INSTALLATION

Endura™ EW5002 Dual Radio Wireless Device

C2682M (7/07)
August 2, 2007 4:27 pm

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Regulatory Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RADIO AND TELEVISION INTERFERENCE

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

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and television reception.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EXPOSURE TO RADIO FREQUENCY FIELDS

The EW5001 is designed to operate at 2.4 GHz or 5.8 GHz with up to 50 W equivalent isotropically radiated power (EIRP) maximum transmit power. This level of radio frequency (RF) energy is above the Maximum Permissible Exposure (MPE) levels specified in FCC OET65:97-01. Take the following precautions during installation:

- The antennas used for this transmitter must be installed to provide a separation distance of at least 8 in. (20 cm) from all persons. It must not be located or operated in conjunction with any other antenna or transmitter.
- Mount the antenna in a manner that prevents any personnel from entering the area within 3.3 ft (1 m) of the front of the antenna.
- During installation and alignment of the antenna, do not stand in front of the antenna assembly.
- During installation and alignment of the antenna, do not handle or touch the front of the antenna.

Video Quality Caution

FRAME RATE NOTICE REGARDING USER-SELECTED OPTIONS

Pelco systems are capable of providing high quality video for both live viewing and playback. However, the systems can be used in lower quality modes, which can degrade picture quality, to allow for a slower rate of data transfer and to reduce the amount of video data stored. The picture quality can be degraded by either lowering the resolution, reducing the picture rate, or both. A picture degraded by having a reduced resolution may result in an image that is less clear or even indiscernible. A picture degraded by reducing the picture rate has fewer frames per second, which can result in images that appear to jump or move more quickly than normal during playback. Lower frame rates may result in a key event not being recorded by the system.

Judgment as to the suitability of the products for users' purposes is solely the users' responsibility. Users shall determine the suitability of the products for their own intended application, picture rate and picture quality. In the event users intend to use the video for evidentiary purposes in a judicial proceeding or otherwise, users should consult with their attorney regarding any particular requirements for such use.

Description

The EW5002 is a high-performance, dual radio wireless unit. Each radio component can be configured separately for any of the following modes:

- Access point: The EW5002 provides a wireless link from a cluster of EW5301T wireless video encoders to an Endura™ network in a point-to-multipoint configuration. It serves as a proprietary wireless network router (refer to Figure 2 on page 9). It supports all features that are available to the EW5301T, including automatic detection of PAL or NTSC, alarm inputs, relay outputs, activity detection, audio support, and pan/tilt/zoom (PTZ) camera control.

  The EW5002 receives dual MPEG-4 video streams from EW5301T wireless video encoders. The EW5002 routes these streams over the Endura network to other Endura system components.
- Backhaul: The EW5002 is configured as an access point on one radio and backhaul on the other radio in a point-to-point configuration. The access point component provides a wireless link from a cluster of EW5301T wireless video encoders. The backhaul component routes these streams over a wireless bridge (EW5001 or EW5002) to the Endura network.
- Bridge: The EW5002 provides a wireless link from a cluster of EW5301T video encoders through an EW5002 access point/backhaul to an Endura network in a point-to-point configuration. You can install the EW5002 on a building and associate one radio with another EW5002, which can be associated with a cluster of EW5301T wireless video encoders. The bridge component provides a wireless link between the backhaul component of an EW5002 and the Endura network. Together, the two EW5002 devices support all features that are available to the EW5301T.

Refer to *Application Scenarios* on page 9 for sample diagrams of five supported EW5002 configurations.

MODELS

EW5002-2-5-xx*	Dual radio wireless unit with one 2.4 GHz radio and one 5.8 GHz radio
EW5002-5-5-xx*	Dual radio wireless unit with one 2.4 GHz radio and one 5.8 GHz radio

*-xx represents region code; for example, -01 for the United States and Canada

OPTIONAL ACCESSORIES

ANTP-2-9	Planar antenna with integrated mount for EW5002-2-5 units, 2.4 GHz, 8.5 dBi gain, 75° x 60° beamwidth
ANTP-5-15	Planar antenna with integrated mount for EW5002-2-5 or EW5002-5-5 units, 5.8 GHz, 13.5 dBi gain, 40° x 35° beamwidth
ANTP-5-23*	Planar antenna with mount for EW5002-2-5 or EW5002-5-5 units, 5.8 GHz, 23.0 dBi gain, 9° x 9° beamwidth
ANTP-5-28*	Planar antenna with mount for EW5002-2-5 or EW5002-5-5 units, 5.8 GHz, 28.0 dBi gain, 4.5° x 4.5° beamwidth
ANTG-2-14*	Grid parabolic dish antenna with mount for EW5002-2-5 units, 2.4 GHz, 14.0 dBi gain, 21° x 14° beamwidth
ANTS-2/5-13	Dual band sector antenna with mount for EW5002 units: 2.4 GHz, 12.0 dBi gain, 120° x 15° beamwidth 5.6 GHz, 14.0 dBi gain, 120° x 8° beamwidth
ANTC-06	7-inch (17.78 cm) antenna cable for integrated antenna
ANTC-3	3-foot (0.91 m) antenna cable for separate antenna
ANTC-10	10-foot (3.05 m) antenna cable for separate antenna
ETHC-10	10-foot (3.05 m) weatherproof Ethernet cable (silicon filled)
ETHC-33	33-foot (10.06 m) weatherproof Ethernet cable (silicon filled)
ETHC-66	66-foot (20.12 m) weatherproof Ethernet cable (silicon filled)
ETHC-148	148-foot (45.11 m) weatherproof Ethernet cable (silicon filled)
ETHC-295	295-foot (89.92 m) weatherproof Ethernet cable (silicon filled)

*Use these antennas when the EW5002 is configured as a bridge or backhaul for point-to-point operation.

Before You Begin

Endura is a network system that requires a continuous amount of bandwidth to transmit true, live video. Therefore, always include your network administrator when planning and installing Endura components.

You will also need the following:

- Pelco-approved Endura certification
- Power source
- Access to an Endura network
  - that is an active, gigabit Ethernet network that supports the full Internet Protocol suite,
  - that is configured with at least one NVR5100 Series network video recorder or other Endura video recorder,
  - that is configured with at least one Endura Workstation, and
  - that will be configured with at least one EW5301T wireless video encoder or one EW5001 wireless access point/bridge.
- 7/16-inch wrench
- Digital voltmeter (DVM) with BNC adapter
- Any tools required for installing the specific mount (refer to the mount documentation)

NOTE: These network requirements represent the minimum standard for a small Endura-capable security network. Please consult the Endura Network Design Guide (C1640M) to make sure your network is properly configured. Your system may be different and may require additional hardware, software, and network resources.

PARTS LIST

Qty	Description
1	EW5002 wireless access point: • EW5002 unit • Junction box (J-box)
1	Power connector and cable
1	Weatherproof network connector
1	EW5002 installation manual
1	EW5002 configuration manual
1	Antenna installation manual
1	Safety instructions

NOTE: The following are not included with the EW5002; they must be purchased separately.

- Ethernet cable
- Antennas and antenna cables

PACKAGE CONTENTS

The following diagram shows the contents of the box.

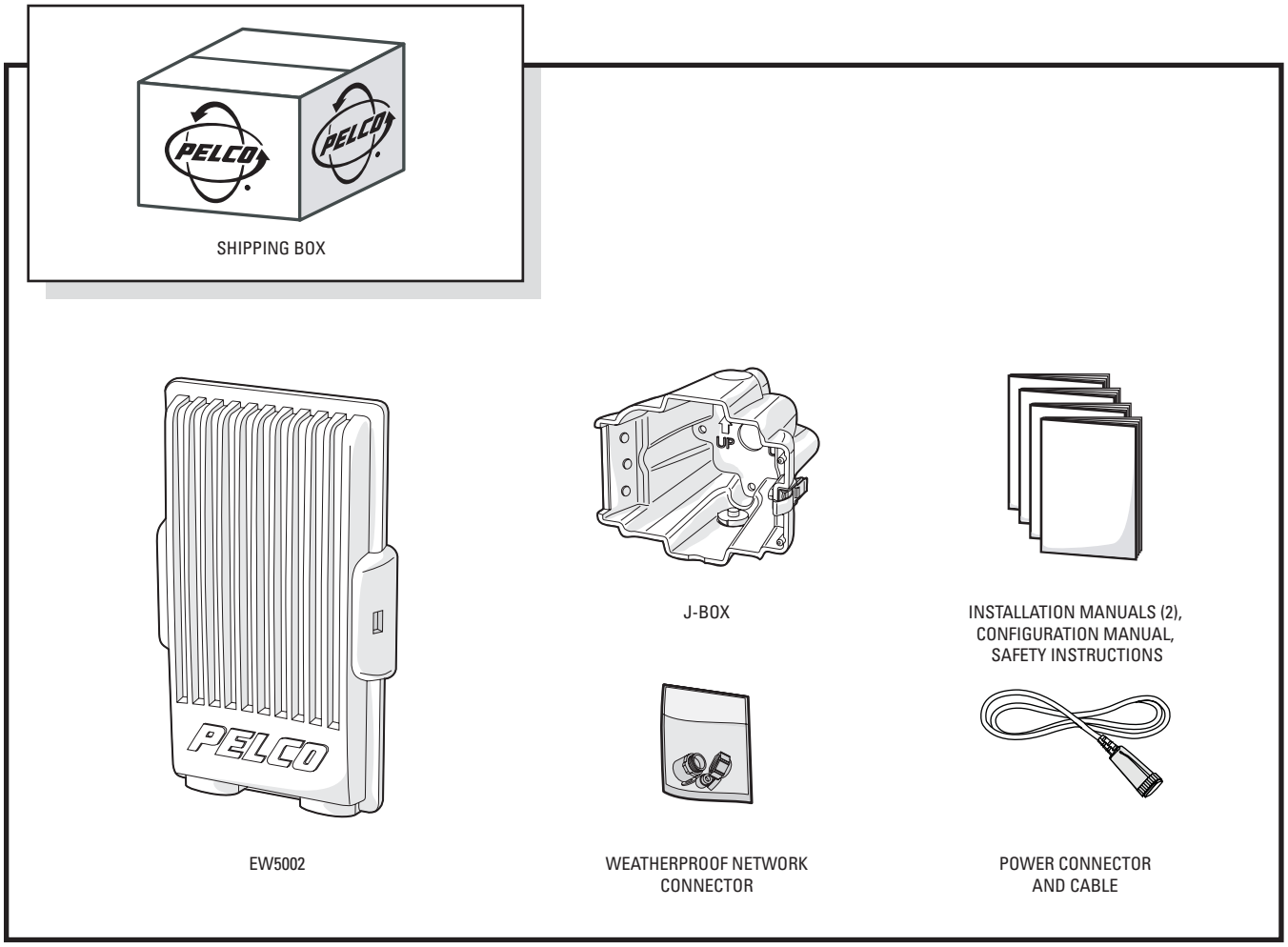

Figure 1. Package Contents

APPLICATION SCENARIOS

Figure 2 shows the EW5002 configured in dual access point (access point/acccess point) mode for two separate clusters of EW5301T video encoders.

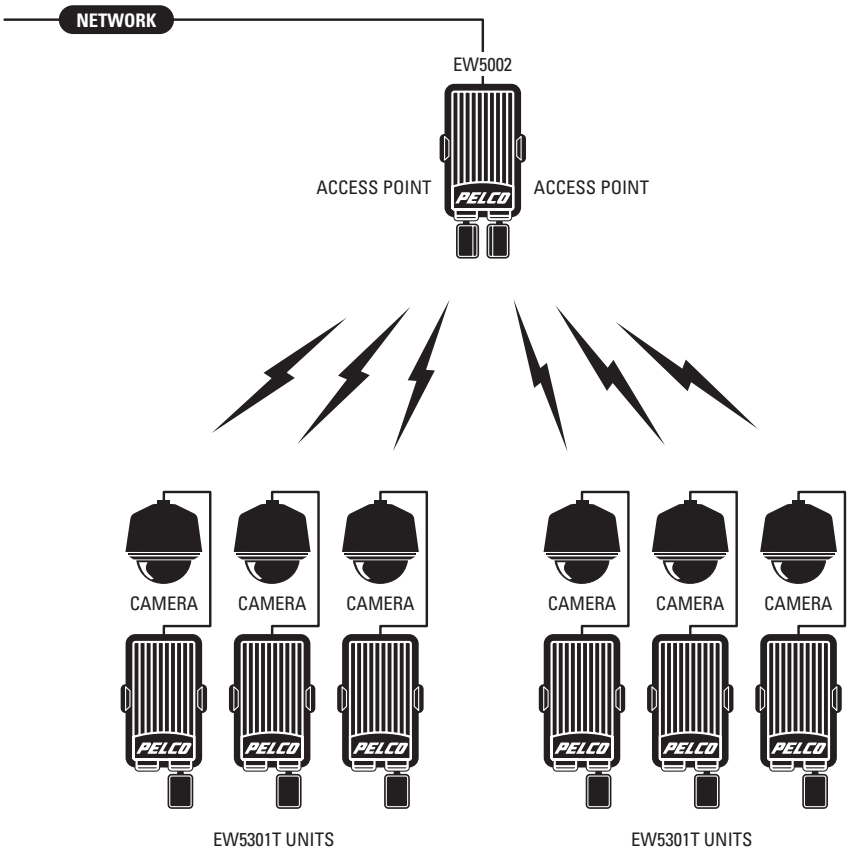

Figure 2. EW5002 Dual Access Point Configuration

IMPORTANT NOTE. PLEASE READ. The network implementation in this document is shown as a general representation only and is not intended to show detailed network topologies. Your actual network will differ, requiring changes or perhaps additional network equipment to accommodate the system as illustrated. Please contact your local Pelco Representative to discuss your specific requirements.

Figure 3 shows the EW5002 configured in access point/backhaul mode. One radio component of the EW5002 is an access point for a cluster of EW5301T video encoders. The other is in backhaul mode to an EW5001 bridge.

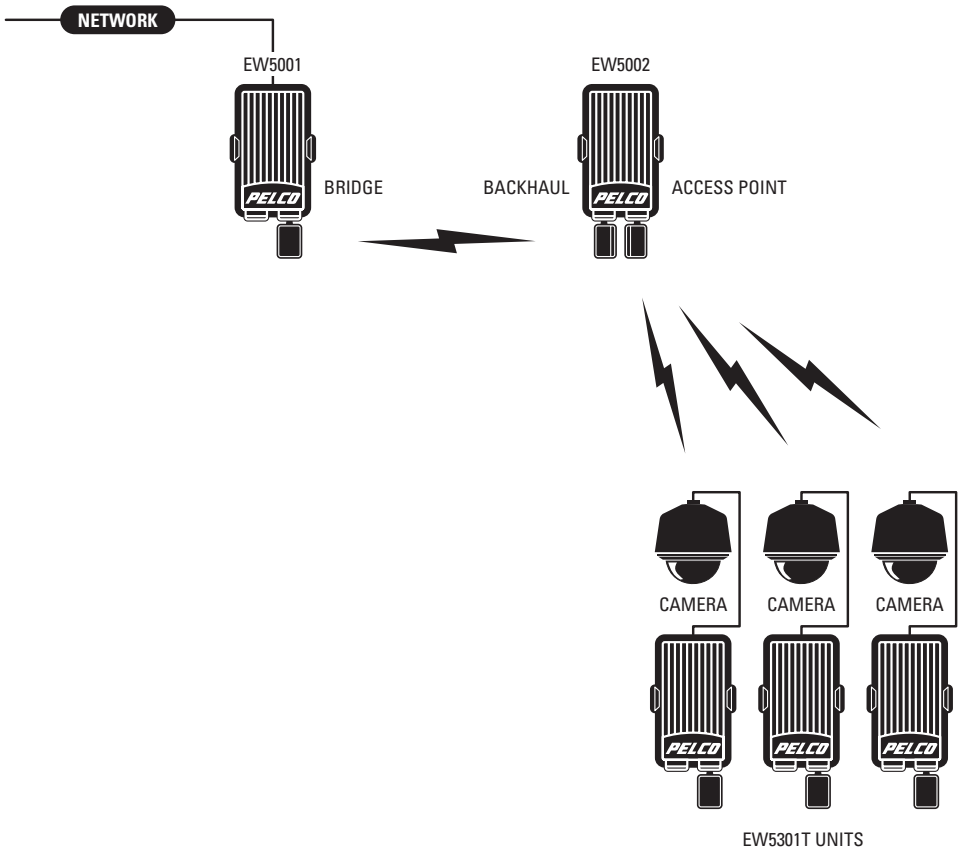

Figure 3. EW5002 Access Point with Backhaul Configuration

Figure 4 shows one EW5002 configured in access point/bridge mode. One radio component of the second unit is used as an access point for a cluster of EW5301T video encoders directly into the Endura network. The second radio component is used as a bridge for the backhaul component of the first EW5002.

The second EW5002 is configured in access point/backhaul mode. One radio component of the EW5002 is an access point for a cluster of EW5301T video encoders. The other is in backhaul mode.

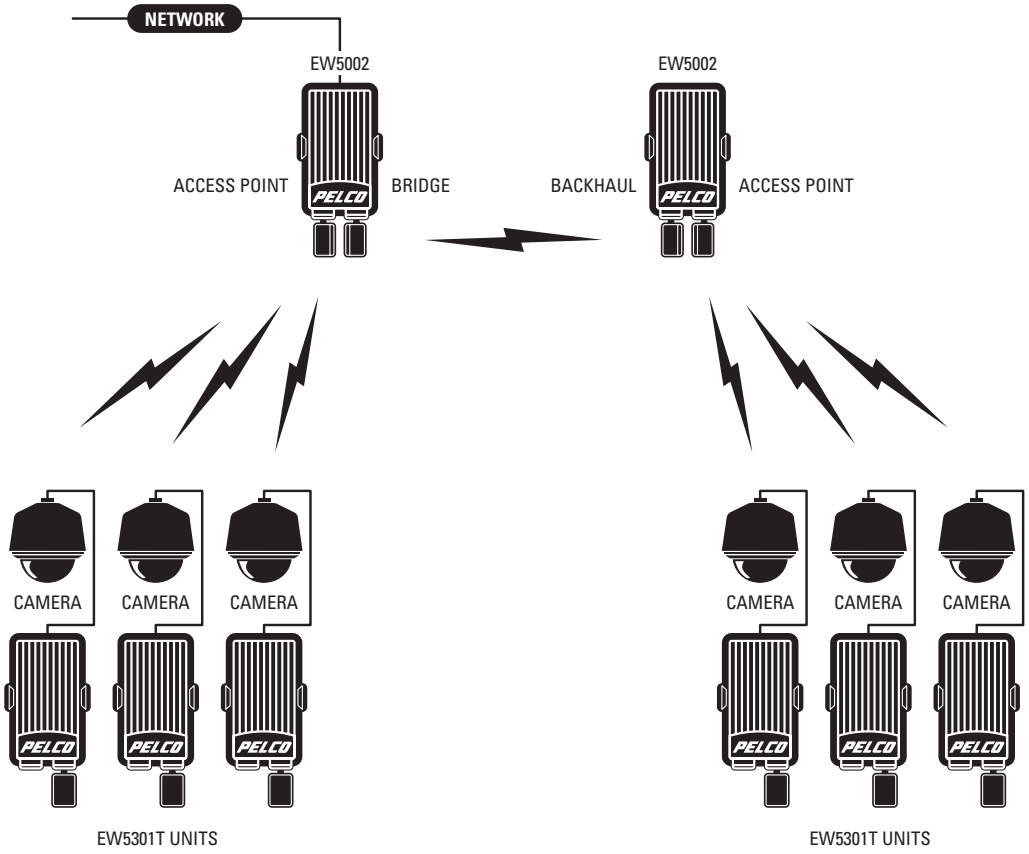

Figure 4. EW5002 Access Point/Bridge Configuration

Figure 5 shows the EW5002 configured in dual bridge (bridge/bridge) mode. Each radio component on the EW5002 is used as a bridge for an EW5002 in access point/backhaul mode.

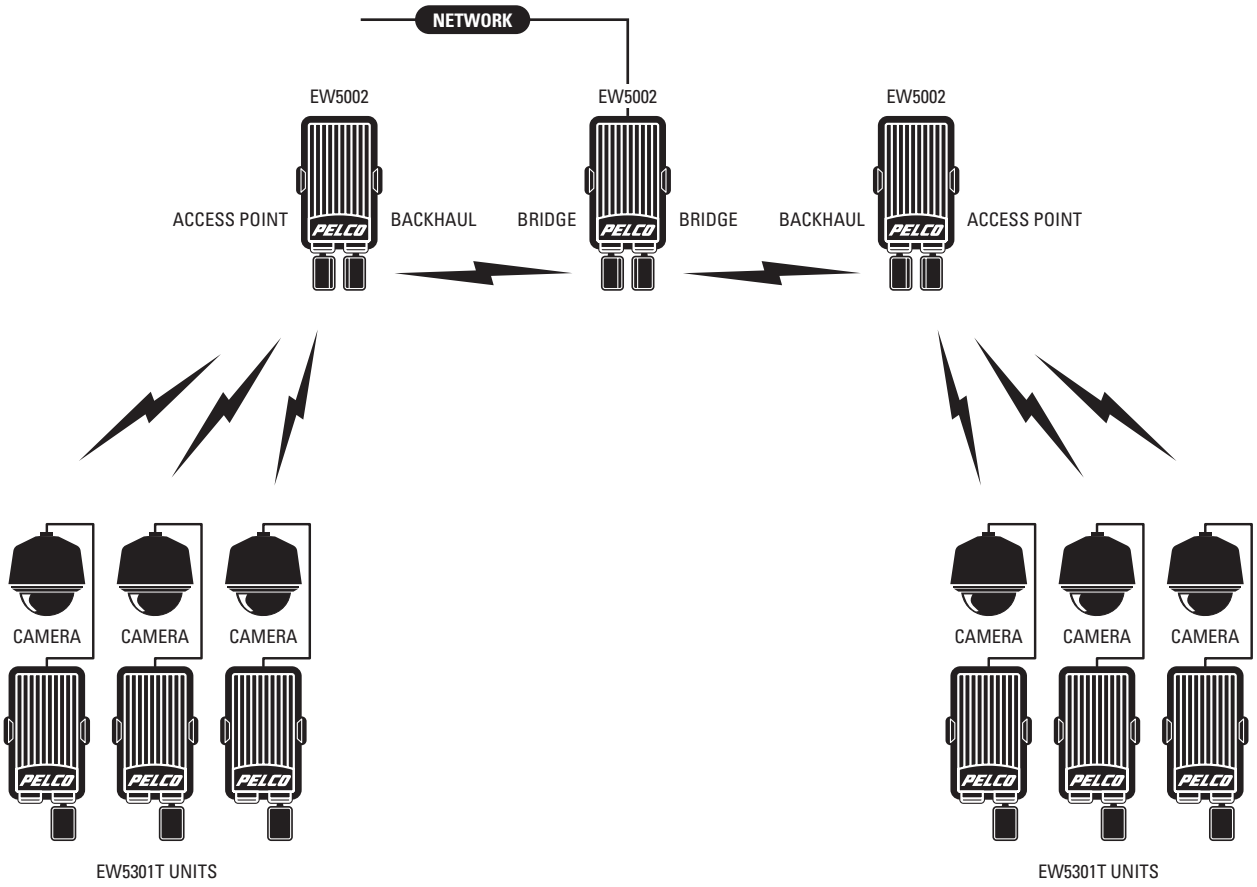

Figure 5. EW5002 Dual Bridge Configuration

Figure 6 shows the EW5002 configured in dual backhaul (backhaul/backhaul), or repeater, mode. This configuration extends the distance from the Endura network to a cluster of EW5301T video encoders. The unit receives backhaul data from an EW5002 and transmits, or repeats, that data to a bridge (EW5001 or EW5002).

You can also use this configuration to enable wireless operation around large line-of-sight obstacles, such as tall buildings or hills.

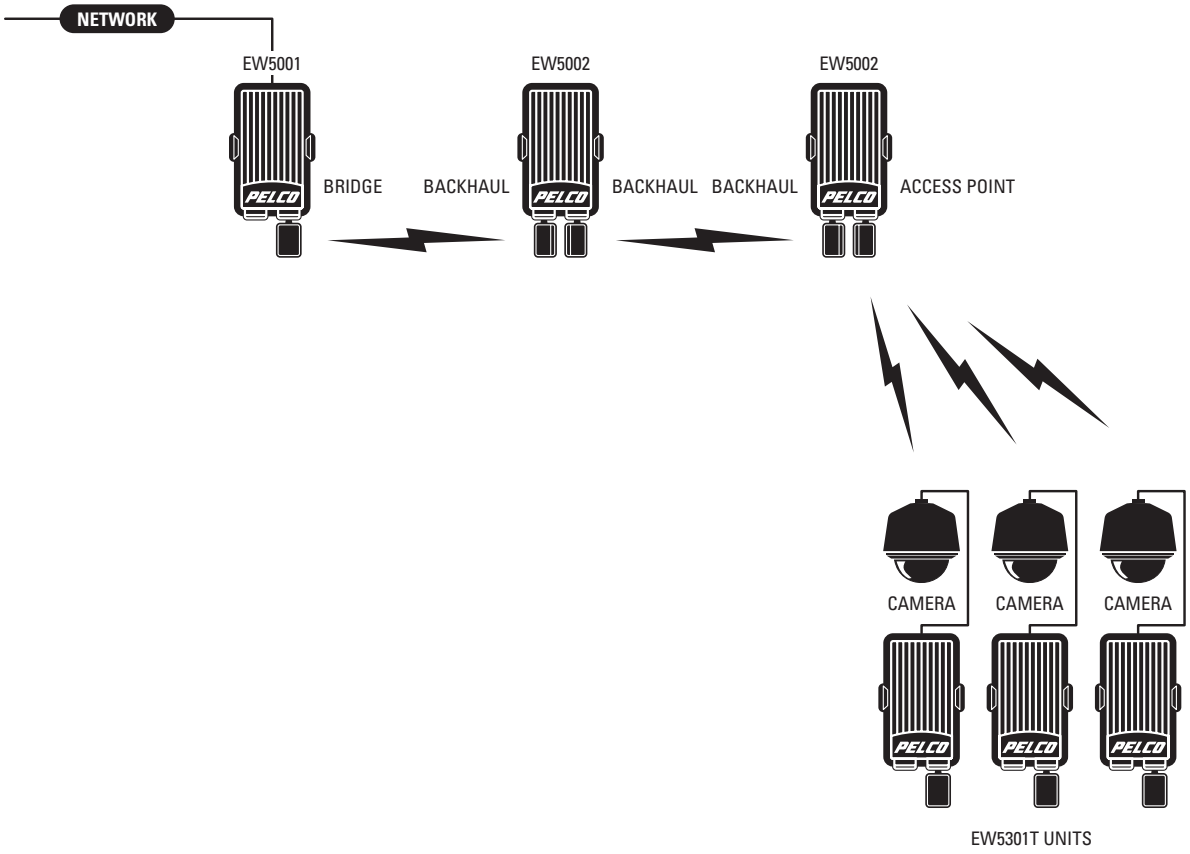

Figure 6. EW5002 Dual Backhaul (Repeater) Configuration

PRODUCT SERIAL NUMBER LABEL PLACEMENT

Product serial number labels help Pelco's Product Support identify your system and its factory configuration in case the EW5002 or its components require service.

A label citing your product's serial number is attached to the rear panel of the EW5002. Because the label will be covered by the J-box (supplied), two additional labels are provided. These additional labels also list the MAC (Media Access Control) or network adapter address for the unit. Attach one of them to your product documentation or other location. The second label is a spare.

To use these labels:

1. On the rear panel of your EW5002, locate two small labels, attached with a yellow sticker that reads, "Extra serial number labels: remove prior to installation."
2. Remove the yellow sticker and the labels.
3. Peel away the backing from one label and attach it to this installation manual, other product documentation, or other location.

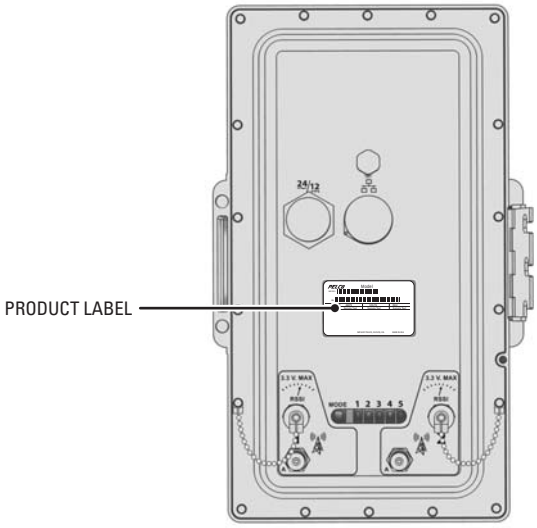

Figure 7. Product Serial Number Label

Site Preparation

Before you install the EW5002, complete the following:

- Select a site for the EW5002.
- Install a mount for the EW5002.
- Wire the site for power and network access. The EW5002 supports Power-over-Ethernet (PoE).
- Install the antenna.
- *Optional:* Configure the network and wireless settings for the EW5002 on a workbench.

SITE SELECTION

Site selection should be performed by a Pelco-certified wireless design consultant, who will address the following issues as part of their site plan. Then follow the design as specified by the consultant.

The EW5002 uses radio waves to communicate with other Endura wireless devices. Select a location with clear line-of-sight from the EW5002 to the other Endura wireless device. Buildings, trees, and other obstacles will affect communication.

Maximum distance from the EW5002 to the other Endura wireless devices is affected by site characteristics, unit transmission rate, antenna options, and unit configuration (access point or bridge). It is also affected by the "noise floor." The noise floor is the sum of all noise sources and unwanted signals in the area between transmitter and receiver. It may include thermal noise, objects between transmitter and receiver, and any interfering signals.

ACCESS POINT CONFIGURATION

When used as an access point, the EW5002 communicates with a cluster of EW5301T video encoders in a point-to-multipoint configuration.

BRIDGE/BACKHAUL CONFIGURATION

When used as a bridge, the EW5002 communicates with the backhaul component of a second EW5002 Endura wireless device in a point-to-point configuration. When used as backhaul, the EW5002 communicates with the bridge component of an Endura wireless device (EW5001 or EW5002) in a point-to-point configuration.

MOUNT INSTALLATION

The EW5002 includes two major mounting components. The unit itself attaches to the J-box. The J-box attaches to any mount with a standard Pelco four-bolt pattern.

Before selecting a mount, plan the wiring paths for power and network cables. The J-box has three openings: one on the top, one on the bottom, and one in the mount surface. Select a mount that facilitates the wiring paths. Table A lists compatible Pelco mounts:

Table A. Compatible Pelco Mounts

Mount	Description	Required Adapter	Maximum Load
EPM	Esprit pole mount with center feedthrough hole	None	100 lbs (45 kg)
PA402	Pole mount	EA4348 adapter plate	75 lbs (34 kg)
CM100	Corner mount	None	75 lbs (34 kg)
CM400	Corner mount	EA4348 adapter plate	75 lbs (34 kg)
ECM100	Esprit corner mount with center feedthrough hole	None	75 lbs (34 kg)
PP100	Parapet mount	None	75 lbs (34 kg)
PP300L/PP301L	Parapet corner mount	EA4348 adapter plate	175 lbs (79 kg)
PP400	Parapet mount	EA4348 adapter plate	75 lbs (34 kg)
PP4348	Parapet rooftop mount	EA4348 adapter plate	75 lbs (34 kg)

NOTE: Make sure the mount supports at least 25 lbs (11.4 kg) for the EW5002. If installing additional equipment to the mount, make sure the mount will support the total weight of the EW5002 and the additional equipment.

Install the mount (refer to the mount documentation for more information).

POWER AND NETWORK WIRING

The EW5002 supports two methods for supplying power and network access to the unit: separate power and network cables or a single network cable using Power-over-Ethernet (PoE) technology. The following sections describe both methods.

SEPARATE POWER AND NETWORK CABLES

Figure 8 shows how to connect separate power and network cables to the EW5002.

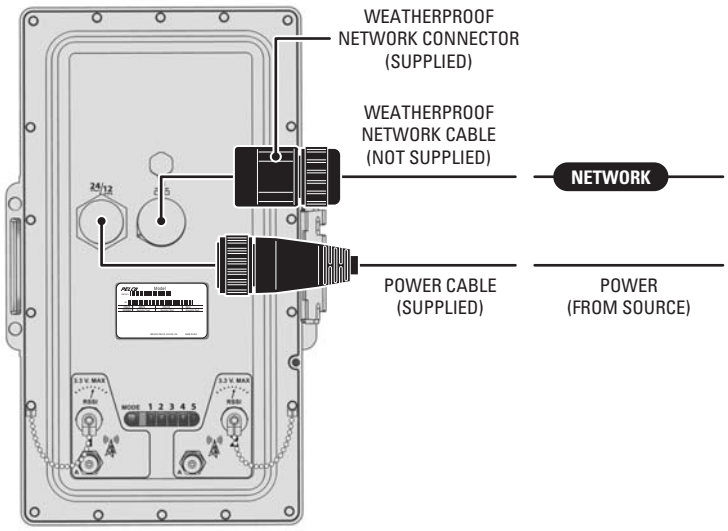

Figure 8. Sample Installation for Separate Power and Network Cables

Low-Voltage Power

The EW5001 can be powered by either a 12 VDC or a 24 VAC power supply. It automatically senses power type and polarity (DC). The unit can be powered from a Pelco WCS Series power supply or any other environmentally-rated power unit that supplies 12 VDC ±10% or 24 VAC ±10%. Unit power consumption is 8 W (16.7 VA).

Use Table B to help identify the necessary wire gauge and maximum cable distance. This table applies to two-conductor solid copper wire. (Reduce distance by 10 percent for stranded copper wire.) These maximum distances are based on a maximum allowable voltage drop of 10 percent.

Table B. Recommended Wire Gauge and Maximum Wiring Distances

Wire Gauge	Maximum Distance	
	12 VDC	24 VAC
20 AWG (0.5 mm^2)	71 ft (21 m)	285 ft (86 m)
18 AWG (1.0 mm^2)	113 ft (34 m)	453 ft (138 m)
16 AWG (1.5 mm^2)	179 ft (54 m)	719 ft (219 m)
14 AWG (2.5 mm^2)	285 ft (86 m)	1,142 ft (348 m)
12 AWG (4.0 mm^2)	453 ft (138 m)	1,814 ft (552 m)
10 AWG (6.0 mm^2)	720 ft (219 m)	2,880 ft (877 m)

The EW5002 includes a 10-foot (3 m) cable with an environmentally-rated plug for connecting power to the unit.

To install the power cable (refer to Figure 8 on page 17):

1. Run power lines from the power supply to the mount site (refer to the power specifications at the start of this section).
2. Connect the power lines from the power supply to the supplied power cable, as indicated:

Wire Color	DC	AC
White	DC+	AC+
Black	Ground	AC-

NOTES:

- Be sure to use environmentally-rated connectors when connecting power to the EW5002. Otherwise, unit reliability may suffer.
- The supplied power cable may include other leads that are not used.
- If the supplied power cable cannot reach from the power source to the mount site, attach additional power cable. Make sure the cable is rated for outdoor use.
- If you use a junction box or patch panel, make sure the connection is protected from the weather.
- Installers should consult local, state, and federal code requirements before installing this cable or running this cable inside any building. Installers should also use best practices when terminating this or any other cable lead.

3. Run the other end of the supplied power cable to the mount site.

You will connect the power cable to the EW5002 later (refer to *Unit Installation* on page 21).

Network Cable

The EW5002 requires a network cable that meets the following specifications:

- Weatherproof
- Silicon filled
- Cat5e or greater unshielded twisted pair (UTP)
- Long enough to reach the EW5002 from the network switch, up to 328 ft (100 m)

Refer to *Optional Accessories* on page 6 for a list of approved cables of various lengths that can be purchased from Pelco.

NOTE: A network cable is not required when the EW5002 is configured as a repeater (backhaul/backhaul). Refer to the repeater application scenario (Figure 6 on page 13).

To install the network cable (refer to Figure 8 on page 17):

1. Run the network cable from a network switch inside the building to the mount site.

   NOTE: If you use a junction box or patch panel, make sure the connection is protected from the weather.
2. Install the supplied weatherproof network connector onto the network cable at the mount site.

You will connect the weatherproof network connector to the EW5002 later (refer to *Unit Installation* on page 21).

POWER-OVER-ETHERNET (POE)

Power-over-Ethernet (PoE) lets you supply both power and network connectivity over a single cable. This simplifies installation and decreases the potential for unit failure.

The EW5002 supports PoE from either a PoE injector or a PoE-enabled network switch. The equipment must support 1-gigabit network speed and supply 15.4 W at 48 VDC. Unit power consumption is 8 W (13.3 VA).

Figure 9 shows how to implement PoE on the EW5002 using a PoE injector.

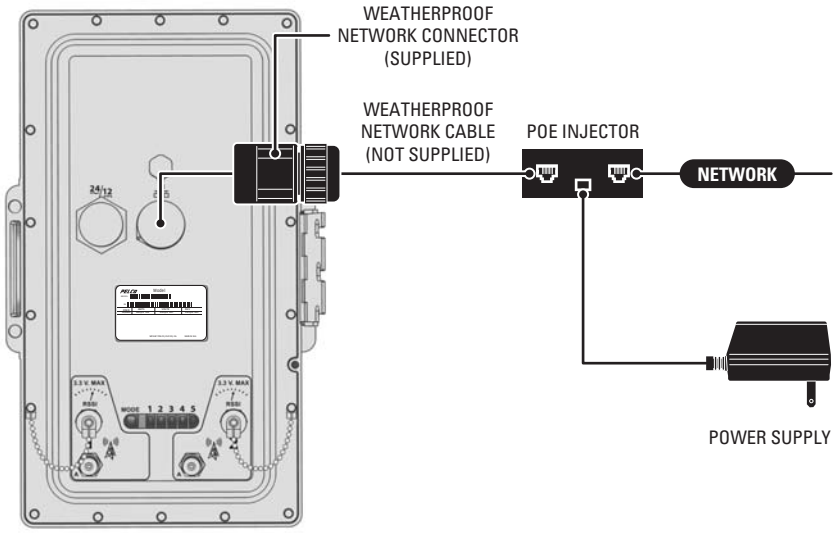

Figure 9. POE Configurations

The EW5002 requires a network cable that meets the following specifications:

- Weatherproof
- Silicon filled
- Cat5e or greater unshielded twisted pair (UTP)
- Long enough to reach the EW5002 from the PoE equipment, junction box, or patch panel, up to 328 ft (100 m)

Refer to *Optional Accessories* on page 6 for a list of approved cables of various lengths that can be purchased from Pelco.

NOTE: Since a network cable is not required when the EW5002 is configured as a repeater (backhaul/backhaul), you may want to use low voltage power instead of PoE. Refer to the repeater application scenario (Figure 6 on page 13) and to *Separate Power and Network Cables* on page 17 for more information.

To install PoE for the EW5002 (refer to Figure 9):

1. Install the PoE equipment (refer to the equipment documentation).
2. Run the network cable from the PoE equipment to the mount site.

   NOTE: If you use a junction box or patch panel, make sure the connection is protected from the weather.
3. Install the supplied weatherproof network connector onto the network cable at the mount site.

You will connect the weatherproof network connector to the EW5002 later (refer to *Unit Installation* on page 21).

ANTENNA INSTALLATION

Pelco offers a planar antenna with integrated mount (ANTP-2-9 or ANTP-5-8) with use with the EW5002. These are the only antennas that can be mounted directly to the EW5002. Any other antenna must be mounted separately.

Before installing either an integrated antenna or a separate antenna, consider the following:

- Make sure the elevation (height) and azimuth (horizontal angle) match at both wireless antenna sites. The units cannot connect unless the antennas are pointing at each other. Antenna misalignment causes the most problems for most wireless installations.
- To limit signal loss, use the shortest cable possible. For every 3 ft (0.91 m) of length, antenna cables lose about 1.0 dB at 5.8 GHz or about 0.7 dB at 2.4 GHz.

If you are using an integrated antenna, you will mount it to the EW5002 as part of the installation procedure (refer to *Unit Installation* on page 21).

If you are using a separate antenna, install it to the mount site. Refer to the Endura Wireless Antenna Installation manual (C2698M).

BENCH SETUP (OPTIONAL)

The EW5002 is designed for easy installation and configuration. By default, it is configured as an access point with backhaul to quickly connect wireless video encoders to an Endura network. Most default settings are automatically configured, including network IP addresses, DHCP server, encryption, wireless channels, and connection speed.

In some cases, it will be necessary to configure the unit on a workbench before installing it on its mount. You will need a service cable and a bench power cable. Refer to the EW5002 Configuration manual (C2685M) and the service cable manual for more information.

Unit Installation

To install the EW5002:

NOTE: If not installing an integrated antenna, skip to step 2 on page 22.

1. Attach the integrated antenna and antenna cable to the EW5002.

   a. Attach the integrated antenna to the EW5002 (refer to Figure 10). Do not tighten the bolts until you align the integrated antenna (refer to *Antenna Alignment* on page 27).

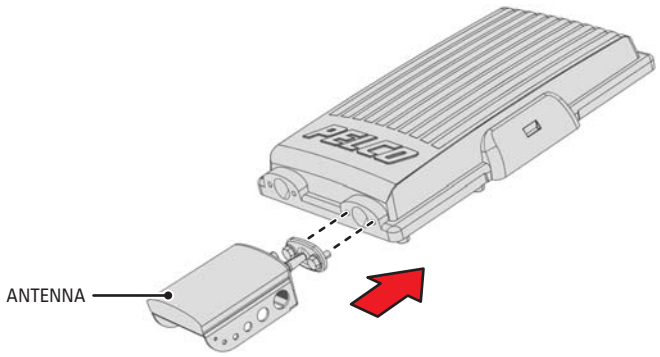

Figure 10. Attaching the Integrated Antenna

NOTE: It is easier to attach the integrated antenna to the unit on the ground before carrying it up to the mount.

   b. Remove the protective cover from the antenna connector on the rear panel.

   c. Connect the antenna cable to the integrated antenna and the EW5002 (refer to Figure 11).

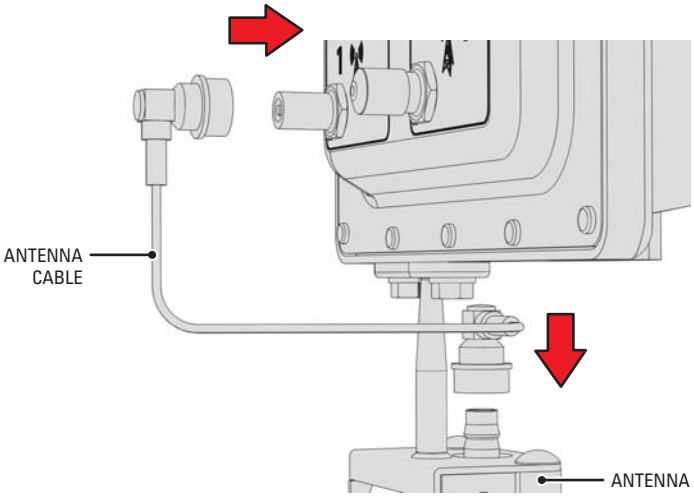

Figure 11. Connecting the Antenna Cable

   d. Make sure both antenna connectors are fully seated. When inserting the connector, you should hear or feel two clicks.

   e. If installing a second integrated antenna, repeat steps a through d.

2. Install the mount (refer to the mount documentation for more information).
3. Orient the J-box so that the arrows and the word UP are pointed up (refer to Figure 12).

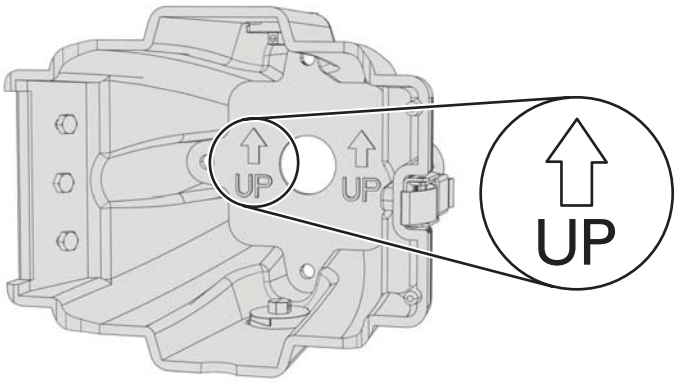

Figure 12. J-Box Orientation

4. Secure the J-box to the mount (refer to Figure 13).

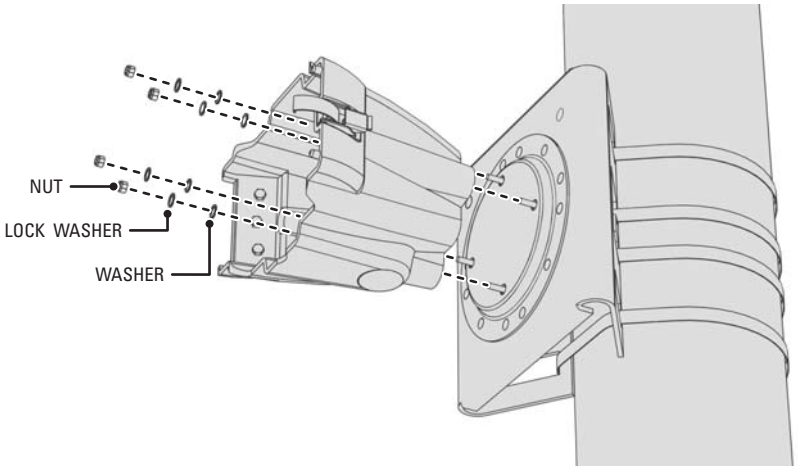

Figure 13. Installing the J-Box *(EWM shown)*

NOTE: The nuts, washers, and lock washers shown in Figure 13 are for illustration only. They are not supplied with the EW5002. Use the actual hardware from the mount to secure the J-box to the mount.

5. *If using an auxiliary opening for cables:* Remove the plug from the appropriate opening in the J-box (refer to Figure 14). Use a 7/16-inch wrench.

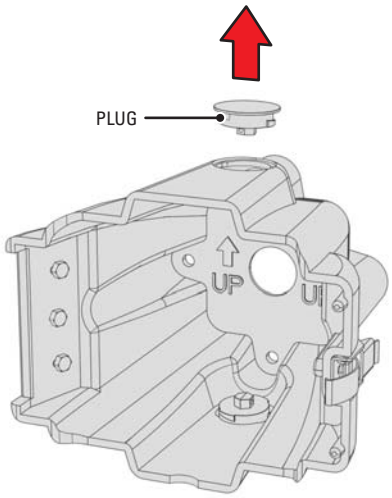

Figure 14. Removing an Auxiliary Opening Plug

6. Route the power and network cables into the J-box through the top, back, or bottom opening (refer to Figure 15).

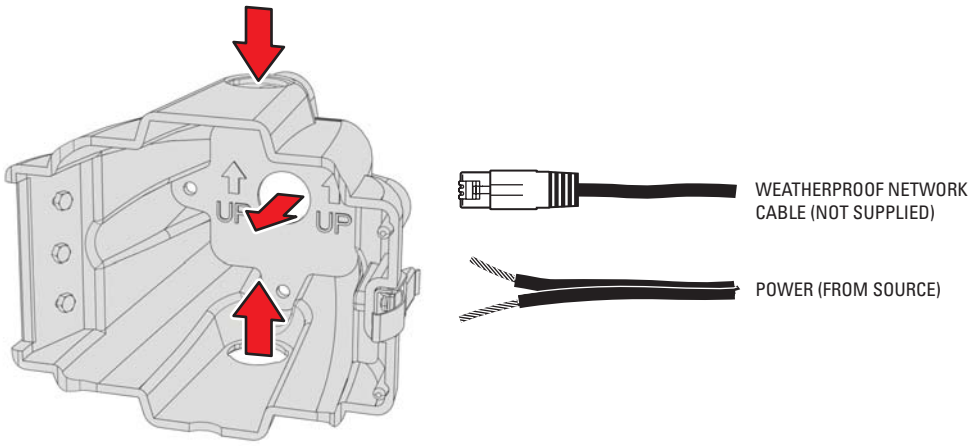

Figure 15. Routing Power and Network Cables

7. Hang the hinge of the EW5002 onto the hinge bolts in the J-box (refer to Figure 16).

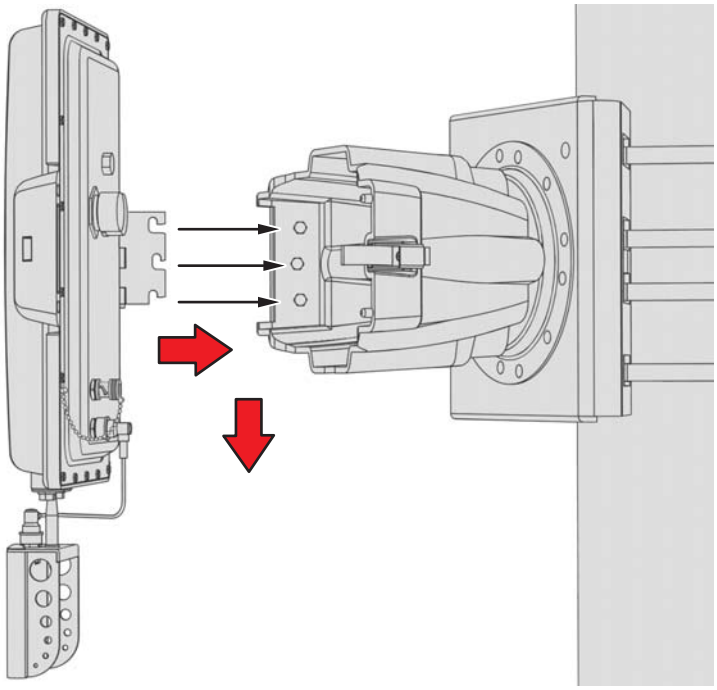

Figure 16. Attaching the EW5002 to the J-Box

8. Tighten the hinge bolts to secure the EW5002 to the J-box.

9. Connect all cables (refer to Figure 17):

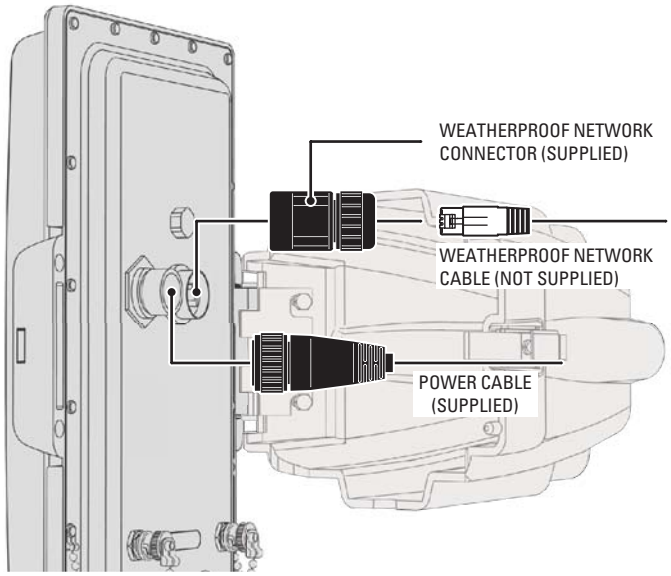

Figure 17. Connecting Cables to the EW5002

a. *If installing a power cable (not using PoE):* Connect the power cable connector.

   (1) Remove the protective cover from the power connector on the rear panel.

   (2) Connect the power cable to the power connector on the rear panel. The connector is keyed and only attaches one way. Make sure you twist the connector all the way down.

b. Connect the weatherproof network connector.

   (1) Remove the protective cover from the network connector on the rear panel.

   (2) Install the supplied weatherproof network connector onto the network cable at the mount site, if not already installed.

   (3) Connect the weatherproof network connector to the network connector on the rear panel. The connector is keyed and only attaches one way. Make sure you twist the connector all the way down.

c. *If using an integrated antenna:* Check the antenna connector to make sure it is fully seated. When inserting the connector, you should hear or feel two clicks.

d. *If using a separate antenna:* Connect the antenna cable.

   (1) Make sure the frequency of each antenna matches the frequency of the EW5002. A label is attached to each antenna connector; the blue label is for 2.4 GHz, the red label is for 5.8 GHz.

   (2) Make sure the antenna cable is the correct length (refer to *Optional Accessories* on page 6 for antenna cables).

   (3) Remove the protective cover from the antenna connector on the rear panel.

   (4) Connect one end of the antenna cable to the antenna. Connect the other end of the cable to the connector on the rear panel. Make sure both connectors are fully seated. When inserting the connector, you should hear or feel two clicks.to the antenna and to the rear panel. Make sure both connectors are fully seated. When inserting the connector, you should hear or feel two clicks.

10. Close and latch the EW5002 to the J-box.

DISCONNECTING AN ANTENNA CABLE

The antenna cable connector is locking. To disconnect it, first pull the sleeve away from the device and hold it (refer to Figure 18). Then pull the connector from the device.

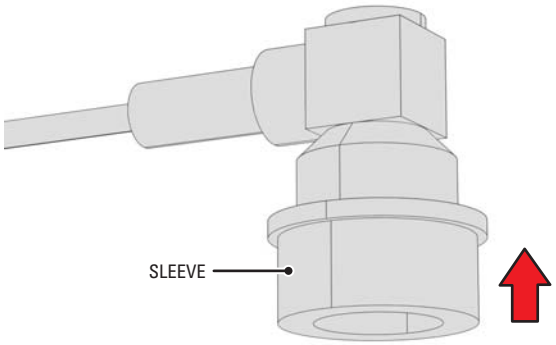

Figure 18. Disconnecting an Antenna Cable Connector

OPENING THE J-BOX

The latch that secures the EW5002 includes a safety release.

To open the J-box (refer to Figure 19):

1. Press and hold the safety release.
2. Release the latch.
3. Open the J-box.

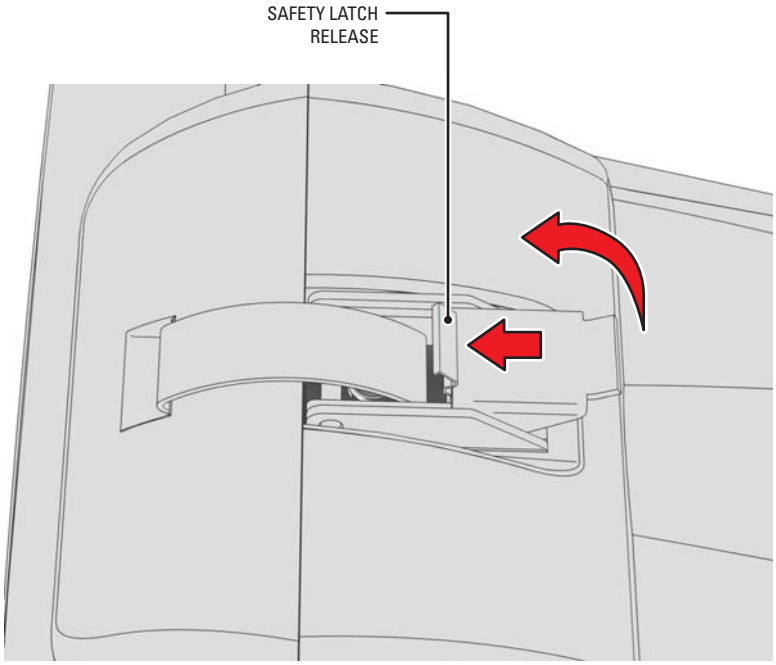

Figure 19. J-Box Safety Latch Release

Antenna Alignment

To achieve the best results, the final step is to align the antennas on the EW5002 with the antennas on the other wireless units. The Receiver Signal Strength Indicator (RSSI) port provides an easy way to help align the antenna for the best possible signal level.

RSSI is a function of transmission power, receiver sensitivity at a specific link speed, antenna alignment, and the noise floor. One way to improve the RSSI is to use a lower link speed.

The EW5002 regularly calculates the RSSI value. Once calculated, it outputs this power level to the RSSI connector, where you can read it with a digital voltmeter (DVM). The RSSI value ranges from 0 V to 3.3 V. When adjusting the antenna, get as close to 3.3 V as possible.

For this procedure, you will use the RSSI connector on the rear panel and a DVM with a BNC adapter.

⚠ **WARNING:** Do not put your hand or other body part in front of a directional antenna during this procedure.

To align the antenna:

1. Make sure that the following indicators are solid green before proceeding:
   - EW5301T: LED 1 and LED 2
   - EW5001: LED 4
   - EW5002: LED 4 or LED 5
2. Make sure the other wireless device is operational and correctly configured.
3. Point one antenna toward the other Endura wireless unit.
4. Set the scale on the DVM for 0 VDC to 6 VDC.
5. Uncap the RSSI connector on the EW5002 (refer to Figure 20).

   NOTE: The cap is attached to the EW5002; you will reinstall it later to protect the unit from weather damage.

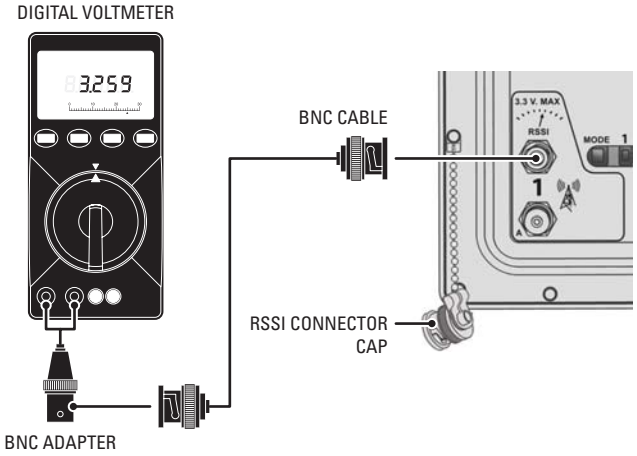

Figure 20. Connecting a DVM to the EW5002

6. Connect the DVM and a BNC adapter to the RSSI connector on the EW5002.
7. Adjust the antenna to achieve the best signal strength. The target is 3.3 VDC.
8. Tighten the antenna mounting hardware.
9. Disconnect the DVM and BNC adapter from the RSSI connector on the EW5002.
10. Reinstall the cap on the RSSI connector on the EW5002.

    NOTE: Do *not* skip this step; you must reinstall the cap to protect the unit from weather damage.
11. Repeat steps 3 through 10 with the second antenna.
12. *Optional:* Realign the antennas on the other wireless units.

    NOTE: Only realign the antenna if distance, weather, obstructions, or other factors are affecting signal strength.

Indicators

The EW5002 has a set of six indicators on its rear panel (refer to Figure 21). These indicators show unit status during startup and normal operation.

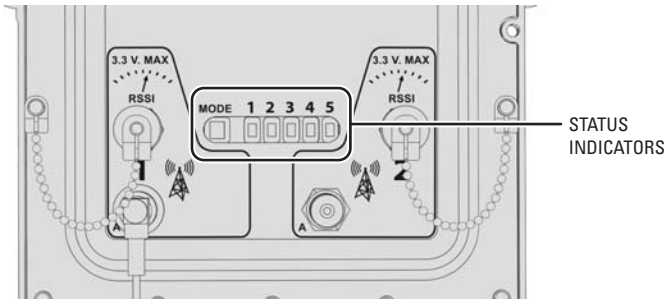

Figure 21. EW5002 Status Indicators

INDICATORS DURING STARTUP

During the startup sequence, the unit steps through a number of phases. The color of the MODE indicator shows the status of each phase:

Green The phase was completed successfully.

Amber The phase is in process. When this indicator is amber, the indicator for the phase will blink.

Red An error occurred that could not be corrected.

INDICATORS DURING OPERATION

During operation, the indicators show unit status as well as status changes (refer to Table C).

Table C. Indicators During Operation

Status Change	MODE	1	2	3	4	5
Unit operating normally.	Green	On	On	On	On	On
Failure to renew unit IP address.	Green	On	On	On	On	Blinking
Unit removed from scheduler's polling-Q.	Green	On	On	On	Blinking	Off
Unit disassociated.	Green	On	On	Blinking	Off	Off
Scanning.	Green	On	Blinking	Off	Off	Off

Configuration and Operation

The EW5002 is configured in two parts:

1. Configure the network and wireless communication settings; refer to the supplied EW5002 Configuration manual (C2685M).
2. Configure the actual EW5002 Endura device settings; refer to the Endura WS5000 Advanced System Software Operation manual (C1624M).

Once configured, you can access the EW5002 in the same manner as other Endura products. Refer to the Endura WS5000 Advanced System Software Operation manual (C1624M) for more information.

Troubleshooting

If the following instructions fail to solve your problem, contact Pelco Product Support at 1-800-289-9100 or 1-559-292-1981 for assistance.

Access the properties windows for the EW5002 dual radio wireless device on the Endura Workstation; refer to the Endura WS5000 Advanced System Software Operation manual (C1624M). Then note the following before calling Pelco:

- Unit serial number: located on the Properties window and on the product label
- Unit firmware version: located on the Advanced Properties window, listed for the Wireless Device

NOTE: Do not try to repair the unit yourself. Opening it immediately voids any warranty. Leave maintenance and repairs to qualified technical personnel. Exchange the defective unit and return it for repair.

Specifications

MODEL NUMBER

EW5002-2-5	Dual radio wireless device; one 2.4 GHz radio; one 5.8 GHz radio
EW5005-5-5	Dual radio wireless device; two 5.8 GHz radios

SUPPLIED ACCESSORIES

Power Cable with Connector	1
Weatherproof Network Connector	1

SYSTEM

Processor	PowerPC® 405EP
Operating System	Linux®
User Interface	Remote operation from WS5000 or VCD5000

INDICATORS

MODE	Green, amber, red
1-5	Green

RF SECTION

Power Output	21 to 26 dBm (±1 dB)
Transmitting Frequency	2.412 – 2.462 GHz (ISM) 5.745 – 5.825 GHz (ISM)
Antenna Types and Gain	Planar antenna, 2.4 GHz, 8.5 dBi gain, 75° x 60° beamwidth Planar antenna, 5.8 GHz, 13.5 dBi gain, 40° x 35° beamwidth Planar antenna, 5.8 GHz, 23.0 dBi gain, 9° x 9° beamwidth Planar antenna, 5.8 GHz, 28.0 dBi gain, 4.5° x 4.5° beamwidth Grid parabolic dish antenna, 2.4 GHz, 14.0 dBi gain, 21° x 14° beamwidth Dual band sector antenna, 2.4 GHz, 12.0 dBi gain, 120° x 15° beamwidth 5.6 GHz, 14.0 dBi gain, 120° x 8° beamwidth
Polarization	Horizontal, vertical
Data Throughput Rate	Up to 54 Mbps

POWER

Power Consumption	8 W, 28 BTU/H
Power Input	12 VDC ±10% 24 VAC ±10% 48 VDC (PoE)

ENVIRONMENTAL

Operating Temperature	-30° to 122°F (-34° to 50°C)
Storage Temperature	-40° to 149°F (-40° to 65°C)
Operating Humidity	20% to 95%, noncondensing
Operating Altitude	-50 ft to 10,000 ft (-16 m to 3,048 m)

PHYSICAL

Construction	Cast aluminum
Finish	White powder coat
Dimension (Without Antenna)	8.76" D x 8.66" W x 14.49" H (22.25 x 22.00 x 36.80 cm)
Mounting	Corner, pole, or parapet with options (for outdoor use only)
Unit Weight (Without Antenna)	14.2 lb (6.44 kg)

OPTIONAL MOUNTING ACCESSORIES

ECM100	Esprit corner mount with center feedthrough hole
EPM	Esprit pole mount with center feedthrough hole
CM100/CM400	Corner mount
PA402	Pole mount
PP100/PP400	Parapet mount
PP300L/PP301L	Parapet corner mount
PP4348	Parapet rooftop mount
EA4348	Adapter plate for CM400, PA402, PP300L, PP301L, PP400, and PP4348

STANDARDS/ORGANIZATIONS

- Pelco is a member of the MPEG-4 Industry Forum
- Pelco is a member of the Universal Plug and Play (UPnP) Forum
- Pelco is a member of the Universal Serial Bus (USB) Implementers Forum
- Pelco is a contributor to the International Standards for Organization/Electrotechnical Commission (ISO/IEC) Joint Technical Committee 1 (JTC1), "Information Technology," Subcommittee 29, Working Group 11
- Compliance, ISO/IEC 14496 standard (also known as MPEG-4)
- Compliant with International Telecommunication Union (ITU) Recommendation G.711, "Pulse Code Modulations (PCM) of Voice Frequencies"

(Design and product specifications subject to change without notice.)

PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship **for a period of one year** after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years on FR/FT/FS Series fiber optic products and TW3000 Series unshielded twisted pair transmission products.
- Three years on Genex® Series products (multiplexers, server, and keyboard).
- Three years on Camclosure® and fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models, which have a five-year warranty.
- Three years on PMCL200/300/400 Series LCD monitors.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra®, Esprit®, ExSite™, and PS20 scanners, including when used in continuous motion applications.
- Two years on Esprit® and WW5700 Series window wiper (excluding wiper blades).
- Two years (except lamp and color wheel) on Digital Light Processing (DLP®) displays. The lamp and color wheel will be covered for a period of 90 days. The air filter is not covered under warranty.
- Eighteen months on DX Series digital video recorders, NVR300 Series network video recorders, and Endura™ Series distributed network-based video products.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico, send goods to:

Service Department
Pelco
3500 Pelco Way
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico and are instructed to return goods to the USA, you may do one of the following:

If the goods are to be sent by a COURIER SERVICE, send the goods to:

Pelco
3500 Pelco Way
Clovis, CA 93612-5699 USA

Green The materials used in the manufacture of this document and its components are compliant to the requirements of Directive 2002/95/EC.

This equipment contains electrical or electronic components that must be recycled properly to comply with Directive 2002/96/EC of the European Union regarding the disposal of waste electrical and electronic equipment (WEEE). Contact your local dealer for procedures for recycling this equipment.

REVISION HISTORY

Manual #	Date	Comments
C2682M	7/07	Original version.

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