



Installation Guide for the

## **DocCAM 4K HDBT**

Ceiling-Mounted Document Camera

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## Overview

This guide describes installation and related information for the DocCAM 4K HDBT ceiling-mounted document camera:

- Camera only, Worldwide 999-99680-000
- Camera with OneLINK HDMI cam extension, North America – 999-9680-200
- Camera with OneLINK HDMI cam extension, Europe/UK – 999-99680-201
- Camera with OneLINK Bridge A/V interface, North America – 999-99680-300
- Camera with OneLINK Bridge A/V interface, Europe/UK – 999-99680-301



## 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 4K HDBT Ceiling-Mounted Document Camera**.

Download manuals, dimensional drawings, and other information from [www.legrandav.com/vaddio](http://www.legrandav.com/vaddio).

## Features

- Exmor® 1/2.5 type, Exmor R CMOS low-noise image sensor for 8.57 megapixels total, native 2160p/29.97.
- 2160p/29.97 HDMI, HDBT outputs, 1080p/59.94 3G SDI output.
- 20x optical, +10X digital zoom with horizontal field of view from 70.2° (wide end) to 3.1° (tele end)
- Low-power laser pointer for centering, adjustable laser x and y position for distance compensation
- 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 2160p/30 HDMI, HDBT video, bidirectional RS-232 connectivity for camera control via third-party equipment, passes IP stream from the camera
  - OneLINK Bridge – OneLINK HDMI capabilities plus uncompressed USB 3.0 streaming, 3 Gb HD-SDI Output (1080p/59.94 maximum), and audio routed up to the camera and injected into the IP stream

## Unpacking the Camera

### Note

This camera is shipped with a mounting kit for use in suspended acoustic tile ceilings. If you plan to mount the camera in a hard ceiling (such as gypsum board), you will need mounting kit 998-2225-152.

Make sure you receive all the items you expected.

### DocCAM 4K HDBT, camera only

999-99680-000 – Worldwide

- DocCAM 4K HDBT camera
- Trim ring with mounting screws
- Tile support brace
- IR remote



### DocCAM 4K HDBT with OneLINK HDMI

999-99680-200 – North America

999-99680-201 – Europe/UK

- DocCAM 4K HDBT camera
- OneLINK HDMI Receiver kit – includes receiver, 48 VDC power supply and AC cord set(s)
- Trim ring with mounting screws
- Tile support brace
- IR remote



### DocCAM 4K HDBT with OneLINK Bridge

999-99680-300 – North America

999-99680-301 – Europe/UK

- DocCAM 4K HDBT camera
- OneLINK Bridge AV Interface kit – includes AV interface, 48 VDC power supply and AC cord sets
- 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



## A Quick Look at the Camera

The DocCAM 4K HDBT ceiling-mounted document camera is designed for recessed mounting. The features of interest during installation are not visible after the installation is complete.

**Camera assembly numbers 998-99680-000:**

*Class 1 Laser Product (IEC 60825-1:2014)*

*Produit Laser de la Classe 1 (IEC 60825-1:2014)*

*Klass 1 Laserprodukt (IEC 60825-1:2014)*

**Note**

*This product contains a Class 1, 650 nm red laser pointer.*

*Cet appareil contient un pointeur laser de la Classe 1, à lumière rouge de 650 nm.*

**All DocCAM 4K HDBT part numbers:**

**Caution | Avertissement**

*Laser light – Avoid direct eye exposure. Do not look at the laser aperture during camera operation.*

*Lumière de laser – Ne regardez pas directement dans le faisceau laser. Ne regardez pas directement dans l'ouverture laser lorsque la caméra est en marche.*

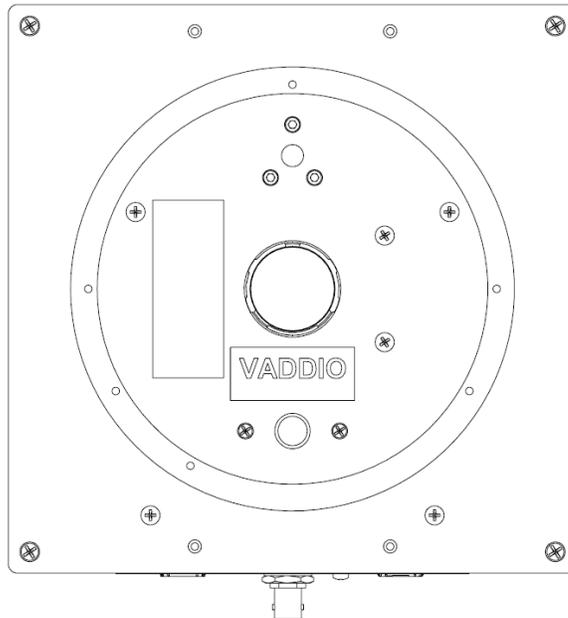
**Caution | Avertissement**

*Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.*

*L'utilisation de commandes, réglages ou instructions autres que ceux spécifiés présente un risque d'exposition dangereuse aux radiations laser.*

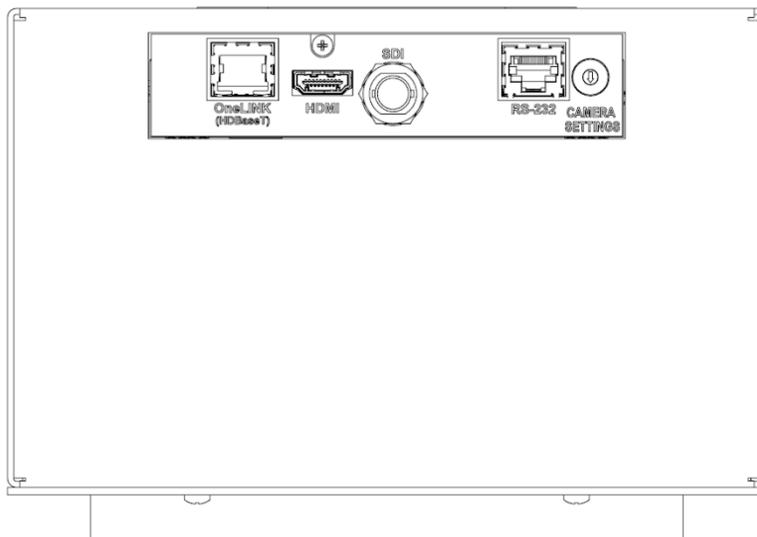
## Features of Interest During Installation

- **Camera enclosure** – 8 x 8 x 5.1 inches (20.3 x 20.3 x 12.9 cm).
- **Bezel ring** – 8.20" (208mm) diameter, extends 0.5 inch from the front face of the camera enclosure; includes threaded holes to attach the trim ring. Maximum ceiling thickness .875" (22mm) with included 6-32 x 1/2" white bezel screws.
- **OneLINK/HDBaseT connector** – Combined power and all connectivity on one cable (if used).
- **Video connector panel** – HDMI, Ethernet/HDBT, local 3G SDI, video resolution rotary switch.



## Connector Panel

The DocCAM 4K HDBT has an exposed jack panel for connections. When installed, the connectors point in the direction of the top of the document video or other camera subject – usually toward the audience. The camera has one video resolution rotary switch. Video resolution configuration is also available via the web interface. Priority can be configured for soft (Web UI) control, or rotary switch control.



## Features of Interest During Operation

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

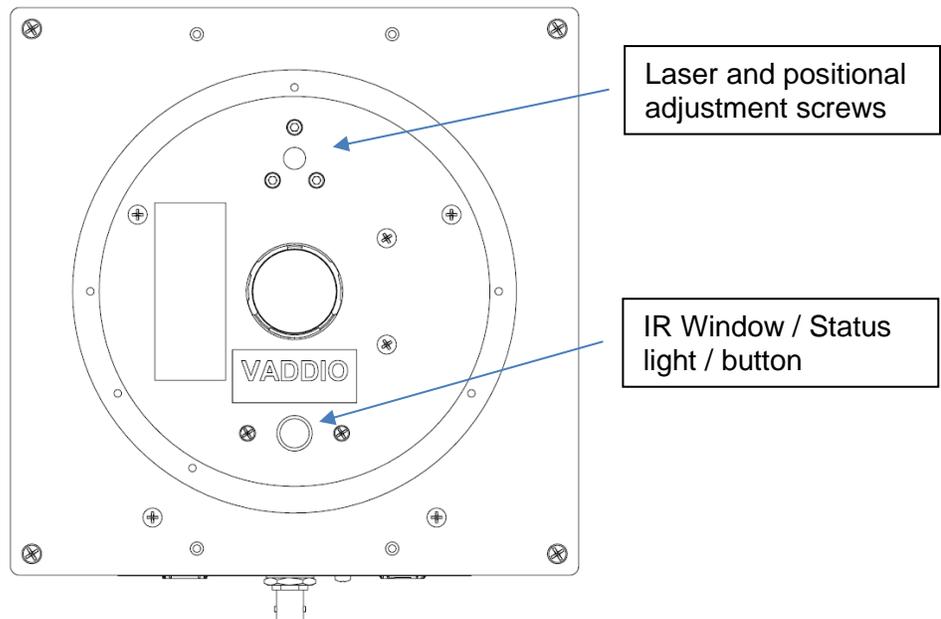
- **Camera lens** – 30x optical zoom for crisp detail.
- **Laser pointer** – Shows where the camera image is centered. Use the remote or web UI to turn on the laser pointer.

### **Caution / Avertissement**

*Laser light – Avoid direct eye exposure. Do not look at the laser aperture during camera operation.*

*Lumière de laser – Ne regardez pas directement dans le faisceau laser. Ne regardez pas directement dans l'ouverture laser lorsque la caméra est en marche.*

- **Combination IR window / Status light / button** – Sensors in the camera face receive signals from the remote. Point the remote toward the camera; precision is not necessary. The multicolored LED indicates the camera's current state.



### **Caution / Avertissement**

*Laser controls are available to remote operators using the web interface. Keep your eyes out of the beam path. Don't point at co-workers, even if it sounded funny in your head.*

*Les commandes laser sont disponibles aux opérateurs à distance utilisant l'interface Web. Gardez les yeux hors du trajet du faisceau.*

## Installing the Camera

This section covers:

- Connections and pre-installation functional check
- Selecting the location for the camera
- Preparing the ceiling
- Installing 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.*

*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.*

*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.*

### 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 terminated cables can damage the connectors on the product, cause intermittent connections, and degrade signal quality. Test cable pin-outs and continuity before connecting them.*



**Intact** – will make reliable contact with cable connector



**Damaged** – Bent contact fingers will NOT make reliable contact with cable connector



#### **Pro Tip**

*To prevent tragic mishaps, label both ends of every cable. Avoid using spaghetti as interconnect, the tomato sauce dries and makes for poor connections. “O-shaped” spaghetti is useless for connectivity.*

## Pre-Installation Functional Check

Before you install the camera, verify that it powers up and sends video. Referring to the basic connection diagrams, connect the camera and verify that video is available on the connected display.

When you have verified that the camera operates properly, disconnect it and continue with the installation.

### **Camera assembly numbers 998-99680-000:**

#### **Note**

*This product contains a Class 1, 650 nm red laser pointer.*

*Cet appareil contient un pointeur laser de la Classe 1, à lumière rouge de 650 nm.*

### **All DocCAM 4K HDBT part numbers:**

#### **Caution | Avertissement**

*Laser light – Avoid direct eye exposure. Do not look at the laser aperture during camera operation.*

*Lumière de laser – Ne regardez pas directement dans le faisceau laser. Ne regardez pas directement dans l'ouverture laser lorsque la caméra est en marche.*

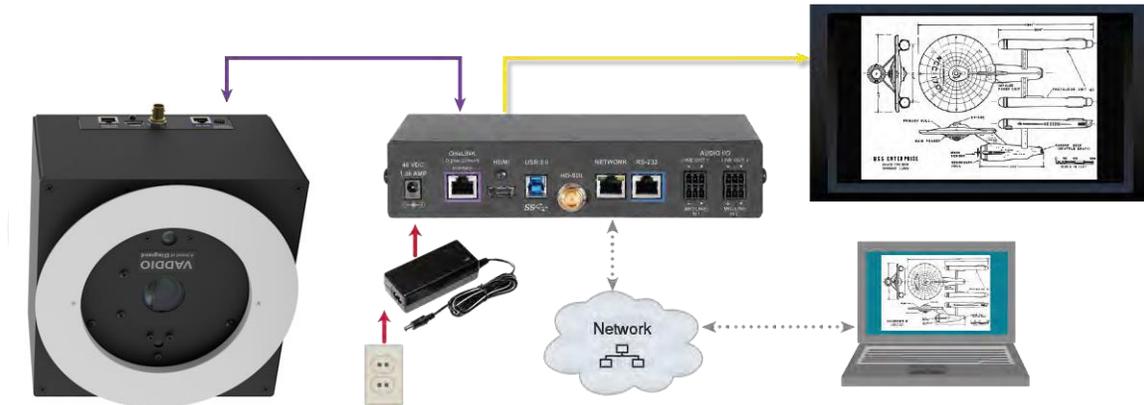
#### **Caution | Avertissement**

*Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.*

*L'utilisation de commandes, réglages ou instructions autres que ceux spécifiés présente un risque d'exposition dangereuse aux radiations laser.*

## 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. A OneLINK HDMI connects in the same fashion. USB connection optional.



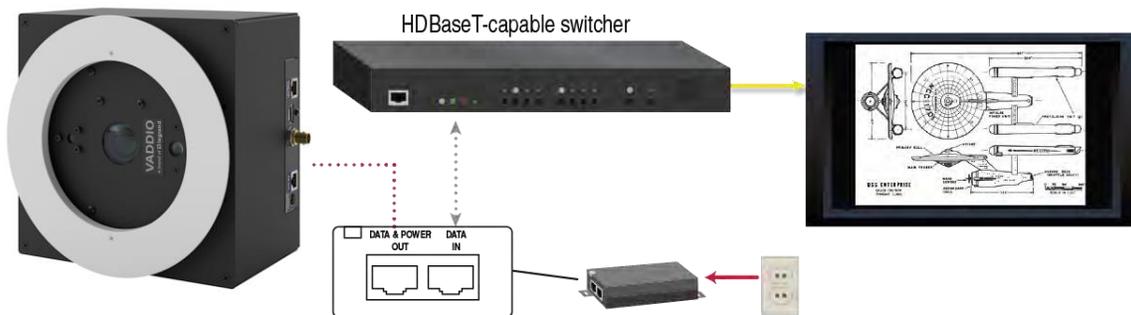
### Note

The OneLINK device is recommended but not required; the camera can be connected directly to a third-party device with a PoE+ power injector (not provided). PoE+ mid-span power injector part numbers 451-0800-055 (North America) and 451-0800-155 (Europe and UK) are compatible with this camera.

## 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. OneLINK Bridge provides a USB 3.0 connection if desired.

**Use a PoE+ power injector** – Connect to a third-party destination or control device through a PoE+ power injector (not provided). PoE+ power injector requirements are 25 watts (delivered) for this camera. Vaddio power injector part numbers 451-0800-055 (North America) and 451-0800-155 (Europe and UK) are compatible with this camera.



### Note

The OneLINK device is recommended but not required. The camera can be connected with a PoE+ power injector.

### Pro Tip

HDBT signaling through a Mid-span style power injector will often be problematic, it is advised to use a HDBT destination which can power an upstream device when used with this camera. Some manufacturers choose to not implement HDBT chips with all the features enabled. Verify any 3<sup>rd</sup> party HDBT equipment supports all 5-play features if power is expected.

## About Installation Height and Viewing Area

The camera may be installed in a ceiling up to 40 ft (12.2 m) high, depending on the desired viewing area.

*When installed in a 9 ft (2.75 m) ceiling, such as a small classroom:*

- Minimum viewing area is smaller than a business card
- Maximum viewing area is nearly 7 ft x 4 ft (over 2 m x 1 m)

*When installed in a 30 ft (9.1 m) ceiling, such as a large lecture hall:*

- Minimum viewing area is smaller than a sheet of letter-size or A4 paper
- Maximum viewing area is over 30 ft x 17 ft (over 9 x 5 m)

The Image Size Calculator on our website can help you to determine the minimum and maximum viewing areas with more precision.

## Selecting the Installation Area

The DocCAM 4K HDBT can be installed in a suspended acoustic tile ceiling or in a wood or drywall ceiling. Wood or drywall ceiling installations can be simplified with the accessory Vaddio Hard Ceiling Installation kit (p/n 998-2225-152). Total installed weight is roughly 4.2 lbs (2.3 kg), plus tile brace if used.

### **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. Determine the exact alignment of the camera with respect to the intended subject.

### **Note**

*The image cannot be rotated. If installing in a hard ceiling, the camera cannot be rotated after installation.*

3. 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 opening to maneuver the camera into place

## Things You Will Need for the Installation

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
- Hard Ceiling mounting kit 998-2225-152, is available if installing in a gypsum board (drywall) or other non-suspended/ Hard ceiling. Installation is easiest if there is access to the rear/top of the document camera.

## Installing the Power Source

You can connect the camera to the IP network using a mid-span power injector, or you can connect it to a OneLINK device. If you use a OneLINK device, it may be installed up to 328 ft (100 m) from the camera.

**Note**

*If you purchase only the camera (999-99680-000), no power source is included with the camera.*

1. Install the power injector or OneLINK device before installing the camera enclosure.
2. Route the camera cable from the power injector or OneLINK device to the camera enclosure location.

## Installing the Camera in a Suspended Tile Ceiling

The camera is shipped with the ceiling mount for this type of installation.

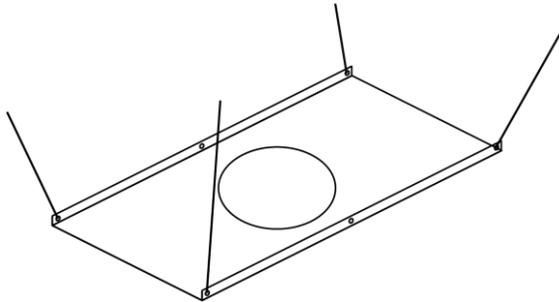
The camera is mounted from above the ceiling, through a round hole, with only the bezel and the features inside it accessible from below. The camera rests on a support plate that distributes its weight across the ceiling tile; the support plate may also be suspended. A trim ring conceals the camera bezel and the adjacent portion of the ceiling tile.

### Preparing the Tile Ceiling

#### **Note**

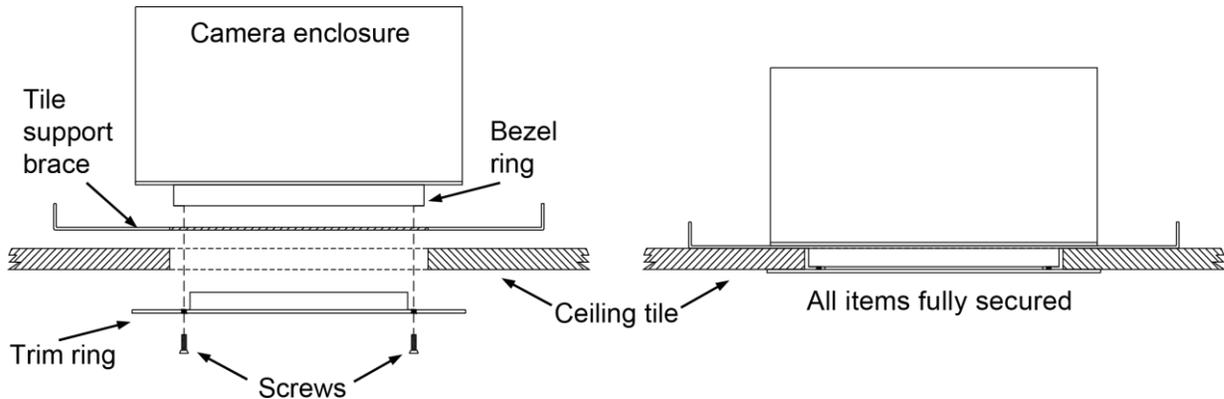
*All above-ceiling work must conform to local building codes and should be performed by qualified personnel.*

1. Remove the ceiling tile where the camera will be mounted.
2. Trace a 6.25 in. (15.9 cm) circle for the camera opening on the front side of the tile. You can use the tile support brace as a template.
3. Cut the camera opening.
4. Ensure that the camera's bezel ring fits into the opening. The bezel ring stands out 0.5 in (12.7 mm) from the camera face, the thickness of most suspended ceiling tiles.
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. Secure the tile support brace to the building structure using appropriate hardware such as Chief's "Speed Connect Hardware Kit," part number CMSHDW. The ends have holes to accommodate support wires.



## Completing the Installation in a Tile Ceiling

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 connectors are facing the same direction as the bottom 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 OneLINK device or customer-provided PoE+ power injector.

### Note

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

## Installing the Camera in a Hard Ceiling

You will need mounting kit 998-2225-152 to install the camera in a gypsum board (drywall) or wood ceiling. *This mounting kit is not included with the camera.*

The camera is raised into place through a square hole in the ceiling, and attached from below using two mounting plates. A large trim ring conceals the portion of the camera enclosure outside the bezel and the camera mounting plates.

### Preparing the Hard Ceiling

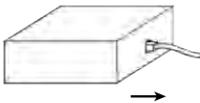
Follow these steps to mount the camera in a gypsum board or other non-suspended ceiling using Hard Ceiling Mounting Kit 998-2225-152.

### Note

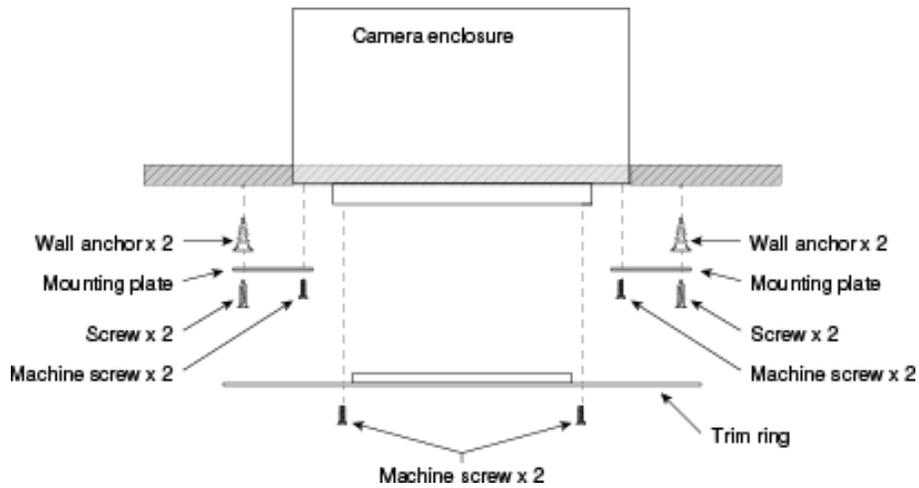
All above-ceiling work must conform to local building codes and should be performed by qualified personnel.

1. Determine the exact alignment of the camera with respect to the subject. The camera face with the connector must point in the same direction as the top of the document or other camera subject.
 

**Note**  
*The image cannot be rotated. Ensure that the camera opening is aligned precisely.*
2. Trace a square, 8.125 x 8.125 inch (20.7 x 20.7 cm), for the camera opening.
3. Cut the camera opening.



## Completing the Installation in a Hard Ceiling



1. Attach the mounting plates to the camera with the black machine screws.
2. Lift the camera into place and mark the locations to drill into the ceiling.
3. Drill the holes and install the screw anchors.
4. Connect the camera cable to the camera, routing it through a conduit box if required.
5. Lift the camera into place and secure it with the 1 1/4 in. screws.
6. Attach the trim ring to the camera's bezel ring with the white machine screws.
7. Connect the camera cable to the OneLINK device or customer-provided PoE+ power injector.



## Powering Up the Camera

Connect power to the OneLINK device or PoE+ power injector that supplies power and connectivity to the camera.

**Note**

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

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.

Once installed, it may be required to center the courtesy location laser dot in the middle of the video image. This adjustment for centering the dot in the middle of the camera image can be achieved by adjusting the (3) socket head cap screws around the laser on the face of the doc cam.

1. Enable laser with IR remote or web UI. Turn any of the screws with a 5/64 (0.077") allen wrench or hollow key tool.
2. Adjust these only a small amount and view progress from the output of the camera to insure left/right and up/down centering. Loosen or tighten the screws until dot is centered
3. Disable laser

## Status Light

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

### **Note**

*By default, the camera's status light is active during normal operation; however, it can be configured to remain off when the camera is powered up. The camera may be sending video even if the indicator light is off. This light indicator is also a button and the IR receiver.*

- **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 – overrides status light configuration



## Next Steps

The camera is now ready to configure and use. This information as well as web User Interface details are available in the more extensive **Integrator's Complete Guide to the DocCAM 4K HDBT Ceiling-Mounted Document Camera**. Any additional resources are available in the Resources & Tools section of the product specific web page at [www.legrandav.com/vaddio](http://www.legrandav.com/vaddio).



## Warranty Information

See Vaddio Warranty, Service and Return Policies posted on [Legrand AV Brands Warranty Information | Legrand AV](#) for complete details. **Hardware\* warranty:** Three (3) 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 three 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 [av.vaddio.techsupport@legrand.com](mailto:av.vaddio.techsupport@legrand.com) or by phone at one of the phone numbers listed on [Contact Us - United States | Legrand AV](#).

**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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