

Complete Guide For VideoLabs Flexible

Camera Series

Installation & User Guide

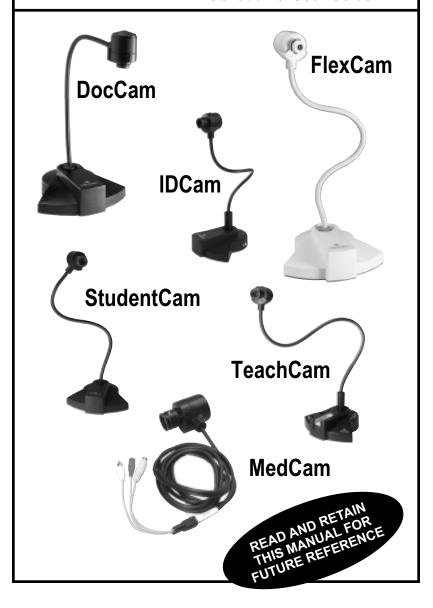


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VideoLabs Flexible Camera Series Installation and User Guide

These six versatile cameras are compact, precision instruments designed for accuracy, ease of use and maximum flexibility. The Flexible Camera Series was carefully designed to meet highly specialized needs of the educational, medical and security industries. Please read these instructions carefully and keep this guide for future reference.

READ FIRST:

How to Use This Manual

Find your camera(s) in the product section beginning on page 8. Read all the information about camera function and use. Identify the accessories packed with your camera. then turn to **Getting Started** (below) to get your camera ready for operation.

Also see the list of optional accessories on page 13. Information on VCR, TV and computer compatibility, care and handling, troubleshooting, technical specifications and VideoLabs warranty follow.

Getting Started

1. Unpack the Camera

Unpack camera, cables and accessories. Carefully place camera unit on a level surface. Identify all parts using the descriptions provided for your specific camera.

Camera Base

The camera base contains five rubber feet for non-slip support of the camera. The rubber feet also protect screw holes made during assembly.

Camera Head

This pre-assembled unit contains the camera lens, lens holder, focus ring attachments, connections to gooseneck and all cables. Do not turn camera head more than 30° left or 30° right.



Do not attempt to take the camera apart. There are no user-serviceable components inside.

Camera Lens and Lens Holder

The camera lens is a pre-manufactured unit held in place by the lens holder. Both are permanently attached to the camera head. <u>Do not</u> try to rethread or unscrew the lens holder.

Gooseneck

The flexible gooseneck adjusts the camera head/camera lens over the projected image. <u>Do not</u> bend the gooseneck more than 90° in any direction or attempt to tie it in a knot. <u>Do not</u> attempt to repair any cracks in the vinyl coating. The gooseneck is non-detachable and should be replaced only by VideoLabs.

2. Plug In

Plug in all cables. Using only a VideoLabs power supply, plug into wall mounted electrical outlet or grounded power strip.

Wall Mounted Power Supply Sources

Use the wall mount power supply provided with the camera (Figure 1). Using a different wall mount power supply may cause the camera to malfunction or damage the camera.



Figure 1 - Power supply.

VideoLabs Serial Numbers

Serial numbers for all cameras are located on the bottom of the camera base. Warranty is voided if this number is tampered with or removed.

Plug(s)

The connectors for VideoLabs cameras are located on the rear of the camera bezel, behind and below the gooseneck. Connect audio and S-Video out connections (Figure 2) using a VideoLabs supplied cable and connect the VideoLabs supplied power supply to the power-in jack.

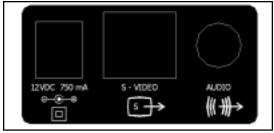


Figure 2 - Camera backplate.

Connector Pins

Detachable VideoLabs cables (S-Video or Composite) have color-coded wires and connector pins (Figure 3).

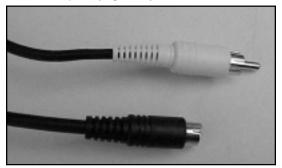


Figure 3 – Camera connector pins for S-Video or Composite.

Jack(s)

An RCA jack is attached to the pigtail adapter cable. <u>Do not</u> force the jack into your TV or VCR plug if there is resistance. Align then insert the jack.

Cable and Cable Breakouts

Each flexible gooseneck camera is equipped with a connection cable. This cable connects to the camera base on the FlexCam, StudentCam, IDCam and TeachCam. The DocCam has an 8-Pin DIN connector.



Figure 4 - Modular cable.



Tampering with these connectors will void warranty.

NOTE:

Audio connection is not required for video only image.

NOTE:

For further information about connecting to VCRs, TVs and computers, turn to the **Compatibility** section on page 17.

Audio Connection

VideoLabs cameras have an integrated microphone with line level output. Connect the audio output to an amplifier, TV or VCR.

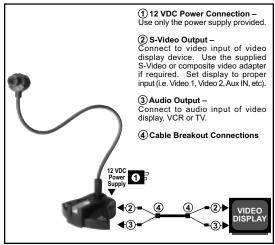


Figure 5 - Basic connnection diagram.

3. Turn On

Turn ON your camera with the ON/OFF switch located on the camera bezel at the base of the gooseneck (except for MedCam). These switches control power ON/OFF for all cameras (Figure 6).



Figure 6 - The TeachCam's ON/OFF switch.

4. Position

The camera head is swivel mounted. <u>Do not</u> turn it past the natural resistance. adjust the flexible gooseneck (maximum 90°) until the camera is aligned with the subject.

5. Audio

The highly sensitive microphone is located under the lens on the camera head. Audio levels are optimal when the camera is pointed toward your face, at an arm's distance away. If your image moves out of the picture, the sound level will begin to drop off.



Figure 7 – Camera microphones.

Microphone Adapters

Adapters for the microphone is included with all cameras.

6. Focus

A focus ring is included with only the DocCam and the FlexCam.

Monitor/Screen

Check the contrast, brightness and white balance of your monitor or screen before focusing your subject in the presentation room.

Cameras

FlexCam[™]

This full-motion analog camera takes color pictures, makes color movies, views three-dimensional objects as well as documents and photographs. It's also ideal for video-conferencing.

Accessories Included:

- 6' detachable cable with S-Video and audio connectors on both ends.
- Pigtail adapter cable (black, 3" to 4", with RCA jack). This cable converts S-Video to Composite Video. Use the pigtail adapter if your VCR or TV does not have S-Video capabilities.



Figure 8 - FlexCam.

12 VDC power supply.

To set up and operate the camera, go to the **Getting Started** section on page 3.

StudentCam®

This camera displays precise images, slides, x-rays and small scientific objects under any lighting. It is full-motion, color, S-Video and Composite compatible, with an 8mm lens and 1:5.6 aperture.

<u>Accessories Included:</u>

• 28mm and 34mm microscope couplers.



Figure 9 - StudentCam.

· Custom microscope eyepiece adapter.

- 6' and 25' detachable cable with S-Video and audio connectors on both ends.
- Pigtail adapter cable (black, 3" to 4", with RCA jack). This cable converts S-Video to Composite Video. Use the pigtail adapter if your VCR or TV does not have S-Video capabilities.
- 12 VDC power supply.

To set up and operate the camera, go to Getting Started section on page 3.

TeachCam®

This camera display precise images, slides, x-rays and small scientific objects under any lighting. TeachCam is a fullmotion, color, S-Video/ analog camera with an 8mm C-mount lens with a 1:1.6 aperture. A selfcontained lightbase enables viewing 35mm slides and microscope slides.



Figure 10 - TeachCam.

Accessories Included:

- Nordic Box carrying case.
- 28mm and 34mm microscope couplers (page 11).
- Custom eyepiece adapter (page 11).
- 5 IllumaSlides[™] (page 10).
 2 IllumaBoxes[™] (page 10).
- Camera position bracket.
- 6' and 25' detachable cable with S-Video and audio connectors on both ends.
- Pigtail adapter cable (black, 3" to 4", with RCA jack). This cable converts S-Video to Composite Video. Use the pigtail adapter if your VCR or TV does not have S-Video capabilities.
- 12 VDC power supply.

To set up and operate the camera, go to the Getting Started section on page 3.

About the IllumaBase® Keypads (Figure 11) There are six buttons on the two IllumaBase keypads. Below are a list of their functions.

1 – Light Bulb Symbol This button controls base lighting. Press once for side lights, twice for bottom lights, three times for all lights and four times for lights off. 2 – Dark Sun Symbol Press and hold this button to decrease image brightness.

3 - Light Sun Symbol Press and hold this button to increase control panel. image brightness.



Figure 11 - TeachCam

- 4 White Balance Hold Press button once to color balance on a particular scene. pressing the button again will return camera to automatic white balance.
- 5 FL Symbol Press button to eliminate image flickering and color hunting when camera is used with a fluorescent microscope. 6 - Color Positive/Negative Press button to view a negative color image. Pressing the button again will switch to a positive color image. Depressing the button for at least two seconds will switch the image from color to black and white. Pressing the button again for at least two seconds will switch the image back to color.

About the IllumaSlides

Five IllumaSlides are included with the TeachCam. Remove the cover on the slide and add various specimens, such as drops of pond water, for viewing. Place the IllumaSlide on the top of the IllumaBase and adjust the focus as needed.

About the IllumaBoxes

Two IllumaBoxes are included with the TeachCam. The rectangular plastic box holds laboratory specimens for viewing. Turn all IllumaBase lights ON. Place the specimen in the box and close the box lid tightly. Next, with cover side up, insert the plastic box lengthwise into the IllumaBase and adjust the focus as needed.

About the Microscope Adapters/Couplers

Included with the TeachCam is a custom metal eyepiece adapter and 28mm and 34mm plastic couplers. To use the custom eyepiece adapter, remove the microscope eyepiece and replace it with the custom eyepiece adapter by sliding the narrow end into place in the microscope. Gently push the 8mm C-Mount lens into position. Plastic couplers (28mm and 34mm) can be attached to a microscope by

placing the coupler over the microscope's eyepiece. Turn the C-Mount lens to the right before placing in the coupler for viewing.



DocCam™

This camera enables the instructor to focus directly on an open textbook, object, map. etc., while projecting the same document pages for students to view on a TV or projection screen. The DocCam has an inverted CCD for viewing bν the presenter. The DocCam has a detachable 8-pin to S-Video, left and right audio and power breakout connectors.



Figure 12 - DocCam.

Accessories Included:

- 6' detachable cable with S-Video and audio connectors on both ends.
- Pigtail adapter cable (black, 3" to 4", with RCA jack). This cable converts S-Video to Composite Video. Use the pigtail adapter if your VCR or TV does not have S-Video capabilities.
- 12 VDC power supply.

To set up and operate the camera, go to the **Getting Started** section on page 3.

MedCam"

The MedCam is a flexible presentation and microscope video camera with many uses in state-of-the-art medical, teaching and industrial environments. The MedCam has an 8mm C-Mount Iens and an adjustable aperture. The camera module is attached to an 8' cable. This cable allows mobility in



Figure 13 - MedCam.

capturing images through attachment to various medical equipment.

Accessories Included:

- 6' and 25' detachable cable with S-Video and audio connectors on both ends.
- Pigtail adapter cable (black, 3" to 4", with RCA jack). This cable converts S-Video to Composite Video. Use the pigtail adapter if your VCR or TV does not have S-Video capabilities.
- 12 VDC power supply.
- Custom eyepiece adapter (below).
- 28mm and 34mm plastic couplers (below).

To set up and operate the camera, go to the **Getting Started** section on page 3.

About the Microscope Adapters/Couplers

Included with the MedCam is a custom metal eyepiece adapter and 28mm and 34mm plastic couplers. To use the custom eyepiece adapter, remove the microscope eyepiece and replace it with the custom eyepiece adapter by sliding the narrow end into place in the microscope. Gently push the 8mm C-Mount lens into position. Plastic couplers (28mm and 34mm) can be attached to a microscope by

placing the coupler over the microscope's eyepiece. Turn the C-Mount lens to the right before placing in the coupler for viewing.



IDCam[™]

The IDCam takes head and shoulders and is photos compatible with most ID badging system. It features a two-button Iris Control System (ICS) that adjusts to any lighting environment. The IDCam is also a full-motion, S-Video, color, analog



Figure 14 – IDCam.

camera. It comes standard with a 16m C-Mount lens.

<u>Accessories Included:</u>

- 5' and 25' detachable cable with S-Video and audio connectors on both ends.
- Pigtail adapter cable (black, 3" to 4", with RCA jack). This cable converts S-Video to Composite Video. Use the pigtail adapter if your VCR or TV does not have S-Video capabilities.
- 12 VCD power supply.

To set up and operate the camera, go to the **Getting Started** section on page 3.

Optional Accessories

Contact your VideoLabs Reseller for more information on the following Accessories.

FlexLite™ Base

Each camera has five adhesive, removable rubber feet on the base. To use with the FlexLite (Figure 15), remove these rubber feet and align the holes of the camera base onto the pegs of the FlexLite base. Plug in the power supply and turn the FlexLite ON.



Figure 15 - FlexLite.

FlexLite Power Supply

Connect the FlexLite power supply into the back of the FlexLite base. Plug in the wall mount power supply into the electrical outlet and press the button on the FlexLite base to turn it ON.

FlexLite Bulbs

Position the two flexible light bulbs over the projected document or object. Replacement bulbs may be purchased through VideoLabs.

NOTE:

The VideoLabs
Flexible Camera
Series uses "C-Mount"
lenses. C-Mount is an
industry lens size
standard that refers to
the thread radius.

C-Mount Lens Models

C-Mount Lenses are available in 3.5mm, 6mm, 8mm, 12mm, 16mm, 25mm and 50mm. If additional C-Mount lenses are purchased, install them by unscrewing the old lens counterclockwise, and screwing in the new lens clockwise.

Focus Ring Models

DocCams and FlexCams can focus their lenses with an optional focus ring. Assemble the focus ring by carefully pushing the smaller end of the ring onto the focus knob at the center of the camera head. (The focus ring will not be flush with the camera head.) Turn the focus ring to the left for close-up, right for distance.

NOTE:

The cameras work with all industry-standard video capture cards.

StingerPro II

Use this capture card for Internet video-conferencing, motion video capture, still frame capture and video editing. Tampering with this card or its circuitry voids the warranty.



Figure 16 - StingerPro.

Handling the Camera

- All VideoLabs cameras are for indoor use only.
- Use only VideoLabs power supply and a wall mounted, indoor, electrical outlet.
- <u>Do not</u> use cameras next to food, beverages, liquid or dry chemicals or solvents. However, cameras have been tested and approved for use in chemistry labs.
- <u>Do not</u> use cameras near working TVs, radios, motors, transformers or magnetic fields.
- <u>Do not</u> turn the camera head more than 30° left or 30° right.

Care and Cleaning of the Camera

- <u>Do not</u> attempt to take the camera apart. There are no user-serviceable components inside.
- Keep the camera away from food and liquid.
- Avoid touching the lens. To clear any dust, blow pressurized air onto the lens. For accidental smears or smudges, wipe carefully with a lens cleaning cloth.
- Clean exterior of camera by wiping with a clean, damp cloth; do not use any abrasive chemicals.
- Use both hands whenever adjusting the neck of the camera; this will avoid any unnessary strain on the camera's base and will keep the camera from tipping over unexpectedly.

WARNING

- Use of a different power supply other than what is provided with the camera will void the warranty.
- Internal thermal protection is built-in. Use only a VideoLabs power supply source.
- Do not loosen or remove exterior assemblies (keypads, electrical connectors, audio units or camera lens).
- Do not disassemble any exterior or interior components of any camera.
- Any camera lens will be permanently damaged if it is overtightened.

Operating and Storage Conditions

<u>Do not</u> store or operate the camera under the following conditions:

- <u>Do not</u> use any camera outdoors or connect camera to outdoor or auxiliary power sources.
- A temperature above 104°F(40°C) or below 32°F(0°C).
- · Environments with high humidity.
- Dusty environments.
- · In inclement weather.
- Under severe vibration.
- When hooking up VideoLabs cameras to computers, ensure that software programs and drivers are installed correctly by following instructions provided by the manufacturer of these products.

I VideoLabs Technical Support

From 8am to 5pm (CST), Monday – Friday VideoLabs Technical Support is available by Phone: 866.384.3245 (U.S. only) International Phone: 763.542.0061 e-mail: support@videolabs.com web site: www.videolabs.com

■ Troubleshooting

If you are experiencing problems with your camera, check the following items:

- Ensure all camera adapter/cable connections and electrical connections are done correctly and completely.
- Check your computer, video capture cards, digitizer boards, VCR, TV, etc. for faulty operation.
- Check all settings on your camera and adjust them for viewing conditions in the presentation room.
- If any component of any camera is damaged, contact VideoLabs Technical Support for repair information.

Compatibility

VideoLabs cameras can be used with either a VCR, TV monitor or computer. <u>Do not</u> use all three at once. All VideoLabs cameras are compatible with standard computer video capture cards and digitizer boards. When using VideoLabs cameras with VCRs or TVs, use the pigtail composite video adapter if the VCR or TV does not have S-Video capabilities.

VCR

Attach the camera to the monitor by connecting the S-Video plug into the VCR video-in jack. If the VCR is an older model, use the pigtail adapter to convert to Composite Video. Connect the audio leads to the audio-in jack.

TVs

Attach the camera to the TV monitor by connecting the S-Video cable into the video-in jack located in the back of the TV. Switch the TV to video mode. If the TV is an older model, use the pigtail adapter to convert to Composite Video.

Computers

Windows:

Read the installation manual enclosed in the box with the StingerPro II Video Capture Card (see page 14). To hook up the computer to the camera, plug in the video-in jack at the back of the computer. Install the video capture card according to the manufacturer's directions. Insert video image by opening the computer and installing in available slot. Install software and drivers. Plug the camera into the available PCI video-in jack. Plug in the power supply and turn ON.

AV Macs:

Plug the camera into the video-in jack. (See **Compatibility** above.)

NOTE:

VCR

If there is only one audio-in jack, use either the left or right audio-in jack. Put the VCR in the video-in mode. Turn the camera power ON. Turn the VCR/TV switch to VCR and the TV to Channel 3.

TV

To change to video mode, use either the switch on the TV front panel or select the corresponding command on the remote control menu. (Consult your TV owner's manual for exact switch locations and remote control menu commands.)

NOTE:

Check your computer video capture cards and digitizer boards for faulty operation.

FEATURE	FlexCam	StudentCam	TeachCam	DocCam	MedCam	IDCam
Optics	5.7mm	8mm	8mm	6mm	8mm	16mm
Resolution Vertical Horizontal	310 400	310 400	310 400	300 350	310 400	310 400
Pixel Count	400K	400K	400K	270K	291K	291K
C-Mount Lens		•	•		•	•
Inverted CCD				•		
Electronic Iris	•	•	•		•	•
Mechanical Iris				•		
Manual Iris Control			•			•
Focal Length	1/4" to ∞	1/4" to ∞	1/4" to ∞	4" to ∞	1/4" to ∞	1/4" to ∞
S-Video or Composite	•	•	•	•	•	•
NTSC	•	•	•	•	•	•
PAL	•	•	•	•	•	•
Gooseneck	18"/45cm	20"/50.8mm	27"/68.5mm	18"/45cm		18"/45cm
Cable Neck					8'/2.4m	
Exterior Color	Platinum	Black	Black	Black	Black	Black
Microphone	•	•	•	•	•	•
6' Cable	•	•	•	•		•
25' Extension Cable		•	•			
3 Microscope Adapters		•	•		•	
Lux	1.5	1.5	1.5	1.5	1.5	1.5

Camera Specifications

Image Pick-up Device 1/4" Progressive Scan or 1/3" HAD

TV System NTSC, PAL

Total Pixels $NTSC - 780(H) \times 510(V) = Total 400k$

 $PAL - 780(H) \times 510(V) = Total 400k$

Number of Effective Pixels $NTSC - 736(H) \times 490(V) = Total 360k$

 $PAL - 736(H) \times 490(V) = Total 360k$

Resolution Horizontal: NTSC – 350+ TV lines

PAL – 350+ TV lines

Vertical: NTSC – 310+ TV lines PAL – 310+ TV lines

S/N Ratio ≥48dB

Condition: AGC off, high-pass filter 10kHz, FSC trap on, weighting filter on, light shield, low-pass filter (NTSC

– 4.2MHz; PAL – KHz)

Minimum Illumination $1.5 \text{ to } \leq 10 \text{ lux}$

Condition: ITE gray scale chart (Gamma = 1.0), Y signal amplitude –

350mV

White Balance Auto, TTL auto tracing; range:

2,800 to 6,800 °K

Iris Control NTSC – EE

PAL – EE, 1/120 sec. (fixed)

Auto Gain Control Yes

Sub-carrier Frequency NTSC -3.57954MHz ± 200 Hz

 $PAL - 4,43361875MHz \pm 200Hz$

Sync. System Internal only

Power Supply 12 VDC \pm 10%, \leq 200mA at 12 VDC

Operating Temperature -10°C to +50°C

Storage Temperature -20°C to +60°C

Dimension $41mm(H) \times 46mm(V) \times 42mm(D)$

Indicator Power ON/OFF

Microphone Condenser Microphone with Amplifier

Warranty Information

Warranty Information on Hardware* – One (1) year limited warranty on all parts. VideoLabs warrants this product against defects in materials and workmanship for a period of one (1) year from the date of purchase. If VideoLabs receives notice of such defects during the warranty period, VideoLabs will either, at its option, repair or replace products which prove to be defective.

Exclusions – The above warranty shall not apply to defects resulting from: improper or inadequate maintenance by customer, customer-supplied software or interfacing; unauthorized modifications or misuse; operation outside of the environmental specifications for the product; use of incorrect power supply; or improper site operation and maintenance.

Obtaining Warranty Service – To obtain warranty service, products must be returned to a service facility designated by VideoLabs. Customer shall prepay shipping charges for product(s) returned to VideoLabs for warranty service and VideoLabs shall pay for return of the product(s) to customer. However, customer shall pay all shipping charges, duties and taxes for product(s) returned to VideoLabs from another country.

VideoLabs Customer Service – If the camera is still under warranty, VideoLabs will test, repair or replace the product(s) without charge. If the camera is out of warranty, VideoLabs will test, then repair the product(s) for the cost of parts and labor. Charges will be estimated by a technician and confirmed by the customer prior to repair. All camera components must be returned to be tested as a complete unit.

Repair time for all cameras is a maximum of two (2) business days from receiving to outbound shipping. VideoLabs will not accept responsibility for shipment after the camera has left the premises.

VideoLabs Technical Support – VideoLabs' technicians will determine and discuss with the customer the criteria for repair costs and/or replacement. Contact VideoLabs' Technical Support through one of these sources: Phone: 866-384-3245 (U.S. only) or 763-542-0061; E-mail: support@videolabs.com or Web Site: www.videolabs.com.

RMA Number (Return Merchandise Authorization Number) – Before returning a camera for repair or replacement, request an RMA number from VideoLabs Technical Support.

Provide the technician with a return phone number or E-mail and a shipping address. Describe the product(s), provide serial number(s), the reason for repair or return, and the date of purchase.

Include your assigned RMA number on all correspondence with VideoLabs. Write your assigned RMA number on the outside of the box when you return the camera.

Voided Warranty – This warranty does not apply if the VideoLabs serial number has been removed or if the product(s) has been disassembled or damaged through misuse, accident, modifications or unauthorized repair.

Shipping and Handling – VideoLabs will not pay for inbound shipping, transportation or insurance charges, or accept any responsibility for loss and/or damage from inbound transit. VideoLabs requires that all overseas returns are shipped via UPS.

VideoLabs will pay for outbound shipping, transportation and insurance charges but will not assume responsibility for loss and/or damage by the outbound freight carrier.

Products Not Under Warranty – Payment arrangements are required before outbound shipping for all products that are out of warranty.

*VideoLabs manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices.

Declaration of Conformity

In accordance with ISO/IEC Guide and EN 45014:

Manufacturer's Name VideoLabs a division of E.mergent, Inc.

Manufacturer's Address 5960 Golden Hills Drive

Minneapolis, MN 55416-1040

763-542-0061

This product complies with the requirements of the EMC Directive 89/336/EEC.

Minneapolis, MN – September, 1999

According to CFR 47:1998, Sections 15.107 and 15.109 Class B

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

<u>Warning:</u> Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Supplied cables must be used with this unit to ensure compliance with the Class B FCC Limits.

Also a Class B digital device meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Notes	
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Notes			



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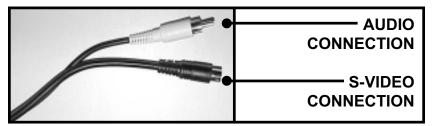
Quick Connection Guide for VideoLabs Flexible Camera Series

NOTE:

Audio connection is not required for video only image.

Cable and Cable Breakouts

Each flexible gooseneck camera is equipped with a connection cable. This cable connects to the camera base for the FlexCam, StudentCam and TeachCam. The DocCam has an 8-Pin DIN connector.



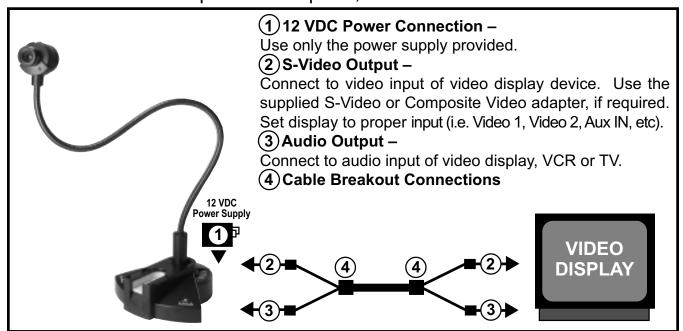


Cable

Cable breakouts

Audio Connection

VideoLabs cameras have an integrated microphone with line level output. Connect the audio output to an amplifier, TV or VCR.



Basic connection diagram



5960 Golden Hills Drive • Minneapolis, MN 55416-1040 763-542-0061 • 800-467-7157 www.videolabs.com info@videolabs.com