DIGITAL VIDEO RECORDER

MAJESTY PC

Operation Manual

Please read carefully

"WARNING & CAUTION" for safe operation

WARNING & CAUTION

All cautions and warnings on this manual should be noted failure to heed this warning & caution will result in serious damage

 WARNING   This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit

 CAUTION   This symbol indicates that it may cause injury, damage and other harmful results

⚠WARNINGS

⚠	Verify that the voltage is set correctly for user location
⚠	Do not touch the cord with wet hand it may cause severe electric shock
⚠	Be sure that power is plugged in securely (may cause fire if the connection is unstable)
⚠	Do not pull on the power cord (may cause fire or electric shock if cord is damaged)
⚠	Do not disassemble or reconstruct product (may cause fire, electric shock or defects)
⚠	When in notice of smoke or weird smell, please stop usage and pull out the power plug and contact the service center (continued usage may cause fire or electric shock)
⚠	Do not place or drop metallic objects (coins, hair pin, metal) or easily flammable products (matches, paper) in the ventilation of the product (may cause fire or electric shock)
⚠	Do not place any liquid filled objects on the product (may cause fire, electric shock or other injuries)
⚠	Avoid direct sunlight, heating equipment and electric equipment (danger of fire)
⚠	Do not install product in areas of high humidity, dust or is soot-covered (may cause fire, electric shock or defects)

	⚠ CAUTIONS	
⚠	Do not place heavy objects on product (may cause injury)	
⚠	Avoid areas of magnetic fields and severe vibration (may cause defect in product)	🧲
⚠	Do not drop the product or cause sudden impacts	
⚠	This product is heavy be careful when moving this product	
⚠	Avoid installation in cold areas	
⚠	This product is designed to operate under max 40℃	
⚠	Avoid installation in uneven areas (may cause defect in product)	
⏚	To product use hour it uses the all the member cable where becomes the ground connection it wishes	
	When cleaning the product, do not use water, but use a dry cloth to gently wipe the product	
	Before operation, become familiar with all the special features and warning associated with this equipment and read this manual carefully	
	Back up the important data	
	Single phase power supply operation is not recommended to prevent a power supply failure ups is strongly recommended	

INSTALL INSTRUCTION

1) This device designed to operate under max 40℃ when you install this device in the rack, please consider the max ambient temperature please install this device proper ambient temperature of all part

2) Caution : when you install this device in the rack, the operating ambient temperature may be greater than room ambient please consider this condition and simulate the max temperature and install in an environment compatible temperature

3) Reduced air flow : installation of this device in a rack should be such that the amount of air flow required for safe operation of this device is not compromised please provide enough space to get the proper air flow

4) Mechanical loading - mounting of this device in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading

5) Circuit overloading : please read the rating in the nameplate and consider appropriate power supply and supply wiring

6) When you are using like a power strips except direct connections to the branch circuit, please make sure to connect reliable earthing maintained

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense

Connecting Power source to System Using 110V power source Make sure power select switch set to 115V(110V use)

Using 220V power source Make sure power select switch set to 230V(220V use)

NOTICE: For U S A and Canada regions; use only UL listed CSA labeled detachable power cord, 3-conductor, 18 AWG, SVT or SJT type, plug rounding type parallel blade, cord connector body-IEC 320 style to mate with appliance inlet on product

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IMPORTANT The only way to disconnect power completely is to unplug the power cord Make sure at least one end of the power cord is within easy reach so that you can unplug the computer when you need to

CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS

WARNING

This is a class A product In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment

Warning Label

MP 6016/7016

WARNING

Verify that the voltage is set correctly for user location.

⚠ CAUTION

Avoid installation in uneven areas.

This equipment is heavy be careful when moving this equipment.

❗ NOTICE

The following warning & caution must be seriously considered.

Before using the product, to read the operationg manual.
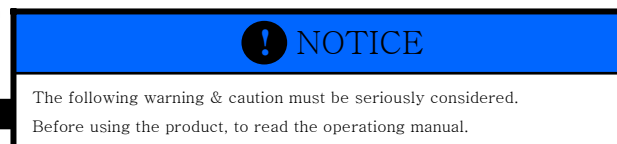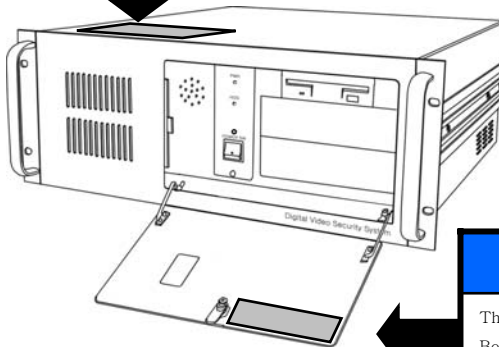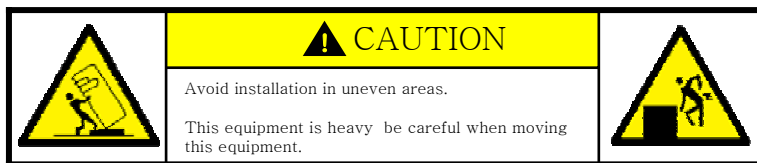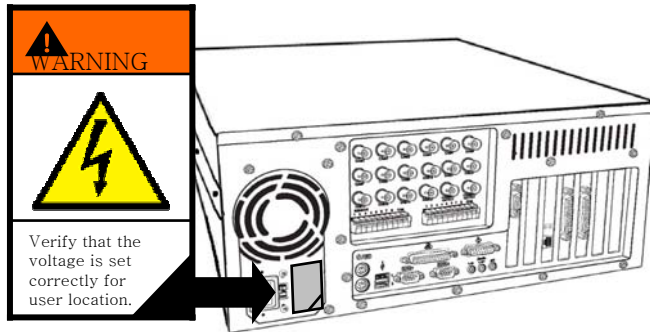
TABLE OF CONTENTS

1. INSTALLATION

P

1.1 Product Content
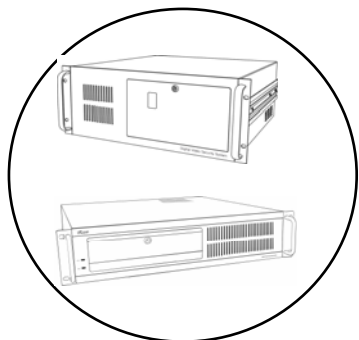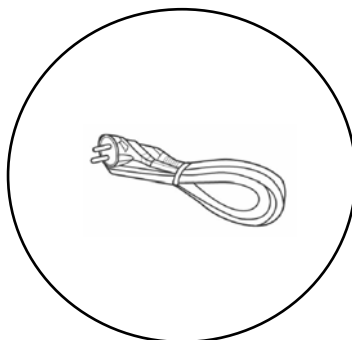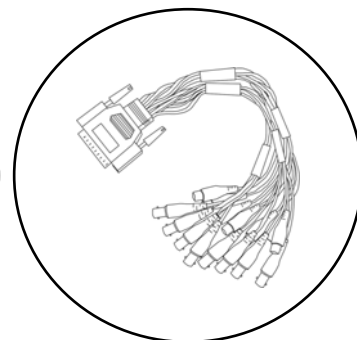
DVR	Power cable	Loop Cables Only PI7016
Keyboard	Mouse	Handle, Screws
Program CD Windows OS CD	Key	Manuals
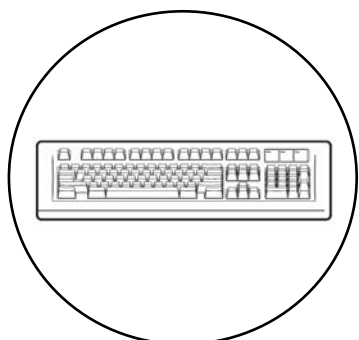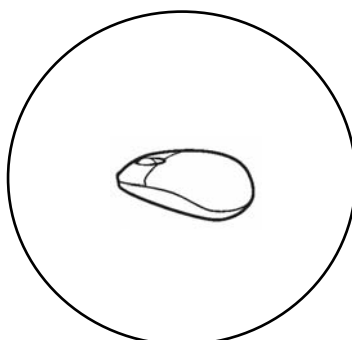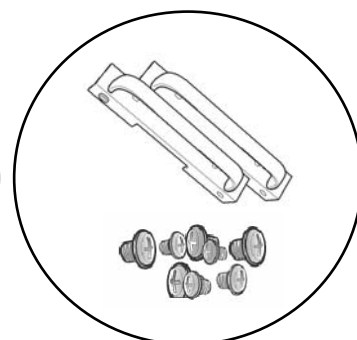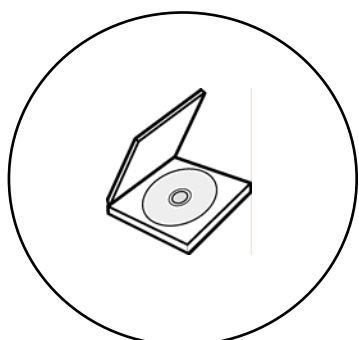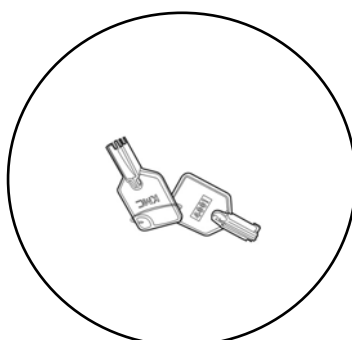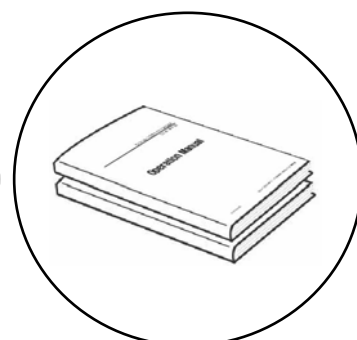
1.2 System Front Layout

MP 6016/7016

The system layout may be different from each other model

Speaker

Power LED, HDD LED

3 5 inch floppy
disk drive

Digital Video Security System

Lock

Expansion guide for
HDD, CD-RW, etc

Power switch
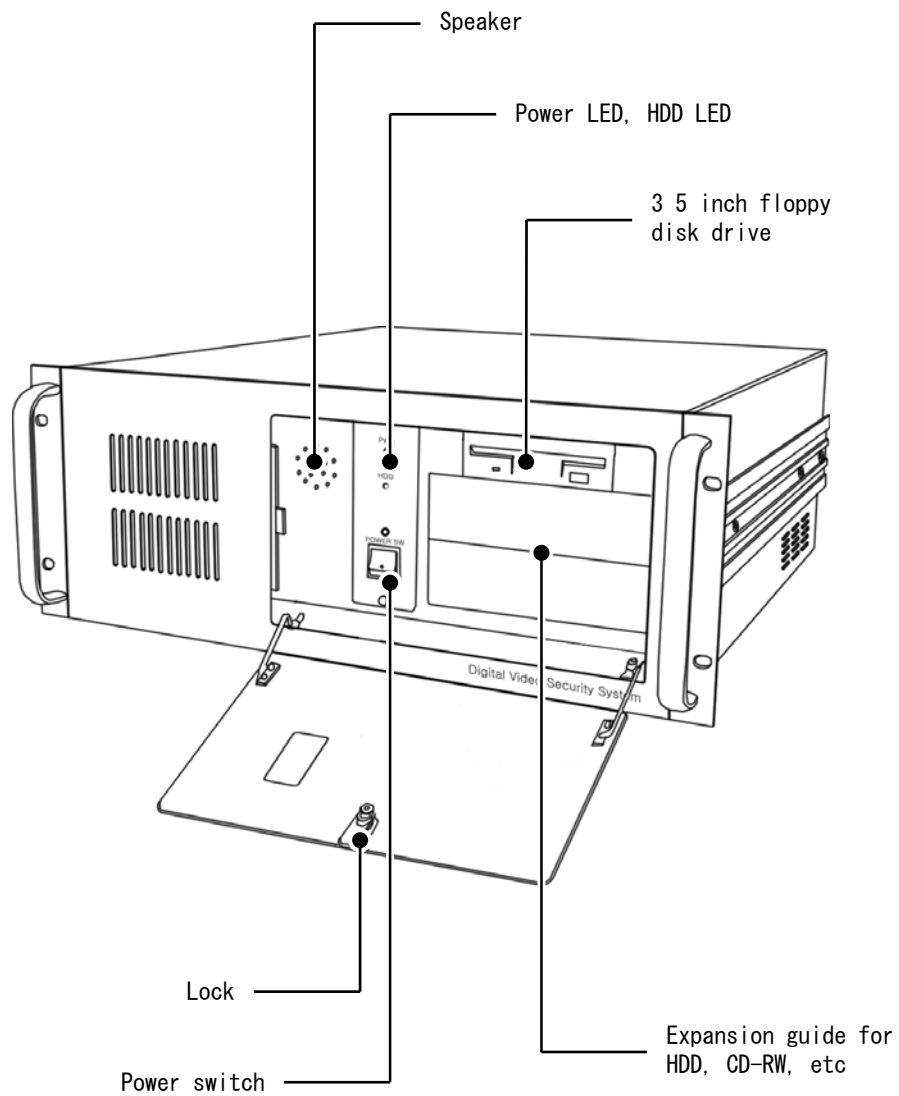
1.3 System Rear Layout

MP 6016/7016

Camera in

TV out 1,2

Video output

Sensor Digital out

AC power inlet

115/230 VAC switch

Audio output

PI 7016
Audio input
Camera output

PI 5016
PI 6016
Audio input

LAN

LPT1 printer port

Pan/Tilt port 1,2

Mouse
Keyboard

USB port
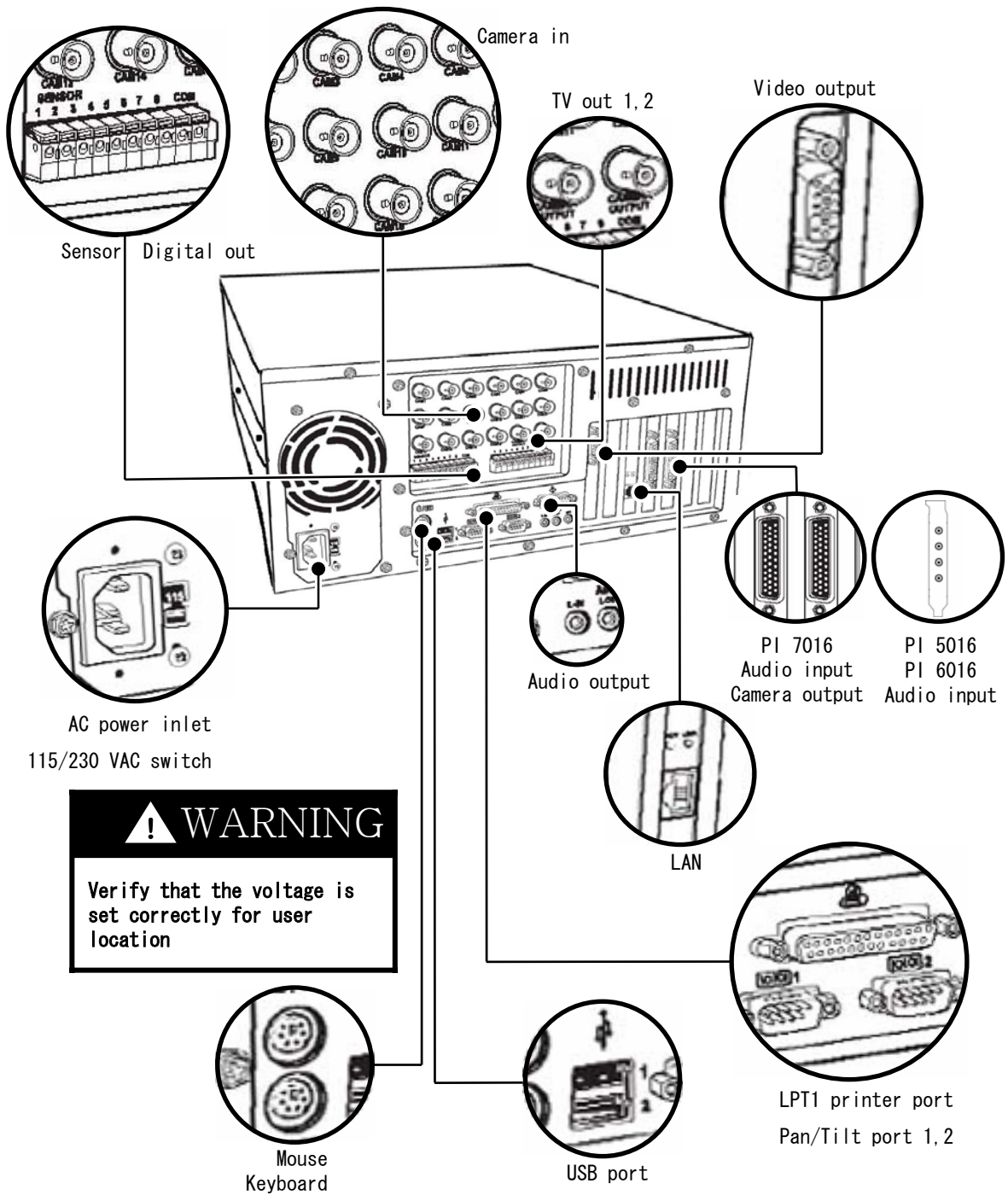
1.4 Mounting

The DVR may be placed on a flat surface, such as a shelf, or it can be install in a 19-inch(48 26 cm) equipment rack

◆   Flat surface mounting

1)   Before placing the unit on a flat surface, attach the rubber feet (supplied) to the bottom of the DVR The unit may scratch the surface if the rubber feet are not installed

◆   Equipment rack mounting

1)   Remove the remove plate refer to Figure –   ❶

2)   Attach the handles to the rack ears and attach the rack ears to the unit –

3)   Use four of ❷ the supplied 10-32 x   75 - inch black screws and finishing washers and mount the assembly to a 19-inch (42 26 cm) rack or console


```
REMOVE                    INSTALL
PLATE                     RACK
                          EAR
```
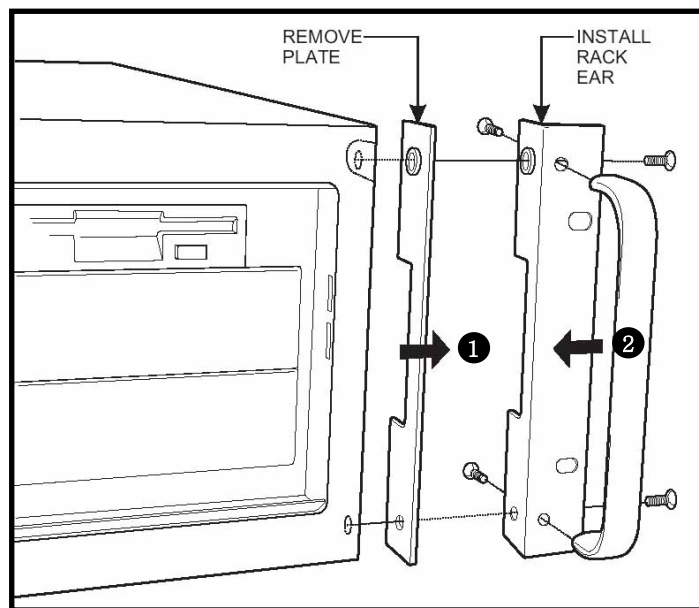
⚠ CAUTION

Slots and openings in the cabinet provide ventilation and prevent it from overheating do not block these opening

1.5 Connection

MP 6016/7016

Camera in

Video out

Keyboard/Mouse in

Power in

230 VAC
115 VAC
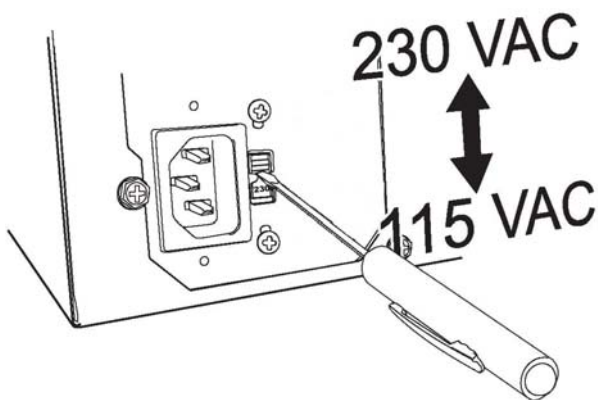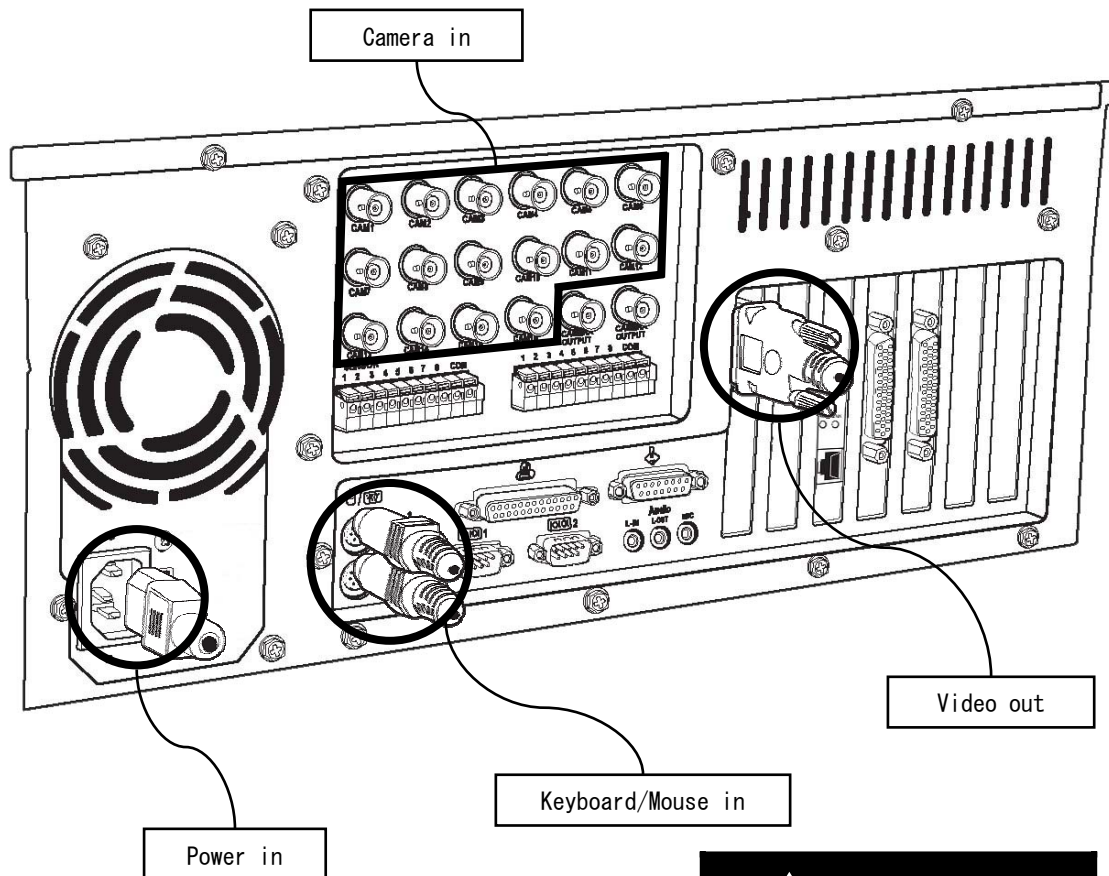
⚠ **WARNING**

Verify that the voltage is set correctly for user location

⚠ **WARNING**

The danger will be electric shock and the possibility where it will put on a damage in the human body it is pay attention

1.6 Extended Connection

MP 6016/7016
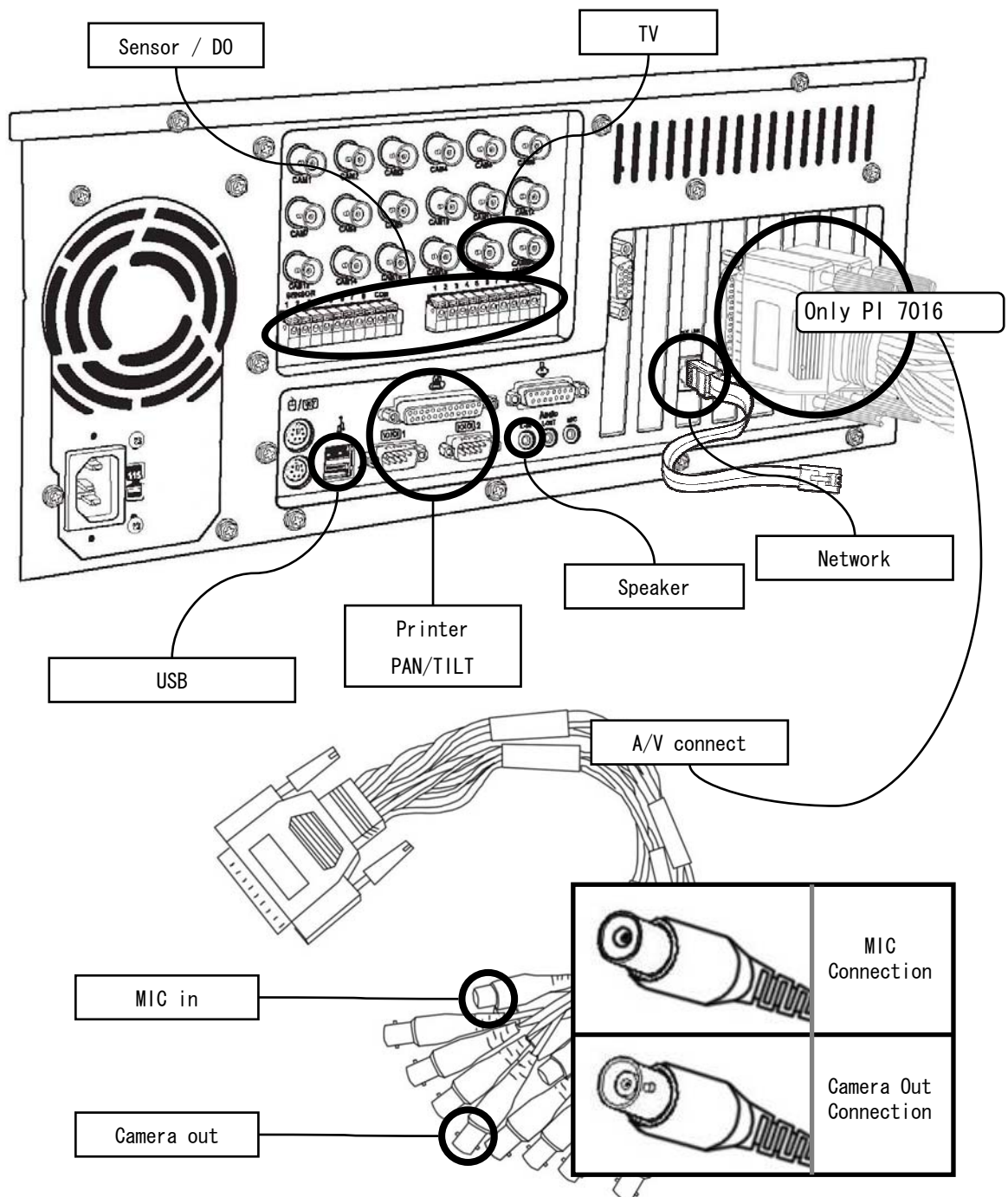
Sensor / DO

TV

Only PI 7016

Network

Speaker

Printer
PAN/TILT

USB

A/V connect

MIC in

MIC
Connection

Camera out

Camera Out
Connection

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2. SURVEILLANCE

I

SURVEILLANCE
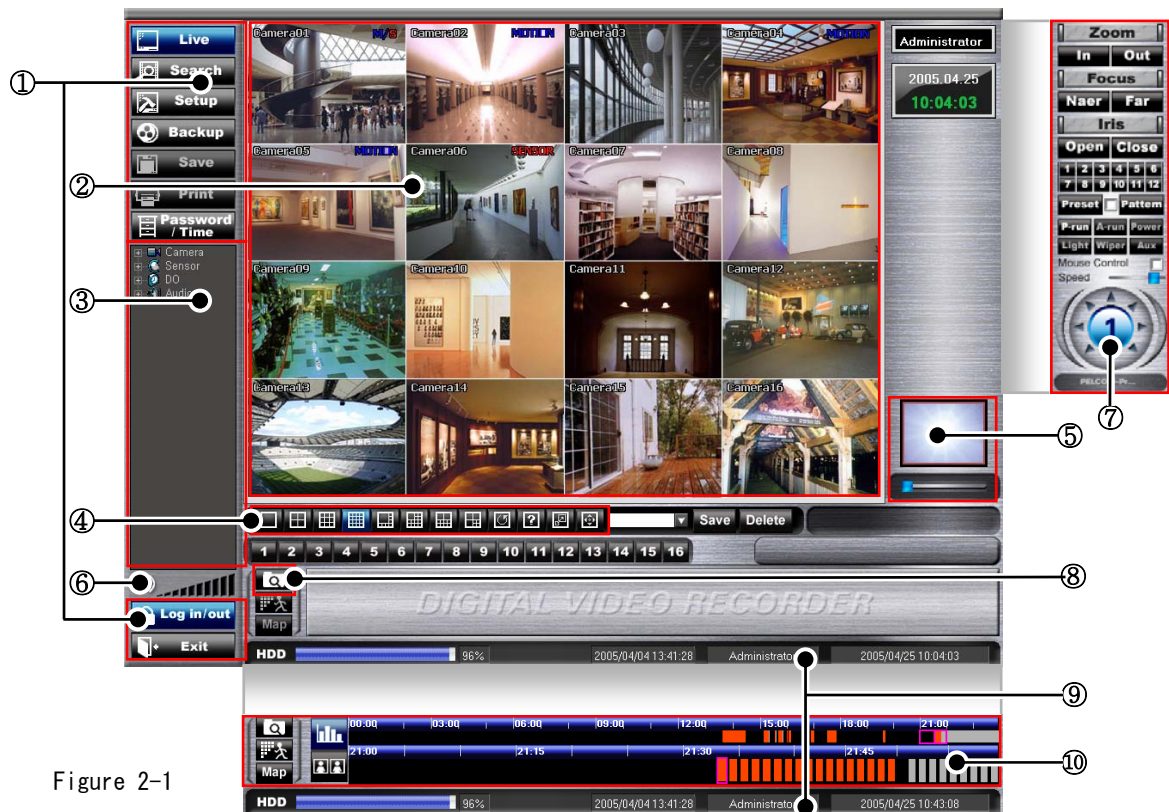
Figure 2-1

①   Main menu

②   Live view

③   Camera controller (camera, sensor, D/O, audio)

④   View option

⑤   Panning view

⑥   Volume control

⑦   Pan/Tilt (PTZ control window will display when the PTZ
        control is assigned to a channel)

⑧   One channel search

⑨   Log-in user

⑩   Map search

2.1 Main Menu
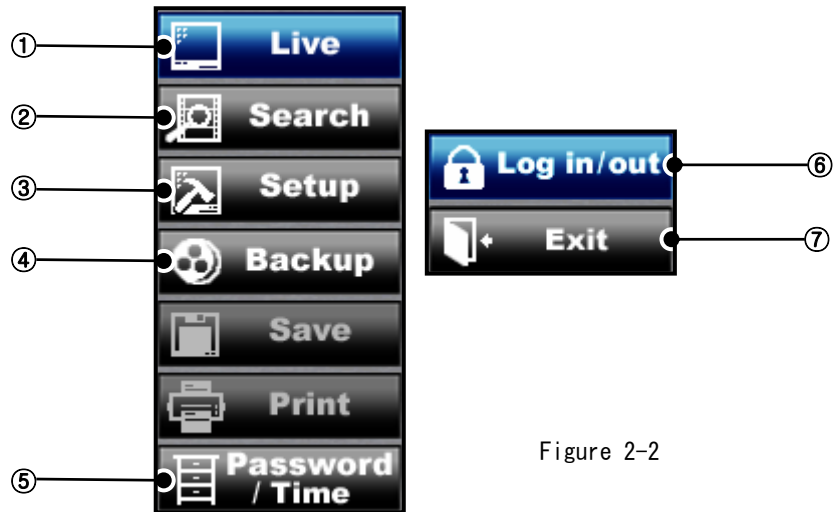
Figure 2-2

①	Surveillance mode
②	Search mode
③	Set up mode
④	Back up mode
⑤	User Password and auto change time setting mode
⑥	User mode (log in / log out)
⑦	System shut down

Disk back up and print function are only activated on search mode

2.2 User Log In

Figure 2-3

①   User Name - to select registered user

②   Password - to enter password

③   key pad (0~9, reset, del)

④   Ok - to confirm for log in

⑤   Cancel - to cancel log in

Each user must log in first in order to use and adjust the function according to each user level

Administrator access & give functions to each user

Access level vary to users, if there is no user name then consult with administrator

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Log In

1	Figure 2-2	⑥	Go to user mode
2		①	Select user name or administrator
3	Figure 2-3	③	Enter password
4		④	"Ok" to log-in

Log Out

1	Figure 2-2	⑥	Go to user mode
2	Figure 2-3	②	Enter password
3		④	"Ok" to log-out

2.3 Changing Password
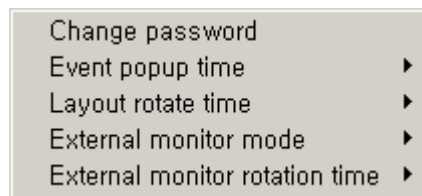
Figure 2-4

①   Change Password - to change user password

②   Event popup time - to set Event pop up time (second)

③   Layout rotate time - to set rotating time (second)

④   External monitor mode – to set External monitor mode
                 (fixed, rotated, event spot mode)

⑤   External monitor rotation time - to set time (second)

✓ Change Password
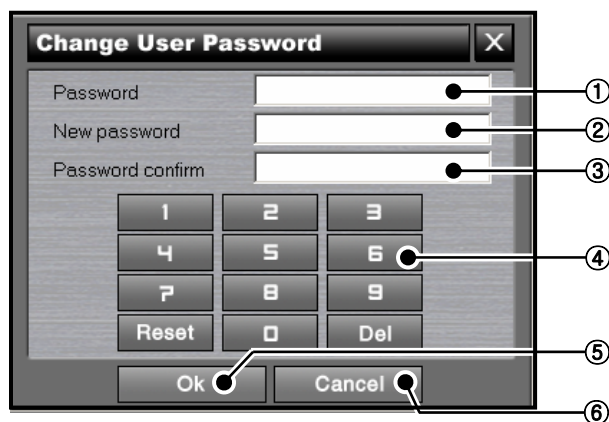
Figure 2-5

①   Password - enter current password

②   New Password - enter new password

③   Password Confirm - re-enter new password

④   key pad (0~9, reset, del)

⑤   Ok

⑥   Cancel

Change password

1	Figure 2-2	⑤	Go to password mode
2	Figure 2-4	①	Select "Change Password"
3	Figure 2-5	①	Enter current password
4		②	Enter new password
5		③	Re-enter new password
6		⑤	"Ok" to confirm

Set layout rotate time

1	Figure 2-2	⑤	go to password mode
2	Figure 2-4	③	select layout rotate time
3			select the desired time (second)

Set event popup time

1	Figure 2-2	⑤	go to password mode
2	Figure 2-4	②	select layout event popup time
3			select the desired time (second)

Set external monitor

1	Figure 2-2	⑤	Go to password mode

Event Spot or Fixed Mode

2	Figure 2-4	④	Select event spot or fixed mode in external monitor mode

Rotation Mode

2	Figure 2-4	④	Select rotation mode in external monitor mode
3		⑤	Select external monitor rotation time
4			Select the desired time (second)

2.4 Surveillance Screen

Figure 2-6

①   Camera Name.

②   Recording Mode Status.
       (NOR — Normal Recording / MOT — Motion Recording / SEN —Sensor recording / MOT+SEN — Motion + Sensor Recording / +A — Audio Recording)

③   Camera Image.

As you select a channel you can see and use one big panning view (digital)

You may have blue screen (no image) when there is no input signal or selected disable

2.5 Channel Information
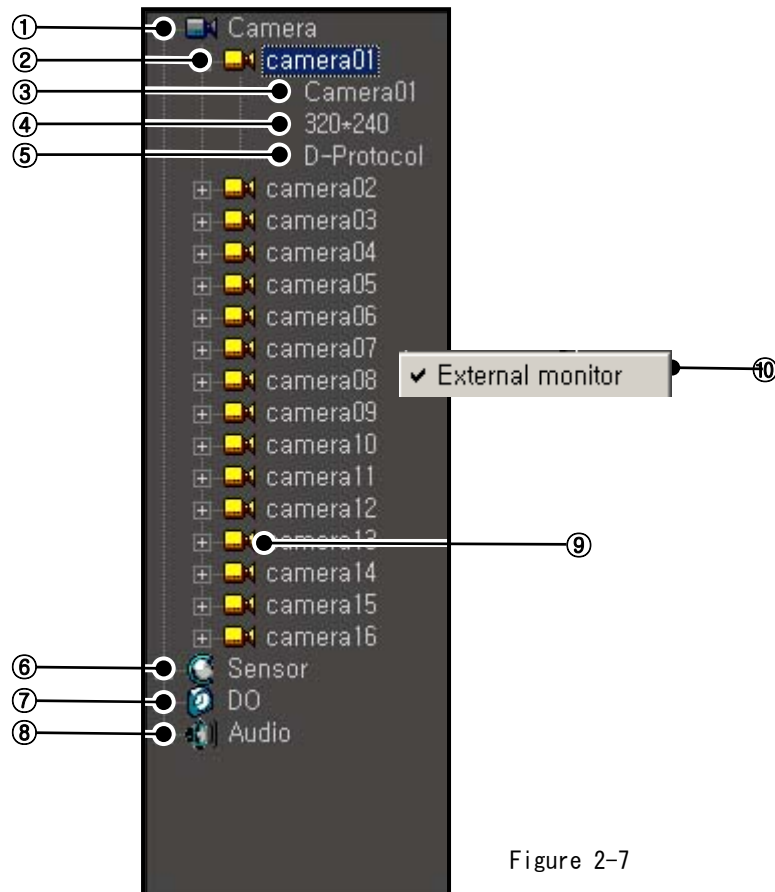
Figure 2-7

①   Camera - group of camera

②   Camera01- camera no 1

③   External monitor – through out the channel to external monitor. The
      name for camera no 1

④   Selected recording resolution for camera no 1

⑤   Pan/Tilt protocol for camera no 1

⑥   Sensor - group of sensor (indicates sensor activity)

⑦   DO - group of digital out
      (indicates digital out activation-right click to turn off)

⑧   Audio - group of audio (right click for turn on/off)

⑨   Camera on recording (twinkles)

⑩   External monitor – through out the channel to external monitor.

Using an audio channel

1		⑧	Go to audio group
2	Figure 2-7		Select one of 16 audio channel then click left of mouse
3			Select on from ON/OFF menu

Using other audio channel

1		⑧	Go to audio group
2	Figure 2-7		Select one among not "ON" audio channel and click left of mouse
3			Select on from ON/OFF menu

Disable audio channel

1		⑧	Go to audio group
2	Figure 2-7		Select "ON" audio channel and click left of mouse
3			Select off from ON/OFF menu

2.6 Camera View Option
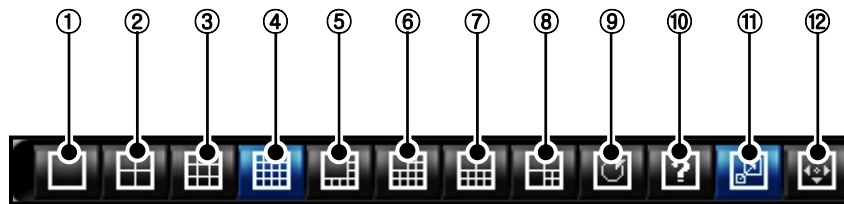
Figure 2-8

①	Single camera view selection
②	4 camera view selection
③	9 camera view selection
④	16 camera view selection
⑤	1 main + 7 sub-screen selection
⑥	1 main + 12 sub-screen selection
⑦	2 main + 8 sub-screen selection
⑧	3 main + 4 sub-screen selection Sequential camera rotation
⑨	Set auto sequential camera rotation
⑩	User defined
⑪	popup-displays camera detected motion, sensor
⑫	Full screen view

View change can be done from /to selected view

When popup is on at splited view a motion detected view is automatically displayed in full view

Full view at splited view is displayed fully with splited views
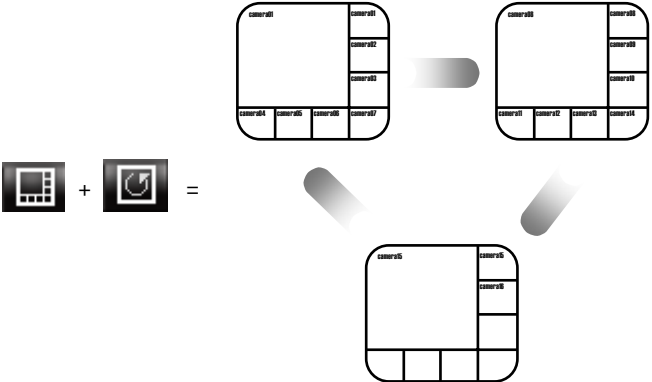
Auto sequential rotation at 4 camera view

1		②	Go to 4 camera view selection
2		⑨	Set auto sequential camera rotation
3	Figure 2-8		
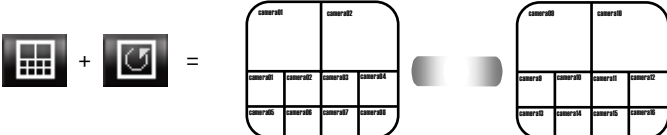
Auto sequential rotation at 9 camera view

1		③	Go to 9 camera view selection
2		⑨	Set auto sequential camera rotation
3	Figure 2-8		

Auto sequential rotation at 1+7 camera view

1		⑤	Go to 1+7 camera view selection
2		⑨	Set auto sequential camera rotation
3	Figure 2-8		

Auto sequential rotation at 2+8 camera view

1		⑦	Go to 2+8 camera view selection
2		⑨	Set auto sequential camera rotation
3	Figure 2-8		

2.7 Panning View (Digital Zoom)

Digital zoom to zoom in a certain part of surveillance screen
this function can be workable at single channel search

Figure 2-9
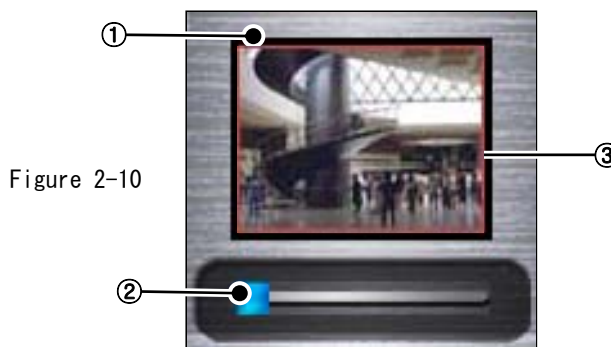
Figure 2-10

①   Digital zoom box (lick and move when small sized box)

②   Digital zoom bar (click and move right and left for zooming)

③   Panning view (digital zoom)

Zoom in panning view

1	Figure 2-8	①	Go to single channel search
2		③	Zoomed while zoom bar is slider to right and box is small
3	Figure 2-9 Figure 2-10		Panning View Screen Screen Display

Moving panning view

1	Figure 2-8	①	Go to single channel search
2		③	Slide to right and click and move the small box
3	Figure 2-9 Figure 2-10		Panning View Screen Screen Display

2.8 Pan/Tilt

Zoom
In   Out

Focus
Naer   Far

Iris
Open   Close

1	2	3	4	5	6
7	8	9	0	11	12

Preset   Pattern

P-Run   A-Run   Power

Light   Wiper

Mouse Control

Speed

Bar Color

Pan/Tilt menu is displayed when
selected pan/tilt channel

The function which is not
supported is non-activated
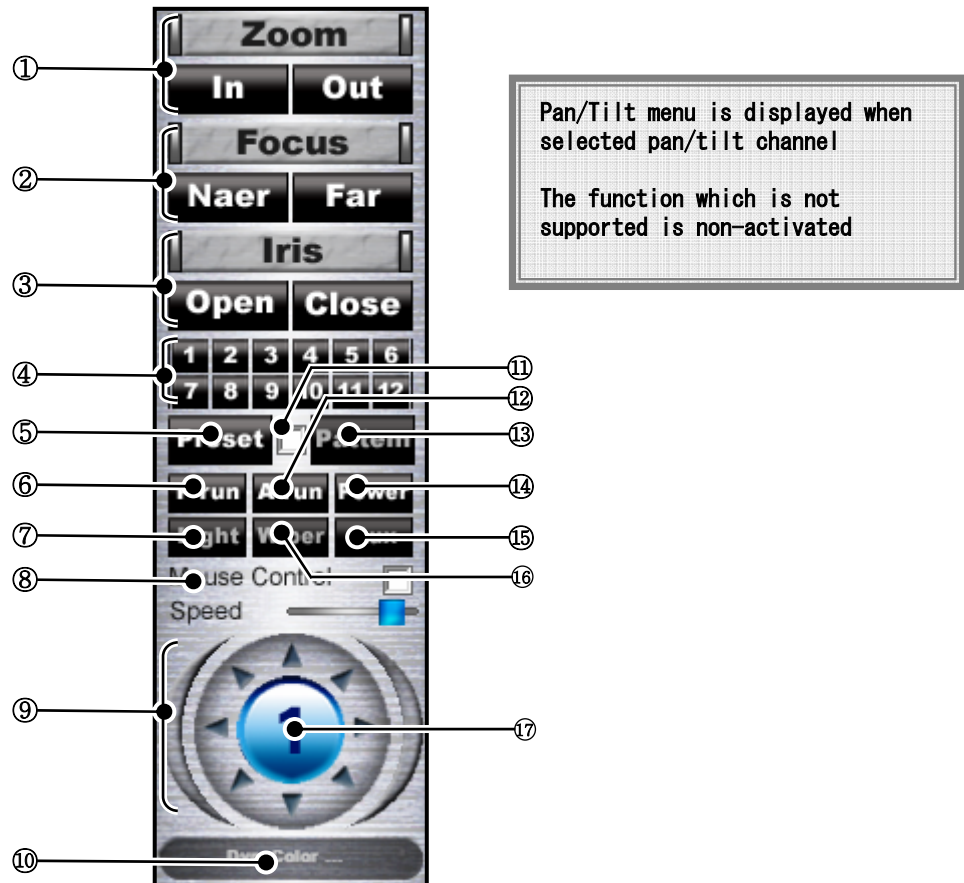
Figure 2-11

①   Zoom (in/out)

②   Focus (near/far)

③   Iris (open/close) - to open/close auto bright control

④   1~12 - memory address of preset

⑤   Preset - to make preset

⑥   P-Run - to run the preset

⑦   Light - to turn on/off outside light

⑧   Mouse Control & Speed - to control PTZ with a mouse

⑨   To move the direction of the selected channel

⑩   The protocol of the selected channel

⑪   To save the preset

⑫   A-Run - auto moving to the position supported with the PTZ

⑬   Pattern - auto moving according to pattern set

⑭   Power - to turn on/off the camera power

⑮   Aux - to run the aux function of the PTZ

⑯   Wiper - to turn on/off the wiper

⑰   Showing the current channel

Setting preset and run

1	Figure 2-6		Select a channel
2		⑤	Select "Preset"
3		⑪	Check
4	Figure 2-11	⑨ ①	Move the camera desired direction Set zoom and/or focus
5		④	Save in a memory address (1~12)
6			Repeat 4 and 5 save the point location into a memory address
7		⑥	Run the preset by "P-run"

Deleting the preset

1	Figure 2-6		Select a channel
2	Figure 2-11	⑤	Select "Preset"
3		④	Click the preset memory address which to delete (1~12)

Setting pattern and run

1	Figure 2-6		Select a channel
2		⑬	Click on "Pattern" button
2		⑪	Check
3	Figure 2-11	⑨ ①	Move the camera desired direction Set zoom and/or focus
4		⑪	Un-check
5		**	Auto moving by setting between check and un-check

Control pan/tilt with a mouse

1	Figure 2-6		Select a channel
2	Figure 2-11	⑧	Check "Mouse Control" Adjust "Speed"
3	Figure 2-6		Move the direction while clicking the mouse

Turn on external light

1	Figure 2-6		Select pan/tilt channel with external light
2	Figure 2-11	⑦	Click on "light" button

2.9 One Channel Search

One channel searching function while surveillance
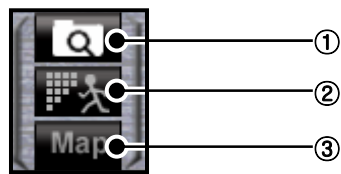
Figure 2-12

①   One channel searching function

②   Smart search function
        (activated after press ①)

③   Map search function
        (activated after press ①)

2.9.1 One channel search
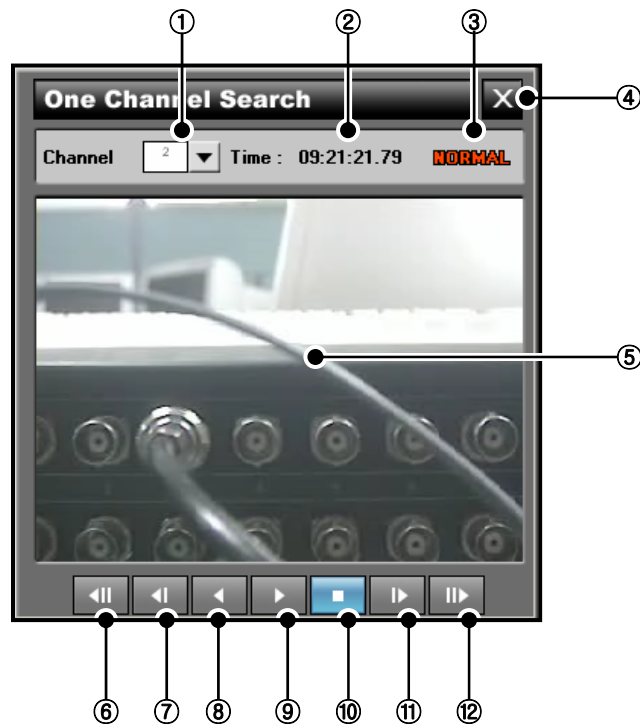
Figure 2-13

①   Channel (select search channel)

②   REC time of display screen

③   Recorded type

④   Close one channel search   ⑦   Display previous screen

⑤   Display recorded screen   ⑧   Reverse play

⑥   Display first recorded screen   ⑨   Play
           (1day basis)

                                                ⑩   Stop

                                                  ⑪   Display next screen

                                                  ⑫   Display last recorded screen
                                                                      (1day basis)

2.9.2 Play
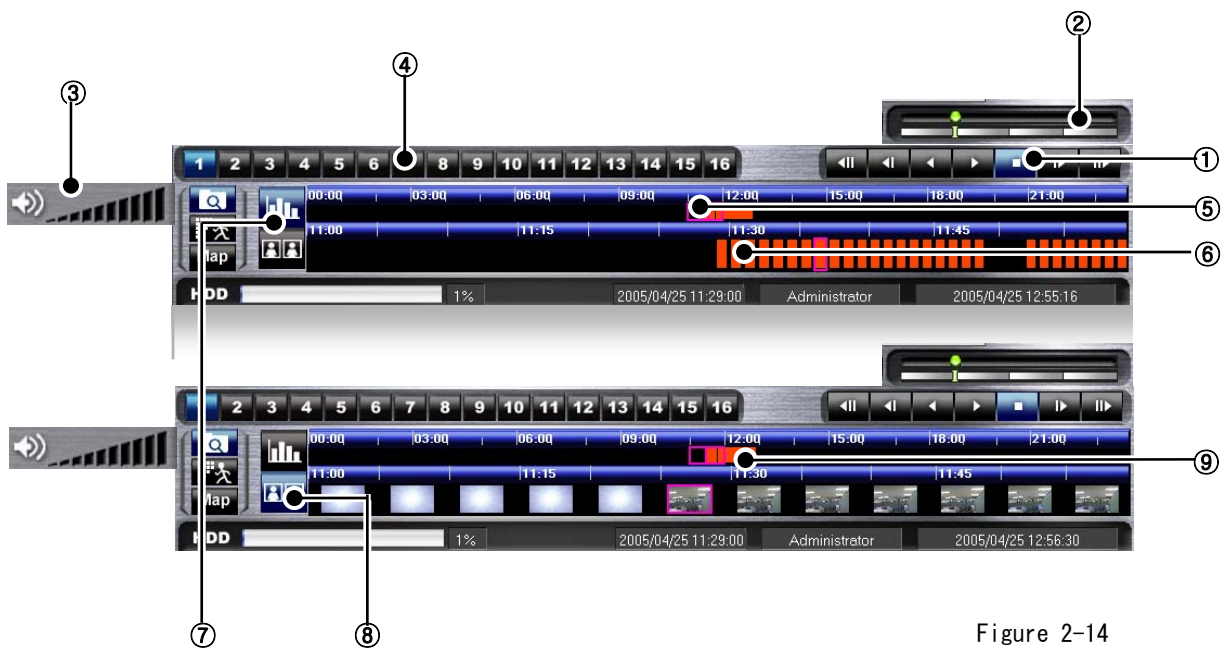
Figure 2-14

①   Play button

②   Adjust speed of play

③   Volume control

④   Search channel (select channel)

⑤   Daily record map (select search part)

⑥   Enlarged map which is selected at ⑤ (select search part)

⑦   Map - showing map

⑧   Thumbnail - show recorded image at small size

⑨   Display selected part(⑤) 5 minutes interval
      (select search part)

2.9.3 Smart search
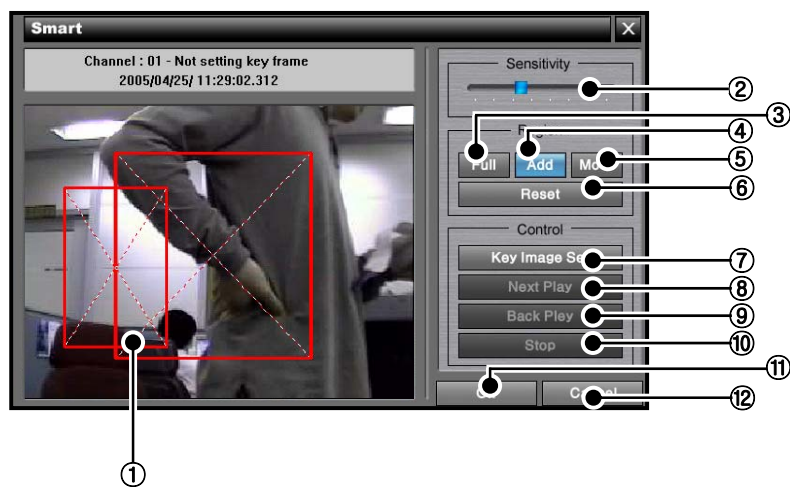
Figure 2-15

①   Area to detect motion

②   Sensitivity - adjust sensitivity

③   Full - set full area to detect motion

④   Add - add area to detect motion
       (set area on screen by mouse)

⑤   Move - move or adjust size of area to detect motion
       (adjust area on screen by mouse)

⑥   Reset - delete area to detect motion

⑦   Key Image Set - set area to detect motion as base

⑧   Next Play - plat forward

⑨   Back Play - reverse play

⑩   Stop

⑪   Ok - confirm play time and close smart search window

⑫   Cancel - close smart search

2.9.4 Record map search
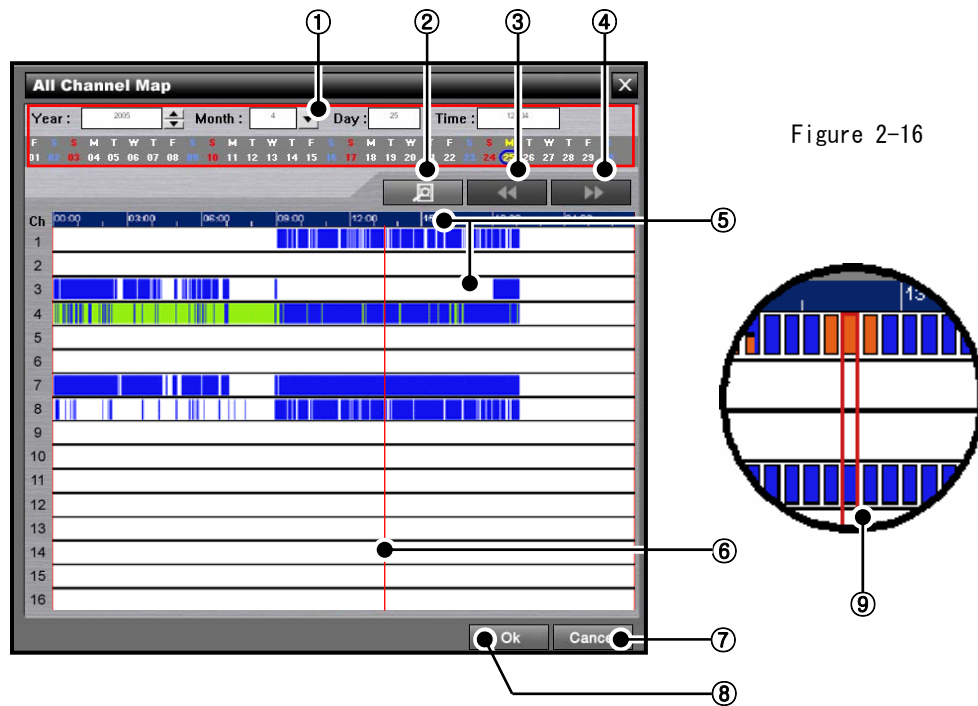
Figure 2-16

①   Calendar showing recorded date   (select date)

②   Detail record map (1hour) / full record map (24hour)

③   Previous time at detail record map

④   Next time at detail record map

⑤   Record mode
     (normal -red, motion - blue, sensor - green)

⑥   Select play position   (mouse click)

⑦   Close full record map

⑧   Move to display

⑨   Zoom-in view of detail record map

One channel search

1	Figure 2-12	①	Select one channel search mode
2	Figure 2-13	①	Select channel
3	Figure 2-14	④	Select date and time (⑤, ⑥ are used to time selection)
4	Figure 2-13		Play

Map search (1)

1	Figure 2-12	①	Select one channel search mode
2	Figure 2-13	①	Select channel
3	Figure 2-12	③	Select record map
4	Figure 2-16	①	Select date and time
5		⑧	"Ok" to search
6	Figure 2-13		Play

Map search (2)

1	Figure 2-12	①	Select one channel search mode
2	Figure 2-13	①	Select channel
3	Figure 2-16	④	Select date and time
4		⑤ ⑥	Select search area from map
5		①	Play

Smart search (full screen)

1	Figure 2-12	①	Select one channel search mode
2	Figure 2-13	①	Select channel
3		③	Set full screen as area to detect motion Adjust sensitivity by ② bar
4	Figure 2-15	⑦	Select "Key Image Set"
5		⑧ ⑨	"Next Play" or "Back Play"
6		⑩	"Ok" to search current time
7	Figure 2-13		Play

Smart search (small screen)

1	Figure 2-12	①	Select one channel search mode
2	Figure 2-13	①	Select channel
3		④	Click "Add"
4			Select an area like ① on screen Adjust sensitivity by ② bar
5	Figure 2-15	⑦	Select "Key Image Set"
6		⑧ ⑨	"Next Play" or "Back Play"
7		⑩	"Ok" to search current time
8	Figure 2-13		Play

2.10 Back Up Backup
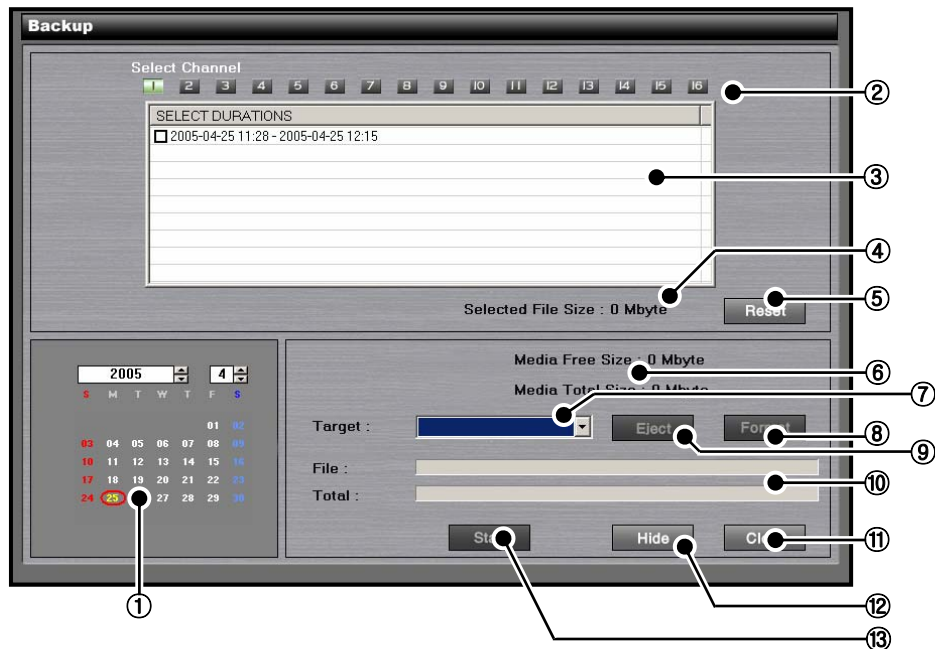
Figure 2-17

①   Calendar - recorded date (select date for back up)

②   Select the desired channel

③   Check back up data

④   Selected space - data size to back up

⑤   Reset - cancel the back up data selected

⑥   Free space - free space of media

⑦   Total space - total size for back up media

⑧   Format - format media

⑨   Eject

⑩   Status of back up process (file/total)

⑪   Close

⑫   Hide

⑬   Start/Stop

This function is used for back up the recorded data

You may connect external back up device or select back up at setup in case of HDD

＊ Recommended back devices

· HDD
· CD-RW (direct CD 5 3 above or InstantWrite install)
· DVD-RW (direct CD 5 3 above install)
· USB-memory HDD
· USB-HDD

> You must format media first before using
>
> Direct CD 5 3 above program is option item
> CD-RW or DVD-RW can be worked only when direct CD 5 3 above program is
> installed if you have trouble for this, please contact shop you bought in

⚠ CAUTION

Please back up periodically to avoid data damage

Media format

1	Figure 2-2	④	Select back up mode
2			Insert media into drive
3	Figure 2-17	⑦	Select drive in the media
4		⑧	Initializing media by "Format"

Eject media

1	Figure 2-2	④	Select back up mode
2	Figure 2-17	⑦	Select drive in the media
3		⑨	"Eject"

Back up

1	Figure 2-2	④	Select back up mode
2			Insert media into drive
3	Figure 2-17	①	Select date of data for back up (yy/mm/dd)
4		⑦	Select back up drive
5		②	Select the desired channel
6		③	Check back up part (time)
7		④ ⑥	Check select size and free media size (if free size is smaller than selected size, back up can not process)
8		⑬	Start back up

3. SEARCH
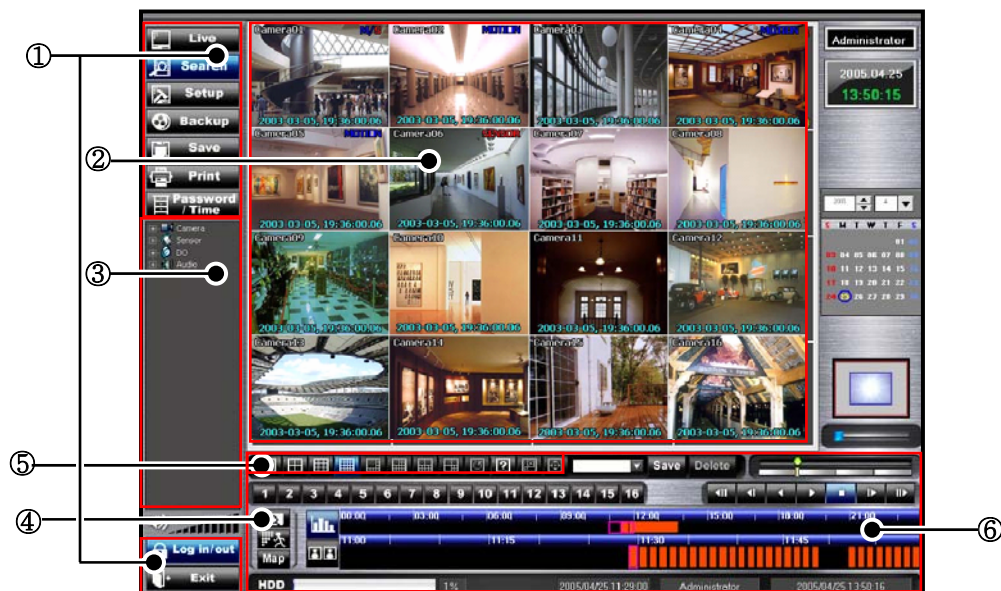
SEARCH

Figure 3-1

①   Search mode menu
     (same as surveillance mode back up, print function enable)

②   Searched screens

③   Camera information (camera, sensor, D/O, audio)

④   Panorama search button

⑤   Screen split button

⑥   Play and map

3.1 Search Menu
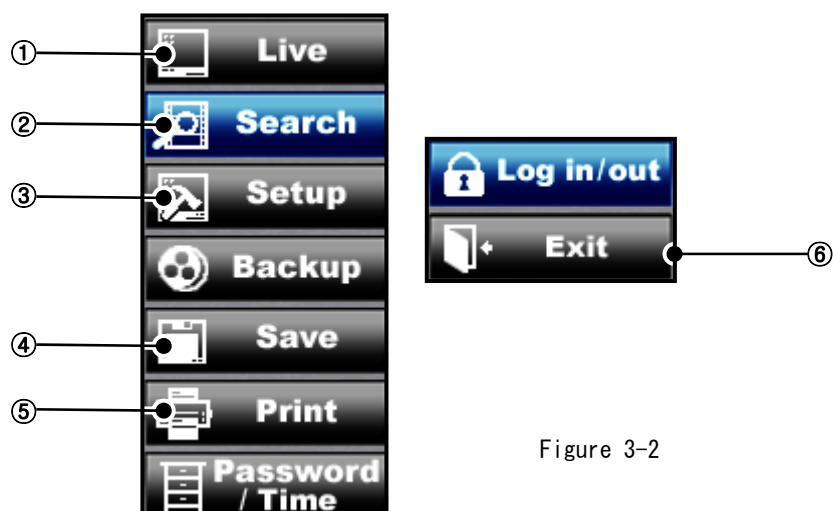
Figure 3-2

①	Go to surveillance mode
②	Go to search mode
③	Go to setup mode
④	Go to disk image save mode
⑤	Go to print mode
⑥	Off system

3.2 Channel Information
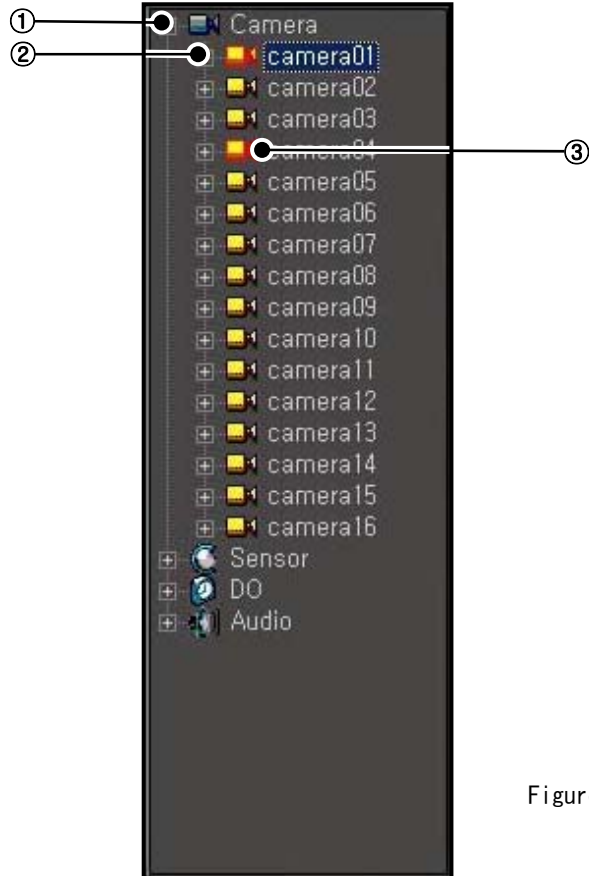
Figure 3-3

①	Camera-camera group (click and move onto channel, displayed all channel)
②	Camera 01 (click and move onto a channel camera 1 displayed at a channel)
③	Camera under recording (same as search mode)

3.3 Search Screen

Figure 3-4

①   Name of camera

②   Type of record   (NORMAL, MOTION, SENSOR, M/S)

③   Played screen

④   Date and time of play

⑤   Divided line

> If you want one channel search, click one channel   one channel only displayed

3.4 Screen Split
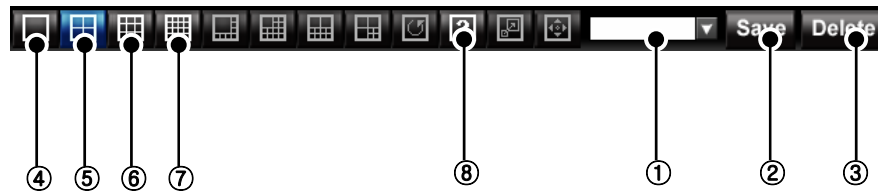
Figure 3-5

①   Name of user split screen

②   Save current split screen

③   Delete current split screen

④   One screen

⑤   4 screens

⑥   9 screens

⑦   16 screens

⑧   User define

At one screen, large and small screen is toggled by mouse right click

User defined split screen?

You can define cameras at split screens
For example at 4 screens mode 1, 4, 12, 16 cameras are dragged onto 4 screens
This user define can be saved

User define split screen

1	Figure 3-5		Select split screen
2		⑧	Select user define split screen
3	Figure 3-3	②	Drag camera onto channel (repeat this as many as channel)

Save user define split screen

1	Figure 3-5	②	Select "Save"
2	저장 화면		Type name to save
3			"Ok"

Delete user define split screen

1	Figure 3-5	①	Select user define split screen
2		③	"Delete"

3.5 Play and Map

3.5.1 Map
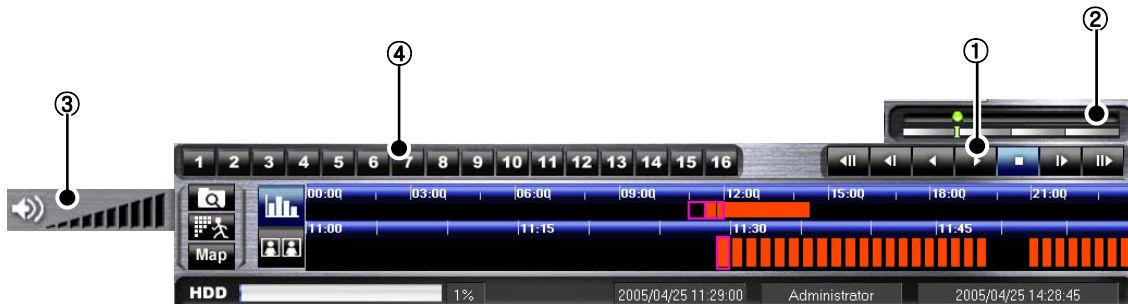
Figure 3-6
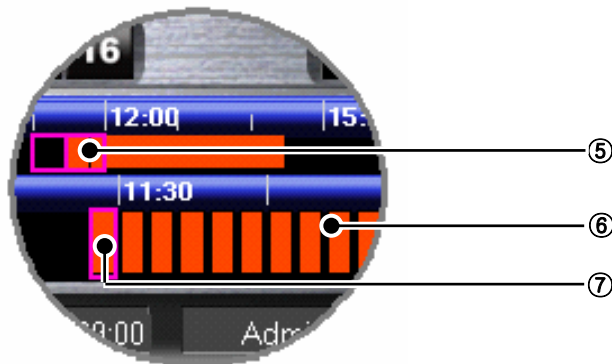
①   Play button

②   Adjust play speed

③   Control volume

④   Channel (select channel)

⑤   One day record map (select search part)
            normal-orange, motion-blue, sensor-yellow

⑥   Zoom in map from one day record map
            (select search part)
            Normal - green, Motion-blue, Sensor-yellow

⑦   Block position of current played screen time

3.5.2 Thumbnail

Figure 3-7
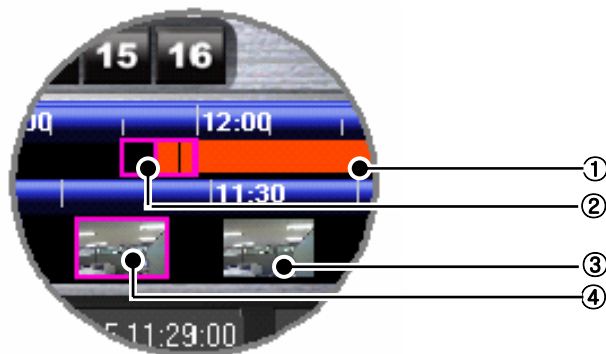
① Grey showing no record in this channel other channel has data

② One day record map (select search part)
Normal - green, Motion - blue, Sensor - orange

③ Thumbnail screen from one day record map (select search part)

④ Thumbnail screen with play time

Map search

1	Figure 3-6	④	Select channel
2			Select "Map"
3		⑤	Select block which has hour to search
4		⑦	Select block which has minute to search
5		②	Adjust play speed
6		①	Play

Thumbnail search

1	Figure 3-6	⑥	Select channel
2			Select "Thumbnail"
3	Figure 3-7	②	Select block which has hour to search
4		④	Select block which has minute to search
5	Figure 3-6	②	Adjust play speed
6		①	Play

3.6 Disk Save 💾 **Save**
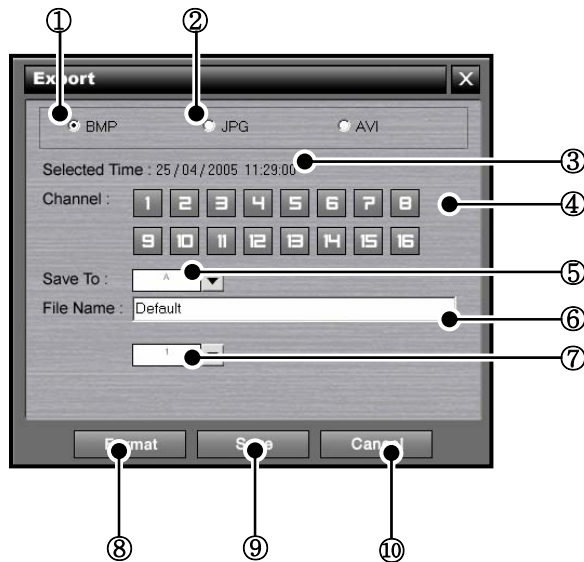
Figure 3-8

①   BMP - bmp file format

②   JPG - jpg file format

③   Selected Time - time of data to save

④   Channel - select channel to save

⑤   Save To - select drive to save to

⑥   File Name - type file name
        (when multi channel save, 01,02,03… are added to file name)

⑦   Frame — select the number of frame saved

⑧   Format — format media

⑨   Save

⑩   Cancel

If file name is set to default, data record date and time is used as file name

BMP save

1	Figure 3-2	④	Select disk save mode
2		①	Select "BMP"
3		④	Select channel (multi select are available)
4		⑤	Select drive to save
5	Figure 3-8	⑥	Type file name
6		⑦	Select the number of frame
7		⑨	Save

JPG save

1	Figure 3-2	④	Select disk save mode
2		②	Select "JPG"
3		④	Select channel (multi select are available)
4		⑤	Select drive to save
5	Figure 3-8	⑥	Type file name
6		⑦	Select the number of frame
7		⑨	Save

3.7 AVI Save
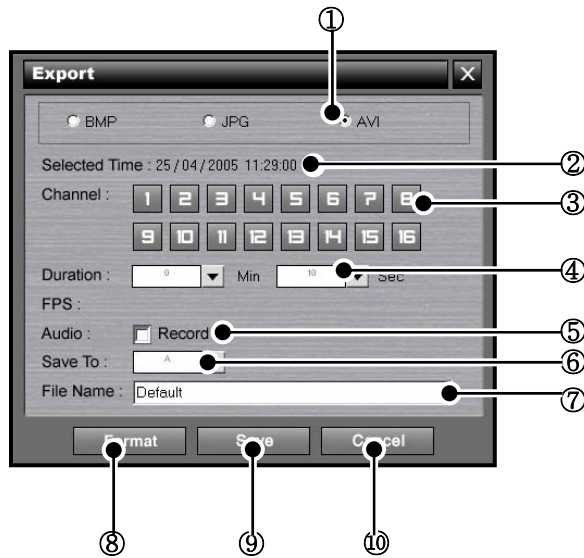
Figure 3-9

①   AVI - AVI file format

②   Select Time - time of data to save

③   Channel - select channel to save (only one channel)

④   Duration - select duration time (min, sec)

⑤   Audio - audio record on/off

⑥   Save To: - select drive to save

⑦   File name - type file name

⑧   Format – Format media

⑨   Save

⑩   Cancel

Max 60 min continuous record for AVI file

AVI save

1	Figure 3-2	④	Select disk save mode
2		①	Select "AVI"
3		③	Select channel to save
4		④	Select duration
5		⑤	Check when if you record audio
6	Figure 3-9	⑥	Select drive to save
7		⑦	Type file name
8		⑧	Format media
9		⑨	Save

3.8 Print 🖨 Print
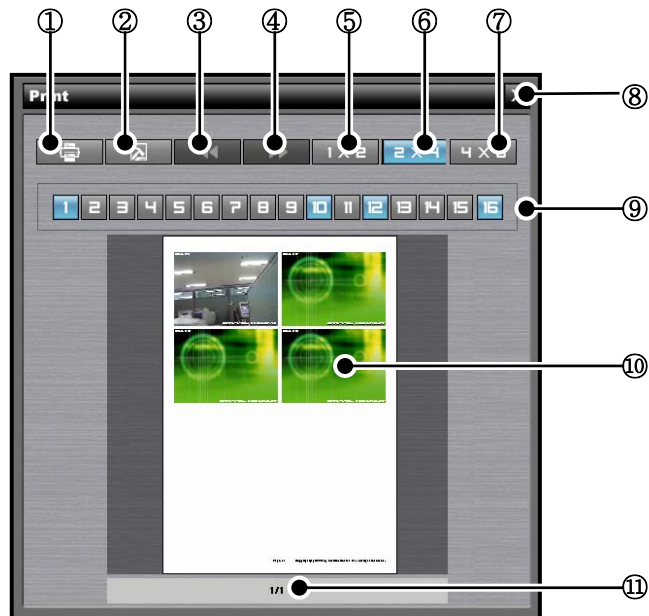
Figure 3-10

①   Print

②   Set up print

③   Previous print page

④   Next print page

⑤   Set 1x2 print at A4

⑥   Set 2x4 print at A4

⑦   Set 4x8 print at A4

⑧   Close print window

⑨   Select channel to print

⑩   Preview before print

⑪   Print page/total page

Please install print driver
before print
Make sure that print is connected
and power on before print

Print

1	Figure 3-2	⑤	Select print mode
2	Figure 3-10	⑤ ⑥ ⑦	Select print type
3		③	Select print channel (multi selection i s available)
4		①	Print

Print at other printer

1	Figure 3-2	⑤	Select print mode
2	Figure 3-10	⑤ ⑥ ⑦	Select print type
3		③	Select print channel (multi selection i s available)
4		②	Select print set up
5			Select printer from print lists
6	Figure 3-10	①	Print

3.9 Panorama Search

Figure 3-11
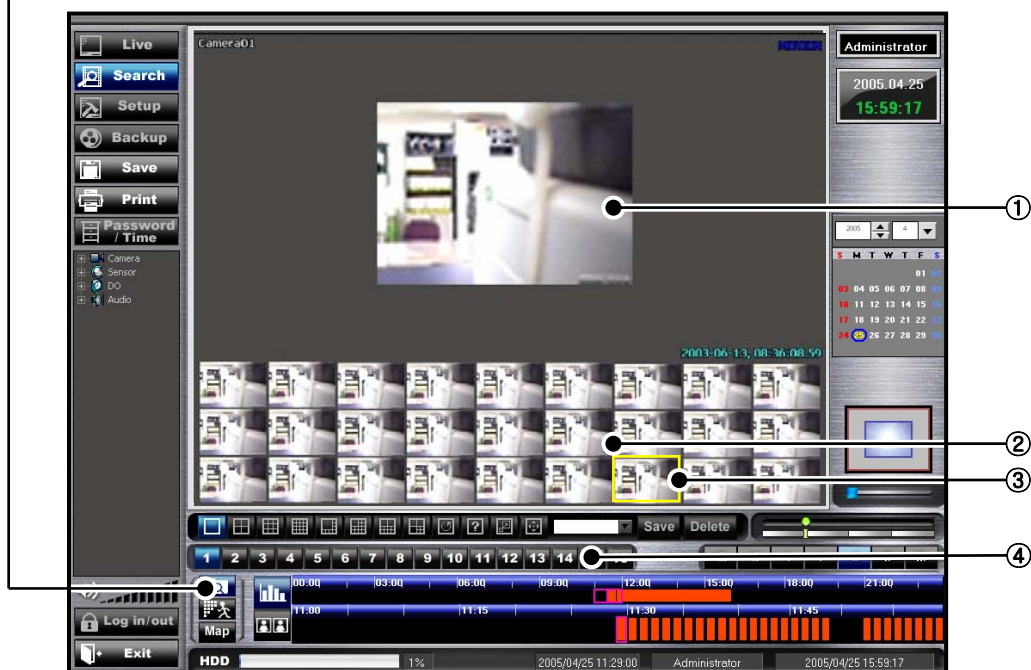
①   Display screen (zoom-in screen of panorama screen)

②   Played panorama screen

③   Playing screen (yellow boxed screen)

④   Select time and/or channel

At surveillance mode, this is used one channel search while
surveillance at search this is used to panorama search of a channel

When select camera at search channel information window and move to
panorama screen, you can change channel
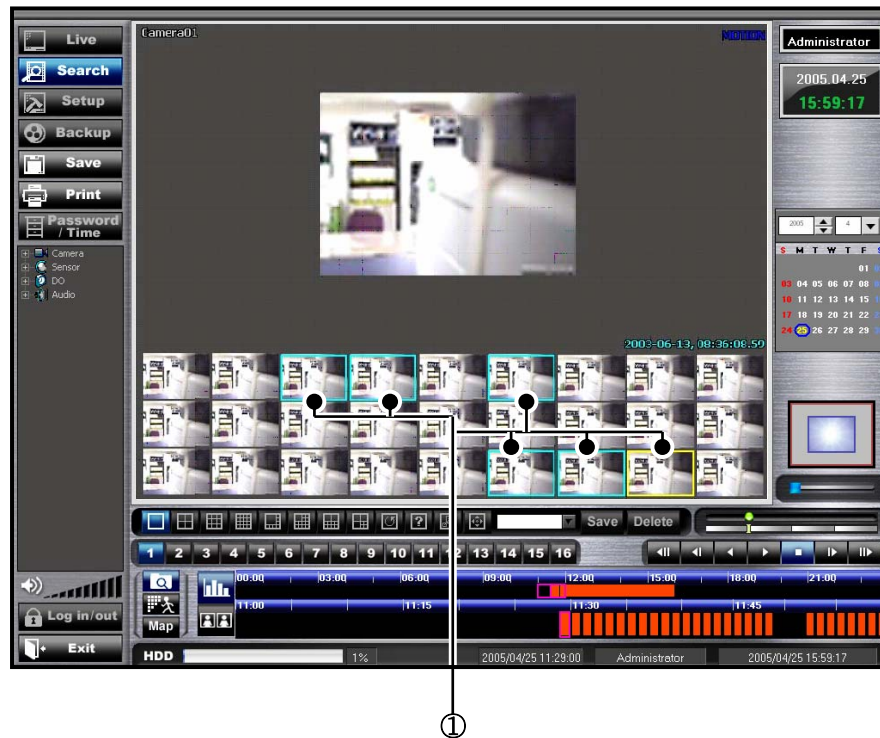
Figure 3-12

① Selected screens

With "disk save" you nay save many screens with "BMP" or "JPG" at a channel

You may print several screen at a channel

BMP save

1	Figure 3-12	①	Select screen to save
2	Figure 3-2	④	Select save mode
3	Figure 3-8	①	Select "BMP"
4		⑤	Select drive to save
5		⑥	Type file name
6		⑦	Save

jpg save

1	Figure 3-12	①	Select screen to save
2	Figure 3-2	④	Select save mode
3	Figure 3-8	②	Select "JPG"
4		⑤	Select drive to save
5		⑥	Type file name
6		⑦	Save

AVI save

1	Figure 3-2	④	Select disk save mode
2	Figure 3-9	①	Select "AVI"
3		④	Select duration time
4		⑤	Select speed
5		⑥	Check when to save audio
6		⑦	Select drive to save
7		⑧	Type file name
8		⑨	Save

Print

1	Figure 3-12	①	Select screen to save
2	Figure 3-2	⑤	Select print mode
3	Figure 3-10	⑤ ⑥ ⑦	Select print type
4		①	Print

4. CONFIGURATION

4.1 Set up Menu
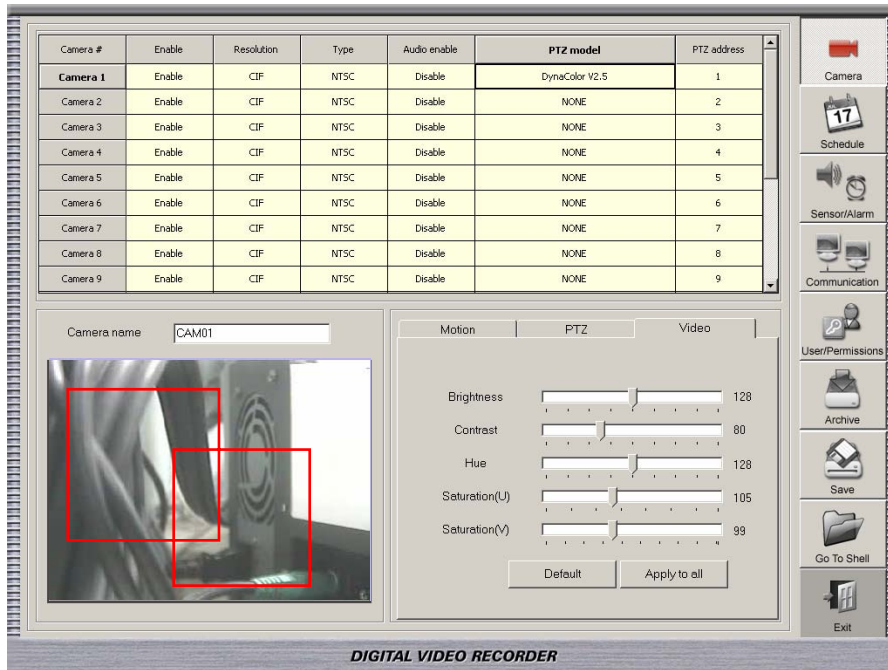
Figure 4-1

Camera/Sensor – camera/audio/sensor set up
Schedule – record schedule set up
Sensor/Alarm – Sensor/Alarm set up
Communication – network
User/Permissions – user/permission set up
Archive – back up devices, network event set up
Save – save change
Go to shell
Exit – exit and go to surveillance mode

4.2 Camera/Sensor
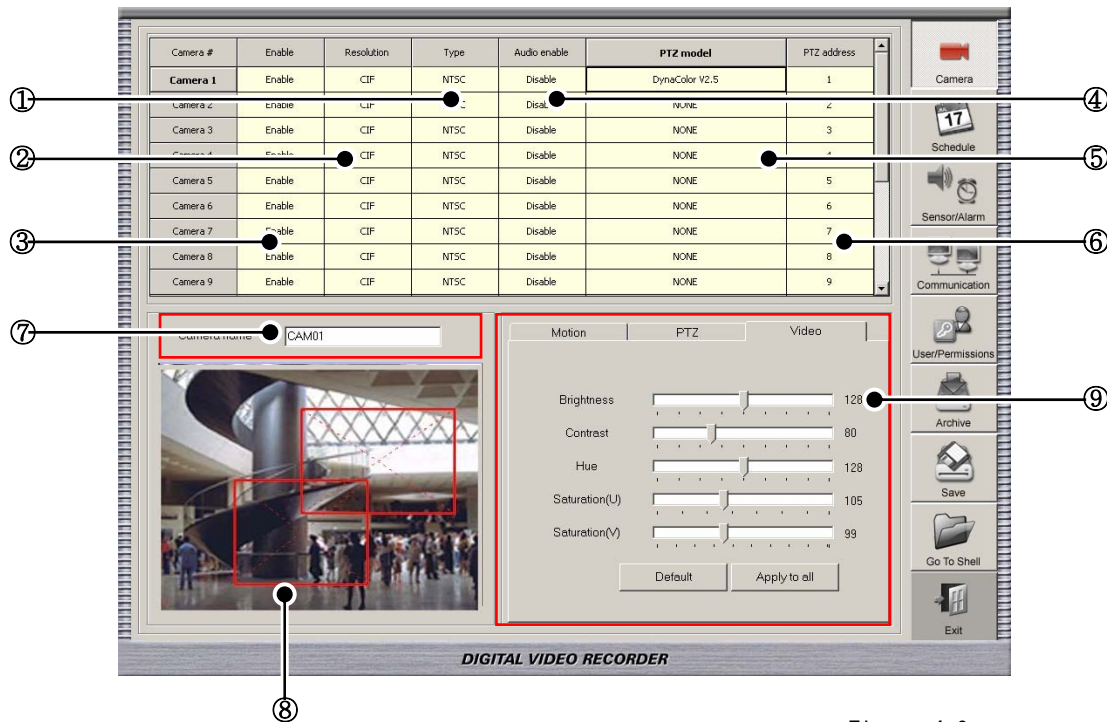
Figure 4-2

①   Camera Type – select type (NTSC/PAL)

②   Image size – select picture size. (CIF/HALF VGA/VGA)

③   Camera Enable – Check camera use.

④   Audio Enable – Check audio use.

⑤   PTZ Model – Select pan tilt of channel.

⑥   PTZ address – Select pan tilt address of channel.

⑦   Camera Name - change the camera name.
                (you should be select channel)

⑧   Motion region – Setup motion region. (max 5 region)

⑨   Motion, PTZ, Video (color)
                – Setup motion, PTZ, color of channel. .
                    (you should be select channel)

Channel select
 – If you want to select channel, you must click the desired camera in yellow list box

4.2.1 Motion area

Select motion detect area of selected camera
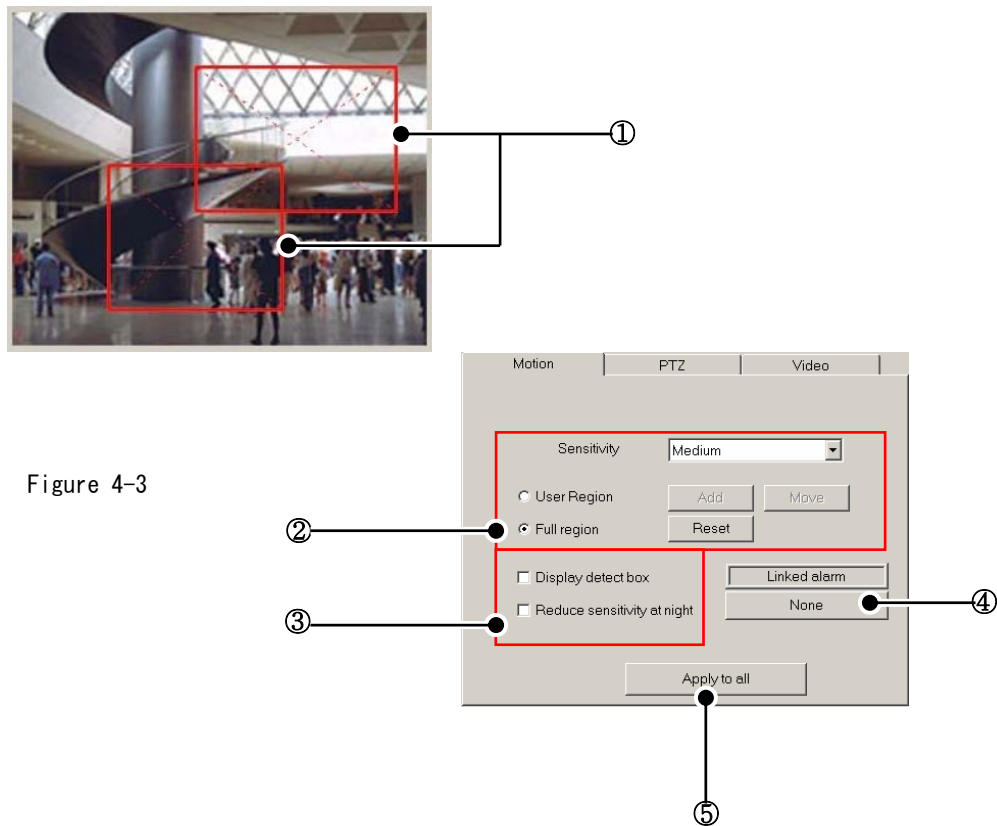
Figure 4-3

①　　　User defined motion detect area

②　　　User Defined - user define area
Full Region - full screen area
Add/Move - add user define area, move the area
Reset - delete user define area/ full area
Sensitivity - adjust the sensitivity

③　　　Display detect box - show or hide motion detected box
Reduce sensitivity at night
　　　　- reduce or not reduce motion sensitivity at night

④　　　Select Linked Alarm of channel.

⑤　　　Apply to all - apply to all cameras

4.2.2 PTZ

Adjust screen color and motion area
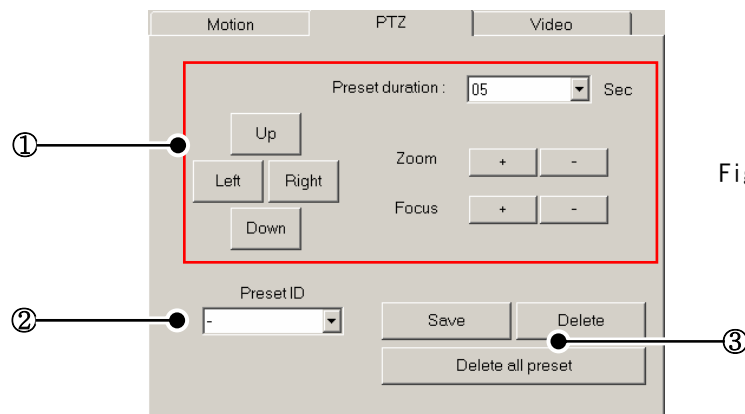
Figure 4-4

①   Move camera as you want (up/down/right/left)
     set zoom, focus, preset duration

②   Preset ID - select preset ID

③   Save - save current preset setting
     Delete - delete current preset
     Delete all preset – clear all presets

4.2.3 Video

Setting preset when do is activated
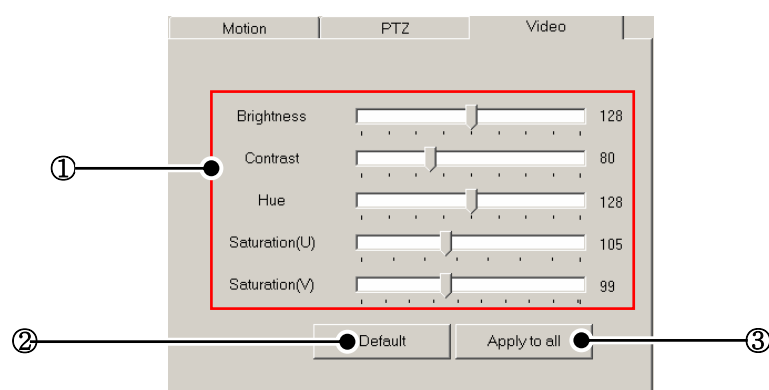
Figure 4-5

①   Adjust Bright/Contrast/Hue/Saturation

②   Set default value

③   Apply to all — apply to all cameras

4.3 Schedule
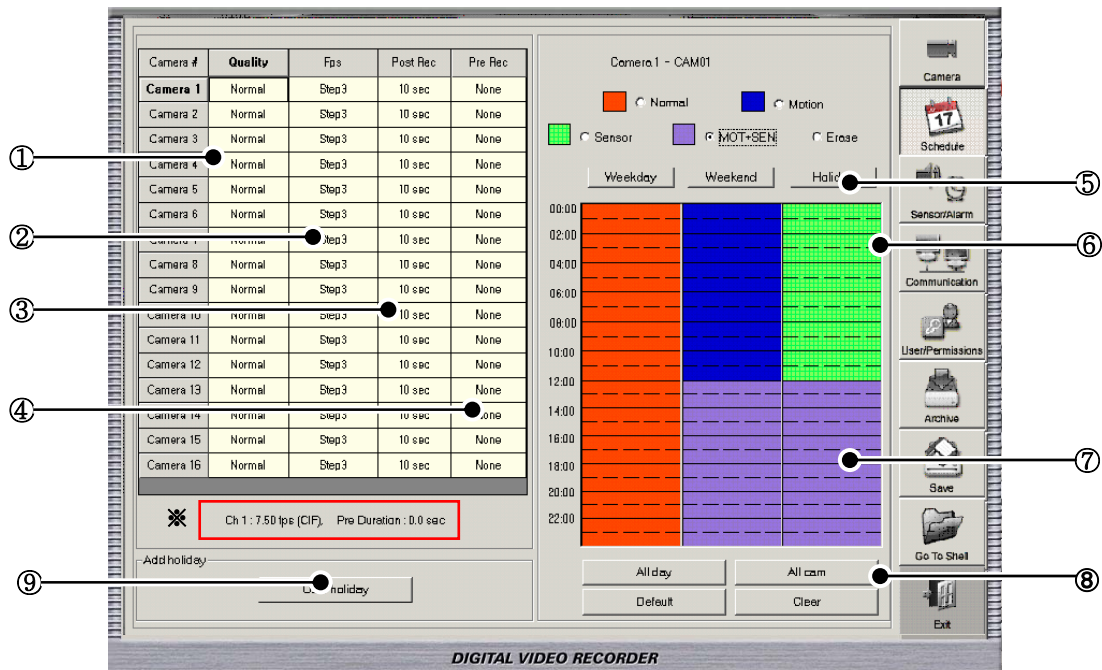
Figure 4-6

①   **Quality** – Select the quality.
           (5 levels : Best, High, Normal, Low, Lowest)

②   **Fps** – Select the recording speed (Step1(MAX)~Step5(MIN))

③   **Post Rec** – Setup the recording duration after an event.
           (Range : 10sec~5min)

④   **Pre Rec** – Setup the recording duration before an event.
           (NONE, SHORT TERM, MIDDLE TERM, LONG TERM)

⑤   **Schedule Mode** - select schedule mode (you should select channel)

⑥   **Schedule Group** – Select the names, changes, and holidays for an individual group
    (you should select channel)

⑦   **Schedule Setting** – Select hourly recording schedule for an individual group (you
    should select channel)

⑧   **Default** – set default schedule value   **clear** – delete
    all schedule of a camera
    All Cam – apply same schedule to all camera
    All Day – apply same every day of week

⑨   **Add holiday** – Setup the holiday schedule

Channel select – If you want to select channel, you must click the desired camera in yellow list box
Remark of FPS/ Pre Duration (※ ☐) – when selecting each channel, indicate the recording of FPS (frame per second), Pre Duration & resolution.

4.3.1 Holiday setup

Figure 4-7
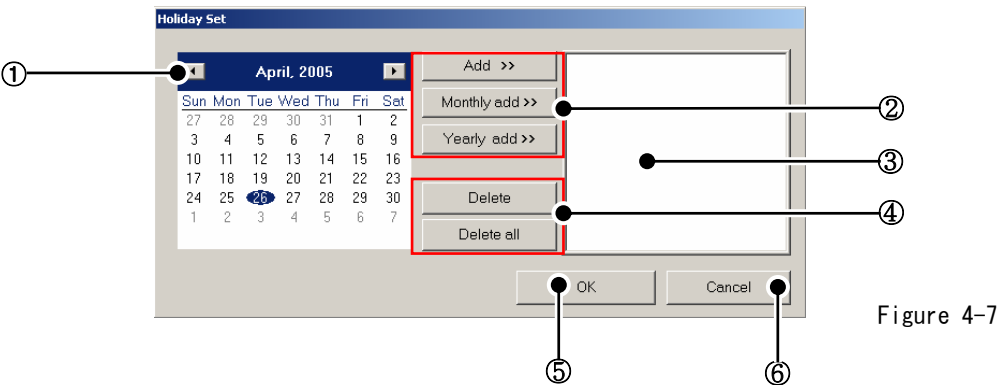
①   Calendar - ◄ / ► previous/next month

②   Add - add the date to holiday schedule (2003-06-13)
          Monthly Add - add monthly holiday (monthly 13)
          Yearly Add - add yearly holiday (yearly 06-13)

③   Added holiday lists

④   Delete - delete selected date from the list
          Delete All - delete all date from the list

⑤   Ok - save and exit

⑥   Cancel - exit without save
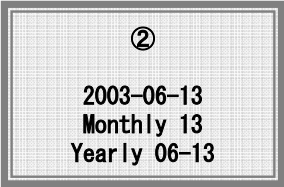
4.3.2 Schedule Group Setting

Figure 4-8
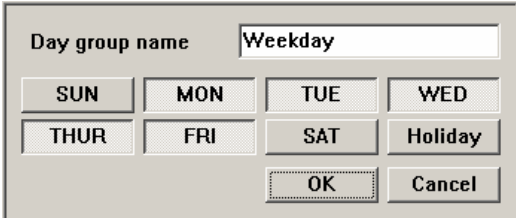
①   Select days for the individual recording group
②   Change the group name

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4.3.3 Pre Duration Information

480FPS (Model 7016)			
Pre Duration / FPS	Short Term	Middle Term	Long Term
Step 1 (MAX)	1 sec	2 sec	3 sec
Step 2	2 sec	4 sec	6 sec
Step 3	4 sec	8 sec	12 sec
Step 4	8 sec	16 sec	24 sec
Step 5	16 sec	32 sec	48 sec
Step 6 (MIN)	32 sec	64 sec	96 sec
240FPS (Model 6016)			
Pre Duration / FPS	Short Term	Middle Term	Long Term
Step 1 (MAX)	2 sec	4 sec	6 sec
Step 2	4 sec	8 sec	12 sec
Step 3	8 sec	16 sec	24 sec
Step 4	16 sec	32 sec	48 sec
Step 5	32 sec	64 sec	96 sec
Step 6 (MIN)	64 sec	128 sec	192 sec

4.4 Sensor/Alarm

4.4.1 Sensor
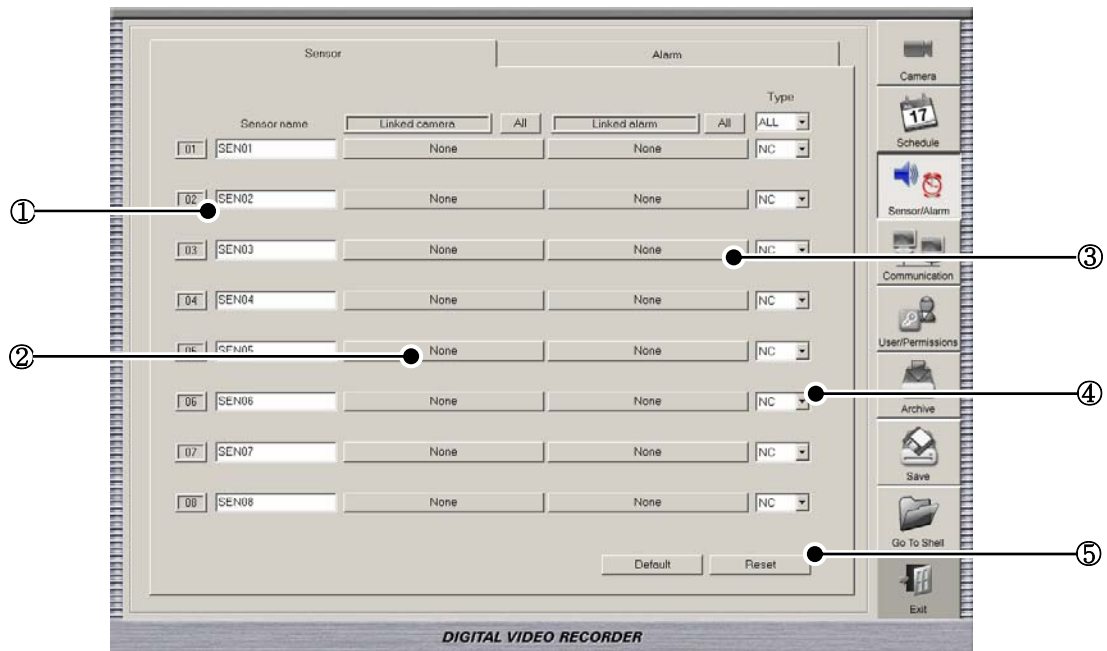
①   Sensor Name - Change sensor name

②   Linked Camera - Select Linked Camera

③   Linked Alarm - Select Linked Alarm

④   Sensor type - Select sensor type (Normal Close, Normal Open)

⑤   Default - Setting default value

⑥   Reset - Clear current value

4.4.2 Alarm
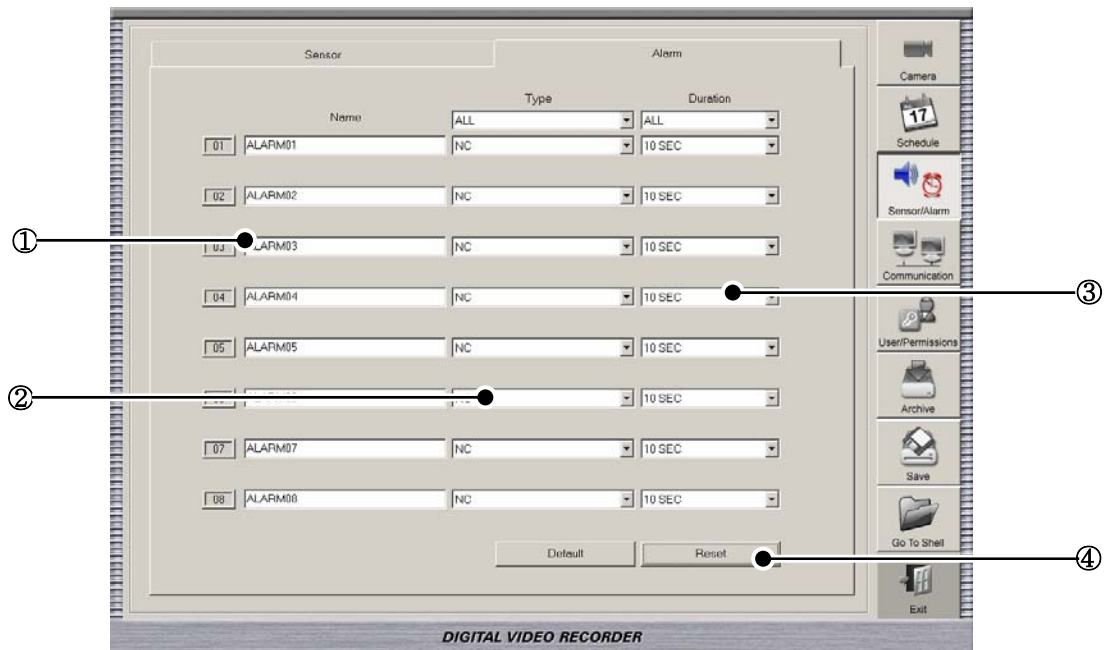
Figure 4-10

①   Alarm Name - Change alarm name

②   Alarm type - Select alarm type (Normal Close, Normal Open)

③   Alarm Duration — Select the duration for the ALARM.
                             (1 TIME, 1sec~10min, CONTINUE)

④   Default - Setting default value

⑤   Reset - Clear current value

4.5 Communication (Network)
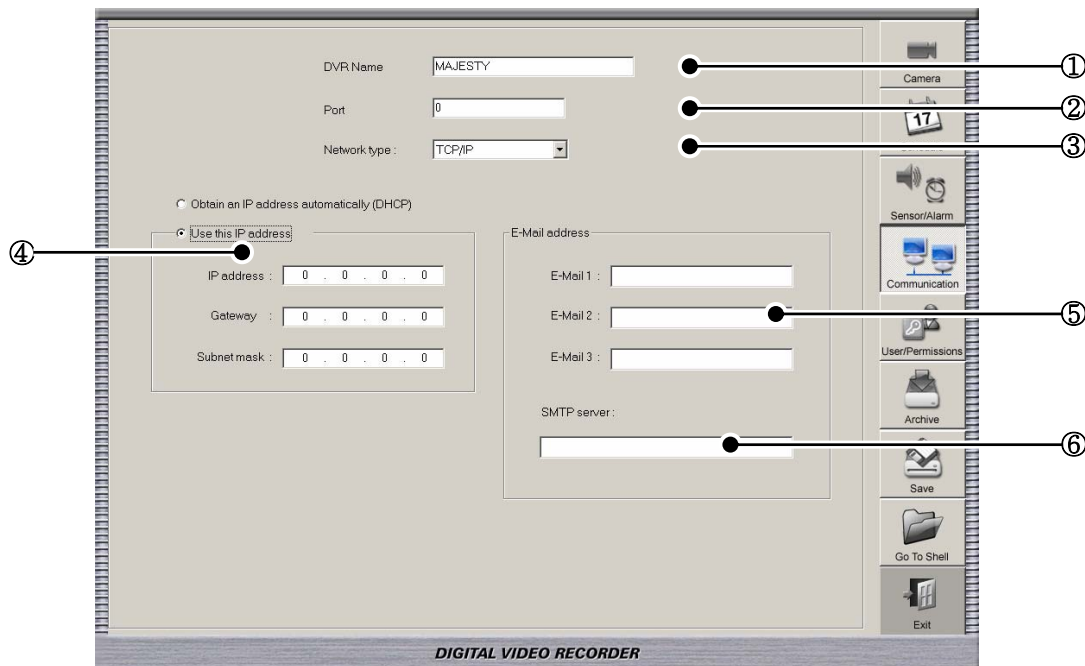
①   DVR Name - Change DVR system name

②   Port - Set network port

③   Network Type - Set network type (TCP/IP, Modem)

④   Set transmission (Enable/Disable)

⑤   Email List - type the e-mail address to receive the emergency transmission

⑥   SMTP Server - type SMTP server

Emergency transmission - detected picture by motion or sensor is sent to e-mail address

4.6 User/Permissions (users)
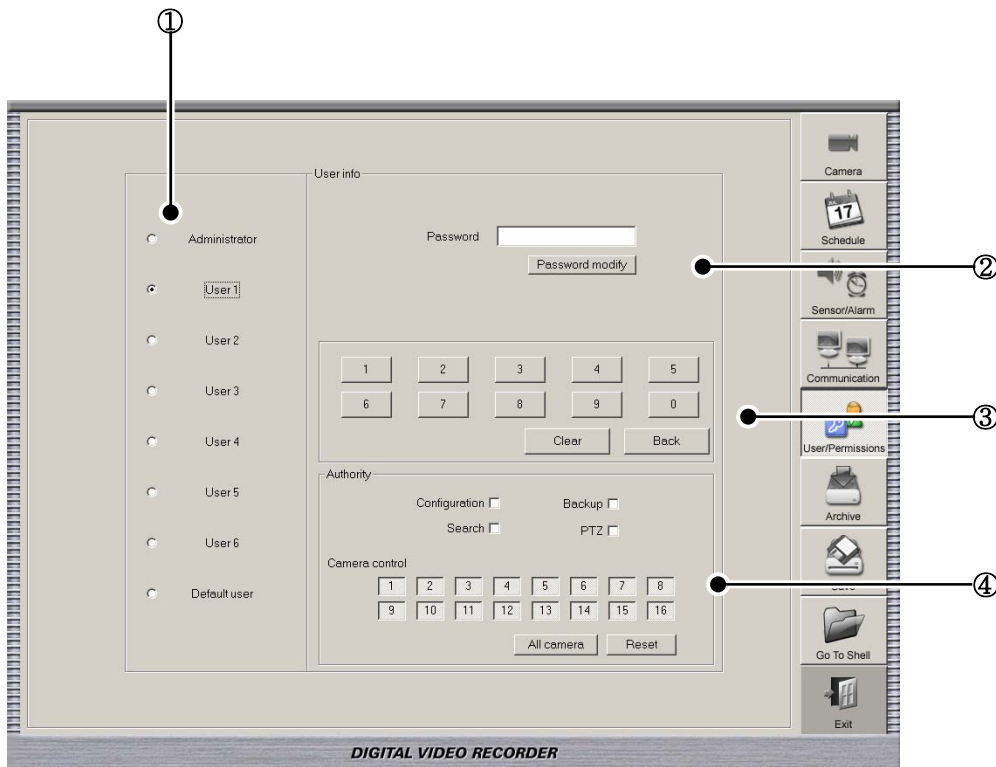
Figure 4-12

①   User - Select the desired user

②   Change password of administrator

③   password number key(0~9, clear, back)

④   Authority - set authority to each user (except Administrator)
        (Configuration, Backup, Search, PTZ, Camera)

4.6.1 changing password of administrator

To change administrator password

Please periodically change password for security

Please keep password carefully
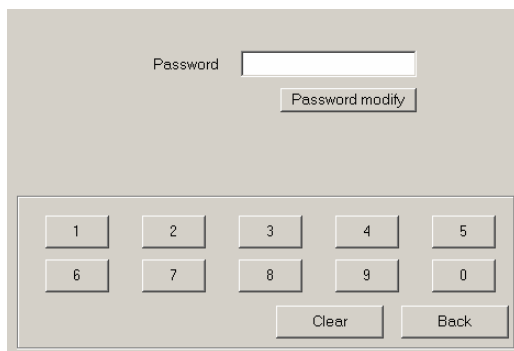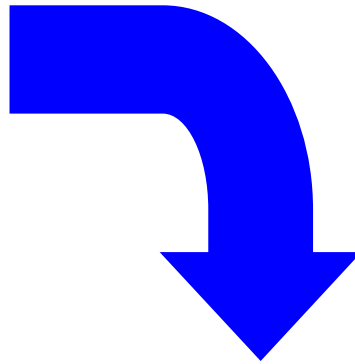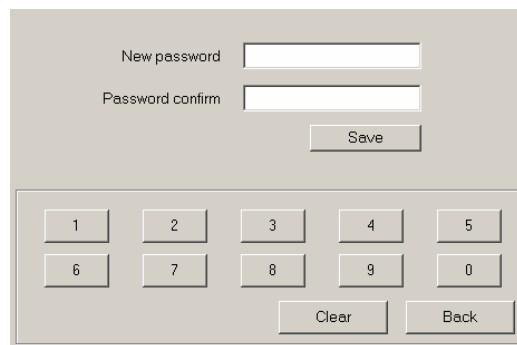
Figure 4-13

After input current password, just
type new password and confirm

4.7 Archive (backup)

System

①	System beep	Off
②	Version	1.0.1
③	CPU	20%

IP address | 10.0.2.5 | ⑤

④ Event

Motion	Sensor	No video signal
	CMS	E-Mail
Camera 1	Off	Off
Camera 2	Off	Off
Camera 3	Off	Off
Camera 4	Off	Off
Camera 5	Off	Off
Camera 6	Off	Off
Camera 7	Off	Off
Camera 8	Off	Off
Camera 9	Off	Off

Backup drive setting ⑥

	Drive type	Total size	Available
C:\	System drive	20002 MB	17666 MB
D:\	Data drive	58157 MB	482 MB

Date / Time ⑦

Date mark manner	yyyy-MM-dd
Division	-

Camera
Schedule
Sensor/Alarm
Communication
User/Permissions
Archive
Save
Go To Shell
Exit

DIGITAL VIDEO RECORDER

Figure 4-14

① System beep – In case of detecting system trouble by self diagnosis program, the beep sound can be controlled by switching ON/OFF.

② Version – show DVR version

③ CPU – show current CPU status

④ Event – Setup to send the message to the CMS or E-mail in case of an   EVENT (Motion, Sensor, No video signal)

⑤ IP address – show IP address

⑥ Backup drive setting – toggle between data and backup drive

⑦ Date/Time - select type of date (yy/mm/dd, mm/dd/yy, dd/mm/yy) and select division(-, /)

If selected "backup drive", recording is not possible please make sure the purpose of the drive before setting

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4.8 Save

To save the change

If not save, all change does not saved

If you want to change, be sure to save

4.9 Go to Shell
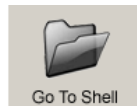
To go to windows mode

To reset or initialize when you add HDD

To install driver when some devices are attached

⚠ CAUTION

Do not run shell mode for long time
At shell mode, recording is not possible

4.9.1 Shell screen
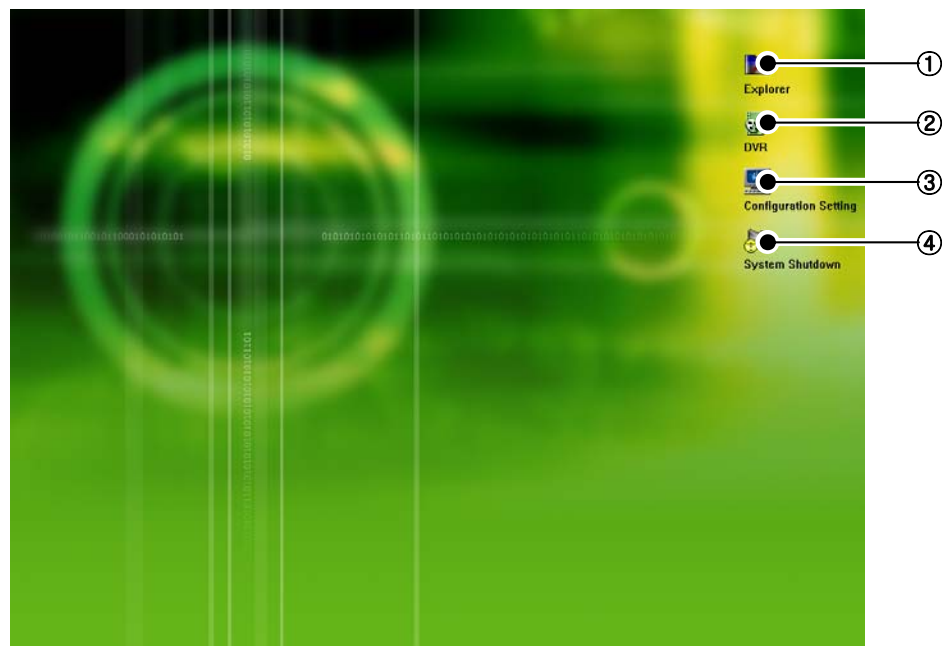
Figure 4-15

①   Windows explorer

②   Start DVR operation

③   The configuration setting
             (set the icon name & color, date, network, printer)

④   System shut down

⚠ CAUTION

Do not run shell mode for long time
At shell mode, recording is not possible

4.9.2 Configuration Setting
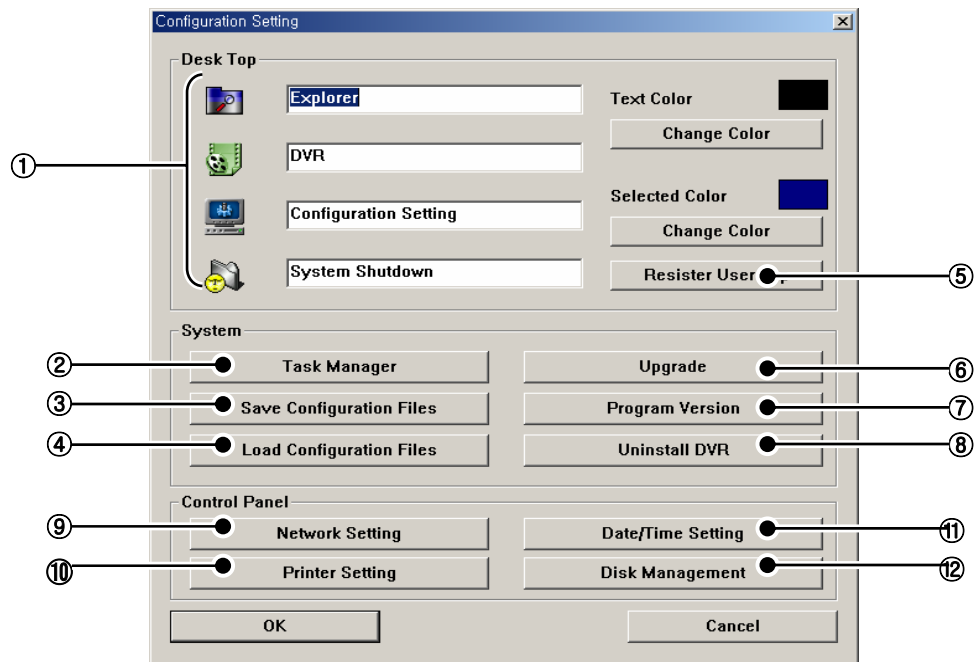
Figure 4-16

①　　Change the icon name of SHELL mode & text color

②　　Execute Windows Task Manager

③　　Save configuration Files in DVR

④　　Load configuration Files in DVR

⑤　　This function is used in case of setup user program automatically
　　　except DVR

⑥　　upgrade　DVR system

⑦　　Can figure out DVR version information

⑧　　Delete DVR program
　　　(please do not use this function except Updating system)

⑨　　Setup network information

⑩　　Setup print

⑪　　Show the registered information of Windows' date & time
⑫　　Execute printer setup of Windows

4.10 General Functions

Change camera name			
1	Figure 4-2	⑦	Selected camera Change camera name

Check camera use		
1	Figure 4-2	Check Camera Enable Select Image Size Setup PTZ Check Audio Enable Set motion detect region

Set Sensor			
1	Figure 4-9	①	Change sensor name
		②	Select linked camera
		④	Select sensor type

Alarm link			
1	Figure 4-2		Select camera
	Figure 4-3	④	Select linked Alarm for motion
2	Figure 4-9	③	Select linked Alarm for sensor

Set motion area (full area)

1	Figure 4-2		Select camera
2	Figure 4-3	②	Select "Full Region" Adjust sensitivity

Set motion area (user defined)

1	Figure 4-2		Select camera
2	Figure 4-3	②	Select "User Defined" Select "Add" Adjust sensitivity
3		①	Set motion detect area

Set Preset

1	Figure 4-2		Select camera
2		②	Select preset
3	Figure 4-4		Set points with up/down/left/right and zoom
4		①	Repeat and Set

Setting schedule group

1	Figure 4-6	⑥	Select the desired group
2	Figure 4-8		Select days
3			Change group name

Normal record

1			Select camera
2		⑤	Select Normal
3	Figure 4-6	⑥	Setting schedule group or
		⑧	Select All day button
4		⑦	Set schedule with a mouse

Motion record for all camera

1			Select camera
2		⑤	Select Motion
3	Figure 4-6	⑧	Select All cam button
4		⑥	Setting schedule group or
		⑧	Select All day button
5		⑦	Set schedule with a mouse

Site name/ auto IP (DHCP)

1	Figure 4-11	①	Type DVR server name
2		④	Check "Obtain an IP address automatically (DHCP)"

Set IP address

1	Figure 4-11	②	Uncheck "Obtain an IP address automatically (DHCP)"
2		④	Type "IP Address" Type "Subnet Mask" Type "Gateway"

Emergency video transmission (motion detect)

1	Figure 4-11	⑤	Input email address (max 3)
2		⑥	Input SMTP server IP
3	Figure 4-14	④	Select motion tap Set on for the desired camera

Change administrator password

1	Figure 4-12	①	Select administrator
2		②	Confirm password
3	Figure 4-13		Input new password

5. Q & A

5.1 Power Problem

Failure of DVR power

1.   Check that the power cable is connected correctly
2.   Check that voltage switch (115/230) is selected correctly
3.   Check the multi tab power switch on

5.2 Screen Problem

Screen does not appear

1.   Check the connection between DVR and monitor
2.   Check the monitor power is on
3.   Check the brightness of monitor

The initial screen does not appear even though the monitor screen is on

1.   If not connected mouse and keyboard, it maybe happen the above
      problem please connect well the mouse and keyboard

5.3 image Problem

The camera image does not appear

1.   Check that video cable is connected well with DVR

2.   Check the camera power is on

3.   At "Figure 4-2" please check camera "Enable"

4.   Test other camera if camera is out of order

Camera image is b & w or distorted

1.   Please test other camera if the camera is out of order

2.   At "Figure 4-2" check the camera type correctly

5.4 PTZ Problem

Pan/Tilt does not operate

1.   Check the connection between rs-485 converter and pan/tilt
      (please check how to connect pan/tilt correctly)

2.   Please test other rx-485 converter if the converter is wrong

5.5 Recording Problem

Q Motion recording does not work

A
1.   At "Figure 4-2" check motion detect area setting
2.   At "Figure 4-7" check the motion record schedule
3.   At "Figure 4-8" check holiday record setting

Q Sensor recording does not work

A
1.   At "Figure 4-2" please check that the sensor record is marked
2.   At "Figure 4-2" check the type of sensor and working correctly
3.   At "Figure 4-7" check sensor record schedule is setup
4.   At "Figure 4-8" and "Figure 5-11" check the holiday recording
5.   At "Figure 4-10" check the sensor schedule is well setup
6.   Check the type of sensor and it is working

5.6 Network Problem

At remote, it does not connect with DVR

1.　　　check the network cable is well connected
2.　　　at "Figure 4-12" check "auto IP" marked or the address odd IP is correct

5.7 Print Problem

It does not print

1.　　　Check the print power is on
2.　　　Check the cable between print and DVR
3.　　　Please check the print driver is installed well　　　　　　　　(driver installation is done at shell mode)

6. SUPPLEMENT

Sensor Connect

PI 5016/6016/7016

PI 5216
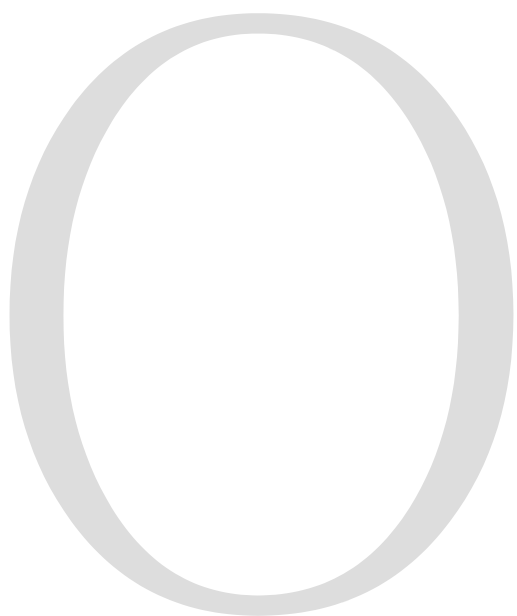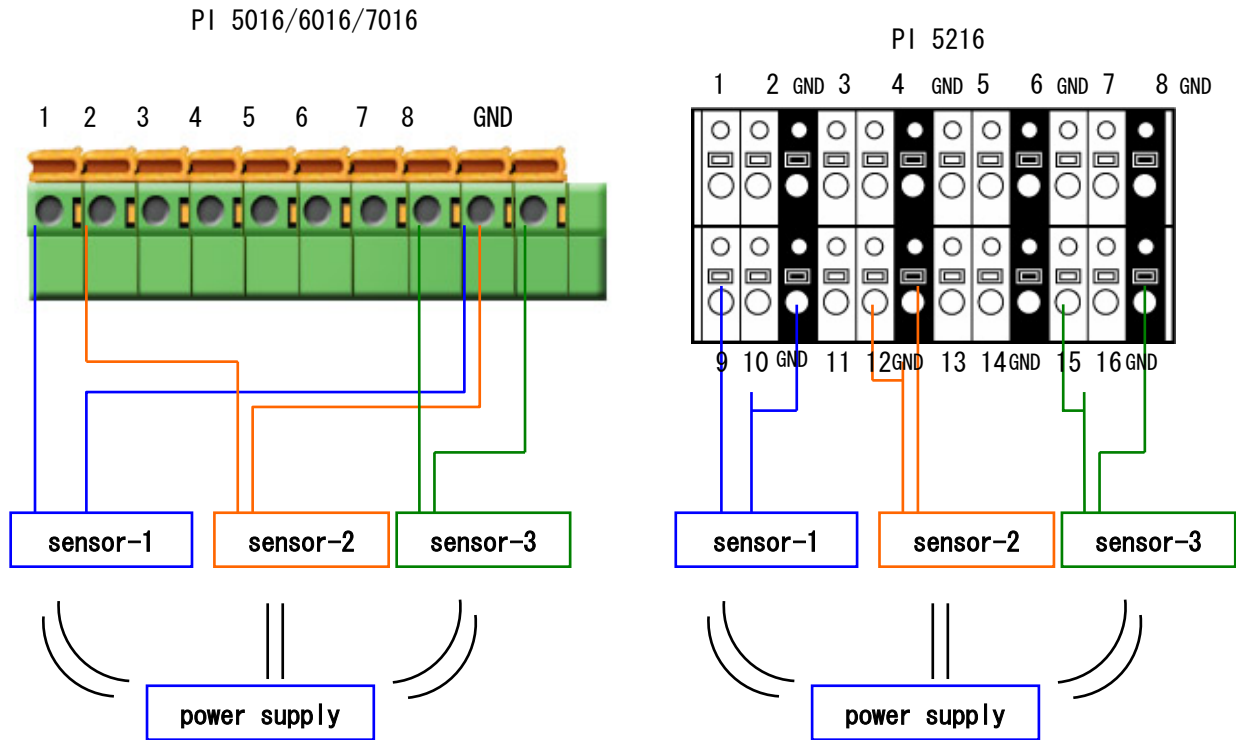
Connect one of the sensor cords to the main part's folding terminal and input another cord in any of the above number terminals

the sensor power is additionally supplied through additional power adaptor

the sensor type of (normal close) and (normal open) are both worked well with our DVR
you have to select the sensor type at (camera/sensor) screen

Digital Out Connect
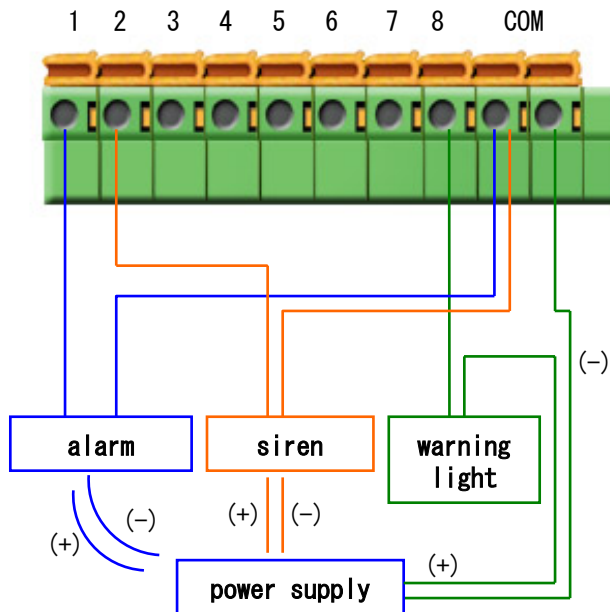
PI 5016/6016/7016   PI 5216
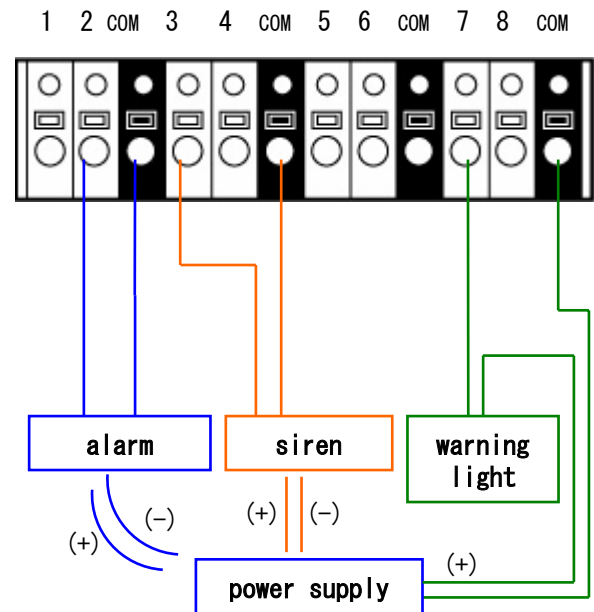

```
the D/O power is additionally supplied through additional power adaptor

the D/O type of (normal close) and (normal open) are both worked well with
our DVR
you have to select the D/O type at  (camera/sensor) screen
```

PAN/TILT Connect

PI 5016/6016/7016
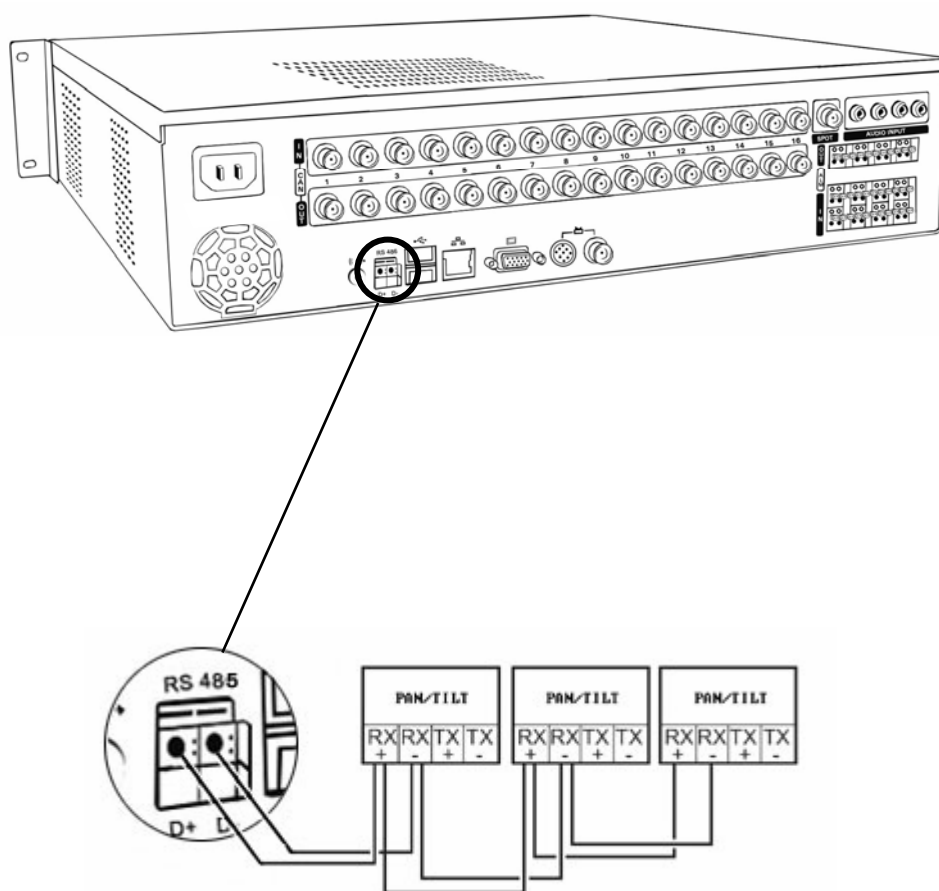
Only PI 7016

9 to 25 Pin Converter

485 Converter

Adapter

CLOSE

T+ T- R- R+

PAN/TILT				PAN/TILT				PAN/TILT			
RX	RX	TX	TX	RX	RX	TX	TX	RX	RX	TX	TX
+	-	+	-	+	-	+	-	+	-	+	-

PAN/TILT Connect

PI 5216

PAN/TILT RX

RX protocol shall be added or deleted without notice

Protocol	Manufacture	Line Info	Interface	Remark
KRE-301	Kodicom	9600-8-N-1	RS-485	Korea
DRX-502A	DongYang	9600-8-N-1	RS-485	Korea
LPT-A100L	LG	9600-8-N-1	RS-485	Korea
PELCO-D	Pelco	2400-8-N-1	RS-485	USA
H7720	Dynacolor	9600-8-N-1	RS-485	Taiwan
HSD:HID2406	LG	9600-8-N-1	RS-485	Korea
KD-1062	YINHE	9600-8-N-1	RS-485	Korea
GRX-2000	Gersung	9600-8-E-1	RS-485	Korea
CCR-200G	SungJin C&C	4800-8-E-1	RS-485	Korea
WV-CS850	Panasonic	19200-8-N-1	RS-485	JAPAN
GC-755	Honeywell	9600-8-N-1	RS-485	USA
DY-255RX	Dongyang	9600-8-N-1	RS-485	Korea
MRX-1000	Samsung	9600-8-N-1	RS-485	Korea
FastScan	Ultrak	9600-8-N-1	RS-485	USA
NK-97CHE	New Born	9600-8-N-1	RS-485	Taiwan
LVC-A700	LG	9600-8-N-1	RS-485	Korea
HID2406	LG HSD-251	9600-8-N-1	RS-485	Korea
SPD1600/2500	Samsung Techwin	9600-8-N-1	RS-485	Korea
SCC 641	Samsung	9600-8-N-1	RS-485	Korea
CNBTech Smart	CNB Tech	9600-8-N-1	RS-485	Korea
Pelco-P	Pelco	9600-8-N-1	RS-485	USA
PhilipsTC8560	Philips	9600-8-N-1	RS-485	USA
SerialSRX100A	Samsung OEM	9600-8-N-1	RS-485	Korea
PIH717	Merit LiLin	9600-8-N-1	RS-485	Taiwan

PAN/TILT RX

RX protocol shall be added or deleted without notice

Protocol	Manufacture	Line Info	Interface	Remark
SJ2819RX	SungJin C&C	4800-8-N-1	RS-485	Korea
HDH-302	HiTRON	9600-8-N-1	RS-485	Korea
HMC-250	CTN-COM	9600-8-N-1	RS-485	Korea
ORX-1000	Oriental System	2400-8-N-2	RS-485	Korea
SBO-201P1	WonWoo Eng	9600-8-N-1	RS-485	Korea
JVC-TKC675BE	JVC	9600-8-E-1	RS-485	Japan
V1311RB	VICON	4800-8-N-1	RS-485	USA
(BBV) TX1000	BBV	9600-8-N-1	RS-232	UK
CRD-J6416	chilsung	19200-8-N-1	RS-485	Korea
LG LPT – SD 160'S	LG	9600-8-N-1	RS-485	Korea
ScanDome II (HSDN-251)	Honeywell	9600-8-N-1	RS-485	Korea
VRX-2201	Inter-M	9600-8-N-1	RS-485	Korea
CCR-1600	Fine System	2400-8-N-1	RS-232	Korea

Audio Connect

PI 5016/6016/7016

Only PI 7016

Only PI 7016

SPEAKER

CAMERA OUT

AUDIO PORT<IN>

MIC

AUDIO CABLE

Used AMP

MIC

AMP
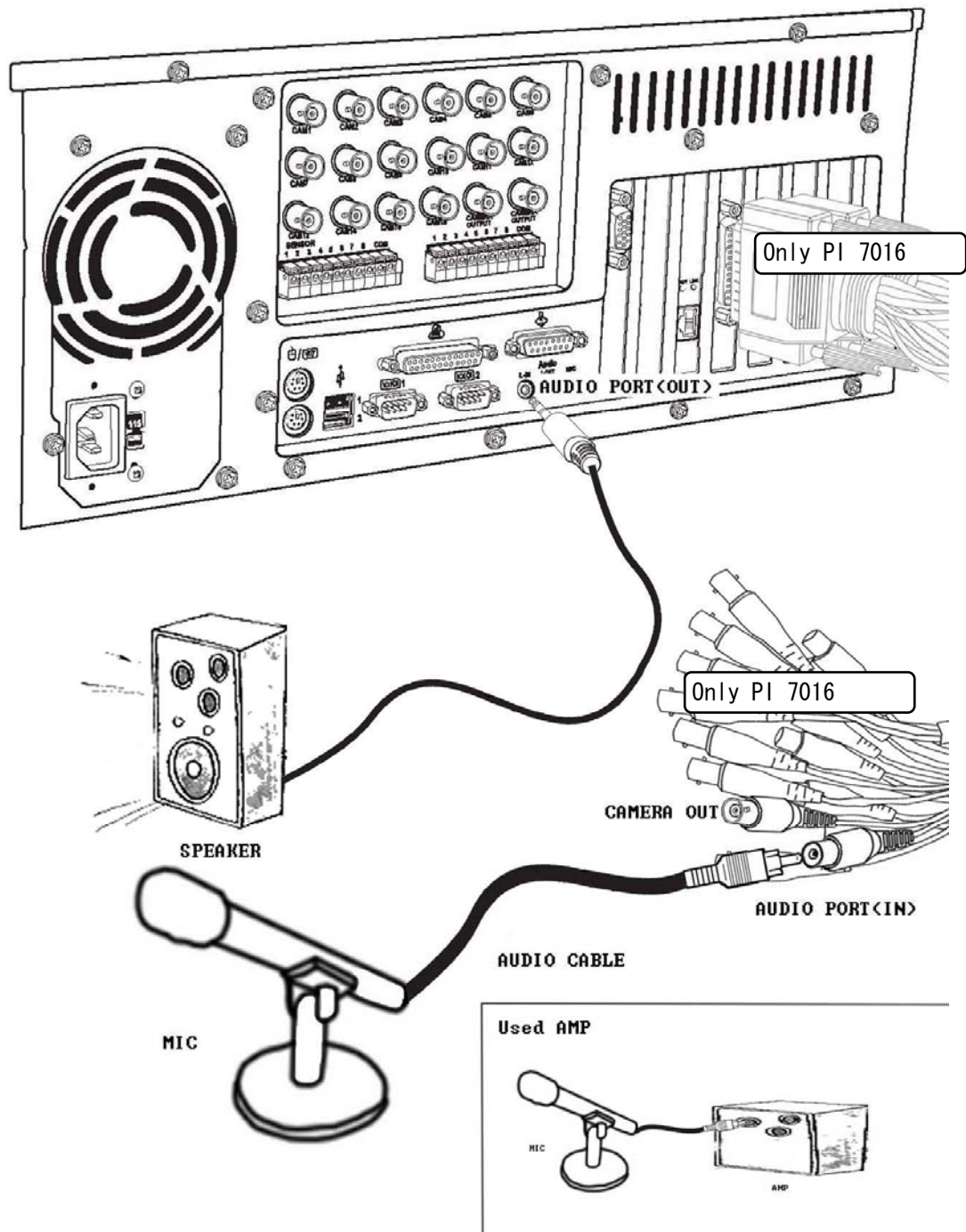
Audio Connect

PI 5216

Image Query & Size

(%) 100
 80
 60
 40
 30
 20

Normal Compression

(Query) 0

24 22 20 18 16 14 12 10 8 6 4 2 0

(Size)   (Kbytes)

(%) 100
 80
 60
 40
 30
 20

High Compression (Enhanced)

(Query) 0

15(k) 10(k) 5(k) 1(k) 500 100 50 30 20 10
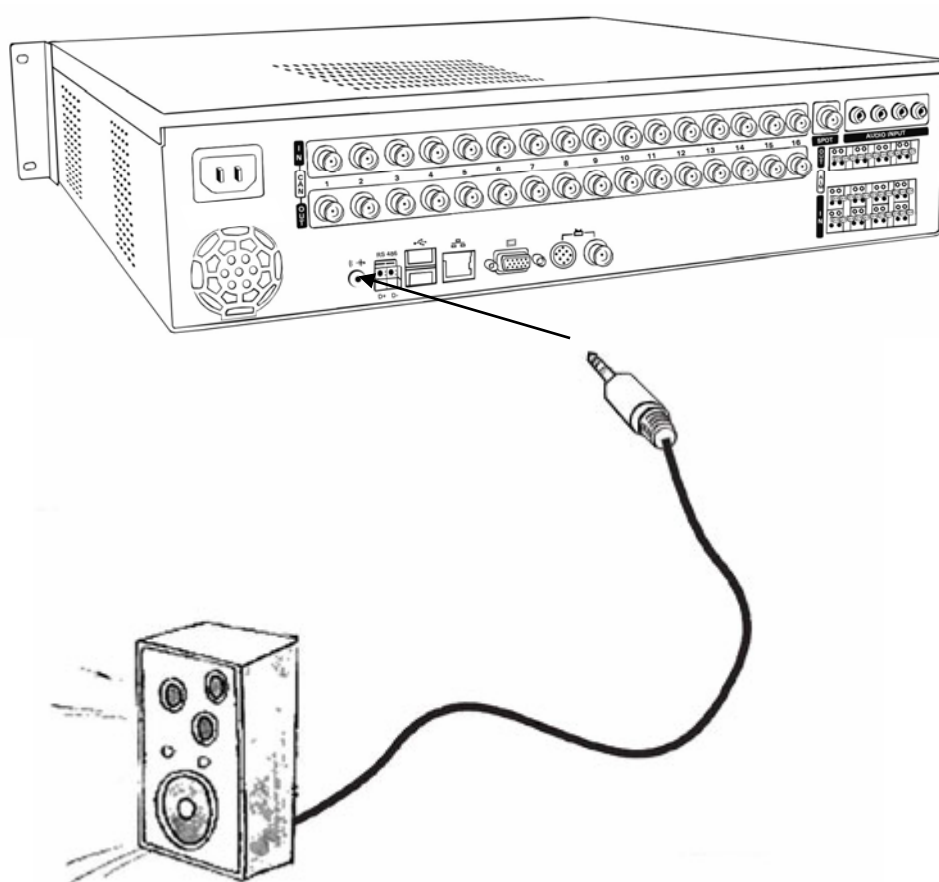
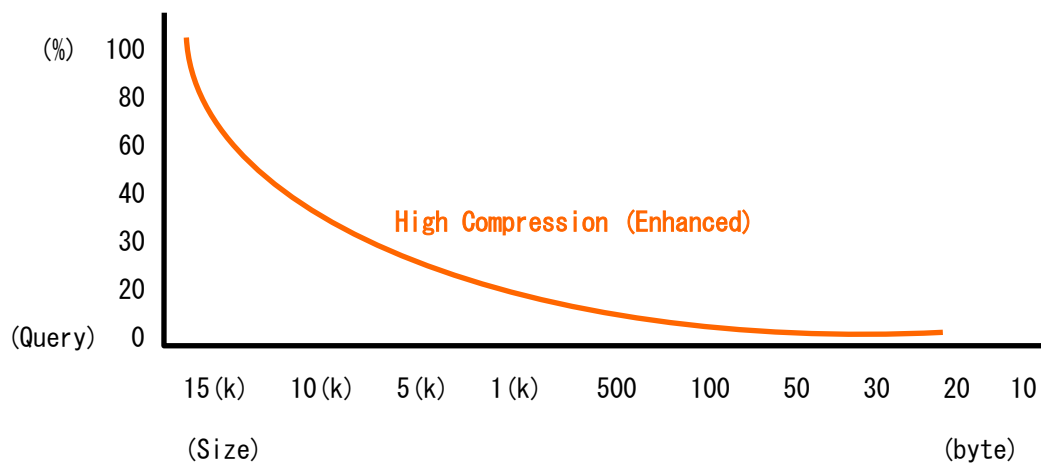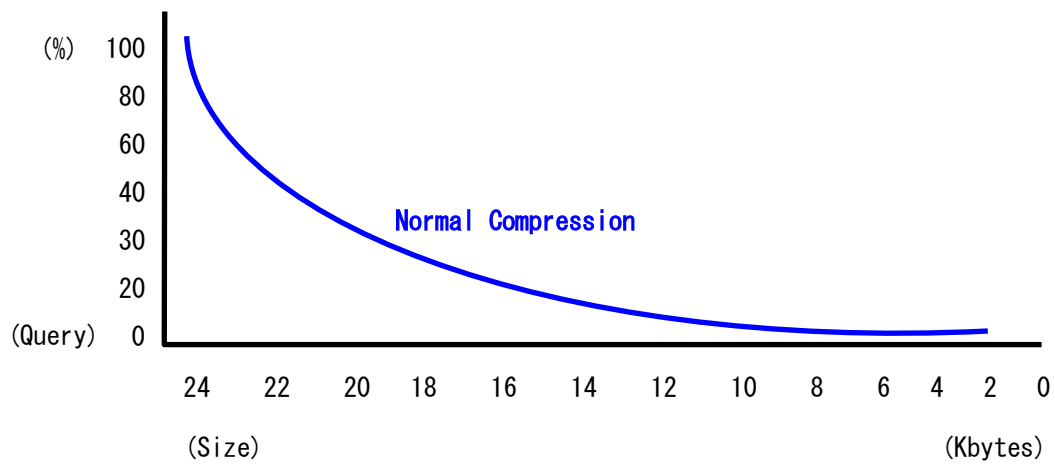(Size)   (byte)

(Status Image Query)

100%   80%   50%   30%   10%

Specification

	PI 7016	PI 5016	PI 5216	PI 6016
CPU	P4 2.4ghz	Celeron P4 2.4ghz		
Memory	DDR 256Mbytes			
LAN	10/100mbyte			
OS	Windows 2000			
Camera Input	16 (NTSC/PAL)			
Camera Output	16	0	16	0
Video Output	1			
Video Spot Output	1			
Max display speed — NTSC	480 fps			
Max display speed — PAL	400 fps			
Max record speed — NTSC	480 fps	150fps(1ch:30fps)		240fps
Max record speed — PAL	400 fps	125fps(1ch:25fps)		200fps
Audio — Input	16	4		
Audio — output	1			
Recording resolution	320x240 / 640x480 (pixels)	NTSC : 352x240/720x240/720x480 (pixels) PAL : 352x280/720x280/720x560 (pixels)		
Compressed image size	2~8 / 3~15 /4~20 Kbytes (1 frame)			
Image compression	Pi-codec (Enhanced, MJPG)			
Audio	Standard GSM 32khz mono (12s)			
Alarm — Input	8	8	16	8
Alarm — Output	8			
Detect method	Motion, Sensor			
Transmission	LAN / Modem			
Power	100~120v (6 3a) / 200~240v (4a)			
Weight	20 kg		10 kg	20 kg
Dimension (㎜)	PI 5016/6016/7016 : 43 18(w) x 17 78(h) x 45 72(d) PI 5216 : 43 18(w) x 10 50(h) x 44 00(d)			
Operation temperature	+5 ~ +40 ℃			
Max working temp.	−5 ~ +60 ℃			
Humidity	30 ~ 80 %RH (Non-condensing)			

Available Frame Setting A

PIDVR 5016/5216

A. first channel's available Frame : 30 frame
            But CIF : 30, HALFVGA : 15, VGA : 8 frame because of CPU Full

B. 2nd~16th channel's available Frame :
            120 ÷ (Enabled channel count) ÷ (Camera resolution weight)

(ex.1) 4 cameras are enable only among 2~16 cameras and resolution is HALFVGA
            120 ÷ 4 ÷ 2 = 15(frame)
            So, we can set the frame each channels with 15 frame

(ex.2) 1 cameras are enable only among 2~16 cameras and resolution is VGA
            120 ÷ 1 ÷ 4 = 30(frame)
            So, we can set the frame each channels with 30 frame

(ex.3) 1 cameras are enable only among 2~16 cameras and resolution is CIF
            120 ÷ 1 ÷ 1 = 120(frame) -> 7.5(frame)
            If resolution is CIF then could not exceed 7.5frames(120 ÷ 16=7.5)
            So, we can set the frame each channels with 8 frame

** Terms are explained in next page

Available Frame Setting B

PIDVR 6016

A. 1st ~ 8th channel's available Frame :
    120 ÷ (Enabled channel count) ÷ (Camera resolution weight)

B. 9th ~ 16th channel's available Frame :
    120 ÷ (Enabled channel count) ÷ (Camera resolution weight)

(ex.1) 4 cameras are enable only among 1st ~ 8th cameras and resolution is HALFVGA
        2 cameras are enable only among 9th ~ 16th cameras and resolution is HALFVGA

        1st ~ 8th : 120 ÷ 4 ÷ 2 = 15(frame)
        9th ~ 16th : 120 ÷ 2 ÷ 2 = 30(frame)

        So, we can set the frame each channels with 15 frame among 1st ~ 8th and
            30 frame among 9th ~ 16th

(ex.1) 2 cameras are enable only among 1st ~ 8th cameras and resolution is CIF
        2 cameras are enable only among 9th ~ 16th cameras and resolution is CIF

        1st ~ 8th   : 120 ÷ 2 ÷ 1 = 60(frame)
        9th ~ 16th : 120 ÷ 2 ÷ 1 = 60(frame)

        If resolution is CIF then could not exceed 15 frames(120 ÷ 8=7.5)
        So, we can set the frame each channels with 15 frame among 1st ~ 8th and
            15 frame among 9th ~ 16th

[Terms]
A. CIF   : 360x240(NTSC), 360x288(PAL)
   HALFVGA : 720x240(NTSC), 720x288(PAL)
   VGA   : 720x480(NTSC), 720x576(PAL)

B. Camera resolution weight :
   CIF   : 1
   HALFVGA : 2
   VGA   : 4
   - HALFVGA is 2 times of CIF and VGA is 4 times of CIF

Available Frame Setting C

PIDVR 7016

If camera resolution is 320x240 then we can set maximum 30 frames.
If camera resolution is 640x480 then we can set maximum 4 channels and max 15 frames

Smart Off Power

If user push the power button then dvr system pop up the login dialog box.
After logined with Administrator, User can select the System off or rebooting like below figure.
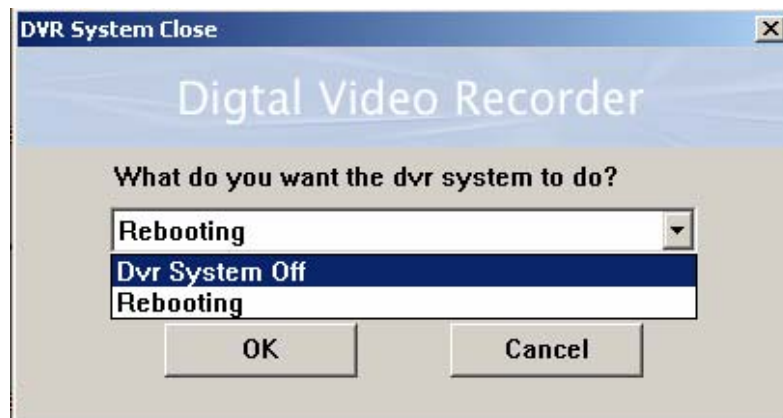
WARRANTY

MODEL	
SERIAL NO	
DATE OF PURCHASE	
WARRANTY PERIOD	ONE YEAR FROM DATE OF PURCHASE
PLACE OF PURCHASE	

1 The following warranty service applies to all factory defects that occur during normal use of this equipment

   1) Within One Month of Purchase: Free Repair, Replacement, Refund

   2) Within 3 Months of Purchase: Free Repair, Replacement

   3) After 3 Months to One Year : Free Repair

2 Warranty services are provided in accordance to the cause of damage as described below

Cause of Damage	Service	
	Within Warranty Period	After Warranty Period
Factory defect during normal use	Free Repair	Repair Service Charge Apply
User misuse, misapplication or accidents	Repair Service Charge Apply	Repair Service Charge Apply
Unauthorized alterations and repair service	Repair Service Charge Apply	Repair Service Charge Apply
Unavoidable situations such as fire and earthquake	Repair Service Charge Apply	Repair Service Charge Apply
User abuse or tempering	Repair Service Charge Apply	Repair Service Charge Apply
Natural wear of minor parts	Repair Service Charge Apply	Repair Service Charge Apply

3 For any product related service, contact the office below

＊ This warranty certification is not duplicable Keep this certification in a safe place with the manual