Rugged CCTV
Industrial Grade Digital

ELX8-60

Installation Guide

(v 1.0a)

FCC Compliance Statement

Caution : Any changes or modifications in construction of this device which are not expressly approved the party responsible for compliance could void the user's authority to operate the equipment.

NOTE : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications, However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

CAUTION

1. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.
2. Disposal of used batteries according to the general recommendations against the environmental pollution.
3. Do not throw the batteries into a fire, and do not heat, short-circuit or attempt to disassemble the batteries.
4. Do not attempt to recharge the batteries.

Important Notice

1. Do not place heavy objects on the top of the ELX8-60.

2. ELX8-60 is not weatherproof. In case of outdoor use, equip a weatherproof case to protect ELX8-60 from water, moisture, or temperature (higher or lower than specifications). To clean the ELX8-60, gently wipe the outside with a clean dry cloth.

3. Be sure to use a DC adapter that is provided by Rugged CCTV Connecting ELX8-60 directly to an AC current will cause electric damages to ELX8-60.

4. Be careful not to drop the ELX8-60. Physical shocks may harm the product. In addition, be sure the ELX8-60 is secured after installation.

5. ELX8-60 is made of metal. Therefore you can hurt human beings if yu throw it to them or hit on them. When installing ELX8-60, be cautious to locate on safe places where children are unreachable.

6. If ELX8-60 does not operate properly, please contact the closest RUGGED CCTV distributor for after sales service. Tampering or disassembling the product will void the warranty.

7. Security surveillance laws may differ for each country. Therefore, please contact the local region first to avoid any surveillance law violations.

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OVERVIEW

1. What is ELX8-60?

The ELX8-60 is an 8-analog channels network digital video recorder. Video, Audio, and Text Event-Logs are digitized and stored on two internal hard-drives.

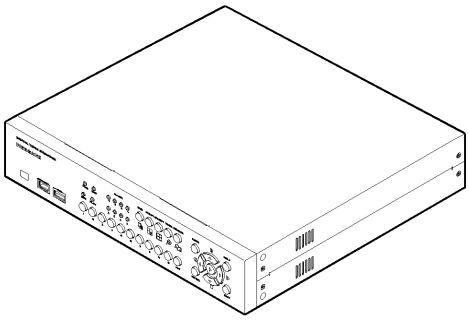
Key features

- 8 analog video channels
- 1 channel audio recording & playback
- Max. 60 / 50 ips (NTSC / PAL) recording speed
- Realtime (30 / 25 ips for each channel) monitoring
- Built-in software multiplexer for all 8 live monitoring channels (1 / 4 / 9 Ch Mode on CCTV Monitor as well as PC)
- Maximum 4TB storage capacity (IEEE 1394 for external HDD)
- ATM/POS transaction information text recording and search with corresponding video
- 4 pairs of sensor inputs and alarm outputs
- Built-in hardware motion detection with search function (64-division comparison)
- Various efficient back-up methods (IEEE 1394(FiWi), Ethernet)
- PTZ Control (Preset support) via RS 232 and RS 485/RS422
- User-friendly 32bit True-colored Graphic OSD Menu
- Dynamic IP (DHCP, Floating IP) support (when xDSL and Cable Modem are used)
- IR remote controller (User controls PTZ with remote controller)
- Remote Management Software (DVR Manager)

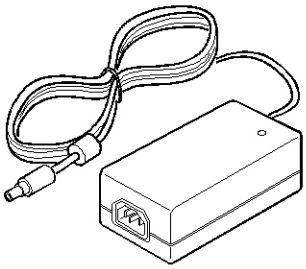
2. Supplied Accessories

Unpack and check all the items as below.

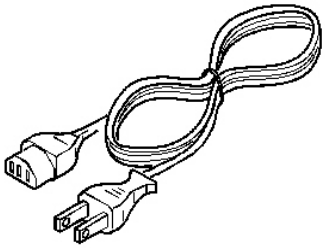
1. ELX8-60 (1)



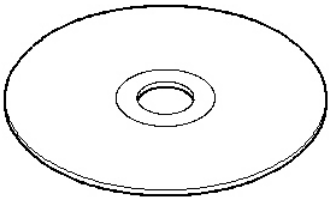
2. DC Power Supply (1)
(110V~220V)



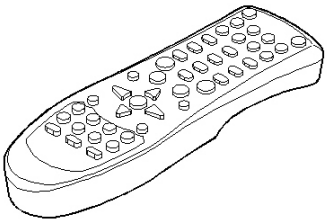
3. AC Power Cord (1)



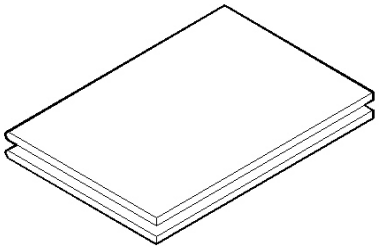
4. CD-ROM (Including DVR Manager) (1)



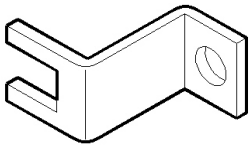
5. Remote Controller (1)



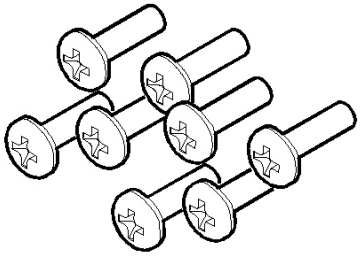
6. Guide (2)



7. Plug Bracket (1)

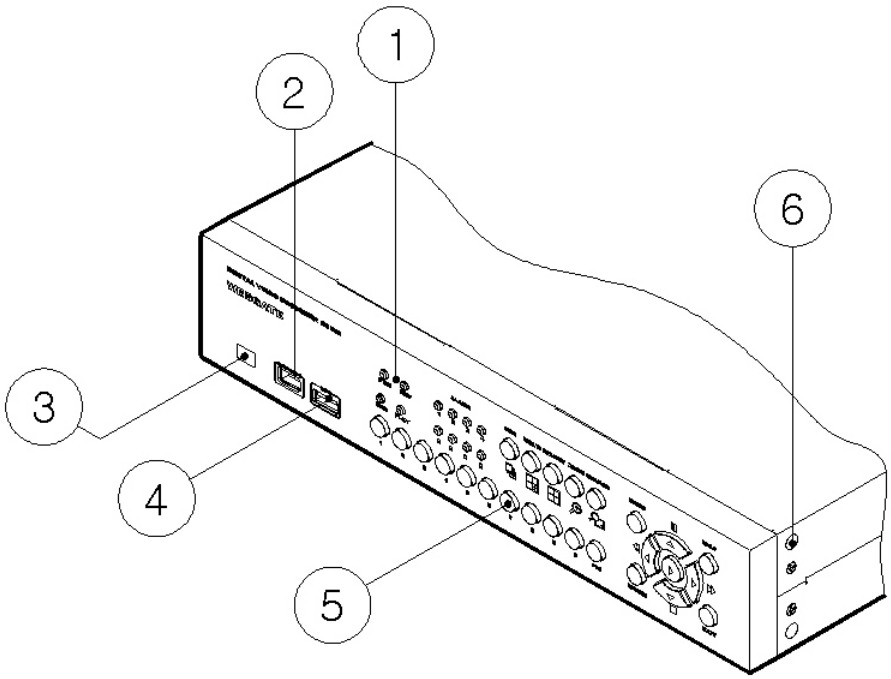


8. HDD Fixing Screw (8)



3. Description & Function

ELX8-60 Front



(1) LED

(2) IEEE1394 connecter

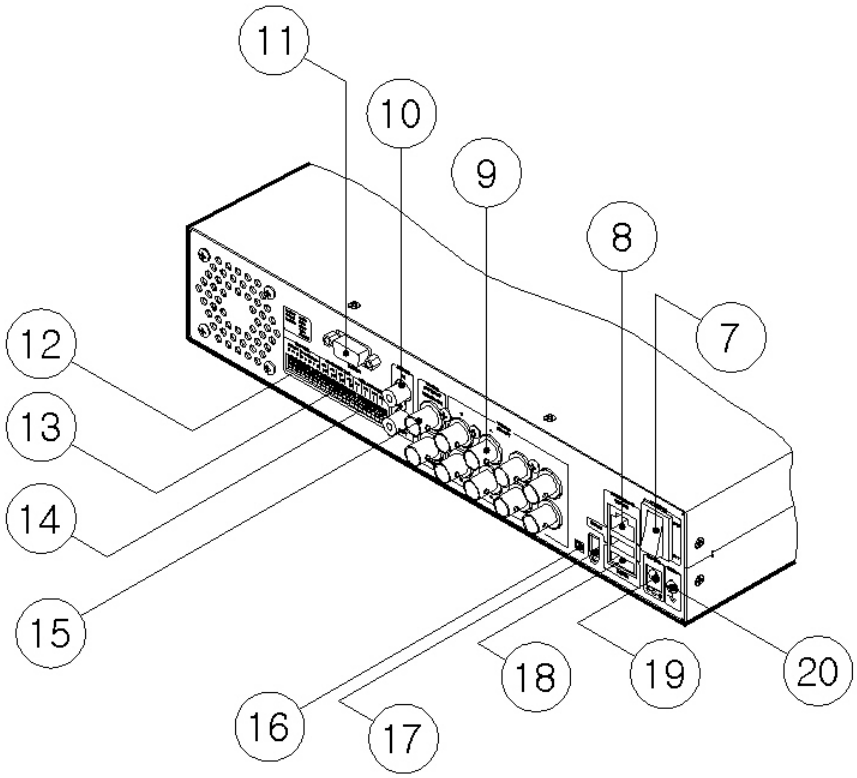
(3) Remote controller receiver

(4) USB connecter

(5) Function buttons

(6) Bracket fixing hole for rack mount

ELX8-60 Rear



(7) Power switch

(8) Ethernet connector

(9) BNC connector for Video input

(10) Audio input / output connector

(11) RS232 connecter (9Pin D-Sub)

(12) Terminal block for RS232 & 422/485

(13) Terminal block for Sensor input

(14) Terminal block for Relay output

(15) Video output for MONITOR or VCR

(16) Video input type/impedance select & remote controller switch

(17) IEEE1394 connecter

(18) USB connecter

(19) Power connector (DC12V)

(20) GND

INSTALLATION AND CONNECTION

4. Connecting & Running ELX8-60

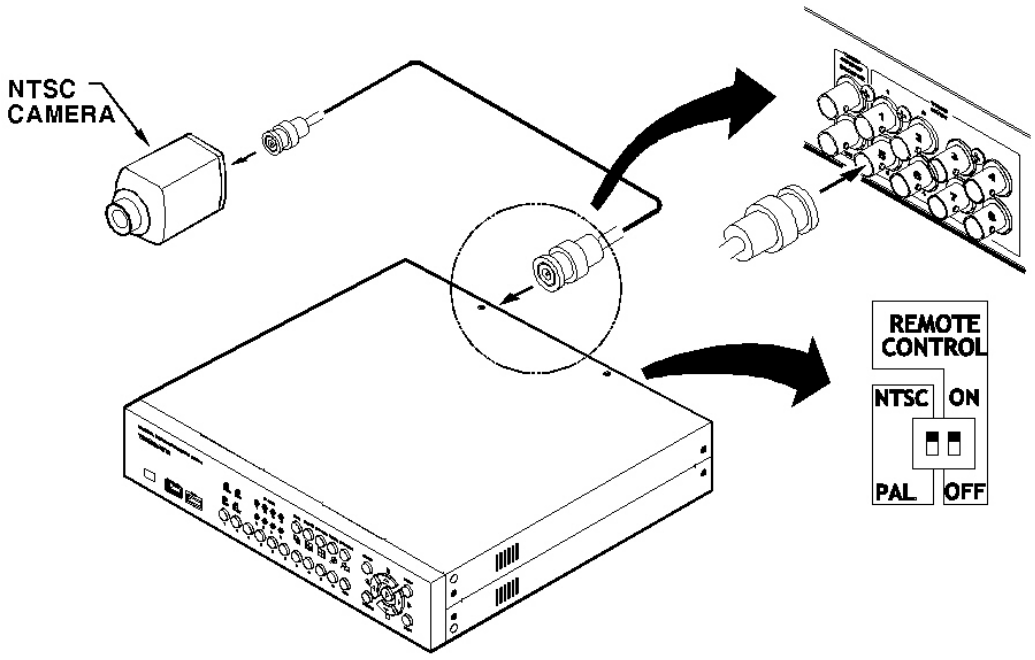
4.1. Connecting camera

(1) Set video type (NTSC/PAL) by rear panel 's switch.

(2) Connect CCTV camera to ELX8-60 with BNC cable as shown below.

<Note>

The video type for all channels should be either NTSC or PAL. NTSC is the standard used in North America.

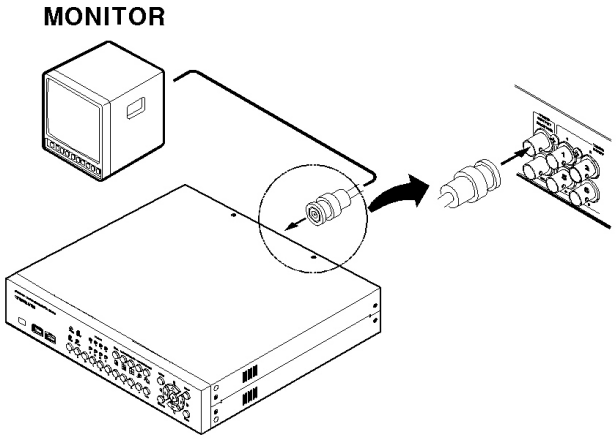


4.2. Connecting Monitor

(1) Connect CCTV monitor to ELX8-60 with BNC cable as shown below.

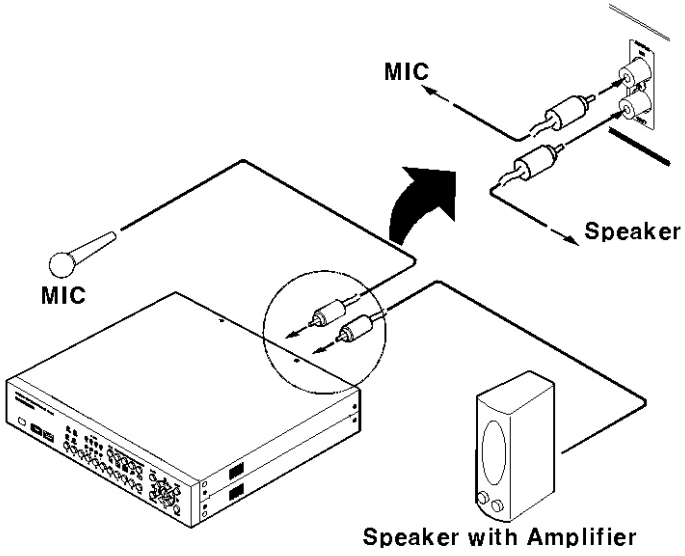
<Note>

ELX8-60 has two video output ports ; for Monitor and VCR. The output signals from the two ports are same and either port may be used.



4.3. Connecting Audio

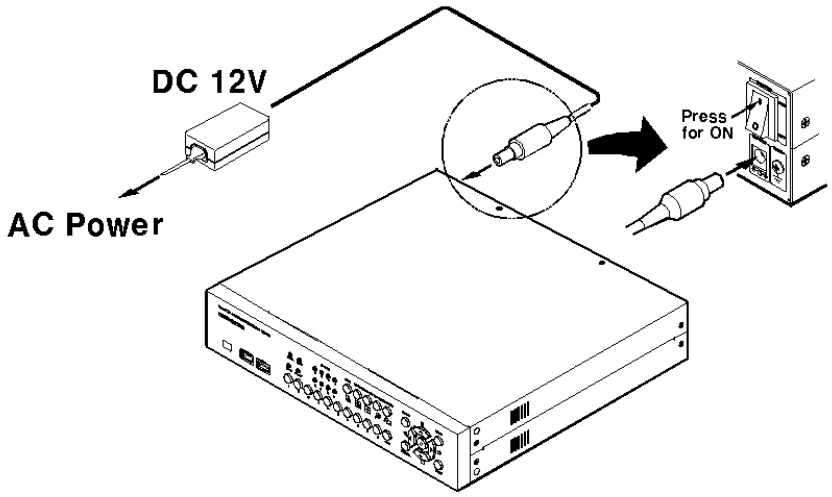
(1) Connect audio signal to ELX8-60.



4.4. Supplying Power

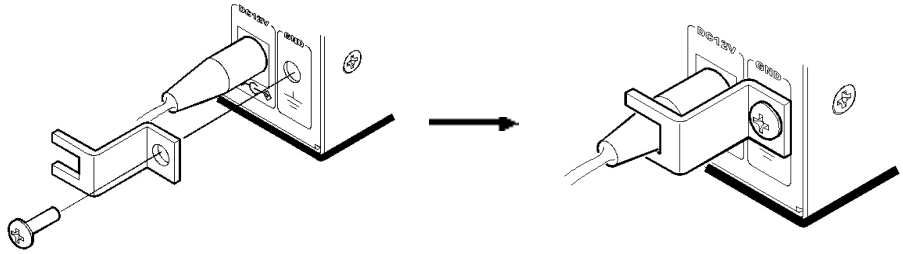
(1) Connect power cable to ELX8-60.

(2) Turn on the power switch located on the ELX8-60 rear panel.



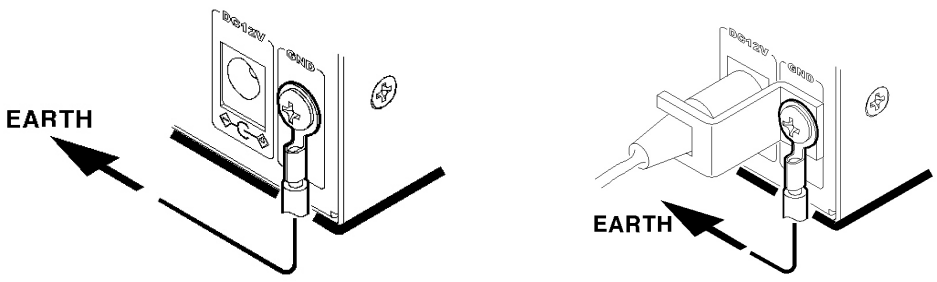
<Note>

Use the plug bracket to secure the power cable if needed.



<Note>

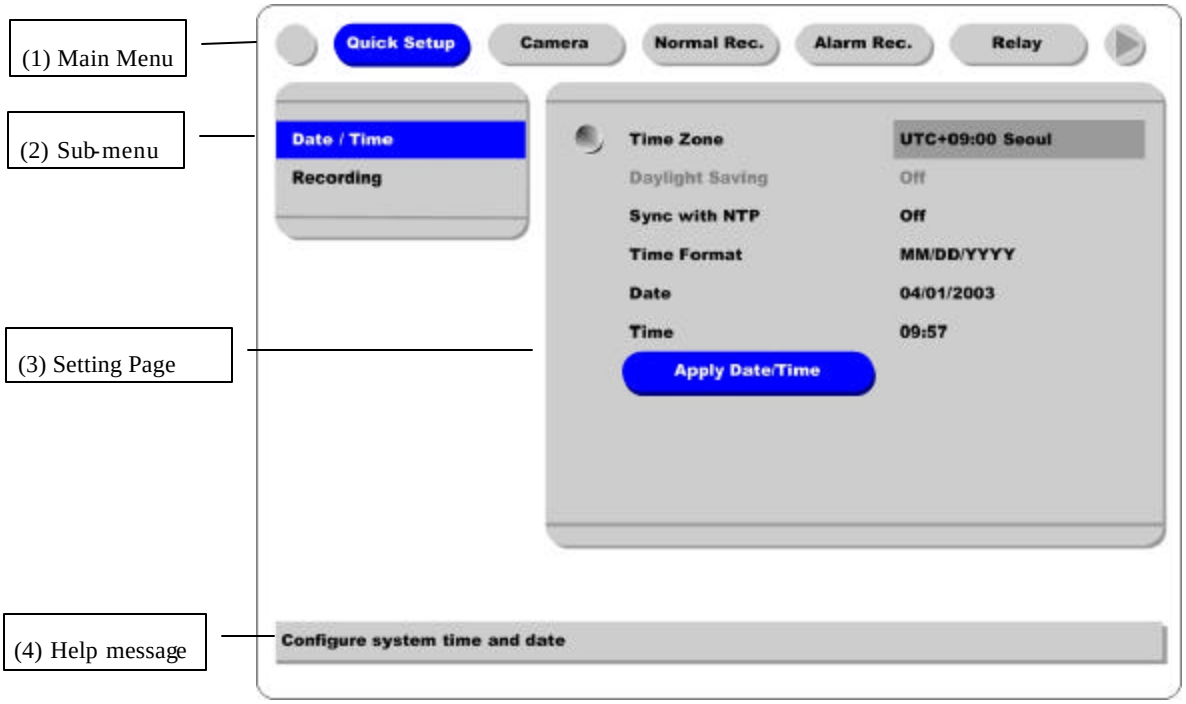
To connect EARTH, refer to the following picture.



5. Running OSD menu

5.1. Using menu

Press the [MENU] button to open the OSD Configuration Menu.



(1) Main Menu Tabs: The selected tab is shown in blue and the related sub-menus will be shown below the tab. To move to the previous/next Main Menu Tab, use the [/] arrow buttons. To move to a sub-menu, press the [ENTER] or [ ] buttons.

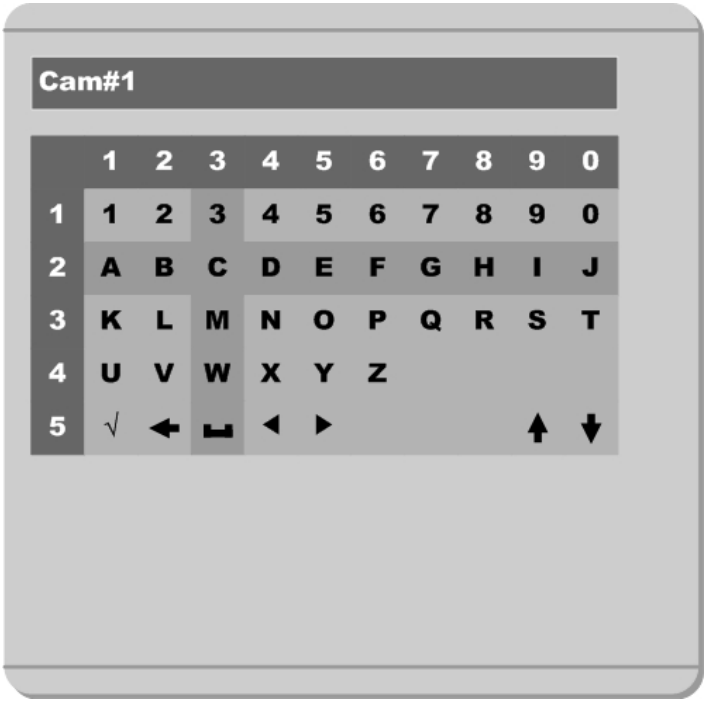
(2) Sub-menu: The selected sub-menu is shown in blue and the related setting page will be shown to the right of the sub-menu. Use the [/] arrow buttons to move within the sub-menu list. To move to the setting page press the [ENTER] button. To exit the setting page, press the [EXIT] button.

(3) Setting Page: The selected item is shown in gray. To move within each page, use the [/] or [/] arrow buttons. Press the [ENTER] button to change the value of a setting. When the setting value is a word, a dialogue box to edit the word will open. When setting value is a number, it should be set with using the [/] or [/] arrow buttons. After the value is set, press the [EXIT] button. To exit the Setting Page, press the [EXIT] button.

(4) Help message : Related information for each menu/setting will be displayed here.

5.2. Dialogue Box to Edit a Word

There are two methods to set word.



(1) Using number button

Enter the related numbers in order of horizontal/vertical . (For example, in order to select "C", press [3] and [2] buttons.)

(2) Using arrow button

Select a value using the [/] or [/] buttons. The intersection of the horizontal and vertical bar is selected value. Press the [ ] button to confirm the selected value.

(3) Function word

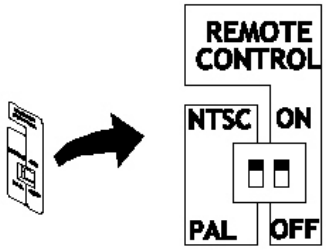
The following symbols are for executing specific functions:

- ✓ *1#2.1* : Enter
- ← : Back Space & delete
- ␣ : Space
- : Move to left
- : Move to right
- ↑ : Previous Code Page
- ↓ : Next Code Page

6. Setting remote controller

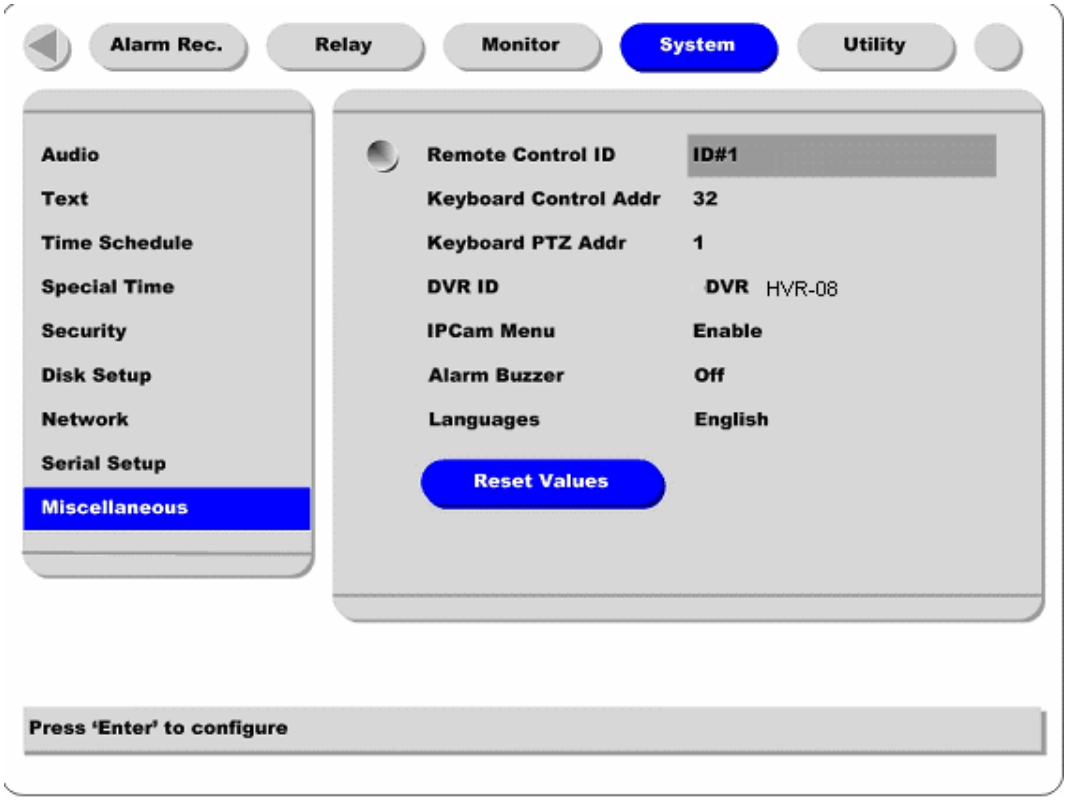
6.1. Setting remote control DIP switch

Set the remote control DIP switch to "ON."



6.2. Setting ID of ELX8-60

When controlling several ELX8-60s with one remote controller, set Remote Control ID as follows.



(1) Press the [MENU] button.

(2) Select "System" with using [ ] button and press the [ENETR] or [ ] button.

(3) Select "Miscellaneous" from the sub-menu list using the [ ] button and press the [ENETR] button.

(4) Select "Remote Control ID," and press the [ENETR] button.

(5) Select a value using the [/] buttons and press the [EXIT] button.

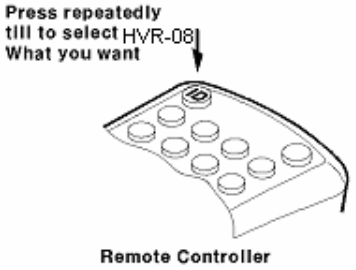
(6) Press the [EXIT] button to exit the Settings Page and return to Monitor mode.

<Note> Remote Control ID

Up to 16 ELX8-60s can be controlled with a single remote controller.

6.3. Selecting ELX8-60

If several ELX8-60s are set with unique ID numbers, they can be controlled with one remote controller. To select a specific ELX8-60, press the ID button of remote controller until the 8 LEDs on the front of the ELX8-60 light up and a buzzer sounds.

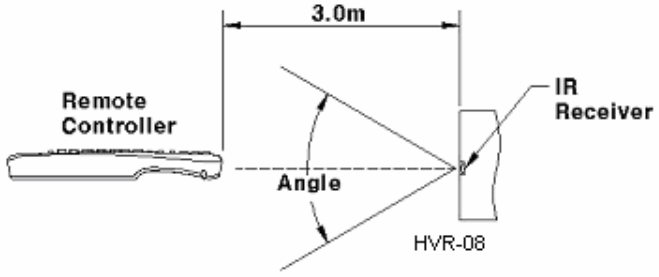


Unselected	STATUS: PWR NET; ALARM: 1 2 3 4; REC PLAY; 1 2 3 4
Selected	STATUS: PWR NET; ALARM: 1 2 3 4; REC PLAY; 1 2 3 4; All LED Blink One Time

<Note>

Because remote controller ID is sixteen, ELX8-60 will correspond.

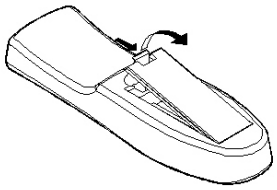
6.4. Operable range of remote controller



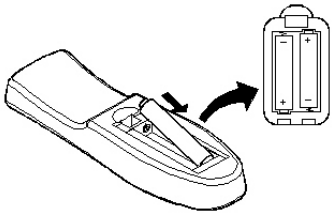
Horizontal Angle : ± 45°
Vertical Angle : ± 60°

6.5. Loading the batteries into remote controller

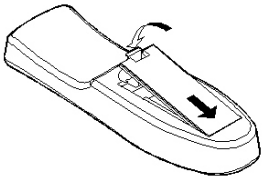
Remote controller requires two AAA-type batteries.



1. Remove the battery cover.



2. Taking care that the poles(+/-) are correctly positioned



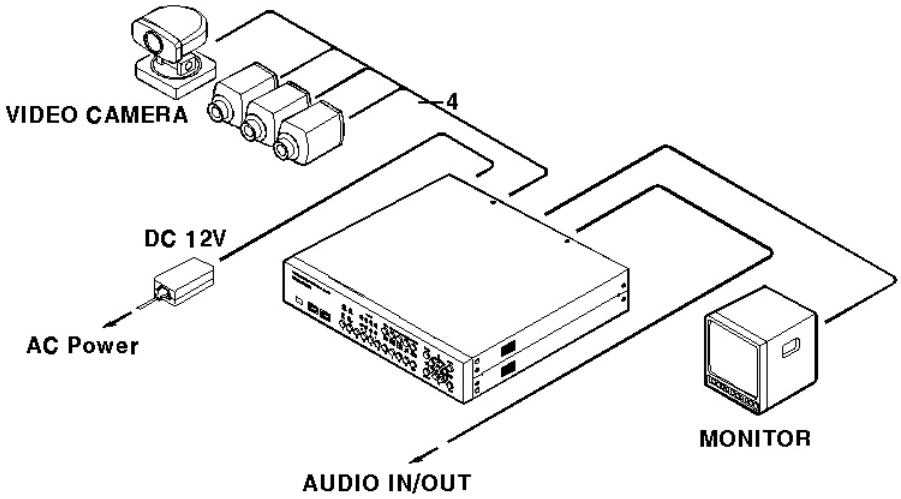
3. Replace the battery cover.

<Note>

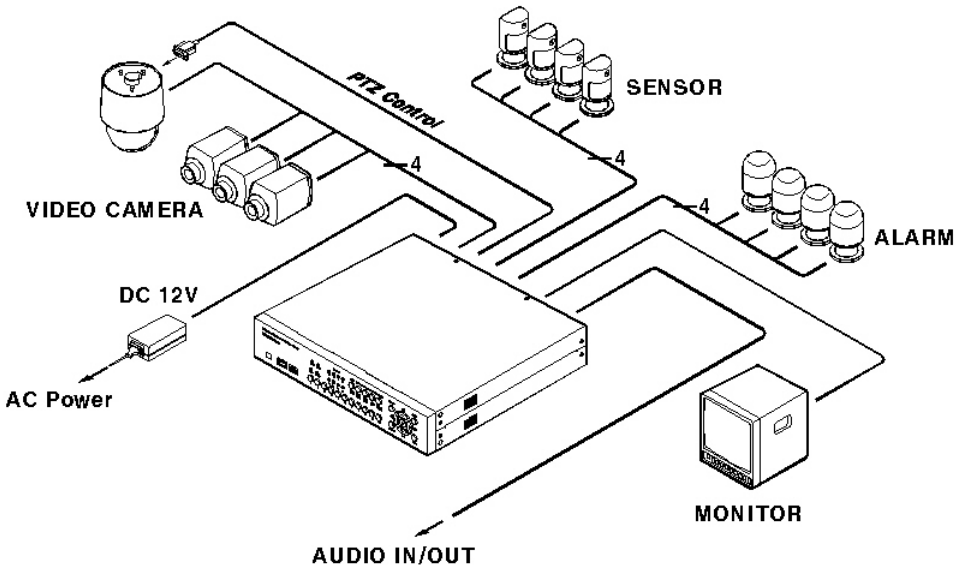
Batteries are not included as a packing accessory.

7. ELX8-60 Configuration

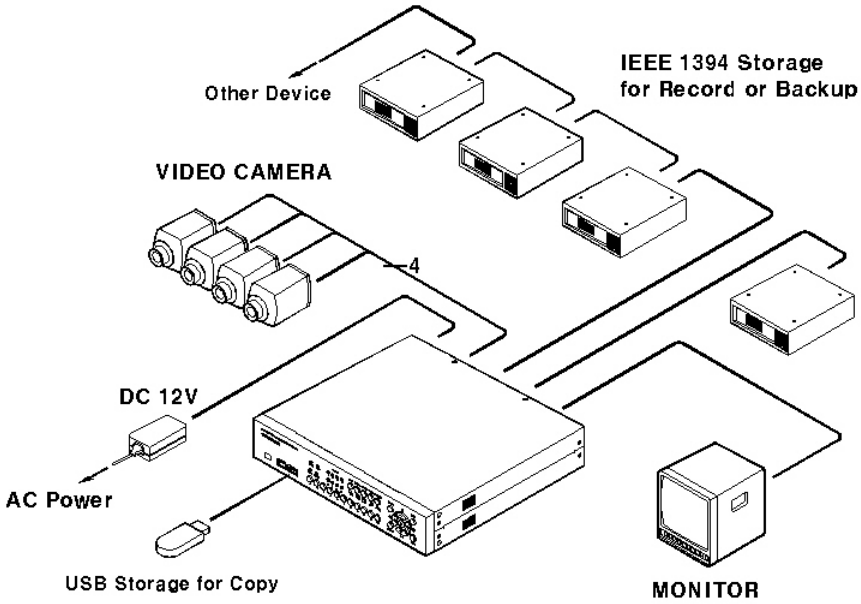
7.1. Basic Configuration



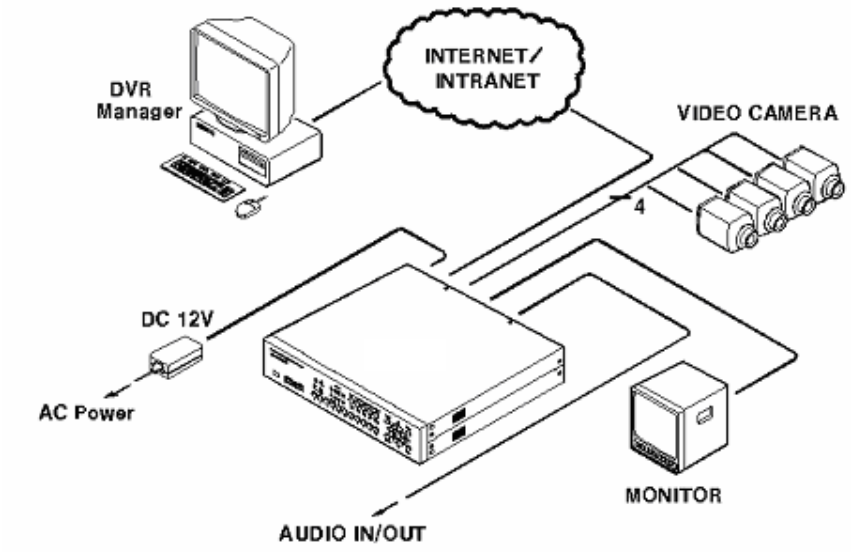
7.2. Advanced Configuration



7.3. External Storage & Backup Configuration



7.4. Internet/Intranet Configuration



8. ELX8-60 Basic Setting

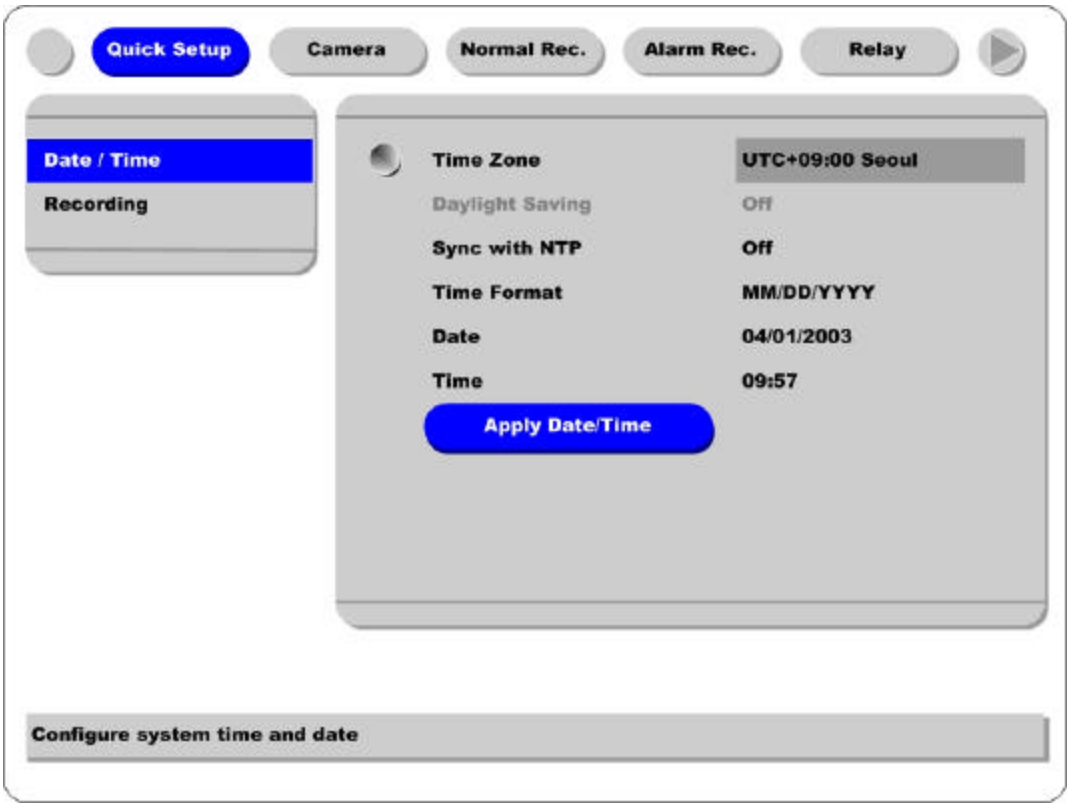
8.1. Viewing Image

After initial start-up, images from Ch.1~4 are displayed in a quad-split screen.

<Note>

If user password is set, a prompt for entering the password will appear.

8.2. Setting Date & Time



(1) Press [MENU] button, and select "Quick Setup" tab.

(2) Select "Date/Time" and enter the Settings Page by pressing [ENTER].

8.2.1. Time Zone

(1) Select "Time Zone" and press [ENETR] button to configure.

(2) Select a value using the [/] button and press the [EXIT] button when finished.

8.2.2. Daylight Saving

(1) "Daylight Saving Time" is only activated for time zones that use Daylight Savings. If activated, press [ENTER] to enter a new value.

(2) Select "On/Off" using the [/] button and press the [EXIT] button when finished.

8.2.3. Sync with NTP

In order to synchronize time with NTP (Network Time Protocol) server, select "On".

(1) Select "Sync with NTP" using the [/] or the [/] buttons and press [ENTER] button.

(2) Select "On/Off" using the [/] button and press the [EXIT] button.

8.2.4. Time Format

(1) Select "Time Format" using the [/] or the [/] buttons and press [ENTER].

(2) Two Time Formats are available; 'MM/DD/YYYY' and 'YYYY/MM/DD'. Select a value using [/] buttons, and press the [EXIT] button when finished. (Default value is 'MM/DD/YYYY'.)

8.2.5. Date

(1) Select "Date" using the [/] or the [/] buttons and press [ENTER].

(2) Select 'MM'/'DD'/'YYYY' using the [/] buttons, and select the value using the [/] buttons.

(3) Press the [EXIT] button when finished.

8.2.6. Time

(1) Select "Time" using the [/] or the [/] buttons and press [ENTER].

(2) Select 'HH'/'MM' using the [/] buttons, and select the value using the [/] buttons.

(3) Press the [EXIT] button when finished.

8.2.7. Apply Date/Time

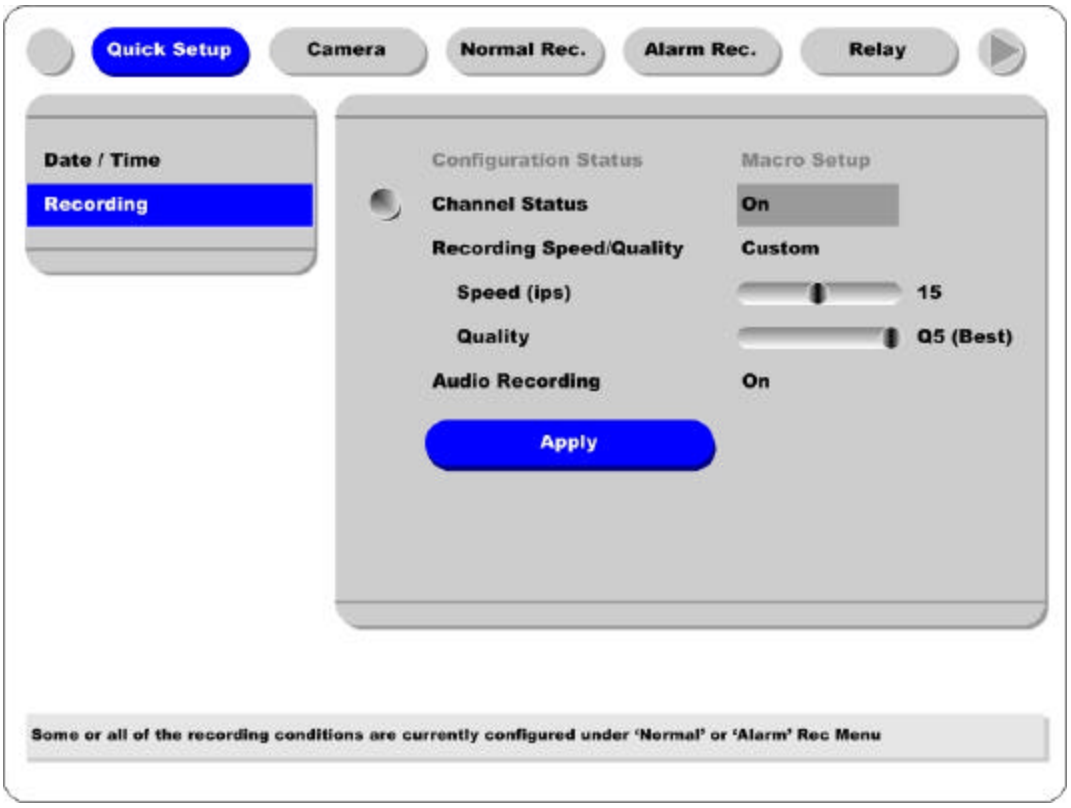
Most setting values are applied automatically, when exiting from the related menu page. But "Date" & "Time" settings are not applied automatically because they may critically affect the file system of the recorded HDD. To apply Date/Time settings confirm settings with [Apply Date/Time] button.

(1) Select "Apply Date/time" using the [/] or the [/] buttons and press [ENTER]. A warning message will appear.

(2) Select "OK" using the [/] or the [/] buttons and press [ENTER]. To cancel, press the [EXIT] button.

8.3. Setting Recording Condition

Recording conditions under the "Quick Setup" menu tab apply the same values to all analog channels 1~8. All settings are applied for 24 hours/day regardless of the values set for "Time Schedule" or "Alarm Rec."



(1) Press [MENU] button, and select "Quick Setup."

(2) Move to sub-menu by pressing [ENTER] or the [ ] button.

(3) Select "Recording" using the [/] buttons and press the [ENTER] button.

8.3.1. Configuration Status

Displays the recording configuration status. When setting up through the "Quick Setup" menu, "Quick Setup" will be shown. When setting up through "Normal Rec." or "Alarm Rec.," "Custom Setup" will be shown.

<Note>

Only when all the 16 channels' normal recording conditions are set through Macro Setup' and maintained, it is marked as 'Macro Setup'. Otherwise, it will be marked as 'Custom Setup'.

8.3.2. Channel Status

(1) Select "Channel Status" using [/] buttons and press the [ENTER] button.

(2) Select a value using the [/] button. Press the [EXIT] button when finished.

8.3.3. Recording Speed/Quality

(1) Select "Recording Speed/Quality" using [/] buttons and press the [ENTER] button.

(2) Select a value using the [/] button. Press the [EXIT] button when finished.

<Note> Recording Speed/Quality means

Low : Speed=1ips and Quality=Q5

Std. : Speed=5ips and Quality=Q5

High : Speed=15ips and Quality=Q5

Custom : Speed and Quality = Manually defined by User.

8.3.4. Speed(ips)

When "Recording Speed/Quality" is set as "Custom," values can be set manually.

(1) Select "Speed" using [/] buttons and press the [ENTER] button.

(2) Select a value using the [/] button. Press the [EXIT] button when finished.

8.3.5. Quality

When "Recording Speed/Quality" is set as "Custom," values can be set manually.

(1) Select "Quality" using [/] buttons and press the [ENTER] button.

(2) Select a value using the [/] button. Press the [EXIT] button when finished.

8.3.6. Audio Recording

(1) Select "Audio Recording" using [/] buttons and press the [ENTER] button.

(2) Select a value using the [/] button. Press the [EXIT] button when finished.

8.3.7. Apply

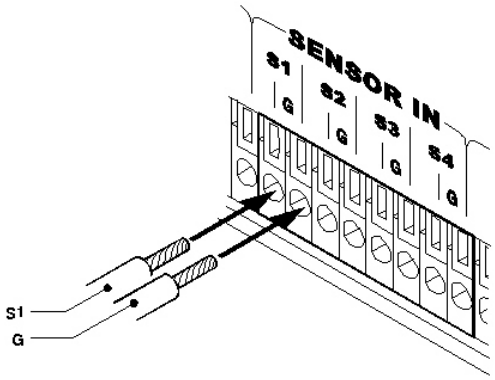
(1) Select "Apply" using [/] buttons and press the [ENTER] button.

(2) Setting values are applied and the previous menu will be displayed.

9. Connecting and Configuring Sensor

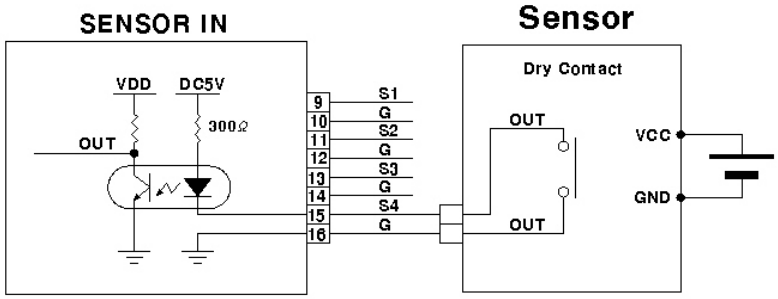
9.1. Connecting Sensor Input

To connect a sensor to S1, fix the wire to "S1" and "G".

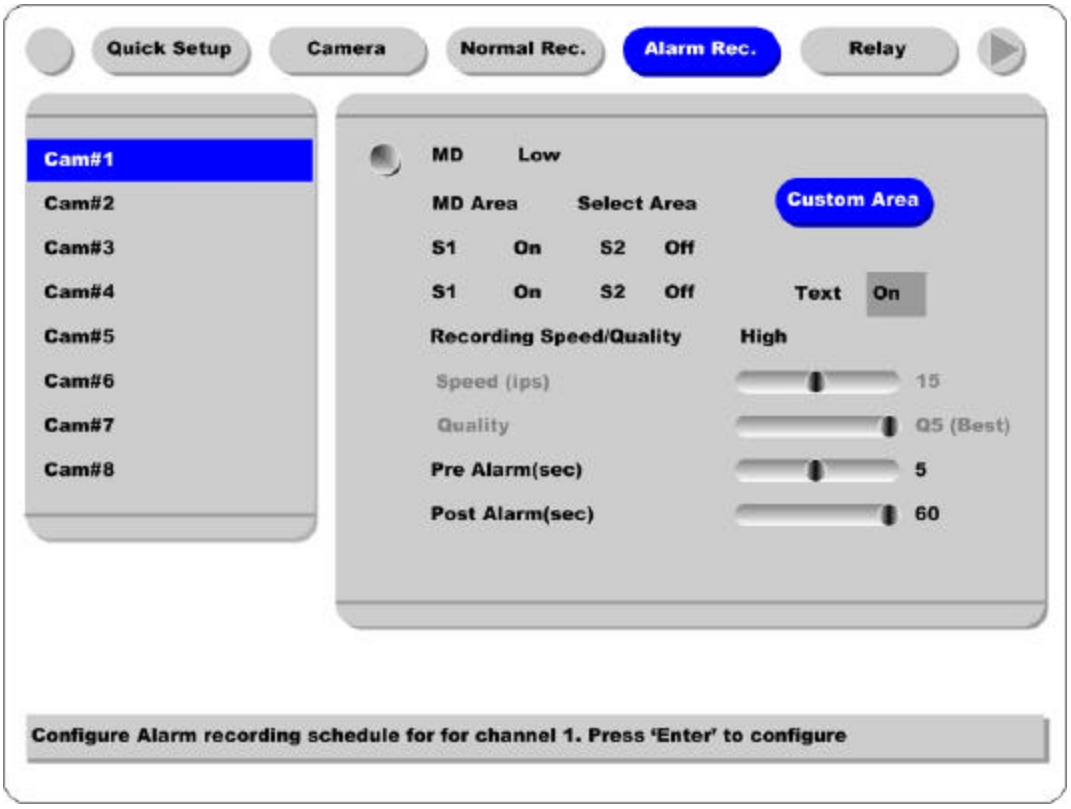


<Note>

Devices connected to the sensor input should have "Dry contact." The following diagram is of an electric circuit with approximately 12mA flows.



9.2. Setting Sensor at OSD menu



(1) After a sensor is connected, it can be activated through the OSD Configuration menu.

(2) Select the sensor number (S1, S2, etc.) and press the [Enter] button to configure. Use the [/] buttons to select "On" or "Off." Press [EXIT] when finished.

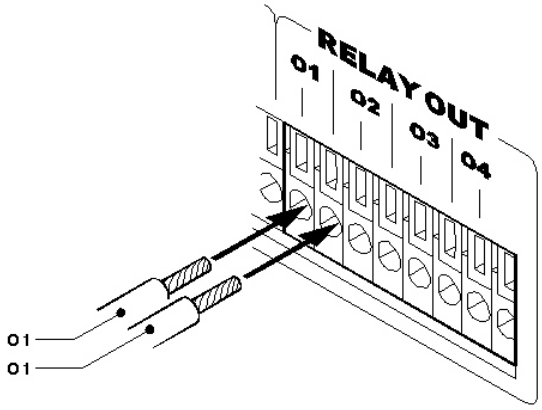
(3) When activated, the "Pre / Post Alarm" function will cause the ELX8-60 to record images at the specified Speed and Quality for a length of time before and/or after the sensor is triggered.

10. Connecting & Configuring Relay Out

10.1. Connecting Relay Out

ELX8-60 has total four ports of Relay Out.

To connect a device to "O1," connect the wires to two "O1"s.

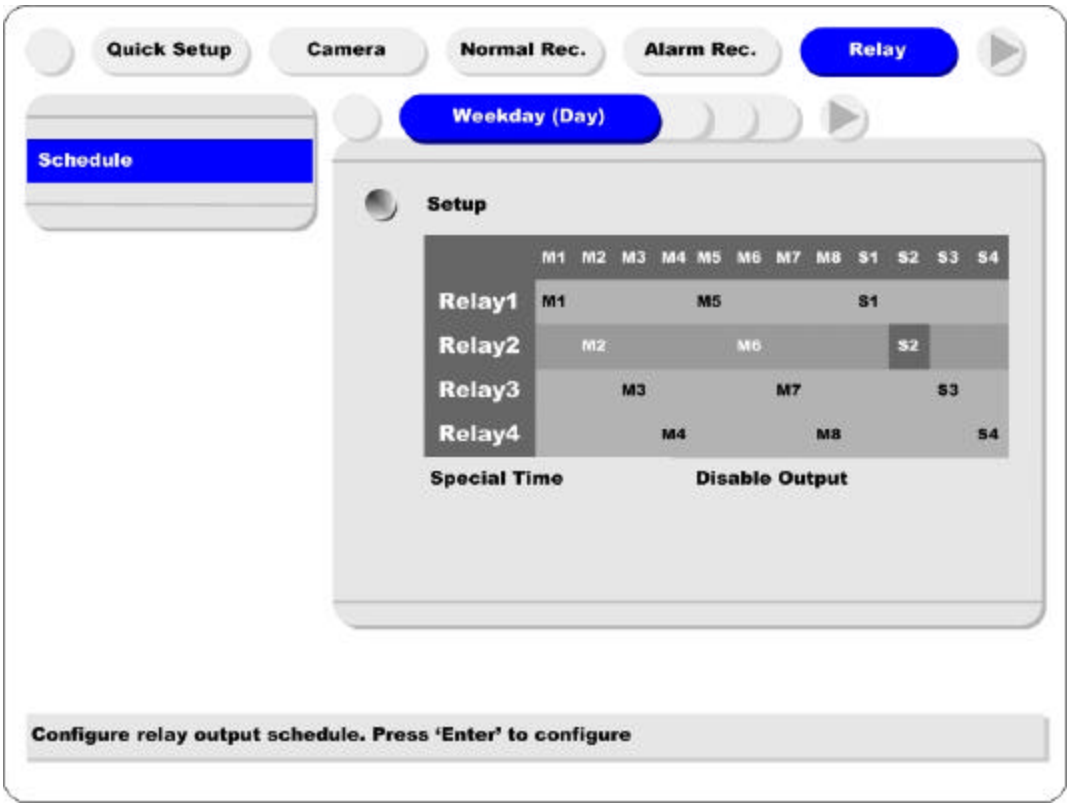


<Note>

The rated voltage and current of Relay Out are as follows. Do not exceed the rated values.

Maximum Switching Capacity	24V DC, 1.25A, 30W
	125V DC, 0.24A, 30W
	125V AC, 0.5A, 62.5VA

10.2. Configuring Relay Out

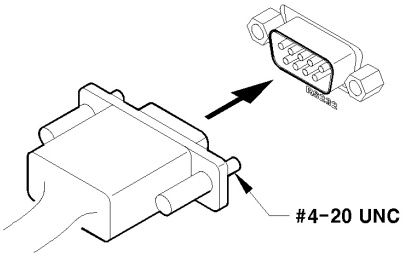


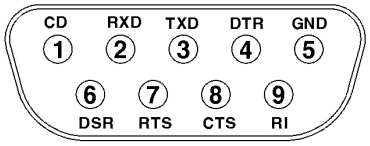
Each relay can be synchronized with a sensor input or with motion detection for each of the four time schedules (Weekday (Day), Weekday (Night), Weekend (Day), Weekend (Night)). Relays can also be controlled locally by pressing the [SEARCH/RELAY] button followed by the relay number (1-4). Relays can also be controlled remotely through the "DVR Manager software."

11. Connecting External Device with Serial Port

11.1. Connecting Text Input Device (ATM / POS / Access Control)

In addition to images, the ELX8-60 can record text data received from POS/ATM through the RS232 serial port.





Connect RS232 to 9pin D-sub of ELX8-60, and configure the "Text" sub-menu under the "System" tab.

Set "Serial Setup" under the "System" menu tab to "RS232" and "Device" to "Text." The baud rate may differ for each device; consult the device manual for more information.

<Note>

Before installing any external device, consult with the local RUGGED CCTV distributor. Some external devices may not be compatible with the ELX8-60.

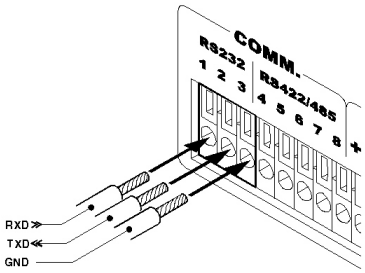
12. Connecting & Configuring Serial Ports for Pan/Tilt/Zoom

12.1. Connecting Serial Port

The ELX8-60 has most major PTZ protocols already pre-programmed. Makes and models not supported can still be controlled using the Transparent Protocol. For a list of supported protocols, refer to the list on the OSD Configuration menu.

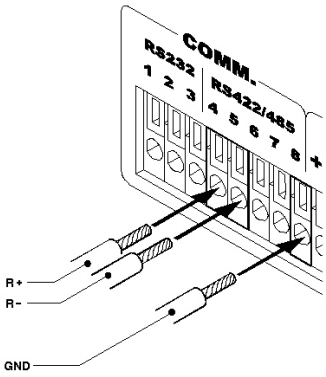
12.1.1. Connecting RS232

Fix the wire to 1~3 pins (RX, TX, GND).



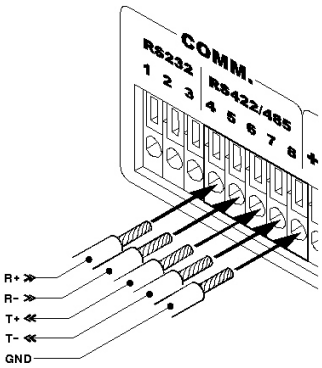
12.1.2. Connecting RS485

Fix the wire to 4~5 pins and 8 pin (R+, R-,GND).



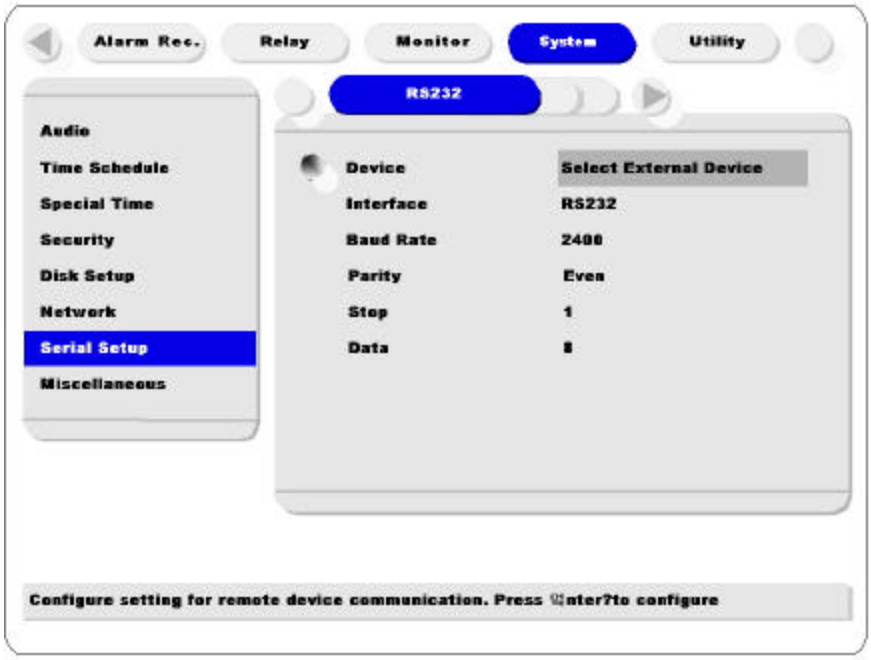
12.1.3. Connecting RS422

Fix the wire to 4~8 pins (R+, R-, T+, T-, GND).

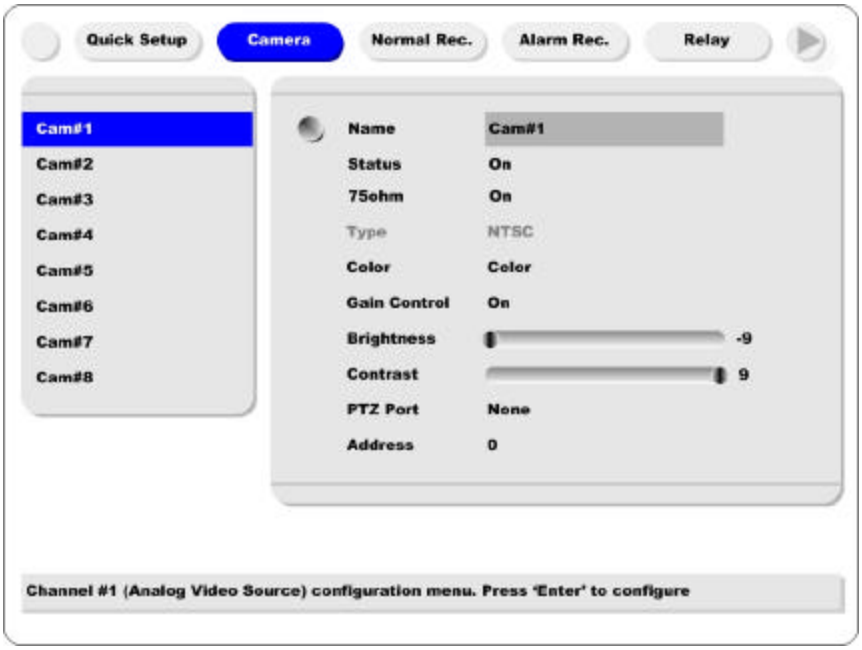


12.2. Configuring Serial Port

Configure PTZ serial ports and available modes at "System / Serial Setup".



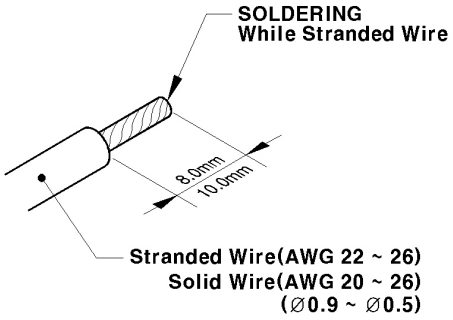
After completing serial setup, configure base address and port for each channel under the "Camera" menu tab. When connecting PTZ devices to several cameras, be sure the base address matches the address for the camera.



<Note> Wire Handling

Trimming Wire

When connecting a wire to a terminal block, follow the instructions below. Note the different types of wire that can be used.

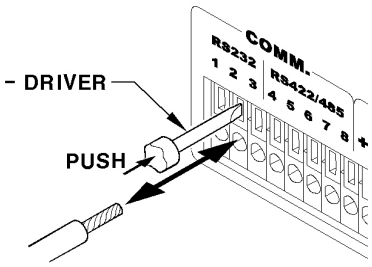


Stranded Wire: Peel off the wiring cover 8~10mm and solder it. Wire gage should be AWG 22 ~ 26.

Solid Wire: Peel off the wiring cover 8~10mm and solder it. Wire gage should be AWG 20 ~ 26.

Inserting & removing wire

To insert the wire, use a screwdriver as shown in the diagram to the right.



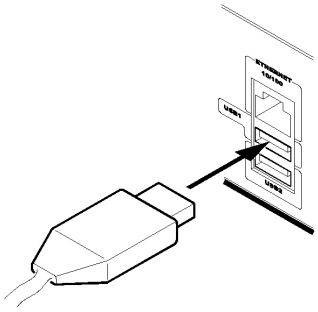
13. Connecting USB Device

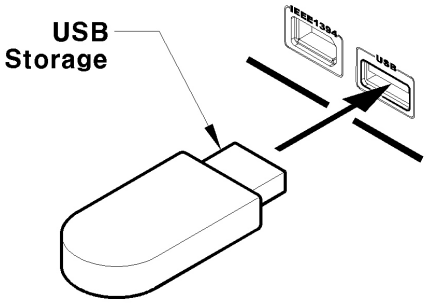
USB port can be used to copy up to 1 minute of images to a USB Flash memory disk. When connecting USB device, do not exceed the rated values of USB device.

USB Spec.	Ver 1.1 (Max 12M bps)
Available Device	USB Memory Stick,
Output Voltage/Current	Max. 200mA per DC 5V / Port

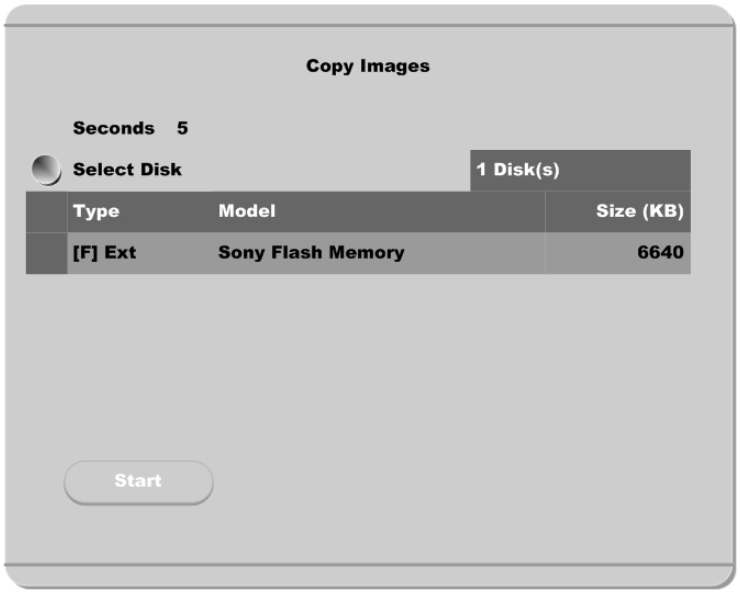
<Note>

The disk should be formatted with FAT32 type.





If properly connected, the disk is recognized automatically as in the following picture. To copy images, the process is as follows: Set copy range (up to 1 minute) → Select drive → Copy (press "Start").



<Note>

USB Flash products that require a Windows program to operate may not be recognized by the ELX8-60.

14. Connecting External Storage

14.1. IEEE1394 Port

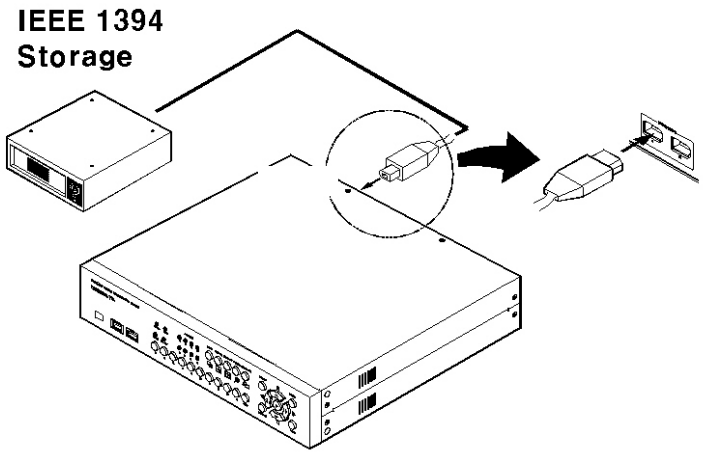
ELX8-60 has two IEEE1394 ports for external storage device interface. With them, ELX8-60 can expand storage capacity up to 4TB.

<Note>

Some IEEE1394 Bay may not be recognized by the ELX8-60. Before purchasing, consult the local RUGGED CCTV distributor.

14.2. Connecting IEEE1394 Device

When using FireWire supported external HDD, hard drive bays can be connected to 1 port in the front panel or 1 port in the rear panel. The ELX8-60 does not supply power to the hard drive bay; therefore only bays that use external power can be used.



<Note>

ELX8-60 detects external HDD, even though ELX8-60 runs. If not, it is recommended to connect as follows.

1. Power off ELX8-60.
2. Connect external HDD to IEEE1394 port.
3. Power on external device.
4. Power on ELX8-60.

14.3. Available HDD

It is recommended to use the following HDD models with the ELX8-60. If a non-recommended HDD is used, Rugged CCTV will not guarantee the warranty.

Manufacturer : MAXTOR

Series	Model No	Size	Series	Model No	Size
DiamondMax Plus 9 (7200rpm)	6Y060L0	60GB	DiamondMax 16 (5400rpm)	4R060L0	60GB
	6Y080L(P)0	80GB		4R080L0	80GB
	6Y120L(P)0	120GB		4R120L0	120GB
	6Y160L(P)0	160GB		4R160L0	160GB
	6Y200P0	200GB			
	6Y250P0	250GB			

<Note>

Buffer for DiamondMax Plus 9's model "L" is 3MB; for model "P" the buffer is 8MB.

14.4. Registering & Formatting HDD

"Disk Manager" will automatically run on start-up after installing a HDD.

If "Disk Manager" does not automatically run on start-up, make sure the HDD is properly installed.

(1) Press [ENTER] button at "Select Disk".

(2) Select new added HDD (indicated as "[F]") using [/] button and press [EXIT] button

(3) Select "Action" using [/] button and press [EXIT] button.

(4) Select "Add" using [/] button and press [EXIT] button.

(5) Select "Apply" using [/] button and press [EXIT] button. The HDD status is changed to "[*]".

(6) Select "Action" using [/] button and press [EXIT] button.

(7) Select "Format" using [/] button and press [EXIT] button.

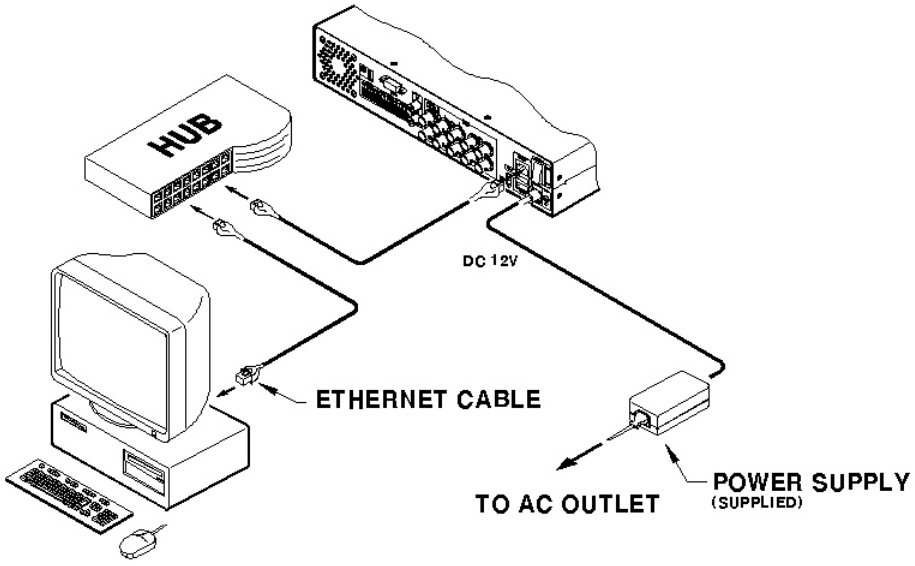
(8) Select "Apply" using [/] button and press [EXIT] button. The HDD status is changed to "[R]" after formatting.

(9) Shut down "Disk Manager" by pressing [EXIT] button.

15. Network Monitoring & Managing

ELX8-60 can be accessed, controlled, and managed from remote site via Internet/Intranet.

15.1. Connecting Ethernet



(1) Turn off ELX8-60's power switch.

(2) Connect ELX8-60 to hub with Ethernet cable.

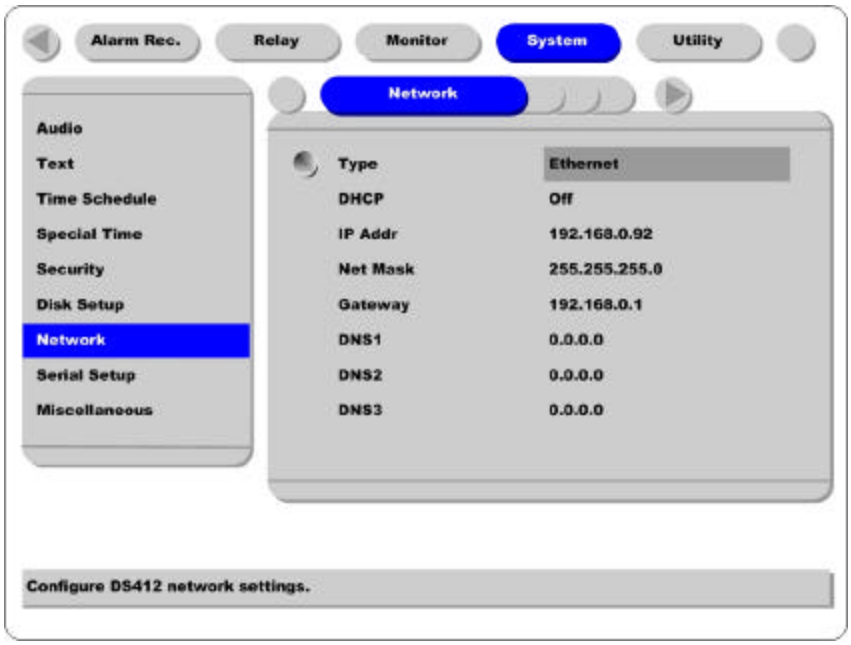
(3) Turn on ELX8-60's power switch.

<Note>

1. Supply power to ELX8-60 after connecting Ethernet cable to protect against electrical damage to ELX8-60.
2. Check cable connection status.
3. Check LED on ELX8-60's rear panel after supplying power.

15.2. Configuring ELX8-60 Network Information

The following description is on based on Ethernet connection. For more detailed information on the Network Settings Page, please refer to "ELX8-60 OSD User's Guide".



(1) Press [MENU] button.

(2) Select "System" using the [/] buttons and press [ENTER].

(3) Select "Network" using the [/] buttons and press [ENTER].

(4) Select "IP Addr" using the [/] buttons and press [ENTER].

(5) Press [EXIT] button after entering IP address in the dialogue box.

(6) Select "Net Mask" using the [/] buttons and press [ENTER].

(7) Press [EXIT] button after entering Net Mask in the dialogue box.

(8) Select "Gateway" using the [/] buttons and press [ENTER].

(9) Press [EXIT] button after entering Gateway in the dialogue box.

(10) Select "DNS" using the [/] buttons and press [ENTER].

(11) Press [EXIT] button after entering DNS in the dialogue box.

(12) Press [EXIT] button to exit the page.

16. Using DVR Manager

16.1. PC System Requirements for running DVR Manager

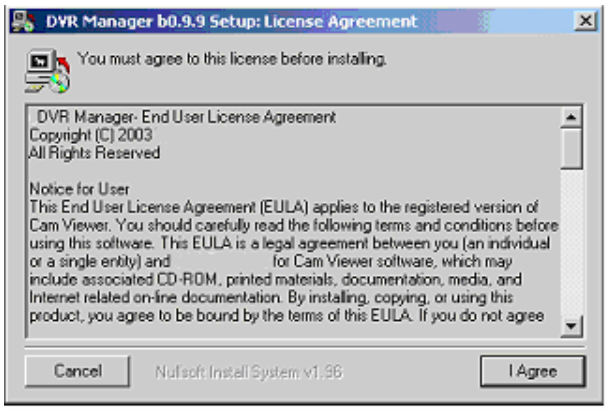
	Minimal Requirements	Recommended Requirements
CPU	P- 600MHz or above	P- 1GHz or above
RAM	128 MB or above	256 MB or above
VGA	16 MB or above	32 MB or above
OS	Windows 2000/XP	Windows 2000/XP
Resolution	1024 X 768 pixels or above	1024 X 768 pixels or above
Network	100 Base TX Fast Ethernet	100 Base TX Fast Ethernet

16.2. Installing DVR Manager

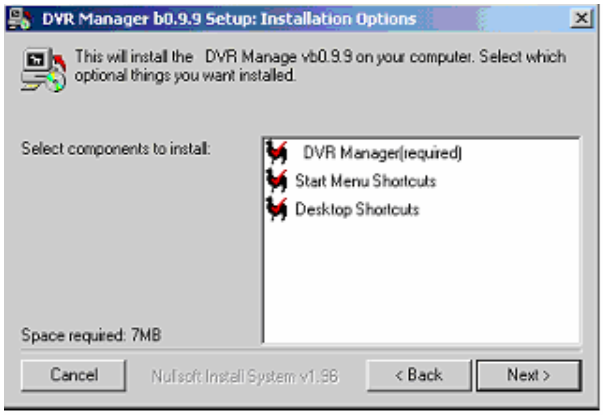
(1) Insert Setup CD-ROM into CD-ROM drive of administrator's PC

(2) Doubleclick the DVR Manager setup file. Install Shield Wizard will be automatically installed.

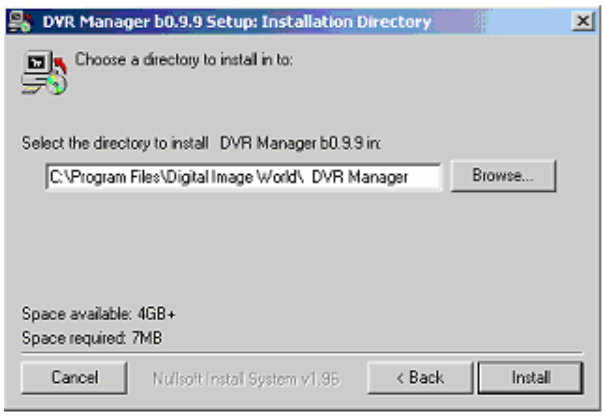
(3) Click the "I Agree" button to accept the license agreement



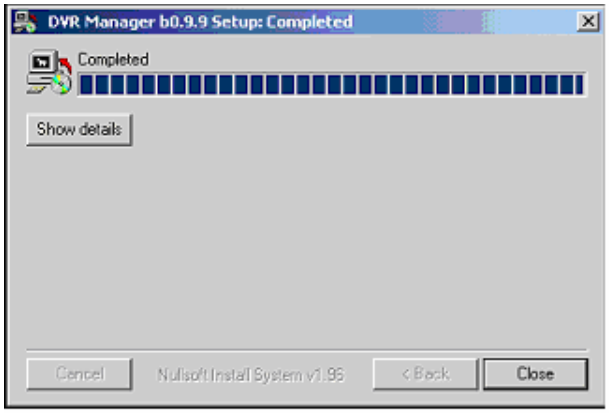
(4) Select which components to install and press the "Next" button.



(5) Browse and choose a directory if the default directory is not preferred. Click the "Install" button, after selecting a directory to install.



(6) Click the "Close" button after DVR Manager program is installed successfully.



16.3. Uninstalling DVR Manager

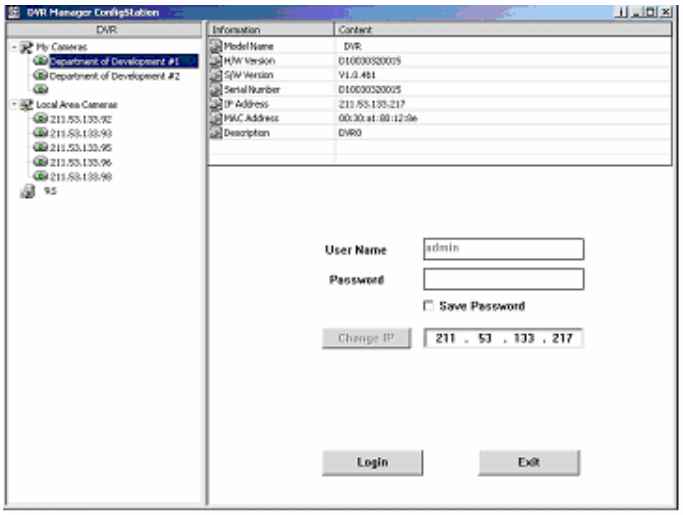
(1) Click Windows "Start" Button.

(2) Select and Click 'Uninstall' icon to run Uninstall Shield.

(3) DVR Manager program will be automatically deleted.

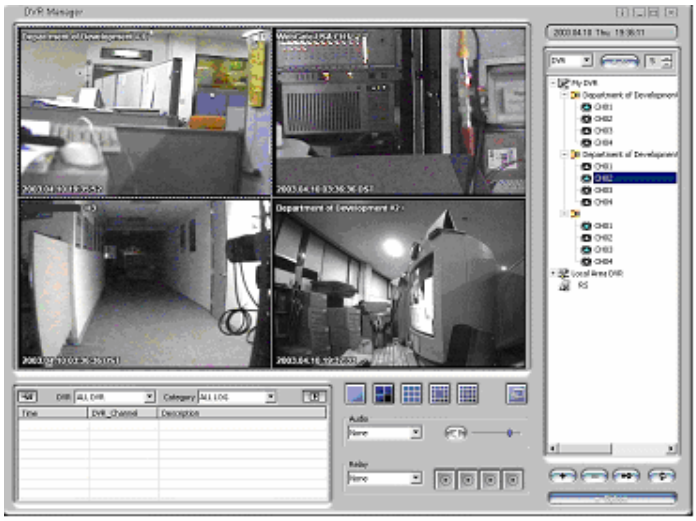
16.4. Configstation

Click icon on desktop to run "DVR Manager Configstation" program.



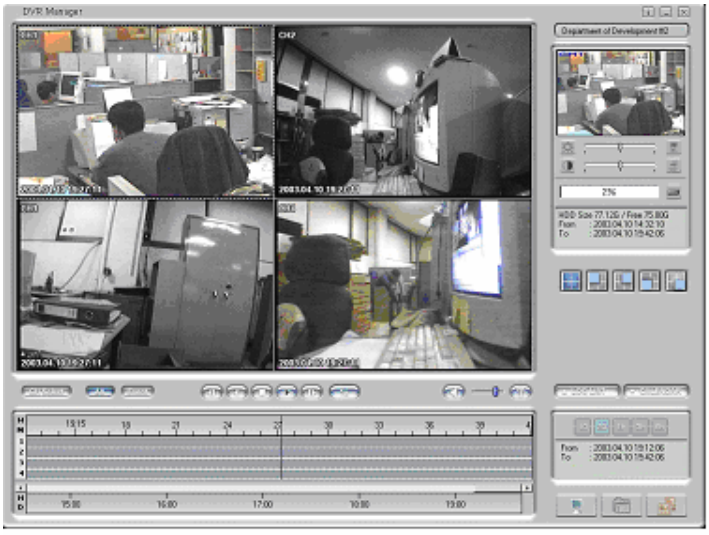
16.5. Monitor

Click the related icon and run the "DVR Manager Monitor" program.



16.6. Playback

Click the related icon and run the "DVR Manager Playback" program.

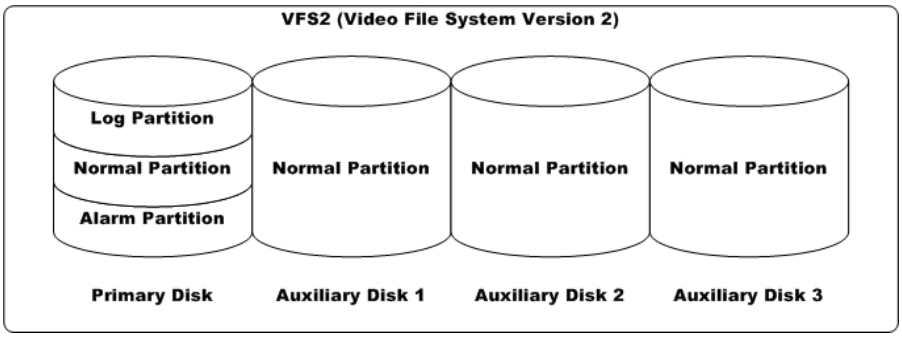


APPENDIX

#1. HDD

#1.1. Fundamental Notions & Terms

ELX8-60 Storing Constructure



(1) It is possible to connect 2 sets of HDD internally (Internal, ATA Interface) and 63 sets of HDD externally (External, 2 ports of IEEE1394).

(2) All of the connected HDDs is recognized as one virtual disk, and ELX8-60 supports upto 4TB.

(3) Hdds are divided into primary disk (connected firstly) and auxillary disk.

<Note>

ATA(or EIDE) supports two channel interfaces (Primary/Secondary). Each channel can be connected to two devices (Mas ter/Slave, HDD/CD-ROM). However ELX8-60 supports 1 channel interface internally and total two HDDs. In order to prevent confusing VFS2's Primary Disk, we will not use the terms (Primary/Secondary).

(4) Primary disk is composed of log partition, normal partition, and alarm partition, and auxillary disk is composed of only no rmal partition. So if primary disk has some problem, all of the recorded data will be lost.

<Note>

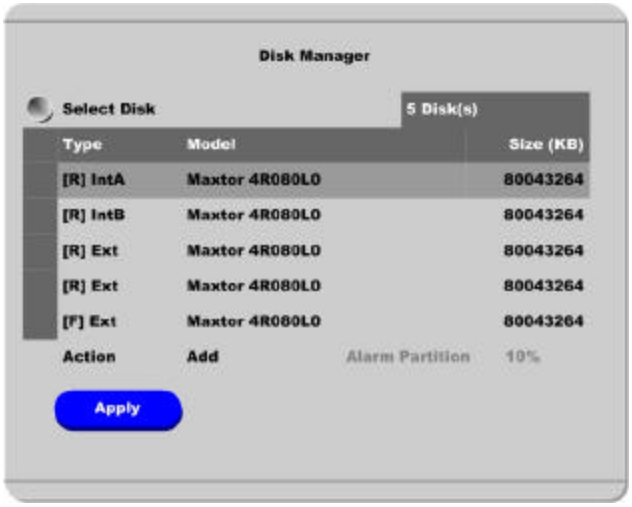
Log Partition	To store the information of recorded data
Normal Partition	To store the data as normal recording schedule
Alarm Partition	To store the data as alarm recording condition (MD or Sensor)

Backup

(1) Backup is possible only through IEEE1394 port, and HDD for backup should be formatted as FAT32 type. (Its type is indicated as [F] in Disk Manager.)

Disk Manager

(1) When HDD is added or deleted physically, Disk Manager runs automatically after rebooting. If not, you can run "Disk Manager" manually with moving "Menu→Utility→Disk Manager".



(2) HDD Type at Disk Manager

[R]	Available of recording
[V]	Connected and formatted as ELX8-60's file system. If using 'Add used' command, it will be changed to [R]. There is no need to reformat.
[F]	Connected but not available file system. After using 'Add', need to format for making as [R].
[*]	Connected and added using the 'ADD' command. If formatting, it will be [R]. If there is a disk of [*], DVR will record nothing.
[X]	HDD cable is not connected or has some problem. In case of that, HDD should be removed with using 'Confirm Removed' menu.
IntA	Internal Master HDD
IntB	Internal Slave HDD
Ext	External HDD

(3) HDD Managing Command

Format	Format as ELX8-60's file system. Not available to PC file system.
Add	Add HDD for recording. Need to format.
Add Used	Add a HDD that has been used and formatted. There is no need to reformat. It is possble only when HDD is added as Primary Disk.
Remove	Remove current HDD. HDD can be reused without data loss by the 'Add Used' command.
Confirm Removed	Used when a removed HDD is still listed. ALL DATA WILL BE LOST!

#1.2. Installing HDD

Compatible HDD

It is recommended to use the following HDD models with the ELX8-60. If a non-recommended HDD is used, Rugged CCTV will not guarantee the warranty.

Manufacturer : MAXTOR

Series	Model No.	Size	Series	Model No.	Size
DiamondMax Plus 9 (7200rpm)	6Y060L0	60GB	DiamondMax 16 (5400rpm)	4R060L0	60GB
	6Y080L(P)0	80GB		4R080L0	80GB
	6Y120L(P)0 6Y160L(P)0	120GB 160GB		4R120L0 4R160L0	120GB 160GB
	6Y200P0	200GB			
	6Y250P0	250GB			

<Note>

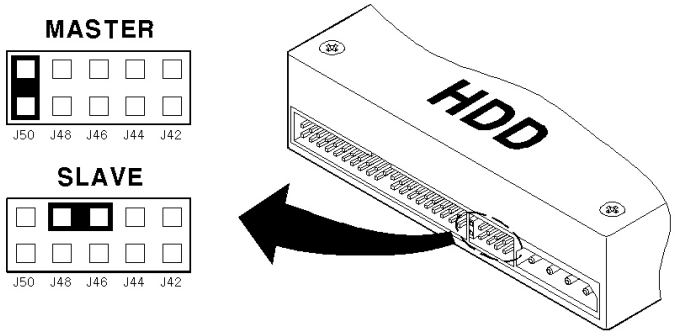
L series of DiamondMax Plus 9 has 2MB buffer memory, while P model has 8MB

Installing & Expanding Internal HDD

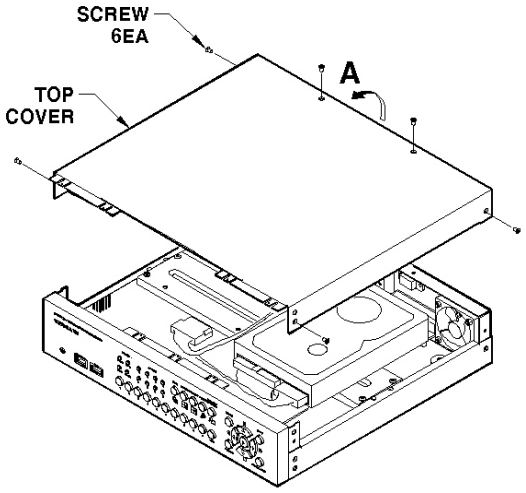
Adding or replacing HDD should follow below process.

(1) Turn off the power of ELX8-60.

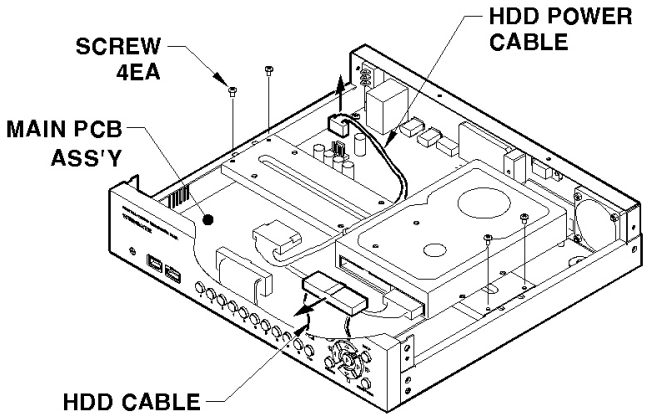
(2) Check whether the dip switches are set as illustrated below



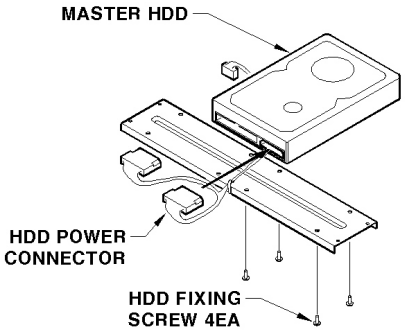
(3) Remove the 6 screws as illustrated below and pull up the cover from the rear part to open.



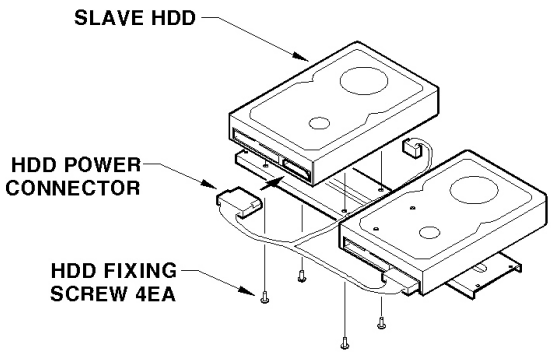
(4) Take out power and data cable of HDD from Main PCB ASS'Y. Remove 4 HDD Bracket screws and take out HDD ASS'Y.



(5) Fix the HDD with provided screws. Connect power and data cables to HDD.



Installing single HDD

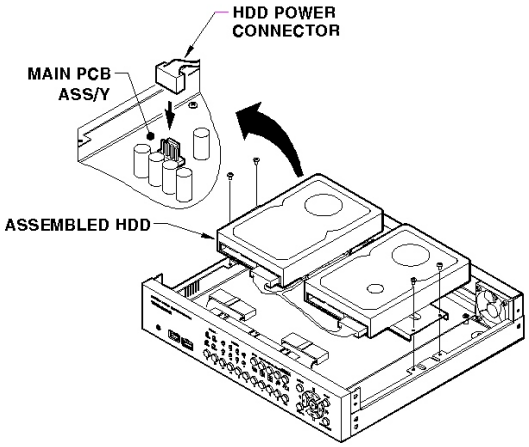


Installing 2 HDDs

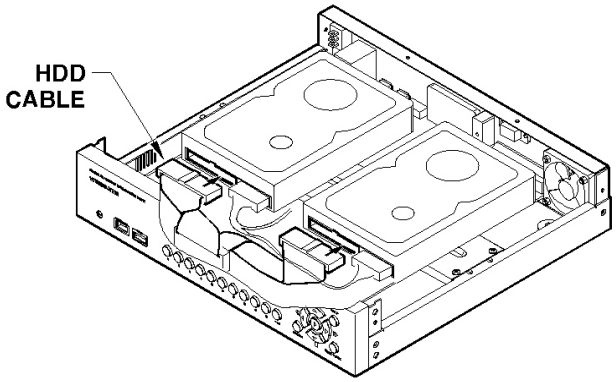
<Note> Caution for HDD Management

1. Replacing 'SLAVE' HDD of internal 2 HDDs causes permanent data loss in the SLAVE HDD.
2. MASTER HDD has all the index of stored data including 'SLAVE' HDD. Corruption on 'MASTER' HDD may cause total data loss. Be careful when handling the main HDD.
3. It is strongly recommended that all data within HDDs should be backed up before replacing.

(6) Connect HDD power cable to main PCB ASS'Y. Secure the HDD with screws.

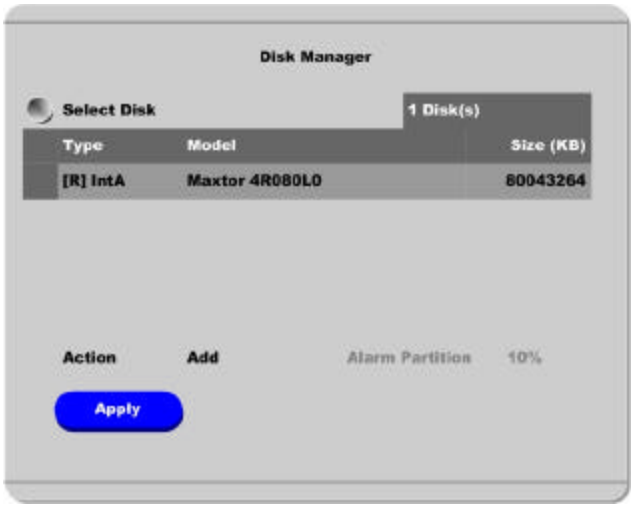


(7) Connect HDD cable's connector to HDD as in the following picture.



(8) Assemble the top cover.

When installing one primary disk



(1) When power is supplied to ELX8-60, "Disk Manager" runs automatically after rebooting. If not, run it manually in "Menu→Utility→Disk Manager".

(2) There is a HDD that is indicated as "[F] IntA". Select it.

(3) Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

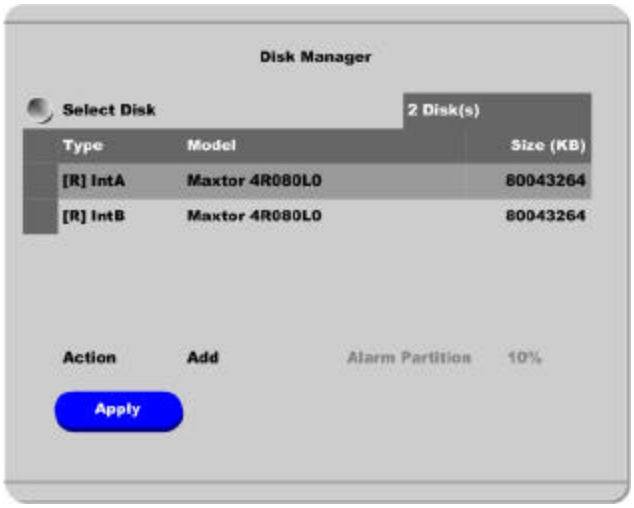
(4) Press the "Apply" button after selecting action as "Format" and setting the size of alarm partition. Then [*] is changed to [R].

<Note>

Alarm partition can be set from 10% to 90% within the size of primary disk.

(5) Press the [EXIT] button to shut down "Disk Manager". (If recording schedule is set, ELX8-60 will start recording.)

When installing one primary disk and auxiliary disk



(1) When power is supplied to ELX8-60, "Disk Manager" runs automatically after rebooting. If not, run it manually in "Menu→Utility→Disk Manager".

(2) There is a HDD that is indicated as "[F] IntA".

(3) Select a HDD for installing as primary disk. (IntA or IntB)

(3) Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*]. If IntB is added as primary disk, it will be placed at upper list.

(5) Select a HDD for installing as auxiliary disk.

(6) Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

(7) Select a primary disk, and press the "Apply" button after selecting action as "Format" and setting the size of alarm partition. Then [*] is changed to [R].

(8) Select an auxiliary disk, and press the "Apply" button after selecting action as "Format" and setting the size of alarm partition. Then [*] is changed to [R].

<Note>

Alarm partition can be set at only primary disk. So it is indicated as "Disable" in case of formatting.

(9) Press the [EXIT] button to shut down "Disk Manager". (If recording schedule is set, ELX8-60 will start recording.)

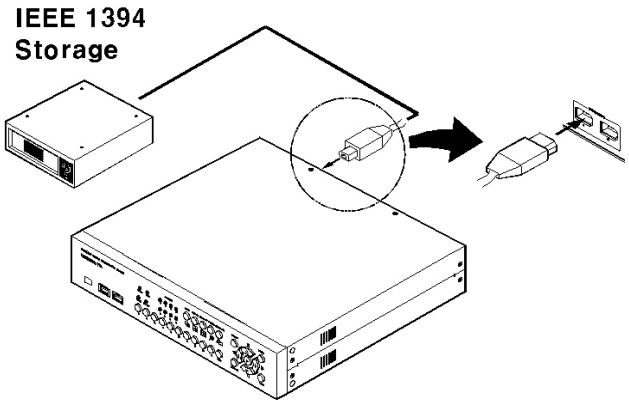
Expending External HDD (When using internal HDD as primary disk)

ELX8-60 use IEEE1394 as external storage device interface, and has two ports of IEEE1394. ELX8-60 supports upto 4TB storage.

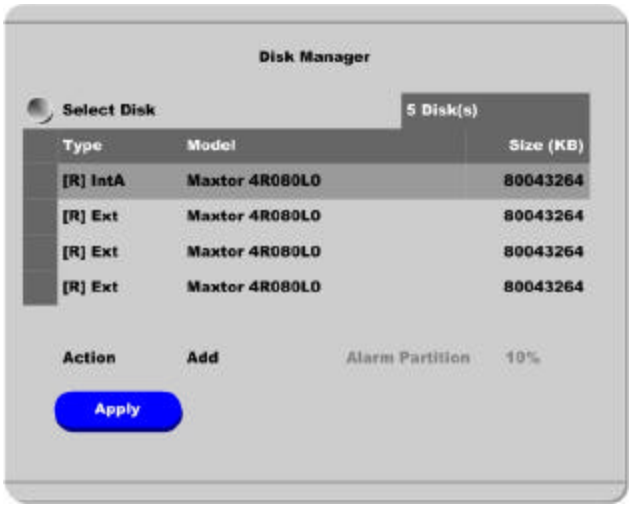
<Note>

1. Some IEEE1394 ports may not be recognized by the ELX8-60. Before purchasing, consult the local RUGGED CCTV distributor.
2. External storage should use external power.
3. For connection and setup of IEEE1394, please refer to the manual of related device.

Connect IEEE1394 interface cable as follows.



When using Disk Farm



The following description is when ELX8-60 has internal primary disk and 3 sets of IEEE1394 HDD.

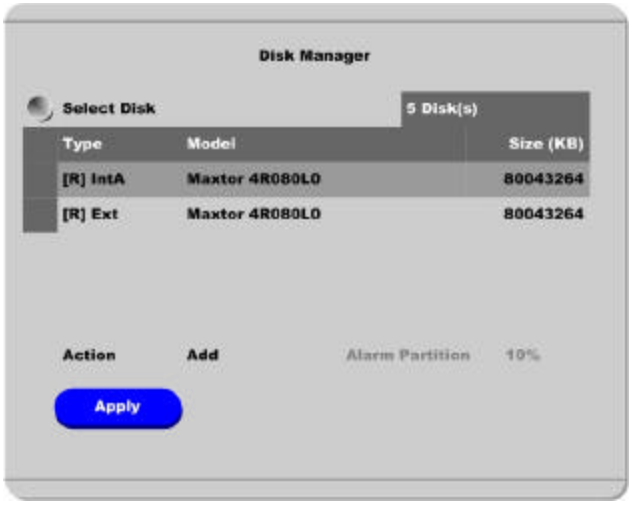
(1) When external HDD farm is connected to IEEE1394 port, "Disk Manager" runs automatically. If not, run it manually in "Menu→Utility→Disk Manager".
(2) Select a second HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

<Note>

If connecting the device that is used in ELX8-60, type will be indicated as [V].

(3) Select a third HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].
(4) Select a fourth HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].
(5) Select a second HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].
(6) Select a third HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].
(7) Select a fourth HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].
(8) Press the [EXIT] button to shut down "Disk Manager".

When using RAID



The following description is when ELX8-60 has internal primary disk and 1 set of IEEE1394 HDD.

<Note RAID>

Even though several HDDs are connected to RAID, ELX8-60 will recognize them as only one HDD.
For connection and setup of RAID, please refer to the manual of related device.

(1) When external HDD RAID is connected to IEEE1394 port, "Disk Manager" runs automatically. If not, run it manually in "Menu→Utility→Disk Manager".
(2) Select a second HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

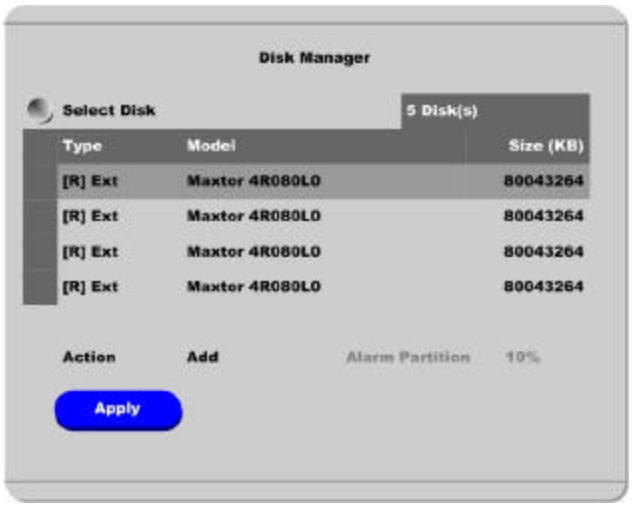
<Note>

If connecting the device that is used in ELX8-60, type will be indicated as [V].

(3) Select a second HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].
(4) Press the [EXIT] button to shut down "Disk Manager".

Installing & Expending External HDD (When using external HDD as primary disk)

When using Disk Farm



The following description is when ELX8-60 doesn't have internal primary disk and 4 sets of IEEE1394 HDD.

(1) When external HDD farm is connected to IEEE1394 port, "Disk Manager" runs automatically. If not, run it manually in "Menu→Utility→Disk Manager".

(2) Select a first HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

<Note>

It is when ExtA is added as primary disk.

If connecting the device that is used in ELX8-60, type will be indicated as [V].

(3) Select a second HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

(4) Select a third HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

(5) Select a fourth HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

(6) Select a first HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].

(7) Select a second HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*]

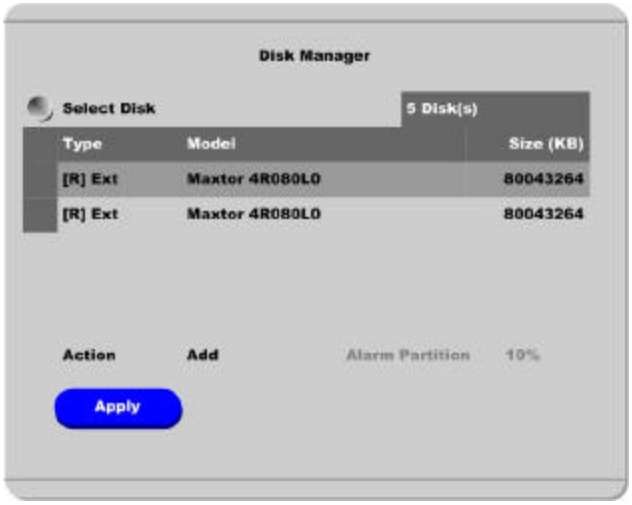
is changed to [R].

(8) Select a third HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].

(9) Select a fourth HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].

(10) Press the [EXIT] button to shut down "Disk Manager".

When using RAID



The following description is when ELX8-60 does't have internal primary disk and 2 sets of IEEE1394 HDD.

(1) When external HDD RAID is connected to IEEE1394 port, "Disk Manager" runs automatically. If not, run it manually in "Menu→Utility→Disk Manager".

(2) Select a first HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

<Note>

It is when ExtA is added as primary disk.

If connecting the device that is used in ELX8-60, type will be indicated as [V].

(2) Select a second HDD of [F] Ext. Press the "Apply" button after selecting action as "Add". Then [F] is changed to [*].

(4) Select a first HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].

(5) Select a second HDD of [*] Ext. Press the "Apply" button after selecting action as "Format". Then [*] is changed to [R].

(6) Press the [EXIT] button to shut down “Disk Manager”.

#1.3. Replacing HDD

Checking HDD

ELX8-60 file system (VFS2) sensors bad sector automatically, and the sensored bad sector is not used.

The following means when HDD is broken or has some problem in connection.

(1) When replaying is stopped or ELX8-60 is rebooted in specific playback range.

(2) When image searching per event is impossible.

(3) When recording is stopped and "Disk Manager" shows HDD type as [X]

When primary disk is broken

When primary disk is broken, all of the connected HDD data can't be used. So the broken HDD should be replaced and all connected HDDs should be reinstalled in "Disk Manager". ("Remove" -> "Add" -> "Format").

When auxiliary disk is broken

The broken auxiliary disk should be replaced and reinstalled in "Disk Manager". ("Add" -> "Format").

#1.4. Keeping Data

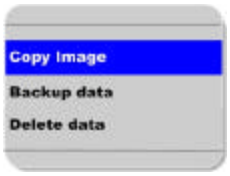
To keep the stored data, you should back up or reserve as HDD itself.

Backup

(1) Connect backup HDD to IEEE1394 port.

(2) Go to playback mode with pressing the [Playback] button.

(3) Press the [SELECT] button and then [MENU] button.



(4) Run "Backup Manager" with selecting the "Backup Data" menu.

(5) Set backup range and press the "Start" button after selecting backup HDD.

<Note>

1. Backup HDD should be formatted as FAT32 type.
2. Backup data can be replayed with specific S/W, DVR Manager or MiniPlayer.
3. Backup data is made as "*.re3" file. If file size is over 2GB, it may not be recognized normally.
4. In course of backup, "Auto Delete" function doesn't run. If HDD is full, recording ma be stopped instantly.
5. For more detailed information of DVR Manager's backup, please refer to the "DVR Manager User's Guide".

How to preserve as HDD itself

To keep HDD itself, it is possible only when HDD is installed and used in ELX8-60 (including primary disk and RAID).

And it is recommended to use external HDD instead of internal HDD. Namely, connect only one external HDD, and then keep it after data is full.

<Note>

The preserved HDD's data is possible to replaying only when it is connected to ELX8-60.

#1.5. Caution in using HDD

For handling or guaranteeing HDD, RUGGED CCTV follows HDD guaranty condition. RUGGED CCTV doesn't bear the responsibility about data loss by user's mistake in operating.

#2. Using CD-ROM

Components of CD- ROM disc

Installation Guide	: ELX8-60 Installation Guide
User's Guide	: ELX8-60 User's Guide
DVR Manager	: DVR Manager User's Guide (ELX8-60 Remote Management Program)
Acrobat Reader	: Version 5.1

Preparation

To read manual of CD-ROM disc, Adobe Acrobat 5.0 should be installed in client's PC.

<Note>

If Adobe Acrobat Reader is not installed within client's PC, use the Acrobat Reader program of CD-ROM.

Reading manual of CD-ROM

Follow the steps to read user's guide.

(1) Insert the supplied CD-ROM into CD-ROM drive of PC.

(2) Open the user's guide, PDF file.

#3. Specification

General

CPU	32bit RISC Processor (200MIPS)
Flash Memory	8MB
Main Memory	64MB
OS	Embedded LINUX
Video Channel	8 Analog Channel (NTSC or PAL)
Storage Device	Internal 3.5” IDE HDD 2EA (default 1EA)
	External 2EA for IEEE1394 Interface
	Support Max. 4Tbytes
Intelligent File System	Data-loss protection against power failure

Image Compression

Technology	Differential Wavelet
Average File Size	1~5KB (Standard Quality)
Image Quality Level	5 Level
Image Compression Rate	20:1~500:1
Recording Speed	60 ips/50 ips(NTSC/PAL) 7.5 ips/8ch or 30 ips/2ch

Network

Browser	DVR Manager
Protocol	TCP/IP, ARP, ICMP, DHCP, FTP, PPPoE
Connector	10/100Mbps Ethernet (RJ-45)
S/W Upgrade	Firmware upgrade via Network
Simultaneous Users	Monitoring : Max. 5 Users
	Playback : Max. 5 Users
Security	Password (User or Administrator Authenticantion)
	Watermarking (Against image forging)

Display

Monitoring	Max. 240/200ips (NTSC/PAL)
Viewer	1ch, 4ch, 9ch, Auto Sequential
Recording Performance	Max. 60 ips for local channel : max 7.5 ips/channel
Recording Resolution	720x243(NTSC), 720x288(PAL)
Playback Performance	Max. 60ips
Playback Speed	1x, 2x, 4x, 8x, 16x (Forward & Reverse Play)
Function	Step-Forward, Step-Reverse

Environment

Operation Temperature	5~45 C
Storage Temperature	-10~55 C
Operation Humidity	30~80%, free of condensation
Storage Humidity	93% below, free of condensation

Data Backup/Expansion/Copy

HDD Expandable Data Backup	IEEE1394
Analogue VCR	VHS Video output for VCR
Backup Reminder	Daily / Weekly / Monthly
Data Copy	USB Flash memory disk

Input/Output

Video	1 Monitor output via BNC
	1 Video output via BNC
Audio	1Input : Line-in, 1 Vpp (20dB off : 0.1 Vpp)
	1 Output : Line-out, 1Vpp
	Level : -7~8(16 Step) Recording level
	AMP : 20dB amplifier for low level audio
	Monitoring : Local and remote
Digital Output	4 Relay outputs (Max DC 30W, AC 62.5VA)
Digital Output Schedule	Daily : Day / Night
	Weekly : Weekdays / Weekends
	Conditions : MD, Sensor inputs
Sensor Input	4 Sensor inputs (Support Dry contact)

PTZ Control

Serial Port	RS232(1), RS485(1)/ RS422(1)
Control Method (Local)	Front panel button & IR remote controller (control IP video channel as well)
Control Method (Remote)	On-the-screen PTZ control on PC
Preset Mode	8 points preset per channel
Group Mode	1 group per channel

Others

Digital Zoom	2x (Live & PlayBack Mode)
Alarm Trigger	Motion Detection or Sensor input
Alarm Data Preservation	Alarm triggered Video Data Preservation
Alarm Log	Log search Log monitoring via OSD & Network
Pre/Post Alarm	Pre : 1~10 seconds Post : 1~60 seconds
Schedule Recording	Daily : Day / Night Weekly : Weekdays / Weekends Conditions : Normal / Event
Text Data Recording	POS/ATM transaction information archived along with corresponding video data
Multilingual Menu	English, German, French, Spanish, Japanese

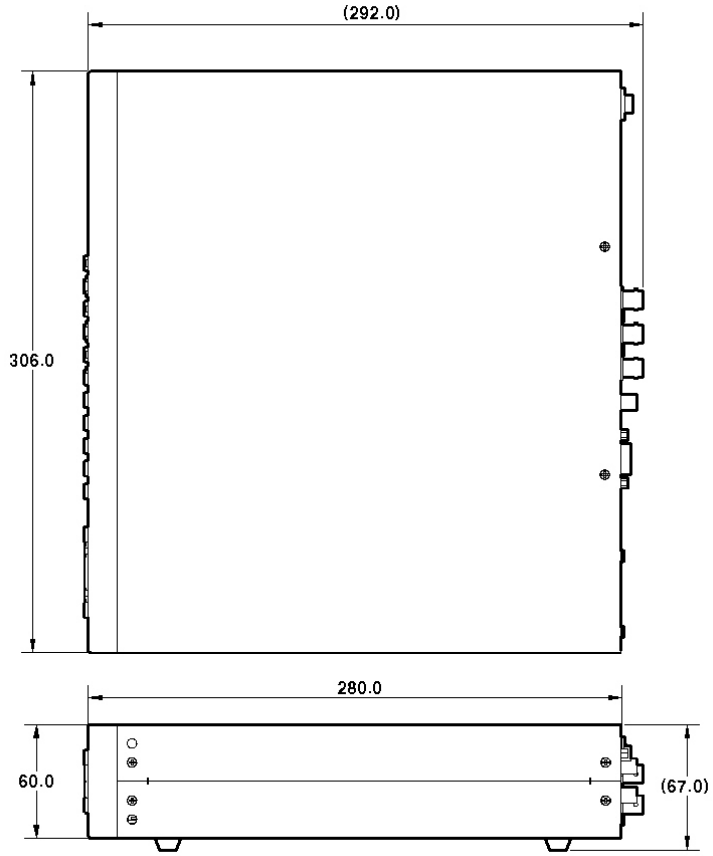
Electricity

Power (Applied Adaptor)	DC 12V
Consumption Current	Max 4.5A (Internal 2 HDD) Typical 2.9A (Internal 2 HDD)
Consumption Voltage	Max. 54W Typical 35W

Mechanical

Dimension (W.D.H) 306 x 280 x 67(mm)

Weight 3.5Kg (With one HDD)



Rugged CCTV
5327 Cedar Creek Dr.
Kemp, Texas 75143
Tel : (866) 301-2288
Fax : (903) 498-8989
Technical Support: 1-866-301-CCTV
URL: www.rugged-cctv.com
E-mail: sales@rugged-cctv.com