

Gradient Lens Corporation®

207 Tremont Street, Rochester, New York 14608

800.536.0790

Fax: 585.235.6645

REV. 0416

Phone: **800.536.0790** 585.235.2620 gradientlens.com info@gradientlens.com

User Guide

Luxxor®
PORTABLE CAMERA

**LUXXOR® PORTABLE
VIDEO CAMERA**



Gradient Lens Corporation®

gradientlens.com



Luxxor® Portable Video Camera

The Luxxor Portable Video Camera (LPC) easily connects to ANY Hawkeye® Rigid or Flexible Borescope! When connected, the LPC delivers sharp, bright video and still images. Borescope inspection images can then be viewed "live," and captured, documented, and e-mailed!



Table of Contents

Warnings	Page 3
Set Up	Page 4
PVM Operation	Page 10
Troubleshooting	Page 17
Specifications.....	Page 18
Notices.....	Page 19
Warranty / Customer Service	Page 20



WARNING:

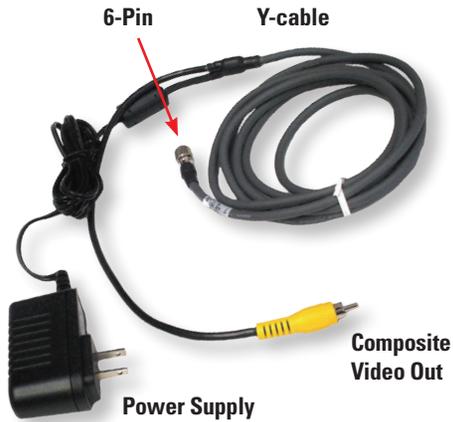
- Not for medical use.
- Do not attempt to disassemble the product. You will break the camera. Disassembly will void your warranty.

If you have purchased the Computer Ready viewing option (VC-USB2), **INSTALL THE SOFTWARE BEFORE CONNECTING THE VC-USB2 TO YOUR COMPUTER'S USB PORT!** (Otherwise your computer is likely to automatically install incorrect drivers which will NOT work)

Luxxor® Portable Camera

The Luxxor® Portable Camera is shipped with a Y-cable, which allows it to be connected to any video monitor with a composite input (NTSC format).

The Y-cable has a 6-pin circular connector at one end. The other end splits into two: an RCA phono plug providing composite video output and a power supply.



Attach the 6-pin connector to the Luxxor® Portable Video Camera.



Connect the composite video output connector to your monitor's composite input.



Normally this is an RCA phono jack, usually colored yellow, and labeled Video, Video In, Composite In, or just Input.

Note: The larger the video screen, the poorer the image resolution will appear at a particular viewing distance.

The composite video output connector may also be connected to a monitor with an S-Video Input or BNC Input with an appropriate adapter (sold separately).



S-Video (Y/C)

BNC

Plug the power supply into a 100-240 VAC, 50-60 Hz outlet. Adapters for a few common power outlets are included. (UK, EU, etc.)

The Luxxor® Portable Camera is powered ON when the cable is connected and the power supply is plugged in. There is no power switch.



Attach the Camera to Your Borescope

To attach the Luxxor® Portable Camera to your Hawkeye® Pro series borescope:

1. Pull back the grooved ring at the head of the camera.
2. Insert the borescope eyecup fully into the camera head.
3. Release the grooved ring.



Focus the image on your monitor by rotating the focus ring of the Hawkeye® Pro series borescope.

The Luxxor® Portable Camera is designed to be used with Hawkeye® Pro series borescopes. It may be used with other borescopes, but their focusing controls may not be easily accessible.



Computer Ready Option



WARNING: The included software drivers **MUST** be installed **BEFORE** the VC-USB2 is connected to your computer's USB port.

Install the Software

1. Insert the included CD into your computer's CD-ROM drive.
2. Open the My Computer window and double-click on the CD-ROM icon.
3. Double-click on the installer program – Video ToolBox Installer USB2b.exe.
4. The program will display the following window:



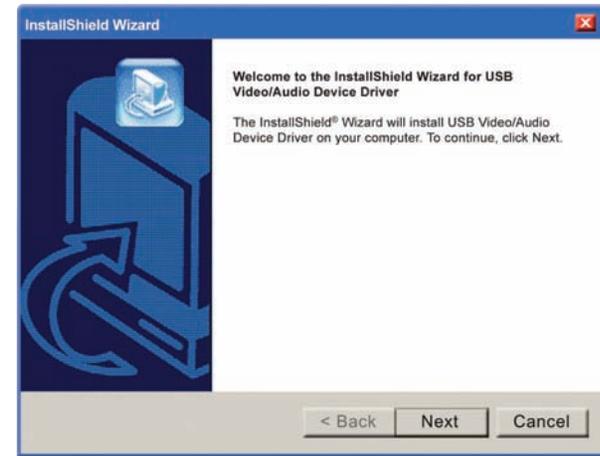
If you are not sure that DirectX 9.0 or later is already installed, press the INSTALL button. The software will not load if a newer version already exists on your computer.

5. The installer will now move to the Install Video ToolBox step. Click INSTALL to install the Video ToolBox software.

6. After the Video ToolBox software has been installed you will see the window below. Press the INSTALL button to install the USB2.0 adapter drivers. If the drivers were already installed then press the SKIP button to continue.



Note: There may be a delay after you press the Install button, but before the Windows Installer window opens. Wait for the InstallShield window to open.



Click NEXT and then FINISH in the next window. Do not plug the VC-USB2 capture device into the computer until the driver installation is completed.

7. When the driver installation has completed, you will see the following window:

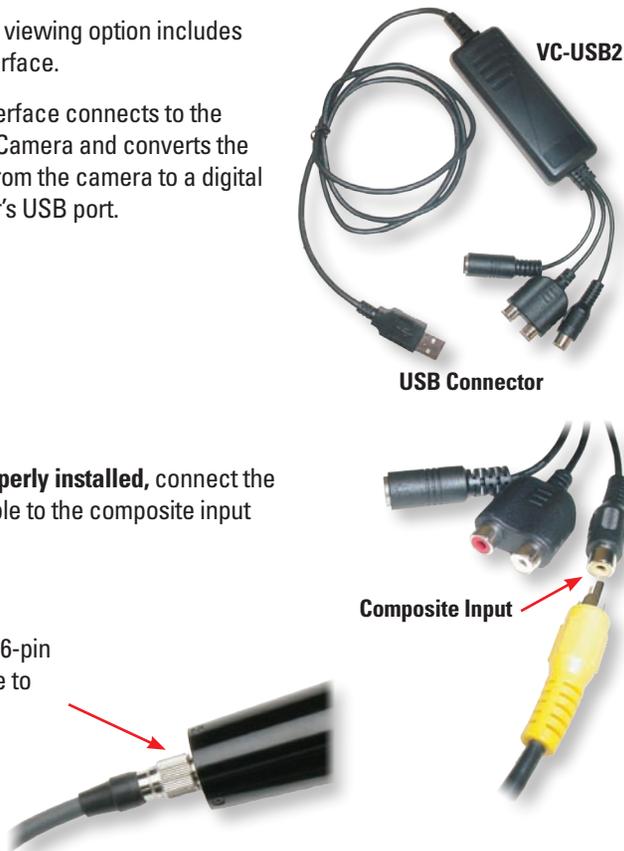


The Computer Ready (VC-USB2) viewing option includes the VC-USB2 image capture interface.

The VC-USB2 image capture interface connects to the Y-cable of the Luxxor® Portable Camera and converts the analog composite video signal from the camera to a digital signal for input to your computer's USB port.

After the software has been properly installed, connect the composite output from the Y-cable to the composite input (yellow) of the VC-USB2.

If not already done, connect the 6-pin circular connector of the Y-cable to the Luxxor® Portable Camera.



Plug the power supply into a 100-240 VAC, 50-60 Hz outlet. Adapters for a few common power outlets are included. (UK, EU, etc.)

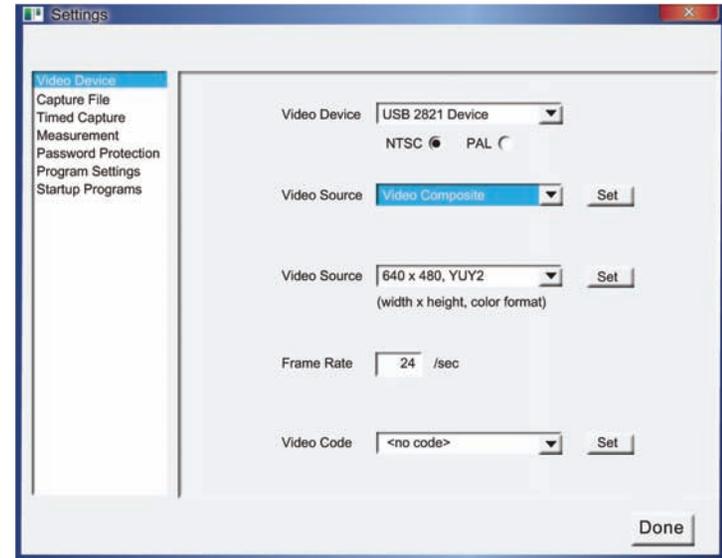
The Luxxor® Portable Camera is powered on when the cable is connected and the power supply plugged in. There is no power switch.



Now plug the USB connector of the VC-USB2 capture device into the USB port you plan to use. **Note:** If you later plug the VC-USB2 into a different USB port on your computer, the Found New Hardware Wizard will run again. In some versions of Windows you will see a warning screen that the device driver has not passed Windows Logo testing. If this appears, click CONTINUE ANYWAY.

Installation is now complete. Double-click the Video ToolBox icon on your desktop to start the program. When the program starts up, you should have a live image on your screen.

If you have no live image, click the Settings button and choose Video Device in the left-hand column of the window that appears. Make sure that the Video Source box is set to Video Composite as shown below.



Also check to make sure there is no protective cap on the end of the scope's insertion tube.

The Video ToolBox Help file has a complete description of all the features of the program as well as hints on how to capture the best quality images and videos.

Refer to the included Video ToolBox manual to learn how to capture and store images and videos, as well as how to annotate and label images and more.



Portable Video Monitor Option

If the Portable Video (PVM-DV) viewing option is chosen, the included cable will have a circular connector at each end, one 6-pin and one 12-pin.



12-Pin

6-Pin

Connect the 6-pin end to the Luxxor® Portable Camera and the 12-pin end to the PVM. The camera is powered from the PVM's battery for completely portable use.



LPC

PVM

Charging the PVM

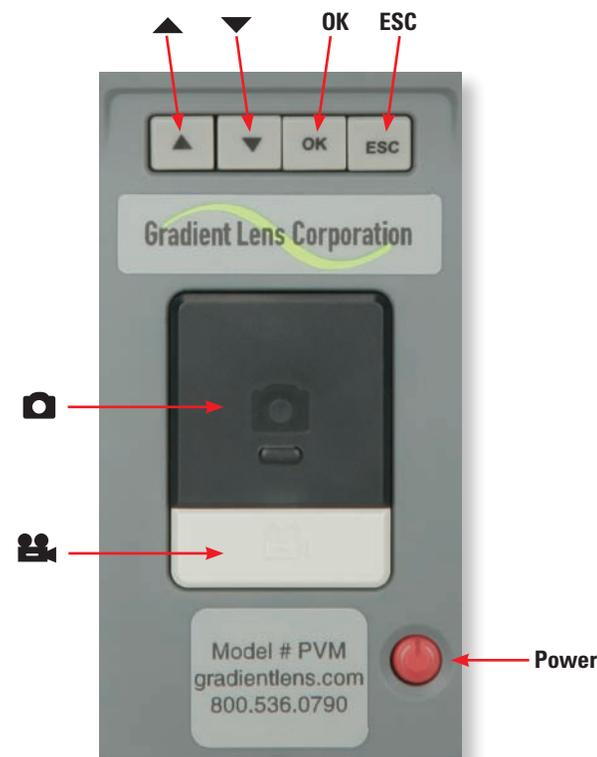
To charge the PVM, connect the charger lead to the jack labeled DCIN on the PVM. Then plug the charger into a 100-240 V, 50/60 Hz outlet. Full charge takes about 2 hours. The PVM will not operate with the charger plugged in when the battery is nearly fully charged.



Note: There is no charging indicator light. The battery status indicator will appear in the display when booting up.

The PVM displays live video and captured still or video images on its built in LCD display. It can output live video to an external monitor via a composite signal connector and the included cable. Stored images can be downloaded to a computer via the USB port and included cable, or through the removable SD memory card. (Details are on page 16.)

Main Controls



Power ON / OFF

Turn the PVM's power on by pressing and holding the power button for 2-5 seconds. The Gradient Lens logo will appear. Then the word CAMERA and the battery and memory status indicators will appear for a few seconds.

When these indicators disappear the unit is in Normal Mode, displaying a live image from the camera.

To turn the unit off, push and hold the power button for 1-2 seconds until it turns off.

Installing the SD Memory Card

Take care to insert the SD card with the correct orientation – contacts should be visible when inserting the card with the video display screen facing you.



CAUTION: Do not remove the SD memory card during capture operations, data will be lost and the memory card may be damaged.



Operating Modes

There are three operating modes:

Normal Mode

Displays current camera input and date/time. From this mode still pictures and video are captured.

Image Review Mode

Displays captured still pictures and video.

Menu Mode

File maintenance, system settings, etc.

The unit powers up in Normal Mode.

From Normal Mode

Enter Image Review Mode by pressing ▲ or ▼

Enter Menu Mode by pressing OK.

Return to Normal Mode from any other mode by pressing ESC.

Normal Mode

Capture a Still Photo

In Normal Mode, press the large black  button. If you hold the button down, the captured image will remain displayed until the button is released.

Still photo files are saved as .JPG.

Capture a Video Clip

In Normal Mode, press the gray  button to start recording. The elapsed time display will be visible in the lower left of the image to indicate that you are recording. Press the  button again to stop recording and save the clip. Pressing the  button will also stop the recording and save the clip. Video files are saved as .ASF.

Memory & Battery Charge Indicators

In Normal Mode, press ESC to display the memory and battery indicators. Memory capacity remaining is displayed as a percentage. Low battery power is indicated by the battery status indicator depicting a less than full charge and turning yellow.

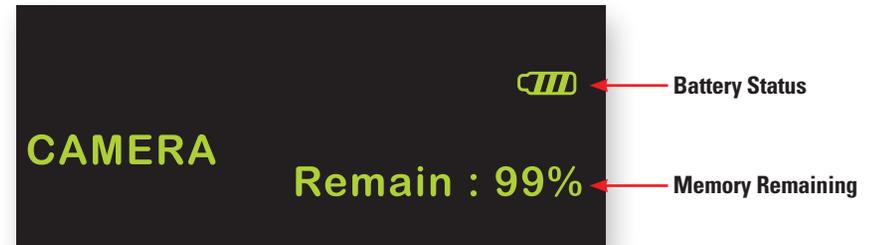


Image Review Mode:

View Captured Photos or Video Clips

Push the ▲ or ▼ button to enter Image Review Mode. You can scroll forward or back through the photos and videos using the ▲ or ▼ buttons. Video files may be played, paused, and resumed by pressing the  button. While a still or video file is displayed (video not playing), pressing the OK button will bring up the DELETE menu. Select YES and press OK to delete the file. To exit Image Review Mode, press ESC.

Delete a Single File

Press ▲ or ▼ to enter Image Review Mode. Scroll to the required file using the ▲ or ▼ buttons. When the required photo or video file is displayed, press OK. A frame will be displayed to confirm the delete function.

Select YES with ▲ or ▼ and press OK to confirm.



Menu Mode:

Display Main Menu

In Normal Mode:

Press the OK button to display the Main Menu as follows:

- DELETE ALL
- VIDEO OUTPUT
- DATE/TIME SETUP
- LANGUAGE
- VIDEO FORMAT
- AUTO POWER OFF

MENU
DELETE ALL
VIDEO OUTPUT
DATE / TIME SETUP
LANGUAGE
VIDEO FORMAT

You can scroll through the functions on this menu using the ▲ and ▼ buttons, and select the function using the OK button.

Delete All

Deletes all saved files, video and still photos. When this function is selected, the unit displays a frame which includes two options. Use ▲ and ▼ to select YES or NO and press OK to confirm.

ERASE ALL
YES NO

Video Output

This function transfers the video signal to and from an auxiliary display using the supplied cable. The unit will automatically switch to the auxiliary display when the cable is connected and will revert to the built in display when the cable is disconnected. This function will allow you to toggle between displays if both are connected. Simply press OK while this function is selected to toggle between displays.

MENU
DELETE ALL
VIDEO OUTPUT
DATE / TIME SETUP
LANGUAGE
VIDEO FORMAT

Date / Time Setup

Sets the date and time. Select this function and use the ▲ and ▼ buttons to select year/month/day or hour/minute/second fields, then press the and/or buttons to scroll through the numbers to set the date and time. If DISPLAY indicates ON status, the date and time will be displayed on the screen. Captured images will always include a time/date stamp. Confirm changes by pressing OK.

MENU	TIME SET
DELETE ALL	2008 / 01 / 01
VIDEO OUTPUT	00 : 00 : 00
DATE / TIME SE	DISPLAY ON
LANGUAGE	
VIDEO FORMAT	

Menu Mode:

Language

If your unit is supplied with a language option this function will allow you to select English or the optional language.

Video Format

This function allows you to choose the format of the output video signal for an auxiliary display. The options are NTSC and PAL. Use the ▲ and ▼ to select and press OK to confirm.

MENU	TV OUTPUT
DELETE ALL	NTSC
VIDEO OUTPUT	PAL
DATE / TIME SETUP	
LANGUAGE	
VIDEO FORMAT	

While the TV OUTPUT options are displayed, pressing the button will display the FACTORY SETUP menu. Here the factory settings for the video display may be changed or reset. Use ▲ and ▼ and press OK to select the property to be changed. Then use ▲ and ▼ to change the setting and OK to confirm. Holding the ▲ or ▼ buttons down for a couple of seconds will cause the settings to change more rapidly. DEFAULT restores the original factory settings.

MENU
BRIGHTNESS 128
CONTRAST 120
HUE 114
SATURATION 90
DEFAULT

Auto Power Off

Select this function by pressing the OK button and use the ▲ and ▼ buttons to select time for auto power off or to disable the auto power off function. Press OK to confirm.

MENU	AUTO OFF
VIDEO OUTPUT	DISABLE
DATE / TIME SET	5 MIN
LANGUAGE	10 MIN
VIDEO FORMAT	15 MIN
AUTO POWER C	30 MIN

Connecting to an Auxiliary Display

Use the included AV cable to connect your auxiliary display to the jack on the side of the PVM.

Note: The display must accept a composite input. The unit will automatically switch to the auxiliary display when the cable is connected. You may switch between the displays by using the VIDEO OUTPUT function on the main menu. The PVM display and the external display cannot be viewed at the same time.



The video output format to the auxiliary display may be switched between NTSC and PAL by using the VIDEO FORMAT function on the main menu.

Transferring Image Files to a PC

The PVM can download saved images through its USB port. Plug in the Mini USB 1.1 connector of the included USB cable into the USB port on the PVM. Then plug the other end into a USB port on your PC and open the drive associated with the chosen port. The stored images are contained in the location X:\DCIM\100MEDIA where X is the drive letter. JPGs can be viewed with Windows Picture Viewer, and .ASF video files play in Windows Media Player.



Alternatively, the SD memory card may be removed from the PVM and inserted into your computer's card reader.

Tripod Stand

A compact tripod stand for the PVM is included to enable one-handed operation of the Rigid Video Borescope.

Attach the tripod stand to the threaded socket on the back of the PVM.

Adjust the tripod head and legs to allow the PVM to stand on a firm surface.



PVM Troubleshooting Tips

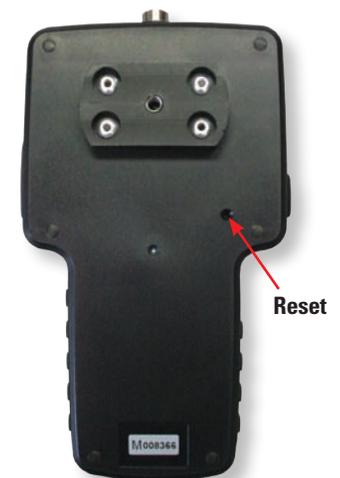
Nothing on LCD screen: Battery power too low. Recharge the battery.

No image – but words and status symbols on LCD display: Insertion tube is not connected securely. Reattach the insertion tube.

Cannot capture photos or video: No SD Card inserted.

Shut down: Battery has discharged below operating threshold. Recharge battery.

!!! No functions working!!! If all functions freeze or fail, first try to power the unit off and restart. If the unit does not recover, insert a non-conducting probe, such as a toothpick, into the hole on the back of the PVM and use it to press the internal reset button to perform a system reset.



LPC Specifications

Sensor	1/4" CCD
Effective Pixels.....	768 x 494
Scanning.....	2 : 1 Interlace
Resolution.....	520 TV Lines
Output.....	Composite
Output Format.....	NTSC
Length.....	6.25" (159 mm)
Max Diameter.....	1.74" (44.2 mm)
Weight.....	6.3 oz. (178.6 gm)

Notices

USA

This device has been tested to be in compliance with part 15, Class A 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 undesired operation.

Canada

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Warranty

Gradient Lens Corporation warrants the Luxxor® Portable Camera to be free of defects in material and workmanship and to perform in accordance with the manufacturer's specifications when subject to normal use and service for a period of one year from the date of purchase. Gradient Lens Corporation will either repair or replace components found to be defective or at variance from the manufacturer's specifications within this time at no cost to the customer. It shall be the purchaser's responsibility to return the instrument to the authorized service center.

This warranty does not cover breakage or failure due to tampering, misuse, neglect, accidents, improper installation, modification, shipping, or to improper maintenance, service and cleaning procedures. This warranty is also void if the instrument is not used in accordance with the manufacturer's recommendations, or if required service is performed by anyone other than a Gradient Lens Corporation authorized agent. No other express or implied warranty is given.

Contact Customer Service:

Should service of the equipment be required: Call Gradient Lens Corporation to obtain a return material authorization (RMA) number and shipping directions.

Telephone**585.235.2620**

Fax585.235.6645

E-mailservice@gradientlens.com

Toll Free800.536.0790 (in US only)