Wired/Wireless All-In-One Surveillance System

User Manual

Model Name: BHA-WP202

- Thank you for purchasing our wired/wireless all-in-one surveillance system.
- Before start using this product, please ensure that you read and understand the User Manual.
- Please store the User Manual at an easily accessible location.
- Before connecting and installing monitors, alarms and computers, please refer to the appropriate instruction manual for proper operation.

SAFETY PRECAUTIONS

CAUTION:

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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

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

WARNING:

TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Contents

Disclaimer

- The information in this manual is believed to be accurate and reliable as of the date of publication. The information contained herein is subject to change without notice. Revisions or New editions to this publication may be issued to incorporate such change
- We make no warranties for damages resulting from corrupted or lost data due to a mistaken operation or malfunction of the Network Video Recorder, the software, the hard drives, personal computers, peripheral devices, or unapproved/unsupported devices.

Warning

- Do not cover the ventilation opening or slots on the outer casing. To prevent the appliance from overheating, provide at least two inches of air space around the vent and the slots.
- Do not drop metallic parts through slots. This could permanently damage the Digital Video Recorder. Immediately turn the NVR's power off or unplug the power cord from the power outlet. Contact a qualified service personnel authorized by your equipment distributor
- Do not attempt to disassemble or alter any part of the equipment that is not expressly described in this guide. Disassembly or alteration may result in high voltage electrical shock. Qualified service personnel authorized by your equipment distributor should conduct internal inspections, alterations and repairs.
- Stop operating the equipment immediately if it emits smoke or noxious fumes. Failure to do so may result in fire or electrical shock. Immediately turn the NVR's power off, remove the power cable from the power outlet. Confirm that smoke and fume emissions have ceased. Please consult your NVR distributor.
- Stop operating the equipment if a heavy object is dropped or the casing is damaged. Do not strike or shake. Failure to do so may result in fire or electrical shock. Immediately turn the NVR's power off or unplug the power cord from the power outlet. Please consult your NVR distributor.
- Do not allow the equipment come into contact with, or become immersed in, water or other liquids. Do not allow liquids to OK the interior. The NVR has not been waterproofed. If the exterior comes into contact with liquids or salt air, wipe it dry with a soft, absorbent cloth. In the event that the water or other foreign substances OK the interior, immediately turn the NVR's Power off or unplug the power cord from the power outlet. Continued use of the equipment may result in fire or electrical shock. Please consult your NVR distributor.

- Do not use substances containing alcohol, benzene, thinners or other flammable substances to clean or maintain the equipment. The use of these substances may lead to fire. Use a

dry cloth on a regular periodic basis and wipe away the dust and dirt that collects on the device. In dusty, humid or greasy environments, the dust that collects around the ventilation or the slots on the outer casing over long periods of time may become saturated with humidity and short-circuit, leading to fire.

- Do not cut, damage, alter or place heavy items on the power cord. Any of these actions may cause an electrical short circuit, which may lead to fire or electrical shock.
- Do not handle the device or power cord if your hands are wet. Handling it with wet hands may lead to electrical shock. When unplugging the cord, ensure that you hold the solid portion of the plug. Pulling on the flexible portion of the cord may damage or expose the wire and insulation, creating the potential for fires or electrical shocks.
- Use only the recommended power accessories. Use of power sources not expressly recommended for this equipment may lead to overheating, distortion of the equipment, fire, electrical shock or other hazards.
- Do not place the batteries near a heat source or expose them to direct flame or heat. Neither should you immerse them in water. Such exposure may damage the batteries and lead to the leakage of corrosive liquids, fire, electrical shock, explosion or serious injury.
- Do not attempt to disassemble, alter or apply heat to the batteries. There is serious risk of injury due to an explosion. Immediately flush with water any area of the body, including the eyes and mouth, or clothing that comes into contact with the inner contents of the battery. If the eyes or mouth contact these substances, immediately flush with water and seek medical assistance from a medical professional.
- Avoid dropping or subjecting the batteries to severe impacts that could damage the casings. It could lead to leakage and injury.
- Do not short-circuit the battery terminals with metallic objects, such as key holders. It could lead to overheating, burns and other injuries.
- The supplied power supply and power cord are designed for exclusive use with the Digital Video Recorder. Do not use it with other products or batteries. There is a risk of fire and other hazards.

Caution

- Do not operate the appliance beyond its specified temperature, humidity or power source ratings. Do not use the appliance in an extreme environment where there is high temperature or high humidity. Use the device at temperatures within +0°C - +40°C (32°F - 104°F) and humidity below 90 %. The normal operating power source for this device is 100V-240V AC 50/60Hz.

Preventing Malfunction

- Avoid Strong Magnetic Fields. Never place the NVR in close Proximity to electric motors or other equipment generating strong electromagnetic fields. Exposures to strong magnetic fields may cause malfunctions or corrupt image data.
- Avoid Condensation Related Problems. Moving the equipment rapidly between hot and cold temperatures may cause condensation (water droplets) to form on its external and internal surfaces. You can avoid this by placing the equipment in an airtight, resalable plastic bag and letting it adjust to temperature changes slowly before removing it from the bag.
- If Condensation forms inside the Network Video Recorder. Stop using the equipment immediately if you detect condensation. Continued use may damage the equipment. Remove the power cord from the power outlet and wait until the moisture evaporates completely before resuming use.

Regulatory

Description on Laser Specification

The optical disc drive such as DVD Super Multi (Double Layer) Drive 22X that is used in this computer is equipped with laser. The classification label with the following sentence is affixed to the surface of the drive.

CLASS 1 LASER PRODUCT TO IEC60825-1 LASER KLASSE 1 The drive with the above label is certified by the manufacturer that the drive complies with the requirement for laser product on the date of manufacturing pursuant to article 21 of Code of Federal Regulations by the United States of America, Department of Health & Human Services, Food and Drug Administration. In other countries, the drive is certified to comply with the requirement pursuant to IEC 60825-1 and EN 60825-1 on class 1 laser product. This computer is equipped with the optical disc drive in the following list according to the model.

EU Conformity Statement:

CE

2002/96/EC (WEEE Directive) : Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information, see: www.recyclethis.info.

2006/66/EC (Battery Directive) : Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information, see: www.recyclethis.info.

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

CAUTION

- Risk of Explosion if Battery is replaced by an Incorrect Type.
- The socket-outlet shall be installed near the equipment and shall be easily accessible

Product Outline

Product Name	ARNIX Wired/Wireless All-In-One Surveillance System
Model Name	BHA-WP202
User Guide Version	Version 1.0
Manufacturer	EMW Co., Ltd.
Address	Head Office: 80B-4L, 680-3, Gojan-Dong, Namdong-Gu, Incheon, Korea R&D Center: 459-24, Gasan-Dong, Geumcheon-Gu, Seoul, Korea
Contact	Tel: +82-2-2107-5500(Rep.) Fax: +82-2-2107-5645 Tel: +82-2-2107-5614/5561(Sales Contact) Email: rfsales@emw.co.kr Website: www.emw.co.kr

Package Contents

Please check the package contents for any visible damage. If any components are damaged or missing, do not attempt to use the unit, contact the supplier immediately. If the unit must be returned, it must be shipped in the original packing box.

BHA-WP202 CONTENTS		QUANTITY	REMARK
IP Camera	IP Camera	2 EA	
	IP Camera Antenna	2 EA	3dBi
	Adapter (12V/1.5A)	2 EA	
	Stand Screw	2 Zipper Bags	Screw & Anchor(Each 6pcs)
NVR	NVR SET	1 EA	
	NVR Antenna	1 EA	5dBi
	Adapter (12V/4A)	1 EA	
	Screw For HDD Mount	1 Zipper Bag	Screw(12pcs)
	USB Mouse	1 EA	
	IR Remote Controller	1 EA	
	Ethernet Cable	1 EA	
etc	Client Software CD	1 EA	User Manual included
	Quick Installation Guide	1 EA	Hard Copy

I. ARNIX ALL-IN-ONE PACKAGE

1. IP Camera Appearance Description

1) Front

-  : Turned on when wired network is connected and properly working
-  : Turned ON/OFF when power is ON/OFF
-  : Turned ON/OFF when wireless network is connected and properly working
- MIC : Microphone
- CDS Sensor : -
- IR LED : -

2) Back

- **Ethernet :** RJ-45 (10/100BASE-T) Ethernet port
- **Power :** DC 12V power socket for IP Camera
- **Audio :** Audio input socket
- **Micro SD Card Slot : -**
- **Speaker :** Speaker output
- **Reset :** The reset button is used to reset the system or restore the factory default settings
- **Antenna**

2. NVR Appearance Description

1) **Front**

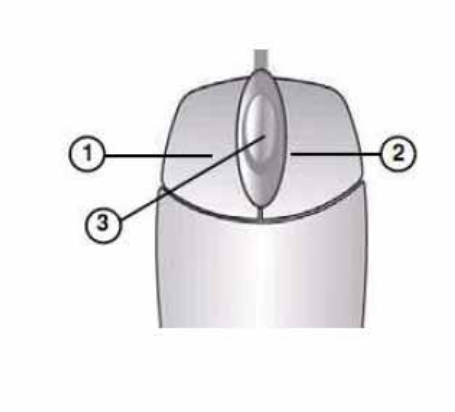
- **USB Port :** For data backup/firmware update using flash drive and USB mouse
- **Remote IR :** For remote controller
- **Power LED :** Turned on when the power is on
- **HDD LED :** Turned on when HDD is running
- **LAN LED :** Turned on when wired network is connected and properly working
- **Wireless LED 1-4 :** 1-4 LED will be turned on when wireless network is Connected and properly working
- **Pairing Button :** Push this button to initiate a automatic IP address scan and to connect

2) **Back**

- **AUDIO OUT :** RCA Audio Output
- **VIDEO OUT :** COAXIAL Video Output
- **HDMI :** HDMI(Vidoe) Output
- **RS-232 :** RS-232C Port for program updates and debugging
- **VGA :** VGA(Vidoe)
- **eSATA Port :** External SATA Terminal
- **USB :** Mouse, Backup or Software Update
- **LAN :** RJ-45 10/100/1000BASE-T Ethernet connector for network function
- **Power :** DC 12V for NVR

3. Remote Controller

4. Mouse Control

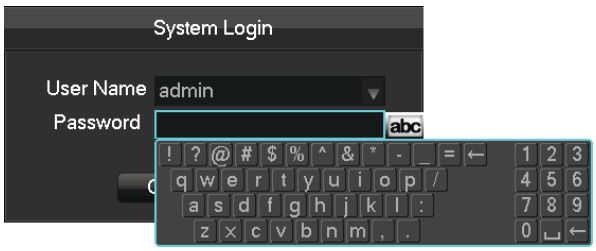


NVR can be controlled by the mouse. Connect the mouse to the USB port before use.

1) **Left-Button** -Double Click on any channel to enlarge to full screen while in a split-screen display mode and double click again to return.
Select the menu option while navigating through various menu options.
2) **Right Button**- Right click anywhere on the screen to open main menu. Double click to return.
3) **Scroll Wheel:** move the scroll wheel up or down to increase/decrease the value of the selected menu option.

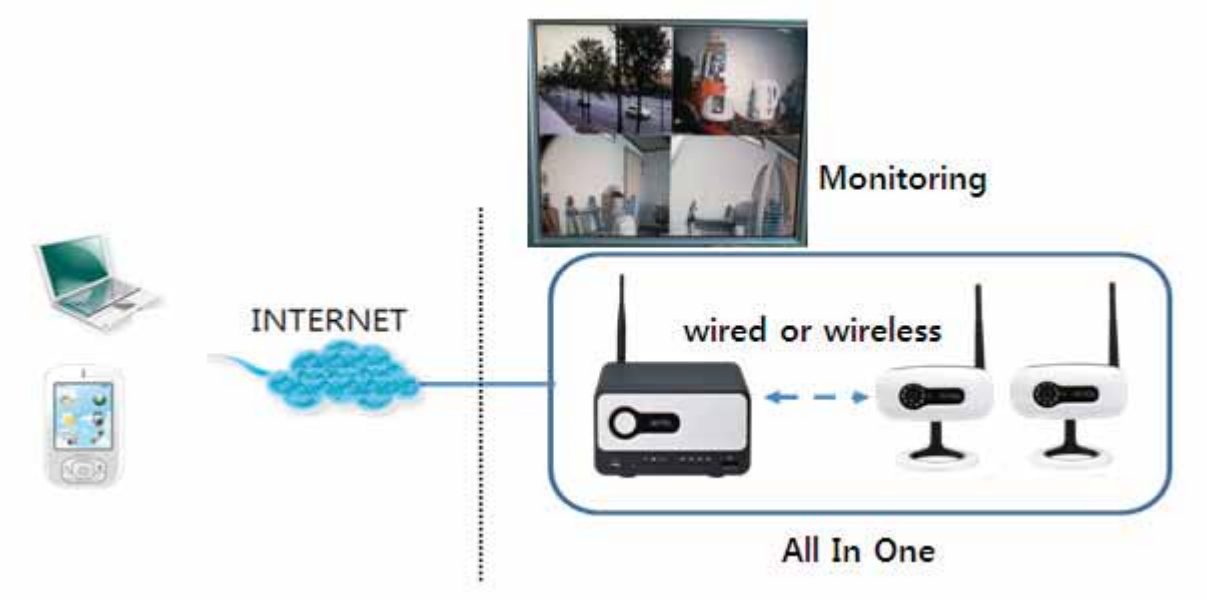
5. Virtual Keyboard for Mouse Control

Our system provides a virtual on-screen keyboard to perform the control by mouse. Connect a mouse via USB port before using



<Virtual Keyboard>

II. INSTALLATION & CONNECTIONS



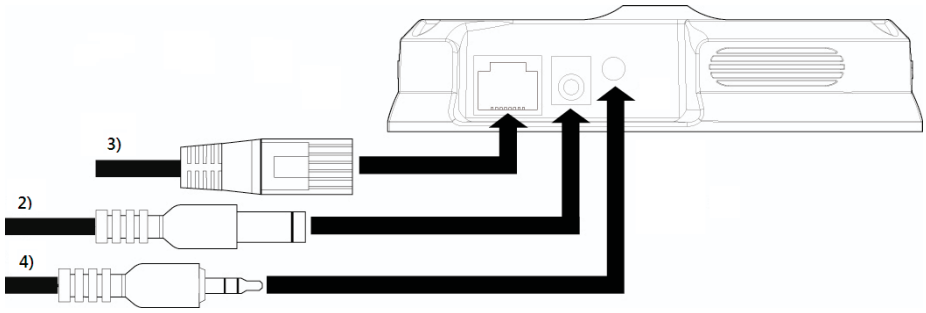
system configuration

1. Assembling the Parts

1.1 Connector to the IP Camera

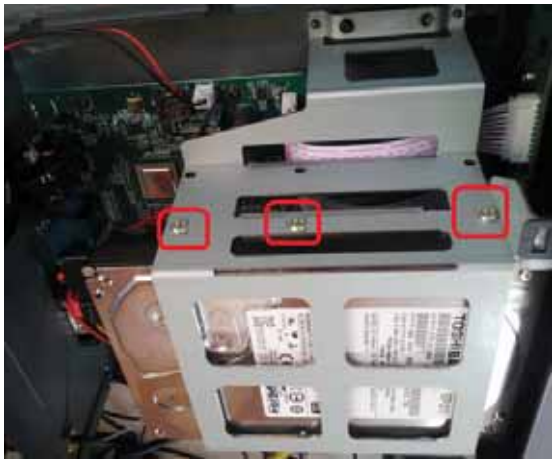
1) Connect the antenna.

2) Connector the Adaptor(12V/1.5A)
3) Connector the Ethernet Cable(for Wired network)
   Remove the Ethernet Cable (for Wireless network)
4) Connector the Audio(for Speaker)

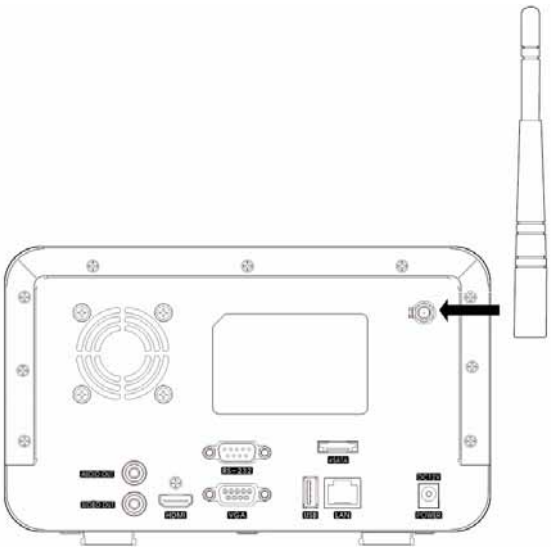


1.2 NVR

1) Mounting the HARD DISK
   a. Installation HDD and Bracket onto base case
   b. After installing bracket and screws onto HDD
   c. After connecting power cable and data cable with HDD

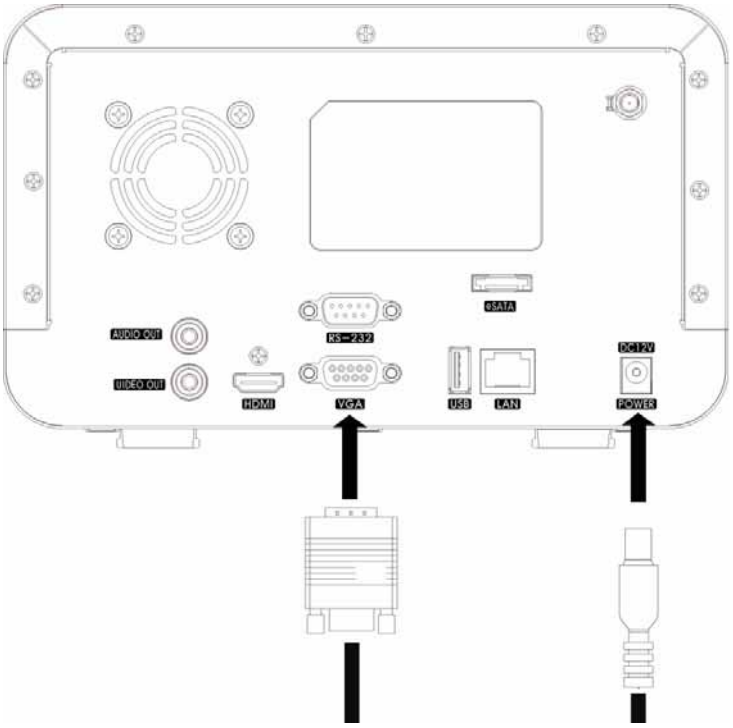


2) Connect the antenna



3) Connect the power cable.

4) Connect the monitor and LAN cable.



※ Compatible HDD Models

Seagate ST3000DM001(CC43) 3 TB SATA3 64 MB

Seagate ST3000DM001(CC24) 3 TB SATA3 64 MB

Seagate ST32000641AS (Barracuda XT) 2 TB SATA3 64 MB

Seagate ST1000DM003 1 TB SATA3 64 MB

Seagate ST31000524AS (Barracuda 7200.12) 1 TB SATA3 32 MB

Seagate ST31000526SV (Surveillance) 1 TB SATA3 32 MB

Seagate ST31000524AS (Barracuda) 1 TB SATA3 32 MB

Seagate ST31000340SV (Surveillance) 1 TB SATA2 32 MB

Seagate ST31000528AS (Barracuda) 1 TB SATA2 32 MB

Seagate ST500DM002 (Barracuda) 500 GB SATA3 16 MB

Seagate ST3500411SV (Surveillance) 500 GB SATA3 16 MB

Seagate ST3500413AS (Barracuda) 500 GB SATA3 16 MB

Seagate ST3500830SCE 500 GB SATA2 8 MB

Seagate ST3500418AS (Barracuda) 500 GB SATA2 16 MB

Seagate ST3500410AS (Barracuda) 500 GB SATA2 16 MB
Seagate ST250DM000 (Barracuda) 250 GB SATA3 16 MB
Seagate ST3250410AS (Barracuda) 250 GB SATA2 16 MB
Seagate ST3250310SV (Surveillance) 250 GB SATA2 8 MB
Seagate ST3250318AS (Barracuda) 250 GB SATA2 8 MB
Seagate ST3160815AS (Barracuda) 160 GB SATA2 8 MB
HITACHI HDS723020BLA642 2 TB SATA3 64 MB
HITACHI HDS722020ALA330 2 TB SATA2 32 MB11
HITACHI HDS721010DLE630 1 TB SATA3 32 MB
HITACHI HDS721010KLA330 1 TB SATA2 32 MB
HITACHI HDT721010SLA360 1 TB SATA2 16 MB
HITACHI HDS721010CLA332 1 TB SATA2 32 MB
HITACHI HDS721050CLA362 500 GB SATA2 16 MB
HITACHI HDP725050GLA360 500 GB SATA2 16 MB
HITACHI HDS721032CLA362 320 GB SATA2 16 MB
HITACHI HDS721025CLA382 250 GB SATA2 8 MB
HITACHI HDT721025SLA380 250 GB SATA2 8 MB
HITACHI HDP725025GLA380 250 GB SATA2 8 MB
Western Digital WD10EZEX-00RKKAO 1 TB SATA3 64 MB
Western Digital WD10EVDS(63U8B1) 1 TB SATA3 32 MB
Western Digital WD10EALX (229BA1) 1 TB SATA3 32 MB
Western Digital WD10EALX (009BA0) 1 TB SATA3 32 MB
Western Digital WD5000AAKX(221CA1 Caviar Blue) 500 GB SATA2 16 MB
Western Digital WD5000AAKX (001CA0) 500 GB SATA3 16 MB
Western Digital WD2500AAKX 250 GB SATA3 16 MB
Western Digital WD2500AAKS 250 GB SATA3 16 MB
TOSHIBA HDS723020BLE640 2TB SATA3 64MB

Product Installation Place

2. Network Connection

2.1 Wireless Network

1) Connect the power to IP Camera and NVR.

(Please wait awhile until the booting process is finished)

2) Push the pairing button on the front panel of NVR for more than 3 seconds to establish the wireless network.

Wait until the LED on the front panel changes from blinking red to green.

<Caution> Pairing sequence must take place if you are connecting the IP Cameras to NVR for the first time.

2.2 Wired Network

1) Connect the power to IP Camera and NVR.

Please wait awhile until the booting process is finished.

2) Use the Network Router to connect the IP Camera(s) to NVR.

3) The addition of IPCs shows as the following interface

4) Enter [video]-[net channel]

5) First open [OPEN].

6) **[Channels]** Choose a local channel to display.

7) **[Search]**Select the appropriate protocol and search.

The IPCs and the device should in the same LAN.

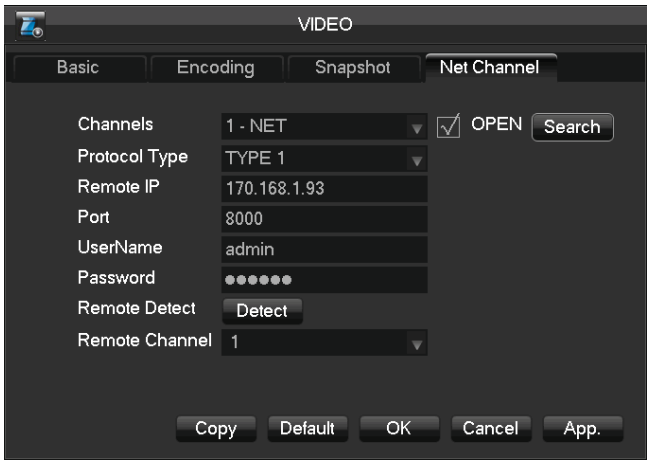
Double click the search results and it will add the IPC automatically and return to the previous page.

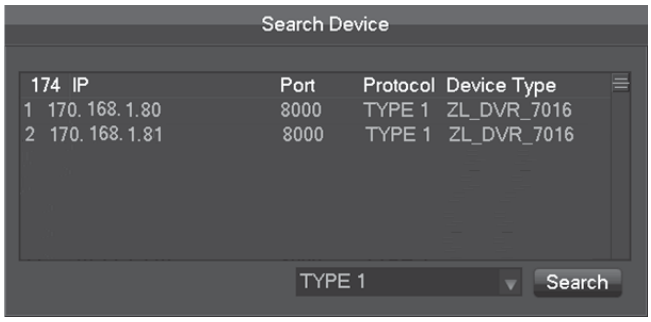
Fill in the user name and password to complete.

8) **[Password]** Fill in the password of the IPC.

9) **[Remote Detect]** After completing the above parameters, click the detect button to return the connection status.

10) Click **[APP and then OK]** to complete the settings.





III. Basic Operations Guide

1 Power On and Off

1.1 Power On

Correctly install and power on the NVR. When the power indicator lit up, the VCR will automatically start. NVR will automatically detect hardware state of the device during the starting. The booting process will continue for about 30 seconds. After boot, the equipment sounds and then enters the state of multi-screen real-time video surveillance.

1.2 Power Off

Press the power key for three seconds to achieve shutdown. Enter the NVR's [main menu]-[shutdown] and select [shutdown].

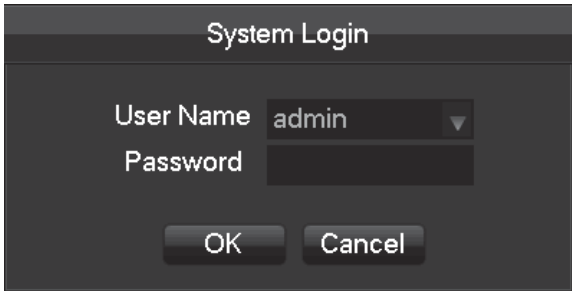
2 Preview and Login

2.1 Preview

After the device is turned on, you will enter the real-time monitoring interface. Right click and the following interface will pop up.

2.2 Login

Click the image above with [main menu], and then input the user name（default：admin）and the password of the NVR（default：123456）to complete the login.



3 Mode Switching (BHA-WC100 Model does not support this feature)

The NVR can work in mixed mode or NVR mode. Mixed-mode can be connected with both analog cameras and network cameras while NVR mode can only support IP cameras.

Enter [configuration]- [system]-[channel mode] to select the mode. Restart to complete the setting.

4 IP Camera

4.1 Add IP Camera

Network channels are used to display remote IPCs. The addition of IPCs shows as the following interface.

1) Enter [VIDEO]-[Net Channel].

2) First open [OPEN].

4) [Channels] Choose a local channel to display.

5) [Protocol] It is selected according to the type that the IPC supports.

6) [IP] Input the IPC's IP address.

7) [Port] Fill in the ONVIF port of the IPC.

8) [Username] Fill in the user name of the IPC.

9) [Password] Fill in the password of the IPC.

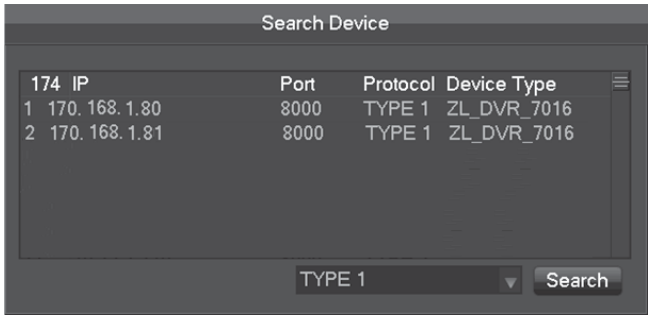
10) [Remote Detect] After completing the above parameters, click the detect button to return the connection status.

11) [Search] Select the appropriate protocol and search.

The IPCs and the device should in the same LAN.

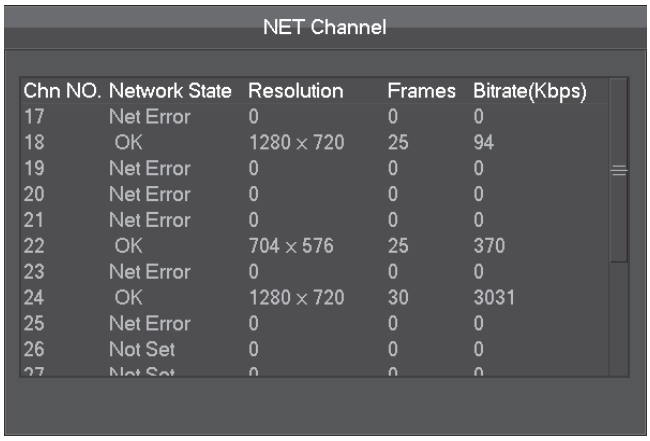
Double click the search results and it will add the IPC automatically

and return to the previous page. Fill in the user name and password to complete.



4.2 Status Display

Right click in the real-time monitoring screen and select [NET Channel] to view the status of the network channels.



5 PTZ Control (BHA-WP202 Model does not support this feature)

When connect with a network ball, right click the corresponding network channel and select [PTZ] to enter into the PTZ interface. If access to a simulated ball machine, enter [Main Menu] - [PTZ] to modify the PTZ protocol, the baud rate and address bits. Then right click in the corresponding channel and select [PTZ].The PTZ control interface is shown as the following interface.

Click to enter the PTZ configuration page.

Refer to 8.2 about more details.

5.1 PTZ configuration

The direction of PTZ, steps, zoom, focusing, iris, preset points, cruising between points, patrols, sweeping the boundary, calling an auxiliary switch, light switch, horizontal rotation are controlled with the usage of the arrow keys.

The [Step] is mainly used to control directions. The figure can be set from 1 to 8. Directly click or to adjust zooming, sharpness and brightness adjustment. PTZ supports eight directions.

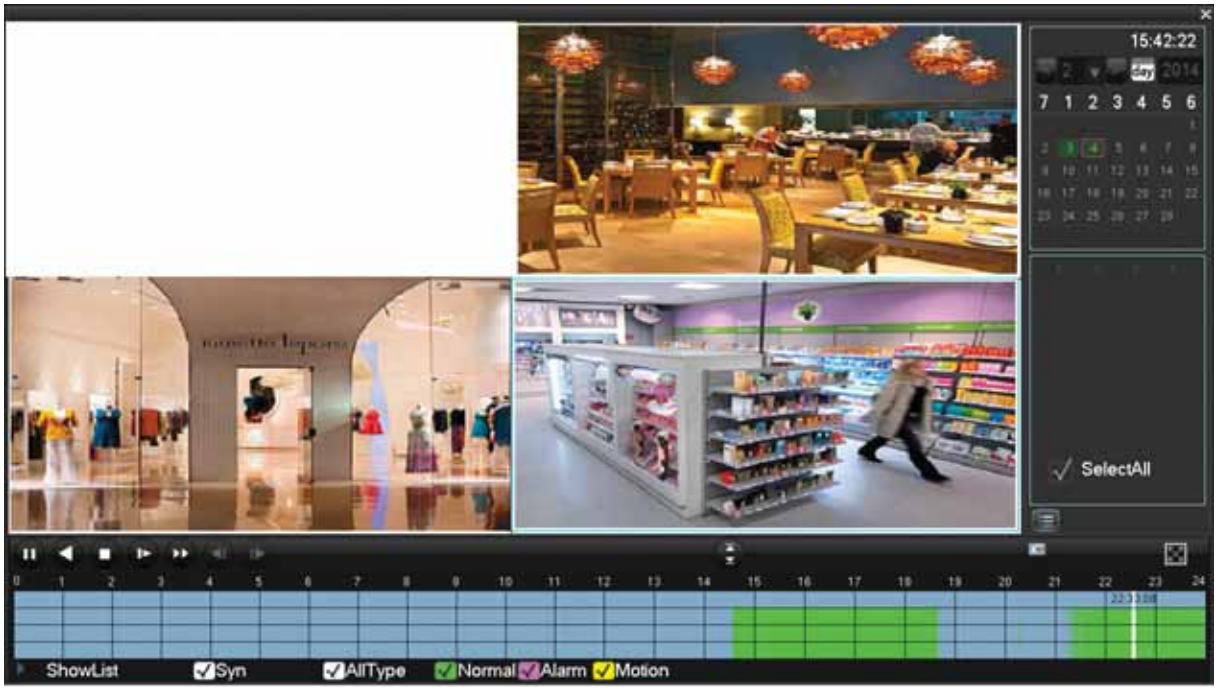
5.2 Quick location

Quick location: <SIT>is in the middle of the direction arrows. Make sure that the protocol supports this function. PTZ will turn to the clicked point and move it to the centre of screen. It also supports zooming. Drag the mouse in the quick location page. The dragged box supports 4 to 16 times zooming. Hold the mouse and drag it up to complete zoom of the box. Drag it down to narrow the box.

Refer to 7.1.5 about more details.

6 SEARCH

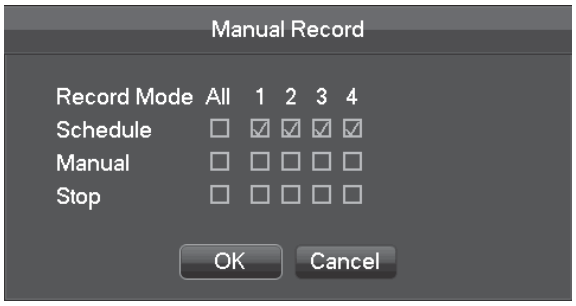
In real-time monitoring screen, right click and select【SEARCH】to enter the searching interface



Index	Type	Description
1	Calendar	Date and time
2	Choose the time	Input the date and time of records searched.
3	Playback control	It can achieve a full screen, circle playback, stopping / playing, pausing, fast playing, slow playing and the previous/next frame on a suspended state .
4	Recoding mode	There are alarm recording and regular recording for selecting.
5	Select channels to query	Choose the channels for querying.
6	Playback controls	It can achieve a full screen and circle playback.
7	Search	Click the button to search.
8	Backup	Choose files and click “”to backup. Then select a storage device and recording files.
9	The list of records	128 video records are shown in the list. Type: R—normal record, A—alarm record, M—motion detection record.
10	The channel for playback	Choose a channel in which the record plays back

7 RECORD

In real-time monitoring screen, right click and select【RECORD】to enter the interface.



1) [Manual] It has the highest priority and corresponding channels will record for whole days after chosen.

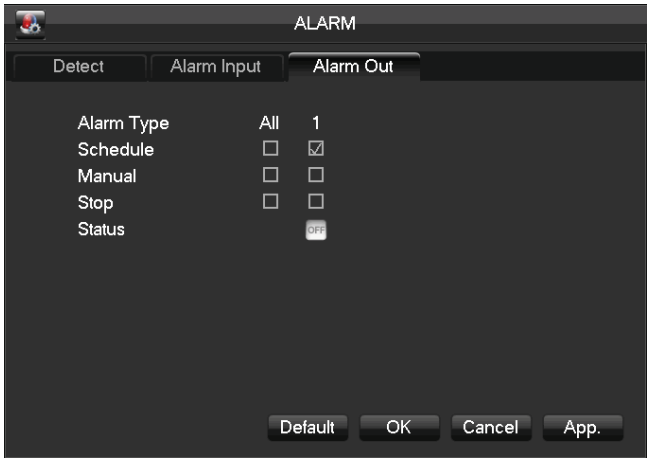
2) [Schedule] Record according to recoding configuration.

3) [Stop] Stop recording.

8 ALARM

8.1 Alarm Output

This menu manages alarm output parameters and displays the current state of alarm.



1) [Channels] The number of channels that are in alarm status.

2) [Schedule] Alarm output is in control of alarm configuration.

3) [Manual] Alarm output is on and the status is active.

4) [Stop] Alarm output is off and the status is inactive.

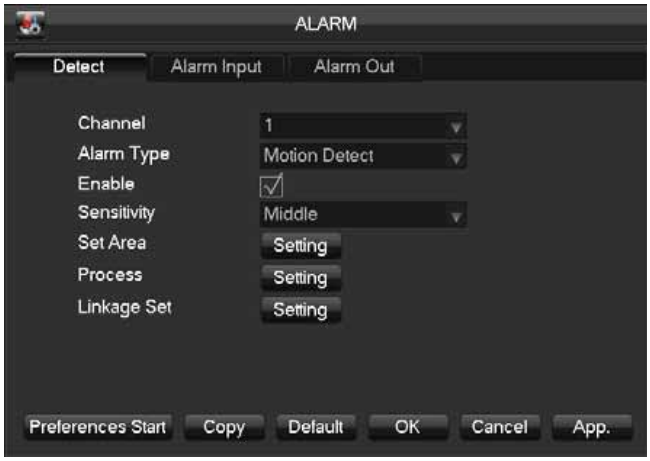
5) [Status] The current status of alarm output.

6) [Notice] Some models don't have the local alarm, please refer to the products descriptions.

8.2 Alarm Configuration

Detect

Enter [main menu]-[detect].



1) [Channel] Select the channel.

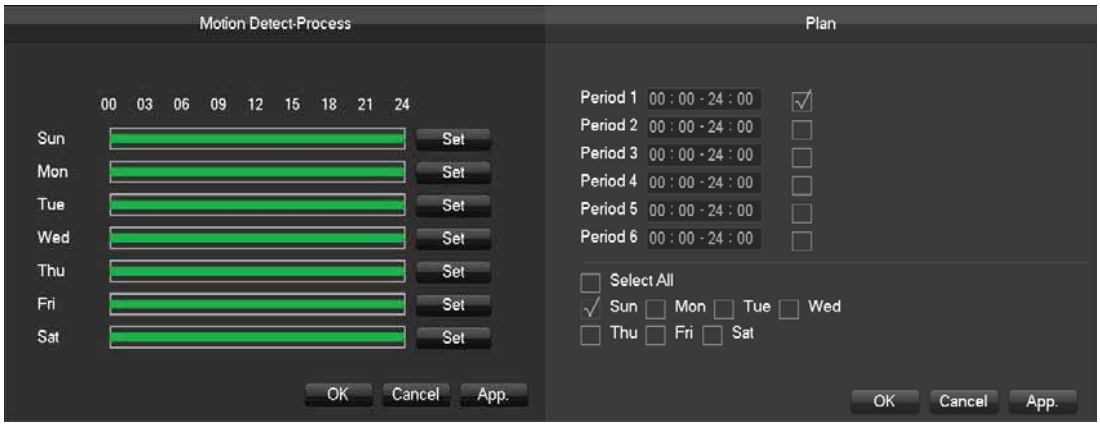
2) [Alarm type] Dynamic monitoring, video loss and video blind can be selected.

：Open the enable switch.

3) [Sensitivity] Set sensitivity of the network channels.

4) [Set area] It should be set in the IPC.

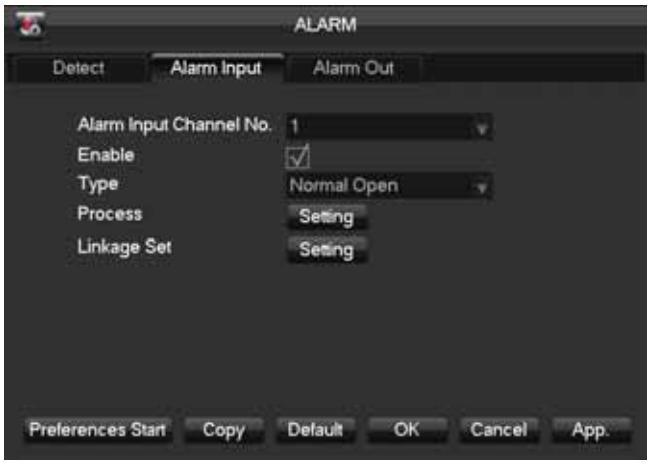
5) [Process] Click the button to set the alarming time, linkage and the handling method.



6) [Linkage Set] When produce an alarm, you can activate the linkage of records, PTZ, touring and capturing.

Alarm Input

Enter [main menu]-[alarm]-[alarm input].



1) [Alarm input channel no.] Select a channel.

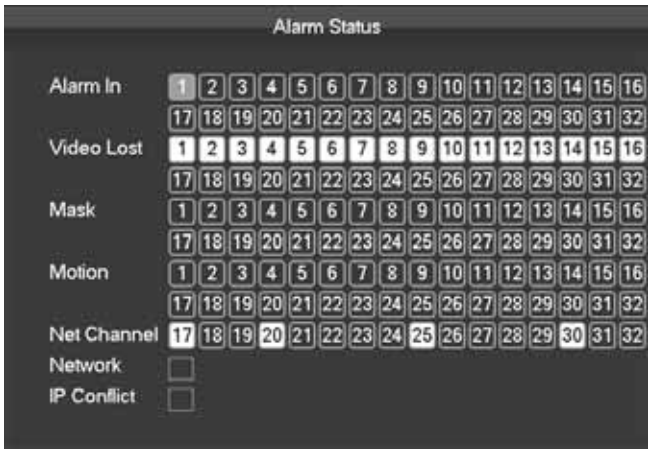
2) [Enable] Select the enable switch.

3) [Type] It can be normal open or close.

4) [Process] and [Linkage] Refer to [Detect].

8.3 Alarm Status

If you select [Show Message] in linkage settings, the following message will pop up when the alarm occurs.



9 Color Setting

Adjust the specified screen (single screen) image color hue, brightness, contrast, saturation, gain and white-level parameters set two time periods according to the local environment difference between day and night for each adjustment period set, the device will automatically switch to the best video quality.

1) [Period] Two periods can be set according to ambient light during the day and night, device will automatically switch configuration time. Need to select the Enable box.

2) [Hue] Adjust according to color cast of image.

3) Brightness] Visual image brightness, according to the environment, reduces or increases the brightness of the image brightness to make the image relatively clear.

4) Contrast] Adjust image of black and white in proportion, the greater ratio, the brighter image.

5) Saturation] Image color purity, the greater value, the more colorful images.

6) [Gain] Enlarge the image signal to improve signal quality.

7) White Level] Change the white level reference value, to improve the brightness of the image display.

Note: Only analog channels support the function.

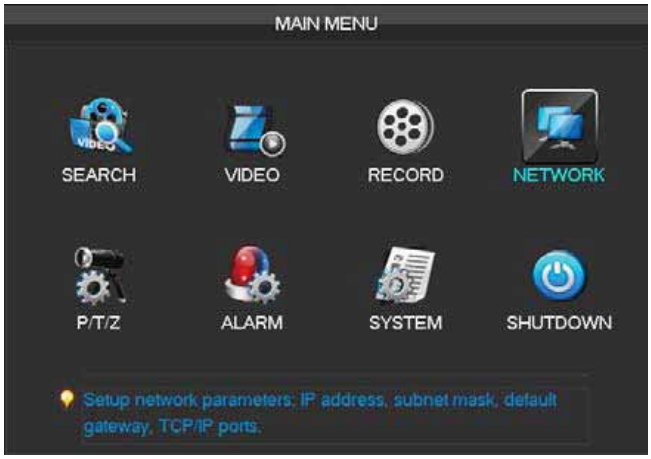
10 The Input Method

In the input box, you can select figures, symbols, English capitalization and the input of Chinese. Click the mouse to complete the input."← "represents the backspace and "_ "represents a space.

IV. Parameter Settings

1 Introduction of Main Menu

The main menu is shown in the following interface.



1) [Search] Search records by types, channels, time and playback records.

2) [Video] Set basic, encoding, snaps and net channels.

3) [Record] Set basic and record plan.

4) [Network] Set base, advanced and apply network.

5) [PTZ] Set parameters of PTZ(BHA-WP202 Model does not support this feature).

6) [Alarm] Set alarm information.

7) [System] Set basic, display, storage, abnormity, status, maintain, account and RS232.

8) [Shutdown] It includes menu logout, shutdown and restart of the system.

2 Video Settings

This menu contains the basic video settings, video encoding settings, the capture channel access and network settings.

2.1 Basic

1) [Channel] Select the desired channel.

2) [Channel name] Select the channel name.

3) [Channel display] Set the position of the channel title.

4) [Time display] The position of the time title in the screen.

5) [Time Synchronization] Time synchronization of network channels and the device.

6) [Video cover] Set protected area of previewing and recording.

2.2 Encoding Settings

1) [Channel] Select the desired channel.

2) [Compression] H.264

3) [Resolution]The resolution of main stream can be D1 or CIF. Different channels correspond to different resolutions. Frame rate setting range is also different. The channel extension stream resolution can support CIF / QCIF. *Frame Rate :* P system: a / s -25 frames / sec.

N system: a / s -30 frames / sec.

Note：Resolution and frame rate are vary depending on NVR model.

4) [Bit Rate] Constant Bit rate or Variable Bitrates. Bit rate can be set in Constant Bit rate. There are 6 levels for image quality in Variable Bit rate, 6 is the best but it is fixed in Constant Bit rate.

5) [Audio] Choose channels record sound or not.

2.3 Snapshot

1) [Channel] Select a channel.

2) [Mode] Trigger: Crawl images when alarm.

3) [Image Size] CIF capture

4) [Image Quality] There are 6 levels of quality.

5) [Snapshot frequency] set highest capture rate for single channel， 1s/pc 2s/pc 3s/pc 4s/pc 5s/pc 6s/pc 7s/pc 8s/pc.

2.4 Net Channel

1) First, open the enable switch.

2) [Channel] Select the desired channel.

3) [Protocol] Choose a protocol supported by IPCs.

4) [Address IP] Input the IP of the IPC.

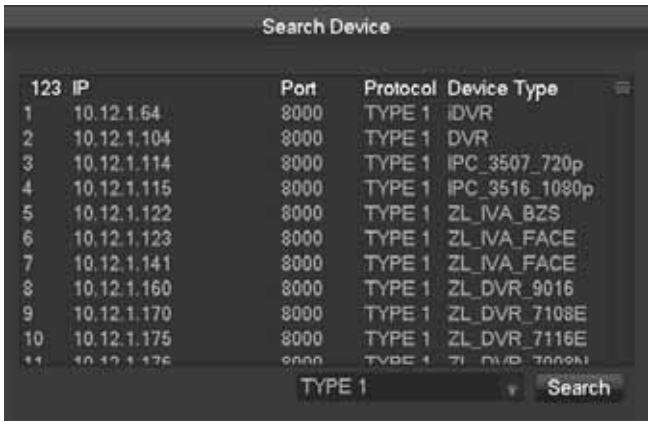
5) [Port] Input the port of the IPC.

6) [User name] Input the user name of the IPC.

7) [Password] Input the password of the IPC.

8) [Detect] After completing of the above settings, click the detection button. The dev ice will connect with the IPC and return the connection status.

9)]Search] Select a appropriate protocol and search. Double click the search results, and then the device will automatically be added and return to the network channel interface. You need to fill in the user name and the password.



3 Record

3.1 Basic

【Video mode】Record automatically, manually or not record.

【Video expiration time】The figure is between 0 to 365.

【Video package time】The figure is between 5 to 120.

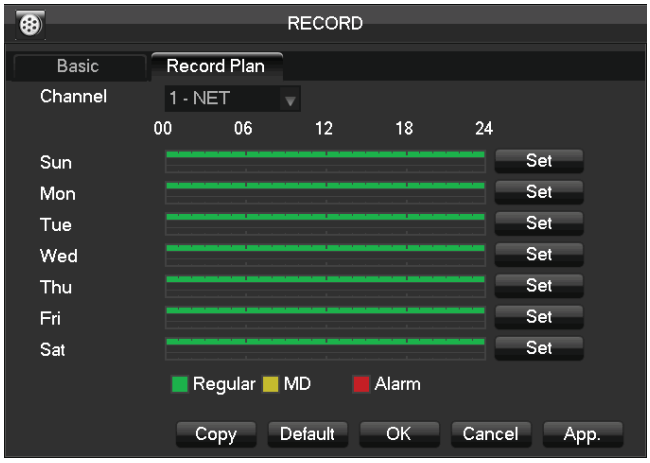
【HDD full】Overwrite or stop recording.

【Channel】Select a channel.

【Video redundancy】Open or close the redundant recording.

【Prerecorded】The figure is between 0 to 30.

3.2 Record Plan



【**Channel**】Select a channel. It uses green, yellow and red to show motion detection, alarm and regular records correspondingly.

【**Copy**】Copy the settings to other channels.

Click the set button to enter the following interface.

【**Time** 】Recording time.6 periods can be set every day.

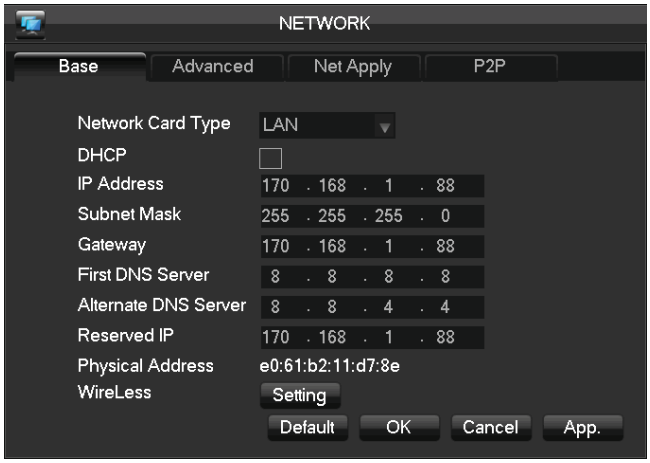
【**Normal**】Normal record

【**Moving Detection**】Moving detection

【**Alarm**】Alarm record

4 Network

4.1 Base



【**DHCP**】Enable the NVR to obtain an IP address automatically. If it is enabled, the NVR will reboot and search for a DHCP server, and then assign a dynamic IP address. The dynamic IP address will be displayed in the menu. Enter a static IP address if there is no DHCP service available. If you are using the advanced feature PPPOE, then the IP/mask/gateway and DHCP are unable to be changed.

【**IP Address**】 Use or input numbers to modify IP, then set subnet mask】and default gateway】for this IP.

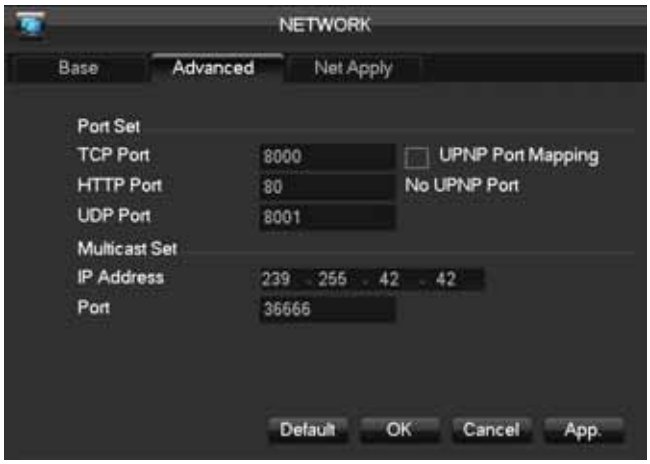
【**First DNS Server**】DNS server IP

【**Alternate DNS Server**】DNS alternate IP

【**Physical Address**】Physical address of current net port

【**WireLess**】 Wireless STATUS & SETPU

4.2 Advance



【**TCP**】default: 8000, variable

【**HTTP**】default: 80

【**UDP**】default: 8001

【**Multicast**】tick 'Multicast' and set a group in 'Set', IP should be limited as follow picture, port no limit.

4.3 Net Apply

【**DDNS**】Enable the NVR to registered a DDNS hostname, which runs on a fixed IP address web client.

Select DDNS type（NO-IP DDNS, Dyndns DDNS, FNT DDNS and so on）.

Input the registered server's IP, port, username and password.

Once completed, you can login in the Web client by inputting the domain name in IE.

Refer to 6.1 about more details.

【**Email**】Enable the function. Set the SMTP server's port, username, password, the sender's mailbox and receiver's mailbox.

【**FTP**】Choose to upload records or images.

Set FTP server's IP address and port(Default:21) .

Create a account in FileZilla Server in the computer.

Fill in the username, password and remote directory which have been created.

Set file length, channel, time for recording, type and date and so on.

Tick alarm, motion and general records or images to upload.

【**NTP**】On/Off NTP. The network time protocol allows the NVR to sync with NTP server time automatically.

Server IP: Input IP of NTP server.

Port：The default port is 123.

Update cycle: The interval time is between 1 to 65535 min.

【**IP Filter**】NVR authority management. If you enable the white list, only the filled IPs can be connected. This system supports a max of 64 IPs.

【**NTP**】On/Off NTP. The network time protocol allows the NVR to sync with NTP server time automatically.

Server IP: Input IP of NTP server.

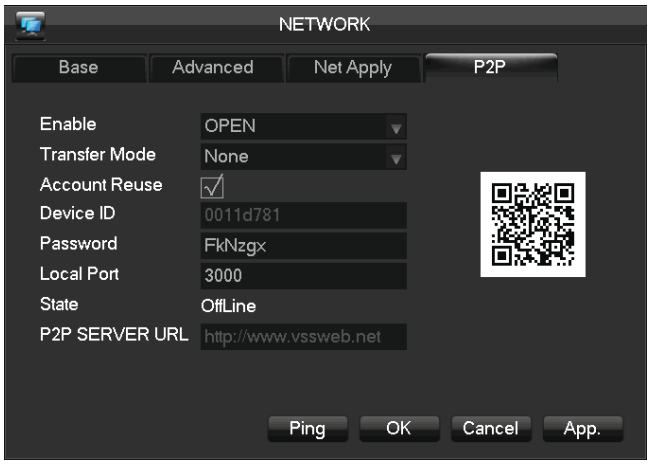
Port：The default port is 123.

Update cycle: The interval time is between 1 to 65535 min.

【**Network Transmission**】Transfer modes and the number of network connections, downloads.

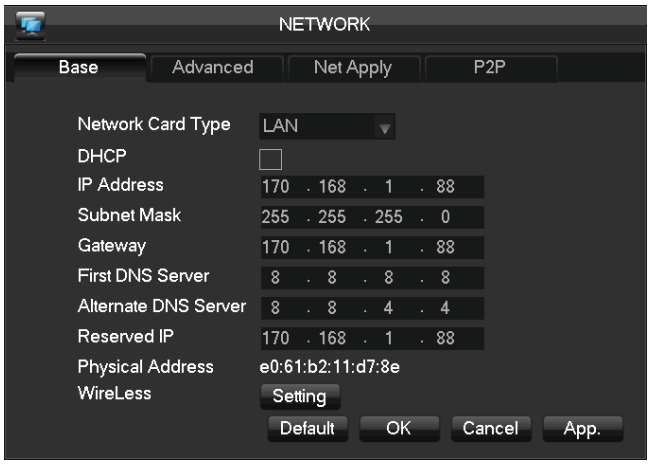
【**Alarm server**】reserved interface

4.4 P2P

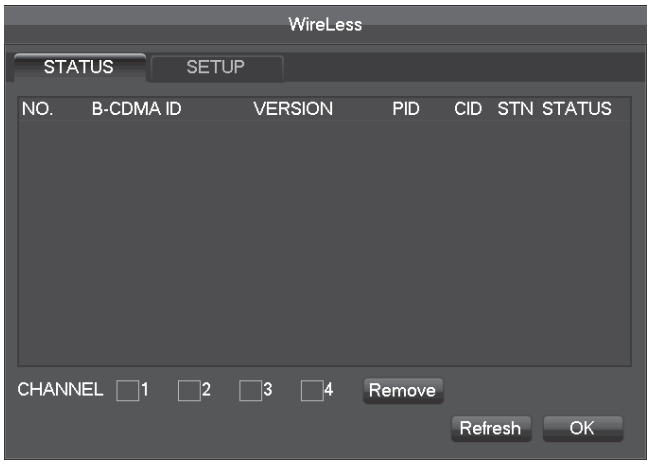


4.5 Wireless Mode

NETWORK → Base → WireLess(Setting)



STATUS



1) Shows the current status of the wireless module on the NVR.

2) B-CDMA ID : Shows ID of the wireless module on NVR.

3) F/W VERSION : Shows the firmware's version of the wireless module on NVR.

4) PID : Shows ID used to wirelessly communicate on the PICONET.

PICONET ID must be matched between IP Cameras and NVR in order to establish wireless connection.

5) CID : Shows the connected frequency channel.

6) STN : Shows the connected numbers of NVRs and IP Cameras.

- STN = NVR(1ea) + IP Cameras

7) Status: Shows the current status of the wireless module on the NVR.

SETUP

1) PICONET ID : User can change the ID by using [-, +] button.

This ID is used for establishing wireless connection and it is chageable.

But the ID must match IP Camera's ID in order to establishing the succesful wireless connection.

2) Channel : Selectable from AUTO, MANUAL

AUTO : Automatically allocated to the channels.

MANUAL : Manually allocated to the channels.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
CH0	2410	CH12	5733
CH1	2426	CH13	5749
CH2	2442	CH14	5765
CH3	2458	CH15	5781
CH4	2474	CH16	5797
		CH17	5813
		CH18	5829
		CH19	5845

3) ENCRYPTION : User can choose whether the wireless signal transmission will use encryption feature or not.

Enabling this feature may decrease the wireless transmission rate by a little.

4) Refresh : NVR forces the wireless module to reboot by clicking this button.

5 PTZ Configuration (BHA-WP202 Model does not support this feature)

Confirm the connection of PTZ A, B lines in the NVR and PTZ.

【**Channel**】Select the channel.

【**Protocol**】Select a associated protocol (e.g. PELCOD)

【**Address**】Set address. Default: 1.

Note: this address has to correspond with dome address, or the dome will not be controlled.

【**Baud Rate**】Select the baud rate. Default is 9600.

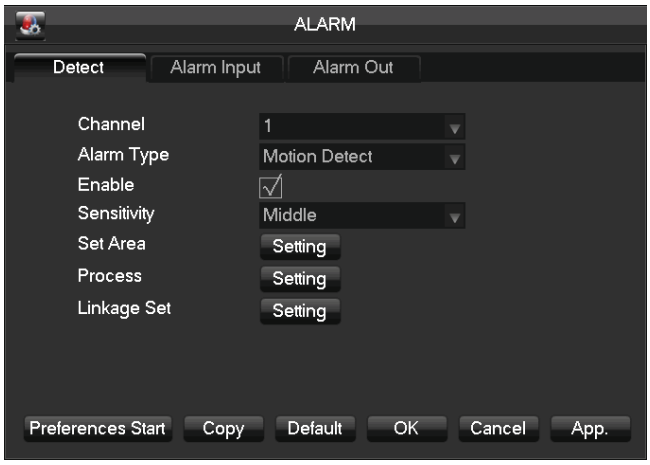
【**Data Bits**】default: 8

【**Stop Bits**】default: 1

【**Parity**】default: None

6 Alarm

6.1 Video Detection



【**Channel**】Select a channel.

【**Alarm type**】Dynamic monitoring, video loss and video blind.

:  Open the enable switch.

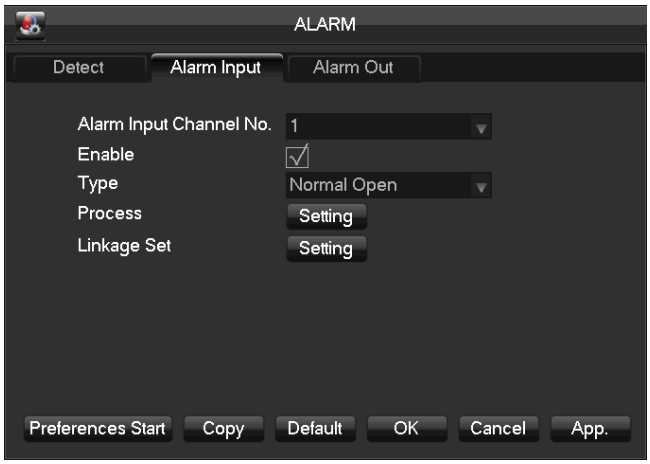
【**Process**】Set the alarming time, linkage and the handling method.

【**Area Set**】The function should be set in the remote IPC.【**Linkage Set**】When a alarm occurs,

you can set linkage of records, PTZ, touring and snapshot.

6.2 Alarm input

Enter [main menu]-[alarm]-[alarm out].

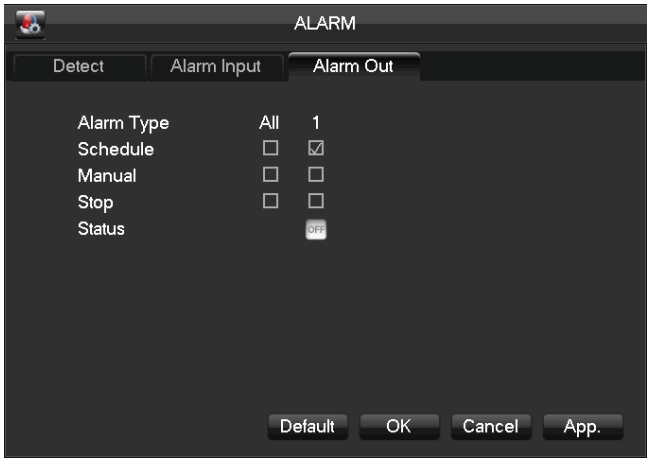


【Alarm input channel No.】Select a channel.

【Enable】Select it.

【Type】Normal Open and normal close

6.3 Alarm out



【**Channel**】Alarm port

【**Auto**】Alarm output is determined by the alarm output menu, while in auto mode.

【**Manual**】Alarm output is on and the status is active.

【**Stop**】Alarm output is off and the status is inactive.

【**Status**】Current status of alarm output

Notice: Some models have no local alarm, please refer to the products descriptions.

7 System

7.1 Base

【**System Time**】Set the current time

Note: Click to save the time modification.

【**Daylight Saving Time (DST)** 】Click “DST” to enable the function, and enter the local DST starting and ending time.

【**Date Format**】Modify the date display format

【**Date Separator**】Select the separator for date

【**Time Format**】24 hr or 12 hr display mode

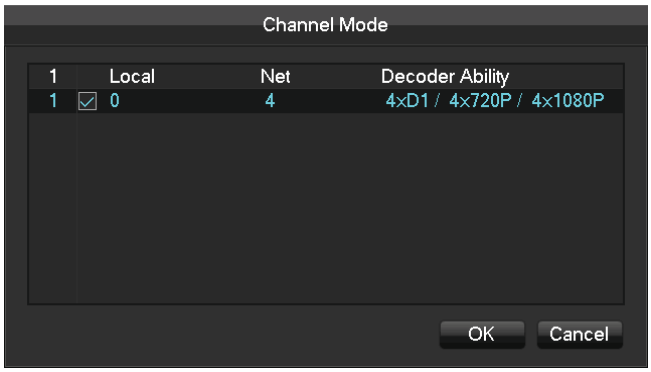
【**Language**】Select language.

【**NVR No.**】Number more than one NVR, click “Ad” button on remote control and input a number to select the corresponding NVR to operate.

【**Video Standard**】PAL/NTSC.

【**Auto Logout**】This ranges from 0-60 minutes. 0 means no setting. NVR will automatically let user quit after standby time’s vacancy.

【**Channel mode**】The selection of local channels and network channels.



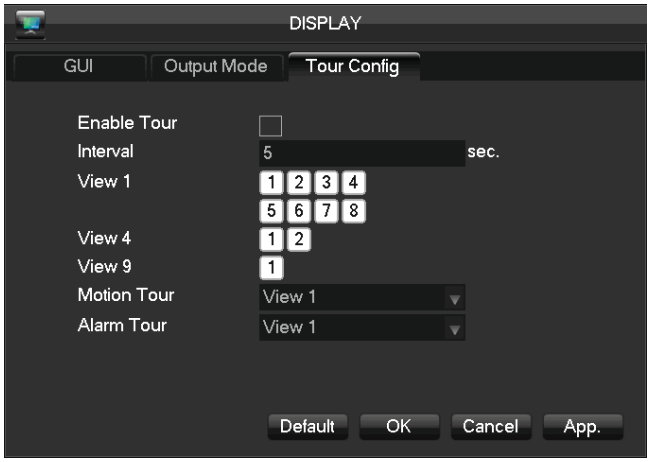
7.2 Display

7.2.1 Output mode

【**Menu Transparency**】Adjust transparency.

【**VGA Output**】Select VGA resolution. The default is 1024×768@60Hz.

Tour configuration



Setting tour mode and interval between rotation , the time is within 5-120s, the mode include single screen, four-, eight-, nine-, sixteen-screen.

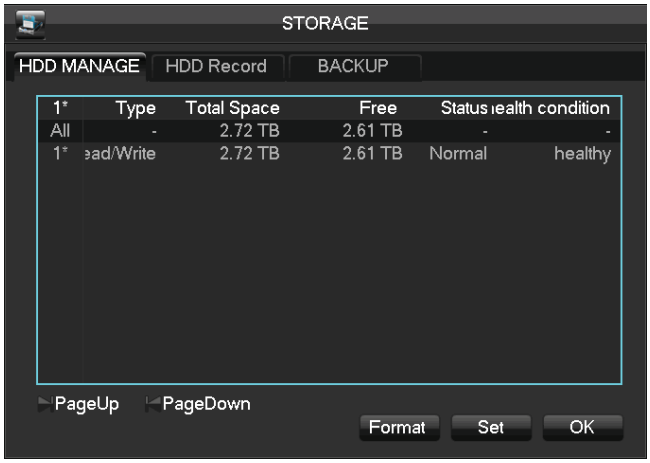
【**Motion Tour Type**】Set the motion detection tour mode

【**Alarm Tour Type**】Set the alarm tour mode

Note: Shortcut Setting: click the button at the top right corner of the monitoring picture or press the Shift Key to switch, you can control the tour.

7.3 Storage

HDD Management

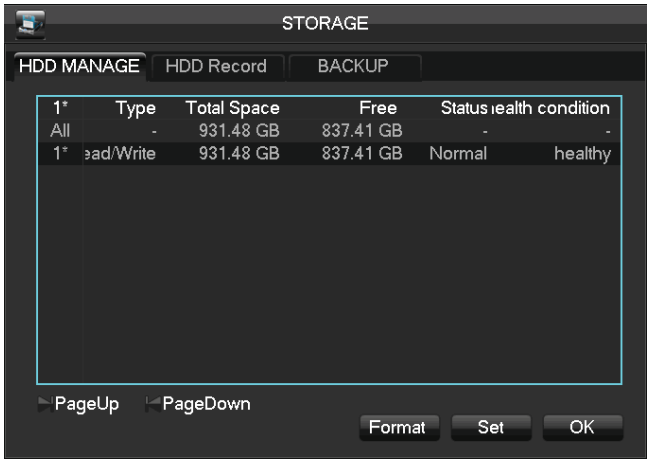


【**Format**】It is possible to format an individual HDD.

Note: Hard disk format operation result in the loss of video data

【**Set**】Set HDD as read-write, read only or redundancy mode. In read only mode, video data cannot be covered.

HDD Record



Backup

Connect an External USB device with the USB port to backup in the “Record Backup” menu.

【**Detect**】Identify external USB device and display the device information.

【**Backup**】Tick the external device and click【Backup】to enter the backup menu .Select the record start-stop time and click

【**Add**】Add files in list. Tick the record you want and click【Start】to backup and display time remaining.

【**Delete**】delete all data in USB backup device

Note: this operation probably cause permanent data loss

7.4 Abnormity

【**Disk low Space**】Alarm when hard disk capacity is lower than setting.

【**No Disk**】Alarm when HDD is not present or can not be detected.

【**Network Failure**】Alarm when network is not connected.

【**Process Mode**】includes【Alarm Output,【Display On Screen and Send Emai,【pushed to phone】and recording linkage.

【**IP Conflict**】Alarm when IP address conflict.

【**Process Mode**】is same as【No Disk's【Process Mode】

【**Disk Error**】Alarm when there is error in reading and writing hard disk.

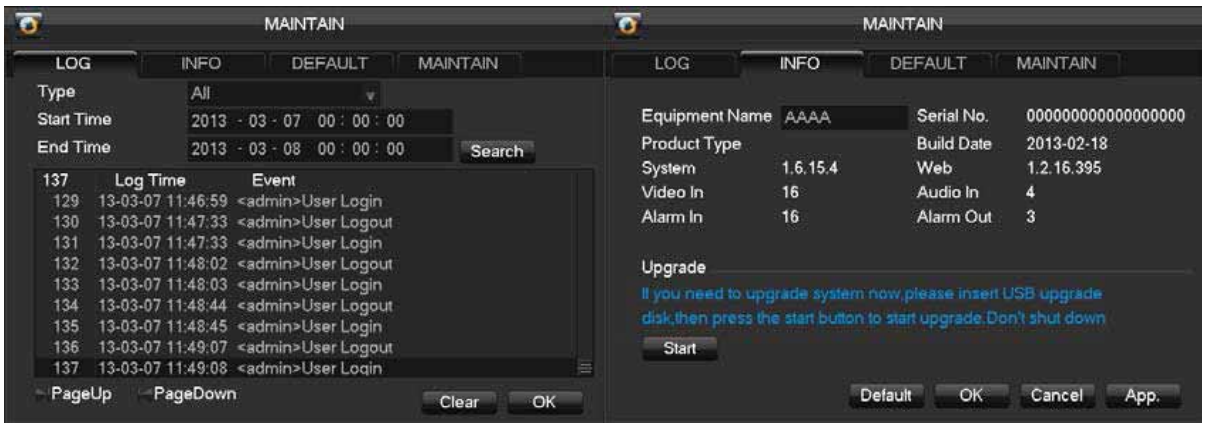
【**Process**】includes:【Alarm Output, 【show message,【Send Email, linkage record,【snapshot】and 【buzzer.

7.5 Status

You can see the BSP and on-line users.

7.6 Maintain

You can see logs of the system, product information, default settings and maintain information in the following interfaces.



7.7 Account

Note: Group and user names can be from 1-6 characters in length. Valid characters include letter, numbers, and limited symbols: underline, subtraction sign, dot, you may not use a space as a

leading or ending character.

There is no limit to the number of groups or users. By default there are two different group levels: admin and user.

User management determined upon two levels: the group and the user level.

Group and user names cannot be duplicated, and each user can only belong to one group.

【Add users】add group member information and set authorities.

Default users are: “admin”, “user” and hidden “default”, the password of first two username is 123456. “admin” has advanced authorities; “user” only has surveillance and playback authority.

Hidden default: operate in password-less login mode, cannot delete, NVR login in this name automatically if “no user login”， user can revise limits of power then operate some without login.

Enter【Add users】input username, password and select group and reusable options. Reusable allows the account to be used by multiple logins.

A user can only belong to one group. User rights cannot exceed group rights.

【Modify users】modify existing group member information and authority.

【Add group】add group and set group authorities

Set a group and authorize 60 items including control panel, shut down, live view、 playback, record, record backup, PTZ control, account, system information, alarm in /out setting, system configuration, search log, log delete, upgrade, operation authority, etc.

【Modify group】modify existing group information.

【Modify Password】change password

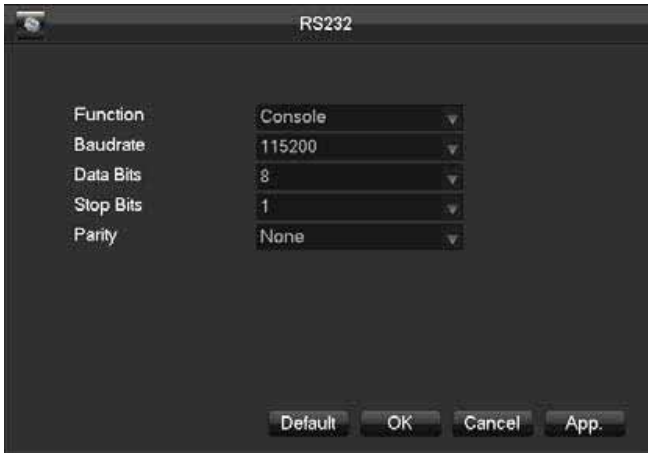
Select a username input the old password and new password twice.

Click【Save】to confirm

Password can be in 1-6 numbers, letters or symbol; blank in beginning and end is invalid.

The account with management authority could change others’ password.

7.8 RS232



【Function】Select the appropriate the serial

【Baud Rate】Set baud rate.

【Data Bit】Default: 8

【Stop Bit】Default: 1

Note: Some models are without an RS-232 port, please see Specifications.

V. Web and Client

1 Web Operation

1.1 Network Connection

H&M Series

Check network connection by LCD on front panel, “” refers connection error.

P Series

Check B-Lamp on front panel, light indicates connection. Set IP, subnet mask and gateway for computer and NVR. Please assign the same segment IP address without router, need to set the appropriate subnet mask and gateway with router.

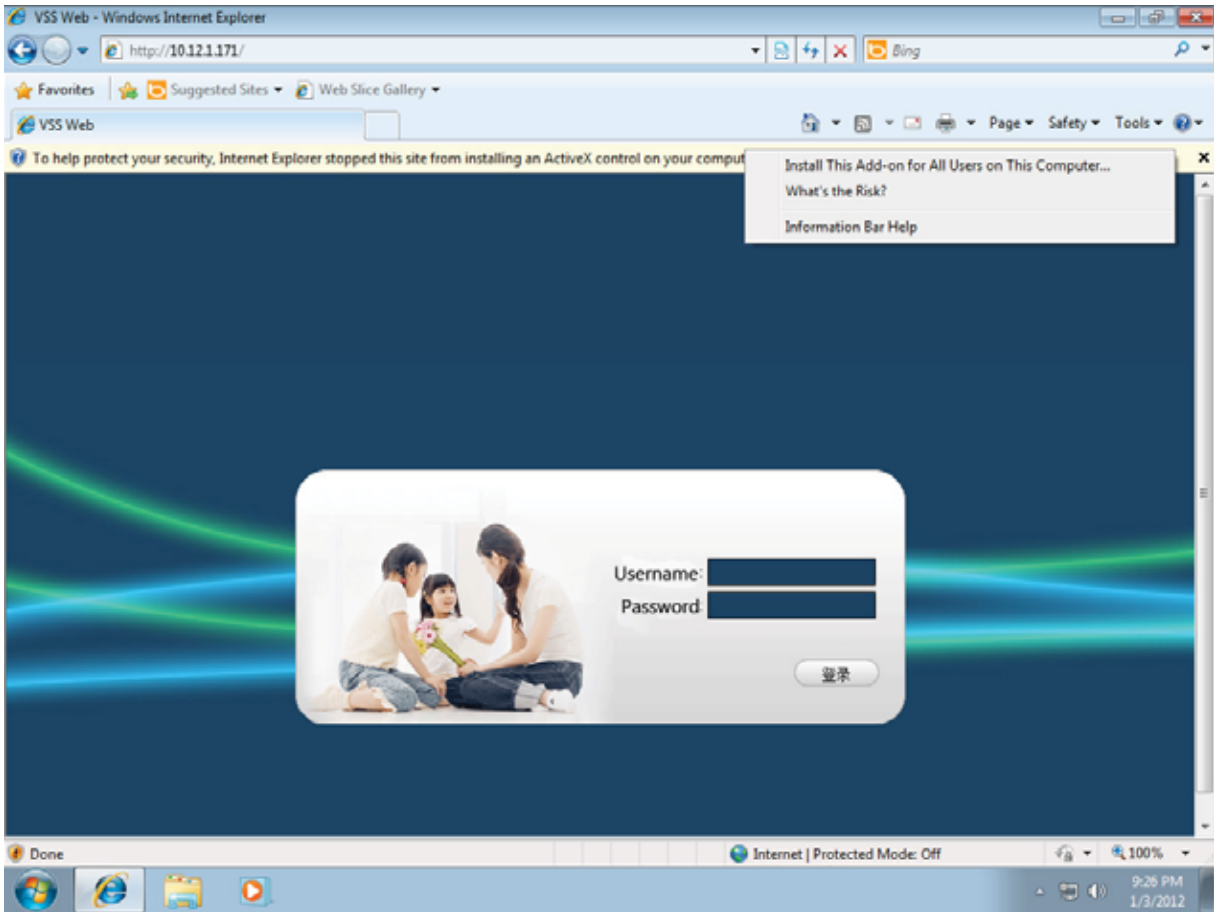
The detail of NVR network configuration please see【Configuration】→【Network Setting】

Ensure the IP is correct and check whether the NVR is on the network by using the Windows command “ping”.

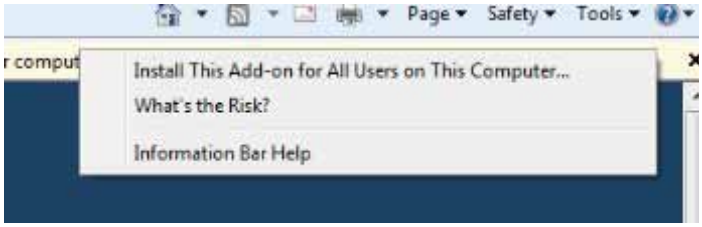
1.2 The control installation and the user login logout

Users can remote access to NVR by Internet Explorer, assuming you have a correct network configuration.

The following interface will pop up when you access the IP address in Internet Explorer.



Install ActiveX: Right click and choose install. If installation is blocked by Windows, please add the IP as a trusted site or lower your Internet Explorer security settings to allow this.



Install Control

The following interface will popup when you input your username, password and click “Login”. Interface like Diagram 5-3 Web Interface when user login successfully. Click “Exit” to quit.

1.3 The Interface of Web Operations

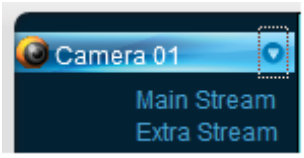
WEB Interface

Index	Name	Description
1	Channel	Channel selection
2	Function key	Local playback: playback local record Open all: play live views in surveillance window
3	Surveillance window	Change window layout
4	Image color & other saturation	Image color: modify brightness, contrast and Other: set capture path, record download path and reboot
5	PTZ control	PTZ control menu(Reserved)
6	Menu	System configuration, record search, alarm setting, exit, etc.

1.4 The Real-time Monitoring

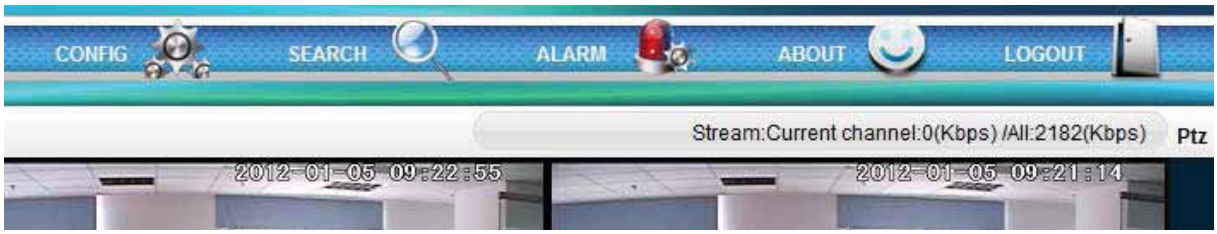
Into the WEB interface, select the focus window in live window, the focus window has a light blue border.

From the left channel column select channel, as shown in the following interface.



Channel Choices

Click on 2 area in upper right corner can choose open / close the channel of the main stream or secondary stream, shows the current NVR's IP and rate information.



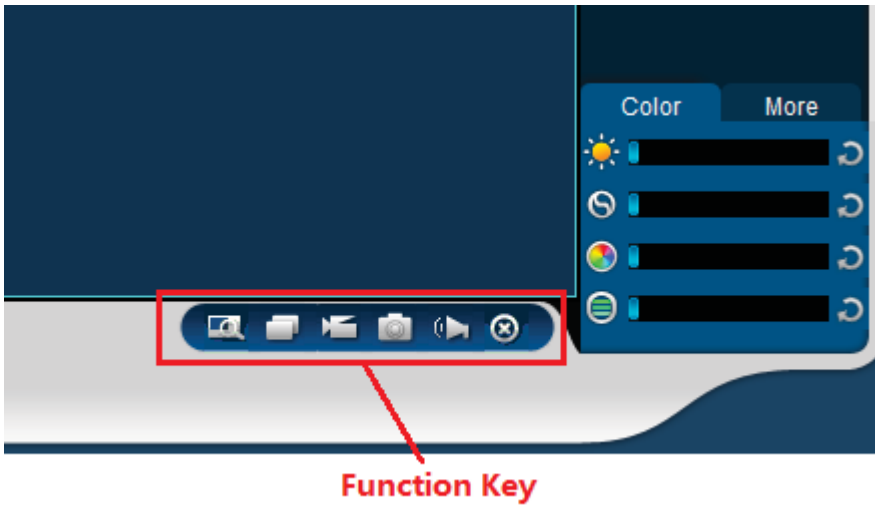
Stream information

Lower left corner shows the current video channel name.

Upper right corner shows the current video time information.

Click “”（Lower left corner of the display window）to switch between single screen and multi-screen.

Lower right corner of the display window is function keys, as the following interface. Refer to area zoom, switching multi screens, local records, capturing and so on.



Area zoom: Video images can be enlarged.

- Multi-screen switch: switch from single screen to multi-screen and vice versa.
- Local record: save and record video to a local HDD while in a live view. Set recording path in configuration.
- Capture: capture of the present channel, set the path in “other.
- Sound: on/off sound.
- Off video: off the focus window video.

1.5 PTZ Control **(BHA-WP202 Model does not support this feature)**

Set protocol（see【Setting】→【PTZ】）

Control PTZ direction, step size, zoom, IRIS, preset, tour, pattern, border scan, light, wiper, auto pan, etc.

Step size controls PTZ direction and speed, e.g. step size 8 is moved faster than step size 1.

Eight direction rotations: up, down, right, left, up-left, up-right, lower left, lower right.

PTZ control

Border scan

Operation: select the camera line scan of the left/right margin by direction button, and click the Settings button in the left /right margin position to determine the left border.

Preset

Operation: modify preset position by direction button and inputting a preset number, then click “Add” to save.

Tour

Operation: select “Tour”; Point between the first cruise line cruise input box value. And input numbers in “Path” and “preset”. Click【Add Preset】to add one preset in the cruise path, and repeat to add additional presets. Click 【Clear Preset】to delete a preset, repeat to delete more.

Pattern

Operation: Click “Pattern” in order to record an automated pattern. Then, go back to the PTZ controls in order to modify the zoom, focus and IRIS, etc. Stop recording in “Pattern” setting to save the pattern.

AUX

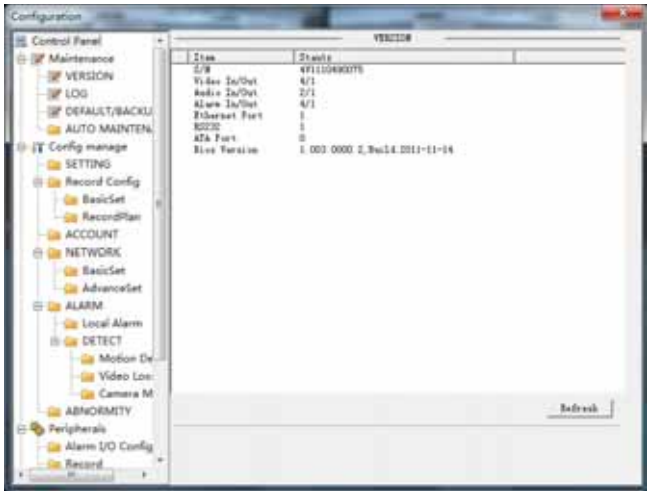
On/off one of AUX

Wiper

On/off wiper under protocol

1.6 Configuration

Access NVR local configuration menu by click “System Setting”, the further details please refer 【Local operation guide】



1.7 Search Record

Click “Search record” to open the search interface (Diagram 0-10), can search and operate record, alarm, motion, local record

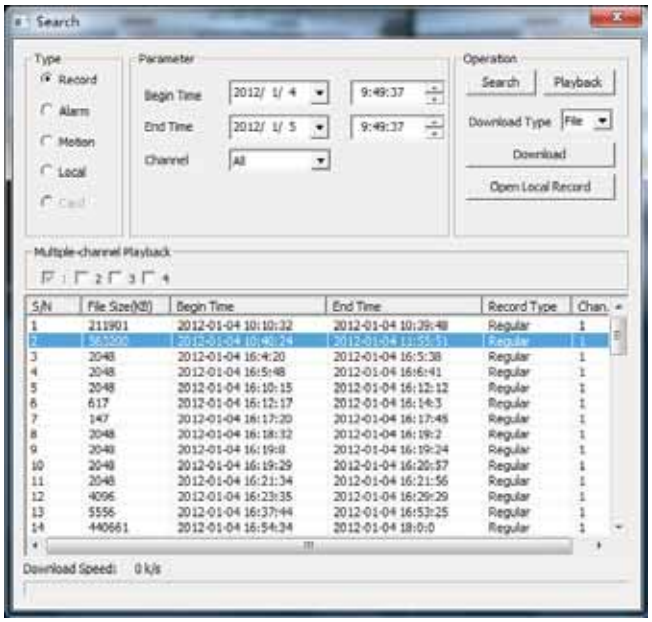
Search record

By selecting the record type, start and end times, and click the check button, get a list of files on the NVR. Select the appropriate file and download can be played

Play

Double click a search result to play in video window. Control the playing video by the control keys on the bottom. At this point, the bottom of the video window will display the video control buttons, video playback can be controlled.

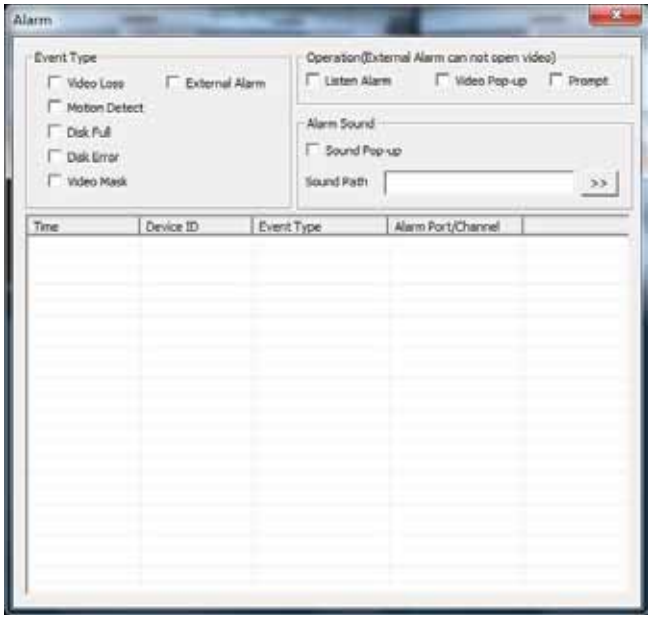
Download: select a searched video to download to local. The download speed and percentage are displayed on the bottom of the screen.



Searching

1.8 Alarm Configuration

Click the 【Alarm】to enter the alarm setup menu, users can set up and operate the alarm mode.



Alarm configuration

Choose type of alarm on menu, monitor video loss, motion detection, disk full, disk error, video mask, external alarm.

Click 【Video Pop-up】, open the video loss, motion detection, hard disk full, hard disk failure, video block, video encoder alarm pop-up linkage.

Click 【prompt】open the prompt: When an alarm occurs in real-time monitoring will popup alarm window menu.

Click 【Sound Pop-up】, you can choose alarm tone pre-recorded on the local hard drive when

an alarm occurs, tone file in WAV format.

1.9 About

Please refer to WEB controls related version information.

2 The PC Client Operations

Please refer to description of IMS 200.

All Client S.W is dedicated client program that connects and manages in real time.

Please refer to each S.W manual for more information.

1. Web server: Using Internet Explorer
2. EMS2.0 Lite: Management S.W that allows you to view and manage up to 300 DVRs.
3. iSMS: 1:1 Management S.W for the Mac PC.
4. SMART Phone: Touch CMS Lite for iPhone, Android,

3 iSMS(MAC OS)

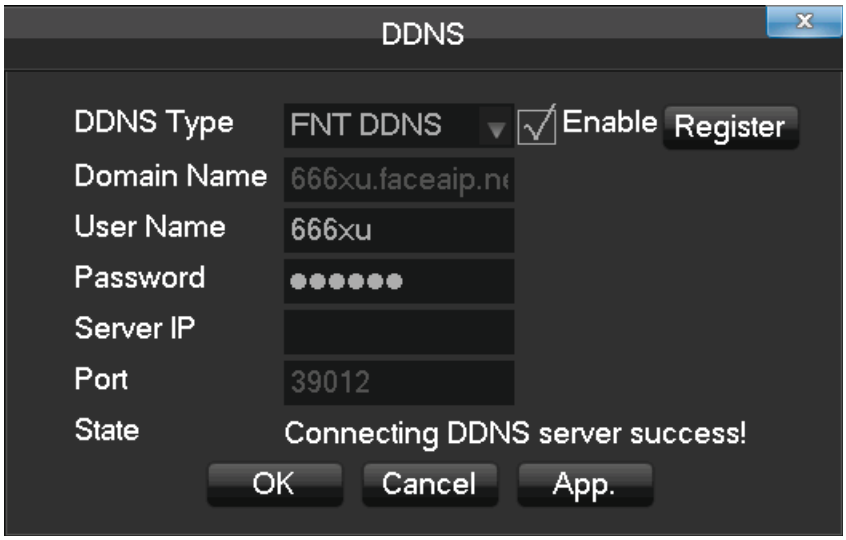
4 Mobile App

VI. Expansion function

1 DDNS Function

1.1 FNT DDNS

FNT DDNS is built-in professional dynamic DNS service in our network NVR. You can register directly in the device .Specific steps are as following.



1：Select FNT DDNS and check Enable.

2：Input a username

3：Input the password.

4：Click the Register button. If the domain name is not registered, it will pop up the message that connect DDNS server successfully otherwise it will prompt that the registration is failed.

5：Click [OK] to complete the settings.

CN99（www.3322.org）

1.2 Register

Register New Users or Login at www.3322.org.Click “My Control Panel” at the navigation bar.

Click the left side, “new” under the DDNS.

Fill in the name of the host machine, IP address will automatically detect in the current internet.

Leave the Mail Servers blank, and then click the “OK” button.

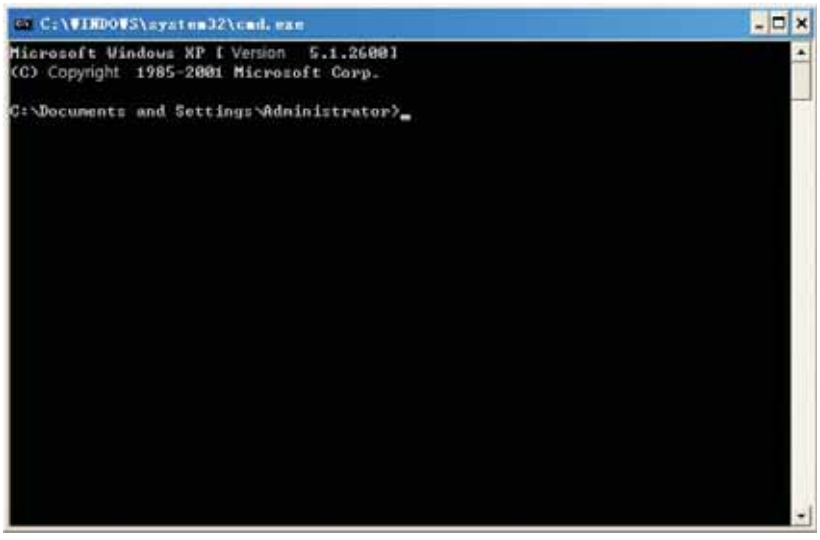
1.3 Embedded NVR Setting

Open 【Main Menu】→【Configuration】→【Network】→【Advanced】→【DDNS】→Enable

Name	Configuration
DDNS	CN99 DDNS
IP	Members.3322.org
Port	80
Domain name	xxx.3322.org
Username	xxx
Password	xxxxxx

1.4 Test and verify DDNS

After setting the Embedded NVR, wait for a few minutes, analysis records will update. Click Operation in the Menu of computer, input “cmd”, click “OK” to open a window. As the Diagram 0-1 Run Command Line Program shows.



Run Command Line Program

Input “ping+ Domain name” then presses Enter, as the Diagram 0-2 DNS shows.

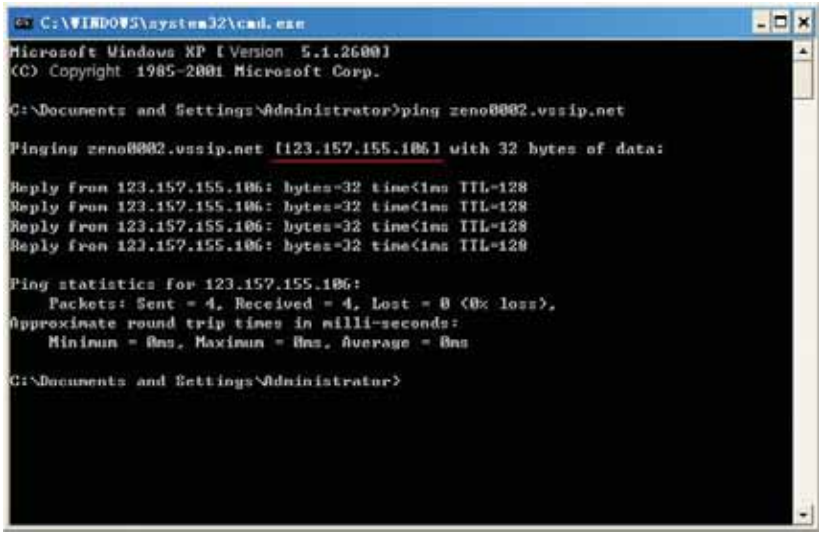


Diagram 0-1 DNS

The computer will analyze the domain name which is set in the NVR and return to the current IP, as the picture shows underlined in red. When the IP correspond to the embedded NVR's IP in Public internet, it means the DDNS is setting right. If they are not, please check the network connection of embedded NVR and DDNS information.

1.5 Port Mapping

Port mapping is mapping a port of outside web host's IP address to a machine inside web, and provide the service. When user connects to the port of the IP, the server will automatically map the request to the corresponding machine inside LAN. With the function of port mapping, we can map many ports of a machine's IP address to different machines' different ports inside web. The port mapping can also have other special agent functions, like POP, SMTP, TELNET, etc. Theoretically, it can provide more than sixty thousand ports. For example, if we want to map a web server which has an IP address of 192.168.111.10, we just need to input the IP address and TCP port 80 into the

port mapping chart of the router. There are two ways to map the port: UPnP function automatically map and modify the router's port mapping chart by manual.

1.6 Manual port mapping

The first step

Connect the Embedded NVR to the Router, set the static IP.

The second step

Log in Router, enter into the configuration menu of Router, and set the menu. Then get to port, set the IP distributed by the Embedded NVR, and set the rule of port mapping, add HTTP and TCP port into mapping list.

Default access ports of Embedded NVR include HTTP port 80 and TCP port 8000, if the ports are

occupied by the other devices, please modify the default port of the Embedded NVR into other vacant ports.

The third step

Input the public net IP address in the IE, and add the port number of the Embedded NVR you want to access after the IP, for example: http://155.157.12.227:81. If you want to access by Client Software, you can use the outer net TCP port directly.

Notice: for detail configuration setting, please refer to the user manual of Router.

2 HDD Capacity Calculation

Reference of HDD Capacity Calculation

The first time install NVR, please check if the HDD has installed.

The capacity of the HDD

There is no limitation of capacity of single HDD to NVR, please choose the HDD according to the saving time.

The choose of the Capacity

Computational formula of HDD Capacity:

Whole HDD Capacity = number of the channels × time in need (hour) × spent of HDD Capacity per hour (MB/hour)

Similarly we can have the formula of recording time:

annelAmountofChhrrHourcupationpeCapacityOcpacityTotalHDDCahourtimeR×=） （） （）（MB/MBecording

Note: 1GB=1000MB, not 1GiB=1024MiB, so HDD capacity shown in Base Configuration under HDD Management less than real marked.

File size per hour (CBR).

Form 7-1 record file size

Bit Rate	File	Bit Rate	File	Bit Rate	File
96k	42M	320k	140M	896k	393M
128k	56M	384k	168M	1.00M	450M
160k	70M	448k	196M	1.25M	562M
192k	84M	512k	225M	1.50M	675M
224k	98M	640k	281M	1.75M	787M
256k	112M	768k	337M	2.00M	900M

Diagram 7-2 Seagate download

b) Double-click to install downloaded file, click installed file to detect the HDD information on PC.

c) Choose the HDD for detection (other manufacturer's hard disk suitable too).

How to detect WDC HDD

a) Get into www.wdc.com , choose WD support / download / SATA&SAS / WD Caviar / GP, download software as Diagram 7-2 WD Download

Diagram 7-3 WD Download

b) Click Icon to hard disk detection after downloading.

c) Double click hard desk in device list, as Diagram 7-3 WD Detection:

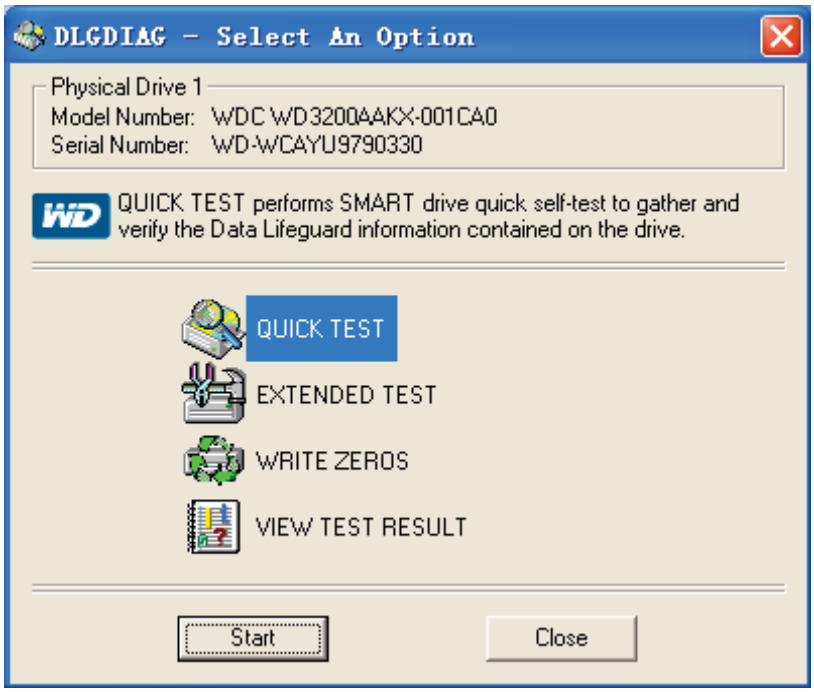


Diagram 7-4 WD Detection

3 Common Faults

3.1 NVR startup failure or continuously reboot

Possible reasons:

1. The system has been damaged from a bad NVR update.
2. There is a problem with the NVR main board error, please contact supplier.
3. There is an HDD error. Replace faulty HDD.

3.2 Remote control does not work

Possible reasons:

1. Check for batteries in remote control, especially positive and Negative.
2. Check for batteries' power.
3. Check if remote receiver is obscured.

3 Check if NVR address corresponds to the remote address.

3.3 NVR cannot control PTZ (BHA-WP202 Model does not support this feature)

Possible reasons:

1. RS-485 cable connection error, A, B ports are inversely connected;
2. PTZ decoder, protocol, baud rate, address are incorrect;
3. Parallel connect a 120Ω resistance to resolve signal reflex caused by too many PTZs on the line.
4. The RS-485 on the NVR is defective

3.4 Blurred screen in preview mode

Possible reasons:

Please make sure your cameras match your video format selected in the General menu. E.g. camera is NTSC standard but the NVR is PAL standard, the preview would be blurred.

3.5 Blurred screen in playback mode or failure to playback records

Possible reasons:

1. Procedure error, reboot the NVR
2. HDD error, test or change out the HDD
3. NVR hardware failure, contact your local supplier

3.6 Fail to connect NVR through network

Possible reasons:

1. check the physical network connection is correct.
2. check the NVR network configuration parameters.
3. check whether IP conflicts exist in network.

3.7 Download records can’t be played

Possible reasons:

1 . Player installation error.

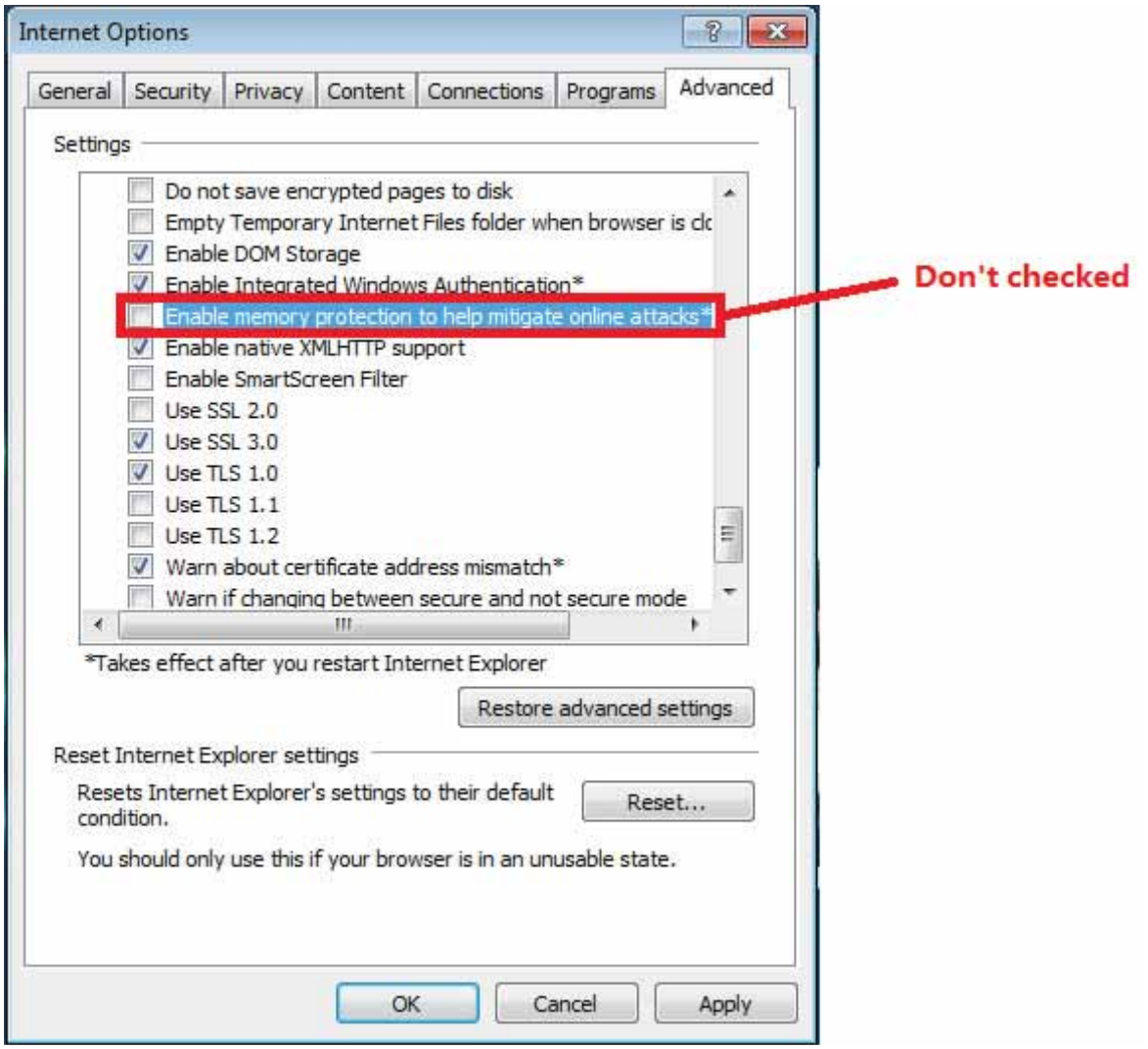
2 . The USB or HDD device has an error.

3 . Do not install graphic software later than DX8.1.

3.8 Internet Explore Crash

Possible reasons:

Close IE explore, enter into the tool bar



4 Upgrading Firmware

VII. Product Specifications

Model Name		IP Camera(BHA-WC102)
Camera	Image Device	1/3" Sony 1.4 Megapixel CMOS Sensor
	Lens	Fixed Focal Lens with IR Cut Filter
	Focal Length	3.6mm
	Angle of View	Horizontal: 77° / Vertical: 54°
	Min. Illumination	1.0 Lux (Color), 0.5 Lux (B/W), 0.002 Lux (Color DSS), 0.001 Lux (B/W DSS)
	AE Mode	Auto / Manual
	Shutter Speed	Auto / 1/30~1/60000
	White Balance	Auto / Indoor / Outdoor
	IR LEDs	10ea / Length: up to 5m
	Function	WDR (Wide Dynamic Range), DNR (Digital Noise Reduction)
Video	Compression	H.264 Main Profile
	Streaming	Dual Streaming with H.264
	Resolution	HD (1280x720), SD (720x480)
	Max. Frame Rate	30fps (NTSC), 25fps (PAL)
Audio	Compression	G.711 Coding
	MIC/Speaker	MIC In / Speaker Out
	Sampling	8 KHz
Network	Ethernet	Ethernet 10/100 Base-T (RJ-45)
	Wireless	Extra-Long-Range Wireless Binary CDMA Technology
	IP	IPv4
	UPNP	Supported
	Protocol	NTP, FTP, TCP/IP, UDP/IP, RTP, RTSP, SMTP, ICMP, DNS, HTTP, P2P
Alarm Event	Motion Detection	Yes (Block Setting)
	Alarm Notice	E-mail, FTP Server, Alarm Server
Function	Viewer	OS: Windows, Android, iOS All Use: Internet Explorer (32bit), Firefox, Safari, Chrome
	Firmware	Network Update
	Privacy Mask	Yes
General	Power Supply	DC 12V / 1.5A
	Power Consumption	5W
	Operating Environment	Temperature -10°C ~ 50°C / Humidity 10% ~ 85%
	Dimensions	132mm (L) x 40mm (W) x 66mm (H)
	Weight	0.26kg

Model Name		NVR(BHA-WN402)
Video	Input	4ch (D1, 720p)
	Output	1 BNC / 1 VGA / 1 HDMI (up to 1920x1080)
Audio	Input & Output	Input: None / Output : 1 BNC, 1 HDMI
	Codec	G.711
Recording	Compression	H.264 Main Profile
	Maximum Rate & Resolution	NTSC: 120fps@D1, 720p PAL: 100fps@D1, 720p
	Recording Quality Grade	6 levels
	Recording Mode	Continuous, Schedule, Event
	Watermark Proof	Yes
Display	Division	Full Screen, 4 division
Playback	Digital Zoom	Supported
	Speed	FF: x1/4, x1/2, x2, x4, x8, x16 / FR: x2, x4, x8, x16
	Search Mode	Calendar, Timeline, Event
Storage	Max. Capacity of 1 HDD	3TB
	Max. No. of Internal HDDs	2 SATA (HDD not included in the package)
	S.M.A.R.T.	Yes
	External Storage	e-SATA (1 port), USB (2 port)
	Backup Media	USB-DVD±RW / USB Flash Stick
System	Serial Interfaces	RS-232 ×1 (Debugging), USB x2, eSATA x1
	Control Devices	Mouse, Remote Control
Network	Ethernet	RJ-45, 10/100/1000M
	Wireless	Extra-Long-Range Wireless Binary CDMA Technology
	Streaming	TCP/UDP
	Protocol	TCP/IP, SMTP, DHCP, DDNS, P2P, RTSP, HTTP
	Network Users	1 Admin + 10 Users
	Client Software	IMS 200 for Windows & Mac PC Web Viewer, Mobile Viewer (Android & iOS)
	Remote Notification	E-mail, Alarm server, FTP server
Others	Firmware Update	USB Flash Drive / Network Update
	Time Setting	Time Zone, Daylight Saving, NTP Sync
	Log	Supported
	Watchdog	Yes (Hardware)
	Auto Deletion	1 Day ~ 30 Days

	Multi Language	27 Languages
General	Power Supply	DC 12V / 4A
	Power Consumption	12W
	Operating Environment	Temperature 0°C ~ 40°C / Humidity 10% ~ 85%
	Dimensions	220mm (L) x 240mm (W) x 126mm (H)
	Weight	1.8kg

※ All features and specifications are subject to change without notice.

VIII. Time Zone Chart

Standard Time	Time Zone
GMT+00:00	Standard
	European DST
GMT+01:00	Standard
	European DST
	Namibia DST
GMT+02:00	Standard
	Israel DST
	European DST
	Lebanon DST
	Jordan DST
	Russia DST
	Egypt DST
GMT+03:00	Standard
	Russia DST
GMT+03:30	Iran DST
GMT+04:00	Standard
	Azerbaijan DST
	Russia DST
GMT+04:30	Standard
GMT+05:00	Pakistan DST
	Russia DST
GMT+05:30	Standard
GMT+05:45	Standard
GMT+06:00	Standard
	Russia DST
GMT+06:30	Standard
GMT+07:00	Standard
	Russia DST
GMT+08:00	Standard
	Russia DST
GMT+09:00	Standard
	Russia DST
GMT+09:30	Standard
	Australia DST
GMT+10:00	Standard
	Russia DST
	Australia DST
GMT+11:00	Standard
	Russia DST
GMT+12:00	Standard
	New Zealand DST
GMT+13:00	Standard
GMT-01:00	Standard
	European DST
GMT-02:00	Standard
GMT-03:00	Standard
	Brazil DST
	European DST
	Uruguay DST
GMT-04:00	Chile DST
	US DST
GMT-04:30	Standard
GMT-05:00	Standard
	US DST
GMT-06:00	Standard
	Mexico DST
	US DST
GMT-07:00	Standard
	Mexico DST
	US DST
GMT-08:00	Standard
	Mexico DST
	US DST
GMT-09:00	Standard
	US DST
GMT-10:00	Standard
GMT-11:00	Standard

IX. Service Guide

Federal Communications Commission (FCC) Interference Statement
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER’S AUTHORITY TO OPERATE THE EQUIPMENT.