

USER'S GUIDE Ver.858

Workhorse **120-16**

English

Operating Instructions & User's Guide



Statement of Compliance with FCC

Model Name: Workhorse 120-16

This device complies with Section 15 of the FCC Rules. Operation is covered by the following provisions: (1) This device shall not cause harmful interference, and; (2) this device must accept any interference received including interference that may cause unintended operations.

Warning

Unauthorized reproduction of all or part of this manual is strictly prohibited.

Cautions



To get the best use out of this product, be sure to read the cautions before using the product.

For your safety, please take note of the following:

- The figures in this manual are for illustration purposes only (may differ from the actual product).
- The specifications and design of the product are subject to change without prior notice for purposes of quality improvement.
- Safety Notes on the Lithium Battery
 1. Replace lithium batteries as instructed in this manual.
 2. Dispose of used lithium batteries properly.
- Caution
 1. To prevent electric shock when installing, moving, or opening the DVR and peripheral devices, connect and disconnect the cables as instructed in this manual. All cables must be connected to grounded outlets.
 2. Install the DVR such that it is easy to disconnect the power cord.
 3. Do not use the DVR in water or in wet places (may cause electric shock).
 4. Keep the vinyl packing materials used for the DVR or other peripheral devices out of reach of children (may cause suffocation).
 5. The UPS power unit contains a small amount of toxic substances. Improper installation of the battery, exposure to fire or moisture, or disassembly or short circuit may cause explosion. Keep the battery pack out of reach of infants and children. Do not bury used batteries.
- Safety Notes on the DVR
 1. Keep the DVR away from heat sources such as heaters (may cause product deformation or fire).
 2. Do not use a damaged power cord (may cause electric shock or fire).
 3. Install the DVR in a safe place (impact due to fall or exposure to external shock may result in product damage or malfunction).

4. Install the DVR in a clean, humid-free place to avoid product malfunction and prevent electric shock. The operating temperature should be 0°C ~ 40°C, and operating humidity, 10% ~ 80%.
5. Install the DVR in a well-ventilated place (overheating may cause product deformation, malfunction or fire).
6. To protect the hard drive from data loss or damage, keep the DVR away from sources of magnetic interference.
7. Incorrect system setup may cause malfunction of the unit.
8. Use only the components indicated in this manual. Do not attempt to disassemble, repair, or remodel the product without permission. IT WILL VOID YOUR WARRANTY!
9. Shut down the system properly as instructed in this manual (shutting down the system by disconnecting the power cord may result in data loss or system malfunction).

Warning and Cautions are indicated as follows:

 Warning	Possible injury or product damage
 Caution	Risk of minor injury or product damage

Workhorse 120-16

C/O/N/T/E/N/T/S

Workhorse 120-16

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1. Overview

1-1. About the Product

Workhorse 120-16 is a digital video monitoring system. This product can display and record at a high resolution rate, the video data of up to 16 cameras.

Front buttons, remote control, and mouse are provided for the user's convenience; along with network features including monitoring and remote system setup.

Workhorse 120-16 supports up to 120/100 (NTSC/PAL) fps.

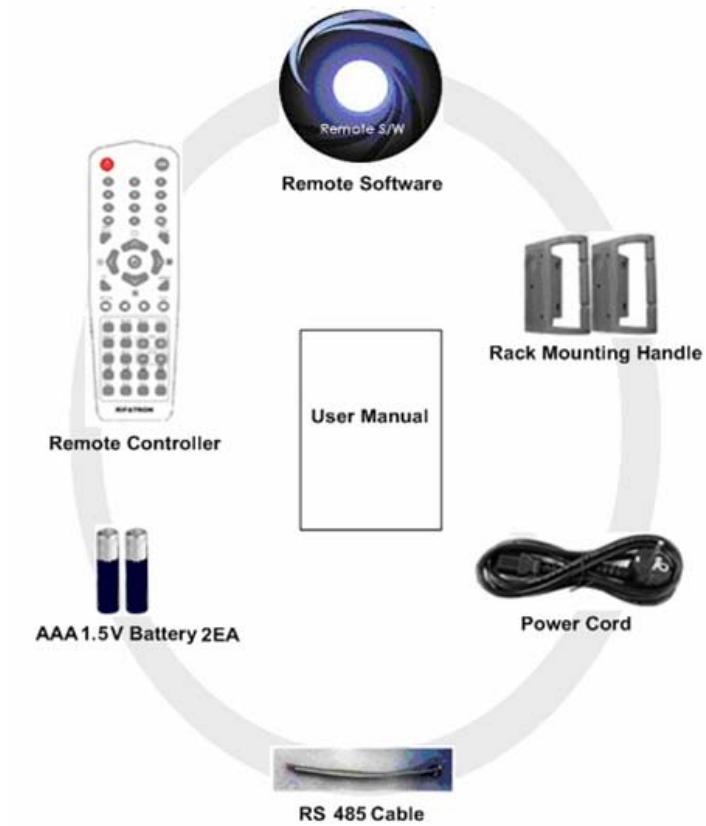
1-2. Major Features

- Stable Standalone DVR (embedded Linux)
- Video output
 - Loop output: 16 BNC
 - Monitor output: 1 BNC, 1 VGA
 - Spot output: 1 BNC
- 480fps real-time display/120fps recording
- Resolution
 - NTSC: 320×240, 640×240, 640×480
 - PAL: 320×288, 640×288, 640×576
- Compression type: MPEG4 (video)/G.726 (audio)
- Backup/Copy: Ethernet, IEEE1394, USB2.0, Built-in CD-RW/DVD-RW
- System operation: Front buttons/Remote control/Network/USB2.0 mouse/Key control
- 8-channel audio input
- Various-recording-interfaces
 - Cable modem, Ethernet, ADSL/DHCP client
- System automation (all features are remote controllable)
- NTP support
- Various-recording-modes
 - Auto, Continuous, Event (sensor, motion, sound) recording
- Recording schedule
- Multi-language support, Automatic emailing
- PTZ control through RS485 communication
- Remote monitoring software, Remote monitoring through the web browser, PDA
- Storage device
 - Internal storage device: Max. of 4HDD, 2TB

1-3. Components

After unpacking the product, check whether the following accessories are included:

1) Basic parts



2) Optional parts



DIO (Sensor/Relay) Extension Module



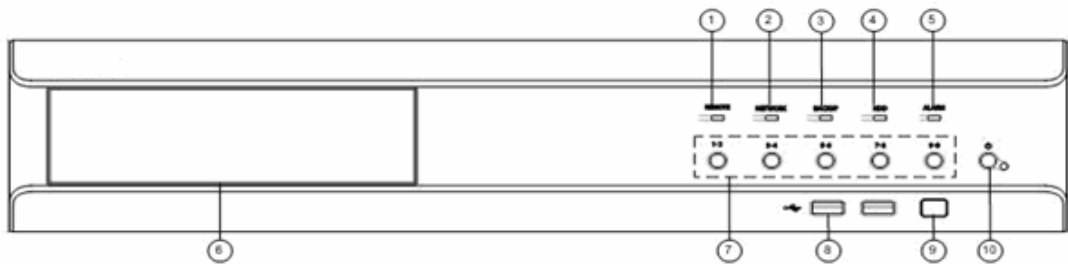
DIO (Sensor/Relay) Extension Module Cable

2. Installation and Connection

2-1. Name and Features of Each Part

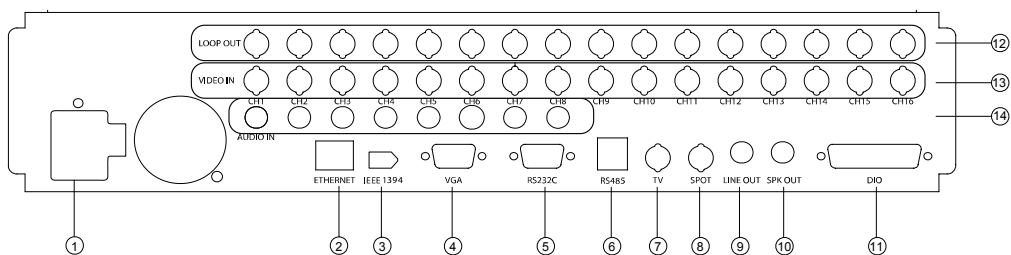
Buttons are conveniently located on the front panel of the Workhorse 120-16, and various interfaces, on its rear panel. Workhorse 120-164 can be easily installed in a standard rack using the rack mounting handles (on the left and right sides).

2-1-1. Front Part



No.	Name	Features
<input type="checkbox"/>	<input type="checkbox"/> Remote	The green light is ON when the remote control is accessing the DVR
<input type="checkbox"/>	<input type="checkbox"/> Network	The green light is ON when the DVR is being accessed through the network
<input type="checkbox"/>	<input type="checkbox"/> Backup	The green light is ON when the DVR is making a backup
<input type="checkbox"/>	<input type="checkbox"/> HDD	The green light is turned ON when the hard drive is operating.
<input type="checkbox"/>	<input type="checkbox"/> Alarm	The red light is ON when an alarm is triggered.
<input type="checkbox"/>	<input type="checkbox"/> CD-RW/DVD-RW	CD-RW/DVD-RW installation slot
<input type="checkbox"/>	<input type="checkbox"/> Numeric buttons	Numeric buttons
<input type="checkbox"/>	<input type="checkbox"/> USB	External backup device or USB mouse connection
9	Remote control sensor	Remote control reception sensor
10	Power	System power ON/OFF or Selection button

2-1-2. Rear Part



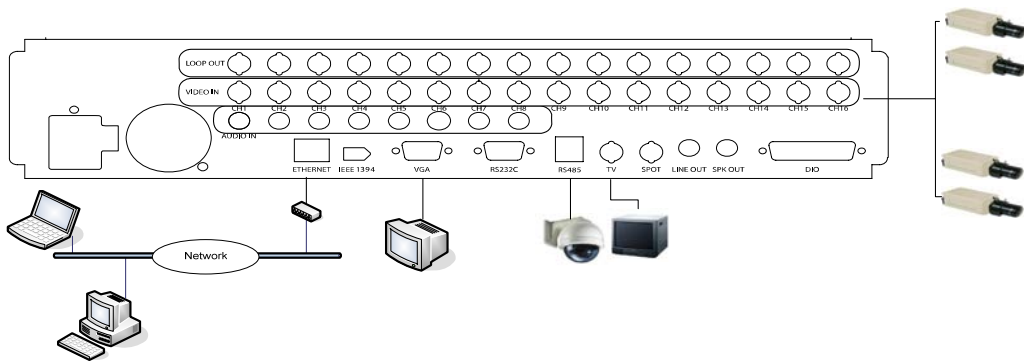
No.	Name	Features	Form
1	AC in	Power cable connection to the body	
2	Ethernet	ADSL, Cable modem, Ethernet 10/100 Base-T connection	RJ-45
3	IEEE1394	IEEE1394 device connection	
4	VGA	VGA monitor connection	D-SUB 15
5	RS-232C	Serial cable connection for system upgrade Interface with POS/ATM/MTRIX	D-SUB9PIN
6	RS485	PTZ camera control cable connection	RJ-11 6-pin
7	TV	CCTV monitor connection	BNC
8	Spot	SPOT monitor output connection	BNC
9	Line out	Line level audio output	RCA
10	SPK out	Speaker output	RCA
11	DIO	Sensor/Relay extension board	D-SUB 25
12	Loop out	Video signal loop-back output connection	BNC
13	Video in	Video signal input connection	BNC
14	Audio in	Audio signal input connection	RCA

2-2. Installation and Connection

2-2-1. Connection

Connect the DVR to the CCTV camera, monitor, and other peripheral devices as shown below:

	Connection Device	DVR Port
1	CCTV camera	BNC Video input
2	CCTV monitor (or PC monitor)	BNC (or VGA)
3	PTZ camera	RS485
4	Audio input/Audio output	Audio input/Audio output
5	LAN cable	Ethernet
6	Sensor/Relay extension board	DIO
7	IEEE1394 device	IEEE1394



1. The inputted video type must be either NTSC or PAL; these two types must not be used together.
2. The inputted video type (NTSC/PAL) is automatically recognized upon the initial operation of the system.

(1) PTZ camera

To use a PTZ camera, connect the control cable to the RS485 connector.

RS485 uses the RJ-11 6-pin type. Below is the pin arrangement:

Pin	1	2	3	4	5	6
RS485	GND	TR+	TR-	TR+	TR-	GND

(2) Spot monitor

Spot monitor refers to a CCTV monitor that displays events.

Spot displays on full screen the channel with an event (motion, sensor, or sound) being detected. Events are checked every second; if events are detected in multiple channels, the channel with the last event is displayed.

(3) Audio input/output

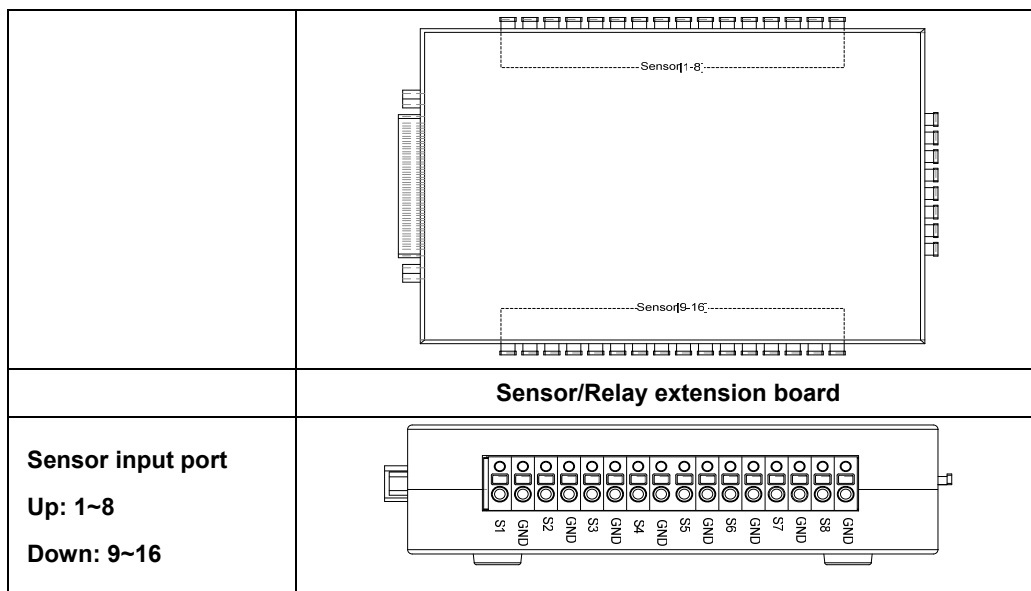
There are eight audio input ports, one line output port, and one speaker output port.

(4) Sensor/Relay extension board

Connect the sensor/relay extension board to the DIO port on the rear side of the system using a D-SUB 25-type extension cable.

A) External sensor connection option

The sensor/relay extension board consists of 16 sensor input ports and 4 relay output ports.



Connecting the external sensors

- Connect the external sensor cables to S1 ~ S16 and the input port of the sensor/relay extension board module with the GND symbol.
- Each input port may be used regardless of the channel number.

Example - Connecting three external sensors

Connect the external sensor cable to the sensor input ports as shown below:

External Sensor	Input Port	Ground Port
Sensor1	S1	GND
Sensor1	S3	GND
Sensor1	S6	GND

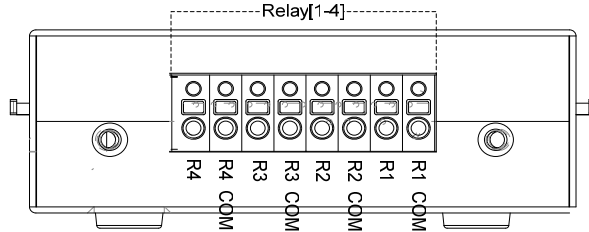
Sensor types include Normal Close (NC) and Normal Open (NO). For more information on sensor type setting, see {5-1-2 Recording Setup} → {(7) Event Setup} → {(B) Sensor}.

Normal Close (NC): Opens in case of incoming signal when closed normally

Normal open (NO): Closes in case of incoming signal when opened normally

B) Relay connection

Relay output port



- The user can run external devices such as a light.
- Connect the external alarm device to the Rx_COM or Rx output port of the sensor/relay extension module.

Example - Connecting four external sensors

Connect the external sensor cable to the relay output port as shown below:

External Alarm Device	Output Port	Ground Port
Relay 1	R1	R1_COM
Relay 2	R2	R2_COM
Relay 3	R3	R3_COM
Relay 4	R4	R4_COM

Relay types include Normal Close (NC) and Normal Open (NO). For more information on relay setting, see {5-1-2 Recording Setup} → {(8) Alarm Output} → {(D) Relay}.

Normal Close (NC): Opens in case of incoming signal when closed normally

Normal Open (NO): Closes in case of incoming signal when opened normally

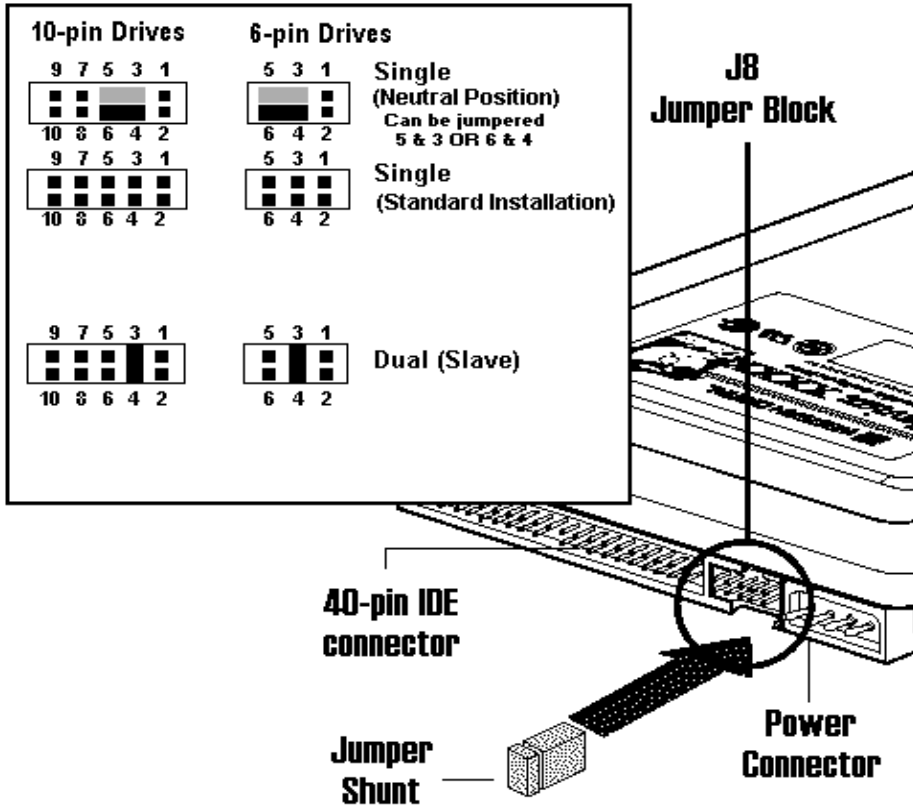
2-2-2. Adding a Hard Drive

- Up to four hard drives may be installed in the system using two hard drive cables.
- Each hard drive cable can connect two hard drives, which must be configured in master-slave structure.
- In the absence of CD-RW, two hard drive bays are installed: one on the right and the other on the left. If there is a CD-RW, however, two hard drive bays are installed on the right.




The jumper setting method varies by manufacturer or model. Refer to the jumper setting information marked on the front side of the hard drive.

Example - Setting the jumper for the Western Digital WD1200 hard drive

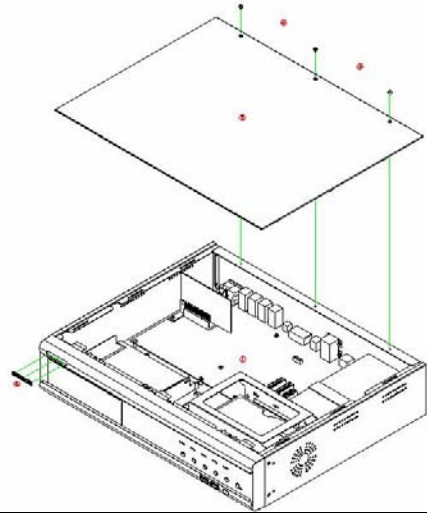


■ Adding a hard drive

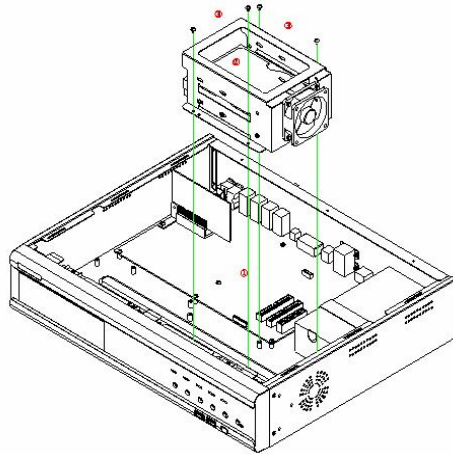
 Caution	<ol style="list-style-type: none"> 1) Before installing the HDD, turn OFF the DVR and disconnect the power cord. 2) Never touch a grounded metallic object when installing the HDD (may cause the body to absorb static electricity, which in turn can cause problems in the DVR). 3) After installing the HDD, do not turn the power ON until the top cover is closed. Never use the DVR with the top cover opened.
---	---

□ Before turning OFF the power, shut down the system first.

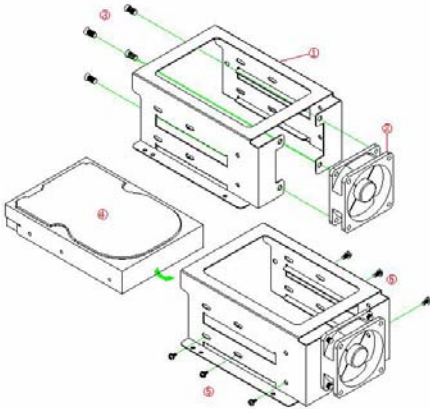
□ Unscrew and open the upper case.



□ Unscrew the hard drive bay using a screwdriver and separate the hard drive bay from the body.



□ Insert the hard drives into the hard drive bay

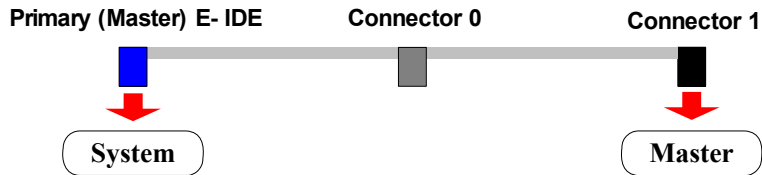


- Connect the hard drive power cable and hard drive connection cable to the corresponding plugs.

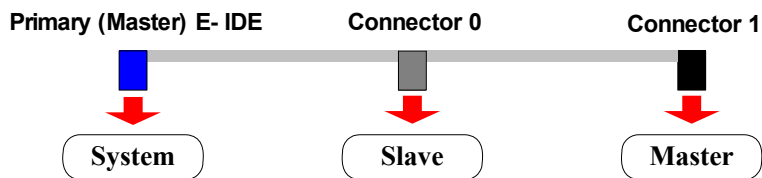
Connect the hard drive connection cable as follows:

1. Connecting one hard drive connection cable

1) Installing one HDD

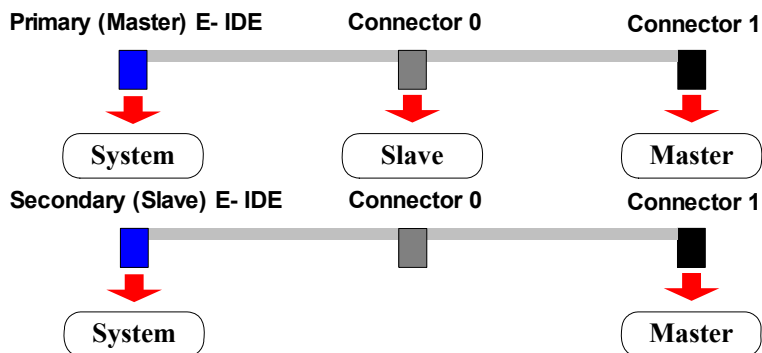


2) Installing two HDDs

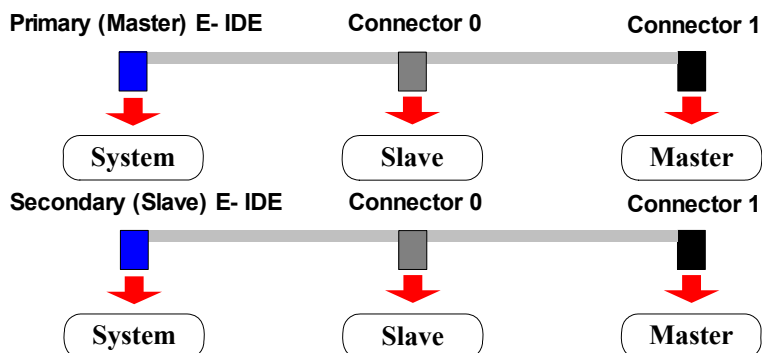


2. Connecting two hard drive connection cables

1) Installing three HDDs



2) Installing four HDDs



Place the hard drive bay on the body and fasten with screws.

Close the upper case and fasten the screws.

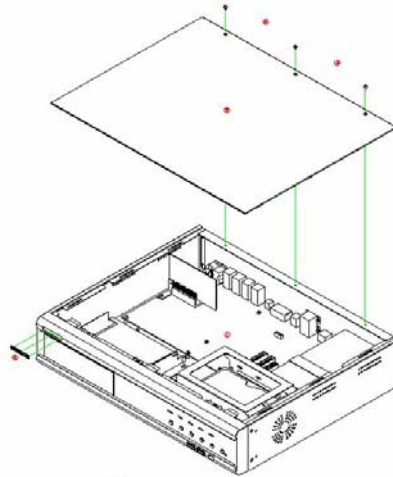
Turn the power ON and start the system.



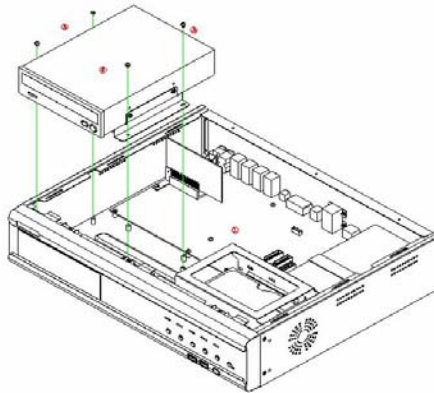
After adding a hard drive, select **{Main Setup} -> {Storage Device} -> {Local} -> {3. Manage Local Storage Device}**. For more information, see **{5. System Setup} -> {5-1 Main Setup} -> {5-1-5 Storage Device}**.

2-2-3. CD-RW/DVD-RW

- Unscrew and open the upper case.

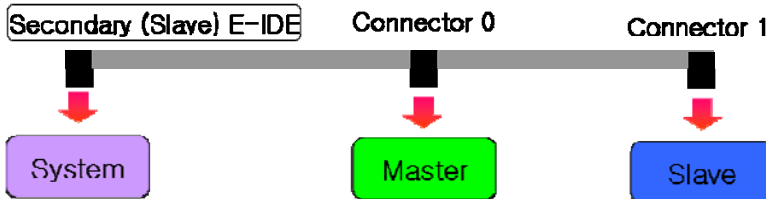


- Screw in the **CD-RW/DVD-RW** on the front **CD-RW/DVD-RW bay**.



- Connect the power cord of the **CD-RW/DVD-RW** and the **E-IDE** cable to the corresponding ports.

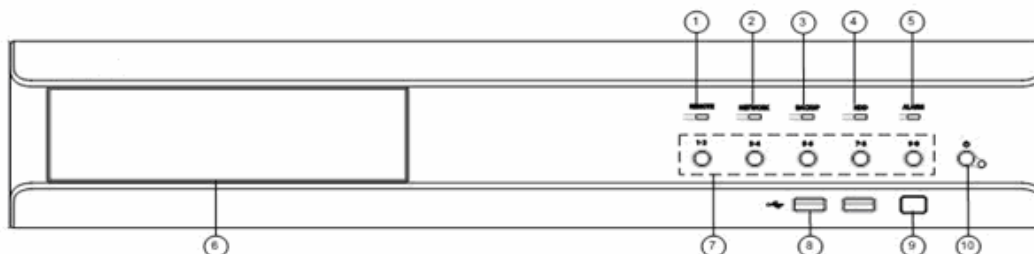
Note ! Connect the **E-IDE** cable to the slave **E-IDE**.



3. Operation and Setup Tools

The user can operate Workhorse 120-16 easily using the front buttons, remote control, and mouse.

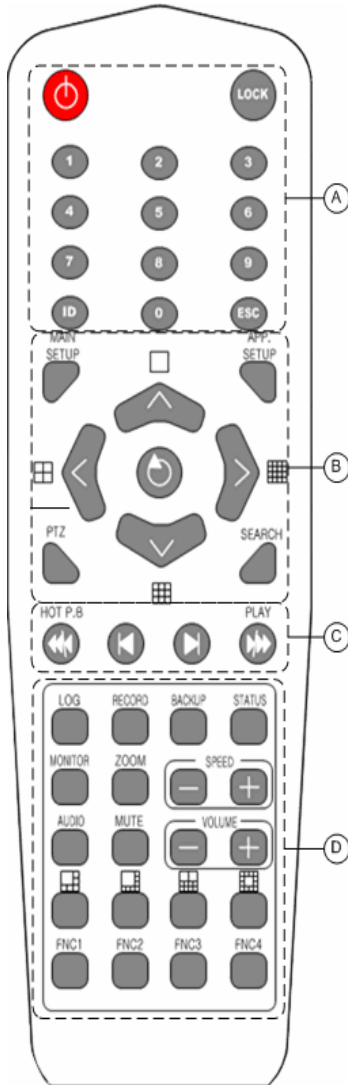
3-1. Front Buttons



No.	Name	Features
1	Remote	The green light is ON when the remote control is accessing the DVR
2	Network	The green light is ON when the DVR is being accessed through the network
3	Backup	The green light is ON when the DVR is making a backup
4	HDD	The green light is turned ON when the hard drive is operating.
5	Alarm	The red light is ON when an alarm is triggered.
6	CD-RW/DVD-RW	CD-RW/DVD-RW installation slot
7	Numeric buttons	Numeric buttons
8	USB	External backup device or USB mouse connection
9	Remote control sensor	Remote control reception sensor
10	Power	System power ON/OFF or Selection button

The front buttons are used only for inputting numeric data. Use the mouse or remote control for the other features.

3-2. Remote Control



A. Basic control buttons

	Power	Turns the system ON or OFF
	Lock	Disables the mouse, remote control, and front buttons
	Number	Used to input numeric data
	ID setting	Used to set the remote control ID
	ESC	Exits the current menu or selects the upper menu

B. System operation and setup buttons

	Main setup	Used to set up the recording, recording schedule, and system
	APP setup	Used to set up the PTZ and network
	PTZ	Changes the PTZ camera control mode
	Search	Searches recorded images
	Move	Moves an item or changes the display mode
	Select	Selects an item or converts screens sequentially

Setting the remote control ID

Example - Setting the remote control ID as 1







Select the **[ID]** button and enter the two-digit remote control ID. Afterward, press the **[ID]** button again.

















To control all DVRs with different DVR IDs, set the remote control ID as 999.

C. Search buttons

	Forward play/Fast-forward	Used to play forward and to fast-forward
	Fast-forward frames by frame or tab	Used to play frames forward frame-by-frame (or TAB)
	Reverse frame by frame or tab	Used to play frames backward frame-by-frame (or TAB)
	Reverse play/Fast reverse	Used to play backward and to rewind

D. Other buttons

	Log	Used to view system logs
	Record	Used to record all channels or stop recording all channels
	Backup	Used to back up the stored video data in Search mode
	Status	Used to view system information or change the display setup
	Monitor	Used for spot monitoring
	Audio	Used to play audio
	Mute	Turns off the audio
	Speed up	Used to increase the playing speed
	Speed down	Used to decrease the playing speed
	6-segmentation	Used to display in 6-divided screen
	8-segmentation	Used to display in 8-divided screen
	10-segmentation	Used to display in 10-divided screen
	13-segmentation	Used to display in 13-divided screen
	FNC 1	Displays/Hides the OSD status

3-3. Mouse

The user can operate the system using a USB mouse.

- To go to the On Screen Display (OSD) menu, right-click as shown below:
- To close the popup OSD menu, right-click once again.
- To execute the popup OSC menu, click each button.
- To exit the sub-menu, just right-click.
-



No.	Name	Features
1	Lock	Disables the mouse, remote control, and touch screen
2	Main setup	Used to set up the recording, recording schedule, and system
3	Additional setup	Used to set up the PTZ and network
4	PTZ	Changes the PTZ camera control mode
5	Search	Searches recorded images
6	Log	Used to view the system log list
7	Record	Used to record all channels or stop recording all channels
8	Status	Used to view system information or change the display setup
9	Monitor	-
10	Voice	Used to change the audio channel
11	F1	Displays/Hides the OSD status
12	F2	-
13	F3	-
14	F4	-

4. System Operation

4-1. Starting and Shutting down the System

4-1-1. Starting the System



The default password of the local administrator is "00000."

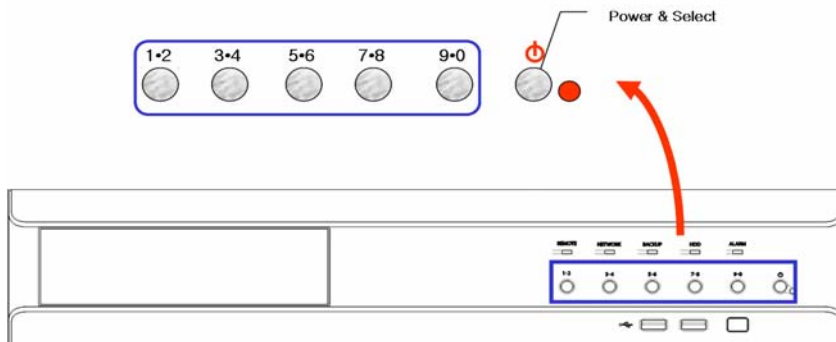
To change the password, select **{Main Setup}** → **{System}** → **{Local Administrator's Password}**.

- With the power connected to the body, press the Power button on the remote control.
- **The Remote, Network, Backup, HDD, and Alarm** LEDs on the front panel are then turned ON.
- Enter the local administrator's password using the numeric buttons.
- Once the correct password is inputted, the system is initialized, and the initial screen appears.
- After the system is initialized and started, the video of all connected channels is displayed.

The user can enter a number using the front buttons as shown below:

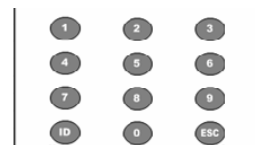
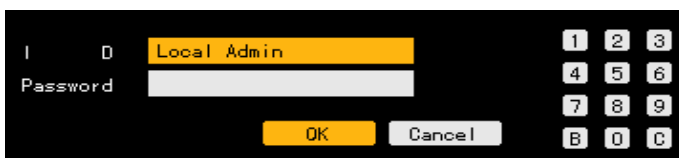
Odd number: Short-press, Even number: Long-press

Input initialization: Press the [Power] button.



4-1-2. Shutting down the System

- Press the [Power button] on the remote control.
- Enter the system administrator's password using the numeric buttons and press the **[Select]** button.



- Once the correct password is inputted, all LEDs on the front panel blink, and a warning sound is generated for approximately 20 seconds before the system shuts down.
- If an incorrect password is inputted, a warning message is displayed followed by the previous screen as shown below:



4-2. System Login

4-2-1. User Account

System users are divided into local system administrators and general users. The local system administrator can use all features.






Local admin	<p>Default account; the default password is "00000"</p> <p>Has access to all features including System Setup, System Power ON/OFF, Monitoring, View Recorded Video</p> <p>Remote access not supported, however</p>
User	<p>Up to four users can be created; system features may be used depending on the authorities given to each user.</p>

■ System features requiring authorities

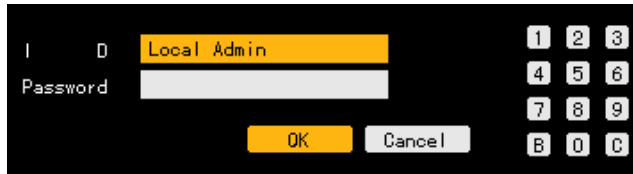
Network live	Network access real-time display
Network play	Network access view recorded video
Download network file	Network access file download
Main setup	Data setup, Recording schedule, System, Storage device, NTP, Advanced setting
Additional setup	PTZ camera, Network setup
Network PTZ control	Network access PTZ camera control
Network backup	Network access backup
Remote upgrade	Remote upgrade

4-2-2. Login

For system security, log in to the system to use the following features:

	Power	<p>System power ON/OFF</p> <p>Only the local system administrator can use this feature.</p>
	Lock/Unlock	<p>Locks/Unlocks the system</p> <p>Only the local system administrator can use this feature.</p>
	Main setup	Data setup, Recording schedule, System, Storage device, NTP, Advanced setting
	Additional setup	PTZ, Network setup
	Record	Used to record all channels or stop recording all channels

- Select the **Power**, **[Lock]**, **[Main Setup]**, **[Additional Setup]**, and **{Record}** buttons. The ID and password input window is then displayed as shown below:




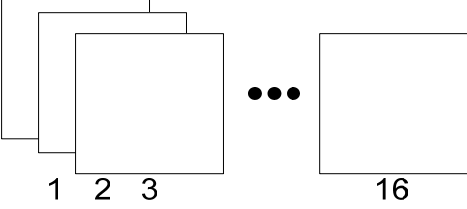



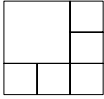
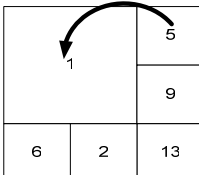
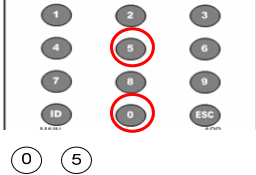
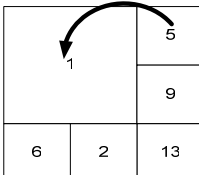
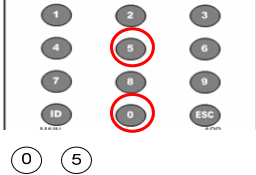
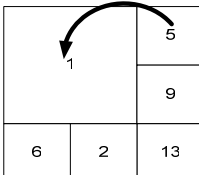
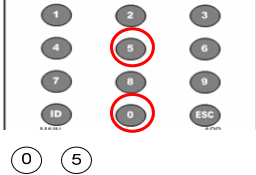
- Select the login account and enter the password using the numeric buttons on the remote control.

- The default password of the local administrator is "00000."
- Click the ID selection box and press the **arrow (▲▼)** buttons on the remote control or double-click the ID selection box to log in using another user account.

4-3. Monitoring

- Once the system starts, video data from the CCTV monitor/VGA is displayed on the 16-divided screen.
- The user can choose from various modes such as Full, 4, 6, 8, 9, 10, 13, and 16 and move between modes.

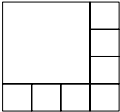
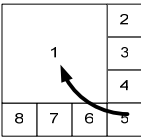
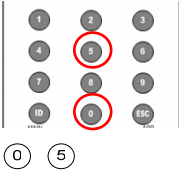
4-3-1. Divided Screen and Automatic Screen Conversion


 View all (16 sub- screens)																			
<p>Press  on the remote control. Pressing the arrow up each time causes the next screen to be selected.</p> <p>Double-click the desired video on the channel.</p> <p>Double-click any area on the View all window to convert into a divided screen.</p>																			
 4-divided screen (4 sub-screens)	<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">1</td><td style="padding: 5px;">2</td><td style="padding: 5px;">5</td><td style="padding: 5px;">6</td><td style="padding: 5px;">9</td><td style="padding: 5px;">10</td><td style="padding: 5px;">13</td><td style="padding: 5px;">14</td> </tr> <tr> <td style="padding: 5px;">3</td><td style="padding: 5px;">4</td><td style="padding: 5px;">7</td><td style="padding: 5px;">8</td><td style="padding: 5px;">11</td><td style="padding: 5px;">12</td><td style="padding: 5px;">15</td><td style="padding: 5px;">16</td> </tr> </table>	1	2	5	6	9	10	13	14	3	4	7	8	11	12	15	16		
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<p>Press  on the remote control.</p> <p>Double-click the desired mode, e.g., Recording Setup, Recording Schedule, System, Storage Device, NTP, Advanced Setting, and 4 Sub-screens.</p> <p>Double-click any area on the View all window to convert into a 4-divided screen.</p>																			
 6-divided screen (3 sub-screens)	<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">1</td><td style="padding: 5px;">2</td><td style="padding: 5px;">6</td><td style="padding: 5px;">7</td><td style="padding: 5px;">11</td><td style="padding: 5px;">12</td> </tr> <tr> <td style="padding: 5px;">6</td><td style="padding: 5px;">5</td><td style="padding: 5px;">4</td><td style="padding: 5px;">11</td><td style="padding: 5px;">10</td><td style="padding: 5px;">9</td> </tr> <tr> <td style="padding: 5px;">16</td><td style="padding: 5px;">15</td><td style="padding: 5px;">14</td><td style="padding: 5px;">11</td><td style="padding: 5px;">12</td><td style="padding: 5px;">13</td> </tr> </table>	1	2	6	7	11	12	6	5	4	11	10	9	16	15	14	11	12	13
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; text-align: center; vertical-align: middle;">  </td> <td style="width: 60%; text-align: center; vertical-align: middle;">  </td> </tr> </table>																			
																			

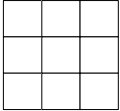



Press the corresponding button on the remote control.

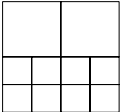
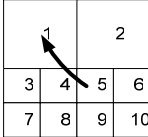
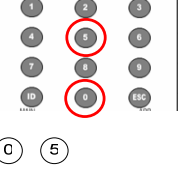
Pressing the corresponding numeric buttons enables viewing the main channel.


 <p>8-divided screen (2 sub-screens)</p>	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">2</td></tr> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">3</td></tr> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">4</td></tr> <tr><td style="width: 20px; height: 20px;">8</td><td style="width: 20px; height: 20px;">7</td><td style="width: 20px; height: 20px;">6</td><td style="width: 20px; height: 20px;">5</td><td style="width: 20px; height: 20px;"></td></tr> </table>					2	1				3					4	8	7	6	5		<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">10</td></tr> <tr><td style="width: 20px; height: 20px;">9</td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">11</td></tr> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">12</td></tr> <tr><td style="width: 20px; height: 20px;">16</td><td style="width: 20px; height: 20px;">15</td><td style="width: 20px; height: 20px;">14</td><td style="width: 20px; height: 20px;">13</td><td style="width: 20px; height: 20px;"></td></tr> </table>					10	9				11					12	16	15	14	13		 
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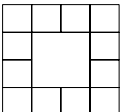
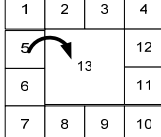
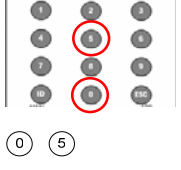
Press the  corresponding button on the remote control.
Pressing the corresponding numeric buttons enables viewing the main channel.


 <p>9-divided screen (2 sub-screens)</p>	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">2</td><td style="width: 20px; height: 20px;">3</td></tr> <tr><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">5</td><td style="width: 20px; height: 20px;">6</td></tr> <tr><td style="width: 20px; height: 20px;">7</td><td style="width: 20px; height: 20px;">8</td><td style="width: 20px; height: 20px;">9</td></tr> </table>	1	2	3	4	5	6	7	8	9	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;">8</td><td style="width: 20px; height: 20px;">9</td><td style="width: 20px; height: 20px;">10</td></tr> <tr><td style="width: 20px; height: 20px;">11</td><td style="width: 20px; height: 20px;">12</td><td style="width: 20px; height: 20px;">13</td></tr> <tr><td style="width: 20px; height: 20px;">14</td><td style="width: 20px; height: 20px;">15</td><td style="width: 20px; height: 20px;">16</td></tr> </table>	8	9	10	11	12	13	14	15	16	
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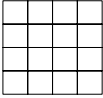






Press  on the remote control.
On the 9-divided screen, double-click the channel for a larger view of its video. Double-click Full mode to convert into a 9-divided screen.

 <p>10-divided screen (2 sub-screens)</p>	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">2</td></tr> <tr><td style="width: 20px; height: 20px;">3</td><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">5</td><td style="width: 20px; height: 20px;">6</td></tr> <tr><td style="width: 20px; height: 20px;">7</td><td style="width: 20px; height: 20px;">8</td><td style="width: 20px; height: 20px;">9</td><td style="width: 20px; height: 20px;">10</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;">7</td><td style="width: 20px; height: 20px;">8</td></tr> <tr><td style="width: 20px; height: 20px;">9</td><td style="width: 20px; height: 20px;">10</td><td style="width: 20px; height: 20px;">11</td><td style="width: 20px; height: 20px;">12</td></tr> <tr><td style="width: 20px; height: 20px;">13</td><td style="width: 20px; height: 20px;">14</td><td style="width: 20px; height: 20px;">15</td><td style="width: 20px; height: 20px;">16</td></tr> </table>	7	8	9	10	11	12	13	14	15	16	 
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Press the  corresponding button on the remote control.
Pressing the corresponding numeric buttons enables viewing the main channel.

 <p>13-divided screen (2 sub-screens)</p>	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;">2</td><td style="width: 20px; height: 20px;">3</td><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">5</td></tr> <tr><td style="width: 20px; height: 20px;">13</td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">6</td><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;">12</td><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">7</td><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;">11</td><td style="width: 20px; height: 20px;">10</td><td style="width: 20px; height: 20px;">9</td><td style="width: 20px; height: 20px;">8</td></tr> </table>	2	3	4	5	13		6		12	1	7		11	10	9	8	<table border="1" style="border-collapse: collapse; margin: auto;"> <tr><td style="width: 20px; height: 20px;">5</td><td style="width: 20px; height: 20px;">6</td><td style="width: 20px; height: 20px;">7</td><td style="width: 20px; height: 20px;">8</td></tr> <tr><td style="width: 20px; height: 20px;">16</td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">9</td><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;">15</td><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">10</td><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;">14</td><td style="width: 20px; height: 20px;">13</td><td style="width: 20px; height: 20px;">12</td><td style="width: 20px; height: 20px;">11</td></tr> </table>	5	6	7	8	16		9		15	4	10		14	13	12	11	 
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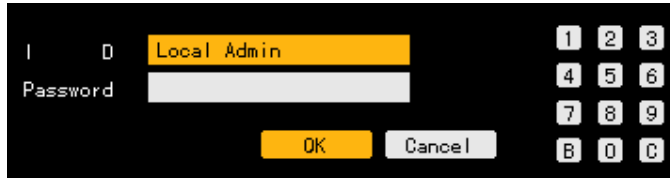
Press the  corresponding button on the remote control.
Pressing the corresponding numeric buttons enables viewing the main channel.

 <p>16-divided screen (1 screen)</p>	<table border="1" data-bbox="731 179 935 369"> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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<p>Press  on the remote control. Double  -click the desired video on the channel.</p>																	
	<p>Automatic screen conversion</p>																
<p>In Live division mode, press the  button to shift to Full, 4, 6, 8, 9, 10, 13, or 16-division mode.</p> <p>To convert the screen automatically, press the  button on the remote control again.</p> <p>The user can convert the screens in the current division mode.</p> <p>Press the  button on the remote control to set the conversion interval.</p> <p>Clicking the conversion button enables increasing the time.</p> <p>To stop the conversion mode, shift to 16-division mode.</p>																	

4-4. Audio Recording and Playing

4-4-1. Audio Recording Setting

- On the real-time monitoring screen, select the **[Additional Setup]** button on the remote control.
- The login window is then displayed as shown below:



- Select the login account, enter the password using the numeric buttons on the remote control, and click [OK].

- (The default password of the local administrator is "00000.")
- Go to the ID selection box and press the **arrow (▲▼)** buttons on the remote control or double-click the ID selection box on it to log in using another user account.

- Once the correct password is inputted, the initial screen of **{Main Setup}** appears as shown below:

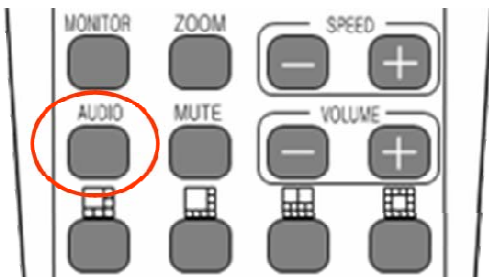
Menu	Menu		Recording					Event				Alarm Out						
	CH	PTZ	Title	Res.	Qua.	Mode	Rate	Audio	Moti.	Sens.	Sound	Pre	Post	Buz.	Call	Mail	Spot	Relay
Recording Setup	1	PTZ	CH01	CIF	V.H	Motn	15	Off	Part	1	Off	Off	10	Off	Off	Off	Off	Off
	2		CH02	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	3		CH03	Fiel	V.H	Cont	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
Schedule	4		CH04	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	5		CH05	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
System	6		CH06	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	7		CH07	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
Storage	8		CH08	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	9		CH09	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
NTP	10		CH10	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	11		CH11	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
Advanced	12		CH12	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	13		CH13	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
	14		CH14	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	15		CH15	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
	16		CH16	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off

- Navigate on the screen using the arrow (▲▼◀▶) buttons. Select {Main Setup} → {Data 1~4} → {Recording} → {Audio} and choose the desired channel. Afterward, click the [Select] button.
- On the channel selection box, select the audio channel and save it.

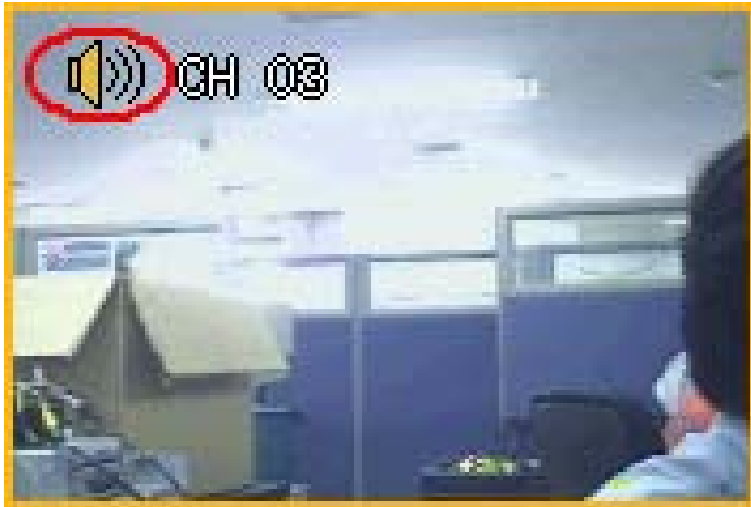


4-4-2. Audio Live

- Select the [Audio] button on the remote control or on the menu on the Real-time Monitoring screen.



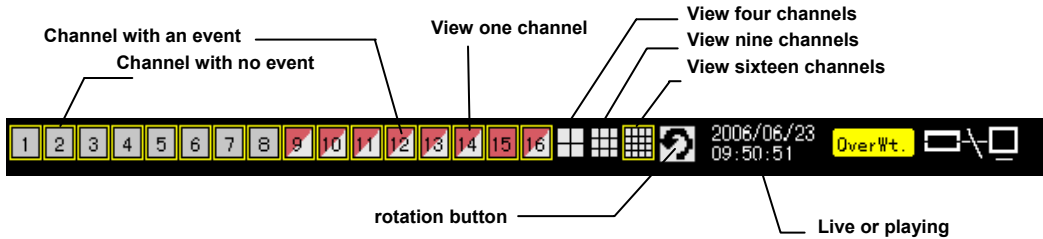
- The Audio icon and active window are then displayed on the channel, with the voice set on the real-time monitoring window as shown below:



- Change the window using the **arrow** (▲▼◀▶) buttons and click the **[Select]** button to select an audio channel.
- The real-time monitoring screen is then selected, and the voice for the selected channel, outputted.

4-5. Viewing System Information and Changing the Display Setup

Workhorse 120-16 displays basic system information through the OSD on the real-time screen to enable the user to monitor the screen, view system information, and set the screen.



- Selecting the **[Status]** button causes the setup menus to be displayed in the following order:



Channel selection window

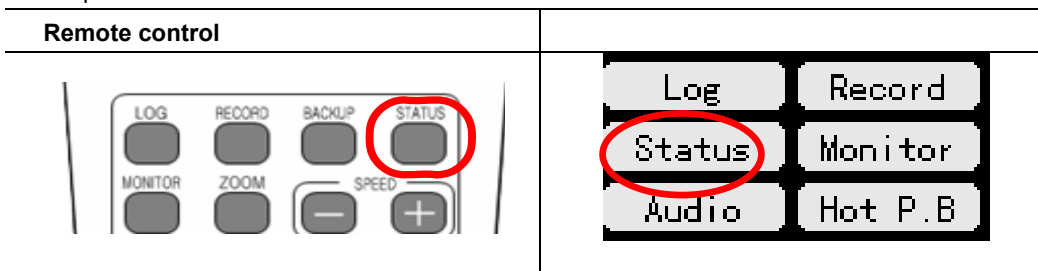
Activation mode	The channel selection window can be moved. At this time, the border of the channel screen is displayed in orange.
Selection mode	The channel is selected. At this time, the border of the channel screen is displayed in blue.

Viewing a divided screen

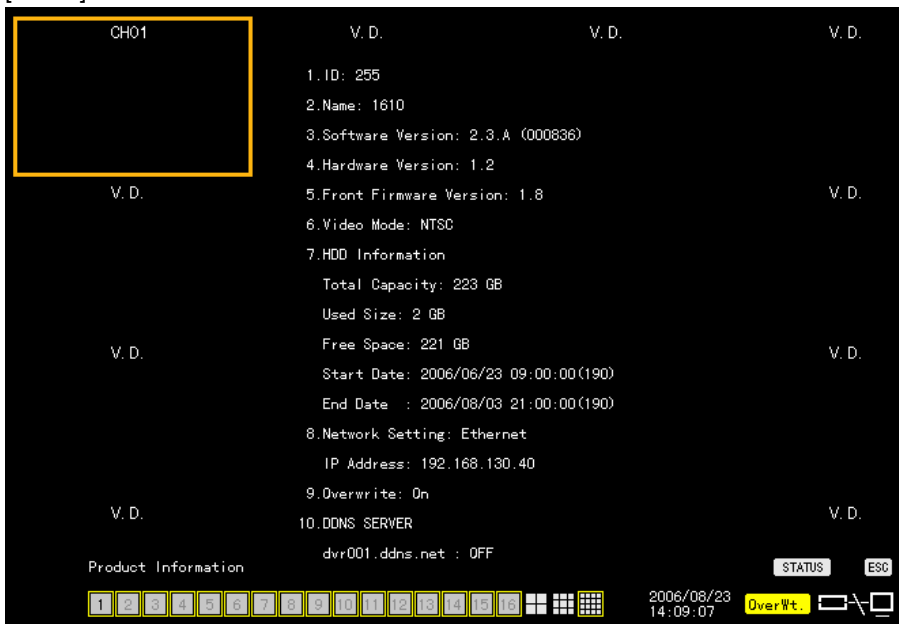
Pressing the buttons in Brightness, Contrast, or Camera Control mode enables monitoring the video in Full, 1, 4, 9, or 16-divided screen.

4-5-1. Viewing System Information

- Button operation



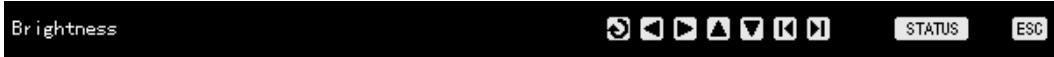
- To view product information, press the **[Status]** button on the remote control or go to the **[Status]** menu.



1. ID	Product ID (1~99) (used for remote control by ID)
2. Name	Product name
3. Software version	Software version (build number)
4. Hardware version	Hardware version (equipment type)
5. Front firmware version	Firmware version on the front part
6. Video mode	Video mode (NTSC/PAL)
7. HDD information	Hard drive
Total space	Total space
Used space	Used space
Free space	Remaining space
Starting day	Recording start date (date changed)
End day	Recording end date (date changed)
8. Network setup	Network setup status
IP address	IP address
9. Overwrite	Overwrite status
10. DDNS server	Domain name, OFF/ACT

4-5-2. Brightness Control

- To shift to brightness control mode, press the **[Status]** button as shown below:



Select the channel on the monitoring screen to adjust the brightness.

- Adjust the brightness using the **arrow (▲▼)** buttons.



- Go to the channel selection window using the **[ESC]** button and adjust the brightness of the channel video by repeating steps 2 and 3.
- After adjusting the brightness of the channel video, press the **[ESC]** button again.
- The adjusted brightness is then saved immediately.

4-5-3. Adjusting the Contrast

- To shift to contrast control mode, press the **[Status]** button as shown below:



Select the channel on the monitoring screen to adjust the contrast.

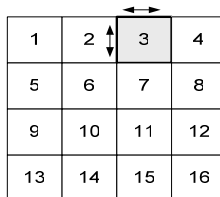
- Adjust the contrast using the **arrow (▲▼)** buttons.



- Go to the channel selection window using the **[ESC]** button and adjust the contrast of the channel video by repeating steps 2 and 3.
- After adjusting the contrast of the channel video, press the **[ESC]** button again.
- The adjusted contrast is then saved immediately.

4-5-4. Camera Control

- Use Camera Control to control the images displayed by moving the channel screen as shown below:



- To shift to camera control mode, press the **[Status]** button as shown below:



- Select the channel on the monitoring screen to control the camera.



- Adjust the camera using the **arrow (▲▼)** buttons.
- Go to the channel selection window using the **[ESC]** button and adjust the camera of the channel video by repeating steps 2 and 3.
- After adjusting the camera of the channel video, press the **[ESC]** button again.
- The adjusted camera control is then saved immediately.

Moving the camera up, down, right, or left excessively may cause a black or gray part to appear on the screen. A proper control range is achieved when there is no black or gray part on the screen.

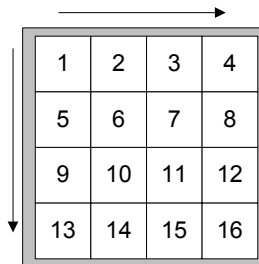
4-5-5. TV Control

- Use TV Control to adjust the images displayed on the CCTV monitor by moving the CCTV monitor screen up, down, right, or left as shown below:

- Press the **[Status]** button to shift to TV control mode as shown below:



- Adjust the CCTV monitoring screen using the **arrow (▲▼◀▶)** buttons as shown below:



- After adjusting the video, press the **[ESC]** button.
- The TV out adjustment is then saved immediately.

Moving the monitor up, down, right, or left excessively may cause a black or gray part to appear on the screen. A proper control range is achieved when there is no black or gray part on the screen.

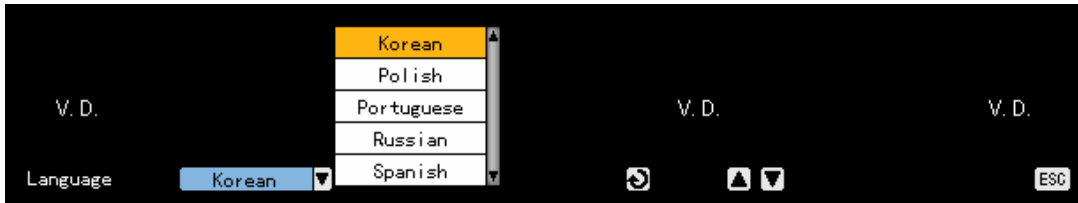
4-5-6. Language

- The user can select the language for the On Screen Display (OSD) menu of the system.

- To shift to language selection mode, press the **[Status]** button as shown below:



- Press the **[Select]** button. On the language selection menu, select the language using the **arrow (▲▼)** buttons and press the **[ESC]** button.



4-5-7. Displaying/Hiding the Camera Name

Displays/Hides each channel on the monitoring screen

- To display/hide the camera name, press the **[Status]** button as shown below:



- Press the **[Select]** button. On the ON/OFF menu, select ON or OFF using the **arrow (◀▶)** buttons and press the **[Select]** button.



4-5-8. Controlling the Screen Border

Used to display/hide the screen border and to control the border form, thickness, transparency, and color

- To display/hide the border, press the **[Status]** button as shown below:



- Press the **[Select]** button. On the setting menu, select the desired item using the **arrow (▲▼)** buttons.



- After selecting the desired item, save the setting and press the **[Select]** button.



- After setting each field, press the **[ESC]** button to exit the borderline setting mode.

Border setting fields

Field	Setting	Description
Mode	ON	Displays the border
	OFF	Hides the border
Form	Internal	Hides the external borderline
	All	Displays all borderlines
Width	2, 4	Sets the width
Transparency	25%, 50%, 75%, 100%	Sets the transparency
Color	Black, White, Red, Green, Blue	Sets the color of the border

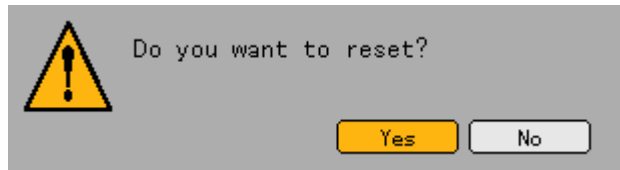
4-5-9. Reset

Resets the **[Status]** setting

- Press the **[Status]** button to shift to reset mode as shown below:



Press the **[Select]** button. On the selection window, select **[Yes]** or **[No]** using the arrow (**▲▼◀▶**) and **[Select]** buttons.



4-6. System Log

Workhorse 120-16 records the logs of all operations including system power ON/OFF, system setup in/out, and network connection/disconnection.

4-6-1. Log Type

(1) General

Logs related to power ON/OFF, file copy/backup failure, setup start/end, replay, and other basic system operations

(2) Recording event

Logs related to recording such as detection of motion, sensor, and sound

(3) Network

Logs related to network operations such as network login, network logout, and network live

(4) Failure

Logs related to operation failures such as signal loss and network connection failure

(5) All

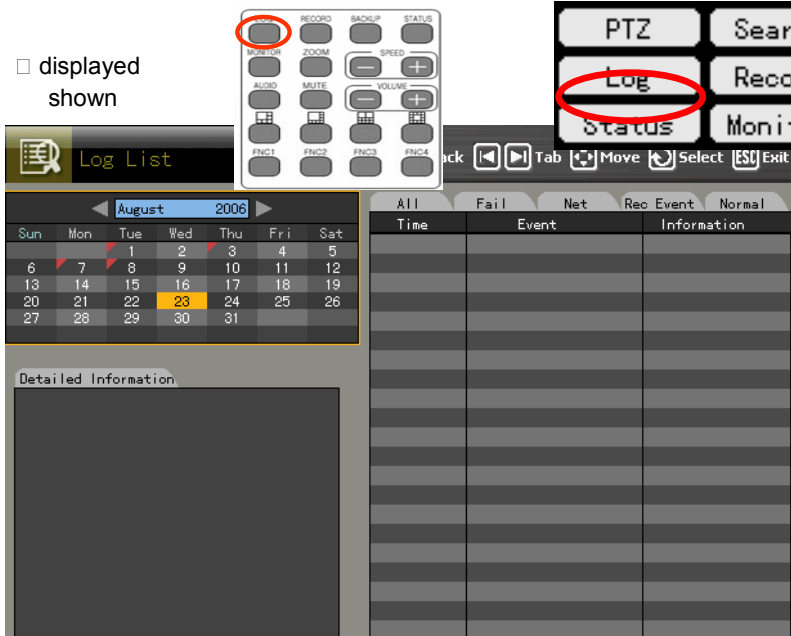
Logs related to all system operations

4-6-2. Viewing the System Log

In real-time monitoring mode, press the **[Log]** button on the remote control or **[Log]** button on the menu.

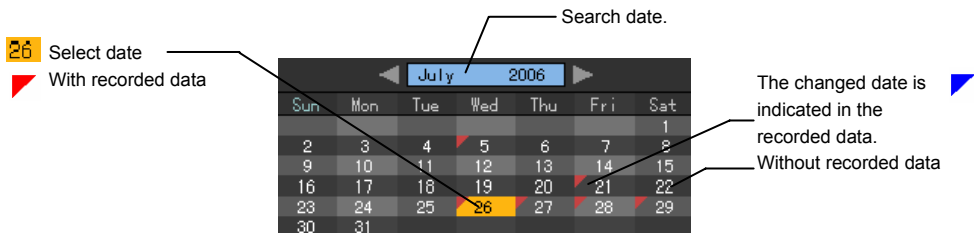
- The initial log list menu is then

- displayed shown



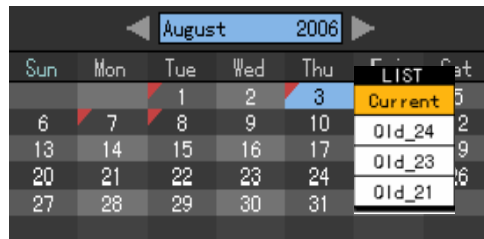
as below:

- On the active calendar window, select the search date using the **arrow (▲▼◀▶)** and **[Select]** buttons as shown below:




Viewing time change-related log data

The stored data folder is updated each time the user changes the time. On the other hand, a blue triangular icon is displayed on the date each time a change is made in the date on the calendar window. Otherwise, a red triangular icon is displayed on the unchanged date. To view the log details, select the date with a red icon. Selecting a date with a blue icon causes the changed date list to appear.



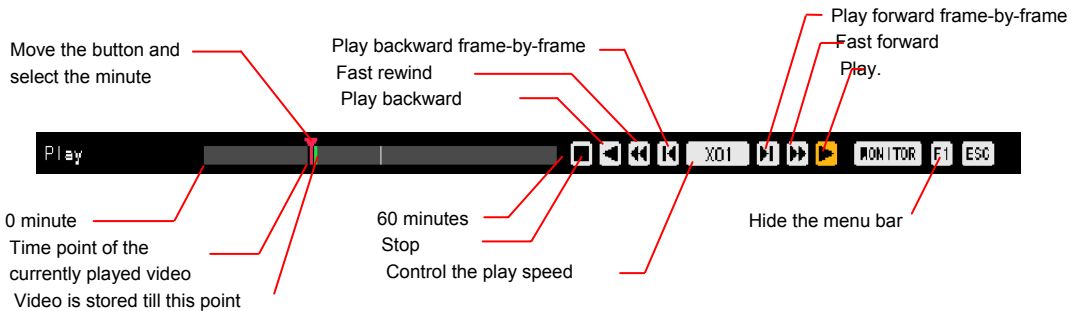
- Select the (new) date on the calendar window to display the log list as shown below:



- Navigate on the screen using the **arrow (◀▶)** buttons and check the logs by time and type.
- The user can check the logs by time and type on each page using the **[Tab]**  buttons.
- Press the **[Play]** button on the selected log to play the recorded video for the corresponding time.



- On the recorded video screen, press the **[Play]** button.



Recorded video is played each second.

Example - The user can play the video from the 19:45:16 log by selecting 19:45:16.

- To return to the previous log list, press the **[ESC]** button.

4-7. Record

4-7-1. Recording Type

Workhorse 120-16 supports various recording types:

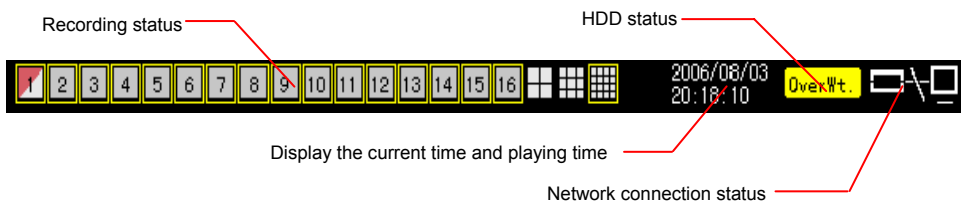
Recording Type	Description
<input type="checkbox"/> Automatic	Set the event recording frame and general recording frame separately for automatic recording based on the setting. When motion, sensor, or sound is detected, the event recording frame is selected. Otherwise, the general recording frame is selected.
<input type="checkbox"/> Continuous	Recording is done based on the general frame setting.
<input type="checkbox"/> Motion	Recording is done based on the event frame setting in case motion is detected.
<input type="checkbox"/> Sensor	Recording is done based on the event frame setting in case of input signal from an external sensor.
<input type="checkbox"/> Sound	Recording is done based on the event frame setting in case sound is detected.

4-7-2. Recording Setup

Select {Main Setup} -> {Recording Setup}. For more information on the recording setup, go to {5-1-2 Recording Setup} -> {Recording}.

4-7-3. Viewing the Recording Status

The user can monitor the video and recording status of each channel in real time through the OSD at the bottom of the screen.



Recording status by shape

	Triangle	Only video is recorded.
	Triangle	Only audio is recorded.
	Rectangle	Both audio and video are recorded.

Recording status by color

	Green	Continuous recording
	Red	Motion is recorded.
	Blue	Sensor signals are recorded.
	Yellow	Sound is recorded.
	Transparent	No recording is done.

Hard drive status

The right part of the OSD shows the status of the hard drive where video data is recorded.

To turn HDD Overwrite ON/OFF, select **{Main Setup}** -> **{Storage Device}**.

■When HDD Overwrite is turned ON	■When HDD Overwrite is turned OFF
Set the event recording frame and general recording frame separately for automatic recording based on the setting. When motion, sensor, or sound is detected, the event recording frame is selected. Otherwise, the general recording frame is selected.	
Recording is done based on the general frame setting.	
Recording is done based on the event frame setting in case motion is detected.	
Recording is done based on the event frame setting in case of input signal from an external sensor.	
Recording is done based on the event frame setting in case sound is detected.	
<div style="display: flex; align-items: center;"> <div style="background-color: yellow; padding: 2px 5px; border: 1px solid black; margin-right: 5px;">Overwrite</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> <div style="font-size: 2em; margin-right: 5px;">/</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> </div>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 2px 10px; margin-right: 5px;">11GB</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> <div style="font-size: 2em; margin-right: 5px;">/</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> </div>

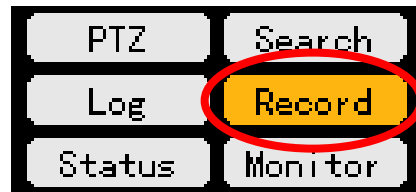
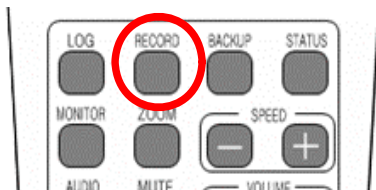
Network access

The right part of the OSD shows the network connection status.

■Network connected	■Network disconnected
<div style="display: flex; align-items: center;"> <div style="background-color: yellow; padding: 2px 5px; border: 1px solid black; margin-right: 5px;">Overwrite</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> <div style="font-size: 2em; margin-right: 5px;">—</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> </div>	<div style="display: flex; align-items: center;"> <div style="background-color: yellow; padding: 2px 5px; border: 1px solid black; margin-right: 5px;">Overwrite</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> <div style="font-size: 2em; margin-right: 5px;">/</div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> </div>

4-7-4. Starting and Stopping Record All

To start or stop Record All, press the **[Record]** button on the remote control or on the **[Record]** menu in real-time monitoring mode.



(1) Stopping Record All

- Press the **[Record]** button on the remote control or on the menu.
- On the login window, enter the ID and password and select **[OK]**.
- The recording of all channels then stops, and the recording status is displayed on the OSD as shown below:



(2) Starting Record All

- Select the **[Record]** button on the remote control.
- On the login window, enter the ID and password and select **[OK]**.
- Based on the recording setting, all channels are recorded, and the recording status, displayed on the OSD as shown below:



4-7-5. Watermark

This system uses Watermark technology to detect video forgery and alteration.

Fragile Watermark technology is used.

Fragile Watermark technology detects the locations and types of counterfeited or altered video. It has been designed for purposes of authentication and to guarantee integrity of the video.

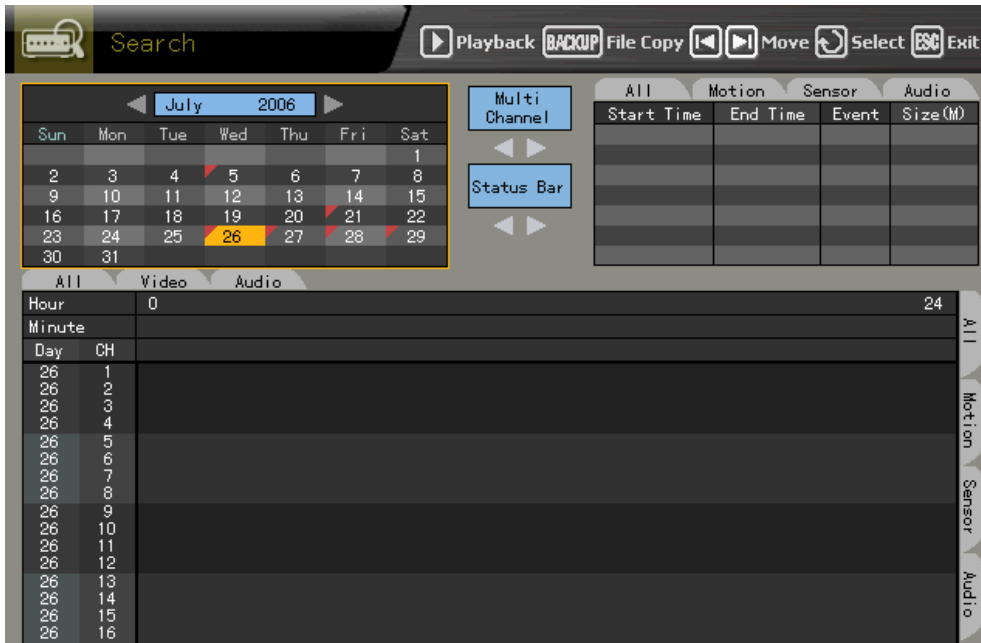
In Workhorse 120-4, the watermark is inserted into all recorded video data; any forgery and alteration of the video is detected.

4-8. Search

Use [Search] to search the recorded video by time and to play the searched video.

4-8-1. Selecting Search Mode

- In real-time monitoring mode, select the **[Search]** button on the remote control or on the **[Search]** menu. The initial menus of the search mode are then displayed as shown below:

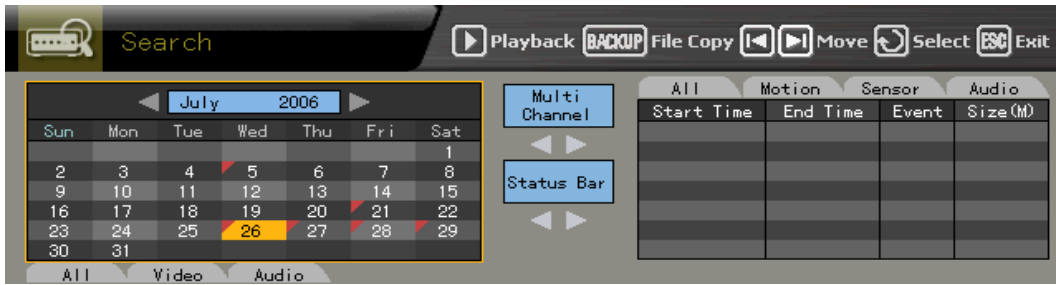





Activation mode and Selection mode

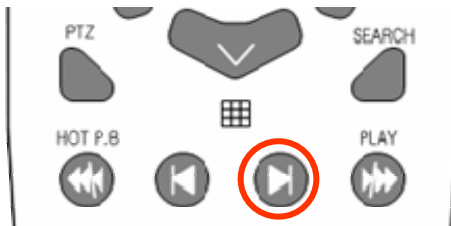
Activation mode	The field can be moved or selected on the OSD menu. At this time, the border or highlighted part of the activated window is displayed in orange.
Selection mode	Items are selected in OSD mode. At this time, the border of the selection window or the selection box is displayed in blue.



4-8-2. Search Method






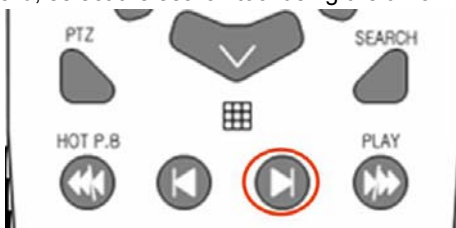
- Before selecting the date, go to the search method selection box by pressing the **[Tab]**  button. Afterward, select the Search method using the **arrow** ( ) buttons.



Multi-channel	Searches the video of multiple channels for the defined time
Multi-date	Searches the video of one channel for multiple dates in a certain time zone
Multi-hour	Searches the video of one channel for the multiple time zones of one date

4-8-3. Selecting the Search Tool

- Before selecting the date, go to the search tool selection box by pressing the **[Tab]**  button. Afterward, select the search tool using the **arrow** ( ) buttons.



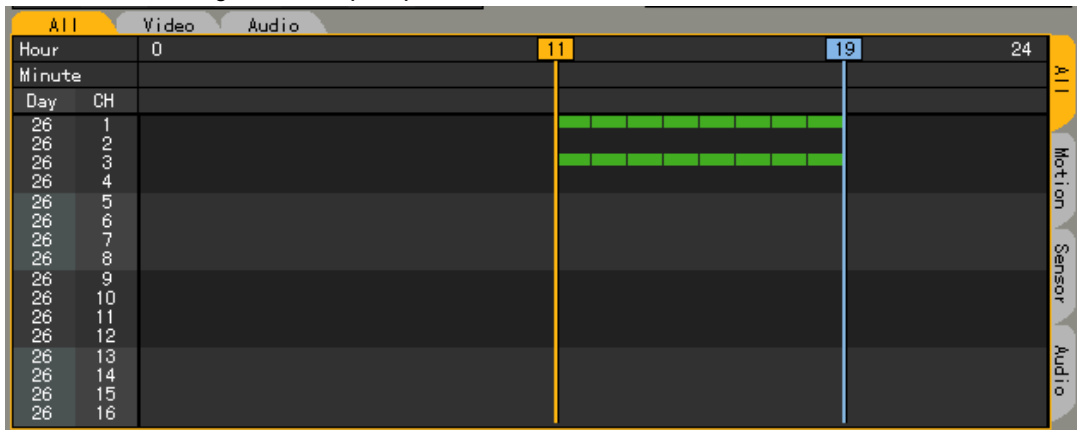
(1) Searching video using the bar graph

- Select the search date. The recorded video is then displayed in a bar graph as shown below:

Green	Continuous recording
Red	Motion is recorded.
Blue	Sensor signals are recorded.
Yellow	Sound is recorded.
Light blue	Shows that recording was done before the time was changed

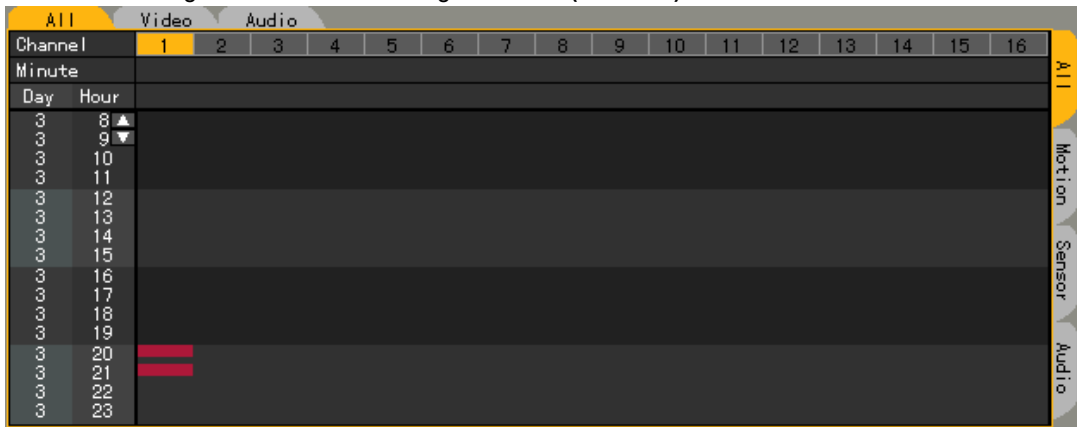
A) Multi-channel

Select the time using the **arrow** (◀▶) buttons.



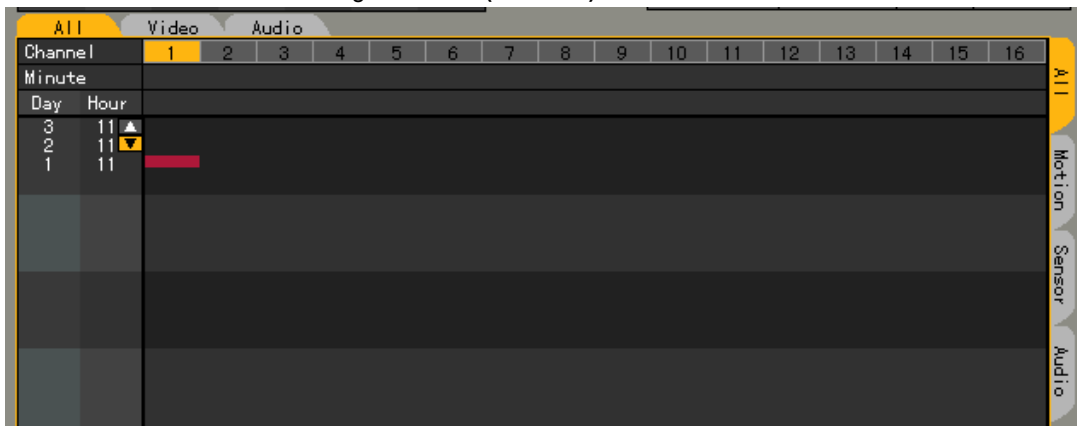
B) Multi-hour

Select the starting time and channel using the **arrow** (◀▶▲▼) buttons.



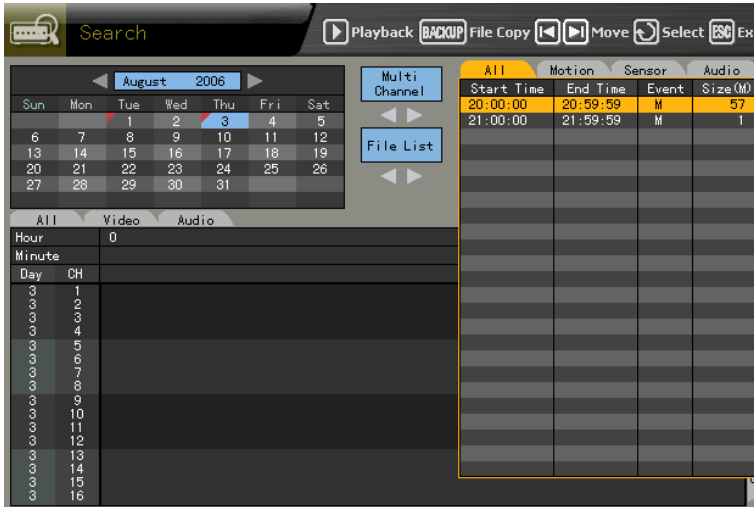
C) Multi-date

Select the time and channel using the **arrow** (◀▶▲▼) buttons.



(2) Search using the file list

- Select the search date. The one-hour file list of the recorded video is then displayed as shown below:
- Select the recorded time zone using the **arrow (▲▼◀▶)** buttons.



- View the file list data related to time change.
- 1) Changing the time by selecting **{Main Setup}-> {NTP} -> {2. Date and Time}** causes the data folder to be updated and subsequently displayed in blue on the file list.
 - 2) Selecting the changed time causes a list including the updated folder to be displayed.

Supported only in multi-channel mode

All	Motion	Sensor	Audio
Start Time	End Time	Event	Size(M)
11:00:00	11:59:59	C	1
12:00:00	12:59:59	C	28
13:00:00	13:59:59	C	28
14:00:00	14:59:59	C	28
15:00:00	15:59:59	C	28
16:00:00	16:59:59	C	28
17:00:00	17:59:59	C	28

All	Motion	Sensor	Audio
Start Time	End Time	Event	Size(M)
11:00:00	11:59:59	C	1
12:00:00	12:59:59	C	28
13:00:00	13:59:59	C	28
14:00:00	14:59:59	C	28
15:00:00	15:59:59	C	28
16:00:00	16:59:59	C	28
17:00:00	17:59:59	C	28

LIST :00:00 13:59:59 C 28

Current :00:00 14:59:59 C 28

Old_24 :00:00 15:59:59 C 28

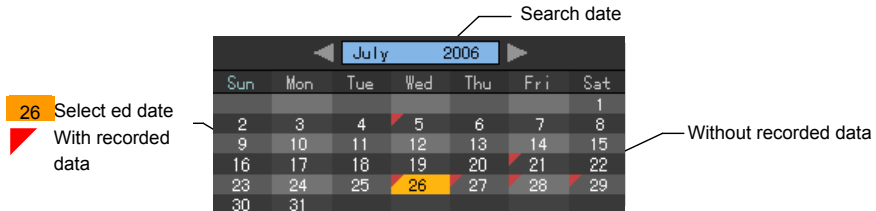
Current	Recorded video file based on the current system time
Old_NUM	Recorded video file based on the previous system time

4-8-4. Multi-channel

Searches the video of multiple channels for the defined time

(1) Date search

- Select the search date using the **arrow (▲▼◀▶)** and **[Select]** buttons on the active calendar window as shown below:



(2) Search time

- Select the search date on the calendar window. The recorded one-hour video of each channel is then displayed in a bar graph as shown below:

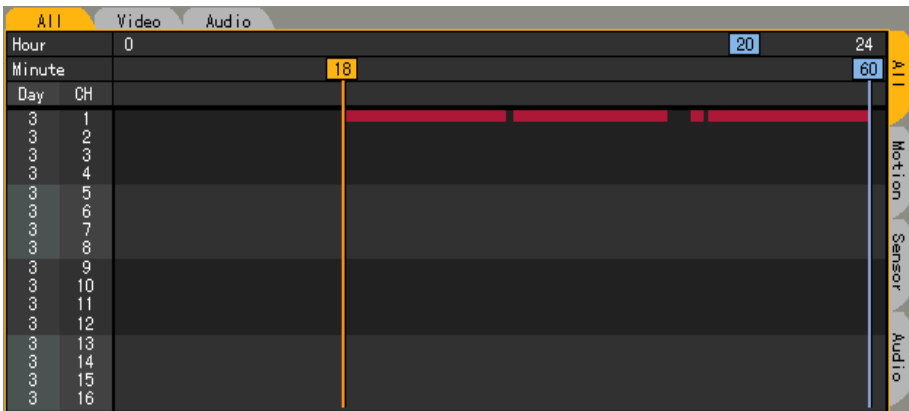
Green	Continuous recording
Red	Motion is recorded.
Blue	Sensor signals are recorded.
Yellow	Sound is recorded.
Light blue	Shows that recording was done before the time was changed

- Set the time by using the **arrow (◀▶)** or numeric buttons or moving the time indicator and press the **[Select]** button.

Input numbers that are less than 10 in two digits using the numeric buttons, e.g., 01 for 1 and 02 for 2.

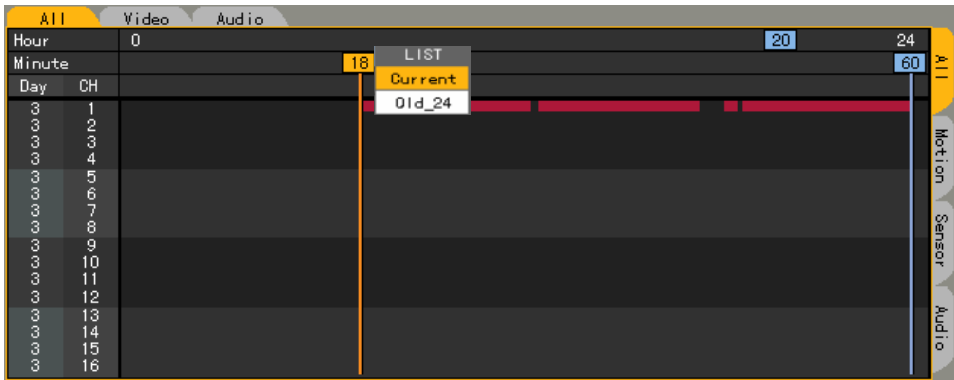
Viewing the status bar related to time change

- 1) After the changed folder is searched by the status bar, the bar for the corresponding time zone is displayed in light blue as shown below:



- 2) Selecting a changed time causes a list including the updated folder to be displayed as shown below:

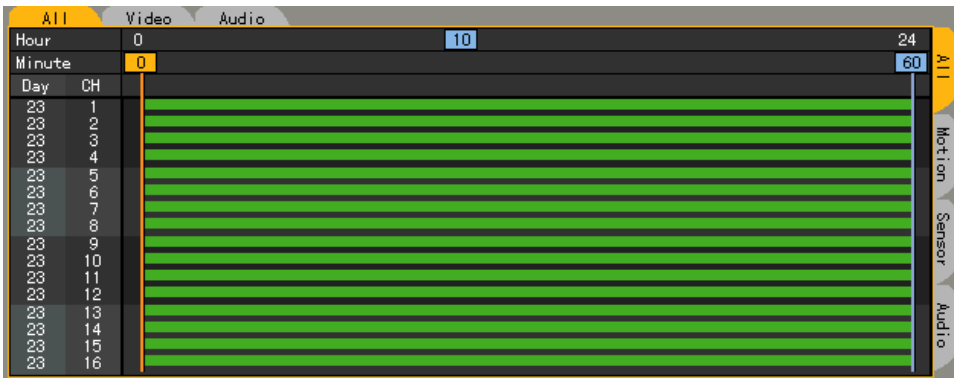
Supported only in multi-channel mode



(3) Minute

- Select the time. The recorded video of each channel is then displayed in a minute-unit bar graph.
- Define the starting point of the search time zone using the **arrow** (▲▼◀▶) and numeric buttons and click the **[Select]** button.

Input numbers that are less than 10 in two digits using the numeric buttons, e.g., 08 for 8 and 09 for 9.

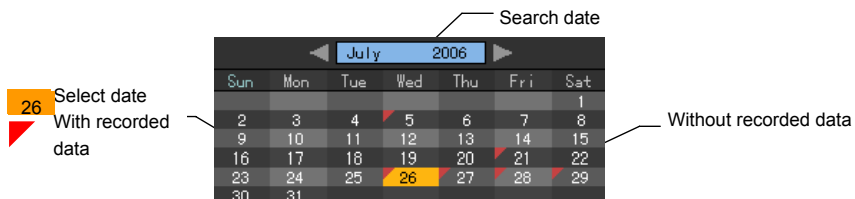


4-8-5. Multi-hour

Searches the video of one channel for the multiple time zones of one date

(1) Date search

- Select the search date using the **arrow** (▲▼◀▶) and **[Select]** buttons on the active calendar window as shown below:



(2) Selecting the starting time and channel

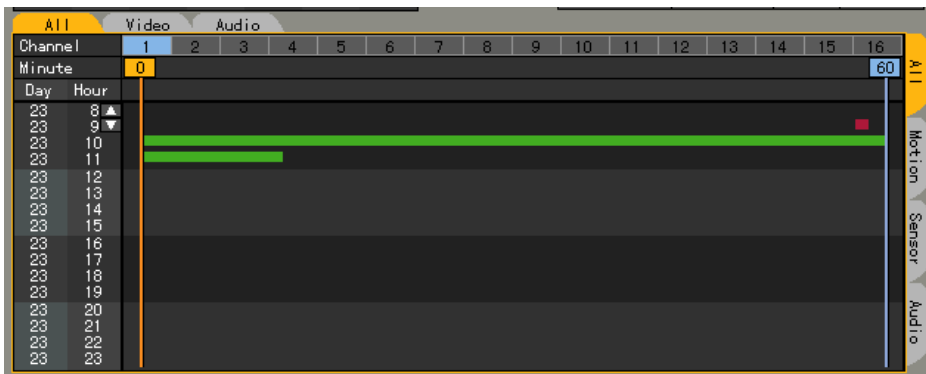
- Select the date. The time and channel of the selected date are then displayed as shown below.
- Define the starting time and channel using the **arrow** (▲▼◀▶) buttons.



(3) Minute

- The video recorded by the hour of the selected channel is displayed in a minute-unit bar graph.
- Define the starting point of the search time zone using the **arrow** (▲▼◀▶) and numeric buttons and press the **[Select]** button.

Input numbers that are less than 10 in two digits using the numeric buttons, e.g., 08 for 8 and 09 for 9.

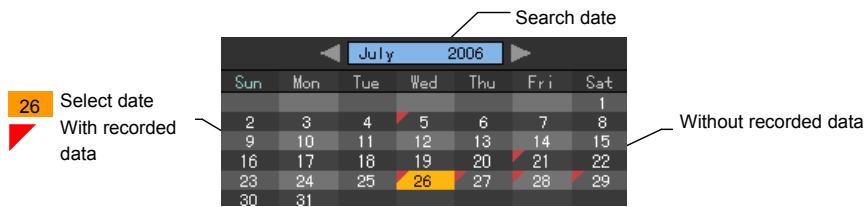


4-8-6. Multi-date

Searches the video of one channel for multiple dates in a certain time zone

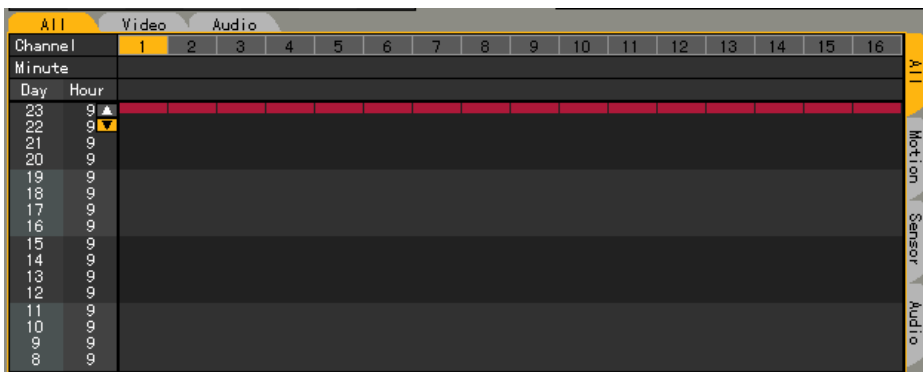
(1) Date search

- Select the search date using the **arrow (▲▼◀▶)** and **[Select]** buttons on the active calendar window as shown below:



(2) Selecting the time and channel

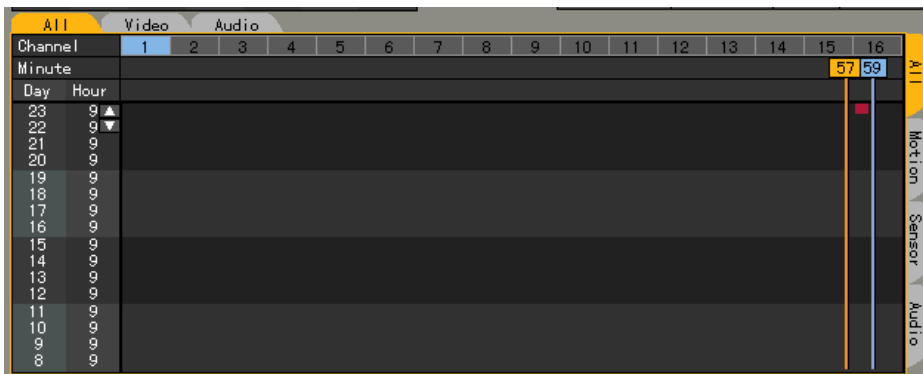
- Select the date. The date list, time, and channel are then sorted in descending order.
- Select the time and channel using the **arrow (▲▼◀▶)** buttons.



(1) Minute

- The recorded video of the selected channel is displayed in a minute-unit bar graph.
- Define the starting point of the search time zone using the **arrow (▲▼◀▶)** and numeric buttons and press the **[Select]** button.

Input numbers that are less than 10 in two digits using the numeric buttons, e.g., 08 for 8 and 09 for 9.



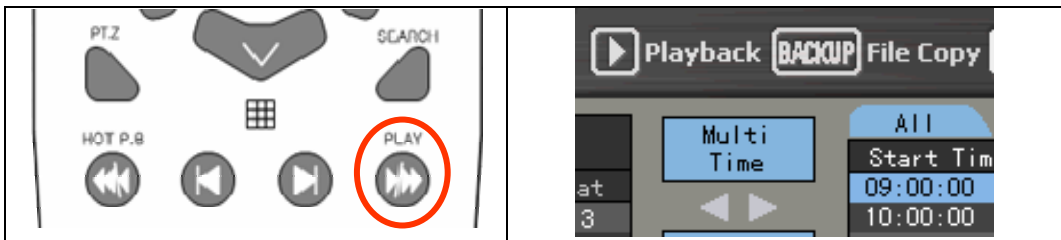
4-9. Play

4-9-1. Selecting Play Mode

To shift to **[Play]** mode, press the [Play] button on the remote control or click **[Playback]** on the display in **{Search}**, **{Log}**, or **{Real-time Monitoring}** mode. In log or real-time monitoring mode, only Multi-channel mode is allowed. To search and play, however, either Multi-channel or Multi-date or Multi-hour mode may be used.

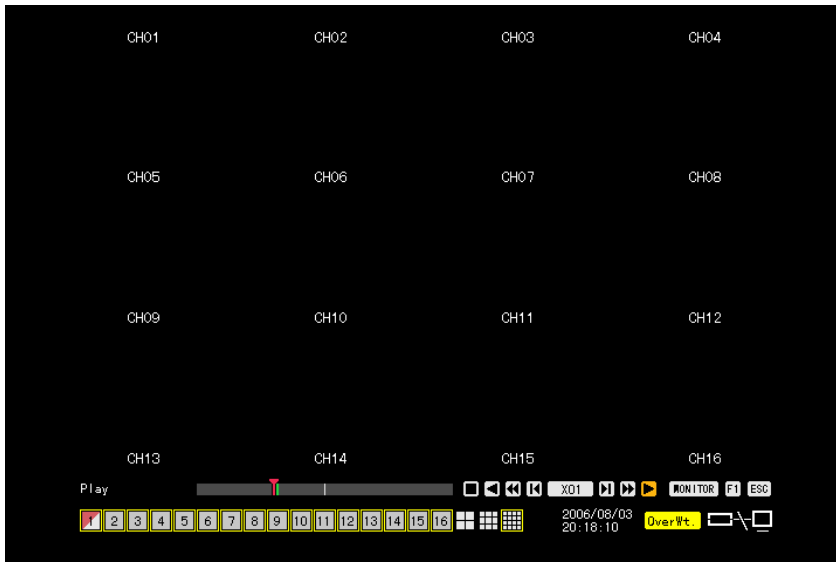
(1) Search

- In **{Search}** mode, select multi-channel, multi-date, or multi-hour.
- In **{Search}** mode, set the date, time, channel, or minute and select the **[Play]** button on the remote control or the **{Playback}** button at the upper center of the **{Search}** mode screen.



- The playback screen for Multi-channel, Multi-date, and Multi-hour is then displayed as shown below:

1) Multi-channel



2) Multi-time

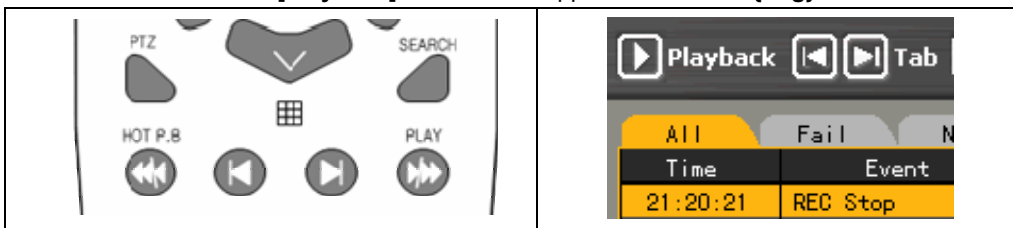


3) Multi-date



(2) Log

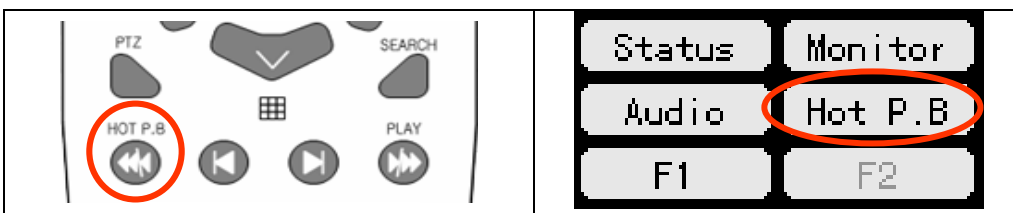
- In **{Log}** mode, select the date and focus for playback and press the **[PLAY]** button on the remote control or the **[Playback]** button at the upper center of the **{Log}** mode screen.



- The initial playback screen in Multi-channel mode is then displayed.

(3) Hot playback

- Press the **[HOT PB]** button on the remote control or on the menu on the real-time monitoring screen.



- Press the **[HOT PB]** button on the remote control or the **[Play]** button on the menu to display the initial playback screen in Multi-channel mode.

The user cannot play the data recorded before the time change.

4-9-2. Playing and Controlling the Playing Speed

(1) Playing

- In Play mode, press the Search button. The video is then played based on the features of each button.

Description of search buttons

Button	Name	Features
	□ Fast-forward frames by frame	Used to play frame-by-frame or to pause
	□ Forward play/Fast-forward	Used to play forward (x1) and to fast-forward (x30)
	□ Reverse frame by frame	Used to play frames backward frame-by-frame or to pause
	□ Reverse play/Fast reverse	Used to play backward (x1) and to rewind (x30)
	Speed down	Used to decrease the playing speed
	Speed up	Used to increase the playing speed

(2) Controlling the playing speed

A) Increasing/Decreasing the speed by X1

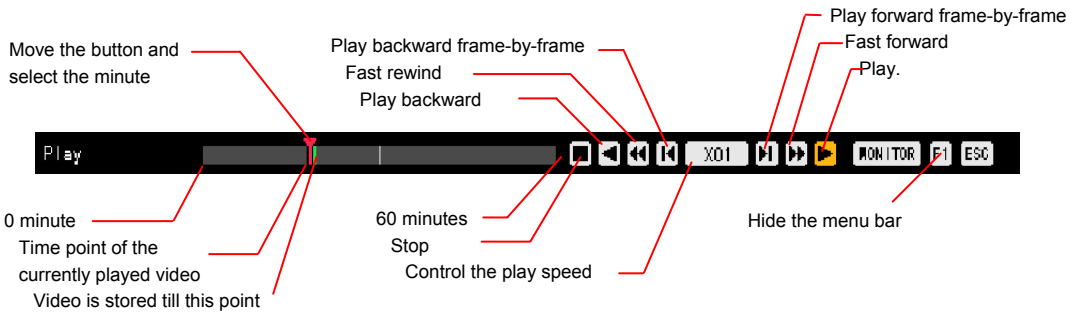
- To increase/decrease the speed by X1, press the **Speed (+/-)** button on the remote control.

The user can play the video by x1 or X1~X29.

B) Increasing/Decreasing the speed by X30


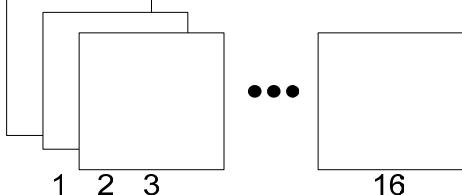


- To increase/decrease the speed by X30, press the **Speed (+/-)** button on the remote control.



The user can play the video by X30 up to X300.

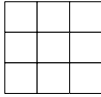


4-9-3. Playing on a Divided Screen



The video can be played on full screen or 4, 9, or 16-divided screen.

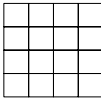
 Full screen (16 sub- screens)	 1 2 3 ... 16																
To view the video of a certain channel, select the desired channel by pressing the numeric buttons. Pressing the  button on the remote control enables changing the screen. Double-click the desired channel for a full screen view. To return to 16-divided screen, double-click the image again.																	
 4-divided screen (4 sub-screens)	<table border="1" style="display: inline-table; margin: 5px;"> <tr><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td></tr> </table> <table border="1" style="display: inline-table; margin: 5px;"> <tr><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td></tr> </table> <table border="1" style="display: inline-table; margin: 5px;"> <tr><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td></tr> </table> <table border="1" style="display: inline-table; margin: 5px;"> <tr><td>13</td><td>14</td></tr> <tr><td>15</td><td>16</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2																
3	4																
5	6																
7	8																
9	10																
11	12																
13	14																
15	16																

Press the  button on the remote control.
 Pressing this  button enables changing the screen. Double-click the desired channel for a full screen view.
 Double-click any area on the View All window to convert into a 4-divided screen.




 9-divided screen
 (2 sub-screens)

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

Press the  button on the remote control.
 Pressing this  button enables changing the screen. Double-click the desired channel for a full screen view. To return to 9-divided screen, double-click the image again.

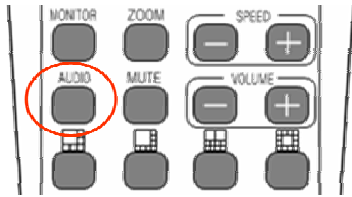

 16-divided screen
 (1 sub-screen)

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

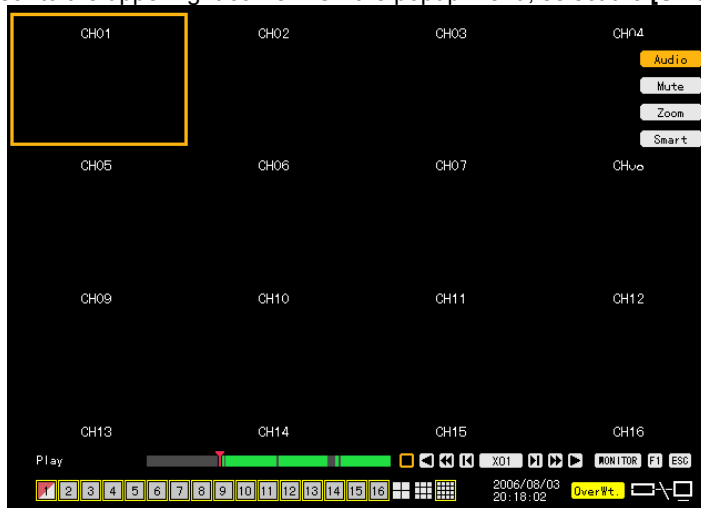
Press the  button on the remote control.
 Double  click the video of the desired channel to view it.
 To convert into a divided screen, double-click any area on the View All window.

4-9-4. Audio Playing

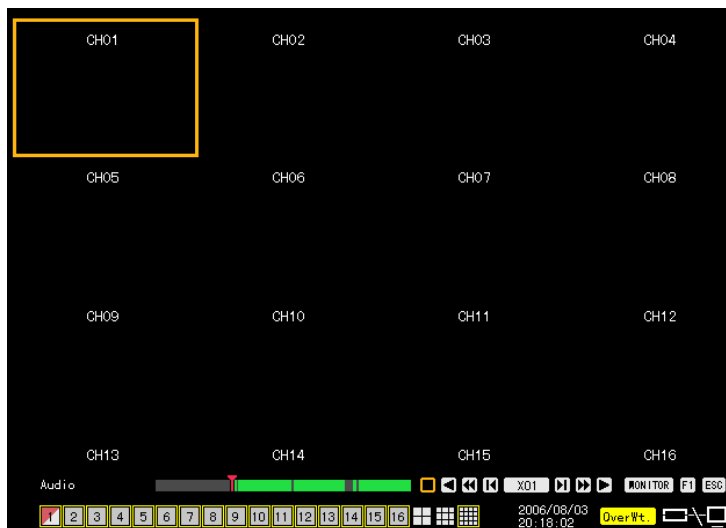
- In Play mode, press the **[Audio]** button on the remote control.



Drag the cursor to the upper right corner. On the popup menu, select the **[Smart]** button.



- The Audio symbol is then displayed for the channel with the voice recording set together with an orange-colored activation window.

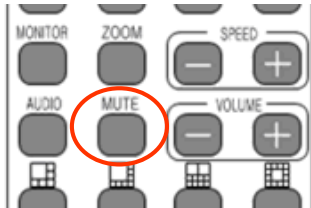


- Go to another window using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.
- The audio recorded on the selected channel is then played.

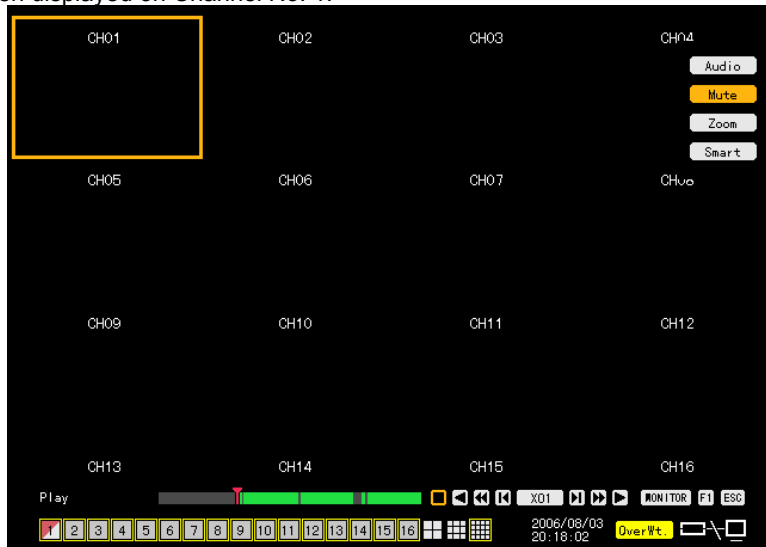
4-9-5. Mute

Use Mute to block the sound of the selected channel.

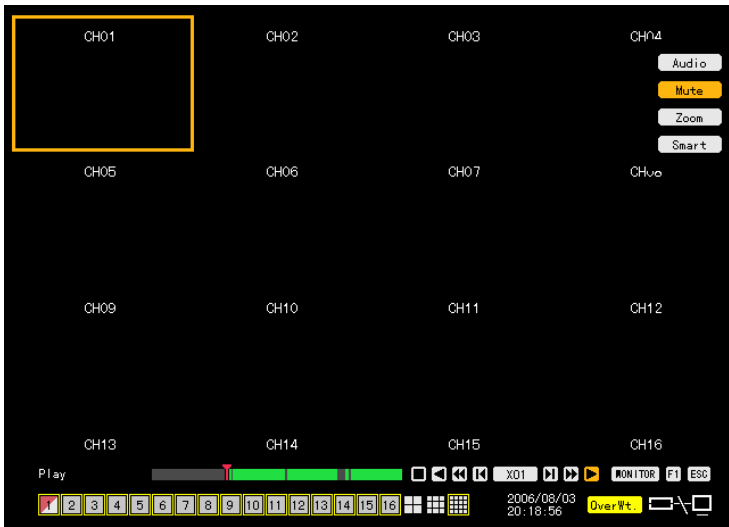
- In Play mode, press the **[Mute]** button on the remote control.



Drag the cursor to the upper right corner. On the popup menu, select **[Mute]**. An audio icon is then displayed on Channel No. 1.



- Press the **[Mute]** button. The Audio Output icon is then displayed as shown below:



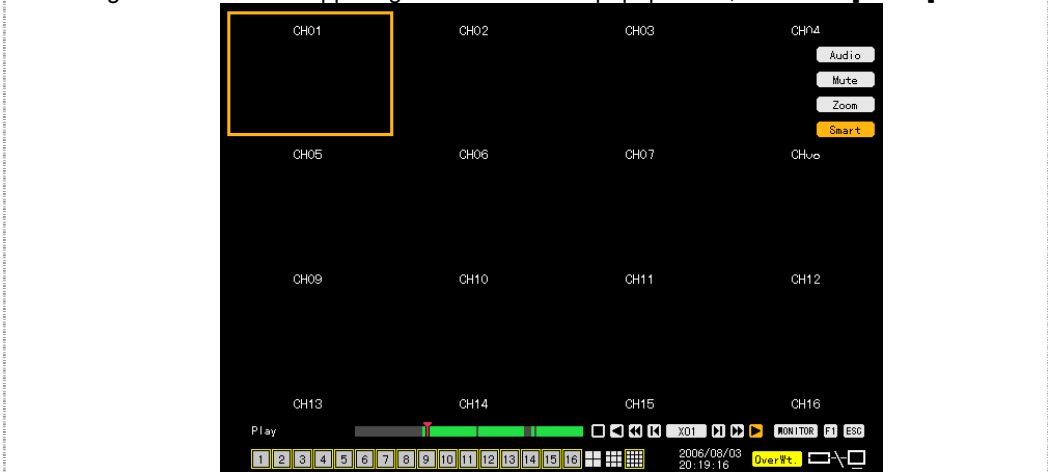
4-9-6. Smart Search

Use Smart Search to search for object motion in a certain zone quickly.

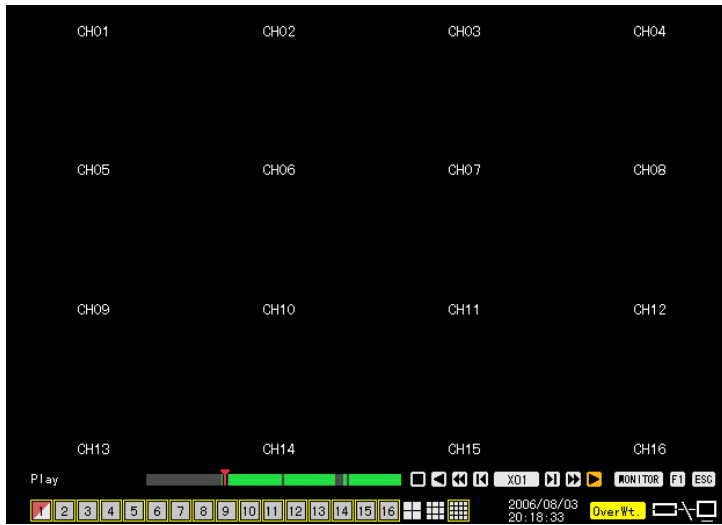
- In Play mode, select the **[Search]** button on the remote control.



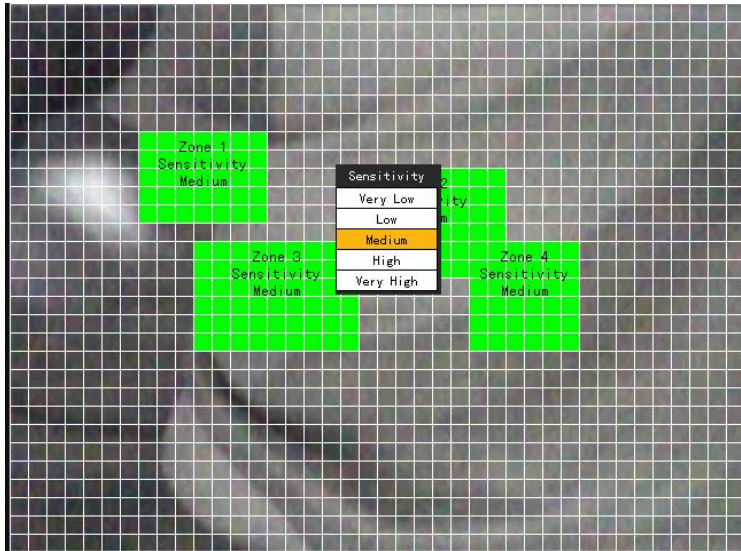
Drag the cursor to the upper right corner. On the popup menu, select the **[Smart]** button.



- Select the channel to be searched.



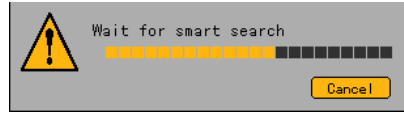
- On the zone setting window, go to the desired zone using the **arrow** (▲▼◀▶) buttons. To set the search zone, press the **[Select]** button. Shifting the blue focus using the **arrow** (▲▼◀▶) buttons causes the search zone to be displayed in green. After setting the search zone, press the **[Select]** button.



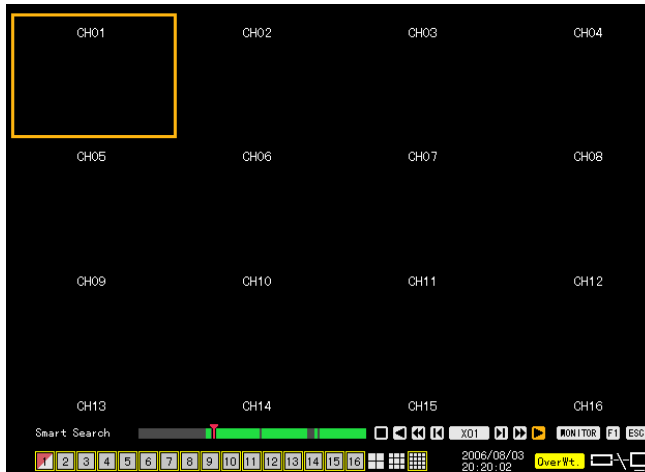
The user can set up to four search zones.

Right-click the green zone or press the **[Main Setup]** button on the remote control to set the motion degree. There are five motion degrees: Lowest, Low, Middle, High, and Highest. The default setting is Middle.

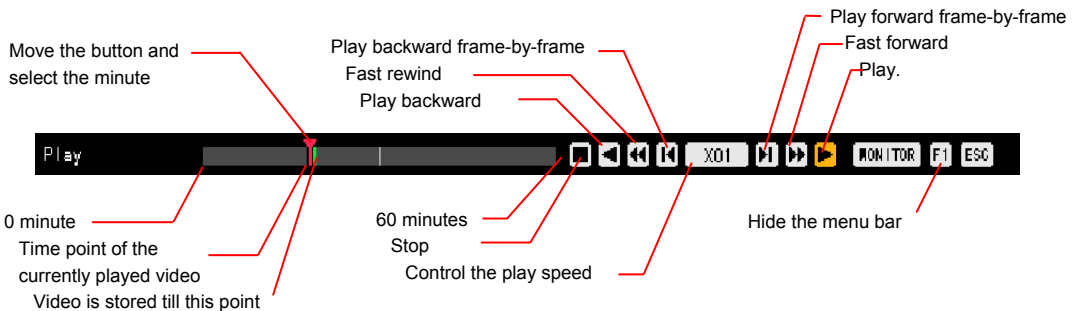
- After setting the search zone, press the **[Playback]** button or go to the play control bar in Play mode. The play control bar is then displayed. Press the **[Playback]** button to start Smart Search.



- After Smart Search is completed, the following search window appears:



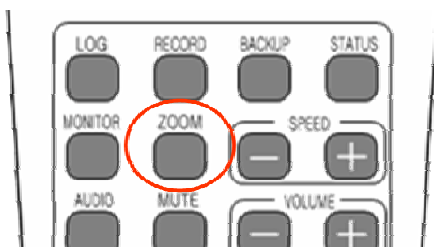
- The search zone where motion is detected turns green.
- The user can play the video searched via Smart Search using the following Search buttons:



4-9-7. Digital Zoom-in

The user can enlarge a certain part of the video during playback.

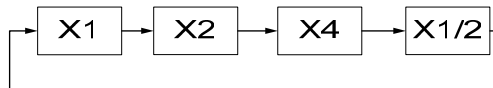
- In Play mode, press the **[Zoom]** button on the remote control.



Drag the cursor to the upper right corner. On the popup menu, select the **[Smart]** button.



- On the active window, select a channel using the **arrow** (◀▶) buttons and press the **[Select]** button.
- Selecting the **[Zoom]** button to zoom in/out the video from X2, X4 up to X1/2 causes the selected channel to be displayed.



The user can select another channel using the **arrow** (▲▼◀▶) buttons.

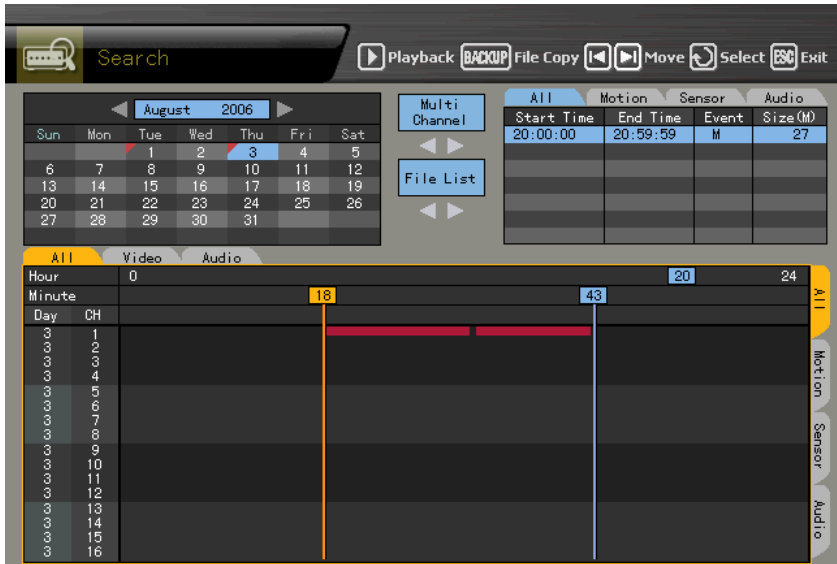
Clicking any point on the screen enables the user to change the direction.

4-10. Backup

Workhorse 120-16 provides USB 2.0 and IEEE1394 backup interfaces. Before backing up the data, check whether the CD-RW/DVD-RW is installed or connect an external hard drive with a USB2.0 interface, an external CD-RW/DVD-RW, or any other storage device to the USB2.0 port on the front side. Refer to the appendix for the list of supported external devices.

- Select **{Search} – {Multi Channel} – {Minute}** as shown below:

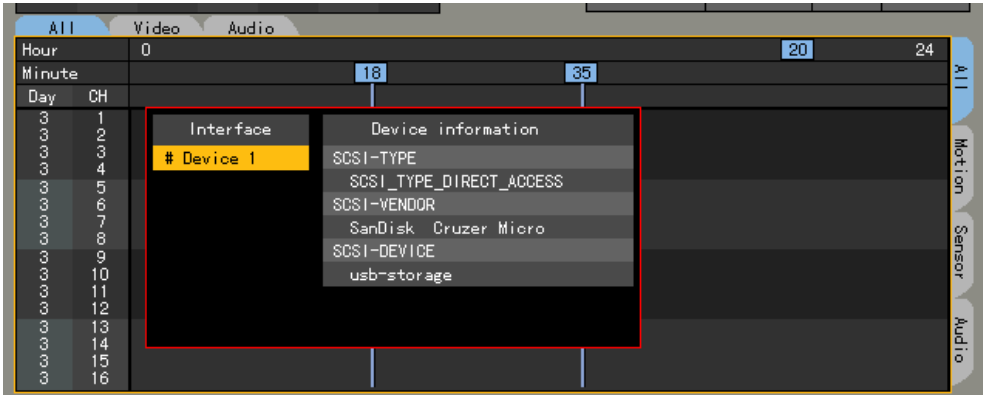
For the search method, refer to Section 4-8 Search.



- Press the **[Backup]** button on the remote control or go to the **[Backup]** menu at the center of the **{Search}** mode screen.



- In the access device selection list, select one for the connected storage device.

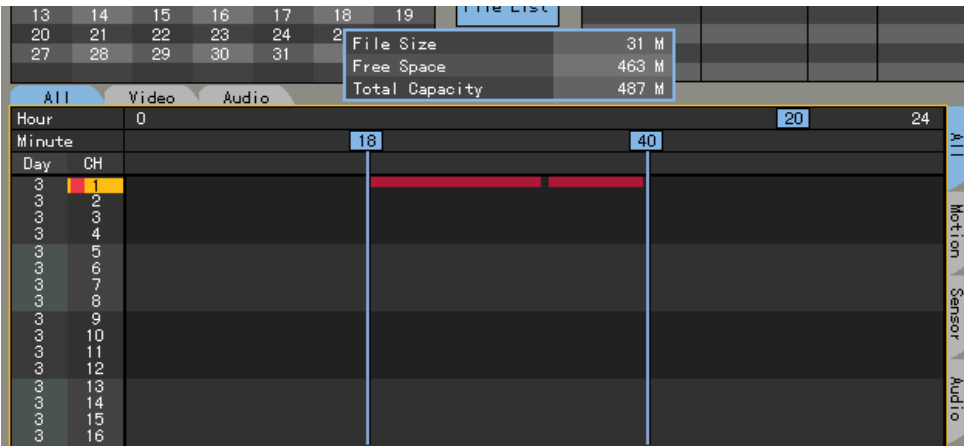


- Check the backup capacity and adjust the available space by using the **arrow (▲▼◀▶)** buttons or pressing the **[Select]** button.

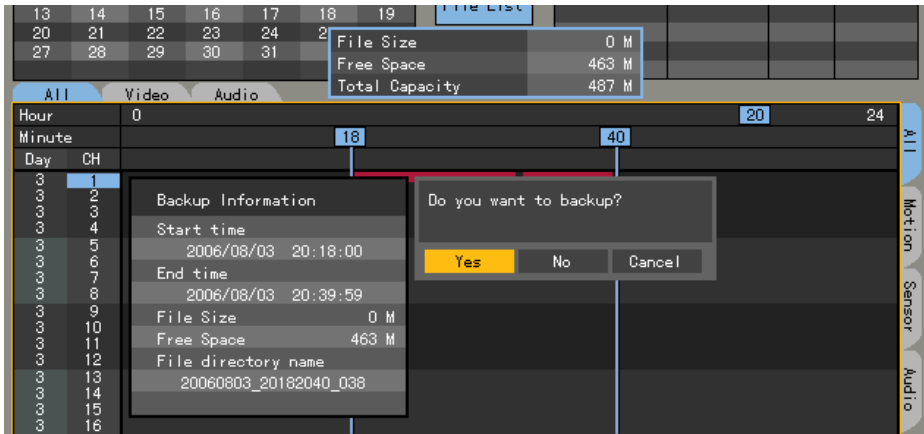
To back up a channel or cancel backup, go to the backup channel by using the **arrow (▲▼)** buttons and pressing the **[Select]** button.

The backup channel is then displayed in red.

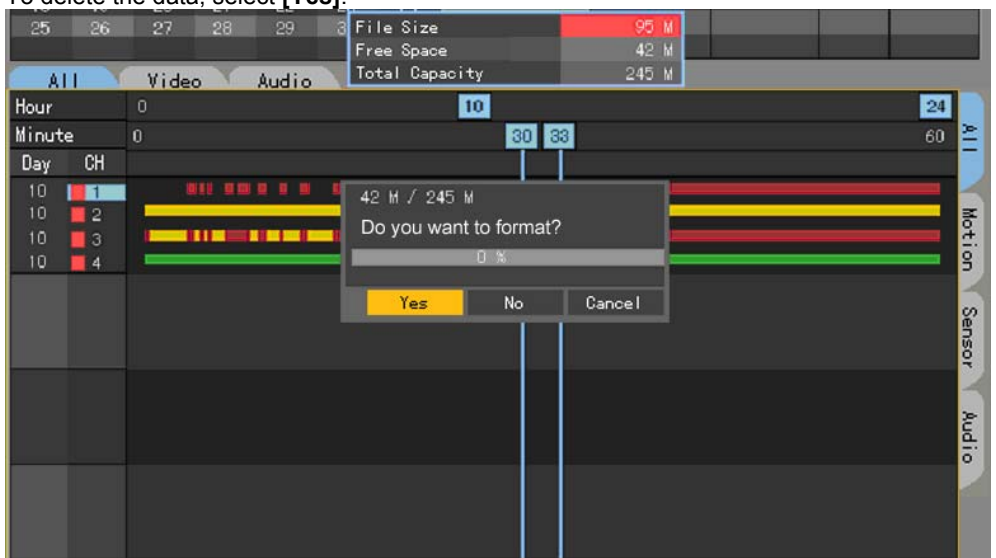
To change the backup time, go to the starting point of the backup time by selecting the **▶** button and change the minute bar using the **arrow (◀▶)** buttons. To go to the end point of the backup time, press the **[Select]** button.



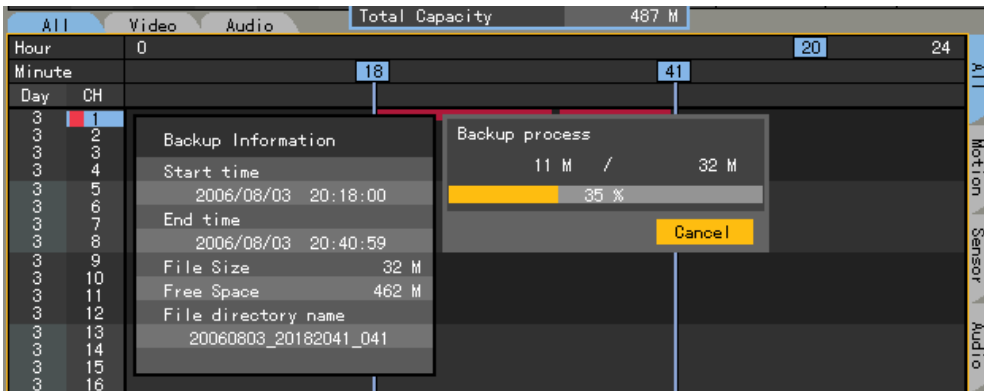
- Select the **[Backup]** button at the upper center on the **{Search}** mode screen. The corresponding backup information is then displayed. Check the backup information and click **[Yes]** on the message window as shown below:



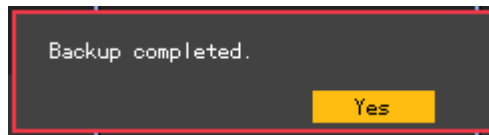
If the backup storage device has not been formatted, or in case the storage space is already in use, the following message appears:
To delete the data, select **[Yes]**.



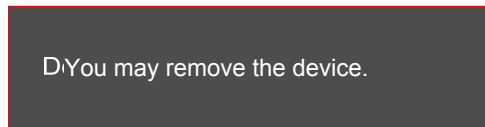
- The backup process starts after the following message appears:



- After backup is completed, press the **[Select]** button on the message window as shown below:



- Once the following message appears, separate the backup device from the USB 2.0 port on the front side.



4-11. PTZ Camera Control

4-11-1. Conditions for Using PTZ

- The PTZ camera must connect with the system.
- Select **{Additional Setup}** -> **{PTZ Setup}** and check whether the PTZ camera protocol is available.

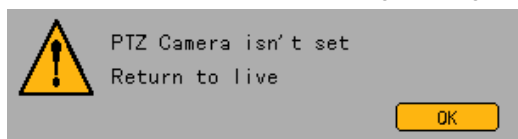
For more information on PTZ camera setting, go to **{Additional Setup}** -> **{PTZ Setup}**.

4-11-2. Shifting to PTZ Mode

- In real-time monitoring mode, press the **[PTZ]** button on the remote control.
- An icon is then displayed on the channel with the PTZ camera, set together with the channel selection window as shown below:



- If the PTZ camera is not set for the channel, the following message window appears:



Channel selection window


Activation mode	The channel selection window can be moved. At this time, the border of the channel screen is displayed in orange.
Selection mode	The channel is selected. At this time, the border of the channel screen is displayed in blue.

4-11-3. PTZ Control

(1) Horizontal/Vertical rotation

- In **{PTZ}** mode, select a channel from among those with the PTZ camera set.
- After a channel is selected, the horizontal/vertical rotation mode can be selected as shown below:




- Adjust horizontally or vertically using the **arrow (▲▼◀▶)** buttons.
- To select a divided screen in horizontal/vertical rotation mode, press the right/left **[Tab]**  buttons.

(2) Zoom-in/Zoom-out

- In horizontal/vertical rotation mode, press the **[PTZ]** button on the remote control. A toolbar is then displayed as shown below:




Zoom out (▲) and **zoom in (▼)** using the **arrow (▲▼)** buttons.

- To select a divided screen in zoom in/out mode, press the right/left **[Tab]**  buttons.

(3) Focus control

- In zoom in/out mode, press the **[PTZ]** button on the remote control. A toolbar is then displayed as shown below:



- Adjust the camera focus using the **arrow (▲▼)** buttons.
- To select another screen in focus control mode, press the right/left **[Tab]**  buttons.

(4) Preset

Use Preset to save the horizontal/vertical/extended/focus settings of the PTZ camera.

- In horizontal/vertical rotation, zoom, or focus control mode, press the **[Select]** button.
- Select a number using the numeric and **arrow (◀▶)** buttons on the OSD menu and press the **[Select]** button.
 - The preset numbers are between 1 and 8.



- The selected number is then changed into blue, and the current screen, saved together with the selected number.



(5) Using the Preset feature

- In horizontal/vertical rotation, zoom, or focus control mode, press any numeric button between 1 and 8 on the remote control.
- The selected horizontal/vertical/extended/focus setting of the PTZ camera is then selected.

(6) Using the Tour feature

Use Tour to select the preset settings sequentially.

Use Preset to save the horizontal/vertical/extended/focus settings of the PTZ camera.

For more information on setting the Tour feature, go to **{Additional Setup} -> {PTZ Setup} -> {Tour}**.

- Once the Tour feature is enabled, No. 9 or No. 0 on the OSD is displayed in blue in horizontal/vertical rotation, zoom, or focus control mode.



- In horizontal/vertical rotation, zoom, or focus control mode, press the numeric buttons (9, 0) on the remote control.
- The current screens are then changed automatically according to the defined tour order.
- To disable the Tour feature, press the currently enabled Tour numbers (9 and 0).

Tour1	Set as 9.
Tour2	Set as 0.

5. System Setup

System setup includes **{Main Setup}** and **{Additional Setup}**:

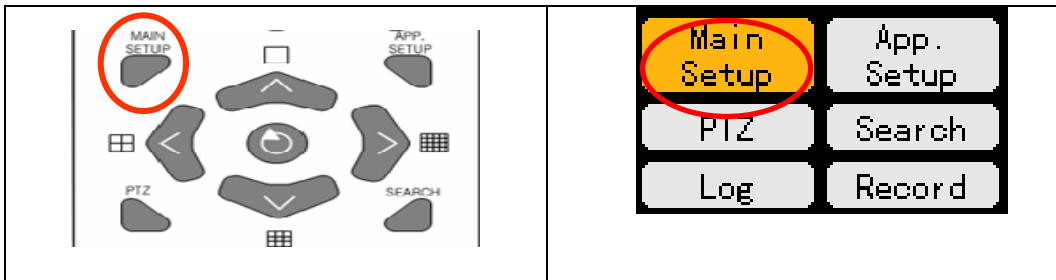
Main Setup	Additional Setup
Data setup	PTZ setup
Recording schedule	Network
System	
Storage device	
NTP	
Advanced	

5-1. Main Setup

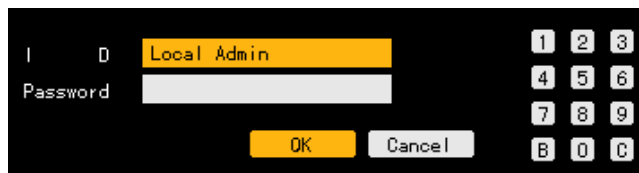
Use **{Main Setup}** to set the recording and system environment and major features.

5-1-1. Starting the Main Setup

- In real-time monitoring mode, select the **[Main Setup]** button on the remote control.



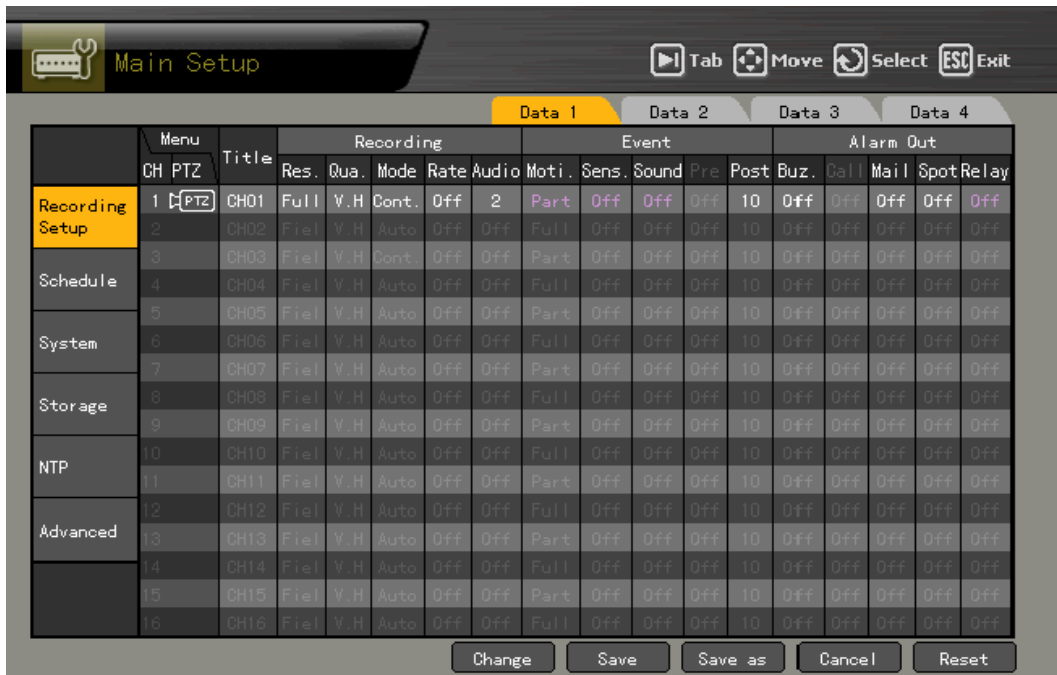
- The login window is then displayed as shown below:



- Select the login account, enter the password using the numeric buttons on the remote control, and select **[OK]**.

- (The default password of the local administrator is "00000.")
- Go to the ID selection box and change the user ID using the **arrow (▲▼◀▶)** buttons.

- Once the correct password is inputted, the initial screen of **{Main Setup}** is displayed as shown below:



5-1-2. Recording Setup

Used to set the recording and events

(1) Selecting the recording setup menu mode

{Recording Setup} supports two modes: data mode and channel mode.

A) Selecting the menu type

- Navigate by pressing the **[Tab]** and **arrow (◀▶)** buttons on the remote control. Select the **[Change]** button of the data mode menu and channel mode menu and press the **[Select]** button.

Data mode menu	Change	Save	Save as	Cancel	Reset
Channel mode menu	Change	Save	Cancel	Reset	

■ Data mode

The user can set the data for Channel Nos. 1 ~ 16 based on the data profile of Data 1 ~ Data 4 as shown below:

		Data 1																Data 2				Data 3				Data 4			
Menu	CH	PTZ	Title	Recording				Event				Alarm Out																	
				Res.	Qua.	Mode	Rate	Audio	Moti.	Sens.	Sound	Pre	Post	Buz.	Call	Mail	Spot	Relay											
Recording Setup	1	PTZ	CH01	Full	V.H	Cont.	Off	2	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
	2		CH02	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											
	3		CH03	Fiel	V.H	Cont.	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
Schedule	4		CH04	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											
	5		CH05	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
System	6		CH06	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											
	7		CH07	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
Storage	8		CH08	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											
	9		CH09	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
NTP	10		CH10	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											
	11		CH11	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
Advanced	12		CH12	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											
	13		CH13	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
	14		CH14	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											
	15		CH15	Fiel	V.H	Auto	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off											
	16		CH16	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off											

■ Channel mode




The user can set the data of Channel Nos. 1 ~ 16 based on four channel groups as shown below:

		CH 1-4				CH 5-8				CH 9-12				CH 13-16				
Menu	CH	Data	Title	Recording				Event				Alarm Out						
				Res.	Qua.	Mode	Rate	Audio	Moti.	Sens.	Sound	Pre	Post	Buz.	Call	Mail	Spot	Relay
Recording Setup	1	1	CH01	Full	V.H	Cont.	Off	2	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
	2		CH01	Fiel	V.H	Motn	3	Off	Full	Off	Off	Off	20	Off	Off	Off	Off	Off
	3		CH01	CIF	V.H	Cont.	6	Off	Off	Off	Off	Off	5	Off	Off	Off	Off	Off
Schedule	4		CH01	Full	V.L	Auto	Auto	Off	Full	Off	Off	Off	15	Off	Off	Off	Off	Off
	2	1	CH02	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
System	2		CH02	Fiel	V.H	Motn	Off	Off	Full	Off	Off	Off	20	Off	Off	Off	Off	Off
	3		CH02	CIF	V.H	Cont.	Off	Off	Off	Off	Off	Off	5	Off	Off	Off	Off	Off
Storage	4		CH02	Full	L	Auto	Off	Off	Part	Off	Off	Off	15	Off	Off	Off	Off	Off
	3	1	CH03	Fiel	V.H	Cont.	Off	Off	Part	Off	Off	Off	10	Off	Off	Off	Off	Off
NTP	2		CH03	Fiel	V.H	Motn	Off	Off	Full	Off	Off	Off	20	Off	Off	Off	Off	Off
	3		CH03	CIF	V.H	Cont.	Off	1	Off	Off	Off	Off	5	Off	Off	Off	Off	Off
Advanced	4		CH03	Full	M	Auto	Off	Off	Full	Off	Off	Off	15	Off	Off	Off	Off	Off
	4	1	CH04	Fiel	V.H	Auto	Off	Off	Full	Off	Off	Off	10	Off	Off	Off	Off	Off
	2		CH04	Fiel	V.H	Motn	Off	Off	Full	Off	Off	Off	20	Off	Off	Off	Off	Off
	3		CH04	CIF	V.H	Cont.	Off	Off	Off	Off	Off	Off	5	Off	Off	Off	Off	Off
	4		CH04	Full	H	Auto	Off	Off	Part	Off	Off	Off	15	Off	Off	Off	Off	Off

(2) Saving the recording setting

Set each menu in {Recording Setup} and save the new setting before exiting the menu.

A) Save

- Select the [Save] button using the [Tab]  and arrow ( ) buttons on the remote control and press the [Select] button.



B) Save as

Save the current setting as multiple data from Data 1 to Data 4.

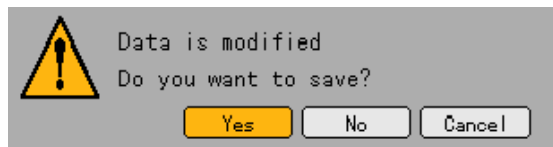
- Select [Save as] using the [Tab]  and arrow ( ) buttons on the remote control and press the [Select] button.



- The user can select multiple data from Data 1 to Data 4. The selected data are then displayed in green, and others, in blue.

C) Saving on the message window

- Closing the window without saving the new setting causes a warning message to appear as shown below:
- Select [Yes] to save the new setting.



Yes	Saves the current setting and goes back to the main setup screen
No	Goes back to the main setup screen without saving the current setting
Cancel	Cancels the current operation and goes back to the previous setting

(3) Naming a channel

Used to name each channel and to set camera input

- On the **{Recording Setup}→{Data 1~4}→{Title}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.
- On the selection box, go to **{Title}** and press the **[Select]** button.


Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

- On the title input box, enter the channel name using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

CHO1									
a	b	c	d	e	f	g	h	i	
j	k	l	m	n	o	p	q	r	
s	t	u	v	w	x	y	z	0	
1	2	3	4	5	6	7	8	9	
@	#	&	_	+	-	*	/	%	
=	.	,	^	?	!	~	()	
Caps Lock	BS	Space	Cancel	Save & Exit					

Caps lock	Used to shift to upper case
BS	Backspace; used to delete
Space	Used to insert space
Cancel	Used to cancel the save
Save and exit	Used to save and exit

- After inputting the data, go to **[Save and Exit]** using the **arrow (▲▼◀▶)** or **[Tab]**  buttons and save the setting by pressing the **[Select]** button.

(4) Hiding a channel

Hides the channel video on the real-time monitoring screen

- On the **{Recording Setup}→{Data 1~4}→{Title}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.
- On the selection box, go to **[Covert]** and press the **[Select]** button.

Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

Screen display based on the recording setup and video input of the camera

VL	Stands for Video Loss, which indicates camera video loss or absence of video on the channel
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VD	Stands for Video Disconnection, which indicates the presence of camera video input on the channel but Record and Live are turned off
VC	Stands for Video Covert, which means that recording is done but the video is hidden only in Live state

(5) Channel ON/OFF

Used to connect the camera to each channel port and to set video input

- On the {Recording Setup}→{Data 1~4} → {Title} menu, go to the desired channel using the arrow (▲▼◀▶) buttons and press the [Select] button.

Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

To set all channels at the same time, go to {Title} and press the [Select] button.

Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

Menu		Title	Recording				
CH	PTZ		Res.	Qua.	Mode	Rate	Audio
1	PTZ	CH01	Full	V.H	Senr	3	3
2		CH02	Fiel	V.H	Motn	Off	Off
3		CH03	Fiel	V.H	Motn	Off	Off
4		CH04	Fiel	V.H	Motn	Off	Off
5		CH05	Fiel	V.H	Motn	Off	1
6		CH06	Fiel	V.H	Motn	Off	Off
7		CH07	Fiel	V.H	Motn	Off	Off

- On the selection box, select [On] or [Off] and press the [Select] button.

On	Connects the inputted video of the camera
Off	Disconnects the inputted video of the camera

(6) Record

Sets the resolution, recording quality, recording type, recording frame, and audio recording status

A) Resolution

Sets the resolution of the recorded channel

- On the {Recording Setup}→{Data 1~4}→{Recording}→{Resolution} menu, go to the desired channel using the arrow (▲▼◀▶) buttons and press the [Select] button.

Recording				
Res.	Qua.	Mode	Rate	Audio
Full	V.H	Senr	3	3
Fiel	V.H	Motn	Off	Off
Fiel	V.H	Motn	Off	Off
Fiel	V.H	Motn	Off	Off
Fiel	V.H	Motn	Off	1
Fiel	V.H	Motn	Off	Off
Fiel	V.H	Motn	Off	Off

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Cont.	Off	2
	CIF			
	Field			
	Full			
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

To set all channels at the same time, go to **(Resolution)** and press the **[Select]** button.

Resolution				
Res.	Qua.	Mode	Rate	Audio
CIF	M	Cont.	Off	2
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	CIF	de	Off	2
CIF	Field	t.	Off	2
	Full			
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

- On the selection box, set the resolution using the **arrow** and **[Select]** buttons.

Resolution by video type

Resolution \ Type	NTSC	PAL
CIF	320x240	320x288
Field	640x240	640x288
Full	640x480	640x576

B) Recorded video quality

Sets the quality of the recorded video

- On the **{Recording Setup}→{Data 1~4} →{Recording}→(Quality)** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Cont.	Off	2
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H			
	Lowest			
	Low			
	Medium			
	High			
	Highest			
Fiel	V.H	Auto	Off	Off

To set all channels at the same time, go to **(Quality)** and press the **[Select]** button.

Quality				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Cont.	Off	2
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

Recording				
Res.	Qua.			
CIF	V.H	Lowest		
Fiel	V.H	Low		
Fiel	V.H	Medium		
Fiel	V.H	High		
Fiel	V.H	Highest		
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

□ On the selection box, set the video quality using the **arrow** and **[Select]** buttons.

Note The size of recording video files according to recording quality

Recording quality	The size of recording video files
Lowest	↑ Smaller ↓ Larger
Low	
Middle	
High	
Highest	

C) Recording type

Recording Type	Description
Automatic	Sets the event recording speed and normal recording speed separately for automatic recording based on the setting
Continuous	Recording done based on the normal frame setting
Motion	Recording done based on the event frame setting in case motion is detected
Sensor	Recording done based on the event frame setting in case of inputted signal from an external sensor
Sound	Recording done based on the event frame setting in case sound is detected

■ Recording conditions

Recording Type	Setting
Continuous	{Record} → {Rate} → Normal: 1~30
Motion	{Event} → {Motion}: Partial or Full
Sensor	{Event} → {Sensor}: 1~16
Sound	{Event} → {Sound}: 1~16
Automatic	Enables both normal and event recording frames at the same time

□ On the **{Recording Setup}→{Data 1~4}→{Recording}→{Mode}** menu, go to the desired channel using the **arrow** (▲▼◀▶) buttons and press the **[Select]** button.

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Cont.	30	1
CIF	V.H	Cont.	30	2
CIF	V.H	Motn	30	Off
CIF	V.H	Cont.	30	Off

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Cont.	30	1
CIF	V.H	Cont.	30	2
CIF	V.H	Motn	30	Off
CIF	V.H	Cont.	30	Off

To set all channels at the same time, go to **(Mode)** and press the **[Select]** button.

Recording Mode						
Res.	Qua.	Mode	Rate	Audio	Moti.	Sens.
CIF	V.H	Motn	Off	2	Full	
Fiel	V.H	Auto	Off	Off	Full	
Fiel	V.H	Cont.	Off	Off	Part	
Fiel	V.H	Auto	Off	Off	Full	
Fiel	V.H	Auto	Off	Off	Part	
Fiel	V.H	Auto	Off	Off	Full	
Fiel	V.H	Auto	Off	Off	Part	

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Motn	Off	2
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Cont.	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

- On the selection box, set the recording type using the **arrow (◀▶)** and **[Select]** buttons.

D) Recording frame

Recording frames include the normal type and event type.

Normal	Sets the recording frame rate for Automatic and Continuous recording
Event	Sets the recording frame rate for Automatic, Motion, Sensor, and Sound recording

Note! Maximum recording frame by resolution

Model \ Resolution	CIF (320X240)	Field (640X240)	Full (640X480)
Workhorse 120-16	120fps	60fps	30fps

- On the {Recording Setup}→{Data 1~4}→{Recording}→{Rate} menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.
- On the selection box, set the recording frame using the **arrow (◀▶)** and **[Select]** buttons.

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Motn	15	1
Fiel	V.H	Auto	5	Off
Fiel	V.H	Cont.	6	Off
Fiel	V.H	Auto	8	Off
Fiel	V.H	Auto	10	Off
Fiel	V.H	Auto	15	Off
Fiel	V.H	Auto	Off	Off

- To set all channels at the same time, go to **{Rate}** and press the **[Select]** button.

E) Audio setting

Sets the Recording/Live status for the audio input from an external device that is compatible with the system

- On the {Recording Setup}→{Data 1~4}→{Recording}→{Audio} menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Recording				
Res.	Qua.	Mode	Rate	Audio
CIF	V.H	Motn	15	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Cont	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off
Fiel	V.H	Auto	Off	Off

Recording					
Res.	Qua.	Mode	Rate	Audio	Moti.
CIF	V.H	Motn	15	Off	Off
Fiel	V.H	Auto	Off	Off	1
Fiel	V.H	Cont	Off	Off	2
Fiel	V.H	Auto	Off	Off	3
Fiel	V.H	Auto	Off	Off	4
Fiel	V.H	Auto	Off	Off	Part
Fiel	V.H	Auto	Off	Off	Of

- On the selection box, select the audio channel using the **arrow (◀▶)** and **[Select]** buttons.

(7) Event setup

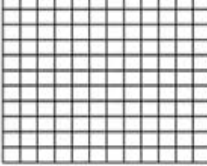
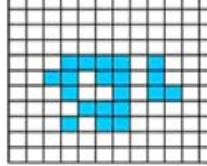
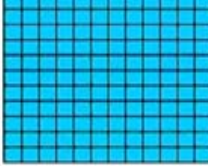
A) Motion

Used to detect motion

Detection settings include Full, Partial, and OFF. The default setting is OFF.

The full video of a certain channel is displayed as shown below (blocks are used to separate the areas where motion is detected).

The blue block indicates the areas where motion is detected.

➤ Motions are not detected.	➤ Motions are detected only in the selected zones	➤ Motions are detected in all zones.
		
Off	Partial	Full

■ Full

Used to detect motion in each zone

- On the {Recording Setup}→{Data 1~4}→{Recording}→{Motion} menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

Recording						
Res.	Qua.	Mode	Rate	Audio	Moti.	Sens.
CIF	V.H	Motn	15	Off	Off	
Fiel	V.H	Auto	Off	Off	1	
Fiel	V.H	Cont.	Off	Off	2	
Fiel	V.H	Auto	Off	Off	3	
Fiel	V.H	Auto	Off	Off	4	
Fiel	V.H	Auto	Off	Off	Part	Off

To set all channels at the same time, select {Motion} and **[Main Setup]**.

Motion Detection				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Partial	Off	Off	10
Full	Full	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

- On the selection box, select **[Full]** using the **arrow (◀▶)** and **[Select]** buttons.

■ Partial

Used to detect motion only in user-defined zones

- On the {Recording Setup}→{Data 1~4}→{Event}→{Motion} menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Partial	Off	Off	10
Full	Full	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

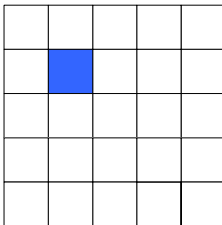
To set all channels at the same time, go to {Motion} and select the **[Main Setup]** button.

Motion Detection				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

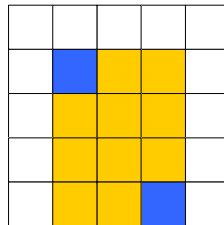
Event				
Moti.	Off	Und	Pre	Post
Part	Partial	ff	Off	10
Full	Full	ff	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

- On the selection box, select **[Partial]** using the **arrow (◀▶)** and **[Select]** buttons.
- The following figure then appears:

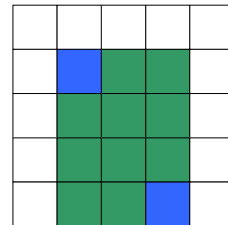
Move the focus to the motion detection-setting area.



Select zones.

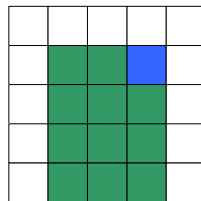


Double-click on the selected zones.

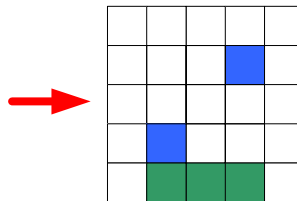


- Select the area where motion is detected using the **arrow (▲▼)** and **[Select]** buttons.
- The user can cancel the selected areas.

Move the blue focus to the motion detection-setting area, and double-click on it.



Select the zone to detect motions and click on it. click on it.



- Select the zone and press the **[ESC]** button.

Selecting the zone

- 1) To view the zone set in yellow, press the **[Select]** button.
 - 2) Set the zone using the **arrow** buttons and press the **[Select]** button.
 - 3) Once set, the **zone** is displayed in green.
- The **[Select]** button may be used for toggling.

■ OFF

Disables the detection of motion in the video

■ Setting the motion detection sensitivity

- On the **{Recording Setup}→{Data 1~4}→{Event}→{Motion}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and select the **[Main Setup]** button. Afterward, right-click **[Motion]**.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Motion			10
Part	Sensitivity: M			10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

Event					Alarm		
Moti.	Sens.	Sound	Pre	Post	Buz.	Call	Ma
Part	Off	Off	Off	10	Off	Off	Off
Full	Motion			10	Off	Off	Off
Part	Sensitivity: M			10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off
Part	Off	Off	Off	10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off
Part	Off	Off	Off	10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off
Part	Off	Off	Off	10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off

To set all channels at the same time, go to **{Motion}** and select the **[Main Setup]** button.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Motion			10
Part	Sensitivity: M			10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

Event					Alarm		
Moti.	Sens.	Sound	Pre	Post	Buz.	Call	Ma
Part	Off	Off	Off	10	Off	Off	Off
Full	Motion			10	Off	Off	Off
Part	Sensitivity: M			10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off
Part	Off	Off	Off	10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off
Part	Off	Off	Off	10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off
Part	Off	Off	Off	10	Off	Off	Off
Full	Off	Off	Off	10	Off	Off	Off

- On the selection box, set the sensitivity using the **arrow (◀▶)** and **[Select]** buttons.

Setting the sensitivity

Sensitivity grades include Lowest, Low, Middle, High, and Highest, indicating the proportion of pixels to the motions being detected. The higher the grade, the more accurate the detection of motion it is.

B) Sensor

Defines the settings for detecting input from an external sensor compatible with the system

The user can set up to 16 external sensors. Once signal input is detected, the video of the corresponding channel is recorded.

■ Sensor setting

- On the **{Recording Setup}**→**{Data 1~4}**→**{Event}**→**{Sensor}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

Event				
Moti.	Sens.	Sound	Pre	Post
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10
Part	Off	Off	Off	10

To set all channels at the same time, go to **{Sensor}** and press the **[Select]** button.

Sensor Detection			
Sens.	Sound	Pre	Post
Off	Off	Off	10
Off	Off	Off	10
Off	Off	Off	10
Off	Off	Off	10

Event				
Moti.	Sens.	Off		Post
Part	Off	1		10
Full	Off	2		10
Part	Off	3		10
Full	Off	4		10
Part	Off	Off	Off	10

- On the selection box, set the input port number on the external sensor box using the **arrow (▲▼)** and **[Select]** buttons.

■ Sensor type setting

- On the **{Recording Setup}→{Data 1~4}→{Event}→{Sensor}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	1			
Full	Off			
Part	Off			
Full	Off			
Part	Off			
Full	Off			
Part	Off			

Sensor Type	
Sensor01:	NO
Sensor02:	NO
Sensor03:	NO
Sensor04:	NO
Sensor05:	NO

Event						AI
Moti.	Sens.	Sound	Pre	Post	Buz.	Call
Part	1					
Full	Off					
Part	Off					
Full	Off					
Part	Off					
Full	Off					
Part	Off					

Sensor Type		
Sensor01:	NO	NC
Sensor02:	NO	NO
Sensor03:	NO	
Sensor04:	NO	
Sensor05:	NO	

To set all channels at the same time, go to **{Sensor}** and select **[Main Setup]**.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	1			
Full	Off			
Part	Off			
Full	Off			
Part	Off			
Full	Off			
Part	Off			

Sensor Type	
Sensor01:	NO
Sensor02:	NO
Sensor03:	NO
Sensor04:	NO
Sensor05:	NO

Event						AI
Moti.	Sens.	Sound	Pre	Post	Buz.	Call
Part	1					
Full	Off					
Part	Off					
Full	Off					
Part	Off					
Full	Off					
Part	Off					

Sensor Type		
Sensor01:	NO	NC
Sensor02:	NO	NO
Sensor03:	NO	
Sensor04:	NO	
Sensor05:	NO	

- On the selection box, set the sensor type using the **arrow (◀▶)** and **[Select]** buttons.

NC (normal close): Opens in case of incoming signal when closed normally

NO (Normal Open): Closes in case of incoming signal when opened normally

C) Sound

Defines the settings for detecting audio input from an external device compatible with the system

The user can set the audio input for two external devices compatible with the system. Once audio input is detected, the video of the corresponding channel is recorded. Each channel can detect audio from up to two devices.

- On the **{Recording Setup}**→**{Data 1~4}**→**{Event}**→**{Sound}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Event			
Moti.	Sens.	Sound	Pre
Part	1	Off	Off
Full	Off	Off	Off
Part	Off	Off	Off
Full	Off	Off	Off
Part	Off	Off	Off

Event				
Moti.	Sens.	Sound	Pre	Post
Part	1	Off	Off	10
Full	Off	Off	Off	1
Part	Off	Off	Off	2
Full	Off	Off	Off	3
Part	Off	Off	Off	4

To set all channels at the same time, go to **{Sound}** and press the **[Select]** button.

Event					
Moti.	Sens.	Sound	Pre	Post	Buz.
Part	1	Off	Off	10	Off
Full	Off	Off	Off	10	Off
Part	Off	Off	Off	10	Off
Full	Off	Off	Off	10	Off

Event				
Moti.	Sens.	Sound	Off	
Part	1	Off	1	
Full	Off	Off	2	
Part	Off	Off	3	
Full	Off	Off	4	
Part	Off	Off	Off	10

- On the selection box, select the audio channel using the **arrow (◀▶)** and **[Select]** buttons.
- The user can define the settings for detecting audio input from multiple devices as follows:

Event				
Moti.	Sens.	Sound	Pre	Post
Part	1	Multi	Off	10
Full	Off	Off	1	
Part	Off	Off	2	
Full	Off	Off	3	
Part	Off	Off	4	

Event				
Moti.	Sens.	Sound	Pre	Post
Part	1	Multi	Off	10
Full	Off	Off	1	
Part	Off	Off	2	
Full	Off	Off	3	
Part	Off	Off	4	

To adjust the audio sensitivity of each channel, go to **{Sound}** and select the **[Main Setup]** button. Afterward, right-click **[Sound]**.

Event				Alarm Out				
Moti.	Sens.	Sound	Pre	Post	Buz.	Mail	Spot	Relay
Part	1	Multi	Off	10	Off	Off	Off	Off
Full	Off	Off	Off	Off	Off	Off	Off	Off
Part	Off	Off	Off	Off	Off	Off	Off	Off
Full	Off	Off	Off	Off	Off	Off	Off	Off
Part	Off	Off	Off	Off	Off	Off	Off	Off
Full	Off	Off	Off	Off	Off	Off	Off	Off

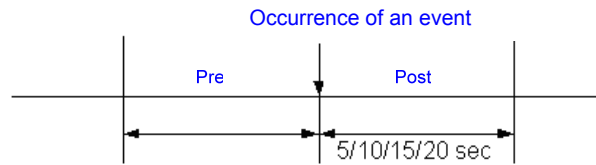
Event				Alarm Out				
Moti.	Sens.	Sound	Pre	Post	Buz.	Mail	Spot	Relay
Part	1	Multi	Off	10	Off	Off	Off	Off
Full	Off	Off	Off	Off	Off	Off	Off	Off
Part	Off	Off	Off	Off	Off	Off	Off	Off
Full	Off	Off	Off	Off	Off	Off	Off	Off
Part	Off	Off	Off	Off	Off	Off	Off	Off
Full	Off	Off	Off	Off	Off	Off	Off	Off

- On the selection box, select the audio channel using the **arrow (◀▶)** and **[Select]** buttons.

D) Post (This DVR does not support Pre-record time)

Sets the recording time upon the occurrence of an event

The unit is in seconds. Whenever an event is detected, recording is done for the defined time.



- On the **{Recording Setup}**→**{Data 1~4}**→**{Event}**→**{Post}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Event				
Moti.	Sens.	Sound	Pre	Post
Part	1	Multi	Off	5
Full	Off	Off	Off	10
Part	Off	Off	Off	10
Full	Off	Off	Off	10

Event						A
Moti.	Sens.	Sound	Pre	Post	Buz.	Call
Part	1	Multi	Off	5		5
Full	Off	Off	Off	10		10
Part	Off	Off	Off	10		15
Full	Off	Off	Off	10		20
Part	Off	Off	Off	10		

To set all channels at the same time, go to **{Post}** and press The **[Select]** button.

Event				Post	Alarm Out			
Moti.	Sens.	Sound	Pre	Post	Buz.	Call	Mail	Sp
Part	1	Multi	Off	5	Off	Off	Off	0
Full	Off	Off	Off	10	Off	Off	Off	0
Part	Off	Off	Off	10	Off	Off	Off	0
Full	Off	Off	Off	10	Off	Off	Off	0

Event					Alarm Out		
Moti.	Sens.	Sound	Pre	Post	Buz.	Call	Mail
Part	1	Multi	Off	5	10	Off	Off
Full	Off	Off	Off	10	15	Off	Off
Part	Off	Off	Off	10	20	Off	Off
Full	Off	Off	Off	10	Off	Off	Off

- On the selection box, select the audio channel using the **arrow (◀▶)** and **[Select]** buttons.

(8) Alarm generation

Used to generate alarms through the buzzer, mail, or relay in case of an event

A) Buzzer

Used to run the buzzer in the system in case of an event

Either Motion, Sensor, or Sound recording may be selected.

- On the **{Recording Setup}**→**{Data 1~4}**→**{Generate Alarm}**→**{Buzzer}** menu, go to the desired channel and press the **[Select]** button.

Alarm Out				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Event			Alarm Out				
Pre	Post		Buz.	Call	Mail	Spot	Relay
Off	Off	10	Off	Off	Off	Off	Off
Motion	:Off		Off	Off	Off	Off	Off
Sensor	:Off		Off	Off	Off	Off	Off
Sound	:Off		Off	Off	Off	Off	Off

To set all channels at the same time, go to **{Buzzer}** and press the **[Select]** button.

Buzzer				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Data 2		Data 3		Data 4		
Event			Alarm Out			
Motion	:Off	Buz.	Call	Mail	Spot	Relay
Sensor	:Off	Off	Off	Off	Off	Off
Sound	:Off	Off	Off	Off	Off	Off

- On the selection box, select ON or OFF using the **arrow (◀▶)** and **[Select]** buttons.

The Call Feature is disabled in the Workhorse120-16 DVRs.

B) Mail

Used to send email to a predefined address in case of an alarm or an event

- On the **{Recording Setup}**→**{Data 1~4}**→**{Generate Alarm}**→**{Mail}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Alarm Out				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Alarm Out						
Pre	Post	Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off	Off	Off
Motion	:Off		Off	Off	Off	Off
Sensor	:Off		Off	Off	Off	Off
Sound	:Off		Off	Off	Off	Off

To set all channels at the same time, go to **{Mail}** and press the **[Select]** button.

E-Mail Alarm Out					
Post	Buz.	Call	Mail	Spot	Relay
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off

Alarm Out					
Post	Buz.	Call	Mail	Spot	Relay
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off

- On the selection box, select ON or OFF using the **arrow (▲▼)** or **[Select]** buttons.

C) Spot

Displays the video on a CCTV monitor connected to the spot port in case of an alarm or an event

- On the **{Recording Setup}→{Data 1~4}→{Generate Alarm}→{Spot}** menu, go to the desired channel using the **arrow (▲▼◀▶)** buttons and press the **[Select]** button.

Alarm Out				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Alarm Out					
Post	Buz.	Call	Mail	Spot	Relay
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off

To set all channels at the same time, go to Spot and press the **[Select]** button.

Spot Out				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Alarm Out					
Post	Buz.	Call	Mail	Spot	Relay
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off

- On the selection box, select ON or OFF using the **arrow (◀▶)** and **[Select]** buttons.

D) Relay

Runs the alarm device connected to the DIO extension module in case of an alarm or an event

■ Relay setting

- On the **{Recording Setup}**→**{Data 1~4}**→**{Generate Alarm}**→**{Relay}** menu, go to the desired channel using the arrow (▲▼◀▶) buttons and press the **[Select]** button.

Alarm Out				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Alarm Out					
Post	Buz.	Call	Mail	Spot	Relay
10	Off	Off	Off	Off	Off
Off	Motion	:Off			Off
1	Sensor	:Off			Off
2	Sound	:Off			Off
3	Off	Off	Off	Off	Off
4	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off

To set all channels at the same time, go to **{Relay}** and press the **[Select]** button.

Relay Out				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Alarm Out					
Post	Buz.	Call	Mail	Spot	Relay
Off	Motion	:Off			Off
1	Sensor	:Off			Off
2	Sound	:Off			Off
3	Off	Off	Off	Off	Off
4	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off

- On the selection box, select ON or OFF using the arrow (◀▶) or **[Select]** buttons.

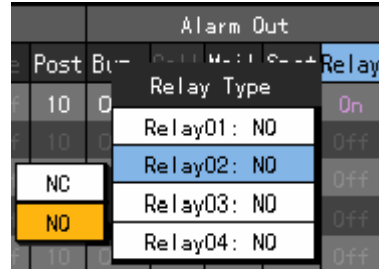
■ Relay type setting

- On the **{Recording Setup}**→**{Data 1~4}**→**{Generate Alarm}**→**{Relay}** menu, go to the desired channel using the arrow (▲▼◀▶) buttons and select the **[Main Setup]** button. Afterward, right-click **[Relay]**.

Alarm Out				
Buz.	Call	Mail	Spot	Relay
Off	Off	Off	Off	On
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off
Off	Off	Off	Off	Off

Alarm Out					
Post	Buz.	Call	Mail	Spot	Relay
10	Off	Off	Off	Off	On
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off
10	Off	Off	Off	Off	Off

To set all channels at the same time, go to **{Relay}** and press the **Select** button.



- On the selection box, set the relay type using the **arrow** and **[Select]** buttons.

5-1-3. Recording Schedule

In **{Main Setup}** mode, go to **{Recording Schedule}** and click the **[Select]** button.



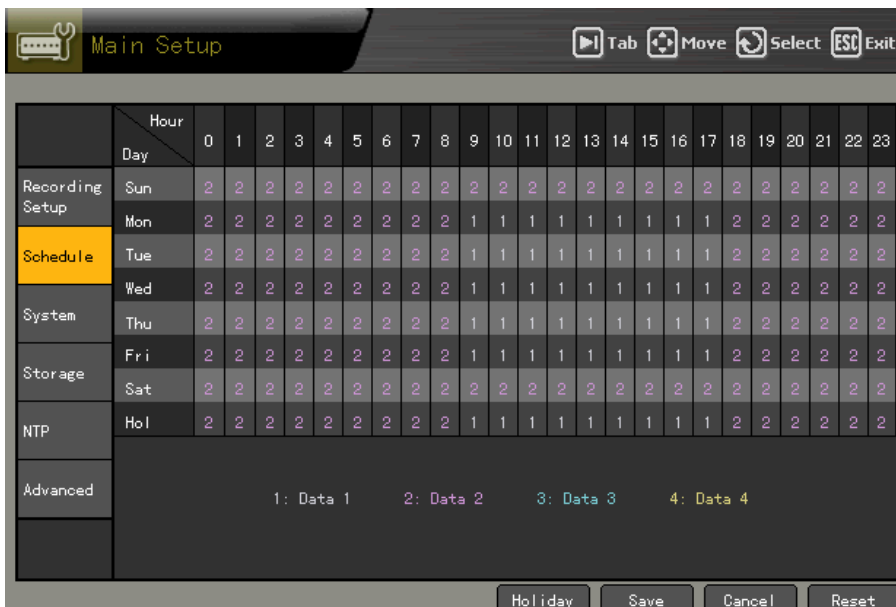
To apply the new setting, save the new setting.

- [Holiday]** - Sets holidays
- [Save]**
Saves the setting
- [Cancel]**
Exits without saving the setting
- [Reset]** – Deletes previous settings and resets the setup



(1) Selecting the Recording Schedule menu

- In **{Main Setup}** mode, go to **{Recording Schedule}** and click the **[Select]** button.



(2) Setting the recording schedule

A) Setting by row

- On the **{Recording Schedule}** menu, go to the date and time using the **arrow (▲▼◀▶)** or numeric buttons on the remote control.

Input numbers that are less than 10 in two digits using the numeric buttons, e.g., 01 for 1 and 02 for 2. At this time, the time line is highlighted.

		Hour																							
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Recording Setup	Sun	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Mon	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Schedule	Tue	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Wed	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
System	Thu	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Fri	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
Storage	Sat	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	Hol	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
NTP																									
Advanced		1: Data 1 2: Data 2 3: Data 3 4: Data 4																							

- Select the time to set the data.

- To set the selected time only, press the **[Main Setup]** button or right-click the corresponding item on the menu.
- To set all rows after the selected time, click the **[Select]** button or double-click the corresponding item on the menu.

- On the selection box, go to the data using the **arrow (▲▼)** buttons and press the **[Select]** button.

		Hour																							
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Recording Setup	Sun	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	Mon	2	2	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
Schedule	Tue	2	4	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Wed	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
System	Thu	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Fri	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
Storage	Sat	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	Hol	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
NTP																									
Advanced		1: Data 1 2: Data 2 3: Data 3 4: Data 4																							

- Data are set based on the buttons pressed during time selection.

- Clicking the **[Main Setup]** button causes the data to be set only for the selected time.

		Hour																								
		Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Recording Setup	Sun	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Mon	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Schedule	Tue	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Wed	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	

b) Clicking the **[Select]** button causes the data to be set for all times after the selected time.

		Hour																								
		Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Recording Setup	Sun	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Mon	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Schedule	Tue	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
	Wed	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
System	Thu	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2

B) Setting by column

- On the schedule menu, go to the row using the **arrow (▲▼◀▶)** or numeric buttons on the remote control.

Input numbers that are less than 10 in two digits using the numeric buttons, e.g., 01 for 1 and 02 for 2.

		Hour																								
		Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Recording Setup	Sun	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Mon	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Schedule	Tue	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
	Wed	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
System	Thu	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
	Fri	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Storage	Sat	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Hol	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Advanced		1: Data 1 2: Data 2 3: Data 3 4: Data 4																								

- Select the time to set the data.

a) To set only one column of the selected time, select the **[Main Setup]** button or right-click the corresponding item on the menu.

b) To set all rows and columns after the selected time at the same time, press the **[Select]** button or double-click the corresponding button on the menu.

- On the selection box, go to the data using the **arrow (▲▼)** buttons and press the **[Select]** button.

	Hour																									
	Day		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Recording Setup	Sun		2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Mon		2	2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Schedule	Tue		2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Wed		2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
System	Thu		2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Fri		2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
Storage	Sat		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	Hol		2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
NTP																										
Advanced			1: Data 1				2: Data 2				3: Data 3				4: Data 4											

□ Data are set based on the buttons pressed during time selection.

- a) Pressing the **[Main Setup]** button causes the data to be set only for the column with the selected time.

	Hour																									
	Day		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Recording Setup	Sun		2	2	2	1	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Mon		2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Schedule	Tue		2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Wed		2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
System	Thu		2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
	Fri		2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
Storage	Sat		2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	Hol		2	2	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	2	2	2	2	2	2	
NTP																										
Advanced			1: Data 1				2: Data 2				3: Data 3				4: Data 4											

- b) Pressing the **[Select]** button causes the data to be set for all rows and columns after the selected time.

	Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Day																								
Recording Setup	Sun	2	2	2	1	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Mon	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Schedule	Tue	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Wed	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
System	Thu	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Fri	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Storage	Sat	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Hol	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Advanced	1: Data 1 2: Data 2 3: Data 3 4: Data 4																								

C) Holiday setting

Enables the user to set holidays

{Recording Schedule} If the holiday and the date are the same on the **{Recording Schedule}** menu, the holiday setting precedes the date setting.

a Calendar

- The defined holidays are marked with a red tag.

b Holiday list

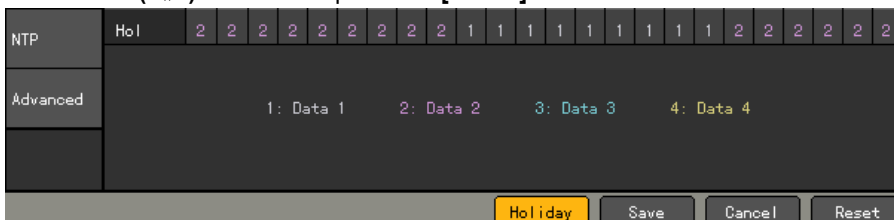
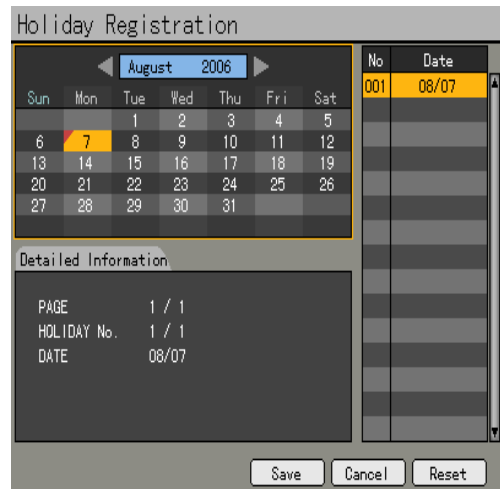
- The list of all defined holidays is displayed.
- 15 holidays are displayed on each page; the rest is displayed on the next pages.

c Holiday information

- Detailed information of the selected date are displayed.
- **{Holiday No.}** denotes the holiday number based on the date.

{Date} shows the date of the holiday.

- On the **{Recording Schedule}** menu, go to **{Holiday}** at the bottom using the **[Tab]** and **arrow** buttons and press the **[Select]** button.



- On the **{Add Holiday}** window, go to the date using the **arrow** and **[Select]** buttons and press the **[Select]** button.

- After setting the holiday, press the **[ESC]** button followed by the **[Save]** button at the bottom of the menu and click the **[Select]** button.
 - [Save] –Saves the defined holidays
 - [Cancel] - Exits without saving the setting
 - [Reset] – Deletes previous settings and resets the setup



5-1-4. System

Use the **{System}** menu to set up the system and define its auxiliary features.

1. {Local administrator password}	Used to set the password of the local administrator
2. {Menu Time Out}	Used to set the time to exit the System Setup menu automatically and to go to the real-time monitoring screen
3. {Modem baud rate}	Sets the modem transmission rate
4. {DVR name}	Used to name the DVR
5. {Remote ID}	Used to name the remote control to run the system
6. {Date display type}	Used to set the date format
7. {Users}	Used to register, add, or delete users
8. {Buzzer}	Turns the alarm sound feature ON/OFF
9. {Alarm Duration}	Sets the alarm generation time (in seconds)
10. {Firmware Upgrade}	Upgrades the system firmware
11. {Factory Setup}	Used to reset the systems

(1) Selecting the System menu

- On the **{Main Setup}** menu, go to **{System}** and press the **[Select]** button.



(2) Local administrator password

Local admin

- The local system administrator's default password is "00000."
- The local administrator can use all features including System Setup, System Power ON/OFF, Monitoring, and Viewing Recorded Video.

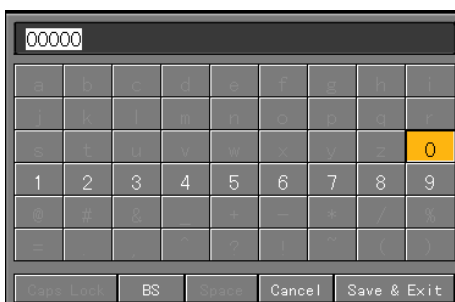
Remote access is not supported, however.

- On the **{System}** menu, go to the **{1. Local Administrator Password}** input field using the **arrow (▲▼)** buttons and press the **[Select]** button.


1. Local Admin. Password

- On the password input field, enter the password using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.

The password may contain up to five digits.



BS	Backspace; used to delete
Cancel	Used to cancel
Save and exit	Used to save and exit

- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow (◀▶)** buttons and press the **[Select]** button.

(3) Menu Time Out

If no input is made on the System Setup menu using the front buttons, remote control, or mouse, the system automatically shifts to real-time monitoring mode.

- On the **{System}** menu, go to **{2. Menu Time Out}** using the **arrow (▲▼)** buttons and press the **[Select]** button.

2. Menu Time Out

Off

- On the selection box, select the time to be set using the **arrow (◀▶)** and **[Select]** buttons.


2. Menu Time Out	Off	Off	
3. DVR Name	1610	10 SEC	
4. Remote ID	255	20 SEC	
5. Date Display Type	Year/Mon/Day	30 SEC	
6. Users	Modify	User Set	Delete
7. Buzzer	Off		
8. Alarm Duration	Default		
9. Firmware Upgrade	Ext. Device	CD-R/CD-RW	Local HDD

Off

Menu Time Out is not used.

The user can exit the menu by pressing the **[ESC]** button on the System menu.

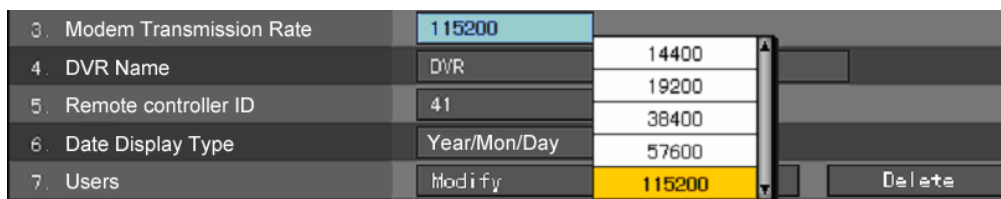
10/20/30 seconds	If no input is made using the touch pad, remote control, or mouse, the system shifts to real-time monitoring mode.
User setting	Enables inputting the time directly The time is between 5 and 99 seconds.

- Selecting the user setting causes the time input window to appear as shown below:
- Enter the time using the **arrow (▲▼◀▶)** and **[Select]** buttons or the numeric buttons on the remote control.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow (◀▶)** buttons and press the **[Select]** button.


(4) Modem Baud rate

Sets the modem transmission rate

- On the **{System}** menu, go to **{3. Modem Baud Rate}** using the **arrow (▲▼)** buttons and press the **[Select]**  button.




For the modem baud rate, refer to the modem manual.

- On the selection box, set the modem baud rate using the **arrow (▲▼)** and **[Select]**  buttons.

(5) Renaming the DVR

- On the **{System}** menu, go to **{3. DVR Name}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



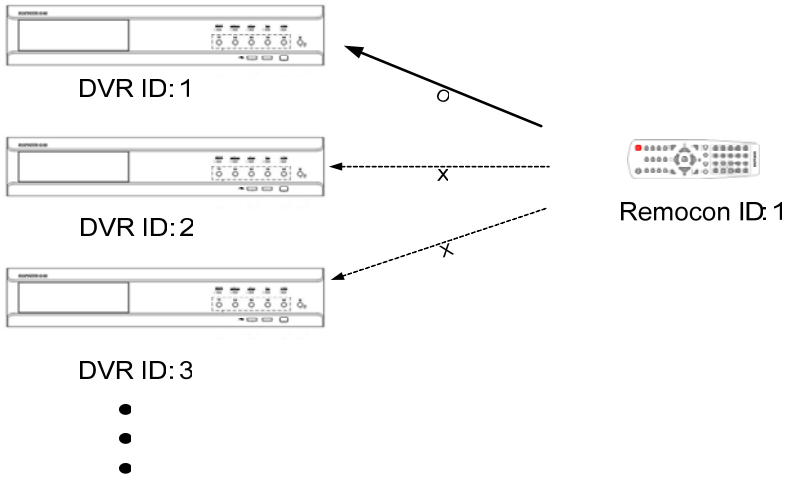
- On the name input field, enter the name using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow (◀▶)** buttons and press the **[Select]** button.

The system name may contain up to 20 alphanumeric characters.

(5) Remote control ID

Sets the remote control ID when multiple devices are used

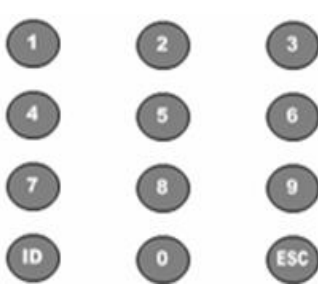
Input signals from the remote control are received only when the DVR ID and remote control ID match as shown below:



- On the **{System}** menu, go to the remote ID selection box using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the ID input field, enter the ID using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
 - The ID may be between 0 and 99.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]** **▶** or **arrow (◀▶)** buttons and press the **[Select]** button.
- After setting the remote control ID of the DVR, apply the new setting.



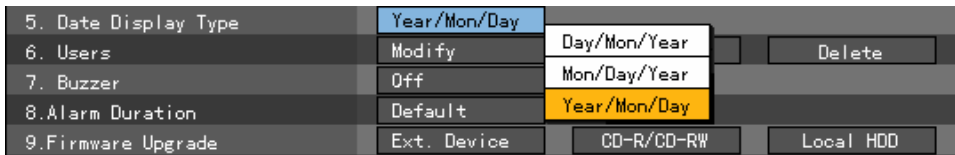
Select the ID button and enter the two-digit remote control ID. Afterward, select the ID button again.



To control all DVRs with different DVR IDs, set the remote control ID as 999.

(6) Date Display Type

- On the **{System}** menu, go to **{5. Date Display Type }** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, set the date display format using the **arrow (◀▶)** and **[Select]** buttons.

(7) User

Used to add, modify, or delete system users

■ System authority

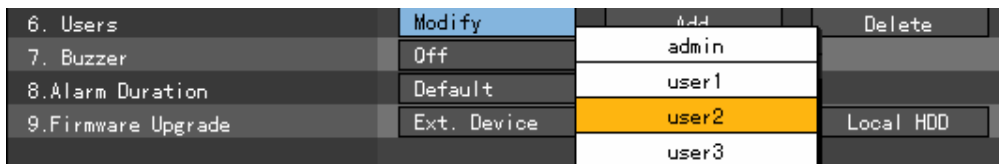
Network live	Viewing screen in real time
Network play	Viewing recorded screen
Download network file	Network access, File download
Main setup	Data, Schedule, System setup
Additional setup	PTZ camera, Network setup
Network PTZ control	PTZ camera control
Network backup	Backup feature
Remote upgrade	Remote upgrade

A) Modifying user information

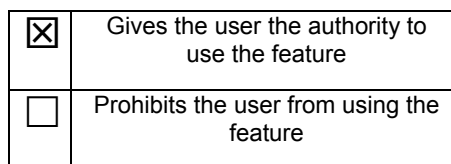
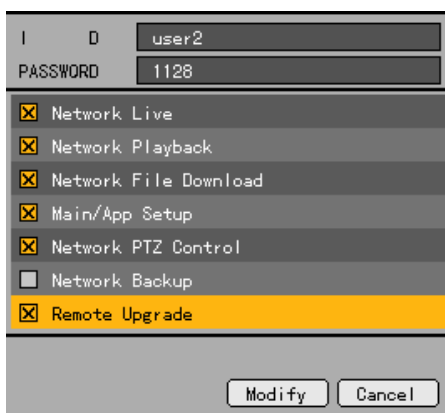
- On the **{System}** menu, go to **{7. User}->{Modify}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, select the user to be modified using the **arrow** and **[Select]** buttons.



- On the user authority setting window, set the user authorities using the **arrow (▲▼)** and **[Select]** buttons.



- After inputting the data, go to **[Save and Exit]** using the **[Tab]** or **arrow (◀▶)** buttons and press the **[Select]** button.

B) Adding a user

The user ID and password may contain up to 31 alphanumeric characters.

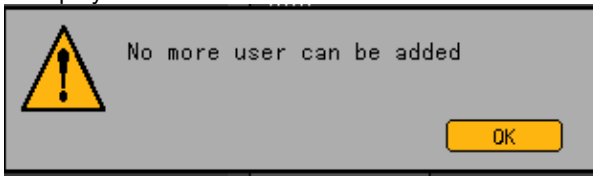
- On the **{System}** menu, go to **{7. User}->{Add}** using the **arrow (▲▼)** buttons and press the **[Select]** button.




- On the user registration window, go to the ID input field and press the **[Select]** button.

<input checked="" type="checkbox"/>	Gives the user the authority to use the feature
<input type="checkbox"/>	Prohibits the user from using the feature


Up to four users can be registered. After four users are registered, the following message is displayed:

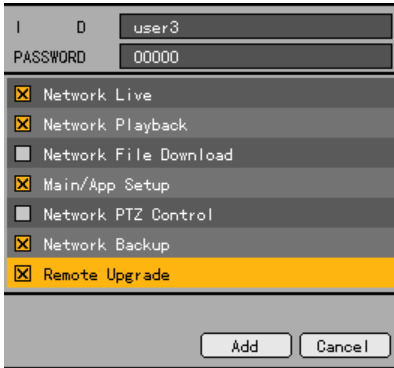


- ◀ Press the **[Select]** button to go back to the previous menu.


- On the user ID input window, enter the user ID using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow (◀▶)** buttons and press the **[Select]** button.
- After setting the user ID, go to the password input field using the **arrow (▲▼)** buttons and press the **[Select]** button.

<input checked="" type="checkbox"/>	Gives the user the authority to use the feature
<input type="checkbox"/>	Prohibits the user from using the feature

- On the password input window, enter the password using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
The password may contain up to **30** digits.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow** buttons and press the **[Select]** button.
- After setting the user ID and password, set the user authorities using the **arrow (▲▼)** and **[Select]** buttons.



<input checked="" type="checkbox"/>	Gives the user the authority to use the feature
<input type="checkbox"/>	Prohibits the user from using the feature

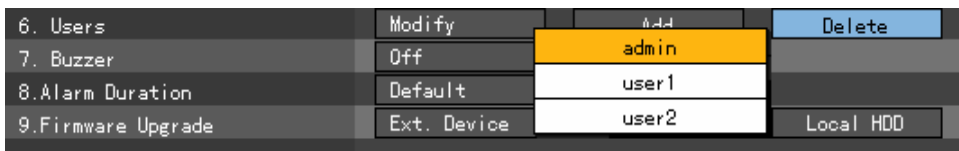
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow (◀▶)** buttons and press the **[Select]** button.

C) Deleting a user

- On the **{System}** menu, go to **{7. User}**->**{Delete}** using the **arrow (▲▼)** buttons and press the **[Select]** button.

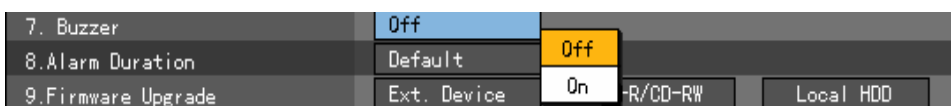


- On the selection box, select the user to be deleted using the **arrow (▲▼)** and **[Select]** buttons.



(8) Buzzer setting

- On the **{System}** menu, go to **{7. Buzzer}** using the **arrow (▲▼)** buttons and press the **[Select]** button.
- On the selection box, select ON or OFF using the **arrow (◀▶)** and **[Select]** buttons.



The buzzer inside the system is used to sound an alarm in case of HDD Failure, Backup Failure, Network Failure, Fan Failure, Power Failure, or Signal Loss.

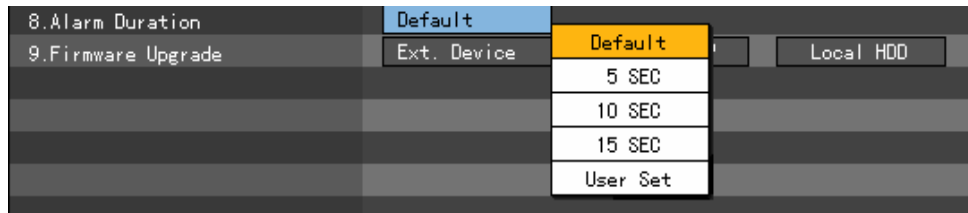
(9) Alarm Duration

Sets the alarm generation time

- On the **{System}** menu, go to **{8. Alarm Duration}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, set the alarm generation time using the **arrow** and **[Select]** buttons.



(10) Firmware Upgrade

Workhorse 120-16 can be easily upgraded using an external storage device or a portable storage device with USB 2.0 port or built-in CD-RW/DVD-RW.

- Find the upgrade file and copy it to the highest folder in the external storage device or portable storage device.



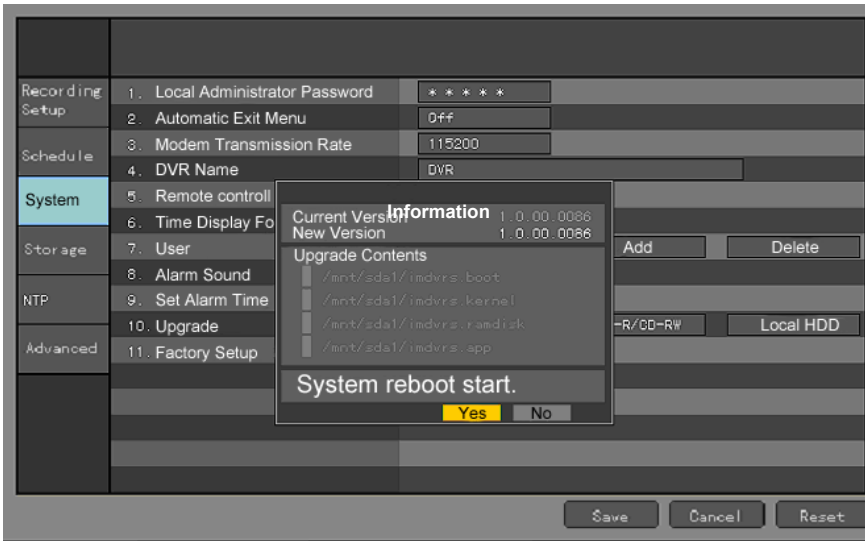
- 1) When copying an upgrade file from the PC, connect the USB device to the PC first.
- 2) If the USB device is disconnected from the port while the upgrade file is being copied, the DVR system may not automatically recognize the file.
- 3) Upgrading cannot proceed if no HDD is installed.

- Connect the storage device containing an upgrade file to the USB 2.0 port.
- On the **{System}** menu, go to **{9. Firmware Upgrade}** using the **arrow (▲▼)** buttons.

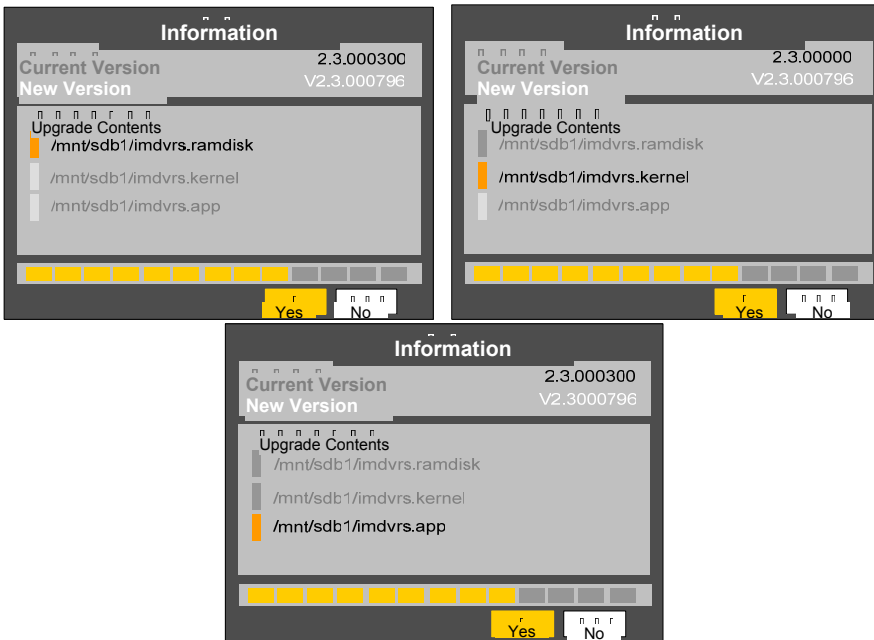


- Press the **[Select]** button.

The upgrade information window then appears within 15 seconds as shown below:



- After checking the information, select the **[Yes]** button. Upgrading then proceeds in the following order (selecting the **[No]** button causes the system to shift to **{System}** mode):




Once it starts, upgrading cannot be canceled.

- After updating is completed, the system restarts.
- The system automatically starts, and upgrading is completed.
- Select **{Status}** -> **{Product Information}** -> **{3. Software Version}**.

(11) Saving the system configuration

After changing the system configuration on the **{System}** menu, save the new configuration before exiting the menu.

- After completing the system configuration, go to **[Save]** by selecting the **[Tab]**  button and press the **[Select]** button.
 - **[Save]**
Saves the setting
 - **[Cancel]**
Exits without saving the setting
 - **[Reset]**
Initializes the setting



5-1-5. Storage Device

(1) Selecting the Storage Device menu

- Select **{Main Setup}** and **{Storage Device}**.

The screenshot shows the 'Main Setup' interface. At the top, there are navigation icons for Tab, Move, Select, and ESC Exit. Below the title bar, there are tabs for 'Local' and 'NAS Backup'. The 'Recording Setup' section includes '1. Maximum Archiving Days' (Off) and '2. HDD Overwrite' (On). The 'Schedule' section is currently empty. The 'System' section contains a table with the following data:

No	Model	Serial	Location	Size (F/T)	Status (SW/HW)
1	WDC WD1200BB...	WD-WCALA1740890	Pri. Master	112GB/114GB	ACTIVE/HEALTHY
2	SAMSUNG SP1203N	S00SJ10Y201170	Pri. Slave	114GB/114GB	ONLINE/HEALTHY

At the bottom of the screen, there are buttons for 'Update', 'Save', 'Cancel', and 'Reset'.

A) Local

(1) Selecting the Local menu

- On the **{Storage Device}** menu, go to the **{Local}** tab using the **arrow (◀▶)** and **[Select]** buttons.



To apply the new setting defined on the **[Storage Device]** menu, save the new setting.

[Update]

Used to read local storage device management information again

[Save]

Saves the setting



[Cancel]

Exits without saving the setting

[Reset]

Resets the setting

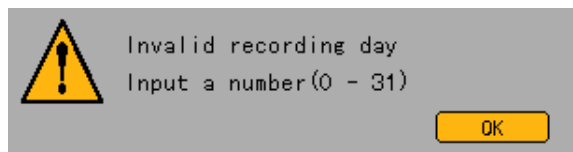
(2) Limits the recording days

- On the **{Storage Device}** menu, go to **{1. Maximum Archiving Days}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the input window, enter the recording date using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
- Only numbers between 1 and 31 are recognized; each number denotes a date.

Beyond 31 days, the following warning message appears:



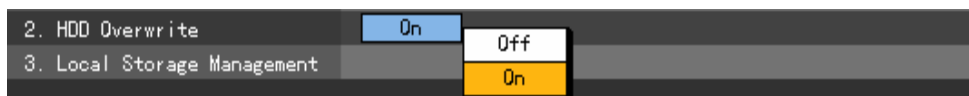
(3) HDD Overwrite

Used to enable/disable HDD overwrite

- On the **{Storage Device}** menu, go to **{2. HDD Overwrite}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, select ON or OFF using the **arrow (◀▶)** or **[Select]** buttons.



ON	In case of insufficient hard drive space, files starting from the oldest ones are overwritten.
OFF	Once the hard drive space is used up, recording stops.

(4) Management and configuration of the local storage device

Similar to a hard drive, a local storage device saves data in real time. It supports the following features:

- **{Initialize}**: Sets the selected storage device as a recording storage device
- **{Online}**: Makes the selected storage device available online
- **{Offline}**: Disconnects the selected storage device from the DVR
- **{Format}**: Formats the selected storage device

In Healthy and Warning states, the commands described above are executed; in Fault state, however, no command is executed.

{5} Configuration of the local storage device

- {Model}**: Storage device model
- {Serial}**: Serial number of the storage device
- {Location}**: Physical location of the storage device
- {Capacity (F/T)}**: Capacity of the storage device (T: Total; F: Free)
- {Status (HW/SW)}**: Status of the storage device (HW/SW; SW: Software; HW: Hardware)

Three software status types

- **Active**: Connected to the DVR; the storage device is currently recording
- **Online**: Connected to the DVR, but the storage device is not recording
- **Offline**: Not connected to the DVR

Three hardware status types

- **Healthy**: Connected to the DVR; the storage device is recording normally
- **Warning**: Connected to the DVR, but an error has occurred; in this state, recording may fail (for more information, see the warning below)
- **Fault**: Not connected to the DVR, possible hardware damage; in this state, the storage device cannot operate



1. **Fault state**: The storage device is damaged and unable to function properly. Fault state is not related to DVR troubles. The DVR detects errors in the storage device and stops recording.
2. **Warning state**: The storage device has a physical error that can be corrected by the storage device or DVR. Failure to repair the error may damage the


storage device (and cause it to shift to fault state). In this case, backing up the data in the corresponding storage device and replacing the device with a normal one is strongly recommended.

3. If the active storage device is in warning or fault state, an alarm message is displayed on the upper left hand corner of the screen. After the user views the alarm message on the **{Log}** menu, however, the alarm message is deleted.
-


(7) After adding a local storage device

- Open the DVR body, connect the drive to the IDE cable, and connect the power cord.
- Supply power to the DVR and boot the system.
- Select the **[Main Setup]** button and enter the password. On the **{Storage Device}** menu, go to **{Storage Device}**->**{Local}** using the **arrow (▲▼)** buttons.
- The following window is then displayed together with information on the newly installed drive :

No	Model	Serial	Location	Size (F/T)	Status (HW/SW)
1	WDC WD1200JB...	WD-WMANN1088514	Pri. Master	16GB/120GB	HEALTHY/ACTIVE
2	WDC WD1200JB...	WD-WMANN1019069	Pri. Slave	120GB/120GB	HEALTHY/NEW

- Select a model using the **arrow (▲▼)** and **[Select]**  buttons as shown below and reset the selected model:

No	Model	Serial	Location		Status (HW/SW)
1	WDC WD1200JB...	WD-WMANN1088514	Pri. Master	Initialize Online Offline Format	HEALTHY/ACTIVE
2	WDC WD1200JB...	WD-WMANN1019069	Pri. Slave	120GB/120GB	HEALTHY/NEW

- Selecting a menu using the **[Select]**  button causes a confirmation message to appear as shown below:

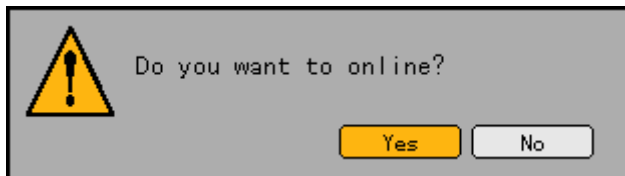


- Select **[Yes]**. Drive is in offline state are then displayed as shown below:

- To make a model available online, select the desired model using the **[Select]** button followed by the Online menu.

No	Model	Serial	Location		Status (HW/SW)
1	WDC WD1200JB...	WD-WMANN1088514	Pri. Master	Initialize Online Offline Format	HEALTHY/ACTIVE
2	WDC WD1200JB...	WD-WMANN1019069	Pri. Slave	119GB/120GB	HEALTHY/OFFLINE

- Selecting a menu using the **[Select]** button causes a confirmation message to appear as shown below:



- Select **[Yes]**. Drive s in online state are then displayed as shown below:

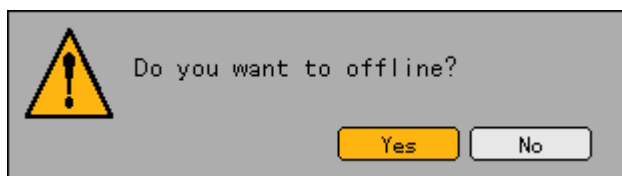
No	Model	Serial	Location	Size (F/T)	Status (HW/SW)
1	WDC WD1200JB...	WD-WMANN1088514	Pri. Master	16GB/120GB	HEALTHY/ACTIVE
2	WDC WD1200JB...	WD-WMANN1019069	Pri. Slave	119GB/120GB	HEALTHY/ONLINE

(8) Operation of the local storage device

- The user can select any valid storage device using the **arrow** (▲▼) buttons.
- Select a storage device using the **[Select]** button. A popup menu is then displayed as shown below:

No	Model	Serial	Location		Status (HW/SW)
2. HDD Overwrite On					
3. Local Storage Management					
1	WDC WD1200JB...	WD-WMANN1088514	Pri. Master	Initialize Online Offline Format	HEALTHY/ACTIVE
2	WDC WD1200JB...	WD-WMANN1019069	Pri. Slave	119GB/120GB	HEALTHY/ONLINE

- Select and execute the corresponding menu using the **arrow** (▲▼) and **[Select]** buttons.
- The system confirms the execution of every command as shown below:



- Click **[OK]** to execute the corresponding command.

B) NAS backup

(1) Selecting the NAS Backup menu

- Go to {Main Setup}, {Storage Device}, and {NAS Backup}.

The screenshot shows the 'Main Setup' menu with the 'NAS Backup' option selected. The interface includes a top navigation bar with 'Main Setup' and icons for 'Tab', 'Move', 'Select', and 'ESC Exit'. The main content area is a table with categories on the left and configuration items on the right. The 'Storage' category is highlighted in yellow. At the bottom, there are 'Save', 'Cancel', and 'Reset' buttons.

			Local	NAS Backup
Recording Setup	1. NAS Use	<input type="checkbox"/> On	Test	
	2. ID	<input type="text" value="dvr1"/>		
	3. Password	<input type="text" value="*****"/>		
Schedule	4. IP	<input type="text" value="192.168.130.90"/>		
	5. Directory	<input type="text" value="/DVR/dvr1"/>		
System	6. Active Time (Every Hour)	<input type="text" value="1"/>	Minute	
	7. Max Save Time	<input type="text" value="2"/>	Hour	
Storage	8. Min Spare Space	<input type="text" value="10"/>	GB	
	9. Overwrite	<input type="checkbox"/> On		
NTP				
Advanced				

Save Cancel Reset

(2) Using NAS

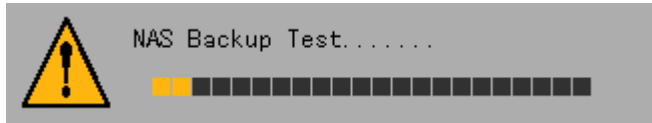
- On the {Storage} menu, go to {NAS Backup} ->{1. NAS Use } using the arrow (▲▼) buttons and press the [Select] button.



- On the selection box, select ON or OFF using the arrow (▲▼) or [Select] buttons.



- Selecting ON or Test causes a test to run as shown below:



(3) ID

- Go to the {2. ID} menu using the arrow (▲▼) buttons and press the [Select] button.
- On the input window, enter the ID using the arrow (▲▼◀▶) and [Select] buttons.
- After inputting the data, go to [Save and Exit] using the arrow (▲▼◀▶) or [Tab] (▶) buttons and save the setting by pressing the [Select] button.

(4) Password

- Go to the {3. Password} menu using the arrow (▲▼) buttons and press the [Select] button.
- On the input window, enter the password using the arrow (▲▼◀▶) and [Select] buttons.
- After inputting the data, go to [Save and Exit] using the arrow (▲▼◀▶) or [Tab] (▶) buttons and save the setting by pressing the [Select] button.

(5) IP

- Go to the {4. IP} menu using the arrow (▲▼) buttons and press the [Select] button.
- On the input window, enter the IP using the arrow (▲▼◀▶) and [Select] buttons.

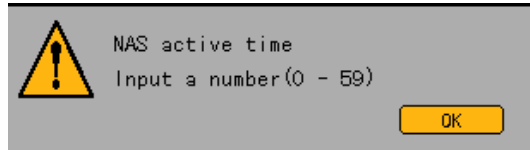
(6) Directory

- Go to the {5. Directory} menu using the arrow (▲▼) buttons and press the [Select] button.
- On the input window, enter the directory using the arrow (▲▼◀▶) and [Select] buttons.
- After inputting the data, go to [Save and Exit] using the arrow (▲▼◀▶) or [Tab] (▶) buttons and save the setting by pressing the [Select] button.

(7) Execution time

- Go to the {6. Execution Time (Hourly)} menu using the arrow (▲▼) buttons and press the [Select] button.
- On the input window, enter the execution time using the arrow (▲▼◀▶) and [Select] buttons.

- Only numbers between 1 and 59 are recognized; each number denotes a minute. Beyond 59 minutes, the following warning message appears:

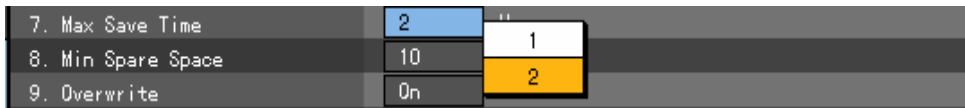


(8) Maximum Save Time

- On the **{Storage Device}** menu, go to **{NAS Backup}** -> **{7. Maximum Save Time}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



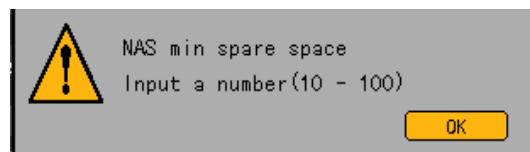
- On the selection box, select One Hour or Two Hours using the **arrow (◀▶)** or **[Select]** buttons.



(9) Minimum Spare Space

- Go to the **{8. Minimum Spare Space}** menu using the **arrow (▲▼)** buttons and press the **[Select]** button.
- On the input window, enter the minimum space using the **arrow (▲▼◀▶)** and **[Select]** buttons.
- Only numbers between 10 and 100 are recognized; each number denotes the space in GB (gigabyte).

If the minimum space is more than 100 gigabytes, the following warning message is displayed:



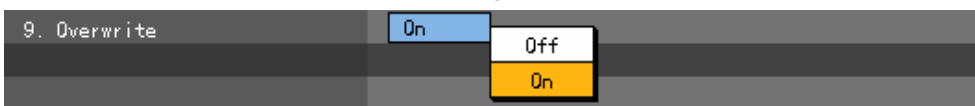
(10) Overwrite

Turns NAS overwriting ON/OFF

- On the **{Storage Device}** menu, go to **{NAS Backup}**->**{9. Overwrite}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, select ON or OFF using the **arrow (◀▶)** or **[Select]** buttons.



5-1-6. NTP

Protocol for synchronizing the time between devices connected through the network

Description of features

1. Time synchronization

1) Synchronization with the NTP server

Time is synchronized with the NTP server by the hour.

A. Automatic setting

Connection with the server nearest to the user-defined zone is attempted or the next nearest server if connection fails.

B. User setting

The user sets the URL or IP of the NTP server. If connection is not established, a message is sent to the user, and the corresponding logs, saved.

If synchronization with the NTP server fails, synchronization with the RTC ensues.

2) Synchronization with the DVR Time Server

The DTS server runs in Workhorse 120-4; time is synchronized by the hour. Workhorse 120-4 DTS clients referring to the DTS synchronize the time of the DVR system.

Any change in the DTS time or zone is reflected on the Workhorse 120-4 of the network (synchronization signals are broadcast without passing through the router or gateway; the DVR time server does not support automatic connection).

2. Daylight saving time (DST) setting

The DST is automatically processed depending on the zone, i.e., whether the NTP server or the DST server is used as a reference.

3. User time setting

The user can set the time.

For NTP client setting, however, the user can only read the time but not change it.

(1) Selecting the NTP menu

- Select **{Main S4etup}** and **{NTP}**.

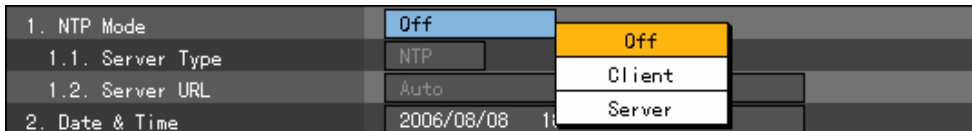


(2) NTP mode

- On the **{NTP}** menu, go to **{1. NTP Mode}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, shift to NTP mode using the **arrow** and **[Select]** buttons.



OFF	NTP is not used.
Server	The DVR time server is used.
Client	DTS client is used, and server time, synchronized.

A) Server type

Settings may be defined in client **{NTP Mode}**. Select either the NTP server or the DVR time server.

- On the NTP menu, go to **{1.1. Server type}** using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, set the server type using the **arrow (▲▼)** and **[Select]** buttons.

1.1. Server Type	NTP	NTP
1.2. Server URL	Auto	DVR
2. Date & Time	2006/08/08	12

B) Server URL

Settings may be defined only in client NTP mode. Set the address of the NTP server or DVR time server.

- On the **{NTP}** menu, go to **{1.2. Server URL}** using the **arrow (▲▼)** buttons and press the **[Select]** button.

1.2. Server URL	Auto
-----------------	------

- On the selection box, set the server URL using the **arrow (▲▼)** and **[Select]** buttons.

1.2. Server URL	Auto	Auto
2. Date & Time	2006/08/08	18:31:31
3. Time Zone	(GMT+09:00) Seoul	IP
3.1. Daylight Saving Time	Off	URL

- The user can enter the IP only when the server type is DVR. For the NTP server, Automatic, IP, or URL should be selected.

■ Automatic

Attempts to connect to the server nearest to the user-defined zone or the next nearest server if connection fails

■ IP

On the numeric data input field, enter the IP of the server to synchronize the time.

■ URL

On the text input window, enter the URL of the server to synchronize the time.

(3) Changing the system date and time

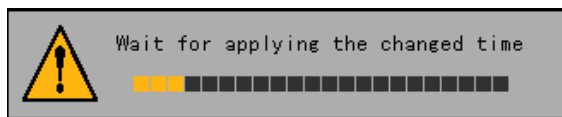
The system date and time can be changed only in NTP Server or OFF mode.

The system date and time format is Year/Month/Day Hour/Minute/Second. To set the display format, go to **{Main Setup}->{System}->{6. Time Display Format}**.

- On the **{NTP}** menu, go to **{2. Date and Time}** using the **arrow (▲▼)** buttons and press the **[Select]** button.
- Go to the field to be changed using the **arrow (◀▶)** buttons and press the **[Select]** button.
- After changing the date and time using the **arrow (▲▼)** buttons, press **[Select]**.

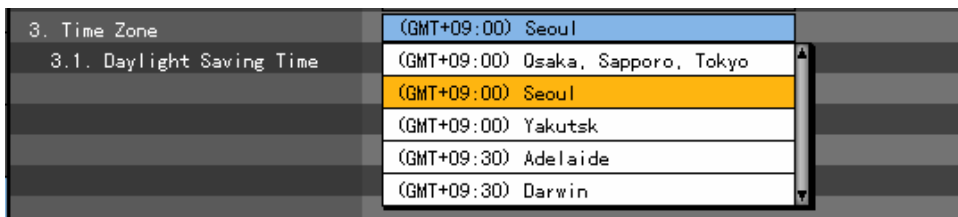
1.2. Server URL	Auto	
2. Date & Time	2006/08/08	18:32:23
3. Time Zone	(GMT+09:00) Seoul	

- The following message is then displayed, and the system time, changed.



(4) Time zone

Used to set the standard time



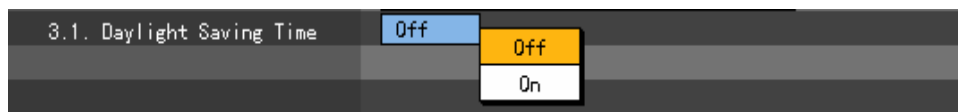
A) Daylight saving time

Used to apply the daylight saving time system

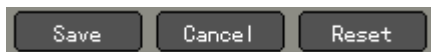
- This field may be selected only when the corresponding region supports the DST.
- On the {NTP} menu, go to {3.1. DST} using the **arrow (▲▼)** buttons and press the **[Select]** button.



- On the selection box, select ON or OFF using the **arrow (▲▼)** or **[Select]** buttons.



- Press the **[Select]** button using the **[TAB]** button on the remote control and the **arrow (◀▶)** buttons.



After DST is selected, existing data are displayed as “OLD_” in the search and log list.

5-1-7. Advanced

Sets the picture quality more specifically per channel

(1) Selecting the Advanced menu

A) Selecting the menu type

- Advanced menu configuration

Main Setup		Tab	Move	Select	ESD	Exit				
	Channel	Filter	Average Filter	Quad	Max Bitrate	H Anti Aliasing	V Anti Aliasing	Peaking	C/Y Coring	
Recording Setup	1	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	2	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
Schedule	3	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	4	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
System	5	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	6	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
Storage	7	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	8	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
NTP	9	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	10	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
Advanced	11	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	12	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	13	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	14	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	15	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	
	16	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No	

Save Cancel Reset

(2) Advanced option setting per channel

A) Filter

- On the **{Filter}** menu, press the **[Select]** button using the **arrow (▲▼)** buttons.


	Channel	Filter	Average Filter	Quad	Max Bitrate	H Anti Aliasing	V Anti Aliasing	Peaking	C/Y Coring
Recording Setup	1	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No
	2	Temporal	Temporal	Off	1000 KB	4MHz	Full	93%	No
Schedule	3	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No
	4	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No

B) {Average filter}

- Go to the **{Average Filter}** menu and press the **[Select]** button using the **arrow (▲▼)** buttons as shown below:

	Channel	Filter	Average Filter	Quad	Max Bitrate	H Anti Aliasing	V Anti Aliasing	Peaking	C/Y Coring
Recording Setup	1	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No
	2	Temporal	1:6:1	1:2:1	1000 KB	4MHz	Full	93%	No
Schedule	3	Temporal	1:6:1	1:6:1	1000 KB	4MHz	Full	93%	No
	4	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No

C) Maximum bit rate

- Enter the bit rate using the **arrow (▲▼◀▶)** and **[Select]** buttons as shown below:
- After inputting the data, go to **[Save and Exit]** using the **arrow (▲▼◀▶)** or **[Tab]**  buttons and save the setting by pressing the **[Select]** button.

D) H anti-aliasing

- Go to the **{H Anti-Aliasing}** menu and press the **[Select]** button using the **arrow (▲▼)** buttons as shown below:

	Channel	Filter	Average Filter	Quad	Max Bitrate	H Anti Aliasing	V Anti Aliasing	Peaking	C/Y Coring
Recording Setup	1	Temporal	1:6:1	Off	1000 KB	4MHz	4MHz	93%	No
	2	Temporal	1:6:1	Off	1000 KB	4MHz	2MHz	93%	No
	3	Temporal	1:6:1	Off	1000 KB	4MHz	1.5MHz	93%	No
Schedule	4	Temporal	1:6:1	Off	1000 KB	4MHz	1MHz	93%	No
	5	Temporal	1:6:1	Off	1000 KB	4MHz	1MHz	93%	No

E) V anti-aliasing

- Go to the **{V Anti-Aliasing}** menu and press the **[Select]** button using the **arrow (▲▼)** buttons as shown below:

	Channel	Filter	Average Filter	Quad	Max Bitrate	H Anti Aliasing	V Anti Aliasing	Peaking	C/Y Coring
Recording Setup	1	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No
	2	Temporal	1:6:1	Off	1000 KB	4MHz	Full	0.25 Line	No
	3	Temporal	1:6:1	Off	1000 KB	4MHz	Full	0.18 Line	No
Schedule	4	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No
	5	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No

F) Peaking

- Go to the **{Peaking}** menu and press the **[Select]** button using the **arrow (▲▼)** buttons as shown below:

	Channel	Filter	Average Filter	Quad	Max Bitrate	H Anti Aliasing	V Anti Aliasing	Peaking	C/Y Coring
Recording Setup	1	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	No
	2	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	31%
	3	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	62%
Schedule	4	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	93%
	5	Temporal	1:6:1	Off	1000 KB	4MHz	Full	93%	93%

(G) C/Y cording

- Go to the **{C/Y Cording}** menu and press the **[Select]** button using the **arrow (▲▼)** buttons as shown below:

	Channel	Filter	Average Filter	Quad	Max Bitrate	H Anti Aliasing	V Anti Aliasing	Peaking	C/Y Cording
Recording Setup	1	Temporal	1:6:1	Off	1000 KB	4MHz	Full	No	No
	2	Temporal	1:6:1	Off	1000 KB	4MHz	Full	No	No
Schedule	3	Temporal	1:6:1	Off	1000 KB	4MHz	Full	+/-1	No
	4	Temporal	1:6:1	Off	1000 KB	4MHz	Full	+/-2	No
	5	Temporal	1:6:1	Off	1000 KB	4MHz	Full	+/-4	No

(3) Description of advanced options

Menu	Description
{Filter}	This is used to filter the images. Either Median Filter or Temporal Filter may be selected. If there are lots of noises in the still image, select Median Filter; if there are lots of noises in the moving image, however, Temporal Filter is recommended. Since the DVR handles moving images, Temporal Filter is recommended. The default setting is temporal filter.
{Average filter}	Either 1:6:1 or 1:2:1 may be selected. For 1:6:1 (which is also the default setting), however, the file size is high but the filtering degree is low; this means that the resulting image is close to the original image
{Maximum bit rate}	Limits the compression file size
{H anti-aliasing}	This is used to set horizontal anti-aliasing. In most cases, 4MHz is closest to the actual video.
{V anti- aliasing}	This is used to set vertical anti-aliasing. In most cases, the [All] option is closest to the actual video.
{Peaking}	Peaking emphasizes the edge of the Y elements. The user can select No, 31%, 62%, or 93%. At 93% (which is also the default setting, the edges are emphasized the most.
{C/Y cording}	Cording is used to keep the edges sharp among the Y elements of the image. The user can select No, +/-1, +/-2, or +/-4. To get the softest images, however, +/-4 is recommended; the default setting is No.

5-2. Additional Setup

Use **{Additional Setup}** to set the PTZ and network features.



After changing the setting on the **{Additional Setup}** menu, save the setting before exiting the menu.

- **[Save]**
Saves the setting
- **[Cancel]**
Exits without saving the setting
- **[Reset]** – Deletes previous settings and resets the setup



5-2-1. Selecting Additional Setup

- On the real-time monitoring screen, select the **[Additional Setup]** button on the remote control.
- The login window is then displayed as shown below:

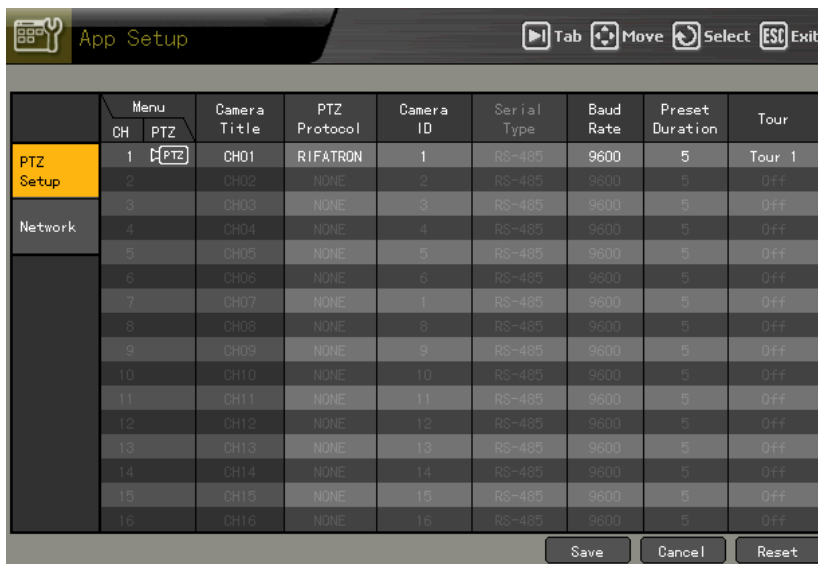


- Select the login account, enter the password using the numeric buttons on the remote control, and click **[OK]**.

• (The default password of the local administrator is “00000.”)

• To change the ID, go to the ID selection box and select the **arrow (▲▼)** buttons.

- Once the correct password is inputted, the initial **{Additional Setup}** menu is displayed as shown below:



5-2-2. PTZ Setup

Sets the PTZ camera connected to the system

Menu CH	Displays the channel
Menu PTZ	Setting the PTZ causes a camera icon to be displayed.

Camera name	Displays the name of each channel
PTZ protocol	Sets the protocol used to communicate with the PTZ camera
Camera ID	ID set in the PTZ camera
Transmission type	Camera control cable type (RS-485)
Transmission rate	Communication speed (must be the same as the communication speed specified in the manual for the PTZ)
Preset maintenance time	Interval between the Preset as defined in the Tour feature and the next Preset (unit: 5 ~60 seconds)
Tour	Used to set the Tour feature (Tour 1 and Tour 2)

(1) PTZ protocol setting

The PTZ protocol is used for communicating with the PTZ camera.

- On the **{PTZ Setup}** menu, **select** the **{PTZ Protocol}** sub-menu and go to the channel using the **arrow (▲▼◀▶)** buttons. Afterward, press the **[Select]** button.
- On the selection box, select the audio channel using the **arrow (▲▼)** and **[Select]** buttons.



PTZ Protocol	Camera ID	Serial Type	Baud Rate	Pre Dura
NONE	GSP	RS-485	9600	5
NONE	HITRON	NONE	9600	
NONE	HONEYWELL	CYBERSCAN		NONE
NONE	LG	RS-485		CYBERSCAN_I
NONE	MIKAMI	RS-485	9600	
NONE	I	RS-485	9600	

(2) Camera ID setting

Camera ID refers to the address used for communicating with the PTZ camera.

- The camera ID must be the same as the address set in the PTZ camera.
- Different methods are used to set the address of the PTZ camera depending on the camera manufacturer or model. See the camera manual for reference.
- On the **{PTZ Setup}** menu, select the **{Camera ID}** sub-menu and go to the channel using the **arrow (▲▼◀▶)** buttons. Afterward, press the **[Select]** button.
- On the selection box, set the camera ID using the **arrow (▲▼)** and **[Select]** buttons.
- Camera IDs may be from 1 to 16.

(3) Setting the transmission type

The transmission type pertains to the type of interface used to communicate with the PTZ camera. In Workhorse 120-16, the transmission type is RS-485.

RS-485	Standard interface for multi-point communication line as approved by TIA/EIA
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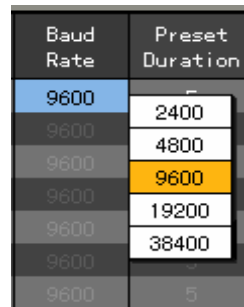
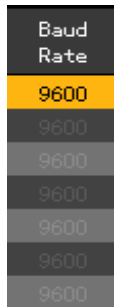
(4) Setting the transmission rate

The transmission rate denotes the speed of communication with the PTZ camera.

- The transmission rate must be the same as the communication speed of the PTZ camera.

Different methods are used to set the address of the PTZ camera depending on the camera manufacturer or model. See the camera manual for reference.

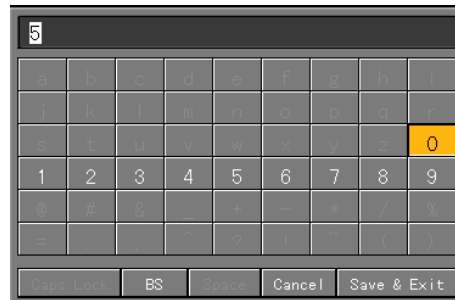
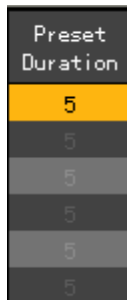
- On the **{PTZ Setup}** menu, go to the channel using the **arrow (▲▼◀▶)** buttons. Afterward, press the **[Select]** button.
- On the selection box, set the baud rate using the **arrow (▲▼)** and **[Select]** buttons.



(5) Preset time setting

Preset	Used to move the PTZ camera up, down, right, and left, to zoom in the image, and to control the focus to save the new setting Up to eight settings can be saved. Setting numbers between 1 and 8 may be selected.
Tour	Automatically controls the preset PTZ camera according to the predefined order Tour 1 is set as 9, and Tour 2 , as 0.
Preset maintenance time	Tour interval (between 5 and 60 seconds)

- On the **{PTZ Setup}** menu, select the **{Preset Duration}** sub-menu and go to the channel using the **arrow (▲▼◀▶)** buttons. Afterward, press the **[Select]** button.
- On the selection box, set the preset maintenance time using the **arrow (▲▼)** and **[Select]** buttons.



(6) Tour setting

Preset	Used to move the PTZ camera up, down, right, and left, to zoom in the image, and to control the focus to save the new setting Up to eight settings can be saved. Setting numbers between 1 and 8 may be selected.
Tour	Automatically controls the preset PTZ camera according to the predefined order Tour 1 is set as 9, and Tour 2 , as 0.
Preset maintenance time	Tour interval (between 5 and 60 seconds)

Example - Tour feature when Tour 1 and Tour 2 are set as follows:

- When 9 is pressed in PTZ mode:
Numbers are selected in the following order: 1 > 7 > 5 > 6.
Selecting 9 again disables the feature.
- When 0 is pressed in PTZ mode:
Numbers are selected in the following order: 3 > 2 > 4 > 8.
Selecting 0 again disables the feature.

Tour1	Tour2
1	3
7	2
5	4
6	8

- On the **{PTZ Setup}** menu, select the **{Tour}** sub-menu and go to the channel using the **arrow (▲▼◀▶)** buttons. Afterward, press the **[Select]** button.
- On the selection box, select the audio channel using the **arrow (▲▼)** and **[Select]** buttons.

Tour
Off
Off
Off
Off
Off
Off
Off
Off
Off
Off
Off
Off
Off
Off

Serial Type	Baud Rate	Preset Duration	Tour
RS-485	9600	Off	Off
RS-485	9600	Set	Off
RS-485	Tour 1	Tour 2	Off
	Off		Off
	1		Off
	2		Off
	3		Off
	4		Off
	5		Off
	6		Off
	7		Off
	8		Off
RS-485	9600	5	Off
RS-485	9600	5	Off
RS-485	9600	5	Off

5-2-3. Network Setup

(1) Selecting the Network Setup menu

- In **{Additional Setup}** mode, go to **{Network}** and press the **[Select]** button.


The screenshot shows the 'App Setup' interface. At the top, there are navigation buttons: Tab, Move, Select, and ESC Exit. Below this is a menu bar with options: Ethernet, PSTN, Cable, ADSL, Alarm, Port, and DDNS. The 'Ethernet' option is selected and highlighted in yellow. Below the menu bar, there are several checkboxes: 'Ethernet for Network' (checked), 'Ethernet for Backup', 'PSTN/ISDN 1:1', 'PSTN/ISDN ISP', 'Cable Modem DHCP', and 'ADSL'. The main area is titled 'Ethernet for Network' and contains a list of settings: '1. IP Address' (192.168.130.40), '2. Subnet Mask' (255.255.255.0), '3. Default Gateway' (192.168.130.1), '4. Primary DNS' (210.94.0.73), and '5. Secondary DNS' (210.108.98.74). At the bottom, there are four buttons: Repair, Save, Cancel, and Reset.

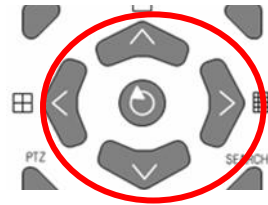
(2) Ethernet

Uses a fixed IP in the local area network environment

- On the **{Network Setup}** menu, go to **{Ethernet}** using the arrow (**◀▶**) buttons and press the **[Select]** button.








This screenshot is identical to the one above, showing the 'App Setup' interface with the 'Ethernet' option selected and the 'Ethernet for Network' settings displayed. The settings are: IP Address (192.168.130.40), Subnet Mask (255.255.255.0), Default Gateway (192.168.130.1), Primary DNS (210.94.0.73), and Secondary DNS (210.108.98.74). Buttons at the bottom include Repair, Save, Cancel, and Reset.

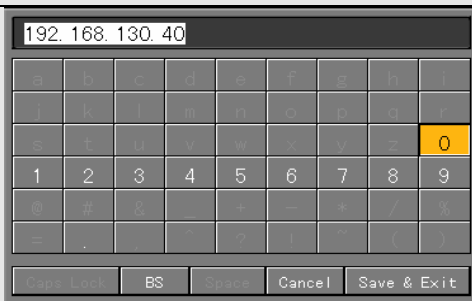
- To select □, □, or □, use the **[Tab]**  button. For others, use the **arrow** ( ) buttons.



- On the LAN Setup menu, set the LAN for the Network field.



When changing the last part of the existing address:

- Go to the input box using **the arrow** buttons and select the **left arrow** () button.
- Go to **[BS]** using the **[Tab]**  or **arrow** ( ) buttons.
- Delete only the changed value using the **[Select]** button.
- Enter the new value using the numeric buttons on the remote control or the **arrow** (  ) and **[Select]** buttons.










BS	Backspace; used to delete
Cancel	Used to cancel
Save and exit	Used to save and exit

B) IP address setup

- On the **{Ethernet Setup}** menu, go to the IP address input field using the **arrow** ( ) buttons and press the **[Select]** button.


Ethernet for Network	
1. IP Address	192.168.130.40
2. Subnet Mask	255.255.255.0
3. Default Gateway	192.168.130.1
4. Primary DNS	210.94.0.73
5. Secondary DNS	210.108.98.74

- On the input window, enter the IP address using the numeric buttons on the remote control or the **arrow** (   ) and **[Select]** buttons.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow** ( ) buttons and press the **[Select]** button.

C) Subnet mask setting

- On the **{Ethernet Setup}** menu, go to the subnet mask input field using the **arrow (▲▼)** buttons and press the **[Select]** button.


Ethernet for Network	
1. IP Address	192.168.130.40
2. Subnet Mask	255.255.255.0
3. Default Gateway	192.168.130.1
4. Primary DNS	210.94.0.73
5. Secondary DNS	210.108.98.74

- On the input window, enter the subnet mask using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow (▲▼)** buttons and press the **[Select]** button.

D) Default gateway setting

- On the **{Ethernet Setup}** menu, go to the default gateway input field using the **arrow (▲▼)** buttons and press the **[Select]** button.


Ethernet for Network	
1. IP Address	192.168.130.40
2. Subnet Mask	255.255.255.0
3. Default Gateway	192.168.130.1
4. Primary DNS	210.94.0.73
5. Secondary DNS	210.108.98.74

- On the input window, enter the default gateway using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow** buttons and press the **[Select]** button.

E) Default DNS setting

- On the **{Ethernet Setup}** menu, go to the default DNS input field using the **arrow (▲▼)** buttons and press the **[Select]** button.


Ethernet for Network	
1. IP Address	192.168.130.40
2. Subnet Mask	255.255.255.0
3. Default Gateway	192.168.130.1
4. Primary DNS	210.94.0.73
5. Secondary DNS	210.108.98.74

- On the input window, enter the default DNS using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow** buttons and press the **[Select]** button.

F) Auxiliary DNS setting

- On the **{Ethernet Setup}** menu, go to the auxiliary DNS input field using the **arrow (▲▼)** buttons and press the **[Select]** button.

Ethernet for Network	
1. IP Address	192.168.130.40
2. Subnet Mask	255.255.255.0
3. Default Gateway	192.168.130.1
4. Primary DNS	210.94.0.73
5. Secondary DNS	210.108.98.74


- On the input window, enter the auxiliary DNS using the numeric buttons on the remote control or the **arrow (▲▼◀▶)** and **[Select]** buttons.
- After inputting the data, go to **[Save and Exit]** using the **[Tab]**  or **arrow** buttons and press the **[Select]** button.

(3) Cable

Uses the automatic access ADSL or a dynamic IP

- On the **{Network Setup}** menu, go to **{Cable}** using the **arrow (◀▶)** buttons and press the **[Select]** button.



- To select or , use the **[Tab]**  button. For others, use the arrow buttons. Select Cable Modem DHCP.

(4) ADSL

Used only in the user authentication-type ADSL network

- On the **{Network Setup}** menu, go to **{ADSL}** using the **arrow (◀▶)** buttons and press the **[Select]** button.



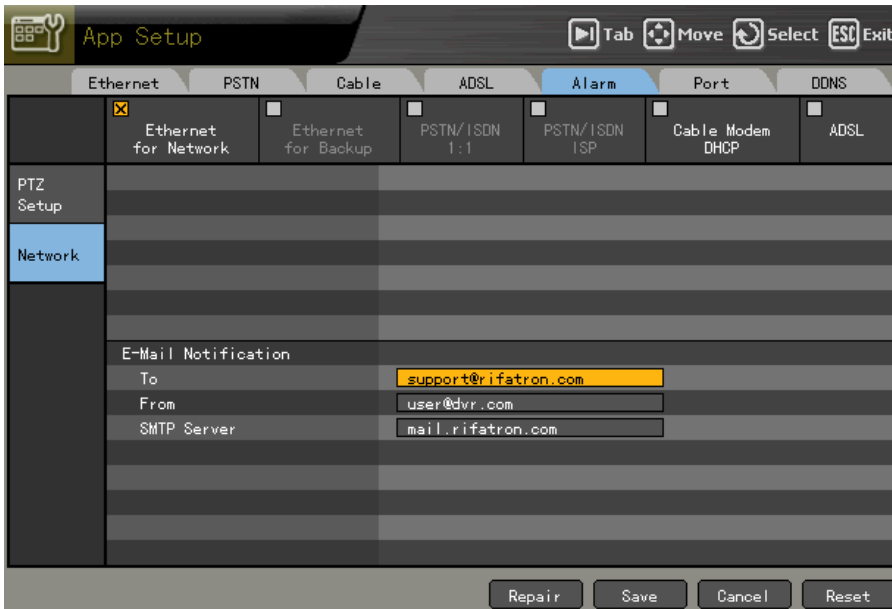
- To select , , or , use the **[Tab]** **▶** button. For others, use the **arrow (◀▶)** buttons. Enter the user ID and password and save them.

(5) Alarm

Fixed phone or mail alarm output setting for the event

To use this feature, select **{Main Setup}** → **{Data Setup}** and enable Call or Mail Alarm.

- On the **{Network Setup}** menu, go to **{Alarm}** using the **arrow (◀▶)** buttons and press the **[Select]** button.



- To select 1, 2, or 3, use the **[Tab]** button. For others, use the **arrow** button. Set the telephone number and the sending/receiving mail addresses.

(6) Port

Sets the user for the network port

The default is between 2000 and 2007; a randomly chosen value may be used depending on the network environment, e.g., firewall.

- On the **{Network Setup}** menu, go to **{Port}** using the **arrow (◀▶)** buttons and press the **[Select]** button.



- Set the port number using the **[Tab]** and **arrow (◀▶)** buttons.

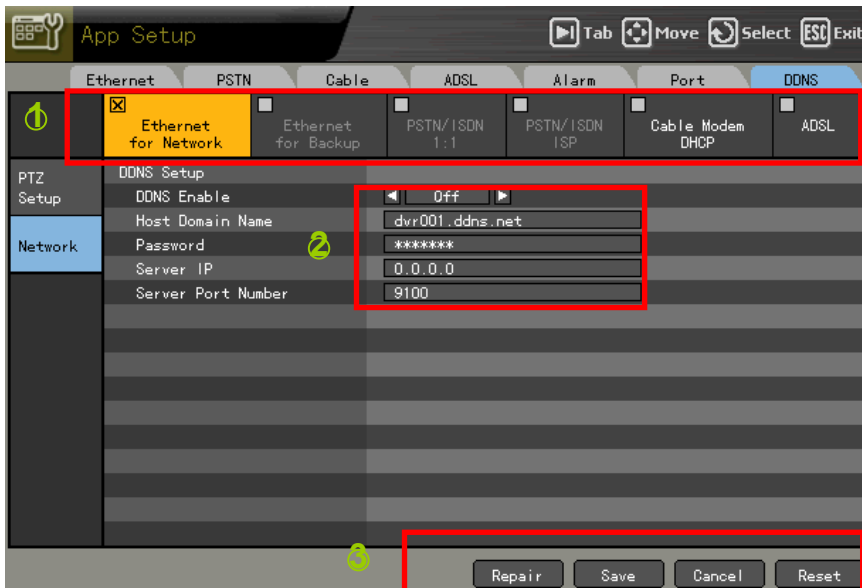
(7) DDNS

As part of the DNS system, the Dynamic Domain Name System (DDNS) service dynamically updates the IP addresses of the host names and allocates fixed domain names for systems connected with dynamic IP addresses. This way, the DDNS service ensures the user's access to the network using the same DNS name regardless of the changes in the IP address.

The Workhorse/Premier series provide a dynamic DNS to ensure URL access in a dynamic IP environment.

Its built-in web server feature enables remotely monitoring images through the Internet anytime.

- Go to **{DDNS}** using the **{Network Setup}** menu and **arrow (◀▶)** buttons and press the **[Select]** button.



- Enable/Disable the use of DDNS using the **arrow (▲▼)** buttons as shown below:



- Register the domain name registered in the DNS server.

After accessing the DDNS server, register the domain name and enter a unique URL. For more information on adding a domain, refer to the DDNS manual.

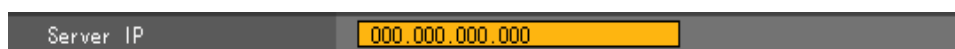


- Enter the DDNS access password registered in the DDNS server.



- Enter the IP address of the DDNS server.

The default IP address of the DDNS server is 211.117.45.25.



- Set the default port of the DDNS server.

The default port of the DDNS server is 9100.



USER'S GUIDE

Rugged Vision viewer/ Quick viewer

English

Operating Instructions & User's Guide

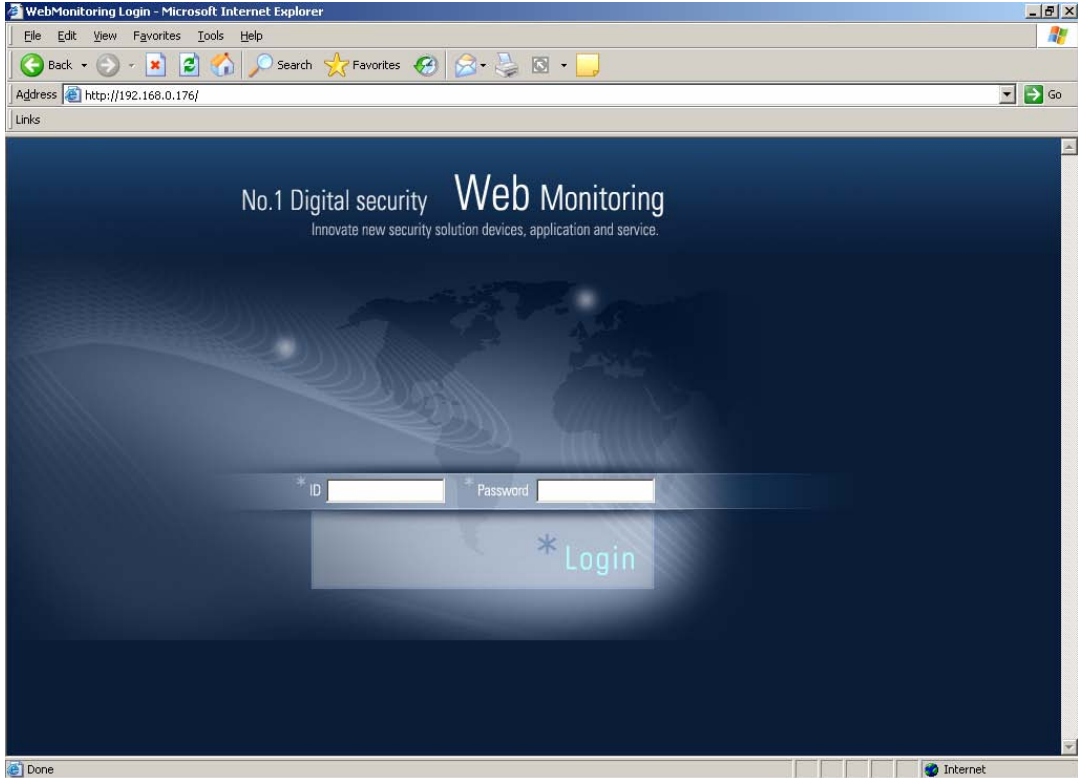


1. Rugged Vision Viewer(Web monitoring)

1-1. Access

The user can access the DVR system through the web.

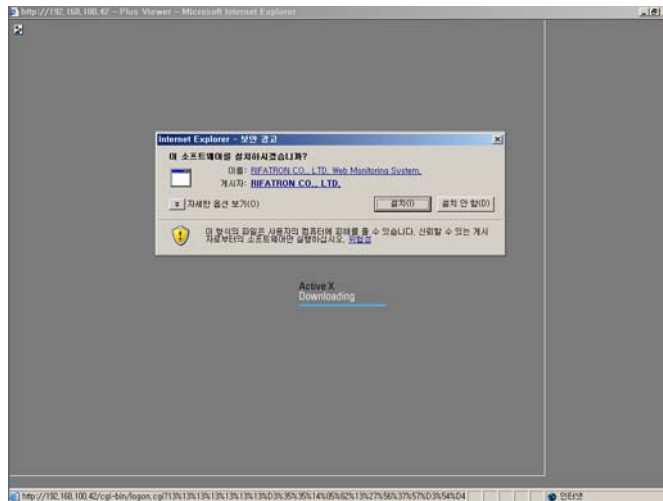
- Enter the IP of the DVR system on the address field of the web browser.



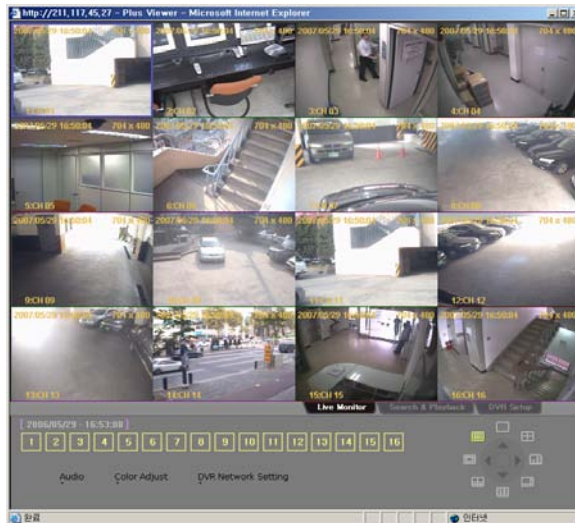
- The ID and password must be the same as those set in the DVR system. After logging in to the system, install ActiveX for Windows XP SP2 or higher.



□ Click [Install] on the window as shown below:



□ After installing ActiveX, the user can use Plus Viewer on the web browser.

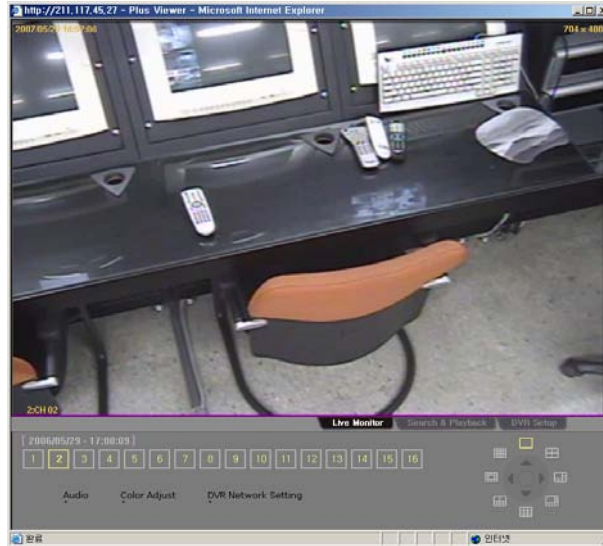


1-2. Description of the Basic Features

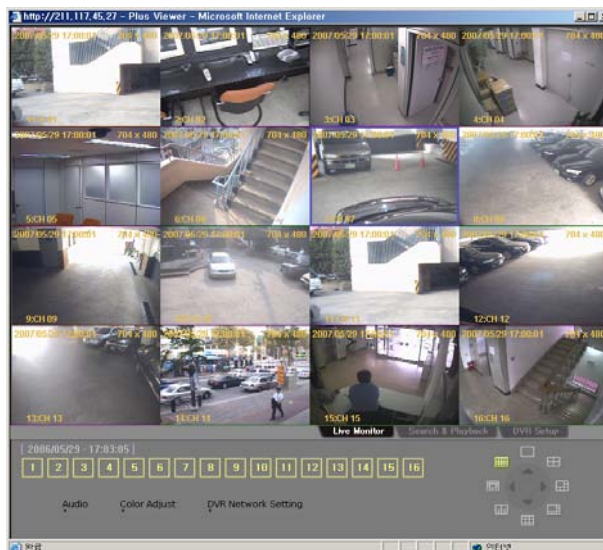
- The user can view the channel on full screen by clicking any of the following numbers:



- Zoomed-in view of Channel No. 2



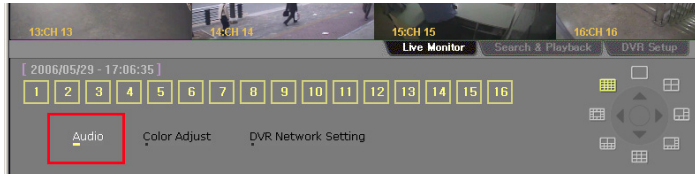
- Clicking Live screen causes the channel to be selected and the border of the corresponding screen to be displayed in a different color (the figure below shows the case wherein Channel No. 1 is selected).



- The user can also view the channel on full screen by double-clicking the channel.

1.3 Audio

- Click the Audio button to control the volume.

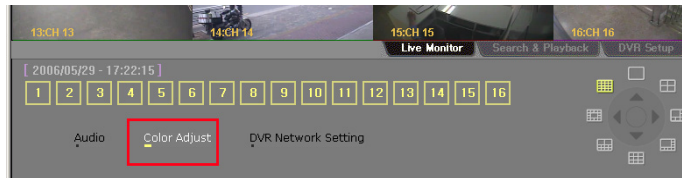


- After adjusting the volume, click the Close button to exit the menu.

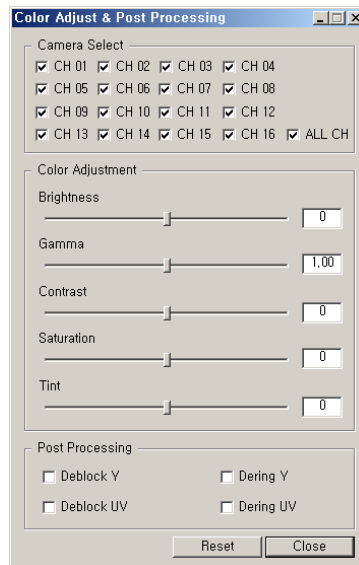


1-4. Color Adjust

- Click Color Adjust to adjust the display colors.



- After adjusting the display colors, click Close to save the setting and close the window.

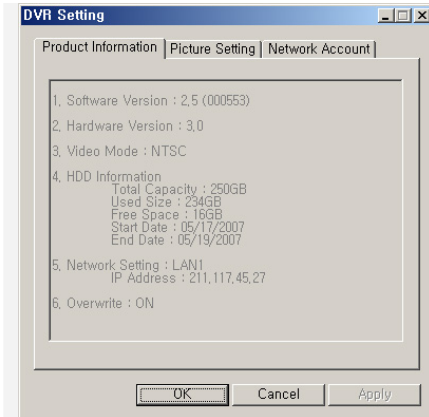


1-5. DVR Network Setting

- To view the DVR setting, click DVR Network Setting.

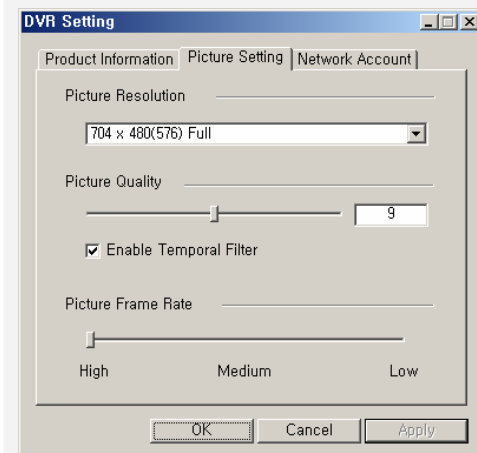


- Product Information.



1. Software version: 00 (build no.)
2. Hardware version
3. Video type
4. Hard drive information
 - Total space
 - Used space
 - Free space
 - Recording start date
 - Last recording date
5. Network setting information
6. Whether to allow overwriting or not

- Use Picture Setting to set the resolution, video quality, and frame speed.



Picture resolution

Used to adjust the resolution; the lower the resolution, the higher the transmission speed (CIF > Field > Full)

Picture quality

Used to adjust the picture quality; the higher the picture quality, the higher the compression rate (in case of low picture quality, the network transmission rate increases)

Enable temporal filter

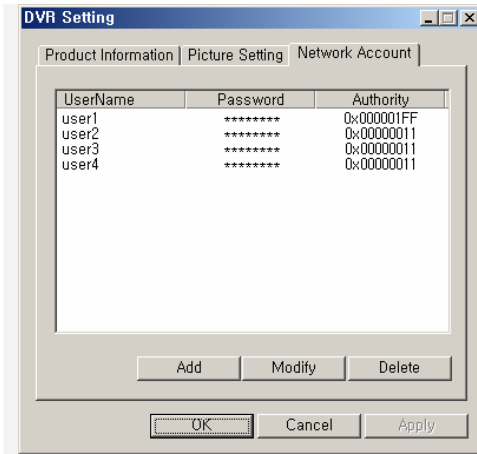
Removes any noise in the image to eliminate unnecessary data and enhance the network transmission speed

Picture frame rate

Controls the frame rate; the following are the frame rates for 30 frames:

High: 30; Medium: 15; Low: 7.5

- Use Network Account to display the user profile.



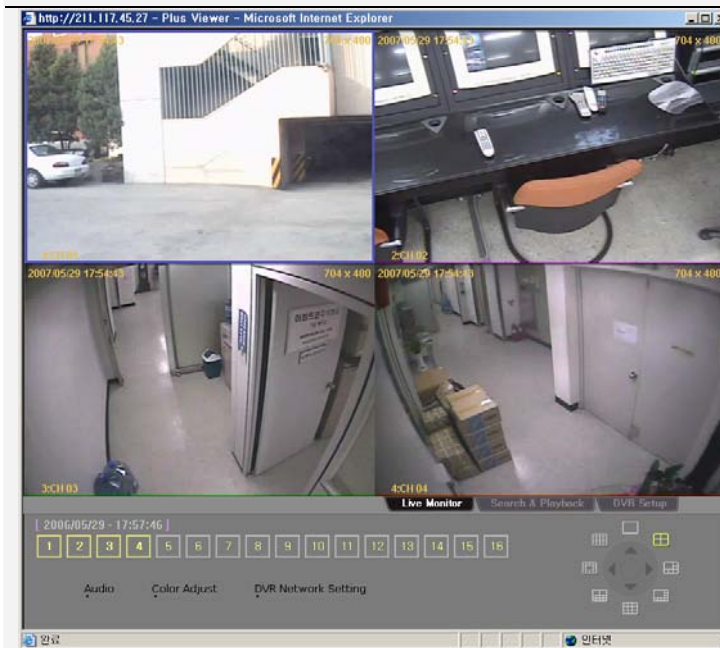
1-6. Viewing a Divided Screen



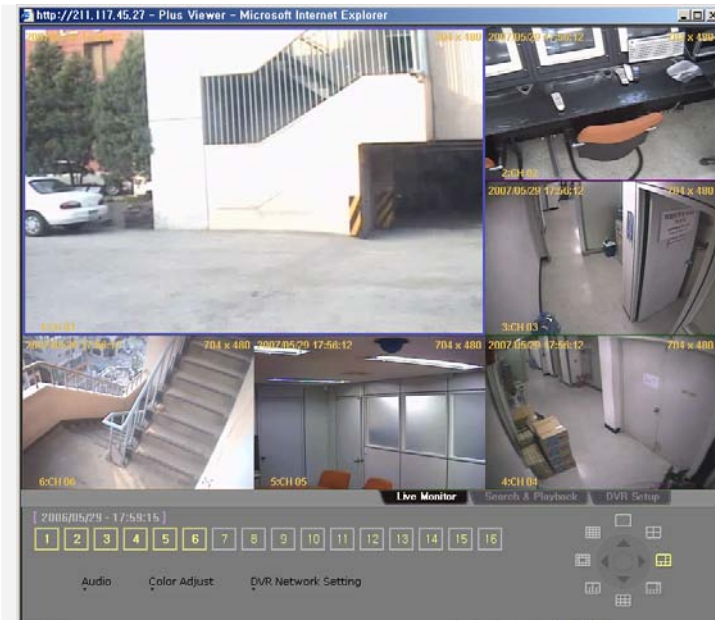
After the channel video is displayed on the monitoring window, the user can view the divided screen by clicking the Division mode button.

To view one channel on full screen, double-click the channel window. To return to division mode, double-click any area on the screen.

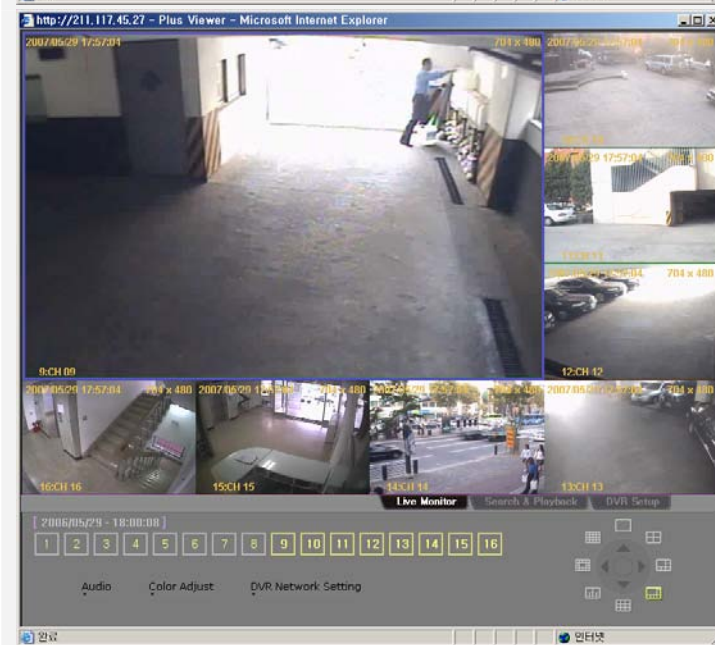
Example - Selecting 4/9/16-division mode



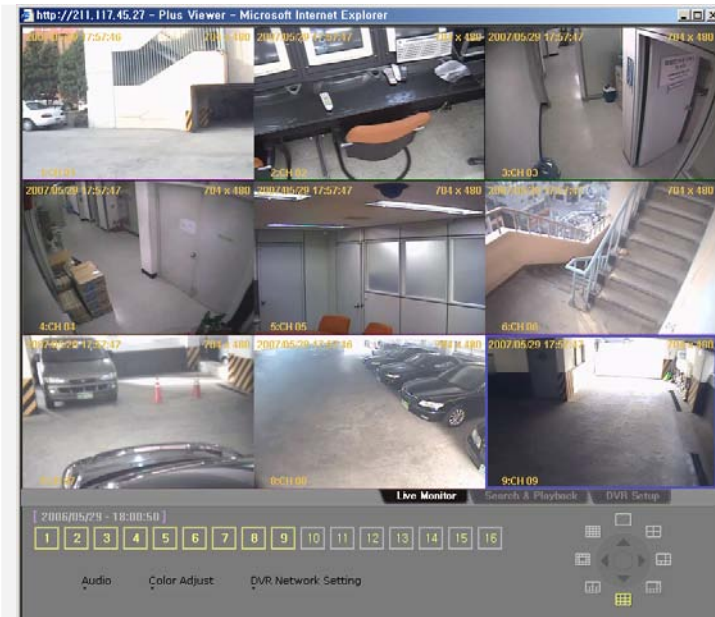
4-division mode



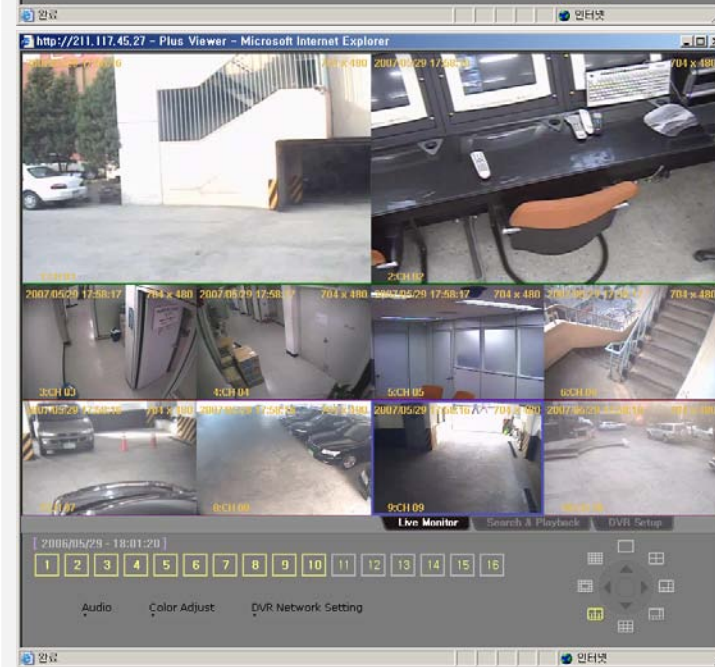
6-division mode



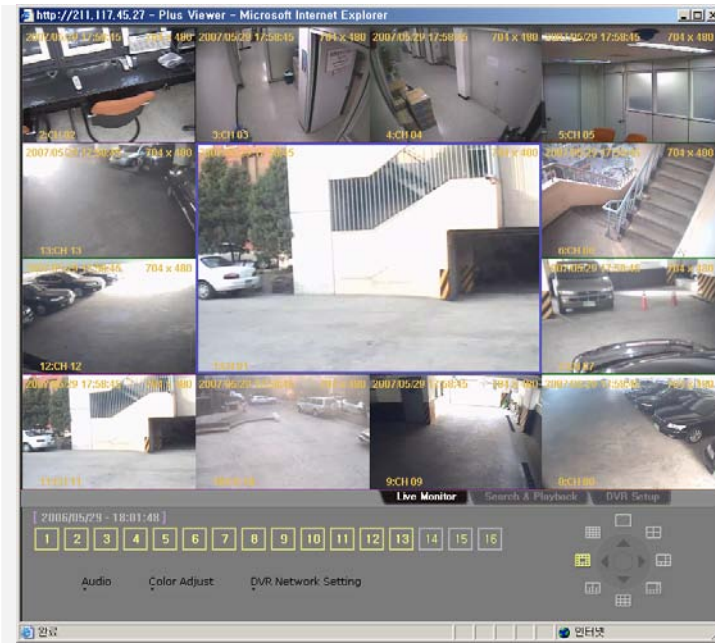
8-division mode



9-division mode



10-division mode

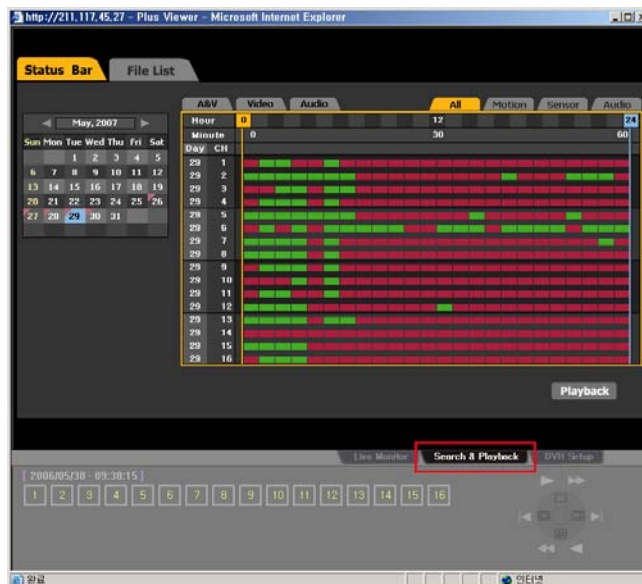


13-division mode

1-7. Search and Playback

Searches and plays the video recorded in a remote DVR in real time

- Click the Search and Play tab at the bottom.



1-7-2. Search Method

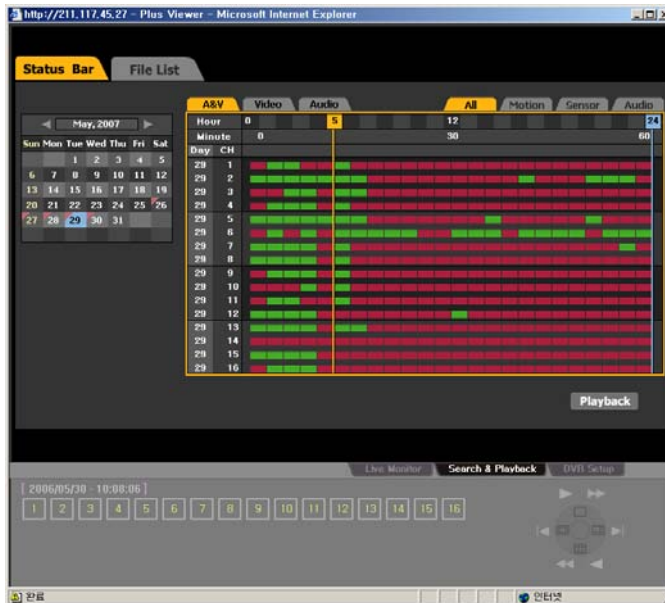
- Status Bar** Search –Displays the recorded video in the form of hour/minute bar graph
- File List** Search –Displays the recorded video in the form of a file list

1-7-3. Search and Play

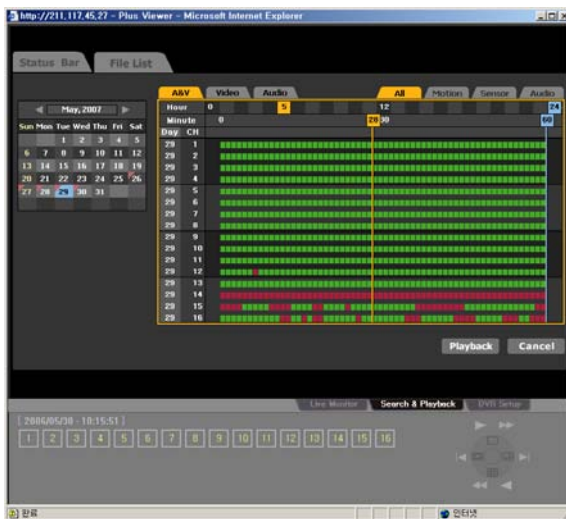
- On the Search window, select the search type by clicking the **Status Bar** or **File List** button.
- Select the date from the calendar. The date when a video was recorded is marked.



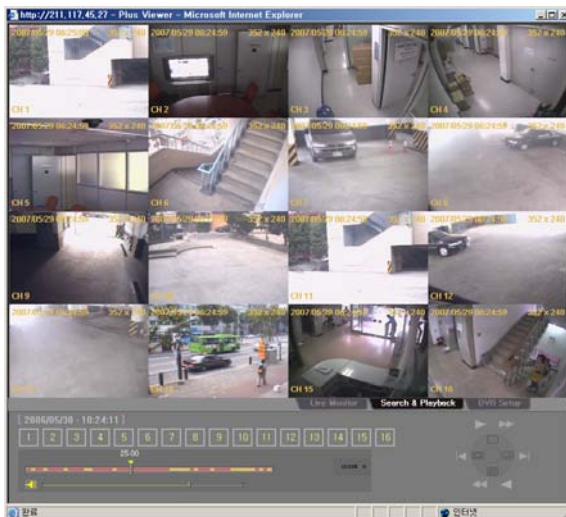
- Select the date and time and click **Playback**. The following screen is then displayed:



- Select the minute and click **Playback**. The video is then played. To go back to the previous screen, click **Cancel**.

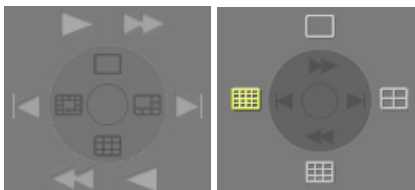


- Below is the playback screen:

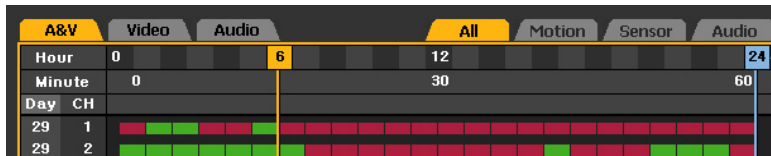


1-7-4. Playback Control

- The user can select the screen division and adjust the playback speed using the control at the lower right hand corner.



1-7-5. Screen Description

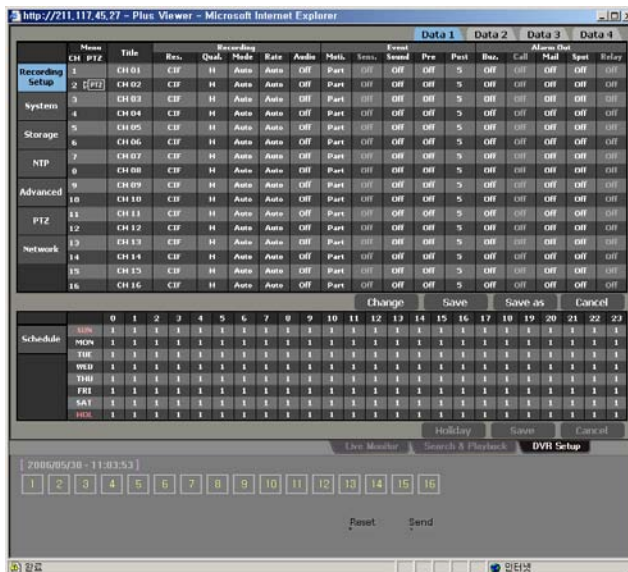


- A & V – Displays all recorded files
- Video – Displays only files with video
- Audio – Displays only files with audio
- All - Displays all recorded videos on the list
- Motion – Indicates the motion events
- Sensor – Indicates the sensor events
- Audio – Displays the audio events
- General images displayed in green bars, and events, in red bars

1-8. DVR Setup

The remote DVR setup screen includes Graphic User Interfaces (GUIs) such as DVR OSD.

- DVR Setup** Clicking DVR Setup causes the following screen to be displayed:



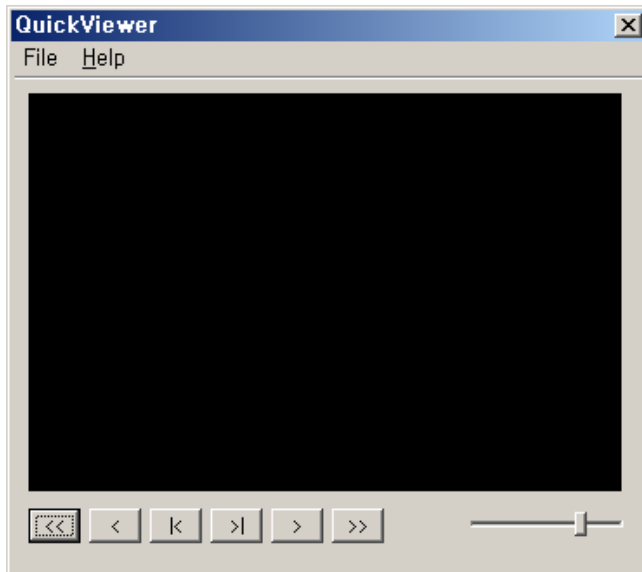
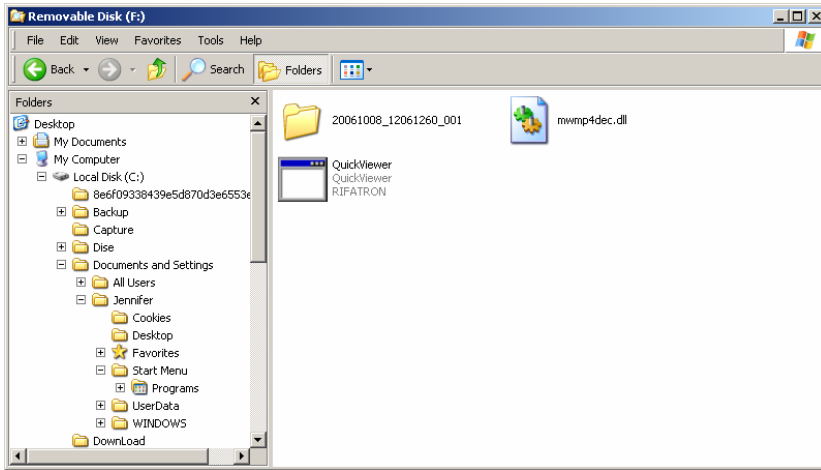
- Change the system setup on the DVR setup screen by clicking **[System Setup]**.

For more information on system setup, see Chapter 5 (**System Setup**).

- After changing the system setting, click **Save**.

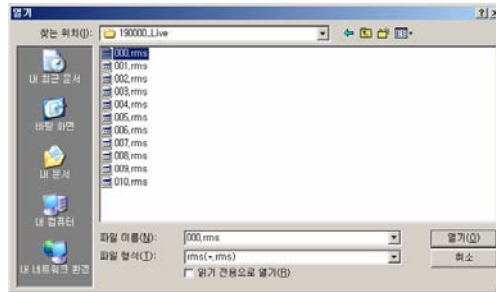
2. Quick Viewer

When recorded data is backed up from the DVR system, a new folder is created in the backup device including QuickViewer.exe and mwmp4dec.dll files. The user can run Quick Viewer by executing QuickViewer.exe.

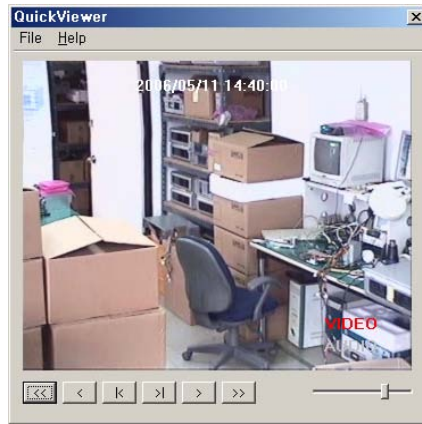


2-1. File Play







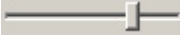
- Click [File] – [Open]. An open file dialog box then appears as shown below:



- Select the rms file of the channel to be played.



2-2. Description of Buttons

-  Fast backward play
-  Backward play
-  Previous frame
-  Next frame
-  Forward play
-  Fast-forward play
-  Volume control

2-3. Version Information

- To check the version of Quick Viewer, click [Help] – [About].



Workhorse 120-16

A/P/P/E/N/D/I/X

1. PTZ Camera Protocol	1511
2. Recommended HDD	1511
3. Recommended USB 2.0 Device	1522
■ Memory Stick	1522
■ 2.5" Portable USB HDD	1522
■ CD-RW, DVD-RW	1522
■ IEEE1394 Device	1522

1. PTZ Camera Protocol

NO.	Vendor	Protocol
1	CHOU	COHU-3925
2	Kalatel	KALATEL
3	Hitron	FASTRAX2
4	Panasonic	WVCS854, WV-CS850A, WV-CS854, WV-CW860 external
5	Dongyang	DRX_500
6	Samsung	SCC641
7	GSP	CYBERSCAN_1
8	HONEYWELL	HSDN251
9	PHILIPS	PHILIPS
10	RIFATRON	RIFATRON
11	VICON	VICON
12	AMERICAN DYNAMICS	SENSORMATIC
13	PELCO	PELCO – D, PELCO – P
14	PROLINE	PROLINE – UK
15	SAMSUNG TECHWIN	SPD-1600

2. Recommended HDD

NO.	Vendor	Model	Capacity	Buffer	RPM
1	Western Digital	WD WD1200	120GB	2M	7200
		WD WD2500	250GB	2M	7200
		WD WD2500	250GB	8M	7200
2	Seagate	SEAGATE BARRACUDA 7200.9 ST3120213A			
		SEAGATE BARRACUDA 7200.7 ST3160023A	120GB	8M	7200
		SEAGATE BARRACUDA 7200.7 ST3200822A	160GB	8M	7200
		SEAGATE BARRACUDA 7200.7 ST3200822A	200GB	8M	7200
		SEAGATE BARRACUDA 7200.9 ST3250824A	250GB	8M	7200
		SEAGATE BARRACUDA 7200.9 ST3250824A	300GB	8M	7200
3	Samsung	Samsung SP1203N/DOM	120GB	2M	7200
		Samsung SP2514N/OMD	250GB	8M	7200
4	HITACHI	HITACHI Desk star	120GB	8M	7200
		HITACHI Desk star	250GB	8M	7200
		HITACHI Desk star	500GB	8M	7200
5	MAXTOR	MAXTOR DIAMOND MAX 11	500GB		7200

3. Recommended USB 2.0 Device

USB 2.0 Device	Media	File System
Memory stick	Flash type	FAT32
2.5" portable USB HDD	HDD type	FAT32
CD	CD R, R/W	ISO9660
DVD	DVD +R, +R/W	ISO9660

■ Memory Stick

No.	Vendor	Model	Capacity
1	Transcend	Ultra Speed JetFlash	256MB
2	FM semiconductor	MemoRive USB2.0	256MB
3	LG	Xtick USB Drive	256MB
4	AL Tech	ANYDRIVE mini-USB	256MB
5	Kingston	DataTraveler USB FLASH DRIVE	256MB
6	Sarotech	FLEX FD-03U1	128MB
8	Scandrive	Cruzer Mini	128M
10	Samsung	PLEOMAX	128MB
11	Sony	Micro Vault	128M

■ 2.5" Portable USB HDD

No.	Vendor	Model	Capacity
1	IT Mall	neo Q Plus USB 2.0	20GB
2	USBNET	Anypak USB 2.0 20GB	20GB

■ CD-RW, DVD-RW

Vendor	Model
SONY	DRX-810UL
Plextor	PX-716UF
SAMSUNG	SE-W164

■ IEEE1394 Device

IEEE1394 Device	Media	File System
2.5" Portable USB HDD	HDD Type	FAT32
CD	CD R, R/W	ISO9660
DVD	DVD +R, +R/W	ISO9660