Installation Guide for
RoboSHOT 20 UHD
High Performance, Ultra High Definition PTZ Camera

Contents

Overview

This guide covers the RoboSHOT™ 20 UHD high performance PTZ camera:

- RoboSHOT 20 UHD (silver and black), North America – 999-9950-000
- RoboSHOT 20 UHD (white), North America – 999-9950-000W
- RoboSHOT 20 UHD (silver and black), International – 999-9950-001
- RoboSHOT 20 UHD (white), International – 999-9950-001W

What's in this Guide

This guide covers:

- Unpacking the camera
- Tips for a successful installation
- Instructions for installing the camera mount
- Information on connecting and mounting the camera
- Camera power-on

Complete product information is available in the **Integrator's Complete Guide to RoboSHOT 20 UHD Ultra-High Definition PTZ Cameras**.

Camera Features

- Back-illuminated 9.03 Megapixel, ultra high definition 1/2.3-type sensor delivers native 2160p/30 (3840 x 2160) video
- 12X optical zoom and 1.67X digital zoom; effective 20X zoom range; horizontal field of view 74° (wide) to 4.8° (tele) at 20X
- Imaging and performance comparable to 3-chip cameras
- Precise pan and tilt movements from 120°/s down to 0.35°/s
- Tri-Synchronous Motion™ simultaneous 3-axis pan/tilt/zoom movement between presets
- Simultaneous HDMI®, HDBaseT™, 3Gb/s HD-SDI and IP streaming outputs
- Presenter-friendly IR remote control
- Full administrative control from your browser via web interface
- Integration-ready Telnet or serial RS-232 control
- Smooth, silent direct-drive motors

Unpacking the Camera

Make sure you received all the items you expected.

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

North America

Part number 999-9950-000, RoboSHOT 20 UHD in silver and black

Part number 999-9950-000W, RoboSHOT 20 UHD in white

- Vaddio IR Remote Commander
- 12 VDC, 3.0 A switching power supply
- AC cord set for North America
- Thin Profile Wall Mount with mounting hardware
- EZCamera RS-232 control adapter
- Quick Start Guide

International

Part number 999-9950-001, RoboSHOT 20 UHD in silver and black

Part number 999-9950-001W, RoboSHOT 20 UHD in white

- Vaddio IR Remote Commander
- 12 VDC, 3.0 A switching power supply
- AC cord sets for UK and Europe
- Thin Profile Wall Mount with mounting hardware
- EZCamera RS-232 control adapter
- Quick Start Guide

A Quick Look at the Camera

This section covers the physical features of the RoboSHOT 20 UHD.

Front of the Camera

- **Camera and Zoom Lens:** Horizontal field of view up to 74°.12X optical zoom combines with 1.67X digital zoom to deliver an effective 20X zoom range; 4.8° field of view at 20X.
- **Dual-arm mount** provides superior stability.
- **IR Sensors:** Sensors in the front of the camera base receive signals from the IR Remote Commander. Make sure there are no obstructions directly in front of the camera base.
- **Status indicator:** The multi-colored LED indicates the camera's current state.
  - Purple – Boot-up and Standby modes.
  - Blue – Normal operation and is a power on, ready condition.
  - Blinking blue – The camera has received IR from the remote or other IR source.
  - Red – Tally function; shows that the camera is on-air.
  - Blinking red – Fault condition.
  - Yellow – Firmware update is in progress.

Caution
Do not remove power or reset the camera while the indicator is yellow, showing a firmware update in progress. Interrupting a firmware update can make the camera unusable.

Connector Panel

From left to right:

- **12 VDC, 3.0 A connector** – EIA-J04 connector for the power supply shipped with the camera, if not using a OneLINK extension system
- **OneLINK HDBaseT connector** – Connect to the network (H.264 IP streaming, web interface or Telnet control, and PoE++ power) or a OneLINK extension system (video, power and control up to 328 ft/100m)
- **HDMI connector** – HDMI video output
- **HD-SDI connector** – HD-SDI video output
- **RS-232 port** – Connect to a camera controller to manage the camera using a modified VISCA protocol
- **HD video select switch** – Select the appropriate output resolution for local outputs
- **DIP switches** – Set IR frequency, IR on/off, image flip (camera is invertible), and baud rate

Switch Settings

RoboSHOT cameras use a rotary switch to set the video resolution and a set of DIP switches that determine certain camera functions. A label on the bottom of the camera provides a quick reference for setting the switches.

Note
Set the switches appropriately before mounting the camera.

Video Resolution

Set the desired available output resolution for the camera with the rotary switch. Switch positions A through F are not used.

Switch position	Resolution
0	1080p/59.94
1	1080p/50
2	1080i/59.94
3	1080i/50
4	1080p/29.97
5	1080p/25
6	720p/59.94
7	720p/50
8	2160p/29.97
9	2160p/25
A – F	Not used

Note
The maximum resolution for the HD-SDI output and the IP stream is 1080p.

Camera Settings

Use the DIP switches to set other camera behaviors.

Note
When the camera is right side up, switches are in their default positions when they are up.
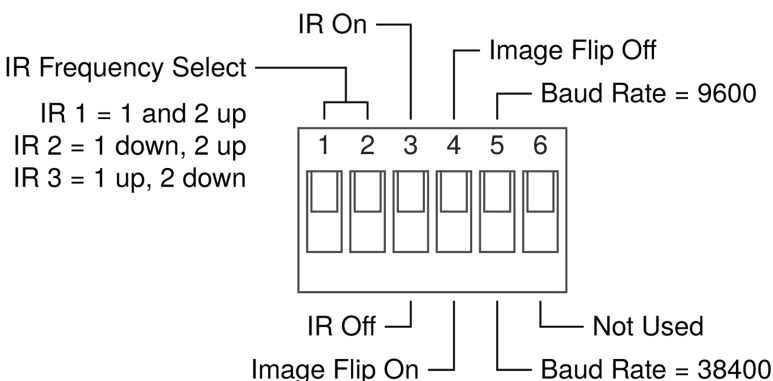
IR Frequency Selection: The IR Remote Commander can control up to three cameras in the same room independently, if they are configured with different IR frequencies. Use **switches 1 and 2** to select the frequency to identify the camera as camera 1, 2, or 3; then use the Camera Select buttons at the top of the remote to select the camera you want to control.

IR: Leave **switch 3** in the default UP position if the IR remote will be used.

Inverted operation: If mounting the camera upside-down, set **switch 4** to the DOWN position: IMAGE FLIP ON.

Baud Rate: Set the baud rate for RS-232 communication using **switch 5**. Most applications use 9600 bps (switch 6 UP), which is recommended when using long cable runs. Use the 38,400 bps setting (switch 6 DOWN) for short control lines only.

Switch 6 is not currently used.

```
                                 IR On ─┐
                                        │      ┌─ Image Flip Off
         IR Frequency Select ───────────┐│     │   ┌─ Baud Rate = 9600
            IR 1 = 1 and 2 up           ││     │   │
         IR 2 = 1 down, 2 up       1   2   3   4   5   6
         IR 3 = 1 up, 2 down      ┌─┐ ┌─┐ ┌─┐ ┌─┐ ┌─┐ ┌─┐
                                  │ │ │ │ │ │ │ │ │ │ │ │
                                  └─┘ └─┘ └─┘ └─┘ └─┘ └─┘

                    IR Off ─┘             └─ Not Used
              Image Flip On ─┘        └─ Baud Rate = 38400
```

Pro Tip
Double-check switch settings before you mount the camera.

Installation

This section covers
- Siting the camera
- Installing the mount
- Connecting the camera
- Installing the camera

Before You Install the Camera

- 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.
- If the IR Remote Commander will be used, ensure that nothing blocks the IR lens in the camera's base.
- Ensure that the camera body can move freely and point away from the ceiling and lights.
- Follow the installation instructions included with the camera mount.

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.

DomeVIEW enclosures are available to allow outdoor installation of RoboSHOT cameras. Learn more at www.vaddio.com/products.

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.

Caution
Check Cat-5 cables for continuity before using them. Using the wrong pin-out may damage the camera system and void the warranty.
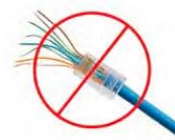
Note
Do not use pass-through RJ-45 connectors. These can cause intermittent connections and degraded signal quality, resulting in problems that may be hard to diagnose. Use standard RJ-45 connectors.

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

Installing the Wall Mount

All RoboSHOT cameras include a Thin Profile Wall Mount. Other mounting options are available as well. Contact us if you don't have the camera mount you need.

You can install the camera wall mount to a 2-gang wall box or directly to the drywall.

- If you mount it to drywall, use the wall anchors provided with the wall mount.
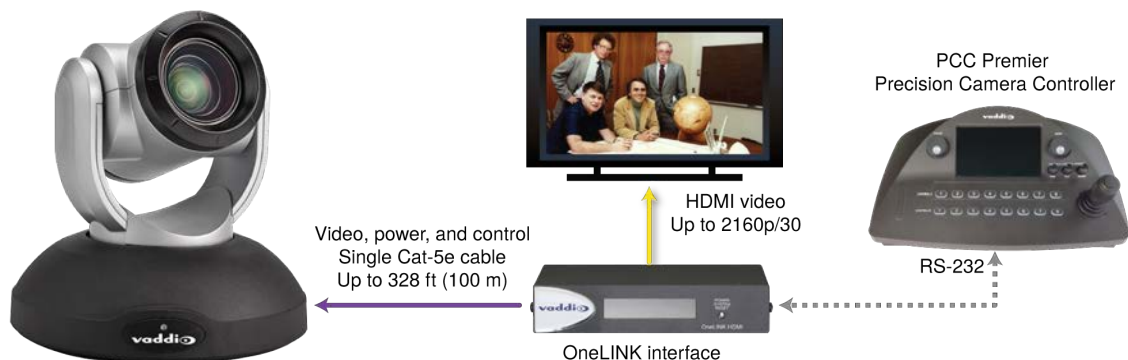- If you mount it to a wall box, use the cover plate screws supplied with the wall box.
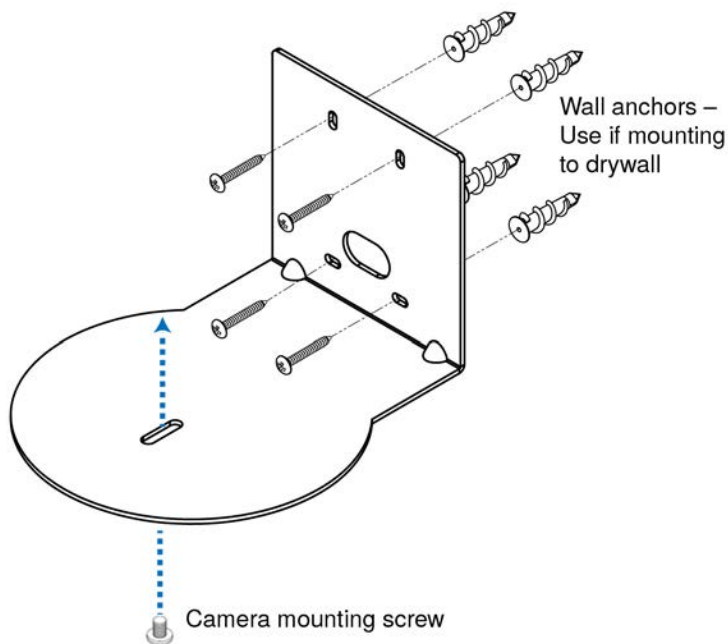
About Ceiling-Mounted Cameras

If you use an inverted mount, set the camera's Image Flip DIP switch ON for inverted operation. See Camera Settings for more information.

Basic Connection Diagram

The Quick-Start Guide for RoboSHOT 20 UHD provides additional information.

Note
The OneLINK™ interface is not required.

Installing the Camera

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. Route the cables to the camera location.
2. Route the cables through the mount, and install the mount on the wall or attach it to the wall box. Leave the screws loose enough to adjust the position of the mount.
3. Level the mount and tighten the mounting screws.
4. Check the level again.
5. Connect the cables to the camera.

    Caution:
    Use the power supply shipped with the camera. Using a different power supply may create an unsafe operating condition or damage the camera, and will void the warranty.

6. Ensure that the video resolution switch and the DIP switches are set appropriately. See Switch Settings.
7. Place the camera on the mount.
8. Attach the camera to the mount using the ¼"-20 x .375 mounting screw supplied with the camera.
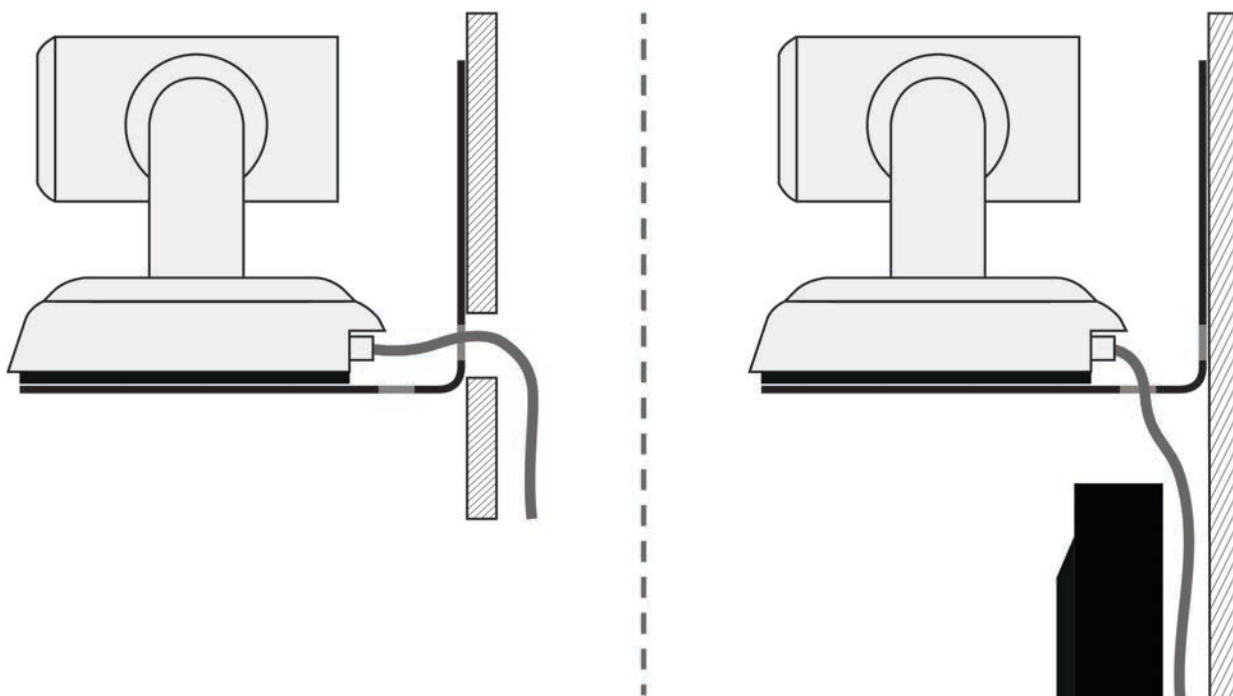
Image for illustration only; not to scale. Camera and mount details may differ.

Powering Up the Camera

Connect camera power.

The camera will wake up and initialize. This will take a few seconds. When the camera is initialized and ready, its front indicator is blue. At this point, it is ready to accept control information.

When powering up, the RoboSHOT 20 UHD camera executes a different sequence of movements than other Vaddio PTZ cameras.

Note
Wait until the camera finishes initializing before trying to control it using the IR remote or other command input.

Operation, Storage, and Care

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

Keep this device 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
- Between converging tectonic plates
- Dry environments with an excess of static discharge

Do not attempt to take this product apart. There are no user-serviceable components inside.

Next Steps

The camera is now ready to configure and use. This information is available in the **Configuration and Administration Guide for RoboSHOT 20 UHD Ultra High Definition PTZ Cameras**. It is also included in the **Integrator's Complete Guide to RoboSHOT 20 UHD Ultra High Definition PTZ Cameras**.

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'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicte 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: C E

EMC Directive 2004/108/EC	
EN 55022: December 2010	Conducted and Radiated Emissions
EN 55024: November 2010	Immunity
EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001	Electrostatic Discharge
EN 61000-4-3: 2006 + A1: 2008	Radiated Immunity
EN 61000-4-4: 2004 + Corrigendum 2006	Electrical Fast Transients
EN 61000-4-5: 2006	Surge Immunity
EN 61000-4-6: 2009	Conducted Immunity
EN 61000-4-8: 2010	Power Frequency Magnetic Field
EN 61000-4-11: 2004	Voltage Dips, Interrupts and Fluctuations
KN22 2008 (CISPR 22: 2006)	Conducted and Radiated Emissions
KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)	IT Immunity Characteristics
EN 61000-4-2	Electrostatic Discharge
EN 61000-4-3	Radiated Immunity
EN 61000-4-4	Electrical Fast Transients
EN 61000-4-5	Surge Immunity
EN 61000-4-6	Conducted Immunity
EN 61000-4-8	Power Frequency Magnetic Field
EN 61000-4-11	Voltage Dips, Interrupts and Fluctuations
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

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 varranty: 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

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