

Network Video Recorder

Quick Guide

RH16NVR1

Safety Precautions

Important Safeguards

1. Read Instructions

All the safety and operating instructions should be read before the appliance is operated.

2. Retain Instructions

The safety and operating instructions should be retained for future reference.

3. Cleaning

Unplug this equipment from the wall outlet before cleaning it. Do not use liquid aerosol cleaners. Use a damp soft cloth for cleaning.

4. Attachments

Never add any attachments and/or equipment without the approval of the manufacturer as such additions may result in the risk of fire, electric shock or other personal injury.

5. Water and/or Moisture

Do not use this equipment near water or in contact with water.

6. Ventilation

Place this equipment only in an upright position. This equipment has an open-frame Switching Mode Power Supply (SMPS), which can cause a fire or electric shock if anything is inserted through the ventilation holes on the side of the equipment.

7. Accessories

Do not place this equipment on an unstable cart, stand or table. The equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.



This equipment and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the equipment and cart combination to overturn.

8. Power Sources

This equipment should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power, please consult your equipment dealer or local power company.

9. Power Cords

Operator or installer must remove power and TNT connections before handling the equipment.

10. Lightning

For added protection for this equipment during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the equipment due to lightning and power-line surges.

11. Overloading

Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.

12. Objects and Liquids

Never push objects of any kind through openings of this equipment as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the equipment.

13. Servicing

Do not attempt to service this equipment yourself. Refer all servicing to qualified service personnel.

14. Damage requiring Service

Unplug this equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- A. When the power-supply cord or the plug has been damaged.
- B. If liquid is spilled, or objects have fallen into the equipment.
- C. If the equipment has been exposed to rain or water.
- D. If the equipment does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the equipment to its normal operation.
- E. If the equipment has been dropped, or the cabinet damaged.
- F. When the equipment exhibits a distinct change in performance - this indicates a need for service.

15. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

16. Safety Check

Upon completion of any service or repairs to this equipment, ask the service technician to perform safety checks to determine that the equipment is in proper operating condition.

17. Field Installation

This installation should be made by a qualified service person and should conform to all local codes.

18. Correct Batteries

Warning: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

19. Tmra

A manufacturer's maximum recommended ambient temperature (Tmra) for the equipment must be specified so that the customer and installer may determine a suitable maximum operating environment for the equipment.

20. Elevated Operating Ambient Temperature

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

21. Reduced Air Flow

Installation of the equipment in the rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

22. Mechanical Loading

Mounting of the equipment in the rack should be such that a hazardous condition is not caused by uneven mechanical loading.

23. Circuit Overloading

Consideration should be given to connection of the equipment to supply circuit and the effect that overloading of circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

24. Reliable Earthing (Grounding)

Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
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 uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



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

FCC Compliance Statement

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE, IN WHICH CASE USERS WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT THEIR OWN EXPENSE.

WARNING: CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT. THIS CLASS OF DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE CAUSING EQUIPMENT REGULATIONS.

WEEE (Waste Electrical & Electronic Equipment)

Correct Disposal of This Product

(Applicable in the European Union and other European countries with separate collection systems)



This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Copyright

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Use or duplication of this operation manual in part or whole without the prior consent of REVO is strictly prohibited.

Contents of this operation manual are subject to change without prior notice for reasons such as functionality enhancements.

This product contains software built partially on open-source content. Codes for the corresponding open-source content are available for download. For more information, refer to the software CD (OpenSourceGuide)OpenSourceGuide.pdf) or the open source guide accompanying this operation manual.

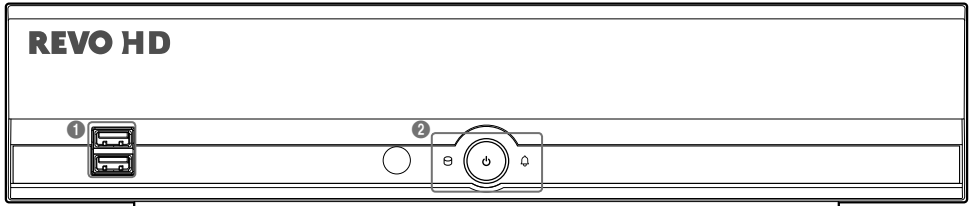
Accessories

Upon unpackaging the product, check the contents inside to ensure that all the following accessories are included.

Item		
Network Video Recorder	Power Cable / DC Adapter (12V, 48V)	Quick Guide
Operation Manual and REVO Remote Pro Program CD	Optical USB Mouse	IR Remote Control
Assembly Screws for Adding Hard Disk Drives	SATA2 Cables	

Overview

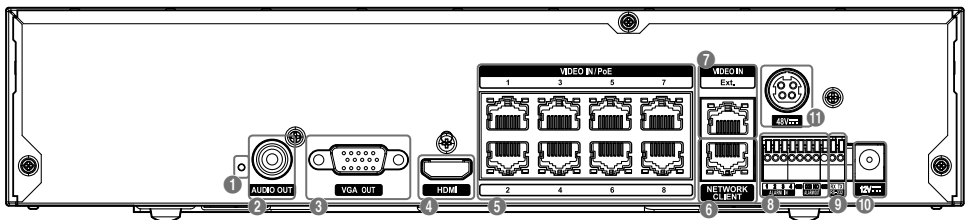
Front Panel



1	USB Ports	2	LEDs
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For more details on USB ports and LEDs of the front panel, refer to the operation manual.

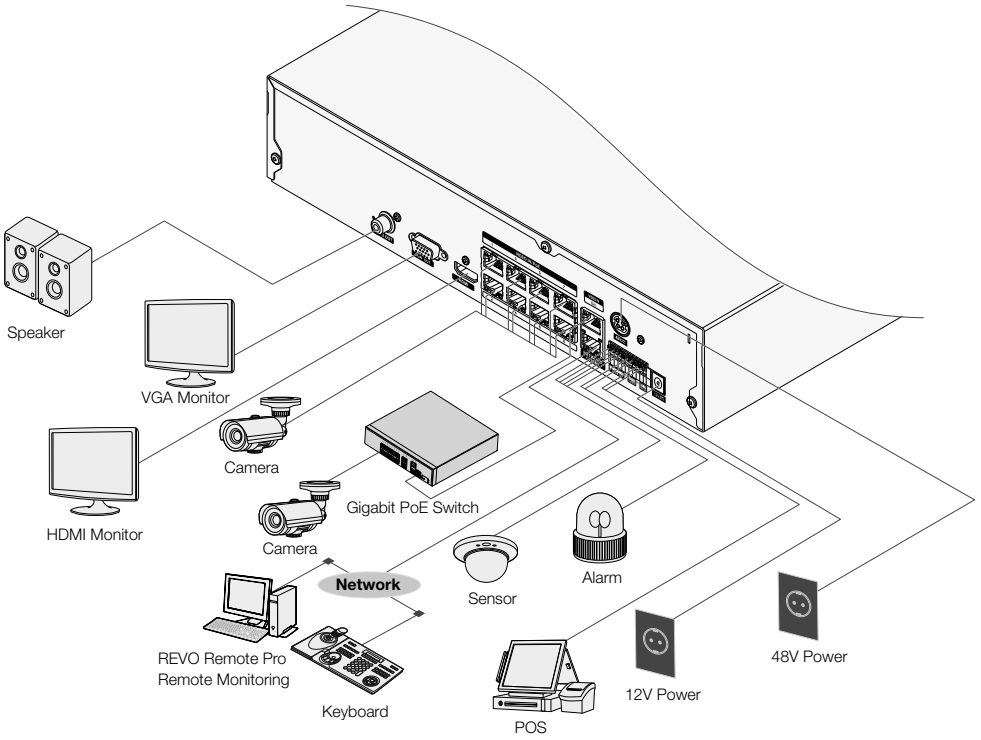
Rear Panel



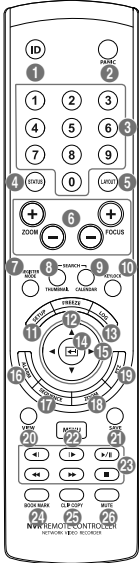
1	Factory Reset Button	2	Audio Out Port	3	VGA Out Port	4	HDMI Out Port
5	Video In / PoE Ports	6	Network Port	7	Video In / Ext. Port	8	Alarm Connection Ports
9	RS232 Port	10	12V Power In Port	11	48V Power In Port		

For more details on rear panel connections, refer to the operation manual.

Connections on the Rear Panel



Remote Control



1	ID Button	2	Panic Button
3	Camera Buttons	4	Status Button
5	Layout Button	6	PTZ Control Buttons
7	Register Mode Button	8	Thumbnail Button
9	Calendar Button	10	Keylock Button
11	Setup Button	12	Freeze Button
13	Log Button	14	Enter Button
15	Arrow Buttons	16	Alarm Button
17	Sequence Button	18	Zoom Button
19	PTZ Button	20	View Button
21	Save Button	22	Menu Button
23	Playback Buttons	24	Bookmark Button
25	Clip Copy Button	26	Mute Button



For more details on remote control buttons, refer to the operation manual.

Getting Started

Setup Wizard



- Setup Wizard only appears during initial booting. To use Wizard after initial booting, go to the system menu and select **General > Wizard**.
- For more details on Setup Wizard, refer to the operation manual.

1 Select a system language.



Quick Setup Wizard

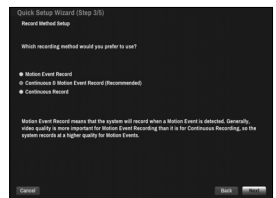
• Start the Quick Setup Wizard

• Date/Time Setup

The new date and time settings will only be applied after clicking **Next**.

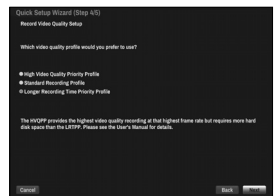


• Record Method Setup



• Record Video Quality Setup

Higher recording quality uses up more disk space.

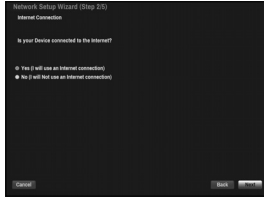


• Finish the Quick Setup Wizard

Network Setup Wizard

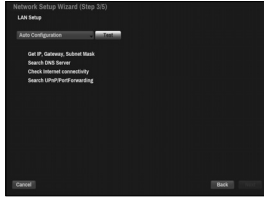
• Start the Network Setup Wizard

• Internet Connection



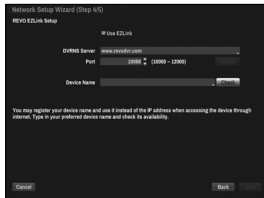
• LAN Setup

This test must be performed before proceeding to the next step.



• EZLink Setup

Enter the NVR name registered on the DVRNS server in the **Device Name** field, and click the **Check** to check its availability.



• Finish the Network Setup Wizard

Camera Registration

Once Network Setup Wizard is complete, the system will automatically enter Camera Registration mode and scan for cameras connected to the NVR.





1	Camera Scan Button	2	Camera View Buttons
3	Camera List Area	4	Video Display Area
5	Apply/Cancel Buttons		

Camera Scan Button

Use this button to scan for and register cameras. Pressing the **Scan** button displays the following submenu:

- **Rescan:** Scan for DirectIP™ cameras that were not scanned automatically.
- **Go To Camera:** Moves the focus automatically to the camera using MAC address of camera in the camera list.
- **Auto Detection:** Activated in Live mode. Automatically notifies the user of unregistered DirectIP™ camera connections.

Camera View Buttons

- **ALIGNMENT**  Button: Realigns camera screens displayed on the video display area in the order of **Video In** port connections.
- **RESET**  Button: Refreshes the video display area and the camera list.

Camera List Area

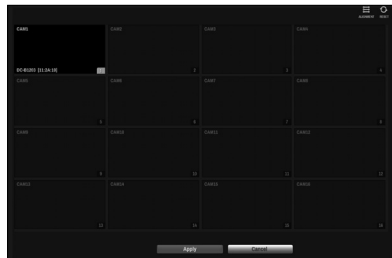
Following options can be accessed by right-clicking on a camera list entry:

- **Add/Remove Camera:** Adds or removes the selected camera. The Add Camera option is inactive if the camera has already been added to the screen.
- **Authentication:** Enter the necessary camera login info. This option is inactive for DirectIP™ cameras because they do not require logins.

Video Display Area

Left-click on the video display area to toggle between split screen and single screen modes.

Drag the camera screens around to rearrange them.



Apply/Cancel Buttons

While in Camera Registration mode, select **Apply** to register all changes.

Select **Cancel** to exit Camera Registration mode without applying the changes.

- It is not possible to register a camera that has already been registered to a different NVR.


Login

Configuring the NVR's settings and accessing its searching and other functions require an authorized user login.

- 1 While in Live mode, right-click on the mouse and select **Login** and either press the **SETUP** button on the remote control.



- 2 Select a user, enter the password, and then select **OK**.

- There is no default password for the admin account. Select "admin" and then "OK" without entering a password to log in.
- Leaving the admin account unassigned with a password poses a security risk. Please assign a password at your earliest convenience. A warning message will continue to be displayed until a password is assigned.
- Click on the  button next to the password field using the mouse. This will bring up a virtual keyboard you can use to assign a password.

- 3 To log out, right-click on the mouse and select **Logout**.

Basic Feature

Live Mode

Once Camera Registration is complete, the system will enter Live Mode.


Press the **Setup** button while in Live mode to bring up the Live menu on the right edge of the screen. Press **Setup** once more to hide the menu. Use the Arrow buttons on the remote control to select the menu options.


Video Recording

Records the live video.


Refer to the Operation Manual for more information.

Panic Recording

Select **Live** or **Search** menu's Panic Recording  icon or press the **Panic Recording** button on the remote control to commence panic recording on all registered cameras.


To stop Panic Recording, select the Panic Recording  icon or press the **Panic Recording** button again. If the **Panic Recording Time** option under **Record Setup > General** has been configured, Panic Recording will automatically terminate after the specified duration of time has elapsed.

- Panic Recording takes place irrespective of any recording schedule set up by the user.
- Panic Recording video profile from **Record Setup – General** applies to all Panic Recording videos.

-  • Panic Recording will not take place if recording mode is not set to **Recycle** and the HDD has reached 100% of its capacity.

Audio Recording


If the Record Audio option under **Record Setup > General** has been enabled the camera will record audio along with video.

-  Check your local laws and regulations on making audio recordings.

Video Recording Playback

You can play back video recordings by using a mouse or remote control.

All Channel Playback

- 1 Press the **Menu** button while in Live mode.
- 2 Select the Search Mode  icon and then select **Time-Lapse Search** or **Event Log Search**.
- 3 The selected search mode will be initiated.

REVO Remote

REVO Remote is a program that allows you to view and search video from remote locations over the Internet and can be accessed on a regular web browser such as Internet Explorer.

System requirements for running REVO Remote are as follows:

	Recommended
OS	Microsoft® Windows® XP (Service Pack 3), Microsoft® Windows® Vista (Service Pack 1), Microsoft® Windows® 7 (Home Premium, Professional, Ultimate) or Microsoft® Windows® 8 (Pro, Enterprise)
CPU	Intel Pentium IV 2.4GHz or above (Core 2 Duo E4600 recommended)
RAM	1GB or more
VGA	128MB or more (1280x1024, 24bpp or above)
Internet Explorer	Ver. 7.0 or above (32-Bit)

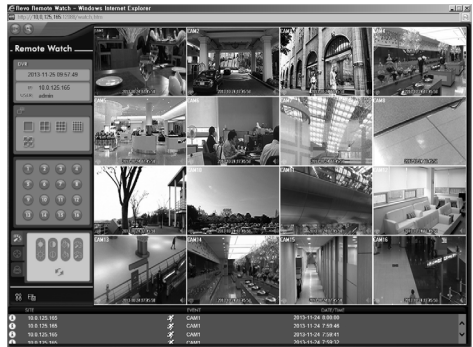
- REVO Remote only works with Microsoft Internet Explorer and will NOT work with other browsers.
- REVO Remote does not work in Microsoft® Windows® 8 metro UI.

Setup REVO Remote

- 1 Launch Internet Explorer and then enter the following information in the address bar.
 - http://IP Address:Port Number (NVR system's IP address and REVO Remote port number configured under Network > General (Default Value: 12088))
 - Or http://www.revodvr.com/NVR name (The NVR name registered on the DVRNS server)

- Contact your network administrator for the IP address of the NVR you wish to connect to and the REVO Remote port number.

- 2 When prompted with the REVO Remote login window, select **REMOTE WATCH** or **REMOTE SEARCH** as the desired mode. Enter the ID and password and click **LOGIN** to sign in using the selected mode. If connecting by entering www.revodvr.com, enter the NVR's IP address in the Device Address field. Selecting the Use DVRNS option on the login window allows you to enter the NVR name registered to the DVRNS server instead of its IP address. You will be prompted to enter the DVRNS server's address and port number under Setup.



REVO Remote Pro Program

System Requirements

	Recommended	Minimum
OS	Microsoft® Windows® 7 x86 (64bit) (Home Premium, Professional, Ultimate) Microsoft® Windows® 8 (pro, Enterprise)	Microsoft® Windows® XP Home SP3
CPU	Intel Core™ i5-2550 3.30GHz or better	Intel Core™ 2 Duo E7200 2.53GHz or better
RAM	2GB or more	1.5GB or more
VGA	ATI Radeon™ HD 3650 or NVIDIA GeForce 8400GS or better (1280x1024, 32bpp or better), multiple monitors	ATI Radeon™ HD 2400 or NVIDIA GeForce FX5500 or better (1024x768, 24bpp or better)
HDD	6GB or more of available space	1GB or more of available space
LAN	Gigabit Ethernet or better	10/100 Mbps Ethernet or better

- REVO Remote Pro program runs on 32-bit OS.
- On 64-bit versions of Microsoft® Windows® Vista or later, REVO Remote Pro installs and runs in 32-bit compatibility mode.

Installation

Prior to installing the software, click on to the Windows **Start** menu, open Control Panel, click on **Power Management**, and set options for **Turn off monitor** and **Turn off hard disks** as **Never**.

- 1 Please enter the software installation CD into the PC.
- 2 Browse to the **Setup** folder in the CD and run **setup.exe**.

- On **Microsoft® Windows® Vista** or **User Account Control** window may pop-up. Click **Allow** and follow the instructions in the installation window to proceed with the installation.

- 3 When the installation window appears, click **Next**.
- 4 Select an installation path for the program, and click **Next**.
- 5 When the install confirmation window appears, click **Next**.



NET Framework and Visual C++ Runtime Libraries will be installed automatically, and it may take a few minutes. If NET Framework and Visual C++ Runtime Libraries are already installed on the system, this step will be skipped automatically.

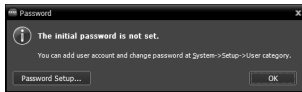
- 6 When the Installation Completed window appears, click **Close** and finish the installation.

Start Program

When REVO Remote Pro software is installed, **REVO Remote Pro** and **REVO Remote Pro Run as administrator** shortcut icons will be created on the desktop. Run REVO Remote Pro software by double-clicking on **REVO Remote Pro** or **REVO Remote Pro Run as administrator** shortcut icon. If a removable eSATA HDD or SD (SDHC) memory card are connected to the REVO Remote Pro system, you must double-click on **REVO Remote Pro Run as administrator**.

Login

This program does not have a password set by default. Leaving the admin account unassigned with a password poses a security risk. Please assign a password at your earliest convenience.



Once the program is running, you must login. Enter a User ID and Password.



- **Remember my ID on this computer:** Remembers the ID used to login.
- **Restore last Live sessions:** Restores the previous Live session on the current Live panel.

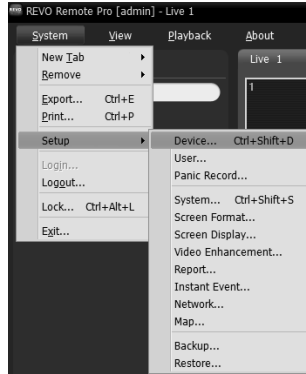


- Default User ID is "admin" without a password.
- You can change User ID and Password in the User menu.

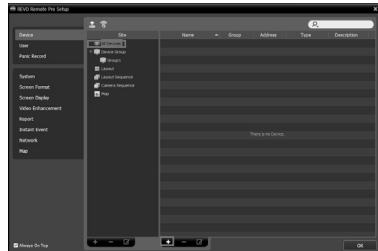
Device Registration

To use the functions provided by REVO Remote Pro, you must first register a device and add the device to a device group.

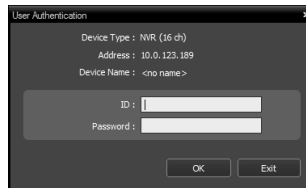
- 1 Select **System > Setup > Device** in the menu at the top of the screen.



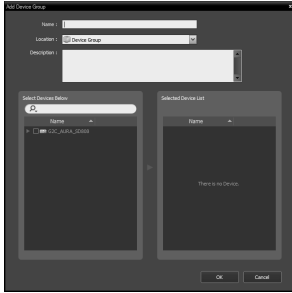
- 2 On the **Site** panel, click on **All Devices**, then click on the **+** button at the bottom of the Site List panel on the right. A **Device Scan** window will appear on the screen.



- 3 After selecting a scan mode, click on **Start Scan** button and the scan results will be displayed on the list.
- 4 Click **Add Devices** at the bottom of the **Device Scan** window.
- 5 When user authentication window appears, enter the User ID and Password set up on each device, and then select **OK** for remote access.



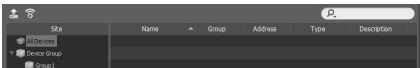
- Click **Device Group** on the **Sites** panel and click **+** at the bottom. **Add Device Group** window will appear.



- **Name:** Enter a name for the device group.
- **Location:** Select an location for the subject device group.

When you select a device from the device List on the left, it will be added to the **Selected Device List** on the right. Click **OK** to register the device group.

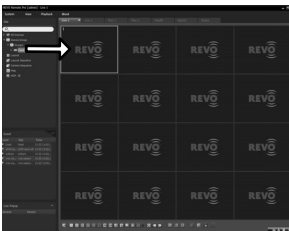
- Make sure that the device has been added to the device group correctly. Click **Device Group** on the **Sites** panel and click on **+** next to **Device Group**. When you click on a registered device group, a list of devices added the selected device group will be displayed on the right.



To modify a device group that has been registered, select a device group and click **✎** on the bottom of the **Sites** panel. **Modify Device Group** window will appear. You can modify the selected device group from this window.

Live Video Mode

- In the Site List, make sure that the device has been added to the device group.
- In the panel tabs, click the **Live** tab. In the **Site** list, select a zone you wish to connect to. Then, drag & drop the selected site on the Live screen using your mouse. The live video of the selected site will be displayed on the screen.



Recorded Video Playback

- In the **Site** List, make sure that the device has been added to the device group.
- In the panel tabs, click on the **Play** tab. In the **Site** list, select a site you wish to connect to. Then, drag & drop the selected site on the playback screen using your mouse. The recorded video of the selected site will be displayed on the screen.

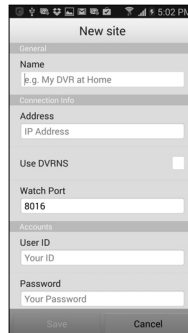
REVO Mobile



This service requires heavy data traffic, and using a Wi-Fi connection is recommended. Using wireless internet (3G, LTE) may result in excessive data charges.

Android OS device

- Open the **Play Store**(Google Play) on your Android device.
- In **Play Store** (Google Play), enter **REVO Mobile** in the search field.
- Install REVO Mobile program and open it.
- The start-up menu appears when pressing the Menu button on your mobile device.
- Register the device by pressing **Add Remote Host** and entering the device (network camera) information.

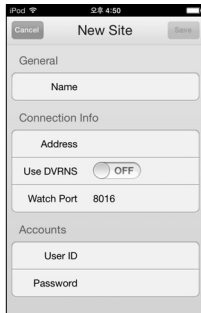


- **General:** Enter a name of the device to be used in REVO Mobile.
- **Connection Info**
 - **Use DVRNS:** Select the check box. Deselect the checkbox if DVRNS is not enabled on the device. If the device is using an additional DVRNS server, press **Settings** in the start-up menu and enter the DVRNS server information. (Default site: revodvr.com, Default port number: 10088). For more details, contact your DVRNS server administrator.

- **Address, Watch Port:** Enter the device name used to register the device to DVRNS. If DVRNS feature is not enabled on the device, deselect **DVRNS** checkbox and enter the device's IP address. For port number, using the default value is recommended.
- **Accounts:** Enter the User ID and Password used to login to the device. (Default value of User ID: **admin**, No default value of password)

iOS device

- 1 Open the **App Store** on your device.
- 2 Enter **REVO Mobile** in the search filed of the **App Store**.
- 3 Install REVO Mobile program and open it.
- 4 Register the device by pressing + button and entering the device (NVR) information.



- **General:** Enter a name of the device to be used in REVO Mobile app.
- **Connection Info:** Turn **Use DVRNS ON** and enter the device name used to register the device to the DVRNS. If DVRNS feature is not enabled on the device, turn **Use DVRNS OFF** and enter the device's IP address. For port number, using the default value is recommended.
- **Accounts:** Enter the User ID and Password used to login to the device. (Default value of User ID: **admin**, No default value of password).

Specifications

These product specifications may change without prior notice.

General	
Exterior Dimensions (W x H x D)	300mm x 61mm x 231mm
Weight (Main Unit)	2.3kg (with 2HDDs)
Weight (Packaging)	4.5kg (with 2HDDs)
Packaging Dimensions (W x H x D)	460mm x 113mm x 360mm
Working Temperature	5°C – 40°C
Operating Humidity	0% – 90%
Power	DC12V, 2.0A (NVR) DC48V, 1.4A (PSE)
Power Consumption	Max. 25W (NVR) Max. 65W (PSE)
Certifications	FCC, CE

Video	
Video In	16 Network Camera (Video In Port : 9)
Monitor Out	HDMI: 1 HDMI VGA: 1 DB15
Video Resolution	1920 x 1200, 1920 x 1080, 1680 x 1050, 1600 x 1200
Recording Speed (IPS)	240ips @ Full HD
Playback Speed (IPS)	120ips @ Full HD

I/O	
Alarm In	4 TTL, NC/NO programmable, 2.4V (NC) or 0.3V (NO) threshold, 5VDC
Alarm Out	1 relay output, 2A@125VAC, 1A@30VDC (NO)
Internal Buzzer	80dB at 10cm
Network Connection	10Mbps/100Mbps/1Gbps Ethernet
Audio In	Network Audio In
Audio Out	1 line Audio Out, RCA
Text In	POS Interface, ATM Interface

Connector	
Video In	Ethernet: 9 ports
Camera Power Out	Ethernet: 8 ports
Monitor Out	HDMI: 1 HDMI VGA: 1 DB15
Audio Out	1 RCA connector
Alarm	Terminal block
Ethernet Port	1 RJ-45
RS232 Serial Port	Terminal block, text insertion (POS/ATM)
IR Remote Control Port	Remote Control
USB Ports	2 x USB 2.0 (5V, less than 0.5A)

Storage	
Internal Storage	2 SATA2 bays
Backup Device	USB Storage Device (USB HDD, USB Memory, etc.)