

Embedded Digital Video Recorders

LE & LE-HC



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Chapter 1: Introduction

Overview

Thank you for purchasing the LE/LE-HC Series Digital Video Recorder. This product is ideal for all of today's video security needs. From home users to industrial applications, the LE/LE-HC Series DVRs can do it all – simply, completely and reliably. This high performance DVR has a built-in dedicated web server, and record and display capability. Video is compressed using one of several user selectable compression algorithms called codecs (compressor/decompressor). The system will record this data onto a hard drive, overwriting the oldest recordings first, when the disk is full. Video is displayed on a SVGA Monitor. The base system has four cameras, which can be upgraded to a total of sixteen cameras (depending on the model purchased) with no loss of frame rate.

This DVR is unique in that the software is contained (embedded) in a firmware module called a DOM, which allows a fresh “re-install” every time the system is turned on. No need to worry about the traditional problems of viruses, Trojans, software glitches or other Windows™ based issues as the install is completely fresh every time. A small area of the module contains the user configured data. No software is contained on the hard drive, so software cannot be corrupted.

Adding additional cameras to the system is as simple as turning off the DVR, plugging in another four camera connector card, and turning it back on. Configuration is done in GUI mode with a mouse, by the included remote controller in full screen mode or through a remote PC. This remote PC control allows users to switch cameras, control any PTZ cameras installed, and change all the features of the DVR, with the appropriate password authority.

The DVR is accessible through the Internet, or a local Intranet, with some simple configuration modifications to the DVR. Through a registry server the LE/LE-HC Series DVR supports Dynamic IP addresses.

The remote software is all browser based and accessible using any reasonably current version of Windows™ Explorer. Linux, Mac and some PDAs are supported through additional (included) software.

Main Features of the LE/LE-HC Series

Ease of use

Plug and play, non-Windows™ embedded real-time OS
Simple configuration via keyboard/mouse, IR Controller or Internet/LAN
Uses a standard web browser for remote PC access.

Video & audio recording

Up to 16 camera inputs (color or B/W) are supported in multiples of four.
Adding cameras is accomplished by installation of additional cards.
Up to 30 fps is provided on each camera for local monitoring
Record / display / playback/ remote access simultaneously
Built-in Multiplexing with local monitoring
Local playback of recorded video on VGA monitor
Remote playback of recorded video using standard PC browser

Search recorded data by date, time & events
Control multiple brands of PTZ Cameras
High video quality and low data rate
Up to 200:1 video compression
Multiple video compression engines:
 LE: MPEG4, H.263, JPEG, M-JPEG
 LE-HC: MPEG4
Networking is supported and allows remote access
Dynamic IP support for Internet access
Direct Dial-up available with optional external modem

Backup

CD or DVD writer

Alarm function

Motion detection / Event trigger / Schedule / Pre-alarm recording
E-Mail, FTP and Voice Call alarm notification
Optional GPI/O for alarm control

Customization

Supports HTML file upload for home page customization

Chapter 2: Getting Started

General Description

Configuring the LE/LE-HC Series DVR can be accomplished in several ways. The Infrared Remote Control included with the LE/LE-HC Series DVR works in IR Mode when the receiver is connected to a USB port on the back of the LE/LE-HC Series DVR. Alternatively, in GUI Mode (Graphic User Interface) a mouse and keyboard can be used. If configured for LAN or Internet, a web browser can be used to configure the DVR.

We have found the easiest way to configure the system is to use the Infrared Remote Control to configure the IP settings, then once on the net use the remote configuration from an alternate PC.

First time starting the LE/LE-HC Series DVR

Before turning the DVR on, connect the appropriate video inputs, monitor and network adapter to the back of the DVR. The system will automatically detect the video mode (NTSC or PAL) of the cameras connected (default is NTSC if no cameras are connected). Symptoms of incorrect video configuration are B/W video when color is expected or the top or bottom of the video cut off.

The LE/LE-HC Series records automatically on power up. The Default IP address is 192.168.10.10, which is within the range of most Intranets. The Sub-net mask is preset to 255.255.255.0, also within the range of most intranets.

Configuration and operation via the Infrared Remote (IR) Control

Chapter 5: Details the operation of the IR Control.

LE/LE-HC Series Networking

Chapter 3: Details the operation of the Networking Operations.

Chapter 3: LE/LE-HC Series Network Operations

Default Configuration

The LE/LE-HC Series DVR comes preconfigured. A list of the default settings is included in Appendix A of this document.

Network Installation

The LE/LE-HC Series DVR comes preconfigured as a static IP. TCP/IP networks either have the IPs assigned manually, or by a DHCP (Dynamic Host Configuration Protocol) Server. Most Internet routers and Windows 2000 Server™ use DHCP to assign IP addresses. The reason for assigning a static IP within this environment is that when a leased IP from a DHCP server runs out (which can happen every day), the LE/LE-HC Series DVR may not re-acquire the old IP address. This will break functionality within the Intranet or LAN environment and will break any port forwarding assigned within the router that allows external (internet) users to connect to the LE/LE-HC Series DVR.

Most networks using a router or a Windows 2000 Server © should be able to see the LE/LE-HC Series DVR once it is connected.

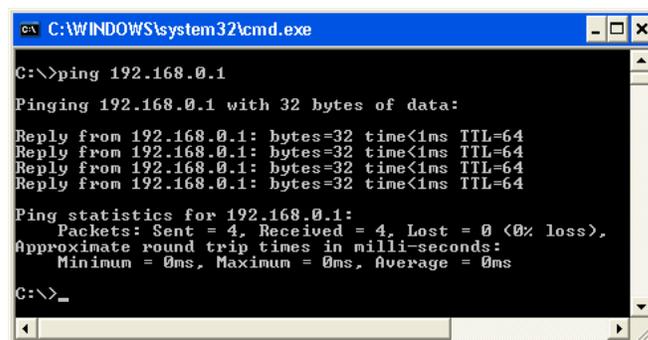
In the case the IP address pre-assigned to the LE/LE-HC Series DVR (192.168.10.10) may already be assigned to another networking device; finding another machine on the network and attempting to ping that IP address will tell if there is a unit already connecting on that specific IP (if it says no IP found, it's a good indication that there is no unit connected at that IP). Use the ping method in figure 3.1 but instead of *times<1ms* or similar (up to 200ms), look for *Request Timed Out*. This indicates that there is no computer currently on the network at that location. Failure to check this could cause the LE/LE-HC Series DVR to push another machine off the network or cause other problems.

In cases where this machine is connected directly to a DSL modem or Cable Modem, these steps may be ignored; however, additional configuration is usually required.

Testing the Network Connection

From any computer on the network, click on the start button and click on run (Windows 98, ME, 2000, XP). Type in command and click OK. This will bring up a DOS prompt. Type in PING 192.168.10.10. A good connection will look like Figure 3.1

If the ping fails, check all the wires to make sure there are connected. Look at the back of the DVR and on the device to which the other end of the cable is connected (a switch, router or hub most likely). Make sure that the connection lights are on, on both ends. Unplugging and reconnecting cables can fix many problems. Rebooting the

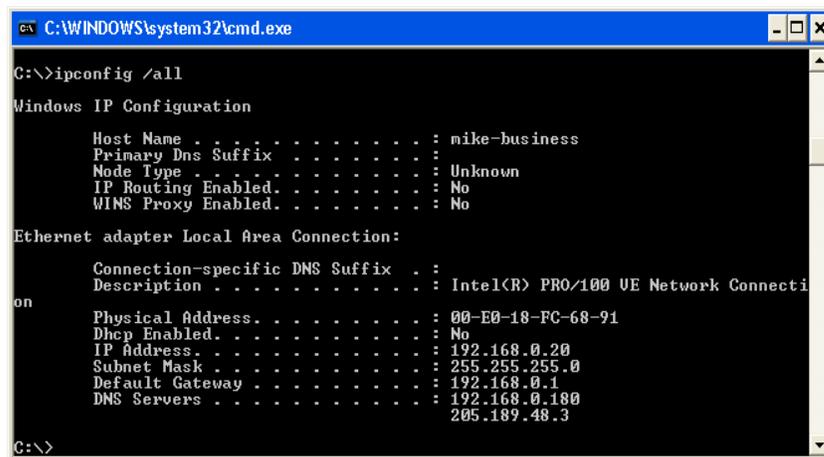


```
C:\WINDOWS\system32\cmd.exe
C:\>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>_
```

Figure 3.1

DVR is required if the light is off, and pushing the connector turns the light on. These lights will usually be located right next to the connector plug on the DVR, and there are usually a bank of lights on the router that show valid connections. If in doubt, unplug the cable and see if one of the lights goes out.

Once a physical connection has been established, the next thing to check is the network settings. The first step is to bring up a DOS prompt. From any computer on the network, click on the start button and click on run. (Windows™ 2000, XP). Type in “command” and click OK. This will bring up a DOS prompt. Type in “*ipconfig /all*”, and press enter. If all goes well, Figure 3.2. The information needed is the subnet mask, default gateway, and DNS Servers. Note the IP



```
C:\WINDOWS\system32\cmd.exe
C:\>ipconfig /all

Windows IP Configuration

    Host Name . . . . . : mike-business
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Unknown
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . :
    Description . . . . . : Intel(R) PRO/100 UE Network Connecti
on
    Physical Address. . . . . : 00-E0-18-FC-68-91
    Dhcp Enabled. . . . . : No
    IP Address. . . . . : 192.168.0.20
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.0.1
    DNS Servers . . . . . : 192.168.0.180
                           205.189.48.3

C:\>
```

Figure 3.2

addresses. The number after the last “dot”, e.g. in 192.168.0.20, the number 20 is the one to change for the DVR. Picking a number above 200 (max is 254) should be OK, unless the unit is being installed in a large networking environment. In that case, they will have a network administrator who knows the exact settings required.

The LE/LE-HC Series can be assigned a dynamic IP by a DHCP Server (usually a router or Windows 2000 Server) by assigning the DVR IP address 255.255.255.253. This does give the added complication of finding out what IP was assigned, and while there is software that can locate the LE/LE-HC Series DVR on the network, it is easier to assign a static IP.

Chapter 4: Using and Configuring the LE/LE-HC Series DVR Remotely

First Connection to LE/LE-HC Series DVR

Once the LE/LE-HC Series DVR is installed on the network, use another Windows® based machine on the network and try to connect to the LE/LE-HC Series DVR -accomplished by opening up a browser and entering in the address bar <http://192.168.10.10> (or the configured IP address for the LE/LE-HC Series DVR)



Figure 4.1

A window should pop up looking like figure 4.1. Note that the IP may differ depending on what was configured. The default Administrator name is “admin” and the password is “sentry”. This will allow remote access to the LE/LE-HC Series DVR.

To view live video from a LE/LE-HC Series DVR remotely, a Live Video Active X Component is required. If the Active X Component has never been installed, or a previous version is on the remote machine, a window will pop up which requests downloading LVSETUP.EXE (see figure 4.2).



Figure 4.2

Configuration of LE/LE-HC Series DVR

When connecting to The LE/LE-HC Series DVR from a remote PC, the web browser display will be Figure 4.3.

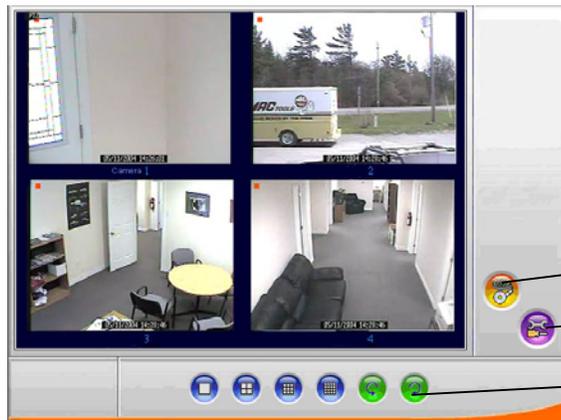


Figure 4.3

Playback recorded files

System Setup

The Surveillance Screen Panel enables the definition of the number of camera images displayed on screen.

Similar local configuration options are available with the GUI and IR interface, although the easiest method for configuration is the remote configuration.

Advance Setting

After the initial login, typing in the URL in Section 3.4 will bring up the page in

Figure 4.4. Clicking on the  (System Setup) button will display the screen which is partially shown in Figure 4.5 (Clicking on System Setup will bring up a login prompt if the original Password and User ID do not have sufficient privilege).

Making changes to the settings will often cause the LE/LE-HC Series DVR to reboot when the done button is clicked. This is unavoidable, and video will not be recorded while the DVR is rebooting. This process can take 3 to 4 minutes.



Figure 4.4

Each of the items in the list in Figure 4.4 are covered in the following subsections of Section 4.3

a) System Information

This page gives information about the LE/LE-HC Series DVR. Most of this information isn't required on a day to day basis, but may be required by a network administrator or Technician should the occasion arise.

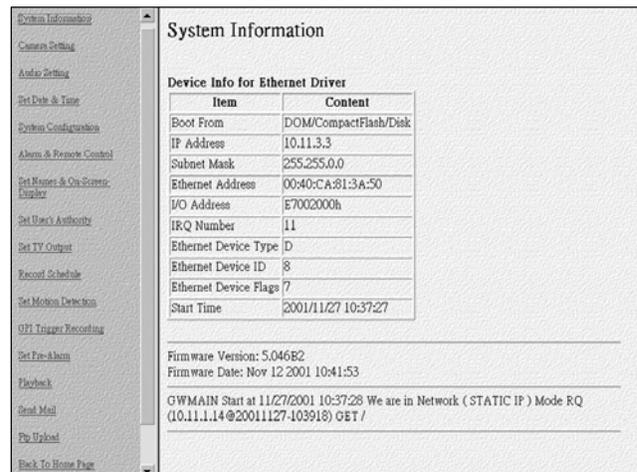


Figure 4.5

b) Camera Settings

1. Video Source: Select camera to display

2. Brightness, Contrast, Saturation, Hue and Quality: Change Brightness, Contrast, Saturation, Hue and Quality here. These parameters are applied to all cameras. To adjust brightness of each individual camera, please use "Gain Control" as described in Item 5.

3. Compression Boost: Selection can be "None", "Low", "Medium" and "High" to adjust video compression rate. The higher the "Compression Boost" level, the smaller the compressed frames become providing faster remote transmissions and smaller recorded files but poorer video quality.

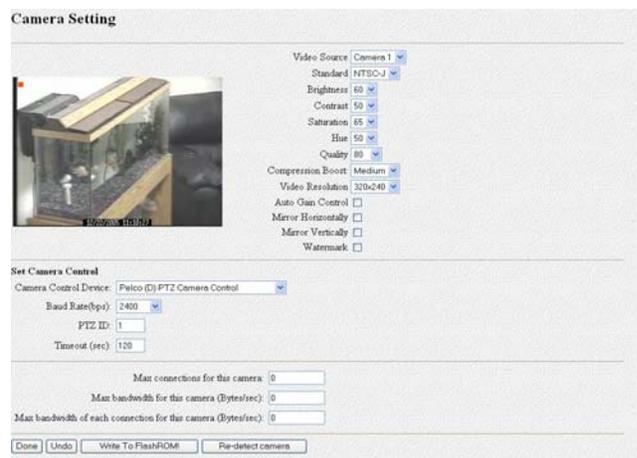


Figure 4.6

4. Video Resolution: Selection can be either 320x240 or 640x480. A higher resolution will provide better video quality but will use more hard drive space and bandwidth.
5. Auto Gain Control: When this box is checked, the LE/LE-HC Series will keep the GAIN value effective automatically no matter day or night, light or dark.
6. Mirror Horizontally: Self Explanatory
7. Mirror Vertically: Self Explanatory
8. Watermark: Inserts watermark into picture.

Set Camera Control (PTZ camera configuration settings)

1. Camera Control Device: Use the drop-down menu to select the correct PTZ protocol.
2. Baud Rate(bps): Select the correct PTZ camera baud rate.
3. PTZ ID: Enter the PTZ ID (set directly on the camera)
4. Timeout (sec): Select desired timeout; default is 120 seconds

Other Settings

1. Max connections for this camera: Limit the maximum number of concurrent (remote) connections to this camera.
2. Max bandwidth for this camera (Bytes/sec): Limit the maximum bandwidth in Bytes/second allocated to this camera.
3. Max bandwidth of each connection for this camera (Bytes/sec): Limit the maximum bandwidth allocated to each connection of this camera.

Click the "Done" button to save any settings changes.

Note: Please click "Write To FlashROM!" to save data

c) Audio Setting

Users accessing this for the first time will be required to download LASETUP.EXE if they have not listened to audio previously.

1. Audio Source. Select the source to modify.

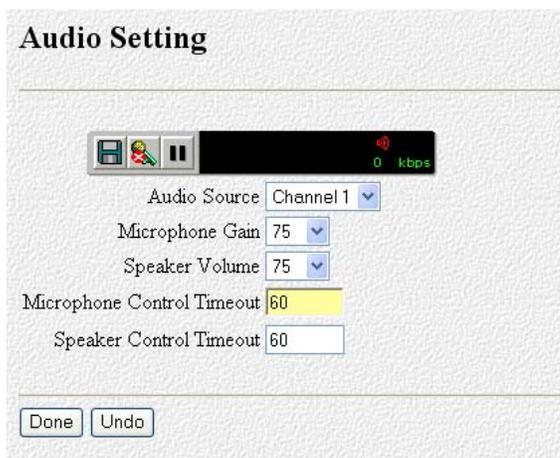


Figure 4.7

2. Microphone Gain: Similar to video gain, it amplifies the signal before audio is processed
3. Audio Selection; Choose which camera to associate audio with. * LE-HC has one channel of audio per video.
3. Speaker Volume: Controls the volume of the speaker
4. Microphone Control Timeout and Speaker Control Timeout determine the length of time that one remote user can have control of the microphone and speaker.

Currently the LE Series supports a single channel of audio recording.

d) Set Date & Time

Follow the formats when setting the time and date.

e) Set NTP Server

NTP stands for Network Time Protocol. It is a protocol to request the current time from a time server. Connection to the internet is required. Check the enable box to turn the Network Time Protocol service on or off. Set the period to however many hours, and once per that period, the time will be updated. Once every 24 hours should be sufficient, if required at all. Keep in mind that this is a service offered by educational and government institutions and abuse will result in our losing these public time servers. This feature is not generally required, but a neat feature none the less.

f) System Configuration

This section is broken down into several parts, as this page is longer than one screen capture will permit. Each of the configuration options are outlined below:

ISP mode is used when the DVR is connected directly to a telephone modem. This mode is generally too slow to see any sort of reasonable data throughput and should be avoided if at all possible. Configuring ISP mode is completed in the “**ISP Setting**” dialog box at the bottom of Figure 4.10. Phone number, user ID, and password as well as maximum baud rate should all be entered. If the ISP assigns an IP address, then configure that in the TCP/IP settings and check the “Use assigned TCP/IP Settings” check box.

Network Mode is the default setting and in most circumstances, the LE/LE-HC Series DVR will be connected to a network of some sorts. It could be

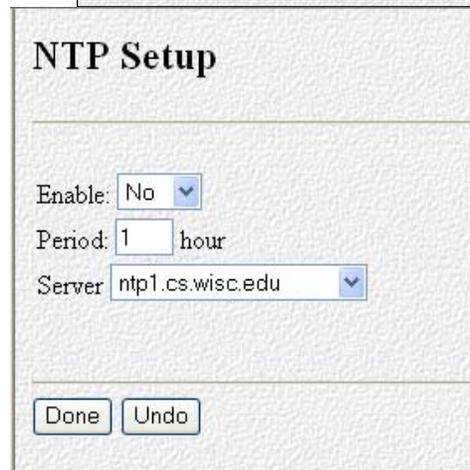
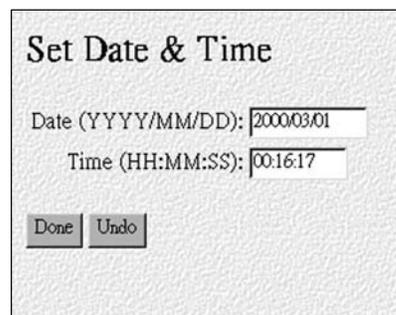


Figure 4.9

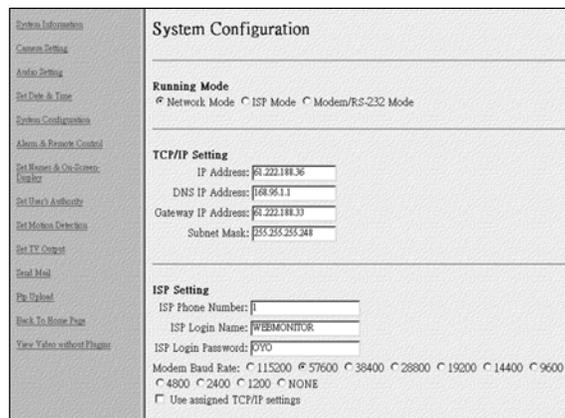


Figure 4.10

connected to a cable connection or DSL line. DSL that uses PPPoE would require a router as PPPoE requires a login procedure, which is not supported by the LE/LE-HC Series DVR.

Network Mode settings are set in “**TCP/IP Settings**”. These need to be configured to have the LE/LE-HC Series DVR communicate over a network or the Internet.

This area really should not need to be changed, once set, as the connection to the network is functional.

Account Setting

Under account setting there are two levels of users. Privileges for the user are configured in the “Set User’s Authority” section covered later in this chapter.

The screenshot displays the 'Account Setting' configuration page. It is divided into several sections:

- Account Setting:** Contains four input fields: 'User's Name' (empty), 'User's Password' (empty), 'Administrator's Name' (pre-filled with 'root@'), and 'Administrator's Password' (pre-filled with 'admin').
- Set Video Compression Algorithm:** Features a dropdown menu for 'Video Encoding Algorithm' currently set to 'H.263 (Low Bandwidth)'.
- Set Camera Control:** Includes a dropdown for 'Camera Control Device' set to 'Pelco (D) PTZ Camera Control', a row of checkboxes for 'Camera' (1-8), and a 'Timeout Value (in sec)' field set to '120'.
- Set IP Registry Host IP Address & Path:** Contains four input fields: 'Registry Host Address' (pre-filled with 'registry.nic.com.tw'), 'Register HTTP Port As' (empty), 'Registry Host Port' (pre-filled with '80'), and 'Registry Host Path' (pre-filled with '/cgi').

At the bottom, there is a radio button selection for 'Visibility in Registry Server' with 'Only can be queried' selected and 'Listed on Registry Server' unselected. A small blue note at the very bottom reads: '### Important: If you set a domain name other than an IP address in Registry Host Address field, remember to set DNS IP address in this page.'

Figure 4.11

Set Video Compression Algorithm & Resolution

Select one of four Compression algorithms. These are MPEG4, H.263, JPEG or Motion-JPEG. Please refer to the table below for relationship between Compression format, Video quality & Data rate:

Compression Format	Video Quality	Data Rate
JPEG	Very Good	High
M-JPEG	Good	High (Less than JPEG)
H.263	Average	Low
MPEG4	Good	Low

***Please Note:** The only compression format available on the LE-HC is MPEG4.

The best compression format depends on network connections; both locally and remote. Remember that a 3 MB DSL connection means 3 MB download, not 3 MB upload. The 3 MB DSL can be as low as 284K upload or even 128K. This will have an affect on the remote video frame rate. Observing video produced remotely under different compression algorithms is the best way to evaluate requirements. The LE Series DVR is set to H.263 compression as a default. This provides the fastest video transmission speeds, the smallest recorded files and satisfactory video quality.

When setting video resolution, remember that 640X480 resolution needs 4 times the physical bandwidth than that required to produce the same frame at 320X240. Once again, look at the video and see if the speed loss of frames is worth the increase in resolution quality.

“Set IP Registry Host IP Address & Path” is used where static IPs are unavailable or impractical. Basically, the LE/LE-HC Series DVR sends its current IP to a computer designated as a registry (usually a commercial service). Remote users can then access that registry and find out what the current IP is. This is an imprecise service at best, and is prone to failure, due to the nature of the internet. However, in cases where a static IP is not available, it is still invaluable.

g) Set Serial Ports

Settings for COM1 and COM2 need only be applied in cases where a GPIO, Modem or PTZ, Voice Call, Data Capture, Control device is connected to the DVR.

Settings for these particular devices will vary by brand. Specific questions regarding this topic should be directed to the vendor. Please be aware that not all brands (especially PTZ cameras) are compatible with this DVR.

Set Names & On Screen Display (Figure 4.12)

The “Set Names of Server and Cameras” option allows users to change the name of the server and the camera names.

Use the “Set Overlay Text” to show text on the camera image. Check the enable box to make it appear on the screen and set the X and Y parameters (X being horizontal and Y being vertical) to assign a specific position (default is upper left hand corner).

Additionally a time stamp can be configured, per camera with the “Set Time Stamp” and give a format for the date by selection from the pull-down menu labeled “Timestamp Date Format.”



Figure 4.12

h) Set User’s Authority (Figure 4.13)

Setting the User’s Authority allows the administrator to configure users to have specific privileges defined by login credentials.

Simply enter a user name and password for the user and then configure the desired privileges for that user.

Below the box is a URL marked Users Listing which gives a list of all the users on the DVR.

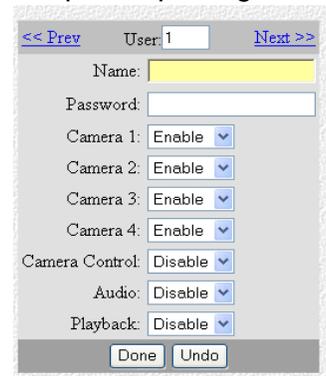


Figure 4.13

i) DVR Setup

DVR Setup Defines whether the LE/LE-HC Series DVR will record based on a first-in first-out recording process, oldest video getting deleted to make room for new video (circular recording) or if it will stop when the drive is full (Auto Stop).

j) Record Schedule

Multiple schedules can be set up to accomplish specific recording requirements at pre-determined times. This would allow maximum usage of hard drive capacity, for instance recording on motion when a store is closed and recording full time when the store is open. Use the pull-down menu at the top of the screen in Figure 4.14 to select the schedule to edit. There can be a maximum of 16 schedules on any one DVR at any one time.

Schedule 1 is set by default to be on all the time. Unlike most traditional DVRs the LE/LE-HC Series DVR uses a schedule all the time. Care must be taken not to overlap schedules. Use

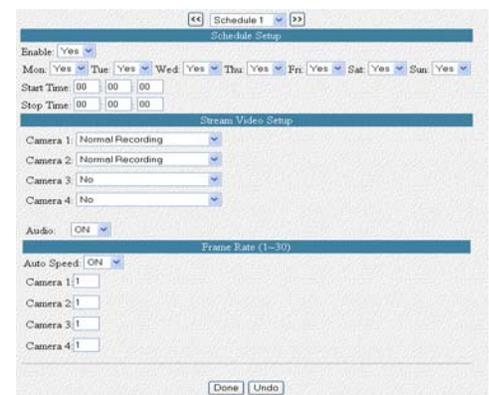


Figure 4.14

the schedule setup section to configure start time and stop time (make both 00:00:00 for the full day) and then pick the days of the week this is to be effective. Make sure to turn the “Enable” pull down menu to “Yes” or the schedule will not run.

Use “Stream Video Setup” to indicate if the camera should record using motion detection, full time or not have it turned on at all.

For the frame rate, in most instances, auto speed should be turned on. This will give the best frame rate. However, each camera can be set to record between 1 and 30 frames per second but total frames added up together cannot be higher than the LE/LE-HC Series DVR is capable of recording.

k) Set Motion Detection

When motion detection recording is selected in Section 4.3.0 the specifics of motion detection are configured in this section. Select the video source (camera). The camera image will show on the left hand side of the screen as in Figure 4.15. Use the left mouse button to click on squares to set detection area and use the right mouse button to clear areas. Hold down the left or right mouse button and drag to block areas larger than single squares. Motion will only be detected in areas that have the Set Detection squares, marked in red.

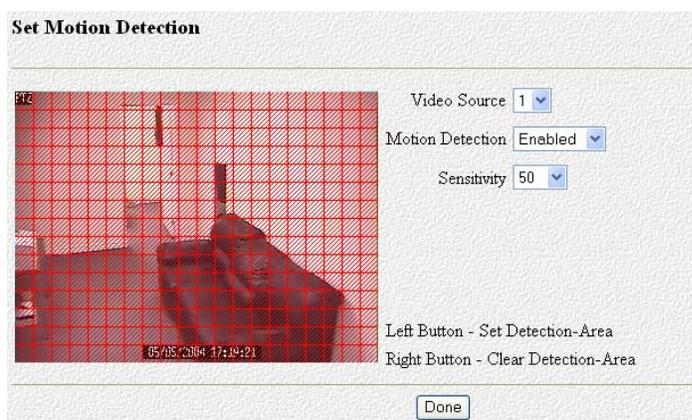


Figure 4.15

l) Set Pre-Alarm

Use the “Set Pre-Alarm” to set the number of frames recorded before an alarm condition exists. Each camera can be configured separately and be configured differently.

m) Playback and Search

To bring up a list of recorded video on the LE/LE-HC Series DVR, either click List All or set a time frame in the from/to folders and then click query. The files will be listed in the lower screen area (see Figure 4.16) and clicking on one will open the play video screen.

If this is the first time attempting to play back recorded video on a remote machine (and for each separate unit accessing remotely) users will be required to download the RPSETUP.EXE file when they attempt to play the video. Download and install the file. Close the window that says “player not found” and attempt to play the video file again.

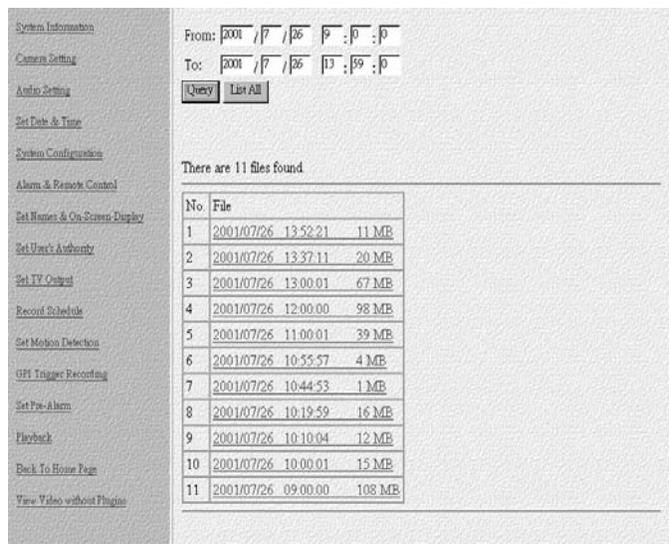


Figure 4.16

Once the ActiveX component is successfully installed, the video display screen should appear as in Figure 4.17.

Use the “Dimension” pull down button to configure the size of the video on the display. The “Display” button will select the number of cameras displayed on the screen at any one time, and the “Camera” button will select which particular subset (less than 16 cameras selected) is shown. In most cases, for DSL and cable connections, select high bandwidth. In times when the bandwidth available is not very good, select low bandwidth.

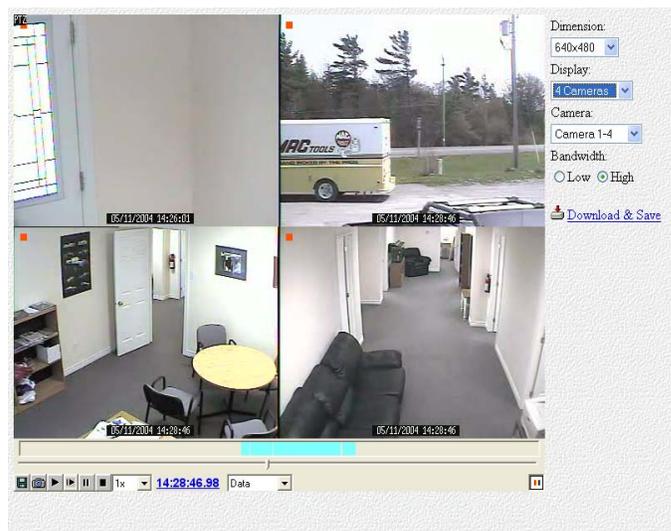


Figure 4.17

Use the “Download and Save” hyperlink, to save the video on the remote PC.

At the bottom left hand corner there are six buttons and some other options. These are explained in Figure 4.18 below:

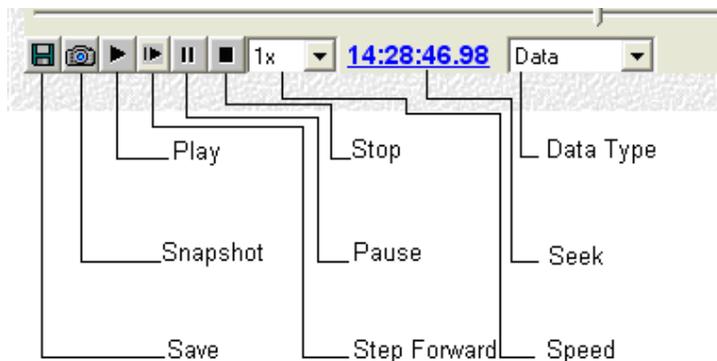


Figure 4.18

Save: Save the data file on the local machine.

Snapshot: Clicking this button brings up a list of Cameras. Select the camera from the list to snapshot, and then click o.k. It will then bring up a Webpage with the picture in it, which may be saved by right clicking on the image and selecting "Save Image As".

Play: Play video.

Step Forward: When the pause button is pressed, "Step Forward" will move each camera forward one frame.

Stop: Stop video playing.

Data Type: When data is selected, all recorded video will be played. Selecting motion will only play video that was recorded based on motion. GPI will play video that was recorded by an alarm trigger

Seek: Allows specific times to be entered and the video will zoom to that time.

Speed: Playback speed

Use the slider bar above this image to move around within the time selected. Please note that using the slider bar or the seek option will cause a delay of several seconds while the video switches.

n) Send Mail

The mail settings configuration page (Figure 4.19) is used to alert configured email recipients when specific events occur on the LE/LE-HC Series DVR.

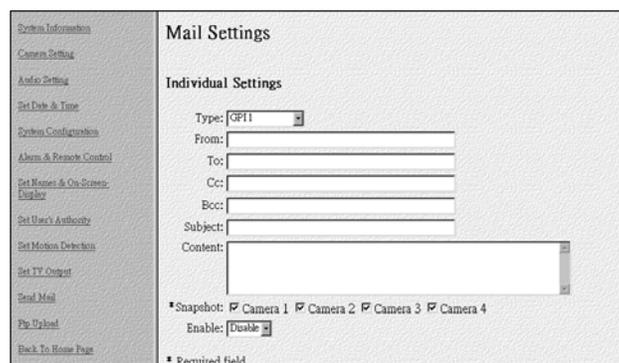
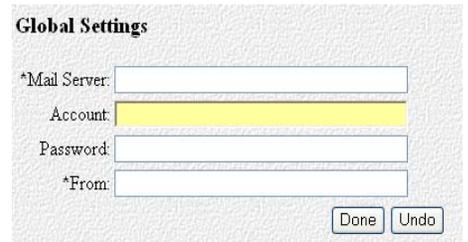


Figure 4.19

As many Motion Detect Types (Events) as cameras can trigger an email and can be set for each camera over a specific time range. Each event must be enabled to send emails. Enable them by using the pull down menu "Enable" and select enable. Enter appropriate data into the From, To,

CC, BCC subject and comment fields. Select the camera image(s) to be sent by email using the checkboxes alongside Snapshot.

Global settings need to be configured to communicate with the mail server used by the network or Internet. This information is needed by the LE/LE-HC Series DVR to effectively email over the internet, or within a LAN. An existing account can be used or a new account can be created. Please get this information from the network administrator or Internet Service Provider. It is very important to note that if the mail server is not an IP address, then a DNS (domain name server) must be identified in system configuration.



The screenshot shows a window titled "Global Settings" with a light blue background. It contains four text input fields: "*Mail Server:", "Account:", "Password:", and "*From:". The "Account:" field is highlighted in yellow. At the bottom right of the window are two buttons: "Done" and "Undo".

Figure 4.20

o) FTP Upload

FTP Upload allows the DVR to send pictures to an FTP Site. The functionality is identical to the mail settings, just configured for an FTP server instead of a mail server.

p) Configuration File

This feature allows the user to backup all the settings of the DVR and restore the settings should the need arise.

Chapter 5: Using and Configuring the LE/LE-HC DVR with Remote Control

All available settings of the LE/LE-HC Series DVR can be configured using the remote controller included with the system or with mouse and keyboard in GUI mode or remotely from a connected PC.

The remote control only works in Full Screen (remote control) display mode. The other display mode is GUI (Graphical User Interface) mode, where a mouse is required. LE/LE-HC Series DVRs are preconfigured to use the Remote Control Mode.

Configure the LE/LE-HC Series for a network with Remote Control



Figure 5.0

This section of the manual assumes that the unit has booted up in Remote Control Mode.

Before the system can connect to a network or to the Internet, in cases where it needs to be connected the following steps must be taken:

- On the remote control, press the menu button. The top option is “**System Setup**”. Select this and press “**OK**” on the remote Control
- Use the **Down Arrow** below the **OK** button to move down to **TCP/IP**
- Press **OK**
- Enter IP address, Subnet, Gateway IP and DNS from Section 5.3 g) below.
- Use the **arrow keys** to select each item, and press **OK**. Then use the numbers on the remote control to set the different addresses.
- Once all the addresses have been entered, use the **down arrow** to go to **Save and Reboot** and press **OK**.

Using the Menus

The following is a list of the keys used on the remote control:

a) Using the Menus

Press the **Menu** button on the remote control to enter the “**System Setup**” menu. This will display Figure 5.2. Once in that menu, use the **Up/Down arrow keys** to choose the option to configure and then Press **OK** to select the configuration option required.

b) Operating the Menus and changing the Setting Parameters

Users can select the Setting values by pressing the **Up/Down** buttons and change the Setting value by pressing the **Left/Right** buttons. Press **“OK”** to save the Setting value or press **“Cancel”** to cancel the Setting and go back to the previous level Setting Menu.

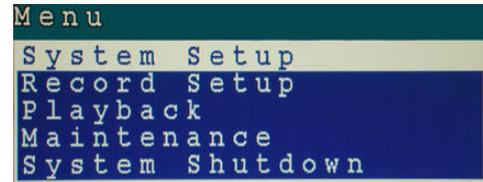


Figure 5.2

In some cases, users also need to key in alpha characters via IR remote control. Press the **“Keypad”** button to bring up a virtual keyboard. Select the required characters then press **“OK”** to save the setting value or press **“Cancel”** to cancel the setting and go back to the previous level setting menu. For numeric characters, use the number buttons near the bottom of the remote. Pressing the **“Enter”** button will save the number into the system and move on to the next number.

c) View the Previous/Next Page

In a **“Setting”** menu, users can press the **Prev/Next Page** buttons to skip to the previous or the next page in the setting menu.

d) Exit the Menus

After changing the setting values, users can press **“OK”** to save the settings or press **“Cancel”** to cancel the settings and go back to the previous level setting menu. Or press the **“Menu”** button to go back to the system setup menu directly.

e) Video Recording Setup

Press **“Menu”** and select **“Record Setup”**. Select **“Record Schedule”** and press **“OK”** or **“Right”** button to enter the record schedule list of the LE/LE-HC Series setting.

Ensure that at least one recording schedule is set up or no recording will occur.

System Setup (Configuration) in IR Mode

Selecting “**System Setup**” from the main menu will bring up the System Setup Menu displayed in Figure 5.3. Use the “**Up/Down**” arrows and the “**Enter**” or the “**Right**” button to select. Each of these options, are discussed below:



Figure 5.3

a) Password Protect

Setting a password protects the system from unauthorized access and unauthorized changes. This function must be enabled to secure the LE/LE-HC Series DVR with passwords.

*** **WARNING***** Setting passwords on the LE/LE-HC Series DVR requires that the user remember the password, as we cannot retrieve the password. A complete system reset will be required to reset the password.



Figure 5.4

b) Video

These settings are “per camera”. Use the Next Page button to advance to the next camera to be Setup.

Standard “AUTO”, the LE/LE-HC Series will detect the type of video input to this channel automatically. The DVR can also be set to “NTSC”, “PAL” or “SECAM”. NTSC is the standard used in North America.

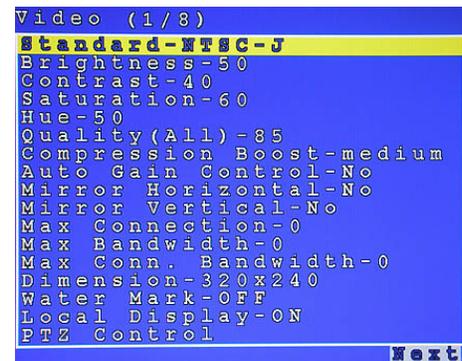


Figure 5.5

- Brightness: The higher the value, the brighter the video (applied to current camera)
- Contrast: The higher value, the stronger contrast (applied to current camera)
- Saturation: The higher value, the more color saturation (applied to current camera)
- Hue: The higher value, the higher hue (applied to current camera)
- Quality: Higher value, better video quality but larger recorded frame size (applied to all cameras).

Higher numbers for quality decrease the compression but increase the file size, thus decreasing storage time and slowing frame rates for remote transmission.

Compression Boost	Select "None", "Low", "Medium" and "High". The higher compression boost, the lower the quality of recorded and transmitted video but the faster remote frame rates.
Auto Gain Control	Set "Yes" to enable auto gain control for this camera.
Mirror Horizontally	Mirror the selected camera video horizontally.
Mirror Vertically	Mirror the selected camera video viewing vertically
Max Connection (for this camera)	Limit the maximum number of remote connections allowed to access this camera.
Max Bandwidth (for this camera)	Limit the total maximum bandwidth in Bytes/second allocated for accessing this camera
Max Conn. Bandwidth this camera.	Limit the maximum bandwidth allocated to each remote connection of this camera.
Dimension	Set frame size to 320x240 or 640x480 pixel resolution
Watermark	Turn Watermarking on/off (only with MJPEG compression)
Local Display	Turn local display on/off for this camera. Display off allows the camera to be recorded without live display

PTZ Control

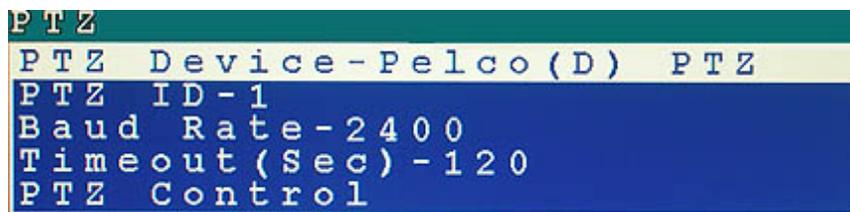


Figure 5.6

Use the right arrow button to bring up Figure 5.6.

PTZ Device	Use the left/right buttons on the controller to select the correct Device Type/ Control Protocol.
PTZ ID	Set the ID number to be the same as the camera ID (from 0 to 255) with the left/right buttons
Baud Rate	Set the Baud Rate to be the same as the camera baud rate setting.
Timeout (sec)	Sets the maximum time that a remote user can control the PTZ Devices. Only one user can control the cameras at any given time. Once the timeout has been reached, if another user is requesting PTZ access, then access will be denied to the first user, and granted to the second.

PTZ Control Allows control of the PTZ camera using the remote control. Press the OK or right arrow button. The Pan/Tilt control screen will appear showing P/T Control can be accomplished with the Up/Down/Left/Right arrow buttons.

Press the Next (Page) button for the Zoom control screen. The Up/Down buttons will now control Zoom

Press Next button for Focus. Use Up/Down buttons to set.

Press Next button for Speed. Use Right/Left button to choose.

Press Next button for "Call Preset". Use a Number key to move the camera to a Preset from 1 to 9.

Press Next button for "Set Preset". Use a Number key to set the camera's present position, zoom and focus as a Preset from 1 to 9 (move camera to desired position/zoom first).

Note: Controlling a PTZ camera with the remote is very cumbersome. Far better to use the DVR in GUI mode and control the PTZ with a mouse.

Click the "OK" button to save the configuration. Pressing "Cancel" or turning off the machine will result in loss of the updated configuration

c) Video Input

Use Video Input to arrange the display window order in which cameras appear. This system is unique in that any camera can be assigned to any position. Use the left/right arrow keys to set/change the display window number alongside each camera number.

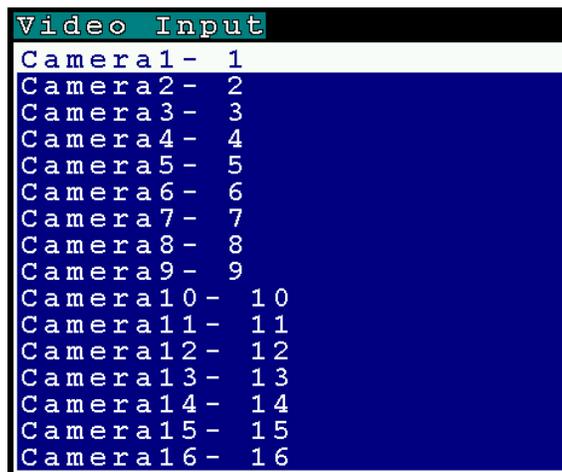


Figure 5.7

d) Disks

Allows the addition and Setup of up to 16 Network File Server (NFS) hard disks. Select a disk number from the screen and use the right arrow button to bring up the setup screen. Enter the IP address and volume of the HDD. Use Test to ensure the disk is accessible and Save to save the settings.

e) TV Output

Allows the definition of both a VGA monitor and TV (Composite video/S-video) display.

Please note that EITHER a VGA monitor or TV/composite video monitor is supported at any one time. Displays can be switched from VGA to TV by pressing the "TV" button and switched back again by holding down the TV button.

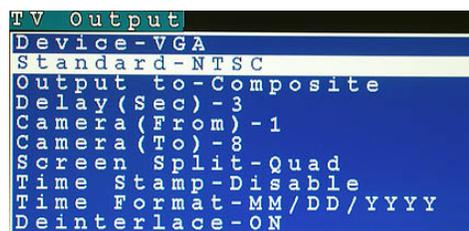


Figure 5.8

Device	Use right arrow button to change from VGA to TV
Standard	Choose NTSC for N. America
Output to	Choose between Composite and S-Video
Delay (Sec)	Sets the dwell time for camera switching (activated using the switching button on the controller)
Camera (From)	Sets the cameras to be switched
Camera (To)	
Screen Split	Allows selection of the number of camera window displayed
Time Stamp	Allows choice of whether a time stamp will be displayed/recorded on each camera's video and where this will be displayed on the camera image.
Time Format	Allows choice of date format
Deinterlace	Set On/Off. Deinterlacing will provide a superior image for moving objects.

f) OSD Text

Allows On Screen Display (OSD) of user defined text to be displayed and position defined using X, Y coordinates

g) TCP/IP Settings

TCP/IP Settings are covered in Section 3. Use the number pad on the remote control to enter the numbers. Remember that the numbers are not configured in a traditional keyboard pattern so double-check the entries. Press OK to save.

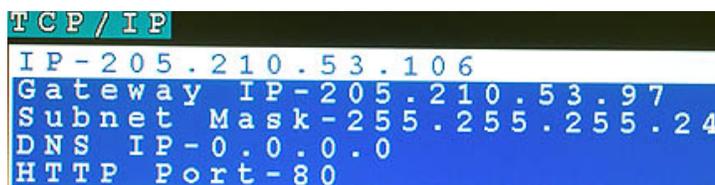


Figure 5.9

h) Account Settings

There are two levels of password. "Admin" and "User". The system default is for the "Admin" name to be "Administrator" and the password to be "sentry".

A maximum of 256 users can be added to the system.

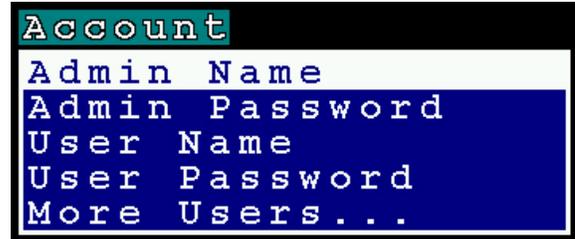


Figure 5.10

The Admin user name and password have full access, but regular users can be configured to have access to some or all cameras, PTZs and audio.

* TIP: A word of warning regarding setting up users by this IR controller method - it is no fun at all. Preferably use the remote access method where a keyboard can be used, or at least use the GUI method with a keyboard and a mouse.

i) Audio

"Mic Gain" is used to increase or decrease the volume coming from the microphone. Make sure to select the appropriate source (channel 1, 2, 3 or 4). The "Speaker Gain" can be thought of as the volume going out to the speakers.

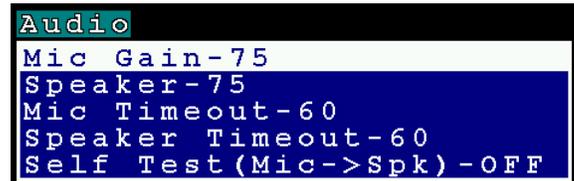


Figure 5.11

"Mic Timeout" and "Speaker Timeout" work the same as the PTZ control. Each user has access to the component for the number of seconds defined by the timeout. After the 1st user reaches the timeout any requests by other users will transfer the request to the 2nd user.

j) Serial Ports

There are two setup screens – for COM1 and COM2. These screens are identical and allow 2 different devices to be attached and defined. COM1 is normally used for PTZ cameras.

Change the settings of the COM ports to match the attached device.

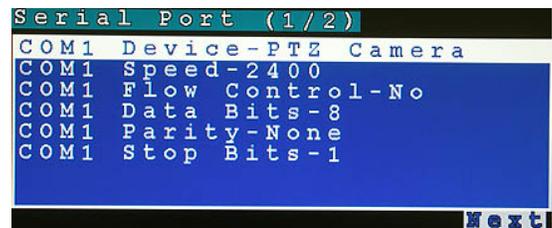


Figure 5.12

Most PTZ devices run at 9600, and in most cases, Flow Control should be disabled. Only one port can be used for PTZ control (eg COM1) and only one port can be used for an external dial-up modem, alarm I/O box or data capture box (eg COM 2). Both ports are RS-232 on a LE/LE-HC Series DVR. Any PTZ cameras that require an RS-485 connection will require an additional converter, usually called a PT-NET.

k) System Information

This option shows basic level information on the LE/LE-HC Series DVR. This information screen may be required by a service technician or network administrator.

```
System Information
Boot-DOM/CF/Disk
IP-205.210.53.106
Mask-255.255.255.240
MacID-00:40:05:8A:5A:B3
Start-2006/01/23 12:14:22
FW Ver-1.3
FW Date-Nov 9 2005 16:26
Model-100/400
Disk Size-157GB
Disk Used-153GB(97.4%)
Rec Period-659 hr
```

Figure 5.13

l) Date/Time

Allows the date and time to be set, including Time Zone selection.

```
Date/Time
Year-2006
Month-1
Day-23
Hour-13
Minute-21
Second-22
T.Zone--5:00 Eastern Time(US
```

Figure 5.14

m) Alarm

Multiple Alarm input types can be setup along with the necessary Actions to be taken when these Alarms are triggered.

Motion Detection

See section on Motion Detection setup under Record Setup.

E-Mail

An external dial-up modem must be connected to either COM1 or COM2 and correctly configured.

Complete the Recipient Address and Name and Sender Name, along with a Password if desired. A Test item is included.

Video Popup

If it is desired that Video Popup (full screen display of the alarmed camera) on Alarm detection, set the length of the Popup in seconds.

Set Action

Set what action is to take place for various alarm types, by camera.

Alarm types are: Motion Detection, Video Lost, Disk Space low, Disk Error.

```
Alarm Setup
Motion Detection
E-Mail
Video Popup(sec)-20
Set Action
```

Figure 5.15

Action types are:

```
Action List (1/8)
Message-OFF
Beep-OFF
E-Mail-OFF
Video Popup-OFF
Voice Call-OFF
Next
```

Figure 5.16

Message On/Off

When turned On, Start and Stop times for this activation must be entered.

Beep On/Off

When turned On, Start and Stop times for this activation must be entered.

E-Mail On/Off

When turned On, Start and Stop times for this activation must be entered. In addition, a Recipient and Subject must be entered along with an optional Text Message. Cameras are selected for snapshot inclusion with the email with an On/Off select.

Video Popup

When turned On, Start and Stop times for this activation must be entered.

Voice Call

Requires a voice modem. When turned On, Start and Stop times for this activation must be entered. In addition, two telephone numbers for outgoing calls are entered and an Audio File (Wave file) must be specified.

Action Types are set from the Action List sub-menu (Figure 5.16), for each camera. This is time consuming and cumbersome with the IR controller and is better accomplished using a mouse and keyboard in GUI mode.

n) ISP

The ISP Setup screen needs to be completed if access to the Internet is going to be by Dial-up.

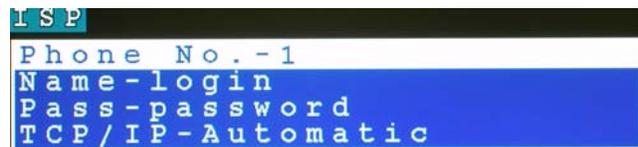


Figure 5.17

Dial-up phone #, Account Name and Password and whether the TCP/IP address is to be manually or automatically entered need to be set.

o) Registry Server Setting



Figure 5.18

Registry Servers are used when it is not feasible or not cost effective to run a static IP. The difference between a static IP and a dynamic IP is that the ISP can change a dynamic IP but not a static IP. Naturally, static IPs are more expensive. Basically what happens with "Registry Server Setting" is that a server is configured and is resident on the Internet. When the IP changes on the LE/LE-HC Series DVR, the DVR tells the server that the IP has changed. Remote users wishing to access their DVR access through the Registry Server to get the new IP, which is always current. This is a great idea in concept, but sometimes it is difficult to implement, as when the service provider changes the IP, sometimes it takes the LE/LE-HC Series DVR (or any PC) a while to update the IP address (it could be hours) and for that time the DVR is inaccessible. Since it is theoretically possible for an ISP to change the IP every couple of hours – obviously, that is a problem. In most cases, ISPs only change the IP when the user logs out and then logs back in. Also, using routers can cause problems, as it adds another link to the chain and sometimes the DVR doesn't know that the External IP has changed due to issues with Network Address Translation.

The **IP address of the default registry host is <http://registry.nfic.com.tw/registry.htm>**, the **default registry host domain name is Null** and the value of registry host path is "cgi". Please visit <http://registry.nfic.com.tw/registry.htm> to query or browse the current registered LE/LE-HC Series units on the registry server.

p) Running mode

Running mode has two settable items:

- Item 1: ISP mode or Network Mode. Make sure the system is configured to run in network mode unless dial-up Internet access is to be used.

Item 2: determines the type of user interface. "IR Control" uses the remote controller to access the LE/LE-HC Series DVR and mouse mode (or GUI mode), which uses the mouse (and an optional keyboard) to control the LE/LE-HC Series DVR.

q) Algorithm Setting

The video compression algorithm can be set to MPEG4, H.263, JPEG or M-JPEG. H.263 is a compression standard similar to MPEG4 and will give



Figure 5.19

superior compression when there is little movement in camera fields of view. JPEG is a good standard but is bettered by M-JPEG or MPEG4 where there is more motion in the video. In instances where there is very low movement, H.263 or JPEG may provide better compression. MPEG4 or M-JPEG are best if the resolution of the images is 640X480. Each camera can be independently set to either 320x240 or 640x480 pixel resolution (dimension) in the Video sub-menu of System Setup.

***Please Note:** The only compression format available on the LE-HC is MPEG4.

r) NTP Setup

Network Time Protocol (NTP) allows the DVR to adjust its date/time clock to a world standard time clock by accessing a special server on the Internet. A default server is provided (but can be changed). A test and save is also provided.

Configure recording in IR Mode

Enter “Menu” screen (Figure 5.2 page 22) and select “Record Setup” to bring up.



Figure 5.20

DVR Setup

Choose Cyclic Recording Mode (when the Hard Disk is full, the system will continue to record, overwriting the oldest recordings first) or Auto Stop (when the Hard Disk is full, the DVR will stop recording)

Record Schedule

A total of 16 schedules can be configured (Figure 5.21). Each one must be enabled individually. Care should be taken to not overlap schedules, as this will cause conflicts

Press the “Right Arrow” button to enable or disable a schedule. When enabled, the LE/LE-HC Series will record based on the settings of this schedule.

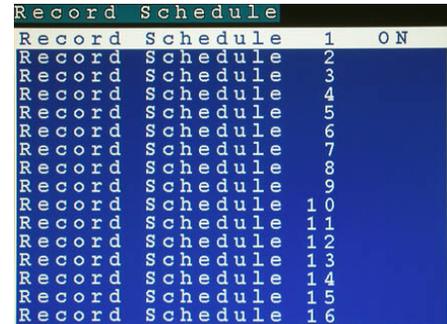


Figure 5.21

Figure 5.22 will be displayed

Select which day(s) of the week and the start time that this particular schedule will begin recording. Press the “Next Page” button to go to Figure 5.23.

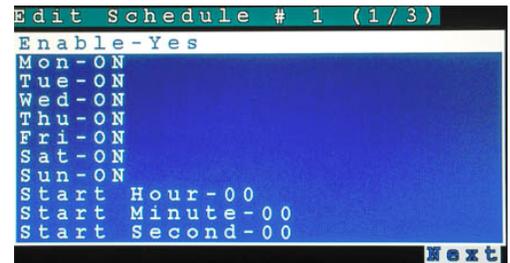


Figure 5.22

Select the Stop time for this schedule, the cameras to record in

this schedule, and whether Motion Detection recording or Normal (Continuous) recording will be used for each camera (or “Off” for no recording). In addition, if Audio is enabled in System Setup, Audio On/Off can be selected by schedule. Press “Next Page” to go to Figure 5.24.

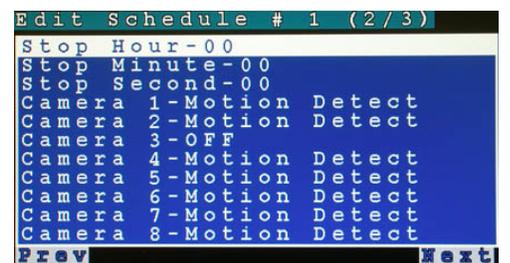


Figure 5.23

Set Recording Frame Rate to Auto Speed “Yes” or “No”.

When set to Auto Speed “Yes”, the system will attempt to maximize the recording frame rate for each camera actually

recording at any one time. When set to Auto Speed “No”, each camera recording speed can be manually set from 1 to 30fps.

Use the up and down arrows to cycle through the different components of the schedule editor and then use the right button to change the setting. Press “OK” to save.

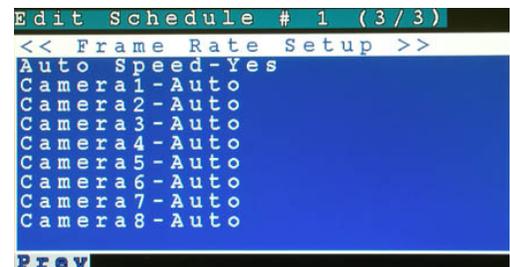


Figure 5.24

Motion Detection

Press **“Menu”** and select **“Record Setup”**. Select **“Motion Detection”** (Figure 5.2) and press **“Right Arrow”** to enter the menu for motion detection setup.

Motion detection must be setup for each camera that will use motion detection based recording. Select the camera by pressing the **“Prev”** or **“Next”** buttons.

Press the **“Left”** or **“Right”** buttons to enable or disable motion detection of the current camera. When motion detection is enabled, a small red square is displayed on the top-left corner of the displayed video when motion is detected.

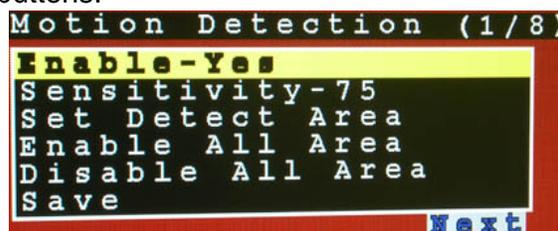


Figure 5.25

Motion sensitivity can be set between 5 and 100 where 5 is lowest and 100 is highest. We recommend at least 20 for most indoor environments.

The whole field of view is the default detect area and will show as a pink mask. To disable part of this area, press the right arrow key on **“Set Detect Area”**. A small blinking square will appear in the top left hand corner of the camera field of view. Move this square with the arrow keys to where you want to start disabling motion detect. Press OK. The square turns blue, showing motion detection is disabled for that portion of the image. Move the square with the arrow keys and press OK again to disable additional areas. Repeat move and press OK until the whole area you wish to disable has turned blue.

Right arrow on **“Enable All Area”** to enable motion detection on the whole image.

Right arrow on **“Disable All Area”** to disable motion detection on the whole image.

When all cameras are setup for motion detection, press OK on Save.

Pre-Alarm

Pre-alarm setup allows up to 90 frames of video to be recorded, by camera, prior to motion being detected. Use the up/down arrow keys to select the camera and the left/right arrow keys to change the number of Pre-Alarm frames to be recorded.

Pre-Alarm		
Camera1-	0	Frames
Camera2-	0	Frames
Camera3-	0	Frames
Camera4-	0	Frames
Camera5-	0	Frames
Camera6-	0	Frames
Camera7-	0	Frames
Camera8-	0	Frames
Camera9-	0	Frames
Camera10-	0	Frames
Camera11-	0	Frames
Camera12-	0	Frames
Camera13-	0	Frames
Camera14-	0	Frames
Camera15-	0	Frames
Camera16-	0	Frames

Figure 5.26

Playback with IR Controller

Press “Menu” then use the Up/Down buttons to select “Playback” (Figure 5.2). Pressing the “Right” button will display **Error! Reference source not found.** Pressing the Menu button again will display the Playback Menu (Figure 5.28).

Playback list (1/66)			
2006-01-23	15:00	M	9 M
2006-01-23	14:00	M	151 M
2006-01-23	13:00	M	126 M
2006-01-23	12:00	M	121 M
2006-01-23	11:00	M	127 M
2006-01-23	10:00	M	107 M
2006-01-23	09:00	M	197 M
2006-01-23	08:00	M	187 M
2006-01-23	07:00	M	197 M
2006-01-23	06:00	M	272 M

Search by Time/Search by Event

Select Search by Time or Search by Event to search video recordings. Use the “Up” and “Down” buttons to select the required time frame. Press the “Right” button to view the selected file in the Playback Screen (Figure 5.29).

Figure 5.27

On the playback screen, push the menu button to bring up the Playback Menu, shown in Figure 5.30.

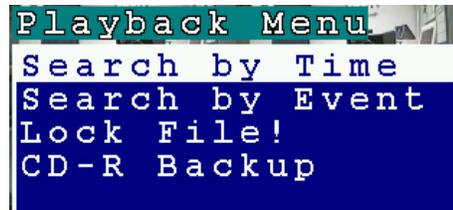


Figure 5.28

Use the “Up” or “Down” buttons to select “Search by Time”, press the right arrow key or OK key and choose a date and time. Or select “Search by Event”, press the right arrow key or OK key and choose an alarm device (GPI) or Motion Camera (Motion) using the right and left arrow keys. Choose a “From” date and a “To” date and time using the Up/Down keys to position the cursor and the left/right keys to change the parameter. Press OK to search and play the associated video if searching for GPI based recordings.

If searching for Motion based recordings, press OK to bring up the “Set Search Area” Screen. This powerful feature allows searching by camera for motion in just a portion of a camera field of view (e.g. a doorway). The default is the whole area is disabled for motion. Select “Enable all Area” if all the field of view is to be searched for motion, otherwise use the Set Area item. Move the cursor using the arrow keys, to the top left section of the area to be searched and press OK. Move the cursor over the area to be searched, pressing OK after each move. The selected area will be highlighted in red. Press Search to search the recordings for motion in the selected area during the time frame selected.

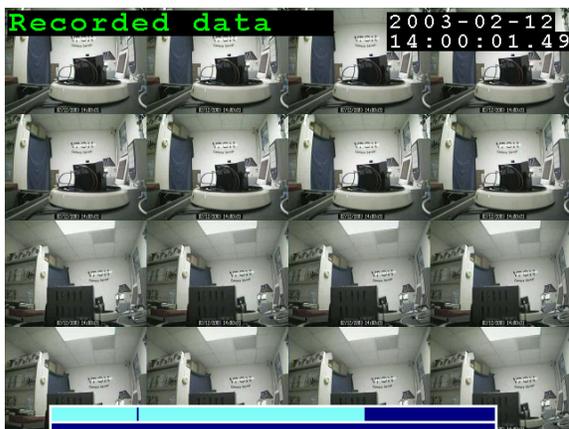


Figure 5.29

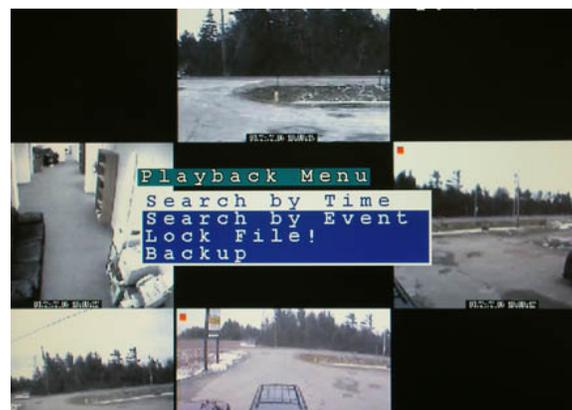


Figure 5.30

Lock File

A recorded file can be locked so that it is not overwritten. Go to the Playback List as shown on the previous page, select the file to be locked using the arrow keys and press the Menu button on the controller to go to the Playback Menu. Select "Lock File" from the Playback Menu. An asterisk (*) will appear to the left of the locked file, indicating it is locked (Figure 5.31). To unlock the file in the same way as it was selected. When a locked file is selected on the Playback List, accessing the Playback Menu will show "Unlock File". Select this and press OK.

Playback list (1/66)						
2006-01-23	15:00	M	89M			
2006-01-23	14:00	M	151M			
2006-01-23	13:00	M	126M			
2006-01-23	12:00	M	121M			
2006-01-23	11:00	M	127M			
*2006-01-23	10:00	M	107M			
2006-01-23	09:00	M	197M			
2006-01-23	08:00	M	187M			
2006-01-23	07:00	M	197M			
2006-01-23	06:00	M	272M			

Figure 5.31

Backup

The LE/LE-HC Series DVR comes with a CD-R/W as standard but may have an optional DVD+RW. Either device can be used to backup video from the DVR. From the Playback Menu (Figure 5.28), select "Backup" and use the arrow keys to select either CD-R/W or DVD+RW. Figure 5.32 will be displayed.

Choose Time & Camera (1/2)	
Start	Year-2006
Start	Month-1
Start	Day-23
Start	Hour-8
Start	Minute-0
Start	Second-0
Stop	Year-2006
Stop	Month-1
Stop	Day-23
Stop	Hour-8
Stop	Minute-59
Stop	Second-59
Camera	1-ON
Camera	2-ON
Camera	3-ON
Camera	4-ON
Camera	5-ON
Camera	6-ON
Camera	7-ON
Camera	8-ON

Figure 5.32

Set the Start date/time, Stop date/time and select which camera recordings are to be backed-up using the ON/OFF switch beside each camera. Press O.K. A message "Loading Disk" followed by "Copying Files" will display. When files are ready for backup, the Burn CD menu (Figure 5.33) will be displayed.

The File size will be displayed and the Burn Speed (Note that the maximum size of a CD file is 640KB and DVD file is maximum 4MB). Change burn speed with the right/left arrow keys and press the "OK" or "Cancel" buttons as appropriate. "Cancel" will return to the previous screen and "OK" will burn the disk.

The CD/DVD created has the video and audio data selected, and also contains a custom player to view both audio and video.



Figure 5.33

Maintenance

Use the Up/Down arrow keys to move to “Maintenance” on the Main Menu (Figure 5.2) and the right arrow or OK keys to enter the “System Maintenance” menu.

The “System Log” is a log of all functions accessed by date and time.

“Default Settings” allows all default settings to be restored.

“Configuration File” allows the current DVR configuration to be backed up to a selected USB attached or network device.

“Restore Configuration” allows a saved configuration to be installed into the DVR from a USB or network drive.

“Revise Firmware” allows a new version of the DVR firmware to be installed into the DVR from a CD or over a network.

System Shutdown

Use the Up/Down arrow keys access “System Shutdown” from the main menu. Use this option to turn off the system. Failure to turn off the LE/LE-HC Series DVR properly can result in a very long boot process and could damage the database.

Chapter 6: Using and Configuring the LE/LE-HC Series DVR in GUI mode

GUI mode involves the use of a Graphic User Interface and a mouse. A mouse is included in the system. Whichever method is used to configure the DVR, all configuration options are available in all methods.

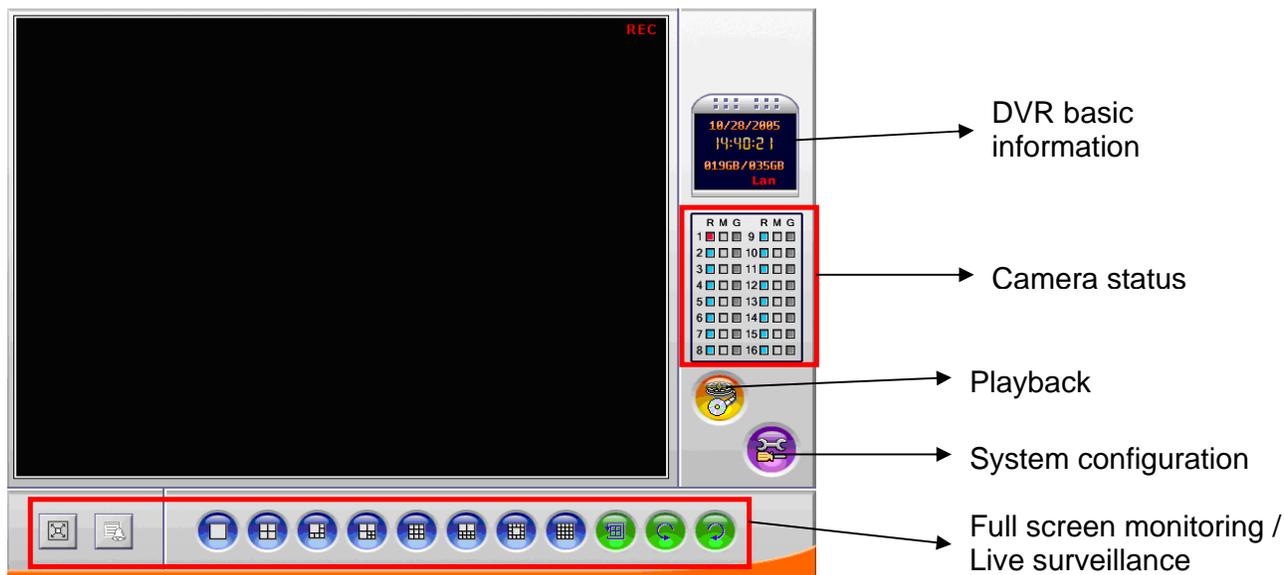


Figure 6.1

Figure 6.1 shows the standard GUI display screen in live video display mode. The large labeled areas in Figure 6.1 are explained below:

DVR basic information: includes date, time, total hard disk size and LAN status.

Camera status: Three columns of square indicators (R-Regular, M –Motion, G-Alarm input) beside each camera indicate the recording status, by color:

R

Color	Recording Mode
Gray	No video signal
Blue	No recording
Red	Full recording

M

Color	Motion detection Status
Gray	Motion not detected
Yellow	Motion detected

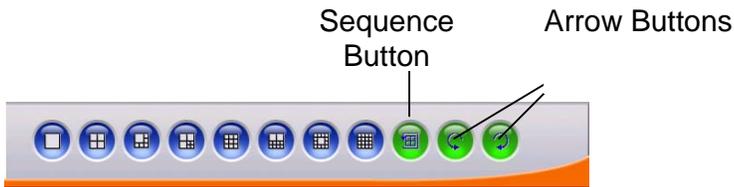
G

Color	Status of each DI and DO device.
Gray	DI or DO not detected
Red	DI or DO was detected

Full screen monitoring / Live surveillance:



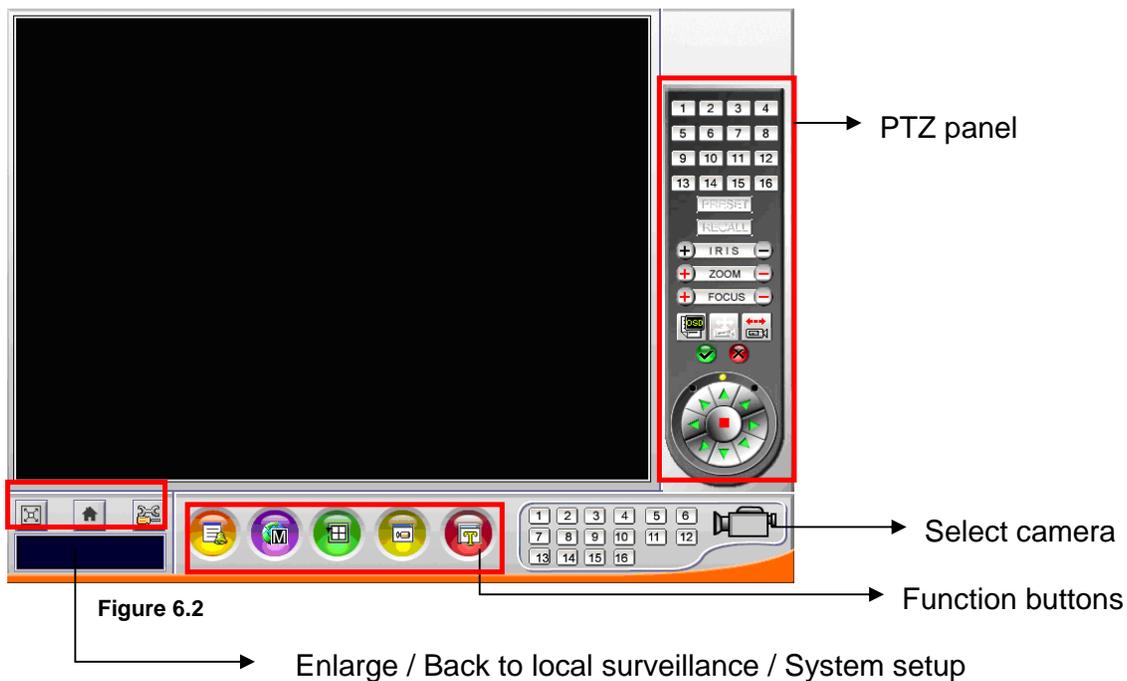
Full screen video display button. Double click the right mouse button to switch back to GUI display mode.



The Surveillance Screen Panel enables the selection of the numbers of cameras displayed on screen.

- A. Selectable 1 / 4 / 6 / 7 / 8 / 9 / 10 / 13 / 16 split-screen display
- B. Use the sequence button to automatically cycle through all the connected cameras
- C. The arrow buttons are used to cycle through all connected cameras

Single Video Monitoring:



Enter Single Video Monitoring (single camera live display) by double clicking any camera image in multi-camera display mode or by selecting the single camera icon on the Surveillance Screen Panel. The different areas of the screen as shown in Figure 6.2 are:

PTZ panel: Use the PTZ panel to control PTZ (Pan, Tilt, Zoom) enabled cameras. This panel is displayed when the view is changed to single screen and a PTZ camera has been setup in System Setup. Up to 16 preset configurations can be set and used for each camera using the following buttons:

16 Preset buttons - save the current pan, tilt, zoom, and focus settings in one of 16 preset configurations by clicking the appropriate number button and then the "Preset" bar.

16 Recall buttons- recall a selected preset configuration by clicking the appropriate preset number button followed by the "Recall" bar.

 **IRIS buttons** – open close camera iris

 **ZOOM buttons** - adjust the zoom-in/out function to provide a closer or wider view of the subject.

 **FOCUS buttons** - adjust the focus of the camera near/far.

 **SPEED buttons (yellow/black dots)** - Adjust the movement speed of the selected PTZ camera.

 **PTZ OSD menu / patrol / auto pan** – Use an OSD menu to control the PTZ.

The "✓" button is ok, "✗" button is cancel.

 **Pan and tilt buttons** – Move the selected PTZ camera horizontally, vertically and at 45 degrees to either.

To set a camera configuration (Preset):

1. Select a camera using the numbered buttons (1~16) on the Surveillance Panel at bottom right.
2. Adjust the Zoom, Focus, Speed, Pan and Tilt buttons until the camera is configured correctly.
3. Press one of the 16 numbered buttons at the top right followed by the Set button to save the configuration as a particular Preset number.

The configuration you have saved can now be recalled by pressing that number button followed by the Recall button.

 **Video Quality button:** Click this button to display the following control panel. It is used to adjust the Brightness, Contrast, Saturation, Hue, and Quality for each camera.



Brightness- adjusts the amount of light or brightness for the selected camera according to your preference.

Contrast - adjusts the difference between light and dark areas (or contrast) for the selected camera according to your preference.

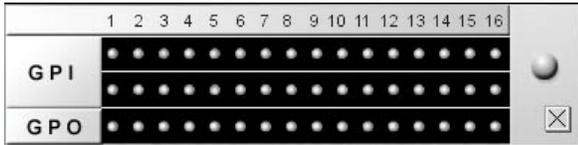
Saturation - adjusts the depth of color for the selected camera.

Hue - adjusts the dominant color for the selected camera.

Quality - adjusts the video quality for each camera. The default setting is 80. We recommend that you do not set this to 100 to avoid slowing the rate of video transmission and using up a significant amount of hard disk space.



GPI/O button: When an alarm has been triggered, the GPI (alarm inputs) and GPO (alarm outputs) that are connected will show the status of the input or output device. GPI devices will show NC (normally closed) or NO (normally open) as the status of the switch while GPO devices will show On or Off as their status.



Playback (Viewing recorded events)



Press the **“Playback”** button in Figure 6.1 to display the playback menu. A list of files divided into one hour segments will be displayed. Select the file to view and click the **“OK”** button.

Figure 6.3 demonstrates the screen displayed when pushing the **“Play”** Button.

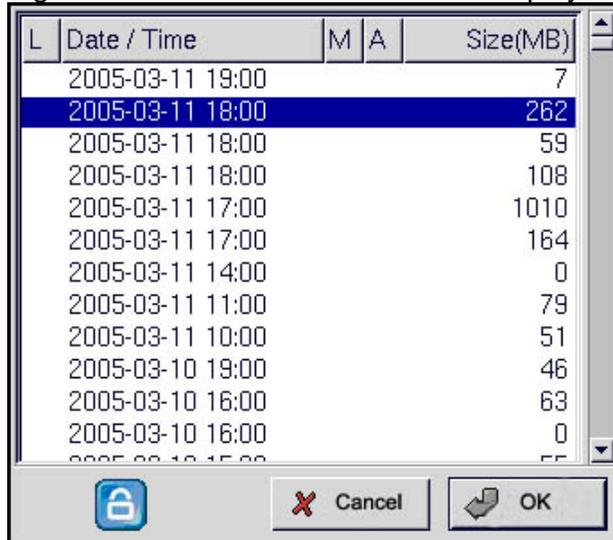


Figure 6.3

Columns on the file table:

- L (Lock) A "*" in this column indicates this file is locked. A locked file can not be deleted or over written.
- Date/Time Indicates the date and time this file was created.
- M (Motion Detection) An "M" in this column indicates this file was created by "Motion Detection".
- A (Alarm for GPI Trigger) An "A" indicates this file was created by "Alarm Trigger".
- Size (MB) File size in MB.

Any time segments not displayed in the menu do not have recordings during that time.

Lock file  **button.** Click this button to lock the selected file, which cannot then be deleted or over-written. The locked file is represented by an asterisk (*) next to it in the "L" column. To unlock a file, follow the same procedure and select the Unlock File! Option from the menu.

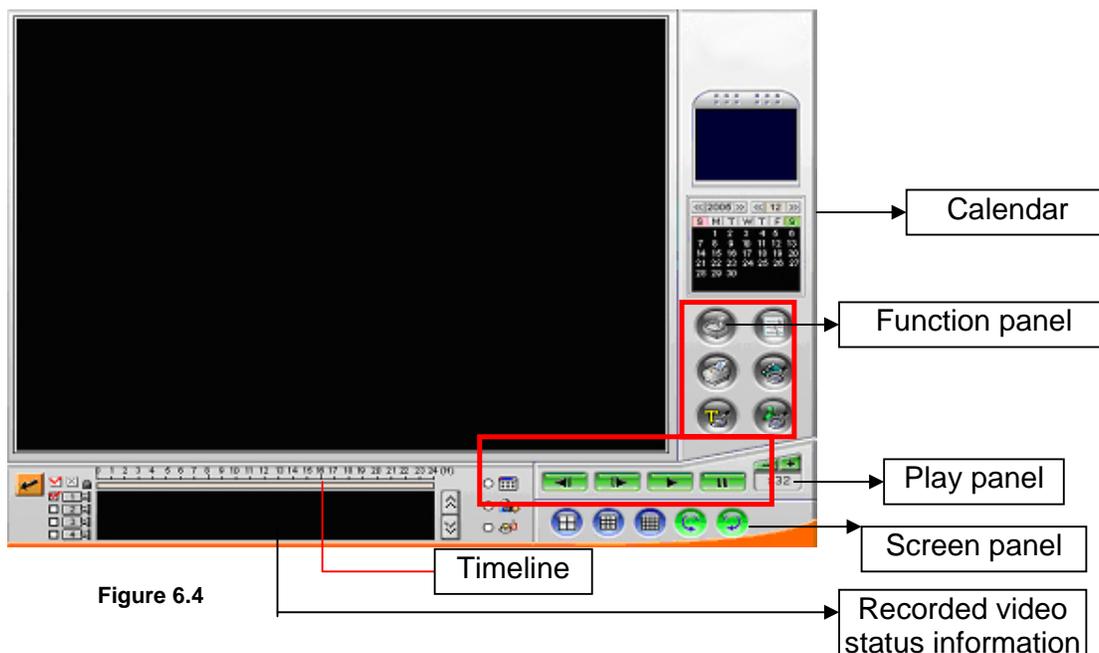
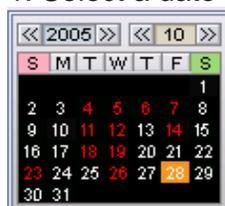


Figure 6.4 above shows the main playback screen with the main areas labeled.

How to play recorded files:

1. Select a date from the calendar.



Date Color	Meaning
Red	Contains recorded data
White	Contains no recorded data
Square	Today's date
Orange	Date selected for playback

2. Select an hour from the time line. Click or move the yellow line on the **Recorded video status information** bar to start to playback from the required hour. Clicking on the hour number scale above the timeline changes hours to minutes.
3. Select cameras for playback. "v"- select camera. "x" – unselect cameras.
4. Click anywhere on **recorded data status** bar to start playback from that point.

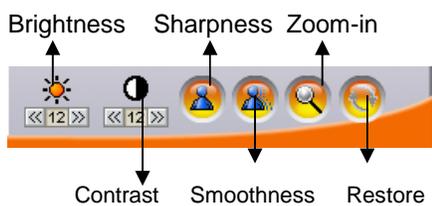
The status panel displays the playback status of the current recording. Blue bars indicate continuous (normal) recorded video. Yellow bars indicate recordings under motion detection. Green bars indicate recordings on alarm input (GPI). The moving yellow line indicates the current playback position. Click anywhere on the Data, Motion, or GPI lines to start playback from the required point.

5. Screen panel:



The Surveillance Screen Panel enables you to select 4 / 9 / 16 split-screen displays. The user can double click the left mouse button on a particular camera image to change to single image display of that camera and double click the mouse again to go back to split-screen display. Right click the mouse to enlarge video image size and right click the mouse again to go back to original image size.

Brightness/Contrast / Sharpness / Digital Zoom in playback.



Enter single camera mode first to display the buttons above at the bottom right of the screen. "Pause" the video and use these buttons to adjust brightness, contrast or sharpness of the paused frame of video and digitally zoom areas of the image. Click the Zoom-in button then click the area of the image to zoom. Repeat for greater zoom.

Click the Restore button to restore all the original parameters of the image.

The buttons in the Function Panel provide the following functions:

Search Recorded Files:



Search by Event- Searches the list of recorded files for the specified event such as a specific area motion or a GPIO trigger that occurred within the specified time interval.



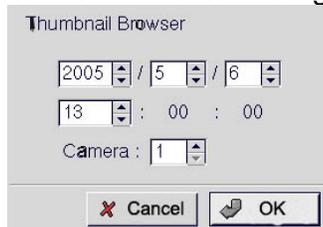
Search by motion:

1. First set the specific search area by dragging the mouse over it.
2. Select the correct date, time, and year for quicker searching.
3. Click "ok" to begin to search motion files that have been motion recording triggered in the specified area.
4. The list of recording files that have motion triggered events in the specified area will be displayed. Double click any file to play.



Thumbnail Browse finds video images and selects them for processing individually, in whole folders, using a simple time selector and built-in image viewer.

1. Select search starting time and camera number.



2. Click OK to display a simple time selector and built-in image viewer (below).



Previous - Search backward

Next - Search forward

Zoom in - The whole Thumbnail search is divided into three layers. The first layer is hourly based. Each picture in the windows is the first picture of a particular hour. When a specific hour is selected for Zoom In, the system enters the second layer. The second layer displays 16 pictures based on evenly divided time slots in the selected hour. If any one of these pictures is selected for Zoom in, it goes into the third layer. This layer displays 16 pictures from left to right, that are the closest to the time slot selected in layer two.

Zoom out - Back out one layer.

Back - Back to Thumbnail Browser window

OK – Select one window and click OK to start playback of the recorded file from that point.

Feature Function:



Bookmark – Bookmarks can be set at selected times during playback-recorded files.



Bookmark:

1. While playing a recorded file, the user can click the “bookmark” button to mark a specific time point.
2. A note can be written and saved by clicking the “Add” button.
3. Select one of the lists of recorded files in the bookmark field and click the “play” button to playback that selection.



Backup - If the DVR is equipped with a CD/RW or DVD+RW drive, recorded files can be backed up your to a CD or DVD. Alternately, a USB hard drive can be used for backup.

Note: The DVR will take time to organize data for backup. When the required data has been collected, backup will begin.



Return to the live video GUI.

System Setup (Configuration)



Press the “**Setup**” button in Figure 6.1 to display the Setup menu page (Figure 6.5 below). The functionality of this setup is identical to the remote setup. There are three parts to the Setup menu – **System Setup; Record Setup and Alarm (Setup)**. This section explains each of the menu pages in turn.

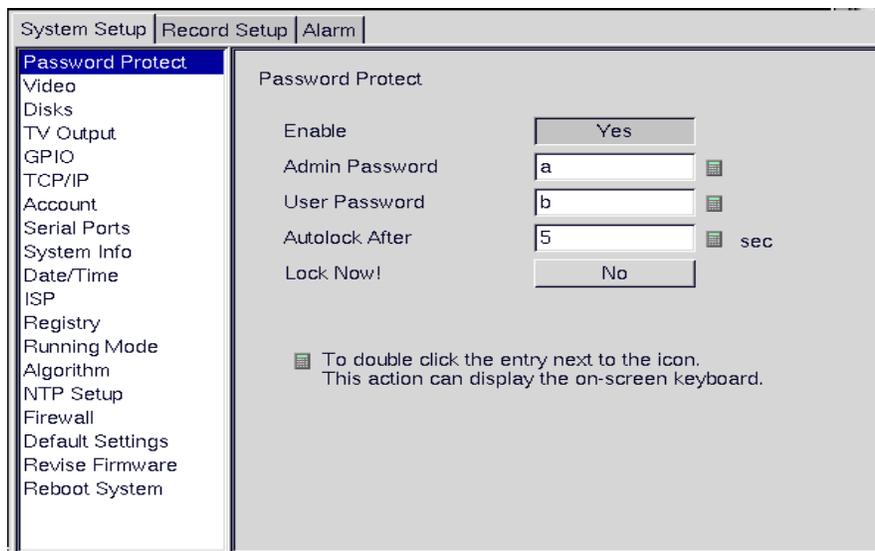
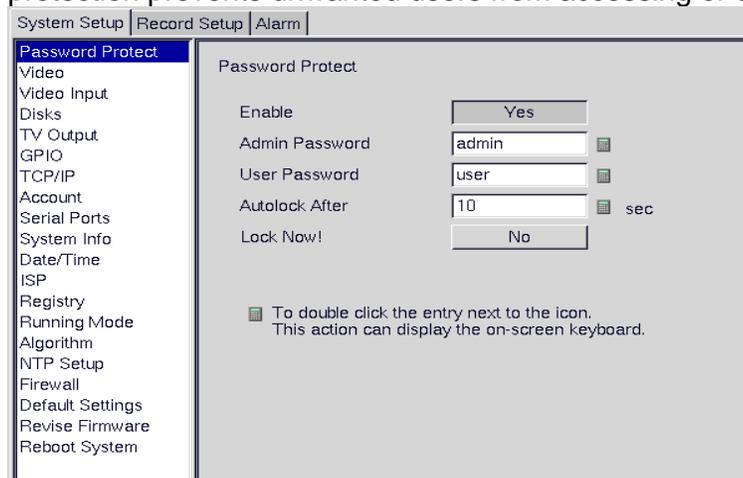


Figure 6.5

a) System Setup

Password Protect

The Password Protect screen helps you to enable password protection, set administrator and user passwords, set the auto lock period and lock the system immediately. Enabling password protection prevents unwanted users from accessing or configuring the LE/LE-HC DVR.



Enter new passwords for Admin and User in the corresponding fields. Set an auto lock time if required in the Autolock After field. The auto lock function locks the system after a given time and a password is required to unlock it. Click Lock Now! to lock the system immediately.

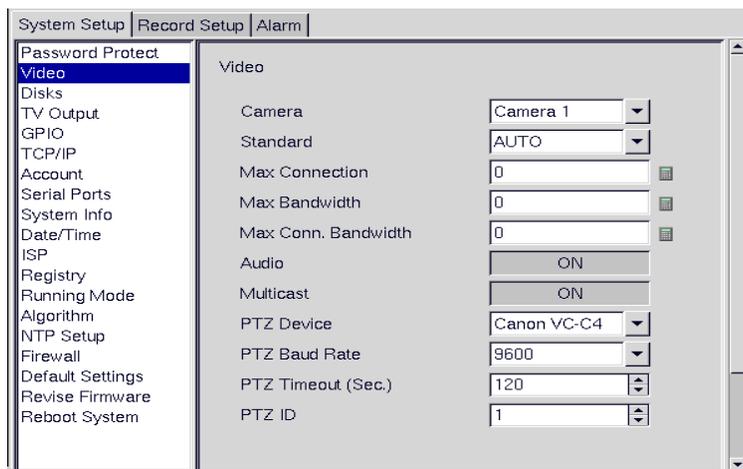
Note: If you do not have a keyboard connected to the system, you can use the on-screen keyboard to enter your passwords. All the fields that can be edited using the on-screen keyboard are indicated by the on-screen keyboard icon. Double-click the field to display the on-screen keyboard (below). Use the mouse to enter characters for the required field.



Video

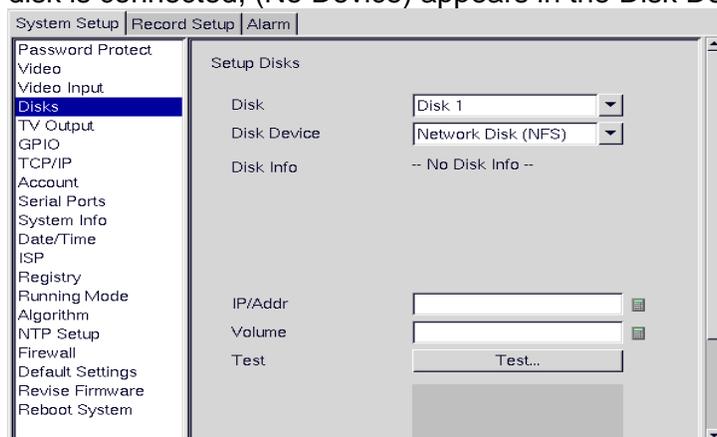
The Video menu enables the setting of video parameters such as the video standard for each of the connected cameras. Audio and Multicast function enable or disable. Select the camera from the Camera drop-down box and fill in the details in each field as required using the mouse or keyboard.

Select the type of PTZ cameras used and set each camera that has one connected to "Yes". The timeout value represents the max. time given to a PTZ camera to respond to a command. Don't forget to setup the PTZ ID. Use the keyboard or mouse to complete each field and click OK to save changes.



Disks

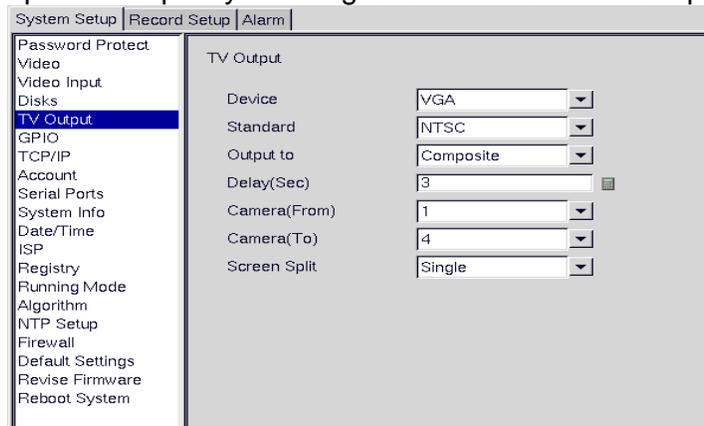
Use the Disks menu to configure network disks that the LE/LE-HC DVR uses to record data. If no disk is connected, (No Device) appears in the Disk Device field.



Use the keyboard or mouse to enter the IP address and Volume of any connected network disk. Click on the Test button to test if the drive is working correctly.

TV output

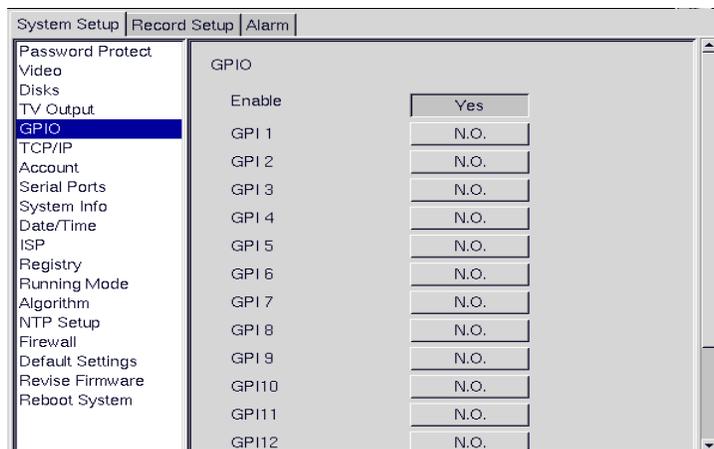
Use the TV Output menu to configure the video output for the LE/LE-HC DVR. The LE/LE-HC DVR can support standard VGA computer monitors or TV (composite) compatible monitors. Set the device type, standard, outputs and other parameters. Set the Camera (From) and Camera (To) options to specify the range of cameras that are displayed in the cyclic display mode.



Use the keyboard or mouse to set each field. Ensure each field is set correctly before clicking OK. If parameters are set incorrectly it could result in the display becoming unreadable and very difficult to correct.

GPIO

The GPIO (General Purpose Input/Output) menu enables you to view the status of the input and output devices such as switches, sensors, LEDs, and so on and view their status. These devices can be attached to the unit to turn external alarms (outputs) on or off when the specified input changes. When an alarm has been triggered, the GPI and GPO that are connected will show the status of the input or output device. GPI devices will show NC (normally closed) or NO (normally open) as the status of the switch. Depending on the input, you can change the status of the GPO devices to On or Off as required.

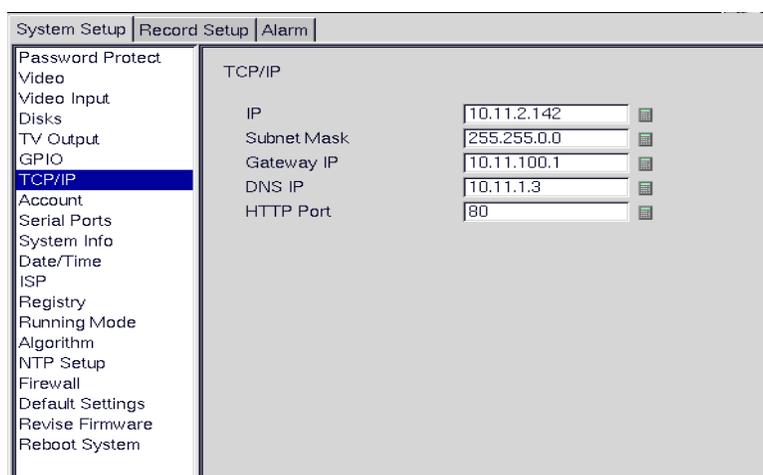


Change the GPO status as needed. Make sure that the devices are working by checking the actual physical status of the inputs and outputs after making changes in this menu.

NOTE: Enabling the GPIO function may cause system efficiency drop down.

TCP/IP

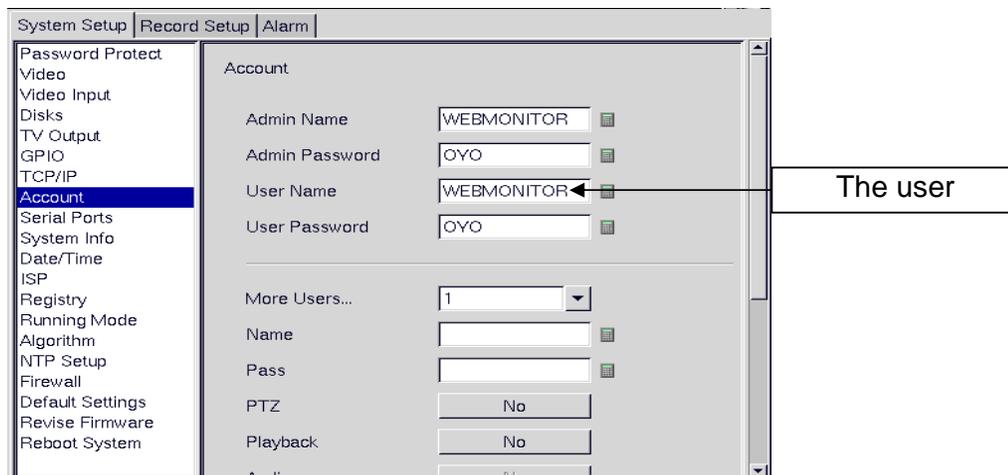
Use the TCP/IP menu to enter the TCP/IP address details for the LE/LE-HC DVR.



Use the keyboard or mouse to complete each field and click OK to save changes.

Account

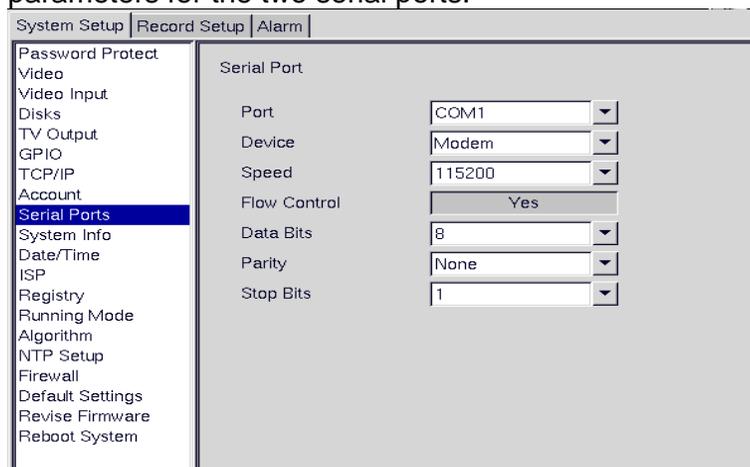
Use the Account menu to set up an administrator name and password as well as the super user name and passwords. You can also use this menu to set up to 256 additional users, their passwords and their permissions on the system. Select the user number and assign a Name and password to it. Click the PTZ, Playback, and Audio fields to enable access to these properties for the selected user. Select the cameras that you want the user to have access to and set them to **yes**.



Note: It is important that you set up the user name and password. The user is different from the administrator and has access to only live videos and playback files. Use the More Users field to change the authorities of Internet users. Use the keyboard or mouse (recommended) to complete all the fields and click OK to save changes.

Serial ports

The RS232 serial ports (COM1 and COM2) are used to attach PTZ camera control cables, external modems, or GPIO modules to the LE/LE-HC DVR. Use the Serial Port menu to set parameters for the two serial ports.



Use the keyboard or mouse to set all parameters and click OK to save changes.

System info

Use the System Info menu to display the system information such as disk parameters, TCP/IP properties, firmware information, and so on, on the screen.

The screenshot shows the 'System Info' menu selected in the left sidebar. The main area displays the following system information:

System Information		
Boot		DOM/CF/Disk
IP		10.11.2.142
Mask		255.255.0.0
MacID		00:40:F4:6A:A2:B6
Start		2005/05/02 14:10:15
FW Ver		6.0B1 build 031
FW Date		Apr 30 2005 18:22:59
Model		100/400
Disk Size		39946 MB
Disk Used		16636 MB (41%)

There are no configurable fields on this page. Click OK or Cancel to leave the screen.

Date/Time

Use the Date/Time menu to set the correct time and date on the system. You can also set the local time zone in the T. Zone field.

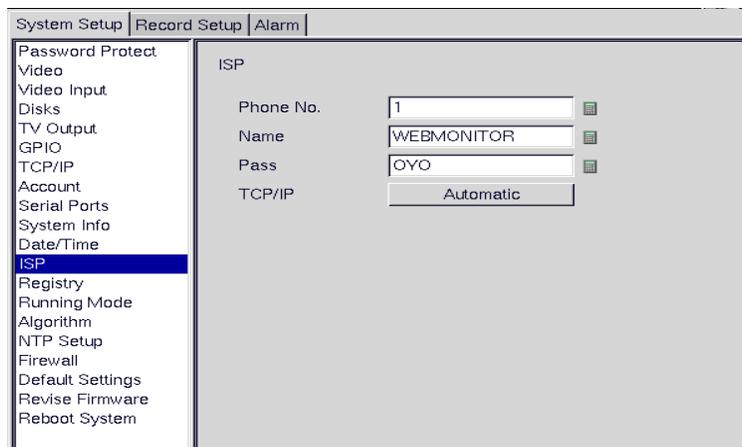
The screenshot shows the 'Date/Time' configuration menu. The fields are as follows:

Date/Time					
T.Zone	<input type="text" value="(GMT+08:00) Taipei"/>				
Year	<input type="text" value="2005"/>	Month	<input type="text" value="03"/>	Day	<input type="text" value="11"/>
Hour	<input type="text" value="19"/>	Minute	<input type="text" value="02"/>	Second	<input type="text" value="28"/>

Use the keyboard or mouse to set all fields and click OK to save changes.

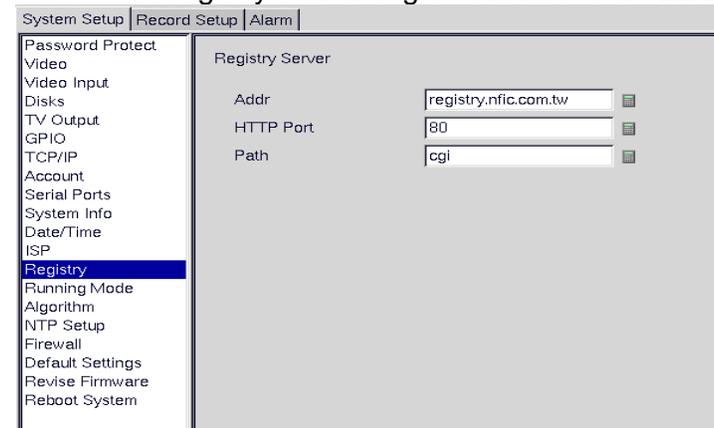
ISP

If you are using dial-up access to the Internet, use the ISP menu to enter details of your Internet Service Provider. Use the keyboard or mouse to complete all fields and click OK to save changes.



Registry

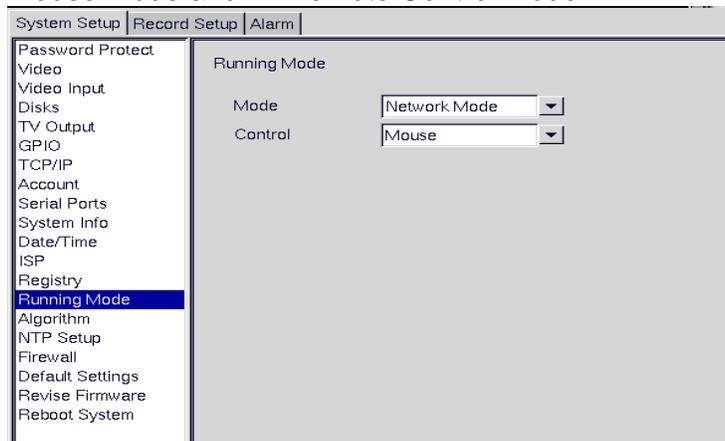
The Registry menu enables you to set up the registry server for your device. If you are using a dynamic IP address for the LE/LE-HC DVR, you can set up the device to post its IP address to the DVR registry server. You can then look up your IP from the MAC address or server name. You can use the registry server to give a name to the LE/LE-HC DVR also.



Use the keyboard or mouse to complete all fields and click OK to save changes.

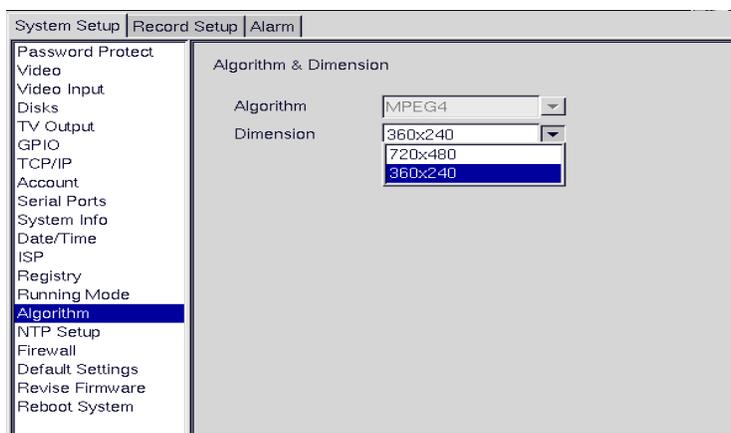
Running mode

Use the Running Mode menu to switch between Network Mode and ISP Mode, and between Mouse Mode and IR Remote Control Mode.



Algorithm

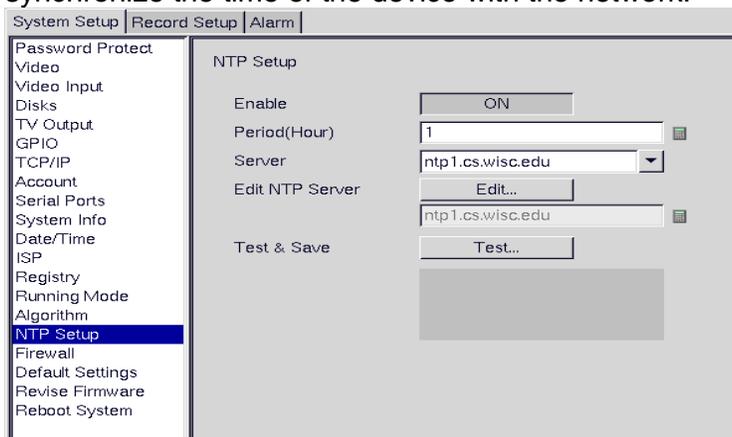
Use the Dimension option to set the resolution of the video. Default resolution setting is 320 x 240 pixels but 640 x 480 can be selected. Please remember that higher resolutions will give larger recorded files and slower remote transmissions.



Use the keyboard or mouse to complete each field and click OK to save changes.

NTP Setup

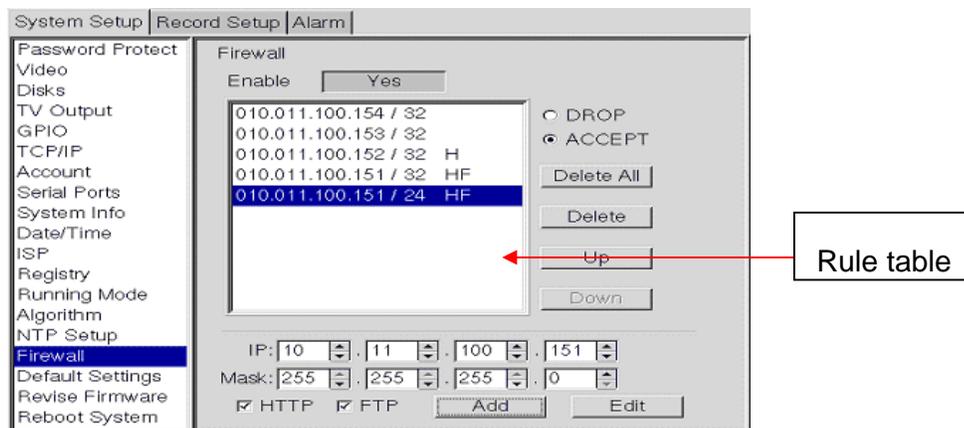
Use the NTP Setup menu to enter details of the Network Time Protocol (NTP) server used to synchronize the time of the device with the network.



Use the keyboard or mouse to complete all fields. After making the changes, click on the Test & Save button to verify that the server is operational. Click **OK** to save changes.

Firewall (only on LE-HC)

The function of the Firewall is to protect your DVR system from Internet attacks so that you can safely hook up your DVR to the Internet.



DROP / ACCEPT

Default to rule table can be selected as DROP or ACCEPT. If default is DROP, that means rules in Rule table are accepted and all others are rejected. On the contrary, if default is ACCEPT, that means rules in Rule table are rejected and all others are accepted.

Add / Edit

Adding or edit an IP address. “Mask” means domain address. For example, when IP address: 10.11.100.151 and Mask:255.255.255.0 are entered, this means IP addresses from 10.11.100.1 to 10.11.100.255 will be blocked totally.

HTTP: When the default is DROP and HTTP is **NOT** checked, this means the HTTP port of this IP is rejected. On the contrary, if the default is ACCEPT and HTTP is **NOT** checked, that means the HTTP port of this IP address is open.

FTP: Same as HTTP.

Rule table

Rules in the table are checked by top down sequence. When any one of the rules is satisfied, checking will **NOT** go further down.

For Example:

Default Rule ACCEPT

1. 10.11.100.151/24 HF means IP’s coming from 10.11.100.* are all rejected.
2. 10.11.100.154/32 means ports from 10.11.100.154 are all rejected EXCEPT HTTP and FTP. If you use 10.11.100.154 to access the DVR web page, it would fail.

When the sequence of Rule1, Rule2 are exchanged and Default Rule is ACCEPT:

1. 10.11.100.154/32
2. 10.11.100.151/24 HF

Then, if you use 10.11.100.154 to access the DVR web page, it would work OK.

Delete

Delete a specific rule in the Rule table.

Delete All

Delete all rules in the Rule table.

Up

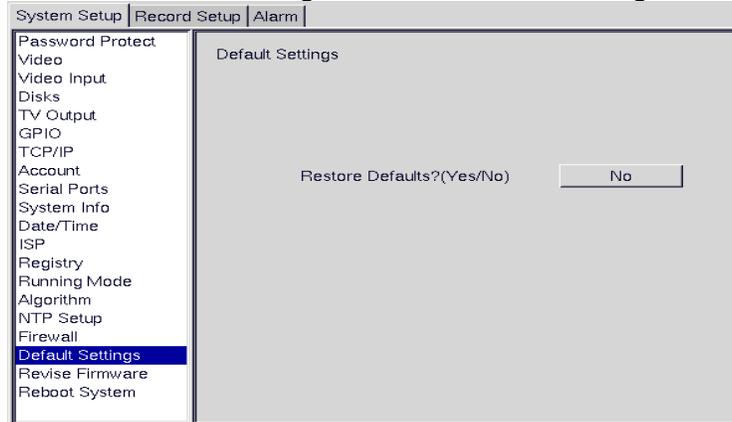
Move a specific Rule one row up

Down

Move a specific rule one row down

Default settings

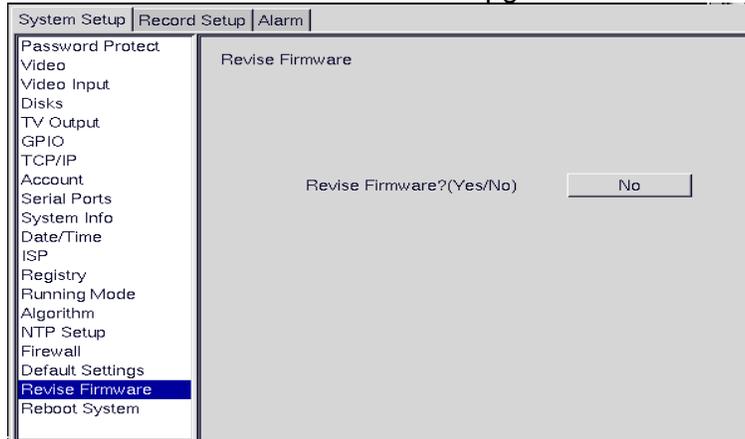
Use the Default Settings menu to reset all configurable parameters to their factory default settings.



Click Restore Defaults? (Yes) to restore defaults. Click Cancel or (No) to retain the current settings.

Revise firmware

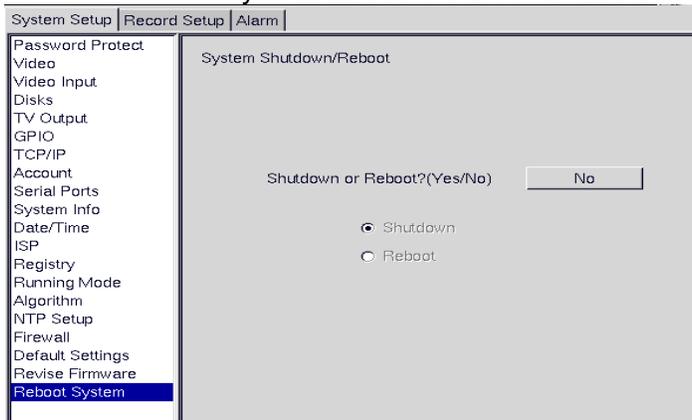
Use the Revise Firmware menu to upgrade the LE/LE-HC DVR firmware.



Click Revise Firmware? (Yes) to start the firmware upgrade process. Click Cancel or (No) to abort the attempt.

Reboot system

Use the Reboot System menu to reboot or shutdown the system.

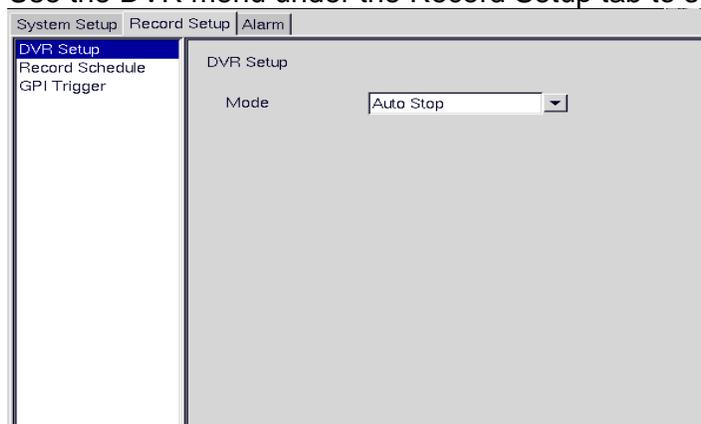


Use the keyboard or mouse to select either Shutdown or Reboot. Click Yes to perform the operation. Click Cancel or No to abandon.

b) Record Setup

DVR setup

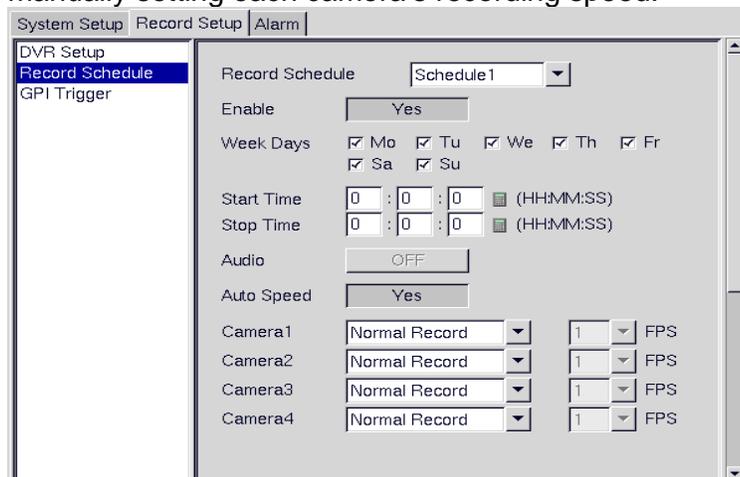
Use the DVR menu under the Record Setup tab to set the Digital Video Recorder parameters.



Select either Auto Stop or Cyclic Recording. Auto Stop recording stops when disk space runs out. Cyclic Recording continues to record until disk space runs out and then overwrites recordings, oldest records first. Click OK to save changes.

Record schedule

Use the Record Schedule menu under the Record Setup tab to set up automatic recording schedules for each camera and audio. You can set up to 16 record schedules that automatically record at given times and days. Auto Speed can be set to “Yes” for automatic recording frame rates or each camera can be individually set. Just remember to set the auto speed setting to No if manually setting each camera’s recording speed.

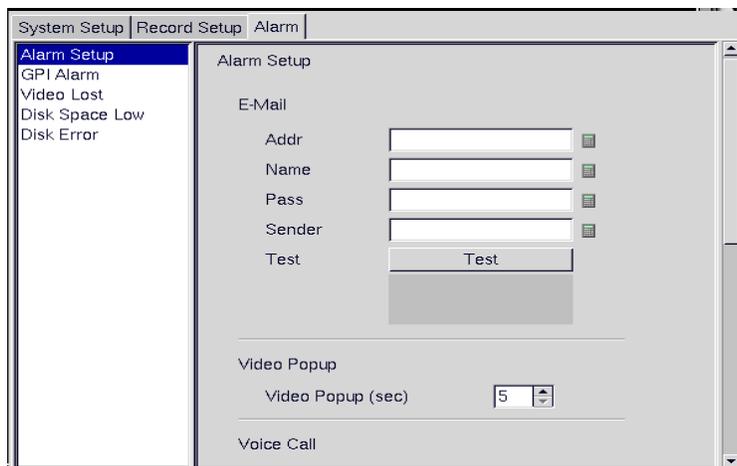


Use the keyboard or mouse to complete all fields and click OK to save changes.

c) Alarm

Alarm setup

Use the Alarm Setup menu under the Alarm tab to define what action is taken when an alarm is triggered. Through this menu, you can set up an E-mail address to which an E-mail is sent when an alarm is generated, or set up the device to display a video popup message on your monitor, or place a voice call.



The Voice Call options enable you to set up a voice modem that will make a call when the selected event (such as a GPI alarm, or video lost from a camera) occurs. Set the following options:

Redial - sets the number of times the voice modem will redial

Voice Repeat - sets the number of times the voice message is repeated on the voice call

Rec. Time - sets the time for which audio is recorded

Modem Speaker - sets the internal or external speaker to be used

Voice File - selects the voice file to be sent

Edit File Name - enables you to change the file name of the voice file

Use the keyboard or mouse to complete all fields and click OK to save changes. Refer to the following sections to see how to select voice call as the required action for specific events such as GPI alarm and so on.

Note: The Voice Call options will be grayed out in the menu system if the voice modem function is not selected in the serial port setup menu. Make sure that a voice modem is enabled in the device field in the Serial Ports menu item in order to place voice calls.

Voice call features

A voice call message can be recorded using an internal or external microphone, and can be played back using an internal or external speaker.

Up to 60 voice messages can be recorded and stored on the LE/LE-HC DVR and used for different alarm events.

Messages recorded for the voice call function must be between 5 and 10 seconds in length.

Known issues with the voice call function

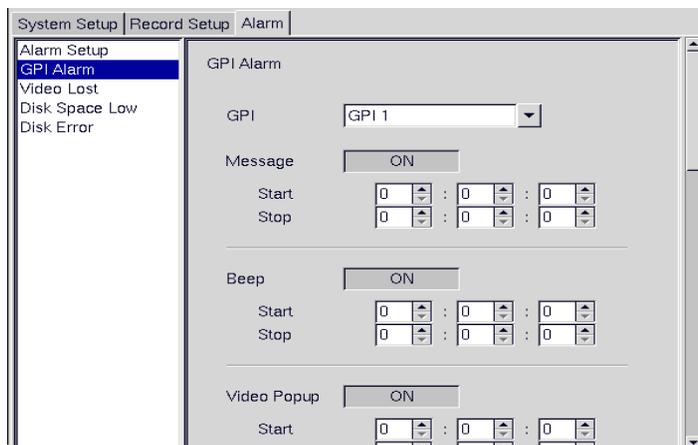
There will be three seconds of silence between a voice call being answered and the start of the message.

If the voice call function calls a phone with an automatic answering machine, the LE/LE-HC DVR will behave as if the phone has been answered.

The LE/LE-HC DVR does not support non-standard ring tones. If the LE/LE-HC DVR calls a phone and a non-standard ring tone is received, an error message will be generated.

GPI alarm

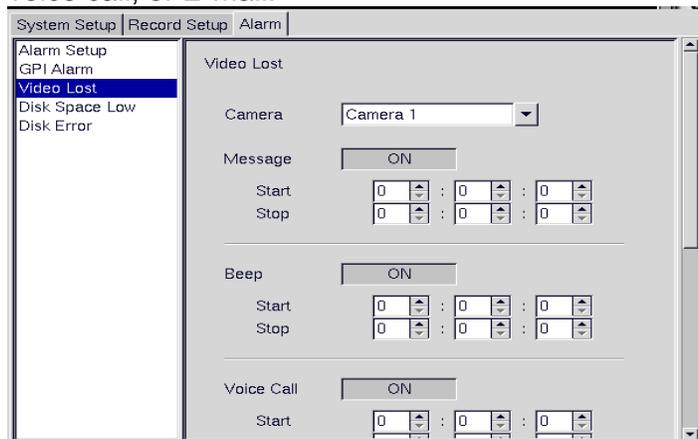
Use the GPI Alarm menu under the Alarm tab to set what actions are taken when a GPI alarm is generated. You can set up the alarm through a message, a beep, a video popup, or E-mail.



Use the keyboard or mouse to select the required GPI from the GPI drop-down box and complete all fields. For each action, you can specify the time interval over which the GPI is monitored for an alarm to be generated. For the Voice Call option, specify two telephone numbers where the call may be placed along with the voice file to be played. For the E-mail option, specify the recipient, subject, and text of the E-mail along with which camera's status is sent in the E-mail and the start and stop times. Click OK to save changes.

Video lost

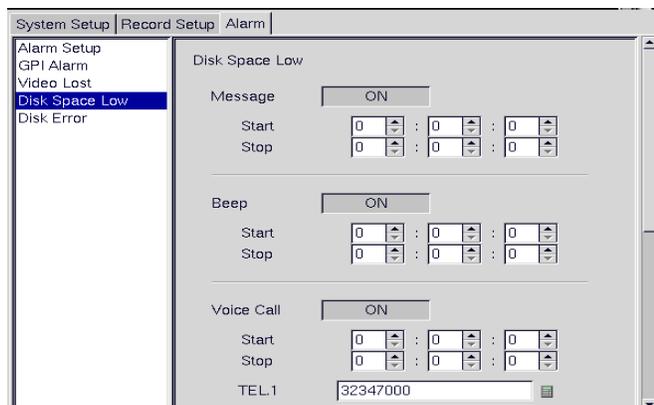
Use the Video Lost menu under the Alarm tab to set what actions are taken when video signal from a camera is lost. You can set up the alarm through a message, a beep, a video popup, a voice call, or E-mail.



Use the keyboard or mouse to select the required camera for video lost from the Camera drop-down box and complete all fields as described in GPI alarm. Click OK to save changes.

Disk Space Low

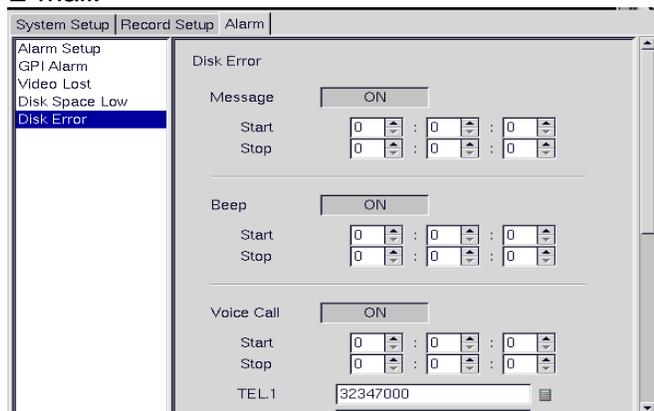
Use the Disk Space Low menu under the Alarm tab to set what actions are taken when the disk space is insufficient to record data. This alarm is generated only when the DVR mode is set to Auto Stop. Set up the alarm through a message, beep, voice call, video popup, or E-mail.



Use the keyboard or mouse to complete all fields as described in GPI alarm. Click OK to save changes.

Disk error

Use the Disk Error menu under the Alarm tab to set what actions are taken if there is an error while accessing the disk. You can set up the alarm through a message, a beep, a video popup, or E-mail.



Use the keyboard or mouse to complete all fields as described in GPI alarm. Click OK to save changes.

c) Motion Detection

Use the **Motion Detection** page to set motion detection parameters for each camera.



Each small square on the displayed grid can be set to detect motion. Use the left mouse button to make a square sensitive to motion. Use the right mouse button to make it insensitive. Click **OK** to save changes.

Chapter 7: Using PTZ Cameras in IR Mode

Configuration of PTZ Cameras in IR Mode is covered on Page 25 under d) PTZ Setup.

In full screen (IR Controller) mode, PTZ Controls are presented in 6 pages. Each page is defined below:

- | | |
|-------------|---|
| First page | Direction control. Use “ Up ”, “ Down ”, “ Left ” and “ Right ” button to make the camera move in the direction clicked. Press “ OK ” to save the values or press “ Cancel ” to go back to the previous menu. Press “ Next ” to enter the next page of PTZ camera control functions. |
| Second page | Zoom in / Zoom out control. Use “ Up ” and “ Down ” keys to zoom in or zoom out. Press “ Prev ” or “ Next ” button to change pages. |
| Third page | Focus control. Use “ Up ” and “ Down ” buttons to adjust focus. Press “ Prev ” or “ Next ” button to change pages. |
| Fourth page | Movement speed control. Press “ Left ” and “ Right ” button to adjust the camera Pan and Tilt speeds. Press “ Prev ” or “ Next ” button to change pages. |
| Fifth page | Preset Position recall. Press Numeric key 1 to 6 to recall the camera to the preset position saved in memory. Press “ Prev ” or “ Next ” button to change pages. |
| Sixth page | Preset position set up. Use “ Up ”, “ Down ”, “ Left ” and “ Right ” arrow keys to move the camera to the desired position and then press a numeric key 1 thru’ 6 to save this Camera preset. |

Appendix A

Running Mode	Network Mode
User's Name	
User's Password	
Administrator's Name	Administrator
Administrator's Password	sentry
Custom Modem Init String (COM1)	Nil
COM1 Baud Rate (bps):	115200
COM2 Baud Rate (bps):	9600
COM2 Hardware Flow Control	Enable
Video Encoding Algorithm	H.263
Set Video Resolution	320x240
Camera Control Device	Nil
Camera Control Timeout (Sec.)	120
Brightness	50
Contrast	50
Saturation	50
Hue	50
Quality	80
Compression Boost	None
Mirror Horizontally	Unchecked
Mirror Vertically	Unchecked
Auto Gain Control	Unchecked
Automatic	Unchecked
Mirror Horizontally	Unchecked
Mirror Vertically	Unchecked
MAX connections for this camera	0
MAX bandwidth for this camera (Bytes/sec)	0
MAX bandwidth of each connection for this camera (Bytes/sec)	0
Audio Source	1
Microphone Gain	50
Speaker Volume	50
Microphone Control Timeout	0
Speaker Control Timeout	60
IP address	192.168.10.10
DNS IP address	0.0.0.0
Gateway IP address	0.0.0.0
Sub net mask	255.255.255.0
Motion Detection	Enable
Motion Detection Sensitivity	50
Running Mode	Network Mode
User's Name	
Password	
Registry Server	http://www.registry.nfic.com.tw/registry.htm

Register HTTP Port	Nil
Registry Host Path	Cgi
Visibility in Registry Server	Listed on Registry Server
Alarm Status (GPI 1/2/3/4)	NO
Time Stamp	Low center
Time Stamp Format	MM/DD/YY
Send Mail	Disable
FTP Upload	Disable

Appendix B

PTZ Cameras Currently Supported by LE/LE-HC Series DVR

VP-202
VP-203
Canon VC-C3
PIH-717x
Acqutek DOM-1
Pelco (D)
VP-202
Canon VC-C4
Kalatel KTD 3
Test VP202 PT
Test Canon VC
Pelco (D) PTZ
DynaColor 772
NICECAM MD-10
PIH-7600
Custom PTZ
Pelco (P)

Custom means configuration of individual settings is possible, however, not supported, and in most cases do not give full functionality.