

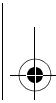
Guardian Angel

GA-251

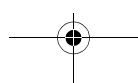
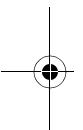
Wireless Security System



User's Manual



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**Guardian Angel
GA-251
Wireless Security System**

User's Manual

Copyright

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Trademarks

All trademarks and registered trademarks are the property of their respective owners.

Precautions

When using the Guardian Angel, refer to the following instructions:

- Read and follow all instructions and warnings provided.
- Save these instructions for future use.
- When servicing or replacement parts are required, ensure work is done by a qualified technician.
- Do not use this unit near water or in a wet or damp environment.

Any electrical equipment is hazardous if handled improperly. Ensure that you follow the preceding safety instructions to avoid harm to yourself and damage to the unit.

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

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 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:

To assure continued FCC compliance:

Any changes or modifications not expressly by the grantee of this device could void the user's authority to operate the equipment.

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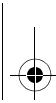
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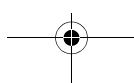
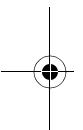
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Introduction

Thank you for selecting the Guardian Angel. This highly configurable wireless audio/visual monitoring system allows you to set up a monitoring network quickly and easily without the need to install wires and cables.

Included in this wireless system are a full-color CMOS camera/transmitter and a portable hand-held receiver with a color TFT LCD display. Both units can be powered by the built-in rechargeable lithium-ion batteries or by the included power adapters, which also serve as battery rechargers.

Standard RF transmission protocols, built-in rechargeable batteries, selectable operating channels and standard A/V input and output ports provide a wide range of applications.

In addition to video and audio monitoring capabilities, the Guardian Angel can also function as a wireless audio/visual or home theatre hub, linking VCRs, DVD players, televisions and stereos. Users can watch TV or DVD movies on the handheld receiver or on a television screen in a different room or area of the building.

The Guardian Angel supports up to four separate transmitters operating on separate channels that you can switch between using a single handheld receiver.

Features

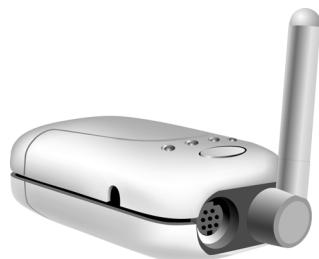
- Wireless audio and video monitoring for office security
- Connects to standard audio/video input and output ports of devices including VCRs, DVD players, televisions and personal computers
- Lightweight receiver is equipped with a 2.5-inch color TFT LCD screen and built-in speaker
- 2.4 GHz signal avoids interference from 900 MHz cordless phones
- Adjustable antenna transmits up to 300 feet (FCC - USA)
- Four-channel capability allows a single receiver to receive signals from up to four different transmitters

Unpacking

Contact your dealer immediately if any of the following components are missing.



Video Monitor/Receiver

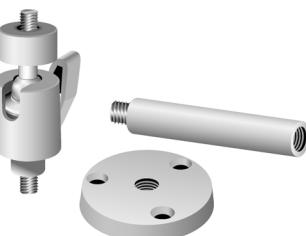


Camera/Transmitter

Your Guardian Angel includes either a tripod or a fixed mounting bracket (must be assembled).



Tripod



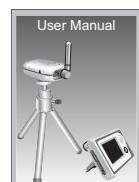
Fixed Mounting Bracket (components)



Audio/Video Cables

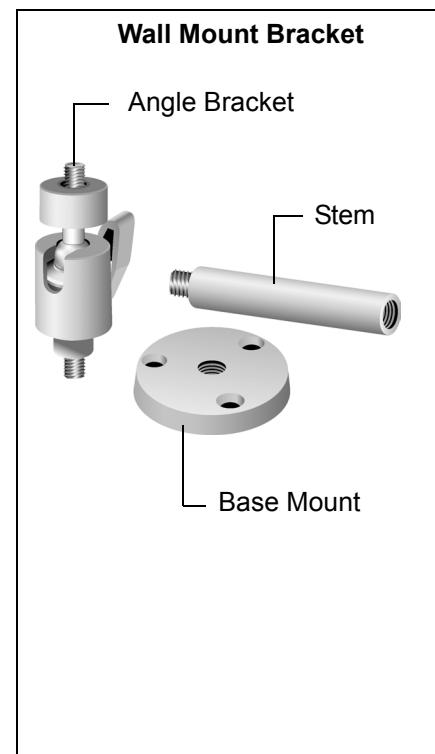
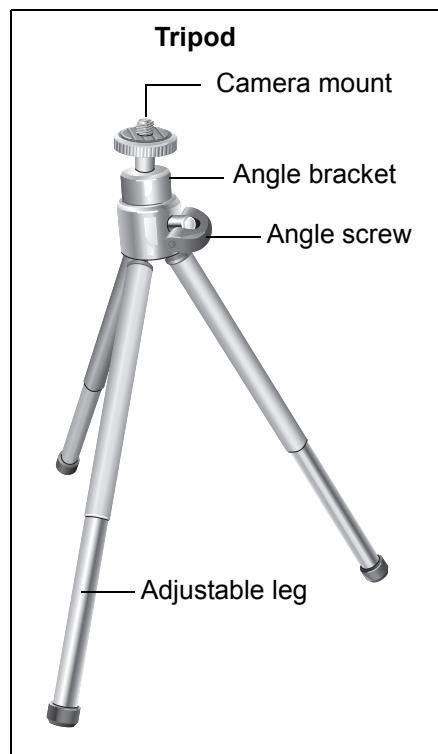
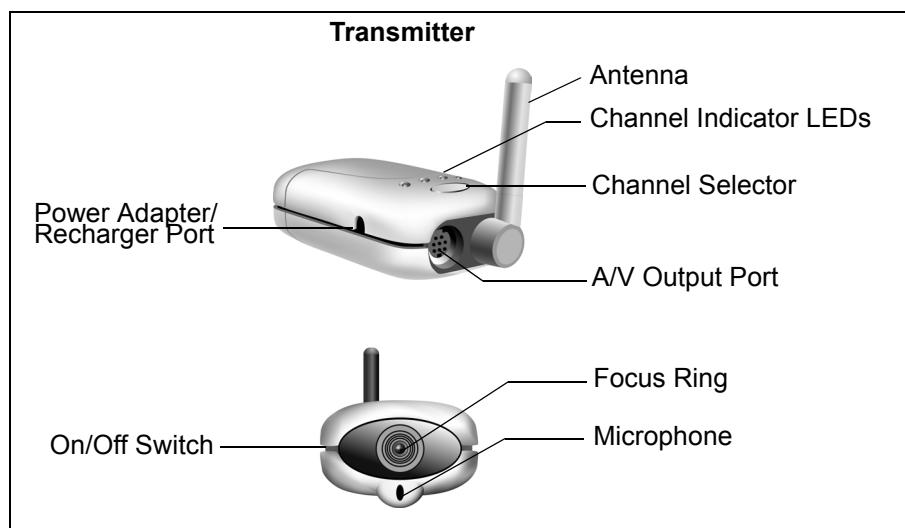


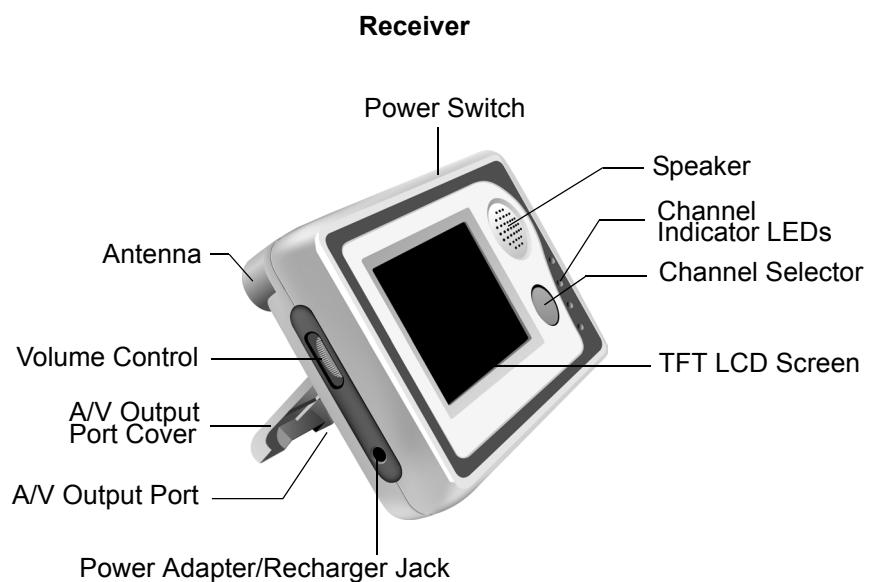
AC Power Adapters



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Setting Up the Guardian Angel

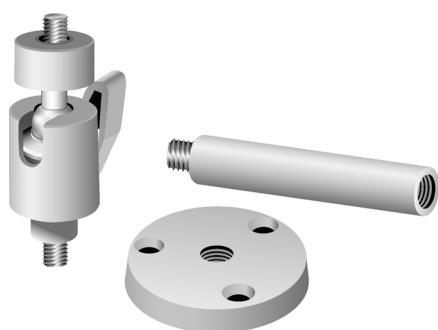
Setting Up the Camera/Transmitter

This chapter takes you through the steps required to set up the Guardian Angel. Depending on the model you purchased, your Guardian Angel will come equipped with either a fixed mounting bracket or a tripod. For instructions on setting up the tripod, see the next section, “Attaching the Camera to the Tripod” on page 6. For instructions on setting up the fixed mounting bracket, see “Assembling the Fixed Mounting Bracket” on page 8.

Tripod



**Fixed Mounting
Bracket Components**



Your Guardian Angel includes either a tripod or a fixed mounting bracket (must be assembled)

Setting Up the Tripod

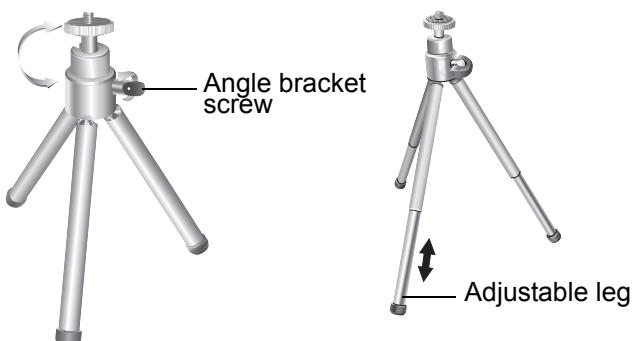
Attaching the Camera to the Tripod

1. Hold the camera firmly to avoid dropping it.
2. Screw the threaded top of the assembled angle bracket clockwise into the hole on the underside of the camera body.



Positioning the Tripod

The camera tripod is equipped with adjustable legs to allow positioning of the camera at a range of heights. Each of the three legs is individually adjustable to allow compensation for uneven surfaces. The camera mount angle bracket at the top of the tripod can be adjusted to a suitable angle by loosening the angle bracket screw, setting the angle, and then tightening the screw.



Take the following points into consideration when planning a location for your camera:

- The camera should be positioned so that the view of the area to be monitored is unobstructed.
- The line of sight between the camera and the video monitor should be as clear as possible. Reducing the number of doors, walls and windows between the camera and the video monitor improves reception quality.
- Decide if you want to power the camera using the included power adapter, or using the built-in rechargeable battery. If you operate the camera with the power adapter you must ensure that there is a power outlet nearby.

When positioning the camera:

1. Make sure the camera is securely attached to the tripod.
2. Position the tripod in the desired location, adjusting the legs and angle as necessary.
3. Test the reception of the video monitor/receiver in locations where you plan to use the receiver. See the section “Adjusting Reception Quality” on page 25 for information on improving wireless transmission quality.

Setting Up the Fixed Mounting Bracket

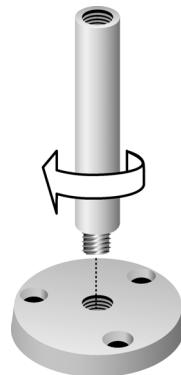
Assembling the Fixed Mounting Bracket

The fixed mounting bracket included consists of three parts:

- Angle bracket
- Stem
- Base mount

Follow these steps to assemble the fixed mounting bracket:

1. Screw the threaded end of the stem clockwise into the base mount.



2. Screw the threaded end of the angle bracket clockwise into the top of the stem.



Attaching the Camera to the Angle Bracket

1. Hold the camera firmly to avoid dropping it.
2. Screw the threaded top of the assembled angle bracket clockwise into the hole on the underside of the camera body.



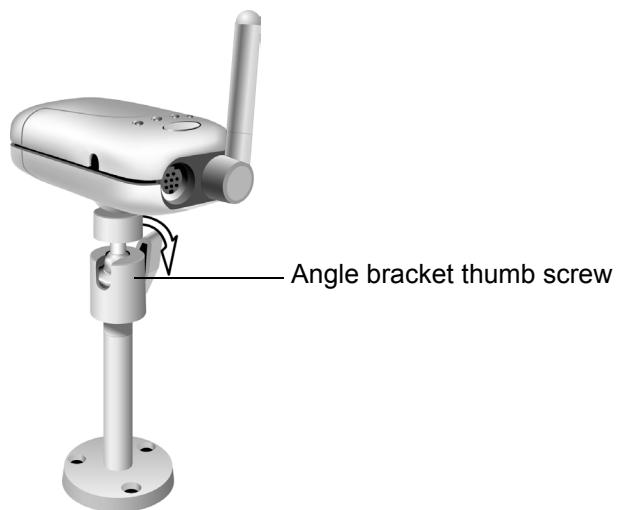
Attaching the Mounting Bracket to a Fixed Surface

You may choose to attach the camera mount to a fixed surface such as a wall or ceiling; however, the following points should be taken into consideration when planning a location.

- The camera should be positioned so that the view of the area to be monitored is unobstructed.
- The line of sight between the camera and the video monitor should be as clear as possible. Reducing the number of doors, walls and windows between the camera and the video monitor improves reception quality.
- Decide if you want to power the camera using the included power adapter, or using the built-in rechargeable battery. If you operate the camera with the power adapter you must ensure that there is a power outlet nearby.

To mount the camera to a fixed surface:

1. Make sure the mounting assembly components are screwed together firmly.
2. Hold the base of the mount against the fixed surface and point the camera at the area to be monitored.
3. Have another person test reception of the video monitor/receiver in locations where you plan to use the receiver. See the section "Adjusting Reception Quality" on page 25 for information on improving wireless transmission quality. Determine the optimum camera placement before proceeding to the next step.
4. Using a sharpened pencil, mark the location of the three mounting bracket holes on the fixed surface (e.g. wall).
5. Drill three holes at the locations you marked.
6. Push the wall plugs into the holes.
7. Use a Phillips screwdriver to screw the base mount to the fixed surface.
8. Attach the camera to the angle bracket and make final adjustments to the camera angle. Tighten the angle bracket thumb screw as shown below.



Setting Up the Video Monitor/Receiver

The video monitor is designed for portability and convenience. It can be held in your hand and carried around, stored in a pocket, or placed at a comfortable viewing angle on a flat surface.

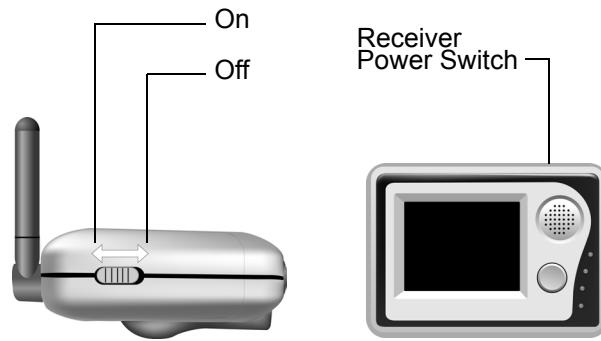


Using the Batteries and Adapters

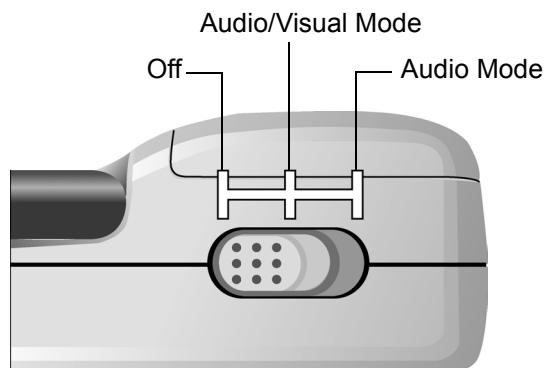
Turning the Power On

Both the camera/transmitter and the video monitor/receiver can be powered using the included power adapters, or using the built-in rechargeable batteries.

To turn the transmitter power on, slide the power switch in the direction of the arrow illustrated below:



The video camera/receiver power switch has three settings as illustrated:



Using the Rechargeable Batteries

The rechargeable batteries included with the Guardian Angel provide convenient, cable-free power to both the transmitter and receiver.

Normal operating times are as follows:

Component	Audio Only	Audio and Video
Camera/Transmitter	6 hours	6 hours
Video Monitor/Receiver	6 hours	3.5 hours

Operating time is maximized when the receiver is set to receive audio only. The receiver can also be plugged into an electrical outlet using the power adapter as explained in the following section.

When the batteries no longer contain enough charge to power the receiver or transmitter they will automatically shut down. There is no audible or visual warning prior to shutdown.

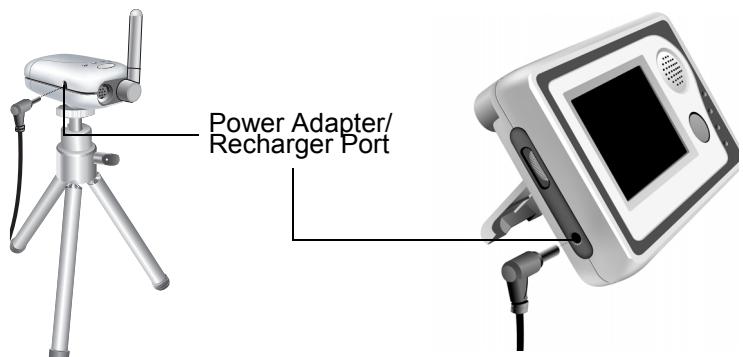
Caution:

- Incorrectly replacing the batteries may result in explosion.
- Replace batteries with the same or equivalent type of battery.

Never force the pins of a power adapter into an electric outlet. Purchase a plug adapter if necessary.

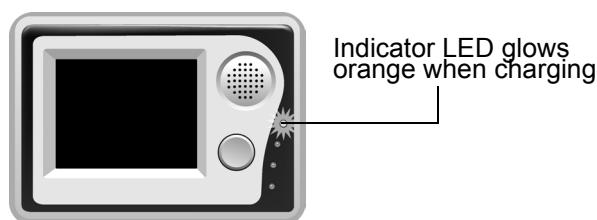
Recharging the Batteries

To recharge the receiver or transmitter batteries simply plug the unit into one of the included power adapters as shown in the diagram below. The two chargers that came with your Guardian Angel are interchangeable – either one can be used with the receiver or transmitter.



The power adapter will simultaneously charge the battery and supply power to the unit so it can be used while the batteries recharge.

When the video monitor/receiver battery is recharging, the channel indicator glows orange. When the battery is fully charged the indicator color changes to green and the unit can be unplugged from the power adapter. The camera/transmitter does not have a recharging indicator.



It takes approximately three hours to recharge the receiver and 18 hours to recharge the transmitter. The batteries have a built-in overcharge protector that will automatically stop recharging when they are fully charged.

Using the Power Adapters

The Guardian Angel comes with two identical chargers that can be used interchangeably between the camera/transmitter and the video monitor/receiver. Read the warning below before proceeding.

Warning:

- Do not use power adapters in outdoor locations.
- Do not place power adapters in areas where they may come in contact with liquids.
- Never force the pins of a power adapter into an electric outlet. Purchase a plug adapter if necessary.
- Only use power supplies manufactured by Deer Computer Co., Ltd. (model no. AD 1609xx).

Plugging In the Power Adapters

1. Plug the power adapter into an electrical outlet.
2. Plug the AC adapter connector into the power adapter port on the transmitter or receiver as shown in the following illustrations.

Transmitter



Receiver



Using the Guardian Angel

This section explains how to set up and use the Guardian Angel as a wireless security system or as a wireless A/V entertainment hub.

Using the Guardian Angel as a Wireless Audio/Video Security System

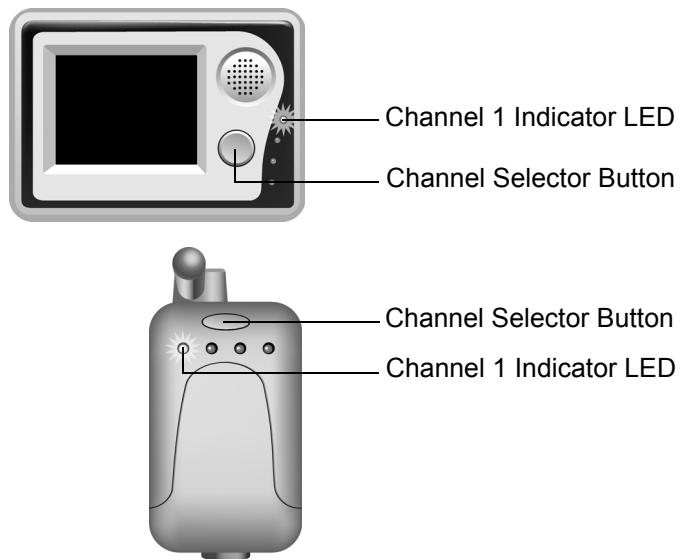
Setting Channels

The Guardian Angel can transmit and receive audio and video signals on four distinct frequencies, or channels. This allows you to monitor up to four different cameras using a single receiver, to monitor a single camera with two receivers, or to use any other combination of transmitters and receivers.

Setting Channels for Single Camera Use

1. Make sure the camera/transmitter and video monitor/receiver are powered on. See “Turning On the Power (A/V Center Mode)” on page 24.
2. Push the channel selector button on the camera to select a channel. The green channel indicator LED switches to the next channel (1, 2, 3 or 4) with each button press. Select channel 1.
3. Push the channel selector button on the video monitor. The green channel indicator LED switches to the next channel (1, 2, 3 or 4) with each button press. Select channel 1.

4. The camera and video monitor are now set to the same channel as shown in the figure below.



5. If the monitor is set to audio/video mode (see page 12), an image appears on the screen. If the monitor is set to audio mode, the monitor speaker will play back audio.
6. If the video or audio quality is poor, try setting the camera and video monitor to a different channel by following steps 2 and 3 above. Poor signal reception may be the result of interference from other nearby wireless devices. Changing the channel can help solve this problem. See the "Troubleshooting" section on page 26 for more information.

Setting Channels for Multiple Camera Use

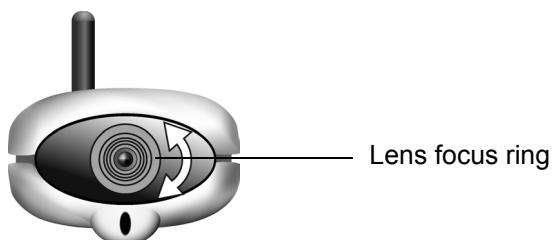
The Guardian Angel video monitor/receiver can receive audio and video signals from up to four separate cameras/transmitters. Additional Guardian Angel cameras/transmitters can be purchased from your dealer.

Follow the instruction below to set up channels for multiple transmitters.

1. Assemble and install each of the cameras as described in “Setting Up the Camera/Transmitter” on page 5. Make sure the cameras are turned on.
2. Set the channel of the first camera to channel 1 by pressing the channel selector button until the first channel indicator LED is lit.
3. Set the second camera to channel 2. If you have a third and fourth camera, set them to channels 3 and 4 respectively.
4. Turn the video monitor/receiver on and set it to either audio/video or audio mode.
5. Check the reception of each channel by pressing the channel selector button on the video monitor. If the audio or video signal of a channel is unclear, adjust the antenna angle of the camera corresponding to that channel. Refer to the Troubleshooting section on page 26 for more information.

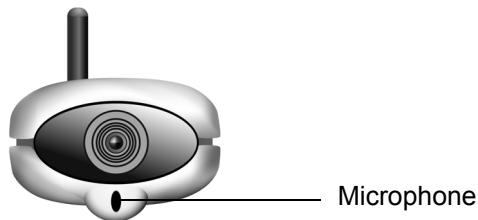
Adjusting the Focus

The Guardian Angel camera lens focus can be adjusted by turning it clockwise or counter-clockwise as shown in the following figure . Adjust the lens focus ring so that the image on the video monitor screen is clear.

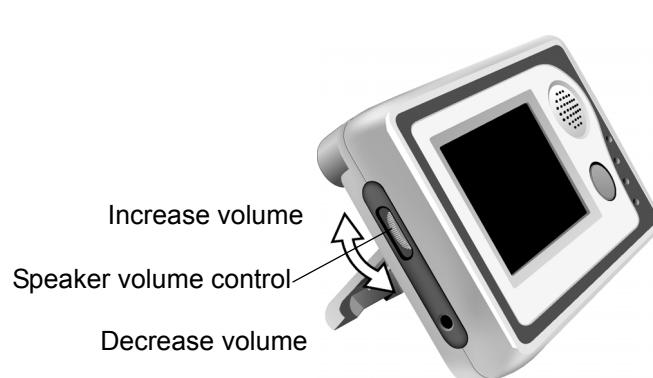


Adjusting the Volume

The Guardian Angel video camera has a high-sensitivity microphone built into the front of the body below the camera lens.



Sound picked up by the microphone is transmitted to the video monitor, where it is played through the built-in speaker. The speaker volume can be adjusted by turning the volume control located on the side of the body as shown.

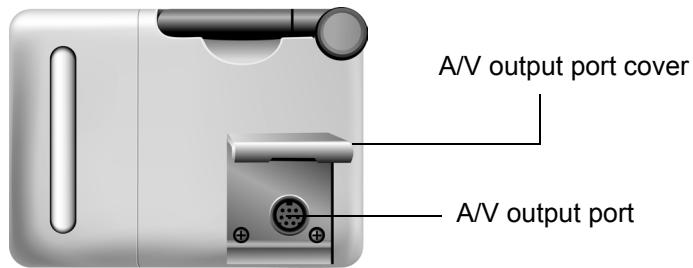


Connecting to a Television, VCR or External Monitor

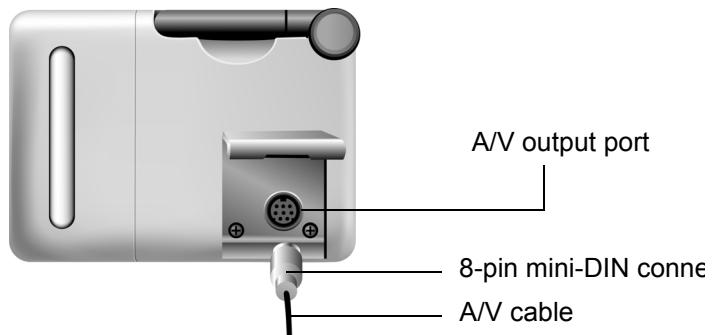
The Guardian Angel video monitor/receiver is equipped with a standard 8-pin mini-DIN port at the back of the unit that can be used to connect to a video monitor, television or video recorder with the included video cable.

Follow these steps to connect an external viewing or recording device.

1. Open the A/V output port cover on the rear of the video monitor casing.

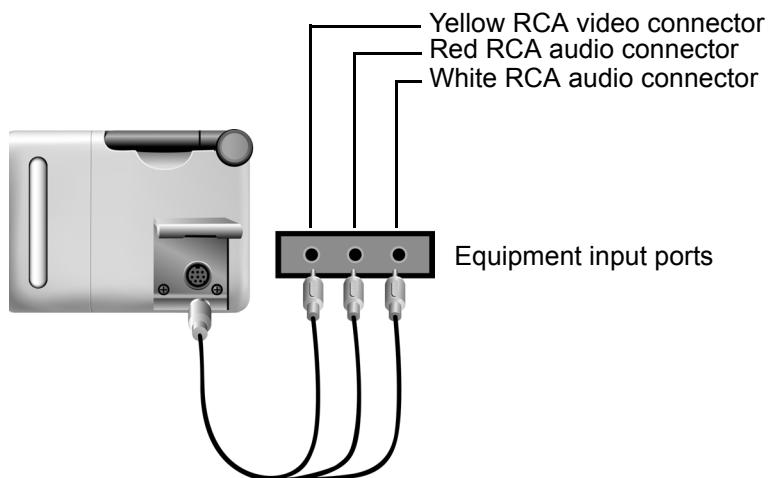


2. Connect the 8-pin mini-DIN connector of the supplied audio/video cable to the video monitor or recorder input port.



3. Locate the audio and video RCA input ports on the equipment you want to connect.
4. Connect the yellow RCA video connector to the RCA video in port.

5. Connect the red and white RCA audio connectors to the left and right audio in ports on the external equipment.



6. Refer to your equipment's user manual for information on how to select the proper input signal. For example, a television may need to be set to "A/V" input.
7. Make sure both the Guardian Angel transmitter and receiver are powered on (page 12) and that each is set to the same channel (page 16). If the receiver is switched to audio/video mode, video and audio are played back or recorded on the external device. If the receiver is set to audio mode, only audio is played back or recorded.

Using the Guardian Angel as a Wireless Audio/Video Center

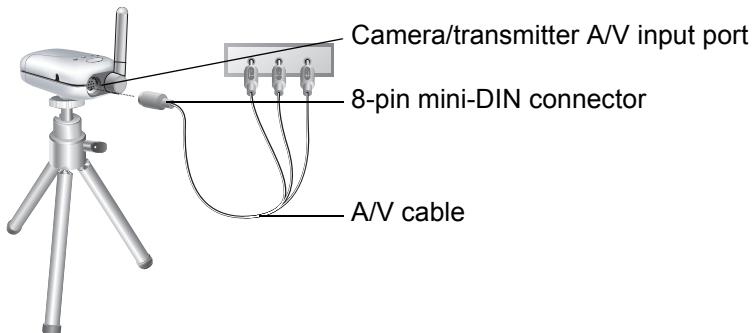
The wireless audio/visual signal transmission capabilities of the Guardian Angel make it very convenient to use as a wireless bridge connecting a television to a VCR or DVD player.

The following instructions can be applied to any device with standard RCA input/output ports including televisions, DVD players, and some personal computers. Refer to the equipment user manual for more detailed information on connecting external devices to your audio/video equipment.

Making Connections

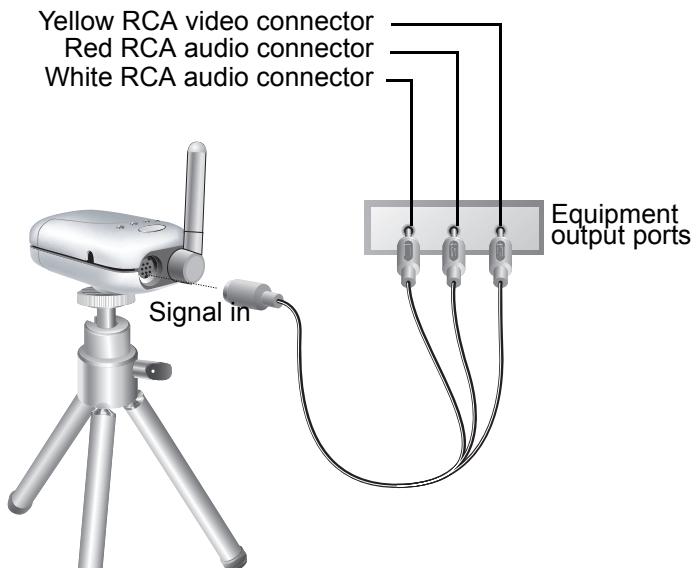
Connecting the Transmitter

1. Insert the round 8-pin mini-DIN connector into the A/V input port at the back of the camera/transmitter as illustrated.



2. Locate the audio and video RCA output ports on the equipment you want to connect.
3. Connect the yellow RCA video connector to the RCA video out port.

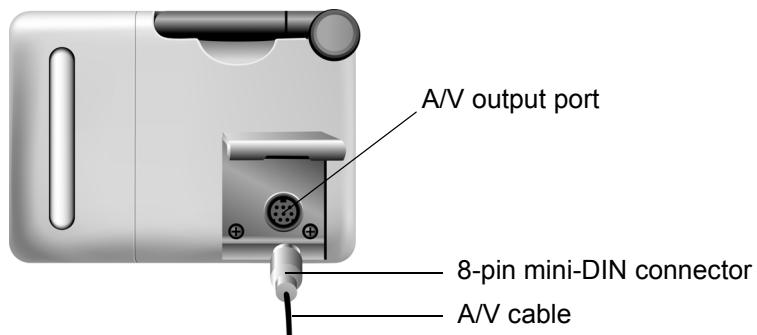
4. Connect the red and white RCA audio connectors to the left and right audio out connectors on the external equipment as shown.



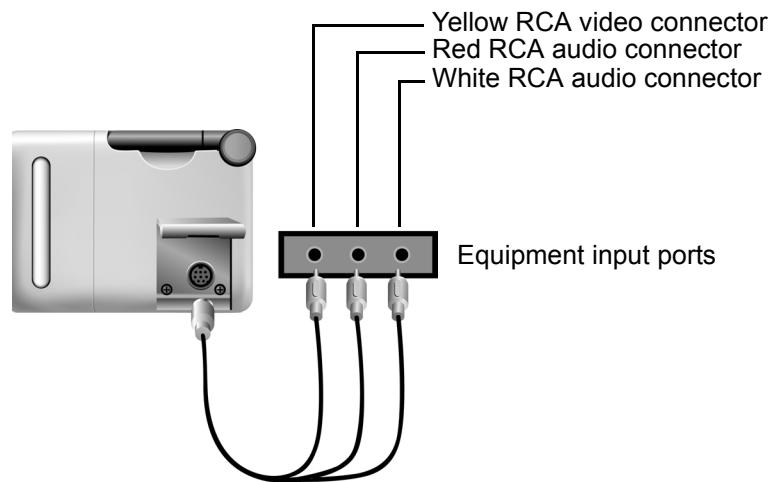
5. Refer to the equipment user manual for more detailed information on connecting external devices to your audio/video equipment.

Connecting the Receiver

1. Insert the round 8-pin mini-DIN connector end of the second audio/video cable (included) into the A/V output port at the back of the camera/transmitter as illustrated.



2. Locate the audio and video RCA input ports on the equipment you want to connect.
3. Connect the yellow RCA video connector to the RCA video in port.
4. Connect the red and white RCA audio connectors to the left and right audio in ports on the external equipment as shown below.



5. Refer to the equipment user manual for more detailed information on connecting external devices to your audio/video equipment.

Turning On the Power (A/V Center Mode)

Depending on your setup, at least four devices must be powered on:

1. Transmitter (see page 12)
2. Receiver (see page 12)
3. Input device (e.g. DVD player)
4. Output device (e.g. television)

Setting Up Channels for A/V Center Use

Both the transmitter and receiver must be set to the same channel for the signal to be sent from the input device to the output device. Refer to “Setting Channels” on page 16 for instructions.

If you have more than one transmitter you can connect each transmitter to a different device. You could, for example, use one transmitter as a security camera and another as a DVD signal transmitter. Each camera/transmitter must be set to a different channel. Changing the channel setting on the video monitor/receiver switches between transmitter signals.

Recording on a VCR

You can record the Guardian Angel’s audio/video signal onto a video cassette by connecting the receiver to a VCR.

Adjusting Reception Quality

If video or audio quality is noisy or distorted, try setting the transmitter and receiver to a different channel. Poor signal reception may be the result of interference from other nearby wireless devices. Changing the channel can help solve this problem.

Adjusting the antenna direction often results in improved wireless transmission. Adjust the antennae on both the transmitter and receiver to achieve optimum results.

See the “Troubleshooting” section on page 26 for more information.

Specifications

General	
Frequency Range	2.400-2.4835 GHz
Transmission Range	300 ft
Channel Selection	4 channels
Video-Audio MOD/DEMOD Type	FM/FM
Power Supply	Input: 110V ~240V Output: 10VDC, 1.2A
Battery	Built-in Li-ion 7.4V/1350mA
Charger	Built-in Smart Li-ion battery charger
Operating Temperature	5°C ~ 40°C
Storage Temperature	-20°C ~ 60°C
Transmitter	
Input Port	8-pin Mini-DIN with A/V cable
Camera	Color CMOS sensor
Output Power	1mW/10mW
Video Input	1 Vp-p @ 75 Ohms
Video Input Format	NTSC/PAL
Audio Input	High sensitivity microphone
Dimensions	90 x 51 x 42mm
Weight	160g
Receiver	
Output Port	8-pin mini-DIN with A/V cable
Display Device	2.5-inch TFT LCD 480x240 pixels
Video Output	1 Vp-p @ 750 Ohms
Speaker	Dim: 10mm 0.2W
Audio Output	1 Vp-p @ 1K Ohms
Video Output Format	NTSC/PAL
Dimensions	110 x 80 x 35mm
Weight	350g

Troubleshooting

1. I can't turn the power on.
 - Recharge the batteries (see "Recharging the Batteries" on page 14) or make sure the units are correctly connected to the power adapters.
2. An image doesn't appear on the video monitor/receiver.
 - Make sure the camera/transmitter and the video monitor/receiver are set to the same channel. See "Setting Channels" on page 16.
 - Make sure the Off - Audio/Video - Audio switch is set to "Audio/Video". See page 12.
3. Battery life is much shorter than expected.
 - The built-in lithium-ion batteries will lose their recharging capacity after approximately 500 recharges. Take the Guardian Angel to your dealer to install replacement batteries.
4. How do I select a channel to avoid interference?
 - When using only one transmitter and receiver, make sure they are set to the same channel. If more than two receivers or transmitters are used within a short distance of each other, set the channels as far apart as possible, for example, Channel 1 and Channel 4. If possible, place the units farther apart from each other.
5. Why does signal fading occur?
 - Slight fading occurs due to weather, building structures, crowding of people and interference from other RF signals. Occasional fading is normal. To prevent fading, place the receiver in a clear location.
6. The audio/video reception is not clear.
 - The Guardian Angel uses the 2.4 GHz frequency range which is also used by microwave ovens, indoor DECT phones and wireless LANs. If any two such devices are operating at the same time, interference occurs. While this situation is difficult

to prevent, switching to different channels can help.

- Because the 2.4 GHz frequency resonates with water, transmission is sensitive to weather conditions and moving people. Poor transmission quality can be improved by adjusting the location, angle or direction of the antennas. You can also replace the antenna with a gain-enabled antenna that increases output power and offers better performance. Contact your dealer for more information.

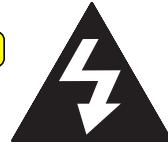
7. The transmission distance is less than 300 feet.

- Transmission distance is highly dependent on environment factors including weather and building structure. The steel framework in a reinforced concrete building will absorb RF signals and reduce the transmission range. Adjust the antennas on the receiver(s) and transmitter(s) to get optimal performance.

Important Notice

Guardian Angel GA-251

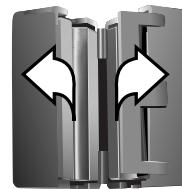
IMPORTANT NOTICE:



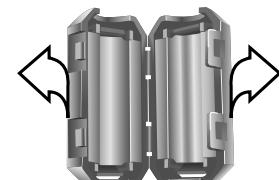
Before Using the Guardian Angel

Before using the **AC power adapters** and the **A/V cable** that come with the GA-251 Guardian Angel, you must first assemble the included electromagnetic interference (EMI) cord attachment as show here.

- 1 Lift the tab at the top of the EMI cord attachment and open the two halves of the attachment as shown.



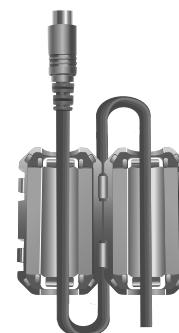
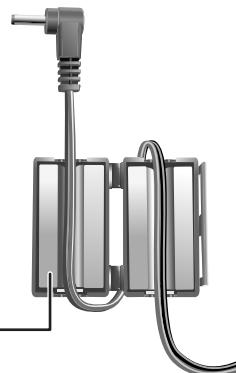
Square EMI cord attachment is for the AC power adapter.



Round EMI cord attachment is for the A/V

- 2 Hold the AC power adapter cable or A/V cable behind the cord attachment and thread the cable through the grooves located on the inside faces of the attachment.

Place the cable in the grooves.



- 3 Making sure the AC power adapter cables are lying flat in the grooves, close the two halves of the attachment and snap the tab back to the closed position.

The AC power adapters are now ready for use.

