

Instruction Manual

Digital Video Recorder

Model: DV1630, PAC161558

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Chapter 1 - Installation

Box Contents

The following parts are included in the box.

▪ Digital Video Recorder	1 unit
▪ CD (Manual & Program)	1 piece
▪ Remote Controller	1 unit (Including AAA battery x 2)
▪ AC/DC adapter	1 piece (12V/4A, 110Vac/220Vac)
▪ AC power cord	1 piece (220V or 110V)
▪ Screws for HDD	1 set

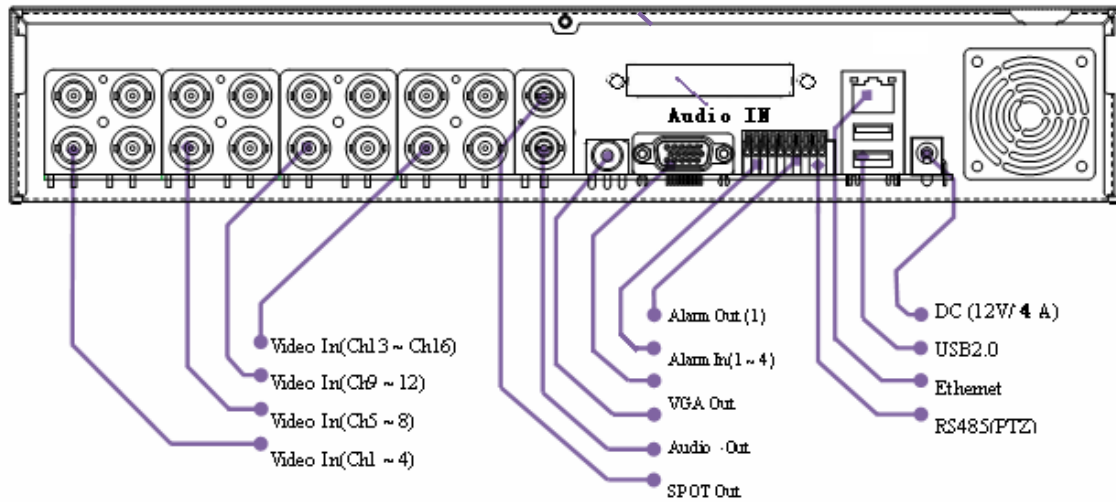
Choosing a location for installation

The unit is designed for desk mount. The following precautions must be taken during installation.

- Openings in the case are for ventilation purpose. To prevent overheating, these ventilation openings should not be blocked or covered.
- Ensure that there is 2" gap on either side of the unit.
- When stacking units, ensure there is at least 1" gap between each unit.
- Ensure the unit is not located in an area where it is likely to be subject to mechanical shocks.
- The unit should be located in an area with low humidity and a minimum of dust.
- If the unit is to be installed in a closed assembly, the maximum operating temperature must not exceed 104°F (40°C)
- Ensure there is reliable earthing of the mains outlet when fitted to supply connections, other than direct connection, to the branch circuit.
- It is recommended that an uninterruptable power source be connected to the unit in case of power failure, to ensure continuous operation of the unit.

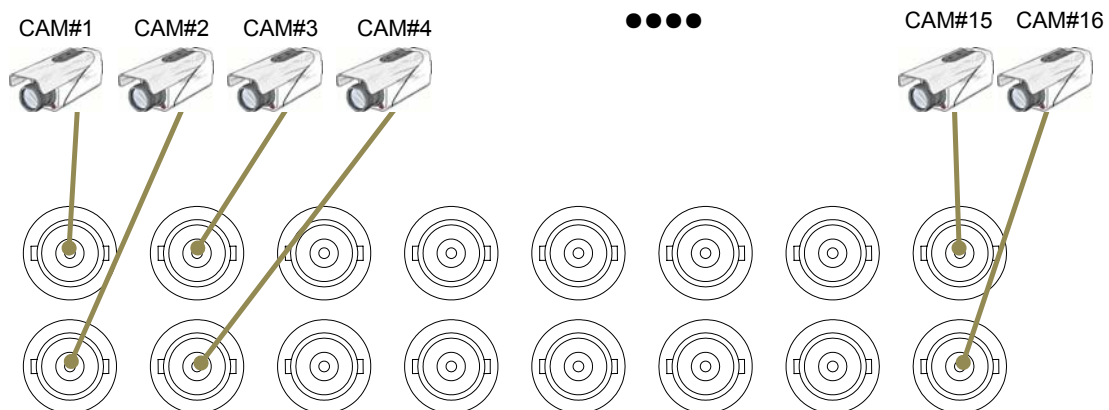
Installation

❖ Rear panel layout

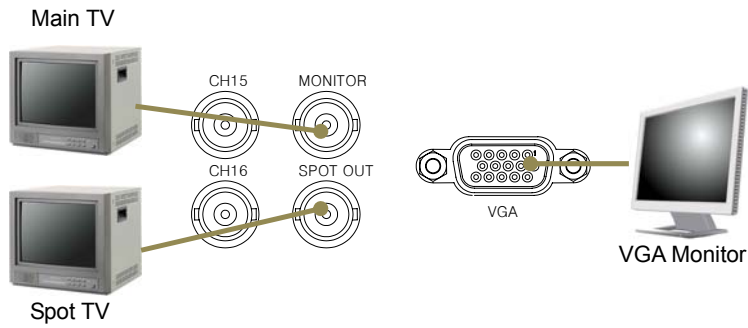


❖ Basic connections

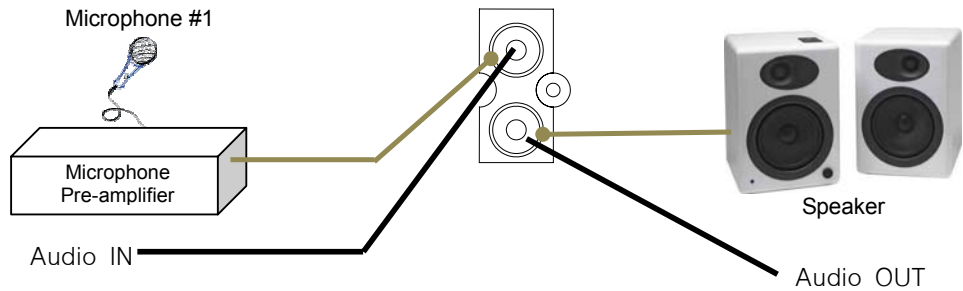
1. Connect Cameras



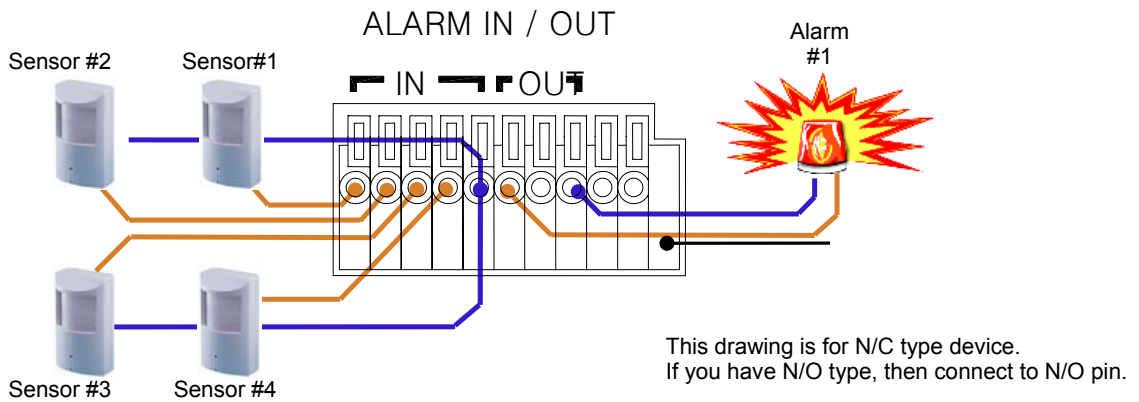
2. Connect display devices



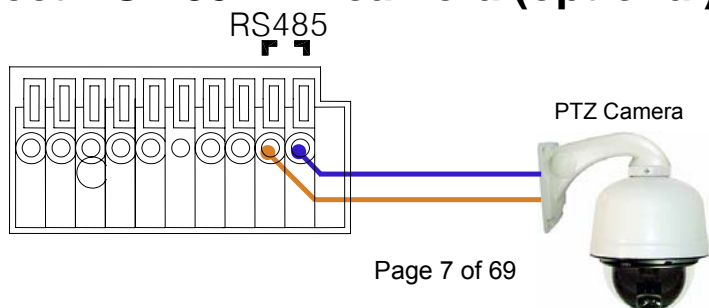
Connect audio devices



❖ Connect alarms



❖ Connect RS-485 PTZ camera (optional)



❖ Connect to network



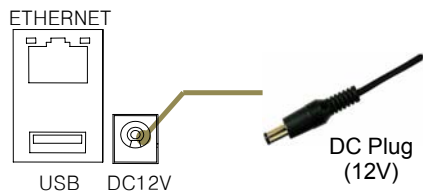
❖ Connect a mouse (optional)

The unit support hot plug-in & play.

Therefore, you can attach the mouse later, while the system is running.



❖ Connect power



Time adjustment

TIME STAMP IS A VERY IMPORTANT REFERENCE FOR RECORDING AND SEARCHING. PLEASE, SET CLOCK CORRECTLY AFTER READING THIS SECTION.

Step 1. Set GMT/Location

Since DST rule is different location by location, you must set your correct location.

Please, set correct GMT/Location in Admin / DateTime menu.

- ◆ Refer to “Daylight Saving Time” section in Chapter 2.
- ◆ Refer to “Admin / DateTime” menu in Chapter 5.

Step 2. Initial time synchronization in Admin menu (Optional)

If the unit can access network time server, it is recommended strongly to synchronize the time with the network time server before start, in Service menu.

If the time difference is big, then time synchronization is failed in recording mode.

You can do this job in Admin / DateTime menu.

- ◆ Refer to Admin / DateTime menu in Chapter 5.

Step 3. Time adjustment

If you are unable to do step 2, then you need to adjust the time manually.

- ◆ Refer to Admin / DateTime menu in Chapter 5.

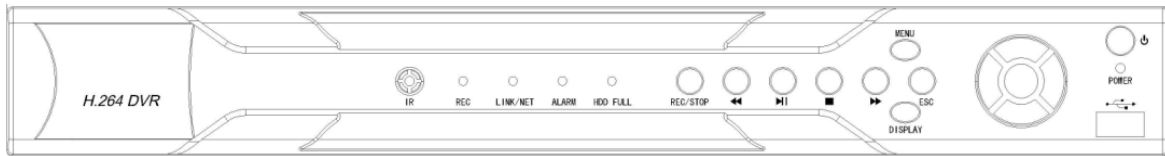
Step 4. Periodical time synchronization (Optional)





You can configure the unit to synchronize the time periodically with network time server.

- ◆ Refer to System / TimeSync menu in Chapter 4.

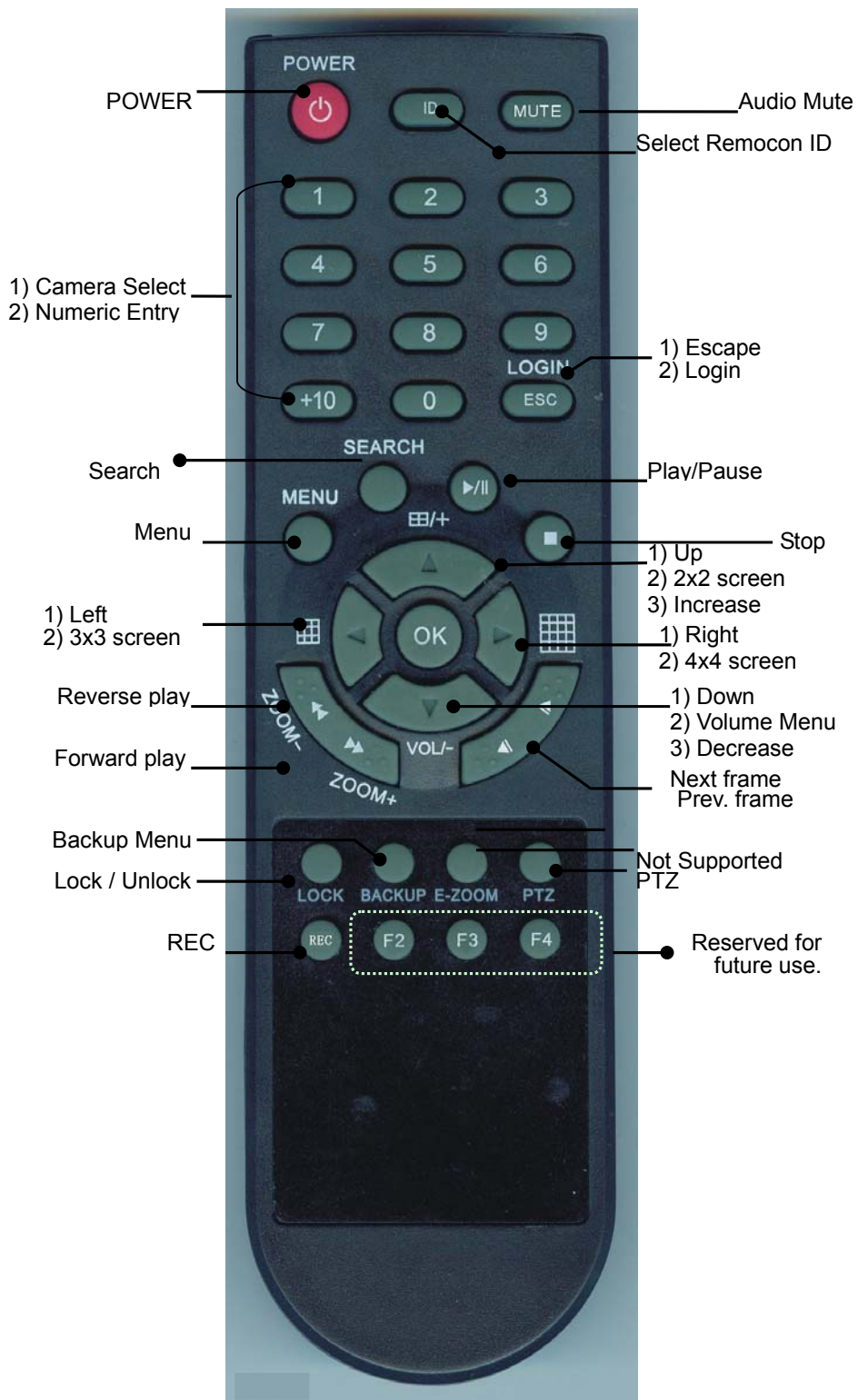
Chapter 2. Pre-acknowledgement

Front Panel



key	name	Descriptions
Power LED	POWER	Power indicator light indicates that DVR has power (including the shutdown state)
Record LED	REC	Shows status of recording
Network LED	NETWORK	Shows status of network
HDD-FULL LED	HDD-FULL	Shows status of HDD-FULL
POWER BUTTON	POWER	Shows status of power
Menu BUTTON	MENU	Press to open the main menu.
Esc BUTTON	ESC	Press to close the main menu
DISPLAY BUTTON	DISPLAY	Press to DISPLAY
REC BUTTON	REC	Press to RECORD
PLAY BUTTON	PLAY/PAUSE	Press to freeze playback to one frame, then press again to advance frame-by-frame
STOP BUTTON		Press to stop playback
DIRECTIONG BUTTON		Press to move cursor up, down, left, and right
Reverse		Press to reverse playback speed by 1/2, 1/4, 1/8
FAST play		Press to increase forward playback speed 2X, 4X, 8X
ENTER BUTTON	ENTER	In menus, press to confirm selections

Infrared remote controller





Multiple unit with single remote controller

You can control multiple unit using single remote controller.

Each unit has its own Remocon ID, you can change/verify it in System / Info menu.

Ensure that each unit has different Remocon ID.

Please, follow below procedure to set a target unit among multiple units.

Step 1. Press ID button in remote controller.

If the unit in live view mode, “Remocon ID” message box will be displayed.

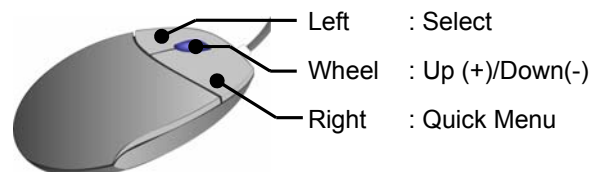
Step 2. Press two digit of the target unit’s Remocon ID.

Pressed digit will be shown in “Remocon ID” message box.

If you want to cancel the job, press ESC button.

Mouse operations

The unit supports PS/2 wheel mouse; hot-plug and play is supported.




- Note
1. Mouse is not supplied as an accessory.
 2. Support wheel mouse only.
 3. Double click is not supported.

Virtual keyboard

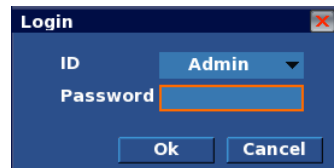
In some menus, virtual keyboard served for text entry.



Login

 **TIP** Default password for all account is "11111111" (eight digit of '1').

When you try to access some functions, the unit will display login window, and you have to login with proper permission to access the unit.

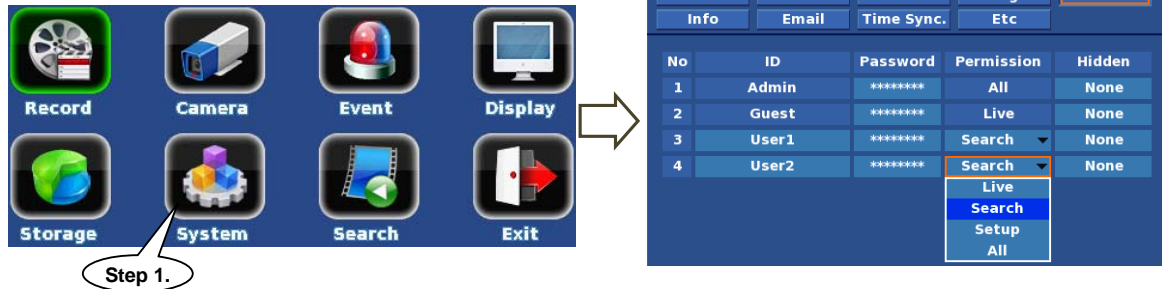


User management

Entering User menu

Step 1. Press Menu button, and select System menu.

Step 2. Select User tab in System menu.



ID

You can rename from User1 to User15 using virtual keyboard, other ID are pre-fixed.

Password

You can change the password, but be advised that you must delete old password using the backspace key of the virtual keyboard. 1 ~ 8 digits are possible as a password.

Permission

4 permission levels are available from User1 to User18; other user's permissions are pre-fixed.

- Live : Right for live view only.
- Search : Right for live view and Search.
- Setup : Right for live view and Setup.
- All : Right for live view, Search and Setup.

Hidden

Administrator can assign different right to live view for each user.

In other words, all user could be assigned different "Hidden Camera" settings.

Daylight Saving Time (DST)

The unit is embedding world DST rules, and it is always enabled.



DST vs. Location

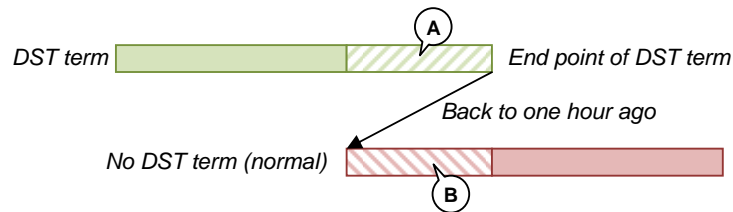
DST rule totally depends on your location.

Please, set correct GMT/Location in “Service: DateTime” menu.

“Service: DateTime” means DateTime menu in Service menu.

Effects of daylight

Time returns to one hour later at the end of DST, this means one hour recording data has the same time stamp. The overlapped zone (B) could be handled optionally. Refer to each menu descriptions in Chap 3. and Chap 4.



- Playback : The unit playback zone (A) and zone (B) are both continuously.
- Calendar Search : You can address exact time point in zone (B).
- Event Search : You can limit search range to zone (B).
- Backup : You can limit backup range to zone (B).

Updating DST rule

Once your location’s DST rule is changed, then you need to upgrade firmware. Otherwise, the last DST rule or no rule will be applied.

If you cannot upgrade firmware, we recommend to do followings;

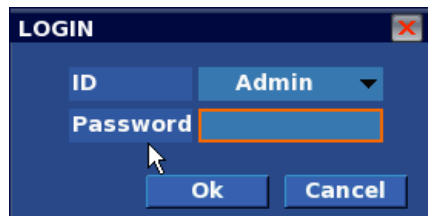
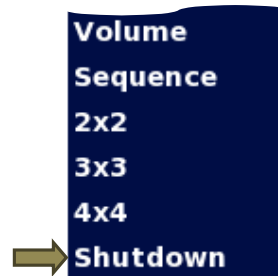
- Backup : Do backup prior to adjusting system clock backward. Otherwise, the overlapped data (zone (B)) will be destroyed.
- Clock adjustment : Adjust system clock in Service::DateTime menu.

Shutdown (Auto power off)

Since the HDD contents could be damaged when HDD power is removed while accessing the HDD, it is strongly recommended to follow shutdown procedures.

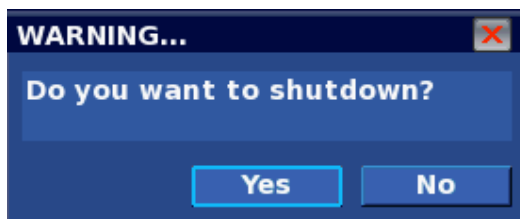
Step 1. Shutdown in menu

The unit prepares to shutdown when you choose Shutdown in Quick menu.
Then login message box appears
Enter 'Admin' password.



Step 2. Auto power off

The following appears "Do you want a shutdown?" message.
If you choose "Yes" then system is powered down



Chapter 3. Operation


View panel



❖ Camera pane

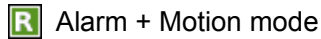
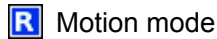
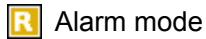


You can show/hide the below items in Display::Screen menu.

1. Camera name **CAM01**
It shows camera name which is configured in Camera::Setup menu.
2. Audio 
It shows when you enable the audio function in Camera::Setup menu.

3. Recording mode

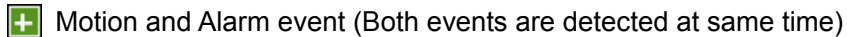
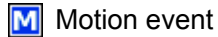
It shows recording mode which is configured in Record::Schedule menu.



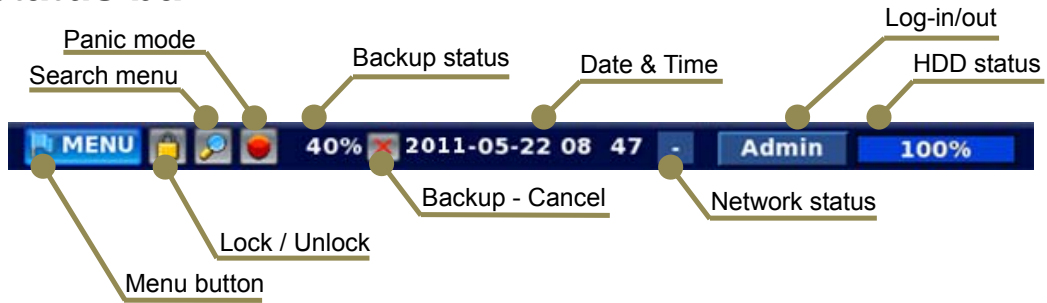
4. Event status

It shows when some events are detected and recording has started.

There is no status in Normal mode.



❖ Status bar



1. Menu button

Click this button to access Menu panel.

2. Lock/Unlock

Click this button to Lock/Unlock mouse and front panel button operations.



Locked



Unlocked

Also, you able to locked through Quick menu.



3. Search Menu

Click this button to enter into Search menu.

4. Panic mode

When you press this button it starts to record immediately at any condition.


Login is required to stop Panic mode.



Panic mode



Normal mode

5. Backup status **40%** 

It indicates that backup is in progress and its progressive rate in percentage.

6. Date & Time **2011-05-22 08 47**

It shows current date & time in “YYYY-MM-DD HH:MM” format.



Auto clock available through public network time server on internet.

See System::Time Sync. Menu in chapter 4. to use auto clock.

7. Network status **-**

It shows count of network connection such as Web viewer and CMS.

“-“ means that network is disconnected.

8. Log-in/out **Admin**

It has two functions as below.

1) Log-in/out button

Click to log-in (or log-out) to(from) the unit.

2) User information

It shows log-in user name.

See System::User menu in Chapter 4. for user management.



Auto-hiding of status bar & Playback control bar

In the auto-hide mode, the status bar and playback control bar are shown/hidden automatically. You can change the mode in Display::Screen menu.

1) Shown

- When mouse pointer is moved to bottom area of the screen.
- When Menu button is pressed in front of panel or remote controller.

2) Hidden

It is hidden when above “Shown” condition is removed, and Show time is passed.

Panic mode (emergency recording)

The unit supports Panic mode for instant recordings in emergency situations.

You can start Panic mode whenever you want.

To stop Panic mode, you need to log-in with “Setup” permission account.

1. Start Panic mode with remote controller

Press REC button.



2. Start Panic mode with mouse

Click PANIC icon.



Live Monitoring

❖ Single-screen display

You can watch a single camera in full screen mode.

1. Front panel 'SCREEN' button when you click the continue button.
Camera number increases in full screen mode.
Remote controller Press a number button that you want to watch.



Selecting channels over 10

Follow below procedures to select from ch11 to ch16.

Step 1) Press "+10" button.

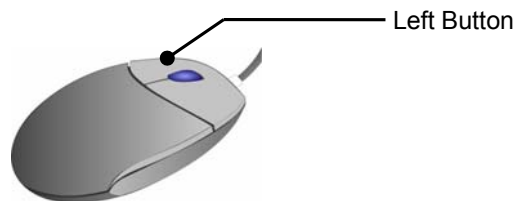
Step 2) Press "1".

In this case channel 11 will be selected.

2. Mouse

Step 1) Move pointer to a pane you want to watch in single screen.

Step 2) Click Left button.

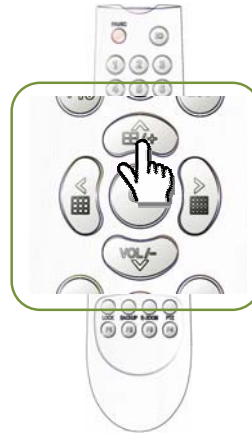
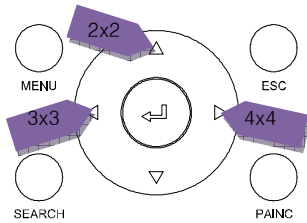
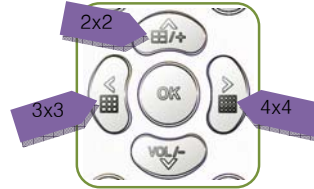


❖ Multi screen display

The unit support multi screen display mode such as 2x2, 3x3 and 4x4 divisions.

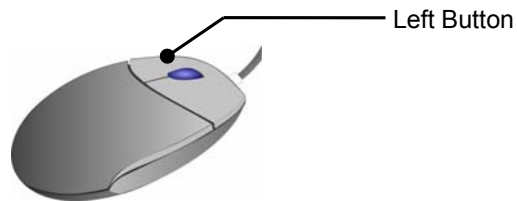
1. Front panel & Remote controller

- 2x2 division : Press Up button
- 3x3 division : Press Left button
- 4x4 division : Press Right button



2. Mouse

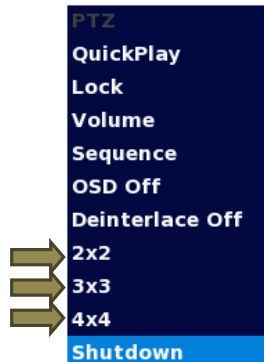
Click Left button at any location on the screen.



2. Quick menu

Click Right button and the quick menu appear.

- 2x2 division : Click 2x2
- 3x3 division : Click 3x3
- 4x4 division : Click 4x4



❖ Audio volume control

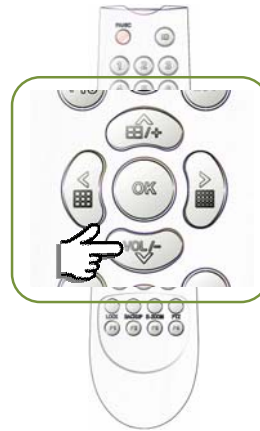
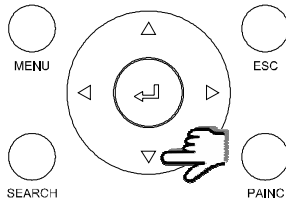
There are two ways to control audio volume and muting.



1. Using Volume button

Press “VOL” button, then Volume control menu will be shown.

- Volume up : Press Up (+) button
- Volume down : Press Down (-) button
- Mute : Move focus to “Mute” using Left/Right buttons, and press OK button.

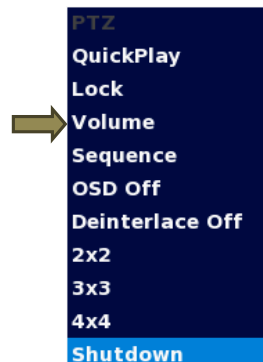


2. Using Quick Menu

1) Right click on mouse button, and Quick menu appears.

2) Press “OK” button in front panel or remote controller, then Quick menu appears.

Select Volume menu and press “OK” or click Left button of the mouse, then Volume control menu appears.



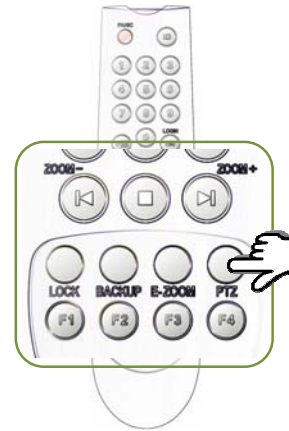
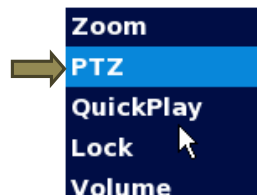
❖ PTZ (Pan / Tilt / Zoom) (Single screen mode only)

This facility works in following conditions;

- PTZ camera is connected to the desired channel.
- Model and Setting are correct in Camera::PTZ menu.
- RS-485 bus is working properly.

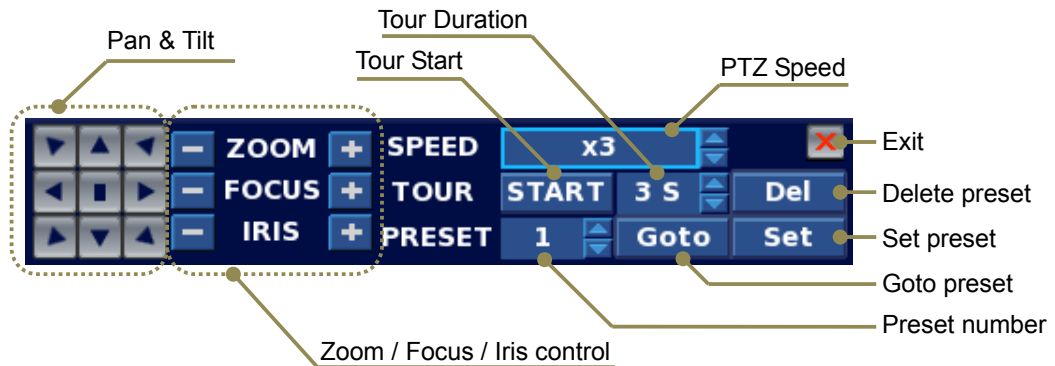
1. Entering into PTZ mode

- 1.1 Press PTZ button in remote controller.
- 1.2 Use Quick menu.



2. PTZ control panels

- 2.1 On screen control panel (GUI)



- 2.2 Key board control(Optional)

3. Pan & Tilt

It is same manner you use GUI or remote controller.

- Choose a desired direction button you want to move.
- To stop moving, press Stop button.



4. Preset

4.1 Set a new preset point

Step 1) Move to a desired point you want to store as a preset using direction buttons.

Step 2) Assign an any preset number.

Step 3) Press "Set" button.



4.2 View a preset point

Step 1) Choose an any preset number you want to watch.

Step 2) Press "Goto" button.



4.3 Delete a preset point

Step 1) Choose an any preset number you want to delete.

Step 2) Press "Del" button.



Search & Playback

Two playback tools are served as below;

















- 1) Quick Play : Instant playback in live mode, start from 10 minutes ago.
- 2) Search menu

There are two search options;

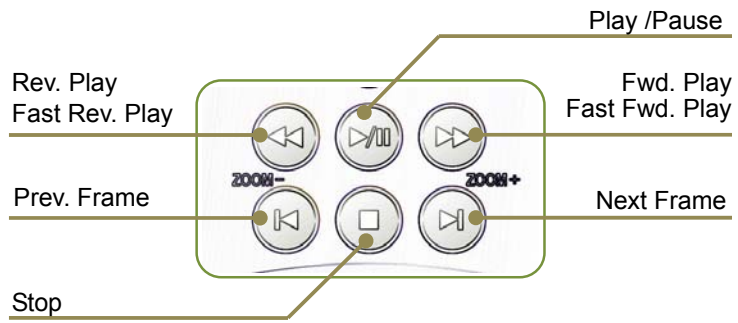
- Calendar search : Specific date & time is used as a playback start point.
- Event Search : Motion or alarm event point is used as a playback start point.

❖ Playback Control

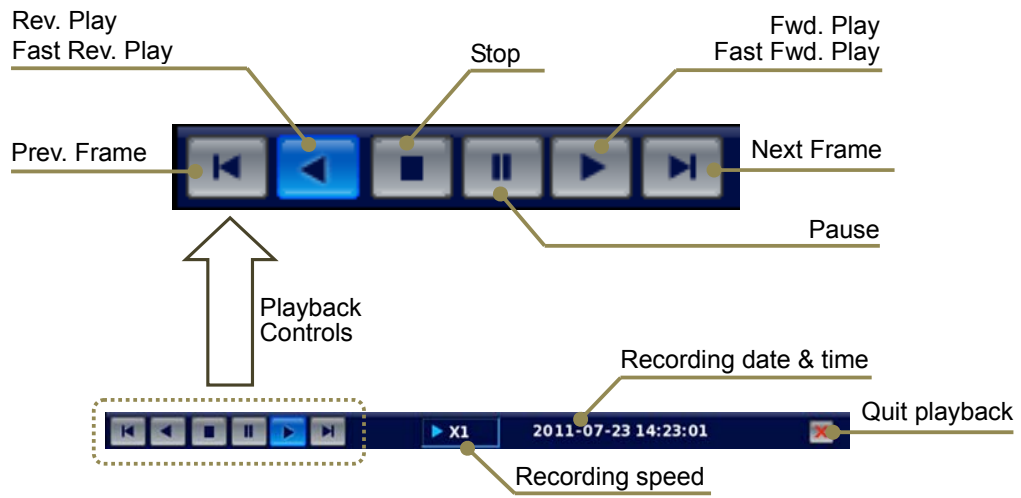
You can control playback using 3 control tools Front panel, Remote controller and GUI.

Function	Front Panel	Remote Controller	GUI (Mouse)	Remark
Fwd. Play	-			Quick play
Rev. Play	-			
Pause	-	Q-PLAY 		Keep playback speed.
Stop	-			Playback speed returns to x1.
Next Frame	-	ZOOM+ 		Playback frame by frame.
Prev. Frame	-	ZOOM- 		
Fast Fwd. Play	-			Playback speed is changed from x1 to x64 when press play button.
Fast Rev. Play	-			

1. Remote Controller



2. GUI

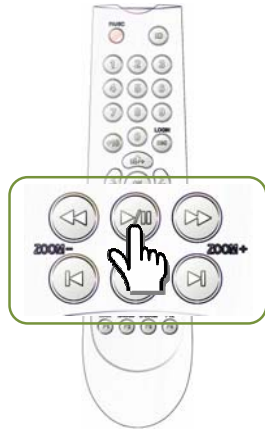


❖ Quick play

Quick play offers convenient playback in live view mode, it starts to play from 10 minutes ago.

Press Q-PLAY button in front panel or remote controller.

The unit is switched into playback mode immediately with “QuickPlay” pop-up message box.



Choose “QuickPlay” in Quick menu.



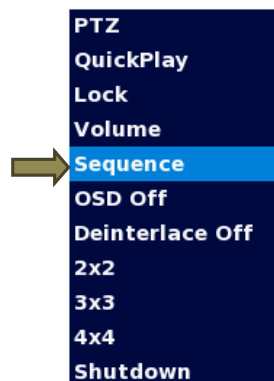
❖ Sequence & screen separate

Sequence offers rotation screen by single screen mode, 2x2 screen mode or 3x3 screen mode. If you want duration time changed where the setting duration time in display menu.

Click sequence and “Seq” icon will appear on the top right by live screen.

Clicking the sequence again will disappear.

“Seq” icon and rotation stop.

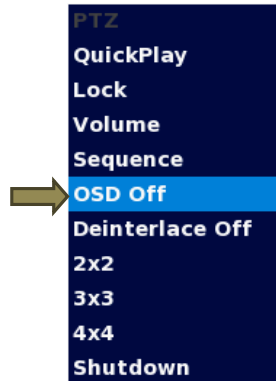


❖ OSD On/Off

OSD Off offers the onscreen OSD is all disappear.

Then OSD Off item changed OSD on.

When you click the OSD on the OSD will appear.

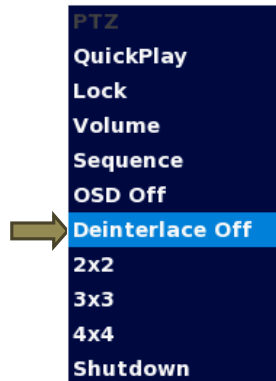


❖ De-interlace On/Off

Deinterlace Off offers the Deinterlace mode off.

When Deinterlace Off item changes to Deinterlace On.

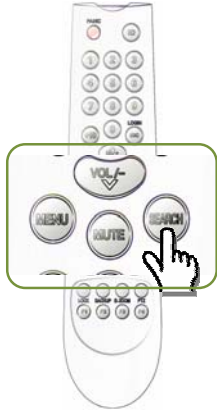
When you click the “Deinterlace On” the Deinterlace mode on.



❖ Entering to search menu

1. Front panel & Remote controller

Press SEARCH button on remote controller, then a menu panel will be displayed.



2. GUI (Mouse)

Click Search icon in the status bar.



❖ Calendar Search

Calendar search mode is a default mode.

If you are in Event mode, then choose “Calendar” tab to switch to Calendar mode.

- Step 1. Choosing a date

You can choose one of red colored dates.

Black colored dates have no recording data.



- Step 2. Choosing an hour

Recording map will be shown in an hour unit.

The color on the map is indicating recording mode as below.

- Red : Normal Recording
- Blue : Motion event



- Yellow : Alarm in event
- Green : Two events at same time - Alarm in event & Motion event

You can start to playback by pressing “Start” button or back to step 1. By pressing “Back”.
To choose a minute, press “OK” in the recording map.

Step 3. Choosing a minute & Play

Recording map will be shown in a minute unit.

You can start to playback by pressing “Start” button or back to step 1. By pressing “Back”.

Pressing “OK” in the recording map will also start to play.




Step 4. Playback Control & Return to search menu

- See “Playback Control” section above for playback control.



- Return to search menu

There are two ways to return to search menu from playback mode.

- 1) Press “ESC” in front panel or remote controller
- 2) Click  icon on playback control bar to quit playback mode.



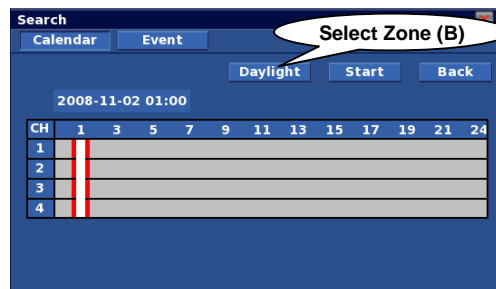
Daylight in calendar search mode

Please, read “Daylight Saving Time (DST)” section first.

Daylight button will be shown if the selected date is including zone (A) and (B).

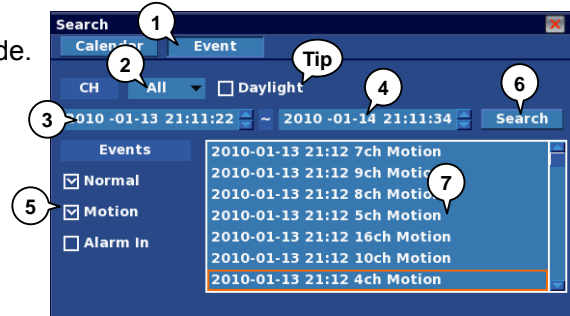
This button is useful when addressing start point in Zone(B).

The recording map will be updated when you press Daylight button.



❖ Event Search

- Step 1. Select “Event” if you are in Calendar mode.
- Step 2. Select desired channel to search.
- Step 3. Set start date & time to search.
- Step 4. Set stop date & time to search.
- Step 5. Check event type to search.
- Step 6. Click Search, event list will be displayed.
- Step 7. Choose one event that you want to play.



Daylight in event search mode

When this option is checked, searches range is limited to zone (B).

At this point, zone (B) must exist within your selected range in Step 6 & 7.

Backup

You can backup recording data to USB storages or built-in optical storage.

❖ Backup device

- Built-in CD/DVD (option)
- USB Flash / HDD / CD / DVD (Support USB 2.0 devices only.)

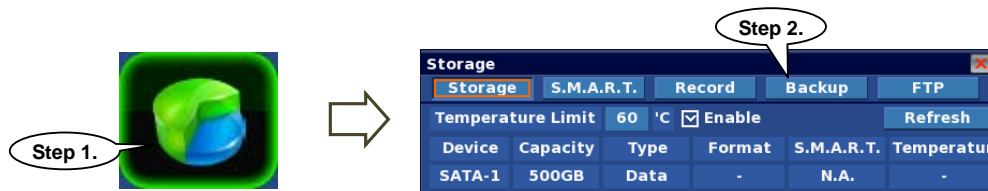
❖ Backup file type

- Native DB (Database)
 - This type is a unique format for video recording.
 - You can play this format using Backup viewer only.
 - Native DB does not support individual channel backup.
- AVI
 - This type is an industrial standard AVI file.
 - Be advised that some media players do not support H.264 AVI file.
 - It is recommended to use MPlayer for audio playback.
 - MPlayer : Visit <http://www.mplayerhq.hu> to download.
 - Try GOM player if you need another free player, but it does not support audio decoding.
 - GOM Player : Visit <http://www.gomlab.com/eng/> to download.
 - It supports English, Chinese, Japanese, and Korean.

❖ Entering Backup Menu

Step 1. Press Menu button, and select Storage menu.

Step 2. Select Backup tab in Storage menu.



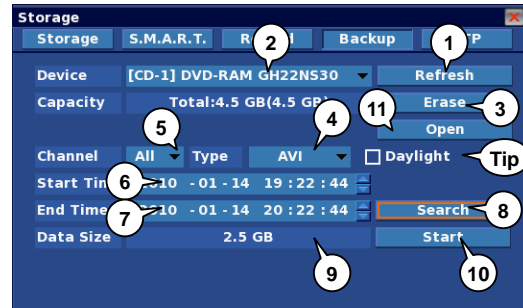
❖ Backup

Step 1. Try “Refresh” if the backup storage is not shown in the Device list.

Step 2. Choose a backup device in the list.

Available capacity will be shown.

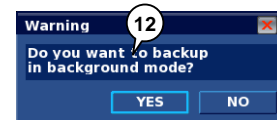
“Total:4.5 GB (8 MB)” means that Total media capacity is 4.5GB, and remaining capacity is 8MB.



Step 3. In the case of CD-RW or DVD-RW,

Erase button will be enabled.

You can erase the media using this button.



Step 4. Choose a backup file type between

“Native DB” and “AVI”.

Step 5. In the case of AVI type, you can select specific channel to backup.

Step 6 & 7. Set start/End date & time to backup.

Step 8. Click Search button to search available backup data.

Step 9. Total backup file size is shown in this column.

Step 10. Click “Start” to start to backup.

Step 11. Click “Open” on CD-RW or DVD-RW tray to open.

Step 12. Choose a backup mode between background mode and normal.

Note that the backup time is same between two backup modes.

- Choose YES for background mode.

The unit will return to live view mode, and backup will start.

In this mode, backup status is shown in Status bar.

Backup status in background backup mode



- Choose NO to start to backup immediately.

Choose CD or DVD, then “Burning...” message will be shown.

Otherwise, “Writing...” message will be shown.



[CD/DVD]



[Other storage]



Daylight in backup

When this option is checked, the unit searches recording data in zone (B).

At this point, zone (B) must exist within your selected range in Step 6 & 7.

Chapter 4. Setup

Press or click Menu button in front panel or status bar to open menu panel.



TIP Menu naming rule

For example, “Record: Setup” is indicating Setup menu in Record menu.

(Record menu is a root menu, and Setup menu is a sub-menu)

❖ Summary

- Record
 - Image size settings / Frame rate settings / Schedule edit / Holiday settings
- Camera
 - Camera naming / Audio on/Off / Color control
- Event
 - Alarm In & Out settings / Email report settings / Buzzer settings
- Display
 - Camera pane layout control / Status bar control
 - Spot output settings
- Storage
 - Storage view / Formatting / S.M.A.R.T. view / Writing settings / Backup
- System
 - Network & Server settings
 - Log view & save to USB storage
 - User management
 - View DVR information: Remocon ID, F/W & Kernel version, MAC address
 - Gateway to Service menu
 - Time synchronization
 - Email settings

Record Settings

❖ Record - Setup

Size

Move to Size column, and press OK, then available image size will be shown.

Note that all channels are using same image size.



Ch	Size	fps	Quality	Pre	Post
1	352x240	15	Best	5 Sec	5 Sec
2	352x240	15	Best	5 Sec	5 Sec
3	352x240	15	Best	5 Sec	5 Sec
4	352x240	15	Best	5 Sec	5 Sec
5	352x240	15	Best	5 Sec	5 Sec
6	352x240	15	Best	5 Sec	5 Sec
7	352x240	15	Best	5 Sec	5 Sec
8	352x240	15	Best	5 Sec	5 Sec

- NTSC : 704x480(D1) / 704x240(HD1) / 352x240(CIF)
- PAL : 704x576(D1) / 704x288(HD1) / 352x288(CIF)

fps (recording frame rate)

Available frame rate are listed by image size.

- NTSC : 30 / 15 / 7.5 / 3.75 / 1.88
- PAL : 25 / 12.5 / 6.25 / 3.125



TIP D1 real time recording

You can record D1 (704x480) size image in real time (120Frames/sec) when 4 cameras are connected to the system.

Quality

High quality means shorter recording time, because the compression file size is getting bigger and bigger when you choose more high quality levels. 5 quality levels are available.

- Best / High / Medium / Low / Lowest

Pre (Pre alarm duration)

Pre alarm duration is fixed as two options: None and 5 seconds.

Post (post alarm duration)

Six post alarm duration times are available: None / 3 / 5 / 10 / 20 / 30 sec

❖ Record - Network

Size

Image size is dependent on the record size



- NTSC : 704x480(D1) / 704x240(HD1) / 352x240(CIF)
- PAL : 704x576(D1) / 704x288(HD1) / 352x288(CIF)

Fps (network transmission frame rate)

Available network transmission frame rates are listed by image size.

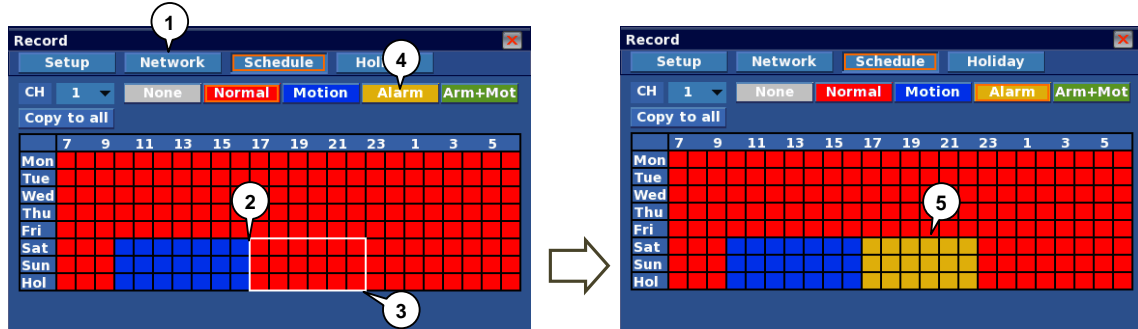
- NTSC : 30 / 15 / 7.5 / 3.75 / 1.88
- PAL : 25 / 12.5 / 6.25 / 3.125

Quality

High quality means shorter recording time, because the compression file size is getting bigger and bigger when you choose more high quality levels. 5 quality levels are available.

- Best / High / Medium / Low / Lowest

❖ Record - Schedule



Recording Mode

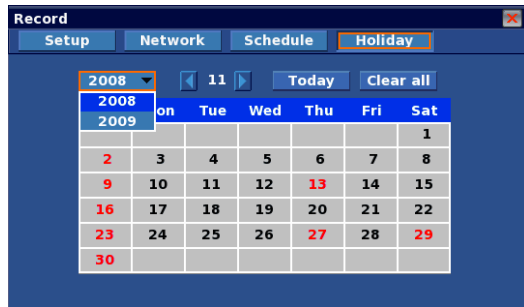
- Normal : Red, Record continuously.
- Motion : Blue, Start recording by motion event.
See Camera:: Motion menu to configure motion event.
- Alarm : Yellow, Start recording by alarm event.
See Event:: Alarm in menu to configure alarm event.
- Alm+Mot : Green, Start recording by motion event or alarm event.

Scheduling

- Step 1. Select Schedule tab to switch to Schedule menu.
- Step 2. Select start point to assign.
You can select any day of the week, any hour, and holiday.
See Recording::Holiday to assign holiday.
- Step 3. Select stop point.
- Step 4. Select a recording mode.
(Alarm is selected in the example.)
- Step 5. Desired zone is changed into yellow color (alarm mode).

❖ Record :: Holiday

You can assign your holidays for 2 years.



Add a new holiday

Select a date and press OK, the date will change into red, holiday.

Delete a holiday

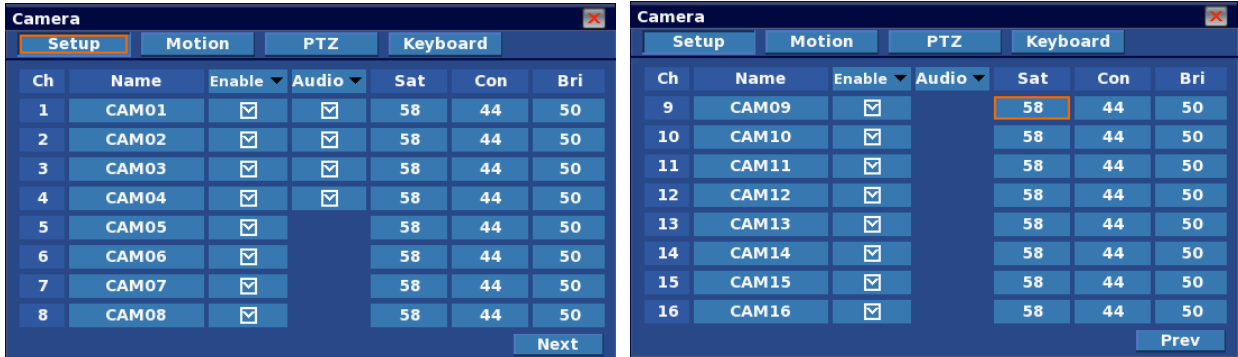
Select a desired holiday and press OK, the holiday will change into black, working day.

Delete all holiday

Press "Clear All" button to delete all holidays of two years assigned by user.

Camera Settings

❖ Camera - Setup



Name

You can change the camera name using virtual keyboard.

Press OK to show virtual keyboard.

Enable

Enable or disabling the channel.

Note that Ch. 1 should be turned on always.

Audio

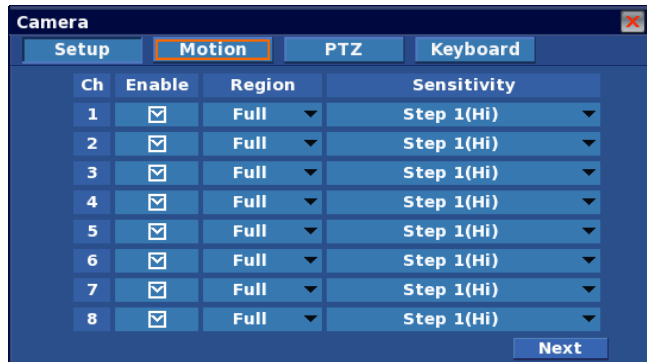
Check this option if you attach a microphone to the channel.

Sat / Con / Bri

You can adjust color settings using this menu.



❖ Camera - Motion



Enable

It enables motion event.

Region

Motion detection cells consist of 15x15 cells.

You can enable or disable each cell.

- Full : All cells are enabled.
- User : You can configure each cell.

Sensitivity

Five levels of motion detection sensitivity available, from step 1 to step 5.

❖ Camera - PTZ



ID

It is a RS-485 device address.

You must set a address if PTZ camera is attached.

Available range is from 1 to 255.

You can change the PTZ camera ID using virtual keyboard.

Press OK to show virtual keyboard.

Model

You can choose a PTZ camera model or protocols.

Settings

You can configure RS-485 communication settings.

Baudrate	Data	Parity	Stop
<input type="checkbox"/> 1200	<input type="checkbox"/> 7	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> 1
<input type="checkbox"/> 2400	<input checked="" type="checkbox"/> 8	<input type="checkbox"/> Odd	<input type="checkbox"/> 2
<input type="checkbox"/> 4800		<input type="checkbox"/> Even	
<input checked="" type="checkbox"/> 9600			
<input type="checkbox"/> 19200			

[Settings]

Event Settings

❖ Event - Alarm In



No	Type	Link Camera
Alarm-1	N/C	1
Alarm-2	N/C	2
Alarm-3	N/C	3
Alarm-4	N/C	4
Alarm-5	N/C	5
Alarm-6	N/C	6
Alarm-7	N/C	7
Alarm-8	N/C	8

Type

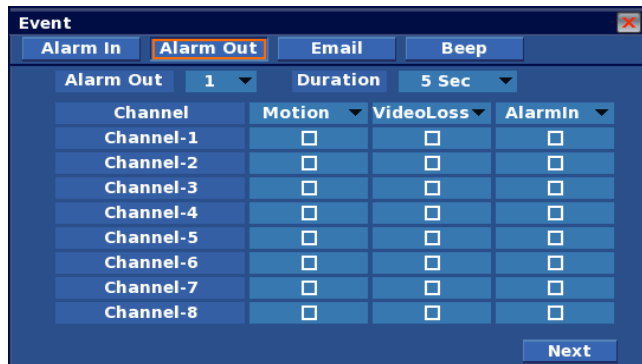
You can configure the alarm device's output polarity.

- N/C : Normal Close
- N/O : Normal Open

Link Camera

The linked camera starts to record-when alarm event is detected.

❖ Event - Alarm Out



Alarm Out Number?

Set the alarm out number you want to configure.

Duration

You can set alarm output durations up to 30 seconds.

- None / 3 / 5 / 10 / 20 / 30 seconds

Motion

If box checked, Alarm output will be turned on when motion event is detected on the selected channels

Video Loss

If box checked, Alarm output will be turned on when video loss event is detected on the selected channels

Alarm In

If box checked, Alarm output will be turned on when the camera records by alarm during event. It is reflecting "Link Camera" settings in the Event - Alarm in menu.

For example,

- Settings
 - Camera-1 is linked to Alarm In #1 and Alarm In #2 in Event-Alarm In menu.
 - Alarm In of Camera-1 is checked in Event-Alarm Out menu.
- Action
 - Alarm out is turned on when Alarm #1 and/or Alarm #2 event is activated.

❖ Event - Email

Configure email settings in System-Email menu to use this service.



Power Up

If box checked, Email is sent when power is turned on.

HDD

If box checked, Email is sent when HDD event occurs.

Motion

If box checked, Email is sent when motion event is detected on the selected channels.

Video Loss

If box checked, Email is sent when video loss event is detected on the selected channels.

Alarm In

If box checked, Email is sent when the camera records by alarm during event. It is reflecting “Link Camera” settings in the Event - Alarm in menu.

❖ Event - Beep



Power Up

If box checked, buzzer beeps when power is turned on.

HDD

If box checked, Email is sent when HDD event occurs.

Duration

You can set alarm output durations up to 30 sec.

- None / 3 / 5 / 10 / 20 / 30 seconds

Motion

If box checked, Email is sent when motion event is detected, on the channels selected.

Video Loss

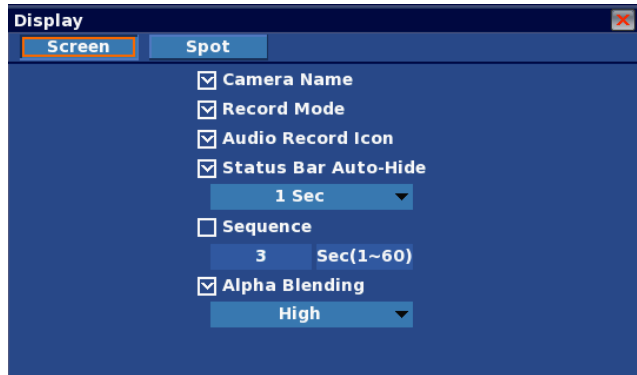
If box checked, Email is sent when video loss event is detected, on the channels selected.

Alarm In

If box checked, Email is sent when the camera records by alarm during event. It is reflecting "Link Camera" settings in the Event - Alarm in menu.

Display Settings

❖ Display - Settings



Camera name

It shows a camera name on the camera pane.

Record mode

It shows record mode and status on the camera pane.

Audio record icon

It shows audio record icon on the camera pane.

Status bar auto-hide

Status bar will be hidden automatically if this option is enabled.

To watch status bar, you can do one of the following: move the mouse pointer to bottom of the screen; press OK, use the menu in the front panel, or use the remote controller. You can set show-time of the status bar from 1 to 10 seconds.

This configuration is applied to the playback control bar also.

To see the playback control bar, move the mouse pointer to bottom of the screen, press playback control button in front panel menu, or use remote controller.

Sequence

If checked it will enable main screen rotation. You will be able to set a duration time.

Press combo box to show virtual keyboard.

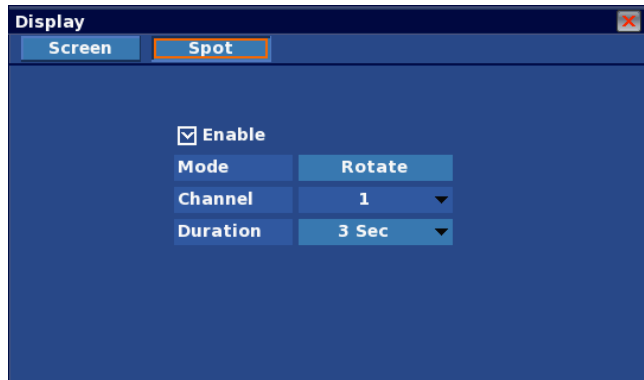
Alpha blending

Menu box will be similar transparency if this option is enabled.

In Alpha blending mode, you can choose a value

- Opaque/ Low / Medium / High.

❖ Display - Spot



Enable

Clicking the box enables spot operations.

Mode

There are two mode options: Fixed and Rotate.

Channel

In Fixed mode, you need to choose a channel you want to watch.

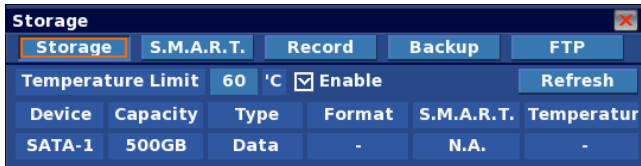
Duration

In Rotate mode, you can choose a duration option from the list below:

- 3 / 5 / 10 / 20 / 30 seconds.

Storage Settings

❖ Storage - Storage



Temperature Limit

HDD event occurs when HDD temperature exceeds this limit.

Enable

Clicking the checkbox enables HDD temperature limit event.

Refresh

It updates storage information. It is useful when you attach USB storage.

Device / Capacity

It shows storage types and its capacity.

Internal SATA storage is shown as SATA-{number} device.

Format

This button is enabled when USB storage is attached.

You can format the storage using this button.

S.M.A.R.T. (Self Monitoring Analysis and Reporting Technology)

It shows HDD health using S.M.A.R.T.

Temperature

It shows current HDD temperature using S.M.A.R.T.

❖ Storage - S.M.A.R.T.



TIP

1. Use S.M.A.R.T information for reference purpose only.
It does not indicate exact HDD conditions.
2. Some old or new HDD could show correct S.M.A.R.T. information.

The screenshot shows a window titled "Storage" with a tab for "S.M.A.R.T.". The device is identified as "[SCSI-1] WDC WD3200AAKS-00YGA0" with a temperature of 44 °C. Below this is a table of S.M.A.R.T. attributes.

ID	Attribute	Value	Worst	Threshold
1	Raw Read Error Rate	200	200	51
5	Reallocated Sector Ct	200	200	140
10	Spin Retry Count	100	100	51
196	Reallocated Event Count	200	200	0
197	Current Pending Sector	200	200	0
198	Offline Uncorrectable	200	200	0

Device

It shows the storage information.

ID

It is an index of the S.M.A.R.T. register.

Attribute

It is an attribute of the HDD.

Value

It is a current monitoring status.

Worst

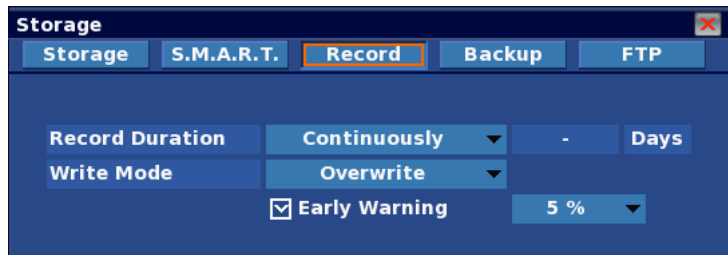
It is a smallest value of the attributes.

Threshold

It is a limitation which it is assigned by HDD manufacturer.

If the Value is close to or lower than the threshold value, then the HDD may has some problems.

❖ Storage - Record



Record Duration

You can configure Record time using the options below:

- Continuously
- 30 / 60 / 90 days
- User Defined

Write Mode

There are two mode options.

- Overwrite: Old data on the HDD will be erased when the HDD is full.
- Suspend: Recording is stopped when the HDD is full.

Early Warning

HDD warning will be issued if remaining HDD capacity is less than the selected limit.

From 5% to 30% are available.

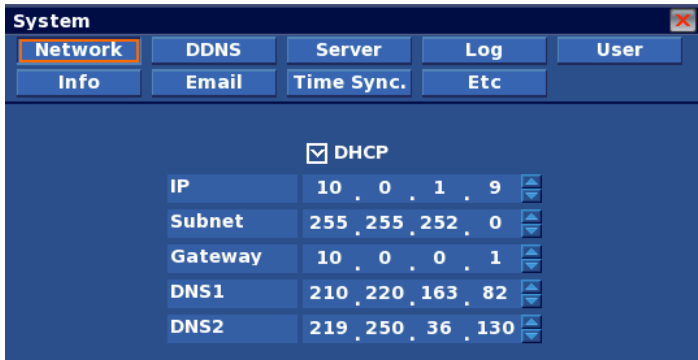
❖ Storage - Backup



- ◆ Refer to “Backup” section in Chapter 3. Operation.

System Settings

❖ System - Network



DHCP

Check this option if you will not using fixed IP.

The unit requests an IP as soon as you save and exit the menu.

You can verify the IP address and other network configurations in this menu after a few minutes.

If the network condition is good, the unit can get IP address within a couple of seconds.

If you are not using DHCP, you have to fill all information manually.

Obtain details about the Network information from your ISP or network administrator.

❖ System - DDNS



DDNS

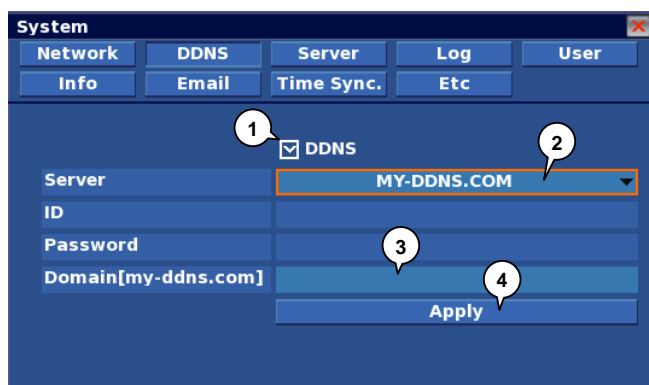
Check this box to enable Dynamic DNS function. You can choose from one of two DDNS options.

- 1) DNIP.NET : Public DDNS (Registration is required.)
- 2) MY-DDNS.COM : Closed DDNS (Registration is not required, Exclusive for this DVR)

MY-DDNS.COM

This exclusive DDNS is very easy to use. Simply assign a domain name and click Apply.

- Step 1) Check DDNS option box.
- Step 2) Choose MY-DDNS.COM
- Step 3) Enter a name in the Domain[my-ddns.com] column.
- Step 4) Click the Apply button, a Success Message box will be shown.



DYNDNS

This is a public DDNS, registration is essential.

Step 1) Register (sign-up) on the web.

Currently, we support DNIP.NET, a free service.

You will need to sign-up at www.dyndns.com to get a User ID and password.

You will need to configure “port forwarding” if you are using a router.

Visit <http://www.dyndns.com/> for details.

Add New Hostname

Note: You currently don't have any active [Dynamic DNS Pro upgrades](#) in your account. You cannot use features. Paying for an Dynamic DNS Pro upgrade will make this form fully functional and will add sev

Hostname:	dvr · dvrDNS.org
Wildcard Status:	Disabled [Want Wildcard support?]
Service Type:	<input checked="" type="radio"/> Host with IP address [?] <input type="radio"/> WebHop Redirect [?] <input type="radio"/> Offline Hostname [?]
IP Address:	218.54.186.86 Use auto detected IP address 218.54.186.86. TTL value is 60 seconds. Edit TTL.
Mail Routing:	<input type="checkbox"/> Yes, let me configure Email routing. [?]

[Add To Cart](#)

[DYNDNS sign-up screen]

Step 2) Check the DDNS option box.

Step 3) Choose DYNDNS

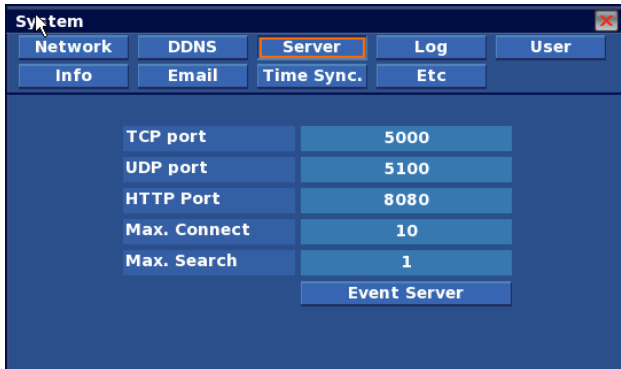
Step 4) Enter the User ID and password that you registered with at www.dyndns.com

Step 5) Click the Apply button, a Success Message box will be shown.

The screenshot shows a 'System' configuration window with several tabs: Network, DDNS (selected), Server, Log, and User. Under the DDNS tab, there are sub-tabs for Info, Email, Time Sync, and Etc. The main area contains a 'DDNS' checkbox which is checked. Below it, there is a 'Server' dropdown menu set to 'DYNDNS'. There are two input fields for 'ID' and 'Passw' (password), both of which are empty. The 'Domain' field is set to 'dvr.dyndns.org'. An 'Apply' button is at the bottom right. Five numbered callouts (1-5) point to the DDNS checkbox, the Server dropdown, the ID field, the Passw field, and the Apply button respectively.

❖ System - Server

Unit Network Settings are shown in this menu.



TCP / UDP / HTTP port

These ports are fixed to 5000, 5100 and 8080; this is used for CMS and Web viewer service.

Max. Connect

This value is the limit of the total number of network connections for live viewing.

System could be unstable if the number of connections is higher.

Max. Search

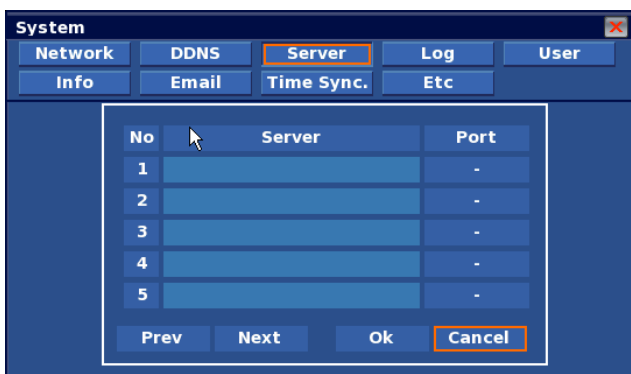
This value is the limit of total number of network connections for search.

Because searching requires excessive system resources, a higher search value could cause unstable operation.

Event Server

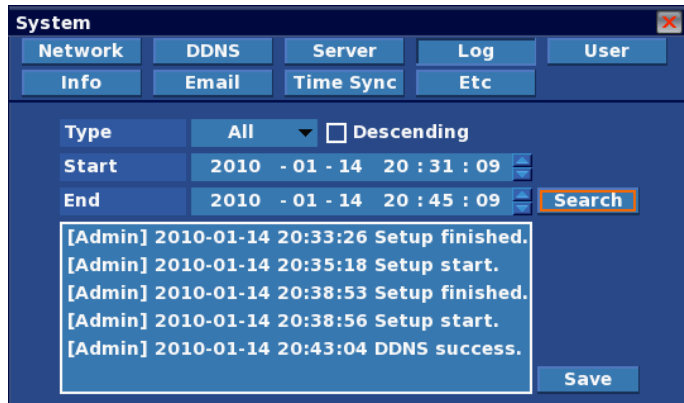
Press "Event server" button, the Server list box will appear.

The server list shows received server information from event data by CMS host.



❖ System - Log

You can verify history of the system operation using the Log Menu.



Type

You can choose a type of history such as System, Setup, Search, etc.

Start / End

You can set the Search Range using this Drop Down Menu.

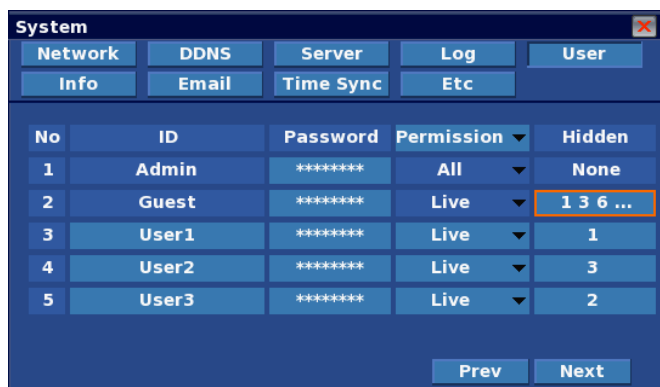
Search

Search will begin as soon as the Search button is clicked.

Save

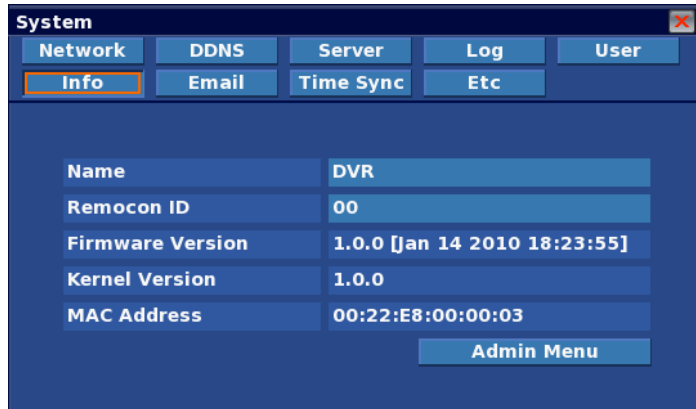
You can save the log data using USB storage. File name is fixed to "log.txt".

❖ System - User



- ◆ Refer to [the](#) "User management" section in Chapter 2. Pre-acknowledgement.

❖ System - Info



Name

Name on network (CMS).

Remocon ID

Identification for InfraRed (IR) remote controller.

See "Infrared remote controller" in Chapter 2. Pre-acknowledgement.

Firmware Version

Firmware Version information.

Kernel Version

Kernel Version information.

MAC address

Identification of the unit on [the network](#); it must be unique to prevent conflict on the network.

Service Menu/ Admin Menu.

You can switch to Service Menu through this button.

See Chapter 5. Service menu for details.

❖ System - Email

The screenshot shows a configuration window titled "System" with a close button in the top right corner. Below the title bar are several tabs: "Network", "DDNS", "Server", "Log", "User", "Info", "Email" (which is highlighted with an orange border), "Time Sync", and "Etc". The main content area contains the following fields and controls:

- "Email-1(Receive)" and "Email-2(Receive)" are text input fields.
- "SMTP AUTH" is a checkbox that is checked.
- "Server", "ID", and "Password" are text input fields.
- The "Password" field contains masked characters "*****".
- A "Test Send" button is located at the bottom right of the form.

Email-1 (Receive)

Primary receiver's email address.

Email-2 (Receive)

Secondary receiver's email address.

SMTP Auth

Use [for](#) SMTP Authentication.

Server

IP address or URL of SMTP server for sending emails

ID

Sender email account of the SMTP server.

Passowrd

Password of the sender account.

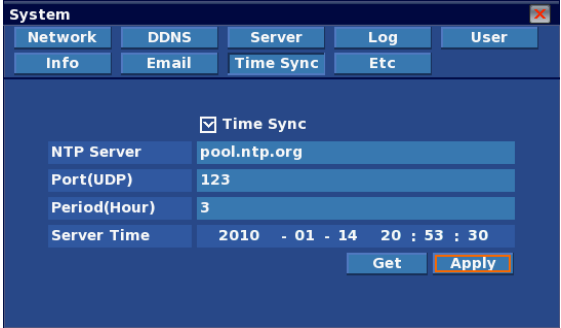
TestSend

Test Mail button will send a test email as soon as it is pressed.

❖ System - Time Sync.

Time Sync.

When the box is checked, the unit starts to synchronize the System clock with Network time server using NTP. NTP server offers the most reliable atomic clock.



The screenshot shows a web-based configuration interface for a system. At the top, there are several tabs: Network, DDNS, Server, Log, and User. Below these, there are sub-tabs: Info, Email, Time Sync, and Etc. The 'Time Sync' sub-tab is active. A checkbox labeled 'Time Sync' is checked. Below this, there are four input fields: 'NTP Server' with the value 'pool.ntp.org', 'Port(UDP)' with the value '123', 'Period(Hour)' with the value '3', and 'Server Time' with the value '2010 - 01 - 14 20 : 53 : 30'. At the bottom right, there are two buttons: 'Get' and 'Apply'.

NTP Server

The unit will look for near network time server if you use “pool.ntp.org”. You can use other network time server if the default server setting has some problem.

Port (UDP)

It is an NTP Server port fixed by network time server.

Period (Hour)

The unit synchronizes the clock periodically; you can set the Period in hour units.

Server Time

It shows the time offered by Network Time Server when you press the Get button.

Get

When the Get button is clicked, the unit will try to get a time from the Network Time Server. Server Time will be updated if there is no problem.

Apply

Once you have found and made the changes, click on the Apply button to complete the changes made to current system time using Network Time Server in the “Time Synchronization” tab.



TIP

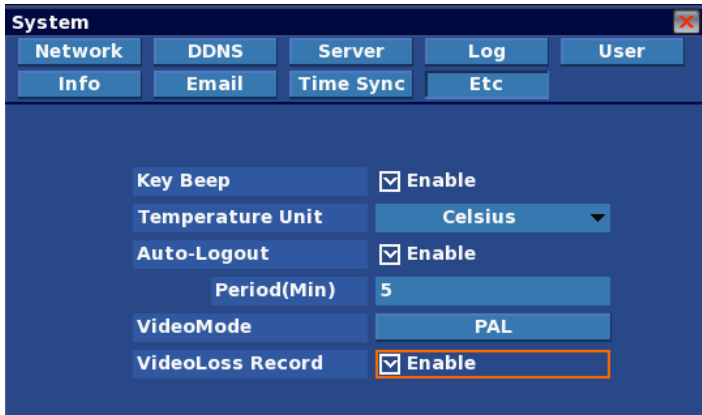
Failure of time synchronization

If time difference is significant, Failure Message will appear.

In this case, you need to try Time Sync. In the Service / DateTime menu.

If system time is faster than the Network Time Server's time, then it is recommended to backup recent data. Otherwise, it will be erased.

❖ System - Etc



Key Beep

Buzzer beeps when front panel button or remote controller button is pressed.
You have the option to enable or disable this feature.

Temperature Unit

You can choose the Temperature display unit between Celsius degree and Fahrenheit degree.

Auto-Logout

It enables Auto-Logout operations.

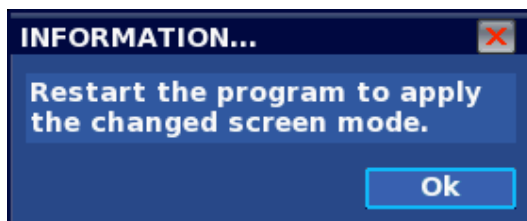
In Auto-Logout operations, you can adjust the duration using the virtual keyboard.

Duration is adjustable from one to sixty minutes; by one minute units.

VideoMode

You can choose between two Video Modes: NTSC and PAL.

If you change the video mode, a warning window appears; Click OK.



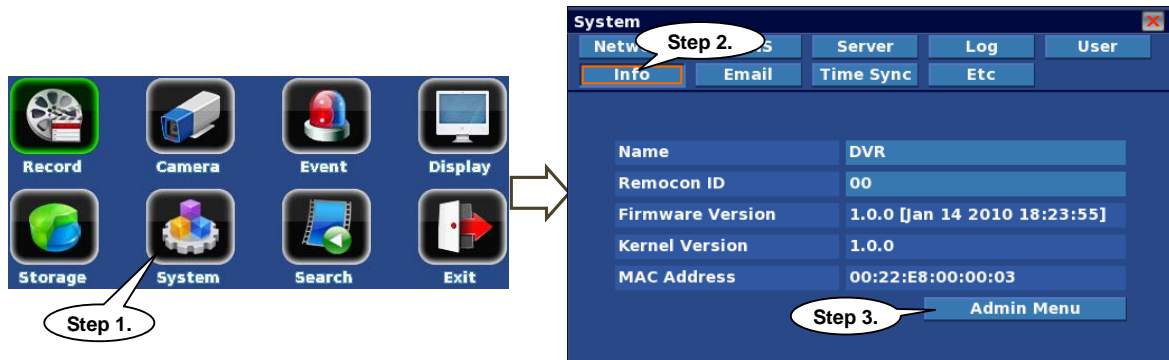
VideoLoss Record

Video Loss will be recorded if you click on the **Enable** check box.

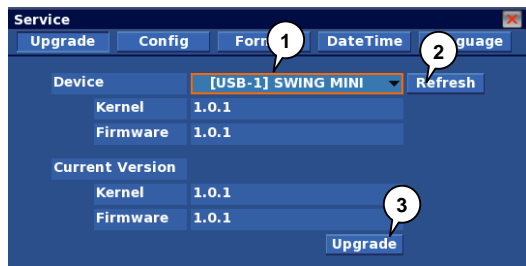
Chapter 5. Admin Menu

Entering the Service Menu

You can enter the Service Menu through System/Info/ Admin Menu.



❖ Admin - Upgrade



You can upgrade **K**ernel and **F**irmware using USB storage at same time or separately.

Step 1: Choose the USB storage that contains the Upgrade file. Press the “Refresh” button if there is no USB storage device.

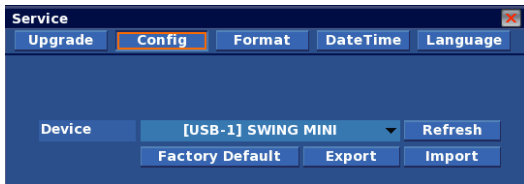
Step 2: Press the “Refresh” button.

The unit will start to scan USB storage and show it’s version.

Step 3: Press the “Upgrade” button to start the Upgrade.

Upgrade will take a couple of minutes.

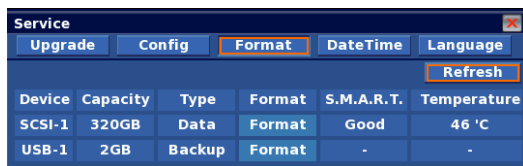
❖ Admin - Config



You can export or import unit's configuration using USB storage.

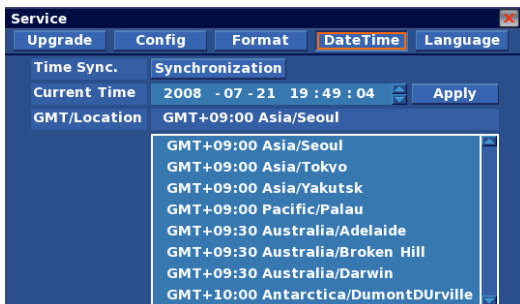
- Factory default: Return to factory default settings.
- Export: Copy this unit's configuration file to USB storage.
You can find "Config.dat" in the USB storage.
- Import: Copy configuration file from USB storage.

❖ Admin - Format



Since recording is stopped, you can format any data disk in the Service menu. Press Format button on the GUI.

❖ Admin – DateTime



Time Sync.

You can adjust the System clock using the “**Time Sync.**” menu.

Standard Time will appear as shown below when you press the “Sync” button.



Press “Sync.” To adjust system clock to standard time which is read from network time server.

Current Time

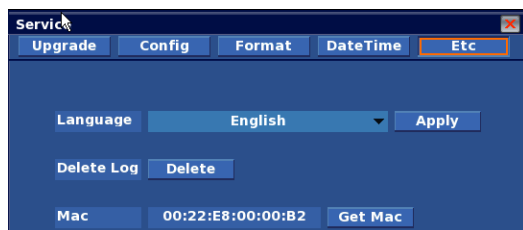
System shows current system clock, which can be adjusted manually. Press “**Apply**” to accept changes to the system clock after adjustment.

GMT/Location

Assign correct location where the unit is installed.

Since this information is a reference for the daylight savings rule this must be correct.

❖ Admin - Etc



Language

You can choose your local language or any other language you want to use.

Delete Log

Click the Delete button to delete the log file.

Mac

You can change the Mac address, then you get Mac address.

Appendix 1. Menu tree

Record
Setup
Image Size
Fps (Recording Speed)
Image Quality
Pre Alarm
Post Alarm
Network
Fps (Network speed)
Image Quality
Schedule
None
Normal
Motion
Alarm
Alarm+Motion
Holiday
Today
Clear All

Display
Screen
Camera Name
Record Mode
Audio Record Icon
Status bar auto-hide
Status bar show time
Spot
Enable
Mode
Channel
Duration

Camera
Setup
Camera Name
Camera Enable
Audio Enable
Saturation
Contrast
Bright
Motion
Enable
Region
Sensitivity
PTZ
ID
Model
Setting
Keyboard
Keyboard Model
Setting
DVR Number

Storage
Storage
Device
Capacity
Type
Format
S.M.A.R.T. Health
Temperature
S.M.A.R.T.
Record
Record Duration
Write Mode
Early warning enable
Early warning level (%)
Backup
Device
Capacity
Channel
Type
Daylight Saving
Start
End
Data Size

[Continue]

Event
Alarm In
Type
Linked Camera
Alarm Out
Alarm Out No
Duration
Motion
Video Loss
Alarm In
Email
Power Up
HDD
Motion
Video Loss
Alarm In
Beep
Power Up
HDD
Duration
Motion
Video Loss
Alarm In

Storage
FTP
Address
ID
Password
Port
Schedule

[Continued]

System	
Network	Info
DHCP Enable	DVR Name
IP Address	Remocon ID
Subnet	Firmware Version
Gateway	Kernel Version
DNS1	MAC Address
DNS2	Service Menu
DDNS	Time Sync.
Enable	NTP Server
Server	Port
ID	Period (Hour)
Password	Server Time
Server	Get
TCP Port	Apply
UDP Port	Email
HTTP Port	Email#1
Max. Connection	Email#2
Max. Search	SMTP Server
Log	SMTP ID
Type	SMTP Password
Start / End	Test Send
Search	Etc
Save	Key Beep
User	Temp. Unit ('C/'F)
ID	
Password	
Permission	
Hidden	

ADMIN MENU	
Admin	
Upgrade	
Device	Kernel Version
	F/W Version
Current Version	Kernel Version
	F/W Version
Upgrade	
Config	
Device	Factory Default
	Export
	Import
Format	
Date/Time	
	Time Sync.
	Current Time
	GMT / Location
Etc	
	Language
	Delete Log
	Get Mac Address

Quick Menu (Live View)	
Quick Menu	
	Zoom
	PTZ
	Quick Play
	Lock
	Volume
	Sequence
	OSD on
	Deinterlace on
	2x2
	3x3
	4x4
	Shutdown

Quick Menu (Search View)	
Quick Menu	
	Volume
	OSD on
	Deinterlace on
	2x2
	3x3
	4x4

Appendix 2. Factory default settings

* Firmware (F/W) Version: 1.1.0 [Jan 15, 2010]

* Password: 11111111 (Type # '1' Eight times)

■ RECORD

Parameter	Default	Range
Setup		
Image Size		
NTSC	360x240	704x480 / 704x240 / 352x240
PAL	360x288	704x576 / 704x288 / 352x288
Frame Rate (NTSC)		
704x480	30 fps	30 / 15 / 7.5 / 3.75 / 1.88
704x240		
352x240		
Frame Rate (PAL)		
704x576	25 fps	25 / 12.5 / 6.25 / 3.13 / 1.56
704x288		
352x288		
Quality	Best	Best / High / Medium / Low / Lowest
Pre-Alarm	5 sec	None / 5 sec.
Post-Alarm	5 sec	None / 3 / 5 / 10 / 20 / 30 sec.
Network		
Image Size		
NTSC	360x240	704x480 / 704x240 / 352x240
PAL	360x288	704x576 / 704x288 / 352x288
Frame Rate (NTSC)		
352x240	30 fps	30 / 15 / 7.5 / 3.75 / 1.88
Frame Rate (PAL)		
352x288	25 fps	25 / 12.5 / 6.25 / 3.13 / 1.56
Quality	Best	Best / High / Medium / Low / Lowest
Schedule		
Mode	Normal	None / Normal / Alarm / Motion / Alm+Mot (Default = Normal recording for 24 hours/7days)
Holiday		
Settings	-	No Holiday

■ CAMERA

Parameter	Default	Range
Setup		
Name	"CAMnn"	Max. 12 character
Enable	Checked	Checked / Unchecked
Audio	Unchecked	Checked / Unchecked
Saturation	58	0 ~ 100
Contrast	44	0 ~ 100
Brightness	50	0 ~ 100
Motion		
Enable	Checked	Checked / Unchecked
Region	Full	Full / User
Sensitivity	Step 1 (Hi)	Step 1 (Hi) ~ Step 5 (Lo)
PTZ		
ID	001 ~ 016	001 ~ 255
Model	None	Various
Setting	9600 8-N-1	Baud : 1200 / 2400 / 4800 / 9600 / 19200 bps Data : 7 / 8 bit, Parity : None/Odd/Even Stop : 1 / 2 bit

■ EVENT

Parameter	Default	Range
Alarm In		
Type	N/C	N/C or N/O
Link Camera	1:1	1 ~ 16
Alarm Out		
Duration	5 sec	None / 3 / 5 / 10 / 20 / 30sec
Motion	Unchecked	Checked / Unchecked
Video Loss	Unchecked	Checked / Unchecked
Alarm In	Unchecked	Checked / Unchecked
Email		
Power Up	Unchecked	Checked / Unchecked
HDD	Unchecked	Checked / Unchecked
Motion	Unchecked	Checked / Unchecked
Video Loss	Unchecked	Checked / Unchecked
Alarm In	Unchecked	Checked / Unchecked
Beep		
Duration	5 sec	None / 3 / 5 / 10 / 20 / 30sec
Power Up	Unchecked	Checked / Unchecked
HDD	Unchecked	Checked / Unchecked
Motion	Unchecked	Checked / Unchecked
Video Loss	Unchecked	Checked / Unchecked
Alarm In	Unchecked	Checked / Unchecked

■ DISPLAY

Parameter	Default	Range
Screen		
Camera name	Checked	Checked / Unchecked
Record mode	Checked	Checked / Unchecked
Audio record icon	Checked	Checked / Unchecked
Status bar autohide	Unchecked	Checked / Unchecked
Show	None	1 / 3 / 5 / 10 sec
Alpha Blending	Unchecked	Checked / Unchecked
Show	Medium	Opaque / Low / Medium / High
Spot		
Enable	Unchecked	Checked / Unchecked
Mode	Fixed	Fixed / Rotate
Channel	1	1 ~ 16
Duration	3 sec	3 / 5 / 10 / 20 / 30

■ STORAGE

Parameter	Default	Range
Record		
Record Duration	Continuously	Continuously / 30 / 60 / 90 Days / User define (1 ~ 365 Days)
Write mode	Overwrite	Overwrite / Suspend
Early Warning	Checked	Checked / Unchecked
Early Warning Level	5%	5 / 10 / 20 / 30% (Remained Capacity)

■ SYSTEM

Parameter	Default	Range
Network		
DHCP	Unchecked	Checked / Unchecked
IP	192.168.0.100	-
Subnet	255.255.255.0	-
Gateway	192.168.0.1	-
DNS1	168.126.63.1	-
DNS2	168.126.63.2	-
DDNS		
DDNS	Unchecked	Checked / Unchecked
Server	-	-
ID	-	Max. 20 character
Password	-	Max. 20 character
Domain	-	Max. 20 character
Server		
TCP Port	5000	0 ~ 65535
UDP Port	5100	0 ~ 65535
HTTP Port	8080	0 ~ 65535
Max. Connect	6	1 ~ 20 (TBD)
Max. Search	1	1 ~ 2 (TBD)
User		
Admin	All	All
Guest	Live	-
User1 ~ User18	Search	Max. 10 character, Live / Search / Setup / All
Password	"11111111"	Max. 8 digit, Accept alphabet and number, Case sensitive
Hidden Camera	None	1 ~ 4
Info		
Name	DVR	Max. 16 characters
Remocon ID	0	0 ~ 99
Email		
Email-1(Receive)	-	Max. 30 characters
Email-1(Receive)	-	Max. 30 characters
SMTP (send)		
Server	-	Max. 25 characters
ID	-	Max. 25 characters
Password	-	Max. 40 characters
Time Sync.		
Time Sync.	Unchecked	Checked / Unchecked
NTP Server	pool.ntp.org	Min. 25 character
Port(UDP)	123	1 ~ 65535
Period	3 Hour	1 ~ 24 Hour
Etc		
Key Beep	Checked	Checked / Unchecked
Temperature Unit	Celsius	Celsius / Fahrenheit
Auto-Logout	Unchecked	Checked / Unchecked
Period(Min)	5 Minute	5 ~ 60 Minute
VideoMode	NTSC	NTSC / PAL
VideoLoss Record	Unchecked	Checked / Unchecked

- End of document -

Appendix 3. Limited 1 Year Warranty

This warranty gives the original purchaser specific legal rights and you may also have other rights, which may vary from state to state. If our products do not function because of any defect in material or workmanship, we will repair it for free for 1 year on parts and labor from the date of original purchase. This warranty does not cover modification, abuse, incidental or consequential damages unless the state of owner's residence specially prohibits limitations on incidental or consequential damages.

Appendix 4. How to obtain Factory Service

- Original purchaser must fill out the warranty card and mail it to the factory with the model number, serial number and the date of purchase.
- We will repair or replace, and return the system to the owner under this limited warranty.
- Please pack the system carefully and securely using the original packing materials, and send it prepaid and insured to: **13073 E. 166th St, Cerritos, CA 90703.**
- Please include a check for \$25.00 to cover the cost of return postage and handling. If the system is returned within the warranty period, please include a proof of purchase. If the system is out of warranty, you will receive an estimate of the repair cost for your approval before repair work will be started.