



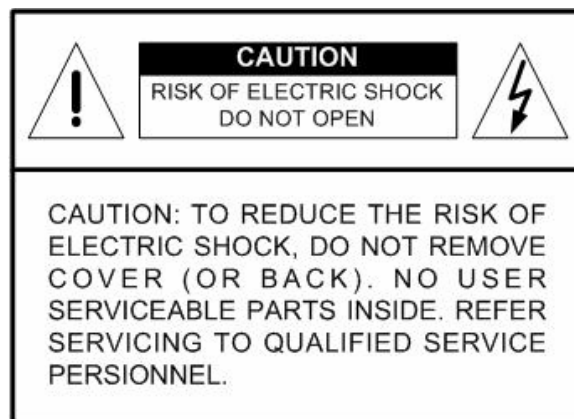
ECO H.264 DVR

User's Manual

Version 1.3

Caution and Preventive Tips

- Handle with care, do not drop the unit
- Mount the unit in an equipment rack or place it on a solid, stable surface
- Indoor use only, do not place the unit in a humid, dusty, oily, or smoky site
- Do not place it in an area with poor ventilation or in an area close to fire or other sources of heat. Doing so may damage the unit as well as cause fire or an electric shock
- When cleaning is necessary, shut down the system and unplug the unit from the outlet before uncovering the top cover. Do not use liquid cleaners or aerosol cleaners. Use only a damp cloth for cleaning
- Always shut down the system prior connecting or disconnecting accessories, with the exception of USB devices



This symbol intends to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



This symbol intends to alert the user to the presence of unprotected "Dangerous Voltage" within the product's enclosure that may be strong enough to cause a risk of electric shock.

Important Information

Before proceeding, please read and observe all instructions and warnings in this manual. Retain this manual with the original bill of sale for future reference and, if necessary, warranty service. When unpacking your unit, check for missing or damaged items. If any item is missing, or if damage is evident, **DO NOT INSTALL OR OPERATE THIS PRODUCT**. Contact your dealer for assistance.

Rack Mounting

Consult with the supplier or manufacturer of your equipment rack for the proper hardware and procedure of mounting this product in a safe fashion. Avoid uneven loading or mechanical instability when rack-mounting units. Make sure that units are installed to get enough airflow for safe operation. The maximum temperature for rack-mounted units is 40 °C. Check product label for power supply requirements to assure that no overloading of supply circuits or over current protection occurs. Mains grounding must be reliable and uncompromised by any connections.

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1. Overview

ECO H.264 DVR is an integrated digital video recorder that combines the features of a time-lapse audio / video recorder, a multiplexer, and a video server to create a single security solution.

Its outstanding triplex operation enables users to view live video, search and playback any recorded video by date/time or event, and remotely monitor the unit via internet on PC, MEANWHILE the recording of the DVR unit is ongoing simultaneously.

ECO H.264 DVR is enhanced to provide H.264 compression mode. Moreover, a marvelous implementation is the brand-new experience of Graphical User Interface (GUI) that optimizes the monitoring controls of the unit.

ECO H.264 DVR is pre-installed with remote viewing and configuration software, which is a Web-browser plug-in allowing users to view live or recorded video images, and enables remote configuration. The remote software is stored in ECO H.264 DVR and deployed over a LAN, WAN or Internet connection to remote Windows-based computers. This simplifies the installation and maintenance of the software components so all remote users are using the same software coming from the unit.

2. System Setup

The notices and introduction on system installation will be described particularly in this chapter. Please follow the description to operate the unit.

In order to prevent the unit from data loss and system damage that caused by a sudden power fluctuation, use of an Uninterruptible Power Supply (UPS) is highly recommended

2.1 Position the DVR

First, note to position / mount the DVR in a proper place and be sure to power off the unit before making any connections. The placed location should avoid hindering or blocking the unit from airflow. Enough airflow is needed to protect the unit from overheating. The maximum allowable temperature of operating environment is 40°C.

The unit utilizes heat-conducting techniques to transfer internal heat to the case, especially to the bottom side of the unit.



NOTE: Be sure the rubber feet are not removed, and always leave a space for air ventilation on the unit's bottom side.

2.2 Select Video Format

The DVR is designed to operate under either NTSC or PAL video formats. The switch is on the rear panel.



2.3 Connect Devices to the DVR

This section lists some important notices that should be read before making any connection to the DVR.

Connecting Required Devices

Before power up the unit, cameras and a monitor should be connected to the unit for basic operation. If needed, connect a call monitor for displaying full screen video of all installed cameras in sequence.

Connecting Short-term Device

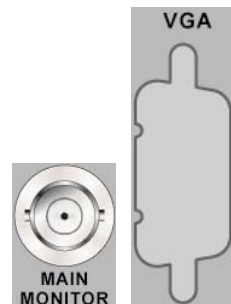
If any short-term devices shall be installed to the DVR as parts of the unit system, such as USB ThumbDrive® or any USB devices, etc, make sure those devices are connected only after the unit is powered up. The reason is because the DVR can recognize the external devices only after the power-up process is done completely.

2.4 Rear Panel Connections

There are various connectors on the rear panel for the DVR installations. The following shows the detailed description of each connector.

Main Monitor (BNC/ VGA)

BNC and VGA output connectors are offered for connecting to a main monitor. The main monitor displays live image and playback recorded video in either full-screen or split-window format. VGA output connector is standard feature.



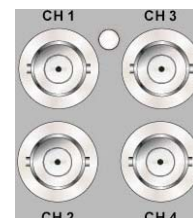
Call Monitor (8CH and 16CH models only)

The call monitor is used to display full screen video of all installed cameras in sequence. The BNC call monitor connector allows users to connect the DVR with an optional call monitor.



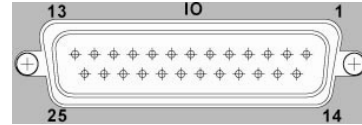
Video In

A group of BNC connectors is offered for video input streams from installed cameras. The number of connectors is equal to the number of channels.

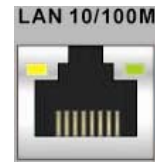


Alarm I/O & RS485

A D-Sub connector is provided to offer users the flexibility to connect the DVR to Alarm I/O and RS-485 devices. Refer to **Setup Guide** for detailed pin definitions.

**LAN Connector (RJ-45)**

The DVR is capable of networking. Once the unit is connected to the LAN network, users can remotely access the unit through the remote software on a PC.

**USB Connector (x1)**

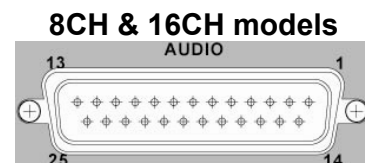
There is one USB 2.0 port provided to allow users to connect external USB devices to the unit, such as a USB ThumbDrive® or a USB mouse.

**Power Jack**

The DVR has a free voltage DC power connection jack. Please connect the power adapter shipped with the unit.

**Audio In**

Audio In connectors are offered for connecting audio source devices to the unit. 4CH models offer RCA connectors while 8CH and 16CH models offer a D-Sub connector.

**Audio Out – Main & Call**

Main & Call Audio Out RCA connectors are provided for connecting the DVR to audio output devices (e.g. amplified speakers). “Main” will output audio from the main monitor, whereas “Call” will output audio from the call monitor.

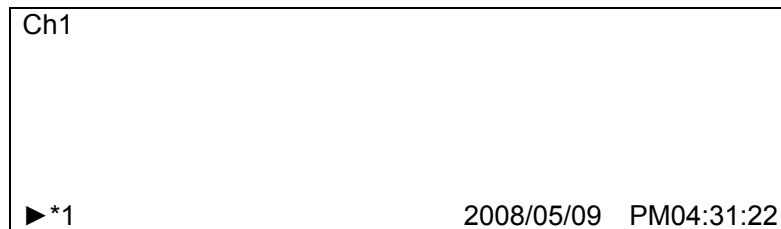


NOTE: Call Audio Out RCA connector is only available for 8CH and 16CH models.

3. General System Setup

Before operating the DVR, some general configuration should be setup first. The following subsections will introduce function keys on the front panel and general configuration of the DVR.

The regular displayed OSD information and its displayed positions are shown as following figure. Title of the channel will be displayed on the top-left corner of the window, either in full-screen mode or in spilt window mode. The current operating mode, including Playback mode, Freeze mode and Sequence mode, will be displayed on the bottom-left corner of the screen. The date/ time information will be display on the bottom-right corner.



3.1 Front Panel Introduction

The front panel controls enable users to control the unit and preset the programmable functions.

3.1.1 LED Definition

The LEDs on the front panel of the DVR are described as follow.



Power LED

The LED lights up when the correct power is connected to the unit.



REC LED

The LED blinks while the DVR is recording.



Alarm LED

The LED lights up when an alarm is triggered.



Network LED

The LED lights up when the DVR is connected to a network and blinks when the data is being transferred.

3.1.2 Function Keys

This section describes the functional keys, which are for normal operation, on the front panel of the DVR.

Please refer to the **Setup Guide** for the graphical illustration of functional keys.

CHANNEL

In both Live and Playback modes, press the CHANNEL key to view the corresponding video in full-screen.

HOME

Press the key to enter dome camera control mode. Please refer to Section **Dome Control** for detailed controlling operation.

MODE

Press repeatedly to select for wanted monitor display format. The available view modes includes: full-screen, 4-window (2×2), 9-window (3×3) and 16-window (4×4). Refer to Section **View Modes** for detailed information.

SEQ (Sequence)

Press to start automatic sequencing of the video coming from the installed cameras.

MENU

Press this key to enter the OSD setup menu.

COPY

In Playback mode, press COPY to select the start and end time of the export video. Refer to Section **Video Export** for detailed information.

CALL (8CH and 16CH models only)

- In Live mode, press this button to enter Call Monitor Control mode.
- In Dome mode, press CALL in association with ENTER to enter the OSD setup menu of the dome camera.

PLAY/STOP

Press this key to switch between live image and playback video.



NOTE: According to record setting, part of the latest video cannot be played back because the video is still saved in the buffer.

FREEZE

- Press FREEZE while viewing live image, the live video will be frozen. The date / time information shown on the monitor will continue updating. Press FREEZE again to return to live mode.
- Press FREEZE while playing the recorded video, the playback video will be paused. Press LEFT / RIGHT to move the recorded video reverse / forward by single step. Press FREEZE again to continue playing video.

SEARCH

In both Playback and Live mode, users can press SEARCH to display the Search menu for searching and playing back recorded video by date and time or events.

ESC

Press to cancel or exit from certain mode or OSD setup menu without changing the settings made previously.

Direction Keys

- In Zoom mode, these keys function as Direction keys.
- In the OSD menu, the LEFT/ RIGHT keys are used to move the cursor to previous or next fields. To change the value in the selected field, press UP/ DOWN.

ENTER / ZOOM

- In OSD menu or selection interface, press this key to make the selection or save settings.
- In live full screen view mode, press this key to view a 2x zoom image; press it again to exit zoom mode.

3.2 Power Up / Shutdown the DVR

If the DVR must be shut down for any reason, please use the proper shut down and power up procedures to avoid damaging the DVR.

To Power Up the Unit

Simply plug in the power adapter that came with the package and the DVR will start to boot.

The color bar and system checking information will be shown on the monitor and then disappear when the unit has been completely powered up.

To Restart / Shutdown the Unit

Press MENU and input the administrator password to access the OSD setup menu. Select <Shutdown> in Main Menu and press ENTER to enter the Shutdown menu, which displays as follows.

Shutdown		
1. Power Off		Execute
2. Reboot		Execute

<Power Off>

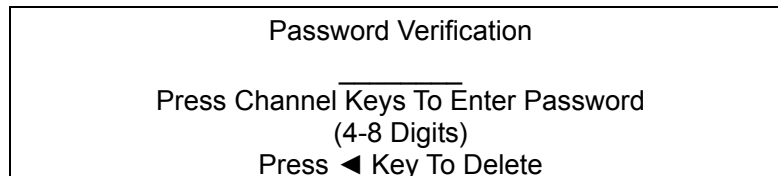
Select this item to shut down the unit. Do not remove the power during shut down until the message "You can safely turn off DVR now!" displays.

<Reboot>

Select this item to reboot the unit. The color bar and system checking information are displayed on the monitor until the unit is completely restarted.

3.3 Enter OSD Setup Menu

The configuration of the DVR can be customized by entering the intuitive Graphical User Interface (GUI) OSD setup menu. Collaborating with a USB mouse, setting up the DVR can be easy as operating on a PC. Press MENU and enter Administrator or User password to enter the OSD setup menu. The Password Verification screen displays as follows.



The default passwords are shown in the following table. The same passwords are used for entering the remote viewing software.

Administrator Password	User Password
1 2 3 4	4 3 2 1



NOTE: It is strongly suggested to change the passwords to prevent unauthorized access to the unit.

3.4 System Date / Time Setting

Users can set the current date, time and other OSD parameters in Date/Time menu (under System Setup Menu). The administrator's privileges are required for entering the submenu. In OSD setup menu, select <System Setup> and press ENTER, then select <Date/Time> to access the Date/Time menu; the menu displays as follows.

Date/Time	
1. Date	2008/02/21
2. Time	PM10:39:26
3. Date/Time Display	1 Row
4. Date Display Mode	Y/M/D
5. Time Display Mode	12 HR
6. Date/Time Order	Date First
7. Daylight Saving Time Setup	

3.4.1 Set Date / Time

Set Date / Time

Select <Date> / <Time> and press ENTER for adjusting the settings. LEFT / RIGHT keys are used to move the cursor to previous or next field, ENTER is for selecting, and UP / DOWN are used to change the value in the selected field.



NOTE: The new date / time setting applies to record new video. The date and time of previously recorded video will not be changed.



NOTE: If time settings have to be changed in any case, it is strongly recommended to format the HDD to avoid database corruption.

Date / Time Display

Users are allowed to set the time OSD displays in 1 or 2 rows. Use the UP / DOWN keys to change the setting.

Date Display Mode

This function allows users to set the OSD display type of the date. There are three options to select from: <Y/M/D>, <M/D/Y> or <D/M/Y>. “Y” represents “Year”, “M” represents “Month” and “D” represents “Day”.

Move to the item and press ENTER, the option starts blinking. Use UP / DOWN keys to change the setting.

Time Display Mode

Users can set the time format to <12 hour> or <24 hour>. Use the UP / DOWN keys to change the format.

Date / Time Order

The item is used to set the order of date / time display to <Date First> or <Time First>. Use UP / DOWN keys to change the setting.

3.4.2 Daylight Saving Time

Daylight Saving Time

The item is for those people who live in certain regions to observe Daylight Saving Time. Select <ON> to enable, or <OFF> to disable the function.

If the function is disabled, the DST Start / End time and DST Bias will be grayed out and cannot be accessed.



NOTE: If this function is enabled, the date/ time information will be shown on the screen with a DST icon when playing back recorded video or searching video in the event list. “S” indicates summer time and “W” indicates wintertime.

DST Start / End

The items are used to program the daylight saving duration. Use LEFT / RIGHT keys to move the cursor to the next or previous field, UP / DOWN to change the settings in the selected field.

DST Bias

The item allows users to set the amount of time to move forward from the standard time for daylight saving time. The available options are in minutes.

3.5 Record Schedule / Quality Setting

The Record Setup menu allows users to set recording quality, recording schedules, and other recording parameters. Administrator's password is required to access Record Setup menu. In the Main menu, move the cursor to <Record Setup> and press ENTER; the following menu is displayed.

Record Setup	
1. Record Mode Setup	
2. Schedule Setup	
3. Preset Config	Best Quality
4. Per Camera Config	
5. ezRecord Setup	
6. Circular Recording	ON
7. Audio Recording	ON
8. Purge Data	

3.5.1 Schedule Setup

The Schedule Setup is used to set the day and night time, or weekend recording schedule. Select <Schedule Setup> from the Record Setup menu and press ENTER; the following menu is displayed.

Schedule Setup	
1. Day Time Start	AM 06:00
2. Day Time End	PM 06:00
3. Night Time Start	PM 06:00
4. Night Time End	AM 06:00
5. Weekend Schedule	ON
6. Weekend Start	Fri 18:00
7. Weekend End	Mon 06:00

- Make appropriate changes of the start time of Day and Night Time using Direction keys.
- Press ENTER to confirm the settings or ESC to cancel.
- If a weekend record is required, select <ON> to enable the Weekend Schedule in advance and then set the Weekend Start/End time.
- Press ESC to return to previous page.

3.5.2 Preset Record Configuration

The <Preset Config> is used to select the preset recording quality and frame rate. In normal circumstances, it is strongly recommended to set the preset configuration as <Best Quality>. Below table shows the PPS and picture size under <Best Quality> in Half-D1 mode for 16CH models. Please refer to OSD Setup Manual, Section **Preset Record Configuration** for more detailed information.

Half-D1 mode (NTSC: 720x240@120PPS; PAL: 720x288@100PPS)			
Normal PPS	Normal Size	Event PPS	Event Size
7.5 NTSC (6.25 PAL)	10 KB / PIC	30 NTSC (25 PAL)	10 KB / PIC

3.5.3 Record Event Video Only

If the DVR shall start recording only when alarms are triggered, follow the steps below:

- Enter the OSD setup menu with correct password.
- In the OSD setup menu, select <Record Setup> menu. Move the cursor to the item <Preset Config>, and select <Event only>.

Refer to OSD Setup Manual, Section **Preset Record Configuration** for more detailed information.

3.5.4 Per Camera Configuration

This function is used to set the Day / Night / Weekend PPS (Picture per Second) and Quality for each channel. The Preset Configuration must be set to <OFF> for accessing these schedules. The menu is displayed as below (Record Mode: 720×240@120PPS in NTSC / 720×288@100PPS in PAL).

Per Camera Config			
Camera Select	Day	Night	CH1 Weekend
Normal PPS	7.5	7.5	7.5
Normal Size	Mid	Mid	Mid
Event Max PPS	30	30	30
Event Size	Best	Best	Best
Event Active	Both	Both	Both

- Firstly, select a Camera for setting its record configuration. The image and recording settings from the selected camera will be displayed on the screen.
- Move the cursor using Direction keys and press ENTER to select an item.
- Change the value using UP / DOWN keys.
- Press ENTER to confirm the settings or ESC to abort.
- Press ESC to return to Record Setup menu.

Please note that the total normal PPS for all channels cannot exceed 120 NTSC (720×240@120PPS) / 100 PAL (720×288@100PPS). To increase one channel's PPS, you may have to reduce others' first. Event PPS is not restricted to this rule, since a smart event scheduler will handle the total PPS with a correct weighting.

3.5.5 ezRecord Setup

This item aims to ease the complicated record settings, and to make the setup much easier. Note that the item can be reached only when <ezRecord> is selected as the option for <Preset Config>.

Select <ezRecord Setup> from <Record Setup> and press ENTER, the sub-menu appears as below figure:

ezRecord Setup	
How Many Days To Record	2 Days
Daytime Record	Yes
Night Record	Yes
Weekend Record	Yes
Record Info	
Average Normal PPS	3.75
Average Normal Quality	Best

Follow these steps to Setup ezRecord:

- Select <How Many Days To Record> and press ENTER, then press UP/DOWN to choose an option. The average normal PPS & Quality will be adjusted automatically. The maximum of days depends of the size of the installed HDD. In other words, the larger the size of the HDD installed, the more days the unit can record.
- Move to <Daytime Record> and press ENTER. This item will determine whether the DVR will record during daytime. If yes, use UP/DOWN to select <Yes> as to enable daytime recording; or select <No> to disable.
- Repeat the same procedures through the 3rd and 4th item, respectively. Note that <Weekend Record> will be inaccessible if <Weekend Schedule> in <Schedule Setup> is set to <No>.
- Select <Average Normal PPS> and press ENTER, then press UP/DOWN to make a choice. The <How Many Days To Record> will be computed automatically.
- Select <Average Normal Quality> and press ENTER, then press UP/DOWN to make a choice. The <How Many Days To Record> will be computed automatically.



NOTE: The current number of connected cameras will affect the recording quality automatically calculated through the <ezRecord Setup>. Therefore, once the number of connected cameras is changed, the <ezRecord Setup> should be reset.

3.5.6 Circular Recording

Users can choose to record video in circular mode or in linear mode. If circular mode is selected, the DVR will store new video into the HDD spaces while overwrite the oldest recorded video. Alternatively, if linear mode is selected, the DVR will stop recording when the HDD is full and the internal buzzer will start to beep.

From the Record Setup menu, move the cursor to <Circular Recording> and press ENTER, then select <ON> / <OFF> using UP / DOWN keys.

3.5.7 Purge Data

This item is used to delete the Normal or Event recording video. In Record Setup menu, move the cursor to <Purge Data> and press ENTER; the Purge Data menu is displayed.

Purge Data		
1. Purge All Data		No
2. Purge All Event Data		No
3. Purge Event Before	2008/01/01	
4. Start to Purge		No

Purge All Data

The item is used to delete all recorded video from the database. Set this item to <Yes> using UP / DOWN keys, and start the deletion by setting <Start to Purge> to <Yes>.

Purge All Event Data

The item is used to delete all event video from database(s). Using UP / DOWN keys to select <Yes> and start the deletion by setting <Start to Purge> to <Yes>.

Purge Event Before

The item is used to delete event video before a specific date. Use LEFT / RIGHT keys to move the cursor to next or previous field, ENTER to select the item and UP / DOWN to adjust the value.

Start to Purge

After the video or data to be deleted are selected, set this item to <Yes> to start the deletion or choose <No> to cancel.

4. Basic Operation

The DVR allows users to access some general operations through the front panel easily. The following sections introduce the general operations of the unit.

4.1 View Live / Playback Video

The general functions in live and playback mode are described in the following sections.

4.1.1 Viewing Modes

The DVR provides users versatile ways of viewing both live and recorded video. Following presents these view formats.

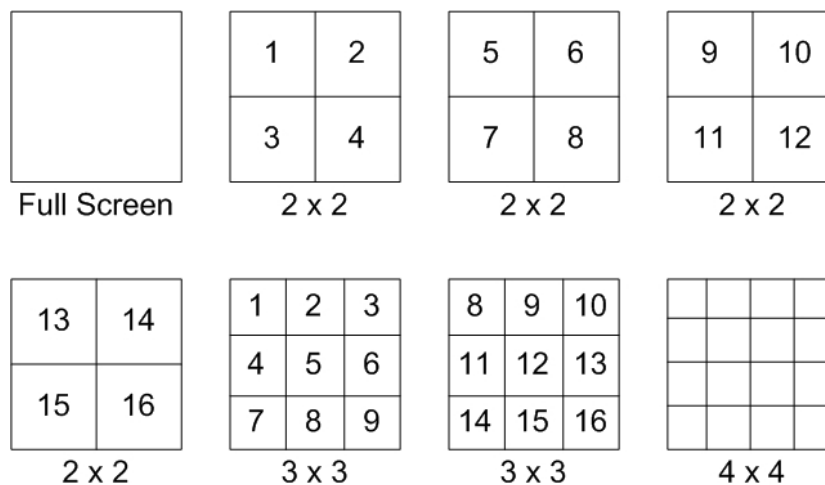
Viewing in Full Screen

Press any CHANNEL key directly to view the corresponding camera image in full screen format.

Viewing in Multi-window

Various multi-window view formats are offered for selection. To switch between available viewing formats, press MODE repeatedly.

The available view formats are illustrated as the following figure.



NOTE: 3x3 viewing mode is only available in 8-ch and 16-ch models, whereas 4x4 viewing mode is only available in 16-ch models.

4.1.2 Digital Zoom

Users are able to view a 2x full screen in live mode. To view the 2x full screen, follow the steps.

- Press a CHANNEL key to view the corresponding camera in full screen.
- Press ZOOM to enter a 2x full screen zoom mode of the selected camera.
- To view a specific area in 2x zoomed screen, use Direction keys to pan / tilt the zoomed screen.
- Either press ZOOM again or ESC to leave the zoom mode.

4.1.3 View Live Cameras

Users are allowed to view live camera in versatile viewing modes, including full-screen, 2x2, 3x3 and 4x4. The general operation under live mode is described as follows.

Freeze Live Image

Press FREEZE while viewing live image, the image pauses but the date / time information does not, and the system clock continues running.

Press FREEZE to pause the live image; press FREEZE again to resume the live camera view.

4.1.4 View Recorded Video

To view recorded video, users can press PLAY key directly. When press the PLAY key, the unit starts to continue playing back the recorded video from the suspended point of record. If it is the first time to use the PLAY key, the unit will playback from the very beginning of the record. Alternatively, users can select records from the Search menu to play specific video. Refer to section **Searching Recorded Video** for more information.



NOTE: When playing back videos with mass motion recorded in D1 mode (resolution=720x480), press SEQ key to switch on “deflicker function” to avoid gleaming of images. Press SEQ again to switch “deflicker off” and the image will return to real D1 resolution.

The Forward or Reverse speed indicator will be shown on the bottom-left corner of the screen, when in the playback mode. The general operations in playback mode are described as follows.

Key Usage in Playback

The key usage is slightly different in playback mode. Following is the key usage found in playback mode.

- **LEFT** (Reverse Playback)
The key is used to reverse the recorded video while the unit is playing back. Press the key repeatedly to increase the speed of reverse playback by 1×, 2×, 4×, 8×, 16×, or 32×.
- **RIGHT** (Forward Playback)
The key is used to play the recorded video fast forward. Press the key repeatedly to increase the speed of forward playback by 1×, 2×, 4×, 8×, 16×, or 32×.
- **FREEZE**
Press FREEZE to pause the playback video. When the recorded video is paused, press LEFT / RIGHT to resume playback video single step reverse / forward, respectively. Press FREEZE again to continue playing video.
- **PLAY**
Press it to start playing back video, exit current mode, or stop playing back video and return to live mode.

Pause Playback and Single Step Forward

To pause and resume recorded video, follow these steps.

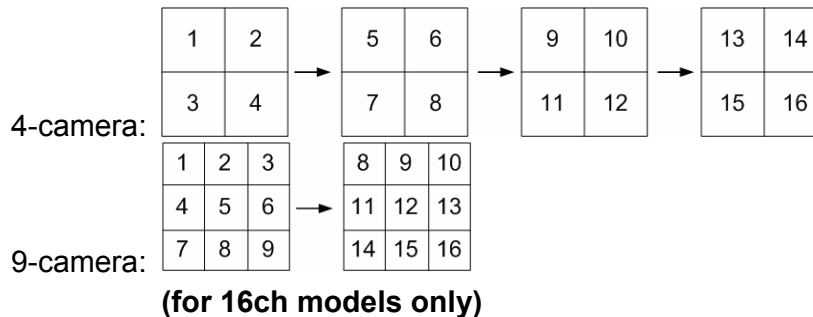
- Press one of the CHANNEL keys to display the corresponding camera in full screen.
- Press FREEZE to pause the current playback image.
- Press RIGHT / LEFT Direction keys to move the video single step reverse / forward. Press and hold RIGHT / LEFT keys to repeatedly reverse / forward the video single step.
- Press FREEZE again to resume the playback operation.

4.2 Sequence

This section introduces the way to view sequence mode with both Main Monitor and Call Monitor, if connected. Sequence function can avoid manual backtracking and provides more flexibility while monitoring surveillance.

4.2.1 Sequence with Main Monitor

Automatic sequence function can be observed in any view mode. Select certain view format and press SEQ to toggle the automatic sequence; press ESC to stop sequencing. The figure below displays the 4-camera and 9-camera sequencing view modes.



4.2.2 Sequence with Call Monitor (8CH & 16CH models only)

Users are allowed to use the DVR front panel to control a call monitor display without having to access the Main menu. Two viewing modes can be displayed on call monitor: Sequence display and Single camera display. To program the call monitor sequence, see OSD Setup Manual, Section **Sequence Setup**.

Follow the steps to control the call monitor.

- Press the CALL key on the front panel to enter Call Monitor Control mode. The message “Call Mode” will be shown on the bottom-left of the screen.

Press 1-16 Key To Select Channel
Press SEQ To Enable Sequence
Call Mode

- Press CHANNEL key to display the associated camera on call monitor.
- Alternatively, press SEQ repeatedly to display the sequence of cameras previously programmed in Call Monitor Schedule menu.
- Press ESC to return the front panel to Main Monitor Control mode.

4.3 Search Recorded Video

The DVR is capable of searching and playing back recorded video by date and time or events. Enter the specific date and time of the wanted video, the DVR will search for matched video and start to playback the video. Alternatively, users can search for event video by channel as well.

In live or playback mode, press SEARCH to enter the Search menu, which is shown as follows.

Search			
-----Search By Time-----			
From:	2008/01/01	00:00:00	
End:	2008/05/01	00:00:00	
Select:	2008/01/01	00:00:00	
		Begin Playback	
-----Search By Event-----			
Select Channel:	CH1	CH2	CH3 CH4
			Event List

4.3.1 Search by Time

Follow the steps to search video by date and time.

- Press SEARCH key to enter the Search menu.
- Move the cursor to “From Time” and press ENTER will start playing recorded video from the specified “From Time”.
- Move the cursor to “End Time” and press ENTER will start playing recorded video from the specified “End Time”.
- Use Direction keys to move the cursor for setting the start time. Adjust the date and time values by UP / DOWN keys.
- Press ENTER to confirm the settings or ESC to abort.
- Move the cursor to <Begin Playback> and press ENTER to start playing back the selected video.
- Either press PLAY again or ESC to return to live video.



NOTE: If there is no available recorded video that matches the specified time and date, the unit starts playback from the next available video.



NOTE: The date/time information will be shown on the screen with a DST icon if the Daylight Saving Time function is enabled. “S” indicates summer time and “W” indicates winter time.

4.3.2 Search by Event

“Event List” allows users to search wanted video by event. The Event List is displayed as below figure:

Event List				
First Page				
Date	Time	Ch.	Type	
2008/03/17	11:26:50	2	Motion	
2008/03/17	09:53:03	1	Alarm	
2008/03/16	16:14:42	3	Alarm	
2008/03/15	03:45:31	4	Motion	
2008/03/12	22:27:56	1	Alarm	
2008/03/12	10:09:29	2	Motion	
2008/03/11	12:18:20	3	Motion	
2008/03/10	05:16:00	4	Alarm	
2008/03/08	17:11:37	2	Motion	
2008/03/08	16:29:10	1	Motion	
2008/03/08	03:22:17	4	Alarm	

The list displays events by date, time, triggered camera and alarm type. As some events are deleted, others are displayed. The latest recorded event video will be listed on the top.

Follow these steps to search event video through Event List:

- Press SEARCH to enter the Search menu.
- To search event video that has been recorded on a specific camera, use LEFT / RIGHT to move the cursor and press ENTER to select or de-select a channel.
- Move the cursor to <Event List> and press ENTER to list the event video of the selected channels. The Event List displays.
- To exit the event list, press ESC.

Follow the steps to playback video from Event List.

- Press and hold UP / DOWN to scroll through the Event List.
- Press ENTER to play back the selected event record.
- Press PLAY to return to live mode.

4.4 Video Export

The unit allows users to export wanted video to an external device, such as a USB ThumbDrive®, and the exported video will be saved as *.drv file. Make sure the external device is connected to the DVR unit and the port has been set appropriately for video export.

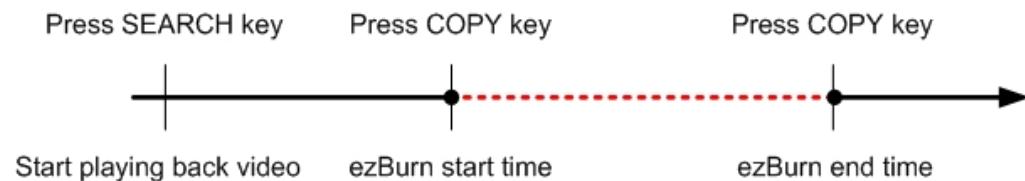
According to the size of video, the export may take about 10 minutes to 1 hour.

4.4.1 ezBurn Introduction

Built with the ezBurn technology, ezBurn function provides users the easier way to export desired video to an external device, such as an USB ThumbDrive®.

TWO keys (SEARCH and COPY) and THREE touches are all that is needed for completing the export. The entire exporting process will be done through the front panel, without needing to enter the OSD setup menu.

The ezBurn exporting process is illustrated as below figure:



The entire process is described step by step in the following sections.



NOTE: The file exported using ezBurn will be in .drv file format, and it can only be played using the remote player software.

4.4.2 Export Normal Video

To Export normal video to external device, follow these step:

- Press SEARCH and play wanted normal video by entering date and time. Note if the screen is showing in multiple channel mode, please make sure there is no window displaying in Live mode, or the export will not work.
- After entering playback mode, play the video and press COPY once to mark the starting point of the export video. The playback continues.

- Press COPY again to mark the ending point of the export video. Then the “ezBurn” window will display as below figure. The information shown on the window is “read only”.

```

ezBurn confirmation
Selected Device: External Device
All data on the disc will be erased.
Exported Required Size = 11 MB
Real Export Range:
From: 2008/05/07 AM10:41:13
To: 2008/05/07 AM10:41:21
Enter: YES ESC: NO

```

- Press ENTER to start the export; or, press ESC to abort.
- If there is no any exportable device connected to the DVR unit, then a warning message will be shown on the screen, as below figure:

```

No exportable device detected.
Please install the target device/media
to the DVR.
Enter: Retry ESC: Exit

```

4.4.3 Export Event Video

To export event video, follow these steps:

- Press SEARCH and play wanted event video. To play event video, refer to Section **Searching Recorded Video**.
- After entering the playback mode, press COPY. The “ezBurn” window will display as below figure. The information shown is “read only”.

```

ezBurn confirmation
Selected Device: External Device
All data on the disc will be erased.
Exported Required Size = 11 MB
Export Event Info:
Data          Time          Ch          Type
2008/05/07   AM10:42:35   13         Motion
Enter: YES   ESC: NO

```

- If there is no any exportable device connected to the DVR unit, a warning message will be shown on the screen
- Press ENTER to start the export the whole event video to the connected device; or, press ESC to abort.

4.5 Dome Control

The DVR allows users to control a dome camera by the front panel.

In Live mode, users can press CHANNEL key to display the desired dome camera in full screen. To enter Dome Control mode, press the DOME key and press channel key 2 to display the hint screen. To exit the Dome Control mode and return to live mode, press ESC or DOME.

To configure the dome control settings, see the following sections.

4.5.1 Dome Connection

Follow the steps to install dome cameras.

- See **Setup Guide** for RS-485 port pin definition.
- Connect the R+, R- terminals on the dome camera to the D+, D- terminals on the RS-485 port by RS-485 cable respectively. Refer to the connection figure illustrated in **Setup Guide**.

4.5.2 Dome Protocol Setup

The Dome Protocol item lists the available dome protocols for communicating with dome cameras connected to the DVR. From the Main menu, select <Camera Setup> and press ENTER. The following menu is displayed.

Analog Camera	
1. Analog Camera Select	CH1
2. Dome Protocol	None
3. Dome ID	0
4. Camera Title	
5. Covert	No
6. Brightness	0
7. Contrast	0
8. Saturation	0
9. Hue	0
10. Audio Association	Yes

To configure dome protocol, select a camera first and set the communications protocol associated with dome camera using the Direction keys and ENTER.



NOTE: The settings become effective after saving the changes and exiting from the menu.

4.5.3 RS485 Setup

The DVR controls the domes via RS-485 communication protocol. The RS-485 parameters in the DVR must be set to the same parameters set in dome camera.

Users are allowed to change the RS-485 settings of the DVR. Select <System Setup> in Main menu, then select <RS485 Setup> from the System Setup menu and press ENTER. The following menu is displayed.

RS485 Setup	
1 Unit ID	224
2 Baud Rate	9600
3 Bits	8
4 Stop	1
5 Parity	None

The ID number must match the ID address set by the dome. The Unit ID is in the range of 1 to 255. Note that there cannot be any two devices on the same bus given the same ID address, or a conflict may occur.



NOTE: The settings become effective after saving the changes and exiting from the menu.

4.5.4 Dome Controlling Keys

The functions of some keys in Dome Control mode are totally different from normal status function. Please refer to **Setup Guide** for the graphical illustration of functional keys.

Set / Go Preset

This key is used to enter the Dome Preset menu to set up certain position as a preset and go to the predetermined preset positions for viewing.

Toggle Hint Screen

This function is used to avoid viewing the dome parameter information while controlling dome cameras. Press this key to hide the screen. Press it again to redisplay the screen.

Iris Open

Use to open the Iris on the dome camera.

Focus Near

Use to focus the dome camera near.

Zoom In

Use to zoom in the dome camera. This function enables users to enlarge a certain area.

ESC

Use to leave Dome Control mode and return to live and full-screen viewing mode.

Auto / Enter

- In OSD setup menu interface, the key is used to make selection.
- In Dome Control mode, this key is used to activate automatic focus and iris function.

Iris Close

Use to close the Iris on the dome camera.

Focus Far

Use to focus the selected dome camera far.

Zoom Out

Use to zoom out the dome camera. This function enables users to shrink the current image and view a larger area.

Pan / Tilt

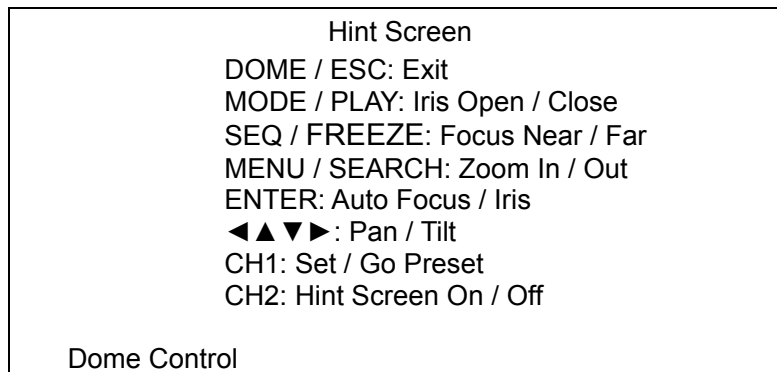
Use to pan and tilt dome camera.

4.5.5 Setting Preset Points

The DVR allows users to set preset positions. The amount of preset points depends on the dome manufacturer.

Follow the steps to set preset points.

- Press a Channel key to view the corresponding camera in full screen.
- Then press DOME to enter Dome Control mode. A Hint Screen shown as below figure displays on the screen.
- Press 2 to hide the Dome Control Hint Screen; press 2 again to toggle the Hint Screen.
- Use Direction keys to position the dome camera to desired position.



- Press 1 to access the Set/Go Preset function. The Dome Preset menu is displayed.

Dome Preset			
First Page	Index	Set Preset	Go Preset
	1	No	No
	2	No	No
	3	No	No
	4	No	No
	5	No	No
	6	No	No
	7	No	No

- Use UP / DOWN keys to select the desired preset number from the menu.
- Set the <Set Preset> of the selected preset number to <Yes>, and press ENTER to save the position. Now the preset is set and ready to be called.

4.5.6 Calling Preset Points

Follow the steps to call preset points.

- Press a Channel key to view the corresponding camera in full screen.
- Then press DOME to enter Dome Control mode. Then a Hint Screen, shown as blow figure, will display on the screen.
- Press 2 to hide the Dome Control Hint Screen; press 2 again to toggle the Hint Screen.
- Press 1 to access the Set/Go Preset function.

Dome Preset			
First Page	Index	Set Preset	Go Preset
	1	No	No
	2	No	No
	3	No	No
	4	No	No
	5	No	No
	6	No	No
	7	No	No

- Use UP / DOWN keys to select the desired preset number from the menu.
- Set the <Go Preset> of the selected preset number to <Yes>, and press ENTER to call the preset point.
- Now the selected dome camera rotates to the preset position automatically.

5. Remote Monitoring Software

The remote monitoring software is a remote browser-based software application designed to operate with the DVR products. Using the software, users are allowed to view live and recorded video, and configure the DVRs remotely via a LAN, WAN or Internet on a personal computer.

The connected PC will automatically download the remote monitoring software plug-ins from the DVR when the DVR is connected by entering its IP address in the address bar on the browser.

Due to the setting items are similar to those listed in the DVR's OSD setup menu, please refer to the sections above for setting configuration of the remote monitoring software.

The tasks can be performed with the remote monitoring software are listed below:

- Remote viewing of live/ recorded video
- Remote setup of the DVR
- Remote control of dome cameras
- Alarm notification from the DVR
- Up to three connections to one DVR using the remote monitoring software, including one Administrator and two User operators

5.1 Remote Monitoring System Requirements

Items	Minimum Requirements
Personal Computer	Minimum: Intel® Pentium® M CPU 1.40GHz RAM 512 MB
	Recommended: Intel® Core™2 Quad CPU Q6600 @ 2.4GHZ RAM 2 GB
Hard Disk Drive	Requires 20 MB for software installation
Operating System	Windows XP, Windows Vista
Web Browser	Microsoft Internet Explorer version 6.0 or above
Monitor Resolution	Minimum 1024 x 768 with 16-bit color
Network Card	10Base-T (10 Mbps) or 100Base-TX (100 Mbps) operation; must match the network configuration

5.2 Installation of Software

Refer to the following description to install the remote monitoring software.

5.2.1 Change Internet Settings

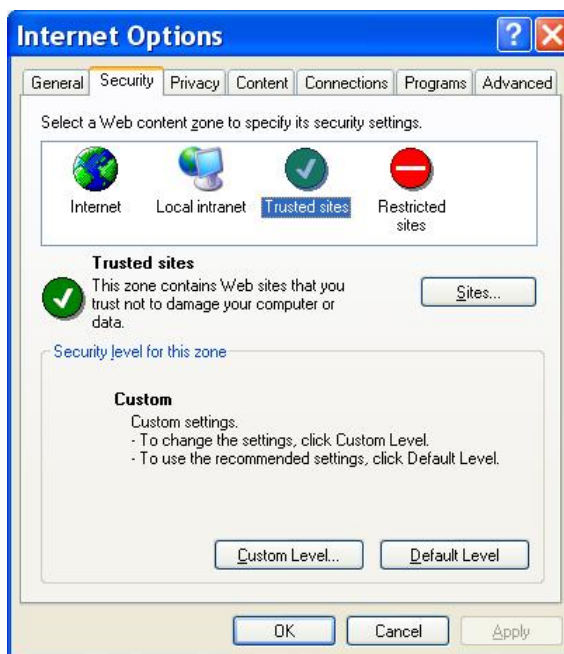
The PC operating with the remote monitoring software should be set to accept ActiveX plug-ins. Please follow the steps to set the Internet security settings appropriately.

- Before operating the remote monitoring software, please check the IP address of the DVR. To check the IP address, press MENU key on the unit and enter password to access OSD setup menu. Select <System Setup>, <Network Setup>, then <LAN Setup> to check the IP.
- Start the IE; it can be started either by clicking on the desktop icon, or by using the Start menu to access it.

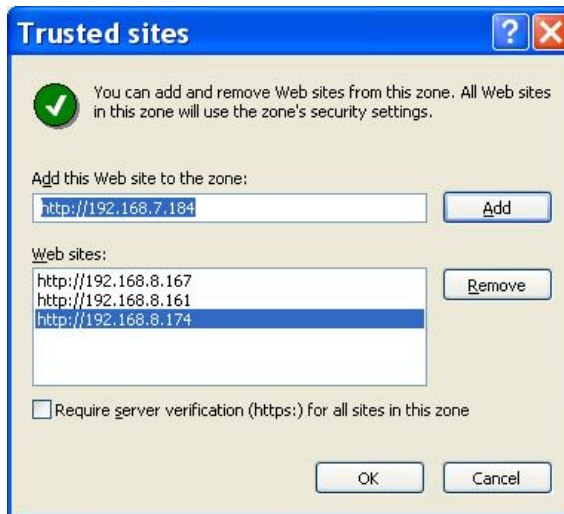


NOTE: Windows IE provides the ActiveX component that is required when using the remote monitoring software.

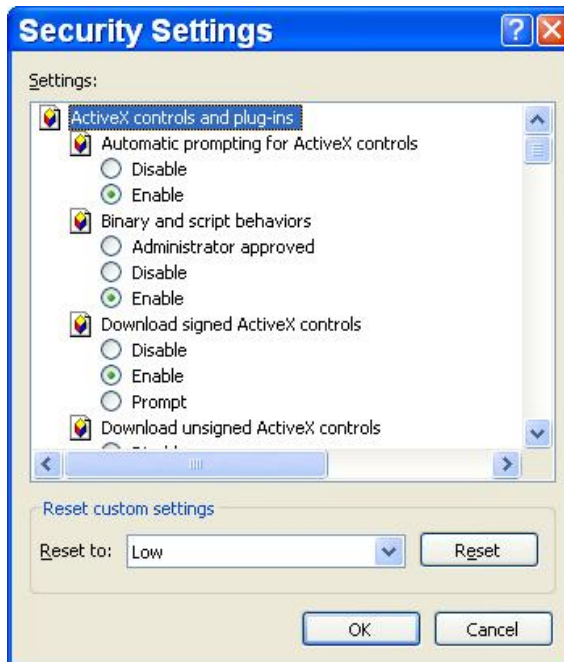
- Select <Tools> from the main menu of the browser, then <Internet Options>, and then click the <Security> tab.
- Select <Trusted sites> and click <Sites> to specify its security setting.



- Uncheck “Require server verification (https:) for all sites in this zone”. Type the IP address of the unit in field and click <Add> to add this web site to the zone.



- Click <OK> to confirm the setting and close Trusted sites dialog.
- In the Security Level area, click <Custom Level>. The Security Settings screen is displayed.



- Under <ActiveX controls and plug-ins>, set all items to <Enable> or <Prompt>.
- Click <OK> to apply the setting and close the <Security Settings> screen.
- Click <OK> to close Internet Options dialog.

Now the installation can continue to the next step.

5.2.2 Install the Remote Monitoring Software

Start the browser to initiate the installation of the remote monitoring software on the PC. The IP address of the DVR can be saved as a Favorites item in the web browser to enable easy access in the future.

- Start the IE; it can be started either by clicking on the desktop icon, or by using the Start menu to access it.
- Enter the IP address of the DVR in the address bar at the top of the browser.
- The ActiveX controls and plug-ins dialog will show twice for confirmation; click <Yes> to accept ActiveX plug-ins. The remote monitoring software plug-ins will be downloaded and installed on the PC automatically when the connection is successfully made.



NOTE: Do not enter any leading “0” characters in the address, for example, “192.068.080.006” should be entered as “192.68.80.6”. If the default trigger port 80 is changed into another one, take port 81 for example, the IP address should be entered as “192.68.80.6:81”.



- A version check starts to verify whether the remote monitoring software was installed already, and also check if the version is the same as that stored in that particular DVR. This process may take up to 30 seconds.
- When the software is completely downloaded and installed, the Login Screen is now displayed.



5.2.2.1 Login / Logout

Login using either <Admin> or <User> account. <Admin> account can modify configuration without restraint, while <User> account is limited to general remote access of the unit.

One "Admin" and up to two "Users" can access a DVR at the same time. Nevertheless, if the "Admin" account is currently accessing the unit's OSD setup menu at the DVR site, then the "Admin" account at the remote monitoring site cannot change the settings at the same time. The Admin account of the DVR has priority.



The following steps demonstrate procedures to view video from remote unit:

- Start the remote monitoring software by entering the IP Address of the DVR in the Address bar of the browser. Alternatively, click on the Favorite entry for the unit (if the IP address of the unit has been set).
- Enter the Username and password. The login username and password can be saved to ease future login. The default usernames and passwords are listed as below.

	Login Type	
Default Username	Admin	User
Default Password	1234	4321

- Click <OK> to login to the DVR. The process may take a few seconds.
- If the connection is made successfully, the main window will display live video of the attached cameras.

If the IE browser is closed, the remote system is logout and disconnected from the DVR at the same time.

5.2.2.2 Software Upgrades

If a new version of the remote monitoring software is available on the DVR, upgrade will be prompted while accessing the unit. Follow the steps to upgrade the software.



- The message as the above figure will be prompted. Click <Yes> to accept version upgrade.
- Start the IE again and enter the IP address of the DVR in the Address bar of the browser; or if the unit address is set as a Favorite site, click the Favorites entry for the unit.
- When the software is completely downloaded and installed, the Login Screen will be displayed.

5.3 Basic Operation

When a DVR is successfully connected, the main window of the remote monitoring software will be displayed. Please refer to the **Setup Guide** for the graphical illustration of functional items.

The functions on the remote monitoring software will be described in the following sections.

5.3.1 View Live Video

View live video from the cameras attached to the DVR by clicking <Live> button on the main window toolbar. Choose desired display mode – full-screen, 2x2 windows, 3x3 windows, and 4x4 windows – after the live images of the DVR are displayed on the main window. When a dome camera is connected and viewed in single channel full-screen mode, the dome camera control can be accessed. To choose desired display mode and to operate dome camera control, refer to the following sections.

5.3.1.1 Select Display Mode

Choose the number of windows to be displayed on the main window. Click one of the display buttons in MODE section. Available selections are 4, 9 and 16 camera displays. To view certain window in full screen, either double-click on the wanted window, or click on the corresponding CAMERA button.

5.3.1.2 Operating Cameras with Dome Control

The remote monitoring software allows users to control and configure a dome camera remotely.

Click on any CAMERA button displayed with a dome icon to view the camera in full screen. The Dome Control Panel will be displayed on the main window. The items on the dome control panel are described as follows.

Set Preset (•)

Set Preset is used to set up preset positions. The remote monitoring software allows its user to set up to 255 preset positions with DynaColor, American Dynamics, Fastrax, JVC, Panasonic (C & N), and Pelco (Pelco P & Pelco D) domes.

Use Direction buttons to move dome camera to an appropriate position, and then click the button and choose wanted number from the pull-down list. The preset position is named as the selected number.

Go Preset (•←)

Go Preset is used to call the camera preset point, which was set up with the set preset point function. Click and choose a number to call the preset point for viewing.

Auto Focus (A.F.)

Click on it and the focus of the camera will be automatically adjusted to show a clearer image.

Dome ID (ID)

Click for changing the dome ID and protocol. Proper authority is required to access this function.

Focus +/-

Use to adjust the camera lens to focus on objects for a clear view. Click on <Focus +> to focus near or <Focus -> to focus far.

Iris +/-

This item is used to open and close the iris to let more or less light into the camera. Click on <Iris +> to open iris or <Iris -> to close iris.

Zoom +/-

Users are allowed to zoom-in or zoom-out using the adjusting buttons. Zoom-in to enlarge a certain area and zoom-out to view more area.

Direction Button

This button is used to pan and/or tilt the dome camera. Click the arrows in the directions to be viewed.

5.3.2 Instant Recording

The Instant Recording function allows users to record video quickly to the PC.



NOTE: The Audio function is set to OFF as the default setting.

5.3.2.1 Record Video Instantly

Follow the steps to start recording instantly:

- Click on the <Instant Recording> button.
- Select the destination folder to save the video.
- Click on the button again to stop recording.



NOTE: The instant recording video will be saved as *.drv file.

5.3.2.2 Playback Instant Recorded Video

Follow the steps to playback a video recorded by “Instant Recording”.

- Click <Play> on main window toolbar and click <Local Playback> tab.
- Click <Open> to choose a recorded file.
- Click <OK> to start playing the recorded video.

5.3.3 Playback Video

The remote monitoring software allows users to view recorded video either from the DVR, or from the hard disk drive of the PC

To access the Playback screen, click <Play> button on the main window toolbar. There are three tabs in the Playback screen: <Remote Playback> and <Local Playback> tabs. <Remote Playback> allows users to play back from the DVR. <Local Playback> enables users to playback a recorded video file stored on the hard disk drive of the PC.

The DVR continues recording while playing back recorded video on the PC, either remote playback or local playback.

5.3.3.1 Playback Remote Video

To view remote video, click <Play> on the main window toolbar, and then <Remote Playback> tab. The <Remote Playback> screen will be displayed.

The <From> and <To> in the <Available Record Video> display the date and time from which recorded video is available for playback.

To playback remote video segments, follow these steps:

- Choose <Playback> in <Select> field for playback recorded video.
- In <Start> field, users can change the date and time either by typing desired numbers directly or using the arrow buttons.

To type directly:

Click on day, month and year of date field respectively, and type the desired numbers directly. Follow above steps to adjust the hour, minute and second of time field.

To use the arrow buttons:

Click on the arrow button next to the date field to display the calendar; then click the left and right arrow at the top of the calendar to change the date. Use up and down arrow next to the time field to change to the wanted time.

- The other way to select date and time is by moving the blue sliding bar.
- Click <OK> to start the playback, or click <Close> to abort.

- The other option <Download (.DRV)> in <Select> field enables users to download the video segment of selected date and time to the PC. The selection of time duration is the same as described above. Files downloaded will be in *.drv format.

5.3.3.2 Playback Local *.drv Files




The <Local Playback> tab allows users to playback *.drv video files stored in the PC's hard drive.

Follow below steps to playback a downloaded *.drv file with the remote monitoring software.

- Click <Open> and the file selection screen is displayed.
- Select the *.drv video file for playback and click <OK>.
- Click <OK> in the <Local Playback> Screen to start the playback, or click <Cancel> to abort.
- View the video playback using the Playback controls.
- To end the playback, click <Live> to return to live video.

5.3.3.3 Playback Controls

When the local or remote video is being played, the remote monitoring software is in Playback Mode. The playback controls toolbar will emerge on the main window toolbar. The Playback controls and indicators are described as below.

Icon	Name	Description
	Fast Backward / Step Backward	<ol style="list-style-type: none"> 1. Click to play the recorded video in backward direction. Click repeatedly to select the backward playback speed: 1x, 2x, 4x, 8x, 16x, or 32x. 2. When playback is paused, click repeatedly to move backward step-by-step.
	Play / Pause	<ol style="list-style-type: none"> 1. While playing, click to pause the playback. 2. When paused, click to resume the playback.
	Fast Forward / Step Forward	<ol style="list-style-type: none"> 1. Click to play the recorded video in forward direction. Click repeatedly to select the forward playback speed: 1x, 2x, 4x, 8x, 16x, or 32x. 2. When playback is paused, click repeatedly to move forward step-by-step.

5.3.4 Search from Event List

Click SEARCH, the Event List appears. The List contains information about the alarm events that the unit recorded and saved. Up to 1024 events can be listed in the Event List.

The Event List displays each event by its number, the date and time of the event, the type of the event (including Alarm In, Motion Detection, Video Loss, and Over Speed), and the camera channel where the event occurred.

To view an event video, follow these steps:

- Click SEARCH button positioned in the main window toolbar. The Event List appears.
- Scroll through the Event List and highlight the interested events.
- Double-click on the desired event to view the event video.

5.3.5 Take a Snapshot

Snapshot is a simple screen capture tool. When users click on the SNAPSHOT button, it will capture the screenshot of the window that is currently showing on the screen. Each click captures one screenshot to be saved as a JPEG file on the desktop. The snapshot file will be named as "Snapshot-*".

5.3.6 Health Status

This function verifies the HDD status of the DVR. The information items in the status chart are described as below.

Device Name

This item shows the model name of the HDD.

Int./Ext.

This item indicates whether the HDD is an internal or external device.

Total Size

This item indicates the total size of the HDD.

State

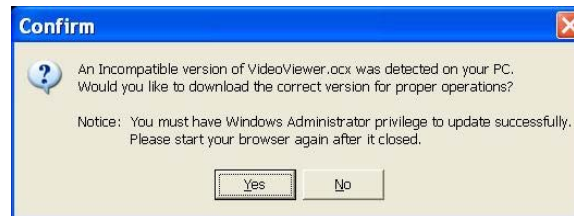
This item indicates whether the HDD is active or non-active.

Temperature

This information item is currently not available.

5.3.7 Remote Monitoring Software Trouble Shooting Guide

What happened if the server requests to upgrade the software every time the DVR is connected? If the following screen displays repeatedly, please follow the steps to delete the temporary internet files.



- Select <Tools> from the main menu of the web browser, then <Internet Options>, and then click the <General> tab.



- Click the <Delete Files> button in the <Temporary Internet Files> field; the <Delete Files> screen displays as below.



- Check the <Delete all offline content> box and click <OK>.
- Now, enter the IP address of the DVR to make the connection again.

Appendix A: Technical Specifications

All specifications are subject to change without notice.

Specifications	16CH	8CH	4CH
Video			
Operation System	Embedded (Linux)		
Input	BNCx16,1.0Vp-p, 75 ohm	BNCx8,1.0Vp-p, 75 ohm	BNCx4,1.0Vp-p, 75 ohm
Output	Main	BNCx1, 1.0Vp-p, 75 ohm	
	Call	BNCx1, 1.0Vp-p, 75 ohm	--
VGA Output	800x600, 1024x768, 1280x1024 pixels		
Picture Refresh Rate	NTSC: 30PPS (per channel) / PAL: 25PPS (per channel)		
Audio			
Input	D-SUB x 16, Line-In	D-SUB x 8, Line-In	RCA x 4, Line-In
Output	Main	RCA x 1, 1 Channel Line-Out	
	Call	RCA x 1, 1 Channel Line-Out	--
Data Rate	8 Kb / s, per ch		
Recording			
Compression Method	H.264		
Recording Mode	Schedule, Alarm, Motion Detection		
Pre-alarm	Yes		
Recording Resolution & Rate	NTSC: 60PPS@720x480 pixels 120PPS@720x240 pixels 240PPS@360x240 pixels PAL: 50PPS@720x576 pixels 100PPS@720x288 pixels 200PPS@360x288 pixels		NTSC: 30PPS@720x480 pixels 60PPS@720x240 pixels 120PPS@360x240 pixels PAL: 25PPS@720x576 pixels 50PPS@720x288 pixels 100PPS@360x288 pixels
	Recording Mode	5 Levels Presets	
Image Size	1K to 20K Byte/Picture		
Storage Mode	Linear/Circular		
Data Life Time	Yes (Programmable)		
Storage			
Built-in Storage Interface	x2, SATA		x1, SATA
Export	x1 USB 2.0 Port, Support ThumbDrive®, External CD-RW or DVD+RW		
Alarm			
Alarm Input	x16, D-Sub	x8, D-Sub	x4, D-Sub
Alarm Relay Output	x1, D-Sub		
Alarm Detection	N.C./N.O., Programmable		
Motion Detection	16 x 12 Grid Array, Sensitivity, Trigger Level Adjustable		
Video Loss Detection	Programmable		
Communication			
Network Connectivity	Ethernet RJ-45 Connector, 10/100Mbps, supports DHCP		
Remote Control Software	Central Management System (CMS), Web Based Viewer		
Remote Operation	Monitor, Playback, Recording, System Setup, Archive		
RS-485	D-Sub		
IR Remote	Yes		
Control			
USB Mouse Port	1x USB 2.0 Port		None
Dome Control Protocol	DynaColor, Pelco P, Pelco D, AD422, Fastrax 2, Panasonic		
General			
Operation Temperature	-5°C ~ 40°C		
Relative Humidity	10% - 90% Non-condensing		
Power Consumption & Input	AC 100 ~ 240V, 50-60Hz, 60W Adaptor		

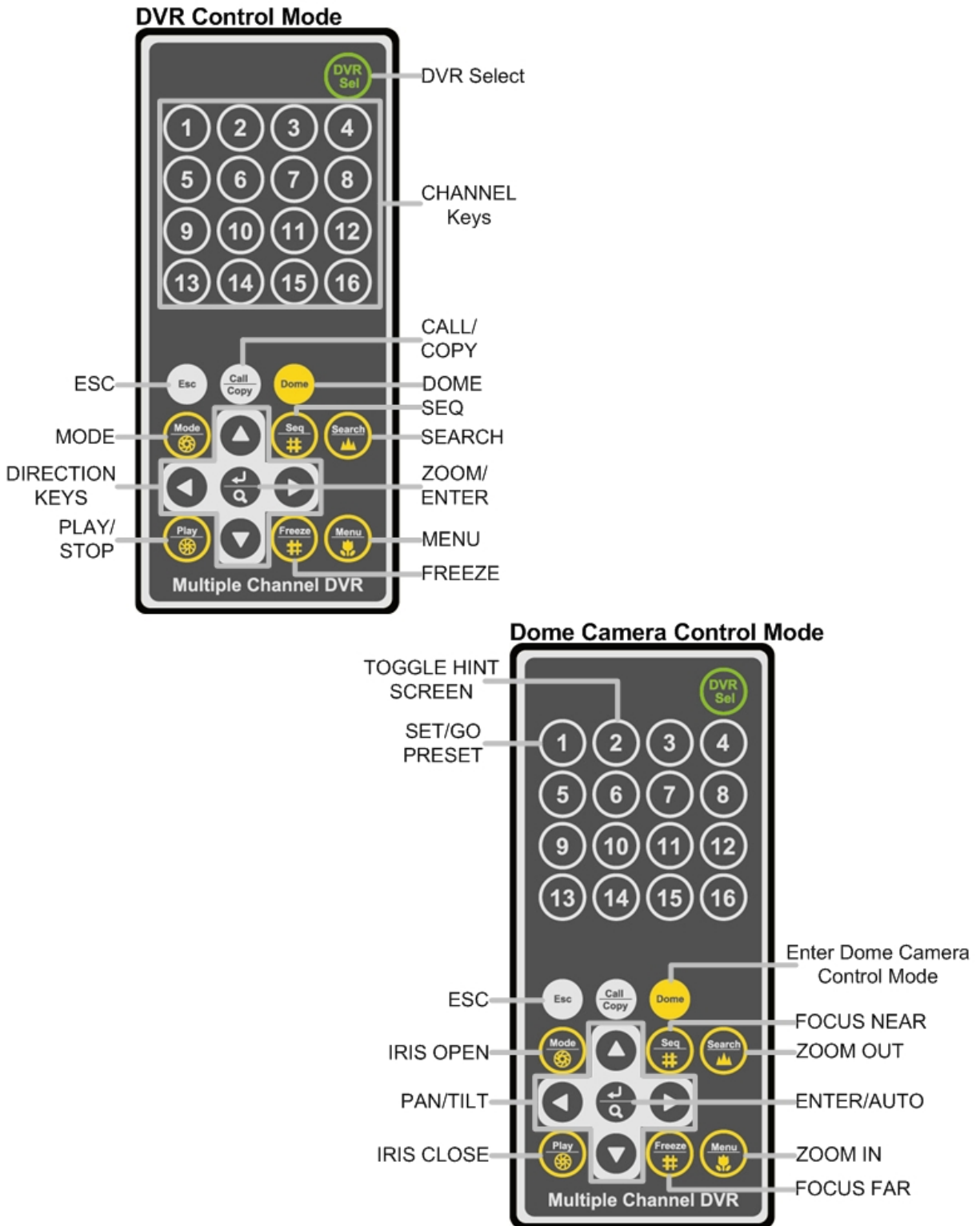
Appendix B: Recommended HDDs

Refer to the following list for some recommended HDDs to be used in the DVR.

Brand	Model Name	Model Number	Size
Seagate	Barracuda ES.2	ST3500320NS	500G
	Barracuda 7200.11	ST3500320AS	500G
	Barracuda 7200.11	ST3750330AS	750G
	Barracuda 7200.11	ST31000340AS	1000G
HITACHI	DeskStar	HDP725032GLA360	320G
	DeskStar	HDP725050GLA360	500G
Maxtor	DiamondMax 22	STM3500320AS	500G
Western Digital	WD AV	WD1600AVJS	160G
	WD AV	WD2500AVJS	250G
	WD AV	WD3200AVJS	320G
	WD AV	WD5000AVJS	500G
	WD AV	WD7500AVVS	750G

Appendix C: Remote Control

The operational function keys on the remote control are listed as below figure:



The keys of the remote control function as the keys of the front panel of the DVR. The only difference between the remote control and the front panel keys is the “DVR SEL” key. The DVR Selection key is used to switch control between each DVR.

The remote control can be used to control up to 16 DVRs. To setup the remote control, the first thing is to assign a unique DVR Unit ID to each DVR.

Use the front panel of the DVR, and follow this path to change the DVR Unit ID, <Main Menu> → <System Setup> → <RS485 Setup> → <Unit ID>. Change the DVR Unit ID to any number between 224 and 239, and exit the menu.

The ID Table is listed below for reference.

DVR Unit ID	224	225	226	227	228	229	230	231
Remote Control #	1	2	3	4	5	6	7	8

DVR Unit ID	232	233	234	235	236	237	238	239
Remote Control #	9	10	11	12	13	14	15	16

After the DVR Unit ID is changed, setup the “DVR SEL” of the remote control. Press “DVR SEL”, and then press the Remote Control # immediately to select the DVR. For example, assuming the DVR Unit ID is set to 225, press “DVR SEL” and then press “2” immediately. Now, the remote control will only be able to control the specified DVR. Press “DVR SEL”, and then press the Remote control # to switch between DVRs.

To exit the single DVR Control mode, press “DVR SEL”, and then press “ESC” to do so.

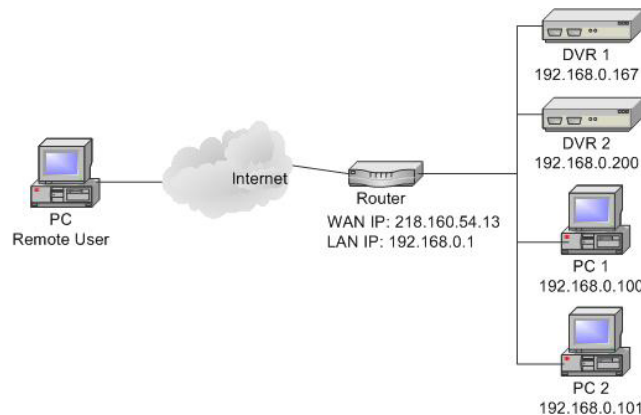
Appendix D: Setting up a DVR behind a Router

This appendix describes how to set up a router if the DVR connects to the internet via a router.

To properly operate a web server, e.g. a DVR, users have to set up both the IP and port of the DVR, which are essential for data and command transmission. The port setting is adjustable in OSD setup menu of the DVR and only one port is needed to do remote operation. Typically and by the default, the DVR operates on port 80, which is well known as the http port. Please make sure that port 80 is not blocked by the ISP. Otherwise, a different available port shall be reset and the setting of the DVR shall be changed.



In case a router or sometimes a DSL modem is in place, the real IP is now assigned to the router instead of the DVR. The DVR is located behind the wall (router) and operates on virtual IP. In most cases, virtual IP starts with 192.168.x.x. The router has two IP: one is real IP (WAN IP); the other is virtual IP (LAN IP). The virtual IP would be 192.168.x.1. When the remote users want to operate the DVR, they will have to send command to the real IP, i.e. the router. Then the router has to map (forward) the command to the DVR. Thus, it is required to set up the router for port mapping (forwarding) before images from the DVR can be remotely viewed on a PC.

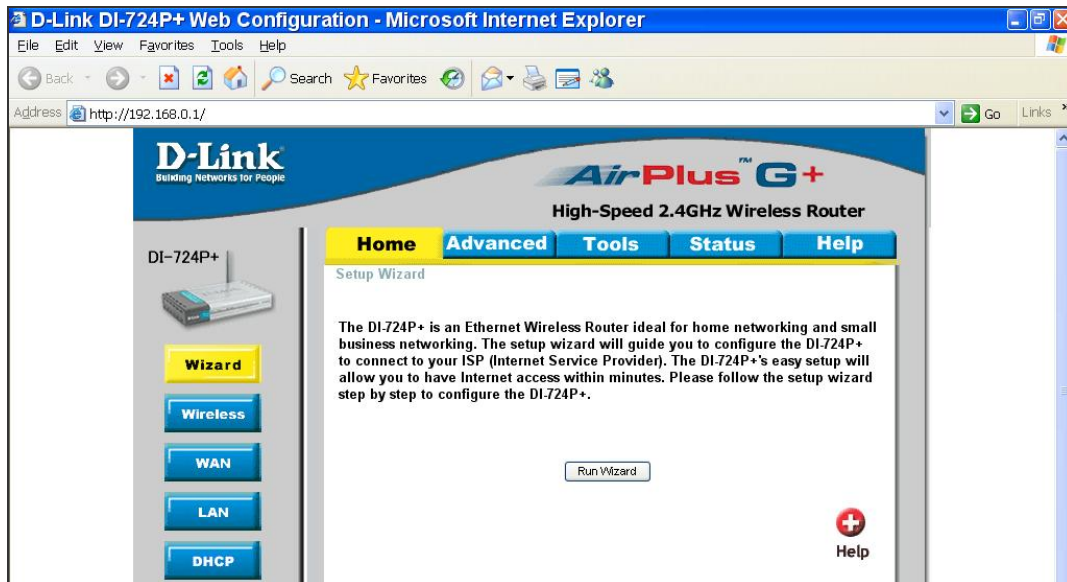


See the router manufacturer's websites for more instructions on port mapping.

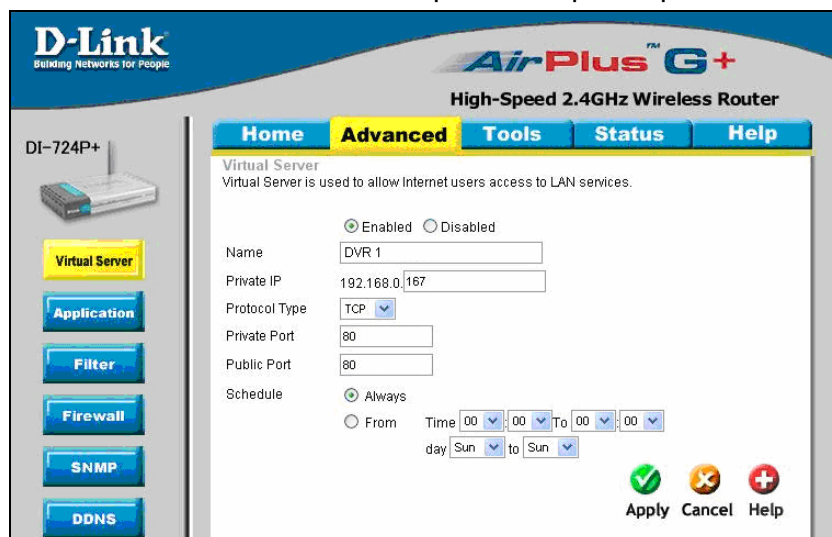
Following is an example of how the router should be set.

Router	PC	DVR 1	DVR 2
(D-Link DI-724P+) WAN IP: 218.160.54.13 LAN IP: 192.168.0.1	IP: 192.168.0.100	IP: 192.168.0.167 Trigger port: 80	IP: 192.168.0.200 Trigger port: 81

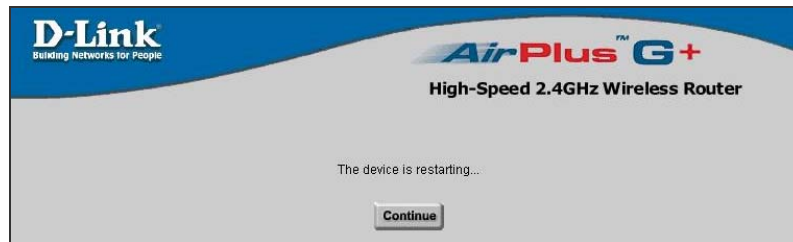
- To change the setting of the router, a PC with web browser is required.
- Connect to D-Link DI-724P+ from PC via IE. The setup screen will be shown after entering the correct username and password.



- Click the <Advanced> tab and follow the steps to set up web port forward to DVR 1.



- A. Select <Enabled> to set up the service.
 - B. Enter the name of the setting in the Name field: DVR 1.
 - C. Enter Private IP: 167
 - D. Choose <TCP> as the Protocol Type.
 - E. Enter Private Port: 80.
 - F. Enter Public Port: 80.
 - G. Click <Always> for the Schedule setting.
 - H. Click <Apply>.
- Click <Continue> to go on when the following screen displays.



- Follow the steps to set up web port forward to DVR 2.
 - A. Click <Enabled> to set up the service.
 - B. Enter the name of the setting in the Name field: DVR 2.
 - C. Enter Private IP: 200
 - D. Choose <TCP> as the Protocol Type.
 - E. Enter Private Port: 81.
 - F. Enter Public Port: 81.
 - G. Click <Always> for the Schedule setting.
 - H. Click <Apply>.
- Now DVR 1 can be connected via <http://218.160.54.13:80> and DVR 2 can be connected via <http://218.160.54.13:81>.
- If there are more than one DVR behind the router, repeat the steps for port mapping setting.