

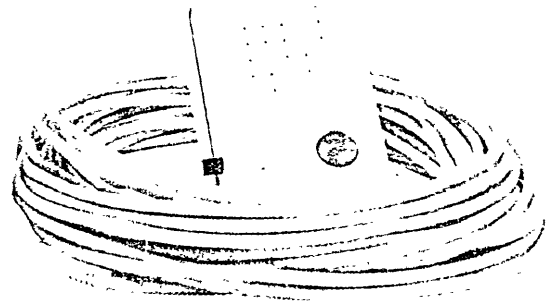
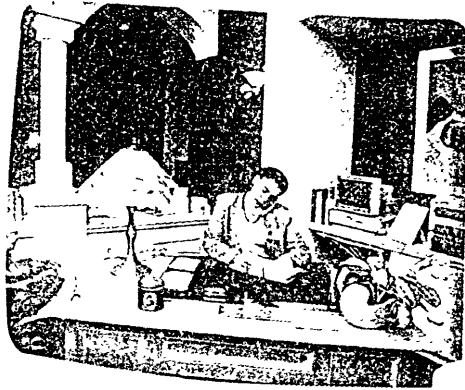
310 5179

# Quad Observation System

Capable of Displaying up to 16 Cameras

(As purchased, the system can accommodate up to four cameras. With additional purchased upgrades, the system can accommodate up to 16 cameras.)

## Instruction Manual



**SO-4120QE**



*Smart Choice is a registered  
trademark of Ultrak*

*A World Leader in Video Surveillance Technology*

Smart Choice Technical Support is available from 7a.m.-6p.m. CST by calling 1-972-353-6492

**Before operating this system, please read this manual thoroughly and retain it for future reference.**

**T**hank you for purchasing the Smart Choice® Quad Observation System. Smart Choice security products are made of the highest quality materials available! Our technological innovation and advanced system designs are the perfect combination for your security system solutions.

The **SO-4120QE Quad Observation System** includes a 12-inch black-and-white monitor with a built-in quad processor, one CCD camera with a 3.6mm F3.8 lens, one 30.3 meters long camera cable, one 9.1meters long intercom cable, one VCR cable, mounting hardware, a camera stand and a two-way intercom box. The system is capable of displaying up to four cameras on the monitor screen at the same time or individually; with upgrades, the system can display up to 16 cameras. You may choose to purchase extra cameras, cable, alarming devices, professional recorders or upgrades. Smart Choice offers a full line of accessories; just call us at 1-972-353-6492.

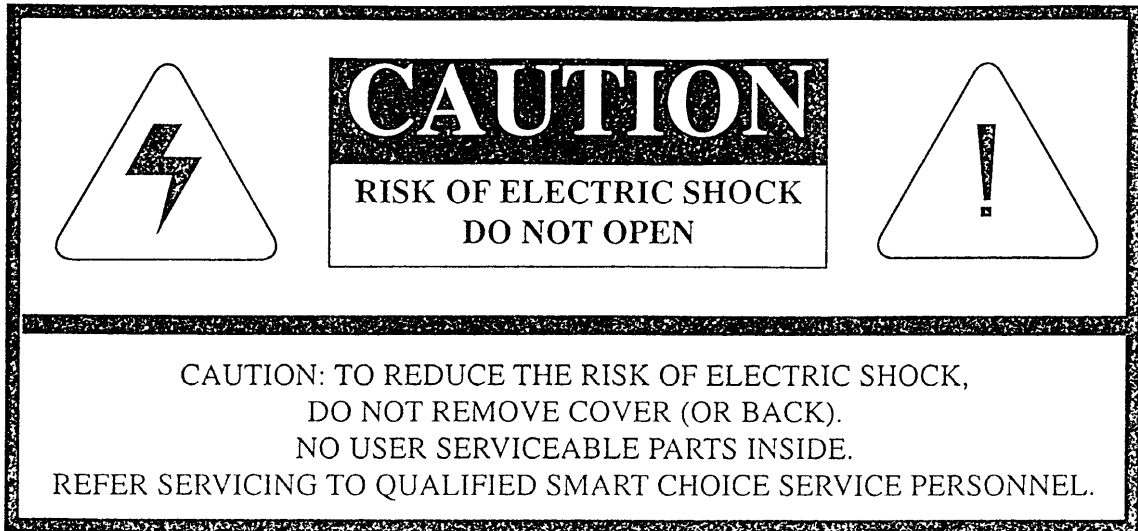


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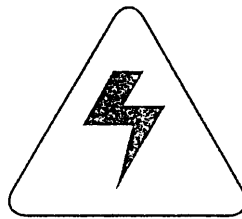
**1301 Waters Ridge Drive  
Lewisville, TX 75057-6022**

**Phone: 972-353-6492 Fax: 972-353-6675**

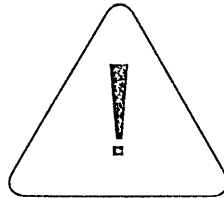


Explanation of Graphic Symbols:

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This symbol 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.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance or product.

- 1. Read Instructions**

All of the safety and operating instructions should be read and understood before the product is used.
- 2. Retain Instructions**

The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings**

All warnings on the product and the instruction manual should be followed.
- 4. Follow Instructions**

All operating and use instructions should be followed for optimal performance.
- 5. Cleaning**

Disconnect this video product from the power supply before cleaning.
- 6. Attachments**

Do not use attachments not recommended by the video product manufacturer as they may cause hazards.
- 7. Water and Moisture**

Do not use this product near water - for example, near a bathtub, wash bowl, kitchen sink, wet basement, or near a swimming pool.
- 8. Accessories**

Use this product only with a stand, tripod, bracket, or table recommended by the manufacturer or sold with the product. Any mounting of the product should follow the manufacturer's instructions.
- 9. Ventilation**

This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation, such as a book case or rack, unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 10. Power Source**

This video product should be operated from the type of power source indicated by the marking label. If you are not sure of the type of power supply at your location, consult your product dealer or your local power company.
- 11. Power Cord Protection**

Power supply cords should not be routed so that they are likely to be walked on or pinched by items placed on or near them.
- 12. Lightning**

For added protection, unplug this product from its outlet during a lightning storm. This will prevent damage to the video product due to lightning and power surges.
- 13. Overloading**

To avoid the risk of fire and electric shock, do not plug this video product into an overloaded power supply
- 14. Object and Liquid Entry**

Never push objects into the openings of this product as they may touch dangerous voltage points that may result in fire or electric shock. Never spill a liquid of any kind on this product.
- 15. Servicing**

Do not attempt to service this video product yourself as opening or removing covers may expose you to voltage or other hazards. Refer all servicing to qualified personnel.
- 16. Damage Requiring Service**

Disconnect this video product from the power supply and refer servicing to qualified service personnel under the following conditions:

  - a. When the power supply cord or plug is damaged.
  - b. If objects have fallen into the video product.
  - c. If the video product has been exposed to rain or liquids.
  - d. If the video product does not operate normally by following the instructions in the instruction manual. Adjust only the controls that are covered in the instruction manual as an improper adjustment may result in damage and will often require extensive work by a qualified service technician to restore the product to its normal operation.
  - e. If the video product has been dropped or the cabinet has been damaged.
  - f. When the video product displays a distinct change in performance - this indicates a need for service.
- 17. Replacement Parts**

When replacement parts are required, be sure the technician uses replacement parts specified by the manufacturer. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- 18. Safety Check**

Upon completion of any service to this video product, ask the service technician to perform safety checks to determine that the product is in proper working condition

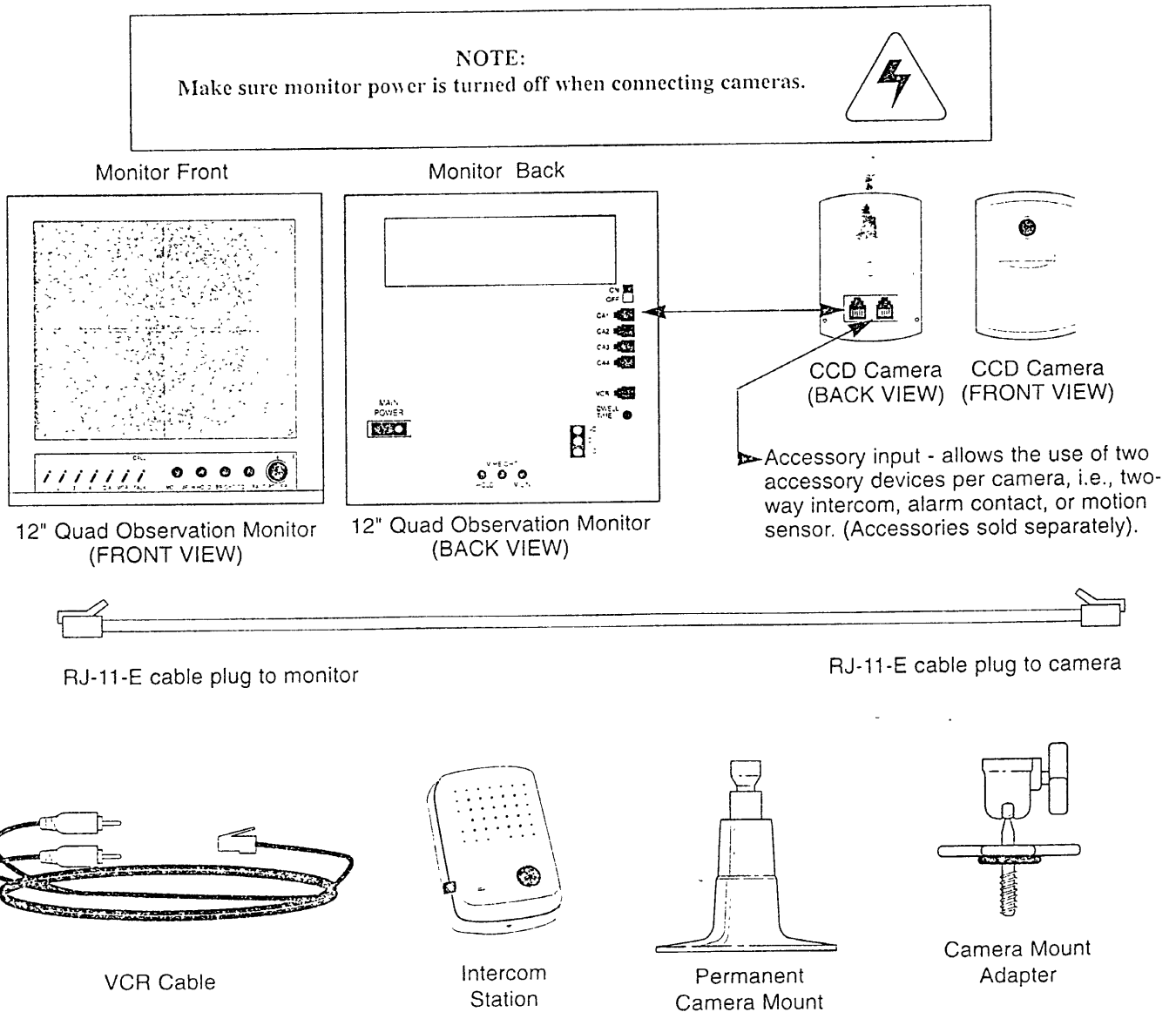
# Basic Camera and Monitor Installation:

1. Unpack all parts from the shipping container.
2. Identify the following parts:
  - a. Monitor
  - b. Camera
  - c. Camera Cable
  - d. Camera Stand/Mount
  - e. Intercom Station
  - f. Intercom Cable
  - g. VCR Interconnect Cable
  - h. Mounting Hardware
  - i. Instruction Manual

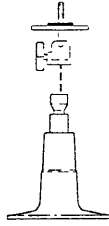
The camera cables have RJ-11-E plugs, which are similar to those on telephone cables to ensure an easy installation. Simply plug one end of the cable into the camera and the other end into the camera port on the rear of the monitor.

CA1 Port is for Camera 1  
CA2 Port is for Camera 2

CA3 Port is for Camera 3  
CA4 Port is for Camera 4




3. Place the monitor in a convenient location.
4. Mount the camera stand in an appropriate location using the enclosed hardware by install guide.
5. Mount the camera on the stand by threading the camera onto the threaded mounting bolt.



6. Run the cable from the camera location to the monitor location.

**Caution:**


Care should be taken when routing the cable from the camera to the monitor. Try not to put unnecessary strain on the cable or connectors. Damage may result to the cable if it is pulled by the connectors. Do not place the cable next to fluorescent lights; interference may result. Do not use staples to support the cable, as you may damage the cable.



7. Plug the cable into the connector port labeled "MONITOR" on the rear of the camera.

**Caution:**


If the provided camera cable is not long enough, do not substitute a telephone cable. Using a telephone cable could damage the camera and/or the monitor. Additional cables and longer cables may be purchased from Smart Choice by calling 1-972-353-6492.



8. Plug the other end of the cable into the corresponding camera port on the rear of the monitor. The ports are labeled "CA1" for camera one, "CA2" for camera two, etc.

**Caution:**

The power to the monitor must be turned off before camera cables are plugged into the camera ports on the rear of the monitor. Plugging a camera cable into the monitor with the power on could damage the monitor and/or camera.



9. Repeat steps 4 through 8 for additional cameras.
10. Plug the power cord for the monitor into an outlet.
11. Turn on the MAIN POWER to the monitor (on the back) and the POWER on the front of the monitor. The Quad display should appear.
12. Press the Q/A button. The system will show each camera one at a time.

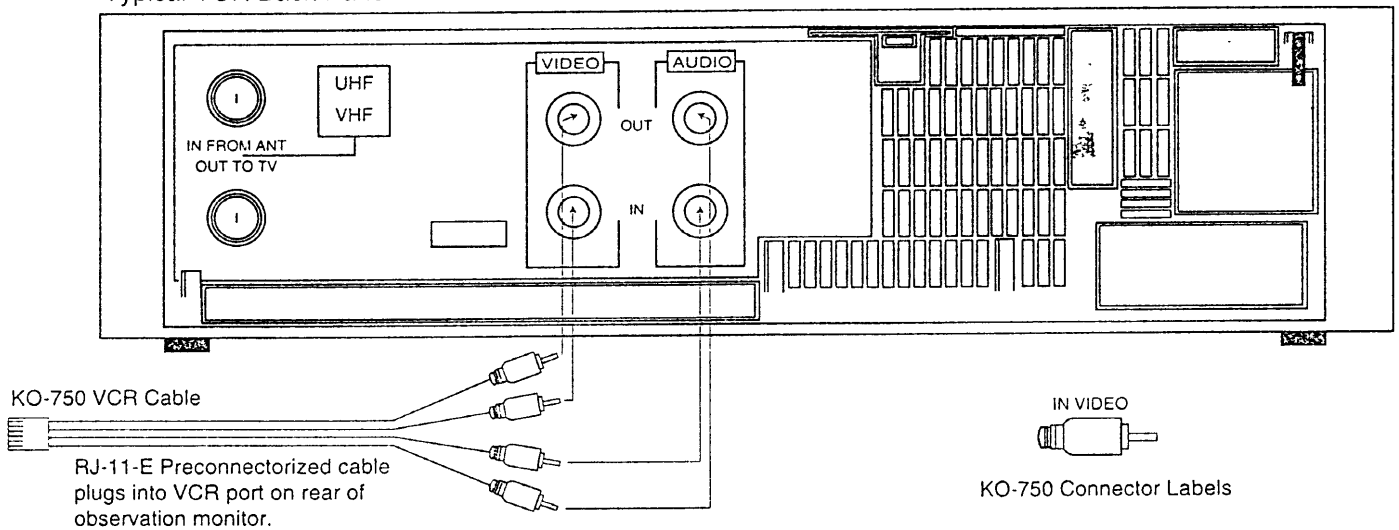
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# Basic VCR Installation:

## Basic Installation of a VCR With Your Smart Choice Observation System:

1. Turn off the MAIN POWER to the monitor.
2. Plug the RJ-11-E connector of the VCR cable into the "VCR" port on the rear of the monitor.
3. Connect the "Audio In" connector to the "Audio In" port on the VCR.
4. Connect the "Audio Out" connector to the "Audio Out" port on the VCR.
5. Connect the "Video In" connector to the "Video In" port on the VCR.
6. Connect the "Video Out" connector to the "Video Out" port on the VCR.
7. Plug in and turn on the VCR.
8. Turn on MAIN POWER to the monitor.
9. Place the VCR in the AUX or LINE INPUT mode.
10. Start the Record mode on the VCR.

Typical VCR Back Panel





## Monitor Features:

- Quad Display - Displays up to four cameras at a time.
- Picture Freeze - Can freeze a picture on the screen in the Quad Display mode.
- Auto Freeze on Video Loss - Automatically freezes the last picture displayed in the quad mode when a loss of video is detected.
- Full-screen Display - Can display one camera at a time on the screen, full size.
- Sequential Switching - Can change from one camera to the next in the Full-screen mode and displays the quad display before restarting the display of individual cameras.
- Vertical Interval Switching - Prevents the monitor picture from rolling when the unit switches from one camera to the next when using PSC-1A cameras.
- Automatic Skip - If a camera position is not used or a loss of video occurs, that position is skipped in the Sequential Switching mode or blank in the quad mode.
- Variable Dwell Time - The amount of time a camera is displayed in the Sequential Switching mode can be adjusted from 1 to 60 seconds.
- Alarm Inputs - Two alarming devices can be connected to each camera. Activity at the protected site causes the alarmed camera to be displayed full screen and an alarm is sounded at the monitor.
- Alarm Output - A relay trips when an alarm is received and, in addition to sounding an audible alarm, it can be used to start a professional recorder or other external device.
- Audible Alarm - Sounds whenever an alarm is received. There is a switch to disable this feature.
- Audio Inputs - Each camera has a microphone to enable audio recording from each camera location. This is also used with the optional two-way intercom.
- Main/Monitor Power Switches - There are separate power switches for the monitor and the quad/switching section of the observation system. This allows the monitor to be turned off to extend monitor life without interrupting the recording of the cameras.
- VCR Input/Output - Allows Audio and Video signal to be sent to a VCR for recording and allows recorded tapes to be played back and reviewed at the monitor.



### Notice:

The user of this system is responsible for checking and complying with local, state and federal laws and statutes concerning the recording and monitoring of audio signals.

## Camera Features:

- 1/3" CCD Image Sensor - This is a professional level camera chip which achieves a very high quality picture.
- Wide Angle 3.6mm Lens - Allows a large area to be monitored from a single camera.
- Electronic Iris - Automatically adjusts the camera for changes in lighting to ensure an optimal picture at all times.
- Microphone - Allows the monitoring of audio at the camera location.

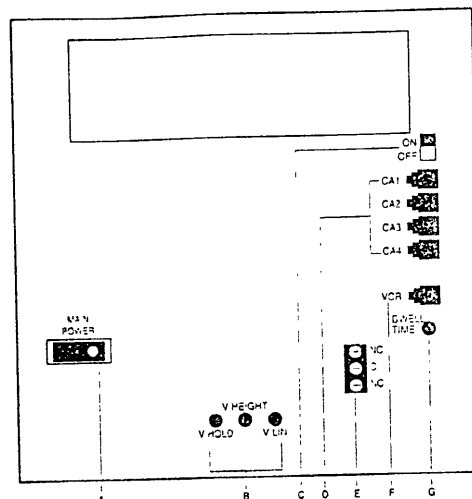
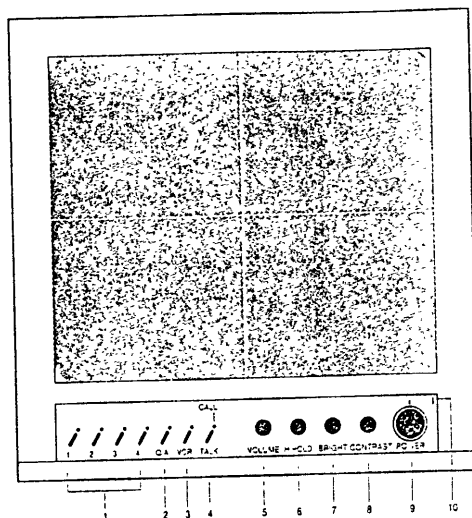


### Notice:

The user of this system is responsible for checking and complying with local, state and federal laws and statutes concerning the recording and monitoring of audio signals.

- Audio Defeat Switch - Allows the audio feature of the camera to be disabled. This is important in states or cities that do not allow audio monitoring and recording.
- Accessory Input - Allows the use of alarm contacts, motion sensors and two-way intercoms.
- Camera Stand/Mount - Allows the camera to be mounted to shelves, walls, ceilings and many other areas.

# Monitor Controls:



## Front of Monitor .....

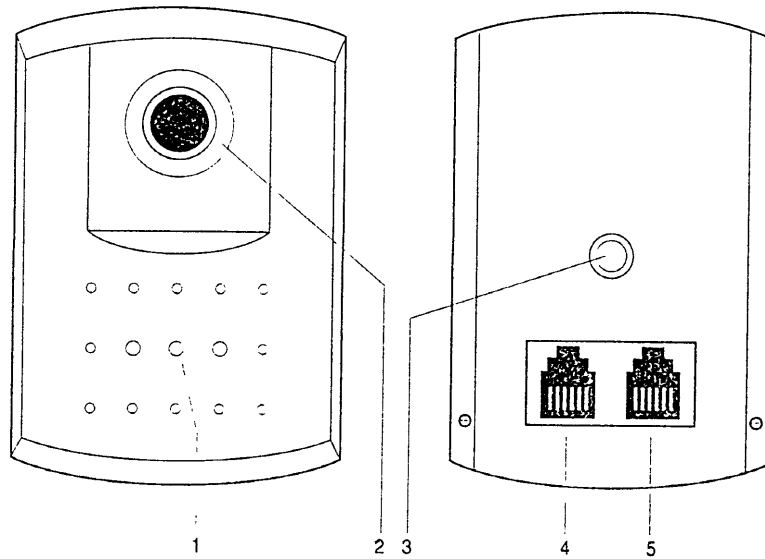
- 1 **Camera Select Buttons**  
In the quad mode (monitor showing four cameras), pressing one of these buttons will "freeze" the chosen camera view on-screen. Pressing it again will "un-freeze" the camera view. In the quad mode, when an alarm is received, the system will automatically change the alarming camera view (the green light above the camera will flash). To acknowledge the alarm just press the button below the flashing green light. In the automatic sequential switching mode (monitor automatically switches from camera 1, 2, 3, 4, then quad), pressing one of these buttons will select a single camera for full-screen display.
- 2 **Q/A Button (Quad/Automatic Display Select Button)**  
This button allows you to choose between the quad display mode (red light is on steady and four cameras show on screen) and the automatic sequential switching mode (red light is flashing).
- 3 **VCR Button**  
This button allows you to playback events that have already been recorded and display them on the system monitor. If the VCR button is pressed, the LED lights, and the monitor is ready to playback an video signal from a VCR. During normal surveillance and recording this button should not be selected.
- 4 **Talk Button**  
This button has two uses. First, it is used for two-way talking ability between the monitor and any camera location with a two-way intercom box. The talk button must be pressed and held down while talking. Second, in the quad mode, it is used to select the camera you wish to "listen in" on. Simply press and hold the talk button while pressing the button for the camera location (1, 2, 3 or 4) that you wish to listen to. A small black square shows up in the inside four corners of the quadrants showing which camera has been selected.
- 5 **Volume**  
Use this to turn the audio up or down at the monitor location
- 6 **H-Hold (Horizontal Hold)**  
Use this control to adjust for any horizontal lines or streaking.

- 7 **Bright**  
This control is used to adjust the overall brightness for optimum picture clarity.
- 8 **Contrast**  
This control is to adjust the contrast for optimum picture clarity.
- 9 **Power Switch**  
This turns the power on at the monitor. Be sure the main power switch (at the rear of the monitor) has been turned on.
- 10 **Microphone**  
This sensitive microphone allows for two-way communication to camera locations equipped with a two-way intercom box.

## Rear of Monitor .....

- A **Main Power**  
This controls power to the entire unit. Depress "O" to turn the unit on and the other side to turn the unit off. This control allows you to keep the main power on at the unit (for recording purposes) while turning the front power switch off (monitor is blank). This extends monitor life and gives the impression that the unit is off when actually the cameras are on and the system can be recording.
- B **Vertical Controls (V-Hold, V-Height, V-Line)**  
These controls are to adjust for vertical streaking and/or lines in the picture. Adjust for optimum picture clarity.
- C **Bell Switch**  
This switch allows the audio alarm function at the monitor to be turned on or off.
- D **Camera Inputs (CA1, CA2, CA3, CA4)**  
Cameras are connected here. Be sure the monitor power is off when connecting cameras.
- E **NO C NC Alarm Output Devices**  
These outputs allow for connection to a VCR, event recorder or external alarm system. Terminals are form C, dry-contact relay output.
- F **VCR (VCR Input/Output Port)**  
When connected to a VCR or professional event recorder (via enclosed KO-750 connector), the audio and video signals are passed through this port.
- G **Dwell Time**  
Use this control to adjust the automatic switching time from 1-60 seconds in the automatic sequential switching mode.

## Camera Controls:



### 1. Microphone

Gathers sound at the camera location; the sound is transmitted to the monitor.

### 2. Wide-angle 3.6mm Lens

Allows a wide area to be monitored.

### 3. Mounting Hole 1/4" - 20 UNC Threads

The camera stand screws into this hole.

### 4. Camera Port

The cable from the monitor plugs into this port.

### 5. Accessory Port

Accessories are plugged into this port. Up to two alarming devices may be connected to each camera with the purchase of an optional two-way connector. Motion sensors, alarm contacts and two-way intercom boxes are available as accessories from Smart Choice.

### REMINDER:

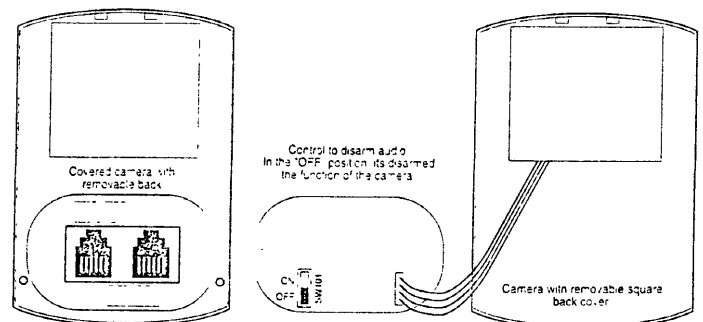
Never aim a camera directly into the sun.



## Audio Defeat Switch Operation:

1. Turn off the MAIN POWER to the monitor.
2. Remove the camera from the camera stand.
3. Disconnect the cable(s) from the rear of the camera.
4. Remove the two screws located on the rear of the camera.
5. Remove the rear cover from the camera.
6. Carefully remove the bottom circuit board from the camera housing.
7. Locate the audio defeat switch (SW101).
8. Change the position of the switch from "ON" to "OFF".
9. Replace the circuit board.
10. Replace the rear camera cover.
11. Reconnect the cable(s) to the rear of the camera.

This feature allows the audio from the camera to be disabled to comply with some state and local laws and regulations. See page 4 for more information.



## Monitor Operation:

To enter the Quad Display Mode, press the Quad/Automatic (Q/A) button once. The following should occur:

- The monitor should display a quad screen with all four camera positions displayed.
- The RED light corresponding to the Q/A button should be continuously lit.
- The GREEN lights over each camera select button should light steady for all active cameras.
- A flashing black square (indicates active camera audio) should appear in the inside corner of one of the four quadrants.

To change the Active Camera Audio to a different camera, press the TALK button and the desired CAMERA button at the same time. The following should occur:

- The flashing black square should move to the picture of the camera selected.
- The sound heard on the monitor speaker should come from the selected camera.

To change to the Automatic Sequential Switching Mode from the quad display mode, press the Quad/Automatic (Q/A) button once. The following should occur:

- The monitor should display a full-screen picture of the first active camera position and then display the rest of the active cameras one at a time. After displaying all of the active cameras a picture of all four cameras is displayed in the quad mode. The cycle will then restart.
- The RED light corresponding to the Q/A button should flash.
- The GREEN lights over each camera select button should light for the amount of time that the camera is displayed on the screen. Dwell time is adjustable at the rear of the monitor.
- A series of white bars will be displayed in the lower left corner of each picture, -for camera 1, =for camera 2, etc.

To change to the Full-screen Display of one camera from the Quad Display Mode, press the Quad/Automatic (Q/A) button once. Press the desired Camera Select button once. The following should occur:

- The monitor should display a full-screen picture of the first active camera position and then switch to the desired camera.
- The RED light corresponding to the Q/A button should flash.
- The GREEN light over the desired camera select button should light.
- A series of white bars will be displayed in the lower left corner of the picture, - for camera 1, =for camera 2, etc.

To change to the Full-screen Display of one camera from the Automatic Sequential Switching Mode, press the desired Camera Select button once. The following should occur:

- The monitor should display a full-screen picture of the desired camera position.
- The RED light corresponding to the Q/A button should flash.
- The GREEN light over the desired camera select button should light.
- A series of white bars will be displayed in the lower left corner of the picture, -for camera 1, =for camera 2, etc.

To change to the VCR Playback Mode from any of the previous display modes, press the VCR button once. The following should occur:

- The monitor will display a picture from the VCR.
- The RED light corresponding to the VCR button will light.

**Note:**

All other lights will remain as they were before pressing the VCR button. A picture from the cameras will be displayed on the monitor until the VCR is placed in the PLAY mode.

### Alarm Operation:

If an alarm on an accessory device is activated, the following will occur:

- The alarmed camera will be displayed full screen on the monitor.
- The GREEN light corresponding to the camera will flash rapidly.
- The RED CALL light will flash rapidly.
- The alarm buzzer will sound for 4 seconds.
- The alarm output will trip and hold for forty seconds or the alarm time, whichever is longer, and, if connected to a professional event recorder, begin taping.

To acknowledge an alarm, press the alarmed camera button (flashing). The following will occur:

- The alarm buzzer will silence.
- The alarmed camera will remain in a full screen display (for a preselected dwell time).

To reset the monitor to the operational mode before the alarm, press the Q/A button once for Quad operation or twice for Sequential Switching operation.

- See previous operations instructions for operational modes.

If you do not acknowledge an alarm, the unit will return to the previous operating mode after 40 seconds or whenever the alarm resets (if the alarm was active for more than 40 seconds). If a second, third, or fourth alarm is received while a previous alarm is in process, the unit will sequentially switch between the alarmed cameras until the alarm timer expires or when both alarms are reset (if the alarm time exceeded forty seconds.)

### Two-Way Intercom Operation:

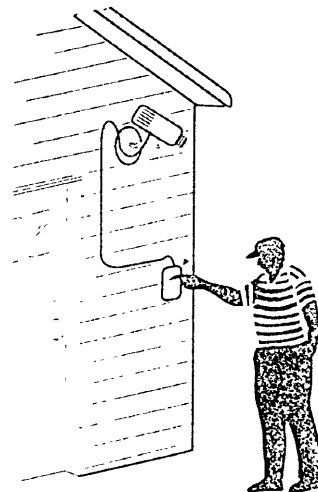
#### Note:

This feature will not work unless the intercom station is connected to the camera via the accessory port.



An intercom call is usually initiated at the intercom station located near the camera. The intercom station is plugged into the Accessory port on the rear of the camera. Pressing the CALL button on the intercom station will sound the alarm buzzer at the monitor and will display the calling station camera full screen on the monitor. To talk to someone at a camera location, press the TALK button and hold while talking into the microphone located on the front of the monitor. The following will occur:

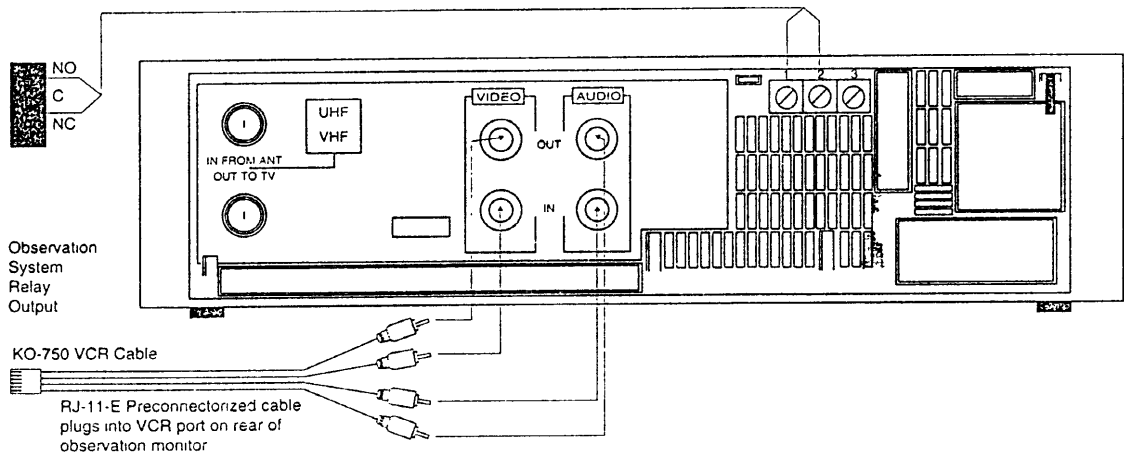
- The CALL light will illuminate as long as the TALK button is pressed.
- The sound of your voice can be heard at the camera location.
- The caller does not need to press and hold the button to talk.
- The operator at the monitor is required to press and hold the TALK button while they are talking to the caller
- To end the conversation, discontinue pressing the TALK button.



**Line Amplifier** - This unit will allow the camera and any alarming devices to be placed more than 90.1 meters from the observation monitor. The camera can be installed up to 90.1 meters from the Line Amplifier using Smart Choice camera cables. The line amplifier can be up to 270.3 meters from the observation monitor. **This unit is required if the camera is more than 90.1 meters from the observation monitor.** The Line Amplifier is powered by plugging it into a 230V ac outlet.

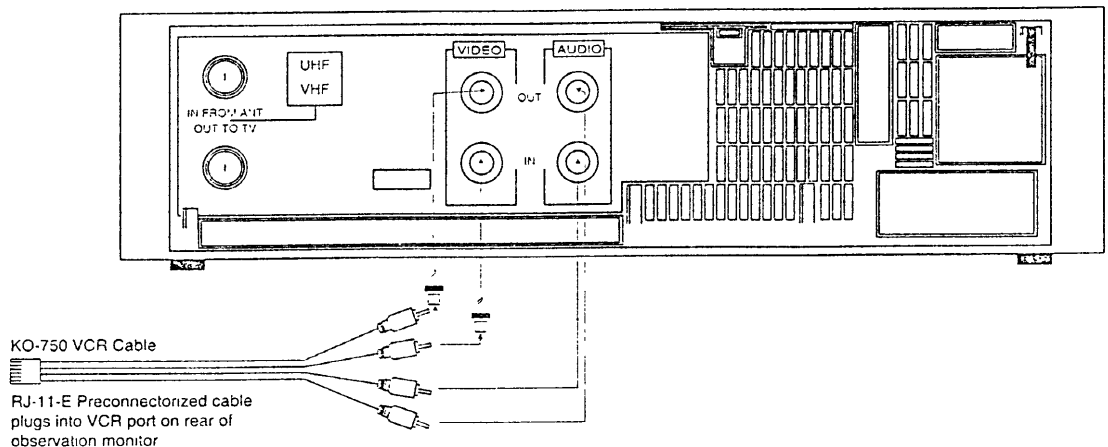
**Event Recorder** - This type of recorder is a VHS VCR with an alarm interface and Time/Date Display. The ES-400 places a time and date stamp on the video tape as it records the audio and video from the SO-4120QE observation system. It can be used in conjunction with the Quad Observation System to allow the system (when connected through the alarming outputs) to automatically turn on the recorder when an alarm is received. A standard VCR can not accommodate this feature.

### Event/Alarm Activated Recording Installation



**24-hour Virtual-time Lapse Recorder** - This type of recorder allows up to 24 hours of video and audio to be recorded on a single T-160 VHS video tape.

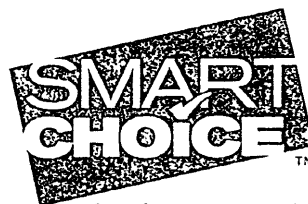
### 24-hour Virtual-time Recorder Installation



# SO-4120QE System Specifications:

12-inch Black-and-white Quad Monitor	CCD Camera with 3.6mm Lens & Microphone
Power Source: 230 V ac, 50 Hz	Power Source: 15V dc (From Monitor)
Power Consumption: 50 Watts (With 4 Cameras)	Power Consumption: 2 Watts Max.
Picture Tube: 12 Inch Diagonal, 90° Deflection Angle	Image Sensor: 1/3" Interline Transfer CCD
Resolution: >800 Lines at the Center	Active Pixels: 512H x 582V
Quad Refresh Rate: 12.5 Frames per Second	Image Sensor Area: 4.8mm H x 3.7mm V
Switching Time: 1-60 Seconds Adjustable	Resolution: >350 Lines
Video Input: CCIR, 1.0Vp-p, 75 Ohms Terminated	Min. Illumination: 2 lux
Video Output (VCR): CCIR, 1.0Vp-p, 75 Ohms Unbalanced	Signal to Noise: 46 dB
Audio Input: Line Level	Electronic Iris: 1/100,000
Audio Output (VCR): Line Level	Synchronization: External (From Monitor for PSC-1AE only)
Max. Dist. to Camera: 90.1 Meters (Additional distance requires Line Amplifier)	Signal Format: CCIR, 625 Lines, 2:1 Interlace
Camera Power: 15V dc (x4)	Video Output: 1.0Vp-p, 75 Ohms Unbalanced
Relay Output: Form C, Dry Contacts 24VDC @ 1Amp Max.	Audio Output: 600 Ohms Line Level
Ambient Temperature: 0°C - +40°C (32°F to 104°F)	Lens: 3.6mm F3.8
Ambient Humidity: 10 - 90% Non-condensing	Camera Mount: 1/4" - 20 UNC (Back)
Dimensions: 283Hx305Wx305D mm (11.125Hx12Wx12D in.)	Ambient Temperature: -10°C - +45°C (14°F to 114°F)
Weight: 10kg (22 lbs) Approx.	Ambient Humidity: 0 - 96% Non-Condensing
	Dimensions: 81Hx50Wx40D mm (3.375Hx2Wx1.625D in.)
	Weight: 72g (1/4 lb.)

Printed in Korea  
MADE IN KOREA



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**For More Information Or To Order Accessories Call:  
1-972-353-6492**

**Quad Processor Upgrade** - One upgrade will convert one quadrant on the quad to four cameras. With four upgrades, system can then accommodate up to 16 cameras for viewing all at once.

**IR Motion Detector** - When connected to a camera it acts as a alarming device and alerts the system of trouble by way of an alarm at the monitor. It can also signal the system to turn on a professional event recorder or external alarm system with the system is connected via the alarm output connections.

**Door/Window Surface Contacts** - when connected to a camera these contacts act as an alarming device and alert the system of trouble by way of an alarm at the monitor. They can also signal the system to turn on a professional event recorder or external alarm system when the system is connected via the alarm output connections.

Additional Professional Accessories are available from your Smart Choice dealer or by calling Smart Choice direct at 1-972-353-6492.

Additional Cameras	Outdoor Camera Housings
Additional Cable	Indoor Scanner for Camera
Additional Monitors	

## Trouble Shooting:

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### 1. No Power

- Check your A/C outlet for power. Make sure the system is plugged in.
- Make sure the MAIN POWER switch is in the ON position.

### 2. Power But No Picture

- Make sure the power switch on the front of the monitor is ON.
- Make sure there is nothing blocking the lens on the camera.

### 3. No Audio or Video

- Make sure the camera cable is plugged into the monitor and the camera.

### 4. No Audio

- In the Quad Display Mode, make sure the flashing black square is in the correct quadrant.
- Make sure the volume control is set at an appropriate level.

### 5. Squealing Noise at the Monitor on a Camera

- The camera is too close to the monitor and the volume control is set too high.