



User Manual

GD-RT-AC3004N
GD-RT-AC3016N
GD-RT-AP5004P
GD-RT-AP5008P

GR-RT-AP5016P
GR-RT-AP5016N
GR-RT-AT5016N

EN

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1. Introduction

Thank you for purchasing a GRUNDIG product. Before installing or connecting the product, please read first the following documents which you can find on the CD Rom in the product package:

- Legal Disclaimer
- Safety Instructions
- Installation Manual for the respective product model

Further information about the product like Data Sheets, CE Documents, etc. can also be found on the CD Rom in the product package.

This User Guide is a user manual for Digital Recorders (DVRs). Please see in the table of 1.1 Model Overview the applicable models.

Please read this User Guide carefully and retain it for future use.

1.1 Model Overview

This User Guide is for the following products:

GD-RT-AC3004N
GD-RT-AC3016N
GD-RT-AP5004P
GD-RT-AP5008P
GD-RT-AP5016P
GD-RT-AP5016N
GD-RT-AT5016N

1.2 Key Features of the DVRs

General

- Connectable to HD-TVI and analog cameras;
- Supports UTC (Coaxitron) protocol for connecting the camera via coax;
- Connectable to AHD cameras, HDCVI cameras and to IP cameras;
- The analog signal inputs including HD-TVI, AHD, HDCVI, and CVBS can be automatically recognized without configuration;
- GD-RT-AP5004P, GD-RT-AP5008P and GD-RT-AP5016P support PoC (Power over Coaxitron) camera connections. The DVRs will detect the connected PoC cameras automatically, manage the power consumption via the coaxial communication, and provide power to the cameras via coaxitron;
- Each channel supports dual-stream. And sub-stream supports up to 1 WD resolution;
- The main stream of GD-RT-AC3004N and GD-RT-AC3016N supports up to 3 MP resolutions with 4 video inputs with channel 1 of the device, 8 video inputs with channels 1 and 2, and 16 video inputs with channels 1, 2, 3 and 4;
- The main stream of GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016P, GD-RT-AP5016N, GD-RT-AT5016N supports up to 5 MP resolutions on all of the channels;
- For GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016P, GD-RT-AP5016N, GD-RT-AT5016N, 5 MP long distance transmissions can be enabled for the analog cameras;
- Independent configuration for each channel including resolution, frame rate, bit rate, image quality, etc.;
- The minimum frame rate for main stream and sub-stream is 1 fps;
- Encoding for both video stream and video & audio stream; audio and video synchronization during composite stream encoding;
- Supports enabling H.265+/H.264+ to ensure high video quality with a lowered bit rate;
- H.265+/H.265/H.264+/H.264 encoding for the main stream, and H.265/H.264 encoding for the sub-stream of analog cameras;
- Connectable to H.265 and H.264 IP cameras;
- Defog level, night to day sensitivity, day to night sensitivity, IR light brightness, day/night mode, and WDR switch configurable for the connected analog cameras supporting these parameters;
- 4 MP/5 MP signal switches for the supported analog cameras;
- Watermark technology.

Local Monitoring

- HDMI output at a resolution up to 4K (3840 × 2160);
- For GD-RT-AT5016N, there are two HDMI interfaces of which the HDMI1 and VGA interfaces share simultaneous output. For HDMI1/VGA output, a resolution up to 1920 × 1080 is supported. For HDMI2 output, a resolution up to 4K (3840 × 2160) is supported;

- 1/4/6/8/9/16/25/36 screen live views are supported, and the display sequence of screens is adjustable;

Note:

For GD-RT-AT5016N, if the sum of the analog and IP channels exceeds 25, a window division mode of up to 32 windows is supported for the VGA/HDMI1 output.

- The live view screen can be switched between a group and a manual switch and an automatic cycle live view is also provided; the interval of the automatic cycle can be adjusted;
- CVBS output only serves as the aux output or live view output.
- A quick setting menu is provided for live view;
- The selected live view channel can be shielded;
- VCA information overlay in live view for the supported analog cameras and in smart playback for the supported analog and IP cameras;
- Motion detection, video-tampering detection, video exception alarm, video loss alarm and VCA alarm functions;
- For GD-RT-AT5016N, 1-ch analog camera supports people counting and heat map functions;
- GD-RT-AP5004P, GD-RT-AP5008P and GD-RT-AP5016P can detect the PoC module exception. When it cannot detect the PoC module or the PoC module is powered off abnormally, alarms are triggered and linkage methods are configurable;
- GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016P, GD-RT-AP5016N, GD-RT-AT5016N support line crossing detection and intrusion detection of all channels, and 2-ch sudden scene change detection. GD-RT-AC3004N and GD-RT-AC3016N support 4-ch line crossing detection and intrusion detection, and GD-RT-AC3016N also supports 1-ch sudden scene change detection. GD-RT-AT5016N supports 4-ch line crossing detection and intrusion detection, and 1-ch sudden scene change detection. For the analog channels, the line crossing detection and intrusion detection conflict with other VCA detection such as sudden scene change detection, face detection and vehicle detection. You can only enable one function;
- For GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016P, GD-RT-AP5016N, GD-RT-AT5016N, the enhanced VCA mode conflicts with the 2K/4K output and 4 MP/5 MP signal input;
- Privacy mask;
- Several PTZ protocols (including Omnicast VMS of Genetec) supported; PTZ preset, patrol and pattern;
- Zooming in/out by clicking the mouse and PTZ tracing by dragging mouse.

HDD Management

- Each disk with a maximum of 10 TB storage capacity for GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016P, GD-RT-AP5016N, GD-RT-AT5016N, and 6 TB for GD-RT-AC3004N and GD-RT-AC3016N
- 8 network disks (8 NAS disks, 8 IP SAN disks or n NAS disks + m IP SAN disks ($n+m \leq 8$)) can be connected;
- Remaining recording time of the HDD can be viewed;

- Supports cloud storage;
- S.M.A.R.T. and bad sector detection;
- HDD sleeping function;
- HDD property: redundancy, read-only, read/write (R/W);
- HDD group management;
- HDD quota management; different capacities can be assigned to different channels.
- For GD-RT-AT5016N, hot-swappable HDD supporting the RAID0, RAID1, RAID5, RAID 6 and RAID10 storage schemes, and can be enabled and disabled on your demand. Also, 16 arrays can be configured.

Recording, Capture and Playback

Note:

Capture is supported by GD-RT-AT5016N only.

- Holiday recording schedule configuration;
- Cycle and non-cycle recording modes;
- Normal and event video encoding parameters;
- Multiple recording types: manual, continuous, alarm, motion, motion | alarm, motion & alarm and event;
- Supports POS triggered recording for GD-RT-AT5016N;
- 8 recording time periods with separated recording types;
- Supports Channel-Zero encoding;
- Main stream and sub-stream configurable for simultaneous recording;
- Pre-record and post-record for motion detection triggered recording, and pre-record time for scheduled and manual recording;
- Searching record files and captured pictures by events (alarm input/motion detection);
- Customization of tags, searching and playing back by tags;
- Locking and unlocking of record files;
- Local redundant recording and capture;
- When HD-TVI, AHD, or HDCVI input is connected, the information including the resolution and frame rate will be overlaid on the bottom right corner of the live view for 5 seconds. When CVBS input is connected, the information such as NTSC or PAL will be overlaid on the bottom right corner of the live view for 5 seconds.
- Searching and playing back record files by camera number, recording type, start time, end time, etc.;
- Smart playback to go through less effective information;
- Main stream and sub-stream selectable for local/remote playback;
- Zooming in for any area during playback;
- Multi-channel reverse playback;

- Supports pause, fast forward, slow forward, skip forward and skip backward during playback; locating by dragging the mouse on the progress bar;
- 4/8/16-ch synchronous playback;
- Manual capture, continuous capture of video images and playback of captured pictures.

Backup

- Exports data by a USB, and SATA device;
- Exports video clips during playback;
- Video and Log, Video and Player, and Player are selectable to export for backup;
- Management and maintenance of backup devices.

Alarm and Exception

- Configurable arming time of alarm input/output;
- Alarms for video loss, motion detection, video tampering, illegal login, network disconnection, IP conflict, record/capture exception, HDD error, and HDD full, etc.;
- Alarm triggers full screen monitoring, audio alarm, notifying surveillance center, sending email and alarm output;
- One-key disarms the linkage actions of the alarm input;
- PTZ linking for the VCA alarm;
- VCA detection alarm is supported;
- Supports POS triggered alarm;
- Supports coaxial alarm;
- System will automatically reboot when a problem is detected in an attempt to restore normal functionality.

Other Local Functions

- Manual and automatic video quality diagnostics;
- Operable by mouse and remote control;
- Three-level user management; the admin user can create many operating accounts and define their operating permission which includes the permission to access any channel;
- Completeness of operation, alarm, exceptions and log writing and searching;
- Manually triggering and clearing alarms;
- Importing and exporting of the configuration file of devices;
- Getting camera types information automatically;
- Unlock pattern for device login for the *admin*;
- Clear-text password available;
- GUID file can be exported for password resetting;
- Multiple connected analog cameras supporting an HD-TVI or AHD signal can be upgraded simultaneously via DVR.

Network Functions

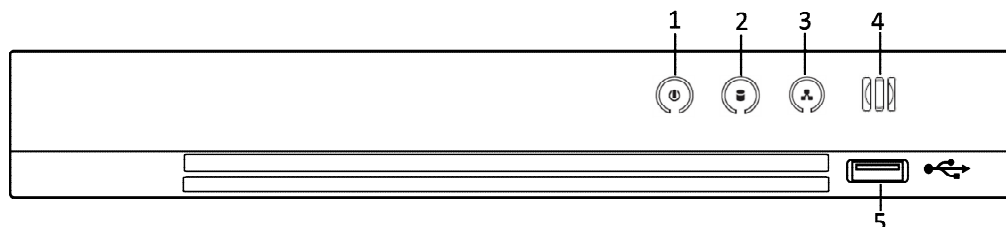
- Self-adaptive 100M or 1000M network interface;
- IPv6 is supported;
- TCP/IP protocol, PPPoE, DHCP, DNS, DDNS, NTP, SMTP, NFS, iSCSI, UPnP™ and HTTPS are supported;
- Supports access by Guarding Vision. If you enable Guarding Vision, the device will remind you of the internet access risk and ask you to confirm the “Terms of Service” and “Privacy Statement” before enabling the service. You should create a verification code to connect to the Guarding Vision;
- TCP, UDP and RTP for unicast;
- Auto/Manual port mapping by UPnP™;
- Remote search, playback, download, locking and unlocking the record files; and downloading files broken transfer resume;
- Remote parameters setup; remote import/export of device parameters;
- Remote viewing of the device status, system logs and alarm status;
- Remote keyboard operation;
- Remote HDD formatting and program upgrading;
- Remote system restart and shutdown;
- Supports upgrading via remote FTP server;
- RS-485 transparent channel transmission;
- Alarm and exception information can be sent to the remote host;
- Remotely start/stop recording;
- Remotely start/stop alarm output;
- Remote PTZ control;
- Two-way audio and voice broadcasting;
- Output bandwidth limit configurable;
- Embedded WEB server;
- If DHCP is enabled, you can enable DNS DHCP or disable it and edit the Preferred DNS Server and Alternate DNS Server.

Development Scalability

- SDK for Windows and Linux system;
- Source code of application software for demo;
- Development support and training for an application system.

1.3 Front Panel

Front View:



Front Panel of the Other Models

Description of the Front Panel of the Other:

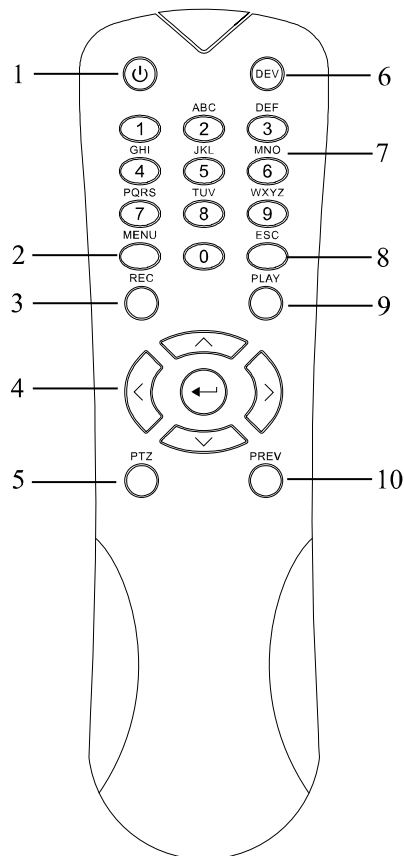
No.	Icon	Description
1		Turns white when DVR is powered up.
2		Turns red when data is being read from or written to HDD.
3		Flashes white when the network is well-connected.
4		Receiver for IR remote control.
5	USB Interface	Universal Serial Bus (USB) ports for additional devices such as USB mouse and USB Hard Disk Drive (HDD).

1.4 IR Remote Control Operations

The DVR may also be controlled with the included IR remote control, shown below (except GD-RT-AP5016P).

Note:

Batteries (2×AAA) must be installed before operation.



Remote Control

The keys on the remote control closely resemble the ones found on the front panel. Refer to the table below. They include:

Description of the IR Remote Control Buttons:

No.	Name	Description
1	POWER	Power on/off the device.
		Power on/off the device by pressing and holding the button for 5 seconds.
2	MENU Button	Press the button to return to the main menu (after successful login).
		Pressing and holding the button for 5 seconds will turn off the audible key beep.
		In PTZ Control mode, the MENU button will start the wiper (if applicable).
		In Playback mode, it is used to show/hide the control interface.
3	REC Button	Enter the Manual Record setting menu.

No.	Name	Description
		In PTZ control settings, press the button and then you can call a PTZ preset by pressing numeric buttons.
		It is also used to turn audio on/off in the Playback mode.
4	DIRECTION Button	Navigate between different fields and items in menus.
		In the Playback mode, the Up and Down button is used to speed up and slow down a recorded video. The Left and Right buttons will select the next and previous record files.
		In the Live View mode these buttons can be used to cycle through channels.
		In PTZ control mode, it can control the movement of the PTZ camera.
	ENTER Button	Confirm a selection in any of the menu modes.
		It can also be used to <i>tick</i> checkbox fields.
		In Playback mode, it can be used to play or pause the video.
		In single-frame Playback mode, pressing the button will advance the video by a single frame.
5	PTZ Button	In Auto-switch mode, it can be used to stop/start auto switch.
6	DEV	Enables/Disables Remote Control.
7	Alphanumeric Buttons	Switch to the corresponding channel in Live view or PTZ Control mode.
		Input numbers and characters in Edit mode.
		Switch between different channels in the Playback mode.
8	ESC Button	Back to the previous menu.
		Press for Arming/disarming the device in Live View mode.
9	PLAY Button	The button is used to enter the All-day Playback mode.

No.	Name	Description
		It is also used to auto scan in the PTZ Control menu.
10	PREV Button	Switch between single-screen and multi-screen mode.
		In PTZ Control mode, it is used to adjust the focus in conjunction with the A/FOCUS+ button.

Troubleshooting the Remote Control:

Note:

Make sure you have installed the batteries properly in the remote control and that you are aiming the remote control at the IR receiver on the front panel.

If there is no response after you press any button on the remote control, follow the procedure below to troubleshoot.

Steps:

1. Go to **Menu > Configuration > General > More Settings** by operating the front control panel or the mouse.
2. Check and remember the DVR No. The default DVR No. is 255. This number is valid for all IR remote controls.
3. Press the DEV button on the remote control.
4. Enter the DVR No. in step 2.
5. Press the ENTER button on the remote control.

If the Status indicator on the front panel turns blue, the remote control is operating properly. If the Status indicator does not turn blue and there is still no response from the remote control, please check the following.

Steps:

1. Batteries are installed correctly and the polarities of the batteries are not reversed.
2. Batteries are fresh and not out of charge.
3. IR receiver is not obstructed.

If the remote control still cannot function properly, please change the remote control and try again, or contact the device provider.

1.5 USB Mouse Operation

A regular 3-button (Left/Right/Scroll-wheel) USB mouse can also be used with this DVR. To use a USB mouse:

Steps:

1. Plug the USB mouse into one of the USB interfaces on the front panel of the DVR.
2. The mouse should automatically be detected. In the rare case that the mouse is not detected, the possible reason may be that the two devices are not compatible. Please refer to the recommended device list from your provider.

The operation of the mouse:

Description of the Mouse Control:

Name	Action	Description
Left-Click	Single-Click	Live view: Select a channel and show the quick set menu. Menu: Select and enter.
	Double-Click	Live view: Switch between single-screen and multi-screen.
	Drag	PTZ control: Wheeling. Privacy mask and motion detection: Select the target area. Digital zoom-in: Drag and select the target area. Live view: Drag channel/time bar.
Right-Click	Single-Click	Live view: Show menu. Menu: Exit the current menu to the upper level menu.
Scroll-Wheel	Scrolling up	Live view: Previous screen. Menu: Previous item.
	Scrolling down	Live view: Next screen. Menu: Next item.

1.6 Input Method Description



Soft Keyboard

Description of the buttons on the soft keyboard:

Description of the Soft Keyboard Icons:

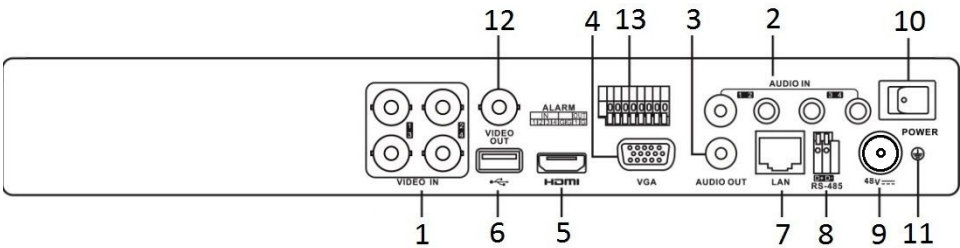
Icon	Description	Icon	Description
	Number		English letter
	Lowercase/Uppercase		Backspace
	Switch the keyboard		Space
	Positioning the cursor		Enter
	Symbols		Reserved

1.7 Rear Panel

Note:

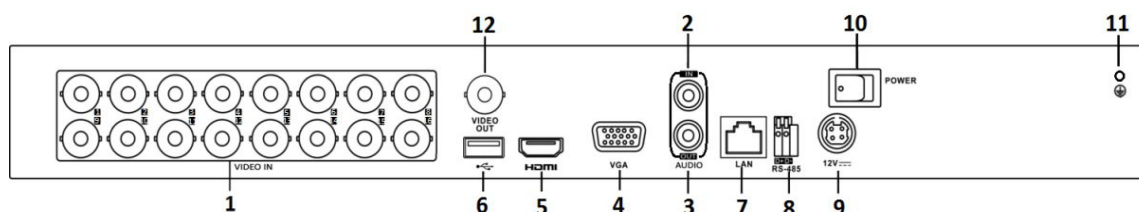
The rear panel vaieres according to different models. Please refer to the actual product. The following figures are for reference only.

Rear Panel 1:



Rear Panel of GD-RT-AP5004P, GD-RT-AP5008P and GD-RT-AP50016P

Rear Panel 2:

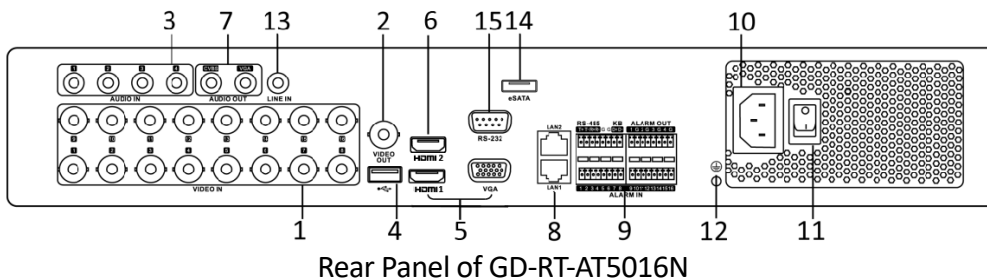


Rear Panel of GD-RT-AC3004N and GD-RT-AC3016N

Description of the Rear Panel:

No.	Item	Description
1	VIDEO IN	BNC interface for HD-TVI and analog video input.
2	AUDIO IN	RCA connector
3	AUDIO OUT	RCA connector.
4	VGA	DB15 connector for VGA output. Display local video output and menu.
5	HDMI	HDMI video output connector.
6	USB Interface	Universal Serial Bus (USB) port for additional devices.
7	Network Interface	Connector for the network
8	RS-485 Interface	Connector for RS-485 devices.
9	Power Supply	48 VDC or 12 VDC.
10	Power Switch	Switch for turning the device on/off.
11	GND	Ground
12	VIDEO OUT	BNC connector for video output.
13	Alarm In/Out	Connector for alarm input and output.

Rear Panel 3:



Description of the GD-RT-AT5016N Rear Panel:

No.	Item	Description
1	VIDEO IN	BNC interface for HD-TVI and analog video input.
2	VIDEO OUT	BNC connector for video output.
3	AUDIO IN/ LOOP OUT (not available)	RCA connector
4	USB Port	Universal Serial Bus (USB) port for additional devices.
5	HDMI1/VGA	Simultaneous HDMI1/VGA output. Display the local video output and menu.
6	HDMI2	HDMI2 video output connector.
7	AUDIO OUT	RCA connector.
8	Network Interface	Connector for the network
9	RS-485 and Alarm Interface	Connector for RS-485 devices. T+ and T- pins connect to R+ and R- pins of PTZ receiver respectively.
		D+, D- pin connects to Ta, Tb pin of controller. For cascading devices, the first DVR's D+, D- pin should be connected with the D+, D- pin of the next DVR.
		Connector for alarm input.
		Connector for alarm output.
10	Power Supply	100 to 240 VAC power supply.

No.	Item	Description
11	Power Switch	Switch for turning the device on/off.
12	GND	Ground
13	LINE IN	BNC connector for audio input.
14	eSATA	Connects external SATA HDD, CD/DVD-RW.
15	RS-232 Interface	Connector for RS-232 devices.
16	ALARM OUT	Connector for alarm output.
17	AUDIO IN	RCA connector (not available)

2. Getting Started

2.1 Starting Up and Shutting Down the DVR

Proper startup and shutdown procedures are crucial to expanding the life of the DVR.

Before you start

Check that the voltage of the extra power supply is the same with the DVR's requirement, and the ground connection is working properly.

Starting up the DVR:

Steps:

1. Check that the power supply is plugged into an electrical outlet. It is HIGHLY recommended that an Uninterruptible Power Supply (UPS) be used in conjunction with the device.
2. Turn on the power switch on the rear panel. The Power indicator LED should turn on, indicating that the unit begins to start up.
3. After startup, the Power indicator LED remains on.

Shutting down the DVR:

Steps:

1. Go to **Menu > Shutdown**.



Shutdown Menu

2. Click <Shutdown>.
3. Click <Yes>.
4. Turn off the power switch on the rear panel when the note appears.

Rebooting the DVR:

While in the Shutdown menu, you can also reboot the DVR.

Steps:

1. Go to **Menu > Shutdown**.
2. Click <Logout> to log out or <Reboot> to reboot the DVR.

2.2 Activating the Device

For the first-time access, you need to activate the device by setting an admin password. No operation is allowed before activation. You can also activate the device via a web browser, the Grundig Viewer or the an SCMS Client Software.

Steps:

1. Enter the same password in the text fields of <Create New Password> and <Confirm New Password>.


Admin Password Settings

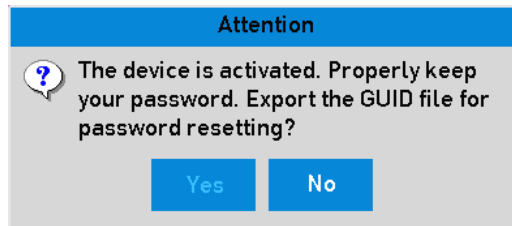
WARNING:

STRONG PASSWORD RECOMMENDED-We highly recommend you create a strong password of your own choosing (Using a minimum of 8 characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters.) in order to increase the security of your product. Further we recommend you reset your password regularly, especially in the high security system. Resetting the password monthly or weekly can better protect your product.

2. Click <OK> to save the password and to activate the device.

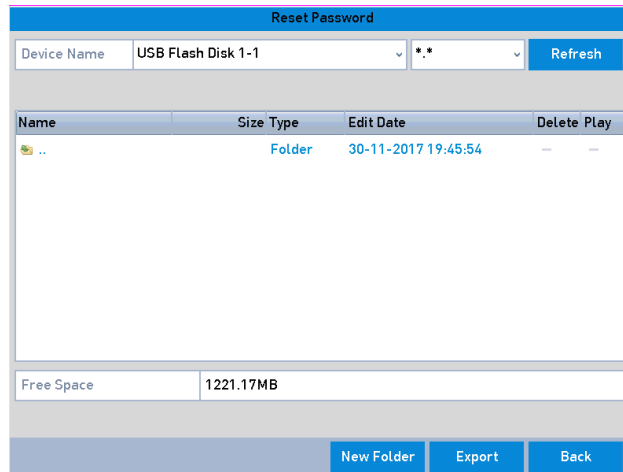
Note:

- View password is supported. Click the  icon and you can view the actual text of the password. Click the icon again and the content of the password becomes invisible again.
 - If you update an older version to the new version, the following dialog box will pop up once the device starts up. You can click <YES> and follow the wizard to set a strong password.
3. After the device is activated, the Attention box pops up as below.



Attention

4. (Optional) Click <Yes> to export the GUID. The Reset Password interface pops up. Click <Export> to export the GUID to the USB flash drive for password resetting.



Export GUID

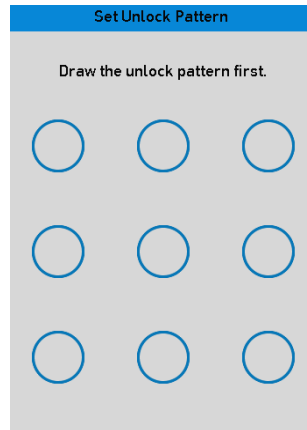
5. After exporting the GUID, an Attention box pops up. Click <Yes> to duplicate the password or <No> to cancel it.

2.3 Using the Unlock Pattern for Login

For the *admin* user, you can configure the unlock pattern for the device login.

2.3.1 Configuring the Unlock Pattern

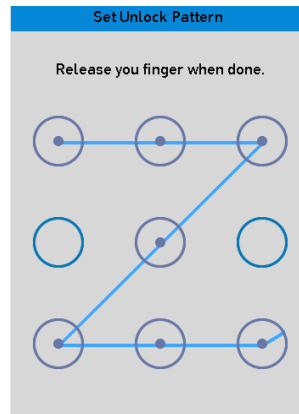
After the device is activated, you can enter the following interface to configure the device unlock pattern.



Setting the Unlock Pattern

Steps:

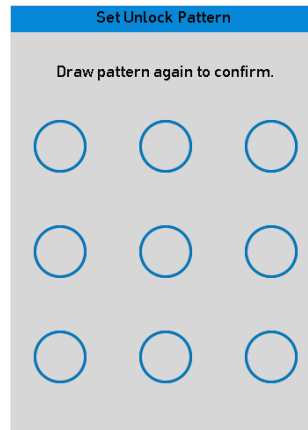
1. Use the mouse to draw a pattern among the 9 dots on the screen. Release the mouse when the pattern is done.



Draw the Pattern

Note:

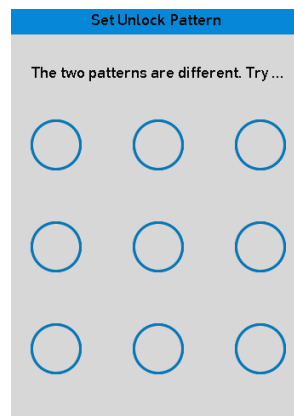
- Connect at least 4 dots to draw the pattern.
 - Each dot can be connected once only.
2. Draw the same pattern again to confirm it. When the two patterns match, the pattern is configured successfully.



Confirm the Pattern

Note:

If the two patterns are different, you must set the pattern again.



Reset the Pattern

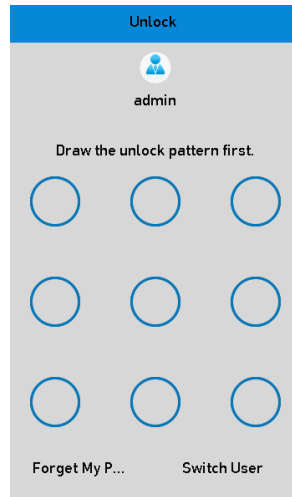
2.3.2 Logging in via Unlock Pattern

Note:

- Only the *admin* user has the permission to unlock the device.
- Please configure the pattern first before unlocking. Please refer to *Chapter 2.3.1 Configuring the Unlock Pattern*.

Steps:

1. Right-click the mouse on the screen and select the menu to enter the interface.



Draw the Unlock Pattern

2. Draw the pre-defined pattern to unlock and enter the menu operation.

Note:

- You can right click the mouse to log in via the normal mode.
- If you have forgotten your pattern, you can select the <Forget My Pattern> or the <Switch User> option to enter the normal login dialog box.
- When the pattern you draw is different from the pattern you have configured, you should try again.
- If you have drawn the wrong pattern 7 times, the account will be locked for 1 minute.

Normal Login Dialog Box

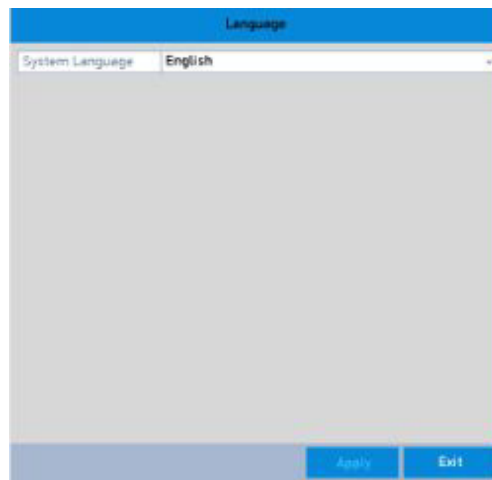
2.4 Basic Configuration with the Startup Wizard

By default, the <Setup Wizard> starts once the device has loaded. You can follow it to complete the basic configuration.

Selecting the language:

Steps:

1. Select the language from the drop-down list.
2. Click <Apply> button.

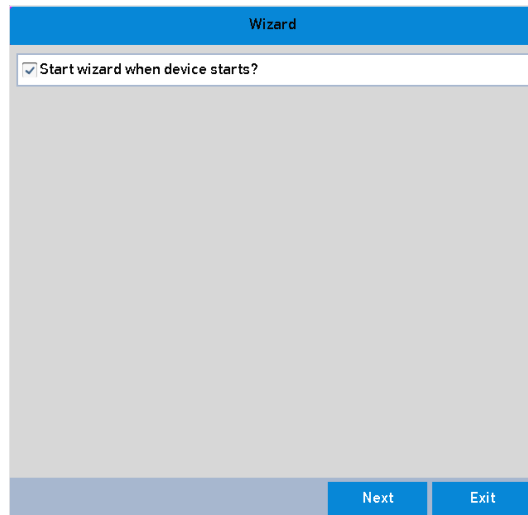


Language Configuration



Operating the Setup Wizard:

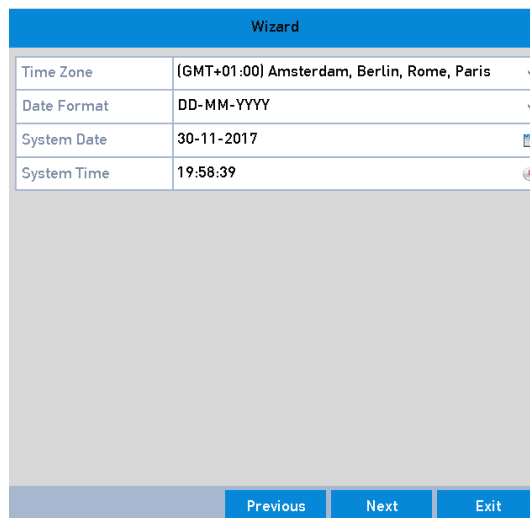
Steps:

1. The <Start Wizard> can walk you through some important settings of the device. If you don't want to use the <Start Wizard> at that moment, click <Exit>. You can also choose to use the <Start Wizard> next time by leaving the <Start wizard when device starts?> checkbox checked.



Start Wizard Interface

2. Click the <Next> button to enter the <Change the Password> interface.
 - 1) Enter the <Admin Password>.
 - 2) (Optional) Check the checkbox of <New Admin Password>, enter the <New Password> and confirm it.
 - 3) (Optional) Check the checkbox of <Enable Pattern Unlock> and draw the unlock pattern. Or click  of <Draw Unlock Pattern> to change the pattern. Refer to *Chapter 2.3 Using the Unlock Pattern for Login* for reference.
 - 4) (Optional) Click  of <Export GUID> to export the GUID to the connected USB flash drive for resetting the password. Refer to *Chapter 17.5.3 Editing a User* for reference.
3. Click the <Next> button and an Attention box will pop up. Click <Yes> to duplicate the password of the device to IP cameras that are connected with the default protocol. Or click <No> to enter the <Date and Time Settings> interface.



Date and Time Settings

4. After the time settings, click the <Next> button to enter the <General Network Setup Wizard> interface as shown below.

Wizard	
NIC Type	10M/100M/1000M Self-adaptive
Enable DHCP	<input type="checkbox"/>
IPv4 Address	10 . 6 . 0 . 98
IPv4 Subnet Mask	255 . 255 . 255 . 0
IPv4 Default Gateway	10 . 6 . 0 . 254
Enable Obtain DNS ...	<input type="checkbox"/>
Preferred DNS Ser...	8.8.8.8
Alternate DNS Serv...	8.8.8.6
Internal NIC IPv4 A...	192 . 168 . 254 . 1
<div> <div>Previous</div> <div>Next</div> <div>Exit</div> </div>	

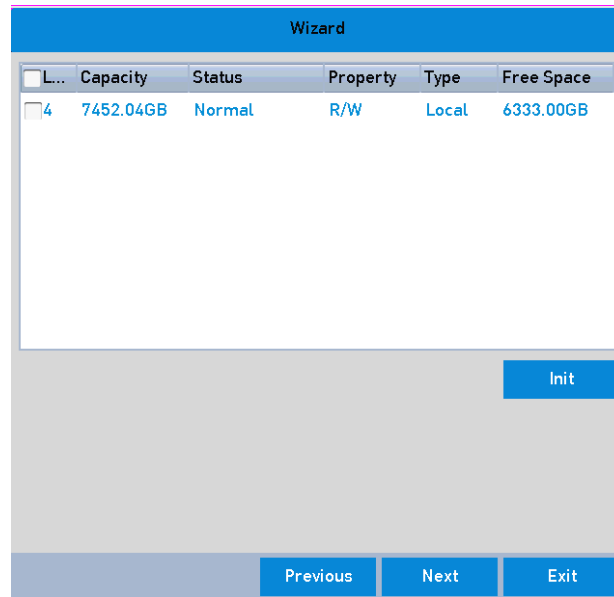
General Network Configuration

5. Click the <Next> button after you configured the basic network parameters.
6. Click the <Next> button to enter the <Advanced Network Parameters> interface. You can <enable DDNS> and set other ports according to your need.

Wizard	
Server Port	8000
HTTP Port	80
RTSP Port	554
Enable UPnP	<input type="checkbox"/>
Enable DDNS	<input type="checkbox"/>
DDNS Type	NO-IP
Area/Country	Custom
Server Address	
Device Domain Name	
Status	DDNS is disabled.
User Name	
Password	
<div> <div>Previous</div> <div>Next</div> <div>Exit</div> </div>	

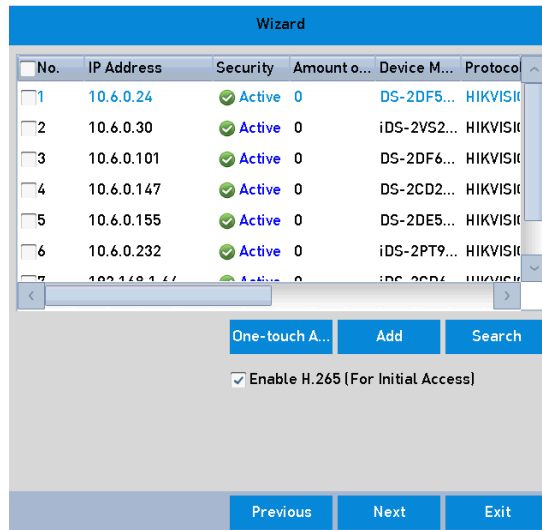
Set Advanced Network Parameters

7. For GD-RT-AT5016N, click the <Next> button and you can enter the <RAID Configuration> interface. Check the checkbox of <Enable RAID> to take this function into effect.
8. Click the <Next> button after configuring the advanced network parameters, which will take you to the <HDD Management> interface as shown below.




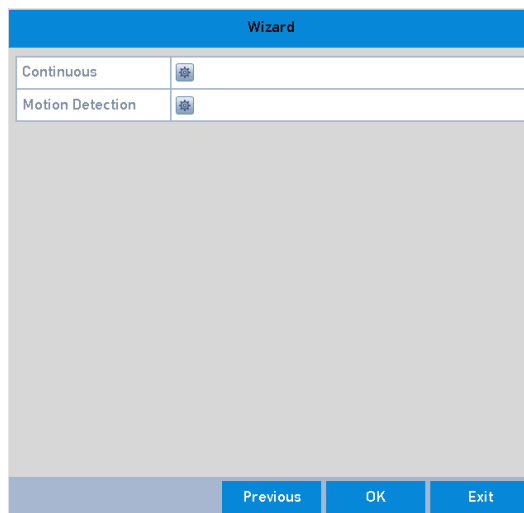
HDD Management

9. To initialize the HDD, click the <Init> button. Initialization will remove all the data saved in the HDD.
10. Click the <Next> button to enter the <IP Camera Management> interface.
11. Add the IP camera.
 - 1) Click <Search> to search the online IP Camera. The <Security> status shows whether it is active or inactive. Before adding the camera, make sure the IP camera to be added has an active status. If the camera has an inactive status, you can click the inactive icon of the camera to set the password to activate it. You can also select multiple cameras from the list and click the <One-touch Activate> to activate the cameras in batch.
 - 2) Click the <Add> button to add the camera.
 - 3) (Optional) Check the checkbox of <Enable H.265> (For Initial Access) for the connected IP camera supporting H.265. Then the IP camera will be encoded with H.265.



IP Camera Management

12. After completing the IP Camera settings, click <Next> to enter the <Record Settings> interface.
13. Click , and you can enable the continuous recording or motion detection recording for all channels of the device.



Record Settings

14. Click <OK> to complete the wizard settings.

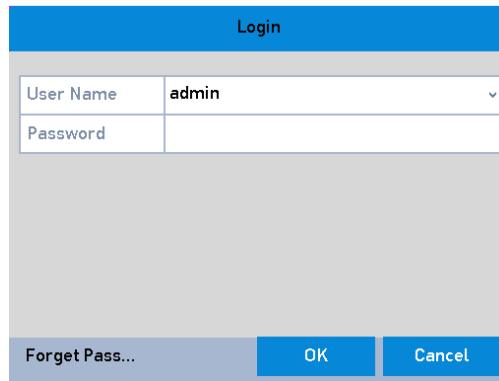
2.5 Login and Logout

2.5.1 User Login

You have to log in to the device before operating the menu and other functions.

Steps:

1. Select the <User Name> in the drop-down list.



The screenshot shows a 'Login' dialog box. It has a blue header bar with the text 'Login'. Below the header, there are two input fields: 'User Name' with the value 'admin' and a dropdown arrow, and 'Password' which is empty. At the bottom of the dialog, there are three buttons: 'Forget Pass...', 'OK', and 'Cancel'.

Login Interface

2. Enter the <Password>.
3. Click <OK> to log in.

Note:

In the Login interface, for the admin user, if you have entered the wrong password 7 times, the account will be locked for 60 seconds. For the operator, if you have entered the wrong password 5 times, the account will be locked for 60 seconds.

2.5.2 User Logout

After logging out, the monitor turns to the live view mode and if you want to perform some operations, you need to enter the user name and the password to log in again.

Steps:

1. Go to **Menu > Shutdown**.



Logout

2. Click <Logout>.

Note:

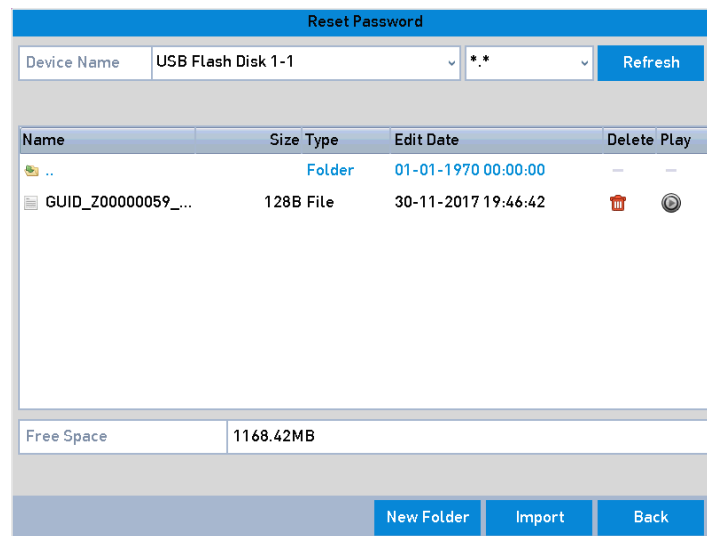
After you have logged out of the system, menu operation on the screen is invalid. It is required to enter a user name and password to unlock the system.

2.6 Resetting Your Password

When you forget the password of the *admin* user, you can reset the password by importing the GUID file. The GUID file must be exported and saved in the local USB flash drive after you have activated the device (refer to *Chapter 2.2 Activating the Device*).

Steps:

1. On the user login interface, click <Forget Password> to enter the <Import GUID> interface.
2. Select the GUID file from the USB flash drive and click the <Import> button to bring up the <Reset Password> interface.



Reset Password

3. Enter the <new password> and <confirm the password>.
4. Click <OK> to save the new password. Then an Attention box will pop up.
5. Click <OK> and the Attention box pops up to remind you to duplicate the password of the device to IP cameras that are connected with the default protocol. Click <Yes> to duplicate the password or <No> to cancel it.

Note:

- If you want to retrieve the password when you forget it, you must export the GUID file first.
- Once the password is reset, the GUID file will be invalid. You can export a new GUID file. Refer to *Chapter 17.5.3 Editing a User* for reference.

2.7 Adding and Connecting the IP Cameras

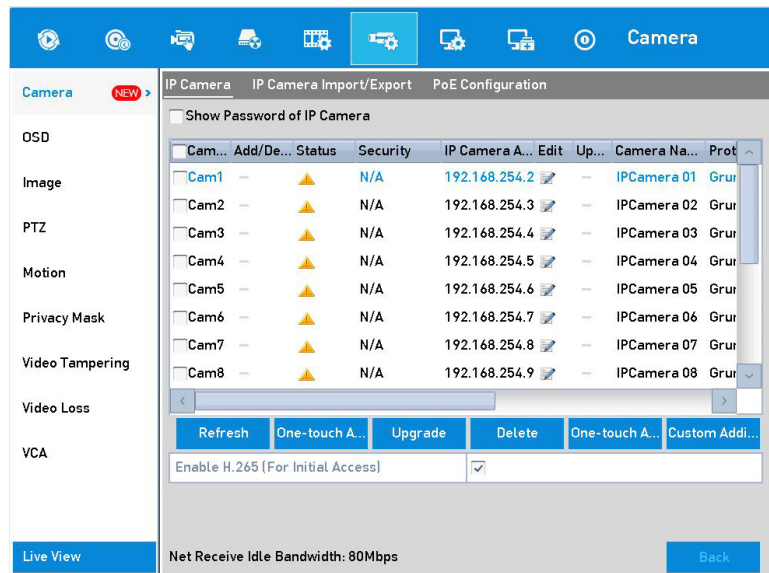
2.7.1 Activating the IP Camera

Before adding the camera, make sure the IP camera to be added has an active status.

Steps:

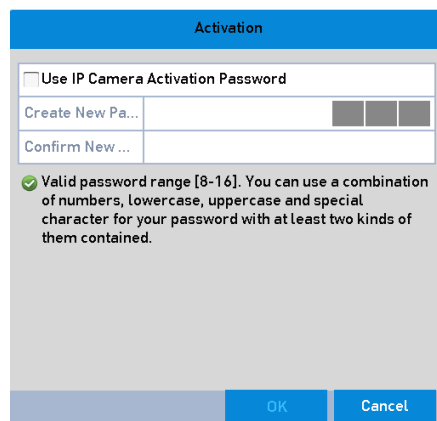
1. Select <Add IP Camera> from the right-click menu in live view mode or go to **Menu> Camera> IP Camera**.

For the IP cameras detected online in the same network segment, the <Security> status shows whether it is active or inactive.



IP Camera Management Interface

2. Click the inactive icon of the camera to enter the following interface to activate it. You can also select multiple cameras from the list and click the <One-touch Activate> to activate the cameras in batch.



Activate the Camera

3. Set the password of the camera to activate it.

<Use Admin Password>: When you check the checkbox, the camera(s) will be configured with the same admin password of the operating DVR.

<Create New Password>: If the admin password is not used, you must create the new password for the camera and confirm it.

Set New Password

WARNING:

STRONG PASSWORD RECOMMENDED-We highly recommend you create a strong password of your own choosing (Using a minimum of 8 characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters.) in order to increase the security of your product. Further we recommend you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

4. Click <OK> to finish the activation of the IP camera. Now the security status of camera will be changed to <Active>.

2.7.2 Adding the Online IP Camera

Before you can get a live view or record of the video, you should add the network cameras to the connection list of the device.

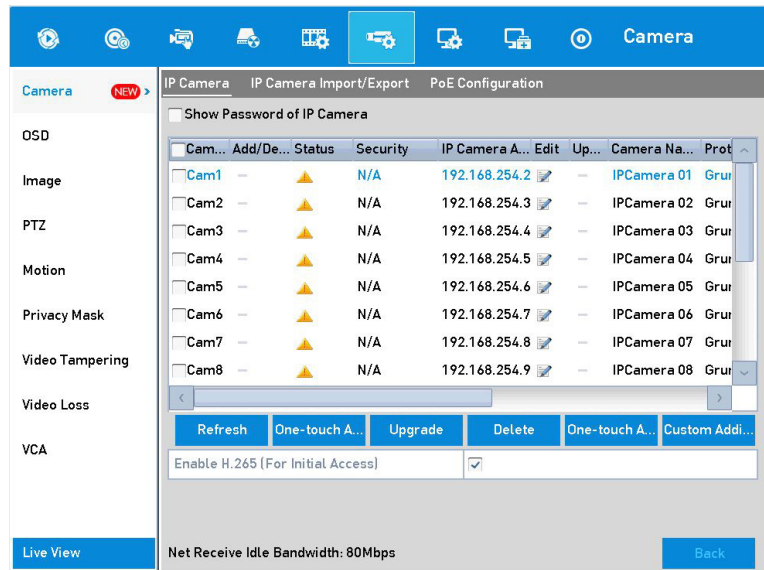
Before you start

Ensure the network connection is valid and correct. For detailed checking and configuring of the network, please see *Chapter 12 Network Settings*.


- **OPTION 1:**

Steps:

1. Select <Add IP Camera> from the right-click menu in live view mode or go to **Menu> Camera> IP Camera**.



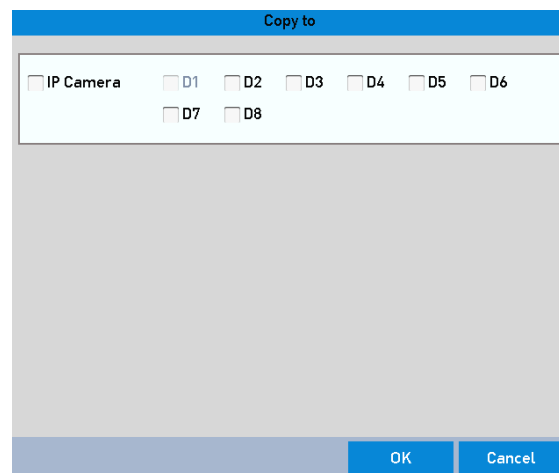
IP Camera Management Interface

2. The online cameras with same network segment will be detected and displayed in the camera list.
3. Select the IP camera from the list and click  to add the camera (with the same admin password of the DVR's). Or you can click the <One-touch Adding> button to add all cameras (with the same admin password) from the list.

Note:

Make sure that the camera to add has already been activated by setting the admin password, and that the admin password of the camera is the same with the DVR's.

4. (Optional) Check the checkbox of <Enable H.265> (For Initial Access) for the connected IP camera supporting H.265. Then the IP camera will be encoded with H.265.
5. (For the encoders with multiple channels only) check the checkbox of <Channel Port> in the pop-up window, as shown in the following figure, and click <OK> to add multiple channels.



Select Multiple Channels

- **OPTION 2:**

Steps:

1. On the <IP Camera Management> interface, click the <Custom Adding> button to pop up the <Add IP Camera (Custom)> interface.

No.	IP Address	Amount o...	Device M...	Protocol	Mane
1	10.6.0.24	0	GD-XXX...	XXXXXX	8000
2	10.6.0.30	0	GD-XXX...	XXXXXX	8000

IP Camera Address	10.6.0.24
Protocol	Grundig-1
Management Port	8000
Transfer Protocol	Auto
User Name	admin
Password	

☒ Continue to Add

Protocol Search Add Back

Custom Adding IP Camera Interface

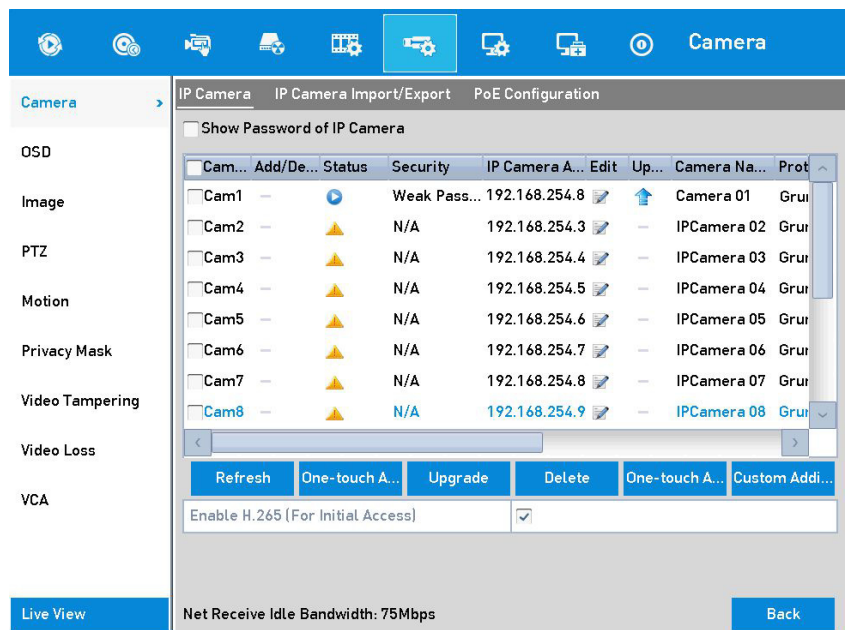
2. You can edit the IP address, protocol, management port and other information of the IP camera to be added.

Note:

If the IP camera to add has not been activated, you can activate it from the IP camera list on the <IP Camera Management> interface.

3. Click <Add> to add the camera.









For the successfully added IP cameras, the <Security> status shows the security level of the password of camera: <strong password>, <weak password> and <risky password>.



Successfully Added IP Cameras

Please refer to *Chapter 18.1 Fehler! Verweisquelle konnte nicht gefunden werden.* for the number of connectable IP cameras for different models.

Explanation of the Icons:


Icon	Explanation	Icon	Explanation
	Edit basic parameters of the camera		Add the detected IP camera.
	The camera is disconnected; You can click the icon to get the exception information of the camera.		Delete the IP camera
	Play the live video of the connected camera.		Advanced settings of the camera.
	Upgrade the connected IP camera.		Shows the security status of the camera to be active/inactive or the password strength (strong/medium/weak/risky)

- (Optional) Check the checkbox of <Enable H.265> (For Initial Access) for the connected IP camera supporting H.265. Then the IP camera will be encoded with H.265.

2.7.3 Editing the Connected IP Camera

After adding the IP cameras, the basic information of the cameras is listed on the interface, and you can configure the basic settings of the IP cameras.

Steps:


1. Click the  icon to edit the parameters. You can edit the <IP address>, <Protocol> and other parameters.

Edit IP Camera	
IP Camera No.	D1
Adding Method	Manual
IP Camera Address	10.6.0.23
Protocol	Grundig-1
Management Port	8000
Channel Port	1
Transfer Protocol	Auto
User Name	admin
Password	

Protocol OK Cancel

Edit IP Camera

<Channel Port>: If the connected device is an encoding device with multiple channels, you can choose the channel for the connection by selecting the <Channel Port> no. in the drop-down list.

2. Click <OK> to save the settings and exit from the editing interface.
3. Drag the horizontal scroll bar to the right side and click the  icon to edit the advanced parameters.

Edit IP Camera	
IP Camera No.	D2
Adding Method	Manual
IP Camera Address	192.168.254.3
Protocol	Grundig-1
Management Port	8000
Channel Port	1
Transfer Protocol	Auto
User Name	admin
Password	

Protocol OK Cancel

Network Configuration of the Camera

4. You can edit the network information and the <password> of the camera.

Edit IP Camera	
IP Camera No.	D1
Adding Method	Manual
IP Camera Address	10.6.0.23
Protocol	Grundig-1
Management Port	8000
Channel Port	1
Transfer Protocol	Auto
User Name	admin
Password	*****

Password Configuration of the Camera

- Click <OK> to save the settings and exit the interface.




2.8 Connecting PoC Cameras

GD-RT-AP5004P, GD-RT-AP5008P and GD-RT-AP5016P support PoC (Power over Coaxitron) camera connections. The DVR will detect the connected PoC cameras automatically, manage the power consumption via the coaxial communication, and provide power to the cameras via coaxitron.

Before you start

Connect the PoC camera to the DVR.

Steps:

- Go to **Menu > Camera > PoC Information**.
- Check the status of the connected PoC camera.
 - : When the PoC camera is connected to the DVR, the default status is AF.
 - : If the connected PoC camera supports AT mode and the power of the DVR PoC module is enough, the DVR will switch the default AF mode to AT mode.
 - : If the DVR detects that the power consumption of the PoC camera is higher than the allowed maximum power of the DVR PoC module, it will stop the power supply to the camera, and the camera status becomes grey.
- Check the connected AF or AT camera number and the connectable camera number.

Note:

- Only the specified PoC camera is supported.
- The maximum connectable AT/AF camera number varies with different models.
- Do not unplug or plug the PoC camera if it is powered by the external power supply.

2.9 Configuring the Signal Input Channel

Note:

This chapter is only applicable to GD-RT-AT5016N.

You can configure the analog and IP signal input types and enable 5 MP long distance transmission.

Steps:

1. Go to **Menu > Camera > Signal Input Status**.
2. Check the checkbox to select different signal input types: <HD/CVBS> and <IP>. If you select <HD/CVBS>, four types of analog signal inputs including <HD-TVI>, <AHD>, <HDCVI>, and <CVBS> can be connected randomly for the selected channel. If you select <IP>, IP camera can be connected for the selected channel.
3. Click <Apply> to save the settings.

Note:

You can view the max. accessible number of IP cameras in the <Max. IP Camera Number> text field. For GD-RT-AT5016N, disabling one analog channel will add one IP channel. For GD-RT-AT5016N, the accessible IP channels are X+2 (X refers to the disabled analog channel(s) of the DVR.).


2.10 Configuring 5 MP Long Distance Transmission

Note:

This chapter is only applicable to GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016P, GD-RT-AP5016N, GD-RT-AT5016N.

For these models you can configure 5 MP long distance transmission on the <Signal Input Status> interface.

Steps:

1. Go to **Menu > Camera > Signal Input Status**.
2. Click  to enter the <5 MP Long Distance Transmission Settings> interface.
3. Check the checkbox to enable <5 MP Long Distance Transmission> of the selected channel.
4. Click <Apply> to save the settings.

3.Live View





3.1 Introduction of Live View

Live view shows you the video image captured by each camera in real time. The DVR will automatically enter Live View mode when powered on. It is also at the very top of the menu hierarchy, thus hitting the ESC many times (depending on which menu you're on) will bring you to the Live View mode.

Live View Icons

In the live view mode, there are icons at the right top of the screen for each channel, showing the status of the record and alarm in the channel, so that you can know as soon as possible whether the channel is recorded or whether alarms occur.

Description of the Live View Icons

Icons	Description
	Alarm (video loss, tampering, motion detection, VCA or sensor alarm)
	Record (manual record, schedule record, motion detection or alarm triggered record)
	Alarm & Record
	Event/Exception (motion detection, sensor alarm or exception information. For details, see <i>Chapter 8.6 Handling Exceptions.</i>)

3.2 Operations in Live View Mode

In live view mode, there are many functions provided. The functions are listed below.

- <Single Screen>: shows only one screen on the monitor.
- <Multi-screen>: shows multiple screens on the monitor at the same time.
- <Start Auto-switch>: the screen is automatically switching to the next one. You must set the dwell time for each screen on the configuration menu before enabling the auto-switch. Go to **Menu>Configuration>Live View>Dwell Time**.
- <Start Recording>: normal record and motion detection record are supported.
- <Output Mode>: select the output mode to <Standard>, <Bright>, <Gentle> or <Vivid>.

- <Playback>: play back the recorded videos for the current day.
- <Aux/Main Monitor>: the DVR checks the connection of the output interfaces to define the main and auxiliary output interfaces. When the aux output is enabled, the main output cannot do any operation, and you can do some basic operation on the live view mode for the Aux output.

For GD-RT-AT5016N , there are two HDMI interfaces. HDMI1 and VGA interfaces share simultaneous output. The priority level for the main and aux output is HDMI2 > VGA/HDMI1. The CVBS output only serves as the aux output or live view output. The priority relationship is shown in the table below.

Priorities of Outputs for GD-RT-AT5016N

S.N	HDMI2	VGA/HDMI1	CVBS	Main output	Auxiliary output	For Live View Output Only
1	√	√	√ or ×	HDMI2	VGA/HDMI1	CVBS
2	√ or ×	×	√ or ×	HDMI2	CVBS	VGA/HDMI1
3	×	√	√ or ×	VGA/HDMI1	CVBS	HDMI2

For other DVR with CVBS output, the VGA/HDMI output is the main output, and the CVBS output is the aux output. The priority relationship is shown in the following table.

Priorities of Outputs

S.N	HDMI	VGA	CVBS	Main output	Auxiliary output
1	√ or ×	√ or ×	√ or ×	VGA/HDMI	CVBS

Note:

√ means the interface is in use, × means the interface is out of use or the connection is invalid. And the <HDMI>, <VGA> and <CVBS> can be used at the same time.

3.2.1 Using the Mouse in Live View

You can refer to the table below for the description of the mouse operation in the live view mode.

Mouse Operation in Live View

Name	Description
Menu	Enter the main menu of the system by right-clicking the mouse.
Single Screen	Switch to the single full screen by choosing a channel number from the drop-down list.

Multi-Screen	Adjust the screen layout by selecting from the drop-down list.
Previous Screen	Switch to the previous screen.
Next Screen	Switch to the next screen.
Start/Stop Auto-Switch	<p>Enable/disable the auto-switch of the screens.</p> <p>Note:</p> <p>The <i>dwell time</i> of the live view configuration must be set before using <Start Auto-Switch>.</p>
Start Recording	<Start recording all channels>, <Continuous Record> and <Motion Detection Record> are selectable from the drop-down list.
Add IP Camera	Shortcut to enter the IP camera management interface. (For the HDVR series only.)
Playback	Enter the <Playback> interface and start playing back the video of the selected channel immediately.
PTZ Control	A shortcut to enter the <PTZ Control> interface of the selected camera.
Output Mode	<Output Mode> is configurable with <Standard>, <Bright>, <Gentle> and <Vivid options>.
Aux Monitor	<p>Switch to the auxiliary output mode and the operation for the main output is disabled.</p> <p>Note:</p> <p>If you enter the Aux monitor mode and the Aux monitor is not connected, the mouse operation is disabled. You need to switch back to the Main output with the <F1> button on the front panel or the <VOIP/MON> button on the IR remote control and then press the <Enter> button.</p>

Playback	>
Export	>
Manual	>
HDD	>
Record	>
Camera	>
Configuration	>
Maintenance	>
Shutdown	>

Right-click Menu

3.2.2 Switching Main/Aux Output

Note:

- Refer to *Chapter 3.2 Operations in Live View Mode* for the main and aux output relationship.
- The CVBS output only serves as the aux output or live view output.

Steps:

1. Use the mouse wheel to double-click on the <HDMI1/VGA>, or <HDMI2>, or <HDMI/VGA> output screen, and a message will box pop up.
2. Use the mouse wheel to double-click on the screen again to switch to the aux output, or click <Cancel> to cancel the operation.
3. Select the <Menu Output Mode> to <others> from the right-click menu on the monitor.
4. On the pop-up message box, click <Yes> to reboot the device in order to enable the selected menu output as the main output.

Note:

You can select the <Menu Output Mode> under **Menu>Configuration>General>More Settings** to <Auto>, <HDMI1/VGA> and <HDMI2> (for GD-RT-AT5016N) or <Auto> and <HDMI/VGA> (for other models) and then reboot the device to switch the main output.

3.2.3 Quick Setting Toolbar in Live View Mode

On the screen of each channel, there is a quick setting toolbar which shows when you click the screen.



Quick Setting Toolbar

You can refer to the table below for the description of the Quick Setting Toolbar icons.

Description of Quick Setting Toolbar Icons:

Icons	Description	Icons	Description	Icons	Description
	Enable/Disable Manual Record		Instant Playback		Mute/Audio on
	PTZ Control		Digital Zoom		Image Settings
	Close Live View		Face Detection		Information
	Show/Hide VCA Information		Capture		

Note:

<Picture Capture> is only applicable to GD-RT-AT5016N.



<Instant Playback> only shows the record of the last five minutes. If no record is found, it means there was no record made during the last five minutes.



<Digital Zoom> is for zooming in the live image. You can zoom in the image to different proportions (1 to 16X) by moving the sliding bar. You can also scroll the mouse wheel to control the zoom in/out.



The <Image Settings> icon can be selected to enter the Image Settings menu. You can drag the mouse or click to adjust the image parameters, including brightness, contrast, and saturation. Refer to the *Chapter 15.3 Configuring the Video Parameters* for details.

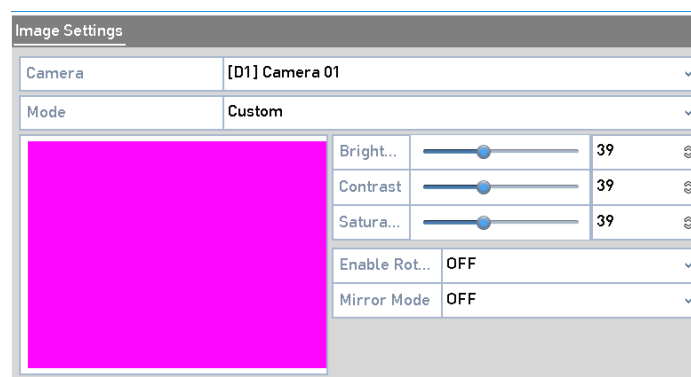



Image Settings

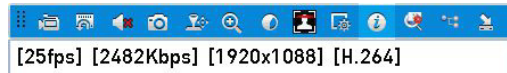


Face Detection can be enabled if you click the icon. A dialog pops up. Click <Yes> and the full-screen live view of the channel is enabled. You can click to exit from the full-screen mode.

Note:

You can configure face detection only when it is supported by the connected camera.

 Move the mouse onto the Information icon to show the real-time stream information, including the frame rate, bit rate, resolution and stream type.



Information

Note:

When an H.264 IP camera is connected, the stream type is displayed as H.264. When an IP camera supporting H.264+ is connected, the stream type is displayed as H.264+. When an IP camera supporting H.265 is connected, the stream type is displayed as H.265. When an IP camera supporting H.265+ is connected, the stream type is displayed as H.265+.



For the analog cameras supporting VCA, click the icon to show the VCA information. Then the configured line or quadrilateral in the VCA configuration and target frame(s) will be shown on the live view. Click the icon again to hide the VCA information.

Note:

- In the live view, only the analog cameras support VCA information overlay.
- Enable the VCA function first before showing the VCA information. Refer to *Chapter 10 VCA Alarm* for the detailed operation.
- The VCA information is hidden by default. If the connected analog camera does not support VCA, the icon displays grey and cannot be operated.
- For the analog cameras, the VCA information includes line crossing detection and intrusion detection.
- The DVR only supports VCA information overlay of one channel. If you enable the function of one channel, the other channels will disable the function automatically.
- Both single window and multi-window display modes support VCA information overlay.
- Only the main output supports VCA information overlay. When switching to the aux output, the VCA information overlay of the main output is disabled.
- For the analog cameras, if the camera number does not exceed the limit for line crossing detection and intrusion detection, the VCA information overlay can be enabled for all of the analog cameras enabled for line crossing detection and intrusion detection. If the camera number exceeds the limit for line crossing detection, intrusion detection and sudden scene change detection, only the cameras enabled for line crossing detection and intrusion detection support a VCA information overlay. Disabling the line crossing detection and the intrusion detection remotely will not affect the VCA information overlay in the local live view.

3.3 Channel-Zero Encoding

Sometimes you need to get a remote view of many channels in real time from the web browser or the SCMS (Client Management System) software, in order to decrease the bandwidth requirement without affecting the image quality. Channel-zero encoding is supported as an option for you.

Steps:

1. Go to **Menu > Configuration > Live View > Channel-Zero Encoding**.

Enable Digital-Spot Enc...	<input checked="" type="checkbox"/>
Frame Rate	Full Frame ▾
Max. Bitrate Mode	General ▾
Max. Bitrate(Kbps)	1792 ▾

Live View- Channel-Zero Encoding

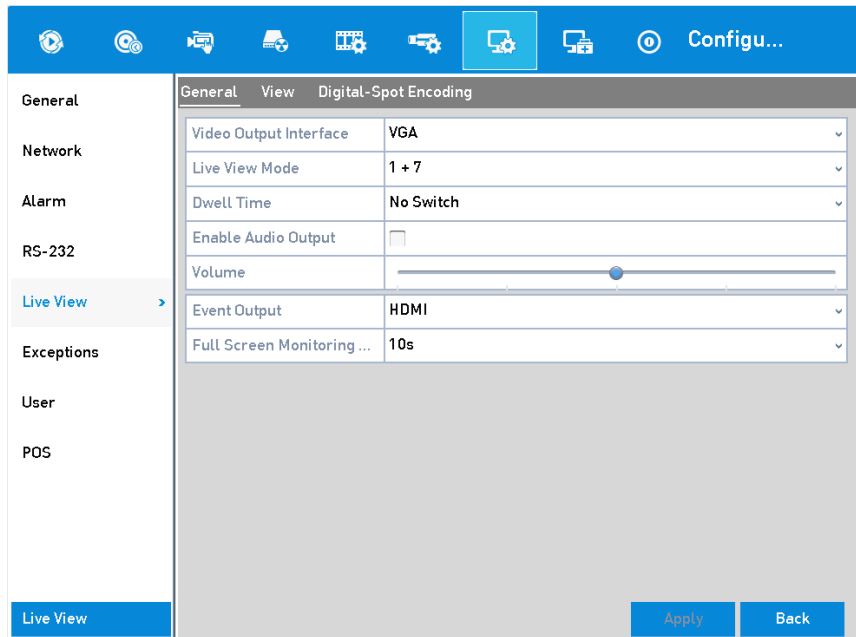
2. Check the checkbox after <Enable Channel-Zero Encoding>.
3. Configure the <Frame Rate>, <Max. Bitrate Mode> and <Max. Bitrate>.
4. Click the <Apply> button to activate the settings.
5. After you set the Channel-Zero encoding, you can get a view of 16 channels in one screen in the remote client or in the web browser.

3.4 Adjusting the Live View Settings

Live View settings can be customized according to different needs. You can configure the output interface, dwell time for the screen to be shown, mute or turning on the audio, the screen number for each channel, etc.

Steps:

1. Go to **Menu > Configuration > Live View > General**.



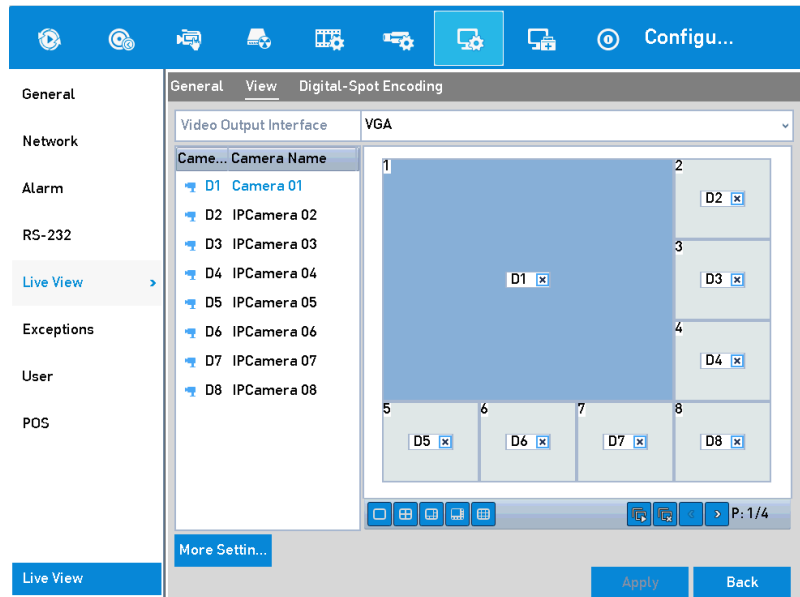
Live View-General

The settings available in this menu include:





- <Video Output Interface>: Selects the output to configure the settings.
- For GD-RT-AT5016N, you can select <VGA/HDMI1>, <HDMI2>, <Main CVBS> for the <Video Output Interface>.
- For other models, you can select <Main CVBS> and <HDMI/VGA> for the <Video Output Interface>.
- <Live View Mode>: Selects the display mode to be used for the Live View.
- <Dwell Time>: This is the time in seconds to *dwell* between the switching of channels when enabling auto-switch in Live View.
- <Enable Audio Output>: Enables/disables audio output for the selected camera in the live view mode.
- <Volume>: Adjusts the volume of the audio output.
- <Event Output>: Designates the output to show an event video. If available, you can select a different video output interface from the <Video Output Interface> when an event occurs.
- <Full Screen Monitoring Dwell Time>: Sets the time in seconds to show the alarm event screen.

2. Set the camera order.

- 1) Click the <View> tab and select the <Video Output Interface> from the drop-down list.



Live View-Camera Order

- 2) Click a window to select it, and then double-click a camera name in the camera list you would like to display. Setting an <X> means the window will not display any camera.
- 3) You can also click  to start the live view of all channels in order and click  to stop the live view of all channels. Click  or  to go to the previous or next page.
- 4) Click the <Apply> button.

Note:

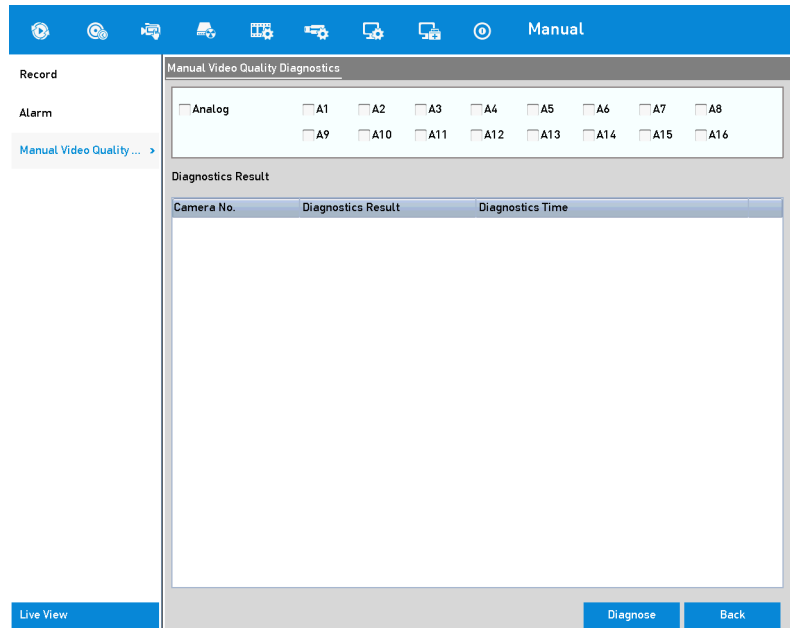
For GD-RT-AT5016N, if the sum of the analog and IP channels exceeds 25, up to 32-window division mode is supported for the VGA/HDMI1 output.

3.5 Manual Video Quality Diagnostics

The video quality of the analog channels can be diagnosed manually and you can view the diagnostic results from a list.

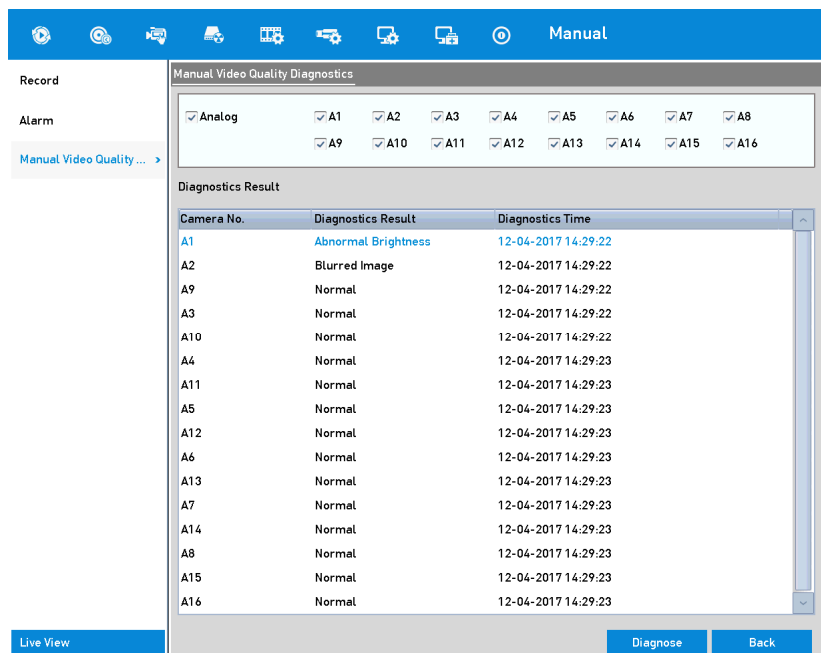
Steps:

1. Go to **Menu> Manual >Manual Video Quality Diagnostics**.



Video Quality Diagnostics

2. Check the checkboxes to select the channels for diagnostics.
3. Click the <Diagnose> button and the results will be displayed on a list. You can view the video status and diagnostics time of the selected channels.



Diagnostics Result

Note:

- Connect the camera to the device for the video quality diagnostics.
- Three exception types can be diagnosed: Blurred Image, Abnormal Brightness and Color Cast.

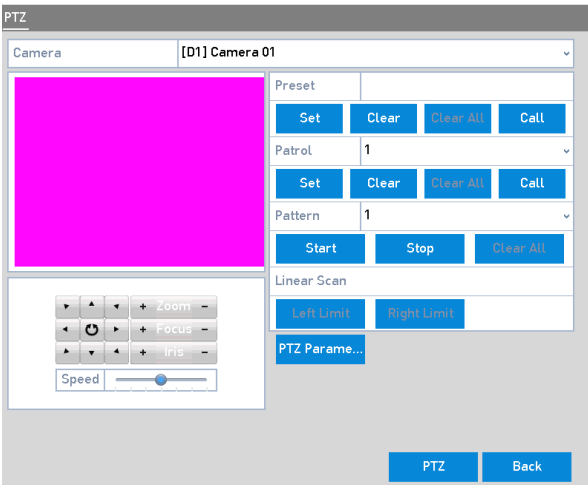
4.PTZ Controls

4.1 Configuring PTZ Settings

Follow the procedure to set the parameters for PTZ. The configuring of the PTZ parameters should be done before you control the PTZ camera.

Steps:

- 1. Go to **Menu >Camera> PTZ.**



PTZ Settings

- 2. Select the camera for the PTZ setting in the <Camera> drop-down list.
- 3. Click the <PTZ Parameters> button to set the PTZ parameters.

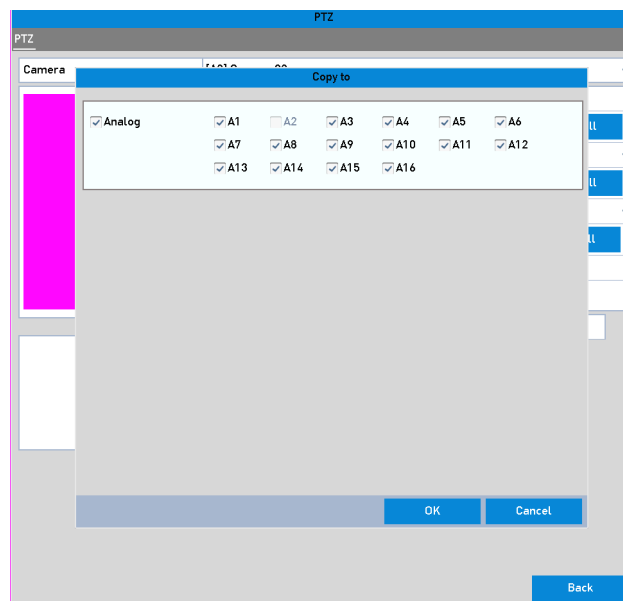
PTZ Parameter Settings	
Baud Rate	9600
Data Bit	8
Stop Bit	1
Parity	None
Flow Ctrl	None
PTZ Protocol	Grundig-1
Address	0
Address range: 0~255	
<div>OKCancel</div>	

PTZ-General

- 4. Select the parameters of the PTZ camera from the drop-down list.

Note:

- All the parameters should be exactly the same as the PTZ camera parameters.
 - For the connected Coaxitron camera/dome, you can select the PTZ protocol to UTC (Coaxitron). Make sure the protocol selected here is supported by the connected camera/dome.
 - When the Coaxitron protocol is selected, all the other parameters like the baud rate, data bit, stop bit, parity and flow control are not configurable.
5. (Optional) Click the <Copy> button to copy the settings to the other channels. Select the channels you want to copy the parameters to and click <OK> to return to the <PTZ Parameters Settings> interface.



Copy to Other Channels

6. Click <OK> to save the settings.
7. (Optional) Check the checkbox of <Enable Omnicast Control> to enable the PTZ control of the selected camera via Omnicast VMS of Genetec.

4.2 Setting PTZ Presets, Patrols and Patterns

Before you start

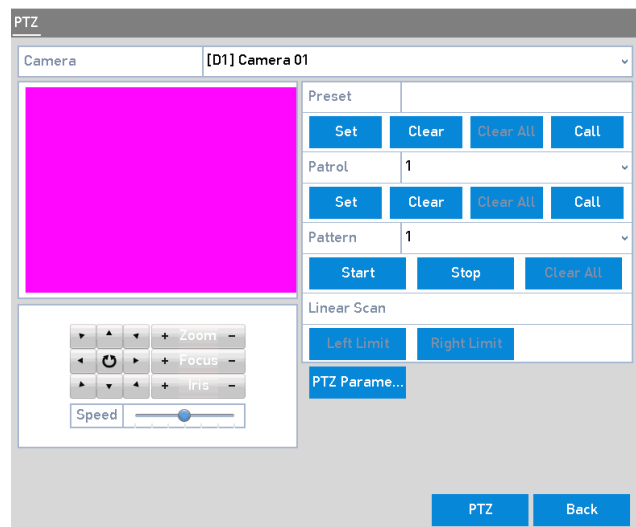
Please make sure that the presets, patrols and patterns should be supported by PTZ protocols.

4.2.1 Customizing Presets

Follow the steps to set the Preset location which you want the PTZ camera to point to when an event takes place.

Steps:

1. Go to **Menu>Camera>PTZ**.



PTZ Settings

2. Use the directional button to wheel the camera to the location where you want to set the preset; the zoom and focus operations can be recorded in the preset as well.
3. Enter the preset No. (1~255) in the <Preset> text field, and click the <Set> button to link the location to the preset.

Repeat the steps from 2 to 3 to save more presets.


You can click the <Clear> button to clear the location information of the preset, or click the <Clear All> button to clear the location information of all of the presets.

4.2.2 Calling Presets

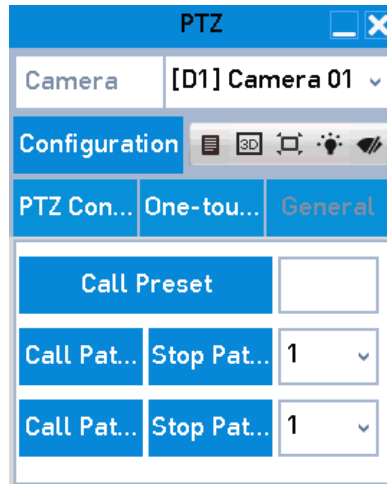
This feature enables the camera to point to a specified position, such as a window, when an event takes place.

Steps:

1. Click the <PTZ> button in the lower-right corner of the PTZ setting interface;

Or press the <PTZ> button on the front panel or click the <PTZ Control> icon  in the quick settings bar, or select the <PTZ> option in the right-click menu to show the PTZ control panel.

2. Choose <Camera> in the drop-down list.
3. Click the <General> tab to show the general settings of the PTZ control.



PTZ Panel-General

4. Click to enter the preset No. in the corresponding text field.
5. Click the <Call Preset> button to call it.

Note:

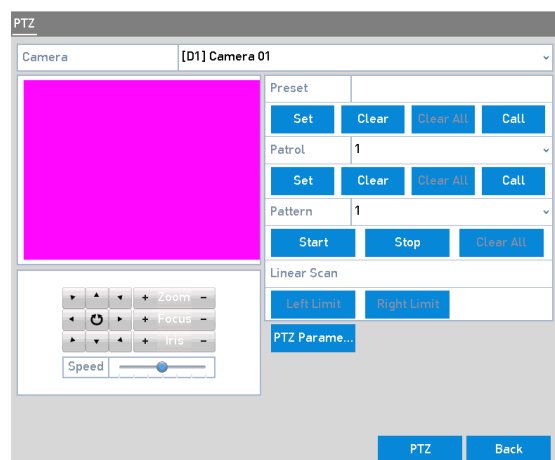
When the Coaxitron camera/dome connected and the PTZ protocol is selected to UTC (Coaxitron), you can call the preset 95 to enter the menu of the connected Coaxitron camera/dome. Use the directional buttons on the PTZ control panel to operate the menu.

4.2.3 Customizing Patrols

Patrols can be set to move the PTZ to different key points and have it stay there for a set duration before moving on to the next key point. The key points are corresponding to the presets. The presets can be set following the steps above in *Customizing Presets*.

Steps:

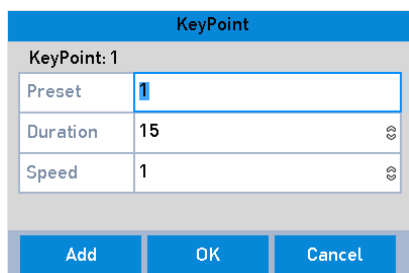
1. Go to **Menu>Camera>PTZ**.



PTZ Settings

2. Select a patrol No. in the <Patrol> drop-down list.

- Click the <Set> button to add key points for the patrol.



The image shows a dialog box titled "KeyPoint". Inside, it says "KeyPoint: 1". There are three input fields: "Preset" with the value "1", "Duration" with the value "15", and "Speed" with the value "1". Each field has a small circular icon to its right. At the bottom, there are three buttons: "Add", "OK", and "Cancel".

Key point Configuration


- Configure key point parameters, such as the key point No., the duration of staying for one key point and the speed of patrol. The key point is corresponding to the preset. The <Key Point No.> determines the order at which the PTZ will follow while cycling through the patrol. The <Duration> refers to the time span for which to stay at the corresponding key point. The <Speed> defines the speed at which the PTZ will move from one key point to the next.
- Click the <Add> button to add the next key point to the patrol, or you can click the <OK> button to save the key point to the patrol.

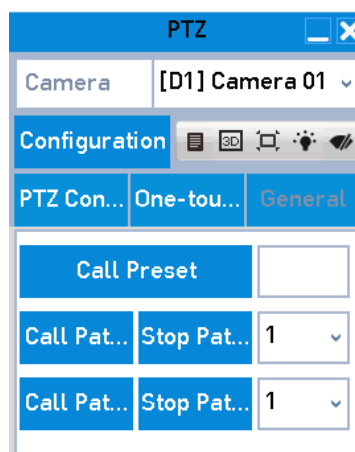
You can delete all of the key points by clicking the <Clear> button for the selected patrol, or click the <Clear All> button to delete all of the key points for all of the patrols.

4.2.4 Calling Patrols

Calling a patrol makes the PTZ move according to the predefined patrol path.

Steps:

- Click the <PTZ> button in the lower-right corner of the <PTZ Settings> interface;
Or press the <PTZ> button on the front panel or click the <PTZ Control> icon  in the quick setting bar, or select the <PTZ> option in the right-click menu to show the PTZ control panel.
- Click the <General> tab to show the general settings of the PTZ control.



The image shows a window titled "PTZ" with a close button. Inside, there's a "Camera" dropdown menu showing "[D1] Camera 01". Below it is a "Configuration" section with icons for 3D, PTZ, and other settings. There are three tabs: "PTZ Con...", "One-tou...", and "General", with "General" being the active tab. Under the "General" tab, there are three rows of controls. The first row has a "Call Preset" button and an empty input field. The second and third rows each have a "Call Pat..." button, a "Stop Pat..." button, and a dropdown menu showing the value "1".

PTZ Panel - General

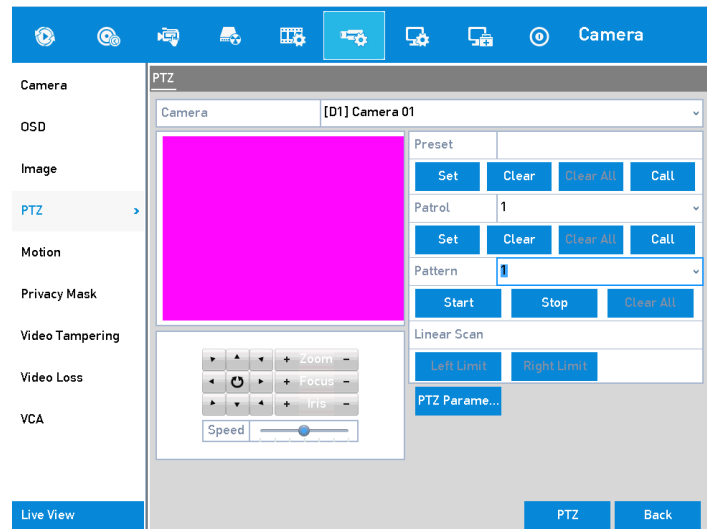
3. Select a patrol in the drop-down list and click the <Call Patrol> button to call it.
4. You can click the <Stop Patrol> button to stop calling it.

4.2.5 Customizing Patterns

Patterns can be set by recording the movement of the PTZ. You can call the pattern to make the PTZ movement according to the predefined path.

Steps:

1. Go to **Menu>Camera>PTZ**.



PTZ Settings


2. Choose a pattern number in the drop-down list.
3. Click the <Start> button and click corresponding buttons in the control panel to move the PTZ camera and then click the <Stop> button to stop it.

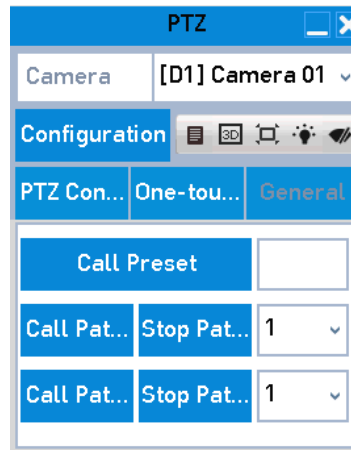
The movement of the PTZ is recorded as the pattern.

4.2.6 Calling Patterns

Follow this procedure to move the PTZ camera according to the predefined patterns.

Steps:

1. Click the <PTZ> button in the lower-right corner of the <PTZ Settings> interface;
Or press the <PTZ> button on the front panel or click the <PTZ Control> icon  in the quick setting bar, or select the <PTZ> option in the right-click menu to show the PTZ control panel.
2. Click the <General> tab to show the general settings of the PTZ control.



PTZ Panel - General

3. Click the <Call Pattern> button to call it.
4. Click the <Stop Pattern> button to stop calling it.

4.2.7 Customizing Linear Scan Limit

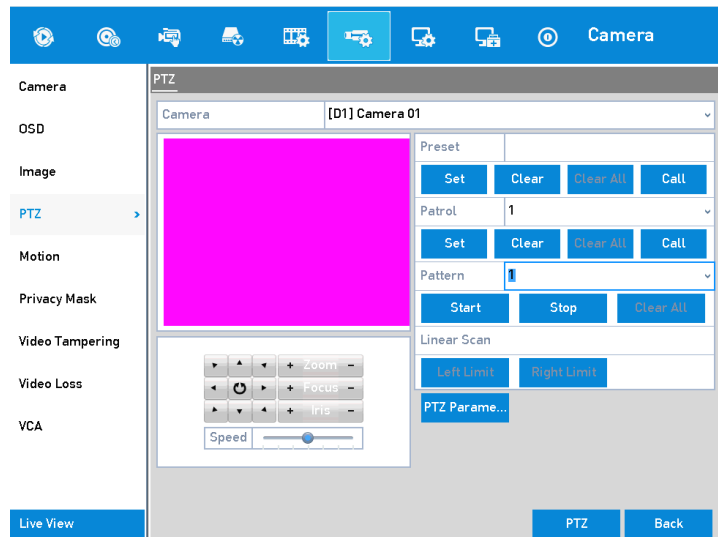
The Linear Scan can be enabled to trigger the scan in the horizontal direction in the predefined range.

Note:

This function is supported by some certain models.

Steps:

1. Go to **Menu>Camera>PTZ**.



PTZ Settings

2. Use the directional button to wheel the camera to the location where you want to set the limit and click the <Left Limit> or <Right Limit> buttons to link the location to the corresponding limit.


Note:

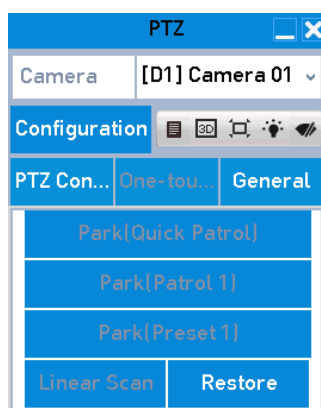
The speed dome starts a linear scan from the left limit to the right limit, and you must set the left limit on the left side of the right limit. Also, the angle from the left limit to the right limit should be no more than 180°.

4.2.8 Calling Linear Scan

Follow the procedure to call the linear scan in the predefined scan range.

Steps:

1. Click the button <PTZ> in the lower-right corner of the <PTZ Settings> interface;
Or press the <PTZ> button on the front panel or click the <PTZ Control> icon  in the quick setting bar to enter the <PTZ Settings> menu in the live view mode.
2. Click the <One-touch> tab to show the one-touch function of the PTZ control.



PTZ Panel - One-touch


3. Click the <Linear Scan> button to start the linear scan and click the <Linear Scan> button again to stop it.

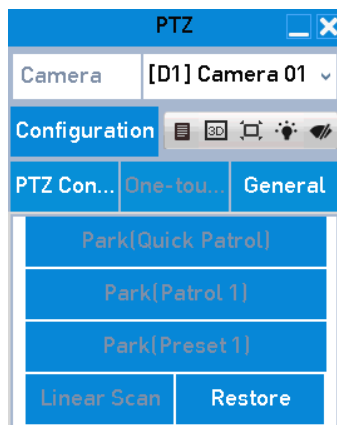
You can click the <Restore> button to clear the defined left limit and right limit data and the dome needs to reboot to make the settings take effect.

4.2.9 One-Touch Park

For certain models of the speed dome, it can be configured to start a predefined park action (scan, preset, patrol and etc.) automatically after a period of inactivity (park time).

Steps:

1. Click the button <PTZ> in the lower-right corner of the <PTZ Settings> interface;
Or press the <PTZ> button on the front panel or click the <PTZ Control> icon  in the quick setting bar to enter the <PTZ Settings> menu in the live view mode.
2. Click the <One-touch> tab to show the one-touch function of the PTZ control.



PTZ Panel - One-touch

- There are 3 one-touch park types selectable. Click the corresponding button to activate the park action.

<Park (Quick Patrol)>: The dome starts to patrol from the predefined preset 1 to preset 32 in order after the park time. The undefined preset will be skipped.

<Park (Patrol 1)>: The dome starts moving according to the predefined <Patrol 1> path after the park time.

<Park (Preset 1)>: The dome moves to the predefined <Preset 1> location after the park time.

Note:

The park time can only be set through the speed dome configuration interface. The default value is 5s.

- Click the button again to inactivate it.


4.3 PTZ Control Panel

There are two possible ways to enter the PTZ control panel.

OPTION 1:

In the <PTZ Settings> interface, click the <PTZ> button on the lower-right corner which is next to the <Back> button.

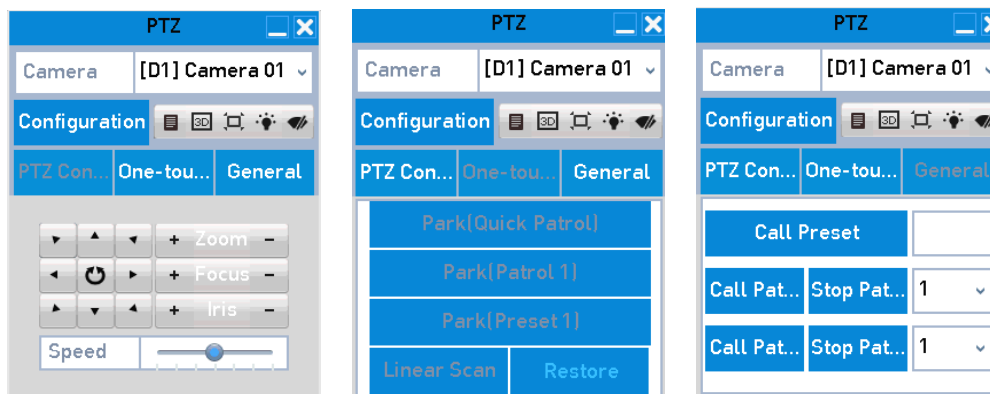
OPTION 2:

In the Live View mode, you can press the <PTZ Control> button on the front panel or on the remote control, or choose the <PTZ Control> icon  in the quick settings bar, or select the <PTZ Control> option in the right-click menu.

Click the <Configuration> button on the control panel, and you can enter the <PTZ Settings> interface.

Note:

In the PTZ control mode, the PTZ panel will be displayed when a mouse is connected with the device. If no mouse is connected, the **PTZ** icon appears in the lower-left corner of the window, indicating that this camera is in PTZ control mode.



PTZ Control Panel

You can refer to the table below for the description of the PTZ panel icons.

Description of the PTZ panel icons:

Icon	Description	Icon	Description	Icon	Description
	Direction button and the auto-cycle button		Zoom+, Focus+, Iris+		Zoom-, Focus-, Iris-
	The speed of the PTZ movement		Light on/off		Wiper on/off
	3D-Zoom		Image Centralization		Menu
	Switch to the PTZ control interface		Switch to the one-touch control interface		Switch to the general settings interface
	Exit		Minimize windows		

5. Recording and Capture Settings

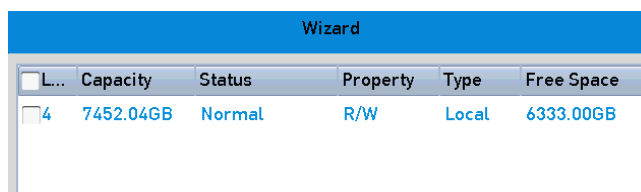
Note:

The picture capture is supported by the GD-RT-AT5016N only.

5.1 Configuring the Encoding Parameters

Before you start

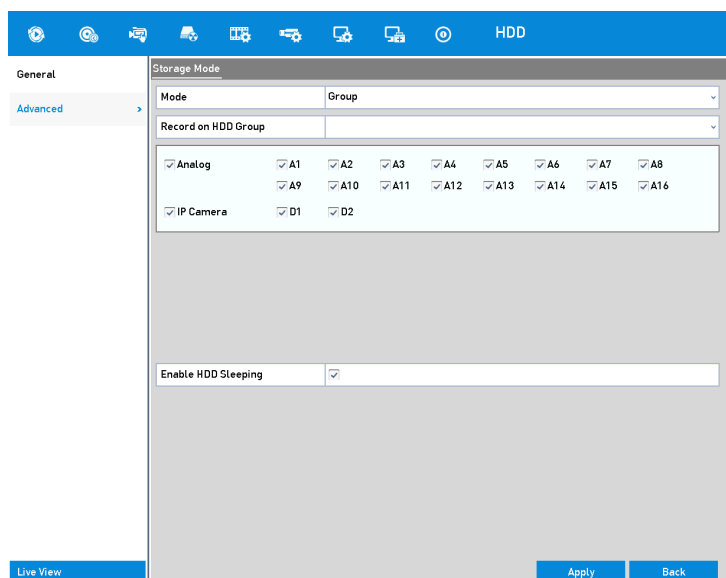
1. Make sure that the HDD has already been installed. If not, please install an HDD and initialize it.
(Menu>HDD>General)



L...	Capacity	Status	Property	Type	Free Space
4	7452.04GB	Normal	R/W	Local	6333.00GB

HDD- General

2. Click the <Advanced> tab to check the storage mode of the HDD.
(Menu>HDD>Advanced>Storage Mode)
 - 1) If the HDD mode is *Quota*, please set the maximum record capacity. For detailed information, see *Chapter 14.4 Configuring Quota Mode*.
 - 2) If the HDD mode is *Group*, you should set the HDD group. For detailed information, see *Chapter 5.9 Configuring HDD Group*.



General

Advanced

Storage Mode

Mode: Group

Record on HDD Group: Group

☒ Analog ☒ A1 ☒ A2 ☒ A3 ☒ A4 ☒ A5 ☒ A6 ☒ A7 ☒ A8

☒ A9 ☒ A10 ☒ A11 ☒ A12 ☒ A13 ☒ A14 ☒ A15 ☒ A16

☒ IP Camera ☒ D1 ☒ D2

Enable HDD Sleeping ☒

Live View Apply Back

HDD- Advanced

Steps

1. Go to **Menu>Record>Parameters**.

Camera	[D1] Camera 01	
Encoding Parameters	Main Stream(Continuous)	Main Stream(Event)
Stream Type	Video	Video
Resolution	1920*1080(1080P)	1920*1080(1080P)
Bitrate Type	Variable	Variable
Video Quality	Medium	Medium
Frame Rate	Full Frame	Full Frame
Max. Bitrate Mode	General	General
Max. Bitrate(Kbps)	4096	4096
Max. Bitrate Range Reco...	3840~6400(Kbps)	3840~6400(Kbps)
Video Encoding	H.264	H.264
Enable H.264+	<input type="checkbox"/>	

Record Parameters

2. Set the parameters for recording.
 - 1) Select the <Record> tab to configure.
 - 2) Select a camera from the camera drop-down list.
 - 3) View the <Camera Resolution>.

Note:

When the HD-TVI, AHD, or HDCVI input is connected, you can view the information including the input signal type, resolution and frame rate (e.g., 5 MP 20 Hz). When the CVBS input is connected, you can view the information such as NTSC or PAL.

- 4) Configure the following parameters for the <Main Stream (Continuous)> and the <Main Stream (Event)>.

<Stream Type>: Set the stream type to <Video> or <Video & Audio>.

<Resolution>: Set the recording resolution.

Note:

- GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016N, GD-RT-AT5016N support 5 MP and 4 MP resolutions on all of the channels.
- The 3 MP signal input is available for channel 1 of GD-RT-AC3004N, and for channel 1/2/3/4 of GD-RT-AC3016N.
- The analog signal inputs (HD-TVI, AHD, HDCVI, CVBS) and the IP signal input can be recognized and connected automatically.
- If the configured encoding resolution conflicts with the resolution of the front-end camera, the encoding parameters will adjust automatically to meet the front-end

camera. E.g., if the resolution of the front-end camera is 720p, then the encoding resolution of the main stream will adjust to 720p automatically.

- The resolution of 960 × 1080 (1080P Lite) is available when the 1080P Lite is enabled in the **Record>Advanced Settings** interface (refer to *Chapter 5.12 Configuring 1080P Lite*).
- Please refer to the *Appendix-Specifications* for the supported resolutions of different models.

<Bitrate Type>: Set the bitrate type to <Variable> or <Constant>.

<Video Quality>: Set the video quality of recording, with 6 levels configurable.

Note:

The Stream Type, Resolution, Bitrate Type and Video Quality are not configurable for the Main Stream (Event) of the IP Camera.

<Frame Rate>: Set the frame rate for the recording.

Note:

- For GD-RT-AC3004N and GD-RT-AC3016N, when the 3 MP signal input is connected, the frame rate of the main stream cannot exceed 15 fps.
- For GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016N, GD-RT-AT5016N, when the 5 MP signal input is connected, the frame rate of the main stream cannot exceed 12 fps. When the 4 MP signal input is connected, the frame rate of the main stream cannot exceed 15 fps.
- The minimum frame rate for main stream is 1 fps.

<Max. Bitrate Mode>: Set the mode to <General> or <Custom>.

<Max Bitrate (Kbps) >: Select or customize the maximum bit rate for recording.

<Max. Bitrate Range Recommended>: A recommended max. bit rate range is provided for reference.

<Max. Average Bitrate (Kbps) >: Set the max. average bit rate which refers to the average amount of data transferred per unit of time.

<Video Encoding>: You can configure H.264 or H.265 for the main stream (continuous) of IP and analog cameras.

Note:

When the connected IP camera does not support H.265, only H.264 can be selected for the main stream (continuous).

3. Check the checkbox of <Enable H.264+> or <Enable H.265+> to enable this function. Enabling it helps to ensure the high video quality with a lowered bitrate.

Note:

- The analog and IP cameras support the enabling of H.264+/H.265+, if the video encoding is H.264/H.265 for the main stream.

- After enabling H.264+ or H.265+, the <Bitrate Type>, <Video Quality>, <Max. <Bitrate Mode>, <Max. Bitrate(Kbps) > and <Max. Bitrate Range Recommend> are not configurable.
- If H.265+ is enabled, the line crossing detection and the region entrance detection are not supported.
- For the connected IP camera, the H.264+ or H.265+ should be supported by the camera and added to the DVR with the supported protocol.
- You should reboot the device to activate the new settings after enabling the H.264+ or H.265+.

4. Click <More Settings> to configure more parameters.

More Settings	
Pre-record	5s
Post-record	5s
Expired Time (day)	0
Record Audio	<input type="checkbox"/>
Video Stream	Main Stream

> OK Back

More Settings of Record Parameters

<Pre-record>: The time you set to record before the scheduled time or event. For example, when an alarm that triggered the recording at 10:00, if you set the pre-record time as 5 seconds, the camera records it at 9:59:55.

<Post-record>: The time you set to record after the event or the scheduled time. For example, when an alarm that triggered the recording ends at 11:00, if you set the post-record time as 5 seconds, it records until 11:00:05.

<Expired Time>: The time for keeping the record files in the HDDs, once exceeded, the files will be deleted. The files will be saved permanently if the value is set as 0. The actual keeping time for the files should be determined by the capacity of the HDDs.

<Redundant Record>: Enabling redundant record means you save the record in the redundant HDD. See *Chapter 5.8 Configuring Redundant Recording*.

<Record Audio>: Enable this feature to record the sound and disable it to record the video without sound.

<Video Stream>: <Main stream>, <Sub-stream> and <Dual-stream> are selectable for recording. When you select sub-stream, you can record for a longer time with the same storage space.

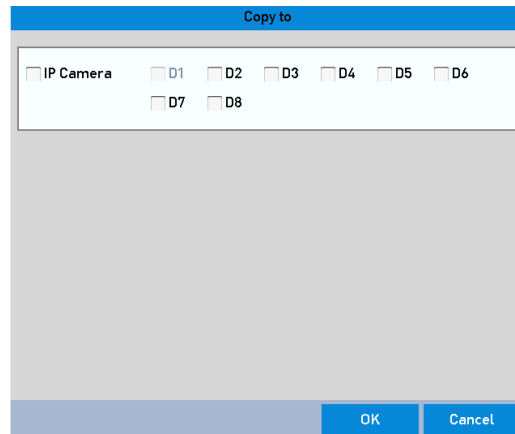
Note:

- The <Redundant Record> option is only available when the HDD mode is *Group*.

- Redundant HDD is required for the redundant record function. For detailed information, see *Chapter 14.3.2 Setting HDD Property*.
- For network cameras, the parameters of Main Stream (Event) are not editable.

5. Click <Apply> to save the settings.

6. Optionally, you can click <Copy> to copy the settings to other analog channels, if needed.



Copy Camera Settings

7. Set the encoding parameters for sub-stream.

1) Select the <Sub-Stream> tab.

Record	Sub-Stream	Capture
Camera	[D1] Camera 01	
Stream Type	Video	
Resolution (max.: 720P)	704*576(4CIF)	
Bitrate Type	Variable	
Video Quality	Medium	
Frame Rate	Full Frame	
Max. Bitrate Mode	General	
Max. Bitrate (Kbps) (max...	1024	
Max. Bitrate Range Reco...	1152~1920(Kbps)	
Video Encoding	H.264	

Sub-Stream Encoding

2) Select a camera in the camera drop-down list.

3) Configure the parameters.

4) Click <Apply> to save the settings.

5) (Optional) If the parameters can also be used for other cameras, click <Copy> to copy the settings to other channels.

Note:

- The resolution of the sub-stream can be selected among <WD1>, <4CIF>, and <CIF>.

- The minimum frame rate for the sub-stream is 1 fps.
- You can select the <Video Encoding> for the sub-stream of IP and analog cameras. For the analog cameras, <H.264> and <H.265> are selectable. For the IP cameras supporting H.265, you can select <H.265> encoding mode.

8. Set parameters for capture.

- 1) Select the <Capture> tab.

Record	Sub-Stream	Capture
Camera	[D1] Camera 01	
Parameter Type	Continuous	Event
Resolution	704*576(4CIF)	704*576(4CIF)
Picture Quality	Medium	Medium
Interval	3s	3s

Capture Settings

- 2) Select a camera from the drop-down list.
- 3) Configure the parameters.
- 4) Click <Apply> to save the settings.
- 5) (Optional) If the parameters can also be used for other cameras, click <Copy> to copy the settings to other channels.

Note:

The interval is the time period between two capturing actions. You can configure all of the parameters on this menu on your demand.

5.2 Configuring the Recording and Capture Schedule

Note:

- The DVR supports <continuous>, <alarm>, <motion>, <motion | alarm>, <motion & alarm>, <event>, and <POS> (for GD-RT-AT5016N) triggered recording types.
- In this chapter, we take the record schedule procedure as an example, and the same procedure can be applied to configure a schedule for the recording.

Set the record schedule, and then the camera will automatically start/stop recording according to the configured schedule.

Steps:

1. Go to **Menu > Record/Capture > Schedule**.

Record Schedule

Different recording types are marked in different color icons.

<Continuous>: scheduled recording.

<Event>: recording triggered by all event triggered alarms.

<Motion>: recording triggered by motion detection.

<Alarm>: recording triggered by alarm.

<M/A>: recording triggered by either motion detection or alarm.

<M&A>: recording triggered by motion detection and alarm.

<POS>: recording triggered by POS and alarm.

Note:

The POS recording is supported by GD-RT-AT5016N only.

2. Choose the camera you want to configure in the <Camera> drop-down list.
3. Check the checkbox of <Enable Schedule>.
4. Configure the record schedule.

Edit the schedule

- 1) Click <Edit>.
- 2) In the message box, you can choose the day for which you want to set the schedule.
- 3) To schedule an all-day recording, check the checkbox after the <All Day> item.

Edit			
Weekday		Mon	
All Day	<input checked="" type="checkbox"/>	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00:00-00:00	Type	Continuous

Copy Apply OK Cancel

Edit Schedule- All Day

- 4) To arrange another schedule, leave the <All Day> checkbox blank and set the Start/End time.

Start/End Time	00:00-00:00	Type	Continuous
Start/End Time	00 : 00 - 00 : 00		

Edit Schedule- Set Time Period

Note:

- Up to 8 periods can be configured for each day. The time periods cannot be overlapped with each other.
 - To enable <Event>, <Motion>, <Alarm>, <M | A> (motion or alarm), <M & A> (motion and alarm) and <POS> triggered recording, you must configure the motion detection settings, alarm input settings or VCA settings as well. For detailed information, refer to *Chapter 8.1*, *Chapter 8.7* and *Chapter 9*.
- 5) Repeat the above steps 1)-4) to schedule the recording for other days in the week. If the schedule can also be set for other days, click <Copy>.

Copy to						
<input type="checkbox"/> All	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
	<input type="checkbox"/> 7					

OK Cancel

Copy Schedule to Other Days

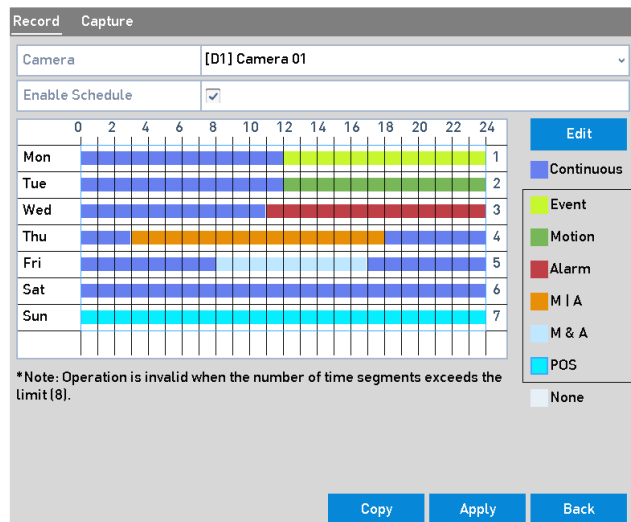
Note:

The <Holiday> option is available when you enable a holiday schedule in <Holiday Settings>. See *Chapter 5.7 Configuring Holiday Record*.

- 6) Click <OK> to save the settings and to return to the upper level menu.

Draw the schedule

- 1) Click the color icon to select a record type in the event list on the right-side of the interface.



Draw the Recording Schedule

- 2) Drag the mouse on the schedule.
- 3) Click the mouse in the area outside of the schedule table to finish and exit from the drawing.

You can repeat step 4 to set a schedule for other channels. If the settings can also be used for other channels, click <Copy>, and then choose the channel to which you want to copy them to.

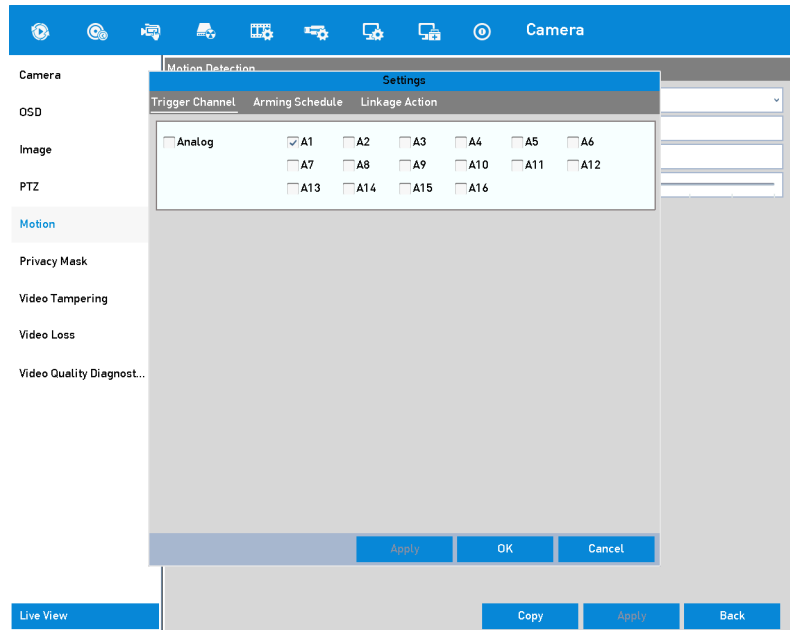
5. Click <Apply> in the <Record Schedule> interface to save the settings.

5.3 Configuring the Motion Detection Recording and Capture

Follow the steps to set the motion detection parameters. In the live view mode, once a motion detection event takes place, the DVR can analyze it and do many actions to handle it. Enabling the motion detection function can trigger certain channels to start recording, or trigger full screen monitoring, audio warning, notifying the surveillance center, sending an email and so on.

Steps:

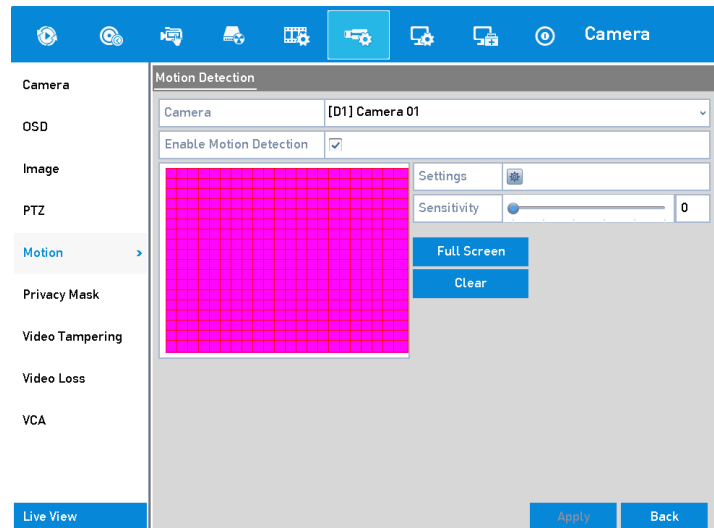
1. Go to **Menu>Camera>Motion**.




Motion Detection

2. Configure Motion Detection:

- 1) Choose the camera that you want to configure.
- 2) Check the checkbox for <Enable Motion Detection>.
- 3) Drag and draw the area for the motion detection with the mouse. If you want to set the motion detection for all of the area captured by the camera, click <Full Screen>. To clear the motion detection area, click <Clear>.



Motion Detection- Mask

- 4) Click , and the message box for channel information pops up.

Settings	
Trigger Channel	Arming Schedule
<input type="checkbox"/> IP Camera <input checked="" type="checkbox"/> D1 <input type="checkbox"/> D2 <input type="checkbox"/> D3 <input type="checkbox"/> D4 <input type="checkbox"/> D5 <input type="checkbox"/> D6 <input type="checkbox"/> D7 <input type="checkbox"/> D8	
<div> Apply OK Cancel </div>	

Motion Detection Settings

- 5) Select the channels which you want the motion detection event to trigger for the recording.
 - 6) Click <Apply> to save the settings.
 - 7) Click <OK> to go back to the upper level menu.
 - 8) Exit the <Motion Detection> menu.
3. Configure the schedule.

Please refer to the 4th step of *Chapter 5.2 Configuring the Recording and Capture Schedule*, while you may choose <Motion> as the record type.

5.4 Configuring the Alarm Triggered Recording and Capture

Follow the procedure to configure alarm triggered recording or capture.


Steps:

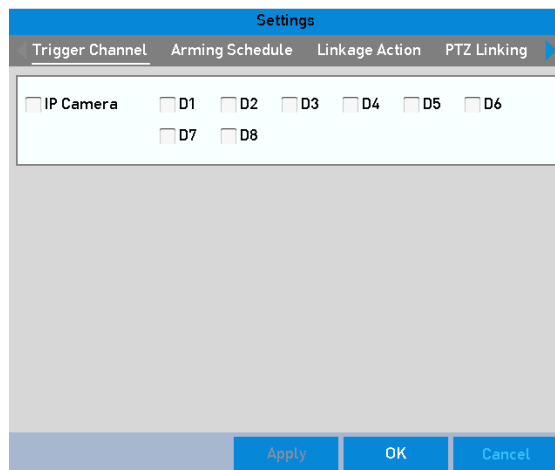
1. Go to **Menu > Configuration > Alarm > Alarm Input**.

Alarm Status	Alarm Input	Alarm Output
Alarm Input No.	Local<-1	
Alarm Name		
Type	N.O	
Enable	<input type="checkbox"/>	
Enable One-Key Disarmi...	<input type="checkbox"/>	
Settings		

Alarm Settings- Alarm Input

2. Select <Alarm Input No.>
3. Enter an <Alarm Name>.
4. Select <N.O> (normally open) or <N.C> (normally closed) for alarm type.

5. Check the checkbox of <Enable> to enable alarm.
6. Click the  button after <Settings> to set the triggered channels, arming schedule, linkage actions and PTZ linking. Refer to step 4 of *Chapter 5.2 Configuring the Recording and Capture Schedule* for detailed operations.

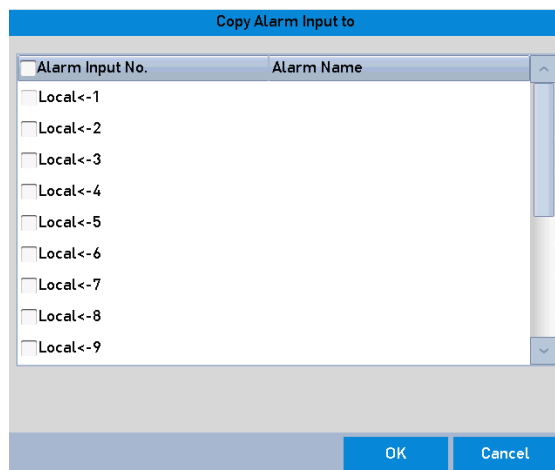


Alarm Handling

7. Click <Apply> to save the settings.

Repeat the steps from 1 to 8 to configure other alarm input parameters.

If the settings can also be applied to other alarm inputs, click <Copy> and choose the alarm input number.



Copy Alarm Input

5.5 Configuring the Event Recording and Capture

The event triggered recording can be configured through the menu. Events include the motion detection, alarm and VCA events (face detection/face capture, line crossing detection, intrusion detection, region entrance detection, region exiting detection, loitering detection, people gathering detection, fast moving detection, parking detection, unattended baggage detection,

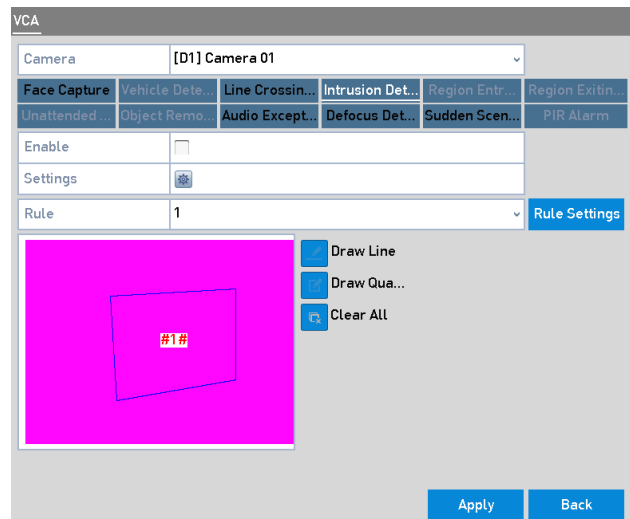
object removal detection, audio loss exception detection, sudden change of sound intensity detection, and defocus detection).

Note:


- GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016P, GD-RT-AP5016N and GD-RT-AT5016N support line crossing detection and intrusion detection of all channels, and 2-ch sudden scene change detection. Channels with audio support audio exception detection.
- GD-RT-AC3004N and GD-RT-AC3016N support 4-ch line crossing detection and intrusion detection. GD-RT-AC3016N also support 1-ch sudden scene change detection. Channels with audio support audio exception detection.
- For the analog channels, the line crossing detection and intrusion detection conflict with other VCA detection such as sudden scene change detection, face detection and vehicle detection. You can only enable one function.

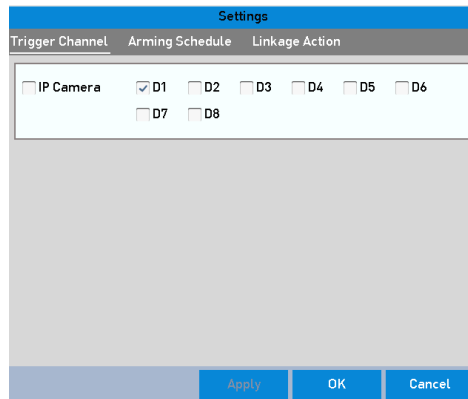
Steps:

1. Go to **Menu > Camera > VCA**.



VCA Settings

2. Select a <Camera>.
3. Configure the detection rules for VCA events. For details, see step 6 in *Chapter 10.3 Line Crossing Detection*.
4. Click the icon  to configure the alarm linkage actions for the VCA events.
Select the <Trigger Channel> tab and select one or more channels which will start to record when the VCA alarm is triggered.
5. Click <Apply> to save the settings.



Set Triggered Camera of VCA Alarm

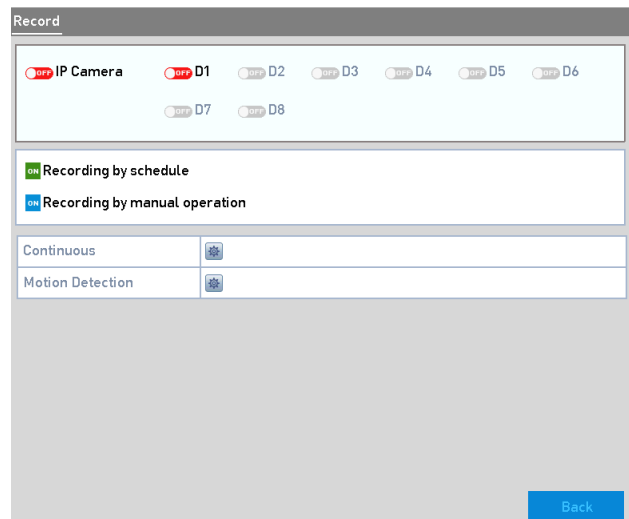
6. Enter the <Record Schedule Settings> interface (**Menu> Record> Schedule>Record Schedule**), and then set Event as the record type. For details, see step 2 in *Chapter 5.2 Configuring Recording and Capture Schedule*.

5.6 Configuring the Manual Recording and Continuous Capture

Follow the steps to set parameters for the manual recording and continuous capture. For the use of manual recording and continuous capture, you need to manually cancel the record and capture. The manual recording and the manual continuous capture come before the scheduled recording and capture.



Steps:


1. Go to **Menu > Manual > Record**.



Manual Record


2. Enable manual record.

Click the status icon  before the camera number to change it to .

Or click the status icon  of <Analog> to enable manual record of all channels.

3. Disable manual record.

Click the status icon  to change it to .

Or click the status icon  of <Analog> to disable manual record of all channels.

Note:

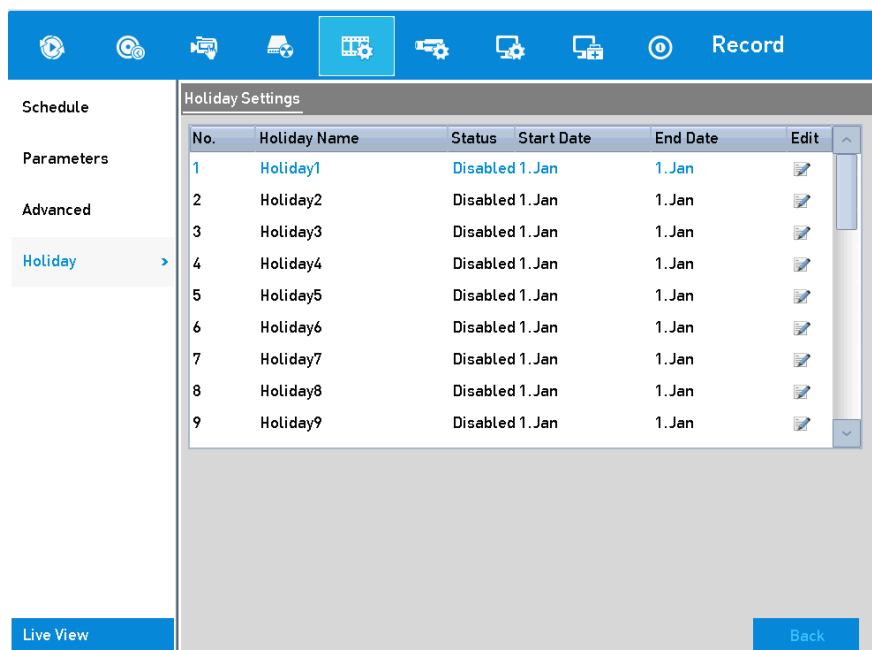
After rebooting, all the enabled manual records are canceled.

5.7 Configuring the Holiday Recording and Capture

Follow the steps to configure the record or capture schedule on holiday for that year. You may want to have a different plan for recording during a holiday.


Steps:

1. Go to **Menu > Record > Holiday**.



Holiday Settings

2. Enable <Edit Holiday schedule>.

1) Click  to enter the <Edit> interface.

Edit			
Holiday Name	Holiday1		
Enable	<input checked="" type="checkbox"/>		
Mode	By Month ▾		
Start Date	Jan ▾	1 ▾	▾
End Date	Jan ▾	1 ▾	▾
		Apply	OK
		Cancel	

Edit Holiday Settings

2) Check the checkbox of <Enable>.

3) Select the <Mode> from the drop-down list.

There are three different modes for the date format to configure a holiday schedule. <By Month>, <By Week>, and <By Date> are selectable.

4) Set the start and end date.

5) Click <Apply> to save the settings.

6) Click <OK> to exit the Edit interface.

3. Configure the record schedule.

Please refer to the *Chapter 5.2 Configuring Recording and Capture Schedule*, while you may choose <Holiday> in the Schedule drop-down list, or you can draw the schedule on the timeline of Holiday.

Note:

- Up to 8 periods can be configured for each day. And the time periods cannot overlap each other.
- In the time table of the channel, both the holiday schedule and the normal day schedule are displayed.
- Repeat the above step 4 to set a holiday schedule for other channels. If the holiday schedule can also be used for other channels, click <Copy> and choose the channel you want to apply the settings to.

5.8 Configuring the Redundant Recording and Capture

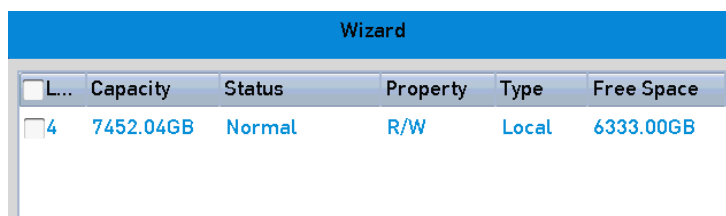
Enabling redundant recording and capture, which means saving the record files and captured pictures not only in the R/W HDD but also in the redundant HDD, will effectively enhance the data safety and reliability.

Before you start

You must set the Storage mode in the HDD advanced settings to <Group> before you set the HDD property to <Redundant>. For detailed information, please refer to *Chapter 14.3 Managing HDD Group*. There should be at least another HDD which is in Read/Write status.

Steps:

1. Go to **Menu > HDD**.

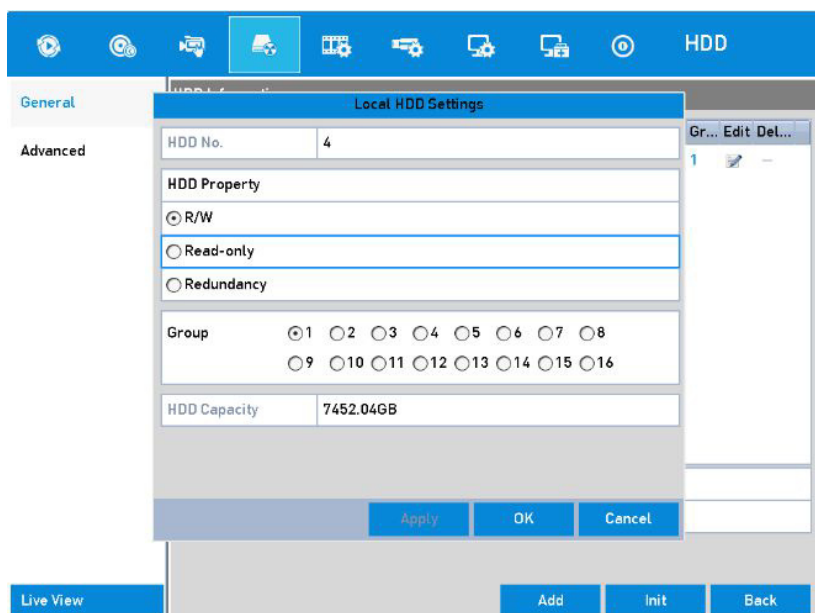


<input type="checkbox"/> L...	Capacity	Status	Property	Type	Free Space
<input type="checkbox"/> 4	7452.04GB	Normal	R/W	Local	6333.00GB

HDD General

2. Select the <HDD> and click  to enter the Local HDD Settings interface.

- 1) Set the HDD property to <Redundant>.



The screenshot shows the 'Local HDD Settings' dialog box. It contains the following fields and options:

- HDD No.:** 4
- HDD Property:** Radio buttons for **R/W** (selected), **Read-only**, and **Redundancy**.
- Group:** Radio buttons for groups 1 through 16. Group 1 is selected.
- HDD Capacity:** 7452.04GB
- Buttons:** Apply, OK, Cancel.

HDD General-Editing

- 2) Click <Apply> to save the settings.

- 3) Click <OK> to go back to the upper level menu.
3. Go to **Menu > Record > Parameters > Record**.
 - 1) Select the camera you want to configure.
 - 2) Click the <More Settings> button.

More Settings	
Pre-record	5s
Post-record	5s
Expired Time (day)	0
Record Audio	<input type="checkbox"/>
Video Stream	Main Stream

OK Back

More Settings

- 3) Check the checkbox for <Redundant Record>.
- 4) Click <OK> to save the settings.
- 5) If the encoding parameters can also be used for other channels, click <Copy> and choose the channel you want to apply the settings to.


5.9 Configuring the HDD Group

You can group the HDDs and save the record files in a particular HDD group.

Steps:

1. Go to **Menu > HDD > Advanced > Storage Mode**.

Check whether the storage mode of the HDD is <Group>. If not, set it to <Group>. For detailed information, please refer to *Chapter 14.3 Managing HDD Group*.
2. Select <General> in the left bar.

Click  to enter the editing interface.
3. Configuring an HDD group.
 - 1) Choose a group number for the HDD group.
 - 2) Click <Apply> to save your settings.
 - 3) Click <OK> to go back to the upper level menu.
4. Repeat the above steps to configure more HDD groups.

5. Choose the Channels in which you want to save the record files in the HDD group.

1) Go to **Menu > HDD > Advanced > Storage Mode**.

Mode	Group
Record on HDD Group	1
<input checked="" type="checkbox"/> Analog	<input checked="" type="checkbox"/> A1 <input checked="" type="checkbox"/> A2 <input checked="" type="checkbox"/> A3 <input checked="" type="checkbox"/> A4 <input checked="" type="checkbox"/> A5 <input checked="" type="checkbox"/> A6 <input checked="" type="checkbox"/> A7 <input checked="" type="checkbox"/> A8 <input checked="" type="checkbox"/> A9 <input checked="" type="checkbox"/> A10 <input checked="" type="checkbox"/> A11 <input checked="" type="checkbox"/> A12 <input checked="" type="checkbox"/> A13 <input checked="" type="checkbox"/> A14 <input checked="" type="checkbox"/> A15 <input checked="" type="checkbox"/> A16
<input checked="" type="checkbox"/> IP Camera	<input checked="" type="checkbox"/> D1 <input checked="" type="checkbox"/> D2 <input checked="" type="checkbox"/> D3 <input checked="" type="checkbox"/> D4 <input checked="" type="checkbox"/> D5 <input checked="" type="checkbox"/> D6 <input checked="" type="checkbox"/> D7 <input checked="" type="checkbox"/> D8 <input checked="" type="checkbox"/> D9 <input checked="" type="checkbox"/> D10 <input checked="" type="checkbox"/> D11 <input checked="" type="checkbox"/> D12 <input checked="" type="checkbox"/> D13 <input checked="" type="checkbox"/> D14 <input checked="" type="checkbox"/> D15 <input checked="" type="checkbox"/> D16 <input checked="" type="checkbox"/> D17 <input checked="" type="checkbox"/> D18 <input checked="" type="checkbox"/> D19 <input checked="" type="checkbox"/> D20 <input checked="" type="checkbox"/> D21 <input checked="" type="checkbox"/> D22 <input checked="" type="checkbox"/> D23 <input checked="" type="checkbox"/> D24 <input checked="" type="checkbox"/> D25 <input checked="" type="checkbox"/> D26 <input checked="" type="checkbox"/> D27 <input checked="" type="checkbox"/> D28 <input checked="" type="checkbox"/> D29 <input checked="" type="checkbox"/> D30 <input checked="" type="checkbox"/> D31 <input checked="" type="checkbox"/> D32
Enable HDD Sleeping	<input checked="" type="checkbox"/>

HDD Advanced

- 2) Choose a Group number in the drop-down list of <Record on HDD Group>
- 3) Check the channels you want to save in this group.
- 4) Click <Apply> to save the settings.

Note:

After you have configured the HDD groups, you can configure the recording settings following the procedure provided in *Chapter 5.2-5.7*.

5.10 Files Protection

You can lock the recorded files or set the HDD property to <Read-only> to protect the record files from being overwritten.

Protect file by locking the record files

Steps:

1. Go to **Menu > Export > Normal**.

Normal

<input checked="" type="checkbox"/> IP Camera	<input checked="" type="checkbox"/> D1	<input checked="" type="checkbox"/> D2	<input checked="" type="checkbox"/> D3	<input checked="" type="checkbox"/> D4	<input checked="" type="checkbox"/> D5	<input checked="" type="checkbox"/> D6	<input checked="" type="checkbox"/> D7	<input checked="" type="checkbox"/> D8
Start/End time of record		14-07-2017 07:03:34 -- 02-12-2017 11:48:37						
Record Type		All						
File Type		All						
Start Time		02-12-2017		00:00:00				
End Time		02-12-2017		23:59:59				

Export

2. Select the channels you want to investigate by changing the checkbox to ☒.
3. Configure the <record mode>, <record type>, <file type>, <start time> and <end time>.
4. Click <Search> to show the results.

File Management

Video Clips Playback Capture Locked File Tag

Cam...	Start/End Time	Size	Lock
<input type="checkbox"/> D1	02-12-2017 09:36:48--09:57:25	440.92MB	

Total: 1 P: 1/1

Total size: 0B

Export-Search Result

5. Protect the record files.
 - 1) Find the record files you want to protect, and then click the icon which will turn to , indicating that the file is locked.

Note:

The record files of which the recording is still not completed cannot be locked.

- 2) Click to change it to to unlock the file and the file is not protected.

Protect the file by setting the HDD property to <Read-only>.

Before you start


To edit the HDD property, you need to set the storage mode of the HDD to Group. See *Chapter 14.3 Managing HDD Group*.

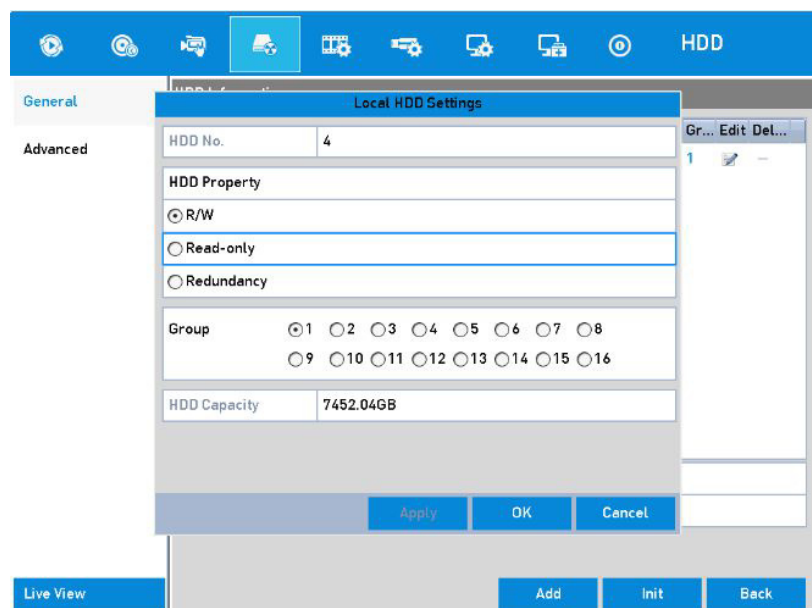
Steps:

1. Go to **Menu > HDD > General**.

Wizard					
<input type="checkbox"/> L...	Capacity	Status	Property	Type	Free Space
<input type="checkbox"/> 4	7452.04GB	Normal	R/W	Local	6333.00GB

HDD General

2. Click  to edit the HDD you want to protect.



HDD General- Editing

3. Set the HDD to <Read-only>.
4. Click <OK> to save the settings and go back to the upper level menu.

Note:

- You cannot save any files in a Read-only HDD. If you want to save files in the HDD, change the property to R/W.
- If there is only one HDD and it is set to <Read-only>, the DVR cannot record any files. Only the live view mode is available.
- If you set the HDD to <Read-only> when the DVR is saving files in it, then the file will be saved in the next R/W HDD. If there is only one HDD, the recording will be stopped.

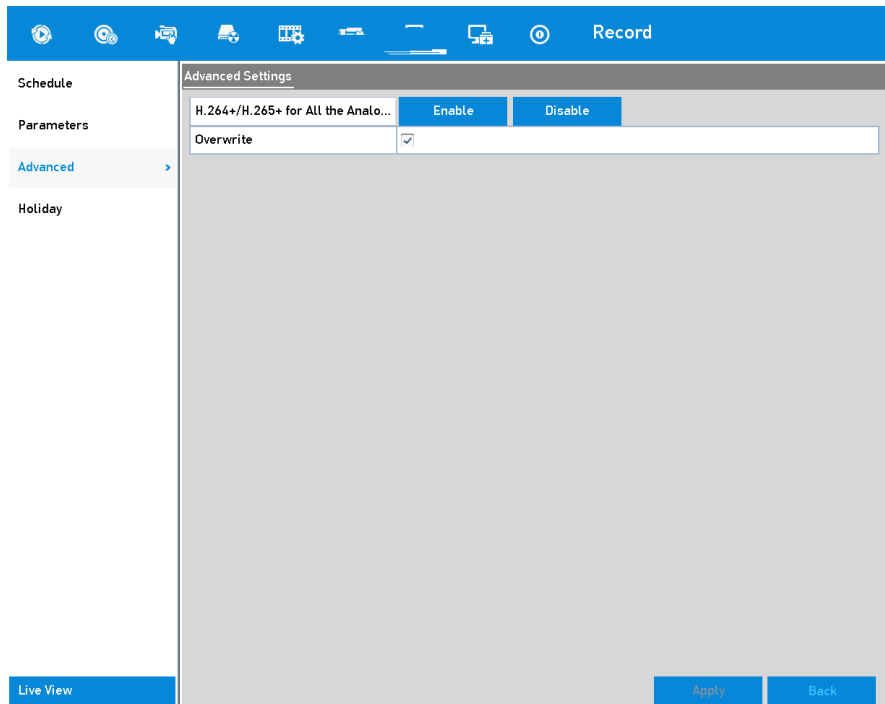
5.11 One-Key Enabling and Disabling H.264+/H.265+ for Analog Cameras

You can one-key enable or disable H.264+/H.265+ for the analog cameras.

Task 1: One-Key Enabling H.264+/H.265+ for All Analog Cameras

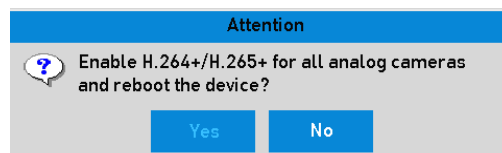
Steps:

1. Go to **Menu > Record > Advanced**.



Advanced Settings

2. Click <Enable> to enable H.264+/H.265+ for all the analog cameras and the following attention box pops up.



Attention Box

3. Click <Yes> to enable the function and reboot the device to have new the settings take effect.

Task 2: One-Key Disabling H.264+/H.265+ for All Analog Cameras

Steps:

1. Go to **Menu > Record > Advanced**.

2. Click <Disable> to disable H.264+ for all of the analog cameras and an attention box will pop up.
3. Click <Yes> to enable the function and to reboot the device to have the new settings take effect.

5.12 Configuring 1080P Lite

When the 1080P Lite Mode is enabled, the encoding resolution at 1080P Lite (real-time) is supported. If not, up to 1080P (non-real-time) is supported.

Note:

This chapter is applicable to GD-RT-AC3004N and GD-RT-AC3016N.

Task 1: Enabling the 1080P Lite Mode

Steps:

1. Go to **Menu > Record > Advanced**.
2. Check the checkbox of <1080P Lite Mode> and click <Apply> to pop up the attention box. After enabling 1080p lite mode, the 3 MP signal is not accessible to the analog channel.
3. Click <Yes> to reboot the device to have the new settings take effect.

Task 2: Disabling the 1080P Lite Mode

Steps

1. Go to **Menu > Record > Advanced**.
2. Uncheck the checkbox of <1080P Lite Mode> and click <Apply>. An attention box will pop up.
3. Click <Yes> to reboot the device to activate the new settings or <No> to restore the old settings.

6. Playback

6.1 Playing Back Record Files

6.1.1 Instant Playback

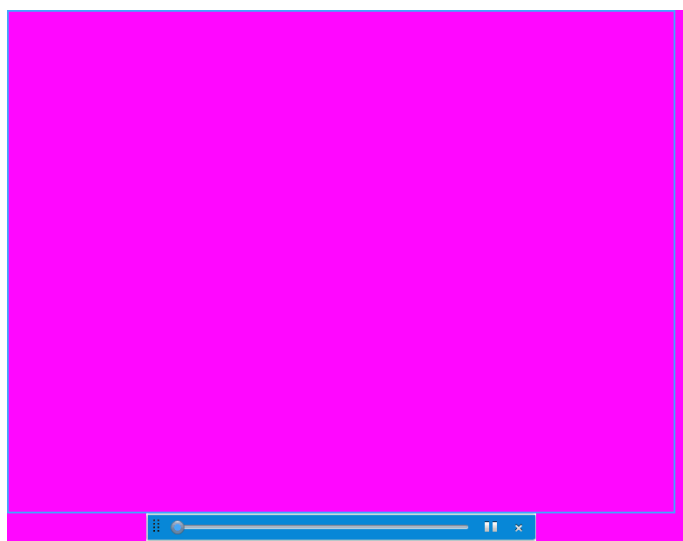
Play back the recorded video files of a specific channel in the live view mode. Channel switch is supported.

Instant playback by channel

Choose a channel in the live view mode and click the  button in the quick settings toolbar.

Note:

In the instant playback mode, only record files recorded during the last five minutes on this channel will be played back.



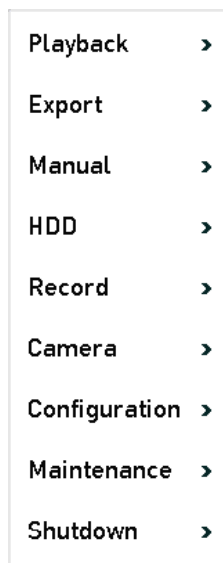
Instant Playback Interface

6.1.2 Playing Back by Normal Search

Playback by Channel

Enter the <Playback> interface.

Right-click a channel in live view mode and select <Playback> from the menu, as shown in the following figure:



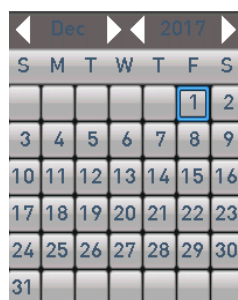
Right-click Menu under the Live View

Playback by Time

Play back video files recorded in a specified time frame. Multi-channel simultaneous playback and channel switch are supported.



Steps:

1. Go to **Menu > Playback**.
2. Check the checkbox of channel(s) in the channel list and then double-click to select a date on the calendar.



Playback Calendar

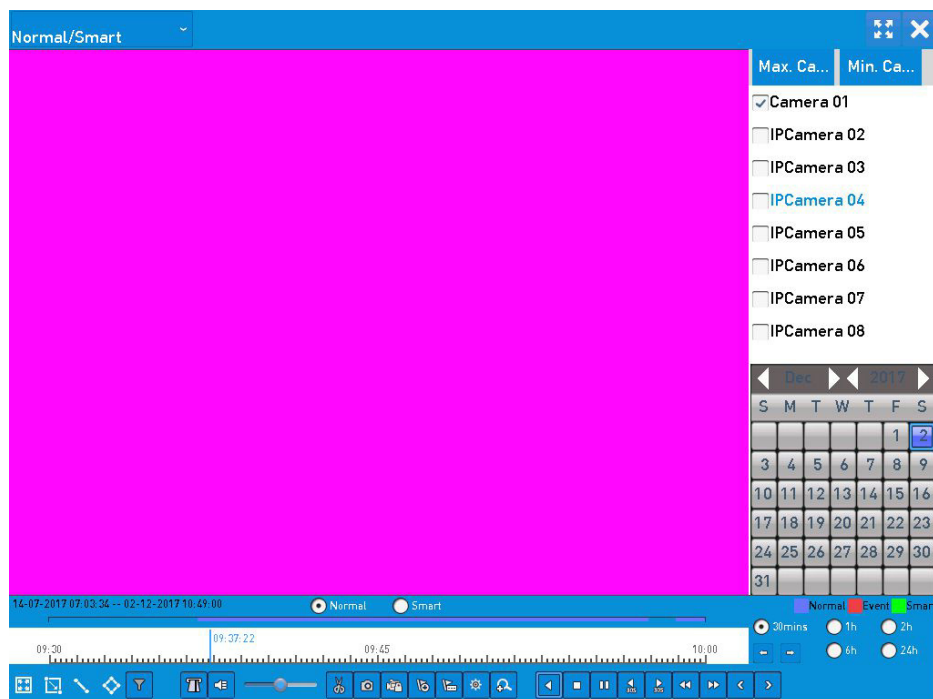
Note:

If there are record files for that camera on that day in the calendar, the icon for that day is displayed as . Otherwise it is displayed as .

Playback Interface

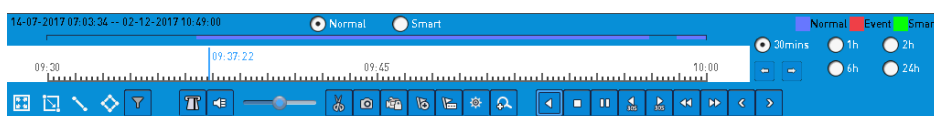
You can select the <Main Stream> or <Sub-Stream> from the drop-down list for playback.

You can also use the toolbar in the bottom part of the <Playback> interface to control the playing progress, as shown in the following figure.



Playback Interface















Select the channel(s) if you want to switch playback to another channel or execute simultaneous playback of multiple channels.



Toolbar of Playback

Detailed Explanation of the Playback Toolbar:

Button	Operation	Button	Operation	Button	Operation
	Audio on/Mute		Start/Stop clipping		Lock File
	Add a default tag		Add a customized tag		File management for video clips, captured pictures, locked files and tags
	Reverse play/Pause		Stop		Digital Zoom

Button	Operation	Button	Operation	Button	Operation
	30s forward		30s reverse		Pause/Play
	Fast forward		Previous day		Slow forward
	Full Screen		Exit		Next day
	Save the clips		Process bar		Scaling up/down the time line
	Capture Picture		Enable/Disable POS information overlay		

Note:

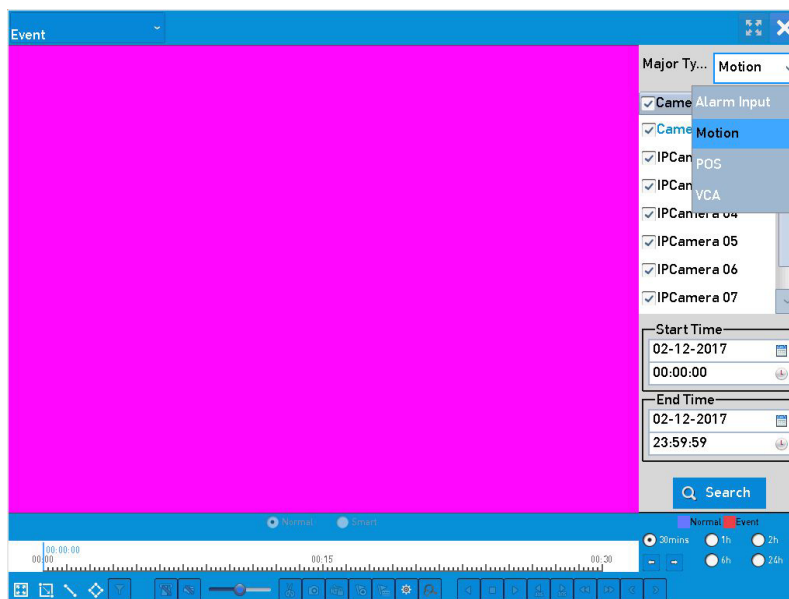
- The 14-07-2017 07:03:34 -- 02-12-2017 10:49:00 indicates the start time and the end time of the record files.
- ■ represents normal recording (manual or schedule); ■ represents event recording (motion, alarm, motion | alarm, motion & alarm).
- Playback progress bar: use the mouse to click any point of the progress bar to locate special frames.
- The POS overlay function is supported by GD-RT-AT5016N only. When the POS is enabled when playing back, the POS information will be overlaid on the video. And the keyword searching is supported.
- The picture capture function is supported by GD-RT-AT5016N only.

6.1.3 Playing Back by Event Search


Play back record files on one or several channels searched out by restricting the event type (motion detection, alarm input or VCA). Channel switch is supported.

Steps:


1. Go to **Menu > Playback**.
2. Click ● Normal and select ■ Event to enter the <Event Playback> interface.
3. Select <Alarm Input, Motion, VCA> as the event type, and specify the start time and the end time for the search.




Video Search by Motion Detection

4. Click <Search> and the record files matching the search conditions will be displayed on a list.
5. Select and click this  button to play back the record files.

You can click the <Back> button to return to the search interface.

If there is only one channel triggered, clicking this  button takes you to the <Full-screen Playback> interface of this channel.

If several channels are triggered, clicking this  button takes you to the <Synchronous Playback> interface. Check ☒ the checkbox to select one channel for playback or select multiple channels for synchronous playback.

Note:

The maximum number of channels that support synchronous playback varies for the different models.



6. On the <Event Playback> interface, you can select the <Main Stream> or <Sub-stream> from the drop-down list for playback.

The toolbar in the bottom part of the <Playback> interface can be used to control the playing process.

<Pre-play> and <Post-play> can be configured for the playback of event-triggered record files.

<Pre-play>: The time you set to play back before the event. For example, when an alarm triggered the recording at 10:00, if you set the pre-play time as 5 seconds, the video plays back from 9:59:55.

<Post-play>: The time you set to play back after the event. For example, when an alarm triggered the recording ends at 11:00, if you set the post-play time as 5 seconds, the video plays back until 11:00:05.

7. You can click  or  to select the previous or the next event. Please refer to the table in section 6.1.5 for the description of the buttons on the toolbar.

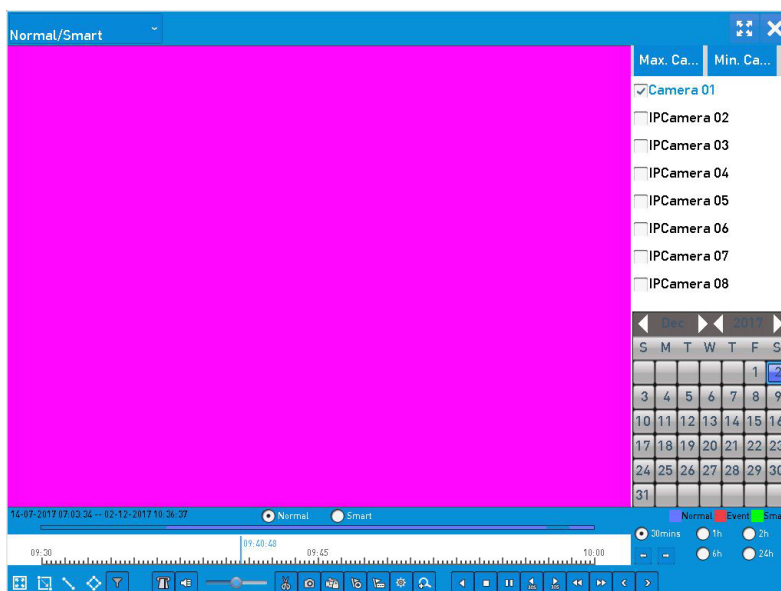
6.1.4 Playing Back by Tag

A video tag allows you to record related information like people and location of a certain time point during the playback. You are also allowed to use video tag(s) to search for record files and position time points.


Before playing back by tag

Steps:

1. Go to **Menu > Playback**.
2. Search and play back the record file(s). Refer to *Chapter 6.1.2 Playing Back by Normal Search* for the detailed information about searching and playback of the record files.



Interface of Playback by Time

Click  to add a default tag.

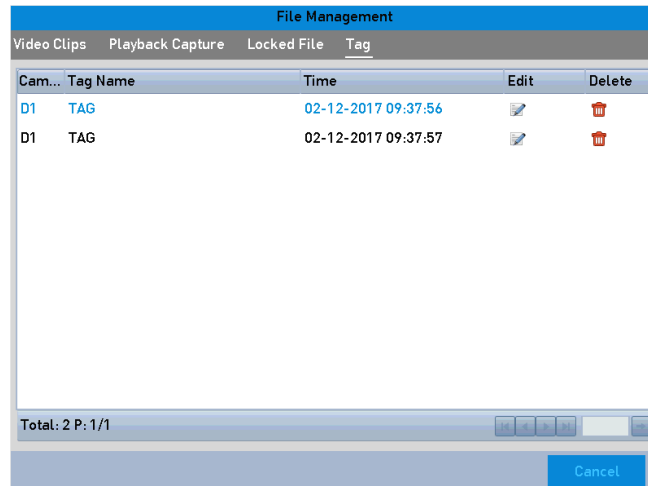
Click  to add a customized tag and enter a tag name.

Note:

Max. 64 tags can be added to a single video file.

3. Tag management.

Click  button to check, edit and delete tag(s).



Tag Management Interface

Steps

1. Select <Tag> from the drop-down list in the <Playback> interface.
2. Choose channels, edit the start time and the end time, and then click <Search> to enter the <Search Result> interface.

Note:

You can enter a keyword in the textbox to search the tag on your command.

3. Click to play back the file.

You can click the <Back> button to return to the search interface.

Note:

- Pre-play and post-play can be configured.
- You can click or to select the previous or the next tag. Please refer to the table in the next section for the description of the buttons on the toolbar.

6.1.5 Playing Back by Smart Search

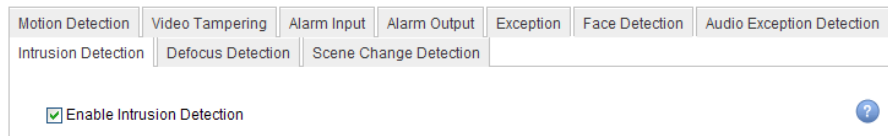
The smart playback function provides an easy way to get through the less effective information. When you select the smart playback mode, the system will analyze the video containing the motion or VCA information, mark it with green color and play it in the normal speed while the video without motion will be played in the 16-time speed. The smart playback rules and areas are configurable.

Before you start

To get the smart search result, the corresponding event type must be enabled and configured on the IP camera. Here we take the intrusion detection as an example.

Steps:

1. Log in the IP camera via the web browser and enable the intrusion detection by checking the checkbox of it. You may enter the motion detection configuration interface via **Configuration > Advanced Configuration > Events > Intrusion Detection**.

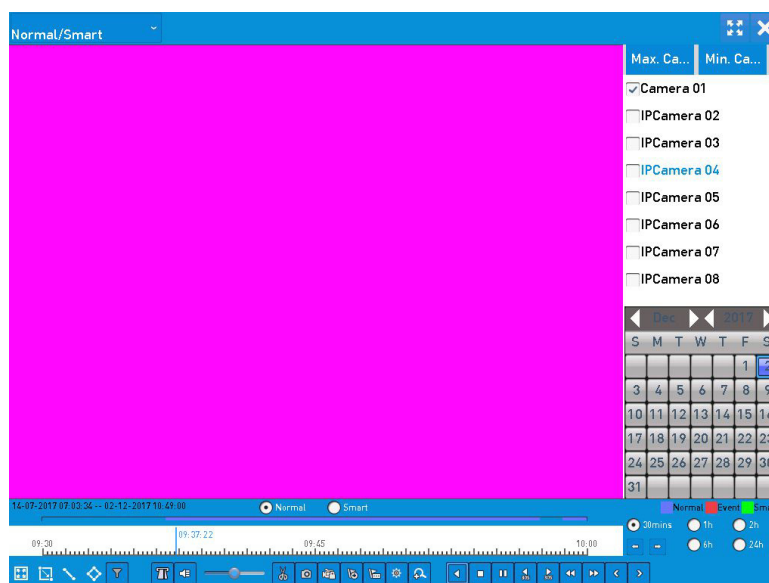


Setting Intrusion Detection on IP Camera

2. Configure the required parameters of the intrusion detection, including <Area>, <Arming Schedule> and <Linkage Methods>. Refer to the user manual of the smart IP camera for detailed instructions.

Steps

1. Go to **Menu > Playback**.
2. Select <Smart> in the drop-down list on the top-left side.
3. Select a camera in the list of cameras.












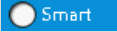



Smart Playback Interface

4. Select a date in the calendar and click  to play.

Refer to the table below for the descriptions of the buttons on the Smart Playback Toolbar.


Detailed Explanation of Smart Playback Toolbar:

Button	Operation	Button	Operation	Button	Operation
	Draw a line for the line crossing detection		Draw a quadrilateral for the intrusion		Draw a rectangle for the intrusion detection


			detection		
	Set full screen for motion detection		Clear all		Start/Stop clipping
	File management for video clips		Stop playing		Pause playing / Play
	Smart settings		Search matched video files		Filter video files by setting the target characters
	Show/Hide VCA information				

5. Set the rules and areas for the smart search for a VCA or motion event.



– **Line Crossing Detection**

Select  and click on the image to specify the start point and the end point of the line.

– **Intrusion Detection**

Click  and specify four points to set a quadrilateral region for the intrusion detection. Only one region can be set.

– **Motion Detection**

Click  and then click and draw the mouse to set the detection area manually. You can also click  to set the full screen as the detection area.

6. Click  to configure the smart settings.


<Skip the Non-Related Video>: The non-related video will not be played if this function is enabled.


<Play Non-Related Video at>: Set the speed to play the non-related video. Max. 8/4/2/1 are selectable.

<Play Related Video at>: Set the speed to play the related video. Max. 8/4/2/1 are selectable.

Note:

Pre-play and post-play is not available for the motion event type.

7. Click  to search and play the matched video files.

8. (Optional) Click  to filter the searched video files by setting the target characters, including the gender and age of the human and whether he/she wears glasses.


Result Filter	
<input type="checkbox"/> Enable	
Gender	All
Ages	All
Glasses	All
<div>OK Cancel</div>	

Set Result Filter

Note:

The Result Filter function is supported by the IP camera only.

9. (Optional) For the cameras supporting VCA, click  to show the VCA information.

Then the configured line or quadrilateral in the VCA configuration and the target frame(s) will be shown on the playback interface. Click  to hide the VCA information.

Note:

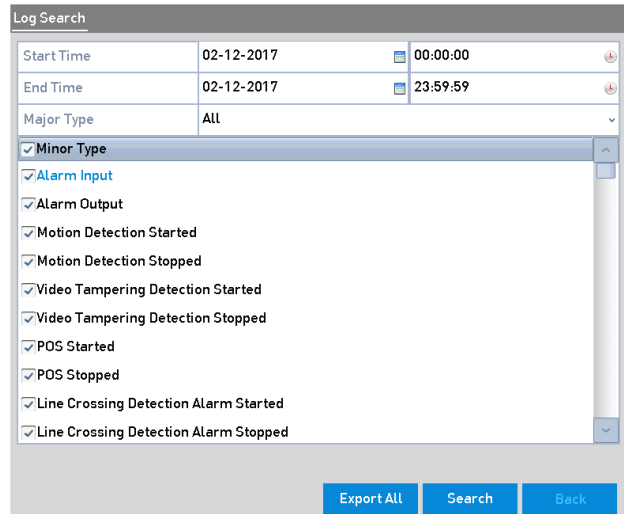
- This function is supported by GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016N and GD-RT-AT5016N.
- In the smart playback, both analog and IP cameras support the VCA information overlay.
- If the connected camera does not support VCA, the icon is grey and unavailable.
- For the analog cameras, the VCA information includes the line crossing detection and the intrusion detection. For the IP cameras, the VCA information includes all of the VCA detections of a smart IP camera.

6.1.6 Playing Back by System Logs

Play back record file(s) associated with channels after searching system logs.

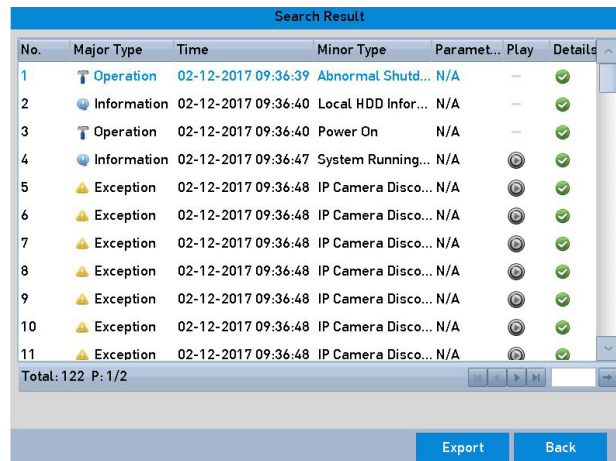
Steps:

1. Go to **Menu > Maintenance > Log Information > Log Search**.



System Log Search Interface

2. Set search time and type and click the <Search> button.



Result of System Log Search

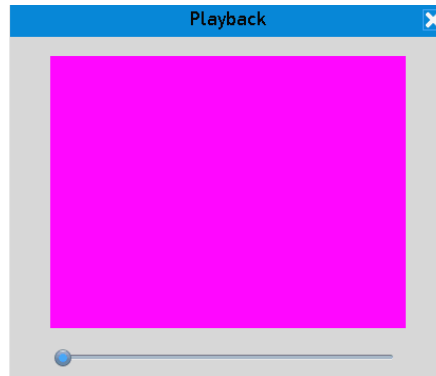
3. Choose a log with a record file and click  to enter the <Playback> interface.

Note:

If there is no record file at the point in time of the log, the message box “No result found” will pop up.

4. Playback management.

The toolbar in the bottom part of the Playback interface can be used to control the playing process.



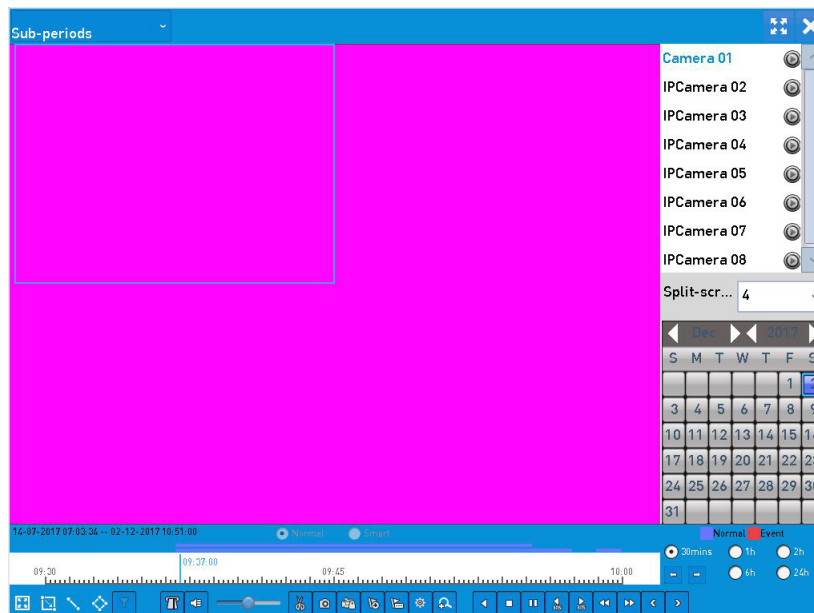
Interface of Playback by Log

6.1.7 Playing Back by Sub-Periods

The video files can be played simultaneously in multiple sub-periods on the screens.

Steps:

1. Go to **Menu > Playback**.
2. Select <Sub-periods> from the drop-down list in the upper-left corner of the page to enter the <Sub-periods Playback> interface.
3. Select a date and start playing the video file.
4. Select the <Split-screen Number> from the drop-down list. Up to 16 screens are configurable.



Interface of Sub-periods Playback

Note:

According to the defined number of split-screens, the video files on the selected date can be divided into average segments for playback. E.g., if there are video files existing between 16:00 and

22:00 and the 6-screen display mode is selected, then it can play the video files simultaneously for 1 hour on each screen.

6.1.8 Playing Back External File

Perform the following steps to look up and play back files in the external devices.

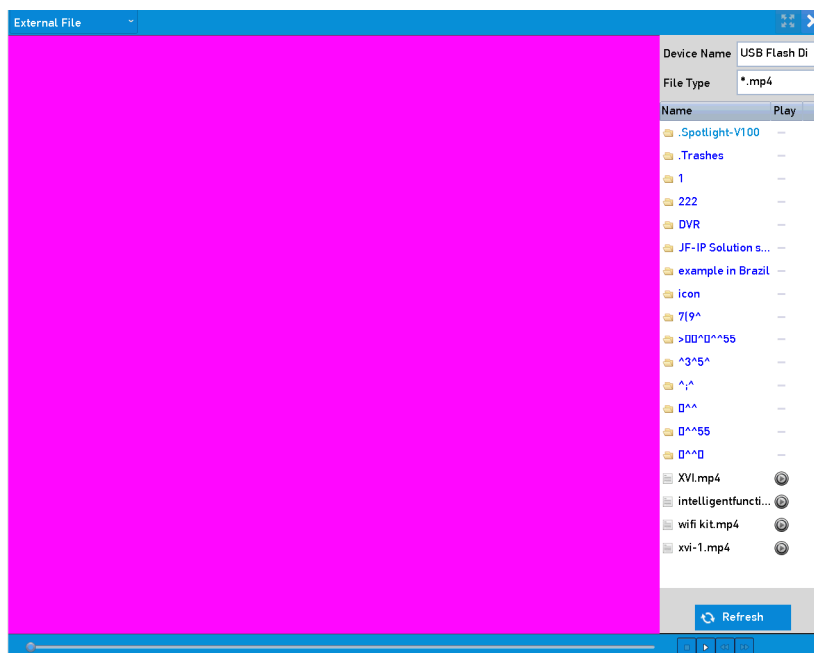
Steps:

1. Go to **Menu > Playback**.
2. Select <External File> in the drop-down list on the top-left side.

The files are listed in the right-side list.

You can click  to refresh the file list.

3. Select and click  to play it back.



Interface of External File Playback

6.1.9 Playing Back Pictures

Note:

This chapter is only applicable to GD-RT-AT5016N.

The captured pictures stored in the HDDs of the device can be searched and viewed.

1. Enter the <Playback> interface.
2. Select <Picture> from the drop-down list in the upper-left corner of the page to enter the <Picture Playback> interface.

Check the checkbox ☒ to select the channel(s) and specify the start time and end time for the search.

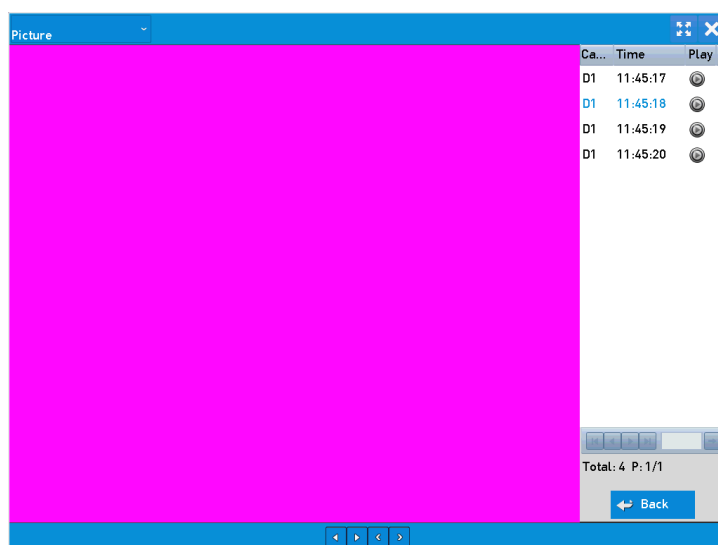
3. Click <Search> to enter the <Search Result> interface.

Note:

Up to 4000 pictures can be displayed at one time.

Choose a picture you want to view and click .

You can click <Back> to return to the <Search> interface.







Result of Picture Playback

4. The toolbar in the bottom part of the <Playback> interface can be used to control the playing process.



Picture Playback Toolbar

Detailed Explanation of the Picture Playback Toolbar:



Button	Function	Button	Function	Button	Function	Button	Function
	Play reverse		Play		Previous picture		Next picture

6.2 Auxiliary Functions of Playback

6.2.1 Playing Back Frame by Frame




Play video files frame by frame in order to check image details of the video when abnormal events happen.

Steps:

1. Go to the <Playback> interface and click  until the speed changes to *Single* frame.
2. One click on the playback screen represents playback or adverse playback of one frame. You can use  in the toolbar to pause the playing.

6.2.2 Digital Zoom

Steps:

1. Click  on the playback control bar to enter the <Digital Zoom> interface.
2. You can zoom in the image to different proportions (1 to 16X) by moving the sliding bar from  to . You can also scroll the mouse wheel to control the zoom in/out.



Draw Area for Digital Zoom


3. Right-click the image to exit the digital zoom interface.

6.2.3 Reverse Playback of Multi-Channel

You can play back record files of multiple channels reversely. Up to 16-ch simultaneous reverse playback is supported.

Steps:

1. Go to **Menu > Playback**.


2. Check more than one checkboxes to select multiple channels and click to select a date on the calendar.
3. Click  to play back the record files reversely.

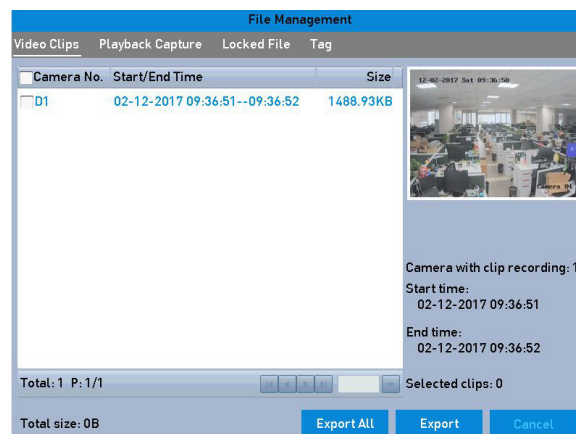
6.2.4 File Management

You can manage the video clips, captured pictures in playback, locked files and tags you have added in the playback mode.

Steps:

1. Enter the <Playback> interface.

Click  on the toolbar to enter the <File Management> interface.



File Management

2. You can view the saved video clips, captured playback pictures, lock/unlock the files and edit the tags which you added in the playback mode.
3. If required, select the items and click <Export All> or <Export> to export the clips/pictures/files/tags to a local storage device.

7.Backup

7.1 Backing up Record Files

Before you start

Please insert the backup device(s) into the device.

7.1.1 Backing up by Normal Video/Picture Search

The record files or pictures can be backed up to various devices, such as USB devices (USB flash drives, USB HDDs, USB writer), a SATA writer and an e-SATA HDD.

Backup using USB flash drives and USB HDDs


Steps:

1. Go to **Menu > Export > Normal/Picture**.
2. Select the cameras to search.
3. Set the search conditions and click the <Search> button to enter the <Search Result> interface.

Normal	
<input checked="" type="checkbox"/> IP Camera <input checked="" type="checkbox"/> D1 <input checked="" type="checkbox"/> D2 <input checked="" type="checkbox"/> D3 <input checked="" type="checkbox"/> D4 <input checked="" type="checkbox"/> D5 <input checked="" type="checkbox"/> D6 <input checked="" type="checkbox"/> D7 <input checked="" type="checkbox"/> D8	
Start/End time of record	14-07-2017 07:03:34 -- 02-12-2017 11:48:37
Record Type	All
File Type	All
Start Time	02-12-2017 00:00:00
End Time	02-12-2017 23:59:59
<div>Search Back</div>	

Normal Video Search for Backup

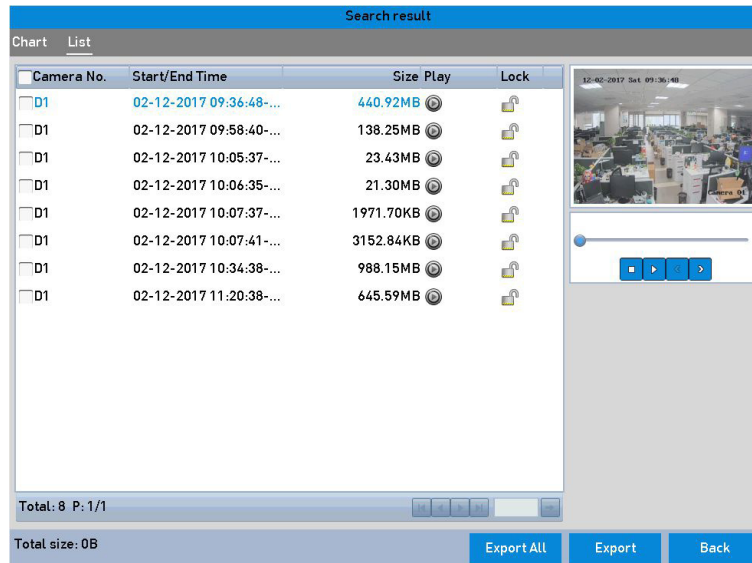
4. The matched video files are displayed in the <Chart> or the <List> display modes.

Click  to play the record file, if you want to check it.

Check the checkbox in front of the video files that you want to back up.

Note:

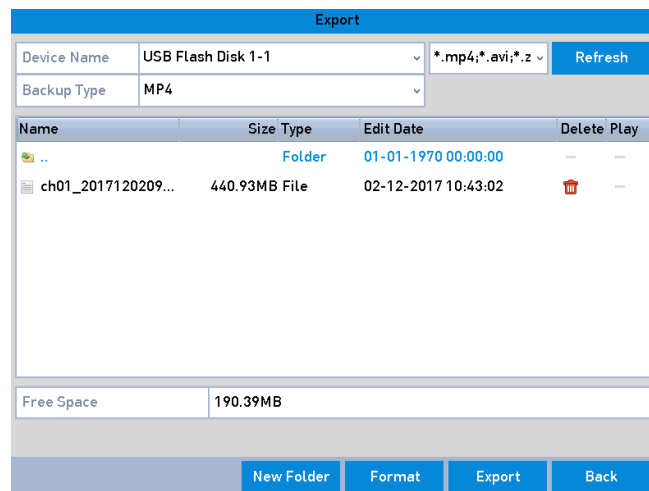
The size of the currently selected files is displayed in the lower-left corner of the window.



Result of Normal Video Search for Backup

5. Select video files to export from the <Chart> or the <List> and click the button <Export> to enter the <Export> interface.

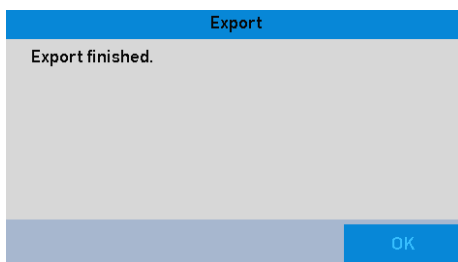
You can also click <Export All> to select all of the video files for the backup and enter the <Export> interface.



Export by Normal Video Search using USB Flash Drive

6. Select the backup device from the drop-down list and you can also select the file format to filter the existing files on the backup device.
7. Select the saving type.
8. Click the button <Export> on the <Export> interface to start the backup process.
 - 1) On the pop-up message box, click the radio button to export the video files, or log the player to the backup device.
 - 2) Click <OK> to confirm.

9. A prompt message will pop up after the backup process is complete. Click <OK> to confirm.



Export Finished

Note:

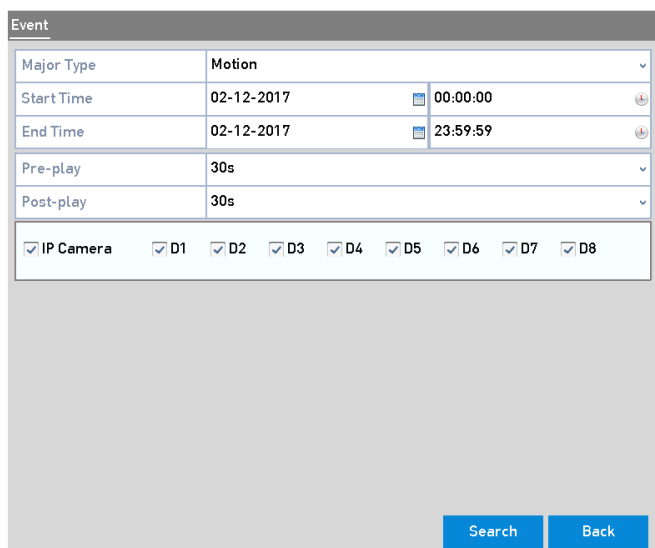
The backup of pictures using a USB writer or a SATA writer has the same operating instructions. Please refer to the steps described above.

7.1.2 Backing up by Event Search

Back up event-related record files using USB devices (USB flash drives, USB HDDs, USB writer), a SATA writer or an eSATA HDD. Quick Backup and Normal Backup are supported.

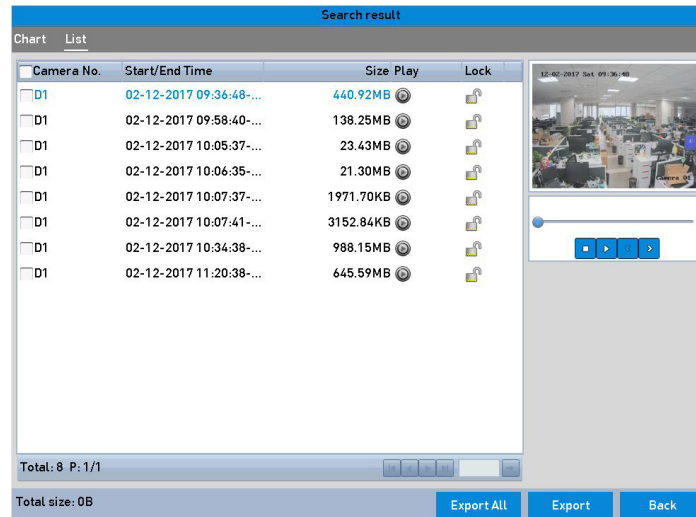
Steps:

1. Go to **Menu > Export > Event**.
2. Select the cameras to search.
3. Select the event type as <alarm input>, <motion>, <VCA>, or <POS> (for GD-RT-AT5016N).



Event Search for Backup

4. Set the search conditions and click the <Search> button to enter the <Search Result> interface. The matched video files are displayed in the <Chart> or the <List> display modes.
5. Select video files from the <Chart> or the <List> interface to export them.






Result of Event Search

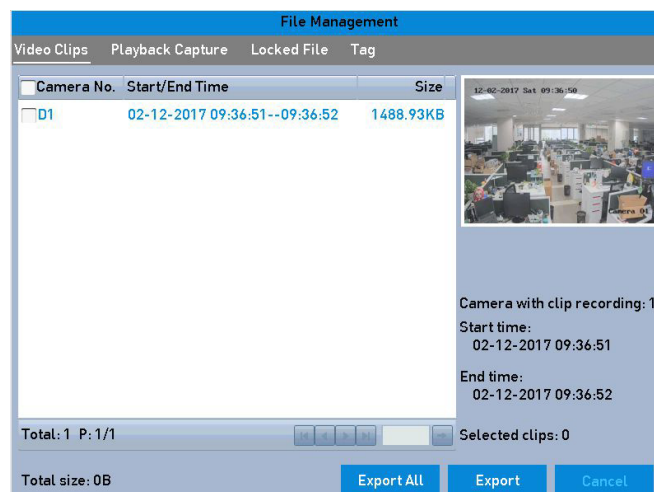
- Export the video files. Please refer to step 5 of *Chapter 7.1.1 Backing up by Normal Video/Picture Search* for details.

7.1.3 Backing up Video Clips

You may also select video clips in the playback mode to export them directly during the playback, using USB devices (USB flash drives, USB HDDs, USB writer) or a SATA writer.

Steps:

- Go to **Menu > Playback**.
- During the playback, use  or  in the playback toolbar to start or stop clipping the record file(s).
- Click  to enter the <File Management> interface.



Video Clips Export Interface

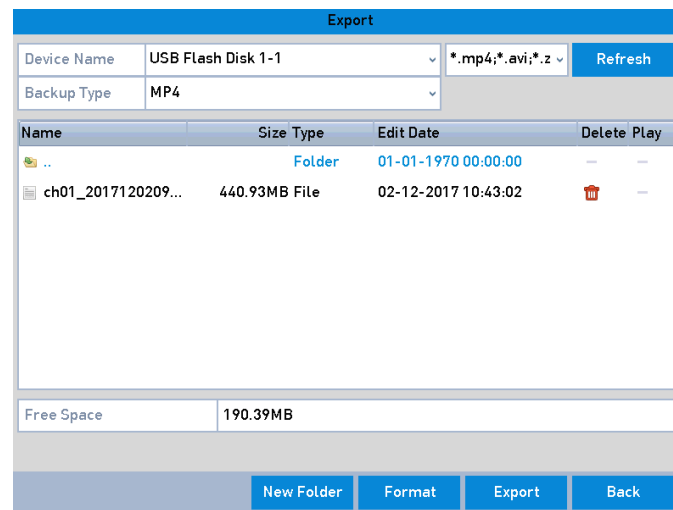
4. Export the video clips during playback. Please refer to step 5 of *Chapter 7.1.1 Backing up by Normal Video/Picture Search* for details.

7.2 Managing Backup Devices

Management of USB flash drives, USB HDDs and eSATA HDDs

Steps:

1. Enter the <Export> interface.



Storage Device Management

2. Backup the device management.

Click the <New Folder> button if you want to create a new folder on the backup device.

Select a record file or folder in the backup device and click if you want to delete it.

Click the <Erase> button if you want to erase the files from a re-writable CD/DVD.

Click the <Format> button to format the backup device.

Note:

If the inserted storage device is not recognized:

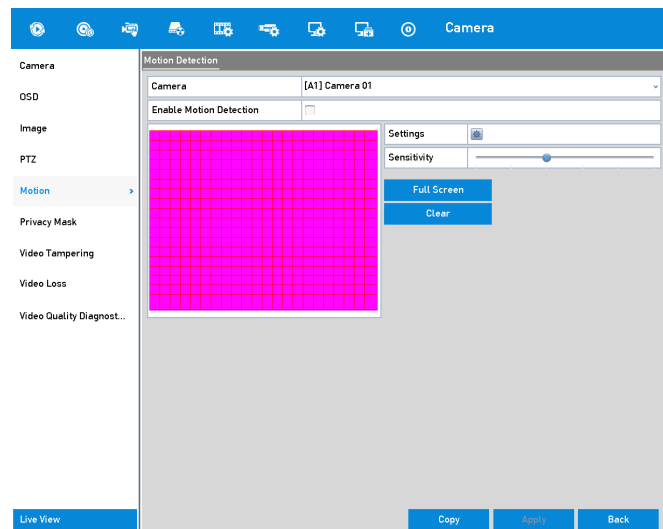
- Click the <Refresh> button.
- Reconnect the device.
- Check the compatibility with the vendor.

8. Alarm Settings

8.1 Setting Motion Detection

Steps:


1. Go to **Menu > Camera > Motion**.

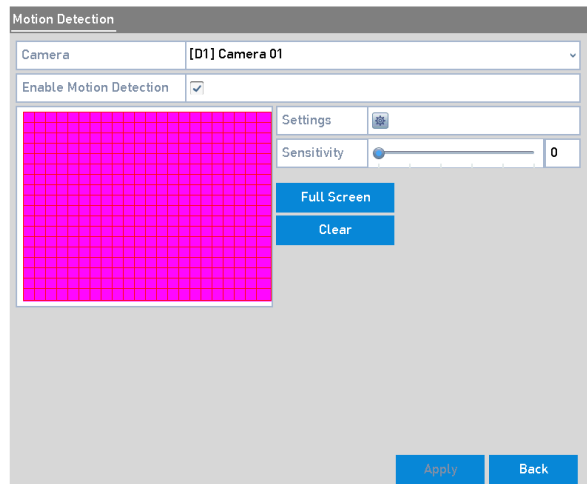


Motion Detection Setup Interface

2. Select a camera that you want to set up for motion detection.
3. Set the detection area and the sensitivity.

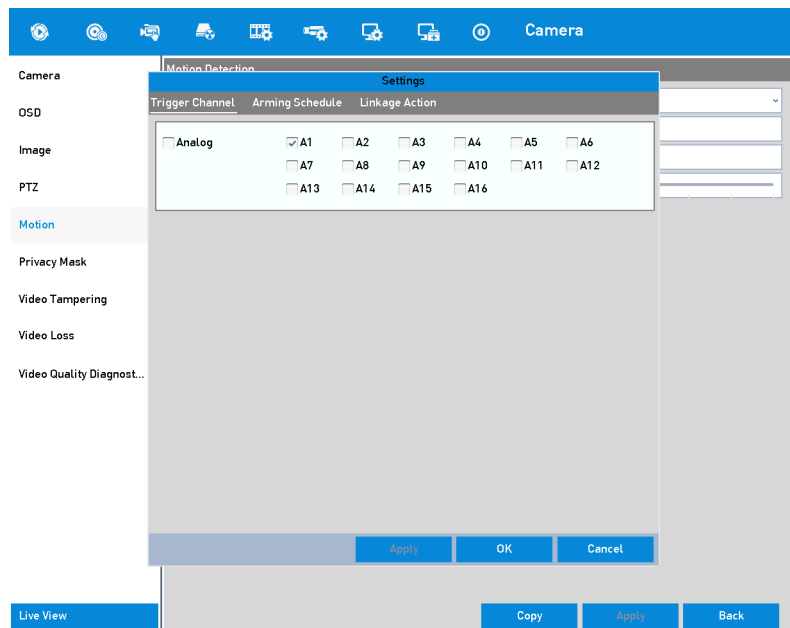
Check the checkbox ☒ to enable motion detection. Use the mouse to draw the detection area(s) or click <Full Screen> to set the full screen as the detection area and drag the sensitivity bar to set the sensitivity.

Click  to set alarm response actions.



Set Detection Area and Sensitivity

- Click the <Trigger Channel> tab and select one or more channels which will start to record or start full-screen monitoring when the motion alarm is triggered.



Set Trigger Camera of Motion Detection

- Set the arming schedule of the channel.

Select the <Arming Schedule> tab to set the channel's arming schedule.

Choose one day of a week and up to eight time periods can be set within each day. Or you can click the <Copy> button to copy the time period settings to other day(s).

Note:

Time periods shall not be repeated or overlapped.

Settings		
Trigger Channel	Arming Schedule	Linkage Action
Week	Mon	▼
1	00:00-24:00	⊕
2	00:00-00:00	⊕
3	00:00-00:00	⊕
4	00:00-00:00	⊕
5	00:00-00:00	⊕
6	00:00-00:00	⊕
7	00:00-00:00	⊕
8	00:00-00:00	⊕

Copy
Apply
OK
Cancel

Set Arming Schedule of Motion Detection

- Click the <Linkage Action> tab to set up alarm response actions of the motion alarm (please refer to *Chapter 8.7 Setting Alarm Response Actions*).

Repeat the above steps to set up an arming schedule for other days of a week.

Click the <OK> button to complete the motion detection settings of the channel.

- If you want to set motion detection for another channel, repeat the above steps or just copy the above settings to it.

Note:

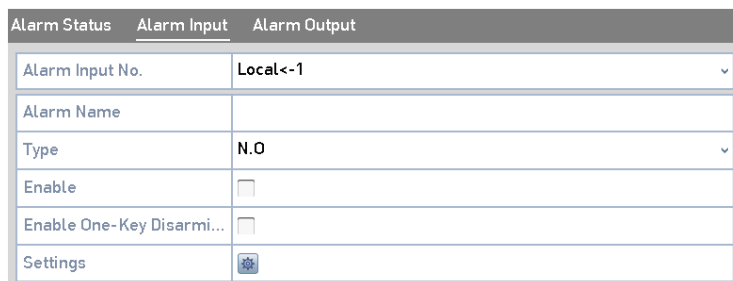
You are not allowed to copy the “Trigger Channel” action.

8.2 Setting Sensor Alarms

Set up the handling method of an external sensor alarm.

Steps:

1. Go to **Menu > Configuration > Alarm > Alarm Input**.



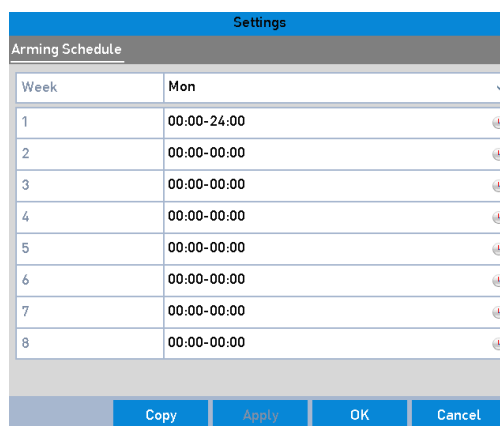
The image shows the 'Alarm Input Settings Interface' with three tabs: 'Alarm Status', 'Alarm Input' (selected), and 'Alarm Output'. The 'Alarm Input' tab contains the following fields:

Alarm Input No.	Local<-1
Alarm Name	
Type	N.O
Enable	<input type="checkbox"/>
Enable One-Key Disarmi...	<input type="checkbox"/>
Settings	

Alarm Input Settings Interface

2. Set the handling method of the selected alarm input.

Check the <Enable> checkbox and click  to set its alarm response actions.



The image shows the 'Settings' dialog box with the 'Arming Schedule' tab selected. It contains a table for setting the arming schedule for each day of the week (Mon-Sun).

Week	Mon
1	00:00-24:00
2	00:00-00:00
3	00:00-00:00
4	00:00-00:00
5	00:00-00:00
6	00:00-00:00
7	00:00-00:00
8	00:00-00:00

At the bottom of the dialog are four buttons: 'Copy', 'Apply', 'OK', and 'Cancel'.

Set Arming Schedule of Alarm Input

3. Select the <Trigger Channel> tab and select one or more channels which will start to record or start full-screen monitoring when an external alarm input is triggered.
4. Select the <Arming Schedule> tab to set the channel's arming schedule.

Select one day of a week and a maximum of eight time periods can be set within each day.

Note:

Time periods shall not be repeated or overlapped.

5. Select the <Linkage Action> tab to set up alarm response actions of the alarm input (Refer to *Chapter 8.7 Setting Alarm Response Actions*).

Repeat the above steps to set up an arming schedule for other days of a week. You can also use the <Copy> button to copy an arming schedule to other days.

6. (Optional) Select the <PTZ Linking> tab and set the PTZ linkage of the alarm input.

Set the PTZ linking parameters and click the <OK> button to complete the settings of the alarm input.

Note:

Check whether the PTZ or speed dome supports PTZ linkage.

One alarm input can trigger presets, patrols or patterns of more than one channel. But presets, patrols and patterns are exclusive.

Settings	
Arming Schedule Linkage Action PTZ Linking	
PTZ Linking	[D1] Camera 01
Call Preset	<input type="radio"/>
Preset	1
Call Patrol	<input type="radio"/>
Patrol	1
Call Pattern	<input type="radio"/>
Pattern	1

Apply OK Cancel

Set PTZ Linking of Alarm Input

7. If you want to set handling actions of another alarm input, repeat the above steps or just copy the above settings to it.

Alarm Input No.	Alarm Name
<input type="checkbox"/> Local<-1	
<input type="checkbox"/> Local<-2	
<input type="checkbox"/> Local<-3	
<input type="checkbox"/> Local<-4	
<input type="checkbox"/> Local<-5	
<input type="checkbox"/> Local<-6	
<input type="checkbox"/> Local<-7	
<input type="checkbox"/> Local<-8	
<input type="checkbox"/> Local<-9	

OK Cancel

Copy Settings of Alarm Input

8. (Optional) Enable the one-key disarming for local alarm input 1 (Local<-1).

- 1) Check the checkbox of <Enable One-Key Disarming>.
- 2) Click the <Settings> button to enter the >Linkage Action Settings< interface.

- 3) Select the alarm linkage action(s) you want to disarm for the local alarm input 1. The selected linkage actions include the <Full Screen Monitoring>, <Audible Warning>, <Notify Surveillance Center>, <Send Email>, <Upload Captured Pictures to Cloud> and <Trigger Alarm Output>.

Note:

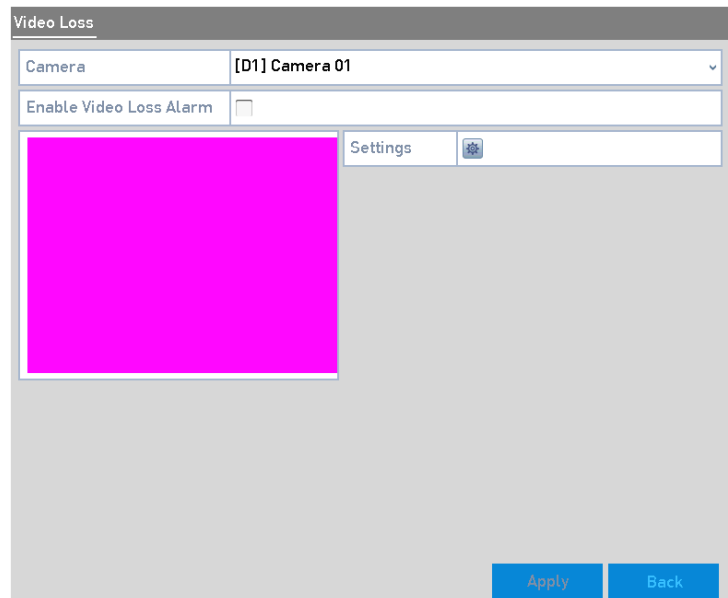
When the alarm input 1 (Local<-1) is enabled with one-key disarming, the other alarm input settings are not configurable.

8.3 Detecting Video Loss

Detect video loss of a channel and take alarm response action(s).

Steps:

1. Go to **Menu > Camera > Video Loss**.



Video Loss Setup Interface

2. Select a <Camera> you want to detect.
3. Set up the handling method for video loss.

Check the checkbox of <Enable Video Loss Alarm>.

Click  to set up the handling method for video loss.

4. Set the arming schedule of the channel.

Select the <Arming Schedule> tab to set the channel's arming schedule.

Choose one day of a week and up to eight time periods can be set within each day. Or you can click the <Copy> button to copy the time period settings to other day(s).

Note:

Time periods shall not be repeated or overlapped.

The screenshot shows a 'Settings' dialog box with two tabs: 'Arming Schedule' and 'Linkage Action'. The 'Arming Schedule' tab is active. It contains a table with 8 rows, each representing a day of the week. The first row is for 'Mon' and shows a time range of '00:00-24:00'. The other 7 rows are for the rest of the week, each showing '00:00-00:00'. Each row has a small icon on the right. Below the table are four buttons: 'Copy', 'Apply', 'OK', and 'Cancel'.

Week	Mon
1	00:00-24:00
2	00:00-00:00
3	00:00-00:00
4	00:00-00:00
5	00:00-00:00
6	00:00-00:00
7	00:00-00:00
8	00:00-00:00

Set Arming Schedule of Video Loss

Repeat the above steps to set the arming schedule for other days of a week. You can also use the <Copy> button to copy an arming schedule to other days.

5. Select the <Linkage Action> tab to set up alarm response action of video loss (please refer to *Chapter 8.7 Setting Alarm Response Actions*).
6. Click the <OK> button to complete the video loss settings of the channel.

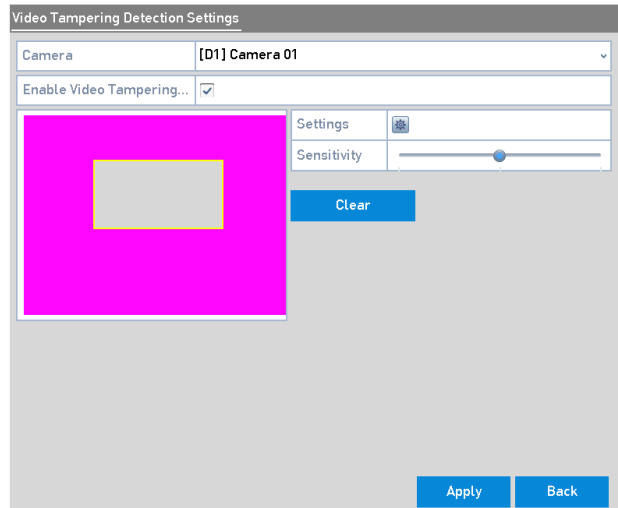
Repeat the above steps to finish settings of other channels, or click the <Copy> button copy the above settings to them.

8.4 Detecting Video Tampering


Trigger an alarm when the lens is covered and take alarm response action(s).

Steps:

1. Go to **Menu > Camera > Video Tampering Detection**.



Video Tampering Interface

2. Select a <Camera> for which you want to detect video tampering.
3. Check the checkbox of <Enable Video Tampering Detection>.
4. Drag the sensitivity bar and choose a proper sensitivity level.
5. Click  to set the handling method for video tampering. Set the arming schedule and alarm response actions of the channel.
 - 1) Click on the <Arming Schedule> tab to set the arming schedule of the response action.
 - 2) Select one day of a week and up to eight time periods can be set within each day.

Note:

Time periods shall not be repeated or overlapped.

Settings	
Arming Schedule	Linkage Action
Week	Mon
1	00:00-24:00
2	00:00-00:00
3	00:00-00:00
4	00:00-00:00
5	00:00-00:00
6	00:00-00:00
7	00:00-00:00
8	00:00-00:00
<div>Copy Apply OK Cancel</div>	

Set Arming Schedule of Video Tampering

- 3) Select the <Linkage Action> tab to set alarm response actions of the video tampering alarm (please refer to *Chapter 8.7 Setting Alarm Response Actions*).

Repeat the above steps to set the arming schedule for other days of a week. You can also use the <Copy> button to copy an arming schedule to other days.

4) Click the <OK> button to complete the video tampering settings of the channel.

Repeat the above steps to finish settings of other channels, or click the <Copy> button to copy the above settings to them.

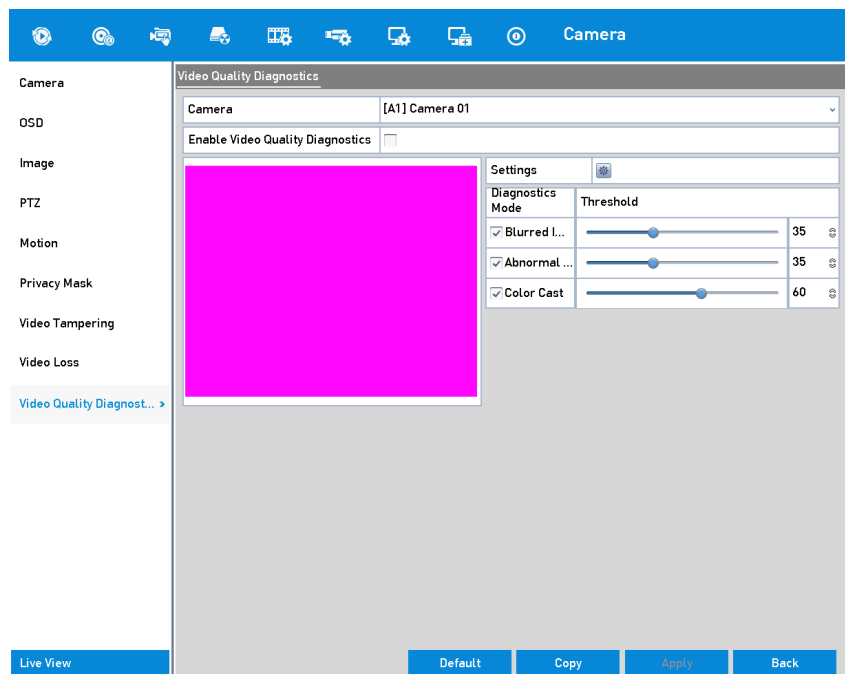
6. Click the <Apply> button to save and activate the settings.

8.5 Setting All-day Video Quality Diagnostics

The device provides two ways to diagnose the video quality: manual and all-day. Perform the following steps to set the threshold of the diagnosing and the linkage actions.

Steps:

1. Go to **Menu > Camera > Video Quality Diagnostics**.



Video Quality Diagnostics Interface

2. Select a <Camera> for which you want to detect video tampering.

3. Check the checkbox of <Enable Video Quality Diagnostics>.

Note:


To enable video quality diagnostics, the function should be supported by the selected camera.

4. Enable and set the threshold of the diagnostic types, there are <Blurred Image>, <Abnormal Brightness>, and <Color Cast>.

Check the corresponding checkbox of the diagnostic type, and adjust the threshold of it by dragging the bar.

Note:

The higher the threshold you set, the harder the exception will be detected.

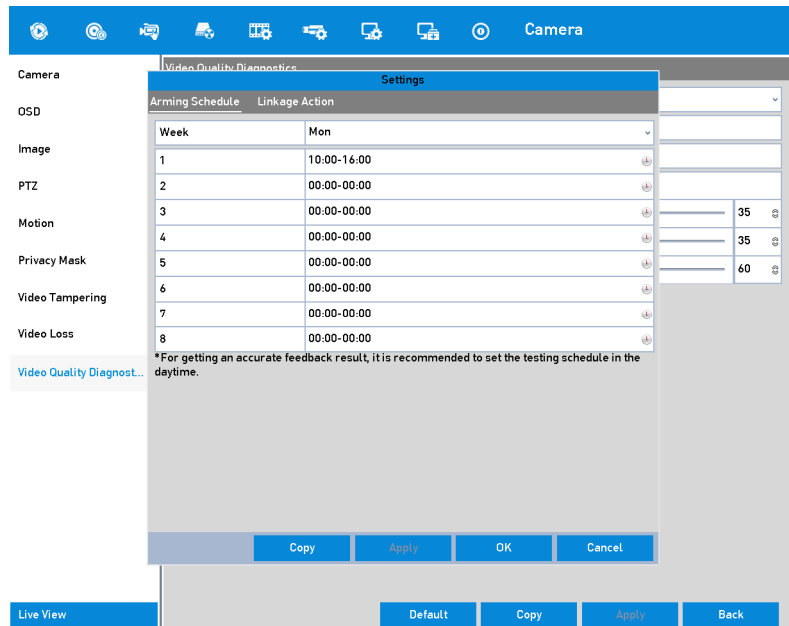
5. Click  to set the handling method of the video quality diagnostics. Set the arming schedule and alarm response actions of the channel.

1) Click the <Arming Schedule> tab to set the arming schedule of the response action.

2) Choose one day of a week and up to eight time periods can be set within each day.

Note:

Time periods shall not be repeated or overlapped.



Set Arming Schedule of Video Quality Diagnostics

- 3) Select the <Linkage Action> tab to set alarm response actions of the video quality diagnostics alarm (please refer to *Chapter 8.7 Setting Alarm Response Actions*).

Repeat the above steps to set the arming schedule for other days of a week. You can also use the <Copy> button to copy an arming schedule to other days.

- 4) Click the <OK> button to complete the video quality diagnostics settings of the channel.

6. Click the <Apply> button to save and activate the settings.

7. (Optional) you can copy the same settings to other cameras by clicking the <Copy> button.

8.6 Handling Exceptions

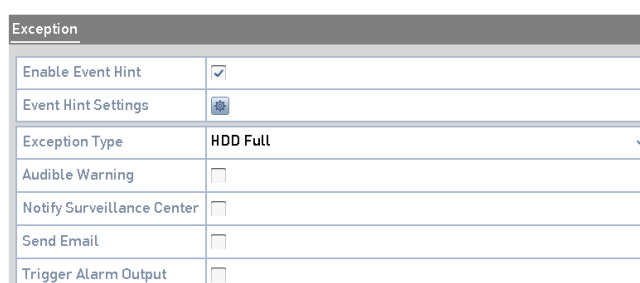
Exception settings refer to the handling method of various exceptions, e.g.

- **<HDD Full>**: The HDD is full.
- **<HDD Error>**: Writing HDD error, unformatted HDD, etc;
- **<Network Disconnected>**: Disconnected network cable;

- **<IP Conflicted>**: Duplicated IP address;
- **<Illegal Login>**: Incorrect user ID or password;
- **<Input/Recording Resolution Mismatch>**: The input resolution is smaller than the recording resolution;
- **<Record/Capture Exception>**: No space for saving recorded files or captured pictures;
- **<PoC Module Exception>**: The DVR cannot detect the PoC module or the PoC module is powered off abnormally.



Steps:

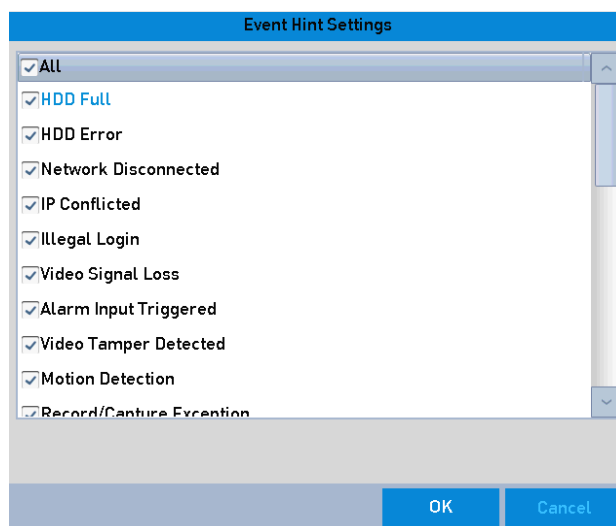
1. Go to **Menu > Configuration > Exceptions**.



Exception	
Enable Event Hint	<input checked="" type="checkbox"/>
Event Hint Settings	
Exception Type	HDD Full
Audible Warning	<input type="checkbox"/>
Notify Surveillance Center	<input type="checkbox"/>
Send Email	<input type="checkbox"/>
Trigger Alarm Output	<input type="checkbox"/>

Exception Settings Interface

2. Check the checkbox of **<Enable Event Hint>** to display  (the Event/Exception icon) when an exceptional event occurs. And click  to select the detailed event hint for display.




Event Hint Settings

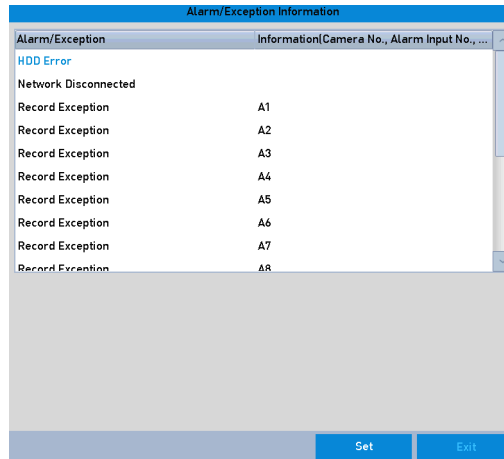
- ☒ All
- ☒ HDD Full
- ☒ HDD Error
- ☒ Network Disconnected
- ☒ IP Conflicted
- ☒ Illegal Login
- ☒ Video Signal Loss
- ☒ Alarm Input Triggered
- ☒ Video Tamper Detected
- ☒ Motion Detection
- ☒ Record/Capture Exception

OK Cancel

Event Hint Settings

Note:

Click the icon that appears in the live view interface , and you can view the detailed information of the exceptional event. Click the **<Set>** button and then you can select the detailed event hint for display.



Detailed Event

3. Set the alarm linkage actions. For details, see *Chapter 8.7 Setting Alarm Response Actions*.
4. Click <Apply> to save the settings.

8.7 Setting Alarm Response Actions

Alarm response actions will be activated when an alarm or an exception occurs, including <Full Screen Monitoring>, <Audible Warning (buzzer) >, <Notify Surveillance Center>, <Send Email> and <Trigger Alarm Output>.

Full Screen Monitoring

When an alarm is triggered, the local monitor (HDMI, VGA or CVBS monitor) displays in full screen the video image from the alarming channel configured for full screen monitoring.

If alarms are triggered simultaneously in several channels, their full-screen images will be switched at an interval of 10 seconds (default dwell time). A different dwell time can be set by going to **Menu > Configuration > Live View**.

Auto-switch will terminate once the alarm stops and you will be taken back to the <Live View> interface.

<Audible Warning>

Trigger an audible *beep* when an alarm is detected.

<Notify Surveillance Center>

This sends an exception or an alarm signal to the remote alarm host when an event occurs. The alarm host refers to the PC that is installed with Remote Client.

Note:

The alarm signal will be transmitted automatically at the detection mode when a remote alarm host is configured. Please refer to *Chapter 12.2.6 Configuring More Settings* for details of alarm host configuration.

<Send Email>

Send an email with alarm information to a user or users when an alarm is detected.

Please refer to *Chapter 12.2.8 Configuring Email* for details of Email configuration.

<Trigger Alarm Output>

Trigger an alarm output when an alarm is triggered.

Steps:

1. Go to **Menu > Configuration > Alarm > Alarm Output**.
2. Select an alarm output and set an alarm name and the dwell time.

Alarm Status	Alarm Input	Alarm Output
Alarm Output No.	Local->1	
Alarm Name	|	
Dwell Time	5s	
Settings		

Alarm Output Settings Interface

Note:

If <Manually Clear> is selected in the drop-down list of <Dwell Time>, you can clear it only by going to **Menu > Manual > Alarm**.

3. Click to set the arming schedule for the alarm output.

Choose one day of a week and up to 8 time periods can be set within each day.

Note:

Time periods shall not be repeated or overlapped.

4. Repeat the above steps to set an arming schedule for other days of a week. You can also click the <Copy> button to copy an arming schedule to other days.

Click the <OK> button to complete the arming schedule set-up for the alarm output.

5. Click the <Apply> button to save the settings.

9.POS Configuration

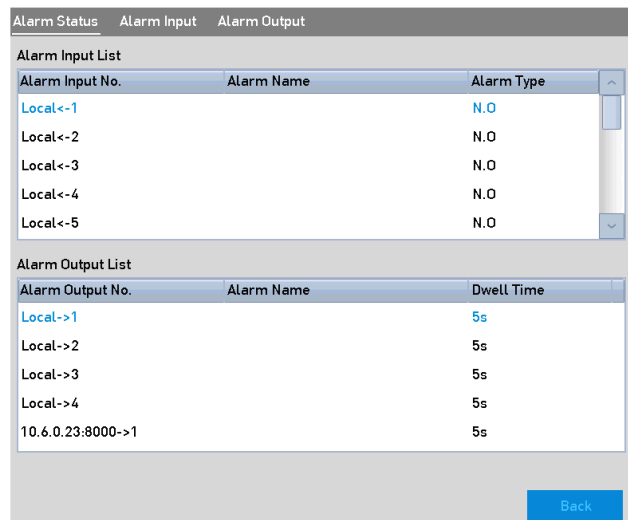
Note:

This chapter is only applicable to GD-RT-AT5016N.

9.1 Configuring the POS Settings

Steps:

1. Go to **Menu > Configuration > POS > POS Settings**.
2. Select the POS from the drop-down list. Up to 8 POS units are selectable.
3. Check the checkbox to enable the POS function.




The screenshot displays the 'POS Settings' window with three tabs: 'Alarm Status', 'Alarm Input', and 'Alarm Output'. The 'Alarm Input' tab is active, showing two lists:

Alarm Input List		
Alarm Input No.	Alarm Name	Alarm Type
Local-<1		N.O
Local-<2		N.O
Local-<3		N.O
Local-<4		N.O
Local-<5		N.O

Alarm Output List		
Alarm Output No.	Alarm Name	Dwell Time
Local->1		5s
Local->2		5s
Local->3		5s
Local->4		5s
10.6.0.23:8000->1		5s

A 'Back' button is located at the bottom right of the window.

POS Settings

4. Filter the POS privacy information if needed.
 - 1) Click  after <Privacy Settings> to enter the <POS Privacy Information Filtering> interface.

POS Privacy Information Filter	
Privacy Information 1	user
Privacy Information 2	card
Privacy Information 3	amount

OK Cancel

POS Privacy Information Filtering

- 2) Edit the <Privacy Information> in the text filed to hide the input information overlay. Up to 3 pieces of privacy information can be edited and no more than 32 characters can be entered for each piece of information.
 - 3) Click <OK> to save the settings.
5. Select the POS protocol to <Universal Protocol>, <EPSON>, <AVE> or <NUCLEUS>.

● **<Universal Protocol>**

Click the <Advanced> button to expand and see more settings when selecting the universal protocol. You can set the <Start Line> tag, <Line Break> tag and <End Line> tag for the POS overlay characters, and the <Case-Sensitive> property of the characters.

POS Protocol	Universal Protocol	General
Connection ...	TCP Reception	Set
Start Line I...		Hex <input type="checkbox"/>
Line Break	0D0A	Hex <input checked="" type="checkbox"/>
End Line Id...		Hex <input type="checkbox"/>
Case Sensit...	<input checked="" type="checkbox"/>	Filt... <input type="checkbox"/>

Universal Protocol Settings

● **<NUCLEUS>**

If you select the <NUCLEUS> protocol, reboot the device for the new settings to take effect.

- 1) Click the <Set> button to enter the <NUCLEUS Settings> interface.
- 2) Edit the <Employee>, <Shift> and <Terminal> information. No more than 32 characters can be entered.
- 3) Click <OK> to save the settings.

Note:

- If you select the NUCLEUS protocol, the connection type defaults to <RS-232>, and all the other POS protocols will become NUCLEUS.
- You should set <Usage> to <Transparent Channel> for the RS-232 settings in **Menu > Configuration > RS-232** first.

6. Select the Connection Type to <TCP>, <UDP>, <Multicast>, <RS-232>, <USB->RS-232> or <Sniff>, and click <Set> to configure the parameters for each connection type.

● **<TCP> Connection**

When using a <TCP> connection, the port must be set from 0 to 65535, and the port for each POS machine must be unique. Enter the <Allowed Remote IP Address> for connecting the DVR and the POS machine via a TCP connection.

TCP Connection Settings	
Port	10010
Allowed Remote IP ...	192.0 .0 .64

TCP Connection Settings

● <UDP> Connection

When using a <UDP> connection, the port must be set from 0 to 65535, and the port for each POS machine must be unique. Enter the <Allowed Remote IP Address> for connecting the DVR and the POS machine via a UDP connection.

UDP Connection Settings	
Port	10100
Allowed Remote IP ...	192.0 .0 .64

OK Cancel

UDP Connection Settings

● <USB->RS-232> Connection

Configure the port parameters of a <USB-to-RS-232> convertor, including the serial number of the port, the baud rate, data bit, stop bit, parity and flow control.

Note:

When using the USB->RS-232 convertor mode, the port for the USB-to-RS-232 convertor and the POS must be corresponding to each other, e.g., POS1 must be connected to port1 of the convertor.

USB-to-RS-232 Settings	
Serial Port Number	Invalid
Baud Rate	115200
Data Bit	8
Stop Bit	1
Parity	None
Flow Ctrl	None

USB-to-RS-232 Settings

- **<RS-232> Connection**

Connect the DVR and the POS machine via <RS-232>. The RS-232 settings can be configured in **Menu>Configuration>RS-232**. The <Usage> must be set to <Transparent Channel>.

RS-232 Settings	
Baud Rate	115200
Data Bit	8
Stop Bit	1
Parity	None
Flow Ctrl	None
Usage	Console

RS-232 Settings

- **<Multicast> Connection**

When connecting the DVR and the POS machine via a <Multicast> protocol, set the multicast <Address> and the <Port>.

Multicast Settings	
Address	224 . 0 . 0 . 1
Port	10400

Multicast Settings

- **<Sniff> Connection**

Connect the DVR and the POS machine via Sniff. Configure the <Source Address> and the <Destination Address> settings.

Sniff Settings	
Enable Source Port...	<input type="checkbox"/>
Source Address	192.168.1.1
Source Port	10200
Enable Destination ...	<input type="checkbox"/>
Enable Destination ...	<input type="checkbox"/>
Destination Address	192.168.0.1
Destination Port	10300
<div>OK Cancel</div>	

Sniff Settings

7. Set other parameters for Character Overlay.
 - 4) Select the <Character Encoding Format> from the drop-down list.
 - 5) Select the <Overlay Mode> of the characters to display in <Scrolling> or <Page> mode.
 - 6) Select the to <Small>, <Medium> or <Large>.
 - 7) Set the <Display Time> (overlay) of the characters. The value ranges from 5 to 3600 sec.
 - 8) Set the <Timeout> (delay time) of the characters. The value ranges from 5 to 3600 sec.
 - 9) (Optional) Check the checkbox to enable the <POS Overlay in Live View>.
 - 10) Select the font color for the characters.

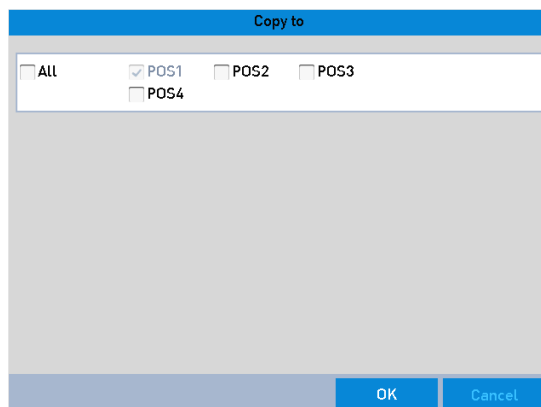
Character Encod...	Latin-1(iso-8859-1) ▼
Overlay Mode	Page ▼
Font Size	Small ▼
Display Time (s)	5
Timeout (s)	5
Overlay POS in L...	<input checked="" type="checkbox"/>
Font Color	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>

Overlay Character Settings

Note:

You can adjust the size and position of the textbox on the live view screen of the <POS Settings> interface by dragging the frame.

8. Click< Apply> to activate the settings.
9. (Optional) You can click the <Copy> button to copy the current settings to other POS(s).



Copy POS Settings

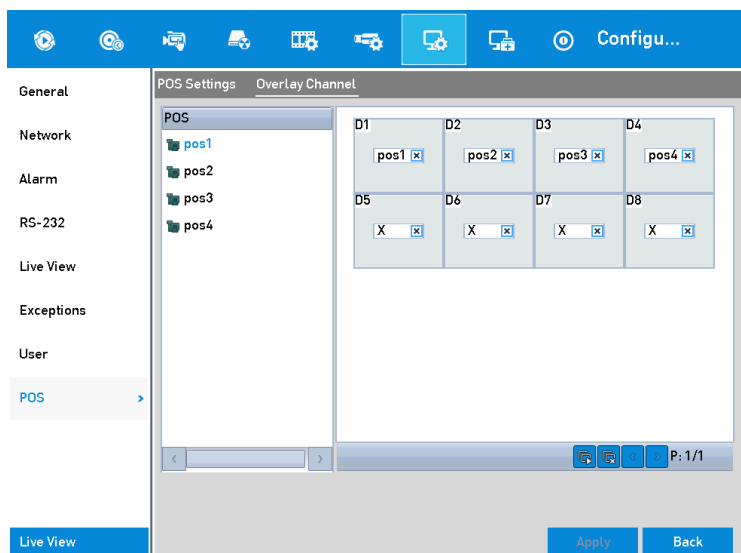
9.2 Configuring the Overlay Channel

You can assign the POS machine to a corresponding channel on which you want to overlay.



Steps:

1. Go to **Menu > Configuration > POS > Overlay Channel**.
2. Click to select an analog or IP camera from the camera list on the right, and then click a POS item (from the <POS> list) that you want to overlay on the selected camera.

Click  or  to go to the previous or next pages of listed cameras.




Overlay Channel Settings

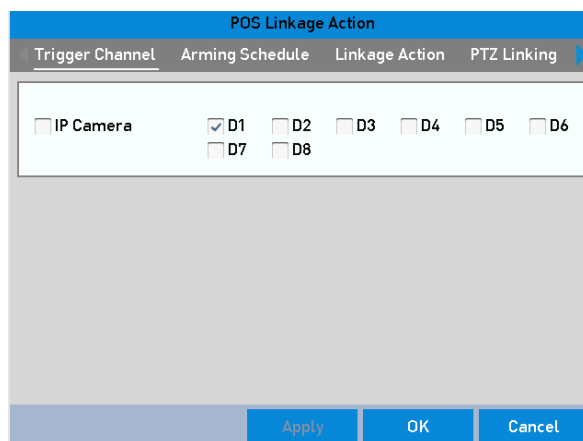
3. You can also click  to overlay all POS items to the first 8 channels in order. And  is used to clear all POS overlay settings.
4. Click the <Apply> button to save the settings.

9.3 Configuring the POS Alarm

Set the POS alarm parameters to trigger certain channels to start recording, or trigger full screen monitoring, audio warning, notifying the surveillance center, sending email and so on.

Steps:

1. Go to **Menu > Configuration > POS > POS Settings**.
2. Follow the steps in *Chapter 9.1-9.2* to configure the POS settings.
3. Click  to enter the <Alarm Settings> interface.



Set Trigger Cameras of POS

4. Click the <Trigger Channel> tab and select one or more channels to record or become to turn to full-screen monitoring when a POS alarm is triggered.
5. Set the arming schedule for the channel.

Select the <Arming Schedule> tab to set the channel's arming schedule.

Choose one day of a week and up to eight time periods can be set within each day. Or you can click the <Copy> button to copy the time period settings to other day(s).

Note:

Time periods shall not be repeated or overlapped.

Settings	
Arming Schedule	
Week	Mon
1	00:00-24:00
2	00:00-00:00
3	00:00-00:00
4	00:00-00:00
5	00:00-00:00
6	00:00-00:00
7	00:00-00:00
8	00:00-00:00

Copy
Apply
OK
Cancel

Set Arming Schedule

- Click the <Handling> tab to set up alarm response actions of the POS alarm (Refer to *Chapter 8.7 Setting Alarm Response Actions*).

Repeat the above steps to set up an arming schedule for other days of a week.

Click the <OK> button to complete the POS settings for the channel.

- Select the <PTZ Linking> tab and set the PTZ linkage of the POS alarm.

Set PTZ linking parameters and click the <OK> button to complete the settings of the alarm input.

Note:

Please check whether the PTZ or speed dome supports PTZ linkage.

Settings	
Arming Schedule	Linkage Action
PTZ Linking	
PTZ Linking	[D1] Camera 01
Call Preset	<input type="radio"/>
Preset	1
Call Patrol	<input type="radio"/>
Patrol	1
Call Pattern	<input type="radio"/>
Pattern	1

Apply
OK
Cancel

Set PTZ Linking

- Click <OK> to save the settings.

10. VCA Alarm

The DVR can receive the VCA alarm (line crossing detection, intrusion detection, sudden scene change detection and audio exception detection) sent by an analog camera; and the VCA detection must be enabled and configured on the camera settings interface first. All other VCA detection features must be supported by the connected IP camera.

Note:

- GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016N and GD-RT-AT5016N support a line crossing detection and an intrusion detection of all channels, and a 2-ch sudden scene change detection. Channels with audio support an audio exception detection.
- GD-RT-AC3004N and GD-RT-AC3016N series support 4-ch line crossing detection and intrusion detection. The GD-RT-AC3016N series also supports a 1-ch sudden scene change detection. Channels with audio support an audio exception detection.
- For the analog channels, the line crossing detection and the intrusion detection conflict with other VCA detection such as sudden scene change detection, face detection and vehicle detection. You can only enable one function.

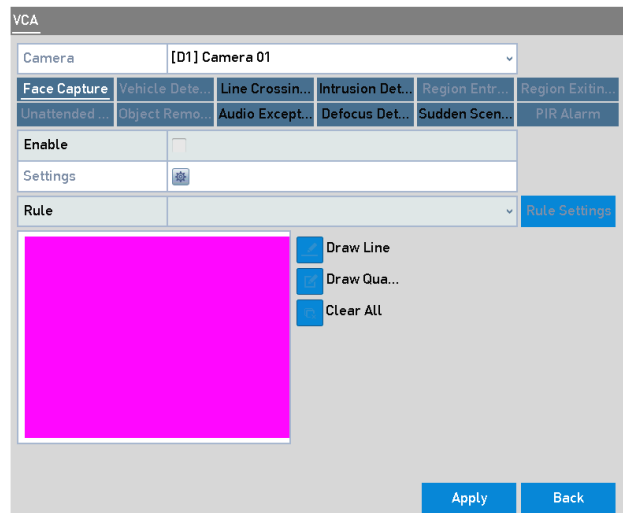
10.1 Face Detection

Face detection function detects the face appears in the surveillance scene, and some certain actions can be taken when the alarm is triggered.


Steps:

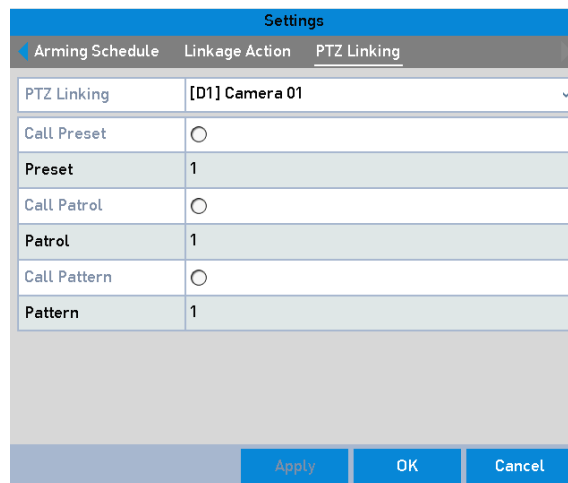
1. Go to **Menu > Camera > VCA**.
2. Select the <Camera> to configure the VCA.

You can check the checkbox of <Save VCA Picture> to save the captured pictures of the VCA detection.



Face Detection

3. Select the VCA detection type called <Face Detection>.
4. Click  to enter the <Face Detection Settings> interface. Configure the <Trigger Channel>, <Arming Schedule>, the <Linkage Action> and <PTZ Linking> for the face detection alarm. Please refer to steps 3 to 5 of *Chapter 8.2 Setting Sensor Alarms* for detailed instructions.



PTZ Linking

5. Click the <Rule Settings> button to set the face detection rules. You can drag the slider to set the detection sensitivity.
 <Sensitivity>: Range [1-5]. The higher the value is, the more easily the face can be detected.
6. Click <Apply> to activate the settings.


10.2 Vehicle Detection

This function may not be available in each recorder model.

Vehicle Detection is available for the road traffic monitoring. In Vehicle Detection, the passed vehicle can be detected and the picture of its license plate can be captured. You can send an alarm signal to notify the surveillance center and upload the captured picture to an FTP server.

Steps:

1. Go to **Menu > Camera > VCA**.
2. Select the <Camera> to configure the VCA.

You can check the checkbox of <Save VCA Picture> to save the captured pictures of the VCA detection.
3. Select the <VCA Detection Type> <Vehicle Detection>.
4. Check the <Enable> checkbox to enable this function.
5. Click  to configure the <Trigger Channel>, the <Arming Schedule>, <Linkage Action> and <PTZ Linking>.

Note:

The PTZ linking is only applicable to the other list, not to the whitelist and the blacklist.

6. Click the <Rule Settings> to enter the <Rule Settings> interface. Configure the lane, upload picture and overlay content settings. Up to 4 lanes are selectable.
7. Click <Save> to save the settings.

Note:

Refer to the User Manual of a Network Camera for detailed instructions for the vehicle detection.

10.3 Line Crossing Detection


This function may not be available in each recorder model.

This function can be used for detecting people, vehicles and objects that cross a set virtual line. The line crossing direction can be set as <Bi-directional>, from <Left to Right> or from <Right to Left>. And you can set the duration for the alarm response actions, such as full screen monitoring, audible warning, etc.

Steps:

1. Go to **Menu > Camera > VCA**.
2. Select the <Camera> to configure the VCA.


You can check the checkbox of <Save VCA Picture> to save the captured pictures of the VCA detection.
3. Select the <VCA Detection Type> called <Line Crossing Detection>.
4. Check the <Enable> checkbox to enable this function.

5. Click  to configure the <Trigger Channel>, the <Arming Schedule>, <Linkage Action> and <PTZ Linking> for the line crossing detection alarm.
6. Click the <Rule Settings> button to set the line crossing detection rules.
 - 1) Select the direction to < A<->B >, < A->B > or < B->A >.

<A<->B>: Only the arrow on the B side shows. When an object goes across the configured line, both directions can be detected and alarms are triggered.

<A->B>: Only the object crossing the configured line from the A side to the B side can be detected.

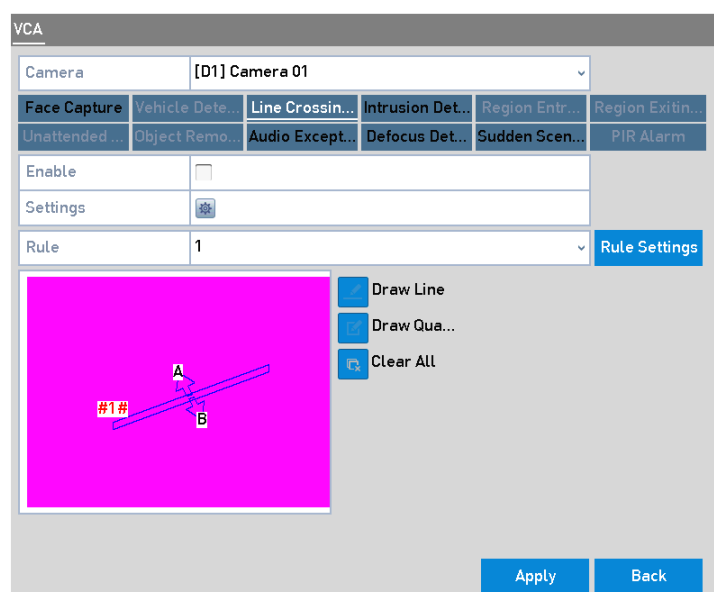
<B->A>: Only the object crossing the configured line from the B side to the A side can be detected.
 - 2) Drag the slider to set the detection sensitivity.

<Sensitivity>: Range [1-100]. The higher the value is, the more easily the detection alarm can be triggered.
 - 3) Click <OK> to save the rule settings and return to the line crossing detection settings interface.
7. Click  and set two points in the preview window to draw a virtual line.

You can use  to clear the existing virtual line and to re-draw it.

Note:

Up to 4 rules can be configured.



Draw Line for Line Crossing Detection

8. Click <Apply> to activate the settings.

Note:

The sudden scene change detection and the line crossing detection cannot be enabled in the same channel.

10.4 Intrusion Detection

The Intrusion Detection function detects people, vehicles or other objects which enter and loiter in a pre-defined virtual region and certain actions can be taken when the alarm is triggered.

Steps:


1. Go to **Menu > Camera > VCA**.

2. Select the <Camera> to configure the VCA.

You can check the checkbox of <Save VCA Picture> to save the captured pictures of the VCA detection.

3. Select the VCA detection type called <Intrusion Detection>.

4. Check the <Enable> checkbox to enable this function.

5. Click  to configure the <Trigger Channel>, the <Arming Schedule>, <Linkage Action> and <PTZ Linking> for the intrusion detection alarm.

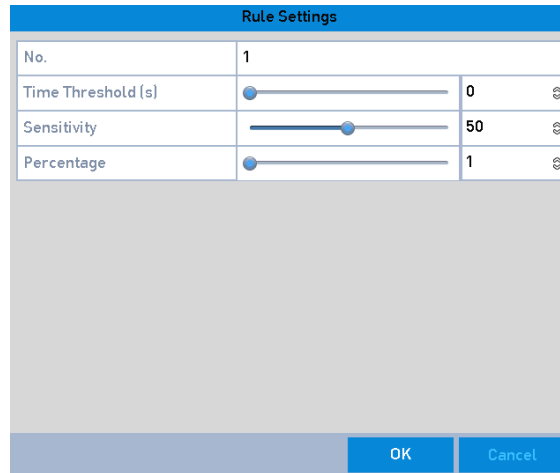
6. Click the <Rule Settings> button to set the intrusion detection rules. Set the following parameters.

- 1) **<Threshold>**: Range [1s-10s] – this is the threshold for the time of the object loitering in the region. When the duration of the presence of the object within the defined detection area is longer than the set time, the alarm will be triggered.

- 2) Drag the slider to set the detection sensitivity.

<Sensitivity>: Range [1-100]. The value of the sensitivity defines the size of the object which can trigger the alarm. The higher the value is, the more easily the detection alarm can be triggered.


- 3) **<Percentage>**: Range [1-100]. This defines the ratio of the in-region part of the object which can trigger the alarm. For example, if the percentage is set as 50%, the alarm is triggered when the object enters the region and occupies half of the whole region.



Rule Settings			
No.	1		
Time Threshold (s)	<input type="range"/>	0	⌵
Sensitivity	<input type="range"/>	50	⌵
Percentage	<input type="range"/>	1	⌵

OK Cancel

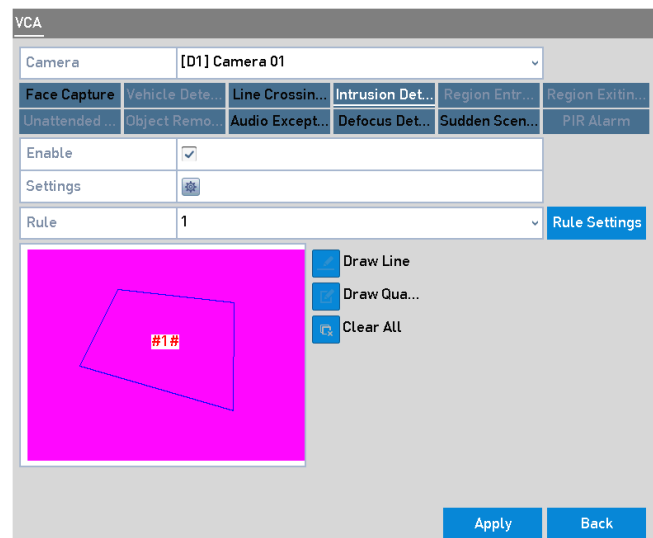
Set Intrusion Crossing Detection Rules

- 4) Click <OK> to save the rule settings and to go back to the <Line Crossing Detection Settings> interface.
7. Click  and draw a quadrilateral in the preview window by specifying four vertexes of the detection region. Right-click to complete the drawing. Only one region can be configured.

You can use  to clear the existing virtual line and to re-draw it.

Note:


Up to 4 rules can be configured.



VCA

Camera [D1] Camera 01

Enable ☒

Settings 

Rule 1

Apply Back

Draw Area for Intrusion Detection

8. Click <Apply> to save the settings.

Note:

The sudden scene change detection and the intrusion detection cannot be enabled at the same channel.

10.5 Region Entrance Detection

This function may not be available in every recorder model.

The Region Entrance Detection function detects people, vehicles or other objects which enter a pre-defined virtual region from outside the place and certain actions can be taken when the alarm is triggered.

Steps:


1. Go to **Menu > Camera > VCA**.

2. Select the <Camera> to configure the VCA.

You can check the checkbox of <Save VCA Picture> to save the captured pictures of the VCA detection.


3. Select the VCA detection type to <Region Entrance Detection>.

4. Check the <Enable> checkbox to enable this function.

5. Click  to configure the <Trigger Channel>, the <Arming Schedule>, <Linkage Action> and <PTZ Linking> for the region entrance detection alarm.

6. Click the <Rule Settings> button to set the sensitivity of the region entrance detection.

<Sensitivity>: Range [0-100]. The higher the value is, the more easily the detection alarm can be triggered.

7. Click  and draw a quadrilateral in the preview window by specifying four vertexes of the detection region. Right-click to complete the drawing. Only one region can be configured.

You can use  to clear the existing virtual line and to re-draw it.

Note:

Up to 4 rules can be configured.

8. Click <Apply> to save the settings.

10.6 Region Exiting Detection

This function may not be available in every recorder model.

The Region Exiting Detection function detects people, vehicles or other objects that exit a pre-defined virtual region and certain actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 10.5 Region Entrance Detection* for operating steps to configure the Region Exiting Detection.
- Up to 4 rules can be configured.

10.7 Loitering Detection

This function may not be available in every recorder model.

The Loitering Detection function detects people, vehicles or other objects which loiter in a pre-defined virtual region for a certain time and a series of actions can be taken when the alarm is triggered.

Note:

- Please refer to the *Chapter 9.4 Intrusion Detection* for operating steps to configure the loitering detection.
- The <Threshold> [1s-10s] in the <Rule Settings> defines the time of the object loitering in the region. If you set the value to 5, then the alarm is triggered after the object has been loitering in the region for 5 seconds; if you set the value to 0, then the alarm is triggered immediately after the object enters the region.
- Up to 4 rules can be configured.

10.8 People Gathering Detection

This function may not be available in every recorder model.

The People Gathering Detection alarm is triggered when people gather in a pre-defined virtual region and a series of actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 9.4 Intrusion Detection* for operating steps to configure the People Gathering Detection.
- The <Percentage> in the <Rule Settings> defines the gathering density of the people in the region. Usually, when the percentage is small, the alarm can be triggered after a small number of people gathered in the defined detection region.
- Up to 4 rules can be configured.

10.9 Fast Moving Detection

This function may not be available in every recorder model.

The Fast Moving Detection alarm is triggered when people, vehicles or other objects move fast in a pre-defined virtual region and a series of actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 9.4 Intrusion Detection* for operating steps to configure the fast moving detection.
- The <Sensitivity> in the <Rule Settings> defines the moving speed of the object which can trigger the alarm. The higher the value is, the more easily a moving object can trigger the alarm.
- Up to 4 rules can be configured.

10.10 Parking Detection

This function may not be available in every recorder model.

The Parking Detection function detects illegal parking in places such as on highways, in one-way streets, etc. and a series of actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 9.4 Intrusion Detection* for operating steps to configure the parking detection.
- The <Threshold> [5s-20s] in the <Rule Settings> defines the time for how long the vehicle is parking in the region. If you set the value to 10, then the alarm is triggered after the vehicle has been staying in the region for 10 seconds.
- Up to 4 rules can be configured.

10.11 Unattended Baggage Detection

This function may not be available in every recorder model.

The Unattended Baggage Detection function detects the objects left behind in the pre-defined region such as baggage, purses, dangerous materials, etc. and a series of actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 9.4 Intrusion Detection* for operating steps to configure the Unattended Baggage Detection.
- The <Threshold> [5s-20s] in the <Rule Settings> defines the length of time for which objects are left behind in the region. If you set the value to 10, then the alarm is triggered after the object is left and stayed in the region for 10 second. And the <Sensitivity> defines the degree of similarity to the background image. Usually, when the sensitivity is high, a very small object left in the region can trigger the alarm.
- Up to 4 rules can be configured.

10.12 Object Removal Detection

This function may not be available in every recorder model.

The Object Removal Detection function detects objects that are removed from the pre-defined region, such as exhibits on display and a series of actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 9.4 Intrusion Detection* for operating steps to configure the Object Removal Detection.
- The <Threshold> [5s-20s] in the <Rule Settings> defines the length of time for which the objects are removed from the region. If you set the value to 10, then the alarm is triggered after the object disappears from the region for 10 seconds. And the <Sensitivity> defines the

degree of similarity to the background image. Usually, when the sensitivity is high, a very small object taken from the region can trigger the alarm.

- Up to 4 rules can be configured.

10.13 Audio Exception Detection

This function may not be available in every recorder model.

The Audio Exception Detection function detects any abnormal sounds in the surveillance scene, such as the sudden increase/decrease of the sound intensity, and certain actions can be taken when the alarm is triggered.

Note:

The Audio Exception Detection is supported by all analog channels.


Steps:

1. Go to **Menu > Camera > VCA**.




2. Select the camera to configure the VCA.

You can check the checkbox of <Save VCA Picture> to save the captured pictures of the VCA detection.

3. Select the VCA detection type called <Audio Exception Detection>.

4. Click  to configure the <Trigger Channel>, the <Arming Schedule>, <Linkage Action> and <PTZ Linking> for the audio exception alarm.

5. Click the <Rule Settings> button to set the audio exception rules.

Rule Settings		
No.	1	
Audio Loss Exception	<input type="checkbox"/>	
Sudden Increase of Sound I...	<input type="checkbox"/>	
Sensitivity		50
Sound Intensity Threshold		50
Sudden Decrease of Sound ...	<input type="checkbox"/>	
Sensitivity		50
<div>OK Cancel</div>		

Set Audio Exception Detection Rules

- 1) Check the checkbox for <Audio Loss Exception> to enable the audio loss detection function.

- 2) Check the checkbox for <Sudden Increase of Sound Intensity Detection> to detect a steep rise of the sound in the surveillance scene. You can set the detection sensitivity and the threshold for steep rise in the sound.

<Sensitivity>: Range [1-100], the smaller the value is, the more severe the change should be to trigger the detection.

<Sound Intensity Threshold>: Range [1-100], it can filter the sound in the environment, the louder the environmental sound, the higher the value should be. You can adjust it according to the real environment.

- 3) Check the checkbox for <Sudden Decrease of Sound Intensity Detection> to detect a steep drop in the sound in the surveillance scene. You can set the detection sensitivity [1-100] for a steep drop in the sound.

6. Click <Apply> to activate the settings.

10.14 Defocus Detection

This function may not be available in each recorder model.

The image blur caused by a defocus of the lens can be detected and certain actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 9.1 Face Detection* for operating steps to configure the Defocus Detection.
- The <Sensitivity> in the <Rule Settings> ranges from 1 to 100 and the higher the value is, the more easily the defocus image can trigger the alarm.

10.15 Sudden Scene Change

This function may not be available in every recorder model.

The Scene Change detection function detects any change in the surveilled environment that is affected by the external factors such as the intentional rotation of the camera. Certain actions can be taken when the alarm is triggered.

Note:

- Please refer to *Chapter 9.1 Face Detection* for operating steps to configure the scene change detection.
- The <Sensitivity> in the <Rule Settings> ranges from 1 to 100 and the higher the value is, the more easily the change of the scene can trigger the alarm.
- For analog cameras, the line crossing detection and intrusion detection conflict with other VCA detection such as Sudden Scene Change Detection, Face Detection and Vehicle Detection. You can only enable one function. If you have enabled the Line Crossing Detection or the Intrusion Detection, then an attention box will pop up whenever you try to enable the Sudden Scene

Change detection as well and click to apply the settings. The attention box that pops up will remind you, that there are not enough resources for this task and will ask you to disable the enabled VCA type(s) of the selected channel(s).


10.16 PIR Alarm

This function may not be available in every recorder model.

A PIR (Passive Infrared) alarm is triggered when an intruder moves within the detector's field of view. The heat energy dissipated by a person or any other warm-blooded creatures such as dogs, cats, etc., can be detected.

Steps:

1. Go to **Menu > Camera > VCA**.
2. Select the <Camera> to configure the VCA.

You can check the checkbox of <Save VCA Picture> to save the captured pictures of the VCA detection.
3. Select the VCA detection type called <PIR Alarm>.
4. Click  to configure the <Trigger Channel>, the <Arming Schedule>, <Linkage Action> and <PTZ Linking> for the PIR alarm.
5. Click the <Rule Settings> button to set the rules. Please refer to *Chapter 9.1 Face Detection* for instructions.
6. Click <Apply> to activate the settings.

11. VCA Search

With the configured VCA detection, the device supports the VCA search for the behavior search, face search, plate search, people counting and heat map results of the IP cameras.

11.1 Face Search

This function may not be available in every recorder model.


When there are detected face pictures captured and saved in the HDD format, you can enter the <Face Search> interface to search the picture and play the picture-related video files according to the specified conditions.




Before you start

Please refer to *Chapter 9.1 Face Detection* for configuring the face detection.

Steps:

1. Go to **Menu > VCA Search > Face Search**.
2. Select the <Camera(s)> for the face search.
3. Specify the <Start Time> and the <End Time> for searching the captured face pictures or video files.
4. Upload the pictures from your local storage device in order to match the detected face pictures.
5. Set the similarity level for the source pictures and the captured pictures.
6. Click <Search> to start searching. The search results of face detection pictures are displayed in a list or in a chart.
7. Play the face-picture-related video file.

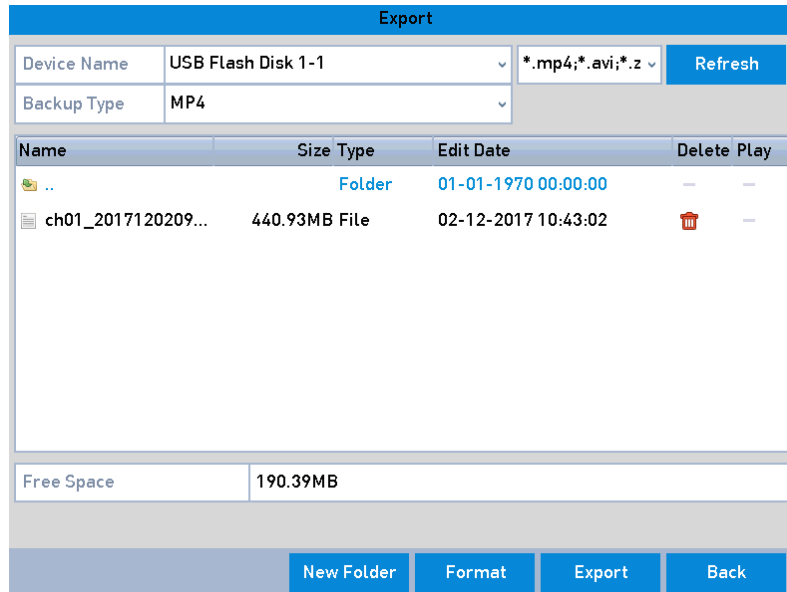
You can double click on a face picture to play its related video file in the view window on the top right or select a picture item and click  to play it.

You can also click  to stop the playing, or click / to play the previous/next file.

8. If you want to export the captured face pictures to a local storage device, you need to connect the storage device and click <Export All> to enter the <Export> interface.

Click <Export> to export all face pictures to the storage device.

Please refer to *Chapter 7 Backup* for steps on how to export files.




Export Files




11.2 Behavior Search

This function may not be available in every recorder model.

The Behavior Analysis detects a series of suspicious behavior based on VCA detection and certain linkage methods will be enabled if the alarm is triggered.

1. Go to **Menu > VCA Search > Behavior Search**.
2. Select the <Camera(s)> for the behavior search.
3. Specify the <Start Time> and the <End Time> for searching the matched pictures.
4. Select the VCA detection type from the drop-down list, including the <Line Crossing Detection>, <Intrusion Detection>, <Unattended Baggage Detection>, <Object Removal detection>, <Region Entrance Detection>, <Region Exiting Detection>, <Parking detection>, <Loitering Detection>, <People Gathering Detection> and <Fast Moving detection>.
5. Click <Search> to start searching. The search results with pictures are displayed in a list or in a chart.
6. Play the behavior-analysis-picture-related video file.

You can double click on a picture from the list to play its related video file in the view window on the top right or select a picture item and click  to play it.

You can also click  to stop the playing, or click  /  to play the previous/next file.

7. If you want to export the captured pictures to a local storage device, connect the storage device and click <Export All> to enter the <Export> interface.

Click <Export> to export all pictures to the storage device.

11.3 Plate Search

This function may not be available in every recorder model.

You can search and view pictures that were captures with matching license plates. You can also view related information according to the license plate searching conditions including the <Start/End Time>, the <Country> and the <Plate No.>

Steps:

1. Go to **Menu > VCA Search > Plate Search**.
2. Select the <Camera(s)> for the plate search.
3. Specify the <Start Time> and the <End Time> to search matching plate pictures.
4. Select the <Country> from the drop-down list to search for a specific location where the vehicle's license plate is from.
5. Enter the <Plate No.> in the text field for the search.
6. Click <Search> to start searching. The search results of detected vehicle license plate pictures are displayed in a list or in a chart.

Note:

Please refer to steps 7 and 8 of *Chapter 10.1 Face Search* on how to operate the search results.

11.4 People Counting

This function may not be available in every recorder model.

The People Counting function is used to calculate the number of people that entered or left a specified area and issues daily/weekly/monthly/annual reports for analysis.

Steps:

1. Go to **Menu > VCA Search > People Counting**.
2. Select the <Camera> for the people counting.
3. Select the report type between <Daily Report>, <Weekly Report>, <Monthly Report> or <Annual Report>.
4. Set the <Statistics Time>.
5. Click the <Counting> button to start generating people counting statistics.
6. You can click the <Export> button to export the statistics report into an excel file.

11.5 Heat Map

This function may not be available in every recorder model.

The Heat Map function is a graphical representation of data represented by colors. The heat map function is usually used to analyze the visit times and dwell time of customers in a configured area.

Steps:

1. Go to **Menu > VCA Search > Heat Map**.
2. Select the <Camera> for the heat map processing.
3. Select the report type between <Daily Report>, <Weekly Report>, <Monthly Report> or <Annual Report>.
4. Set the <Statistics Time>.
5. Click the <Counting> button to export the report data and to start generating heat map statistics. The results are displayed in graphics marked in different colors.

Note:

As shown in Figure 10-8, a red color block (255, 0, 0) indicates the area that is more highly populated, and a blue color block (0, 0, 255) indicates the area that is less populated.

6. You can click the <Export> button to export the statistics report into an excel file.

12. Network Settings

12.1 Configuring the General Settings

Network settings must be properly configured before you can operate the DVR over a network.

Steps:

1. Go to **Menu > Configuration > Network > General**.

General		PPPOE	DDNS	NTP	Email	SNMP	NAT	More Settings
NIC Type		10M/100M/1000M Self-adaptive						
Enable DHCP		<input checked="" type="checkbox"/>						
IPv4 Address...	.	.	.	.	IPv6 Address...	fe80::2a57:beff:fe88:7081/64		
IPv4 Subn...	.	.	.	.	IPv6 Subn...			
IPv4 Defau...	.	.	.	.	IPv6 Defau...			
MAC Address		28:57:be:88:70:81						
MTU(Bytes)		1500						
Enable Obtain DNS Serv...		<input checked="" type="checkbox"/>						
Preferred DNS Server								
Alternate DNS Server								
Internal NIC IPv4 Address		192.168.254.1						
<div>Apply Back</div>								

Network Settings Interface

2. On the <General Settings> interface, you can configure the following parameters: <Working Mode> (applicable for GD-RT-AT5016N), <NIC Type>, <IPv4 Address>, <IPv4 Gateway>, <MTU>, <DNS Server> and <Main NIC>.

<Working Mode>

There are two 10M/100M/1000M NIC cards provided by GD-RT-AT5016N, and they allow the device to work in Multi-address and Net-fault Tolerance.

- **<Multi-address Mode>**: The parameters of the two NIC cards can be configured independently. You can select <LAN1> or <LAN2> in the <NIC Type> field under the parameter settings.

You can select one NIC card as the default route. Then the system connects with the extranet and the data will be forwarded through the default route.

- **<Net-fault Tolerance Mode>**: The two NIC cards use the same IP address and you can select the Main NIC to <LAN1> or <LAN2>. This way, in case one NIC card fails, the device will automatically enable the standby NIC card so as to ensure the continued running of the whole system.

Note:

- The valid value of <MTU> has to be fixed between 500 to 1500.
- If the DHCP server is available, you can check the checkbox of <Enable DHCP> to automatically obtain an IP address and other network settings from that server.
- If the DHCP is enabled, you can check the checkbox of <Enable DNS DHCP> or uncheck it and edit the <Preferred DNS Server> and an <Alternate DNS Server>.

3. After having configured the general settings, click the <Apply> button to save the settings.

12.2 Configuring the Advanced Settings

12.2.1 Configuring the PPPoE Settings

The DVR also allows access by Point-to-Point Protocol over the Ethernet (PPPoE).

Steps:

1. Go to **Menu > Configuration > Network > PPPoE**.

General	PPPOE	DDNS	NTP	Email	SNMP	NAT	More Settings
<div>Enable PPPOE <input type="checkbox"/></div> <div>User Name <input type="text"/></div> <div>Password <input type="password"/></div>							

PPPoE Settings Interface

2. Check the <Enable PPPoE> checkbox to enable this feature.

3. Enter the <User Name> and the <Password> for PPPoE access.

Note:

The User Name and the Password should be assigned by your ISP.

4. Click the <Apply> button to save the settings.

5. After successful set-up, the system asks you to reboot the device to enable the new settings and the PPPoE dial-up will automatically connect after the reboot.

You can go to **Menu > Maintenance > System Info > Network interface** to view the status of the PPPoE connection.

12.2.2 Configuring DDNS

If your DVR is set to use PPPoE as its default network connection, you may set the Dynamic DNS (DDNS) that is to be used for network access.

Registration with your ISP is required before configuring the system to use DDNS.

Steps:

1. Go to **Menu > Configuration > Network > DDNS**.
2. Check the <Enable DDNS> checkbox to enable this feature.
3. Select the <DDNS Type>. Three different DDNS types are selectable: <DynDNS>, <PeanutHull>, and <NO-IP>.
 - **<DynDNS>:**
 - 1) Enter the <Server Address> for DynDNS (i.e. members.dyndns.org).
 - 2) In the <Device Domain Name> text field, enter the domain name that you obtained from the DynDNS website.
 - 3) Enter the <User Name> and the <Password> that were registered on the DynDNS website.

General PPPOE <u>DDNS</u> NTP Email SNMP NAT More Settings	
Enable DDNS	<input checked="" type="checkbox"/>
DDNS Type	DynDNS
Area/Country	Custom
Server Address	members.dyndns.org
Device Domain Name	123.dyndns.com
Status	DDNS is disabled.
User Name	test
Password	*****

Apply Back

DynDNS Settings Interface

- **<PeanutHull>:** Enter the <User Name> and the <Password> obtained from the PeanutHull website.
- **<NO-IP>:**

Enter the account information in the corresponding fields. Refer to the DynDNS settings.

- 1) Enter the <Server Address> for <NO-IP>.
- 2) In the <Device Domain Name> text field, enter the domain name that you obtained from the NO-IP website (www.no-ip.com).
- 3) Enter the <User Name> and the <Password> that were registered on the NO-IP website.

General	PPPOE	DDNS	NTP	Email	SNMP	NAT	More Settings
Enable DDNS		<input checked="" type="checkbox"/>					
DDNS Type		NO-IP					
Area/Country		Custom					
Server Address		no-ip.org					
Device Domain Name		13.no-ip.org					
Status		DDNS is disabled.					
User Name		test					
Password		*****					

NO-IP Settings Interface

4. Click the <Apply> button to save the settings and to exit the interface.

12.2.3 Configuring the NTP Server

A Network Time Protocol (NTP) Server can be configured on your DVR to ensure the accuracy of the system date/time.

Steps:

1. Go to **Menu > Configuration > Network > NTP**.

Enable NTP	<input checked="" type="checkbox"/>
Interval (min)	60
NTP Server	1
NTP Port	123

NTP Settings Interface

2. Check the <Enable NTP> checkbox to enable this feature.
3. Configure the following NTP settings:
 - **<Interval>**: Time interval between the two synchronizing actions with the NTP server. The unit is one minute.
 - **<NTP Server>**: IP address of the NTP server;
 - **<NTP Port>**: Port of the NTP server;
4. Click the <Apply> button to save the changes and to exit the interface.

Note:

The time synchronization interval can be set from 1 to 10080 minutes and the default value is 60 minutes. If the DVR is connected to a public network, you should use an NTP server that has a time synchronization function such as the server of the National Time Center (IP Address: 210.72.145.44). If the DVR is set in a more customized network, NTP software can be used to establish an NTP server used for time synchronization.

12.2.4 Configuring the NAT

Universal Plug and Play (UPnP™) can permit the device to seamlessly discover the presence of other network devices on the network and establish functional network services for data sharing, communications, etc. You can use the UPnP™ function to enable a fast connection between the device and the WAN via a router without port mapping.

Before you start

If you want to enable the UPnP™ function of the device, you must enable the UPnP™ function of the router to which your device is connected. When the network working mode of the device is set as multi-address, the Default Route of the device should be in the same network segment as that of the LAN IP address of the router.

Steps:

1. Go to **Menu > Configuration > Network > NAT**.

Port Type	Edit	External ...	External IP Address	Port	UPnP Status
HTTP Port		80	0.0.0.0	80	Inactive
RTSP Port		554	0.0.0.0	554	Inactive
Server Port		8000	0.0.0.0	8000	Inactive
HTTPS Port		443	0.0.0.0	443	Inactive

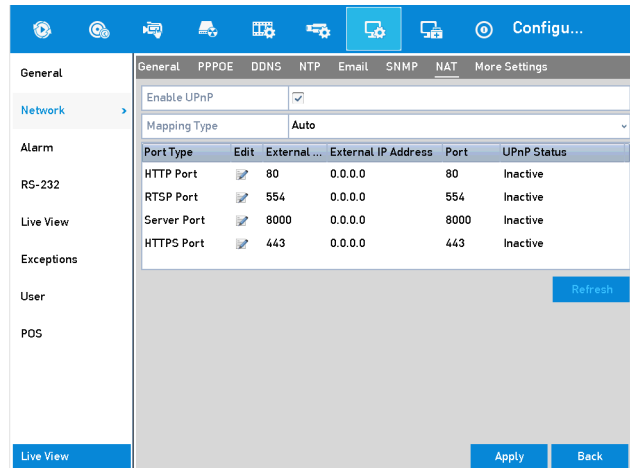
UPnP™ Settings Interface

2. Check the <Enable UPnP> checkbox to enable UPnP™.
3. Select the <Mapping Type> as <Manual> or <Auto> in the drop-down list.

OPTION 1: Auto

If you select <Auto>, the Port Mapping items are read-only, and the external ports are set automatically by the router.

- 1) Click the <Apply> button to save the settings.
- 2) You can click the <Refresh> button to get the latest status of the port mapping.



UPnP™ Settings Finished-Auto

OPTION 2: Manual

If you select <Manual> as the mapping type, you can edit the external port on demand by clicking to activate the <External Port Settings> dialog box.

- 1) Click to activate the <External Port Settings> dialog box. Configure the external port No. for the server port, the http port and the RTSP port respectively.

Note:

- You can use the default port No. or change it according to actual requirements.
 - The External Port indicates the port No. for port mapping in the router.
 - The value of the RTSP port No. should be 554 or between 1024 and 65535, while the value of the other ports should be between 1 and 65535 and the value must be different for each of them. If multiple devices are configured for the UPnP™ settings under the same router, the value of the port No. for each device should be unique.
- 2) Click the <Apply> button to save the settings.
 - 3) You can click the <Refresh> button to get the latest status of the port mapping.

12.2.5 Configuring More Settings

Steps:

1. Go to **Menu > Configuration > Network > More Settings**.

More Settings	
Alarm Host IP	
Alarm Host Port	0
Server Port	8000
HTTP Port	80
Multicast IP	
RTSP Port	554

More Settings Interface

2. Configure the remote Alarm Host, the <Server Port>, the <HTTP Port>, the Multicast IP> and the <RTSP Port>.

- **<Alarm Host IP/Port>**: With a remote alarm host configured, the device will send the alarm event or an exception message to the host when an alarm is triggered. The remote alarm host must have the SCMS (Client Management System) software installed.

The <Alarm Host IP> refers to the IP address of the remote PC on which the SCMS (Client Management System) software is installed and the <Alarm Host Port> must be the same as the alarm monitoring port configured in the software (the default port is 7200).

- **<Multicast IP>**: The multicast can be configured to realize live view for more than the maximum number of cameras through network. A multicast address spans the Class-D IP range of 224.0.0.0 to 239.255.255.255. It is recommended to use the IP address ranging from 239.252.0.0 to 239.255.255.255.

When adding a device to the SCMS (Client Management System) software, the multicast address must be the same as the device's multicast IP.

- **<RTSP Port>**: The RTSP (Real Time Streaming Protocol) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers.

Enter the RTSP port in the text field of **<RTSP Port>**. The default RTSP port is 554 and you can change it according to different requirements.

- **<Server Port> and <HTTP Port>**: Enter the <Server Port> and the <HTTP Port> in the text fields. The default Server Port is <8000> and the default HTTP Port is <80> and you can change them according to different requirements.

Note:

The <Server Port> should be set to the range of 2000-65535 and it is used for remote client software access. The <HTTP Port> is used for remote IE access.

- **<Output Bandwidth Limit>**: You can check the checkbox to enable an Output Bandwidth Limit.
- **<Output Bandwidth>**: After enabling the Output Bandwidth Limit, enter the output bandwidth into the text field.

Note:

- The output bandwidth limit is used for the remote live view and playback.
 - The default output bandwidth is the maximum limit.
3. Click the <Apply> button to save and exit the interface.

12.2.6 Configuring the HTTPS Port

HTTPS provides authentication of the web site and associated web server that one is communicating with, which protects against Man-in-the-middle attacks. Perform the following steps to set the port number of https.

Example

If you set the port number as 443 and the IP address is 192.0.0.64, you may access the device by inputting *https://192.0.0.64:443* via the web browser.

Note:

The HTTPS Port can be only configured through the web browser.

1. **Steps:** Open the web browser, enter the IP address of the device and the web server will select the language automatically according to the system language and maximize the web browser.
2. Enter the correct user name and password, and click the <Login> button to log in the device.
3. Go to **Configuration > Remote Configuration > Network Settings > HTTPS**.
4. Create the self-signed or authorized certificate.

HTTPS

☒ Enable HTTPS

Create

Create Self-signed Certificate

Create Certificate Request

Install Signed Certificate

Certificate Path

Created Request

Created Request

Installed Certificate

Installed Certificate

HTTPS Settings

OPTION 1: Create the self-signed certificate.

1) Click the <Create> button to create the following dialog box.

Create

Country *

Hostname/IP *

Validity Day(s) *

Password

State or province

Locality

Organization

Organizational Unit

Email

Create Self-signed Certificate

2) Enter the <Country>, <Host Name/IP>, <Validity> and other information.

3) Click <OK> to save the settings.

OPTION 2: Create the authorized certificate.

1) Click the <Create> button to create the certificate request.

2) Download the certificate request and submit it to the trusted certificate authority for signature.

3) After receiving the valid, signed certificate, import the certificate to the device.

5. The certificate information will display after you successfully create and install the certificate.

Certificate Details	
Installed Certificate	C=DE, ST=172.6.23.101 Delete
Property	Subject: C=DE, ST=172.6.23.101 Issuer: C=DE, ST=172.6.23.101 Validity: 2017-12-01 16:09:28 ~ 2018-03-11 16:09:28

Installed Certificate Property

6. Check the checkbox to enable the HTTPS function.
7. Click the <Save> button to save the settings.

12.2.7 Configuring Email

The system can be configured to send an Email notification to all designated users if an event is detected, e.g. an alarm or motion event is detected, etc.

Before configuring the Email settings, the DVR must be connected to a local area network (LAN) that maintains an SMTP mail server. The network must also be connected to either an intranet or the Internet depending on the location of the e-mail accounts to which you want to send a notification. Additionally, the Preferred DNS server must be configured.

Before you start

Make sure you have configured the <IPv4 Address>, <IPv4 Subnet Mask>, <IPv4 Gateway> and the <Preferred DNS Server> in the Network Settings menu. Please refer to *Chapter 12.1 Configuring General Settings* for detailed information.

Steps:

1. Go to **Menu > Configuration > Network > Email**.
2. Select the <Email> tab to enter the <Email Settings> interface.

General		PPPOE		DDNS		NTP		Email		SNMP		NAT		More Settings	
Enable Se...	<input type="checkbox"/>			SMTP Ser...											
User Name				SMTP Port		25									
Password				Enable SS...		<input type="checkbox"/>									
Sender															
Sender's Address															
Select Receivers		Receiver 1													
Receiver															
Receiver's Address															
Enable Attached Picture		<input type="checkbox"/>													
Interval		2s													

Email Settings Interface

3. Configure the following Email settings:

<Enable Server Authentication (optional) >: Check the checkbox to enable the server authentication feature.

<User Name>: The user account of the sender's Email for the SMTP server authentication.

<Password>: The password of the sender's Email for the SMTP server authentication.

<SMTP Server>: The SMTP Server IP address or host name (e.g., smtp.263xmail.com).

<SMTP Port>: The SMTP port. The default TCP/IP port used for SMTP is <25>.

<Enable SSL (optional) >: Click the checkbox to enable SSL if required by the SMTP server.

<Sender>: The name of the sender.

<Sender's Address>: The Email address of the sender.

<Select Receivers>: Select the receiver. Up to three receivers can be configured.

<Receiver>: The name of the receiver of the Email.

<Receiver's Address>: The Email address of the receiver.

<Enable Attached Picture>: Check the checkbox if you want to send the email with attached alarm images. The <Interval> is the time between two captures of the alarm images.

Note:

- For the IP cameras, the alarm images are directly sent as the attached pictures by Email. Up to one picture can be sent for one IP camera. The attached pictures of the linked cameras cannot be sent.
- For analog cameras, three attached pictures can be sent for one analog camera when the alarm is triggered.

<Interval>: The interval refers to the time between two actions of sending attached pictures.

<E-mail Test>: Sends a test message to verify that the SMTP server can be reached.

4. Click the <Apply> button to save the Email settings.

5. You can click the <Test> button to test whether your Email settings work. The corresponding Attention message box pops up.



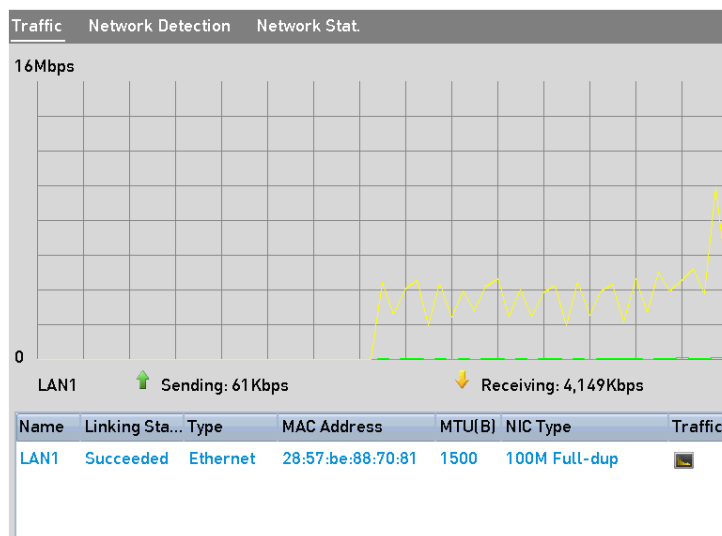
Email Testing Attention

12.2.8 Checking the Network Traffic

You can check the network traffic to obtain real-time information of the DVR such as the linking status, MTU, the sending/receiving rate, etc.

Steps:

1. Go to **Menu > Maintenance > Net Detect > Traffic**.



Network Traffic Interface

2. You can view the sending and receiving rate information on the interface. The traffic data is refreshed every 1 second.

12.3 Configuring the Network Detection

You can obtain the network connection status of the DVR through the network detection function, including network delay, packet loss, etc.

12.3.1 Testing Network Delay and Packet Loss

Steps:

1. Go to **Menu > Maintenance > Net Detect > Network Detection**.

The screenshot shows the 'Network Detection' tab. It contains two main sections: 'Network Delay, Packet Loss Test' and 'Network Packet Export'. In the first section, 'Select NIC' is set to 'LAN1' and 'Destination Address' is '10.6.0.98'. A 'Test' button is to the right. In the second section, 'Device Name' is set to 'USB Flash Disk 1-1'. A 'Refresh' button is to the right. At the bottom, a summary row shows 'LAN1' with '10.6.0.98' and '5,225Kbps', with an 'Export' button to the right.

Network Delay, Packet Loss Test		
Select NIC	LAN1	Test
Destination Address	10.6.0.98	

Network Packet Export		
Device Name	USB Flash Disk 1-1	Refresh

LAN1	10.6.0.98	5,225Kbps	Export
------	-----------	-----------	--------

Network Detection Interface

2. Select a NIC to test network delay and packet loss.
3. Enter the destination address in the text field of <Destination Address>.
4. Click the <Test> button to start testing network delay and packet loss.

12.3.2 Exporting a Network Packet

By connecting the DVR to the network, the captured network data packet can be exported to a USB-flash disk, a SATA and to other local backup devices.

Steps:

1. Go to **Menu > Maintenance > Net Detect > Network Detection**.
2. Select the backup device from the drop-down list of <Device Name>.

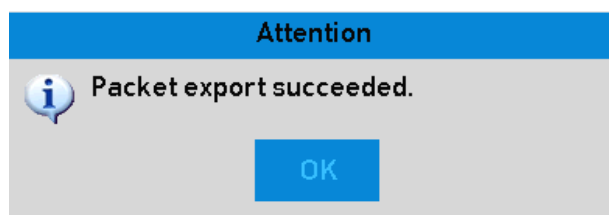
Note:

Click the <Refresh> button if the connected local backup device cannot be displayed. When it fails to detect the backup device, please check whether it is compatible with the DVR. You can format the backup device if the format is incorrect.

Traffic	Network Detection	Network Stat.
Network Delay, Packet Loss Test		
Select NIC	LAN1	
Destination Address	10.6.0.32	Test
Network Packet Export		
Device Name	USB Flash Disk 1-1	Refresh
LAN1	10.6.0.98	4,487Kbps Export

Export Network Packet

3. Click the <Export> button to start exporting.
4. After the exporting is complete, click <OK> to finish the packet export.



Packet Export Attention

Note:

Up to 1M data can be exported each time.

12.3.3 Checking the Network Status

You can also check the network status and quick set the network parameters in this interface.

Steps:

1. Go to **Menu > Maintenance > Net Detect > Network Detection**.
2. Click <Status> on the right bottom of the interface.

The screenshot shows the 'Network Detection' tab in a software interface. It contains two main sections: 'Network Delay, Packet Loss Test' and 'Network Packet Export'. The first section has input fields for 'Select NIC' (set to LAN1) and 'Destination Address' (set to 10.6.0.32), with a 'Test' button. The second section has a 'Device Name' field (set to USB Flash Disk 1-1) and a 'Refresh' button. Below these is a table with network status data.

Network Delay, Packet Loss Test		
Select NIC	LAN1	
Destination Address	10.6.0.32	Test

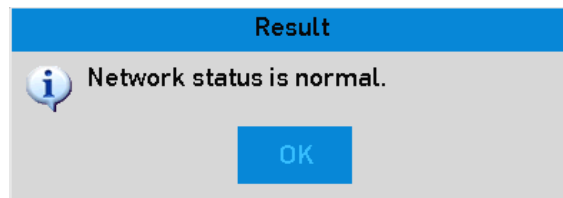
Network Packet Export		
Device Name	USB Flash Disk 1-1	Refresh

Interface	IP Address	Speed	Action
LAN1	10.6.0.98	4,487Kbps	Export

At the bottom right, there are three buttons: 'Status', 'Network', and 'Back'.

Checking Network Status

If the network is normal, then the following message box pops out.



Network Status Checking Result

If the message box pops up with other information instead of this one, you can click the <Network> button to show the quick setting interface of the network parameters.

Parameter	Value
NIC Type	10M/100M/1000M Self-adaptive
Enable DHCP	<input type="checkbox"/>
IPv4 Address	10.6.0.98
IPv4 Subnet Mask	255.255.255.0
IPv4 Default Gateway	10.6.0.254
Enable Obtain DNS...	<input type="checkbox"/>
Preferred DNS Ser...	10.1.7.77
Alternate DNS Serv...	

Network Parameters Configuration

12.3.4 Checking the Network Statistics

You can check the network statistics to obtain the real-time information of the device.

Steps:

1. Go to **Menu > Maintenance> Net Detect > Network Stat.**

Type	Bandwidth
IP Camera	5,120Kbps
Remote Live View	0bps
Remote Playback	0bps
Net Receive Idle	75Mbps
Net Send Idle	256Mbps

Network Stat. Interface

2. View the bandwidth of the <Remote Live View>, bandwidth of the <Remote Playback>, and bandwidth of the Net Total Idle.
3. Click the <Refresh> button to get the latest bandwidth statistics.

13. RAID

Note:

This chapter is applicable for GD-RT-AT5016N.

13.1 Configuring Array

RAID (redundant array of independent disks) is a storage technology that combines multiple disk drive components into a logical unit. A RAID setup stores data over multiple hard disk drives to provide enough redundancy so that data can be recovered if one disk fails. Data is distributed across the drives in one of several ways called "RAID levels", depending on what level of redundancy and performance is required.

The DVR supports the disk array that is realized by software. You can enable the RAID function on demand.

Note:

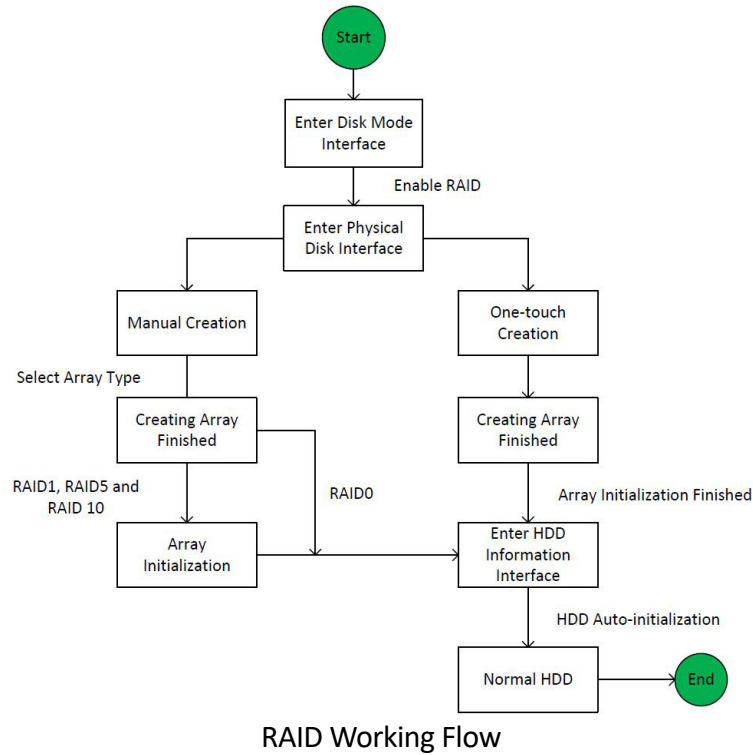
The GD-RT-AT5016N supports the RAID0, RAID1, RAID5, RAID6 and RAID 10 array types.

Before you start

Please install the HDD(s) properly and it is recommended to use the same enterprise-level HDDs (including the model and the capacity) for array creation and configuration so as to maintain the reliable and stable running of the disks.

Introduction

The DVR can store the data (such as record, picture, log information) in the HDD only after you have created the array or you have configured a network HDD (refer to *Chapter14.2 Managing Network HDD*). Our device provides two ways for creating an array, including a one-touch configuration and a manual configuration. The following flow chart shows the process of creating an array.



13.1.1 Enable RAID

Perform the following steps to enable the RAID function, or the disk array cannot be created.

- **OPTION 1:**

Enable the RAID function in the Wizard when the device starts up, please refer to step 7 of *Chapter 2.3.2*.

- **OPTION 2:**

Enable the RAID function in the <HDD Management> Interface.

Steps:

1. Enter the Disk Mode configuration interface: **Menu > HDD > Advanced**.
2. Check the checkbox of <Enable RAID>.
3. Click the <Apply> button to save the settings.
4. Reboot the device to take RAID into effect.

13.1.2 One-touch Configuration

Through the one-touch configuration, you can quickly create the disk array. By default, the array type to be created is <RAID 5>.

Before you start

Steps:

1. The RAID function should be enabled, please refer to the *Chapter 13.1.1* for details.
2. As the default array type is <RAID 5>, please install at least 3 HDDs on your device.
3. If more than 10 HDDs are installed, 2 arrays can be configured.
4. Enter the <RAID Configuration> interface: Menu > HDD > RAID.
5. Check the checkbox of the corresponding HDD No. to select it.
6. Click the <One-touch Config> button to enter the <One-touch Array Configuration> interface.
7. Edit the array name in the <Array Name> text filed and click the <OK> button to start configuring the array.

Note:

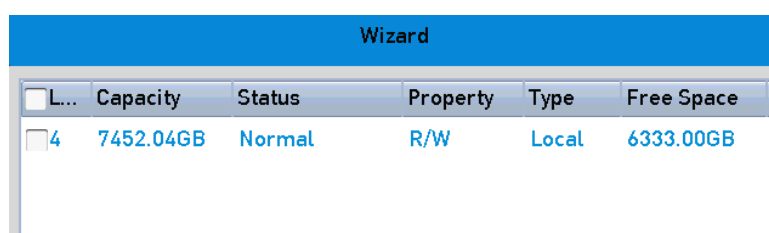
If you install 4 or more HDDs for one-touch configuration, a hot spare disk will be set by default. It is recommended to set a hot spare disk for automatically rebuilding the array when the array is abnormal.

8. When the array configuration is completed, click the <OK> button in the pop-up message box to finish the settings.
9. You can click the <Array> tab to view the information of the successfully created array.

Note:

By default, one-touch configuration creates an array and a virtual disk.

10. A created array displays as an HDD in the <HDD information> interface.



<input type="checkbox"/> L...	Capacity	Status	Property	Type	Free Space
<input type="checkbox"/> 4	7452.04GB	Normal	R/W	Local	6333.00GB

HDD Information Interface

13.1.3 Manually Creating Array

You can manually create the array of <RAID 0>, <RAID 1>, <RAID 5>, <RAID6> and <RAID 10>.

Note:

In this chapter, we take RAID 5 as an example to describe the manual configuration of an array and a virtual disk.

Steps:

1. Enter the <Physical Disk Settings> interface: Menu > HDD > RAID > Physical Disk.
2. Click the <Create> button to enter the <Create Array> interface.
3. Edit the <Array Name>; set the <RAID Level> to <RAID 0>, <RAID 1>, <RAID 5>, <RAID6> or <RAID 10>; select the <Physical Disk> that you want to configure for the array.

Note:

- If you choose <RAID 0>, at least 2 HDDs must be installed.
- If you choose <RAID 1>, 2 HDDs need to be configured for RAID 1.
- If you choose <RAID 5>, at least 3 HDDs must be installed.
- If you choose <RAID 6>, at least 4 HDDs must be installed.
- If you choose <RAID 10>, the number of HDDs installed should be even in the range of 4 to 16.

4. Click the <OK> button to create the array.

Note:

If the number of HDDs you select is not compatible with the requirement of the RAID level, the error message box will pop up.

5. You can click the <Array> tab to view the successfully created array.

13.2 Rebuilding Array

The working status of an array includes <Functional>, <Degraded> and <Offline>. By viewing the array status, you can perform immediate and proper maintenance for the disks so as to ensure the high security and reliability of the data stored in the disk array.


When there is no disk loss in the array, the working status of the array will change to <Functional>; when the number of lost disks has exceeded the limit, the working status of the array will change to <Offline>; in other conditions, the working status is <Degraded>.

When the virtual disk has a <Degraded> status, you can restore it to <Functional> by array rebuilding.

Before you start

Please make sure the hot spare disk is configured.

Steps:

1. Enter the <Physical Disk Settings> interface to configure the hot spare disk.
2. Select a disk and click  to set it as the hot spare disk.

Note:

Only the global hot spare mode is supported.

13.2.1 Automatically Rebuilding Array

When the virtual disk has a <Degraded> status, the device can start rebuilding the array automatically with the hot spare disk to ensure high security and reliability of the data.

Steps:


1. Enter the <Array Settings> interface. The status of the array is <Degraded>. Since the hot spare disk is configured, the system will automatically start rebuilding, using it (**Menu > HDD > RAID > Array**)

If there is no hot spare disk after rebuilding, it is recommended to install an HDD on the device and set it as a hot spare disk to ensure high security and reliability of the array.

13.2.2 Manually Rebuilding Array

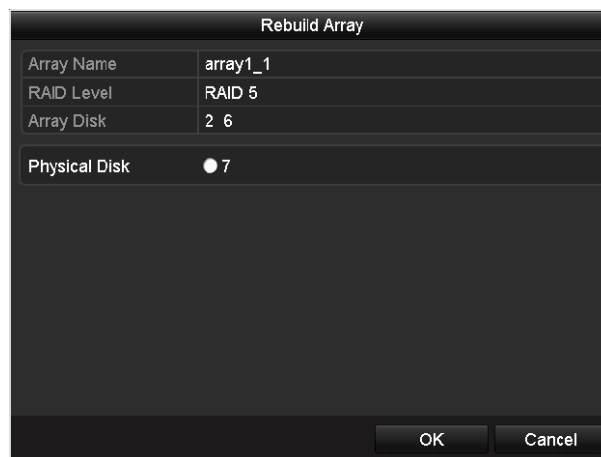
If the hot spare disk has not been configured, you can rebuild the array manually to restore the array when the virtual disk has a <Degraded> status.

Steps:

1. Enter the <Array Settings> interface. Disk 3 is lost (**Menu > HDD > RAID > Array**).
2. Click the <Array> tab to return to the <Array Settings> interface and click  to configure the array rebuild.

Note:

At least one available physical disk should exist for rebuilding the array.



Rebuild Array Interface


3. Select the available physical disk and click the <OK> button to confirm to rebuild the the array.
4. The “Do not unplug the physical disk when it is under rebuilding” message box pops up. Click the <OK> button to start rebuilding.
5. You can enter the <Array Settings> interface to view the rebuilding status.
6. After rebuilding successfully, the array and the virtual disk will restore to <Functional>.

13.3 Deleting Array

Note:

Deleting the array will cause to delete all the data saved in the disk.

Steps:

1. Enter the Array Settings interface (**Menu>HDD>RAID>Array**).
2. Select an array and click  to delete the array.
3. In the pop-up message box, click the <Yes> button to confirm the array deletion.

Note:

Deleting the array will cause to delete all the data in the array.

13.4 Checking and Editing the Firmware

You can view the information of the firmware and set the background task speed on the <Firmware> interface.

Steps:

1. Enter the <Firmware> interface to check the information of the firmware, including the version, the maximum physical disk quantity, the maximum array quantity, the auto-rebuild status, etc.
2. You can set the <Background Task Speed> in the drop-down list.
3. Click <Apply> to save the settings.

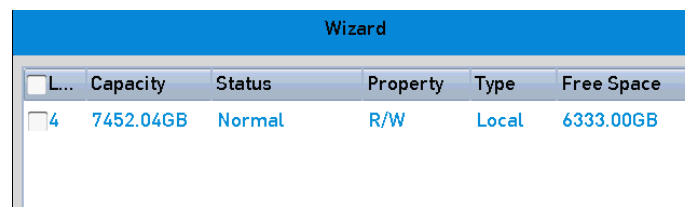
14. HDD Management

14.1 Initializing HDDs

A newly installed hard disk drive (HDD) must be initialized before it can be used with your DVR.

Steps:

1. Go to **Menu > HDD > General**.

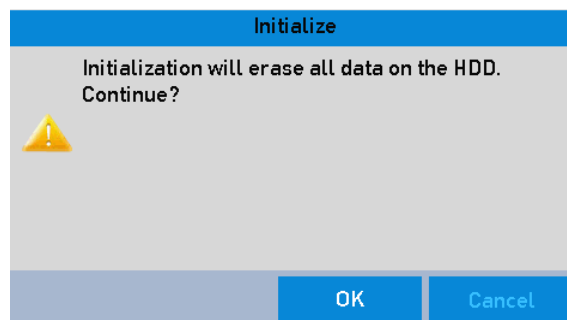


L...	Capacity	Status	Property	Type	Free Space
4	7452.04GB	Normal	R/W	Local	6333.00GB

HDD Information Interface

You can view the total <Capacity>, <Free Space> and <Remaining Recording Time> of the HDD. The algorithm of the <Remaining Recording Time> is to use average the bit rate for the channel, enabling smart encoding to raise accuracy.

2. Select the HDD that is to be initialized.
3. Click the <Init> button.



Confirm Initialization

4. Select the <OK> button to start the initialization.
5. After the HDD has been initialized, the status of the HDD will change from *Uninitialized* to *Normal*.

Wizard					
<input type="checkbox"/> L...	Capacity	Status	Property	Type	Free Space
<input type="checkbox"/> 4	7452.04GB	Normal	R/W	Local	6333.00GB

HDD Status Changes to Normal

Note:

Initializing the HDD will erase all data on it.

The HDDs which are not running for a long time can be enabled to sleep, thus decreasing the power consumption of the device and extending the life of the HDDs.

Steps:

1. Go to **Menu > HDD > Advanced**.

The screenshot shows the 'HDD' settings page in a web interface. The top navigation bar has icons for Live View, Camera, HDD, and other functions. The left sidebar has 'General' and 'Advanced' tabs, with 'Advanced' being the active tab. The main content area is titled 'Storage Mode' and shows settings for 'Camera 01'. The settings include 'Mode' (set to [D1] Camera 01), 'Used Record Capacity' (1024.00MB), 'Used Picture Capacity' (0B), 'HDD Capacity (GB)' (7452), 'Max. Record Capacity (GB)' (0), and 'Max. Picture Capacity (GB)' (0). A 'Free Quota Space' of 7452 GB is displayed. At the bottom, there is a checkbox for 'Enable HDD Sleeping' which is checked. Below the checkbox are 'Copy', 'Apply', and 'Back' buttons.

Enable HDD Sleeping

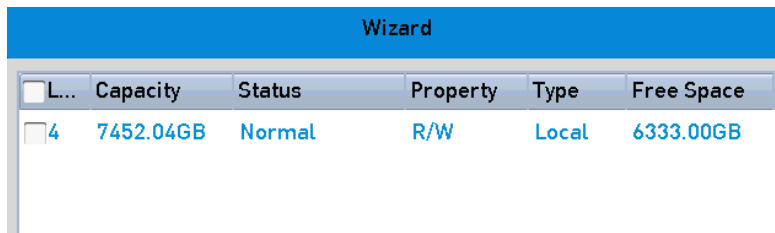
2. Check the checkbox of <Enable HDD Sleeping> (by default) and the HDDs which are not running for a long time will be set to sleep.
3. Uncheck the checkbox of <Enable HDD Sleeping> and the HDDs will be set to work for all of time.

14.2 Managing a Network HDD

You can add the allocated <NAS> or disk of <IP SAN> to the DVR and use it as a network HDD.

Steps:

1. Go to **Menu > HDD > General**.



L...	Capacity	Status	Property	Type	Free Space
4	7452.04GB	Normal	R/W	Local	6333.00GB

HDD Information Interface

2. Click the <Add> button to enter the <Add NetHDD> interface, as shown in **Fehler! Verweisquelle konnte nicht gefunden werden..**
3. Add the allocated NetHDD.
4. Select the type to <NAS> or <IP SAN>.
5. Configure the <NAS> or <IP SAN> settings.

● **Add a NAS disk:**

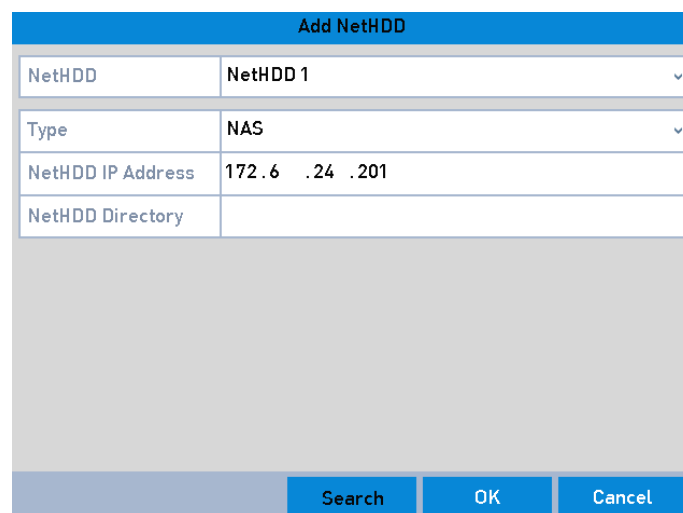
- 1) Enter the <NetHDD IP address> in the text field.
- 2) Click <Search> to search the available NAS disks.
- 3) Select the NAS disk from the list shown below.

Or you can just manually enter the directory in the text field of <NetHDD Directory>.

- 4) Click <OK> to add the configured NAS disk.

Note:

Up to 8 NAS disks can be added.



NetHDD	NetHDD 1
Type	NAS
NetHDD IP Address	172.6.24.201
NetHDD Directory	

Search OK Cancel

Add NAS Disk

● **Add IP SAN:**

- 1) Enter the <NetHDD IP address> in the text field.
- 2) Click the <Search> button to look for available IP SAN disks.
- 3) Select the desired IP SAN disk from the list shown below.
- 4) Click the <OK> button to add the selected IP SAN disk.

Note:

Up to 8 IP SAN disks can be added.

Add NetHDD	
NetHDD	NetHDD 1
Type	IP SAN
NetHDD IP Address	172.16.24.201
NetHDD Directory	

Search OK Cancel

Add IP SAN Disk

- 5) After having successfully added the NAS or IP SAN disk, return to the <HDD Information> menu. The added NetHDD will be displayed in the list.

Note:

If the added NetHDD is uninitialized, please select it and click the <Init> button for initialization.

HDD Information									
<input type="checkbox"/> L...	Capacity	Status	Property	Type	Free Space	Gr...	Edit	Del...	
<input type="checkbox"/> 4	7452.04GB	Initializing 20%	R/W	Local	0MB	1	-	-	

Initialize Added NetHDD

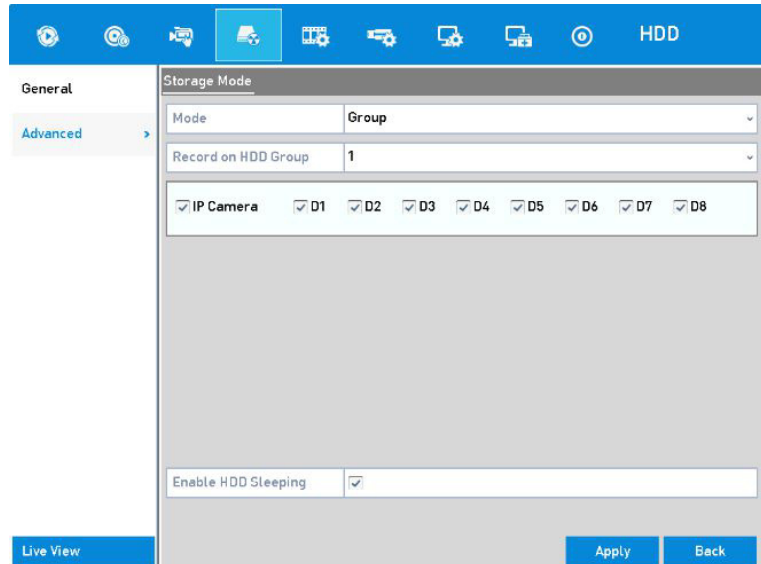
14.3 Managing a HDD Group

14.3.1 Setting HDD Groups

Multiple HDDs can be managed in groups. Video from specified channels can be recorded onto a particular HDD group through HDD settings.

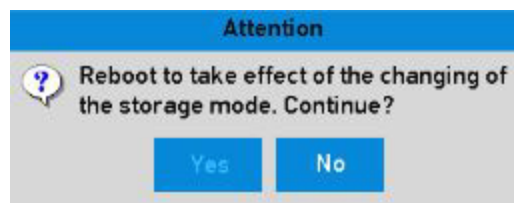
Steps:

1. Go to **Menu > HDD > Advanced**.
2. Set the <Mode> to <Group>, as shown below.




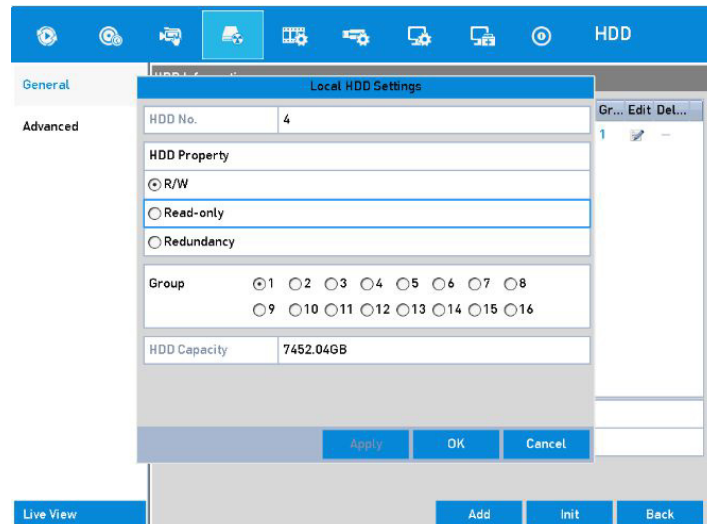
Storage Mode Interface

3. Click the <Apply> button and the following Attention box will pop up.



Attention for Reboot

4. Click the <Yes> button to reboot the device to activate the changes.
5. After the reboot of the device, go to **Menu > HDD > General**.
6. Select an HDD from the list and click the  icon to enter the <Local HDD Settings> interface, as shown below.



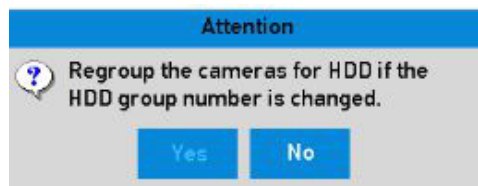
Local HDD Settings Interface

7. Select the Group number for the current HDD.

Note:

The default group No. for each HDD is 1.

8. Click the <OK> button to confirm the settings.



Confirm HDD Group Settings

9. In the pop-up Attention box, click the <Yes> button to finish the settings.

14.3.2 Setting a HDD Property


The HDD property can be set to redundancy, read-only or read/write (R/W). Before setting the HDD property, please set the storage mode to Group (refer to steps 1 to 4 of *Chapter 14.3.1 Setting HDD Groups*).

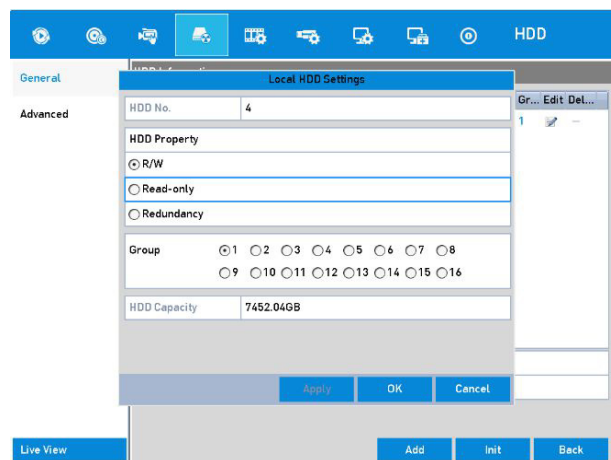
An HDD can be set to <Read-Only> to prevent important recorded files from being overwritten when the HDD becomes full in the overwrite recording mode.

When the HDD property is set to <Redundancy>, the video can be recorded both onto the redundancy HDD and onto the R/W HDD simultaneously, so as to ensure high security and reliability of video data.

Steps:

1. Go to **Menu > HDD > General**.

2. Select an HDD from the list and click the  icon to enter the <Local HDD Settings> interface, as shown below.



Set HDD Property

3. Set the HDD property to <R/W>, <Read-only> or <Redundancy>.
4. Click the <OK> button to save the settings and exit the interface.
5. In the <HDD Information> menu, the HDD property will be displayed in the list.

Note:

At least 2 hard disks must be added on your DVR when you want to set an HDD to <Redundancy>, and there is one HDD with <R/W> property.

14.4 Configuring the Quota Mode

Each camera can be configured with allocated quota for the storage of recorded files.

Steps

1. Go to **Menu > HDD > Advanced > Storage Mode**.
2. Set the <Mode> to <Quota>, as shown below.

Note:

The DVR must be rebooted to enable the changes to take effect.

Storage Mode	
Mode	Quota
Camera	[D1] Camera 01
Used Record Capacity	1024.00MB
Used Picture Capacity	0B
HDD Capacity (GB)	7452
Max. Record Capacity (GB)	0
Max. Picture Capacity (GB)	0
<p>⚠ Free Quota Space 7452 GB</p>	
Enable HDD Sleeping	<input checked="" type="checkbox"/>

Copy Apply Back

Storage Mode Settings Interface

3. Select a camera for which you want to configure a quota.
4. Enter the storage capacity in the text field of <Max. Record Capacity (GB)>.
5. You can copy the quota settings of the current camera to other cameras if required. Click the <Copy> button to enter the <Copy Camera> interface, as shown below.

Copy to	
<input type="checkbox"/> IP Camera	<input type="checkbox"/> D1 <input type="checkbox"/> D2 <input type="checkbox"/> D3 <input type="checkbox"/> D4 <input type="checkbox"/> D5 <input type="checkbox"/> D6
	<input type="checkbox"/> D7 <input type="checkbox"/> D8

OK Cancel

Copy Settings to Other Camera(s)

6. Select the camera(s) to be configured with the same quota settings. You can also click the checkbox of <Analog> to select all cameras.
7. Click the <OK> button to finish copying the settings and to back to the <Storage Mode> interface.
8. Click the <Apply> button to apply the settings.

Note:

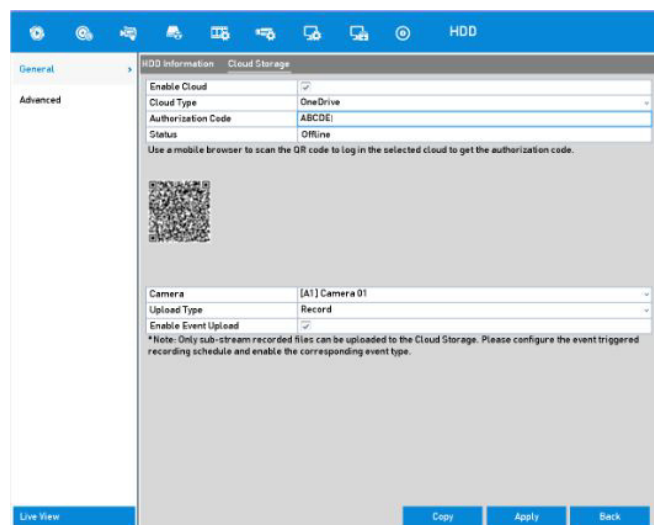
If the quota capacity is set to <0>, then all cameras will use the total capacity of the HDD to record.

14.5 Configuring a Cloud Storage

The cloud storage facilitates you to upload and download the recorded files at any time and at any place, which can highly enhance the efficiency.

Steps:

1. Go to **Menu > HDD > General > Cloud Storage**.
2. Check the <Enable Cloud> checkbox to enable the feature.
3. Select the <Cloud Type> from the drop-down list to <One Drive>, <Google Drive> or <Drop Box>.



Cloud Storage Interface

4. According to the prompts, you are required to use a mobile browser to scan the QR code to log in to the selected cloud to get the authentication code. Then copy the authentication code to the <Authentication Code> text field.
5. Click <Apply> and then go back to the main menu.
6. Enter the <Cloud Storage> interface again about 20 seconds later. When the <Status> shows <Online>, it indicates that the registration was successful.
7. Configure the recording schedule.

Go back to enter the <Record> interface, choose a certain camera from the <Camera> drop-down list and check the <Enable Schedule> checkbox to enable the schedule recording. For details on the recording schedule, refer to *5.2 Configuring the Recording and Capture Schedule*.

Record Schedule

Record Schedule

8. Upload the event-triggered recording files to the cloud storage.
 - 1) Go back to enter the <Cloud Storage> interface and select the camera you have set in the <Recording Schedule> interface.
 - 2) Select the upload type in the <Upload Type> text filed.
 - 3) Check the <Enable Event Upload> checkbox.
 - 4) Click <Apply> to finish the settings.

Upload to Cloud Storage Interface

Upload to Cloud Storage Interface

Note:

- Only the sub-stream recorded files can be uploaded to the <Cloud Storage>.
- Please configure the event-triggered recording schedule and enable the corresponding event type.

9. (Optional) You can click the <Copy> button to copy the cloud storage settings to other cameras. You can also click the checkbox of <Analog/IP Camera> to select all cameras.

Click the <OK> button to go back to the <Cloud Storage> interface and click <Apply> to finish the settings.

14.6 Configuring a Disk Clone

Note:

This chapter is only applicable to the DVR models with eSATA.

If the S.M.A.R.T. detection result declares the HDD is abnormal, then you can choose to clone all the data on the HDD to an inserted eSATA disk manually. Refer to *Chapter 14.8 Checking S.M.A.R.T. Information* for details of S.M.A.R.T. detection.

Before you start

An eSATA disk should be connected to the device.

Steps:

1. Enter the <HDD Advanced Settings> interface: **Menu > HDD > Advanced**.
2. Click the <Disk Clone> tab to enter the <Disk Clone Configuration> interface.
3. Make sure the usage of the eSATA disk is set as <Export>.

If not, click the <Set> button to set it. Choose <Export> and click the <OK> button.

Note:

The capacity of the destination disk must be the same as that of the clone source disk.

4. Check the checkbox of the HDD to be cloned in the <Clone Source> list.
5. Click the <Clone> button and a message box pops up.
6. Click the <Yes> button to continue.

You can check the clone progress in the HDD status.

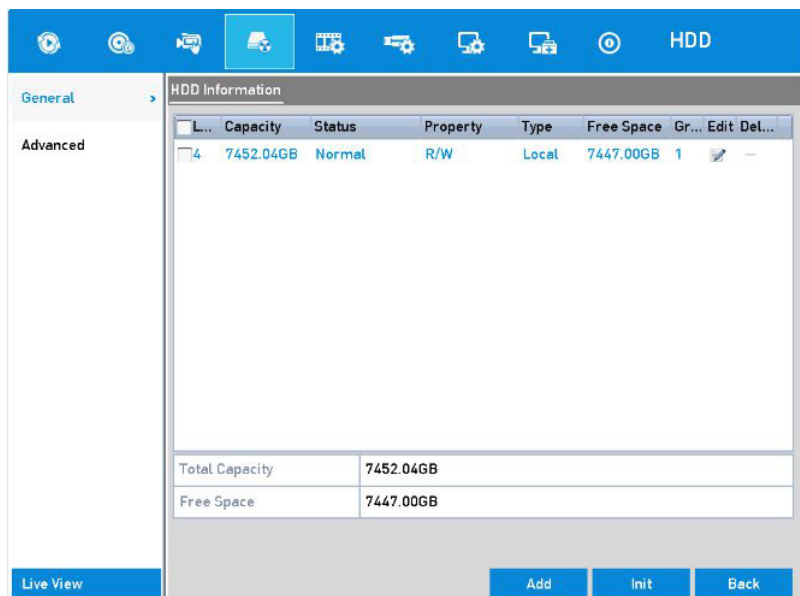
14.7 Checking the HDD Status

You may check the status of the installed HDDs on the DVR so as to do an immediate check and maintenance in case of an HDD failure.

Checking the HDD Status in the HDD Information Interface

Steps:

1. Go to **Menu > HDD > General**.
2. Check the status of each HDD which is displayed on the list, as shown below.



View HDD Status (1)

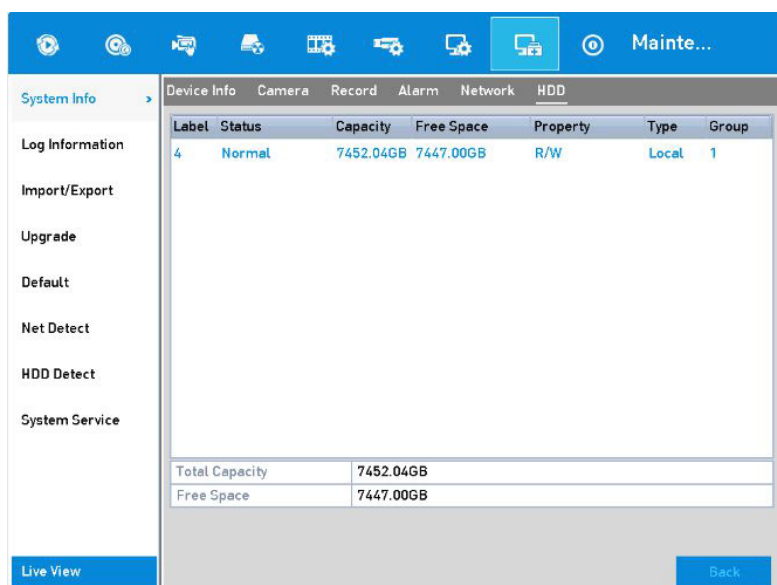
Note:

If the status of the HDD is <Normal> or <Sleeping>, then it functions normally. If the status is <Uninitialized> or <Abnormal>, please initialize the HDD before use. In case the HDD initialization is failed, please replace it with a new one.

Checking HDD Status in System Information Interface

Steps:

1. Go to **Menu > Maintenance > System Info > HDD**.
2. View the status of each HDD displayed on the list, as shown below.



View HDD Status (2)

14.8 Checking the S.M.A.R.T Information

The S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitoring system for an HDD to detect and report on various indicators of reliability in the hopes of anticipating failures.

Steps:

1. Go to **Menu > Maintenance > HDD Detect > S.M.A.R.T. Settings**.
2. Select the HDD to view its S.M.A.R.T. information list, as shown below.

Note:

If you want to use the HDD even when the S.M.A.R.T. checking has failed, you can check the checkbox before the <Continue to use this disk when self-evaluation is failed> item.

ID	Attribute Name	Status	Flags	Thresh...	Value	Worst	Raw Value
0x1	Raw Read Error Rate	OK	f	44	82	64	147050184
0x3	Spin Up Time	OK	3	0	90	84	0
0x4	Start/Stop Count	OK	32	20	100	100	297
0x5	Reallocated Sector Co...	OK	33	10	100	100	0

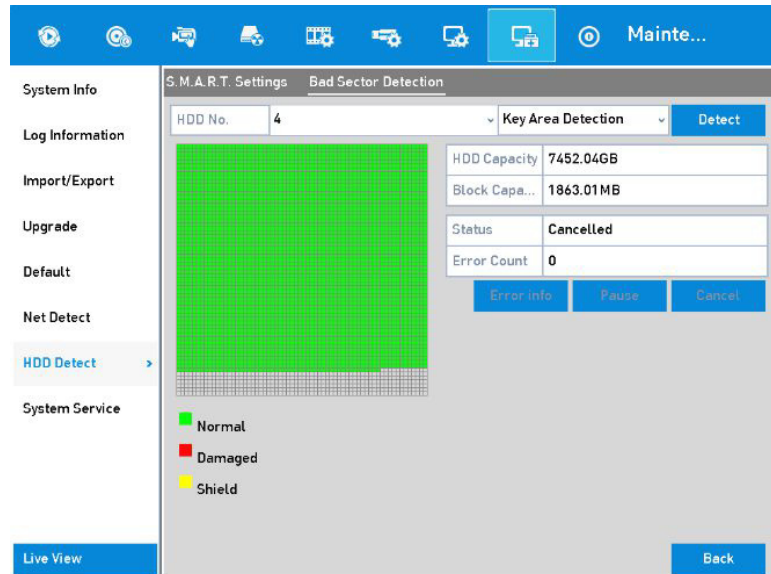
S.M.A.R.T Settings Interface

14.9 Detecting a Bad Sector

You can detect the bad sector of the HDD to check the status of the HDD.

Steps:

1. Go to **Menu > Maintenance > HDD Detect > Bad Sector Detection**.
2. Select an HDD and click the <Detect> button to start detecting.



Bad Sector Detecting

3. You can click the <Pause> button to pause the detection and click the <Resume> button to resume the detection.
4. If there is error information about the HDD, you can click the <Error Info> button to view the information.

14.10 Configuring HDD Error Alarms

You can configure the HDD error alarms when the HDD status is *Uninitialized* or *Abnormal*.

Steps:

1. Go to **Menu > Configuration > Exceptions**.
2. Select the <Exception Type> to <HDD Error> from the drop-down list.
3. Check the checkbox(es) below to select the linkage action(s) for <HDD Error>, as shown in the figure below.

The linkage actions can be selected to: <Audible Warning>, <Notify Surveillance Center>, <Send Email> and <Trigger Alarm Output>.

Exception	
Enable Event Hint	<input checked="" type="checkbox"/>
Event Hint Settings	
Exception Type	HDD Error
Audible Warning	<input checked="" type="checkbox"/>
Notify Surveillance Center	<input checked="" type="checkbox"/>
Send Email	<input checked="" type="checkbox"/>
Trigger Alarm Output	<input checked="" type="checkbox"/>
Alarm Output No.	Alarm Name
<input checked="" type="checkbox"/> Local->1	
<input type="checkbox"/> Local->2	
<input type="checkbox"/> Local->3	
<input type="checkbox"/> Local->4	

Configure HDD Error Alarm

4. When the <Trigger Alarm Output> is selected, you can also select the alarm output to be triggered from the list below.
5. Click the <Apply> button to save the settings.

15. Camera Settings

15.1 Configuring the OSD Settings

You can configure the OSD (On-Screen Display) settings for the camera, including date/time, camera name, etc.

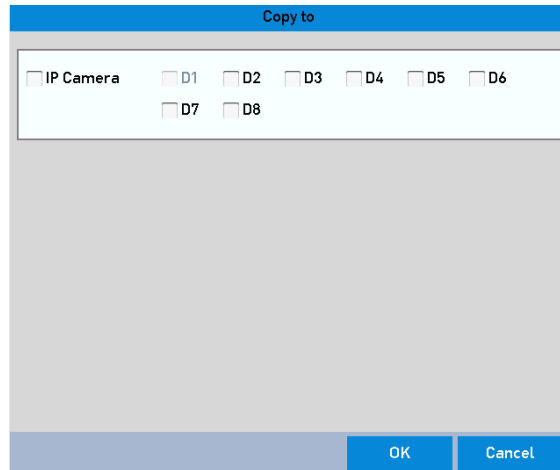
Steps:

1. Go to **Menu > Camera > OSD**.
2. Select the camera to configure OSD settings.
3. Edit the <Camera Name> in the text field.
4. Configure the <Display Name>, <Display Date> and <Display Week> by checking the checkboxes.
5. Select the <Date Format>, the <Time Format>, the <Display Mode> and the <OSD Font>.

OSD Configuration	
Camera	[D1] Camera 01
Camera Name	Camera 01
<div>Preview window with a red text frame</div>	
Display Name	<input checked="" type="checkbox"/>
Display Date	<input checked="" type="checkbox"/>
Display Week	<input checked="" type="checkbox"/>
Date Format	MM-DD-YYYY
Time Format	24-hour
Display Mode	Non-Transparent & Not Flashing
<div>Apply Back</div>	

OSD Configuration Interface

6. You can use the mouse to drag the text frame on the preview window to adjust the OSD position.
7. Copy the camera settings
 - 1) If you want to copy the OSD settings of the current camera to other cameras, click the <Copy> button to enter the <Copy Camera> interface, as shown below.



Copy Settings to Other Cameras

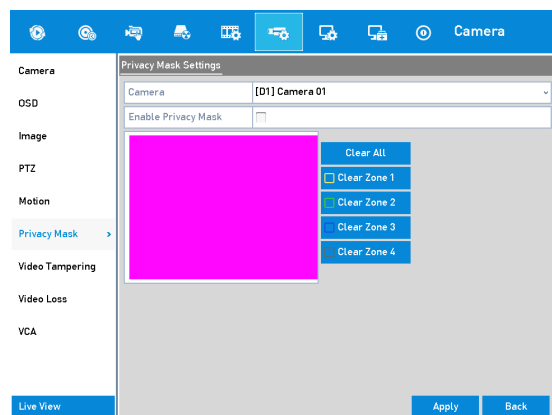
- 2) Select the camera (s) to be configured with the same OSD settings. You can also check the checkbox of <Analog> to select all cameras.
 - 3) Click the <OK> button to finish copying the settings and to go back to the <OSD Configuration> interface.
8. Click the <Apply> button to apply the settings.

15.2 Configuring a Privacy Mask

You are allowed to configure the four-sided privacy mask zones that cannot be viewed or recorded by the operator.

Steps:

1. Go to **Menu > Camera > Privacy Mask**.
2. Select the camera to set the privacy mask.
3. Check the checkbox of <Enable Privacy Mask> to enable this feature.



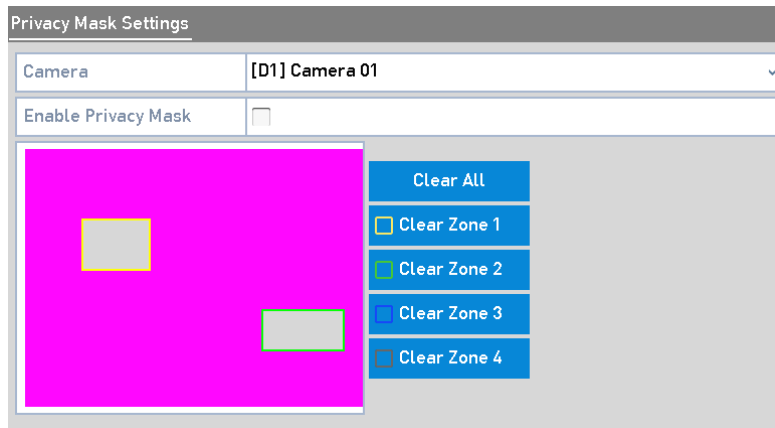
Privacy Mask Settings Interface

4. Use the mouse to draw a zone on the window. The zones will be marked with different frame colors.

Note:

Up to 4 privacy mask zones can be configured and the size of each area can be adjusted.

5. The configured privacy mask zones on the window can be cleared by clicking the corresponding <Clear Zone 1-4> icons on the right side of the window, or click <Clear All> to clear all zones.



Set Privacy Mask Area

6. You can click the <Copy> button to copy the privacy mask settings of the current camera to other cameras. Please refer to step 7 of *Chapter 15.1 Configuring the OSD Settings*.
7. Click the <Apply> button to save the settings.

15.3 Configuring the Video Parameters

15.3.1 Configuring the Image Settings

Steps:

1. Go to **Menu > Camera > Image > Image Settings**.

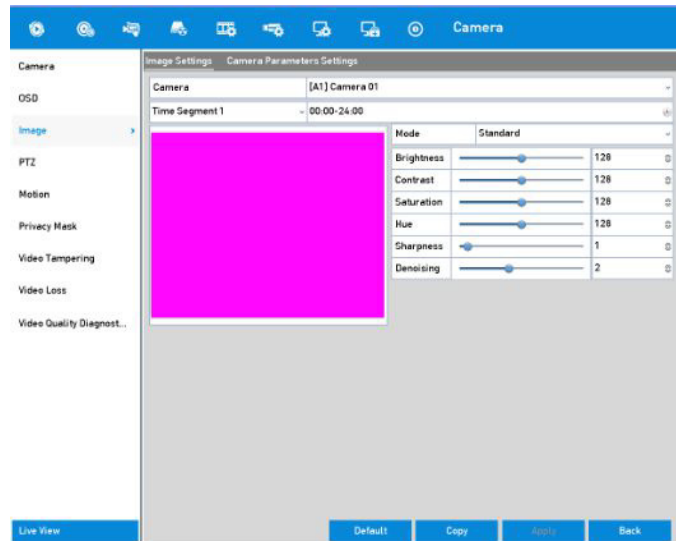


Image Settings Interface (Analog Camera)

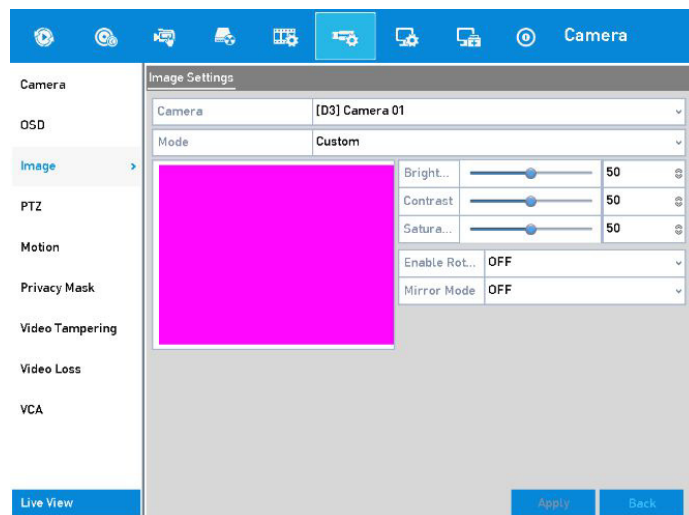


Image Settings Interface (IP Camera)

2. Select the camera to set image parameters.
3. Two periods for different image settings are provided, select the period name in the drop-down list.

Note:

The time periods cannot overlap each other.

4. Select the mode from the drop-down list of <Mode>, there are four modes selectable for the analog cameras: <Standard>, <Indoor>, <Dim Light> and <Outdoor>.
5. Adjust the image parameters according to the actual needs. The parameters include <Brightness>, <Contrast>, <Saturation>, <Hue>, <Sharpness> and <Denoising> for the analog cameras and <Brightness>, <Contrast> and <Saturation> for the IP cameras. You can also click <Restore> to set the parameters to the default settings.

6. You can click <Copy> to copy the image settings of the current camera to other cameras.
7. Click <Apply> to save the settings.

15.3.2 Configuring the Camera Parameters Settings

Steps:

1. Go to **Menu > Camera > Image > Camera Parameters Settings**.
2. Select the <Camera> from the drop-down list.
3. Configure the parameters.
 - Switch the 4 MP or 5 MP signal from the <Signal Switch> drop-down list. <4 MP 25/30 fps> and <5 MP 20 fps> are selectable. The <4 MP 25 fps> and <4 MP 30 fps> signals are self-adaptive for the camera.
 - Check <Enable Defog> to enable the defog function of the selected camera. And set the <Defog Level> anywhere from 1 to 4.
 - Adjust the parameters including <Day to Night Sensitivity>, <Night to Day Sensitivity> and <IR Light Brightness> for the analog cameras.
 - Select the <Day/Night Mode> of the camera from the drop-down list.
 - Check the <WDR Switch> checkbox to enable the function of the camera.
4. (Optional) Click <Default> to set the parameters to the default settings.
5. (Optional) Click <Copy> to copy the parameters of the current camera to other analog cameras.
6. Click <Apply> to save the settings.

Note:

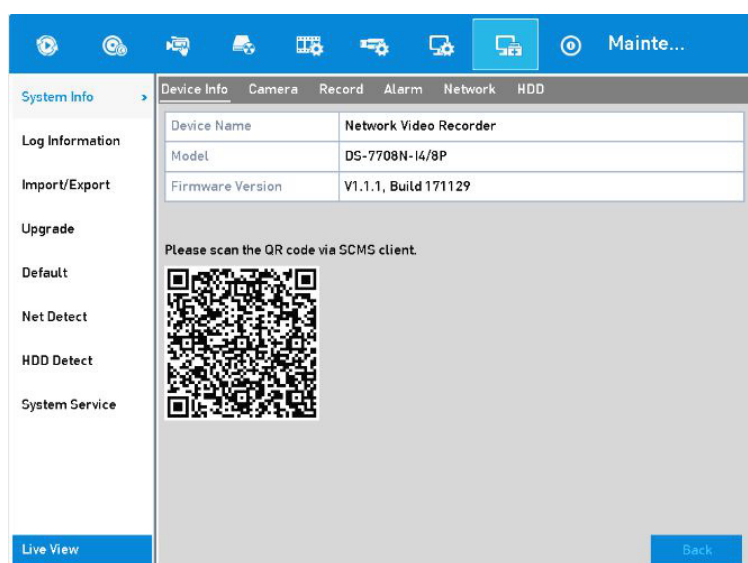
- The camera parameters settings are only applicable for analog cameras.
- The <4 MP/5 MP Signal Switch>, <Defog>, <Day to Night Sensitivity>, <Night to Day Sensitivity>, <IR Light Brightness>, <Day/Night Mode>, and <WDR Switch> functions must be supported by the connected analog camera. You cannot set the parameters if the connected analog camera does not support them or if there is no video signal.
- The parameters are saved to the connected analog camera and are not saved to the DVR.
- The default value for <Day to Night Sensitivity>, <Night to Day Sensitivity> and <IR Light Brightness> is 5. The effective value ranges from 1 to 9.
- If you exit from the interface and enter it again, the parameters displayed are those you have set the last time.
- The DVR connects to the analog camera via coaxitron and there is no response mechanism. Even if the coaxitron is abnormal, the parameters are still displayed to be set successfully.

16. DVR Management and Maintenance

16.1 Viewing System Information

Steps:

1. Go to **Menu > Maintenance > System Info**.
2. You can click the <Device Info>, <Camera>, <Record>, <Alarm>, <Network> and <HDD> tabs to view the system information of the device.



System Information Interface

16.2 Searching Log Files



The operation, alarm, exception and information of the DVR can be stored in log files, which can be viewed and exported at any time.

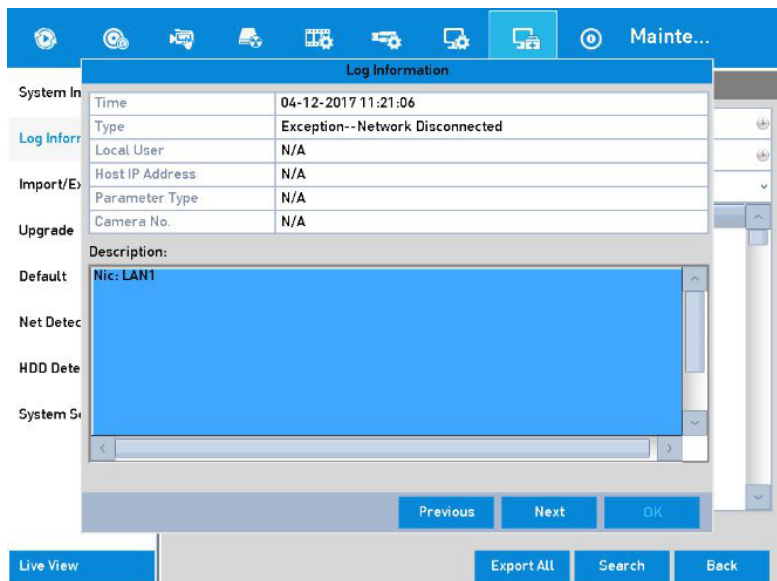
Steps:

1. Go to **Menu > Maintenance > Log Information**.
2. Set the log search conditions to refine your search, including the <Start Time>, <End Time>, <Major Type> and <Minor Type>.
3. Click the <Search> button to start searching for log files.
4. The matched log files will be displayed on the list shown below.

Note:

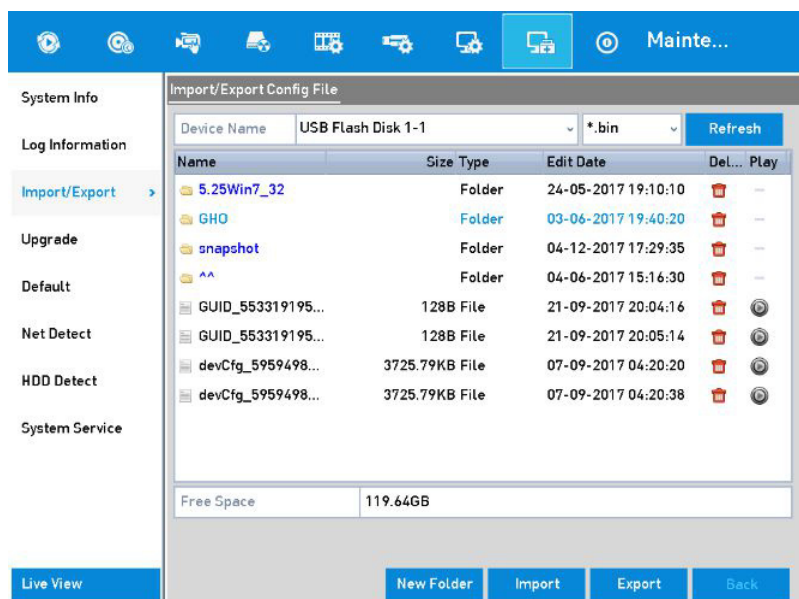
Up to 2000 log files can be displayed each time.

- You can click  for each log or double-click it to view its detailed information. You can also click  to view the related video files if available.



Log Information Interface

- If you want to export the log files, click the <Export> button to enter the Export menu, as shown below.



Export Log Files

- Select the backup device from the drop-down list of <Device Name>.
- Click <Export> to export the log files to the selected backup device.

You can click the <New Folder> button to create a new folder in the backup device, or click the <Format> button to format the backup device before the log export.

Note:

- Please connect the backup device to the DVR before operating a log export.
- The log files exported to the backup device are named by exporting time, e.g., *20110514124841logBack.txt*.

16.3 Importing/Exporting IP Camera Info

The information of an added IP camera can be generated into an excel file and exported to the local device for backup, including the IP address, manage port, admin password, etc. The exported file can then be edited on your PC, e. g. you can add or delete content and copy the settings to other devices by importing the excel file to them.

Steps:

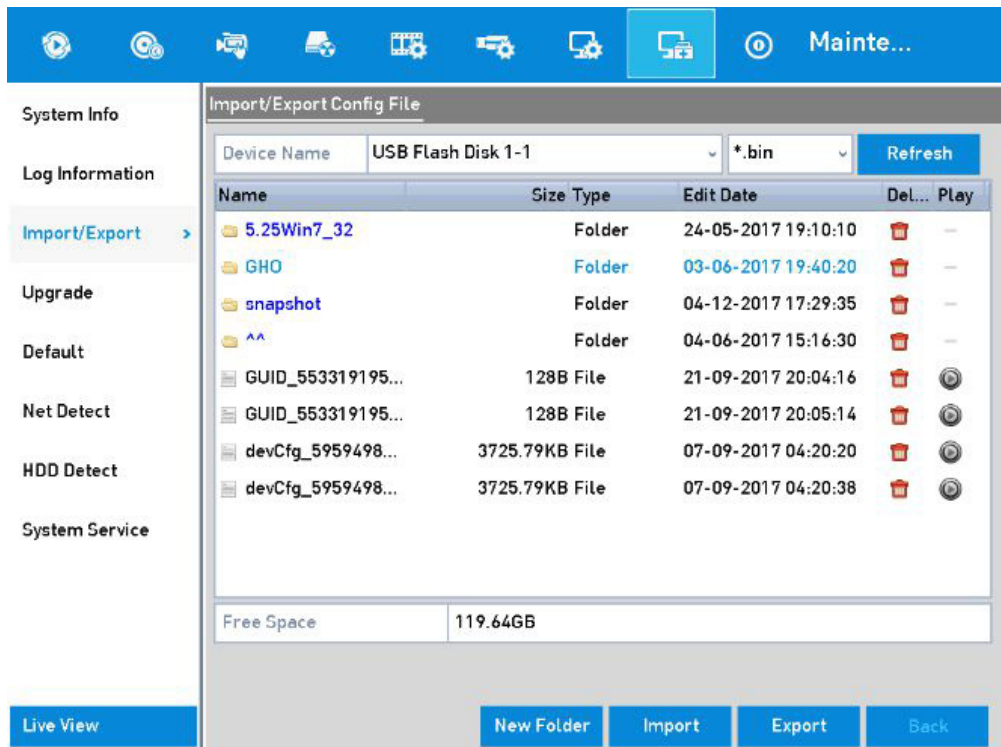
1. Go to **Menu > Camera > Camera > IP Camera Import/Export**.
2. Click the <Export> button to export configuration files to the selected local backup device.
3. To import a configuration file, select the file from the selected backup device and click the <Import> button. After the importing process is completed, you must reboot the DVR.

16.4 Importing/Exporting Configuration Files

The configuration files of the DVR can be exported to a local device for backup; and the configuration files of one DVR can be imported to multiple DVR devices if they are to be configured with the same parameters.

Steps:

1. Go to **Menu > Maintenance > Import/Export**.



Import/Export Configuration File

2. Click the <Export> button to export configuration files to the selected local backup device.
3. To import a configuration file, select the file from the selected backup device and click the <Import> button. After the import process is completed, you must reboot the DVR.

After having finished the import of configuration files, the device will reboot automatically.

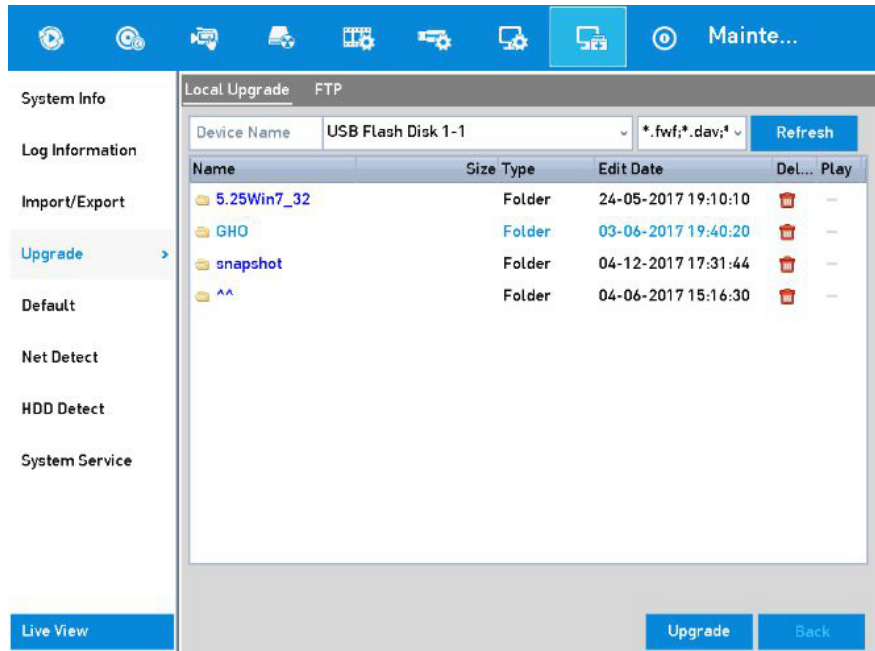
16.5 Upgrading the System

The firmware on your DVR can be upgraded by the local backup device or a remote FTP server.

16.5.1 Upgrading by Local Backup Device

Steps:

1. Connect your DVR with a local backup device where the firmware update file is located.
2. Go to **Menu > Maintenance > Upgrade > Local Upgrade**.



Local Upgrade Interface

3. Select the update file from the backup device.
4. Click <Upgrade> to start upgrading.
5. After the upgrading is completed, reboot the DVR to activate the new firmware.

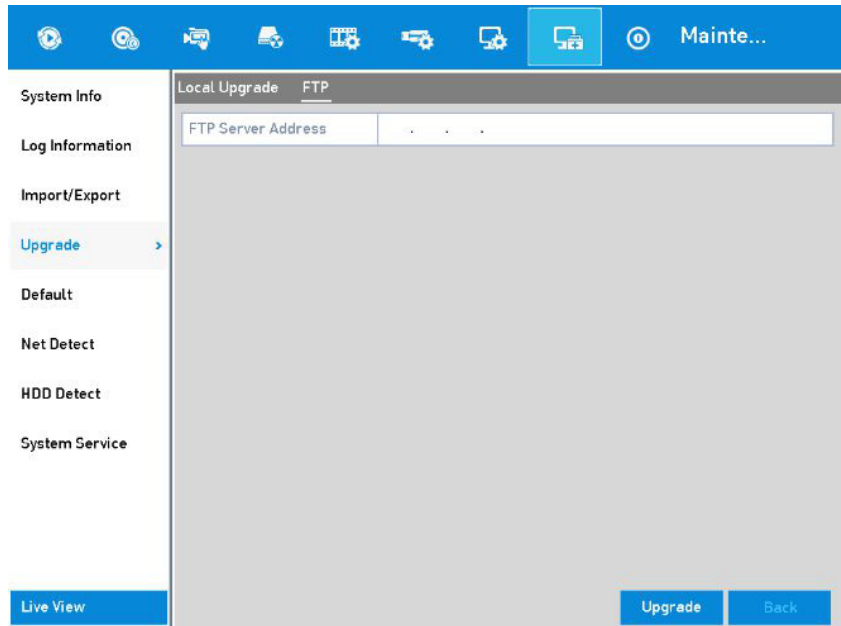
16.5.2 Upgrading by FTP

Before you start:

Configure the PC (that is the running FTP server) and the DVR for the same Local Area Network. Run the 3rd-party TFTP software on the PC and copy the firmware into the root directory of the TFTP.

Steps:

1. Go to **Menu > Maintenance > Upgrade > FTP**.



FTP Upgrade Interface

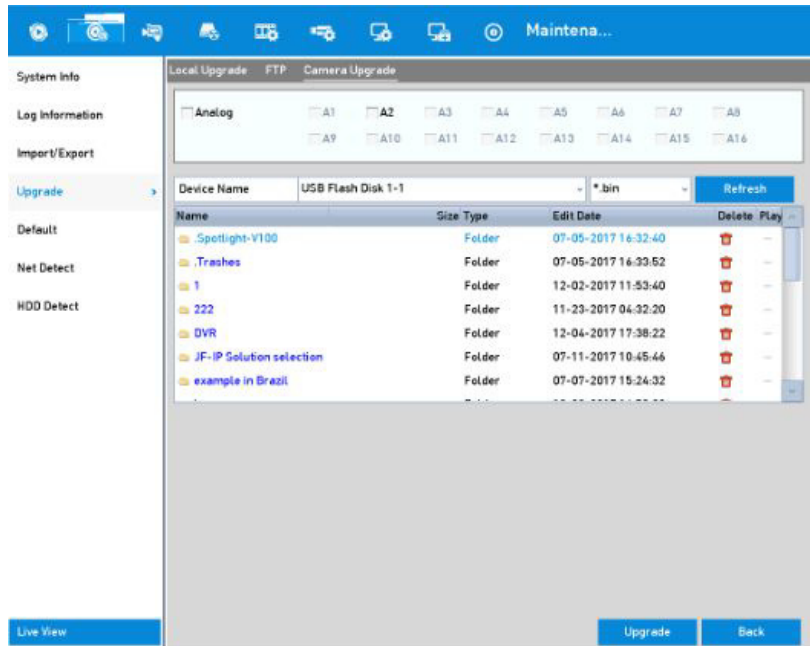
2. Enter the <FTP Server Address> in the text field.
3. Click the <Upgrade> button to start upgrading.
4. After the upgrading is complete, reboot the DVR to activate the new firmware.

16.6 Upgrading the Camera

You can upgrade multiple connected analog cameras supporting a HD-TVI or a AHD signal simultaneously with DVR.

Steps:

1. Go to **Menu > Maintenance > Upgrade > Camera Upgrade**.



Camera Upgrade

2. Check the checkbox(es) of the analog camera(s) for upgrading.

Note:

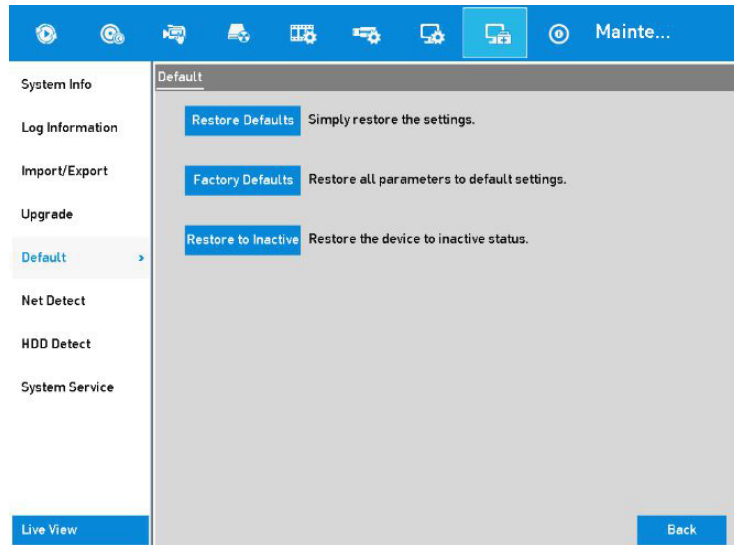
The analog camera must support a HD-TVI or a AHD signal.

3. Select the update file from the backup device.
4. Click the <Upgrade> button to start upgrading.

16.7 Restoring Default Settings

Steps:

1. Go to **Menu > Maintenance > Default**.



Restore Defaults

2. Select the restoring type from the following three options.

<Restore Defaults>: Restore all parameters, except the network (including the <IP address>, the <Subnet Mask>, the <Gateway>, <MTU>, <NIC Working Mode>, <Default Route>, <Server Port>, etc.) and user account parameters, to the factory default settings.

<Factory Defaults>: Restore all parameters to the factory default settings.

<Restore to Inactive>: Restore the device to the inactive status.

3. Click the <OK> button to restore the default settings.

Note:

The device will reboot automatically after restoring to the default settings.

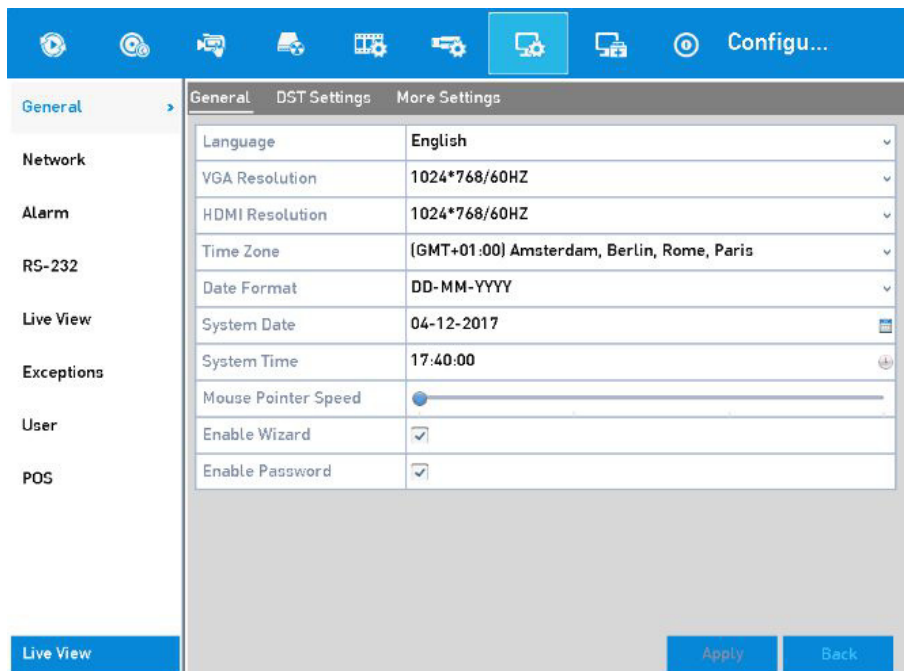
17. Others

17.1 Configuring the General Settings

You can configure the output resolution, system time, mouse pointer speed, etc.

Steps:

1. Go to **Menu > Configuration > General > General**.



General Settings Interface (for GD-RT-AT5016N)

2. Configure the following settings:

- **<Language>**: The default language used is *English*.
- **<Output Standard>**: Select the output standard to be <PAL> or <NTSC>.
- **<VGA/HDMI Resolution>**: Select the output resolution which must be the same as the resolution of the VGA/HDMI display.

Note:

For the GD-RT-AT5016N model, the <VGA/HDMI1 Resolution> and the <HDMI2 Resolution> can be configured separately. A resolution of up to 1920 × 1080/60 Hz is supported for a VGA/HDMI1 output and a resolution of up to 4K (3840 × 2160)/30 Hz is supported for a HDMI2 output.

- **<Time Zone>**: Select the time zone.
- **<Date Format>**: Select the date format.

- **<System Date>**: Select the system date.
- **<System Time>**: Select the system time.
- **<Mouse Pointer Speed>**: Set the speed of mouse pointer; 4 levels are configurable.
- **<Enable Wizard>**: Enable/disable the Wizard when the device starts up.
- **<Enable Password>**: Enable/disable the use of the login password.

Note:

If you check the checkbox of <Enable Password> every time when you log in to the DVR, the <Unlock Pattern> interface will pop up. If you uncheck the checkbox of <Enable Password>, when you log in to the DVR, the <Unlock Pattern> interface will not pop up.

3. Click the <Apply> button to save the settings.

17.2 Configuring the RS-232 Serial Port

Note:

The RS-232 serial port is supported by the GD-RT-AT5016N.

The RS-232 port can be used in two ways:

- **Parameters Configuration**: Connect a PC to the DVR through the PC serial port. Device parameters can be configured by using software such as *HyperTerminal*. The serial port parameters must be the same as the NVR's when connecting via the PC serial port.
- **Transparent Channel**: Connect a serial device directly to the DVR. The serial device will be controlled remotely by the PC through the network and the protocol of the serial device.

Steps:

1. Go to **Menu > Configuration > RS-232**.

RS-232 Settings	
Baud Rate	115200
Data Bit	8
Stop Bit	1
Parity	None
Flow Ctrl	None
Usage	Console

RS-232 Settings Interface

2. Configure RS-232 parameters including the <Baud Rate>, the <Data Bit>, the <Stop Bit>, <Parity>, <Flow Control> and <Usage>.
3. Click the <Apply> button to save the settings.

17.3 Configuring the DST Settings

Steps:

1. Go to **Menu > Configuration > General > DST Settings**.

General DST Settings More Settings						
<input type="checkbox"/> Auto DST Adjustment						
Enable DST <input type="checkbox"/>						
From	Apr	1st	Sun	2	:	00
To	Oct	last	Sun	2	:	00
DST Bias	60 Minutes					

DST Settings Interface

2. Check the checkbox before the <Auto DST Adjustment> item.

Or you can manually check the <Enable DST> checkbox and then you choose the date of the DST period.

17.4 Configuring More Settings

Steps:

1. Go to **Menu > Configuration > General > More Settings**.

General DST Settings More Settings	
Device Name	Network Video Recorder
Device No.	255
Auto Log out	5 Minutes
Menu Output Mode	Auto

More Settings Interface

2. Configure the following settings:

- **<Device Name>**: Edit the name of the DVR.
- **<Device No.>**: Edit the serial number of the DVR. The <Device No.> can be set in a range from 1 to 255 and the default No. is 255.
- **<Auto Logout>**: Set a timeout time for menu inactivity. E.g., when the timeout time is set to <5 Minutes>, then the system will exit from the current operation menu to the live view screen after 5 minutes of menu inactivity.
- **<CVBS Output Brightness>**: Adjust the video output brightness via the CVBS interface.
- **<Menu Output Mode>**: You can choose the menu display on different video output.

For the GD-RT-AT5016N, <Auto>, <HDMI1/VGA>, and <HDMI2> are selectable.

For other models, <Auto> and <HDMI/VGA> are selectable.

- **<Enhanced VCA Mode>**: For the GD-RT-AP5004P, GD-RT-AP5008P, GD-RT-AP5016N and GD-RT-AT5016N models, the enhanced VCA mode conflicts with the 2K/4K output and the 4 MP/5 MP signal input. You can enable or disable the VCA mode.

Enable Enhanced VCA Mode

- 1) Check the checkbox to enable <Enhanced VCA Mode>.
- 2) Click <Apply> and an attention box pops up.
- 3) Click <Yes> to apply the function and reboot the device.

Disable Enhanced VCA Mode

- 1) Uncheck the checkbox to disable enhanced VCA mode.
- 2) Click <Apply> and an attention box pops up.
- 3) Click <Yes> to apply the function and reboot the device.

Note:

If you have configured 2K/4K output or connected 4 MP/5 MP signal input already, when you enable enhanced VCA mode and after the device reboots, the output resolution will decrease to 1080p and the 4 MP/5 MP signal input will not display a video.

3. Click <Apply> to save the settings.

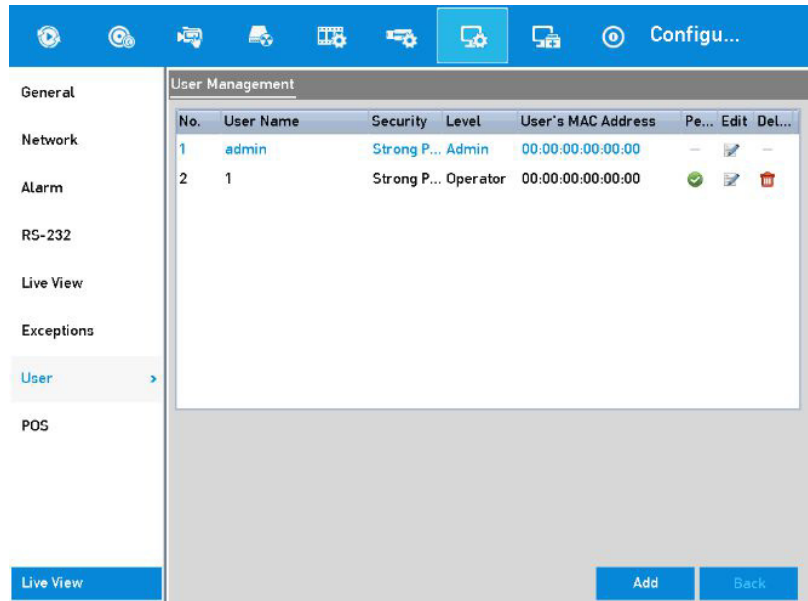
17.5 Managing User Accounts

There is a default account in the DVR: *Administrator*. The *Administrator* user name is *admin* and the password is set when you start the device for the first time. The *Administrator* has the permission to add and delete a user and to configure user parameters.

17.5.1 Adding a User

Steps:

1. Go to **Menu > Configuration > User**.



User Management Interface

- Click the <Add> button to enter the <Add User> interface.

The screenshot shows the 'Add User' form. The form fields are as follows:

- User Name: test
- Admin Password: [masked]
- Password: [masked] (with a green 'Strong' indicator)
- Confirm: [masked]
- Level: Guest (dropdown menu)
- User's MAC Address: 00 :00 :00 :00 :00 :00

Below the form fields is a message: "Valid password range [8-16]. You can use a combination of numbers, lowercase, uppercase and special character for your password with at least two kinds of them contained." At the bottom of the form are 'OK' and 'Cancel' buttons. The background shows the same sidebar and 'Add'/'Back' buttons as the previous screenshot.

Add User Menu

- Enter the information for the new user, including the <User Name>, a <Password>, <Confirm>, the <Level> and the <User's MAC Address>.

<Password>: Set the password for the user account.

WARNING:

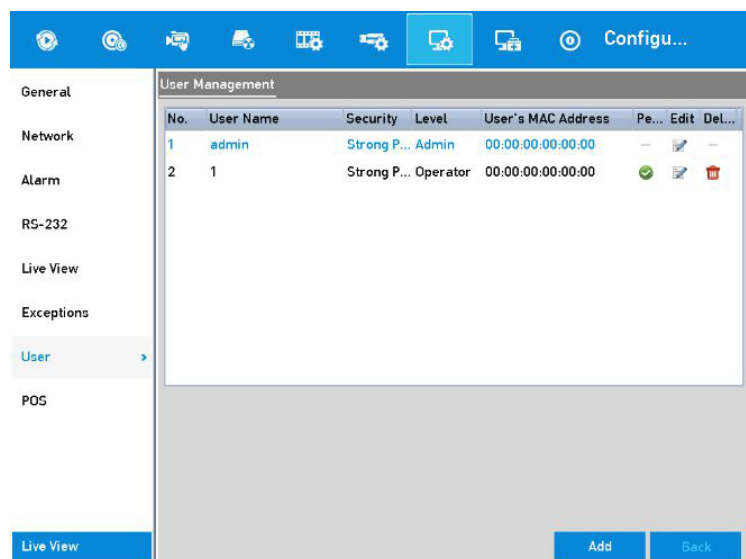
STRONG PASSWORD RECOMMENDED-We highly recommend you create a strong password of your own choosing (Using a minimum of 8 characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters.) in order to increase the security of your product. Further we recommend that you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

<Level>: Set the user level to <Operator> or <Guest>. Different user levels have different operating permission.


- **<Operator>:** The *Operator* user level has permission to <Two-way Audio> in the <Remote Configuration> and all operating permissions in <Camera Configuration> by default.
- **<Guest>:** The *Guest* user has no permission to <Two-way Audio> in <Remote Configuration> and only has the <Local/Remote Playback> in the <Camera Configuration> by default.

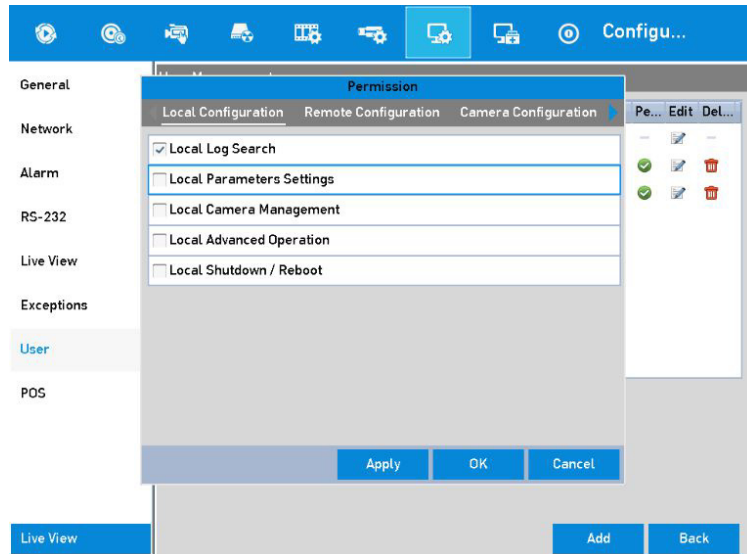
<User's MAC Address>: The MAC address of the remote PC which logs onto the DVR. If it is configured and enabled, it only allows the remote user with this MAC address to access the DVR.

4. Click the <OK> button to save the settings and go back to the <User Management> interface. The added new user will be displayed on the list, as shown below.



Added User Listed in User Management Interface

5. You can assign permissions for the added user.
 - 1) Select the user from the list and then click  to enter the <Permission Settings> interface, as shown below.



User Permission Settings Interface

- 2) Set the operating permission for the <Local Configuration>, the <Remote Configuration> and the <Camera Configuration> for the user.

<Local Configuration>

- **<Local Log Search>**: Searching and viewing logs and system information of the device.
- **<Local Parameters Settings>**: Configuring parameters, restoring factory default parameters and importing/exporting configuration files.
- **<Local Camera Management>**: Enabling and disabling analog camera(s). Adding, deleting and editing network camera(s). This function is supported by the HDVR series.
- **<Local Advanced Operation>**: Operating HDD management (initializing HDD, setting the HDD property) and upgrading system firmware.
- **<Local Shutdown /Reboot>**: Shutting down or rebooting the device.

Remote Configuration

- **<Remote Log Search>**: Remotely viewing logs that are saved on the device.
- **<Remote Parameters Settings>**: Remotely configuring parameters, restoring factory default parameters and importing/exporting configuration files.
- **<Remote Camera Management>**: Remotely enabling and disabling analog camera(s), and adding, deleting and editing network camera (s). This function is supported by the HDVR series.
- **<Remote Serial Port Control>**: Configuring settings for the RS-485 port.
- **<Remote Video Output Control>**: Sending a remote control panel signal.

- **<Two-way Audio>**: Realizing two-way radio between the remote client and the device.
- **<Remote Alarm Control>**: Remotely arming (sending an alarm and an exception message to the remote client) and controlling the alarm output.
- **<Remote Advanced Operation>**: Remotely operating the HDD management (initializing a HDD, setting the HDD property) and upgrading system firmware.
- **<Remote Shutdown/Reboot>**: Remotely shutting down or rebooting the device.

Camera Configuration

- **<Remote Live View>**: Remotely viewing live video of the selected camera(s).
- **<Local Manual Operation>**: Locally starting/stopping manual recording, picture capturing and alarm output of the selected camera(s).
- **<Remote Manual Operation>**: Remotely starting/stopping manual recording, picture capturing and alarm output of the selected camera(s).
- **<Local Playback>**: Locally playing back recorded files of the selected camera(s).
- **<Remote Playback>**: Remotely playing back recorded files of the selected camera(s).
- **<Local PTZ Control>**: Locally controlling the PTZ movement of the selected camera(s).
- **<Remote PTZ Control>**: Remotely controlling the PTZ movement of the selected camera(s).
- **<Local Video Export>**: Locally exporting recorded files from the selected camera(s).

Note:

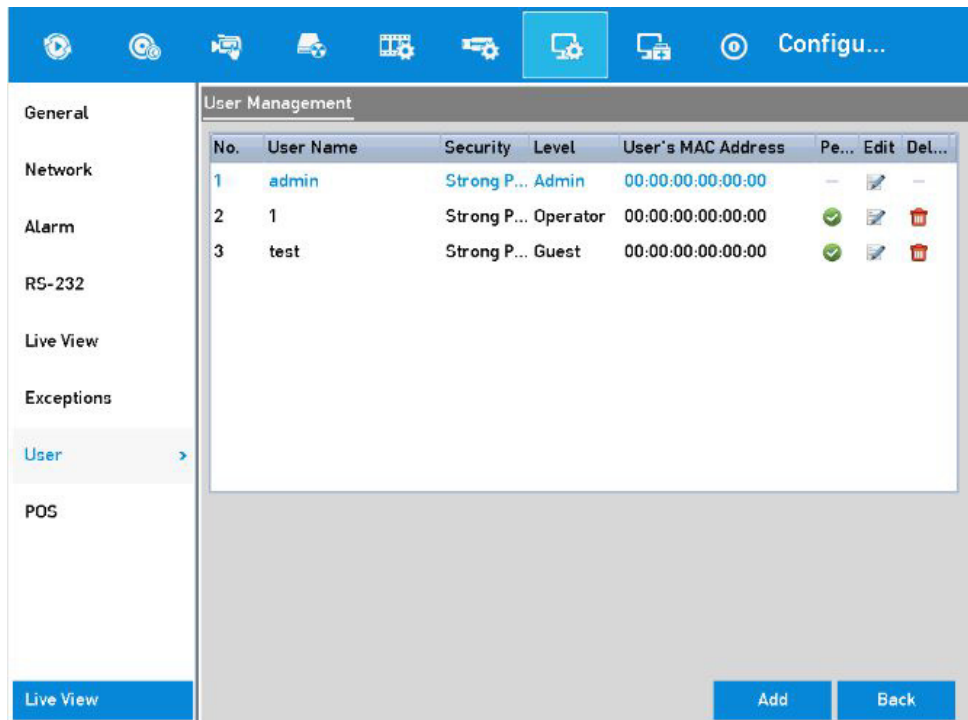
Local Camera Management is provided for the IP cameras only.

3) Click <OK> to save the settings and to exit.

17.5.2 Deleting a User

Steps:

1. Go to **Menu > Configuration > User**.
2. Select the user to be deleted from the list, as shown below.



User List

3. Click to delete the selected user account.

17.5.3 Editing a User

For the added user accounts, you can edit the parameters.

Steps:

1. Go to **Menu > Configuration > User**.
2. Select the <User> to be edited from the list.
3. Click to enter the <Edit User> interface, as shown below.

Edit User Interface

4. Edit the corresponding parameters.

● Operator and Guest

You can edit the user information, including the <User Name>, the <Password>, the permission <Level> and the <User's MAC Address>. Check the checkbox of <Change Password> if you want to change the password, and enter the new password in the text fields named <Password> and <Confirm>. A strong password is recommended.


● Admin

You are only allowed to edit the password and the MAC address. Check the checkbox of <Change Password> if you want to change the password, and enter the correct old password, and then enter the new password in the text fields named <Password> and <Confirm>.

WARNING:

STRONG PASSWORD RECOMMENDED-We highly recommend you create a strong password of your own choosing (Using a minimum of 8 characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters.) in order to increase the security of your product. Further we recommend you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

Note:

Click and hold  and you can see the clear text of the password. Release the mouse and the content of the password goes back to being invisible.

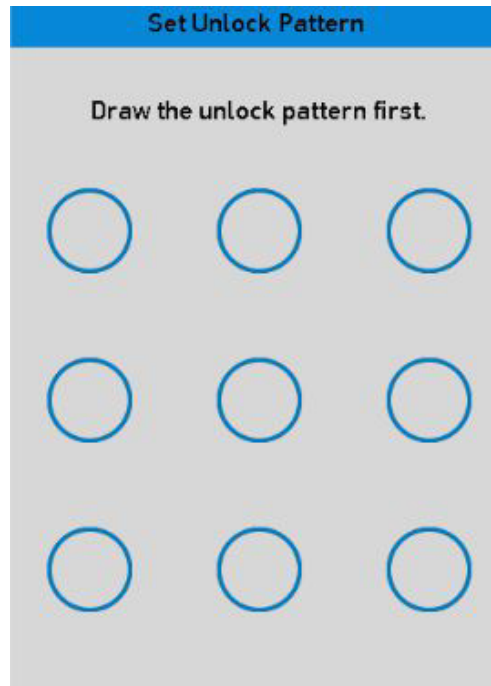
5. Edit the unlock pattern for the *admin* user account.

- 1) Check the checkbox of <Enable Unlock Pattern> to enable the use of an unlock pattern when logging in to the device.



- 2) Use the mouse to draw a pattern among the 9 dots on the screen. Release the mouse when the pattern is done.
- 3) Confirm the pattern again with the mouse.

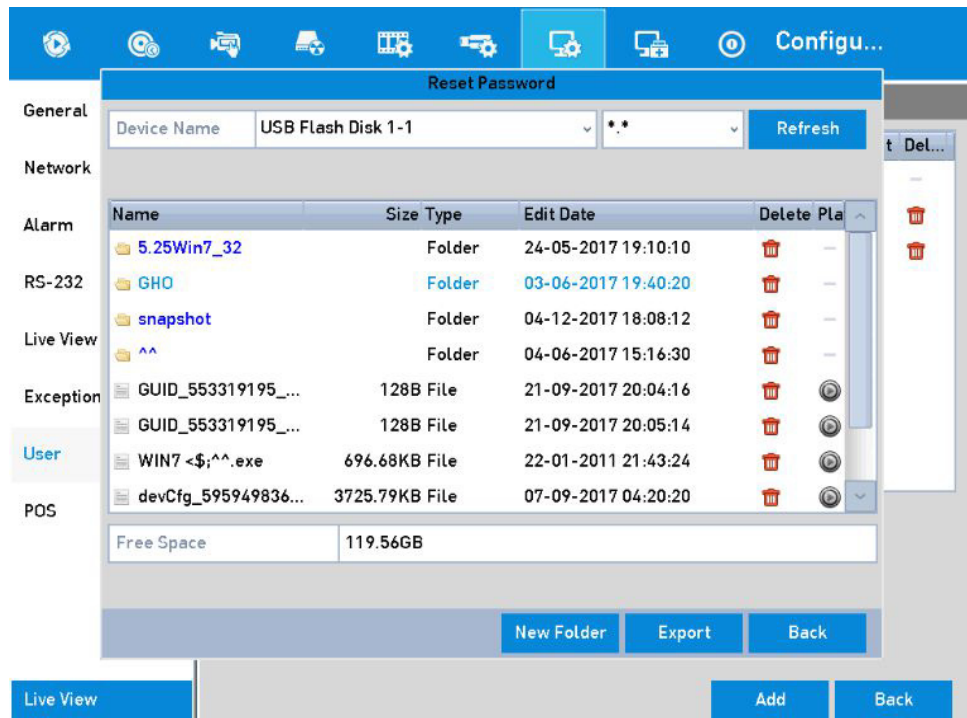
Note:

Please refer to *Chapter 2.3.1 Configuring the Unlock Pattern* for detailed instructions.



Set an Unlock Pattern for the Admin User

6. (Optional) Click  after <Draw Unlock Pattern> to modify the pattern.
7. (Optional) Click  after <Export GUID> to bring up the <Reset Password> interface. Click the <Export> button to export the GUID to the USB flash drive for retrieving the forgotten password. Then a GUID file will be saved in the USB flash drive.



Export GUID

Note:

You must enter the correct old password of the *admin* user before you can export the GUID.

8. Click the <OK> button to save the settings and to exit from the menu.
9. (Optional) For the <Operator> or the <Guest> user accounts you can also click the button on the <User Management> interface to edit the permission.

18. Important Notes

18.1 Glossary

- **Dual-Stream:** Dual-stream is a technology used to record a high resolution video locally while transmitting a lower resolution stream over the network. The two streams are generated by the DVR, with the main stream having a maximum resolution of 1080P and the sub-stream having a maximum resolution of CIF.
- **DVR:** Acronym for Digital Video Recorder. A DVR is a device that is able to accept video signals from analog cameras, compress the signal and store it on its hard drives.
- **HDD:** Acronym for Hard Disk Drive. A storage medium which stores digitally encoded data on platters with magnetic surfaces.
- **DHCP:** Dynamic Host Configuration Protocol (DHCP) is a network application protocol used by devices (DHCP clients) to obtain configuration information for operation in an Internet Protocol network.
- **HTTP:** Acronym for Hypertext Transfer Protocol - a protocol to transfer hypertext requests and information between servers and browsers over a network.
- **PPPoE:** PPPoE or Point-to-Point Protocol over Ethernet is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with ADSL services where individual users connect to the ADSL transceiver (modem) over Ethernet and in plain Metro Ethernet networks.
- **DDNS:** Dynamic DNS is a method, protocol or network service that provides the capability for a networked device, such as a router or a computer system using the Internet Protocol Suite, to notify a domain name server to change, in real time (ad-hoc), the active DNS configuration of its configured hostnames, addresses or other information stored in DNS.
- **Hybrid DVR:** A hybrid DVR is a combination of a DVR and a NVR.
- **NTP:** Acronym for Network Time Protocol. A protocol designed to synchronize the clocks of computers over a network.
- **NTSC:** Acronym for the National Television System Committee. NTSC is an analog television standard used in such countries as the United States and Japan. Each frame of an NTSC signal contains 525 scan lines at 60Hz.
- **NVR:** Acronym for a Network Video Recorder. An NVR can be a PC-based or embedded system used for centralized management and storage for IP cameras, IP Domes and other DVRs.

- **PAL:** Acronym for Phase Alternating Line. PAL is also another video standard used in broadcast television systems in large parts of the world. A PAL signal contains 625 scan lines at 50Hz.
- **PTZ:** Acronym for Pan, Tilt, Zoom. PTZ cameras are motor driven systems that allow the camera to pan left and right, tilt up and down and zoom in and out.
- **USB:** Acronym for Universal Serial Bus. USB is a plug-and-play serial bus standard to interface devices to a host computer.

18.2 Troubleshooting

- **No image is displayed on the monitor after the device is starting up normally.**

Possible Reasons:

- There are no VGA or HDMI connections.
- The connection cable is damaged.
- The input mode of the monitor is incorrect.

Steps:

1. Verify that the device is connected with the monitor via a HDMI or a VGA cable.
If not, please connect the device with the monitor and reboot.
2. Verify that the connection cable is good.
If there is still no image display on the monitor after rebooting, please check if the connection cable is good and change the cable and connect again.
3. Verify that the input mode of the monitor is correct.
Please check that the input mode of the monitor matches the output mode of the device (e.g. if the output mode of the DVR is an HDMI output, then the input mode of the monitor must be the HDMI input). If not, please modify the input mode of the monitor.
4. Check, if the fault is solved by steps 1 to 3.
If it is solved, finish the process.
If not, please contact the engineer from our company to continue the process.

- **There is a beep sound after a newly bought device starts up.**

Possible Reasons:

- There is no HDD is installed in the device.
- The installed HDD has not been initialized.
- The installed HDD is not compatible with the device or it is broken-down.

Steps:

1. Verify that at least one HDD is installed on the device.

- 1) If not, please install the compatible HDD.

Note:

Please refer to the “Quick Operation Guide” for the HDD installation steps.

- 2) If you do not want to install a HDD, select **Menu>Configuration > Exceptions** and uncheck the Audible Warning checkbox <HDD Error>.
2. Verify that the HDD is initialized.
 - 1) Select **Menu>HDD>General**.
 - 2) If the status of the HDD is <Uninitialized>, please check the checkbox of the corresponding HDD and click the <Init> button.
 3. Verify that the HDD is detected or is in good condition.
 - 1) Select **Menu>HDD>General**.
 - 2) If the HDD is not detected or the status is <Abnormal>, please replace the dedicated HDD according to the requirement.
 4. Check if the fault is solved by following steps 1 to 3.
 - 1) If it is solved, finish the process.
 - 2) If not, please contact the engineer from our company to continue the process.

● **Live view stuck when video outputs locally.**

Possible Reasons:

- The frame rate has not reached the real-time frame rate.

Steps:

1. Check the parameters of <Main Stream (Continuous)> and <Main Stream (Event)>.
Select **Menu > Record > Parameters > Record** and set the resolution for <Main Stream (Event)> to the same as the one for <Main Stream (Continuous)>.
2. Verify that the frame rate is a real-time frame rate.
Select **Menu > Record > Parameters > Record** and set the <Frame Rate> to <Full Frame>.
3. Check if the fault is solved by following the above steps.
If it is solved, finish the process.
If not, please contact the engineer from our company to continue the process.

● **When using the device to get the live view audio, there is no sound, is too much noise or the volume is too low.**

Possible Reasons:

- The cable between the pickup and the camera is not well-connected; impedance mismatches or incompatible.
- The stream type is not set as <Video & Audio>.

Steps:

1. Verify that the cable between the pickup and the camera is connected well; impedance matches and compatible.
2. Verify that the setting parameters are correct.
Select **Menu > Record > Parameters > Record** and set the Stream Type as <Audio & Video>.
3. Check if the fault is solved by following the above steps.
If it is solved, finish the process.
If not, please contact the engineer from our company to continue the process.

● The image gets stuck when the DVR is playing back by single or multi-channel cameras.***Possible Reasons:***

- The frame rate is not the real-time frame rate.
- The DVR supports up to 16-channel synchronized playback at the resolution of 4CIF, if you want a 16-channel synchronize playback at the resolution of 720p, the frame extracting may occur, which leads to a slight stuck.

Steps:

1. Verify that the frame rate is a real-time frame rate.
Select **Menu > Record > Parameters > Record** and set the <Frame Rate> to < Full Frame>.
2. Verify that the hardware can afford the playback.
Reduce the channel number of the playback.
Select **Menu > Record > Encoding > Record** and set the resolution and the bitrate to a lower level.
3. Reduce the number of local playback channels.
Select **Menu > Playback** and uncheck the checkbox of unnecessary channels.
4. Check if the fault is solved by following the above steps.
If it is solved, finish the process.
If not, please contact the engineer from our company to continue the process.

● No record file is found on the device local HDD and the prompt “No record file found” pops up when you search the record files.***Possible Reasons:***

- The time setting of the system is incorrect.
- The search condition is incorrect.
- The HDD has an error or is not detected.

Steps:

1. Verify that the system time setting is correct.

Select **Menu > Configuration > General > General** and verify that the <System Time> is correct.

2. Verify that the search condition is correct.

Select <Playback> and verify that the channel and the time are correct.

3. Verify that the HDD status is normal.

Select **Menu > HDD > General** to view the HDD status and to verify whether the HDD is detected and whether it can be read and written normally.

4. Check if the fault is solved by following the above steps.

If it is solved, finish the process.

If not, please contact the engineer from our company to continue the process.

18.3 List of Compatible Third-Party IP Cameras

Manufacturer	Model	Version	Max. Resolution	Sub-stream	Audio
Axis	P3304	5.2	1440×900	√	×
Sony	SNC-RH124	1.7.00	1280×720	√	√
Samsung	SND-5080P	3.10_130416	1280×1024	√	√
Vivotek	FD8134	0107a	1280×800	√	×
Bosch	Dinion NBN-921-P	V10500453	1280×720	×	×
Panasonic	SP306H	Application: 1.34 Image Data: 1.06	1280×960	×	√
Cannon	VB-H410	Ver.+1.0.0	1280×960	×	√
Zavio	F3206	MG.1.6.02c045	1920×1080	√	×
Pelco	IX30DN-ACF ZHB3	1.8.2-20120327-2.9080-A1.7852	2048×1536	√	×

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