



Installation Guide for the **RoboTRAK Presenter Tracking System**

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What's in this Guide

This guide covers:

- System features
- Unpacking the RoboTRAK™ IR camera
- Descriptions of the hardware
- Tips for a successful installation
- Instructions for installing the camera mount
- Information on connecting and mounting the camera
- Camera power-on

The **Configuration and Administration Guide for the RoboTRAK Presenter Tracking System** provides information about pairing the IR camera to the video camera and lanyard, along with other system configuration and administration tasks.

Complete product information is available in the **Integrator's Complete Guide to the RoboTRAK Presenter Tracking System**.

Overview

This guide covers the RoboTRAK presenter tracking system with IR camera:

- RoboTRAK, North America – 999-7270-000
- RoboTRAK, Europe and UK – 999-7270-001
- RoboTRAK, Australia and New Zealand – 999-7270-009

This system requires a video camera, which is sold and documented separately. The RoboTRAK system works with RoboSHOT™ series cameras. Refer to the video camera's documentation for information on how to connect and configure it.



Features

- IR-based presenter tracking for medium to large rooms
- Designed for educators, in consultation with educators, using Vaddio's proven, industry-leading technology
- Reliable tracking: Move around, turn your head, invite others to the front of the room... the camera stays on you
- Switch between tracking and preset positions
- Camera sold separately – use with the RoboSHOT™ camera of your choice

IR Camera

- Simple configuration and administration using the Vaddio web interface
- Adjust the system's tracking behavior to match the presenter's style
- Operational range of 12 to 50 ft (3.7 to 15.2 m), any height from 6 to 15 ft. (1.8 to 4.6 m)

IR Source Lanyard

- No belt pack – comfortable, highly wearable design that does not interfere with clothing
- Up to 40 hours of battery power; 25 hours typical
- Recessed switch for full power-down – Conserve battery life during storage; no risk of accidental actuation

Unpacking the System

Make sure you received all the items you expected.

Vaddio recommends purchasing a second lanyard as a spare or for smooth transitions between multiple presenters.

Note

In addition to the items listed here, you will need a video camera. Any RoboSHOT series camera can be used.

If remote viewing is desired, you must use a video camera that is capable of streaming. These include RoboSHOT 10 USB, RoboSHOT HD-SDI, and RoboSHOT 20 UHD cameras.



Caution

Always support the camera's base when picking it up. Lifting the camera by its head or mounting arm will damage it.

Note

Copy the default hostname from the label on the bottom of the camera, and keep this information in a place where it will be available to anyone who needs to work with the camera's web interface. This information is required to access the camera for initial configuration, or after a factory reset.

North America

Part number 999-7270-000, RoboTRAK

- Vaddio RoboTRAK IR camera
- PoE+ power injector
- AC cord set for North America
- PoE splitter
- Power cable, 1 ft (30 cm)
- Cat-5e cable, 1 ft (30 cm)
- Cat-5e cable, 10 ft (3 m)
- Wall mount with mounting hardware
- IR lanyard
- USB charger
- USB charger cable
- Ferrite bead
- Quick Start Guide



Part number 999-7271-000, additional lanyard kit (optional, purchased separately):

- Lanyard
- USB charger
- USB charger cable
- Ferrite bead

Europe and UK

Part number 999-7270-001, RoboTRAK

- Vaddio RoboTRAK IR camera
- PoE+ power injector
- AC cord sets for Europe and UK
- PoE splitter
- Power cable, 1 ft (30 cm)
- Cat-5e cable, 1 ft (30 cm)
- Cat-5e cable, 10 ft (3 m)
- Wall mount with mounting hardware
- IR lanyard
- USB charger
- USB charger cable
- Ferrite bead
- Quick Start Guide



Part number 999-7271-001, additional lanyard kit (optional, purchased separately):

- Lanyard
- USB charger
- USB charger cable
- Ferrite bead

Australia and New Zealand

Part number 999-7270-009, RoboTRAK in silver and black

- VaddioRoboTRAK IR camera
- PoE+ power injector
- AC cord set for Australia and New Zealand
- PoE splitter
- Power cable, 1 ft (30 cm)
- Cat-5e cable, 1 ft (30 cm)
- Cat-5e cable, 10 ft (3 m)
- Wall mount with mounting hardware
- IR lanyard
- USB charger
- USB charger cable
- Ferrite bead
- Quick Start Guide



Part number 999-7271-009, additional lanyard kit (optional, purchased separately):

- Lanyard
- USB charger
- USB charger cable
- Ferrite bead

A Quick Look at the RoboTRAK System

This section covers the physical features of the RoboTRAK system:

- IR camera
- Tracking Lanyard

The RoboTRAK system requires a video camera as well. You can use any Vaddio RoboSHOT camera as the video component of the system.

Note

If remote viewing is desired, you must use a video camera that is capable of streaming. These include RoboSHOT 10 USB, RoboSHOT HD-SDI, and RoboSHOT 20 UHD cameras.

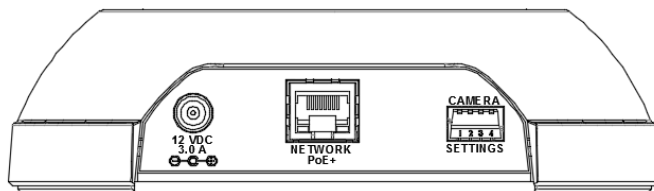
Refer to the documentation for your RoboSHOT camera for detailed information on connections and camera control.

Front of the IR Camera



- **Camera assembly** – based on the same reliable hardware as our latest generation of video cameras.
- **Reflective lens** – reduces interference from spurious IR sources. The reflective lens also provides a simple visual cue that it's not a standard video camera.
- **Indicator light** – shows the IR camera's current status.

Connectors



- **12 VDC, 3.0 Amp power connector** – Connect only the PoE splitter shipped with the camera.
- **Network/PoE+** – 10/100 Ethernet/PoE+ port allows the RoboTRAK™ IR camera to control the video camera, and provides access to the web interface.
- **DIP switches** – Factory use only.

Lanyard

Vaddio recommends purchasing a second lanyard as a spare or for smooth transitions between multiple presenters.

Medallion – Houses charging and control circuitry, switches to standby (low-power) mode when the IR camera switches to standby.

- **Button** – On/off switch for IR sources
- **Illuminated ring** – Visual status indicator directs light toward the wearer, not the audience
- **Battery** – Rechargeable Li-ion battery; up to 25 hour battery life, roughly 4 hour charging time
- **USB micro-B charging port** – Connect the supplied battery charger
- **Recessed power switch** – Allows you to turn off the lanyard completely to extend battery life

Ribbon – Holds the medallion and contains the IR sources.

- **Strand of IR LEDs** – Provide a characteristic image pattern that the camera identifies and tracks
- **Safety clasp** – Automatically releases under tension

Caution

Do not pinch, crease, or stretch the lanyard ribbon. Do not pull the lanyard ribbon to release the clasp. Any of these will damage the circuitry in the ribbon.



Before You Start

Ensure that the room is suitable for the RoboTRAK system, and that all the required elements of the installation are present. This section covers the requirements for a successful installation.

Note

Copy the default hostname from the label on the bottom of the camera, and keep this information in a place where it will be available to anyone who needs to work with the camera's web interface. This information is required to access the camera for initial configuration, or after a factory reset.

Network Requirements

- Network connections for both cameras
- Hostname resolution

Additional Equipment

Side-by-side displays – The team or individual tuning the RoboTRAK system will need to see the IP stream from the IR camera and the live video feed from the video camera at the same time. The display for the IR camera is not needed after the system is configured and fine-tuned.

Tablet or other device with wifi access – If you do not have an assistant for the tuning process, you will need to be able to work with the RoboTRAK IR camera's web interface while moving around the room.

Lighting and IR

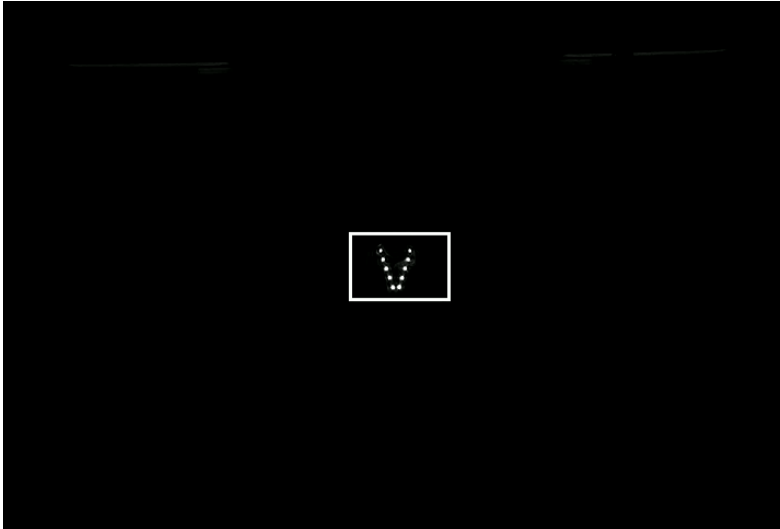
Note

The RoboTRAK IR camera works best in an IR-sterile environment. Natural lighting and halogen lamps produce enough stray IR to overwhelm the system.

- If the room has windows, blackout curtains or blinds are required - standard window blinds admit enough IR at the edges to keep the IR camera from identifying the tracking lanyard.
- Fluorescent or LED lighting is preferred.



This is a shot from the IR stream of a RoboTRAK camera in an IR-sterile room. Other than the presenter's lanyard, the room is dark. This is what you should see when you view the stream from the IR camera. (If the camera is not in setup mode, the image will not include the white rectangle.)



In the photograph below, the two displays both show virtually the same shot from the RoboTRAK IR camera as shown in the previous photograph, but in a different room. The window shades are closed and the room looks dark - but the IR image shows that the whole room is flooded with IR, and the lanyard does not emit enough IR to be detected.

This room requires IR remediation.



Certain types of room systems also emit IR, and can keep the tracking system from working properly:

- Assisted listening systems
- IR-based audio systems
- Room occupancy sensors

Turning any of these off may not be an option. In such cases, cover or remove reflective objects if possible. IR reflects the same way as visible light – an object that looks shiny to you also looks shiny to the IR camera.



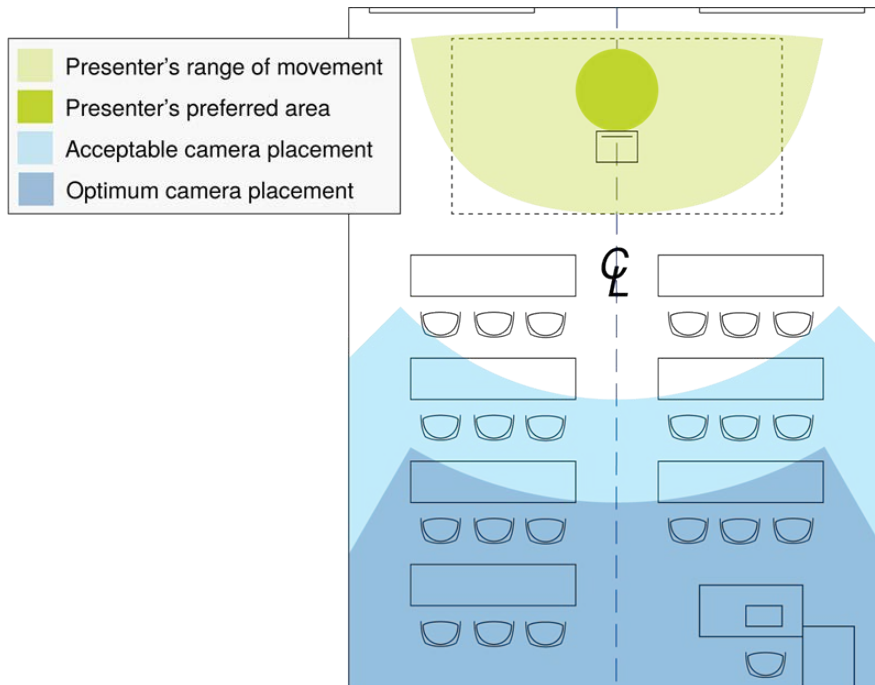
Contact the Vaddio Applications Engineering team (appse@vaddio.com) for help with stray IR mitigation.

Camera Location

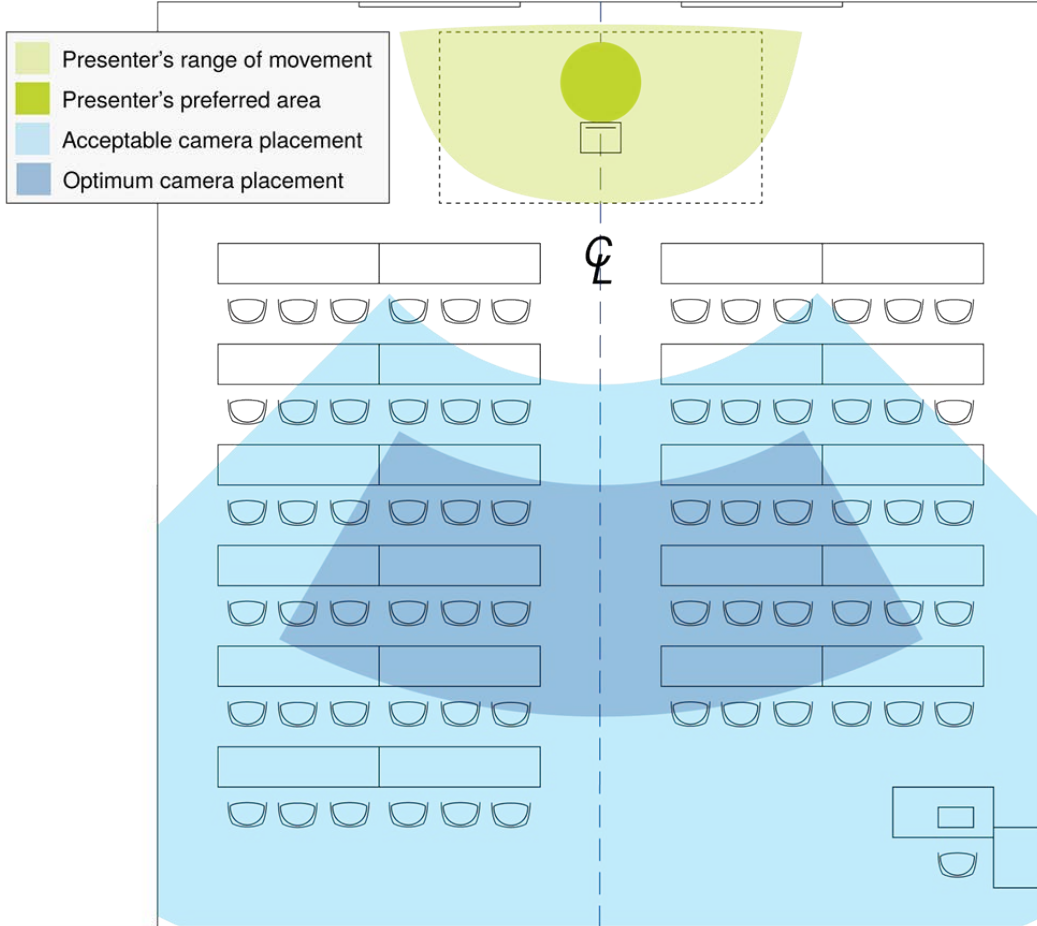
Siting requirements for the IR camera are similar to those for the video camera you use with it.

- Clear line of sight to the desired viewable area
- Acceptable camera distance 12 to 50 ft (3.7 to 15.2 m) from area of interest; best performance at 20 to 35 ft (6.1 to 10.7 m) from area of interest
- Height 7 to 15 ft (2.1 to 4.6 m) depending on distance
- Viewing angle as close as possible to the centerline of the tracking area

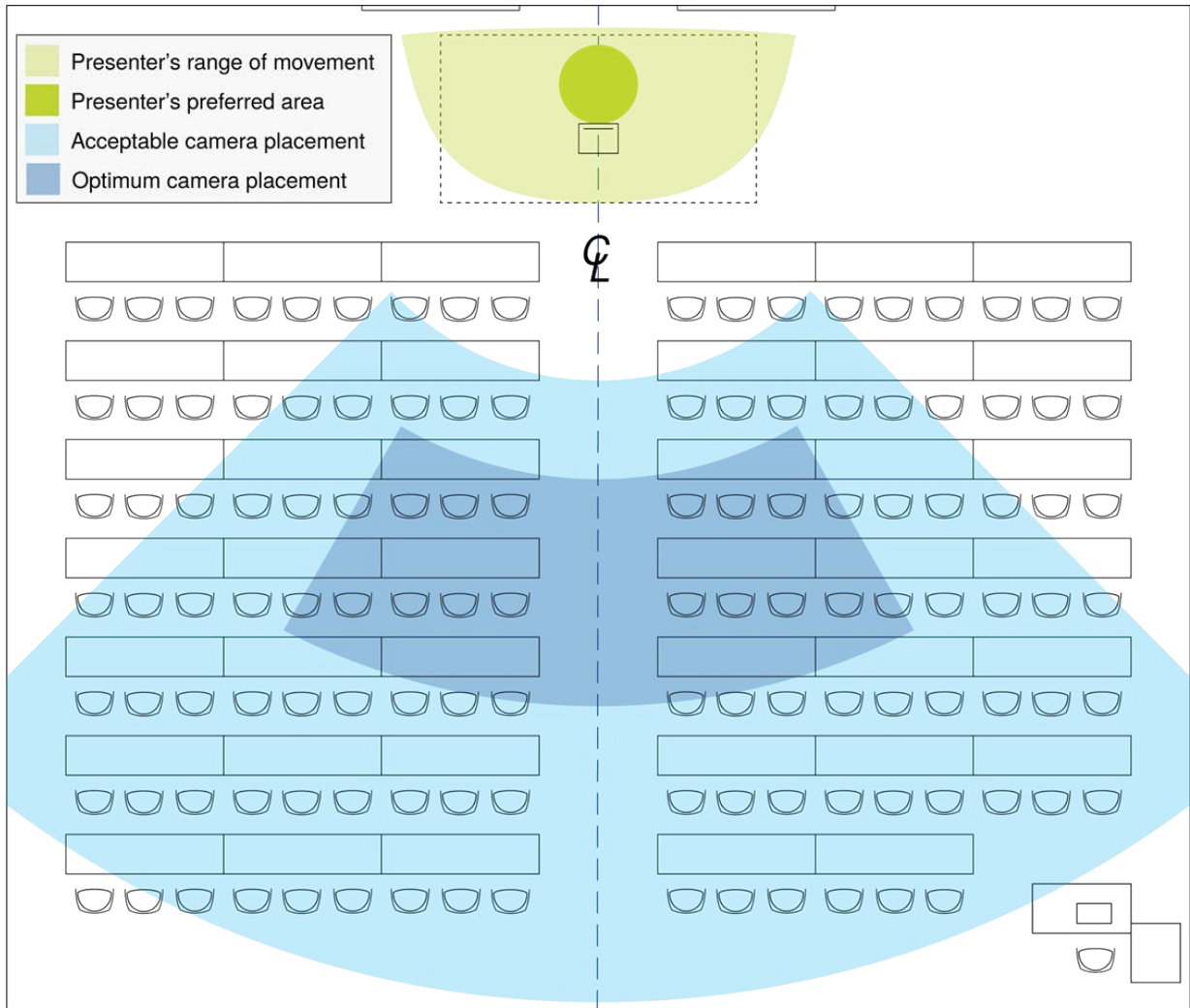
Camera Placement – Small Room



Camera Placement – Medium Room



Camera Placement – Large Room



Installation

This section covers selecting the camera location, installing the mount, and connecting the camera.

Don't Void Your Warranty!

Caution

This product is for indoor use. Do not install it outdoors or in a humid environment without the appropriate protective enclosure. Do not allow it to come into contact with any liquid.

Use only the power supply included with this product. Using a different one will void the warranty, and could create unsafe operating conditions or damage the product.

Do not install or operate this product if it has been dropped, damaged, or exposed to liquids. If any of these things happen, return it to Vaddio for safety and functional testing.

Cabling Notes

Use Cat-5e or better cable and standard RJ-45 connectors (568B termination). We recommend using high-quality connectors and a high-quality crimping tool.

Note

Do not use pass-through RJ-45 connectors. These can cause intermittent connections and degraded signal quality, resulting in problems that may be hard to diagnose. Use standard RJ-45 connectors.



Caution

Check Cat-5 cables for continuity before using them. Using the wrong pin-out may damage the camera system and void the warranty.



Pro Tip

To prevent tragic mishaps, label both ends of every cable.

Preparing the Tracking Lanyard for Use

You will need all the items from the box that the lanyard was shipped in:

- Lanyard
- USB charger
- USB charging cable
- Ferrite bead

1. Snap the ferrite bead onto the charger cable about 2 inches (5 cm) from the connector that plugs into the lanyard.

Note:

To ensure compliance with FCC regulations, you must install the ferrite bead as directed.

2. Make sure the recessed power switch is in the ON position.
3. Plug the charger into a power source, and connect the charger cable.
4. Plug the charger cable into the lanyard.
5. Leave the lanyard connected to the charger until the medallion blinks only occasionally. Charging may take several hours.



The IR Camera's Default Hostname

Note

Copy the default hostname from the label on the bottom of the camera, and keep this information in a place where it will be available to anyone who needs to work with the camera's web interface. This information is required to access the camera for initial configuration, or after a factory reset.

Be sure to record the default hostname exactly as it is shown on the label.

The RoboTRAK IR camera can only be configured via its web interface. Ensure that the team or individual configuring the RoboTRAK system has the IR camera's default hostname.

Before You Install the Camera

The RoboTRAK presenter tracking system includes a dual wall mount which can be used with Vaddio's Offset Drop-down Ceiling Mount for RoboTRAK, part number 535-2000-045. Contact us if you don't have the camera mount you need.

Note

Install the cameras with the IR camera directly above the video camera. Other physical orientations are not supported, as they pose tuning/configuration challenges.

- Choose a camera mounting location that will optimize camera performance. Consider camera viewing angles, lighting conditions, line-of-sight obstructions, and in-wall obstructions where the camera is to be mounted.
- Ensure that the camera body can move freely and will point away from the ceiling and lights.
- Follow the installation instructions included with the camera mount.

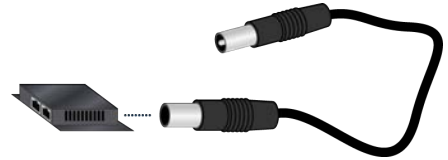
Placing the PoE Splitter

Both connections to the IR camera are from the PoE splitter.

1. Remove the backing from one side of the rectangle of 3M[®] Dual Lock[™] material to expose the adhesive, and press it firmly against the back of the PoE splitter.
2. Connect the long Cat-5e cable to the Power & Data connector on the PoE splitter.
3. Connect the short Cat-5e cable to the Data Out connector on the PoE splitter.
4. On the short power cable, identify the connector with no center pin and connect it to the PoE splitter.

Caution

The connectors on the short power cable are NOT identical. One has a center pin. Attempting to connect the wrong end of the cable to the PoE splitter will damage the connector. (We did this in the lab, and we're admitting it so you can avoid our mistake.)



5. Holding the PoE splitter under the top shelf of the camera mount, route the two short cables through the cable opening for the upper camera.
6. Determine the best position for the PoE splitter, then remove the backing from the exposed side of the 3M Dual Lock material and press the PoE splitter into place within the camera mounting shelf.



Installing the Camera Mount

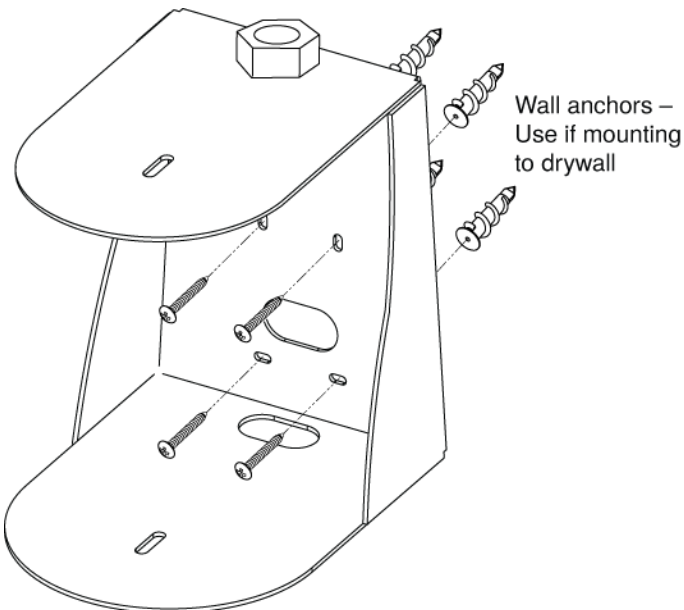
The dual camera mount can be attached to a wall, or mounted to the ceiling.

Wall Installation

Note

You can install the camera mount to a 2-gang wall box or directly to the drywall. If you install the wall mount on drywall, use the wall anchors provided with the wall mount. If you install it over a wall box, use the cover plate screws supplied with the wall box.

1. Route cables through the appropriate cable opening in the mount.
2. Attach the mount to the wall, using wall anchors if not attaching it to a wall box.
3. Level the mount and tighten the mounting screws.
4. Check the level again.



Ceiling Installation

For a ceiling installation, you will need Vaddio's Offset Drop-down Ceiling Mount for RoboTRAK, part number 535-2000-045.

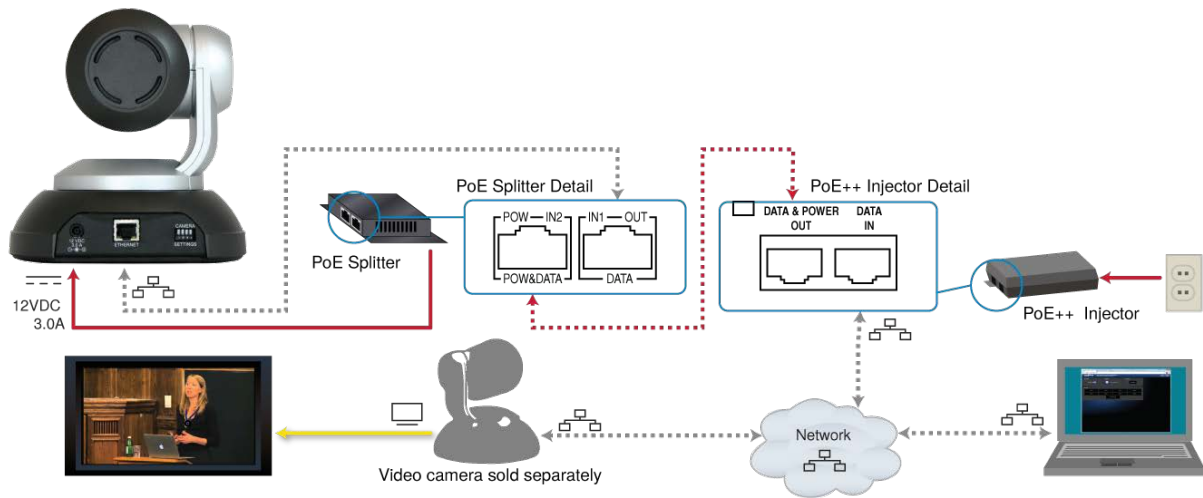
Vaddio does not recommend using a non-offset ceiling mount pole, as the system's center of mass is significantly forward of the 1" NPT threaded nut. Contact Vaddio if you don't have a suitable ceiling mount kit.

1. Install the ceiling mount kit according to the instructions provided with it.
2. At the appropriate step, route the cables for both cameras through the pipe.
3. At the appropriate step, attach the dual camera mount to the end of the threaded pipe.

Note

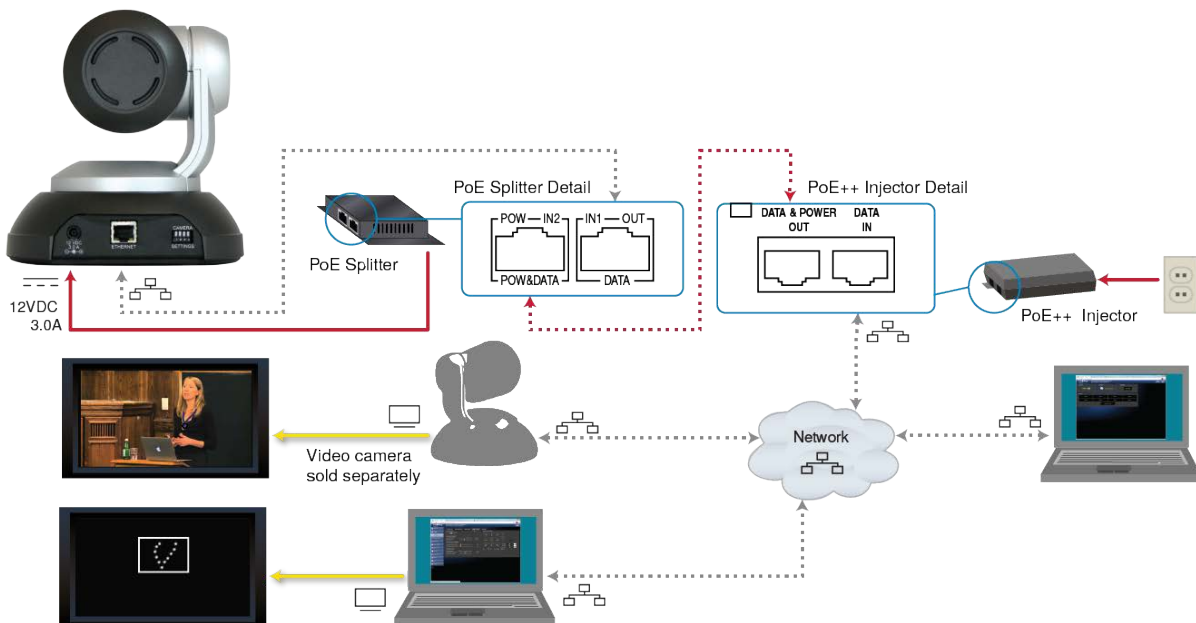
Inverted operation is not supported.

Basic Connection Diagram



Connections for Configuring the System

To configure the system for the room and set up the desired tracking behavior, you will need to view the IP stream from the IR camera. Side-by-side displays of the IR camera stream and the video camera output are strongly recommended.



Installing the Cameras

Caution

Before you start, be sure you can identify all cables correctly. Connecting a cable to the wrong port can result in equipment damage.

Caution

Check Cat-5 cables for continuity before using them. Using the wrong pin-out may damage the camera system and void the warranty.

1. Connect the cables from the PoE splitter to the IR camera.
2. Place the camera on the upper shelf of the mount.
3. Attach the camera to the mount using the ¼"-20 x .375 mounting screw supplied with the camera.
4. Ensure that the video camera's resolution switch the DIP switches are set appropriately. Refer to the video camera's manual for this information.
5. Connect the cables to the video camera.
6. Place the video camera on the lower shelf of the mount.
7. Attach the camera to the mount using the ¼"-20 x .375 mounting screw supplied with the camera.

Powering Up the Cameras

Connect camera power.

The cameras will wake up and initialize. This will take a few seconds. When the cameras are ready to accept control information, their front indicators are blue. At this point, the system is ready to configure.

Operation, Storage, and Care

For smears or smudges on any component of the system, wipe with a clean, soft cloth. Use a lens cleaner on the lens. Do not use any abrasive chemicals.

Keep this system away from food and liquids.

Do not operate or store the device under any of the following conditions:

- Temperatures above 40°C (104°F) or below 0°C (32°F)
- High humidity, condensing or wet environments
- Inclement weather
- Severe vibration
- Dry environments with an excess of static discharge
- Outside a spacecraft during or after launch

Do not attempt to take any component of this system apart. There are no user-serviceable parts inside.

Next Steps

The camera is now ready to configure and use. This information is available in the **Configuration and Administration Guide for the RoboTRAK Presenter Tracking System**. It is also included in the **Integrator's Complete Guide to the RoboTRAK Presenter Tracking System**.

Compliance Statements and Declarations of Conformity

Compliance testing was performed to the following regulations:

| | |
|--|---------|
| FCC Part 15 (15.107, 15.109), Subpart B | Class A |
| ICES-003, Issue 54: 2012 | Class A |
| EMC Directive 2004/108/EC | Class A |
| EN 55022: December 2010 | Class A |
| EN 55024: November 2010 | Class A |
| KN22 2008 (CISPR 22: 2006) | Class A |
| KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002) | Class A |
| IEC 60950-1:2005 (2nd Edition); Am 1: 2009 + Am 2: 2013 | Safety |
| EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013 | Safety |

FCC Part 15 Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15, Subpart B, 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/her own expense.

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference including interference that may cause undesired operation of the device.

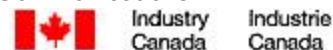
Changes or modifications not expressly approved by Vaddio can affect emission compliance and could void the user's authority to operate this equipment.



ICES-003 Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.



European Compliance

This product has been evaluated for electromagnetic compatibility under the EMC Directive for Emissions and Immunity and meets the requirements for a Class A digital device. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Standard(s) To Which Conformity Is Declared:



EMC Directive 2004/108/EC

EN 55022: December 2010

EN 55024: November 2010

EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001

EN 61000-4-3: 2006 + A1: 2008

EN 61000-4-4: 2004 + Corrigendum 2006

EN 61000-4-5: 2006

EN 61000-4-6: 2009

EN 61000-4-8: 2010

EN 61000-4-11: 2004

KN22 2008 (CISPR 22: 2006)

KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)

EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-5

EN 61000-4-6

EN 61000-4-8

EN 61000-4-11

IEC 60950-1: 2005 (2nd Edition); Am 1: 2009 + Am 2: 2013

EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013

Conducted and Radiated Emissions

Immunity

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and
Fluctuations

Conducted and Radiated Emissions

IT Immunity Characteristics

Electrostatic Discharge

Radiated Immunity

Electrical Fast Transients

Surge Immunity

Conducted Immunity

Power Frequency Magnetic Field

Voltage Dips, Interrupts and
Fluctuations

Safety

Safety

Warranty Information

See Vaddio Warranty, Service and Return Policies posted on support.vaddio.com for complete details.

Hardware* warranty: Two (2) year limited warranty on all parts and labor for Vaddio manufactured products. Vaddio warrants its manufactured products against defects in materials and workmanship for a period of two years from the day of purchase, to the original purchaser, if Vaddio receives notice of such defects during the warranty. Vaddio, at its option, will repair or replace products that prove to be defective. Vaddio manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry standard practices.

Exclusions: The above warranty shall not apply to defects resulting from improper or inadequate maintenance by the customer, customers applied software or interfacing, unauthorized modifications or misuse, mishandling, operation outside the normal environmental specifications for the product, use of the incorrect power supply, modified power supply or improper site operation and maintenance. OEM and special order products manufactured by other companies are excluded and are covered by the manufacturer's warranty.

Vaddio Customer Service: Vaddio will test, repair, or replace the product or products without charge if the unit is under warranty. If the product is out of warranty, Vaddio will test then repair the product or products. The cost of parts and labor charge will be estimated by a technician and confirmed by the customer prior to repair. All components must be returned for testing as a complete unit. Vaddio will not accept responsibility for shipment after it has left the premises.

Vaddio Technical Support: Vaddio technicians will determine and discuss with the customer the criteria for repair costs and/or replacement. Vaddio Technical Support can be contacted by email at support@vaddio.com or by phone at one of the phone numbers listed on support.vaddio.com.

Return Material Authorization (RMA) number: Before returning a product for repair or replacement request an RMA from Vaddio's technical support. Provide the technician with a return phone number, e-mail address, shipping address, product serial numbers and original purchase order number. Describe the reason for repairs or returns as well as the date of purchase. See the General RMA Terms and Procedures section for more information. RMAs are valid for 30 days and will be issued to Vaddio dealers only. End users must return products through Vaddio dealers. Include the assigned RMA number in all correspondence with Vaddio. Write the assigned RMA number clearly on the shipping label of the box when returning the product. All products returned for credit are subject to a restocking charge without exception. Special order product are not returnable.

Voided warranty: The warranty does not apply if the original serial number has been removed or if the product has been disassembled or damaged through misuse, accident, modifications, use of incorrect power supply, use of a modified power supply or unauthorized repair.

Shipping and handling: Vaddio will not pay for inbound shipping transportation or insurance charges or accept any responsibility for laws and ordinances from inbound transit. Vaddio will pay for outbound shipping, transportation, and insurance charges for all items under warranty but will not assume responsibility for loss and/or damage by the outbound freight carrier. If the return shipment appears damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

Products not under warranty: Payment arrangements are required before outbound shipment for all out of warranty products.

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Vaddio

131 Cheshire Ln., Suite 500

Minnetonka, MN 55305

The logo for Vaddio, featuring the word "vaddio" in a bold, blue, lowercase sans-serif font. The letter "o" is stylized as a circle with a smaller solid circle inside it, resembling an eye or a camera lens.