Camera j	oosition				
	Image: Management Image: Media Image: Image: Image: </th <th>• • 01 - Camera 01 • 02 - Camera 02 • 03 - Camera 3-FD8154 • 04 - • 05 - • 06 - • 07 - • 08 - •</th> <th>Camera name: IP: Port: Channel: Model: MAC: User name: Password:</th> <th>Camera 01 192.168.6.136 80 1 SD8363E 00-02-D1-21-50-FB</th> <th></th> <th></th>	• • 01 - Camera 01 • 02 - Camera 02 • 03 - Camera 3-FD8154 • 04 - • 05 - • 06 - • 07 - • 08 - •	Camera name: IP: Port: Channel: Model: MAC: User name: Password:	Camera 01 192.168.6.136 80 1 SD8363E 00-02-D1-21-50-FB					
					Apply				

For a camera name, you can enter up to 64 alphabetic and numeric characters including [0-9][a-z][A-Z][_][-][]. For user name and password, you can enter up to 64 alphabetic and numeric characters including [0-9][a-z][A-Z][!][\$][%][-][.][@]["][~].

1. C	lick on the	Add	DUT	on. A	A IIS	t of (came	eras in th	e sam	e subnet	t w
ి											
\$		Add cameras from	list				-	_	_	_	
-1	Management		IP	*		MAC ~		Model ~	Port ~	Channel 🗸	
	AND MARK BRIDE	Add <	1	2	3	4	-7A-4A	IP8352	80	1	
	Recording	Add >			- 3	4	-99-76	IB8338-H	80	1	
_		Add >		Add			-CB-CF	FE8191	80	1	
	Media	Add >	9	10			6-F4-29	IB8382-T	80	1	
•		Add >	13				-A4-D7	IP8155HP	80	1	
	Motion detection PTZ settings						-				
).											
i											
Ì											
		<									

To recruit cameras:

. Click on the Add 🗾 button. A list of cameras in the same subnet will appear.

- 2. Click the **Add** button, the camera will be placed at an unoccupied position. You may also expand the menu on the side of the Add button to select a position number.
- 3. When a camera is added, it should appear on the graphical placement below.
- 4. Click the Apply button after you added cameras.
- 5. You may click the page back button **K** to return to the previous window.

lo d	lisband car	neras:			
1. C	lick on the	Remove -	button. A	list of cameras wil	l appear.
ۍ ک			Add/edit Networ	k Wi-Fi Camera position	
-1	Management	• -	Camera name:	Camera 05	
	Recording	01 - Camera 01	IP: Port:	192.168.6.106 80	20.00
	Media	02 - Camera 02	Channel:	1	
i	Image	03 - Camera 3-FD8154 04 - Camera 04	Model: MAC:	IB8168 00-02-D1-29-A5-C9	
	Motion detection	Remove			
Optimized in the second sec	PTZ settings	06 - 07 -	User name:		
۲		08 -	Password:	Apply to all cameras	
i		,			
È					
			\$		

- 2. The **Remove** button will turn yellow **C**. Mouse over to the camera you want to remove, and its entry will display the **Remove** message.
- 3. Click on the Remove message. The camera should then disappear from the camera list. The recording from that camera will also be discontinued.

Network

On the Network tabbed window, you can configure the network type, IP address, and the connection ports for video streaming.

					×
•					
\$		01 - Camera 01			
	Management	02 - Camera 02	Configuration:	DHCP 🗸	
	Recording	03 - Camera 3-FD8154 04 - Camera 04	IP:	192.168.6.136	
	Media	05 -	Subnet mask:	255.255.255.0	
ė	Image	06 - 07 -	Gateway: DNS Server 1:	192.168.6.1 192.168.0.21	
	Motion detection	08 -	DNS Server 2:	192.168.0.22	
۲	PTZ settings		WINS server 1: WINS server 2:	192.168.0.21 192.168.0.22	
٩			HTTP Port:	80	
i			RTSP port:	554	
-			RTSP authorization:	disable 😽	
曲			Apply to all came	ras	

You can select DHCP as the method for cameras to acquire IP addresses, or you can manually configure static IPs for a single or all cameras. Using static IPs is recommended. Although the NVR can remember the MAC addresses of cameras, if IPs are changed under the DHCP configuration, your NVR may still fail to connect the cameras. Please consult your network administrator for details about network settings. It is usually not necessary to change port numbers for the HTTP and RTSP ports unless there is a conflict in your network environment.

Wi-Fi

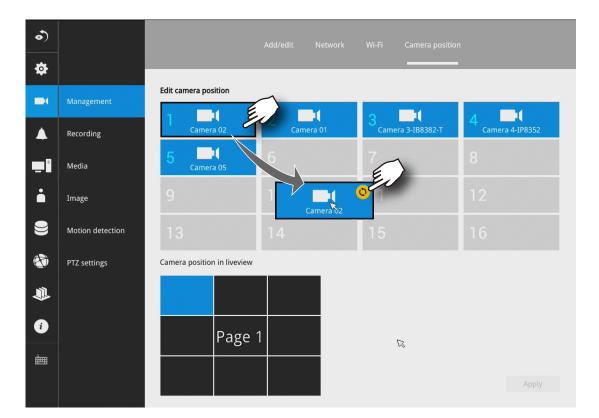
If wireless cameras are recruited by the NVR, its wireless connection details are shown in here.

e)		Add/edit Netw	ork Wi-Fi Camera ı	position	
Image: A state of the state of th	01 - Camera 01 02 - Camera 02 03 - Camera 03 04 - Camera 04 05 - Camera 05 06 - Camera 06 07 - 08 -	WI-FI WI-FI (SSID) Security mode Encryption	Eric_Buffalo WPA2-PSK TKIP		Us

- 1. Wi-Fi (SSID): Displays the AP (Access Point) this camera is connected to.
- 2. Security mode: Displays the security mode used for the security encryption.
- 3. Encryption: Displays the encryption standard currently applied.

Camera position

To change a camera's position on the Liveview layout, click and drag a camera to an unpopulated position. Note that you cannot swap the positions of two cameras by dragging a camera onto a position already populated by the other. Also, the camera index number on the management list is not affected by the change of positions. Click the **Apply** button for the configuration change to take effect. The position screen displays the current layout on the Liveview screen.



3-5-3. Settings-Camera-Recording

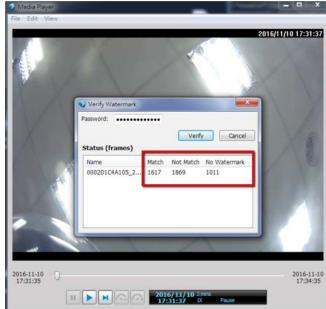
Recording options

On the camera Recording page, you can configure the following:

- 1. Configure the duration of camera events, for the concern that camera can be too frequently triggered.
- 2. Enter the Pre- and Post-event recording time. The triggering events can be DI, DO, Motion detection, PIR, or Tampering detection.
- 3. The default recording stream is Stream 1, and the system automatically adjusts the frame rate, resolution, etc. for optimum performance. However, you can still change the streaming characteristics. Note that you can not assign the recording task to other video stream.
- 4. Watermark password: Configure a password in a length of 16 to 64 characters. You can use it to verify the authenticity of exported videos using the included video player.



Select File > Verify Watermark.



Enter the password to verify. If the Not match value is 0, the video is the original and has not been tampered with.

3-5-4. Settings–Camera–Recording

Recording options

On the camera Recording page, you can configure the following:

- 1. Configure the duration of camera events, for the concern that camera can be too frequently triggered.
- 2. Enter the Pre- and Post-event recording time. The triggering events can be DI, DO, Motion detection, PIR, or Tampering detection. A recording length of 10 seconds of pre-event and up to 300 seconds of post-event can be configured.
- 3. The default recording stream is Stream 1, and the system automatically adjusts the frame rate, resolution, etc. for optimum performance. However, you can still change the streaming characteristics. Note that you can not assign the recording task to other video stream.
- 4. Enable the Activity Adaptive Streaming feature. This feature records the I-frames only when there are no activities detected. When activities or alarm are triggered, the camera raises the recording stream to the full frame rate. This feature can save tremendous ammount of bandwidth.
- 5. Enable or disable audio recording. Note that audio transmission through HDMI cable is currently not available.
- 6. Change the life expectancy of the recording data.
- 7. You can apply a typical configuration to all cameras using the **Apply to all** cameras checkbox.

6)			Recording options		
¢	Management	01 - Camera 01 02 - Camera 02	Event duration		
•	Recording Media	03 - 04 - Camera 04 05 -	Duration of camera events for next trigger: Pre-event recording: Post-event recording:	10 secs 5 ~ 20 ~	secs secs
•	Image Motion detection	06 - 07 - 08 -	Stream:	Stream 1	R
\$ \$	PTZ settings		Other options Watermark password:	(16~64 characters, letters and nu	mbers only)
i			Activity Adaptive Streaming Record audio	(AAS)	
È			Keep recording data:	180 day(s)	Apply

You can refer to the User Manuals that come with your network cameras for more discussions of these configurable options.

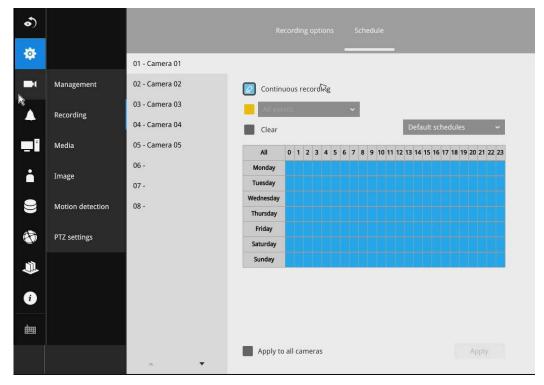
Recording Schedule

By default, all video feeds from cameras are recorded at all time. You can modify the recording task using the schedule tool:

1. Click to select a recording condition's checkbox–1. Continuous recording 2, Event recording

and 3. Clear (no recording).

2. Click and drag on the cells on the time table. For example, to stop the recording during a period of time, select the the Clear checkbox and move the cursor across the time table. The minimum unit on the table is half an hour.



- 3. You may also use the scheduler tool on the right to facilitate the process. You can select a condition checkbox, and then select the All day, Work hour, Off duty, Working day, Weekend options to apply a time selection.
- 4. Repeat the process on individual cameras or select the **Apply to all** checkbox if the schedule can apply to all cameras.
 - Continuous recording Clear R All day 0 1 2 3 4 5 6 7 8 9 10 11 12 All Monday Off duty Tuesday Working day Wednesday Weekend Thursday Friday Saturday Sunday

5. When done with the configuration,

click on the Apply button.

Note that Event-triggered recording and continuous recording can not be taking place at the same time.

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3-5-5. Settings-Camera-Media

Stream management

The stream here refers to the recording stream, namely, Stream 1. You can use these preset conditions to configure the resolution, image quality, frame rate, and the bandwidth consumption of the recording stream on this window.

Recommended setting	Configuration
Default Medium resolution; full frame rate	
High Quality	Guaranteed video quality set as Good; full frame rate
Economical	Medium to low resolution; frame rate at 5fps
High quality w/ economical	High resolution, Good image quality; frame rate at 5fps

With each recommended configuration applied, the estimated bandwidth consumption value is immediately calculated and displayed at the lower screen. Click the **Apply** button for the configuration change to take effect.

(ہ							
\$		Select a recommend set:	Default ~	_			
-	Management	All	Recording				
R.		01 - Camera 01	Stream1 - 1280x1280 H.264 12fps Good				
	Recording	02 - Camera 02	Stream1 - 1600x1200 H.264 30fps Good				
		03 - Camera 03	Stream1 - 1920x1080 SVC 30fps Good				
		04 - Camera 04	Stream1 - 1600x1200 H.264 30fps Good				
·	Image	05 - Camera 05	Stream1 - 1600x1200 H.264 30fps Good		Budende		
	Intage	o6 -		*	Default		ŝ
	Motion detection	07 -			Default		~
		08 -					
	PTZ settings	Bandwidth 14% used			High quality		
		Bandwidth 14% used			Economical s	and the second se	
			6		ECONOMICAL S	erup	
			Ø		High quality	with economical setu	1p
i							
重							

Video

The Video window allows you to configure all video streams (the no. of stream available can be different for different models). You can configure the following:

- 1. Codec: video compression codec in H.264, MPEG-4, or MJPEG. Note that MPEG-4 is not supported for Liveview.
- 2. Frame size: video resolution. Note that due to the limited CPU resources, you may not be able to change the resolution to a very high value, e.g., 5MP in the 1920x1920 resolution.
- 3. Maximum frame rate: the highest frame rate.
- 4. Intra frame period: How often an I-frame will be inserted into the video stream.
- 5. Smart Stream II: Some newer camera models come with Smart Stream features. Please refer to the next page for detailed information.
- 6. Video quality: You may either select Constant bit rate or Fixed Quality as the defining rules for video transmission:

Constant bit rate	Places a packet size threshold on video frames; This guarantees the frame rate per second performance, yet image quality can be compromised if bandwidth is not sufficient in your network environment.
Fixed Quality	Guaranteed video quality, and to ensure image quality, some frames may be dropped when bandwidth is not sufficient.

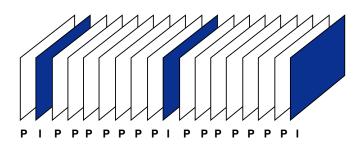
When done with the configuration, click the **Apply** button.

٩				
\$		01 - 走廊		
	Management Recording	02 - Camera 02 03 - Camera 03 04 - Camera 04	Stream 1 Codec:	Stream 2 Stream 3 Stream 4
=1 •	Media Image	05 - Camera 05 06 - Camera 06 07 -	Frame size: Maximum frame rate: Intra frame period:	1600x1200 ~ 30 fps ~ 1 S ~
)))	Motion detection PTZ settings	08 -	Smart stream II:	✓ Dynamic intra frame period ⑦ ✓ Smart codec: ↓
i			Video quality:	ROI preference: Fixed quality Quality: Good Maximum bit rate: GMbps
▦				Apply

Dynamic Intra frame period

High quality motion codecs, such as H.265, utilize the redundancies between video frames to deliver video streams at a balance of quality and bit rate.

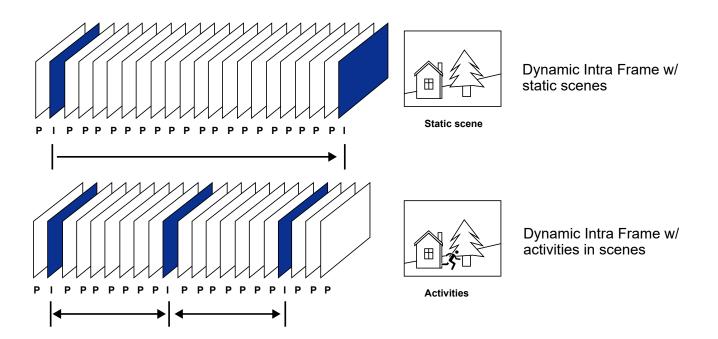
The encoding parameters are summarized and illustrated below. The **I-frames** are completely selfreferential and they are largest in size. The **P-frames** are predicted frames. The encoder refers to the previous I- or P-frames for redundant image information.



H.264/265 Frame Types

By dynamically prolonging the intervals for I-frames insertion to up to 10 seconds, the bit rates required for streaming a video can be tremendously reduced. When streaming a video of a static scene, the Dynamic Intra frame feature can save up to 53% of bandwidth. The amount of bandwidth thus saved is also determined by the activities in the field of view. If activities occur in the scene, firmware automatically shortens the I-frame insertion intervals in order to maintain image quality. In the low light or night conditions, the sizes of P-frames tend to be enlarged due to the noises, and hence the bandwidth saving effect is also reduced.

Streaming a typical 2MP scene normally requires 3~4Mb/s of bandwidth. With the Dynamic Intra frame function, the bandwidth for streaming a medium-traffic scene can be reduced to 2~3Mb/s, and during the no-traffic period of time, down to 500kb/s.



Smart codec effectively reduces the quality of the whole or the non-interested areas on a screen and therefore reduces the bandwidth consumed.

You can manually specify the video quality for the foreground and the background areas.

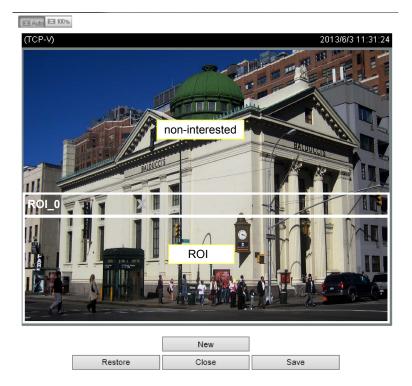


Slide bar to the right–higher quality in the ROI areas Slide bar to the left–higher quality in the non-ROI areas.

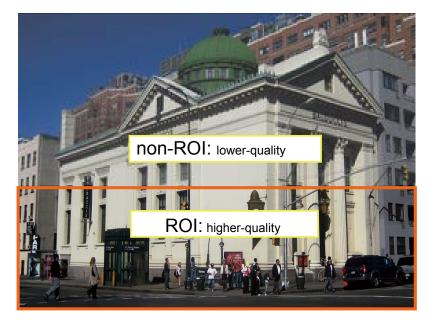
Select an operation mode if Smart codec is preferred.

- **Auto tracking**: The Auto mode configures the whole screen into the non-interested area. The video quality of part of the screen returns to normal when one or more objects move in that area. The remainder of the screen where there are no moving objects (no pixel changes) will still be transmitted in low-quality format.

- **Manual**: The Manual mode allows you to configure 3 ROI windows (Region of Interest, with Foreground quality) on the screen. Areas not included in any ROI windows will be considered as the non-interested areas. The details in the ROI areas will be transmitted in a higher-quality video format.
- As illustrated below, the upper screen may contain little details of your interest, while the sidewalk on the lower screen is included in an ROI window.



As the result, the lower screen is constantly displayed in high details, while the upper half is transmitted using a lower-quality format. Although the upper half is transmitted using a lower quality format, you still have an awareness of what is happening on the whole screen.



- **Hybrid**: The major difference between the "Manual" mode and the "Hybrid" mode is that:
- In the "**Hybrid**" mode, any objects entering the non-interested area will restore the video quality of the moving objects and the area around them. The video quality of the associated non-interested area is immediately restored to normal to cover the moving objects.
- In the "**Manual**" mode, the non-interested area is always transmitted using a low-quality format regardless of the activities inside.

Quality priority: (Help)

- Quality priority: Use the slide bar to tune the quality contrast between the ROI and non-interested areas.
- The farther the slide bar button is to the right, the higher the image quality of the ROI areas. On the contrary, the farther the slide bar button to the left, the higher the image quality of the non-interested area.
- In this way, you may set up an ROI window as a privacy mask by covering a protected area using an ROI window, while the remaining screen become the non-interested area. You may then configure the noninterested area to have a high image quality, or vice versa.

You should also select the Maximum bit rate from the pull-down menu as the threshold to contain the bandwidth consumption for both the high- and low-quality video sections in a smart stream.

Audio

The Audio window allows you to configure all audio codec, sampling rate, and Microphone input gains. Depending on design of the camera models, some codecs may not be available. Also, there are cameras that come without embedded mircrophones.

)			
\$		01 - Camera 01	
- 1 R	Management	02 - Camera 02	Mute:
	Recording	03 - Camera 03 04 - Camera 04	Audio type: G.711 ~ pcmu ~
	Media	05 - Camera 05	Microphone input gain
i	Image	06 - 07 -	Internal: 65% External: 65%
	Motion detection	08 -	
3	PTZ settings		\mathcal{D}
4			
i			
曲		A T	

3-5-6. Settings-Camera-Image

.0(Speed dome 2014/04/10 11:19:09 Camera 01

Display

The Display window allows users to tune the image display options:

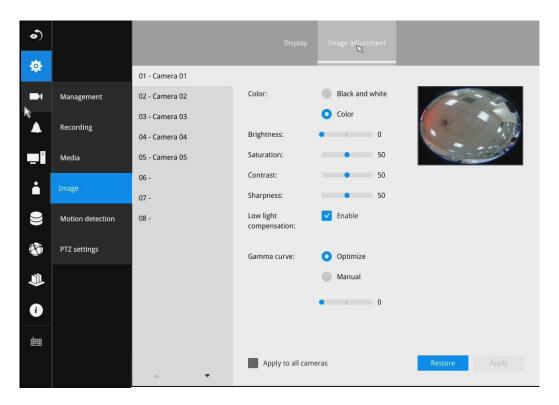
- 1. Video name: the video name is displayed on the title bar that is displayed on each view cell. The screen shot below shows a name as "Speed dome."
- 2. Video name and timestamp: Default is enabled. If enabled, the video name and time is displayed on the view cell.
- 3. Power line frequency: Depending on power line frequency of your country, select a matching option, NTSC 60Hz or PAL 50Hz, to avoid image flickering due to unmatched electricity.
- 4. Video orientation: select these options if the image from camera needs to be vertically or horizontally flipped.
- 5. Click Restore to poll for the original settings or click the Apply button to finish the process.

(ہ					
\$		01 - Camera 01		_	
	Management	02 - Camera 02	Video name:		1
	Recording	03 - Camera 03 04 - Camera 04	Video name and timestamp: Powerline	Show on image and snapshot	
	Media	05 - Camera 05	frequency:		
i	Image	06 - 07 -	Video orientation: 🛛 📕	Flip Mirror Ceiling Wall	Floor
	Motion detection	08 -			
٠	PTZ settings				
\$					R
i					
È					
		A. V			Restore Apply

Image adjustment

The Image adjustment window allows users to tune the basics about image display options:

- 1. Color: Select to display image as color or black and white.
- 2. Brightness.
- 3. Saturation.
- 4. Contrast.
- 5. Sharpness.
- 6. High TV line, Gamma curve, low light compensation, etc. The rest of the options depend on the lens and image sensor type of each individual camera. Therefore, the options here can vary. For unique options coming with each individual camera, please refer to their User Manuals for more information.
- Click Restore to poll for the original settings or click the **Apply** button to finish the process. For features common among cameras, you may select the **Apply to all cameras** checkbox.



3-5-7. Settings–Camera–Motion Detection

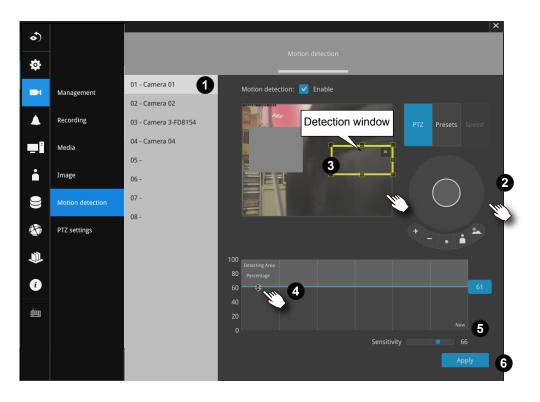
Motion Detection

To set up a detection window:

- 1. Select a camera by a single click.
- 2. Use the PTZ panel to move to a field of view where you want to place a detection window.
- 3. Click and drag to draw a rectangular detection window.
- 4. Pull the detection area level up to a preferred position. An object must be larger than the detection area to trigger an alarm.
- 5. Select a Sensitivity level using the slide bar.
- 6. Click the **Apply** button for the configuration to take effect.

The sample screen shows a connection with a speed dome camera.

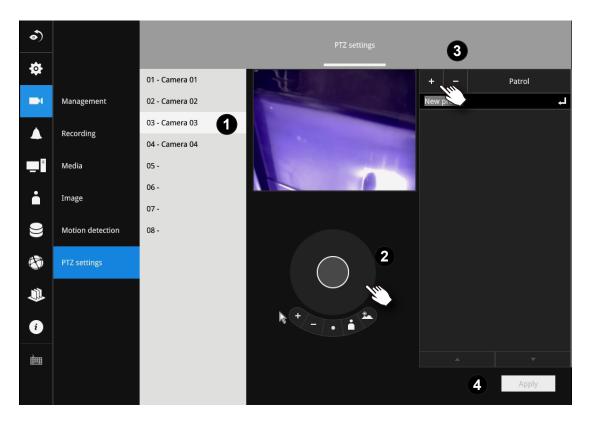
If you already configured Preset positions, expand its menu and click on the presets to move to a position.



3-5-8. Settings-Camera-PTZ settings

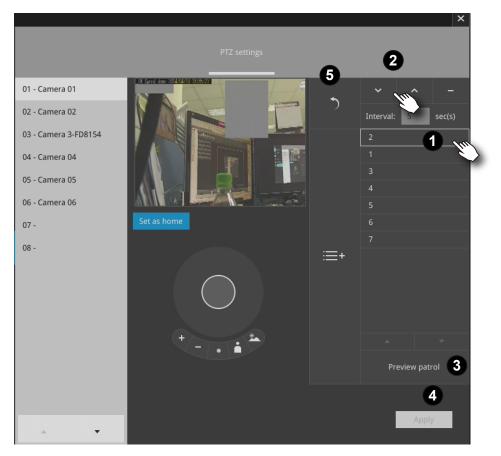
To configure PTZ preset positions:

- 1. Select a PTZ camera by a single click.
- 2. Use the PTZ panel to move to a field of view where you want to designate as a preset position.
- 3. Click the add button, and enter a name for the position. Press Enter to proceed. Repeat the configuration to create more positions.
- 4. Click the **Apply** button for the configuration to take effect. Note that the PTZ panel can vary with different PTZ cameras.



To configure a patrol:

- 1. Click to enter the Patrol menu. Select a preset position if you want to change its position on the patrolling order.
- 2. Click the up and down buttons to change the position on the order, or click the remove button to disband a position from the order. You can also change the interval to stay before moving from one position to the next position.
- 3. You may then click on the Preview patrol button to see if it runs as expected.
- 4. Click the Apply button for the configuration to take effect.
- 5. Click on the Back to preset list button to return to the preset window.



Fisheye camera has its unique options such as the mount types. Please refer to page 76 or the camera's User Manual for fisheye display mode options.

01 - Camera 01	4	
02 - Camera 02		Video name:
03 - Camera 3-FD8154		Video name and Show on image and snapshot
04 - Camera 04		Powerline 50Hz O 60Hz
05 - Camera 05		frequency:
06 - Camera 06	4	Video orientation: 📕 Flip 📕 Mirror
07 - Camera 07	4	Fisheye mount type: 💽 Ceiling 🔵 Wall 🛑 Floor

3-5-9. Settings–Alarm–Alarm

The events reported from individual cameras' digital inputs, digital outputs, and motion detection can be accommodated in the NVR system's alarm settings. These events will then be reported or trigger corresponding actions as follows:

- 1. **Record** the video by the time the event is triggered.
- 2. Reporting events via Email with snapshots attached.
- 3. Sound the onboard **buzzer**.
- 4. Triggering video snapshot and text message by the occurrences of events to an **FTP** site.
- 5. Triggering a camera's **DO**.
- 6. Triggering a **PTZ** camera(s) for its lens to move to a **preset** position.
- 7. Sending notification to the **VAST CMS** software.
- 8. Sending a full screen live view on the connected monitor.

You can create up to 10 instances of alarm.

Hardware connections to DIs or DOs, e.g., window sensors, should be made separately. The motion detection configuration can be made in the Camera configuration window.

ۍ ک		• •		
		 New alarm 		
			New alarm	Enable afarm Edit
			Trigger:	
			System	System DI,System DO
-	Email		02 - Camera 02	Camera DI, Camera DO, Motion detection, PIR, Tampering detection,
ė			Action:	
			Video recording	02 - Camera 02
đ				
i				
Ì				

When an alarm is triggered, a message prompt will appear on the Liveview or any configuration window.



Below is a glimpse of alarm sources and alarm actions:

Sources	Actions		
System DI	Video recording	▶ video footage	
System DO	Email snapshot	▶ snapshots	
Disk failure	Buzzer		
Disk full	FTP	▶ snapshots	
GPS disconnected	Camera DO		
G-sensor	Pan-tilt-zoom	▶Pan-Tilt-Zoom	
Speed limit (XX km/h)	System DO		
- Camera sources below	Send to CMS		
Camera DI	Send video to full screen		
Camera DO			
Motion detection			
PIR			
Tampering detection			
Camera disconnected			
	* Camera DI/DO, motion detection, and tampering are not		
	supported for ONVIF cameras.		

1. Click on the	e Add button +	
	• -	1. Status 2. Trigger 3. Action 4. Schedule
	 New alarm 	
	New alarm	
Email		
		Enable alarm:
		Alarm name: New alarm
		Triggered duration: 10 v sec(s)
		R
		Abort

You can manually enter a name for the current setting. You can enter up to 16 numeric or alphabetic characters for the name, including symbols such as [0-9][a-z][A-Z][_][]. You can also designate the interval between one alarm and the next triggered alarm to avoid the situation that the alarms can be too frequently triggered.

Click on the next button > to proceed.

To create an alarm,

Please note that on a fisheye camera's Motion window, you can click and move the corner marks of a window to change its shape. The Motion window does not have to be a square. 3. On the **Trigger** window, select system triggering conditions, or one or more cameras by selecting their checkboxes. The number of DI or DOs on each camera is automatically detected and displayed through individual checkboxes. The **Motion detection** function, if there are many detection windows configured on a camera, is all triggered by one checkbox.

Note that the triggering sources will be listed even if the camera is currently not connected.

ه)			1. Status	2. Trigger 3. Action	4. Schedule
\$ •		Built-in alarm System alarm	Copy trigger from	New alarm 🗸	
	Alarm	Regular alarm New alarm	 System 01 - Camera 01 04 - Camera 04 	System DI System DO Disk failure	
	Email	New alarm		Disk full GPS disconnected	
				G-sensorSpeed limit (10 km/h)	
٠ ۲			Selected:		
۲			System	Speed limit,G-sensor,GPS disconnected	
i					
Ħ			Abort	k	

You may also select the "Copy trigger from" menu to borrow the setting you previously configured.

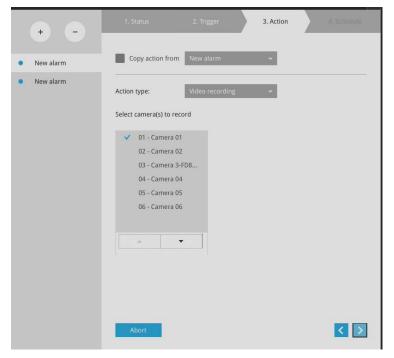
Click on the next button \ge to proceed.

Note that the GPS and G-sensor configuration, such as vehicle speed limit, is configured in the GPS & G-sensor window.

The following can apply with the GPS and G-sensor configuration:

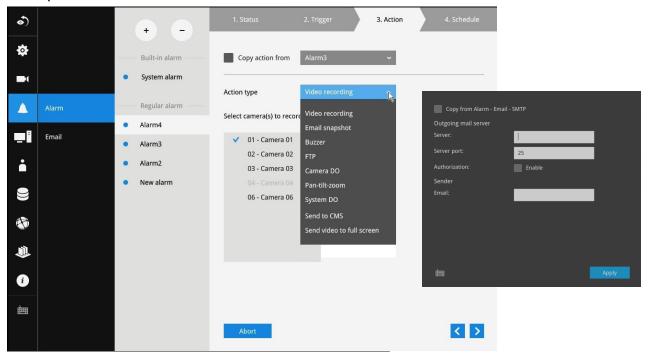
- 1. G-sensor event: Applies when a vehicle receives impact, or accidents occur.
- 2. When the vehicle over-speeds.
- 3. GPS disconnected: When the GPS signal vanishes.

- 4. On the **Action** window, you can select the Action type from a drop-down menu. The configuration details of each action type is discussion below.
- 4-1. **Recording**–When an event is triggered, the selected camera will record a video footage of the length defined by the pre-/post-event setting, to the NVR system.



4-2. **Email**–The Email action sends an Email to the administrator along with a snapshot of the event.

To configure Email notification, enter valid Email addresses as the Sender and Recipient addresses, an Email subject, and the SMTP server address through which the Email will be delivered. If you need to log in to SMTP server to deliver an Email, enter the User name and password for access to that account.



The Email subject and addresses can be composed of 254 characters in numeric or alphabetic characters including: [0-9][a-z][A-Z][_][][-][.][,][@]. You can enter the addresses of multiple recipients. Use semicolons, (;), to separate the addresses of multiple recipients.

4-3. Buzzer–The buzzer is sounded on the occurrence of the event. The buzzer tones are categorized into: Critical (1 long, 1 sec interval) Major (1 long 2 shorts, 1 sec interval), Normal (3 shorts, 2 sec interval), Minor (2 shorts, 2 sec interval), and Notify (2 very shorts) depending on the importance of an event. Select a Buzzer modulation from the drop-down list.

A long tone has a duration of 1 second, while a short tone 0.5 second. A very short tone lasts only for 0.1 second.

Select how many times the buzzer tones will be repeated on the occurrence of an event.

	2. Trigger	3. Action	4. Schedule
Copy action from	New alarm	~	
Action type:	Buzzer	~	
Buzzer severity:	Normal	~	
Repeat times:	10	~	

If events of different importance are issued at the same time, e.g., one major and one minor event, system will ignore the minor event and sound the buzzer tone for the major event only. The buzzer can be sounded either by the Alarm actions or the system events. If Alarm actions and system service events occur at the time, Alarm actions have the higher priority.

If multiple Alarm actions occur, the currently-sounded events can be depleted by the new event.

There are conditions that the system will sound the buzzer, and the conditions are not configurable:

- 1. Disk failure–missing drives or SMART detected failures.
- 2. Disk full-the free space is too small for recording tasks.

4-4. FTP–Snapshots from specified cameras can be uploaded to an FTP site on the occurrence of an event. Enter the FTP site address in the dotted-decimal notation, e.g., 159.22.151.20. Enter the login name and password for the user account. You can enter a directory name you prefer on the FTP site. The server port default is 21, a different number between 1025 and 65535 can also be assigned.

The snapshot thus delivered has a size of 320x240 pixels.

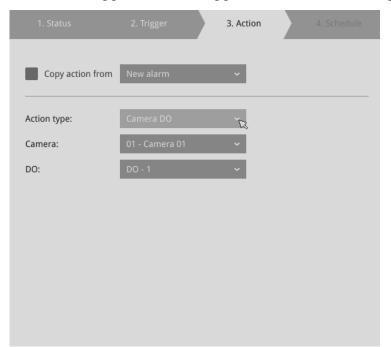
If authentication is not applied, login will proceed using the [anonymous] account.

The file names of the snapshot jpeg files will look like this:

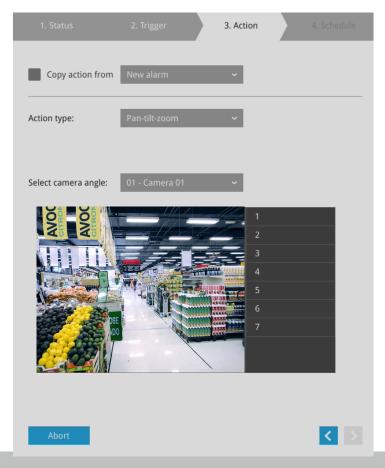
[MAC]_[DATE]_[TIME]_[CAMERA_INDEX].jpg - If similar files already exist, an additional index number will be added to the end of file name.

Copy action from New a	larm	~	
Action type: FTP		×	
Select camera(s) to snapshot	FTP setup		
 O1 - Camera 01 O2 - Camera 02 O3 - Camera 3-FD8 	FTP Server: Port: Authorization:	21	
04 - Camera 04 05 - Camera 05 06 - Camera 06	, la lion autom		
	Upload folder:	/ Upload test file	

4-5. Camera DO-A triggered alarm triggers a camera's DO, e.g., an alarm siren.



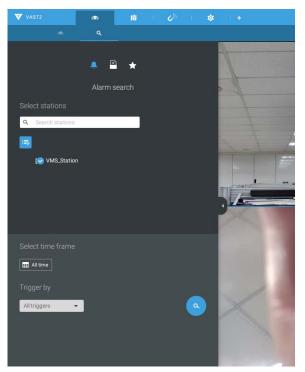
4-6. **Camera pan-tilt-zoom**–A PTZ capable camera can move its lens to the preset position in case of a triggered alarm. For example, a triggered sensor may indicate an area of interest has been intruded, and a camera's field of view should be moved to cover that area. The precondition is that you properly set up preset positions on your PTZ cameras using a local or a web console.



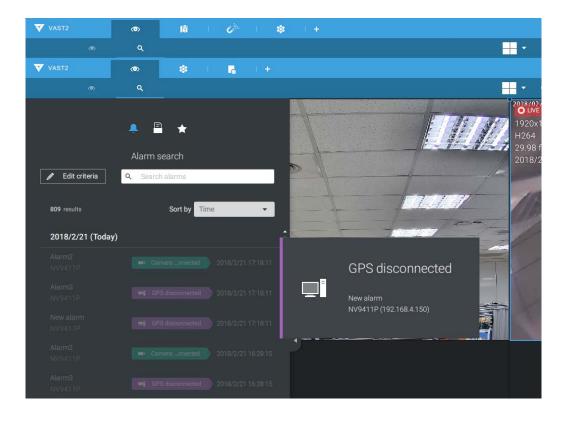
4-7. **System DO**–A triggered alarm can be used to toggle the NVR's digital output, e.g., to sound an alarm siren.

	• •	1. Status	2. Trigger	3. Action	4. Schedule
	New alarm	Action type:	System DO	~	;
Alarm		DO:	D0 - 1 D0 - 1	^r R	
Email			DO - 2 DO - 3 DO - 4		
			00-4		
		Abort			< >

4-8. **Send to CMS**–An event message will display on your VAST CMS software in the event of GPS signal loss or G-sensor force exceeds configured thresholds.



The triggered alarms can be found in the Alarm search panel.



You should also configure a corresponding alarm on the VAST server. Enter the Alarm management window. Select System Event and begin your configuration.

VAST2 👁	\$ +			¢ 🎝 🗠 🕅 د	
🔊 Settings		Alarm ma	anagement		
				Q. Search	alarms
if 	+ Add trigger	Do + Addacton	At Add a schedule Ahvays Customize	Alarm	Cancel

Select NVR and a triggering condition, such as the GPS diconnect, as your trigger.

VAST2	o 🔹 +			o ⁱⁿ 🛯 🗠	📕 🕸 📩 ? – 📼 ×
🔊 Settings		Alarm ma	nagement		
					Image: Constraint of the search alarms
If		Select trigge	r and source	Alarm	
	+ Add trigger	Event/Status Network disconnected	NV9411P No repeated triggers within 5 s	Instruction	Add
<u>.</u>		Search devices E VMS_Station E VMS_V411P			Cancel
		NV9411P 192.168.4.150			
			Add Cance	•	

Select the triggering condition from the pull-down menu.

VAST2 💿	\$ +			olin 🗠 🗖 🏘 🦛	? – 16 ×
🔊 Settings		Alarm mar	agement		
				Q Search alar	ms
ıf		Select trigger Event/Status Network disconnected	and source X NV9411P	Alarm	
	+ Add trigger	Storage failure Storage full Fan status GPS disconnected (Mobile NVR) Abnormal G-sensor motion (Mobile _ Speeding (Mobile NVR)	No repeated triggers within 5 s		Cancel
			Add Cancel		

Configure the corresponding action, and proceed with the rest of the configuration. When an event is triggered, such as GPS signal loss, or exceptional G-force is detected, an event message will prompt on screen. You can also search the past alarms to find an event.

VAST2 💿	\$ +		ଓ ^{ଲି} 🛍 🗠 🌄 🏟 🛔 ? – ଲ ×
n Settings		Alarm management	
			C Search alarma
If		Select actions X	Alarm
	+ Add trigger	Start to record videos Start to record videos Set DO status Go to camera presets Send HTTP requests	Instruction Add Cancel
<u>.</u>		Send H I I Frequests Send live streaming Send email Go to E-Mop	
		Add Cancel	u

- 4-9. **Send video to full screen**—The video feed from a related camera will be displayed on the occurrence of a triggered condition.
- 5. On the **Schedule** page, you can select to activate or de-activate alarm triggers throughout a specific timeline. For example, in some situations you can disable the alarm triggers during the office hours, and choose to enable the triggers only during the off-office hours.

All	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Monday																								
Tuesday																								
Vednesday																								
Thursday																								
Friday																								
Saturday																								
Sunday																								

- 6. Click **Finish** to end the configuration.
- 7. Repeat the process above to create more alarms according to the needs in your surveillance deployment.

3-5-10. Settings–Alarm–Email

This window provides an interface where you can configure the connection to a Mail server. Via the Mail server, the system can deliver Emails containing system alarm messages to multiple receivers. A reachable Mail server and Email accounts must be provided before you can apply the settings.

6		Recipient list SMTP	
₽			
		Outgoing mail server	
		Server:	
	Alarm	Server port: 25	
	Email	Secure connection: O TLS OSL	
	Eman	✓ Authorization	
÷		Username:	
		Password:	
		Sender	
Ð		Email:	
i			
鮋			
		1 ₂	Apply

The configuration options are identical to those found in the Email configuration in Settings– Alarm window.

3-5-11. Settings–System–Information

On this window, you can configure the following:

- 1. Change the system name. Using a name in different languages is supported via a web console.
- 2. Select the UI text language.
- 3. Configure system time, time zone, and if you are connected to a DNS server where Auto Daylight Saving time can be applied, you can acquire the associated setting from a server within your network. You can use the Auto Setup button to automatically update the daylight saving configuration. A system reboot is required.

You can also manually update the daylight saving profile in the GZ format using the Import file button below.

4. Click the Apply button for the configuration to take effect.

Note that if **NTP** time server configuration (Auto) is preferred, the system will automatically configure all cameras to be listening to the system, and therefore to the same time server.

්		Name and language	
\$		System name:	NV9311P
_,		Language:	English ~
		Time	
		Set system date and time:	Manual setup 👻
	Information		January 27, 2018 ~ 15:54:11 ~
i	Maintenance	Time zone:	Asia/Taipei (CST, GM 🐱
9	Display	R	Auto setup Daylight Saving Time Set up Network - IP - DNS server to update Daylight Saving Time
3	PoE management		Manual setup
۵	Power management		 Download update file from https://www.iana.org/time-zones Save file to USB device
i	UPS		3 Import file to update
È	Log		
	VIVOCloud service		

Changing system time can produce disruptions to the existing recordings. Turning the current system time back to a time when video recording was taking place can generate duplicate files. And those files may not be playable.

3-5-12. Settings–System–Maintenance

If the need arises for updating system firmware, acquire the update from VIVOTEK's technical support or download site. Locate the firmware binaries, and click the Import button. The upgrade should take several minutes to complete. Note that during the upgrade, the recording task will be interrupted.

On this window, you can perform 4 maintenance tasks:

- 1. **Update firmware**–Download firmware and save it to a USB drive in the FAT format, attach the USB device to the NVR for firmware upgrade.
- 2. **Update device pack**–A device pack allows you to import associated configurations and parameters for new camera models so that these cameras can be integrated into your NVR configuration. The information in the device pack is related to some tunable parameters.
- 3. **Backup–**You can backup your system configuration using the Backup function. Click Backup, a message window will prompt. Click Save to preserve your system configurations.

Select a location for your backup file, then click Save to complete the process. If you back up to a USB thumb drive, that thumb drive must be formatted using the FAT format.

)		
✿		
-1		
•		0
	Information	Update firmware: Import
÷	Maintenance	Update device pack: Import
		Download http://www.vivotek.com/device-pack/#downloads
9	Display	Backup: Backup
۲	PoE management	Restore: Restore
۹	Power management	
i	UPS	2
È	Log	
	VIVOCloud service	

Note that the backup action does not involve the following:

- 1. Recorded videos and database,
- 2. Alarm records, bookmarks, and bookmarked footages.

4. **Restore**–If you have a previously-saved profile, you can restore your previous configuration. Click the Restore button.

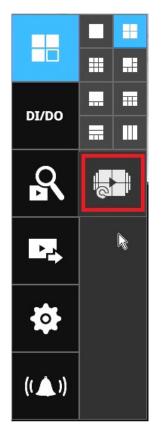
A file location window will prompt. Locate the backup file, and click Open. The Restore process will take several minutes to complete, and system operation will be interrupted during the process.

3-5-13. Settings-System-Display

On this page, you can configure the system to consecutively display (rotate) cameras' view cells on the Liveview window. For example, if you have 8 cameras in 2 2x2 layouts, the rotation can let you see the live views of all cameras by every few seconds. You can also enable or disable the Alarm notification.

হ		Resolution Output resolution:	1080p 🗸	
• 1		Rotation Duration of rotating LiveView pages:	10 sec(s)	
	Information			
i	Maintenance			
	Display			
۲	PoE management		R	
٩	Power management			
i	UPS			
È	Log			
	VIVOCloud service		Apr	

To enable the rotate function, click on the rotate button on the layout panel.



3-5-14. Settings–System–PoE management

When IP cameras are connected to the NVR's PoE ports, their power consumption is constantly monitored, and the power budget is displayed on the PoE management screen. The following apply to the PoE connections and PoE management:

- 1. Cameras will be automatically enlisted to the NVR. The PoE connection status is polled every 10 seconds.
- 2. For devices that come with multiple video channels, e.g., a video server, each video stream will occupy a video channel.
- 3. PoE Plug and Play takes effect after the initial setup. Any cameras connected thereafter will automatically join the NVR configuration. If you manually delete a camera from list, you should unplug and then re-connect it to the PoE port before joining the network back to NVR.
- 4. The above does not apply to ONVIF cameras.
- 5. The total PoE power budget is 64W. The maximum output for each port is 30W.
- 6. You can manually enable or disable the PoE output on each port, and configure a priority setting for each port (should you need to run the deployment on a tight power budget).
- 7. If port #5, #7, and #8 are configured with Low priority, and power runs short on the NVR. The ports with smaller port number, e.g., port #5, will be powered first. In this case, ports #7 and #8 may not be sufficiently supplied.

6)		9/64V	V O		2	4 6 8	
¢.		97 04 0			Pow	a 5 7	r.
		Por	t Name	Power used	Max power (Watt)	Priority	PD Class
4		ON 1	-	0.0	30	Medium 🗸	-
]=]	Information	ON 1 2	Camera 04	3.5	30	Medium 🗸	4
		ON 3	-	0.0	30	Medium 🗸	-
	Maintenance	ON 1 4	Camera 01	2.5	30	Medium 🗸	0
2	Display	ON 1 5	-	0.0	30	Medium 🗸	-
		ON 1 6	-	0.0	30	Medium 🗸	-
ð	PoE management	ON 1 7	Camera 02	2.5	30	Medium 🗸	4
)	Power management	ON 8	4	0.0	30	Medium 🗸	-
•	UPS						
#	Log						
	VIVOCloud service			k}			Ápply

- 8. The PoE automatic enlistment does not apply for cameras that come with preset credentials, namely, password-proteced.
- 9. The PoE port status can reflect the following situations:
- A. PoE enable PoE is working (port icon displayed in green on the upper-right screen)
- B. PoE turned OFF PoE manually disabled (turned to OFF)
- C.PoE turned OFF –Port power overload (under camera name)
- D.PoE turned OFF –Total power overload (under camera name)
- E. PoE turned OFF Abnormal power supply voltage(under camera name)
- F. PoE turned OFF –Non-standard powered device (under camera name)
- G.PoE turned OFF –Port error (under camera name)

10. When the NVR has little reserved power budget, and you attach a new camera, the NVR will stop supplying power to the new camera.

3-5-15. Settings–System–Power management

You can configure the system delayed boot up and delayed shuntdown here. Note the function only takes effect when the power line connection is valid.

If the key lock of the tray box is unlocked, the system automatically shuts down.

NVR power delay				
Start NVR power after ignition is	on for seconds	Enable		
		10 ~		
Shut down NVR power after ignit	ion is off for minutes	Enable		
		30 ~		
Low voltage protection				
Enable protection				
Input voltage	12 🗸			
	NVR will be shut dow	n automatically when batter	y voltage is lower than 9V.	
Minimum power-on voltage	12 🗸			
		oltage has to be lower than	current voltage (54.5V)	
		onage has to be loner and	can ene ronage (5 no 1)	
Minimum operation voltage	11 🛩			
	After minutes	2 ~		
			Apply Cance	

The low voltage protection feaure enables the system to be powered down after the low voltage condition persists for a configurable period of time.

3-5-16. Settings-System-UPS

On this page, you can configure the system to gracefully shut down when UPS battery is lower than a certain level. You may also let it shut down when the estimated sustainable time is reached. We support APC Black 500 UPS.

•)					
₽					
-1		Back-UPS ES 500			
4		Turn off system	■ 82% (1:8 remaining)		
	Information		When current battery charge is lower than When estimated time remaining	40% ←	min(s)
i	Maintenance				
	Display				
Ť	PoE management				
1	Power management				
i	UPS				
È	Log				R
	VIVOCloud service				

3-5-17. Settings-System-Log

System logs are categorized as **System**, **Recording**, **User**, and **Error**. To display system logs, select a range of time and click on the Search button.

٩			
₽		From	 To
		February 02, 2018 🛛 🗸	February 02, 2018 - Search
			
	Information		
ė	Maintenance		
	Display		
C	PoE management		
\$	Power management		
i	UPS	he and the second secon	
È	Log		
	VIVOCloud service		

You can search for past logs in each category window.

	System		
om	То		
April 07, 2014	← April 10, 201	4 🗸 Sear	ch
result(s)		R	
Date 🗸	Level ~	Source ~	Message ~
2014.04.08 00:01:29	INFO	recycle service	Recycle finish: Volume 1 Volum
2014.04.08 00:00:08	INFO	recycle service	Recycle start: camera:2 expired
2014.04.08 00:00:08	INFO	recycle service	Recycle start: camera:1 expired
2014.04.07 13:51:00	INFO	system service	DHCP renew: Interface:eth0 Ad
2014.04.07 13:21:13	INFO	User: admin	System reboot
2014.04.07 13:11:07	INFO	User: admin	System reboot
2014.04.07 13:08:01	INFO	User: admin	Change the settings:
2014.04.07 13:08:00	INFO	User: admin	Change the settings:
2014.04.07 13:08:00	INFO	User: admin	Change the settings:
2014.04.07 13:08:00	INFO	User: admin	Change the settings:
2014.04.07 12:00:53	INFO	recycle service	Recycle finish: Volume 1 Volum
2014.04.07 12:00:11	INFO	recycle service	Recycle start: camera:2 expired
2014.04.07 12:00:11	INFO	recycle service	Recycle start: camera:1 expired

rec	virce vice tording service mera service	e F	Message Y Recording stop: RTSP F	ail
rec	ording service	e F	Recording stop: RTSP F	ail
rec	ording service	e F	Recording stop: RTSP F	ail
car	0		0 1	ail
	nera service			
car		(Camera online	
	mera service	(Camera offline	
car	mera service	(Camera offline	
rec	ording service	. F	Recording stop: RTSP F	ail
car	nera service	(Camera online	
car	nera service	(Camera offline	
car	nera service	(Camera online	
car	nera service	(Camera offline	
rec	ording service	. F	Recording stop: RTSP F	ail
car	nera service	(Camera offline	
rec	ording service	e F	Recording stop: RTSP F	ail
rec	ording service	e F	Recording stop: RTSP F	
rec	ording service	e F	Recording stop: RTSP F	ail
car	nera service	(Camera online	
	rec car car car rec car rec rec rec car car	recording service camera service camera service camera service camera service recording service recording service recording service	recording service F camera service C camera service C camera service C camera service C camera service F camera service F camera service F recording service F recording service F camera service F	recording service Recording stop: RTSP F camera service Camera online camera service Camera offline camera service Camera offline camera service Camera offline recording service Recording stop: RTSP F camera service Camera offline recording service Recording stop: RTSP F recording service Recording stop: RTSP F recording service Recording stop: RTSP F camera service Camera offline

om	То		
April 07, 2014	✓ April 10, 2014	✓ Sear Sear Sear Sear Sear Sear Sear Sear	
			•
esult(s) Date ~	Source ×	User name v	Message ~
esult(s)			Message ~ Login
result(s) Date ~	Source ~	User name v	
esult(s) Date ~ 2014.04.08 08:49:19	Source ~ 192.168.6.135	User name v admin	Login

3-5-18. Settings-User

The User window allows you to create more users, to change user password, and place limitations on users' privileges and administration rights. Up to 16 users can be created, including the default administrator.

- 1. By default, there are two user groups: Administrator and Regular user.
- 2. The regular users cannot access the **Settings** window, meaning that regular users can not add or remove cameras, make changes to alarm, network, and all other system settings. When users try to access the Settings window, the login window prohibits regular users to log in. There is simply no regular user's name on the login window.
- 3. The administrator users can access all cameras recruited in the configuration; while the regular users can be configured to have access to some or all cameras.
- 4. The system blocks out the video feeds from users who are denied of the access to particular cameras. The alarms and the alarm-triggered recordings from those cameras will also be inaccessible for unauthorized users.

ه)		• •	Username	New user			
¢		Current user	At least 8 charao (uppercase or lo	cters with no space, 1 alphabet chara owercase), and 1 numeric character.	cter		
A		Other users	New password Confirm passwo				
-	User		Group Camera access	Administrator 🗸			
))) ())		ŀ₹			Camera access	Authorization 01 - Camera 01 02 - Camera 02 03 - Camera 03 04 - Camera 04 05 - Camera 05 06 - Camera 06	
<i>i</i>						07 - Camera 07 08 - Camera 08	V V V
					Apply		

MIMPORTANT:

The default administrator name and password are: admin and admin. It is highly recommended to change the default password to prevent unauthorized access to the system.

To create or edit users,

1. Select a User group by unfolding its pull-down menu. Select either an Administrator or regular user as the user group.

				×
• •	Group:	Administrator	R	
🚉 New user	User name: Password:	Administrator Regular user		
ំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំ	Confirm password:			
	Camera access:	All cameras		
				Apply

2. Enter the User name and password. The max. number of characters for a user name is 64, with alphabetic and numeric characters including [0-9][a-z][A-Z][_][][-][.][,][@]. The max. number for password is also 64.

+ -	Group: User name: Password: Confirm password:	Regular user 👻	
	Camera access:	Copy from admin Authorization 01 01 - Camera 01 02 02 - Camera 02 03 03 - Camera 02 03 04 - Camera 4.1P8352 05 05 - Camera 05 06 06 - Camera 6-FD8165H 07 07 - Camera 7-FD8162 08 08 - Camera 8-FD8168 08	

- 3. If you are creating a regular user with limited access to cameras, deselect the checkboxes by the cameras to deny the user access.
- 4. Click **Apply** to close the configuration window. Repeat the process to create more users.

3-5-19. Settings–Storage

The storage page displays the volume information including physcial position, total capacity, used and free space, and associated commands such as Format and Delete. Since each volume contains only 1 hard drive, detailed information about the hard drive is also displayed on this page.

You can format an existing storage volume in situations such as when you need to re-deploy the system elsewhere.

٩			Volume1(Single disk) 🕵	Delete
₽		9+	Capacity: 929 GB 🔲 Used: 5 GB 🔳 Free: 924 GB	Format
-		🌏 Volume 1		
		Disk1	Disk1 931 GB	
			551 68	
			Information	Verify
			Model family: -	
i			Device model: WDC WD10JUCT-63CYNY0	
			Serial number: WD-WX71AB7H26LS	
\mathbf{a}	Storage		Firmware version: 01.01A01	
۲			Last check: , ,	
			S.M.A.R.T.	
٩		R	Status: Passed	
i			Attribute name: Raw Read Error Rate 🗸	
			Value: 100	
È			Worst: 253	
			Threshold: 51	

Disk Information:

Model family: The brand name of the HDD manufacturer.

Device model: The disk model name.

Serial number: Serial number assigned to the disk drive.

Firmware version: The version of firmware running on this disk drive.

Last check: The bad block check or S.M.A.R.T. test previously executed on this drive.

Status: S.M.A.R.T. status polled from the disk drive. This is not the results from a manuallyexecuted S.M.A.R.T. test. Attribute: The various attributes can vary from different HDD manufacturers.

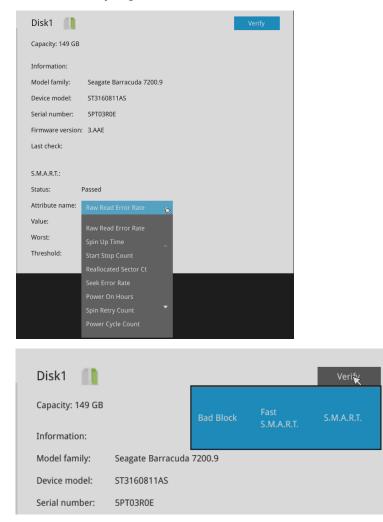
Value: Value for the currently selected attribute.

Worst: Worst value acquired for that attribute.

Threshold: A predefined threshold or triggering value. The threshold below which the normalized value will be considered exceeding specifications.

Raw value: The detected parameters for that attribute.

Status: The judgement made to deem the current reading as OK or failed.



Note that disk verify function requires a volume to be temporarily disabled; namely, the video recording will be stopped before disk verify can be performed.

Verify:

Three types of check disk actions can be initiated through this button.

- **Bad block check**: Performs read/write test to drive sectors to locate bad blocks. This action may take several hours to complete.
- **Fast S.M.A.R.T. test**: Tests the electronic and mechanical performance and disk read performance, including those on disk buffer, read head, seek time, and integrity of drive sectors. The short test is performed on a small section of disk platters, and takes about 2 minutes to complete.
- **S.M.A.R.T. long test**: The long test is more thoroughly and is performed to all drive sectors. The actual completion time depends on drive sizes and the attributes put to test.

The Check disk functions mentioned above, when performed during active I/Os, can consume system resources and cause dropped frames with the recording tasks.

MIMPORTANT:

There are conditions that disk drives will not be available for storage configuration:

- 1. The disk drives are performing the Verify process.
- 2. The disk drives considered as "failed" drives by the S.M.A.R.T. self detection.

3-5-20. Settings–Network

Settings-Network-IP

<u>Default Gateway:</u> The NVR gains access to the Internet via Ethernet, Wi-Fi, or LTE (4G Long Term Evolution) wireless WAN. Select a default gateway and start configuration.

٦		Default gateway:	Ethernet			
₽			Ethernet			
-		Ethernet	Wi-Fi LTE			
		- NVR	× · · LTE			
		Pin code				
÷		APN Username				
		Password		-		
1						
٩	DDNS					
i	Service					
È						
					Apply	Cancel

When using LTE, and a PIN is required:

It is very important to use the correct PIN after it is configured. The SIM card will be blocked if the wrong PIN is entered three consecutive times on a locked SIM during the authentication process or when trying to unlock a locked SIM.

You can unblock a blocked SIM card using the PUK code. Contact your service provider for the PUK code.

Prerequisites for Using 4G LTE:

- 1. You must subscribe to a service with a wireless service provider and obtain a Subscriber Identity module (SIM) card.
- 2. If LTE connection is preferred and an LTE module is installed, you need an active SIM card provided by a service provider.

The SIM cards are usually provided in an unlocked state so that it can be used without a Personal Identification Number (PIN). If the SIM is unlocked, it can be inserted into the NVR and used without an authorization code.

- 3. Install the SIM card and the LTE module before configuring the 4G LTE wireless WAN connection.
- 4. Antennas must be installed for the WAN feature to work.

LTE Configuration:

6		Default gateway:	Ethernet	~		
₽		Ethernet	Wi-Fi	LTE		
-						
A		•• NVR E E	🗙 · · · LTE			
		Pin code				
i		APN Username				
		Password			R	
8	IP					
٩	DDNS					
i	Service					
È						
					A	oply Cancel

Enter the following on the LTE configuration page:

- 1. PIN: A code (4 to 8 digits long) provided by your carrier to lock or unlock the SIM card.
- 2. APN: specifies an Access Point Name (APN). An APN is provided by your service provider.
- 3. User Name: provided by service provider.
- 4. Password: provided by service provider.

Ethernet Configuration:

<u>DHCP</u>: Default is selected, the server obtains an available dynamic IP address assigned by the DHCP server each time the system is connected to the LAN.

Manual setup: Select this option to manually assign a static IP address to the NVR.

Enter the Static IP, Subnet mask, Default router, and Primary DNS provided by your ISP.

<u>Subnet mask</u>: This is used to determine if the destination is in the same subnet. The default value is "255.255.255.0".

<u>Default router</u>: This is the gateway used to forward frames to destinations in a different subnet. Invalid router setting will fail the transmission to destinations in different subnet.

<u>Primary DNS</u>: The primary domain name server that translates hostnames into IP addresses. <u>Secondary DNS</u>: Secondary domain name server that backups the Primary DNS.

When finished with the network settings, click on the **Apply** button.

402 400 4 452
192.168.4.153
255.255.255.0
192.168.4.1
192.168.0.21
192.168.0.22

Wi-Fi Configuration:

6		Default gateway:	Ethernet	~		
₽		Ethernet	Wi-Fi	LTE		
-1			lu.			
		•• NVR		1		
		Wi-Fi(SSID):		Select Wi-Fi		
i		Security	WPA2 Password	~		
₿		IP Configuration	DHCP	~		
1		IÞ				
٩	DDNS	Subnet mask				
i	Service	Gateway DNS server 1				
È		DNS server 2				
					Apply	Cancel

Configuration options:

<u>Wi-Fi (SSID)</u>: Enter a known SSID or search for a nearby AP. The applicable alpha-numeric characters are [0-9][a-z][A-Z][-], with a max. length of 64 characters.

<u>Security</u>: APs support three wireless authentication settings that use pre-shared keys:

WPA only (PSK) — The AP accepts connections from wireless devices configured to use WPA with pre-shared keys.

WPA2 only (PSK) — The AP accepts connections from wireless devices configured to use WPA2 with pre-shared keys. WPA2 implements the full 802.11i standard. The WPA2 only mode it does not work with some older wireless network cards.

WPA/WPA2 (PSK) — The AP accepts connections from wireless devices configured to use WPA or WPA2 with pre-shared keys.

<u>Password</u>: The applicable alpha-numeric characters are [0-9][a-z][A-Z][-], with a max. length of 64 characters.

When connecting to an AP, the applicable alpha-numeric characters are [0-9][a-z][A-Z][-], with a password length between 8 and 63 characters.

<u>DHCP</u>: Default is selected, the server obtains an available dynamic IP address assigned by the DHCP server each time the system is connected to the LAN.

Manual setup: Select this option to manually assign a static IP address to the NVR.

Enter the Static IP, Subnet mask, Default router, and Primary DNS provided by your ISP.

<u>Subnet mask</u>: This is used to determine if the destination is in the same subnet. The default value is "255.255.255.0".

<u>Default router</u>: This is the gateway used to forward frames to destinations in a different subnet. Invalid router setting will fail the transmission to destinations in different subnet.

<u>Primary DNS</u>: The primary domain name server that translates hostnames into IP addresses. <u>Secondary DNS</u>: Secondary domain name server that backups the Primary DNS.

Settings–DDNS

VIVOTEK provides Safe100.net, as a free DDNS dynamic domain name service for users who want access from the internet or a domain name service for the NVR. VIVOTEK maintains a database of product MAC addresses for the Safe100.net service, and you can apply one domain name for each NVR system.

٦		DDNS:	Enable					
₽			Off	Select	t from list manually			
-			Provider:		safe100.net	~		
20.1			Host name:		.safe10	0.net		
			Email:					
-			Key:					
			Confirm key:					
ċ			I agree to t	he term	is and conditions of th	nis license agreement	×	
9								
٢	IP							
i	DDNS							
鮋	Service				2	2		
						8		
								Apply

DDNS Enable: Select this checkbox to enable the DDNS setting.

Enter a Host name, Email address, and password twice, and then click **Apply** to proceed. Make sure you have internet access.

Click the **Register** button. The terms of service agreement window is selected from a checkbox at the

bottom. Click is to read the license agreement terms.

The acceptable characters for email address are: [0-9][a-z][A-Z][!][#][\$][%]['][+][-][/][=][?] [^][_][`][{][]][~][.]. Two successive periods, [..], are not acceptable. The address filed can accommodate up to 256 characters.

Use only alphabetic and numeric characters for the password. The maximum number of characters is 64.

When completed, a confirm message will prompt. You will also receive a confirm Email. You can now access your NVR system using the <u>xxxx.safe100.net</u> domain name address. Note that access from the Internet should be routed to the private IP assigned to your NVR, using methodologies such as port forwarding, etc.

Settings–Service

By default, the NVR service and video streaming are accessed via HTTP port 80 and RTSP port 554. You can designate a different port number if the need arises. Usually it is not necessary to change these ports. HTTPS encrypted connection is enabled by default.

٦		Service port								
\$		HTTP		80						
•		HTTPS		443						
		RTSP		554						
		CMS & iView	er							
		Allow a	ccess							
_1		Port	VAST &	iViewer		3454				
i			VAST2 (same a	as HTTPS)		443				
		CMS		assword for VAST & V	AST2					
	IP		Confirm	password						
	16		VA:	ST2 remote connectio	on					
٩	DDNS		IP		nv9411p	o.dnset.com				
			AP	I service port	3443		VAST2	•• NVR		
i	Service			ername Iministrator)	admin		<u> </u>			
È			Acc	count password	•					
									Apply	

Instead of a web console, you can also access the NVR and the subordinate cameras using the **iViewer** and VIVOTEK's **VAST** software. The NVR can be managed as one of the sub-stations in a hierarchical device structure.

Set up a password for access from the VAST server before you can join the NVR to a VAST configuration. For access from the iViewer, you log in using the same user name and password for the login to the NVR.

Below is the screen showing the sub-station recruitment process from a VAST server.

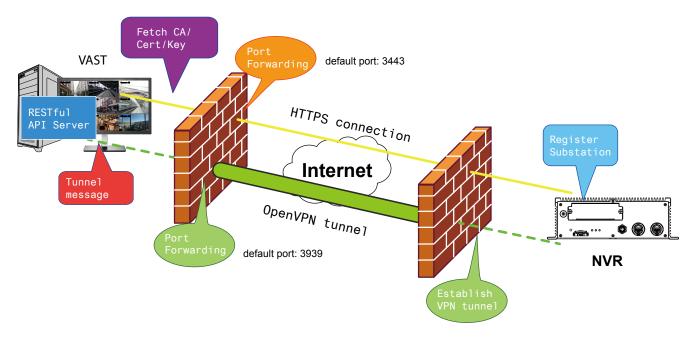
VAST2	o \$ +		V ^{ba} 배 날 🔹 ? - ㅋ
að Settings	s	Site management	
Cameras	Q. Search devices	Add 1 sites Q Q. 192.168.4.171	Authorize
Sites POS D/D0 devices	YNS_SHIDDI	Status Name IP Port Model Image: Comparison of the state of	

VAST2 auto connection

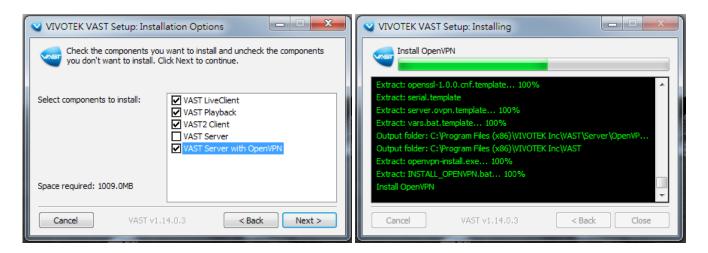
NAT-traversal with OpenVPN

You can select the "VAST Server with OpenVPN" option when installing the VAST server. A remote connection from NVR via a 3G/4G/LTE network can be made through an OpenVPN tunnel. When the OpenVPN option is selected, an OpenVPN server will be installed with the VAST server.

HMAC authentication and TLS encryption over an encrypted UDP connection are made effortlessly using the traversal methodology.



The sample installation screens are shown below:



With a remote VAST2 instance that needs to access the NVR via the Internet, you can enter its public IP address and credentials. The NVR runs an Open VPN client that makes remote connection via the RESTful (Repretational State Transfer) API (Application Programming Interface) service to a VPN server running on the remote site. The applicable service port number ranges from 1 to 65534. Default is 3443. The NVR automatically registers with CA cert key and becomes with sub-station over a VPN tunnel. Once set, the VAST2 can automatically connects the NVR.

A public IP or domain name must be configured on the VAST server for the access through the Internet. The IP or domain name can contain alpha-numeric characters [0-9][a-z][A-Z][-]. [-] can not be the beginning or the ending character.

Note that on the side of the VAST server making connection via the OpenVPN, the server/client configuration should be properly configured. On the mobile NVR, a proper gateway setting should be made for VPN connection.

For the server configuration, the configuration file is placed in:

C:\Program Files (x86)\VIVOTEK Inc\VAST\Server\OpenVPN\config\server\server.ovpn

You can edit your VPN IP subnet parameters according to your network configuration. The contents of the editable text file looks like this:

port 3939 proto udp dev tun ca ca.crt cert server.crt key server.key dh dh.pem server 10.6.0.0 255.255.0.0 topology subnet client-to-client client-config-dir "C:\\Program Files (x86)\\VIVOTEK Inc\\VAST\\Server\\OpenVPN\\ ccd" keepalive 10 30 cipher AES-256-CBC max-clients 50000 persist-key persist-tun status openvpn-status.log log-append openvpn.log verb 3 mute 20 sndbuf 262144 rcvbuf 262144 tls-server

Note that the NVR and VAST server should have a similar time setting when exchanging certificate information. Otherwise, the mutual handshake authentication process may fail.

Enter the OpenVPN DNS domain name and the credentials on the NVR network service configuration page.

A public IP or domain name must be configured on the VAST server for the access through the Internet. The IP or domain name can contain alpha-numeric characters [0-9][a-z][A-Z][-]. [-] can not be the beginning or the ending character.

٩		Servio	ce port							
\$		HTTP		80						
		HTTP	S		443					
		RTSP			554					
		CMS	& iViewe	r						
_		I	Allow acc	cess						
		F	Port	VAST &	iViewer		3454			
i				VAST2 (same a	as HTTPS)		443			
		c	CMS	Set up p	bassword for VAST 8	VAST2				
				Confirm	n password					
8	IP			VA:	ST2 remote connec	tion				
1	DDNS			IP		nv9411	p.dnset.com			
				AP	I service port	3443		VAST2	•• NVR	
i	Service				ername Iministrator)	admin		<u> </u>		
È				Acc	count password	•				
										Apply

3-6. Devices

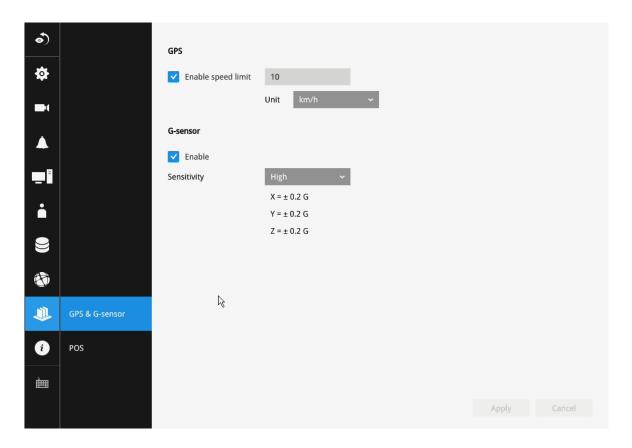
GPS & G-sensor

GPS

GPS can be used to detect the vehicle's speed. The speed limitation can be used as a triggering condition. Enter a number as a speed threshold.

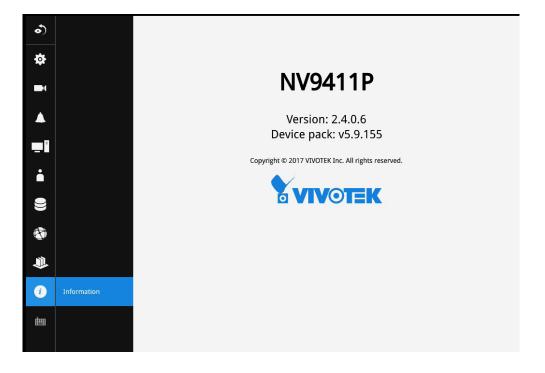
G-sensor

The G-sensor can be used to detect unusual maneuvers by detecting acceleration speed information in 3-axial (X, Y, Z) directions. You can change its sensitivity using the pull-down menu, or use the Customized option to manually enter the numbers for g-force (m/s^2 - meters per second squared). G=9.8 m/s^2



3-7. Information

This window shows the revision number of the firmware running on this machine.

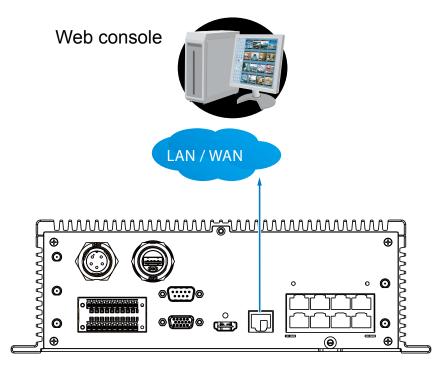


Section Two

Management over a Web Console

There are two different interfaces on the system:

- 1. One is connecting mouse and keyboard, and an HDMI cable to a TV screen or monitor. The local management thus made is described in **Section One** of this manual.
- 2. The other is accessed through the Ethernet connection. Management via a web console will be described in **Section Two** of this manual.



Note that when accessed over the network, the total streaming throughput is 96Mbps.

Chapter Four Login and Getting Started

4-1. Login

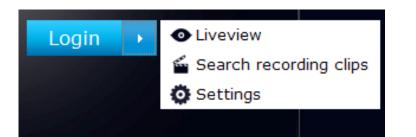
← ⊖ ¥ http://192.168.41.138/	ivotek ND8321 ×	<u>+</u> ★ ₩
File Edit View Fevorites Tools Help		
	X VIVOTEK	
	User name	
	Password	
	🛛 Remember me 🛛 🛛 🔒 🔒 🛛 🔒 🕹	
English		
		·

This is the login page on the browser. The minimum for resolution is 1280x960. If you enable the IE7 compatible mode when using the IE8 browser, please disable the compatibility function. While you are in the browser, press F12 to check its status.

It is highly recommended that you should change the default password. Please refer to **Settings** > **Security** > **User account** page to see how to prevent unauthorized access. The system will prompt you if you entered an incorrect user name or password.



Remember me: Your user name will be preserved in browser cookies for two days if you select the Remember me checkbox. The user name will be automatically erased if you do not log in to the system for two days.



You may login to a different software utility by unfolding the side panel on the **Login** button.

You can also select a different language using the **Multilingual** selector menu on the **lower left** corner of the Login screen. The functional items, menus, and dialogues will then be displayed using the selected language.

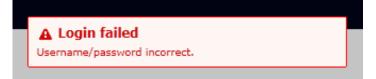


Remember me:

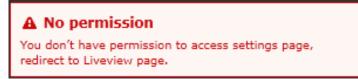
Select the checkbox to save your user name for use on the next login. The user name will be preserved in browser cookies for two days. If you do not login within the next two days, the user name will be erased.



Login errors: below are the login errors that might occur.



A Login failure can result from the incorrect user name and passwords.



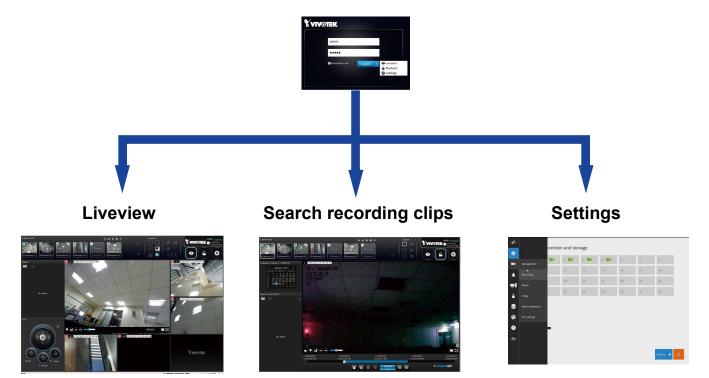
The No permission error occurs when a user logs in using an authentication that has no access rights to the Settings page. He will then be re-directed to the Liveview page.

Login options:

You may also mouse over the Login button to display the login options. You can then enter the Liveview, Playback, or Settings window.



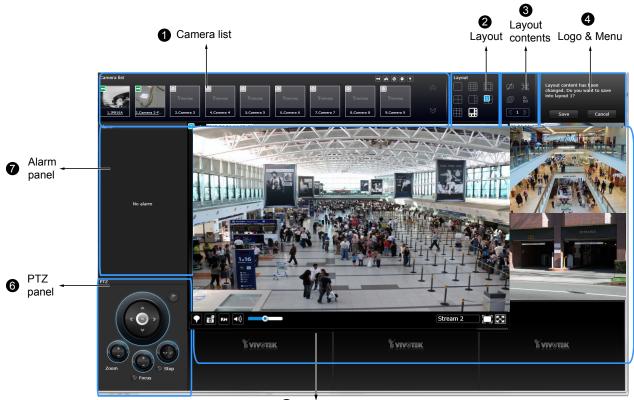
The NVR system features a simple UI structure which consists of a Liveview window, a Playback utility, and a system Settings window. Once logged in, you can move from one window to another by selecting the hot link buttons on the upper right of the screen.



MIMPORTANT:

- 1. Before operating the NVR, make sure you have properly installed hard drives and configured the storage volumes. Otherwise, you will not be able to operate some of the system's functionality.
- 2. Since the NVR system comes with 32-bit plug-ins for screen control, if your PC runs a default 64-bit IE browser and you manually enter the NVR's address on the browser, your browser session may malfunction. Instead, if you double-click on the discovered NVR on the IW2 utility, a 32-bit IE browser will open.
- 3. When you log in to the Liveview or Playback interface to stream a live or recorded video, install the ActiveX plug-ins. If it does not prompt when you log in, install plug-ins when you try to playback a recorded video. You may then need to re-start the IE browser console.





4-2. Graphical Layout and Screen Elements–Liveview

5 Viewcell panel

Once you log in, the system defaults to the Liveview page, which provides access to other configuration utilities, live view screen, and other functional panels. The screen elements are described as follows:

Item	Name	Description
1	Camera List	Provides a glimpse of all cameras inserted into your configuration. Basic
		information is also provided along with a screenshot.
2	Layout	Provides access to various layouts
3	Layout contents	Provides functions to extend, rotate, and redo the layout. System DI/DOs are also shown in here.
4	Logo & Menu	Provides access to the Playback and System Settings utilities, as well as system time and logout function.
5	View cell panel	Displays video streams from one or multiple cameras. Snapshot, streaming, bookmark, and audio control functions are also available on individual view cells.
6	PTZ panel	Exerts Pan/Tilt control on a selected view cell if the camera comes with mechanical PTZ mechanism.
7	Alarm panel	Reports alarms transmitted via cameras' DI connections or those by the Motion Detection, Tampering, etc.

Each panel will be described in further discussions.

4-2-1. Camera List Panel

The camera list displays the recruited cameras by the sequential numbering order you configured in the System Settings utility.

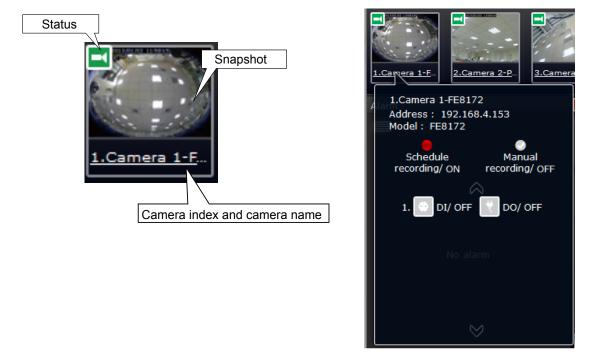


Depending on the size and screen resolution of your monitor, the snapshots of 8 cameras are displayed in this panel. If a user logged in using a credential of a limited access, he may only see cameras that he can access instead of all of the cameras.

To arrange a view cell layout, users can click and drag a camera to a view cell. Once connected, a camera's video stream is displayed in the view cell.

Camera Thumbnail:

A mouse click on the camera name under the thumbnail brings forth the summary of IP address, model name, recording setup and DI/DO information.



- * **Snapshot**: the camera's image snapshot is replenished every 5 minutes. If a camera is disconnected, the last image taken will be used to represent a camera.
- * Camera index & Camera name: Placing the mouse cursor on top of a camera text displays the camera index number and the camera name. You can click on the camera index to display the information box.
- * Status:

-	Online: the online status can be accompanied by the DI/DO icon 🖸
1	Offline: camera is disconnected.
Ø	An unconfigured camera instance
۲	Digital input is triggered
	Connected and recording video to system storage
	Connected with live streaming
	Disconnected or trying to establish a connection

Sorting criteria

Use the sorting buttons to re-arrange the order of the cameras on the list. Cameras that match the condition will be brought to higher places on the list (front of the order) regardless of its original camera index.

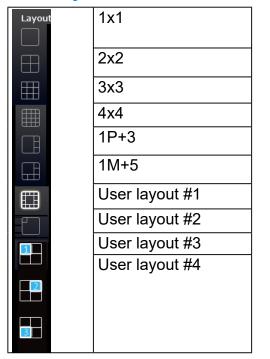
	Online: the online cameras.
F 4	Offline: the offline cameras.
0	Unconfigured camera instances
۲	Cameras whose Digial inputs have been triggered
•	Cameras whose Digial outputs have been triggered



NOTE:

For online cameras, the snapshots on the camera list are refreshed by every 5 minutes, and therefore may not represent the latest occurrences on the surveillance areas.

4-2-2. Layout



By default, 5 typical layouts are provided for the user. They include: 1x1, 2x2, 3x3, 4x4, 1P+3, 1M+5, and 1M+12. System default is the 4x4 layout. Cameras that do not fit into the first page of a layout, say, a 3x3 layout, will be displayed on the succeeding layout pages.

Each functional button on the screen is activated by a mouse hover. For example, the below states designate user's operation on a button:

: not selected.

1.

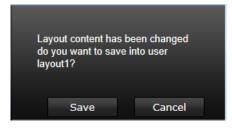
2.

: moused over, and is ready for selection.

: selected, and is taking effects.

Only an administrator can change and preserve a custom layout, and every user can designate a specific layout to be displayed when he/she logs in. The default layout for each user is stored in a browser's cookies.

Whenever changes are made to the current layout, a message prompt will appear on the side of the layout panel reminding you to save your current setting.



Note that a user who did not log in as an administrator can change a layout, but his configuration changes (with cameras placed on view cells) **will not** be saved.

User Layouts



There are another 4 user layouts that can be individually configured. An administrator can insert camera views into these layouts, and save the configuration. These user layouts can be seen by all users.

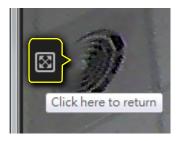
If you click the **Rotate** button before the configuration changes can be saved, your configuration changes will be lost.

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4-2-3. Layout contents

A few functional buttons are available on the Layout contents page.

Þ	Clears all view cells on the current layout.					
H	Full view: extends the view cells on the current layout to the full of the screen.					
Ð	 Rotate: the rotate function lets system display successive layout pages by the intervals of 10 seconds. The layout page that does not contain camera views will be skipped. A Rotate action will stop when you 1. move to another page, 2. move to a user layout, 3. click to select a view cell, 4. remove a camera from view cell. 					
DI, DO	Click to display the NVR's DI/DO statuses.					
(1	If your current layout spans across multiple pages, use the arrow buttons to switch from one page to another. The index number of the current page will be shown between the arrow buttons.					



When your current layout is displayed in a full view, move your cursor to the left center of the screen to return to the default Liveview screen. The **Return** button will appear.

4-2-4. Logo & Menu

A logout button, system time panel , and 3 hot link buttons to access the Liveview, Search recording clips, and System Settings utilities.



The system date and time refers to the date and time kept on the NVR system's real time clock. Due to the limited space for the user name, user name may be

partially displayed until you hover your mouse cursor.

MIMPORTANT:

Your configuration changes will be lost if you click one of the hot link buttons to move to another utility window. For example, you have changed your Live View layout and then click on the Playback button, you will enter the Playback window without saving your configuration. **Save your changes before you use these buttons.**

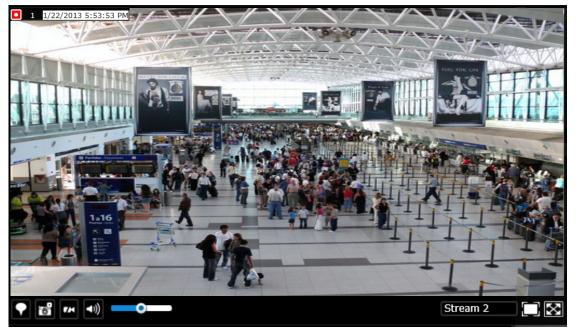
4-2-5. View Cell panel

A single view cell is shown below. Each view cell contains a video stream display area, an information bar, and functional buttons at the bottom. A view cell is displayed in Normal, Focused, or Maximized mode.

1. **A single click** selects a view cell from the View Cell panel, enables its function buttons, and turn it into the Focused mode.

2. The 2nd click maximizes the size of the view cell to the full of the panel.

3. The 3rd click shrinks the maximized view back into the focused mode.



Although the system automatically selects the video stream to display on the view cell, you can still manually select a different video stream from the Stream tab below. To deselect a view cell and return to the normal view, click on the **Restore** button at the

lower right of the window.

Adding Cameras to View Cells

- 1. Click and drag a camera from the camera list to an unoccupied view cell.
- 2. Double-click a camera on the camera list. The camera will be added to the first available view cell.

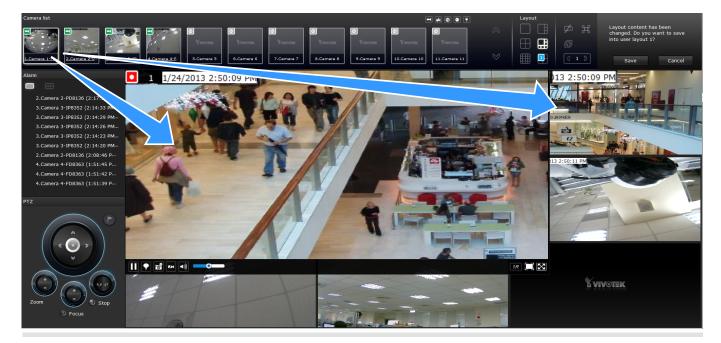
To deselect a view cell and return to the normal view, click on the **Restore** button at the lower right of the window. You can also click on another view cell to continue adding other cameras.



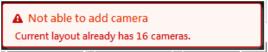
A view cell attempting to connect to a network camera will look like this. If the connection attempt takes a long time, it may result from network problems or incorrect configuration with video streaming. For example, you may have configured the camera to be streaming a 5MP stream. The NVR uses video stream #1 for recording, and stream #2 from cameras for live viewing. You should then open an individual web console with the network camera to change its video streaming configuration.



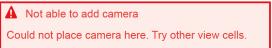
A camera can be inserted into multiple view cells. This way, a camera with a wide field of view, , can simultaneously display different regions of interest on different view cells.



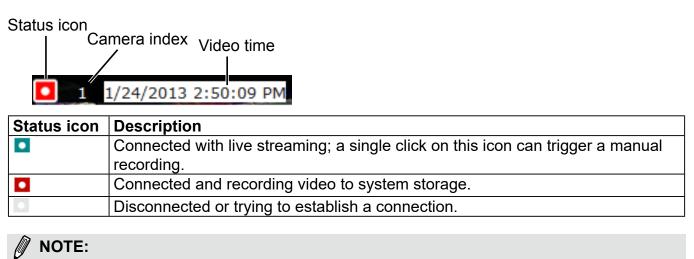
If the current layout already contain the max. number of cameras, e.g., 16 for the ND9441, the following message will prompt.



If you are using the 16-CH ND9441, there can be more than 16 view cells across multiple layout pages, e.g., on the second page of the 1M+12 layout. Placing a camera in the 17th to 18th view cells will bring out the following message.



Information Bar



5	Camera 5 - 198330 Camera 6 - 198330 Camera 7		172.16 172.16 172.16	.6.138	80 80 80	В	P8330 P8330 P8330	If you disable the Manual recordi function on the Settings page, you
	Connection	Recor		.0.141	80	10	6330	will not be able to use the Manual Recording function on the Liveview
Dei	ete recorded date older then i	days	180					
Pre	-alarm buffer time		5			٠	seconds	A Could not start manual recording
Por	at alarm recording time Audio recording		20			*	seconds	Please enable manual recording first

A mouse hover over the status icon will produce the following messages:

1. "Connecting" or "Cannot connect"	Connecting to a camera, or connection problem might have occurred.
2. "Live streaming"	Video is being streamed.
3. "Recording"	Currently recording the video stream.

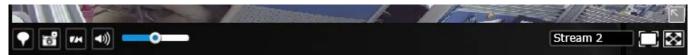
Camera index: an index number appointed to a camera following the order you inserted cameras during the initial setup.

Video time: The time configured on the NVR system is displayed here.

The time display format is as follows:

yyyy/m/d/yyyy	hh:mm:ss	2014.05.05 16:15:41

Tool Bar Buttons



Buttons	Description
	Resumes streaming.
	Pauses a video stream.
	Adds a Bookmark (that saves a short description and a one-minute footage from the current feed)
6	Takes a snapshot.
7.4	Removes camera from the view cell.
((ب	Mutes (if there is audio input from the camera.)
•	Unmutes
Stream 2	tream selector.
	Restores the view cell's original position on the Liveview panel.
\mathbf{X}	Maximize the size of current view cell.
R	Activates the PiP function.
R	Disables digital zoom (PiP).
10	Fisheye display modes–if the view cell contains video from a fisheye camera, the fisheye display mode selector will be available:
1P 1R	 10: the orginal circular view. 1P: the panoramic view. 1R: the regional view.
	Please refer to the fisheye camera's User Manual for more information.



Volume controller

Tool Bar Functions in Details

1. Play and Pause buttons:



These buttons pause and resume a video stream currently being played on your web browser. Note that this operation does not affect the video recording taking place between a camera and the NVR system.

2. Bookmark:



This function allows you to place a bookmark on a recorded stream when you observe a situation from your live view window. The bookmark is preserved as a one-minute footage along with a short description of a particular incident. The precondition of using this function is that the video stream, while you are watching it on the view cell, must be recorded to the NVR at the same time.

To add a bookmark,

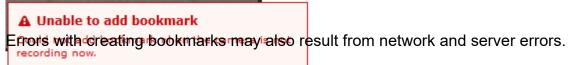
- 1. Click on the button,
- 2. Enter a short description that can be as long as 120 characters.



3. A confirm message will prompt at the lower right of the screen.



If the current video feed is not being recorded to storage, you will receive the following message:



Below are two bookmarks (yellow tags) shown along with a recorded video in the Playback utility screen. Bookmarks help find and retrieve important moments in a recorded video.

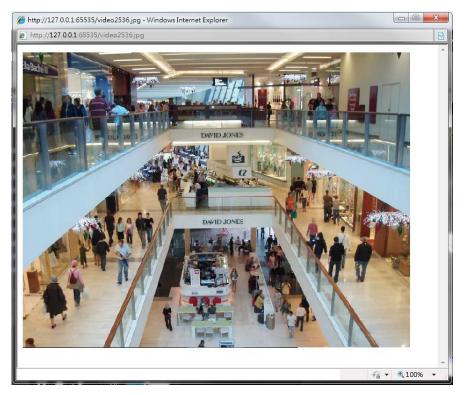
	and the second s
1/24/2013	1/24/2013
12:00:00 PM	4:46:23 PM6:00:00 PM
	• •
	spotted1

NOTE:

Bookmarks will be erased if the user/system erases the video clips they were appended to. For example, system will recycle storage space by deleting old videos along with their bookmarks.

3. Snapshot: 🚺

This button produces a snapshot prompt. You may then right-click on the snapshot image to save it to a preferred location.



Note that the size of a snapshot is equal to the frame size set for the video stream.

4. Clear: 🏴

This button removes camera from the current view cell. The view cell will then be available for other cameras

5. Mute and Unmute:

These buttons stops or resumes audio from a live stream.

6. Restore:

This button restores the view cell's original position on the Liveview panel.

7. Maximize: 🚺

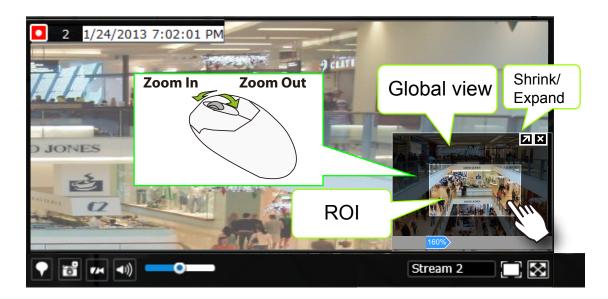
This button extends the size of current view cell to the full of the Liveview panel.

8. Activate and Deactivate **PiP** function:



PiP is short for **Picture in Picture**, a function that provides digital zoom into a live video. When activated, a Global view window will appear at the lower right of the view cell as shown below. You can display only a portion of the complete video frame as an area of your interest. Using a click and drag on the ROI window, you can instantly move to other areas within the video frame.

You can resize the ROI window by a mouse hover on the lower-right corner of the window until the resize mark appear be default size of the ROI window is 25% of the Global view. Click on the deactivate button to close the PiP window.



Note that not every camera supports the PiP function.

DOTE:

The Talk function in the two-way audio is currently not supported.

9. Volume controller:



The volume control takes effect when audio input from the network camera is available. Audio is heard only from a focused window, one that you selected by a mouse click from the Liveview panel. Some network cameras do not come with an embedded microphone, and its audio is disabled by system default. The actual sound level is also dependent on the system volume of the PC having a web console with the NVR.

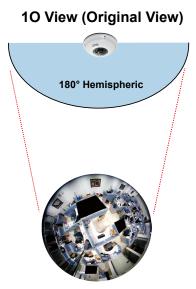
The sound volume configuration will not be preserved when a camera is removed from a view cell, web console is restarted, or when the Liveview layout is re-configured.



10. Fisheye display modes:

A view mode selector icon appears in a view cell of a fisheye camera. You can click to select a viewing mode. The viewing modes are illustrated as follows:

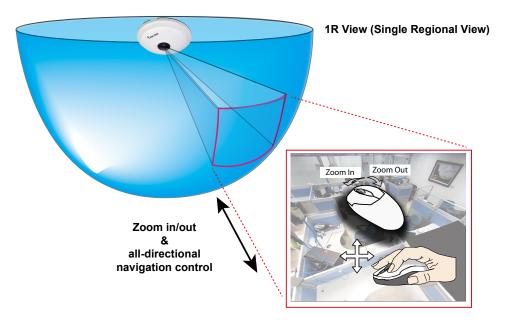
10 (Original view)



1P (Panoramic view)



1R (Regional view)



The 1R mode (or rectilinear) provides access to one image section within the hemisphere. You can zoom in or out (using the mouse wheel or PTZ panel) or travel through to other areas within the hemisphere using simple mouse clicks and drags. A single click on a particular object can bring the object to the center of your view window. Click and hold down the left mouse button, and you can swipe the view both horizontally and vertically.

Note that if your fisheye mounting type is set to the **Wall Mount** type, your screen control in the view cell will be limited to 90° pan and tilt. Make sure your mounting type and camera settings have been properly configured.

Because fisheye lens can cover a wide surveillance area, you can insert a fisheye camera into multiple view cells, and let different regional views display in these view cells. In this way, you can have a glimpse of multiple areas of interest, and the configuration of these different view windows will be preserved when you save your layout settings.

4-2-6. PTZ panel

The PTZ panel takes effect for cameras that come with mechanical PTZ functions. It does not support digital PTZ functions. To utilize its functions, select a view cell populated by a PTZ camera, such as a speed dome.

Depending on the individual functions that come with PTZ cameras, some functions will not be available for every cameras. For example, the zoom controller will not apply for a PTZ camera that comes without a mechanized zoom module, such as PD8136 and PT8133.



Listed below are the camera models and the types of supported PTZ controls:

Model (series)	Pan/tilt controller	Preset location	Zoom controller	Focus controller	Auto Pan/Patrol controller
PD	Yes	Yes	No	No	Yes
VS (VS8100 and 8102)	* Depends	Depends	Depends	Depends	No
VS84xx/88xx	Depends	Depends	Depends	Depends	Depends

* If the analogue cameras connected through the video server support PTZ mechanism.

NOTE:

On the Liveview window, currently the Continuous Move and the Click-on-image functions for PTZ cameras are not supported. Neither can you zoom in/out using the mouse wheel.

PTZ presets: If your PTZ cameras have preset locations, click on the button to unfold the preset menu. Click on any of the preset locations to move to the area of your interest. Refer to your camera's User Manual for how to configure preset locations.



The following message will prompt if the camera has no preset locations.



Pan/Tilt controller: A mouse hover over the arrow buttons activates the arrow button. Use the buttons to navigate to a preferred location.



Zoom controller: The zoom controller buttons only apply to cameras that come with an optical zoom module, such as a speed dome camera.

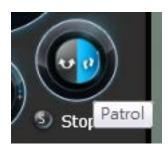


Focus controller: The focus controller buttons apply to cameras that come with focus control over its lens module, such as a speed dome camera.



Auto Focus: If your camera supports the auto focus function, use this button to acquire an optimal focus point.

Auto pan/patrol controller: These buttons provides pan and patrol functions provided that preset locations have been configured on the camera. For a speed dome camera, the pan command tells the camera to continuously pan 360 degrees until it is stopped by a user command. For PZ or PT series cameras, the pan action only takes place once to cover reachable areas.



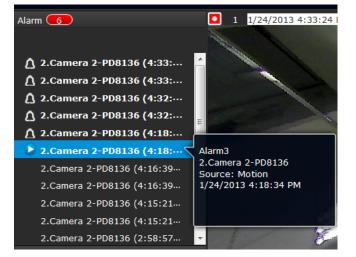
The **Stop** button ends a pan or patrol tour.

4-2-7. Alarm panel

To receive alarms from cameras, you need to configure alarm triggers in the **Settings** > **Alarm** configuration window (see page 107). Network cameras' digital inputs, digital outputs, or motion detection can all be used to detect conditions in external environments. When the alarms are triggered, you can configure certain kind of actions to take place in response to the alarms, such as:

- 1. recording the immediate image,
 - 2. sending an Email,
 - 3. sounding the buzzer,
 - 4, sending snapshots to an **FTP** server,
 - 5. sending event messages to web server,
 - 6. moving camera lens to a **preset** location,
 - 7. triggering a camera digital output.

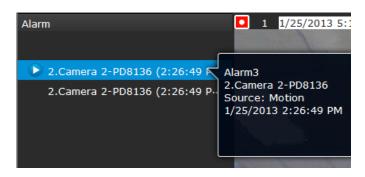
The alarm panel displays the latest 10 alarm entries with the latest alarm on top of the list. The alarm list keeps up to 200 events. Older events will be erased if the number exceeds 200.



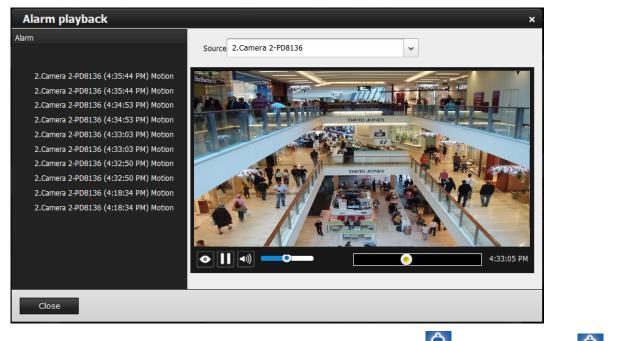
The alarm panel is polled every 10 seconds. A mouse hover on an alarm entry displays full information of the event.

Note that multiple alarms can be triggered by one incident. See page 107 for how to configure the alarm settings.

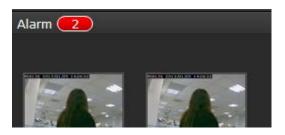
If an event is configured with a recording action, there will be a play button to the left of the alarm message.



The alarm playback window will begin playback of a footage taken **10 seconds** before the occurrence of an alarm. The playback of an alarm-triggered recording will normally last for **one minute**. If, however, you configured a shorter pre- and post-alarm recording time, your alarm recording may be slightly shorter. The default for **pre-** and **post-alarm** buffer time are 5 seconds and 20 seconds.

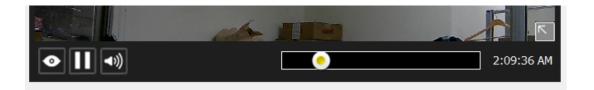


Click and read a text-only alarm will turn off the alarm icon . The alarm icons indicate unread alarms. The number of unread alarms will be listed on the title bar.



Move your cursor over an alarm with a recorded footage. The Play button will become available.



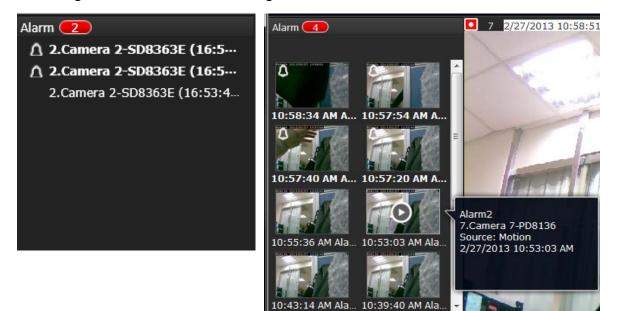


The following buttons are available in the alarm playback window.

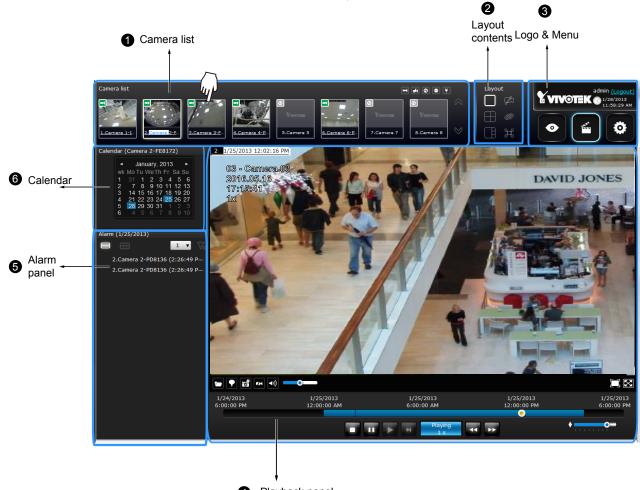
Buttons	Description					
•	View live video: displays the live view streaming instead of the alarm recording.					
R.	Resu	mes the	alarm playback.			
	Begin	s the ala	arm playback.			
Ш	Pause	Pauses the current playback.				
◄)) — C	Mute or unmute the audio with the current playback. Drag the controller t change the audio volume level.					
2:09:38 AM			Use the playback slider to quickly change the playback position.			
R	Click to enable the digital zoom function.					

Incoming Alarms

New alarms will be indicated by the messages in bold letters, the alarm bell icons, and the increasing number of unread messages **3** on the title bar.



4-3. Graphical Layout and Screen Elements–Search recording clips



4 Playback panel

The screen elements of the **Playback** window are described as follows:

ltem	Name	Description
1	Camera List	Provides a glimpse of all cameras that have recorded data. Basic information is also provided along with a screenshot.
2	Layout contents	Provides functions to extend, rotate, redo the layout, and the synchronous playback.
3	U	Provides access to the Playback and System Settings utilities, as well as system time and logout function.
4		Displays the playback functions. Snapshot, bookmark, and export functions are also available on individual view cells.
5	Alarm panel	Reports alarms transmitted via cameras' DI connections or those by the Motion Detection, etc.
6	Calendar	Shows when the recording took place, and thus enables users to quickly locate a specific part of recording in history.

4-3-1. Camera List Panel

The camera list displays the 8 recruited cameras by the sequential numbering order you configured in the System **Settings** window on page 87. The elements in the Camera list on a **Search recording clips** window are identical to those on a **Liveview** window. Please refer to page 152 for details on the Camera list panel.

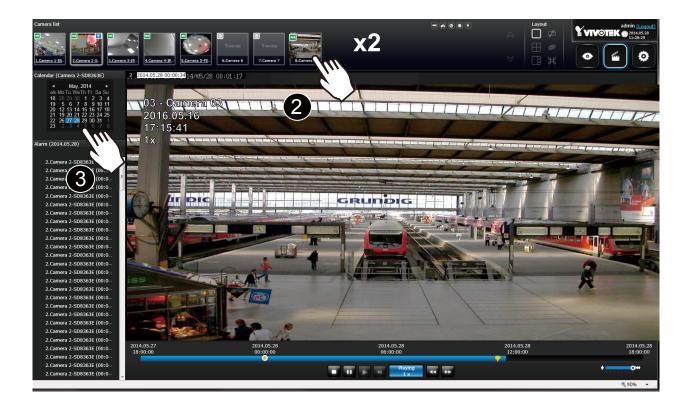
There are two key differences between the Camera List on Liveview and that on the Playback window:

- 1. Users **can not** click and drag a camera thumbnail to a playback view cell.
- 2. A double-click on a camera **does not** display video in a view cell. A double-click displays a **calendar** where days with recorded videos are shown.

To begin playback and search for past recordings,

1. Double-click on a camera.

2. The **Calendar** panel will display the days video recording actually took place. And those days will be highlighted by a blue background (as the 25th and 28th in the screen below.)

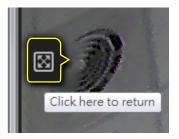


4-3-2. Search Recording Clips Layout

3 types of layouts are provided for the Search recording clips window: 1x1, 2x2, and 1+3.

In the Search recording clips window, users can simultaneously playback up to 4 recorded videos.

Ø	Clears all view cells on the current layout
Ø	Starts or stops the Synchronous playback.
÷	Full view: extends the view cells on the current layout to the full of the screen.



When your current layout is displayed in a full view, move your cursor to the left center of the screen to return to the default Liveview screen. The **Return** button will appear.

4-3-3. Logo & Menu

A logout button, system time panel , and 3 hot link buttons to access the **Liveview**, **Playback**, and **Settings** utilities. This panel is identical to that on the Liveview window.

4-3-4. View Cells in Search Recording Clips

The view cells in Liveview and Playback windows are similar. Their differences are listed as follows:

1. 3 simple layout types are supported as previously described.

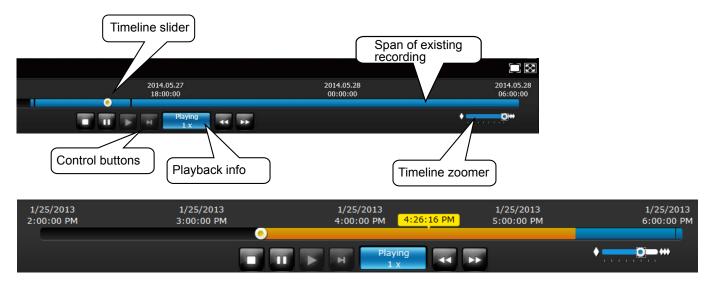
2. The information bar displays camera index and video time information only.

3. The Play and Pause buttons are not available on the Tool bar. One Export function is added on a playback view cell.

The functional buttons on an individual view cell are described as follows:

Buttons	Description					
	Exports a section of the video into a 3GP or Windows exe file. The length of exported video is configurable to 1, 3, 5, or 10 minutes.					
Adds a Bookmark (that saves a short description and a one-minute footage from the current feed)						
6	Takes a snapshot.					
7 /4	Removes camera from the view cell.					
<>))	Mutes (if there is audio input from the camera.)					
•	Unmutes					
Restores the view cell's original position on the liveview panel.						
Maximizes the size of current view cell.						
Enables the digital zoom.						
Disables digital zoom (PiP).						
10 1P 1R	Fisheye viewing modes–if the view cell contains video from a fisheye camera, the fisheye display mode selector will be available: 10: the orginal circular view. 1P: the panoramic view. 1R: the regional view. Please refer to the fisheye camera's User Manual for more information.					
0	Volume controller					

Search Recording Clips Control Panel

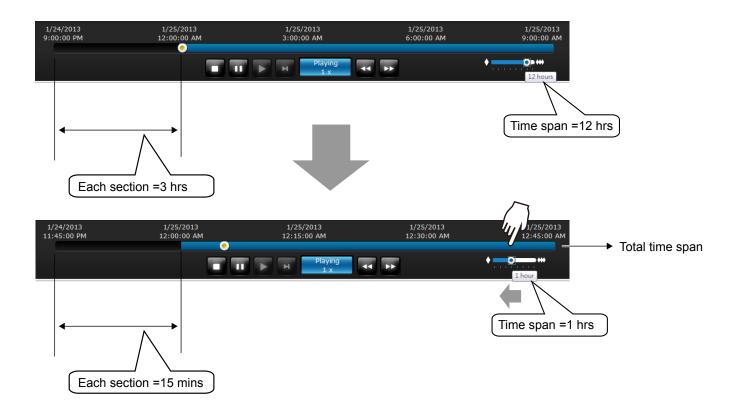


The time slide bar enables quick skimming through the recording. Its functional buttons are described as follows:

Buttons	Description						
	Pause						
	Play. This button is available after you manually pause a playback.						
	Stops the current playback.						
H	Next frame. After you paused a playback, use this button to browse video frame by frame.						
	Speeds down by 1/2. The slowest speed is 1/8.						
>>	Speeds up. Increases the playback speed, to 2x, 4x, 8x, 16x, and then to a maximum of 32x.						
Playing 4 x	Displays the current playback status, such as Playing, Pause, play speed, or Stop.						
+++	•	Timeline zoomer. Use the zoomer to zoom in for more precise skimming.					
•	Timeline slider thumb. Click and drag this thumb button to move along and reach a specific point in time. A click on the time line will also work.						

The time line shows the length of existing recording taken on a specific time span. You can use the timeline zoomer to scale down the span of time. For example, if the time span is reduced to 1 hour, then each section on the time line represents 15 minutes of recording. The total time span of a timeline starts from the minimal of 4 minutes, 20 minutes, 40 minutes, 1 hour, and up to a maximum of 24 hours.

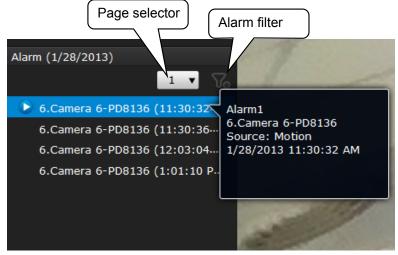
In the Synchronous play mode, a change to the zoomer will be reflected by all synchronously playing view cells.



If recordings take place by an event-triggered recording, the intervals between recordings can be down to 1 minute, and the individual recordings will not be easily discernible. In this situation, you can mouse over the timeline to pinpoint individual recording instances.

4-3-5. Alarm Panel

The alarm panel displays the alarms or bookmarks recorded by the day of recording. Two additional buttons are available: **Page selector** and **Alarm filter**.



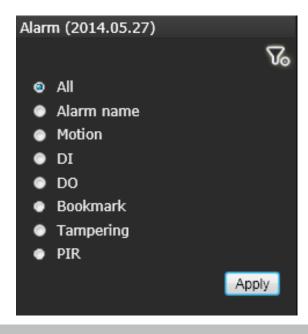
See page 107 for how to configure alarms.

- A playback button will be available with an alarm-triggered recording. The alarm panel in the Playback window also supports the List mode and Icon mode that are similar to that in the Liveview window.
- There can be numerous alarms occurring in a day. Use the page selector to display different pages of alarm entries. Up to 200 entries can appear on one page. Note that the new alarms that occurred seconds or minutes ago may not be instantaneously listed on the page.

If bookmarks are listed in the Alarm list, a bookmark entry will look like this: Camera index. camera name (time)–bookmark

Alarm filter:

Use the alarm filter to find out specific alarms. Use the check circles below to narrow down your search criteria by Alarm name or alarm type by Motion detection, DI, DO, Tampering, PIR, or those manually marked down as Bookmarks.



The alarm name is defined by users in the **Settings** > **Alarm** page.

4-3-6. Calendar Panel

Double-click on any of the existing cameras to display the Calendar panel. Days with recorded videos will be highlighted in blue regardless of the length of existing recordings that occurred in that day. You may then click on a day to begin viewing the past recordings.

 ▲ April, 2014 ▶ wk MoTu WeTh Fr Sa Su 14 31 1 2 3 4 5 6 15 7 8 9 10 11 12 13 16 14 15 16 17 18 19 20 17 21 22 23 24 25 26 27 18 28 29 30 1 2 3 4 19 5 6 7 8 9 10 11 	Calendar (Camera 07)											
wk MoTu WeTh Fr Sa Su 14 31 1 2 3 4 5 6 15 7 8 9 10 11 12 13 16 14 15 16 17 18 19 20 17 21 22 23 24 25 26 27 18 28 29 30 1 2 3 4		▲ April 2014 ►										
15 7 8 9 10 11 12 13 16 14 15 16 17 18 19 20 17 21 22 23 24 25 26 27 18 28 29 30 1 2 3 4		•										
16 14 15 16 17 18 19 20 17 21 22 23 24 25 26 27 18 28 29 30 1 2 3 4		14	31	1	2	3	4	5	6			
17 21 22 23 24 25 26 27 18 28 29 30 1 2 3 4		15	- 7	8	9	10	11	12	13			
18 28 29 30 1 2 3 4		16	-14	15	16	17	18	19	20			
		17	21	22	23	24	25	26	27			
19 5 6 7 8 9 10 11		18	28	29	30		2	3	4			
		19	- 5	6	- 7	8	9	10	11			

You may use the arrow button to view the records in other months. If there are no recordings in the current month, the recordings taken in the days of the following month will be shown stead.

Chapter Five System Settings

Since revision 2.0.0.x, the System Settings pages are made identical to those on the local console. Since the Setting pages are identical, the following pages will be omitted. Please refer to page 87 for the description of System Settings via a local console.

Some minor differences between the web console and local console exist. One is the Restore Factory default function. It is only available on the web console.

The restore function is not available on the local console, for users can use the reset button to perform the system default restoration.

ы	Overview	
- 1	Camera	
	Alarm	
	System	Information
i	User	Maintenance
	Storage	Display
٢	Network	UPS
i	Information	Log
		EZConnect servi

Another difference is the ability to enter a camera or system name using languages other than English. The NVR's system name also supports the use of other lanaguages. This is only achievable through a web console.

The following characters are not supported: [>][<][)][(]["][%][;][#][&][+][-][\]

	Overvlew		Auto/edit Network						
-	Gimeia	Management		^		_			
•	Alarm	Recording	• •		Camera name: IP:	走雨 ×	\frown		
_	System	Media	01 - 走廊		Port	BO	\bigcirc		
i	User	Image	02 Camera 02		Protocol:	VIVOTEK	Connecting		
	Storage	Motion detection	03 - Camera 03		Channel:	1			
			04 Camera 04		Model	FD9381 EHTV			
6	Network	PTZ settings	05 - Camera 05		MAC	00-02-01-30-38-82			
	Information		00						
	anomotion		07 -		User name:				
			08		Password:				
			09 -			Apply to all carr			
			10			_			
			11-				Арріу		
			12						
			13-						
			14	~					

Chapter Six Operation

MIMPORTANT:

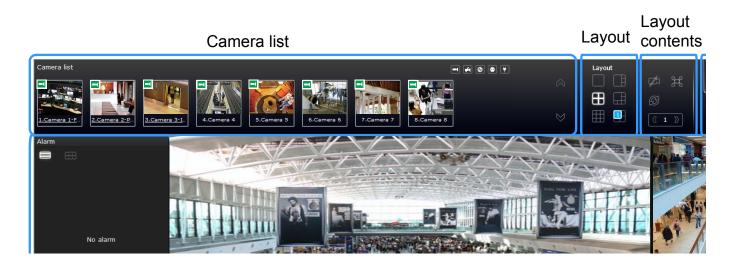
- 1. Before operating the NVR, make sure you have properly installed hard drives and configured the storage volumes. Otherwise, you will not be able to operate most of the system's functionality.
- 2. Since the NVR system comes with 32-bit plug-ins for screen control, if your PC runs a default 64-bit IE browser and you manually enter the NVR's address on the browser, your browser session may malfunction. Instead, if you double-click on the discovered NVR on the IW2 or Shepherd utility, a 32-bit IE browser will open.

6-1. Liveview

6-1-1. Placing Cameras into the Layout

Legends and definitions of icons on the layout panel have been described on page 88.

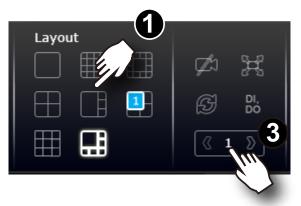
It is presumed that you have properly inserted all network cameras in your deployment as previously described on page 88. All 8 cameras should be listed on the Camera list.



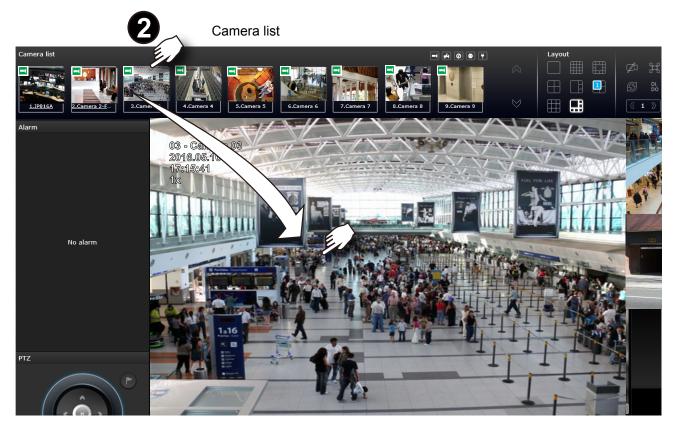
Note that layout design can only be performed by the system administrator.

To begin the design of your layout,

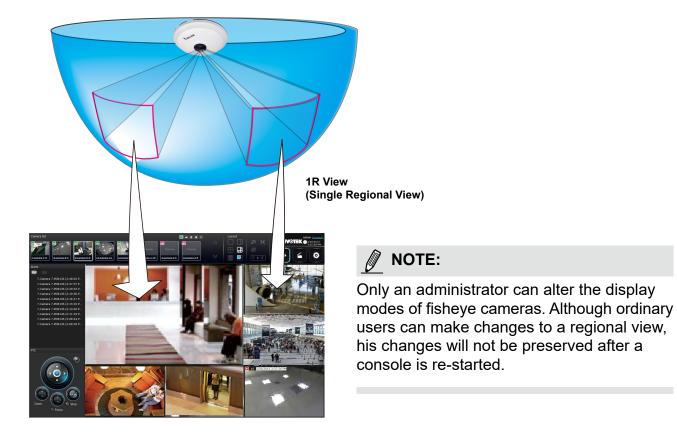
1. Select a layout pattern by a single click. The options are: 1x1, 2x2, 3x3, 4x4, 1P+3, 1M+5, 1M+12, and 1M+31, where 4x4 and 1M+12 are available for the 16-CH model.



2. Click and drag cameras from the Camera list to empty cells on your layout. Repeat the action until you placed all your cameras into the layout. You may also double-click on a camera's thumbnail to fill it into the first unoccupied view cell.



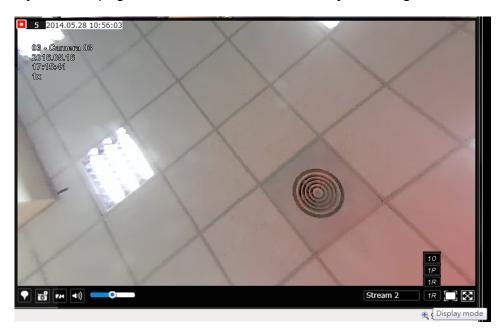
- 3. When you filled up the current layout, e.g., 6 camera into the 1M+5 layout, click the page switch switch switch button to continue on the next layout page.
- 4. On completion, click **Save** to preserve your setting.



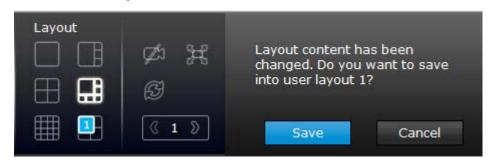
Placing different regional views of a fisheye camera into view cells will look like this:

In addition to fisheye cameras, if a camera has a wide field of view, you may also display its different fields of view in multiple view cells. Some view cells may also contain a PiP view that is digitally zoomed.

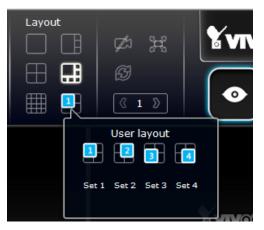
The fisheye mode button is available on the view cell where you inserted a fisheye camera. When a regional view is displayed, the shooting angle and image orientation is kept with the layout. See page 163 to see more about fisheye viewing modes.



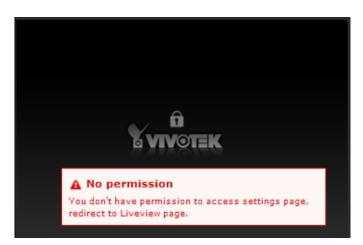
4. When you are done with the current layout design, i.e., the user layout 1, click **Save** to preserve your settings. This message prompts on the screen whenever any change is made to the current layout.



5. You can create more user layouts by mouse-overing the user layout button. You may create more user layouts for different purposes, such as for the use of different users, or playing different views of a camera on multiple view cells.



If users were created and some cameras are excluded from their access, a user may log in and see the locked-on cells as shown below:



A user who has limited access rights may still re-arrange the layout of view cells. However, his configuration change will not be saved after he leaves the current console.

NOTE:

By default, every users or administrator logs in to the Live view window to the last layout page he visited. The last layout page a user visited during the previous console becomes the default layout.

6-1-2. PTZ and Other Screen Controls

Note that the PTZ control panel only applies when you select a view cell with a camera that comes with mechanical PTZ functions. Currently the e-PTZ function is not supported by the NVR system.

With a PTZ camera, the buttons on the PTZ panel become functional when you mouse over its GUI elements. For all compatible cameras and exerting Zoom, Focus, and Patrol functions, please refer to page 165 for details. The Zoom function, for example, requires a camera that comes with a motorized zoom module, and may not be applicable to every PTZ camera.



The preset positions and the patrol functions require the associated configuration on the cameras via a web console. Before you make use of these functions, you should set up the preset positions on a web console with the camera. The NVR GUI does not provide the configuration options with PTZ preset positions.



You can use **Preset** button to display preset positions and tell the camera to move and point at the preset direction, and to perform a camera tour to visit these positions in a consecutive order.

To access live view control,

- 1. **Click** on a view cell. The view cell will become a focused view cell. The streaming control buttons will be listed at the bottom of a view cell. These buttons have been discussed on page 159.
- 2. **The 2nd click** on a view cell enlarges it to the full of the live view area. **The 3rd click** reduces its size to the original focused view.
- 3. To deselect a view cell, you can click on another view cell in the display area or click on the Restore 🚺 button.



A selected, focused, view cell.

NOTE:

If you have concerns with the display quality and frame rate per second, refer to page 97 for how to configure video feeds for live viewing as well as for video recording. The configuration options can be found in **Settings** > **Camera** > **Video**.

Note that the constant bit rate methodology is applied in this system and it sets an upper threshold on the size of IP packets sent with the video streams. Image quality will be slightly compromised if reaching the ceiling of allowable bandwidth.

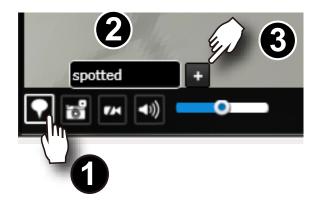
To place bookmarks and exert screen controls,

On a focused view cell, you can place a bookmark **N** that saves a short description and a oneminute footage from the current feed. The bookmark is also displayed along with the recorded video, and therefore it is easier to look for a specific moment in time when you need to trace back for a scenario later.

The bookmark function can be executed on a live or recorded stream when you observe a situation from your Live view or Playback window. The precondition of using this function is that the video stream, while you are watching it on the view cell, must be recorded to the NVR at the same time.

To add a bookmark,

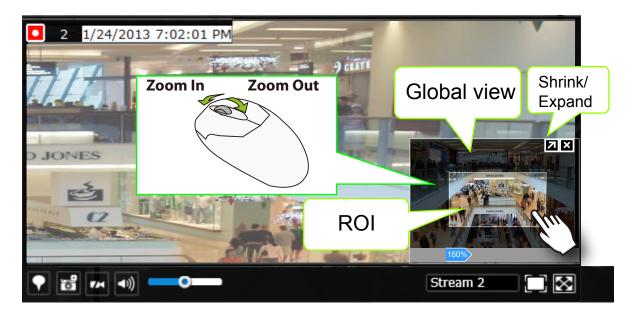
- 1. Click on the button,
- 2. Enter a short description that can be as long as 120 characters.
- 3. Click on the + button or simply press Enter on your keyboard.



To Activate and Deactivate PiP function,

PiP is short for Picture in Picture, a function that provides digital zoom into a live video. When activated, a Global view window will appear at the lower right of the view cell as shown below. You can display only a portion of the complete video frame as an area of your interest. Using a click and drag on the ROI window, you can instantly move to other areas within the video frame.

You can resize the ROI window by a mouse hover on the lower-right corner of the window until the resize mark appear be default size of the ROI window is 25% of the Global view. Click on the deactivate button to close the PiP window.



Note that not every camera supports the PiP function. For example, PTZ cameras do not support the PiP feature.

Refer to page 159 for GUI legends and individual functionality.

6-1-3. Audio

Audio is only transmitted through the camera in a view cell that is currently selected. You can manually tune the volume level, mute, or unmute the audio feed through a view cell.

6-1-4. Camera Properties and Controls

You can click on the <u>underlined name entry</u> of a camera on the camera list to open its properties window. Here you can find a short description of the camera name, address, and model name. You can also enable or disable the scheduled or continuous recording set for the camera. Click on their associated icons, \heartsuit , $\textcircled{\bullet}$, to change their recording status.

For a camera that is not performing a continuous recording, you can click on the Manual Recording button, \checkmark , to start a manual recording. The recording will stop using the same button. You can also manually turn on the digital output \checkmark , e.g., to trigger an external alarm that is connected to a specific camera.



6-1-5. Alarm Panel

To receive alarms from cameras, you need to configure alarm triggers in the **Settings** > **Alarm** configuration window (see page 107). Network cameras' digital inputs, digital outputs, or motion detection can all be used to detect conditions in external environments. You can configure certain kind of actions to take place in response to the alarms: such as,

1. recording the immediate image,

- 2. sending an Email notification,
- 3. sounding the onboard buzzer,
- 4, sending snapshots to an FTP server,
- 5. sending videos to a web server,
- 6. moving camera lens to a preset location,
- 7. triggering a camera's digital output.

The operation details of the **Alarm panel** and **Alarm Playback** utility have been described on page 167.

Alarm	2/26/2013 3:16:38
 7.Camera 7-PD8136 (2:48:02 K 7.Camera 7-PD8136 (2:37:37 P. 7.Camera 7-PD8136 (2:20:33 P. 7.Camera 7-PD8136 (2:19:30 P. 7.Camera 7-PD8136 (2:16:17 P. 7.Camera 7-PD8136 (2:15:10 P. 7.Camera 7-PD8136 (2:15:10 P. 7.Camera 7-PD8136 (2:11:19 P. 7.Camera 7-PD8136 (2:08:44 P. 7.Camera 7-PD8136 (2:08:44 P. 7.Camera 7-PD8136 (2:08:36 P. 	
7.Camera 7-PD8136 (2:08:33 P	

6-1-6. Layout view Control Buttons



- 1. When editing a user layout, you can use this button to clear all view cells of inserted cameras.
- 2. 🔀 This button extends the current layout to the full of the screen.
- 3. G The Rotate function lets system display successive pages in a user layout by the

A Rottateaaction wile stop when you page that does not contain camera views will be skipped.

- 1. move to another page in the user layout,
- 2. move to another user layout,
- 3. click to select a view cell,
- 4. remove a camera from view cell,
- 5. click to disable the rotation function.

When your current layout spans across multiple pages, use the arrow buttons $\underbrace{(1)}_{i=1}$ to switch from one page to another. The index number of the current page will be shown between the arrow buttons.

6-2. Search Recording Clips

The elements in the Camera list on a **Search recording clips** window are similar to those on a **Liveview** window. Please refer to page 152 for details on the Camera list panel.

However, on a Search recording clips window,

- 1. You cannot click and drag a camera thumbnail to a playback view cell.
- 2. A double-click on a camera does not display video in a view cell. A double-click displays a **calendar** where days with recorded videos are shown.

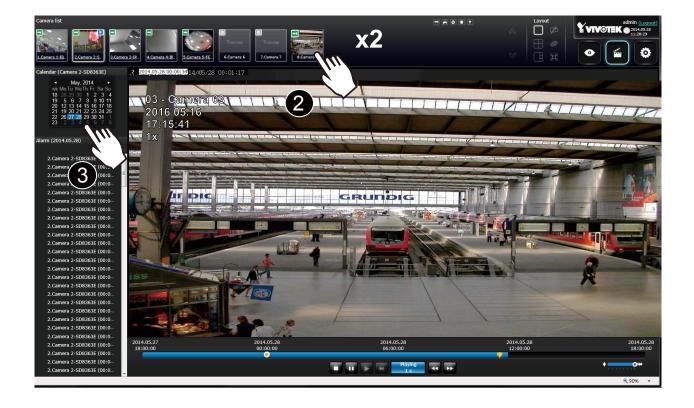
6-2-1. Begin Playback and Search for Past Recordings

- 1. Select a layout. You can display the playback views of multiple cameras on one screen.
- 2. Double-click on a camera.
- 3. The **Calendar panel** will display the days video recording actually took place. And those days will be highlighted by a blue background (as the 25th and 28th in the screen below.)



NOTE:

If a video stream was recorded in the **MPEG-4** format, it will not be playable on the Playback window.



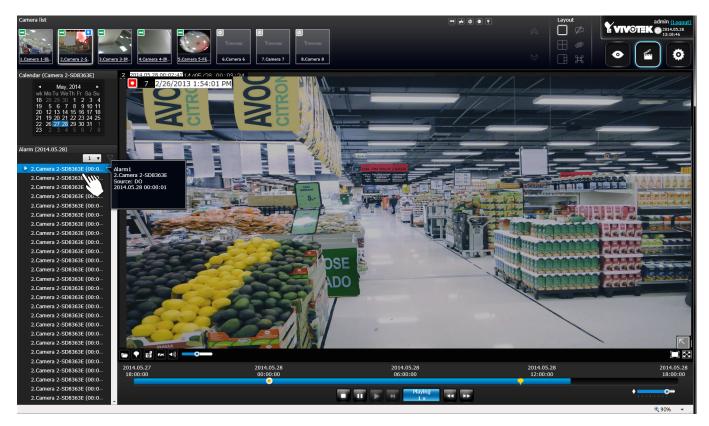
6-2-2. Past Alarms and Bookmarks

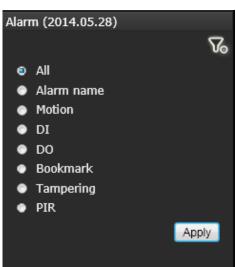
When you selected a day when alarms took place on a camera, the alarms will be listed on the Alarm panel. Up to 200 entries can be listed on a single page, and a max. of 1,000 entries across multiple pages.

You may then,

1. Mouse over the alarm thumbnails and click on the play button. The Playback window will then play back the video recorded by the time of the occurrence.

2. Unlike the **Alarm playback** function on the Liveview window, which only plays back the related video for only one minute, the alarm playback will continue throughout the recording of that day.





If you set up multiple triggering sources on a camera,

you can use the **Alarm filter button** to find the alarms of a specific type.

You can select the check circles to narrow down the types of listed alarms using search criteria by **Alarm name**, **Motion**, **DI**, **DO**, **Bookmark, Tampering,** or **PIR**.

Note that if searching by the Alarm name, the search does not apply to the camera model name that is automatically appended to the description of an alarm. Only the name of an alarm will apply in the search. Note that the bookmarks you inserted on the Liveview window will be listed on the Alarm panel, and the bookmarks will also appear on the slide bar of the Playback window.

To retrieve or view the video clip tagged by the bookmark, click on it to play the video that was recorded by the time bookmark was inserted.

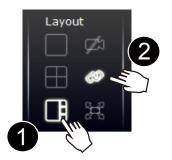


6-2-3. Synchronous Playback

The NVR supports synchronous playback, which allows you to review video clips from up to **4** cameras at the same time. These video clips will be retrieved simultaneously all playing for a specific point in time.

To perform synchronous playback:

- 1. Select a layout from the Layout panel, e.g., a 2x2 layout.
- 2. Click on the **Synchronous playback** W button.
- 3. Double-click to select a camera from the camera list. This camera becomes the Master camera.
- 4. When the Calendar panel appears, click to select a date you prefer.
- 5. Click and drag other cameras from the camera list to the empty view cells. These cameras will play back videos according to your operation on the Master camera.



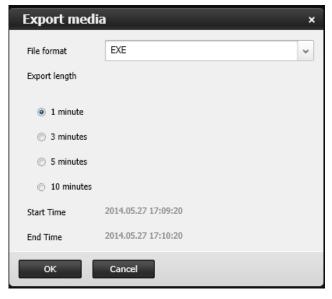
Note the following when using the Synchronous playback:

- 1. Only the alarms triggered on the Master camera will be shown. In the Synchronous mode, you can not find the alarms or bookmarks generated for other cameras.
- 2. The playback speed, selection of video clips, and alarm playback of all cameras are made synchronous.

6-2-4. Export media

To export video clips,

- 1. Click on the **Export media** button on the tool bar, while the Playback window is playing a video section of your interest.
- 2. An Export media window will prompt.



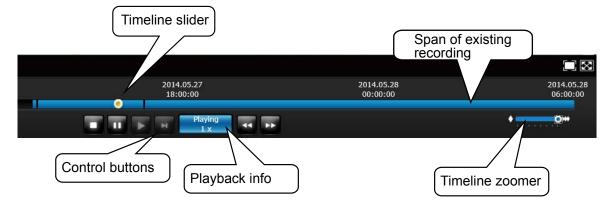
- 3. Select the file format using the pull-down menu. An EXE file is an self-executable file playable by an embedded Media Player. The 3GP format is a multimedia container format for 3G UMTS services. These files can be played on QuickTime, RealPlayer, and VLC. The file name will look like this: [MAC]_ [DATE]_[TIME]_ [CAMERA_INDEX].[3gp/exe].
- 4. Select an export length of video by 1, 3, 5, or 10 minutes. The actual length can be longer due to the fact that the program needs to trace back to the previous I-frame for a complete rendering of video frames into the media.
- 5. Click **OK** to proceed.
- 6. System will prompt you for the EXE file. Click Save to proceed.



- 7. The exported media file should be saved to the default download folder.
- 8. A self-executable EXE file should look like this.



6-2-5. Time Search

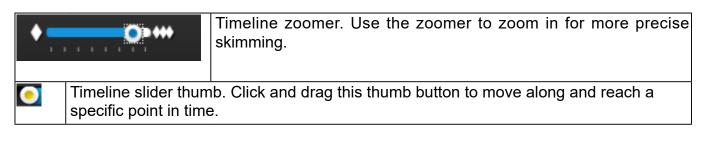


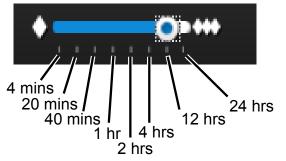
Use the time line slide bar to find the nearest recording from a specific point in time.

Details of the control bar in the Playback window can be found on page 175.

1/25/2013 2:00:00 PM	1/25/2013 3:00:00 PM	1/25/2013 4:00:00 PM	1/25/2013 5:00:00 PM	1/25/2013 6:00:00 PM
			_	♦
		Playing	>>	

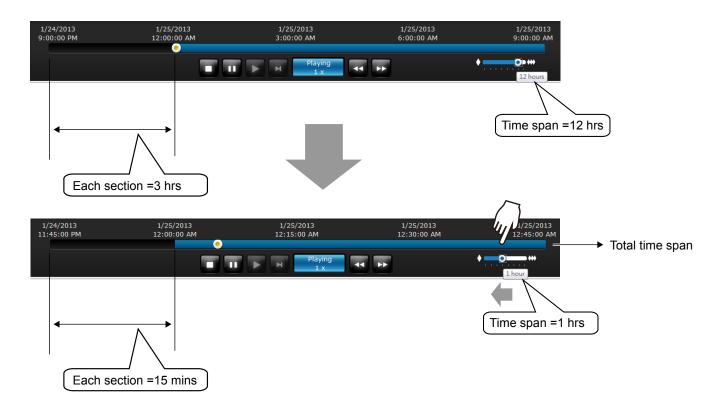
If the need arises to more accurately pin-point the occurrence of an event, you can use the Timeline zoomer and the slider thumb on the time line for a closer view into the existing recording.





You can use the timeline zoomer to scale down the span of time. For example, if the time span is reduced to 1 hour, then each section on the time line represents 15 minutes of recording. The total time span on a timeline starts from the minimal of 4 minutes, 20 minutes, 40 minutes, 1 hour, and up to a maximum of 24 hours.

In the Synchronous play mode, a change to the zoomer will be reflected by all synchronously playing view cells.



If recordings take place by an event-triggered recording, the intervals between recordings can be down to 1 minute, and the individual recordings will not be easily discernible. In this situation, you can mouse over the timeline to pin-point individual recording instances.

Safety and Compatibility

Federal Communications Commission (FCC) Statement

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Warning:

[A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.]

[Use only shielded cables to connect I/O devices to this equipment.]

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

[]: depend on EUT condition.



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For business users in the European Union

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