

# D V R

(Digital Video Recorder)

## User Manual

Ver. 1.6

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## 1. Features

- **1~16 Camera Input**

Up to 16 camera input available for digital storage.

- **1~16 Sensor Input**

Up to 16 sensors linked to the system.

- **1~4 Digital Output (Relay Outputs)**

Digital Output can be used to activate things like siren, ...etc. and linked to sensor detection.

- **Sound Recording and Two Way Communication**

Sound can be recorded with video images, and mutual communication between DVR and Remote Sites.

- **Multi-Monitoring**

The option of viewing 1, 4, 6, 9, 10, 16, split screen.

- **PAN/TILT/ZOOM/FOCUS**

You can control the camera via the DVR program, such as moving the camera's different direction (as long as the camera supports these movements).

- **Auto System Recovery – Watchdog**

When DVR detects a system error, it reboots the system for correction automatically.

- **Motion Detection and Sensor Triggering**

Record images only by motion detection or sensor triggering to save memory.

- **Scheduled recording**

You can schedule the program to work only whatever you want, for example, recording data only on specific periods and days of the week.

- **Data Backup and Auto Backup**

Data can be recorded onto different media (like DAT, CD, or DVD), and you can specify the camera to record, and the same for date and time. And scheduled recording means you can automate the whole Backup process.

### - Digitalized Video Search

Recorded data can be reviewed in digital, each camera or all at a time, and you can specify the date and time period of the search. You can also extract an image from the video to save separately and print it out, enlarge and edit it.

### - Network Support (TCP/IP Protocol)

By network support, you can log on to DVR from any remote site to search through and download video data, and even change the settings of the program.

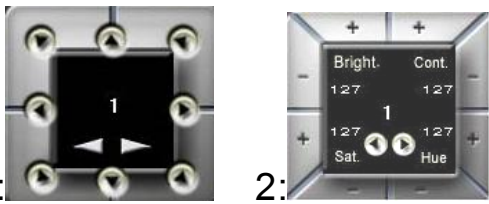



Function	Special
Camera Input	4, 8, 16, Port (NTSC/PAL)
Sound Input	4 Port(By Sound Device)
Sensor Input	16 Port
Relay Output	4 Port
Composite Output	1 Port (NTSC/PAL, Switching 16CH) 1 Port Split screen (Back Panel with Live video card only)
Image Format	MJPEG, MPEG
Recording Mode	Watch, Normal, Motion Detection, Sensor, Scheduled Recording
Remote Control	Full remote control PSTN, ISDN, ADSL, LAN and TCP/IP
Back-up	DAT, CD, DVD
PAN/TILT/ZOOM /FOCUS	RS-232 Interface RS-422/485 (option)



## 2. Main



<p>A</p>	<p>Spilt Screen button for 1,4,6,9,10,16, and Next Page, Auto Next Page, Lager Screen and OPEN PTZ/Color control panel.</p>
<p>B</p>	<p>The current date and time appear on the screen lower part. The numbers and the bars on the upper part of the screen indicate the total number of Volumes and the numbers of volume being used. Image on the right indicates the current status of network connections and Backup.</p>
<p>C</p>	<p>Switch Camera Control and Image Control to get the control panel.</p>
<p>D</p>	<p>Preset points, Preset function and Tour function.</p>
<p>E</p>	<p>Auto Pan function, Power1~3, Zoom in/out and Focus Near/Far.</p>

F		<p>1. P/T/Z Direction button.</p> <p>In the middle indicate the camera number being controlled, and press the left or right arrows to switch the channel.</p> <p>2. Image Control panel</p>
G		<p>The 'Search' button activates the 'DVR Search' program (the Main program is still running).</p> <p>The 'Setup' button activates the 'DVR Setting' Program (The Main program stops automatically).</p> <p>The 'Power' button turns off the main program.</p>
H		<p>Relay status. You can click it make it on of off.</p>
I		<p>Show the status of max. 16cameras. The LEDs on the middle row indicate that images are coming through from the camera, there are CH-numbers noted on the top row. A blinking light on the middle row indicates that the camera was enabled from the DVR Settings, but no images are coming through. The LEDs on the bottom indicate that the images from the cameras are being recorded, but no light; no recording.</p>

On the 6 and 10 split image screen, if you want to have a large image, Then click the right hand of mouse , located on that image screen. Then, that image moves to large image location.

**Attention:** The Preset and Tour function is depending on PTZ device as the same as Zoom/Focus...etc, the protocol also need to be supported.

### 3. Setup

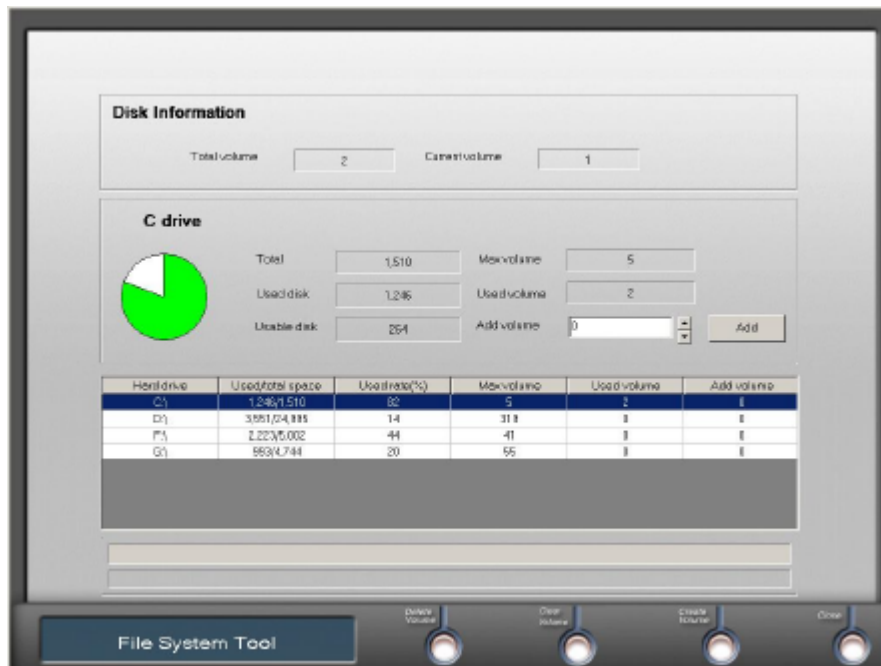
Start "DVR Setting", take note of the following appearance.



DVR will operate by the setting of the Configuration.

- **Disk tool** - Create a file system. (Program will create its own file system, so that the large amounts of data can be handled safely and it reduces the danger of system failure.)
- **System** - Settings for network connection options, initial screen, sounds, automatic restoration, etc.
- **Camera** - Settings for max.16 cameras, digital outputs, and scheduling for record times.
- **Sensor** - Settings for max.16 sensors.
- **Backup** - Settings for automatic backup schedule.
- **User Admin** - Different users are assigned to different access on DVR.

### 3-1. Disk Tool



- **Total** - The total capacity of hard disk.
- **Used Disk** - Hard disk being used currently.
- **Usable Disk** - The capacity of hard disk available.
- **Max Volume** - The total number of Volumes available.
- **Used Volume** - The number of Volumes being used.
- **Add Volume** - Input the number of needed volumes.
- **Delete Volume**- Discard all volumes from the selected hard drive.
- **Create Volume** – Add Volume.
- **Clear Volume** – Clear all image data.

Enter the number of needed volumes on "Add Volume" and click "Add" button, check the correct number appearing on "Add Volume" on the graph below, and click "Create Volume" button to create a file system on the selected Hard Disk.

One(1) Volume equals to 66MBs of hard disk space. Motion Picture Data are recorded in these volumes, and once a volume is completely full the program starts overwriting from the beginning of the volume. (Important data better be backed up prior to this overwriting process.)

## 3-2 System Setup

The screenshot displays the 'System Setup' window with the following sections:

- Site Information:** Fields for 'Site Name' and 'Site Location'.
- Screen:** 'Initial screen' set to '16 View', 'Large screen' checkbox, 'CCTV monitor auto switching interval' set to '4 sec', and 'PC screen auto switching interval' set to '2 sec'.
- Network:** 'Allow remote connections' checked, 'Remote notification of events' checked, 'Method' set to 'SERVER', 'IP Num' set to 'USA02', and 'Use IP Server' checked. A 'Properties' button is present.
- Sound:** 'Sound recording' checked, '1 Channel' selected, and a 'Properties' button.
- E-mail:** 'Use email' checked and a 'Properties' button.
- Auxiliary Functions:** 'Keyboard lock (Windows key enable/disable)' checked, 'Enable hardware watchdog (Auto recovery)' checked, 'Audible alert on video loss' checked, and 'Schedule system auto reboot' unchecked. A 'Properties' button is present.
- Log Write:** 'System log', 'Sensor log', 'Motion log', and 'User log' are all checked.

At the bottom, there are four buttons: 'Virtual Keyboard', 'Apply', 'Save & Close', and 'Cancel'. The 'System Setup' title is also visible at the bottom left.

### - Site Information

- **Site name:** Key in name of the system,(This name for sending mail).
- **Site location:** Key in address of the system.

### - Network

#### - Allow remote connections

: Check on the box to allow connection from remote site.

#### - Remote notification of events

: The option of having notification in case of motion or sensor detection. (In order to notify a network program, enter the remote site ' IP address' or ' phone number' .)

#### - Use IP Server

: If IP server is utilized, it will be much convenient in access to network without input frequently the changed dynamic IP. This can be achieved by assigning the unique Code to the DVR and by configuring that code number to DVR.

**The default update time is one hour.**

Code: USA01

IP server: ipserver.adslidns.org

Notify interval: 1 hour 0 min

OK Cancel

**Code:** The unique Code to be set in DVR instead of dynamic IP. This code shall be made within 5 digital mixed with alphabetic and numeric.

**IP Server:** Specially developed Program to control Dynamic IP.

**Notify interval:** select IP address update time.

- NOTE :**
1. Code number shall be made with numeric and alphabetic within 5 digits, discerning capital letter and small letter.
  2. If same number of code happens to use, latest assigned code number will govern.

## - Sound

### -Sound Recording

: Check if enable sound recording. (It shall be clicked for networking - two-way communication.)

### - Selected Channel

: Key in the camera No, so the sound records to the selected camera. (Sound recording can be 1channel, 2channels or 4channels (maximum). A sound card handles two (2) CH. Max. 4CH done by 2 sound cards.)

Installed Audio Devices:

1. Avance AC97 Audio

Volume: 255

Select Directory:

Save directory: F:\sound Browse

Stop at (MB): 300 Max. 3.1Gb Available

Select Channel:

☒ 1 Channel ☐ 2 Channel ☐ 4 Channel

Select Camera:

Channel 1: CAM 1 Channel 3: CAM 3

Channel 2: CAM 2 Channel 4: CAM 4

OK Cancel

### - Installed Audio Devices

: It show up the installed audio devices, one sound device take care two channel audio, two sound devices take care four channels.

- **Volume:** This is to increase or decrease the recording volume.

### -Select Directory

**Save directory:** setup it for sound files.

**Stop at(MB):** The hard driver need the swap space to operator the sound recorded files at least 300MB.

### - Select Channel

Select how many channel audio recording.

### - Select Camera

They nominate the camera No, which records video and audio, specified in each channel No. After designation all of camera No, click "OK". And design the directory for saving data and the sound if needed

**Available storage capacity for sound data = Max capacity – "Stop at".**

"Stop at" space shall be allotted as much as 300 MB, which is for the system swap and making virtual area of sound recording data.

### Attention:

When setting as **one channel Sound recoding**, program will setup the recording device to **Microphone**, **2** and **4 Channel Sound recoding** will be **Line-in**, after running DVR Main program, please check the Volume Control of record parts. Because of microphone is mono, so, the program will change it when select to two or four channel. And connection with Line-In is necessary in both two and four channel sounds. Because of **Line-In**, **amplified microphone** is necessary.

### - Log Write

- Log in information will be recorded to C:\ for the desired categories. Check on the box to allow logging.

### - Screen

- **Initial screen:** Choosing the number of camera on the screen while starting the program. (The number of splits chosen will determine how many cameras shown on the monitor screen.)
- **Large Screen:** Check on the box to show a large screen when starting DVR.
- **CCTV Monitor Auto Sequential Interval:** Set up the interval time of the sequential switching for Composite-TV Out port. Only for Full Screen switching. The other TV output is as the same as DVR Main displays. Which is to say, there are two TV-output.

### - Auxiliary Functions

- **Keyboard lock (Windows key disable / enable)**  
: Disables Shift, Ctrl, Alt, and the Windows Button from the keyboard.
- **Enable hardware watchdog (Auto Reboot):** Allows rebooting when system problems are detected.
- **Audible warning on event:** When Motion & Sensor are detected, it makes beep sound.
- **Schedule system auto reboot**



## - E-mail

- **Reboot Notify:** Whenever main program begins to start, its time and System IP number are noticed to the designated address. Thus even when you are using the changeable IP on main machine, you can make every remote viewers be accessible.

- **Event Notify:** Upon detecting the event over motion and sensor it sends the alarm by e-mail automatically.

**SMTP Server:** Prior to sending e-mail, you must configure the mail server addresses.

**From:** Fill in the account for sending mail. (If you didn't fill it out, you have to key in any of ID address. Ex. abc@abc.com) This mail is to send by the name of site name.

**To:** Configuration of receiver account.

**Subject:** Title of sending mail. (Describe as you want.)

**Content:** Contents of sending mail. (Describe as you want.)

**Attach image:** Message with image file.

**Send Interval:** Be understood mail shall be sent just one mail in this interval time definitely. In describing Subject and Contents above, following value character can be used. So, if you fill \$\$0 in text. Automatically the camera No shall be included in mail text.

(Note): Subject, Content, Send Interval are available only when you set up 'events notify'.

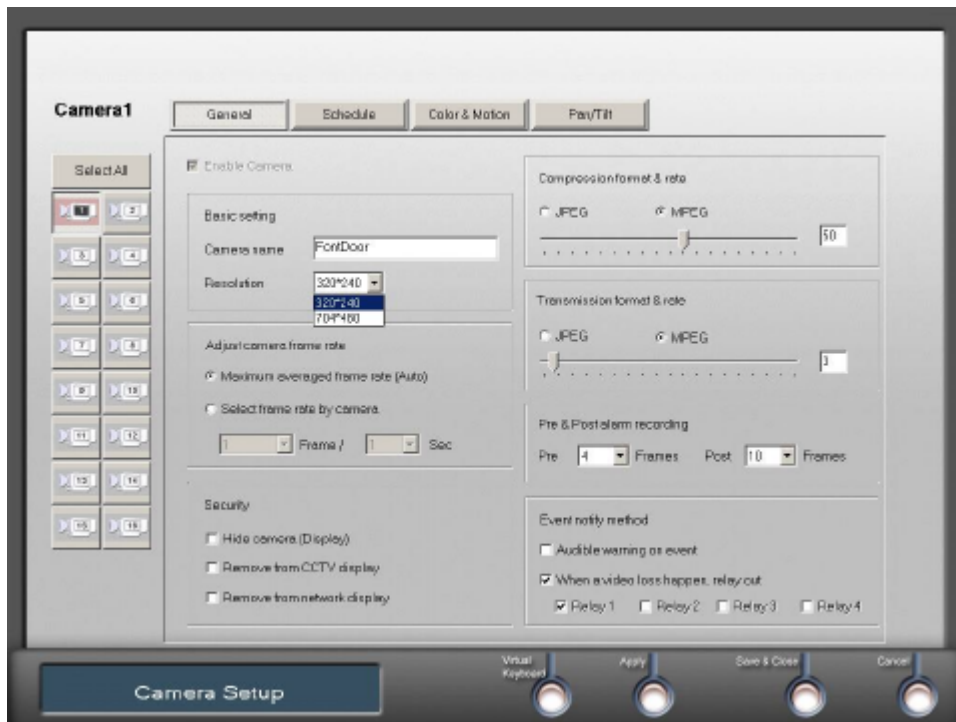
Push the "Apply" button for completing all settings.  
(Apply means 'save without exiting'.)

Reserved word	Contents
\$\$0	Camera No.
\$\$1	Events
\$\$2	Time
\$\$3	IP address



### 3-3 Camera

#### 3-3-1 General



- **Enable Camera** : Check the box to enable camera.
- **Camera Name** : Insert the name of the camera location.
- **Resolution:**

- Adjust camera recording resolution to 320x240 or 640x480 for NTSC, 352x288 or 704x576 for PAL

**Attention:** In 30 frames recording system, using one chip to handle all of the camera. In 60 frames case, two chips, even (1,3,5,7,9...) channel using one chip, odd(2,4,6,8...) using the other chip, 120frames using four chips, (1,5,9,13),(2,6,10,14),(3,7,11,15),(4,8,12,16).

When you change the resolution, the other camera but the same chip will be change at the same time.

- **Adjust camera frame rate**
  - **Maximum averaged frame rate:** Choose to record data on the Capture Card with the greatest frame per second rate possible.
  - **Select frame rate by camera:** Set the number of frames per second to be recorded.
- **Security**
  - **Hide camera (Display):** Choose to hide camera images from the PC monitor.

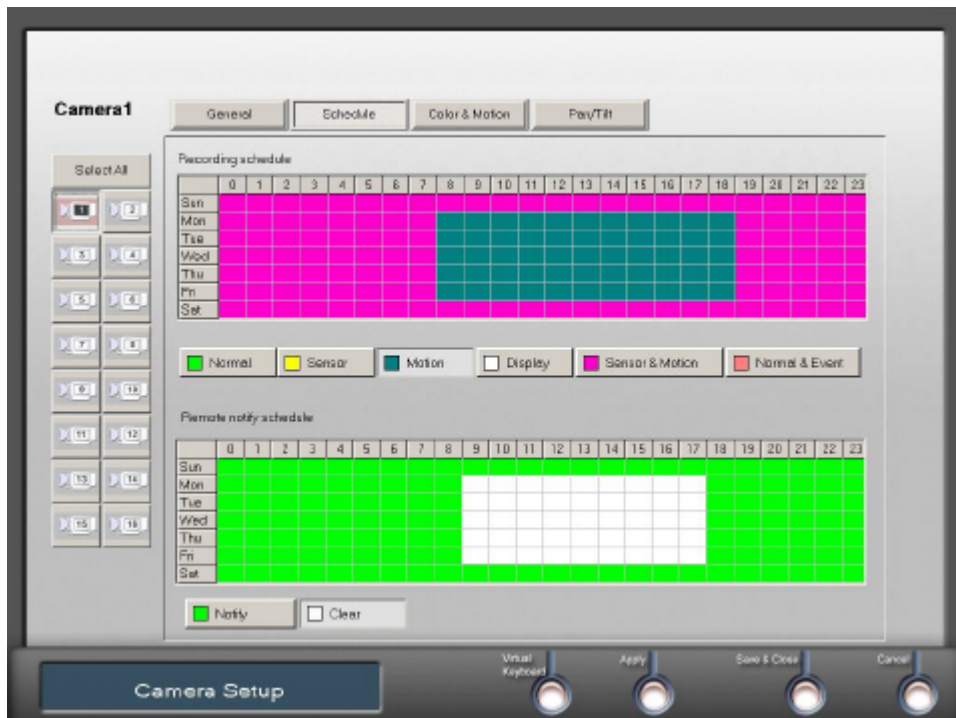
- **Remove from CCTV display:** Choose to block camera images from going out the Composite-Out port.
- **Remove from Network display:** It makes the images not to send to DVR-Net .
- **Compress format & rate**  
: Choose the recording format (jpeg, mpeg), and change the compression rate. (Positioning the knob left will reduce both the image size and picture quality)
- **Transmission format & rate**  
: Choose the format (jpeg, mpeg) and the compression rate for the images transmitted through the network program.
- **Pre & Post alarm recording**  
(Enabled only when using Motion or Sensor from the 'Scheduling' menu)
  - **Pre** : Records the selected amount of images prior to a Motion or Sensor detection.
  - **Post** : Records the selected amount of images after a Motion or Sensor detection.
- **Event notify method**
- **Audible warning on event:** When events come out by detecting motion or sensor, it goes off the beep sound. At this time, Red mark is shown on that screen. If click on that screen, the beep will disappears.
- **When a video loss happen, relay out::** It is used for activating a relay-out when video loss happen to be arisen.

Remember pushing the "**Apply**" button to complete the settings of individual camera.

#### **P/T/Z camera Supported Protocols List:**

- |                              |                         |
|------------------------------|-------------------------|
| > D-Protocol(Pelco)          | > P-Protocol(Pelco)     |
| > DSCP(DynaColor)            | > 5-Series(Pelco)       |
| > Vicon                      | > Panasonic             |
| > Philips                    | > Kalatel               |
| > Cannon                     | > PIH7000(Lilin)        |
| > StarPT                     | > SAE Elec.             |
| > CCD Control Box            | > SSP(Samsung)          |
| > SPD1600(Samsung)           | > MD-1000(Nicecam)      |
| > CRR1600i(Fine)             | > SUNGJIN               |
| > SERIM                      | > PT102N(C&B)           |
| > HSD-251 (Honeywell)        | > HSD-251 II(Honeywell) |
| > DRX500(Dongyang)           | > HSD251(FULL)          |
| > LPT-A100L(LG)              | > GC655/755(Honeywell)  |
| > 2000(SensorMatic)          | > DY255-DRXB(Dongyang)  |
| > CRD-J6416                  | > KPC-S38CZH            |
| > SecuMera Pro(TechnoVision) | > NKH-97CHE(NikoPT)     |
| > WPT101                     | > CP-32M(CommaxPT)      |

### 3-3-2 Scheduling



Choose the time (set by hour and day-of-the-week) for recording images of the camera from the Scheduling menu.

#### - Recording schedule

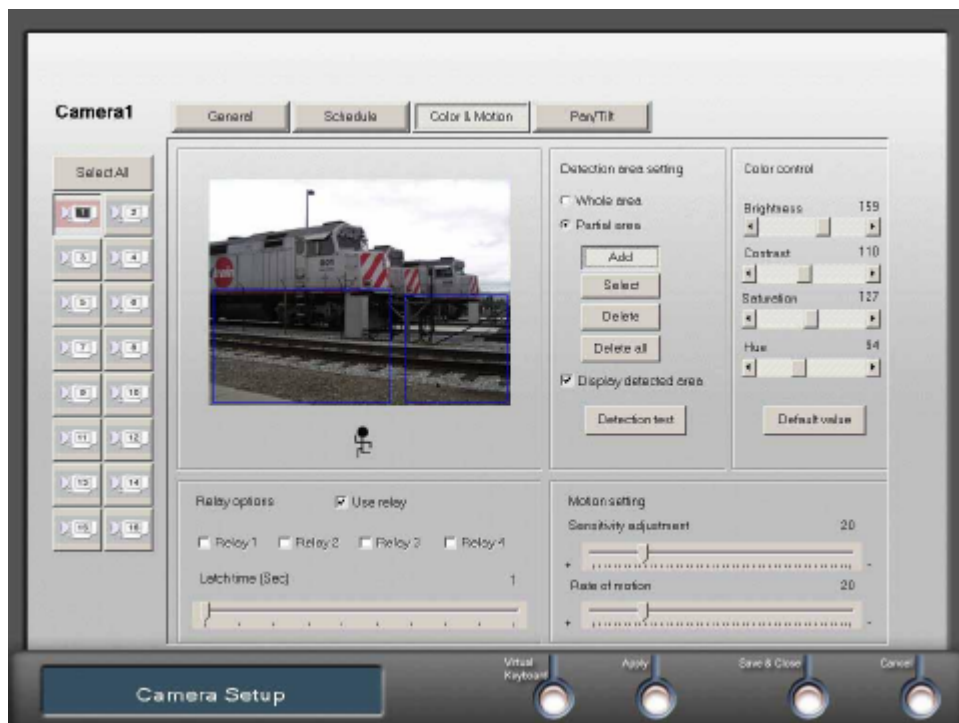
- **Normal** : All images captured on the camera is to be recorded.
- **Sensor** : Record images only when the sensor is triggered.
- **Motion** : Record images only when motion is detected.
- **Display** : Choose not to record images, just for view.
- **Sensor & Motion** : Record images when the sensor is triggered or motion is detected.
- **Normal & Event**: Record only one(1) fps(frame per second) when no motion (or sensor) is detected, but continuous recording once when detection occurs.

#### - Remote notify schedule

Data will be transmitted via the network program on the chosen time of the schedule chart. (enable only when set by Motion & Sensor)

- **Notify** : Set the desired time and day-of-the-week.

### 3-3-3 Color & Motion



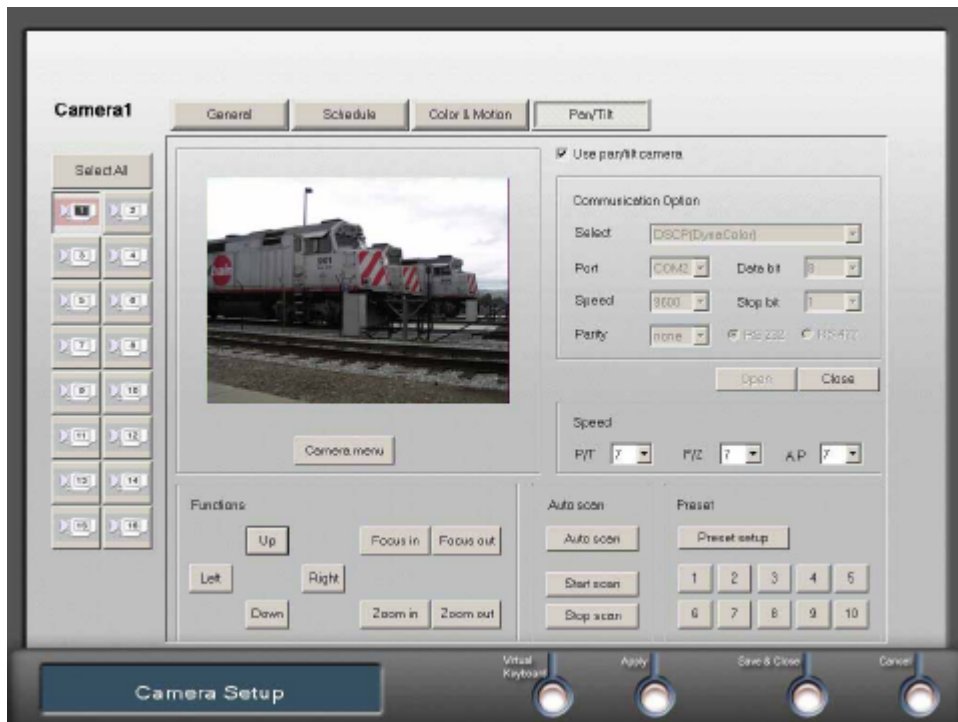
From this menu, control the color of the image, make detailed settings when Movement is set on the Schedule menu, and choose Digital Outputs (sirens, etc.).

- **Relay options** : Enable when Motion is selected on the Schedule menu.
- **Use relay** : Click for use, the 4 relay outputs.
- **Port 1~4** : Select each of the desired port to be enabled.
- **Relay time** : Select the time differential to remain signal prolonging after motion(sensor) triggered.
- **Detection area setting**
  - **Whole area** : Detect the motion within a full screen area.
  - **Partial area** : Click "Add" and drag for a specific area to detect motion. Max ten zones. And "Delete" to erase the zone setup.
- **Display detected area**: Check the box, and press the "Detection test" to test the sensitivity of motion detection.
- **Motion setting**
  - **Rate of motion**: Change the percentage(%) of motion. Lower the %, more the sensitivity.
  - **Sensitivity adjustment**: Set the color range of a moving object. Lower the %, more the sensitivity.

### - Color Control

Set up the Brightness, Contrast, Saturation, and Hue of each camera image. "Default Value" button to return to the original ones.

### 3-3-4. P/T/Z



- **Use pan/tilt camera** : Check to enable Pan/Tilt options.
- **Communication option**
  - **Select** : Select the maker/model receiver for application
  - **Port** : Select the serial port to connect to the computer
  - **Speed** : Set the speed of the Pan/Tilt option.(it depends on the camera equipment being used)
  - **Parity, Data bit, Stop bit, RS 232, RS 422** : Set in accordance with the Pan/Tilt equipment manual.
- **Open** : This is for PTZ configuration . Click "Open " then, It come to port to be opened.
- **Close** : This is for closing PTZ port.
- **Speed**
  - **P/T** : Speed adjustment of Pan/Tilt
  - **F/Z** : Speed adjustment of Focus / Zoom
  - **A.P**: Speed adjustment of Auto scan
- **Camera menu** : If clicks, you can see the menu for PTZ devices.

- **Functions:** At function, many tab can be used for moving up/down, left/right and to activate the focus and zoom.

- **Auto scan**

- **Auto scan :** It makes scanning from “Star scan” to “stop scan”.
- **Start scan:** It defines the starting position of PTZ.
- **Stop scan:** It defines the ending position of PTZ.

- **Preset**

- **Preset setup :** This helps PTZ to memorize No. of the appointed locations to go , up to 10 locations.

For example , how to set the preset at no.1 , is like this.

Click “ preset setup” and “No. 1” Tap, and Move PTZ to the desired location and stop and depress the taps of “ preset setup” and “No. 1”.

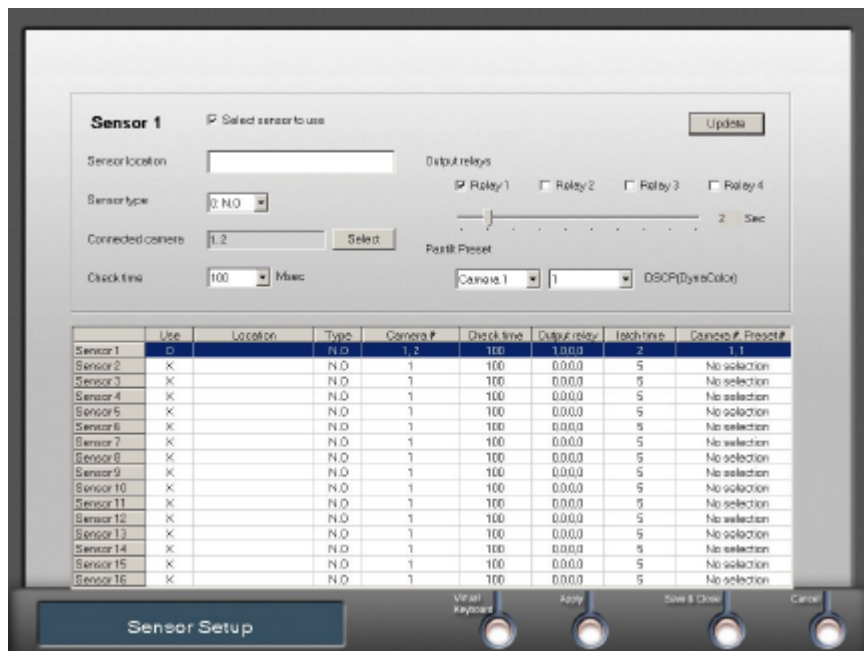
**Note :** 1. Definitely click “close” after set as you want by clicking “ Open”

2. Depending upon PTZ type, activating items such as auto scan, camera menu , preset, speed

etc, may be different when click “open”. For further specifications for PTZ, please refer to PTZ

manual supplied by PTZ maker.

### 3-4 Sensor



1~16 sensors can be connected, and sensor activation can be linked to Digital Outputs and cameras.

- **Selected sensor to use:** Check the box of the chart on the bottom half of the screen to choose specific group which sensors to use.
- **Sensor location :** Input the position of the sensor.
- **Sensor type :** Choose the sensor type being used. (Sensor activation: 0-NC, Sensor disables while sensor activated: 1-NO)
- **Connected camera :** Choose the camera to enable recording when sensor is activated.
- **Check time :** Check for sensor movement every designated interval.
- **Output Relay 1~4 :** Choose the appliances connected to the Digital Output.
- **Output time :** Select the time differential continuity.
- **Pan tilt Preset:** Select the camera number and Preset number when sensor trigger.

### 3-5 Backup Setup

☒ Use schedule

Scheduling:

Hour:  Minute:

Backup Device Setup:

Camera selection: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Schedule table: ☒ Start backup timer

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Time	Status	Backup path
Sunday	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	05:00	On	C:\Backup
Monday	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	00:00	Off	C:
Tuesday	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	00:00	Off	C:
Wednesday	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	00:00	Off	C:
Thursday	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	00:00	Off	C:
Friday	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	00:00	Off	C:
Saturday	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	00:00	Off	C:

Backup Setup What Keyboard Apply Save & Close Cancel

Recorded images can be backed up automatically when a Backup Schedule is noted. If choose the day-of-the-week, then the backup done automatically. **Remember that automatic Backup is enabled only when "Backup" on the file is enabled!**

- **Use schedule** : check to use a Backup Schedule.
- **Scheduling table** : choose date from the chart below.
- **Hour, Minute** : choose the time to start Backup.
- **Camera selection** : select the cameras that you want them to be backed up.
- **Backup device setup** : choose a specific hard drive to save the backup data. (data can be recorded on CD or DVD, and these are shown as drives on the computer. ex) HDD will be shown as drives C: D:, CD will be drive E:, etc.)
- **Start backup timer** : On rebooting, clicking this undertakes the Back-Up setting to be stored in resident memory.(This event is likely to be recognized with appearance of the tray bar at screen, bottom right-sided.)

When finished with the settings, be sure to push the "Update" button to save them. Updated information should be shown on the chart on the screen.

Backup starts from the time when the last Backup stopped and ends at the time when Backup began. (On the first backup, backup starts on the beginning of the data.)

**When finished the Backup settings, be sure to run the Backup EXE file before starting the main program, otherwise scheduled backup will not work automatically.**



### 3-6. User Admin

**New User**

Username:

Password:

Confirm password:

**Security level**

☒ Level 1 (Admin)  
☐ Level 2 (User)  
☐ Level 3 (Guest)

**Authority**

☒ Setting ☒ System shutdown  
☒ Command control (Parity/image control)  
☒ Backup ☒ Search  
☒ Network access

☒ Cam 1 ☒ Cam 2 ☒ Cam 3 ☒ Cam 4  
☒ Cam 5 ☒ Cam 6 ☒ Cam 7 ☒ Cam 8  
☒ Cam 9 ☒ Cam 10 ☒ Cam 11 ☒ Cam 12  
☒ Cam 13 ☒ Cam 14 ☒ Cam 15 ☒ Cam 16

**User list**

Add/Modify Modify Delete

Username	Level	Setting	Shutdown	Control	Search	Backup	Network
1	Admin	Yes	Yes	Yes	Yes	Yes	Yes

User Admin

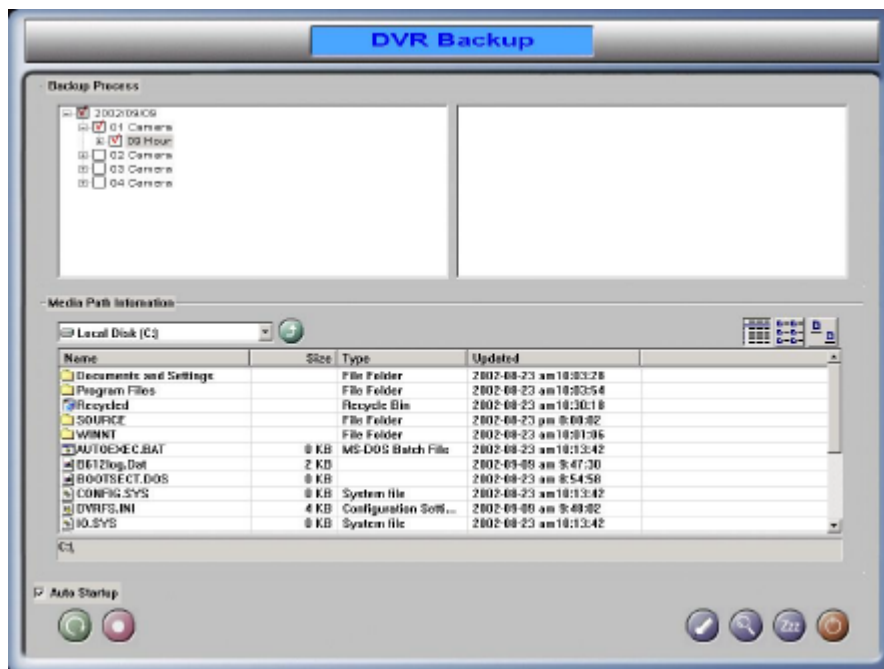
Virtual Payment Apply Done & Close Cancel

- **User Name** - Input name of admin or user.
- **Password** - Input password.
- **Confirm Password** - Password for check.
- **Security Level** - Select the level of the authority.
- **Authority** - Assign the functions to which the admin. Will have authority. (level 1 admin. will have complete authority of all functions.)

After filling the user information and checking the appropriate boxes, push the "Add/Modify" button to register the admin. information. To change the status of an existing administrator, click on the administrator from the graph and make the desired changes.

To delete an administrator or user, click on the desired admin. and push the "Delete" button.

### 3-7. Manual Backup



Backup can be done manually by choosing the desired folder, or be done automatically using a Backup Schedule.

- **Backup Process** : From the window on the left, choose the camera and date, hour, minute desired for backup. The window on the right shows the progress of the backup process as it occurs.
- **Media Path Information** : Create a folder as a desired backup destination, find it from the window and double-click on it.
- **Auto Startup** : When the box is checked, automatic backup according to the present settings will occur the next time "DVR Backup" is activated.



: Erase all settings.



: Start backup according to current settings. (You' ll be asked once more to verify the drive and folder chosen as backup destination)



: Display the starting and the finished time of backup.



: Run "Backup Viewer".



: Backup program switches to stand-by mode. (If Backup Schedule was chosen on the user settings, then the Backup program MUST be activated and is in stand-by mode!!)



: End Backup program.

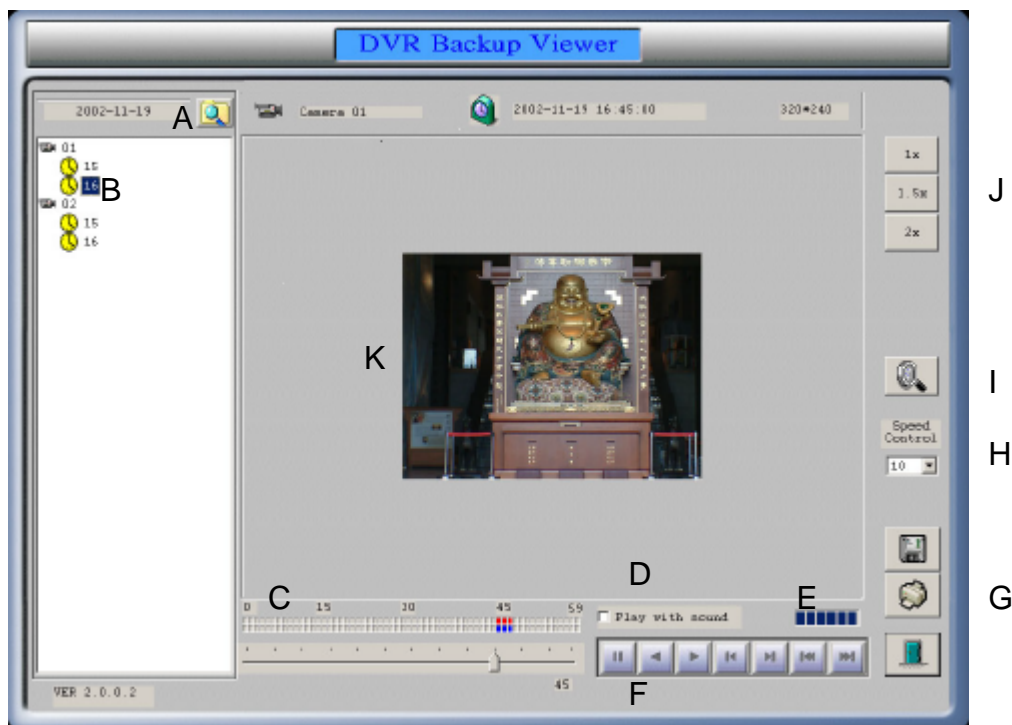
**When copying Backup data to other media:** you MUST use folder name as date-camera no-time in order . That is you must use the same folder name as the folder name in Backup folder.

And Backup files are named by minute unit while hour is set by folder name. It's recommended you use like it, too.

Example    dat, 01.dat    : back-up file at 01 minutes of backup date





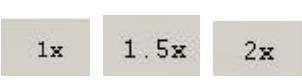

            Dat.12 dat    : back-up file at 12 minutes of backup date

### 3-8. Backup Viewer

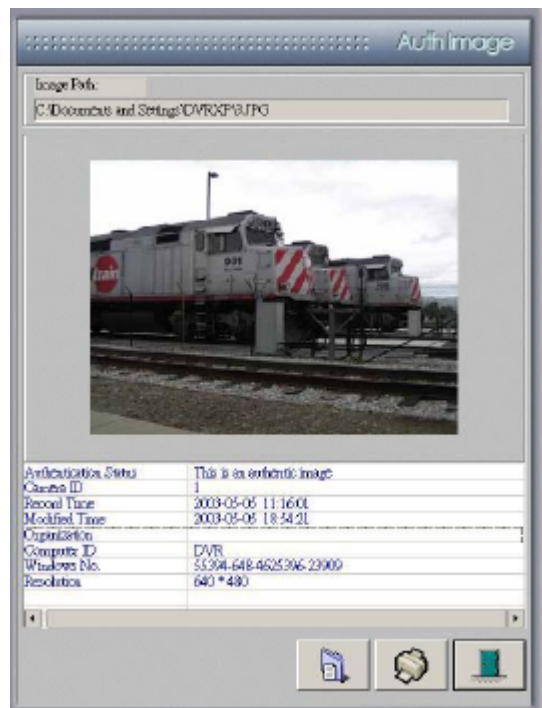


Backup Data can be reviewed with only the "Backup Viewer" program, on a search-by-date basis.




A	Read Backup data by date.
B	Choose the desired camera and time period for search.
C	Saved data are indicated in red, and each notch stands for one minute. Scroll with the arrow to move to the desired time.
D <input type="checkbox"/> Play with sound	If stored sound data co-exists, by checking this Image may be viewing with sound performances.
E	Status bar of playing speed

F		<p>Use the buttons (in the order of display, stop, play backwards, play forwards, show image by image backwards, show image by image forwards, move to beginning, move to end) to search through the images. <b>Recorded by MPEG mode, some button will be disabled as secondary.</b></p>
G		<p>Quit "Backup Viewer" . Print image. Save image.</p>
H		<p>Play speed is adjustable by selecting the number. (1-10)</p>
I		<p>If you take a selection to be enlarged by dragging the mouse the area can be shown as enlarged.</p>
J		<p>By selecting these Tab, image size can be enlarged as much as 100%, 150%, 200%</p>
K		<p>Image Control: while leading the mouse appoint to image area, Clicking right side button of mouse, then the image control menu (Sharpness, Softness, Black/White, Cancel, Original) come out so that you can adjust as you want.</p>

### 3-9. Auth Image Tool



This program deciphers images saved by the Search or Backup Viewer Program, and tells you when an image has been altered.

	<p>Open an image to decipher. With real unaltered images, the image information appears as shown above, but nothing appears for altered images.</p>
	<p>Print image.</p>
	<p>End program.</p>





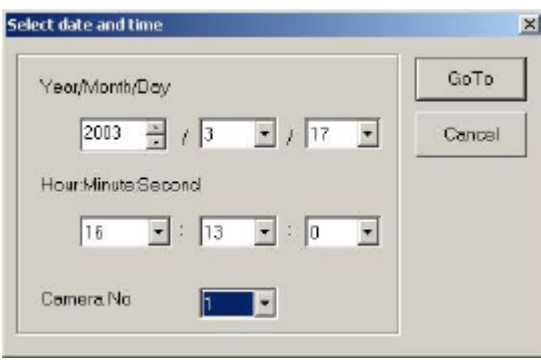
## 4. Search



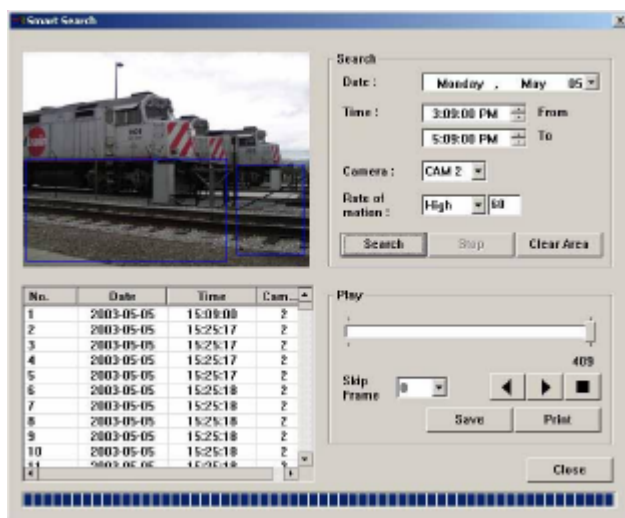
Search Single or Multiple image data according to date and time and camera.

Desired images can be saved separately and even be printed.

	<p><b>'Date'</b> : Choose the specific date desired for search. If the dates do not appear on screen, push the "Date" button below.</p> <p><b>'Goto'</b>: Directly to select date and time that you want.</p>
	<p><b>"Smart Search"</b>: Use for more quickly to find out when the object moved.</p> <p><b>"Save As"</b> : to save the current image,</p> <p><b>"Print"</b> to print it out.</p> <p><b>"AVI Save"</b> button to save motion picture images from that point to the point you choose to stop as an .avi file.</p>
	<p><b>"Search"</b> button to use the SEARCH menus,</p> <p><b>"Image tool"</b> button to use the Image Tools menus.</p>
	<p>SEARCH menu appears as the "Search" button is pressed. You can play images both forwards and backwards, and search image by image, also both forwards and backwards</p>
	<p>"Image Tools" menu appears as the "Image tool" button is pressed. Use the various options (Zoom In/Out, Sharpen, Soften, B&amp;W) to adjust the image.</p>

F		Push to end "DVR Search"
G		Switch Camera mode and sound mode by double click.
H		Use the buttons to scroll through cameras 1~4, 5~8, 9~12, 13~16.
I		<p>The camera number (numbers on the right), hour (numbers on the bottom), and minute (numbers on the top) are indicated on the graph, and click the mouse to search the desired data.</p>
J		<p>On this menu, select time and date to be searched directly and Click "GOTO". Then the stored image files appear if the stored data exists as effective of that date and time. If not exists, the data, at the closest to that date or time, are searched.</p>

## 4-1. Smart Search



**Date:** date to be searched

**Time:** time to be searched

- **From:** starting Time to be searched


- **To:** ending time to be searched

**Camera:** camera no. to be searched

**Rate of Motion:** No. of recording sensitivity at the area to be searched.

The Sensitivity are ranged to High:60, Middle:40, Low:20. But by directly inputting the value, the results may be different.

**Note:** The lower No. of “ rate of motion ”, the higher sensitivity it has , The higher sensitivity has more precise detection. But it needs more data and takes more time to search.

Search	search the images per preset data.
Stop	It stops smart searching.
Clear Area	It deletes the designated area for smart search.
NO.	It indicates the total no. of image files searched by smart searching.
Skip Frame	If you feel inconvenient in handling the huge stored data, you can make the data file reduced to compact data file by skipping as much as the set values.
	These tab are used for “Play”, “reverse Play”, ”Stop” when searching data.
Save	It makes saving of data searched by smart searching function. (When used JPEG compression , Save file is made with .JPG. But if it is MPEG, Saved file will have .bmp file .
Print	It prints the searched data by smart search function.
Close	Close the smart searching process.

## 5.Features of DVR-Net

- **Support of TCP/IP Protocol (PSTN, ISDN, ADSL, etc.)**

Use any of the communication protocols to log on to DVR.

- **Real-time Monitoring**

Log on DVR-Net to monitor real time DVR images.

- **Searching and Recording DVR data**

Search recorded data in DVR, and save it in the remote site.

- **Two-way Voice Communications**

DVR-Net allows users to receive and send audio to DVR.

- **PAN/TILT/ZOOM/FOCUS remote control**

Control PTZ cameras remotely by DVR-Net.

- **Change DVR Settings Remotely**

DVR-Net enables users to turn on/off cameras, change recording schedules, and reset sensors

- **'Notify'(Automatic message alert from DVR)**

DVR-Net is automatically started upon a DVR event, motion detected or an alarm triggered.

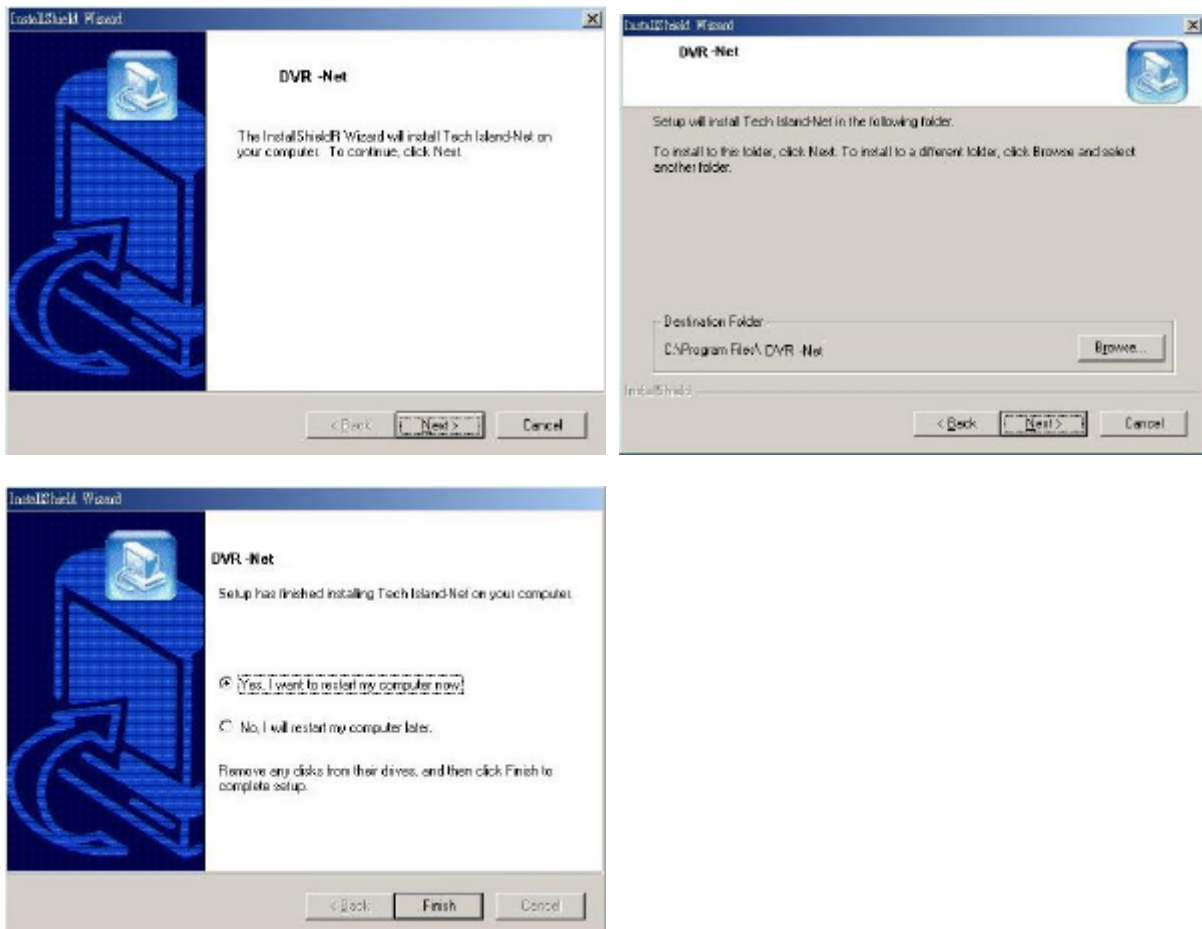
- **Compatible O.S**

Windows 98/ME/2000/XP systems.

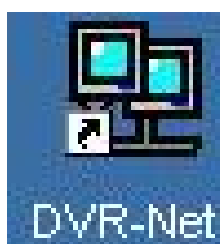


## 6. Installation of DVR-Net

Click on 'DVR-Net\setup.exe' and follow the messages.



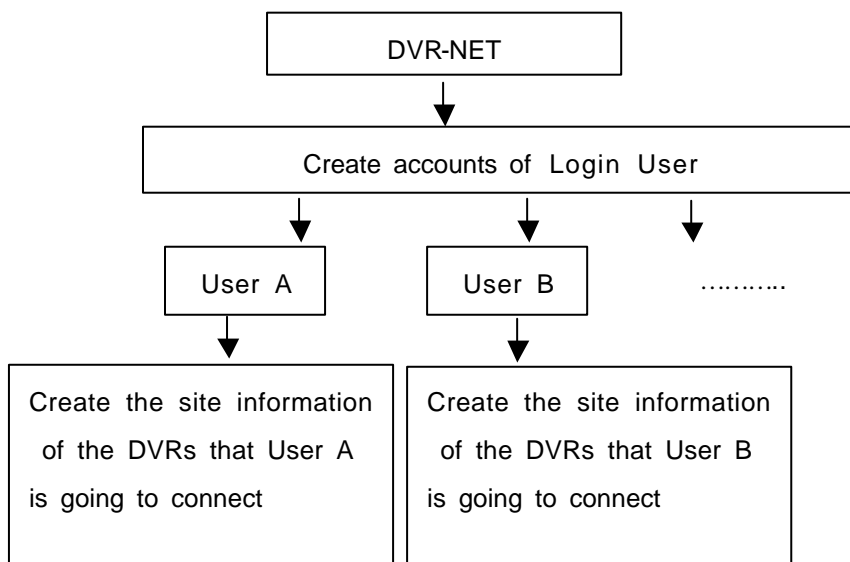
It shows at desktop after the installation is completed.



## 7. DVR-Net

### 7-1 DVR Login Configuration:

#### 7-1-1 How it works




#### 7-1-2 First Time Setting

- + **Step 1:** Run DVR-Net and it pops out the following log-In window.
- + **Step 2:** Select **New**



- **New** : Add a new log-in user and create DVR sites under this user name
- **Edit** : Edit the DVR site configuration
- **Cancel** : Exit without change
- **Minimized screen** : Minimized the screen of system

- + **Step 3: Input the user information:** this is to set up the information of users that log in to the DVR-Net



Create new login user

Login name

Description

Password

Confirm PWW

OK Cancel

- **Login name** : Create an account of the Login User
- **Description** : Describe the user.
- **Password** : Assign a password to the user
- **Confirm P/W** : Re-type the password

➤ **Step 4: Click OK to continue “Register site information”** : **click New** to register the site information of the DVR that is going to be connected.

The screenshot shows a window titled "Add, Delete and Edit site information". It contains a table with four columns: "Site name", "IPTel no.", "Method", and an empty column. The table has 8 rows. Below the table are four buttons: "New", "Edit", "Delete", and "Close". The "New" button is highlighted with a red rectangle.

Site name	IPTel no.	Method	

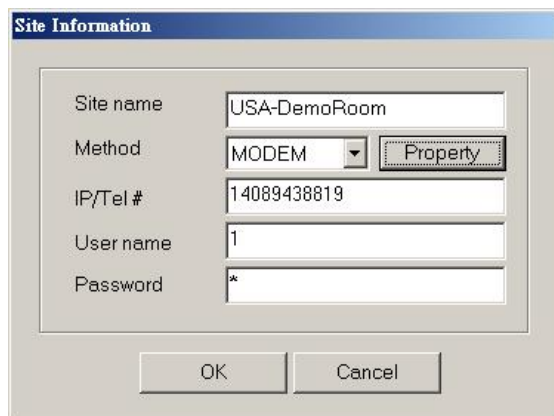
New
Edit
Delete
Close

- **New** : Create a new DVR site
- **Edit** : Edit a site.
- **Delete** : Delete a site.
- **Close** : Save and Exit.

**Note :**

1. Site names are not allowed to be repeated.
2. Do not edit or delete any site while DVR-Net is running.

✦ **Step 5: Register site information, and click “OK” to save the settings.**



The 'Site Information' dialog box contains the following fields and controls:

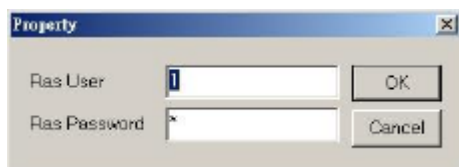
- Site name:** Text field with 'USA-DemoRoom' entered.
- Method:** Dropdown menu set to 'MODEM', with a 'Property' button to its right.
- IP/Tel #:** Text field with '14089438819' entered.
- User name:** Text field with '1' entered.
- Password:** Text field with '\*' entered.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

- **Site name** : Create a site name.
- **IP/Tel no.** : Input the IP address or telephone number (for PSTN/modem) of DVR
- **Method** : Select “TCP/IP” for LAN, Cable Modem, ADSL  
                   Select “Modem” for PSTN Modem  
                   Select “Server” for use IP Server.
- **User name** : Key-in the user ID that allows “Network Access” in your DVR “User Admin” list
- **Password** : Input the password of this ID

Connection by Modem, select method to Modem,

click “property “ and type the contents at dialogue box of “Ras User” and “Ras Password” like figures,

depending upon OS types; Window98 or Windows2000 / XP.



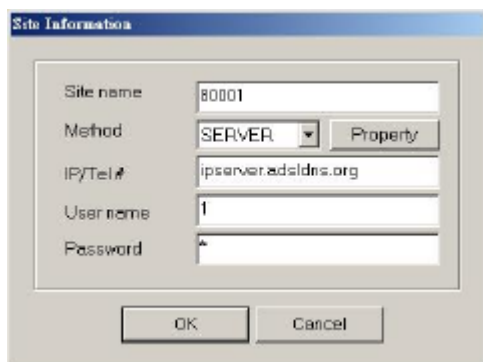
The 'Property' dialog box contains the following fields and controls:

- Ras User:** Text field with '1' entered.
- Ras Password:** Text field with '\*' entered.
- Buttons:** 'OK' and 'Cancel' buttons.

If the DVR's OS. is Windows9x, You should not specify anything in dialogue box of “Ras User ” and “Ras Password” .

If the DVR's OS. Windows2000/XP, You should specify anything in dialogue box of “Ras User ” and “Ras Password”

Connection by IP Server, the Site Name will be the DVR's code number which you want to connect.

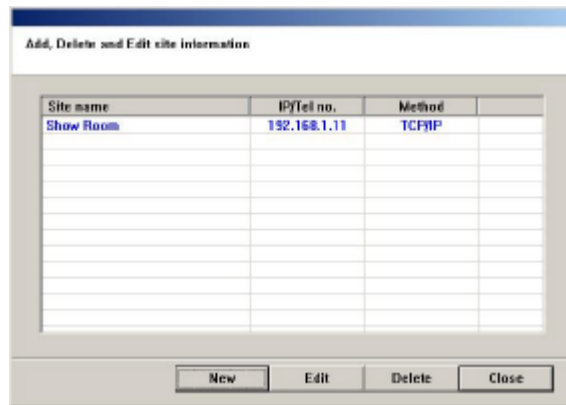


The 'Site Information' dialog box for IP Server connection contains the following fields and controls:

- Site name:** Text field with '80001' entered.
- Method:** Dropdown menu set to 'SERVER', with a 'Property' button to its right.
- IP/Tel #:** Text field with 'ipserver.adslins.org' entered.
- User name:** Text field with '1' entered.
- Password:** Text field with '\*' entered.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

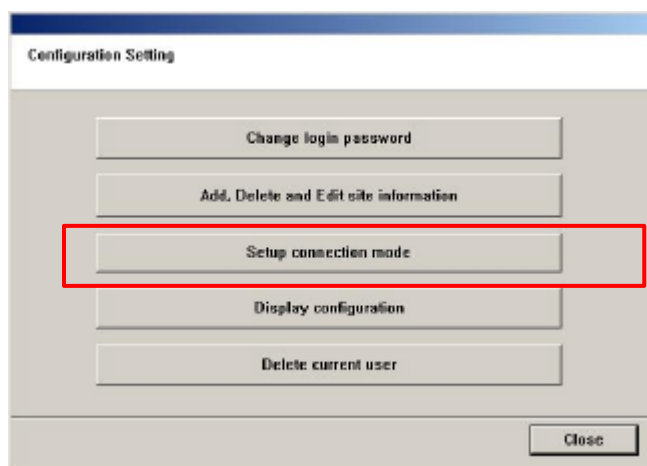
✦ **Step 6: To re-edit or to delete the sites you just created:** select the site and click Edit/Delete to re-edit/delete the site.

✦ **Step 7: Repeat step 5 and 6 to create another new site.**



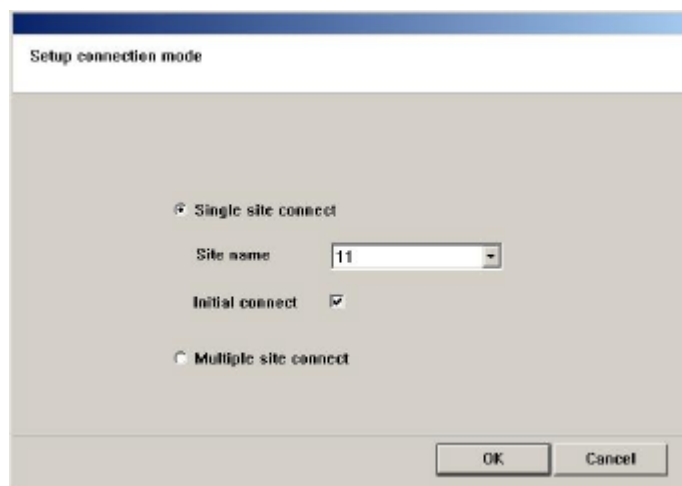
✦ **Step 8: Click “Close” to save settings and continue.**

✦ **Step 9: Click “Setup connecting mode”**



- **Change login password** : change DVR-NET users' passwords.
- **Register site information:** go back to Step 5 to register site information.
- **Setup connecting mode:** set the connection mode, Single site or Multi sites.
- **Display configuration:** setup the initial display screen, assign a directory to save data and a file name to save system log, and setup whether and when to display caption.

✦ **Step 10: Setup “Setup connecting mode”:** Select Single or Multiple, and check Initial Connect for broadband users.

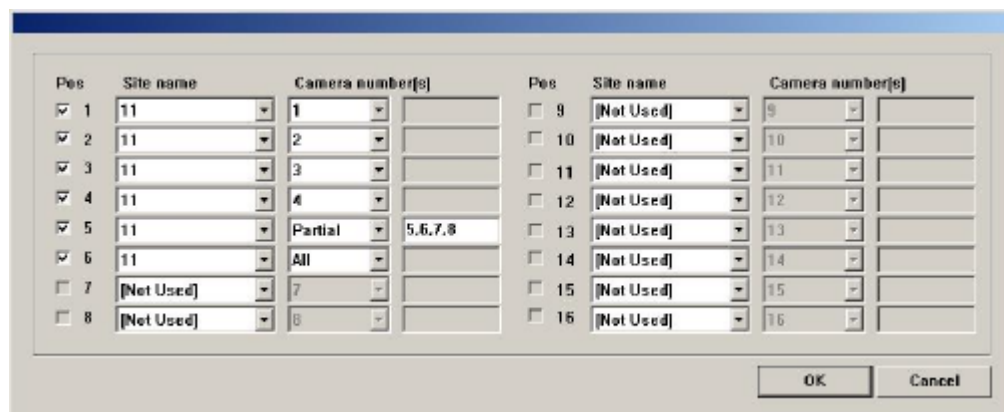


**A- Single site connect:** When there is only one DVR site to be connect and check 'Initial Connect'

- When **Initial connect** Checked – suggest to check the box for broadband users  
DVR-NET transmits video of all cameras automatically
- When **Initial connect** Unchecked – Users have to click the camera button manually to start video transmission

**B- Multiple site connect:** When there are more than one DVR site to be connected

\*\* The following picture is just an example. Please enter correct site information.



- **Pos(Position):** The channel number of DVR-NET.

- **Site name :** Select the site to be connected.

\*\* Not Used: if no site to be connected in this channel

- **Camera number(s) :**

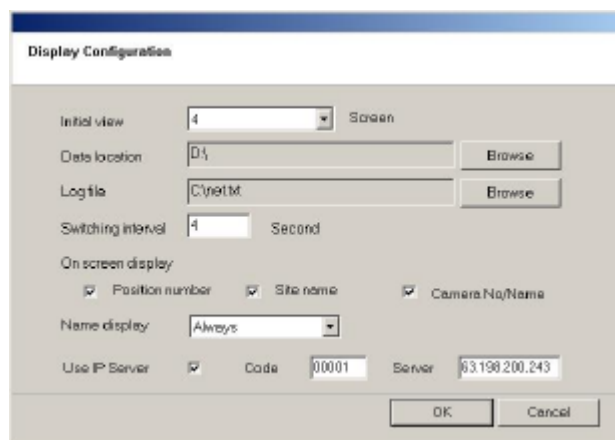
**Choose the Camera Number** of that DVR that you want to monitor in DVR-NET.

**All:** Show all cameras of that DVR site in this Position.

- **Partial:** Display each camera auto-sequentially in the order you put down in this column.

**You can set switch interval in the following step.**

- ✦ **Step 10: Setup “Display configuration”:** Choose an initial screen, assign a Save Directory and create the log file name.



- **Initial view:** Set the initial screen as full screen, quad screen, or other split mode, when DVR-NET starts to run. There are 1, 4, 6, 9, 10, and 16 split mode to choose from.
- **Data location:** It makes a set up of directory to be stored when clicks “Save” under accessing to DVR-Net.
- **Log file:** Create a file name to save system activity log.
- **Switching interval:** Input the seconds of the switching interval.
- **On screen display:** Image position No, site name, camera No/Name, can be set-up in this mode.
- **Name display:** Choose when and whether to display the above information.
  - **Always:** Show caption all the time.
  - **Only Mouse On:** Show caption only when the mouse is moved to a certain channel.
- **Use IP Server:** Check if IP SEVER shall be used.
  - **Code:** Type the Code which was input at ‘IP/Num(Code)’ when setting of ‘Remote notification of events’ at DVR System.

**Note:**

1. Code no. shall be made with mix of alphabetic and numeric letter. Also it discerns capital and small letter.
2. Do not confuse “Code” of ‘Use IP Server’ in Network setting of System configuration in DVR system.

- **Server:** Address of IP Server

- ✦ **Step 10: Click “OK” to finish and close the configuration setting.**

- ✦ **Step 11: Log In: Input your DVR-NET ID/PSW and click Login.**

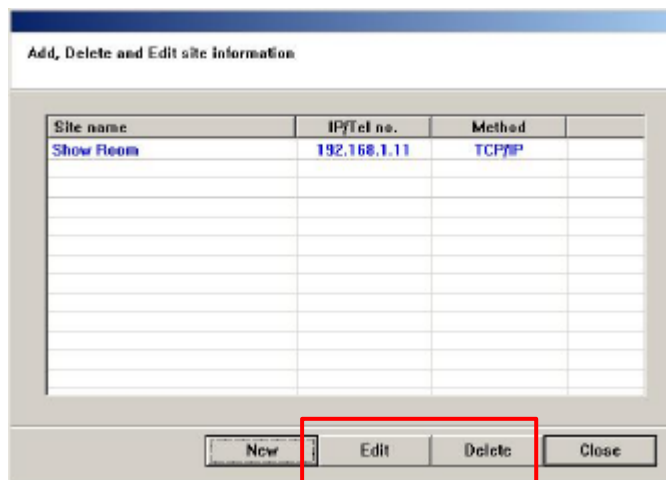


### 7-1-3 Re-Edit Site Information

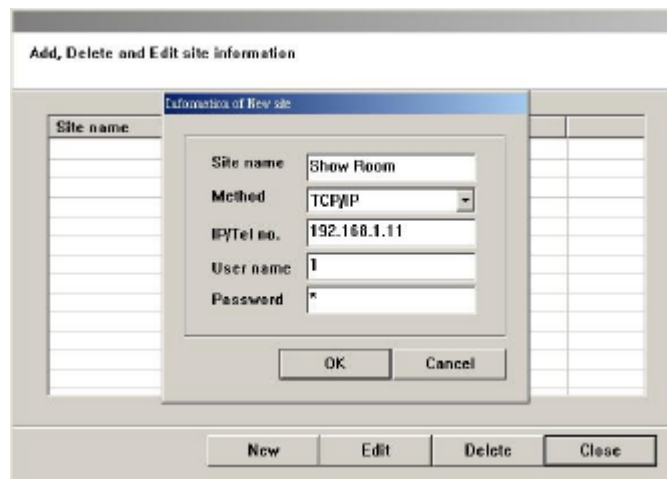
- ✦ Step 1: Input your DVR-NET ID/PSW and then click Edit.



- ✦ Step 2: Select the site you want to edit/delete and click Edit/Delete to re-edit/delete the site.



- ✦ Step 3: Click OK to finish editing.



- ✦ Step 4: Refer to [7-1-1](#) for the other settings.



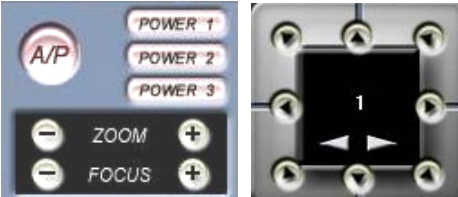


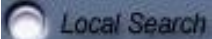
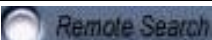
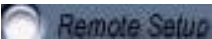



## 7-2 Accessing DVR-Net



Please put "name & password" and click "Login"



A	It is for <b>login</b> and <b>logout</b> to DVR-Net
B	<p><b>-Date/Time:</b> Present time and date indicated in the system.</p> <p><b>-Login name:</b> It says the registered User ID to be used in log-in</p> <p><b>- Event Information:</b> It can notify when an event (Motion detection or Sensor activation) happens in DVR.</p>
C	It configure the information for log-in of DVR-Net
D	Save the images being transferred. (Search through the saved data on Local Search)
E	Switching panel of Camera control (Pan/Tilt/Zoom) and Image control and Compression Rate.
F	Preset point and Preset, Tour function

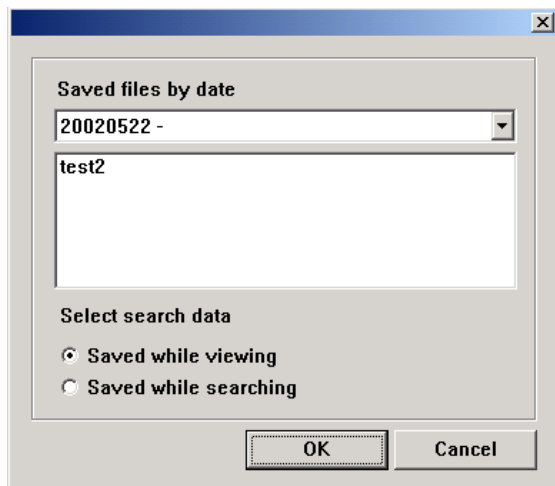
G		PTZ camera function and direction button.
H		Buttons of the COMPRESSION RATE menu appear as the "COMP Rate" button is pressed. Choose HIGH SPEED to increase the rate of data transfer but decrease the image quality. Choose LOW SPEED to do the opposite.
I		End DVR-Net
G		Local Search - Search through data saved on the DVR-Net system
K		Remote Search - Search through data saved on DVR, and save the data on the current computer
L		User settings Change the settings of the DVR through DVR-Net.
M		Enable voice communications with DVR. ("Sound Recording" on the DVR User settings menu must be set on) Send Voice / Receive Voice / Send and receive voice / cancel.
N		While connecting to DVR-Net, if you point out the upper channel small box by mouse, the connected site information such as IP address (Tel No), camera Number, validity of connection. So it's very easy to know who are connecting. Also, when pressing upper box of camera, if it turns to apricot color button pressed, it means it is connected. Otherwise, it means the connection is not valid
O		Relay state, you can turn it on or off manual.

### 7-3 Local Search



Its feature makes it possible to search the recorded data in DVR-Net.

On screen, if you press the button like a left-handed Icon, following box pops up



The name of system where the data recorded, are shown in lists. So, selecting the system which wish to be searched in and check the option of “Saved while viewing” or “Save while searching” and press “OK” as final.

Saved while viewing – It can make it recorded while watch the screen connected to DVR.

Saved while searching – It can make it recorded at DVR-Net while searching the recorded data in -DVR.



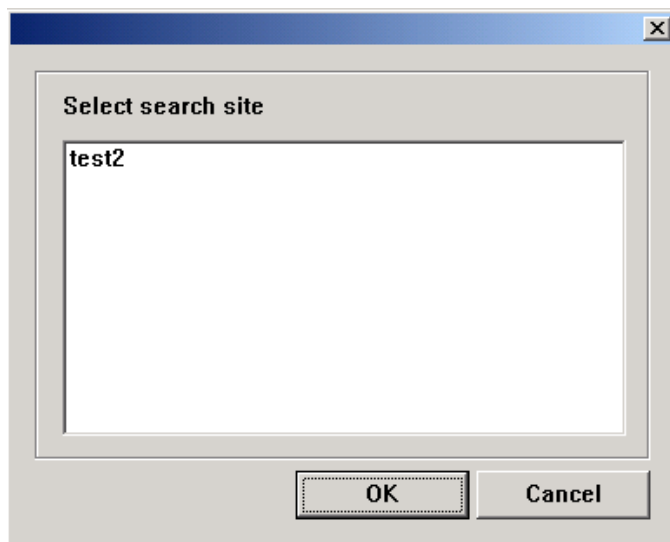
**Most of operator is similarity  
Search program**

## 7-4 Remote Search

To search the recorded data in DVR by DVR-Net.



If pressing the button like left-handed Icon, picture box like followings, will be shown.



After selected the site name, click "OK", then following screen pops up.



Most of operator is similarity *Search* program

## 7-5 Remote Setup

It is possible to configure the DVR while presently connected with DVR-Net



: Press the left handed Icon on screen.

< Ref > : Please refer to the further detail procedure of configurations.

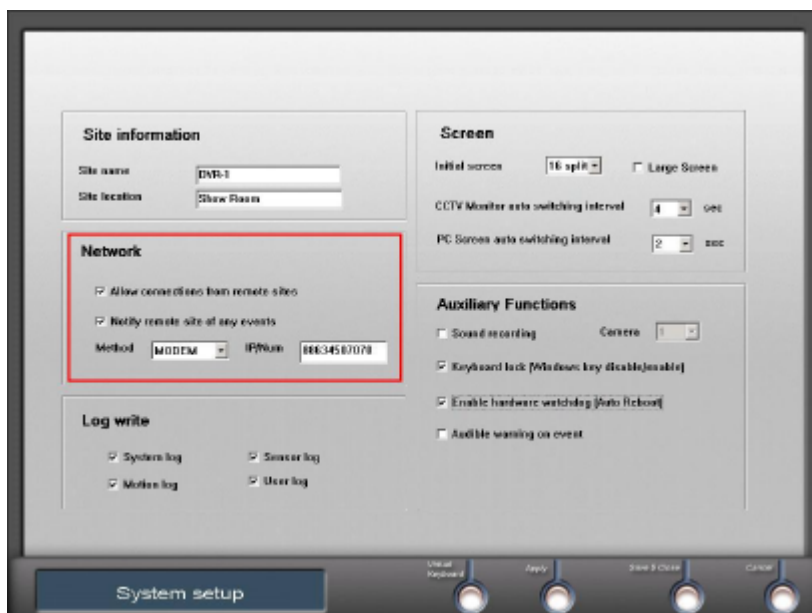
## 7-6 Notification of event happening

This feature is that event happening such as motion detection and sensor activation may be notified to DVR-Net on real time.

The method of using this feature is as follows.

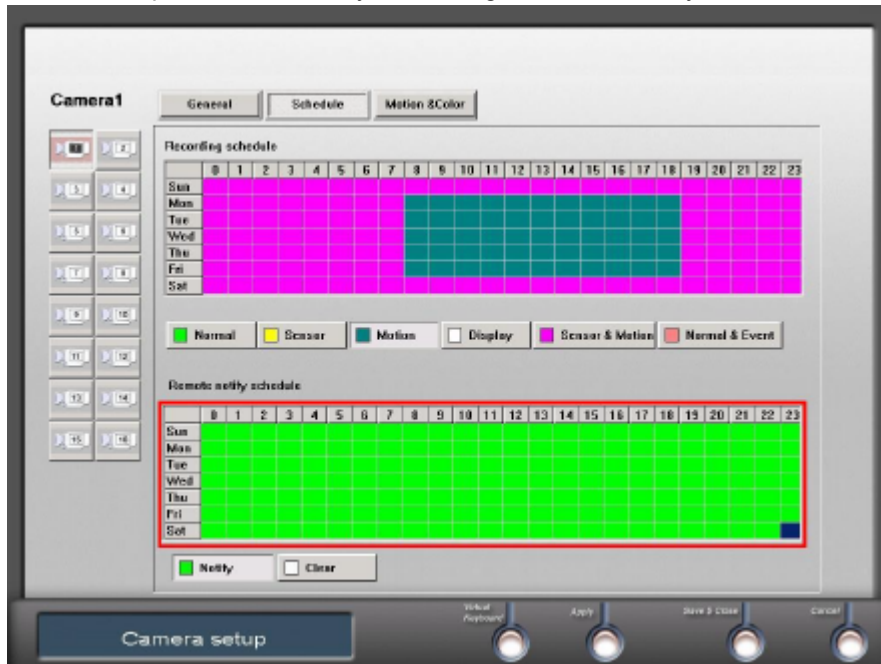


By press the Icon like left-handed picture, you can configure the system set-up of DVR at remote location.



At system setup, check “Notify remote site of any Events” on network and input the method of access by TCP/IP or Modem in a line with IP address or Telephone No.

Next, it is required to set “Notify scheduling” on selected day of week in “Scheduling” of “Camera setting”.



It is easy to find out at what channel the event happens because the channel has specially image boundary with red colors-line.





## 8. Setup the Dial-Up Server

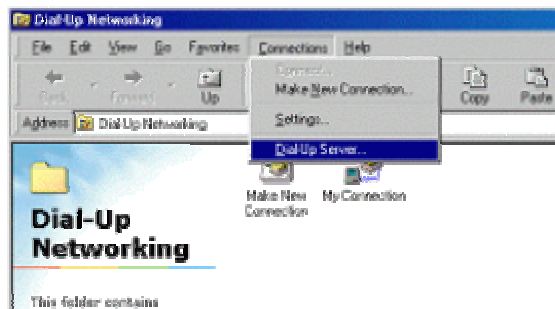
**Attention:** Before you start to setup it, please make sure that the Modem spec. is with the “**Accept incoming connection**”.

To connect to DVR using a modem, a Dial-Up Server must be installed on the DVR. To connect by using a modem, both of the DVR and DVR-Net must be equipped with a modem. To connect with an IP address Both of the systems must have an IP address.

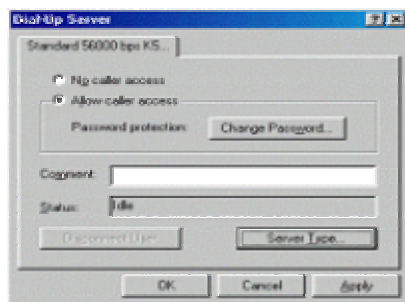
### 8-1. For Windows 98

Go to "Control Panel-Add/Remove Programs-Windows Setup" and choose "Dial-Up Server" from the "Communications" column and push OK.

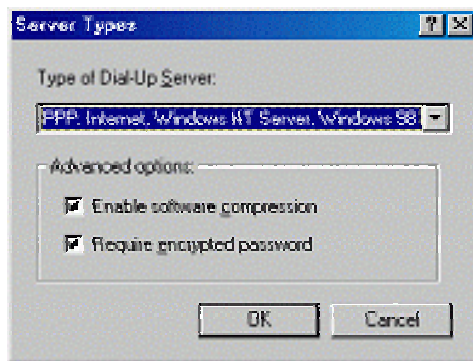
Then, go to the bottom of the screen to the "Start-Programs-Accessories-Communications-Dial-Up Networking"



Choose "Dial-Up Server"



Check on “Allow caller access” and push “Server type”



Choose "PPP : Internet, Windows NT Server, Windows 98" and push OK to end the installation and settings.

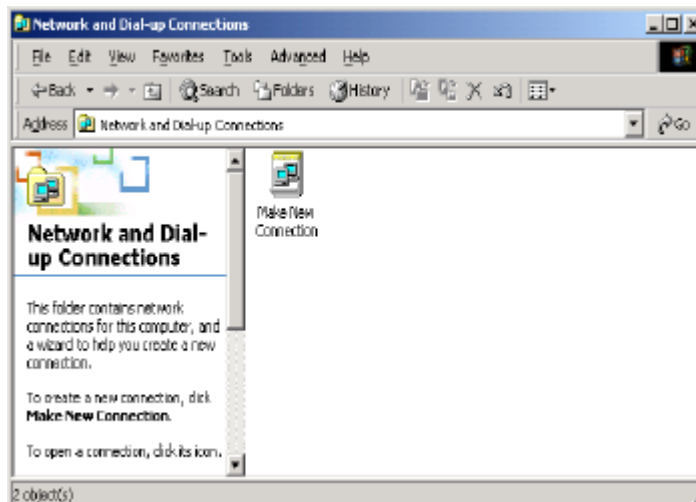
If you have succeeded in proper installation, the following icon will appear.



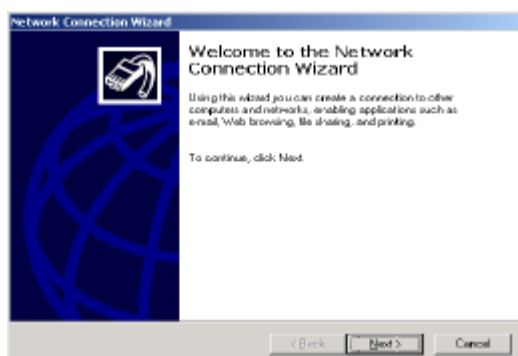
You can now log on to DVR with a telephone number or IP address No.

## 8-2 For Window2000

Click Start > Setup > Control panel > Network and Dialup Connection and you can see follow screen.



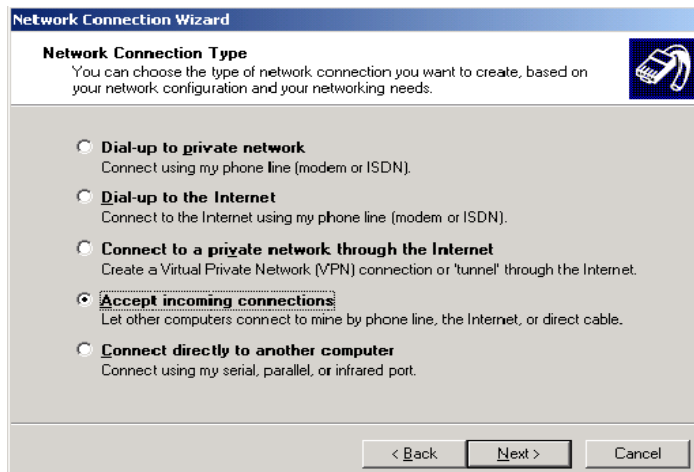
Click ' Make New Connection' , then follow screen comes.



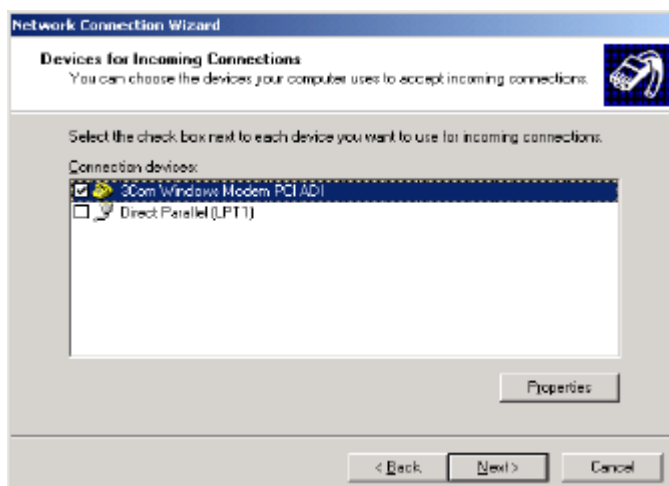
Click ' Next' .



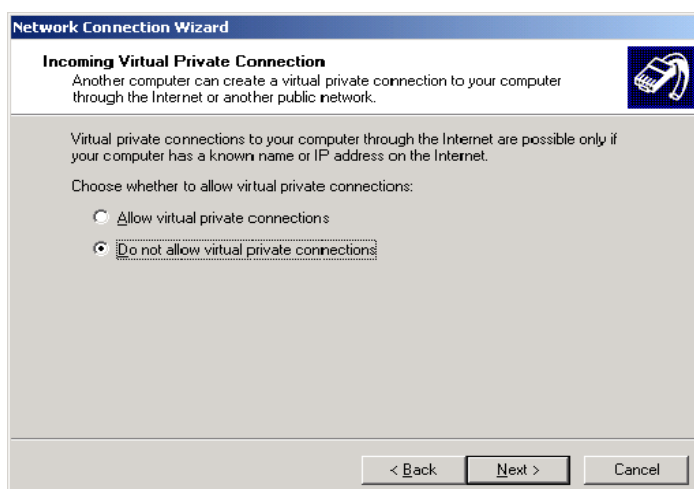
Select 'Accept Incoming Connections' and Click 'Next'



Selecting the proper modem on modem list, Click 'Next'  
(Following picture is sample for selecting "3Com" Modem.)

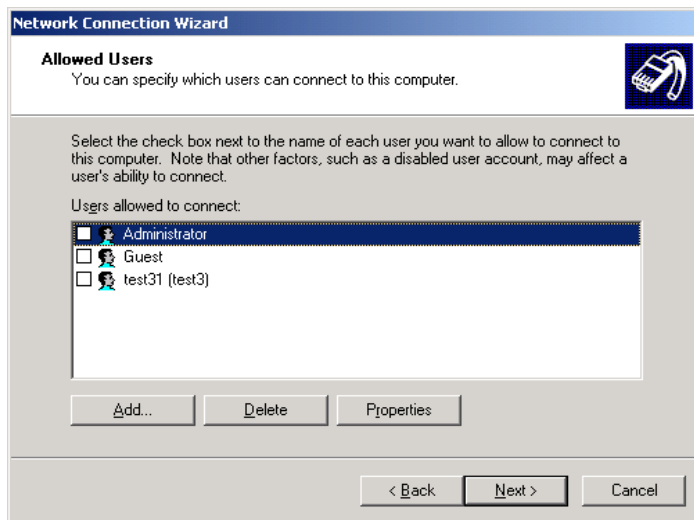


Select 'Do not allow virtual private connections' and Click 'Next'.

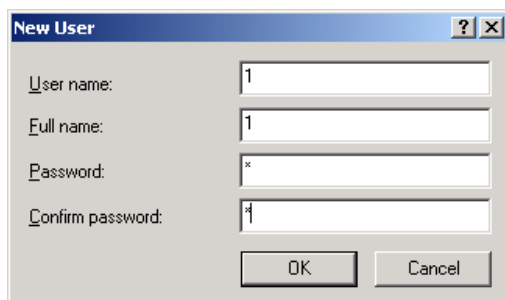


Then, the Screen with ' Allowed Users' comes out.

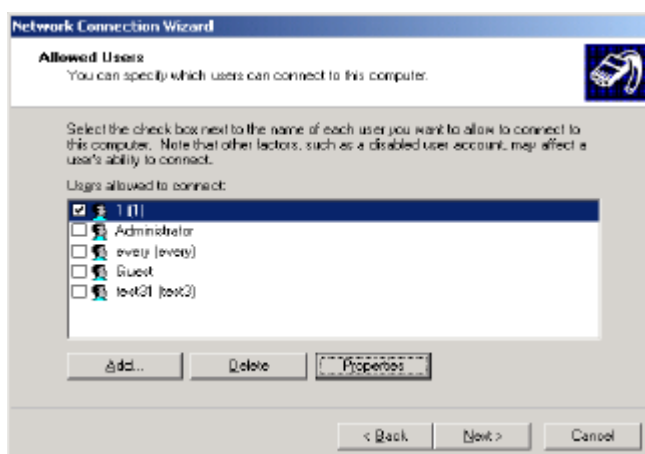
Here, you can add the user from Net viewer allowed to access DVR main. For this process, Click ' Add...'



And now, Fill in the names of added were and password. Press ' OK ' .

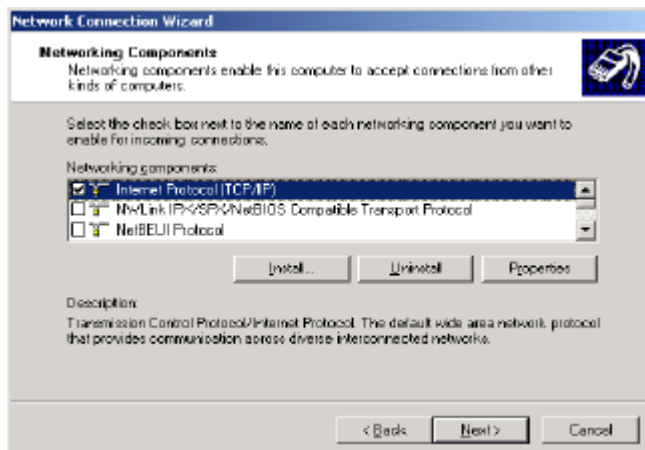


When you finish to input user "1" to be accessed, then those allowed users are shown with ' user 1' currently input for example.



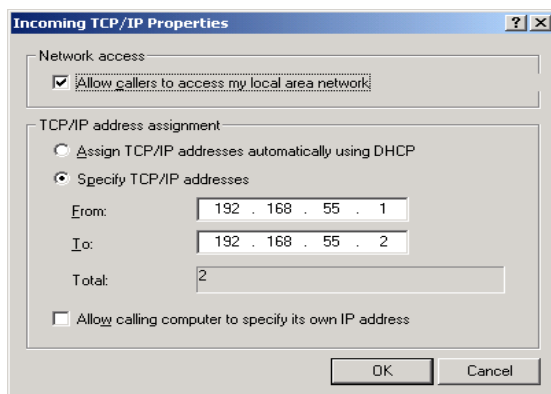
And now, Click ' Next ' .

Checking “Internet Protocol TCP/IP” and Press ‘ Properties’.



Checking “Allow callers to access my local area network” and In TCP/IP address assignment, check “Specify TCP/IP address”

And now, fill the IP No of DVR main in blank of “From” while filling the IP No of Net Viewer in “To”.



Note: Because of Windows, the IP address must be 192.168.55.1, Otherwise it can't be connection.

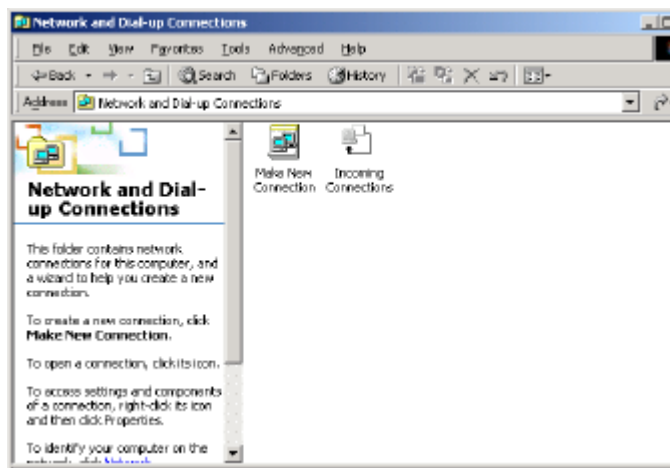
Designating TCP/IP add, Click ‘ OK’ and ‘ Next’ on following screen.

Then you can see following screen “Completing the Network Connection Wizard”.

Here, you can specify the connection name are you want and Click ‘ Finish’.



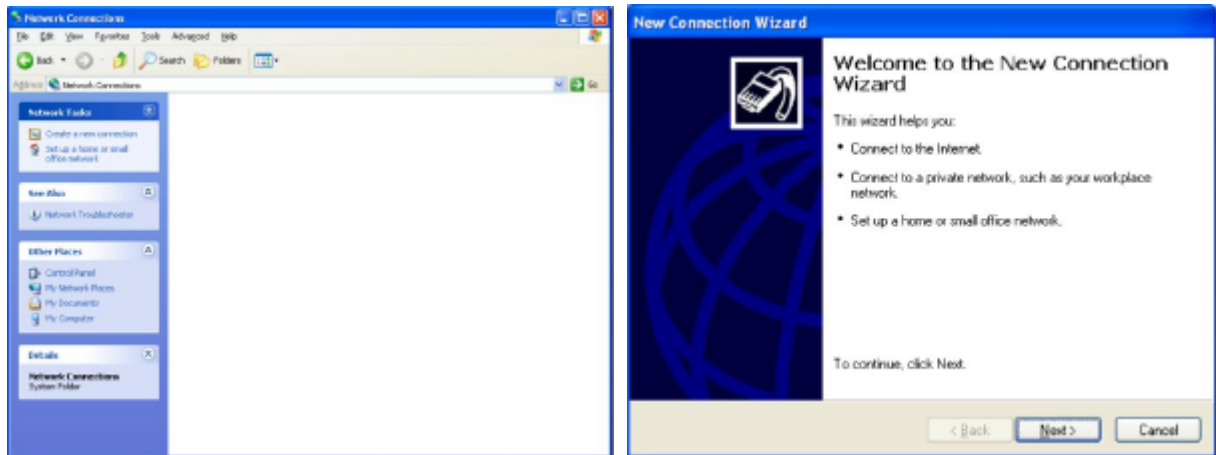
Now, you can see that Icon you have configured up to now, on following screen.



These procedures are described for installing dialup network server, only. So, the procedures for accessing network viewer shall be referred to the related previous article.

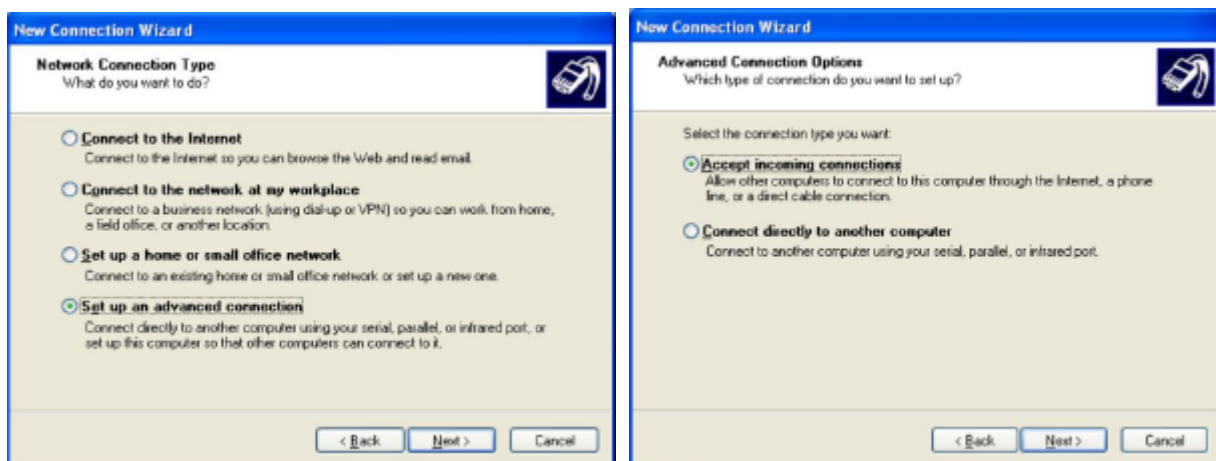
### 8-3. For Windows XP

Click Start > Setup > Control panel > Network Connection and then you can see follow screen.



Select "Create a new connection"

Click 'Next'.



Select "Set up an advanced connection"

Check "Accept incoming connection" and Click "Next"

Then, the other step as the same with Windows2000 at page 44 to 47.

## 9. Setup Auto Backup

If you want to setup the Auto Backup, please refer the page 18 and 20,21.

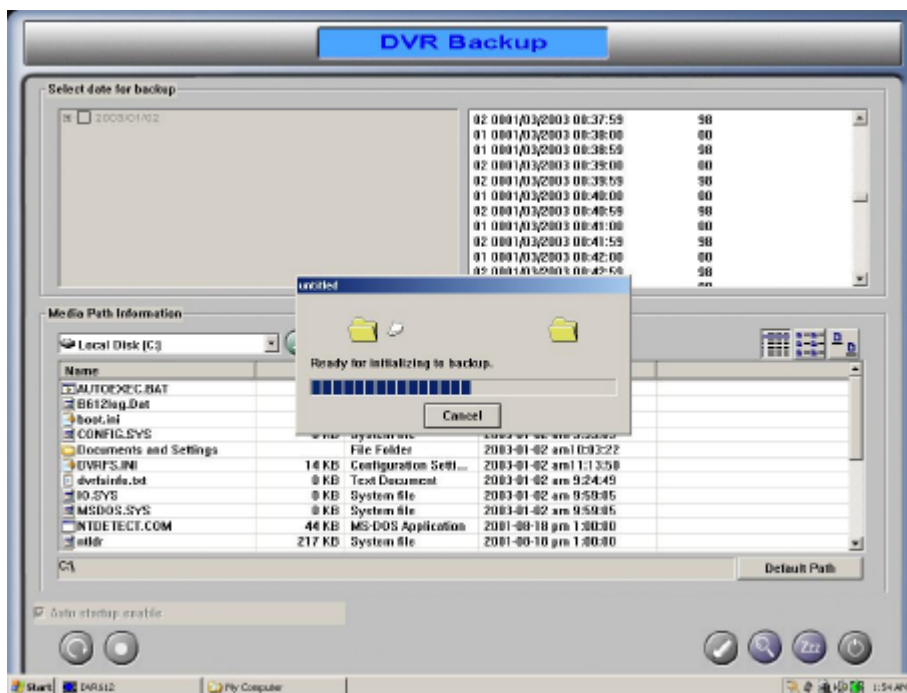
You must check the Backup Schedule (Page 18) is setup done, and Backup program (Page 20,21) is running background before Main program.

## ## Auto Backup just running once per you have setup day.

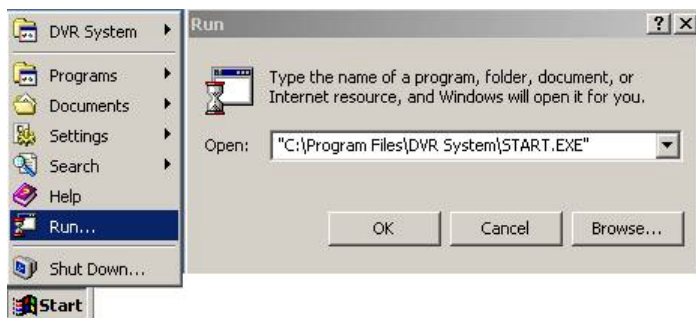
When times up, the screen will like this.



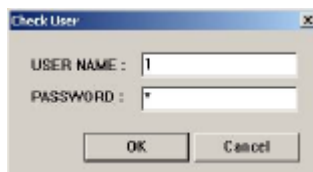
If you click the Backup icon at task bar, you can see as blow. Make sure that save path is enough to backup data.



## 10. DVR Management

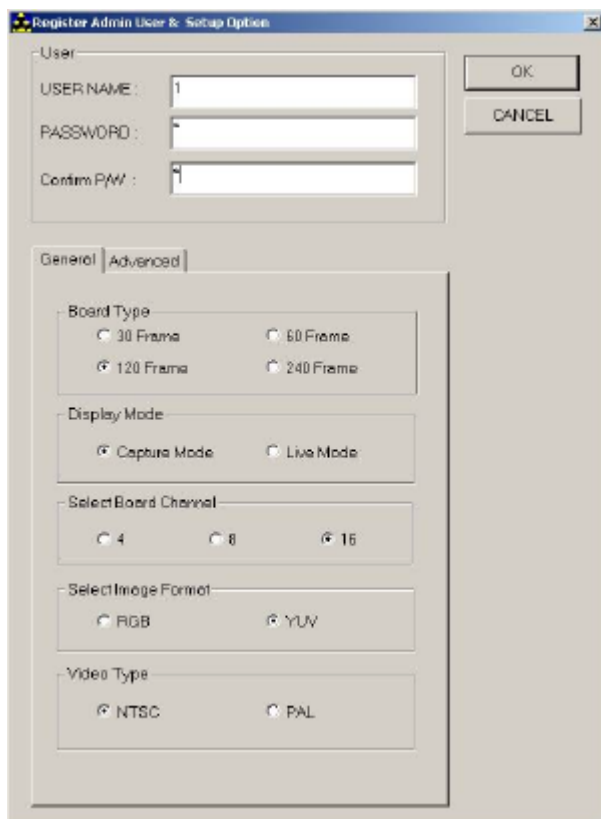


Run "START.EXE" , Then check user dialog box will appear



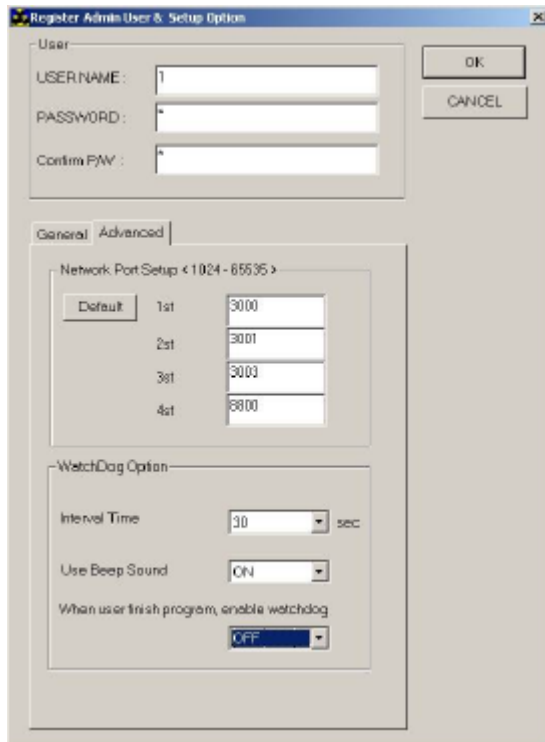
- **USER NAME** : Type Name of Top manager .
- **PASSWORD** : Type Password of Top manager.

### 10-1. Basic settings



- **User**  
Key-in the new administrator name and password.
- **Board Type** :  
Type the frame rate of board you installed.
- **Display Mode** :  
When Live video board are installed, Select "Live Mode", or select "Capture Mode".
- **Select Board Channel** :  
Type the channel no. of board you installed.
- **Select Image Format** :  
Select the image format type ,which was set to YUV as default. If you got **pink** image, please select **RGB**.
- **Video Type** :  
Select the camera type which is available at your locations.

## 11-2. Advanced settings



### - Network Port Setup

- 1 ST ~ 4 ST : Type the port no. for Network.

1 st : for Image

2 nd: for PTZ and command

3 rd: for Setting

4 th: for Event notify

- Default : Click Default, Then it sets as default.

### - WatchDog Option

- Interval Time: it sets the time of beep sound.
- Use Beep Sound : it allows to go off beep sound by selecting "on".
- When user finish program: it allows to go off beep sound when program finish to run by selecting "on".



## 11. User Define PTZ Protocol

For define PTZ protocol, you have to refer PTZ's data sheet, or contact with distributor.

Two file need to check,

One for option file, file location at <windows>\AngelCam.dat

Find [PT\_INFO] section, and change the PT\_CNT option and new PTZ name.

Other is in <Program Files\DVR System\PT> and make new file as the same with the other.

### 1. Section List

Section	Description
GENERAL	Settings of Parameter under Communication Backgrounds and Functional Definition of Pan / Tilt
DATA	Data setting of constant data and reserve data
DATAEX	Camera No., Preset No. and define Speed step
CAMERAEX	Define the extended camera no.
CHECKSUM	Formally define Checksum
SPEED	Define setting of Pan/Tilt, Zoom / Focus, Speed
COMMAND	Define functional Protocol format
COMMAP	Define Mapping Code of Command section Data

### 2. Section Detail

#### (1) "GENERAL" section

Key	Description
NAME	Setting of Pan / Tilt Name
SPEED	Setting of Baud rate Available variable) 2400, 4800, 9600, 14400, ...
PARITY	Set of Parity bit Available variable) N (none), O (odd), E (even)
DATABIT	Set of Data bit Available variable) 4, 5, 6, 7, 8
STOPBIT	Set of Stop bit Available variable) 1, 1.5, 2
PRESET	Set of use / not-use of Preset function Available variable) 0 (Not use), 1 (Use)
AUTOSCAN	Set of use / not-use of Auto scan function Available variable) 0 (Not use), 1 (Use)

TOUR	Set of use / not-use of Tour function Available variable) 0 (Not use), 1 (Use)
CAMERAMENU	Set of use / not-use of Camera Menu feature Available variable) 0 (Not use), 1 (Use)

Example)

```
[GENERAL]
NAME = LilinPT
SPEED = 9600 //Use "baud rate 9600 bps"
PARITY = N //No parity bit
DATABIT = 8
STOPBIT = 1
PRESET = 1 // Use the preset function
AUTOSCAN = 1 // Use auto scan function
TOUR = 1 // Use tour function
CAMERAMENU = 0 // Do not use Camera menu feature
```

## (2) DATA section

Key	Description
LEN	Total No. of Data (or Last No.)
DATA[n]	<p>Settings of data</p> <ul style="list-style-type: none"> <li>- format [No. of byte], [one byte to be shown as 2 digits in hexadecimal ]</li> <li>- example In case of express "abc", DATA1 = 3, 616263</li> </ul> <p>* But, the value start from No. 1</p>

Example)

```
[DATA]
LEN = 2
DATA1 = 1, 30 //'0'
DATA2 = 4, 61626364 //'abcd'
```

## (3) DATAEX section

Key	Description
CAMERA	Define Camera No. - format [No. of byte], [ one byte to be shown as 2 digits in hexadecimal ], ... * Up to 16 as maximum, Settings are available.
PRESET	Define the Preset No. - format [No. of byte],[ one byte to be shown as 2 digits in hexadecimal], ... * Up to 10 as maximum, Settings are available
PTSPEED	Setting of basics and No. of Pan/Tilt Speed Step - format [Total No. of step], [No. of basic step] * No. of step area integer and ranged from 1.And No. of basic step can never be more than No. of total step.
FZSPEED	Setting of No. of Zoom/Focus Speed step and basic step * same as setting of PTSPEED
APSPEED	Setting of No. of Auto Pan Speed step and Basic step. * same as setting of PTSPEED
PSSPEED	Setting of No. of Preset Speed step and basic step. * same as setting of PTSPEED

## Example)

[DATAEX]

CAMERA = 1, 31, 32, 33, 34, 35, 36, 37, 38, 39, 3A, 3B, 3C, 3D, 3E, 3F, 40   //Camera No. of #1 is 0x31 and that of #16 is 0x40

PRESET = 1, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A

PTSPEED = 7, 4 // Use step 4 among total 7 steps of speed level

FZSPEED = 7, 4

APSPEED = 7, 3

PSSPEED = 20, 10

## (4) CAMERAEX section

Key	Description
LEN	Total No. of data (or last No.)
CAMERA[n]	Define Camera No. ▪ format <i>[No. of byte],[ one byte to be shown as 2 digits in hexadecimal ], ...</i> * Spread out up to 16 as maximum

Example)

[CAMERAEX]
LEN = 2
CAMERA1 = 1, 41, 42, 43, 44, 45, 46, 47, 48, 49, 4A, 4B, 4C, 4D, 4E, 4F, 50
CAMERA2 = 1, 81, 82, 83, 84, 85, 86, 87, 88, 89, 8A, 8B, 8C, 8D, 8E, 8F, 90

## (5) CHECKSUM section

Key	Description
LEN	Total No. of step (or Last No.)
CHECK[n]	Formal Definition of Checksum ▪ format <i>[data index], [No. of byte], [operation], [(1)additional value], [(2)operation], ... (repeat (1) ~ (2))</i> * data index are calculated from 0 * additional value - 0 : when Single calculation is applied. * operation value - -1 : no - 0 : = - 1 : + - 2 : - - 3 : * - 4 : / - 5 : ^ (exclusive or) - 6 : ~ (not) - 7 :   (bit or) - 8 : & (bit and)

--	--

Example)

[CHECKSUM]

LEN=2

CHECK1 = 0, 7, 1 // add 7 bytes from 1<sup>st</sup> data

CHECK2 = 0, 8, 1, 0, 5 // add 8 bytes from 1<sup>st</sup> data and make that value "exclusive or"

## (6) SPEED section

Key	Description
LEN	Total No. of data (or last No.)
SPEED[n]	<p>Data Setting per speed step</p> <ul style="list-style-type: none"> <li>format [No. of byte], [one byte to be shown as 2 digits in hexadecimal], ...</li> </ul> <p>* Up to 16 step as maximum, Settings are available.</p>

Example)

[SPEED]

LEN = 3

SPEED1 = 1, 89, 92, 9B, A4, AD, B6, BF // the value of 1<sup>st</sup> step is 0x89 and the value of 7<sup>th</sup> is 0xBF.

SPEED2 = 1, 89, 92, 9B, A4, AD, B6, BF

SPEED3 = 1, 0C, 18, 24, 30, 3C, 48, 54, 60, 6C, 78, 84, 90, 9C, A8, B4, C0, CC, D8, E4, F0

## (6) COMMAND section

Key	Description
LEN	Total No. of data (or last No.)
CMD[n]	<p>Definition of command data</p> <ul style="list-style-type: none"> <li>format [No. of total byte ], [(1)data index], [(2)No. of byte], [(3)data value], ... (Repeat (1) ~ (3) )</li> </ul> <p>* data index start from 0.</p> <p>* data value</p> <ul style="list-style-type: none"> <li>\$d[n] : use the value defined at DATA section</li> <li>\$c : use camera No. defined at DATAEX section</li> <li>\$c[n] : use camera No. defined at CAMERAEX section</li> </ul>

	<ul style="list-style-type: none"> <li>- \$p : use Preset No. defined at DATAEX section</li> <li>- \$s[n] : use the defined formula at CHECKSUM section</li> <li>- \$s[n]1 : use low bit calculated by relevant formula</li> <li>- \$s[n]2 : use high bit calculated by relevant formula</li> <li>- \$s[n]3: character value of low bit of value calculated by relevant formula</li> <li>- \$s[n]4 : character value of low bit of value calculated by relevant formula</li> <li>- \$e[n]1 : p/t speed used the defined value at SPEED section</li> <li>- \$e[n]2 : f/z speed used the defined value at SPEED section</li> <li>- \$e[n]3 : auto scan speed used the defined value at SPEED section</li> <li>- \$e[n]4 : preset speed used the defined value at SPEED section</li> </ul> <p>But, n means the index value of key to be used for relevant section</p> <p>▪ example</p> <p>In case of ,</p> <p style="text-align: center;">CMD1 = 3, 0, 1, \$c, 1, 1, 04, 2, 1, \$e11</p> <p>,No. of total data byte is 3 and 1 byte from 1<sup>st</sup> index means camera no. 1 byte from 2<sup>nd</sup> byte stands for 0x04 in hexadecimal.</p> <p>One byte from 3<sup>rd</sup> byte represents the value of P/T speed, which brings value of SPEED1 key.</p>
CMDS[n]	<p>Index definition of command data to be used for stopping the relevant command.</p> <p>* The Index value means Index defined at COMMAND section.</p>
CMDEX[n]	<p>Definition of Repeat command</p> <p>▪ format</p> <p><i>[timer], [command index], [repeat count]</i></p>

	<p>* timer</p> <ul style="list-style-type: none"> <li>- setting as values in millisecond</li> <li>- -1 : no use</li> </ul> <p>* repeat count</p> <ul style="list-style-type: none"> <li>- -1 : infinite</li> <li>- 0 : no repeat</li> </ul>
--	---

Example)

[COMMAND]

LEN = 21

CMD1 = 3, 0, 1, \$c, 1, 1, 04, 2, 1, \$e11

CMD51 = 14 // Stop command of #1 command is used for the command data of #14.

CMDEX1 = 0, 1, -1 // Repeat command after #1 command, makes it continue to run #1 command endlessly in 0 millisecond (without interval) until the next command or stop command comes.

...

CMD8 = 8, 0, 2, AA5F, 2, 1, \$e22, 3, 3, \$d1, 6, 1, \$c, 7, 1, \$s1

// Length of total data is 8 bytes and 2 bytes from 1<sup>st</sup> byte are shown as 0xAA, 0x5F.

1 byte from 2<sup>nd</sup> byte means F/Z speed value which brings SPEED2 of SPEED section and 3 bytes from 3<sup>rd</sup> byte bring value of DATA1 key of DATA section. 1 byte from 6<sup>th</sup> byte means camera no. and 1 byte from 7<sup>th</sup> byte is value of checksum used formula CHECK1 of CHECKSUM section.

...

#### (8) COMMAP section

Key	Description
LEN	Total No. of data (or last No.)
CMD1	Move Tilt up Setting of index value of command section, which are mapping with relevant command.
CMD2	Move Pan right, Tilt up
CMD3	Move Pan right
CMD4	Move Pan right, Tilt down
CMD5	Move Tilt down
CMD6	Move Pan left, Tilt down
CMD7	Move Pan left
CMD8	Move Pan left, Tilt up

CMD9	Activate Auto pan (scan)
CMD10	Activate Focus in
CMD11	Activate Focus out
CMD12	Activate Zoom in
CMD13	Activate Zoom out
CMD14	Stop 1
CMD15	Stop 2
CMD16	Open command
CMD17	Close command
CMD18	Start Preset setting
CMD19	End Preset setting (or Saving)
CMD20	Activate Preset
CMD21	Remove all setting value of Preset
CMD22	Tour Set (tour set is made by all of set value for Preset)
CMD23	Activate Tour
CMD24	Set the starting of Auto Scan
CMD25	Set the ending of Auto Scan
CMD26	(auxiliary) Power 1
CMD27	(auxiliary) Power 2
CMD28	(auxiliary) Power 3
CMD29	(OSD) Camera menu display

Example)

```
[COMMAP]
LEN = 23
CMD1 = 1
CMD2 = 2
CMD3 = 3
...
CMD23 = 21
```

### Attention:

Please refer the data sheet to make new protocol files; any of improper operation will make PTZ devices damage and DVR program will crash.



## 12. Connection Port

### 12-1. Port and Function table

For remote site connection, program using some port to transmit data.

Port number	Type	Function	
3000	TCP	Image	Changeable(1 st)
3001	TCP	Command/PTZ	Changeable(2 nd)
3003	TCP	Setting	Changeable(3 rd)
3005	UDP	Sound	Fixed
4000	UDP	IP Server notify	Fixed
8800	UDP	Event notify	Changeable(4 th)

If using same level networking, you don't need to care about it.

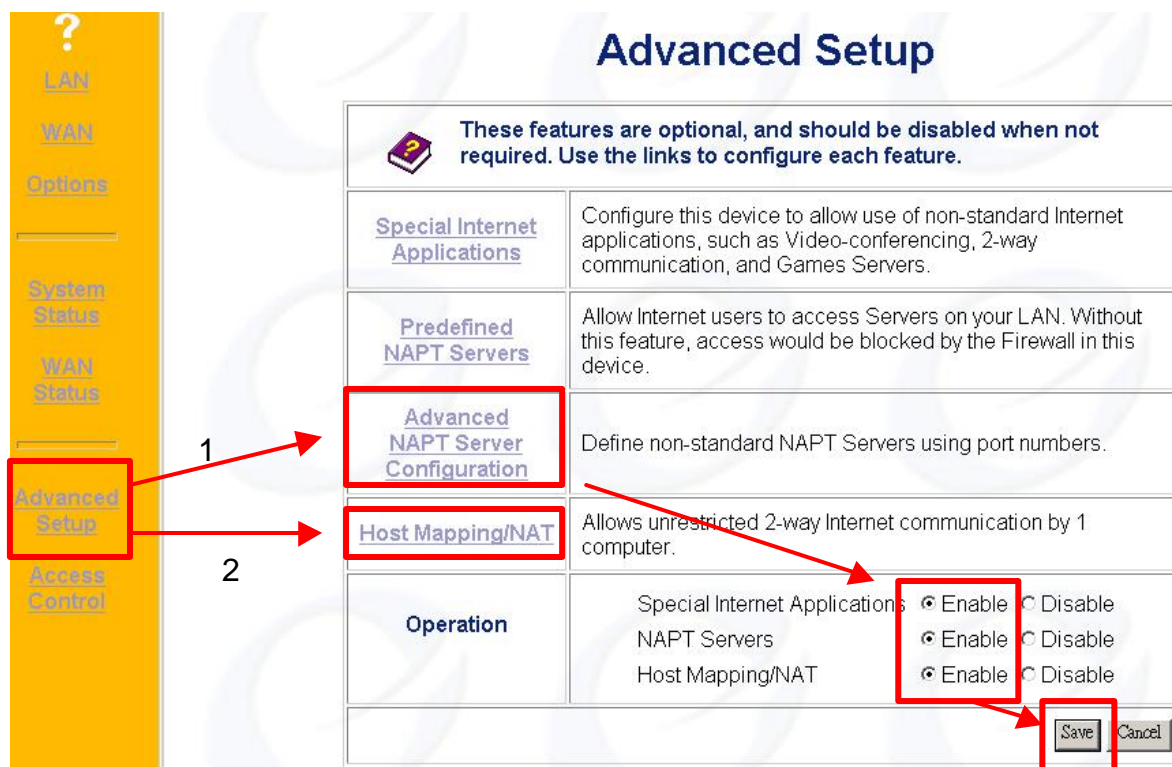
But for the other, like Real-IP and Virtual-IP connection, or PC with firewall, you have to know something about it.

### 12-2 Remote with Virtual-IP

In case of Remote site with Virtual-IP, you have to find out the IP-mapping at router.

For example, Router device: Speed Stream 2601

Supported function: NAPT (Network Address Port Translation), Host Mapping



Please refer the router manual for more detail about setting steps.

In this case, there is two ways to do it.

1. Using NAPT, setup the port which you want to use at remote PC.

## Advanced NAPT Server Configuration

Define Special-purpose NAPT Servers on your LAN. These function the same way as the other NAPT Servers.

<b>Select Server</b>	Name: <input type="text" value="Server1"/> <input type="button" value="Get Data"/> Click "Get Data" to see correct data for selected server.
<b>Details</b>	Name: <input type="text" value="Server1"/> <input checked="" type="checkbox"/> Enable IP Address: <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="1"/> <input type="text" value="100"/> <span>← Remote's IP address</span> Protocol: <input type="text" value="UDP"/> <span>← Type and port number</span> Internal Port No.: <input type="text" value="8080"/> (Required) External Port No.: <input type="text" value="8080"/> (Optional) <input type="button" value="Clear Form"/>
<input type="button" value="Add"/> <input type="button" value="Delete"/> <input type="button" value="Update"/> <input type="button" value="List All"/> <input type="button" value="Cancel"/>	

2. Use Host Mapping, for all of the port to remote PC.

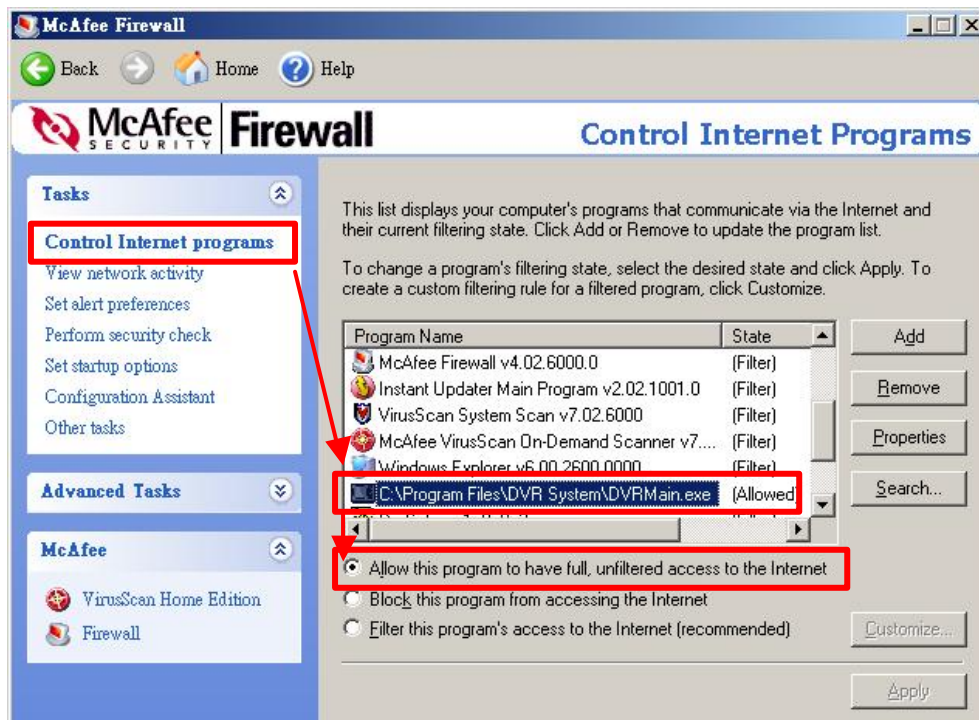
## Host Mapping/NAT

Allows one (1) computer to have unrestricted 2-way communication with Internet servers or users.

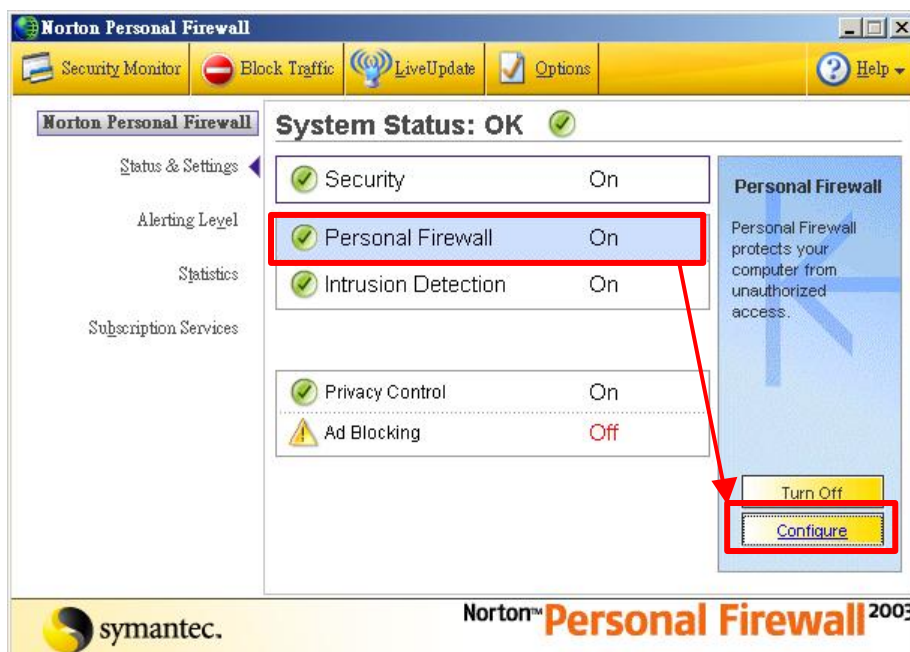
<b>Enable</b>	Because of the security risk involved in using this feature, it should be activated only when necessary. <input checked="" type="checkbox"/> Enable Host Mapping/NAT feature
<b>LAN IP Address</b>	Enter the local IP Address of the Host Mapping/NAT device or PC. LAN IP Address: <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="1"/> <input type="text" value="100"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

### 12-3. Firewall

For McAfee's Firewall case, Click "Control Internet programs", select "DVRMain" and allow it.



For Norton's Personal Firewall case, select "Personal Firewall" and Configure it.



Then, "Program Control" tab, find out the DVRMain.exe and "Permit All".

