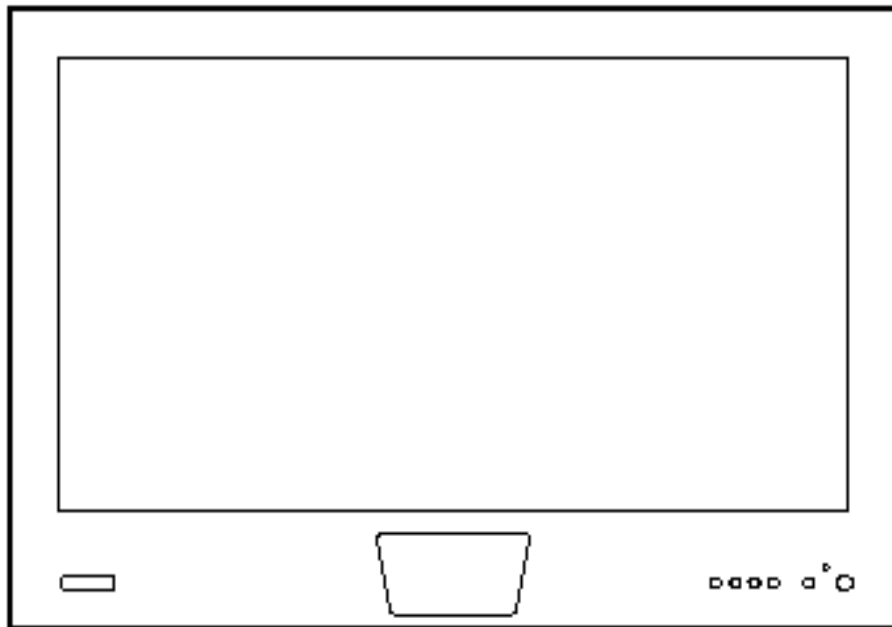


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User Instructions

COLOR TFT-LCD MONITOR

23 Inch Wide TFT-LCD Public View Monitor with Built-in 4 CH Multiplexer



June 08, 2004

Please read this manual thoroughly before use, and keep it handy for future reference.

THE INFORMATION IN THIS PUBLICATION IS BELIEVED TO BE ACCURATE IN ALL RESPECTS. HOWEVER, WE CANNOT ASSUME RESPONSIBILITY FOR ANY CONSEQUENCES RESULTING FROM THE USE THEREOF. THE INFORMATION CONTAINED HEREIN IS SUBJECT TO CHANGE WITHOUT NOTICE. REVISIONS OR NEW EDITIONS TO THIS PUBLICATION MAY BE ISSUED TO INCORPORATE SUCH CHANGES.

FCC COMPLIANCE STATEMENT

INFORMATION TO THE USER: THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS B DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE IN A RESIDENTIAL INSTALLATION. THIS EQUIPMENT GENERATES, USES AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTIONS, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. HOWEVER, THERE IS NO GUARANTEE THAT INTERFERENCE WILL NOT OCCUR IN A PARTICULAR INSTALLATION. IF THIS EQUIPMENT DOES CAUSE HARMFUL INTERFERENCE TO RADIO OR TELEVISION RECEPTION, WHICH CAN BE DETERMINED BY TURNING THE EQUIPMENT OFF AND ON, THE USER IS ENCOURAGED TO TRY TO CORRECT THE INTERFERENCE BY ONE OR MORE OF THE FOLLOWING MEASURES :

- REORIENT OR RELOCATE THE RECEIVING ANTENNA
- INCREASE THE SEPARATION BETWEEN THE EQUIPMENT AND RECEIVER
- CONNECT THE EQUIPMENT INTO AN OUTLET ON A CIRCUIT DIFFERENT FROM THAT TO WHICH THE RECEIVER IS CONNECTED
- CONSULT THE DEALER OR AN EXPERIENCED RADIO/TV TECHNICIAN FOR HELP

CAUTION: CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE MANUFACTURER COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

THIS CLASS B DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003.

CET APPAREIL NUMÉRIQUE DE LA CLASSE B EST CONFORME À LA NORME NMB-003 DU CANADA.

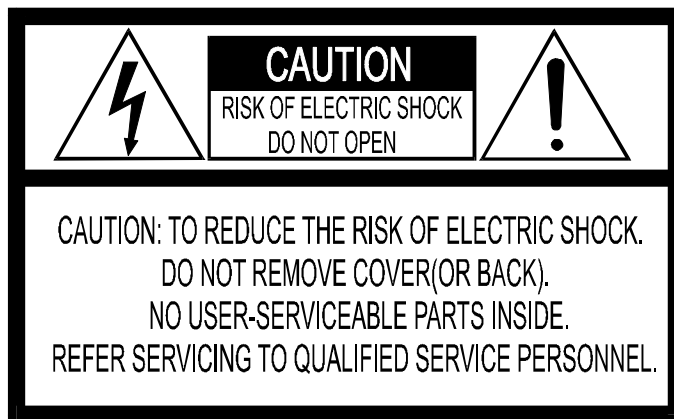
Warnings and Cautions

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

DO NOT INSERT ANY METALLIC OBJECT THROUGH VENTILATION GRILLS.

CAUTION



Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.

PRECAUTIONS

Safety: Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by the qualified personnel before operating it any further.

Unplug the unit from the wall outlet if it is not going to be used for several days or more.

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To disconnect the cord, pull it out by the plug. Never pull the cord itself.

Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.

Installation: Do not install the unit in an extremely hot or humid place or in a place subject to excessive dust or mechanical vibration.

The unit is not designed to waterproof. Exposure to rain or water may damage the unit.

Cleaning: Clean the unit with a slightly damp soft cloth.

Use a mild household detergent. Never use strong solvents such as thinner or benzene as they might damage the finish of the unit.

IMPORTANT SAFEGUARDS

1. READ INSTRUCTIONS – All the safety and operating instructions should be read before the appliance is operated.
2. RETAIN INSTRUCTIONS – The safety and operating instructions should be retained for future reference.
3. CLEANING – Unplug video monitor or equipment from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. ATTACHMENTS – Do not use attachments not recommended by the video monitor or equipment manufacturer as they may result in the risk of fire, electric shock or injury to persons.
5. WATER AND MOISTURE – Do not use video monitor or equipment near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, or the like.
6. ACCESSORIES – Do not place video monitor or equipment on an unstable cart, stand or table. The video monitor or equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
- 6A. Video monitor or equipment and cart combinations should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the equipment and cart combination to overturn.
7. VENTILATION – Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to ensure reliable operation of the video monitor or equipment and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the video monitor or equipment on a bed, sofa, rug, or other similar surface. Video monitor or equipment should never be placed near or over a radiator or heat register. Video monitor or equipment receiver should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.
8. POWER SOURCES – Video monitor or equipment should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your



video monitor or equipment dealer or local power company. For video monitor or equipment designed to operate from battery power refer to the operating instructions.

9. **GROUNDING OR POLARIZATION** – This video monitor may be equipment with a polarized alternating – current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your safety purpose of the polarized plug.

Alternate Warnings – This video monitor is equipment with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet.

This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

10. **POWER CORDS** – Do not allow anything to rest on the power cord. Do not locate video monitor or equipment where the cord will be abused by persons walking on it.
11. **HEED WARNINGS** – Follow all instructions marked on the video monitor or equipment.
12. **LIGHTNING** – For added protection for video monitor or equipment during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power-line surges.
13. **OVERLOADING** --Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
14. **OBJECT AND LIQUID ENTRY** -- Never push objects of any kind into video monitor or equipment through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.
Never spill liquid of any kind on the product.
15. **SERVICING** – Do not attempt to service video monitor or equipment yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
16. **DAMAGE REQUIRING SERVICE** – Unplug video monitor or equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions :
 - A. When the power-supply cord or the plug has been damaged.
 - B. If liquid has spilled, or objects have fallen into the video product.
 - C. If the video product has been exposed to rain or water.
 - D. If the video product does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.
 - E. If the video product has been dropped, or the cabinet damaged.
 - F. When the video product exhibits a distinct change in performance – this indicates a need for service.

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17. **REPLACEMENT PARTS** – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
 18. **SAFETY CHECK** – Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in proper operating condition.
 19. **FIELD INSTALLATION** – This installation should be made by a qualified service person and should conform to all local codes.
-

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CHAPTER 1. FEATURES

DESCRIPTION

The Wide LCD Public View Monitor includes a Built-in multiplexing processor to allow simultaneous viewing of up to four different camera locations and a Built-in high resolution camera.

All programming and operation is accomplished via a hand-held remote control or user accessible buttons on the monitor.

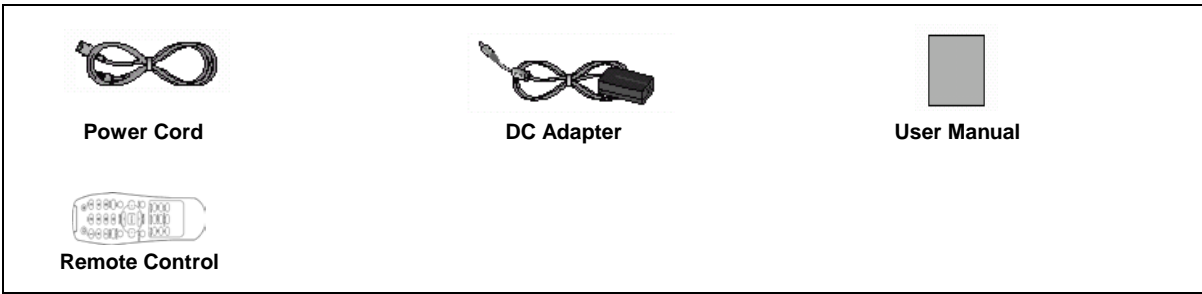
Cameras can be viewed sequentially, full or quadruple screen.

FEATURES

- TFT-LCD Color MUX Monitor
- High Brightness and Contrast TFT-LCD Color Monitor
- Full Screen Display
- High resolution Quad Display
- Dual Window Display – Main & Sub Window
- Motion Detection & Storage Function
- Image Capture & Replay Function
- Screen Freeze Capability
- Alarm Input & Output - N.C or N.O
- Video Loss & Motion Detection Alarm
- VCR Inputs and Outputs
- User Friendly Programmable Menu - On Screen Display
- Key Lock / Menu Password Function
- Motion / Video Loss Count Function
- Time-and-Date Stamp

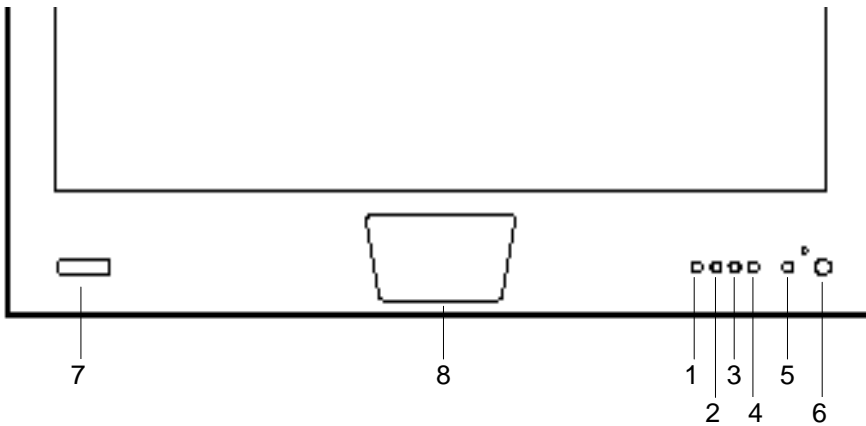
ACCESSORIES


Please make sure the following items are included with your LCD Monitor.
If any items are missing, contact your dealer.




CHAPTER 2. FRONT AND REAR PANEL

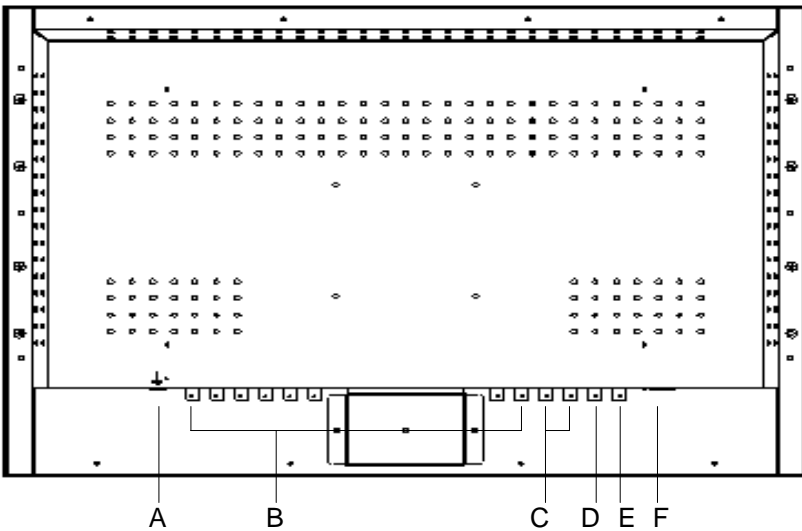
THE FRONT PANEL



Part	Function	Description
1	DOWN (▼)	Use the DOWN button to move down in the OSD menu.
2	UP (▲)	Use the UP button to move up in the OSD menu.
3	LEFT (◀)	Use the LEFT button to decrease the amount of the chosen item. For some types of items, this button will choose "ON" or others.
4	RIGHT (▶)	Use the RIGHT button to increase the amount of the chosen item. For some types of items, this button will choose "ON" or others.
5	MENU 	The MENU button will place the unit in the programmable menu mode when pressed. It is also used to go the previous setup or exit from the OSD system. This allows setup of camera option, alarm option, sequence option, picture adjustments, configuration and other operations.

6	<p>PWR</p> 	<p>Press the PWR button to turn the monitor on.</p> <ul style="list-style-type: none"> - The PWR LED turns on. <p>Press the PWR button again to turn the monitor off.</p> <ul style="list-style-type: none"> - The PWR LED turns off. <p>Green – Normal operation.</p>
7	<p>IR / PHOTO SENSOR</p>	<p>Remote control sensor / Light sensor for detecting ambient light.</p>
8	<p>INTEGRATED CAMERA</p>	<p>Integrated camera window.</p>

THE REAR PANEL



< HMM231WB >

Part	Label	Function
A	DC IN Socket	Connect the adapter jack to the DC power connector on the back of the monitor.
B	CA1 - 4	<p>Four cameras can be connected to the monitor using the BNC connections labeled CA1, CA2, CA3 and CA4.</p> <p><i>Either left or right BNC can be input or output.*</i></p> <p><i>The connectors have auto-termination internal switches.*</i></p>

C	VCR IN/OUT	The BNC VCR connectors are used to connect a VCR to the monitor for recording purposes. The output video can be multiplexed or quadrant video.
D	MONITOR OUT	Connect the BNC cable to other monitors if you want to see same main window on other monitors. The Monitor Output is the latest motion detected camera signal when the main window is QUAD Mode.
E	SPOT OUT	SPOT OUT is the auxiliary video output. It can be CA1, CA2, CA3, CA4 or QUAD (REC OUTPUT) and also supports the SEQUENCE mode.
F	ALARM IN / OUTPUT & Trigger Input	Connect the alarm input source to alarm input connector and the alarm output connector to other equipments that support an alarm input function. Connect the trigger output of a time-lapse VCR to the Trigger input of the monitor.

CHAPTER 3. MUX PROCESSOR FUNCTIONS

DISPLAY FORMATS

QUAD DISPLAY

To display quadrant picture on the main screen, select QUAD on the OSD setup menu or press the QUAD button on the remote control.

Black background displays for not installed or disabled cameras.

Use the following table as a guide for the actions possible in the QUAD mode.

Button(s)	Description
QUAD (MAIN)	Press the QUAD button on the remote control to display QUAD screen on the main window.

POP	<p>Press POP button on the remote control to display sub window.</p> <p>POP : Four Motion detected Image</p> <p><i>The last motion detected camera picture is live, but others are frozen.</i></p>
-----	--

FULL SCREEN

To display any cameras in full on the main window, select any camera number on the OSD menu or press any camera number button on the remote control.

The selected camera title will be displayed on the main window.

Button(s)	Action
CA 1 – 4 (MAIN)	Press camera number button on the remote control to change the main window to the Full screen display of the camera.
POP	The real-time display of four cameras.

SEQUENCE DISPLAY

To sequence cameras in full on the main window, select Sequence on the OSD menu or SEQUENCE button on the remote control.

The camera title will be displayed on the upper-left side of the screen.

If there are uninstalled or disabled cameras, they will be skipped in the sequence.

The dwell time of each camera can be set individually in the Sequence Time Setup menu.

Button(s)	Action
SEQ (MAIN)	Press SEQUENCE button on the remote control to start the sequence of cameras.
POP	The real-time display of four cameras.

FREEZE DISPLAY

Pressing FREEZE on the remote control freezes the screen.

When the unit is Freeze mode, the blinking "FREEZE" character is displayed and the image is frozen on the screen until the FREEZE button is pressed again.

VCR OPERATION

OVERVIEW

The VCR mode allows you to view the video playing back the VCR.

VCR PLAYBACK

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After pressing the PLAY button of the VCR, pressing the VCR or PB button using the remote control or selecting VCR on the OSD menu displays the VCR playback.

The VCR PLAYBACK input can be time-multiplexed video of cameras or real-time video.

Select the PB MODE on the OSD menu to display the time-multiplexed video of cameras and select VCR on the OSD menu to display the live video.

The correct mode has to be selected to operate correctly in the OSD setup menu or on the remote control.

Live Video – VCR Mode

Time-multiplexed video – PB Mode

VCR OUTPUT

The output signal of the VCR Output connector goes to the VCR input.

This monitor supports two kinds of the VCR Output mode.

The one is the field-switching output of four cameras by selecting MUX on the OSD menu and the other is the quadrant output of cameras by selecting QUAD on the OSD menu.

The field-switching interval can be set in the setup menu.

Use the Output Mode option to select QUAD or MUX mode.

SPOT OUTPUT

The Spot Output is the auxiliary output.

It can be CA1, CA2, CA3, CA4 or VCR Output.

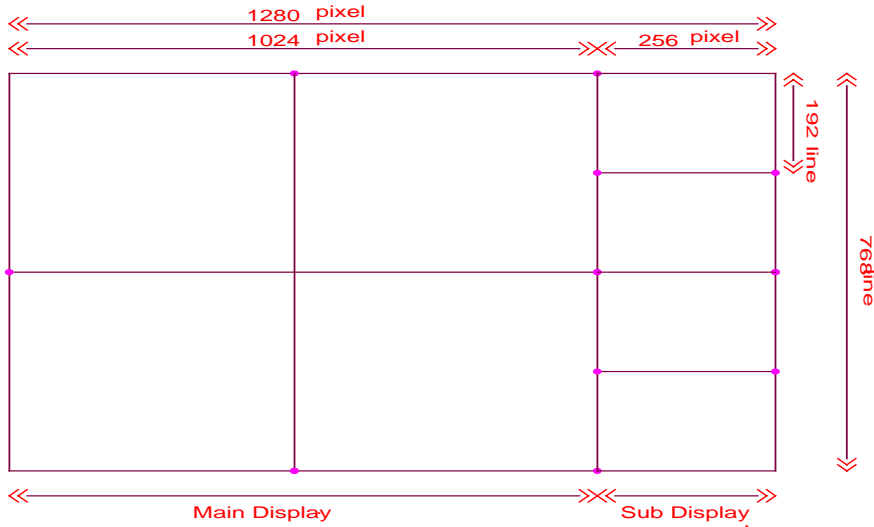
The selection of the SPOT Output is set in the OSD Setup Menu.

POP DISPLAY

POP ON/OFF

Press the POP button on the remote control to turn the POP window on or off.

It can be a live video or motion detected saved image.



Main Display	SUB Display
Full Display	4 Cameras Live Video
4CH QUAD Display	Motion Detected Saved Video**

** If the video signal that contains motion comes from any cameras, the image that had a motion will be displayed below the previous motion detected saved picture. Up to four motion detected images can be displayed at a same time on the POP window and the sub window will be rolling vertically after the forth display of image which contained motion. The last camera that had a motion is live and others are frozen on the POP screen.

Display Format	Panel	Actual Video
Wide Full Screen Format	1280 x 768	720 x 480
Normal Full Screen Format	1024 x 768	720 x 480
Wide Quadrant Screen	640 x 384(each)	640 x 384(each)
Normal Quadrant Screen	512 x 384(each)	512 x 384(each)

ALARMS

OVERVIEW

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The monitor has several alarm functions, including external alarm, motion detection alarm and Video loss alarm.

Each of these alarms will be explained in this section.

If Beep Time is set to "0", the alarm buzzer doesn't beep.

EXTERNAL ALARM

When the external alarm occurs, the following actions are carried out.

- The alarm buzzer sounds if the Beep Time has been set over 0 second.
- The alarm relay is energized if the Relay Time has been set over 0 second.
- The blinking character "ALARM" is displayed.
 - All above actions are continued until the alarm is reset.

The ALARM hold time can be set in the setup menu.

It starts to count after the alarm has released.

The beep time of the buzzer (Relay) starts when an alarm is occurred and stops when the Beep (Relay) Time expires.

MOTION ALARM

When the motion is detected in any cameras, the following actions are carried out.

- The alarm buzzer sounds if the beep time has been set over 0 second.
- The character "MOTION" is displayed.
 - All above actions are continued until the motion is not detected.

VIDEO LOSS ALARM

This Monitor can detect the loss of video signal for all connected camera inputs.

If the Video Loss Alarm has been set to OFF in the ALARM setup menu, then the loss of video signal is ignored. If the option is set to ON, the following actions occur:

- The alarm buzzer sounds, if the Beep Time has been set over 0 second.
- The relay are energized if the Relay Time has been set over 0 second.
- The "VLOSS" messages is displayed to Loss Picture.

The Beep time of video loss alarm can be set in the setup menu.

The Beep time of video loss alarm starts to count as soon as the unit detects no video signal.

The buzzer (relay) of Video loss alarm starts when the unit detects Video loss, and stops

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when the Beep (relay) Time expires.

But the "VLOSS" message appears until the unit detects the new valid video signal on the camera with video loss.

ALARM RESET

When one of the following occurs, the alarm action finishes.

- When the Alarm Beep Time has elapsed, the external alarm action is terminated.
- When the V-LOSS Beep time has elapsed, that camera's video loss alarm action is terminated.
- When the Motion Beep Time has elapsed, that camera's motion alarm action is terminated

ALARM INPUT CONNECTOR

Alarm Input:

This monitor has one alarm input connector.

This input can be connected to any security device equipped with either a contact closure or TTL/CMOS standard alarm output.

Alarm polarity can be selected for each input via the Alarm Input Setup menu.

Alarm input connection requires two wires.

One wire connects to the desired alarm input pin.

The second wire connects to ground pin.

If the alarm input has been turned OFF in the Alarm Input Setup menu, then the input is ignored.

Alarm output:

This monitor has one alarm output that a Form "C" dry contact output.

Normally open (N.O) and Normally closed (N.C) contacts with shared common.

CHAPTER 4. SETUP MODE

OVERVIEW

Pressing the MENU button places the unit into a programming mode.

Setup mode allows you to customize the unit operation to suit a specific application.

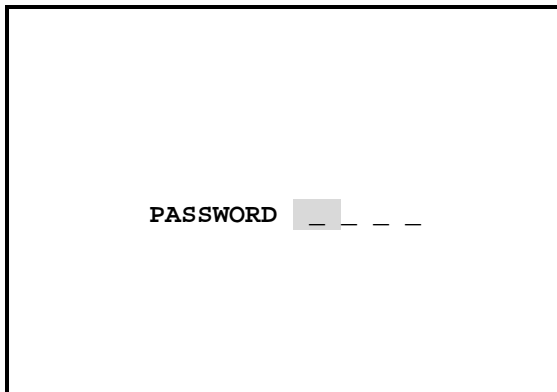
In the setup mode, the arrow buttons are used to move DOWN, UP, LEFT and RIGHT in the OSD Setup menu.

The OSD display time also can be adjusted in the OSD setup menu.

Some chosen values and items are memorized after exit of the OSD menu.

PROGRAMMING SCREENS

PASSWORD PROTECTION



If the PASSWORD option is turned ON, pressing MENU displays the password confirmation screen.

If the PASSWORD option is turned OFF, the password confirmation screen is bypassed and the Main MENU screen is displayed.

The four-digit password must be entered using DOWN, UP, LEFT and RIGHT buttons.

If the incorrect password is entered, Menu access will be denied.

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- Factory Default

PASSWORD 0 0 0 0

OSD WINDOW OF MAIN MENU

Main Menu	
Main Input	QUAD
Mux Menu	
Picture	
Configuration	
OSD Menu	

This monitor has six Main OSD items.

Press the MENU button to turn on or off the main OSD Menu.

The MENU button also used to go to the previous OSD menu window.

Use UP(DWON) button to move up(down) in the Main Menu.

Use LEFT or RIGHT buttons to display a sub-menu of the item where the horizontal indication bar is located or decrease and increase the chosen item.

SELECTING DISPLAY FORMAT OF THE MAIN WINDOW

OVERVIEW

Use Main Input in the OSD setup menu to select the display format on the main widow.

It consists of 7 options; QUAD, Sequence, CA1, CA2, CA3, CA4 and VCR.

Use the following steps to set the Main Input option.

Step	Action
1	Press ▼ or ▲ button until Main Input is selected.
2	Press ◀ or ▶ button to select the desired display format.
3	Press MENU button to exit the main OSD window.

USING MUX MENU ITEMS

Mux Menu
Time / Date
Camera Title
Camera Adjust
Alarm
Sequence Time
Record

The Mux Menu is composed of six items.

ADJUSTING TIME/DATE

Time / Date
Date Format : US
Date : MM / DD / YYYY
Time : HH / MM / SS
Display : ON

DATE FORMAT

The option on the time and date setup screen is date format.

This is used to select between the following three date formats:

FORMAT	DISPLAY	EXAMPLE
US (default)	MM/DD/YYYY	01/01/2004
EURO	DD/MM/YYYY	01/01/2004
ASIA	YYYY/MM/DD	2004/01/01

Use the following steps to set the date format option.

Step	Action
1	Press ▼ or ▲ button until Date Format is selected.
2	Press ◀ or ▶ button to select the date format.
3	Press MENU button to go to the previous OSD window.

DATE

This field is used to set the current date.

The format displayed on the screen is dependent on the date format option set in the preceding steps.

Use the following steps to set the current date.

Step	Action
1	Press ▼ or ▲ button until Date is selected.
2	Press ◀ or ▶ button to select the option.
3	Set desired Date using the ▼ or ▲ button.
4	Press MENU button to go to the previous OSD window.

TIME

This field is used to set the time in the 24-hour format.

Use the following steps to set the current Time.

Step	Action
1	Press ▼ or ▲ button until Time is selected.
2	Press ◀ or ▶ button to select the option.
3	Set desired Time using the ▼ or ▲ button.
4	Press MENU button to go to the previous OSD window.

DISPLAY

The display option on the time and date setup screen allows you to select whether to display the time and date on the screen.

The default option is ON.

The steps below provide an example for setting camera titles.

In this example, set CA1 to "LOBBY."

Step	Action
1	Press ▼ or ▲ until the CA1 is selected.
2	Press ◀ or ▶ to select the character position of the title.
3	Press ▼ or ▲ until the "L" character is displayed. Pressing ▲ scrolls one character at a time in ascending order. Pressing ▼ scrolls one character at a time in descending order. Holding down the ▼ or ▲ button for two seconds will scroll the characters automatically. Stop pressing ▼ or ▲ to stop scrolling.
4	Press ▶ to move the cursor one position to the right in the title. Press ▼ or ▲ until the "O" character is displayed.
5	Press ▶ to move the cursor one position to the right in the title. Press ▼ or ▲ until the "B" character is displayed.
6	Press ▶ to move the cursor one position to the right in the title. Press ▼ or ▲ until the "B" character is displayed.
7	Press ▶ to move the cursor one position to the right in the title. Press ▼ or ▲ until the "Y" character is displayed.
8	Press the MENU button to save the title.

DISPLAY

The display option on the camera titles setup screen allows you to select whether or not to display camera titles on the screen.

The default option is ON.

Change the display option using the following steps.

Step	Action
1	Press ▼ or ▲ until DISPLAY is selected.
2	Select the desired option (ON or OFF) using ◀ or ▶ the button.
3	Press the MENU button.

CAMERA ADJUSTMENT

Camera Adjust	
Camera Title	CA1
Contrast	25
Brightness	25
Color	25
Tint *	25
Sharpness	01

The picture quality of each camera can be adjusted by using the Camera Adjust setup menu.

There are five options for adjustment of each camera picture.

* Tint is only for the NTSC system.

Use the following steps to set the picture of each camera.

Step	Action
1	Press ▼ or ▲ to select the option to be adjusted.
2	Select the desired camera number and set the desired value using ◀ or ▶.
3	Press the MENU button.

ALARM SETUP

OVERVIEW

The alarm setup screen allows you to select the alarm input options, the video loss alarm on/off , the motion alarm and other options.

Alarm
Alarm Input
Video Loss
Motion Set
Covert
Replay
History

EXTERNAL ALARM SETUP

Alarm Input defines the way the connector responds to external input, in terms of whether it is normally open (NO), normally closed (NC), or they ignore the input.

The default is OFF. The alarm input setup screen allows you to set these options.

Alarm Input	
Alarm Input	OFF
Latch	OFF
Beep Time	00 SEC
Relay Time	05 SEC

ALARM INPUT

The Alarm Input that is displayed on the screen allows you to change the alarm input options.

Use the following steps to change the option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Alarm Input.
2	Press ◀ or ▶ to select the new option. <ul style="list-style-type: none"> • OFF: The alarm input is ignored. • NO: The unit looks for a short for alarm condition. • NC: The unit looks for an open for alarm condition.
3	Press MENU to go to the previous OSD window.

LATCH

This option is used to determine how long the alarm message will display on the screen.

Step	Action
1	Press ▼ or ▲ to move the cursor to the alarm LATCH option.
2	Press ◀ or ▶ to select the new option. <ul style="list-style-type: none"> • ON : The external alarm message disappears on the screen after pressing the menu button. • OFF : The external alarm message remains on the screen until alarm event is terminated. <i>(Default)</i>
3	Press MENU to go to the previous OSD window.

BEEP TIME

The Beep Time option allows you to select the time to sound the beep.

Use the following steps to change this option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Beep Time.
2	Press ◀ or ▶ to select the time desired. Beep Time can be set from 0 to 99 seconds.
3	Press MENU to go to the previous OSD window.

RELAY TIME

The Relay Time option allows you to select the time to energize the relay.

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Use the following steps to change this option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Relay Time.
2	Press ◀ or ▶ to select the time desired. Beep Time can be set from 0 to 99 seconds.
3	Press MENU to go to the previous OSD window.

VIDEO LOSS ALARM

Video Loss	
CA1	ON
CA2	ON
CA3	ON
CA4	ON
Latch	OFF
Relay Time	00 SEC
Beep Time	00 SEC

The video loss alarm allows you to turn the video loss alarm on or off for each camera when video input is lost.

Latch, Relay Time and Beep Time functions are same as the Alarm Input function in action except for events that make functions.

Use the following steps to change this option.

Step	Action
1	Press ▼ or ▲ to move the cursor to the desired camera number.
2	Press ◀ or ▶ to select the option. <ul style="list-style-type: none">• OFF: The V-LOSS alarm is ignored.• ON : The video loss alarm is active while the system lose any video signals.
3	Press MENU to go to the previous OSD window.

MOTION ALARM

The Motion Sensitivity and other options for motion detection can be set in the Motion Setup menu.

Some options (Motion Enable and Sensitivity) can be adjusted individually on each camera input.

Motion Set	
Camera	CA1
Motion Enable	ON
Sensitivity	95
Capture Time	05 SEC
Beep Time	00 SEC
Dwell Time	05 SEC
QUAD	OFF

Camera

Camera allows you to select which camera inputs to be adjusted.

Use the following steps to change the camera number to be set.

Step	Action
1	Press ▼ or ▲ to move the cursor to Camera.
2	Press ◀ or ▶ to select the camera title to be adjusted.
3	Press MENU to go to the previous OSD window.

Motion Enable

To enable motion detection of the selected camera, select "ON"

Step	Action
1	Press ▼ or ▲ to move the cursor to Motion Enable.
2	Press ◀ or ▶ to select "ON" or "OFF". <ul style="list-style-type: none"> • "ON" : Motion Detection of the selected camera is enabled. • "OFF" : Motion Detection of the selected camera is disabled.
3	Press MENU to go to the previous OSD window.

Sensitivity

Use the Sensitivity to adjust the sensitivity of motion detection.

To increase (decrease) the sensitivity of the specific camera, increase (decrease) the sensitivity value.

Use the following steps to set the sensitivity.

Step	Action
1	Press ▼ or ▲ to move the cursor to Sensitivity.

2	Press ◀ (▶) to decrease (increase) the sensitivity value.
3	Press MENU to go to the previous OSD window.

Capture Time

Capture Time is the interval that the motion detection is processed.

It also affects to the POP window.

When it is set to 5 SEC, the motion detected camera picture will be moved vertically every five seconds.

It supports up to 99 seconds.

Use the following steps to set the Capture Time.

Step	Action
1	Press ▼ or ▲ to move the cursor to Capture Time.
2	Press ◀ (▶) to decrease (increase) the Capture Time.
3	Press MENU to go to the previous OSD window.

Beep Time

The Beep Time function is same as the Alarm Input function in action except for events that make function.

Dwell Time

If there is a motion in any camera, the main screen switches to the motion detected camera during the time that was set in the Dwell Time setup menu and then goes back to the previous camera when the system is operating in the full screen or the sequence mode.

Dwell Time is the time that the motion detected camera remains in the main window when the main window is full screen mode or the sequence mode.

Use the following steps to set the Dwell Time.

Step	Action
1	Press ▼ or ▲ to move the cursor to Dwell Time.
2	Press ◀ or ▶ to select the desired time.
3	Press MENU to go to the previous OSD window.

QUAD

Even though the main window is quadruple screen, the motion detection is still processed.

If the system detects the motion in any camera, the main window can be switched from the quadruple screen to the full screen of the specific camera which contained motion.

To enable main window switching from the quadruple screen to the full screen, select QUAD "ON".

Step	Action
1	Press ▼ or ▲ to move the cursor to QUAD.
2	Press ◀ or ▶ to select "ON" or "OFF".
3	Press MENU to go to the previous OSD window.

COVERT

Select Covert "ON" to hide the picture of any cameras.

Covert	
CA1	OFF
CA2	OFF
CA3	OFF
CA4	OFF

Use the following steps to set the Covert option.

Step	Action
1	Press ▼ or ▲ to move the cursor to the desired camera number.
2	Press ◀ or ▶ to select "ON" or "OFF". <ul style="list-style-type: none"> • "ON" : Covert of the selected camera is enabled. • "OFF" : Covert of the selected camera is disabled. <i>(Default)</i>
3	Press MENU to go to the previous OSD window.

Replay

Replay is for viewing captured or motion detected image that had been saved in the memory.

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The replay window is the latest motion detected POP window when main window is the QUAD mode or is the main window when this monitor is operated in full screen mode.

This monitor can save up to 60 fields images.

The latest captured image with the saved time and camera number is displayed on the screen when the Replay mode is selected.

The larger number means the older captured image.

If you disconnect the power plug from the monitor, the motion detected images will be cleared.

Replay	01 / 60		
CA1	01 / 15 / 2004	12 : 03 : 25	

Use the following steps to replay captured images.

Step	Action
1	Press ▼ or ▲ to move the cursor to Replay.
2	Press ◀ or ▶ to display captured or motion detected images.
3	Press MENU to finish the Replay mode.

History

The History is used to display the COUNT up to 96 alarm events.

The COUNT data includes alarm source, camera number, time and date.

“M” means the alarm was happened by motion detection.

“L” means the alarm was occurred by the loss of the video signal from the camera input.

“C” means the image was captured by pressing the capture button.

History			
M	CA1	MM/DD/YYYY	HH/MM/SS
L	CA2	MM/DD/YYYY	HH/MM/SS
C	CA3	MM/DD/YYYY	HH/MM/SS
•			
•			

Use the following steps to display the alarm COUNT for each alarm.

Step	Action
1	Press ▼ or ▲ to move the cursor to History.
2	Press ◀ or ▶ to display the history window.
3	Press MENU to exit from the history window.

SEQUENCE TIME SETUP

The Sequence Time is used for the sequential switching mode for each camera.

The Sequencing Time of each camera can be adjusted individually.

It supports up to 99 seconds.

Sequence Time	
CA1	03 SEC
CA2	03 SEC
CA3	03 SEC
CA4	03 SEC

Use the following steps to set the sequencing time.

Step	Action
1	Press ▼ or ▲ to move the cursor to the desired camera number.
2	Press ◀ or ▶ to select the desired time. • 03 SEC (Default)
3	Press MENU to go to the previous OSD window.

RECORD SETUP

The Record setup menu allows you to set optional functions of the record output.

Record	
Output Mode	MUX
Record Channel	OFF
Spot	CA1
Mux Mode	
Trigger Mode	Ext.
Edge Mode	Falling

OUTPUT MODE

The Output Mode allows you to select the kind of the record output.

Use the following steps to set record output.

Step	Action
1	Press ▼ or ▲ to move the cursor to Output Mode.
2	Press ◀ or ▶ to select desired option. <ul style="list-style-type: none"> • MUX : The record output is the field switching video of cameras. • QUAD : The record output is the real-time video for a quadruple picture.
3	Press MENU to go to the previous OSD window.

OUTPUT CHANNEL

The Output Channel allows you to select which camera number goes to the record output.

This option is composed of OFF, CA1, CA2, CA3 and CA4.

This option is prior to the Output mode option.

If you select the CA1 in the Output Channel option, only the camera 1 goes to the record output.

Use the following steps to set Output Channel option.

To playback the VCR tape which was recorded using this option, select the VCR mode not PB mode.

Step	Action
1	Press ▼ or ▲ to move the cursor to Output Channel.
2	Press ◀ or ▶ to select the desired option. <ul style="list-style-type: none"> • OFF : The record output is the field switching video. • CA1 : The record output is the camera 1. • CA2 : The record output is the camera 2. • CA3 : The record output is the camera 3. • CA4 : The record output is the camera 4.
3	Press MENU to go to the previous OSD window.

SPOT OUTPUT

The Spot output is the auxiliary output of this monitor.

It can be CA1, CA2, CA3, CA4, QUAD or Sequence.

If QUAD is selected as the spot output, the spot output and record output are same.

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To use the spot output for a quadrant display, select the record output to "QUAD" in the Record Output setup menu.

Use the following steps to set the spot output.

Step	Action
1	Press ▼ or ▲ to move the cursor to Spot Output.
2	Press ◀ or ▶ to select desired output. <ul style="list-style-type: none">• CA1 : The spot output is the camera 1.• CA2 : The spot output is the camera 2.• CA3 : The spot output is the camera 3.• CA4 : The spot output is the camera 4.• QUAD : The spot output is the record output. (QUAD)• Sequence : The spot output is the Sequencing video of CA1, CA2, CA3, CA4 and QUAD.
3	Press MENU to go to the previous OSD window.

MUX MODE

The Mux Mode in the Record Output setup menu is the special feature of the record output when the "MUX" is selected as the record output.

Mux Mode	
Enable	
Priority	
Interval	002

ENABLE

Select Enable "ON" to record the selected camera when the record output mode is Mux.

Enable	
CA1	ON
CA2	ON
CA3	ON
CA4	ON

Use the following steps to set the Enable option.

Step	Action
1	Press ▼ or ▲ to move the cursor to the Enable option.
2	Press ◀ or ▶ to select "ON" or "OFF". <ul style="list-style-type: none"> • ON : The selected camera is inserted in field switching process for recording. • OFF : The selected camera is not inserted in field switching process for recording.
3	Press MENU to go to the previous OSD window.

PRIORITY

Set Priority "ON" to give the priority of the selected camera for more frequent recording.

For example, if the Priority of CA1 and CA2 are on, the switching sequence is following.

CA1 / CA1 CA2 / CA2 / CA1 CA2 / CA3 / CA1 CA2 / CA4 / CA1 CA2 / CA1...

Use the following steps to set the Priority option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Priority.
2	Press ◀ or ▶ to select "ON" or "OFF".
3	Press MENU to go to the previous OSD window.

INTERVAL

Set the interval of the field switching of cameras.

The selected value is not the time but the number of fields.

Use the following steps to set the Interval option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Interval.
2	Press ◀ or ▶ to set the desired number of fields.
3	Press MENU to go to the previous OSD window.

TRIGGER MODE

If your VCR has a synchronizing trigger pulse, using it will save you a lot of time when setting up your system.

Use the following steps to set Trigger Mode.

Step	Action
1	Press ▼ or ▲ to move the cursor to Trigger Mode.
2	Press ◀ or ▶ to select desired option. <ul style="list-style-type: none"> • Int. : The switching is synchronized by the OSD setup menu (interval). • Ext. : The switching is synchronized by the trigger pulse from a VCR.
3	Press MENU to go to the previous OSD window.

EDGE MODE

When using your VCR's synchronizing trigger pulse, set this option to match the VCR's signal.

Use the following steps to set Edge Mode.

Step	Action
1	Press ▼ or ▲ to move the cursor to Edge Mode.
2	Press ◀ or ▶ to select desired option. <ul style="list-style-type: none"> • Falling : This monitor sense the falling edge of the trigger pulse. • Rising : This monitor sense the rising edge of the trigger pulse.
3	Press MENU to go to the previous OSD window.

PICTURE ADJUSTMENT

OVERVIEW

The Picture Adjust menu allows you to modify the picture quality.

It affects to main and sub windows.

This setup menu is also used in PC and Component video mode.

Picture	
Contrast	48
Brightness	49
Color	50
Tint ¹⁾	50
Sharpness	5
Motion Adjust	2
Picture Size	Normal

1) Tint is only for the PAL system.

Use the following steps to adjust the picture quality.

Step	Action
1	Press ▼ or ▲ to move the cursor to the desired Picture option.
2	Press ◀ (▶) to decrease (increase) the value of the selected item.

3	Press MENU to go to the previous OSD window.
---	--

Motion Adjust

The Motion Adjust is for the full screen of any cameras, VCR and component video mode.

The unwanted artifacts can be seen on the edge of materials moving fast.

Lower value gives better picture quality for images that is moving fast.

But the better picture quality is obtained by adjusting Motion Adjust to the larger value in still image.

Use the following steps to set the Motion Adjust option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Motion Adjust.
2	Press ◀ or ▶ to adjust the Motion Adjust value.
3	Press MENU to go to the previous OSD window.

Picture Size

This monitor uses the wide LCD panel.

But the user can adjust the picture size to 4:3 screen.

Set Picture Size to Wide to fill the screen fully and set to Normal to make the screen 4:3 picture.

The picture Size setup menu is activated in full of any cameras, PC and component video mode and the POP window has to be turned off.

Use the following steps to set the Picture Size option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Picture Size.
2	Press ◀ or ▶ to adjust the picture size.
3	Press MENU to go to the previous OSD window.

CONFIGURATION

OVERVIEW

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The configuration setup screen allows you to make changes to the security options, the POP window position and other options.

POP Position	Right
Video System	NTSC
Video Mode	PB Mode
CA4 Input	Int.
Photo Input	OFF
Key Lock	OFF
Password	OFF
Recall	OFF

POP POSITION

POP Position is used to select the position of the POP window on the screen. It is also used to turn the POP window off.

Use the following steps to set the position of the POP window.

Step	Action
1	Press ▼ or ▲ to move the cursor to the POP Position option.
2	Press ◀ (▶) to locate the POP window on the right (left) side of the screen.
3	Press MENU to go to the previous OSD window.

VIDEO SYSTEM

Select the video system that is used in your region.

Use the following steps to set the video system.

Step	Action
1	Press ▼ or ▲ to move the cursor to the Video System option.

2	Press ◀ or ▶ to select NTSC or PAL.
3	Press MENU to go to the previous OSD window.

VIDEO MODE

This option is activated when the main video input is Video mode on the main OSD window.

Because this monitor supports two kinds of the VCR record output, so the user has to select correct mode to playback a VCR.

The one is field switching video of 4 cameras and the other is live video.

Use Video Mode to select which kind of the video format is routed on the VCR input.

Select VCR to view the live video that was recorded on a VCR tape that can be obtained by setting Record Output Mode to QUAD on the Record setup menu.

Select MUX to view the time multiplexed video that was recorded on a VCR tape that also can be obtained by setting Record Mode to MUX on the Record setup menu.

Use the following steps to set Video Mode.

Step	Action
1	Press ▼ or ▲ to move the cursor to the Video option.
2	Press ◀ or ▶ to select VCR or MUX.
3	Press MENU to go to the previous OSD window.

CA4 INPUT

The input of the forth camera can be the internal camera or the signal from a external camera.

User has to select this option to Int. to use the internal camera as the forth camera input and Ext. to use it as a external camera.

Use the following steps to set CA4 Input.

Step	Action
1	Press ▼ or ▲ to move the cursor to CA4 Input.
2	Press ◀ or ▶ to select Int. or Ext..
3	Press MENU to go to the previous OSD window.

PHOTO INPUT

This monitor can be turned off and go to power saving mode if there is low light condition by setting

Photo Input to "ON".

Use the following steps to set the Photo Input option.

Step	Action
1	Press ▼ or ▲ to move the cursor to Photo Input.
2	Press ◀ or ▶ to select ON or OFF.
3	Press MENU to go to the previous OSD window.

KEY LOCK

This option is used to protect the control buttons against unauthorized operation.

Use the following steps to set the key lock option.

Step	Action
1	Press ▼ or ▲ until Key Lock is selected.
2	Press ◀ or ▶ to set Key Lock to "ON" or "OFF". Valid settings are : <ul style="list-style-type: none"> • ON: The front panel is inoperable. Pressing MENU will place the unit into the main menu setup mode. • OFF: The front panel is operable. (<i>Default</i>)
3	Press MENU to go to the previous OSD window.

PASSWORD

The password option is used to protect programming setup from unauthorized access.

If this option is ON, pressing MENU to enter the main menu setup mode will display the password confirmation screen.

Use the following steps to change the Password option

Step	Action
1	Press ▼ or ▲ until Password is selected.
2	Select the desired option (ON or OFF) using the ◀ or ▶ button.
3	Press MENU to go to the previous OSD window.

CHANGING THE PASSWORD

The password changing process is started when the Password option is set to "ON"

Configuration	
POP Position	Right
Video System	NTSC
Key Lock	OFF
Enter Code	0 0 0 0
Confirm Code	0 0 0 0
Password	ON
Recall	OFF

Use the following steps to change the password.

Step	Action
1	On the Configuration setup menu screen, press ▼ or ▲ to select the first digit of the password.
2	Press ◀ or ▶ to select other digits and then set them to desired number using ▼ or ▲. Press the Menu button to go to the Confirm Code after entering four digits.
3	Confirm digits that you entered in the Comfirm Code option, and then press menu button to finish the password change.

RECALL

This option allows you to return to the unit to factory-defined defaults.

Some items do not go to factory default values.

Step	Action
1	Press ▼ or ▲ until Recall is selected.
2	Select Recall "ON" using ◀ or ▶ button and then press MENU button to go factory defaults.

ADJUSTING OSD WINDOW

OVERVIEW

Use the OSD Menu to adjust the OSD window.

The OSD Position and other options can be adjusted in this setup menu.

OSD Menu	
Language	English
H Position	07
V Position	36
Blending	07
Time	40 SEC

LANGUGAE

Selects OSD language displayed.

Use the following steps to change OSD language.

Step	Action
1	Press ▼ or ▲ until Language is selected.
2	Select desired language using ◀ or ▶ button. (English / German / French / Italian / Spanish / Polish)

H & V POSITION

Use the H (V) Position setup menu to adjust the horizontal (vertical) position of the OSD window.

Use the following steps to move the OSD window horizontally (vertically).

Step	Action
1	Press ▼ or ▲ until H (V) Position is selected.
2	Adjust the horizontal (vertical) Position of the OSD window using ◀ or ▶ button.

BLENDING

Use the Blending setup menu to change the opaqueness of the background of the OSD.

Use the following steps to change the OSD Blending.

Step	Action
1	Press ▼ or ▲ until Blending is selected.
2	Select the desired value using the ◀ or ▶ button.

TIME

Use the TIME setup menu to adjust the on-screen display time.

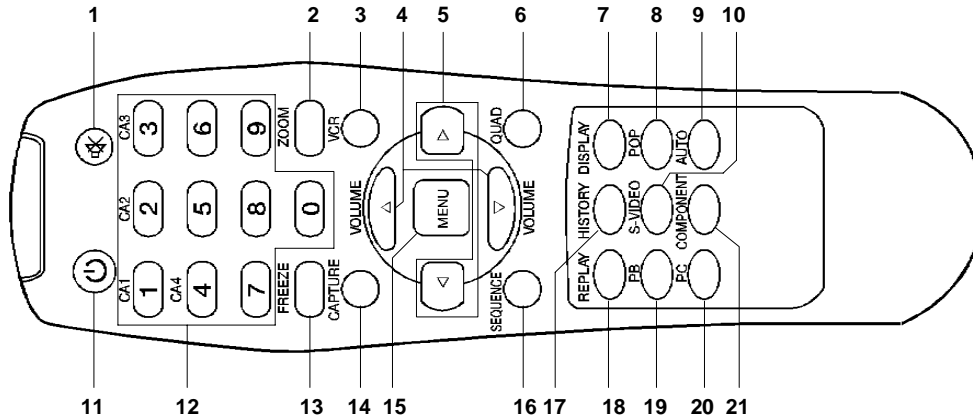
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Use the following steps to change the OSD time.

Step	Action
1	Press ▼ or ▲ until Time is selected.
2	Select the desired time using the ◀ or ▶ button.

CHAPTER 5

REMOTE CONTROL



- | | |
|---|--|
| <p>1. Mute
Cuts off the sound.</p> | <p>2. Zoom
Make the main window 2x zoom.</p> |
| <p>3. VCR
Selects the VCR as the main window video source (Live video).</p> | <p>4. Up / Down Keys
Moves up / down in the OSD menu.</p> |
| <p>5. Left / Right Keys
Decreases / increases the chosen item.</p> | <p>6. QUAD
Makes the main window as a quadruple picture.</p> |
| <p>7. Display
Displays setup information.</p> | <p>8. POP
Turns the POP window on or off.</p> |
| <p>9. Auto
Not available.</p> | <p>10. S-Video
Not available.</p> |
| <p>11. Power
Power on / off.</p> | <p>12. Numbers (0 ~ 9)
Numeric keypads.</p> |
| <p>13. Freeze
Freezes the screen temporarily.</p> | <p>14. Capture
Captures the image of the main window.</p> |
| <p>15. Menu
Turns the OSD menu on / off.</p> | <p>16. Sequence
Sequences the main window from the camera1 to the camera4.</p> |
| <p>17. History
Displays alarm history.</p> | <p>18. Replay
Replays captured images or motion detected images.</p> |
| <p>19. PB
Selects the VCR as the main window video source (Time-multiplexed video).</p> | <p>20. PC
Not available.</p> |
| <p>21. Component</p> | |

CHAPTER 6

TECHNICAL SPECIFICATIONS

Model		23 Inch Public View Monitor
Items	Display Source	1 CH Built-in Camera Video + 4 CH External Camera Video (CH 4 : Internal or external camera selection)
LCD	LCD Panel	23.01 inches (584.40mm) TFT LCD Panel
	Active Display Area	501.12 mm (H) x 300.67 mm (V)
	Pixel Format	1280 (H) x 768 (V) , RGB vertical stripe
	Pixel Pitch	0.3915mm x 0.3915mm
	Color Depths	8 Bit / 16.7M Colors
	Contrast Ratio	400 : 1 (Typical)
	Brightness	450 cd/m ² (Typical)
	Viewing Angles (L/R/U/D)	85 / 85 / 85 / 85 (Typical)
	Light Source / Lifetime	12CCFL / 50,000Hrs (Minimum)
	Response Time	25 ms (Typical)
Composite Video (Built-In Camera)	Video Mode	NTSC / PAL
	Camera Video Input Level	1.0Vp-p @ 75 ohm
Composite Video (External Cameras & VCR)	Video Mode	NTSC / PAL
	Camera Video Input Level	1.0Vp-p @ 75 ohm
	Camera Video Input Connector	BNC x 4
	Camera Video Output Connector	BNC x 4
	VCR Input Level	1.0Vp-p @ 75 ohm
	VCR Input Connector	BNC x 1
	Monitor / Record / Spot Video Output Level	1.0Vp-p @ 75 ohm
	Monitor / Record / Spot Video Output Connector	BNC x 1 / BNC x 1 / BNC x 1
Alarm	Alarm Input / Output connector & External Trigger Input	7 Pin Terminal Block
	Alarm input	One input with individual polarity selection
	Alarm output	One N.O and N.C contact with shared common
Built-In Camera	CCD Image Sensor	1/3"
	Resolution	470 TVL
	Sensitivity	1 Lux (F1.2, 50 IRE)
	S/N Ratio	50dB
	Auto Iris	Yes
	Auto White Balance	Yes
	Electronic Shutter	1/60 ~ 1/100,000 sec
	VF Lens	4 - 8mm (F2.0 ~ 2.8)
Power Supply		DC 24 V
Power Consumption		105 Watts

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Operating Temperature	0 ~ 40 °C
Storage Temperature	0 ~ 50 °C
Case Material	Metal
Dimensions / Weight	572.0 mm x 422.0 mm x 95.0 mm / 8.7 kg (Net) 695.0 mm x 540.0 mm x 235 mm / 12.5 kg (Gross)
Accessories	DC Adaptor, Power Cord, Manual, Remote Control Extension Cable for Power (Option)

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23 INCH 4 CHANNEL
TFT-LCD Public View MONITOR