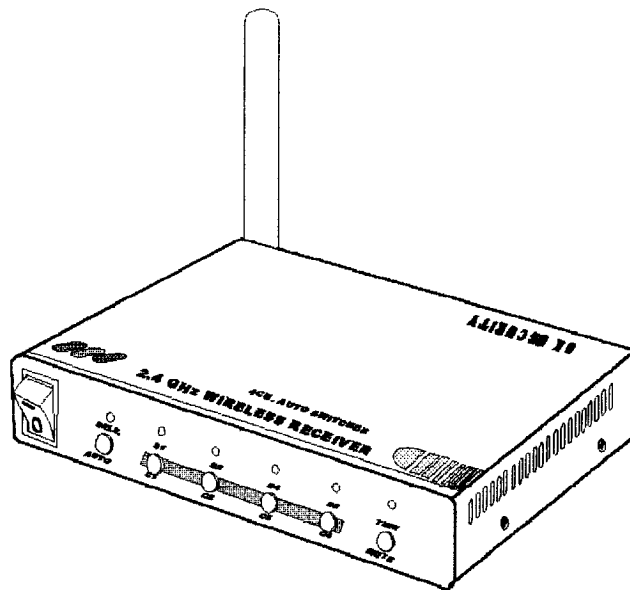
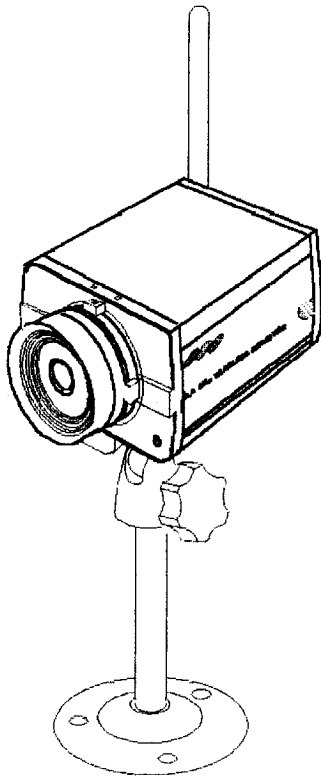


**USER'S  
INSTRUCTIONS**

# 2.4GHz 4CHANNELS WIRELESS COLOR CAMERA & RECEIVER

MODEL :  CSW-244S



**OK SECURITY**

1999. 3. 16 AKS-25

\* Please read this Users Guide carefully before attempting to operate this product.

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1. SAFETY INSTRUCTIONS
2. INTRODUCING 2.4GHz WIRELESS SYSTEM
3. CONTROLS AND FUNCTIONS
4. INSTALLATION
5. SYSTEM OPERATION
6. SPECIFICATION

**SAFETY INSTRUCTIONS**

These symbols with supplemental markings are at the rear of monitor.

	<b>CAUTION</b> Risk of Electric Shock Do Not Open	
<p><b>CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</b></p>		



This symbol is intended to alert the user to the presence of unprotected "dangerous voltage" within the product's enclosure that may be strong enough to cause 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.

**WARNING - TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

**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 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 with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, the user should correct the interference by taking one or more of the following actions :

- \* Re-orient or relocate the receiving antenna.
- \* Increase the distance between the equipment and receiver.
- \* Connect the equipment to 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.

The user may find the following booklet prepared by Federal Communications Commission helpful :

**HOW TO IDENTIFY AND RESOLVE RADIO-TV INTERFERENCE PROBLEMS.**

This booklet is available from the US Government Printing Office, Washington DC 20402, Stock Number 004-000-00345-4

**CAUTION :** CHANGE OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

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## ■ SAFETY INSTRUCTIONS

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### ■ IMPORTANT SAFEGUARDS

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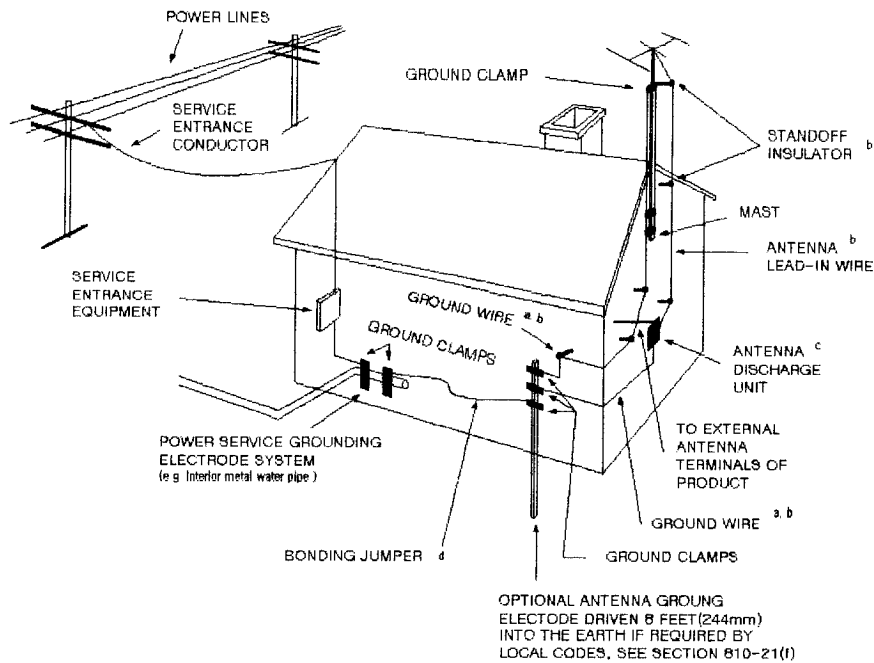
All the safety and operating Instructions should be read and retained for future reference before the appliance is operated.

1. HEED WARNING-All warnings on the appliance and in the operating instructions should be adhered to.
2. FOLLOW INSTRUCTIONS-All operating instructions should be followed.
3. CLEANING-Unplug this equipment from the wall outlet before cleaning.  
Do not use liquid or aerosol cleaners. Use a water-dampened cloth for cleaning.
4. WATER AND MOISTURE-Do not use this product near water-for example, near a bath tub, wash bowl, kitchen sink, swimming pool or laundry tub, or in a wet basement.
5. ACCESSORIES-Do not place this product on an unstable cart, stand, tripod, bracket, or table. Do not drop.
6. VENTILATION-Slots and openings in the cabinet are provided for ventilation.  
To ensure reliable of this product and to protect it from overheating, the opening must not be blocked or covered.  
This product should never be placed near or over a radiator or heat register or in a built-in installation, such as a bookcase or rack, unless proper ventilation is provided.
7. POWER SOURCES-This product should be operated only from the type of power source indicated on the marking label.
8. POWER CORD PROTECTION-Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed on or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the unit.
9. OUTDOOR ANTENNA GROUNDING-If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges.  
Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1981, provides information with respect to power grounding of the mast and supporting structure grounding of the lead-in wire to antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrodes. See Figure A.
10. LIGHTNING-For added protection of the product during a lightning storm, or when it is left unattended and unused for a long time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power surges.
11. This equipment is provided with a three-wire grounding type 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.

## SAFETY INSTRUCTIONS

FIGURE A

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 "RADIO AND TELEVISION EQUIPMENT"



- a. Use No. 10 AWG(5.3mm<sup>2</sup>) copper, No. 8 AWG(8.4mm<sup>2</sup>) aluminum, No. 17 AWG(1.0mm<sup>2</sup>) copper-clad steel or bronze wire(or larger) as a ground wire.
  - b. Secure antenna lead-in and ground wires to house with stand-off insulator spaced from 4-6 feet(1.22 - 1.83mm) apart.
  - c. Mount antenna discharge unit as close as possible to where lead-in wire enters house.
  - d. Use Jumper wire not smaller than No. 6 AWG(13.3mm<sup>2</sup>) copper, or the equivalent, when a separate antenna-grounding electrode is used.
- See NEC, Section 810-21(f).

12. **POWER LINES** - An outside antenna system should not be located in the vicinity of overhead power lines or other electric light power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep it from touching such power lines or circuits, as contact with them might be fatal.
13. **OVERLOADING** - Do not overload 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 this product 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 service this product yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

## ■ SAFETY INSTRUCTIONS

16. **DAMAGE REQUIRING SERVICE**—Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions :
  - a. When the power supply cord or plug is damaged.
  - b. If liquid has been spilled, or objects have fallen into the product.
  - c. If the product has been exposed to rain or water.
  - d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions.
  - e. If the product has been dropped or the cabinet has been damaged.
  - f. When the product exhibits a distinct change in performance, it may need servicing.
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 product, ask the service technician to perform safety checks to ensure that the product is in proper.
19. Do not use attachments not recommended by the television equipment manufacturer, as they may result in the risk of fire, electric shock, or injury to persons.
20. Do not place this equipment on an unstable cart, stand, or table.  
The equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Use only with a cart or stand recommended by the manufacturer or sold with the equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should be secured with a mounting kit approved by the manufacturer.
21. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



### **WARNING**

The audio and video capabilities of this equipment are extremely powerful. Anyone using this equipment should be familiar with individuals' rights to privacy under federal, state and local law and should be trained to comply with all such laws.

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## ■ INTRODUCING 2.4GHz WIRELESS SYSTEM

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CSW-244S uses the latest in wireless communication technology to deliver consistently audio, B/W and color video images up to 300feet away .By transmitting at very high frequency(2.4GHz) the FCC approved CSW-244S avoids the crowd 900MHz band used by many cordless telephones and other wireless audio/video transmitters. Its superior quality is due to FM rather than AM signal modulation. The use of state-of-the art circular polarized high-gain omni directional transmitting and receiving antennas maximizes the signal range and minimizes interference from unwanted signals.

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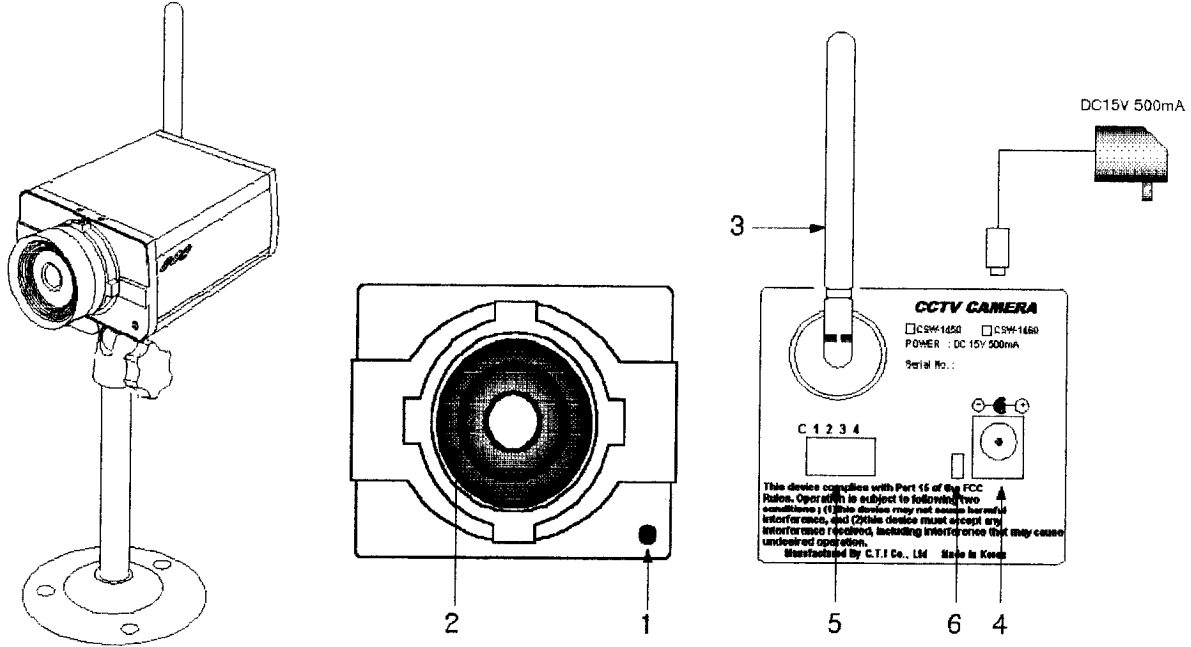
## ■ HOW TO USE CSW-244S FOR OPTICAL PERFORMANCE

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1. CSW-244S should be placed on a flat stable surface to prevent damages to it from falling.
2. For maximum operating range, try to minimize the number of obstacles(TV, other electronics, large steel, structure) between the transmitter and the receiver units.
3. It broadcasts high-quality audio and video, using omni directional antennas which must be oriented in certain configurations for best results.
4. Additional lighting may be required in dark conditions to obtain a proper image.
5. Avoid pointing the camera directly into light or extreme sunlight. This will interfere with your ability to obtain a proper image.
6. To receive optimum images performance, always make sure lenses are kept clean.
7. This camera is not waterproof. Do not use in wet or high humidity environments as this can cause camera damage or electrical shock.

## CONTROLS AND FUNCTIONS

### WIRELESS CAMERA



**1. MICROPHONE**

High sensitivity condenser microphone.

**2. LENS**

1/4" CCD Image sensor with C/CS mounted lens.

**3. OMNI DIRECTIONAL  
2.4GHz ANTENNA**

Transmits audio and video signals

**4. DC IN**

Plug the DC 15V 500mA adaptor(supplied)

**5. CHANNEL SELECTION  
SWITCH (C1/C2/C3/C4)**

Select channel which you want to connect to receiver.

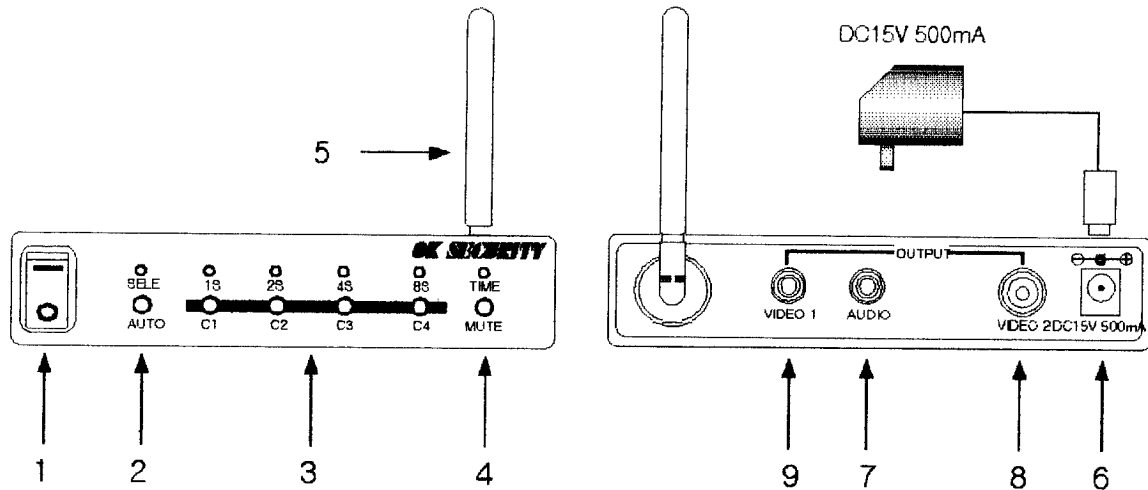
**6. LED**

Indicate power on



## CONTROLS AND FUNCTIONS

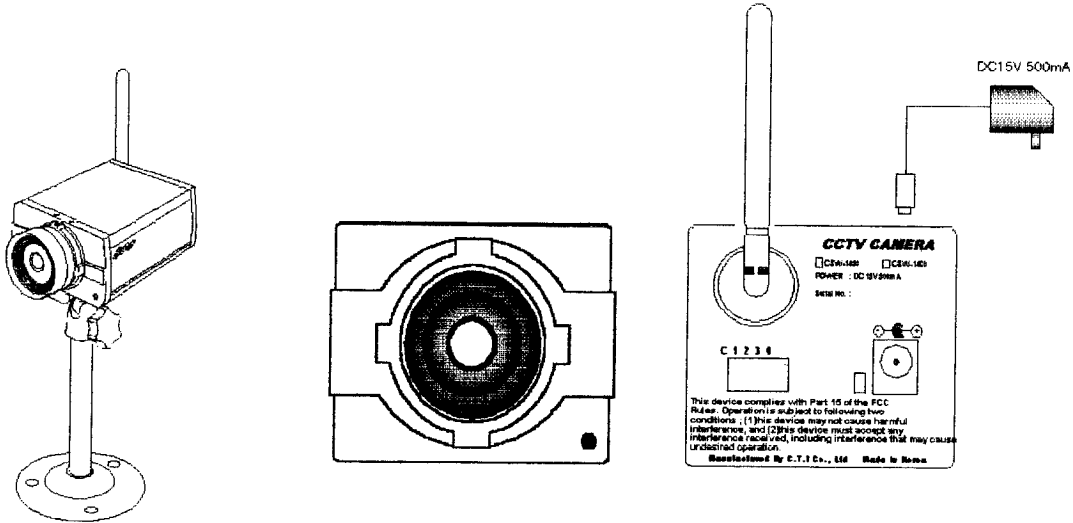
### WIRELESS RECEIVER



1. **POWER ON/OFF SWITCH**  
Switch for the power on, off.
2. **AUTO /SELECTION**
  - 1) **AUTO MODE**  
This receiver normally will be in AUTO mode, which means it switches cameras automatically. Press this button if you want to rescan camera channel.
  - 2) **SELECTION MODE**  
This mode will be operated in selected AUTO mode to switch only the channel which you selected. If you press any camera selector button (C1/C2/C3/C4 ) and auto button simultaneously.  
Press AUTO MODE button if you want to return from manual mode.
3. **CAMERA SELECT (C1/C2/C3/C4)**  
If you press any camera selector button, this receiver goes into manual mode. Press AUTO button if you want to return to auto mode.
4. **MUTE /TIME MODE**
  - 1) **MUTE MODE**  
Press MUTE button if you want to sound off
  - 2) **TIME SETTING MODE**  
If you want to adjust switching time time ,press TIME button and CAMERA (C 1~C4)button simultaneously.(The assigned time: C1 1 sec, C2 2sec, C3 4sec C4 8sec).  
In the state of the pressing TIME button ,you can press 4 CAMERA buttons. If you above 2 CAMERA buttons, the assigned time will be added. So you can control the SWITCHING time from 1 sec to 15 sec.  
  
e.g. TIME + C2= 2 sec  
TIME + C1,C4= 9 sec  
TIME + C1,C2,C3,C4 = 15 sec.
5. **OMNI DIRECTIONAL 2.4GHz ANTENNA**  
Receive a audio and video signals
6. **DC IN**  
Plug the DC 15V 500mA adaptor (supplied)
7. **VIDEO OUT RCA JACK (YELLOW)**  
RCA video out jack for wire mode operation
8. **VIDEO OUT BNC JACK**  
BNC video out jack for wire mode operation
9. **AUDIO OUT RCA JACK (RED)**  
Audio output jack for wire mode operation

## INSTALLATION

### WIRELESS CAMERA



1. Attach HOLDER to the wall or ceiling, wherever you want to install the camera. Locate a wall stud or ceiling joint and secure the bracket, using screws.
2. Install CAMERA on the HOLDER. If you use the CAMERA HOUSING, tighten the camera housing and put the camera into the housing.
3. Connect the supplied DC 15V 500ma adaptor to the DC jack on the rear of the camera and plug it into AC outlet. The green LED (Power indicator lamp) on the front of the camera will indicate that the unit turn on.
4. Choice the channel which you want to connect to receiver. ( one of the C1,C2, C3, C4)
5. Verify that this system works, then focus the camera properly with the lens.
6. Please retain distance between cameras(C1/C2/C3/C4) and receiver in order to get good reliability if it is possible.

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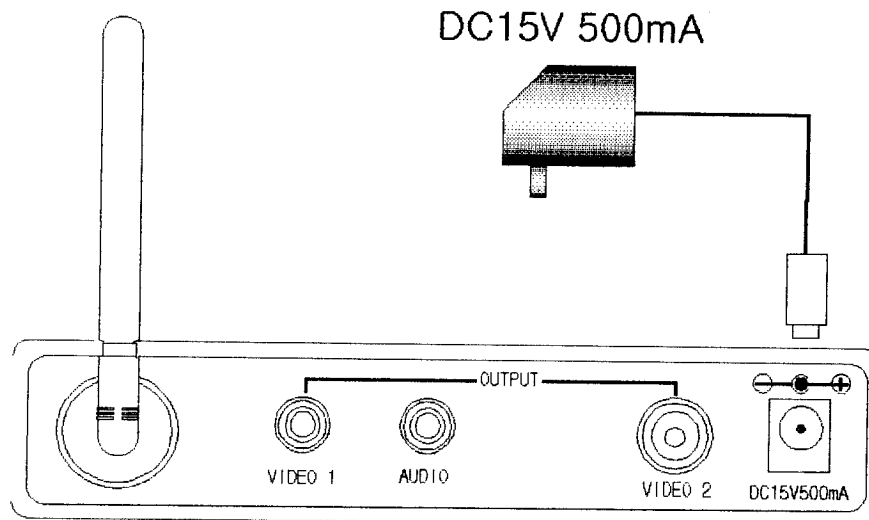
**■ INSTALLATION**

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**■ WIRELESS RECEIVER**

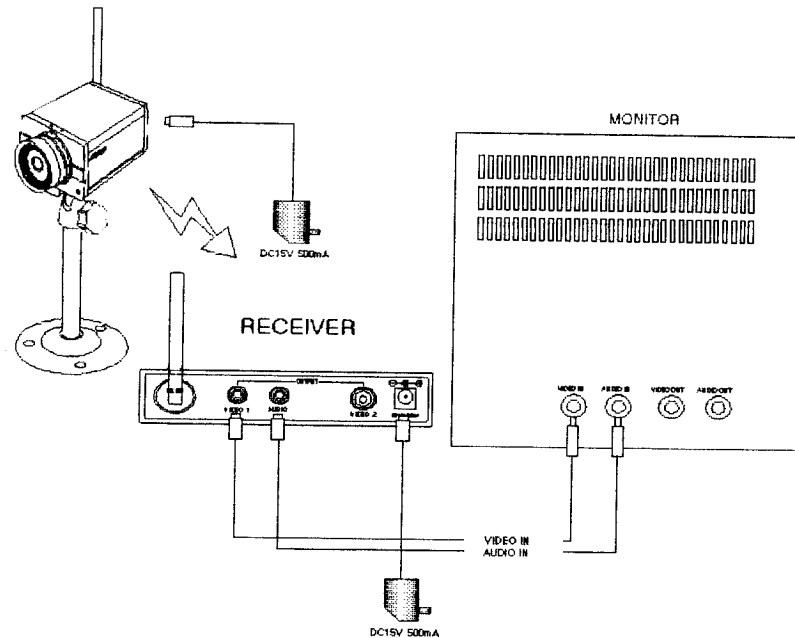
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1. Place the wireless receiver unit on or near the TV or Monitor where you want to install it.
2. Connect the supplied DC15V 500ma AC adaptor to the DC IN jack at the rear of the receiver and plug it into AC outlet.
3. Turn on the power switch .

## SYSTEM OPERATION

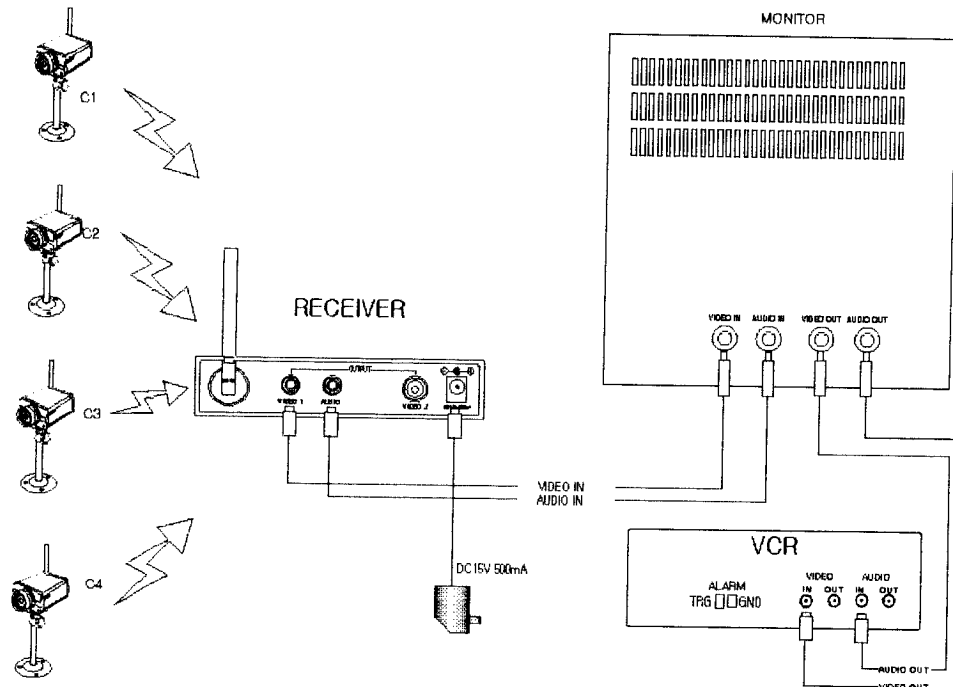
### 1 WIRELESS CAMERA AND RECEIVER



1. Be sure to set the power switch on the receiver to the OFF position before processing following steps.
2. Connect one of the RCA cable to the Audio(RED) and Video(YELLOW) jacks on the rear the receiver. Plug the other end of RCA cable into the Audio/ Video in jacks on your TV or Monitor. Be sure to match the plug color on the cables in both connection. If your TV or Monitor has single Audio input jack, Connect white(Audio-L) in both connection. If you want to see BNC cable on your monitor or TV, connect BNC cable from the video 2 of the receiver and video in at rear of the monitor or TV.
3. Connect one end of another RCA cable to the Audio/Video jacks on your monitor. Plug the other end of RCA cable into the Audio /Video jacks on your VCR.
4. Turn on the receiver. Set your TV to Video mode to view the receiving AV signal from the receiver.
5. Select the channel 1-4 by pressing channel selector switch on the receiver to select the best one for optimum reception in your area.
6. Please set both camera and receiver unit must be set to same channel.
7. Adjust the antenna direction as necessary.

## SYSTEM OPERATION

### 4 WIRELESS CAMERAS AND 1 VCR OPERATION



You can transmit signals from several cameras to a remote location with one wireless receiver due to this system has 4 wireless channel capability.

You can watch 4 different AV's by pressing the channel selector switch on the receiver.

1. Be sure to set the power switch on the camera and receiver to the OFF position before processing following steps.
2. Turn on all of the cameras. The cameras must use different channel. Select the channel 1-4 for each unit by pressing channel selector switch on each camera.  
If you want to watch and record on your monitor with VCR, please connect RCA cable between receiver and monitor and VCR as above diagram. Also it is available to connect both video 2 at receiver and video in terminal at monitor with BNC cable.
3. Turn on your monitor that is connected to the receiver. Set your TV to video mode in case of TV.
4. Turn on the receiver.
5. You can select the channel 1-4 one by one manually by pressing channel selector switch on the receiver. Your monitor will display the signal from different camera as selected.
6. Adjust the antenna direction as necessary.
7. Please retain the same distance between CAMERAS(C1~C4) and receiver in order to get good reception if it is possible.

**■ SPECIFICATION**

**■ WIRELESS CAMERA(CSW-244SC)**

NO	DESCRIPTION	SUB DESCRIPTION	LIMIT SPEC	REMARK
1	IMAGE SENSOR	INTERLINE TRANSFER CCD 1/4" FORMAT		
2	EFFECTIVE PIXEL	NTSC	512(H)*492(V)PIXEL(CSW-146)	
		PAL	512(H)*582(V)PIXEL(CSW-145)	
3	SCANNING SYSTEM	2:1 INTERLACED		
4	SYNC SYSTEM	INTERNAL SYNC		
5	SYNC PULSE	15.734KHz±1%(H)/15.625KHz ±1%(H) 59.94Hz±1%(V)/50Hz±1%(V)		
6	RESOLUTION	420 TV LINE		
7	S/N RATION	MORE THAN 46dB (TYP)		
8	MIN. ILLUMINATION	1.0 LUX F1.8		
9	VIDEO OUT	COMPOSITE VIDEO SIGNAL 1V <sub>p-p</sub>		
10	WHITE BALANCE	AUTO BALANCE		
11	LENS ADAPTOR	C-MOUNT TYPE 6.0mm (40.5DEGREE) F:1.8		
12	GAMMA CHARACTERISTICS	0.45		
13	MICROPHONE	ELECTRIC CONDENSER		
13	FREQUENCY RANGE	CH1:2410MHz, CH2:2430MHz CH3:2450MHz, CH4:2470MHz		
14	RF OUTPUT POWER	10mW		
15	POWER SUPPLY	DC15V 500mA		
16	SPURIOUS EMISSION	-40dBc		
17	FREQUENCY STABILITY	±100ppm		
18	MODULATION MODE	FM		
19	OSCILLATION MODE	T-LINE VCO WITH PLL		
20	AUDIO SUB-CARRIER FREQUENCY	5.5MHz		
21	OPERATION TEMPERATURE & HUMIDITY	0~40℃		
22	STORAGE TEMPERATURE & HUMIDITY	-20~60℃		
23	DIMENSION	L x W x H = 64.3mm x 55mm x 92mm		
24	WEIGHT	500g		
25	CHANNEL SELECTION	DIP S/W		

**SPECIFICATION**

**WIRELESS RECEIVER(CSW-244R)**

NO	DESCRIPTION	LIMIT SPEC	REMARK
1	VIDEO OUTPUT LEVEL	COMPOSITE VIDEO SIGNAL 1V <sub>P-P</sub>	
2	AUDIO OUTPUT LEVEL	1V <sub>P-P</sub>	
3	RECEIVING METHOD	SUPER HETERODYNE	
4	DEMODULATION METHOD	FM	
5	OSCILLATION METHOD	PLL	
6	SENSITIVITY	-85dBm	
7	IF FREQUENCY	479.5MHz	
8	IF BANDWIDTH	18MHz	
9	BASEBAND OUTPUT LEVEL	0.5V <sub>PP</sub>	
10	OUTPUT FREQUENCY RESPONSE	±20IRE (4MHz MULTIBURST)	
11	VIDEO S/N RATIO	35dB(MIN.)	
12	POWER SUPPLY	DC15V 500mA	
13	DIMENSION	L x W x H = 180mm x 115mm x 35mm	
14	WEIGHT	650g	
15	OPERATION TEMPERATURE & HUMIDITY	0~40℃	
16	STORAGE TEMPERATURE & HUMIDITY	-20~60℃	

\* If you need extra camera or receiver , please order each model name seperately( camera model CSW-244SC, receiver model name CSW-244R).