# FREEDOMVIEW® LED VIDEOSCOPE

# Instruction Manual

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## Introduction

Thank you for choosing Optim LLC for your inspection needs. Optim is a US manufacturer of remote visual inspection systems. The FreedomView LED Videoscope Inspection Kit is an easy to use, nondestructive inspection system. It enables the user to observe and record still images and video clips of inaccessible, interior portions of structures in a wide variety of applications. Do not use this device for human or animal subjects.

This electronic viewing instrument is constructed of high quality, durable materials and is designed for simplified integration with complementary components.

Read this operator's manual thoroughly to familiarize yourself with all components prior to the first use. The manual contains care and handling information which will help extend the life of the instrument.

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⚠ **NOTE:** Read this manual completely.

⚠ All **WARNINGS** and **CAUTIONS** are printed in **BOLD LETTERS**.

### 1) KIT COMPONENTS

**Part Number: FV Videoscope Kit**
**FreedomView LED Videoscope Kit Includes:**

- Videoscope
- (2) Rechargeable Smart Li-ion batteries
- Battery charger cradle with power supply
- 8GB SD memory card
- USB to PC Streaming software
- USB 2.0 Cable – 6'
- User Manual
- Carrying Case

## Operating the FreedomView® LED Videoscope

### SAFETY RULES

1. Do not attempt to use this device for any application in which the operator is untrained or unfamiliar.
2. Do not tamper with the power supply.
3. Provide adequate ventilation for the battery charger to prevent overheating.
4. Avoid damage to the power cords. Never carry the charger by the cord. Keep the power cords away from heat, extreme cold, oil, solvents and sharp edges.
5. The handle assembly contains electrical components. DO NOT use in an explosive environment. DO NOT immerse or expose the handle assembly to liquids of any type.
6. The high intensity light at the tip of the scope is extremely bright. To minimize the risk of injury, avoid direct viewing of the light.
7. When illumination is not required, even for short intervals, turn the light source power off. This will extend battery life and reduce heat buildup.

⚠ **CAUTION** – Do not exceed a bend radius of 25mm (1 inch) when bending the insertion shaft

### 1) FV VIDEOSCOPE – BASIC OPERATION AND SET UP

Before proceeding with your internal inspection, obtain a sample or cut-away section of the item to be inspected. Practice the inspection several times outside the object. Familiarize yourself with the operating characteristics of the FV Videoscope. Practice your access path and diagnostic observations. It is not uncommon to experience difficulty in positioning the objective end of the LED Videoscope during initial inspections.

### A. Inserting the Smart Li-ion Battery

To operate the FV Videoscope, begin by inserting a fully charged ***Smart Li-Ion Battery*** into the battery compartment as shown below. To install the battery, unscrew the thumbscrew on the battery door and pull the door straight back. The battery installs up from the bottom with the contacts to the left and the "gas gauge" on the bottom. Slide the battery into the housing and click it into place. When the battery is fully seated, replace the battery door by sliding it forward into place and tightening the thumb screw.

**Note**: The scope is designed to not allow installation of the battery door if the battery is installed incorrectly.

**Smart Li-ion Battery**

The Smart Li-ion Battery has a built in “gas gauge” that allows the user to see how much charge is remaining in the battery before installing it in the scope.

| | | |
|---|---|---|
| **5 bars** | – | 81-100% charge |
| **4 bars** | – | 61-80% charge |
| **3 bars** | – | 41-60% charge |
| **2 bars** | – | 21-40% charge |
| **1 bar** | – | 1-20% charge |
| **0 bars** | – | less than 1% charge |

### B. Inserting the SD Memory Card

i. Gently pull up the bumper cover on the left side of the screen to expose the SD slot.

ii. Insert the 8GB SD Memory Card provided in your kit.

iii. Replace the bumper cover.


### C. Powering the Unit On / Off

i. To power the FV Videoscope On, press the power button for 0.5 seconds. The green Power Indicator LED will glow as the system boots and will stay lit while the unit is powered.

ii. To power the FV Videoscope Off, press and hold the power button for 1 second. A message will appear on the screen indicating that the scope is powering down.

⚠ **Note:** The scope is designed to shut down automatically or not turn on in the event of a low battery.


### D. LED Illumination Controls

i. The FV Videoscope has a high intensity light for use in dark spaces. The Illumination LED Increase button (+) will increase the intensity of the illumination LED from 0 to 100% in 10% increments, allowing the user to select the best illumination for the task.

ii. The illumination is decreased from 100 to 0% illumination using the Illumination LED Decrease button (-). The LED Decrease (-) button reduces illumination from 100 to 0% in 10% increments.

## E. Articulation with Joystick Controls

The FV Videoscope has all-way end tip articulation using the joystick direct control. The articulating tip is connected to the joystick articulation control lever located on the handle. To articulate the end tip, move the joystick in the desired direction.

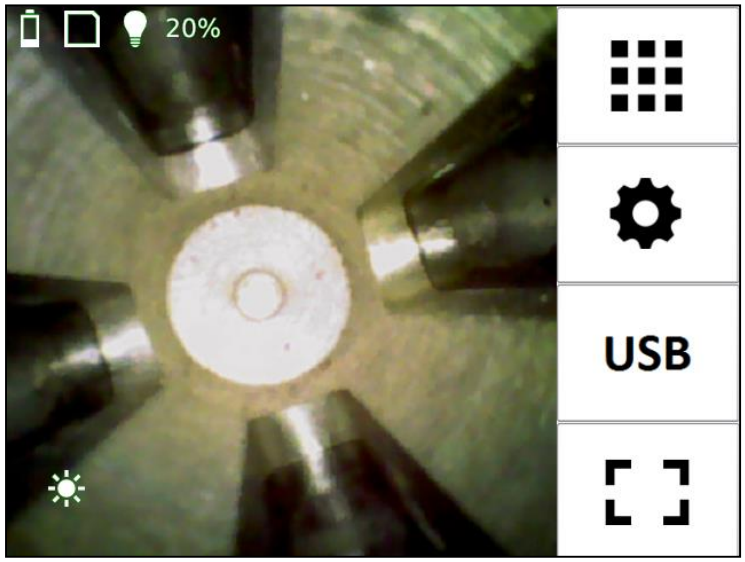

**WARNING:** Never force the articulation joystick. Forcing the joystick control can severly damage the unit.

If the articulation control becomes frozen or sluggish, discontinue use and contact Optim.

**WARNING:** Extensive damage can be prevented if the proper precautions are taken immediately when any abnormality is discovered.

## 2) FV VIDEOSCOPE – ON SCREEN FUNCTIONS AND OPERATION

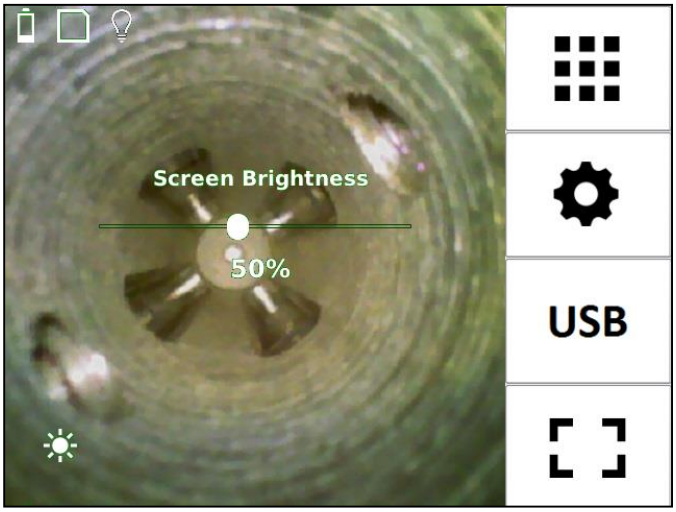
### A. Home Screen




| Standard Home Screen Icons / Indicators: | | | Home Screen Function Icons: | |
|---|---|---|---|---|
| / | Battery Level Indicator – Indicates the level of charge remaining in the battery | | | Gallery Icon – Opens the image gallery of saved still images and videos |
| / | SD Card Indicator – Indicates an SD card is inserted into the SD slot, and indicates the amount of storage used | | | Settings Icon – Opens the settings menu |
| / | LED Light Indicator – Indicates when the LED light source is on. An "empty" bulb indicates the light is off, a "full" bulb indicates the light source is on and the level is indicated as a percentage of full brightness | | USB | USB Icon – Opens the USB function screen for direct connection using USB cable to PC for streaming video and file transfer |
| | Screen Brightness Indicator – Allows for adjustment of the brightness of the display screen | | | Full Screen Icon – Hides the function icons and enlarges the viewing image to fill the screen<br>***Note:*** *When full screen mode is engaged the top and bottom of the image are cropped in order to maintain proper aspect ratio.* |

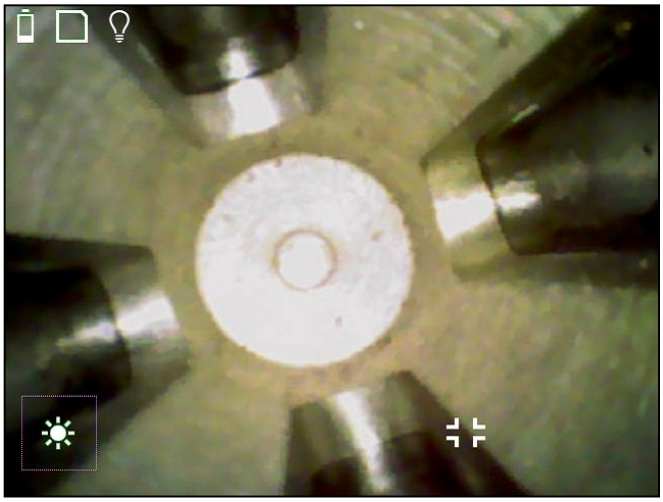
### B. Adjusting Display Screen Brightness

To adjust the display screen brightness tap on the Screen Brightness Indicator and slide from left to right on the slider bar to adjust to a preferred setting. Tap the indicator again to hide the slider bar.



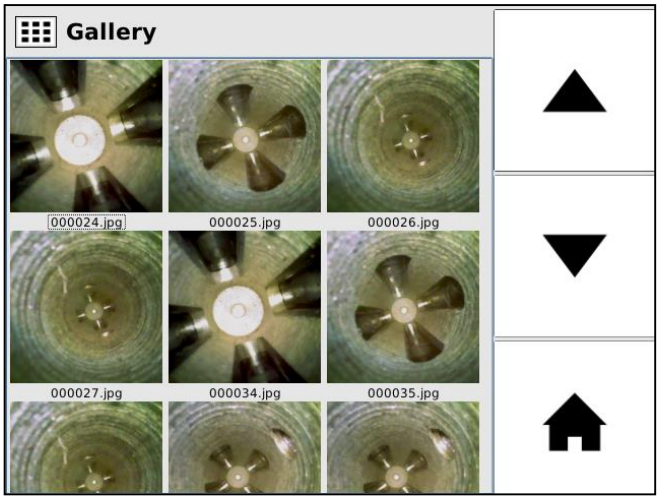
### C. Full Screen Icon

To return to the default home screen from the full screen tap the Return Icon.

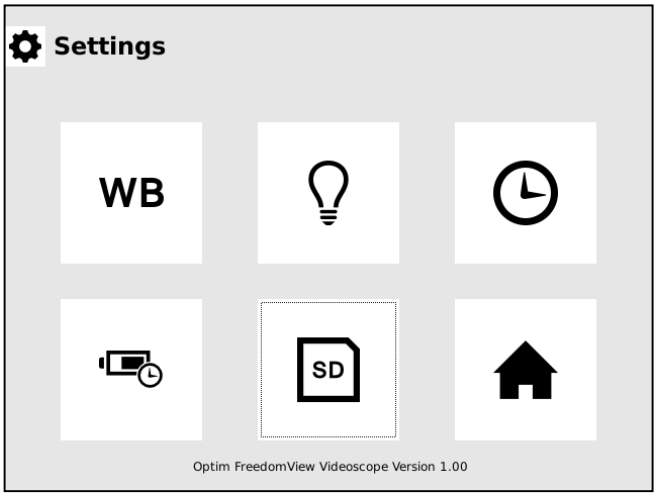


### D. Home Screen Function Icons / Indicators

i. **Gallery** – To enter the image gallery tap the Gallery Icon. Thumbnails of the available images and videos will appear listed by file name. Use the ▲ and ▼ to scroll through the gallery. To view the image full size or to play the video, tap on the image and it will appear full size in the display screen. To return to the home screen, tap the Home Icon.



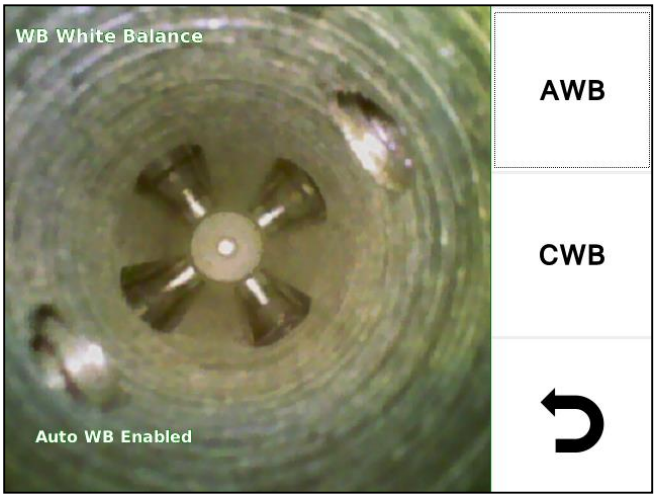

ii. **Settings** – To enter the settings function tap the Settings Icon .




| Standard Home Screen Icons / Indicators: | |
|---|---|
| WB | White Balance Setting – Allows the user to select either automatic white balance or create a custom white balance |
| | Auto Brightness Setting – Allows the user to turn on the light source and set the sensor gain |
| | Time and Date Setting – Allows the user to set the current date and time |
| | Auto Shutdown Timer Setting – Allows the user to adjust the length in minutes of inactivity before the unit automatically shuts down |
| SD | SD Card Info Icon - Provides information on the amount of used and available space on the SD card |
| | Home Icon – Returns the user to the home screen |

**Additional Settings Details:**

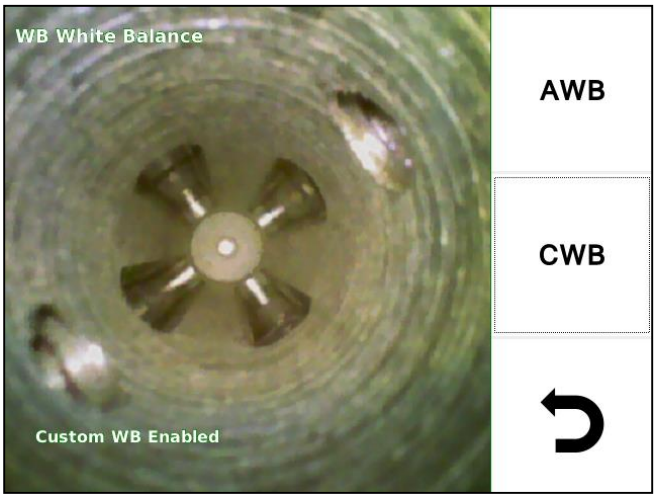
**White Balance Setting –** Tapping on the White Balance Setting Icon **WB** will bring the user to a setting screen.The White Balance menu allows the user to select either an automatic and continuously self-correcting white balance control (AWB), or to create a custom “reference” white balance (CWB) to use for the session.




Auto White Balance

On power-up the FV Videoscope has its Auto White Balance (AWB) mode enabled. For most situations, the AWB mode provides the most realistic color correction for imaging. The AWB is enabled whenever the “AWB” icon is pressed, and will cancel any Custom White Balance previously set up.

Custom White Balance




To create a custom white balance, the user should perform the following steps:

1—Find a suitable “white” reference, i.e. a piece of white paper and place it in front of the FVVS camera.

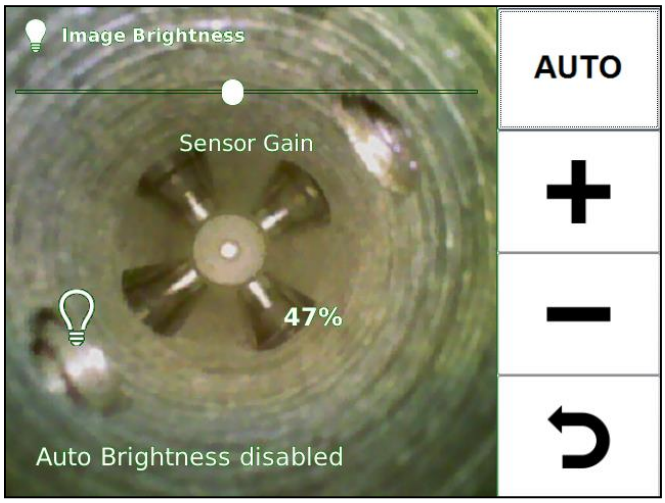
2—Turn on the Illumination LED to the approximate brightness that will be used in the session.

3—Press the “CWB” button in the White Balance menu. The message “Custom WB in progress…” will appear for 4 seconds, followed by the message “Custom WB Enabled”.

From this point on the videoscope will use the custom white balance value and will not attempt automatic white balancing.

**Note:** The CWB mode is not preserved through power-down.

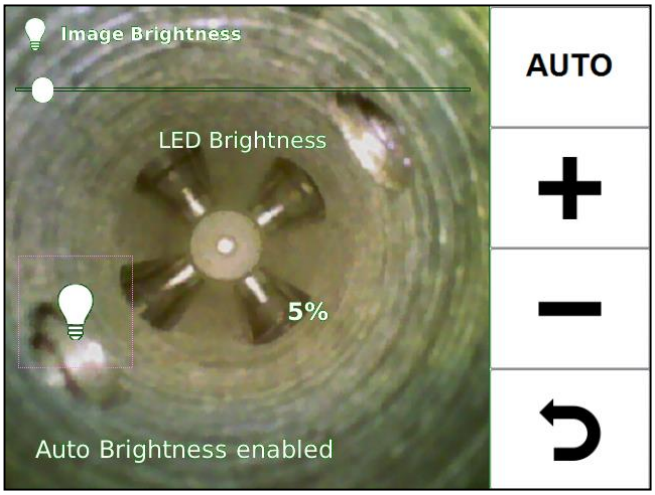
**Auto Brightness Setting –** Tap on the Auto Brightness Setting Icon . The Auto Brightness menu allows the user to control the following functions which affect image brightness:




- Illumination LED power level.
- Automatic Gain Control (AGC) enable/disable.
- Maximum amount of gain allowed to be applied to camera sensor.

To turn on the Illumination LED from the Auto Brightness menu, press the light bulb button in the lower left part of the live image display area. The

LED will turn on at 5% of its maximum power. Each press of the menu's "+" or "-" buttons will increase or decrease the LED's power by 5%. The user may also use the slider control to vary the LED brightness.

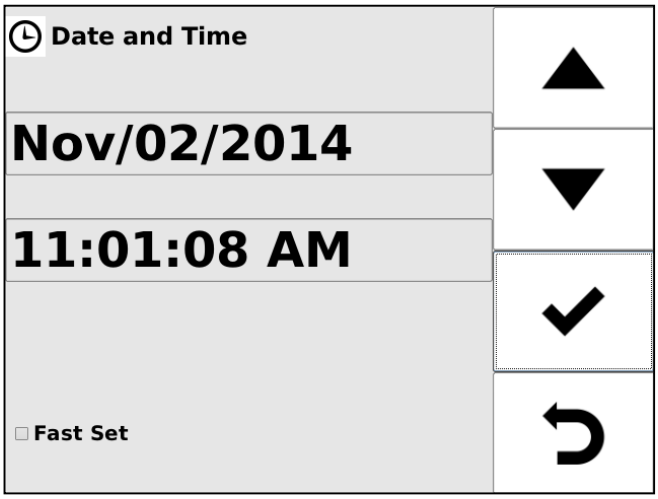



**Note:** If the user has already turned on the illumination LED using the "+" button on the FV Videoscope handle, the Auto Brightness menu will show the current LED power level and the menu's light bulb button will be "on" (white-filled). Once the user has entered the Auto Brightness menu, only the Auto Brightness menu's buttons can be used to control the LED brightness. When the user exits the Auto Brightness menu, control of the LED is transferred back to the buttons in the videoscope handle.

The FV Videoscope powers up with the "Auto Brightness" mode enabled. For most situations, this is the best way to achieve proper image exposure as the Auto Brightness function can accommodate a wide range of illumination conditions. The Auto Brightness mode is controlled by the "AUTO" button in the Auto Brightness menu. When this is pressed, Auto Brightness is disabled and a slider labeled "Sensor Gain" appears in the Auto Brightness menu display. When the "AUTO" button is pressed again, it toggles back to the automatic brightness mode.

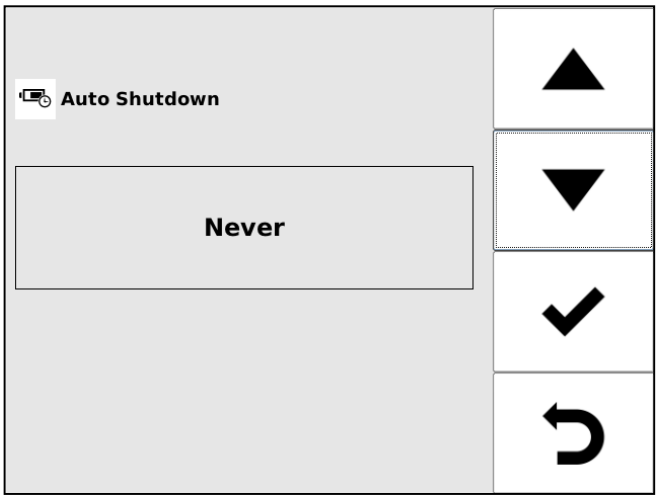
**Note:** The Auto Brightness "Sensor Gain" value is set to 50% which covers most imaging scenarios. Increasing "Sensor Gain" will increase the camera's sensitivity under low-light scenarios but may also increase video noise. Decreasing "Sensor Gain" may improve video noise under certain conditions but can result in parts of the image being under-exposed if there is insufficient light.

In general, to achieve the best imaging be sure that the subject matter is sufficiently illuminated.



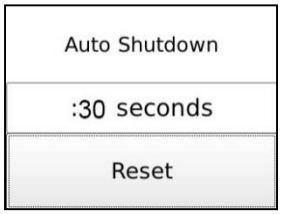

**Time and Date Setting –** Tap on the Date / Time Icon to initiate the option to change and use the ▲ and ▼ arrows to adjust accordingly. When the setting is complete tap the ✔ to approve the change. To return to the previous menu tap ↩. The Fast Set checkbox in the Time and Date Setting menu allows the user to change the time or date value in increments of 15 instead of 1. Tapping the Fast Set checkbox enables fast set mode, and tapping this checkbox again toggles back to the default setting increment of 1.

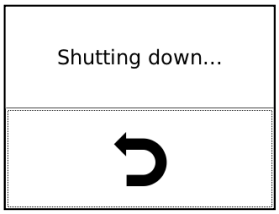
**Auto Shutdown Timer Setting –** Tap on the Auto Shutdown Timer Setting icon to initiate the option to change the timing of the auto shutdown of the unit. Tap on the option box and use the ▲ and ▼ arrows to adjust accordingly. Available shutdown times are **NEVER – 20 MINUTES in 5 minute intervals.** When the setting is complete tap the ✔ to approve the change*. To return to the previous menu tap ↩.




** The updated value becomes active the next time the unit is*

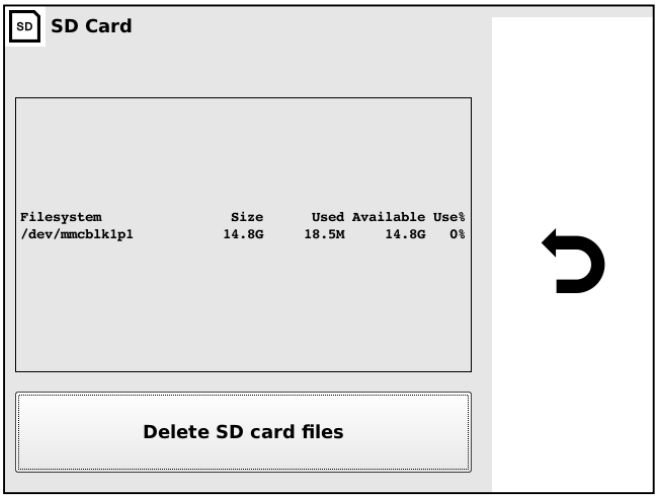
*Auto Shutdown messages:* If the auto shutdown timer is set to a value other than "Never" the following notice will appear for 30 seconds indicating the inactivity timer is about to expire and the unit will shut down. Tapping the reset tab resets the auto shutdown timer. Tapping ↩ on the shutdown message will clear the message and shutdown will continue.



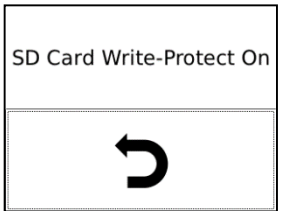

**SD Card Info Icon –** This screen provides information on the amount of storage used and available on the SD Memory Card. The user has the option in this screen to delete all files on the SD Card. A confirmation box will pop up to confirm your action.

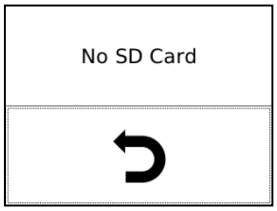

Tap 🗑✔ to confirm delete. To return to the previous menu tap ↩.

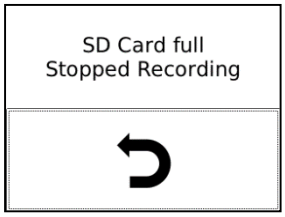



*Note: Deleting all files resets the file name counter to 1.*

*SD Card messages:* Possible SD card status messages that may be displayed are shown below.



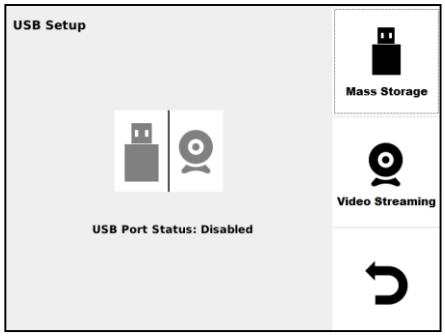



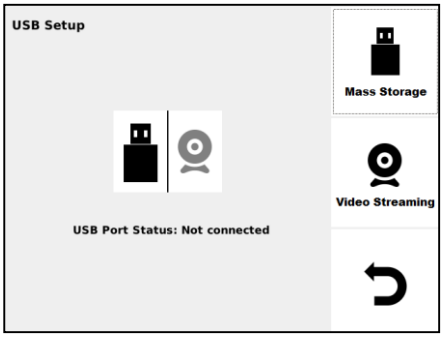
| | | |
|---|---|---|
| The SD Card's lock tab is in the write-protected position – slide the tab to unlock the card | There is currently no SD Card in the FVVS. Insert a card to allow image and video capture | The SD Card is full. Remove and replace with a different card or remove files to make additional space. |

**USB Icon**– The USB Icon brings up a screen that allows for multiple options when connecting the FV Videoscope to a PC via USB connection. To begin, connect the Micro USB Cable to the port on the right side of the videoscope's handle by gently pulling up the bumper cover.





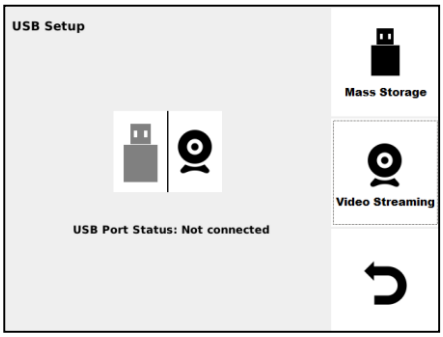

**Screen A** Shows the default settings, no ports are selected at this time (both center icons are greyed out) and the menu's USB Port Status field underneath the center icons indicates "Disabled".




**Screen B** Tap on the Mass Storage Icon. It will change from grey to black and the user may now connect the USB cable to a PC. Once the USB cable is connected to the PC the menu's USB Port Status field should indicate "Connected" and a new drive will automatically pop up on the PC. The user may now access from the PC the files saved on the SD card.

To turn off the USB Mass Storage mode, press the Mass Storage icon again. The USB Port Status field will indicate "Disabled" as shown in screen A above.

*Note: When USB Mass Storage is enabled and the PC is connected to the FV Videoscope via USB cable,* ***the PC takes full ownership of the FV Videoscope SD card****. No FV Videoscope access to the SD card is allowed while USB Mass Storage mode is active.*

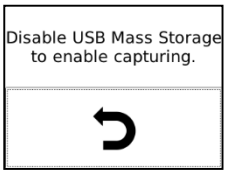



**Screen C** Tap on the Video Streaming Icon. It will change from grey to black and access is now available for direct to PC streaming. Once the USB cable is connected to the PC the menu's USB Port Status field should indicate "Connected". Live video feed will be available on both the FV Videoscope display screen and PC. Streaming to PC requires installation of the AMCap software. After the AMCap program is started on the PC, the USB Port Status field should change to "Streaming".

To turn off the USB Video Streaming mode, first exit the AMCap program, then press the Video Streaming icon again. The USB Port Status field will indicate "Disabled" as shown in screen A above.

*Note: The USB Mass Storage and Video Streaming functions are mutually exclusive and cannot be simultaneously enabled.*

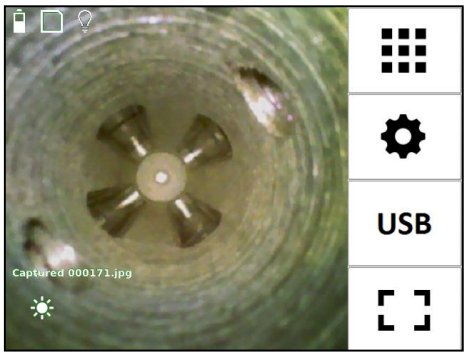
*USB messages:* The message below will be displayed if the USB Mass Storage mode is active and the user attempts to capture an image or video, or attempts to access the FV Videoscope gallery menu. To resume FVVS capture and gallery viewing functions the USB menu icons must appear as they do in **Screen A**.



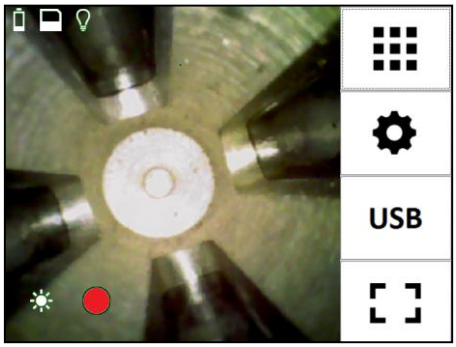

**Refer to the installation guide on the provided software disc for setup.**

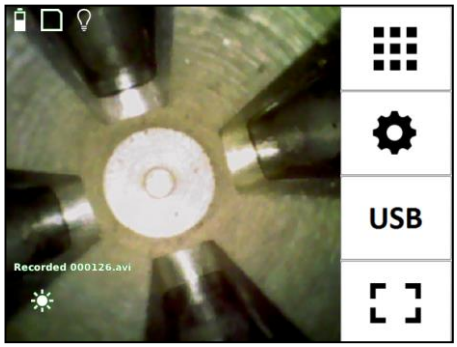
### D. Taking Still Images and Streaming Videos

i. To take a still image with the FV Videoscope, quickly press and release the red Trigger button with the operator's index finger as the unit is held. A message will appear on the screen indicating the filename under which the image has been saved (See below).


ii. To record video, press and hold the trigger button for at least 1 second to initiate video capture. A red"recording" icon will appear on the screen. To stop the recording of video, quickly press and release the Trigger button. A message will appear on the screen indicating the filename under which the video clip has been saved (See below).




**Note:** Estimated Storage capacity based on the provided 8 GB SD Card

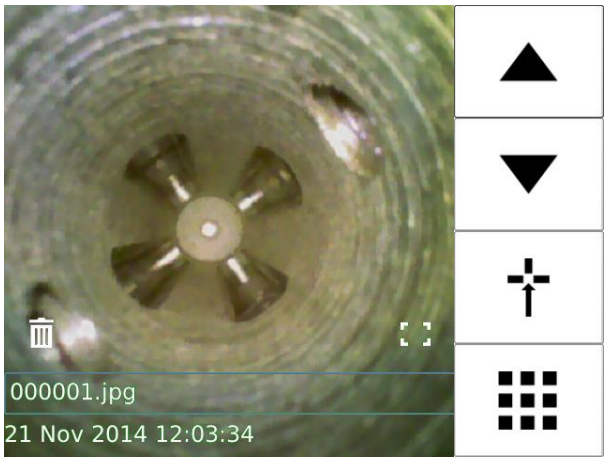
Maximum number of JPEGs: 100,000
**OR**
Maximum number of minutes of AVI clips: 60*
*Maximum record time for any single video clip is 2 GB (~15 minutes)

**Additional Scenarios:**

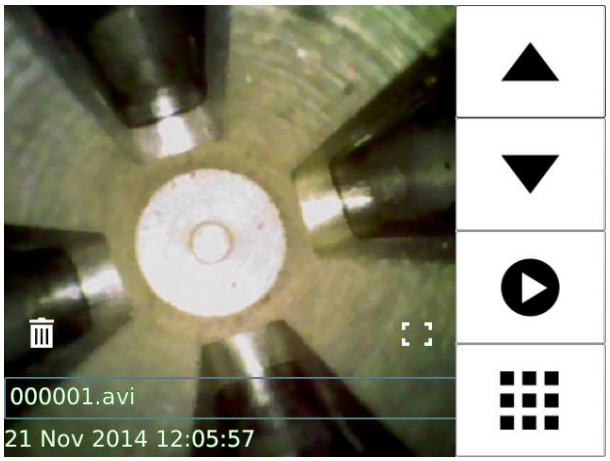
| |
|---|
| 50,000 JPEG's and 30 Minutes of AVI Clips |
| 25,000 JPEG's and 45 Minutes of AVI Clips |
| 75,000 JPEG's and 15 Minutes of AVI Clips |

### E. Viewing Images and Videos

i. **Viewing images** - Tap the Gallery Icon to open the file viewing location. The user may select the image file to view by tapping on the image. The user has the option to view the image full size, delete the image, or rename the image. The user can also scroll through the gallery of images by tapping the ▲ and ▼ arrows. Tap the Gallery Icon to return to the thumbnail Gallery.

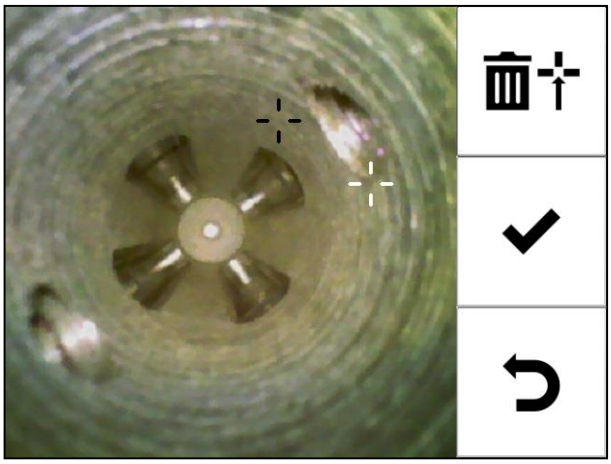

ii. **Playing Videos** - Tap the Gallery Icon to open the file viewing location. The user has the option to view the video in normal or full screen mode, delete the video, or rename the video. The user can also scroll through the gallery of videos by tapping the ▲ and ▼ arrows. To begin viewing the streaming video, tap the Play Icon to begin and the Pause Icon to pause at any time. Tap the Gallery Icon to return to the thumbnail Gallery.



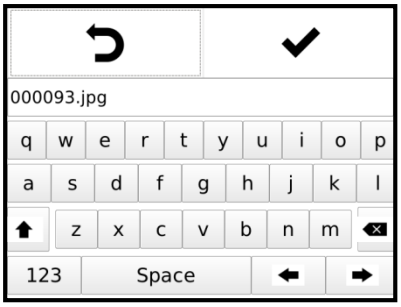

***Note:*** *The time/date stamp displays are suppressed when viewing images or clips in full screen mode.*

### F. Annotating an Image

To add an annotation to a still image, enter the Gallery by tapping the Icon. Select the still image to annotate by tapping directly onto the image. Tap the Annotate an Image Icon to open the annotation screen. To add an annotation tap on the image at the location where the annotation is desired. Up to four annotations may be added to an image. To delete an annotation, tap on the white annotation icon, it will change to black; tap the delete icon to remove. To move an annotation already placed on the image to a different part of the image, tap the white annotation icon. It will change to black. The annotation icon may then be dragged to the desired location in the image.



To save the annotation on the image tap on the ✔ . The next screen will allow for renaming the file. Tap on the ✔ to approve the changes, or press ↩ to go back the annotation screen.




Note the file name that is entered in the annotation keyboard will automatically be prepended with "a_" in the filename. For example, the filename "000093.jpg" gets saved as "a_000093.jpg" to indicate that this is an annotated copy of the original image file named "000093.jpg". When one scrolls through the image gallery, both the original, unannotated image and the annotated version will be visible.

***Note:*** *Moving an annotation by dragging is most easily done using a fingernail instead of the pad of the finger.*

***Note:*** *Images that have "a_" in the beginning of the file name have already been annotated and cannot be re-annotated via the annotation menu.*

***Note:*** *Adding an annotation to an image creates a copy of the image with overlayed annotations, the original file is preseved.*

### G. Operating Temperature

Operating temperature range from -25°C to 70°C (In Air) and 10°C to 30°C (In Liquid). **Avoid Articulation Below 0° F.** Under low temperature conditions, articulation becomes restricted and, if forced, can cause the articulation wires to stretch or break.

### H. Immersion of Components

**The insertion shaft of the FV Videoscope has been tested for immersion in water. For immersion in other liquids, consult the manufacturer prior to use**. Some caustic liquids may cause severe damage to the insertion shaft. In the event the FV Videoscope shaft becomes contaminated with any material or organic liquids, the shaft should be washed with a mild detergent and water. The shaft should be air dried completely after cleaning. Always clean any organic material from the shaft prior to storing the FV Videoscope.

⚠ **WARNING:** Do not immerse the FV Videoscope handle in any liquid.

### I. Cleaning

Wipe the insertion shaft periodically with a clean dry rag. Use a cotton swab moistened with 70% isopropyl alcohol to clean the lens. Dry with a lint-free cloth.

**DO NOT** put unnecessary pressure on the articulation section when cleaning the objective lens. Hold the stainless steel end tip while the instrument is positioned on a clean, dry surface.

⚠ **WARNING:** Do not clean the device with organic solvents of any type. Some solvents may cause deterioration of the insertion shaft or the handle.

## 3) CHARGING THE LI-ION BATTERY

Place the charger on a flat, level surface away from sources of heat and moisture. Plug the DC connector from the power supply into the back of the charger and connect the power supply to the main AC supply using the cable supplied. Plug the AC power adapter into a wall outlet.

Place the battery into the battery bay ensuring that the 5-way connector is fully seated. The LED's in the status window will provide status information and the charger will automatically begin charging.


**LED Status Window Indicators:**

| | |
|---|---|
| Green Flashing: | Battery charging |
| Green Solid: | Battery fully charged |
| Red Solid: | Error |

**Note:** A new, drained Li-Ion battery takes approximately 2 hours to charge fully.

## 4) VIDEOSCOPE STAND AND ADAPTOR

The tripod stand and adaptor are designed to allow for hands-free operation during bench top inspection. The stand adaptor latches onto the scope handle and uses a 1/4-20 thread to attach to the included tripod or other mounting device.

To attach the stand to the scope, thread the tripod screw into the mounting hole in the stand adaptor. Open the latch and place the scope handle in the adaptor with the top of the adaptor just below the trigger button as shown below. Close the latch to secure the scope handle in the stand.

To adjust the orientation of the scope, loosen the thumb screw on the tripod, move the scope to the desired position, and tighten the thumb screw.


## 5) MGT-FLEXIBLE GUIDE TUBE

### A. Attaching the Flexible Guide Tube

The FV Videoscope will accept an optional malleable guide tube; which may assist when positioning the shaft in hard-to-reach applications.

To attach the malleable guide tube: Uncoil the guide tube and lay flat.

**WARNING:** Do not attach the guide tube to the FV Videoscope while the guide tube is coiled. Damage to the FV Videoscope will occur.

Remove the strain relief from the FV Videoscope body and slide it down the shaft. Insert the FV Videoscope shaft into the end of the guide tube.

Slide the guide tube over the FV Videoscope's insertion shaft. Carefully align the connector's tongue and groove. Thread the malleable guide tube's knurled collar onto the FV Videoscope handle. Tighten the malleable guide tube connector finger tight only.

**DO NOT FORCE THE GUIDE TUBE ONTO THE HANDLE OR TIGHTEN WITH A WRENCH.**

### B. Removing the Flexible Guide Tube

Remove the malleable guide tube from the FV Videoscope before storing in the carrying case.

**WARNING:** Do not remove the guide tube to the FV Videoscope while the guide tube is coiled. Damage to the FV Videoscope will occur.

Lay the FV Videoscope, with the guide tube attached, on a flat surface. Loosen the guide tube connector and carefully slide the FV Videoscope out. Replace the strain relief on the FV Videoscope and tighten it finger tight.

**WARNING:** Do not operate the FV Videoscope without the strain relief in place.

## 6) WINDOW WEDGE

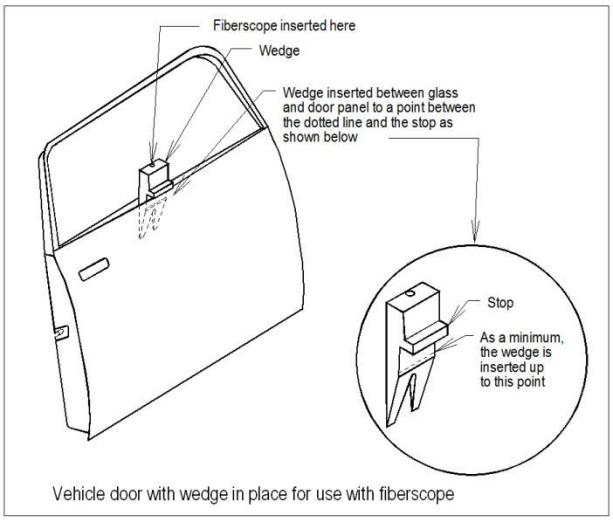
The wedge is designed to widen openings in order to prevent damage to the FV Videoscope's insertion tube when it is inserted between vehicle door panels, etc. for inspection purposes

**A. Inspection of Vehicle Door Parts using Window Wedge with the FV Videoscope:**

a. Carefully place the wedge between the exterior door panel and window with the flat side against the window, until the hole in the middle of wedge clears the door panel. **Under no circumstances should the wedge be forced.** (see illustration below)
b. Insert the FV Videoscope's insertion tube through the hole in the wedge to conduct vehicle door examinations.

**B. Inspection of other Cavities/Crevices (openings)**

1. Place the wedge between walls/panels or into crevices or narrow openings that could damage the FV Videoscope's insertion tube.
2. Insert the FV Videoscope's insertion tube through the hole in the wedge to conduct examination.



Vehicle door with wedge in place for use with fiberscope

## STORAGE


**CLOSING THE CARRYING CASE LID ON AN IMPROPERLY STORED INSTRUMENT IS ONE OF THE MOST COMMON CAUSES OF DAMAGE.**

The FV Videoscope Inspection Kit may be stored and transported in the provided carrying case.

**ALLOW THE INSTRUMENT TO WARM UP OR COOL DOWN TO OPERATING TEMPERATURE PRIOR TO USE.**

The FV Videscope's case and insert are designed to provide optimum protection during storage and transport. When the FV Videoscope is not in use, put it into the foam insert with the shaft in the channel below the top of the insert. Always store and transport FV Videoscope components in the carrying case.

If the FV Videoscope Inspection Kit has been stored for an extended period of time, check the battery pack prior to use.

Li-Ion batteries can be stored in charged or uncharged condition for extended periods without significant loss of performance. Partial self-discharge during storage is normal.

**WARNING:** Do not store the FV Videoscope with the battery inside the unit for an extended period of time.

## TROUBLESHOOTING

If abnormalities occur during FV Videoscope operation, discontinue use and consult Optim LLC.

**DO NOT ATTEMPT SELF-REPAIR!**

**IMAGE IS NOT CLEAR**

| **POSSIBLE CAUSE** | **SOLUTION** |
|---|---|
| Contaminant on lens: | Clean lens (Refer to Section I). |
| Fluid leakage into the internal shaft: | Return to Optim for service. |
| Loose Lenses: | Return to Optim for service. |

**INSUFFICIENT ARTICULATION**

| **POSSIBLE CAUSE** | **SOLUTION** |
|---|---|
| Stretched control wires: | Return to Optim for service. |
| Loose lever: | Return to Optim for service. |
| Shaft Damage: | Return to Optim for service. |
| Excessive number of bends in shaft: | Access path may be too complicated or intricate. |
| Articulation becomes frozen or sluggish: | Return to Optim for service. |

**NO ILLUMINATION**

| **POSSIBLE CAUSE** | **SOLUTION** |
|---|---|
| Battery is discharged: | Refer to Section 2, Charging the Li-ion Battery |

# TECHNICAL SPECIFICATIONS

## OPTICAL SPECIFICATIONS

| | |
|---|---|
| Depth of field: | 5mm - ∞ |
| Field of view: | 80° |
| Aperture: | F 7.0 |

## OPERATIONAL SPECIFICATIONS

| | |
|---|---|
| Device operating temperature: | -25° C to 40° C |
| Flexible shaft operating temperature: | -20° C to 70° C |
| Preferred shaft temperature for image stability: | 0° C to 50° C |
| Handle: | Not immersible |

## MECHANICAL SPECIFICATIONS

| | |
|---|---|
| Maximum outside diameter: | 6mm (.236”) |
| Shaft length: | 2.0m (79”) |
| Shaft construction: | Tungsten braid (Submersible in water) |
| Degree of articulation: | 110° up / down / left / right |
| Rigid distal end length: | 11mm |
| Weight: | 1,000g (2.3lbs) |
| Maximum Bend Radius: | 25mm (1inch) |

## VIDEO SPECIFICATIONS

| | |
|---|---|
| Image Capture: | Still images and streaming videos |
| USB Connection: | USB 2.0 Cable, 6 ft., A to Micro-B |
| Media Storage: | Standard SD card |
| Still Image: | JPEG 400 x 400 pixels |
| Streaming Video: | Motion JPG (AVI file extension) |
| Removable Storage Capacity: | Maximum number of JPEGs: 100,000 **OR**<br>Maximum number of minutes of AVI clips: 60* |
| Still Image Display: | Full screen display or thumbnail (9-images) |
| Video Controls: | Play / Pause |
| Stored Image Delete: | Yes |
| Time and Date Stamp: | Yes |
| Language: | English |

**INTERNAL LED LIGHT SOURCE SPECIFICATIONS**

| | |
|---|---|
| Battery: | Rechargeable Li-ion Battery |
| Average charge life: | 2 hours continuous operation |
| Light Source: | Integrated LED Light Source |

 **NOTE:** The handle assembly contains electrical components.

 **WARNING:** Do not use in an explosive environment.

 **WARNING:** Do not immerse or expose the handle assembly to liquids of any type.

**MGT-FLEXIBLE GUIDE TUBE SPECIFICATION**

| | |
|---|---|
| Outside diameter: | 11mm (.430 inches) |
| Inside diameter: | 7.9mm (.312 inches) |
| Length: | 80” |
| Shaft construction: | Stainless steel interlocked flexible metal tube with Polyurethane cover. |

**GENERAL PRODUCT SPECIFICATIONS**

| | |
|---|---|
| RoHs Compliant: | Yes |

## PARTS & ACCESSORIES

| DESCRIPTION | PART NUMBER |
|---|---|
| FreedomView LED Videoscope Kit | FV Videoscope Kit |
| FV LED Videoscope | F014942 |
| Smart Li-ion Battery | R014935P |
| Battery Charger Cradle with US AC Power Supply | R014936P |
| AC Power Supply for Charger Cradle – Euro | R014979P |
| AC Power Supply for Charger Cradle – UK | R014978P |
| Carrying Case | R014940P |
| MGT Guide Tube | F4093423 |
| Window Wedge | F004113 |
| FV Videoscope Stand Adaptor | F014949 |
| FV Videoscope Stand | F014998 |
| 8 GB SD Memory Card | R014939P |
| USB 2.0 Cable – 6’ | R014997P |
| USB to PC Streaming Software | R015058P |

## SERVICE

The FV Videoscope is serviced at Optim LLC's manufacturing facilities in Sturbridge, MA, USA. Use the following procedure to expedite returned goods for evaluation, repair or replacement.

1. Telephone Optim LLC at 1.800.225.7486 or 1.508.347.5100 or complete the online RMA request form on our website www.optim-llc.com/rma-request.

2. Provide a detailed description of the problem.

3. If the scope needs to be sent to Optim, a Returned Material Authorization number will be issued.

4. The scope should then be returned to the address below for repair or replacement.

5. Include a copy of the RMA inside package.

6. Have RMA visible on package.

**Returning Goods to Optim LLC**

***Ship to:***

Optim LLC
64 Technology Park Road
Sturbridge, MA 01566-1253 USA
Attention: Customer Service / RMA#_____

Upon evaluation, the customer will be contacted and advised of the findings and estimated repair cost. Repairs will not begin until authorization or a purchase order is issued indicating the approval of charges.

**Distributed by:** ABQ Industrial LP USA
**Tel:** +1 (281) 516-9292 / (888) 275-5772 **eFax:** +1 (866) 234-0451
**Web:** https://www.abqindustrial.net **E-mail:** info@abqindustrial.net

## WARRANTY

The Optim LLC FreedomView LED Videoscope is warranted to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase.

All non-warranty repairs will be warranted to be free from defects in materials and workmanship for a period of ninety (90) days from the date of the invoice.

Accidental damage and damage resulting from misuse or abuse, as well as normal wear and tear, will be subject to prevailing repair charges. Disassembly, alteration, or repair performed by any person not authorized by Optim will result in immediate loss of warranty.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EITHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Suitability for use of this device for any procedure shall be determined by the user. Optim shall not be liable for incidental or consequential damages of any kind.

## DO NOT ATTEMPT SELF REPAIR

**Please refer all warranty or service related questions to Optim LLC, 64 Technology Park Road, Sturbridge, MA 01566-1253 (800) 225-7486.**



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