Installation Guide for the

DocCAM 20 HDBT

Ceiling-Mounted Document Camera

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Overview

This guide describes installation and related information for the DocCAM 20 HDBTceiling-mounted document camera:

- Camera only, North America – 999-9968-000
- Camera only, Europe/UK – 999-9968-001
- Camera with OneLINK HDMI, North America – 999-9968-200
- Camera with OneLINK HDMI, Europe/UK – 999-9968-201
- Camera with OneLINK Bridge, North America – 999-9968-300
- Camera with OneLINK Bridge, Europe/UK – 999-9968-301

What's in this Guide

This guide covers:

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

Complete product information is available in the **Integrator's Complete Guide to the DocCAM 20 HDBT Ceiling-Mounted Document Camera**.

Download manuals, dimensional drawings, and other information from www.vaddio.com/support.

Features

- Exmor® 1/2.8 type, high-speed, low-noise image sensor for 2.38 megapixels total, full HD (native 1080p/60)
- 20x optical zoom with horizontal field of view from 59.5° (wide end) to 3.3° (tele end)
- Low-power laser pointer for centering
- Superior low-light performance (0.4 Lux)
- Web interface for remote administration and operation, integration-ready Telnet and serial RS-232 control, presenter-friendly IR remote control
- Use with a OneLINK device for power, video, and control:
  - OneLINK HDMI – uncompressed HDMI video, bidirectional RS-232 connectivity for camera control via third-party equipment, passes IP stream from the camera
  - OneLINK Bridge – OneLINK HDMI capabiliities plus uncompressed USB 3.0 streaming, HD-SDI output, and audio routed up to the camera and injected into the IP stream

Unpacking the Camera

Make sure you receive all the items you expected.

DocCAM 20 HDBT, North America

999-9968-000

- DocCAM 20 HDBT camera and enclosure
- PoE+ power injector with AC cord set for North America
- Trim ring with mounting screws
- Tile support brace
- IR remote

DocCAM 20 HDBT, Europe/UK

999-9968-001

- DocCAM 20 HDBT camera and enclosure
- PoE+ power injector with AC cord sets for Europe and UK
- Trim ring with mounting screws
- Tile support brace
- IR remote

DocCAM 20 HDBT with OneLINK HDMI, North America

999-9968-200

- DocCAM 20 HDBT camera and enclosure
- OneLINK HDMI Receiver kit – includes receiver, 48 VDC power supply and AC cord set for North America
- Trim ring with mounting screws
- Tile support brace
- IR remote

DocCAM 20 HDBT with OneLINK HDMI, Europe/UK

999-9968-201

- DocCAM 20 HDBT camera and enclosure
- OneLINK HDMI Receiver kit – includes receiver, 48 VDC power supply and AC cord sets for Europe and UK
- Trim ring with mounting screws
- Tile support brace
- IR remote

DocCAM 20 HDBT with OneLINK Bridge, North America

999-9968-300

- DocCAM 20 HDBT camera and enclosure
- OneLINK Bridge AV Interface kit – includes AV interface, 48 VDC power supply and AC cord set for North America
- 3-position Phoenix-type connectors (qty. 4)
- USB 3.0 cable, type A to type B, 6 ft (1.8 m)
- Trim ring with mounting screws
- Tile support brace
- IR remote

DocCAM 20 HDBT with OneLINK Bridge, Europe/UK

999-9968-301

- DocCAM 20 HDBT camera and enclosure
- OneLINK Bridge AV Interface kit – includes AV interface, 48 VDC power supply and AC cord sets for Europe and UK
- 3-position Phoenix-type connectors (qty. 4)
- USB 3.0 cable, type A to type B, 6 ft (1.8 m)
- Trim ring with mounting screws
- Tile support brace
- IR remote

Note

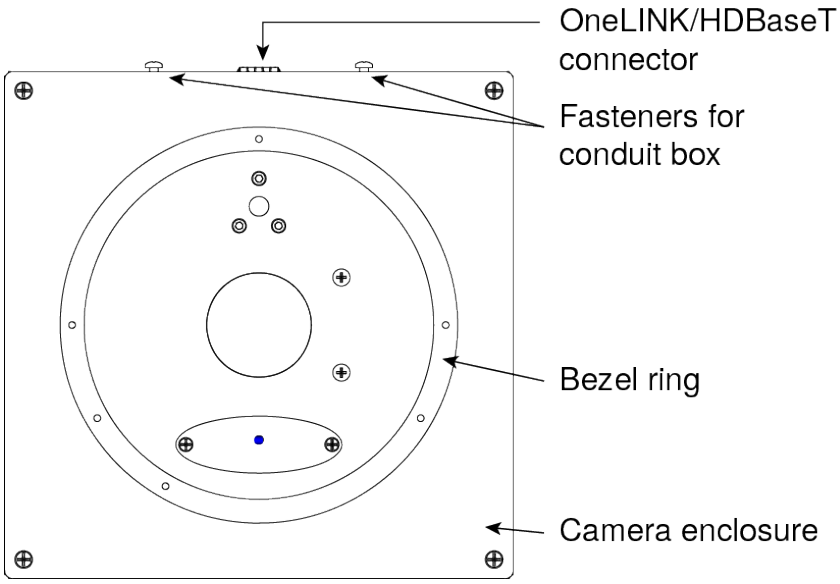
The mounting hardware that ships with the camera is designed for dropped acoustic tile ceilings. If you plan to mount the camera in a hard ceiling (gypsum board or wood), you will need mounting kit 998-2225-152.

A Quick Look at the Camera

The DocCAM 20 HDBT ceiling-mounted document camera is designed for recessed mounting. The features of interest during installation are not visible after the installation is complete.

Features of Interest During Installation

- **Camera enclosure** – 8 x 8 x 5.1 inches (20.3 x 20.3 x 12.9 cm) installed. Placed on a tile support brace when installed in a dropped tile ceiling.
- **Bezel ring** – Extends 0.5 inch from the front face of the camera enclosure; includes threaded holes to attach the trim ring.
- **OneLINK/HDBaseT connector** – Connects to a PoE+ power injector or a OneLINK device for power and all connectivity. When installed, the connector side points in the direction that the top of the document or other camera subject will face.
- **Fasteners for conduit box** – For installations that require all cabling to be routed through conduit, the conduit box is installed after the camera cable is connected. The conduit box is not supplied with this product.



Caution
This product contains a 5 mw, 650 nm red laser which produces visible laser radiation. Avoid direct eye exposure. Do not look at the laser aperture during camera operation.

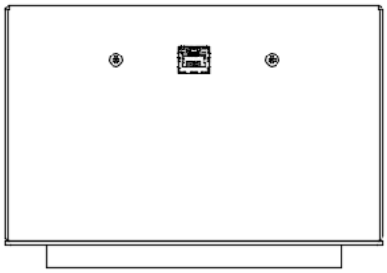
Caution
Laser controls are available to remote operators using the web interface. Keep your eyes out of the beam path when the camera is connected to power.

Connector Panel

The DocCAM 20 HDBT has one connector, the OneLINK/HDBaseT connector. When installed, the connector points in the direction of the top of the document or other camera subject – for example, toward the audience in a lecture hall.

The camera has no physical switches. Configuration is via the web interface.

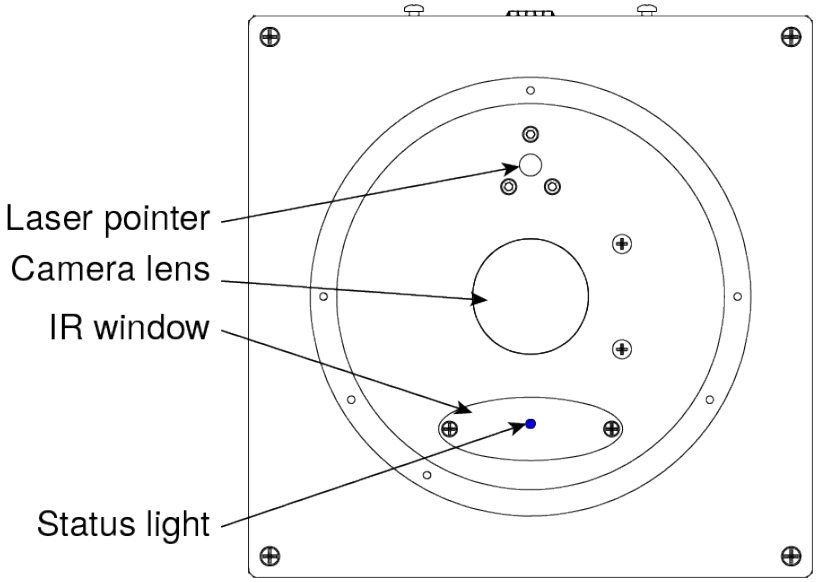
This is it: The Art of Easy.



Features of Interest During Operation

- **Camera lens** – 20x optical zoom lens for crisp detail.
- **Laser pointer** – Shows where the camera image is centered. Use the remote to turn on the laser pointer.
- **IR window** – Sensors in the camera face receive signals from the remote. Point the remote toward the camera; precision is not necessary.
- **Status indicator** – The multicolored LED indicates the camera's current state.

In a typical installation, only the items inside the bezel ring are visible.



Installation

This section covers

- Selecting the location for the camera
- Preparing the ceiling
- Connecting the camera
- Completing the installation

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 the power supply, power injector, or camera extension device included with or recommended for use with this product.

For products with power supplies, using the wrong power supply will void the warranty, and could create unsafe operating conditions or damage the product. Note that power supplies for different products may look nearly identical – always check the label for the output voltage.

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.

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

Use standard RJ-45 connectors and a good crimping tool. Do not use pass-through RJ-45 connectors. Poorly crimped connectors can damage the connectors on the product, cause intermittent connections, and degrade signal quality. Test cable pin-outs and continuity before connecting them.

Intact – Contact fingers will make reliable contact with the cable connector

Damaged – Some contact fingers are bent and will NOT make reliable contact with the cable connector

Pro Tip

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

Things You Will Need

Before you start, be sure you have what you need:

- Access to the area above the ceiling
- Plumb line
- Pencil
- Appropriate tools for cutting a hole in the ceiling
- #2 Phillips screwdriver
- Conduit box, if required

Selecting the Installation Area

This product is designed for installation in a suspended ceiling tile above a conference table, lectern or work surface. Mounting kit 998-2225-152 is available for gypsum board (drywall) or wood ceilings.

Note

All above-ceiling work must conform to local building codes and should be performed by qualified personnel.

1. Use the plumb line to determine the ideal camera location, centered above the surface where documents or other objects will be placed, and mark the desired center.
2. Verify that the area above the ceiling where the camera is to be installed is clear of obstructions and provides enough room for the camera enclosure:
   - 8 inch by 8 inch (20.3 cm x 20.3 cm) footprint, aligned to the work surface where the camera's subject is placed
   - Minimum 5.6 inches of clear space above the camera opening to maneuver the camera into place

Preparing the Installation Area

The DocCAM 20 HDBT can be installed in a dropped acoustic tile ceiling or in a wood or drywall ceiling. Total installed weight is roughly 5.1 lbs (2.3 kg).

Preparing a Tile Ceiling

1. Remove the ceiling tile where the camera will be mounted.
2. Use the tile support brace as a template to trace the camera opening on the front side of the tile.
3. Cut the camera opening.
4. Ensure that the tile fits over the camera's bezel ring.
5. Place the tile back in the ceiling grid.
6. Place the tile support brace above the tile, aligning it to the hole in the tile.
7. If required, secure the tile support brace to the building structure. The ends have holes to accommodate support wires.

   Note

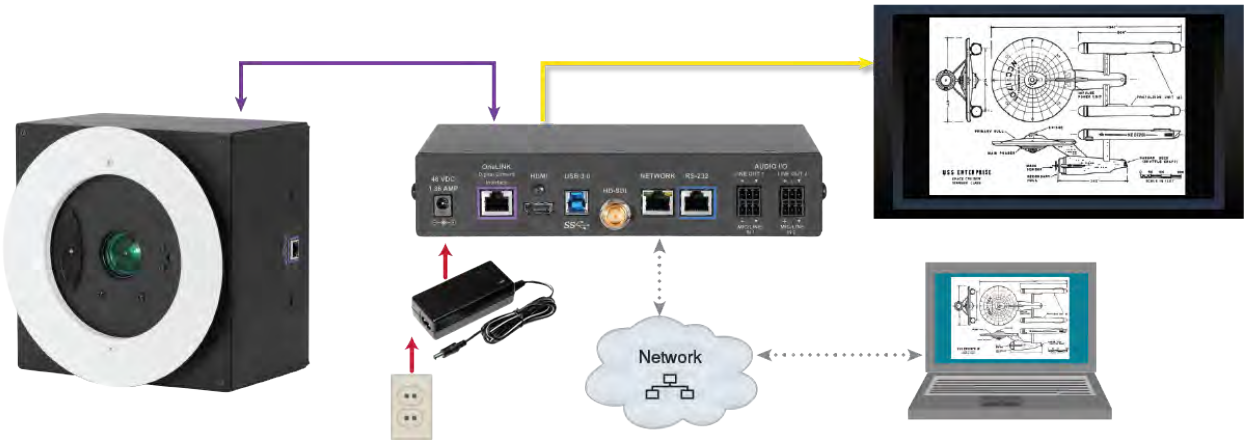
   This step is optional unless local building codes require it.

Preparing a Solid Ceiling

1. Trace a 6.25 inch diameter circle for the camera opening.
2. Cut the camera opening.
3. Ensure that the camera's bezel ring fits through the opening.
4. Install hard ceiling mounting kit 998-2225-152 according to the instructions supplied with it.

Basic Connection Diagram

The diagram below shows basic connections with a OneLINK Bridge AV Interface providing camera power, control, and video from the camera to other devices.



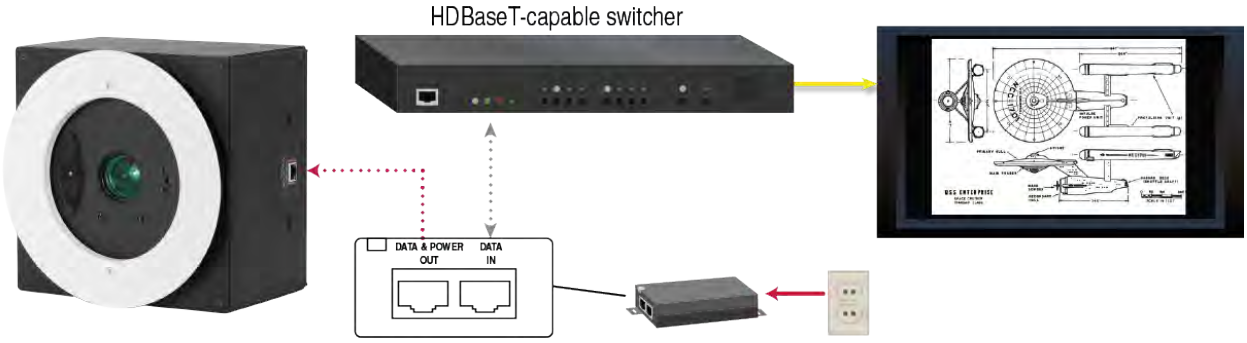
Note

The OneLINK device is not required; the camera can be connected directly to a third-party device with a PoE+ power injector.

Options for Power and Other Connections

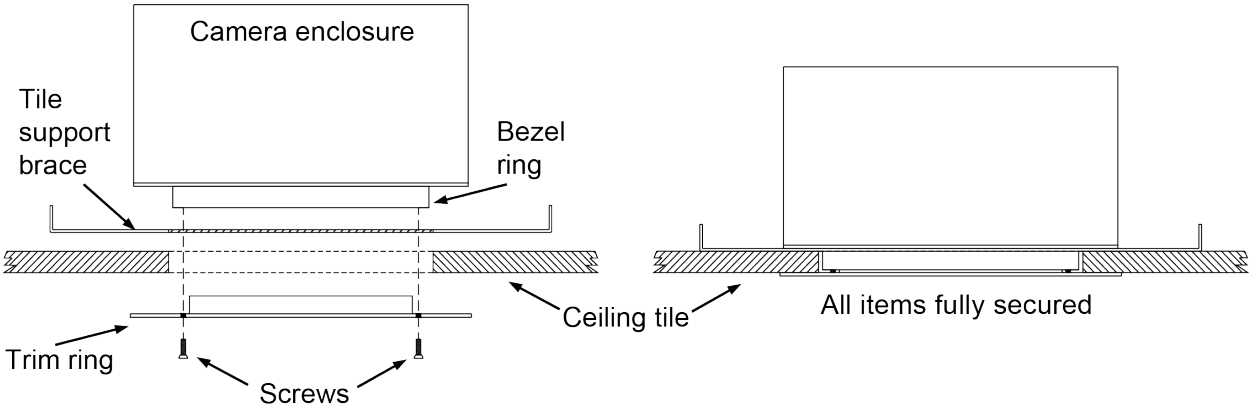
Connect the camera to a OneLINK HDMI or a OneLINK Bridge AV Interface – a single Cat-5e (or better) cable provides power to the camera, along with HDBaseT network and video connectivity. Network, video output, and RS-232 control are connected at the OneLINK device. The OneLINK Bridge also provides audio connections.

Use a PoE+ power injector – Connect to a third-party control device through a PoE+ power injector.



Completing the Installation

1. Connect the camera cable to the camera, routing it through a conduit box if required.
2. If using conduit, attach the conduit box to the camera enclosure using the threaded inserts on either side of the cable connector.
3. Seat the camera in place, with the bezel ring in the opening.
4. Rotate the camera so that the cable connector is facing the same direction as the top of the document or other photographic subject.
5. Secure the trim ring to the camera bezel ring using the screws provided with it.



6. Connect the camera cable to the PoE+ injector or the OneLINK device, as applicable.

Note

After the camera is powered on, check the image and rotate the camera as needed to align it.

Powering Up the Camera

Connect power to the OneLINK device or mid-span power injector that supplies power and connectivity to the camera.

The camera will take a few seconds to initialize. When the camera is ready, its status light is blue. At this point, video is available and the camera is ready to accept control information.

Caution
This product contains a 5 mw, 650 nm red laser which produces visible laser radiation. Avoid direct eye exposure. Do not look at the laser aperture during camera operation.

Caution
Laser controls are available to remote operators using the web interface. Keep your eyes out of the beam path when the camera is connected to power.

Note
Wait until the camera finishes initializing before trying to operate or control it.

Status Light

The light in the camera's face indicates its current state.

Caution
This product contains a 5 mw, 650 nm red laser which produces visible laser radiation. Avoid direct eye exposure. Do not look at the laser aperture during camera operation.

Caution
Laser controls are available to remote operators using the web interface. Keep your eyes out of the beam path when the camera is connected to power.

- **Blue:** Normal operation (blinks off momentarily when the camera receives a command from the remote)
- **Purple:** In standby mode or booting
- **Yellow:** Firmware update in progress

Next Steps

The camera is now ready to configure and use. This information is available in the **Configuration and Administration Guide for the DocCAM 20 HDBT Ceiling-Mounted Document Camera**. It is also included in the **Integrator's Complete Guide to the DocCAM 20 HDBT Ceiling-Mounted Document Camera**.

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 2014/30/EU	Class A
EN 55032: 2015	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:

CE

EMC Directive 2014/30/EU	
EN 55032: 2015	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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