

# MANUAL



**OPTICAM PUSH CAMERA**  
Manufactured by Insight Vision



## General Safety Guidelines

**WARNING:** Read all safety warnings and guidelines.

Failure to follow the warnings and instructions may result in electrical shock, fire, and/or serious injury.

### Work Area Safety Guide

Keep your work area clean and dry as possible.

Do not operate equipment in explosive or flammable environment.

Keep children away when operating the system.

### Electrical Safety Guide

Do not expose equipment to rain or wet environment.

Keep hands dry and all electrical connections dry.

Do not abuse the power cord.

### Personal Safety Guide

Be alert and aware of your environment.

Be prepared and follow instructions.

Use protective equipment when using the equipment.

### Use Equipment with Care

Do not force the equipment.

Do not allow inexperienced operator to use the equipment.

Maintain equipment and use only accessories that are recommended by the manufacturer.

### Use Battery with Care

Use equipment only with specific external battery pack.

Recharge with the charger specified by the manufacturer.

**If you need to contact customer service or for immediate assistance, contact Insight Vision.**

Phone: 800-488-8177  
Fax: 262-268-9952  
Email Technical Service: [service@insightvisioncameras.com](mailto:service@insightvisioncameras.com)  
Email Sales & Support: [sales@insightvisioncameras.com](mailto:sales@insightvisioncameras.com)  
Web Inquiry: [www.insightvisioncameras.com](http://www.insightvisioncameras.com)

**Please complete the following information for future reference:**

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Place of Purchase: \_\_\_\_\_

**The serial number is on the back of the unit. Retain this manual with your sales receipt as a permanent record of your purchase, in the event of theft, fire or warranty service.**



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## Warranty

Insight Vision warrants to the original purchaser that should any of its products prove to be defective in material or workmanship in normal use, within one **(1)** year from the date of delivery, Insight Vision will, at its exclusive option, repair, replace or exchange the product or any of its parts.

**THIS WARRANTY IS SUBJECT TO THE FOLLOWING LIMITATIONS:**

1. The warranty does not apply to any product which has been subject to accident, negligence, alteration, abuse, misuse, overload, repair by anyone other than Insight Vision or its authorized representatives, or not maintained in accordance with the manufacturer's suggested maintenance requirements.
2. The warranty applies only to components manufactured by Insight Vision. The appropriate manufacturer's warranty, if any, shall apply to components not manufactured by the company.
3. The warranty does not apply to flex-link connectors, rod, LED light rings, cable, rollers, O-rings, and skids, or other parts, which are considered consumable. The replacement of these items is part of normal product maintenance.
4. The warranty shall not apply if the products are used or operated in any manner not consistent with their intended purpose.
5. The warranty is limited to repair or replacement of defective products and parts during the warranty period, and shall be the exclusive remedy. Insight Vision shall in no event have any other obligation or liability of any nature arising from the breakdown, malfunction, defect or other failure of the product, including, without limitation, any liability for service, maintenance, repairs, personal injury, property damage, loss of profits, loss of use or other consequential damages.
6. Any action for any claimed breach of this warranty shall be brought within one (1) year from the date of delivery of the product.
7. The purchaser must return the defective product, part or component to the Insight Vision factory in Saukville, WI 53080 at the purchaser's expense, properly and adequately packaged, with insurance and transportation pre-paid. Insight Vision will either repair or replace the defective product, part or component, at its option, and will return it to the purchaser at the customer's expense. In no event shall Insight Vision be liable for delay in repair or replacement and return under this warranty. Insight Vision will endeavor to effect appropriate repairs in the shortest time practical, with respect to the customer having beneficial use of their equipment.
8. Insight Vision neither assumes nor authorizes any person to assume any other liability or make any other warranty in connection with the products.
9. THIS WARRANTY IS EXPRESSLY GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED. INSIGHT VISION EXPRESSLY DISCLAIMS ANY OTHER WARRANTY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

## General Overview

### Description

The Opticam system is a portable push camera designed to inspect and record mainlines, pipelines and underground infrastructure videos. The user-friendly keypad has been redesigned with an easy **“On Demand”** recording and snapshot button to help speed up inspection time. Technicians can easily record vital inspection data and client information using the available on-screen text-writer and footage counter. A built-in microphone and speaker allows the technician to record voiceover videos and then play the video back on the 10.4” LCD monitor. Geared to inspect sewer pipes from 3” up to 12” inch diameter. A built-in sonde which transmit a 512 Hz frequency which is locatable with a 512 Hz locator. The Opticam system also comes with a free downloadable Insight Vision App for IOS and Android mobile devices which allows users to view, record, snapshot and share sewer inspection videos.

### System Maintenance Requirements:

The following maintenance procedures are recommended for all Opticam systems. Standard warranty policy dictates that components and accessories subject to wear and tear are not covered under the One (1) year warranty. Therefore we are strongly recommending that all systems be maintained according to the following procedures. Please be advised that Opticam will not allow warranty coverage for these items if these procedures are not followed.

### Opticam Command Module:

The Opticam command module incorporates a USB port as its standard data storage device. This port has no moving parts or recording heads so it does not require a cleaning device. However, if water, dirt or dust become present in this connector due to extreme conditions in the field, owners/operators will be responsible for the cleaning of the connector/port area using a Q-tip or other non-abrasive cleaning tool to remove the debris before inserting a memory stick.

**NOTICE: All Insight Vision's command modules are not water-resistant. Insight Vision assumes no liability for any water damage, caused directly or indirectly, by improper usage of the system. Damage to the system components, the internal mother board, and injury to you may result if water is applied to the command module. Water damage will not be covered under warranty, and may be cause for voiding of command module warranty.**

FAILURE TO FOLLOW THIS PROCEDURE  
 INVALIDATES ANY WARRANTY CLAIM  
 AGAINST OPTICAM FOR THE FUNCTIONALITY  
 OF THE RECORDING DEVICE AND WARRANTY  
 COVERAGE WILL NOT BE GRANTED.



**O-Rings:**

O-rings are critical to insure the watertight integrity of the camera and connection areas. O-rings are subject to wear and tear and can also suffer failure due to age and other factors. They should be inspected regularly and replaced whenever needed. When O-rings are working properly, a small amount of water and sometimes fine particles of grit will build up behind them. Any time the camera or sonde connection is taken apart and exposed, there exists the risk of grit wearing down or possibly even tearing the O-ring. It is also possible for water to then enter the connection area once exposed. **All connections, once opened or exposed, MUST be thoroughly cleaned and dried before re-connecting.** We recommend using an old toothbrush or other soft bristled brush to clean the O-ring areas and remove the grit or fine debris. Then, completely dry the area around male and female connector and the O-ring before re-connecting.

**Sonde:**

The sonde transmit a 512hz frequency so that it's locatable with a locator. We recommend after every inspection, power off the system and disconnect the sonde. Wipe down the sonde with a damp towel and check for damages or missing O-rings on the male and female connector. Read O-Rings above when re-connecting.

**Camera Head:**

All Opticam camera heads are covered for one (1) year under the standard warranty against all defects in workmanship. These cameras are all sealed and water-resistant. Warranty coverage will apply for any and all internal failures to the camera head unless external damage is evident. This would include a broken window and any deformation to the stainless steel metal housing of the camera head.

**NOTICE: The system has provided protective 2" and 3" skids that MUST be used at all times. These skids are designed to aid in the centering of the camera head and have the added benefit of helping to protect the camera head from extreme wear. Failure to use the provided skids will result in the direct wear of the metal, especially at the front window array, resulting in the eventual wearing down of the metal. This wear could result in a breach of the window seal allowing water into the camera head. This type of wear will not be covered under warranty.**

**Hub Assembly:**

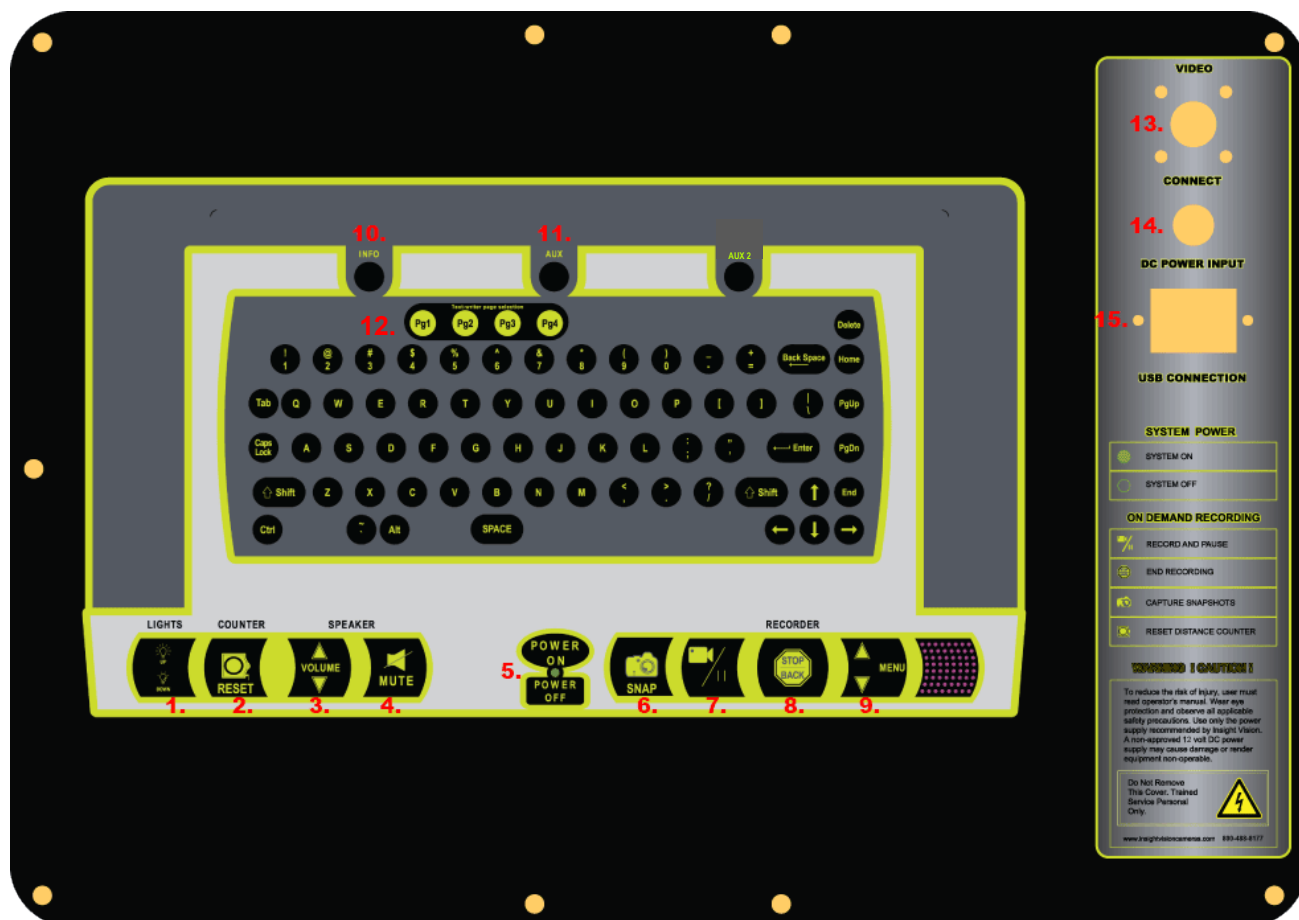
The hub assembly houses the encoder, the wiring terminals, and solders joints that are susceptible to water damage. Although it is very well covered and enclosed, the electronic components are not water-proof. Only wipe with damp cloth when cleaning. You will find the warning label on the hub assembly:

**NOTICE: DO NOT POWER WASH THE HUB ASSEMBLY AREA.**

**Push Rod:**

The Opticam push rod terminations are covered for one (1) year under warranty. This warranty policy covers workmanship on the termination connection **ONLY** and does not cover push rod breakage or kinks in other parts of the rod. While recoiling your push rod, wipe down with damp rag and check for kinks, or cracks after every inspection.

## Main System Controls



1. Light Up/Down – Up will increase and down will decrease brightness on the camera head light ring.
  - Recommended to keep light level at maximum for most pipe conditions
2. On-Screen Distance Counter Reset Button - The button will reset distance counter to zero.
  - If you are doing underground constructions, we highly suggest that you use a 512 Hz locator for more accurate reading of location. The counter only read distance pushed through bends and 90's, does not pin point area.
3. Volume Increase/Decrease – Adjust volume for video playback. **(Use for audio playback only!)**
4. Mute – Mute/unmute audio during video playback. **(Use for audio playback only!)**
5. System Power **ON/OFF** button - **GREEN** LED indicates the system is ON.
6. Snapshot – allows for JPG picture capture during live inspection

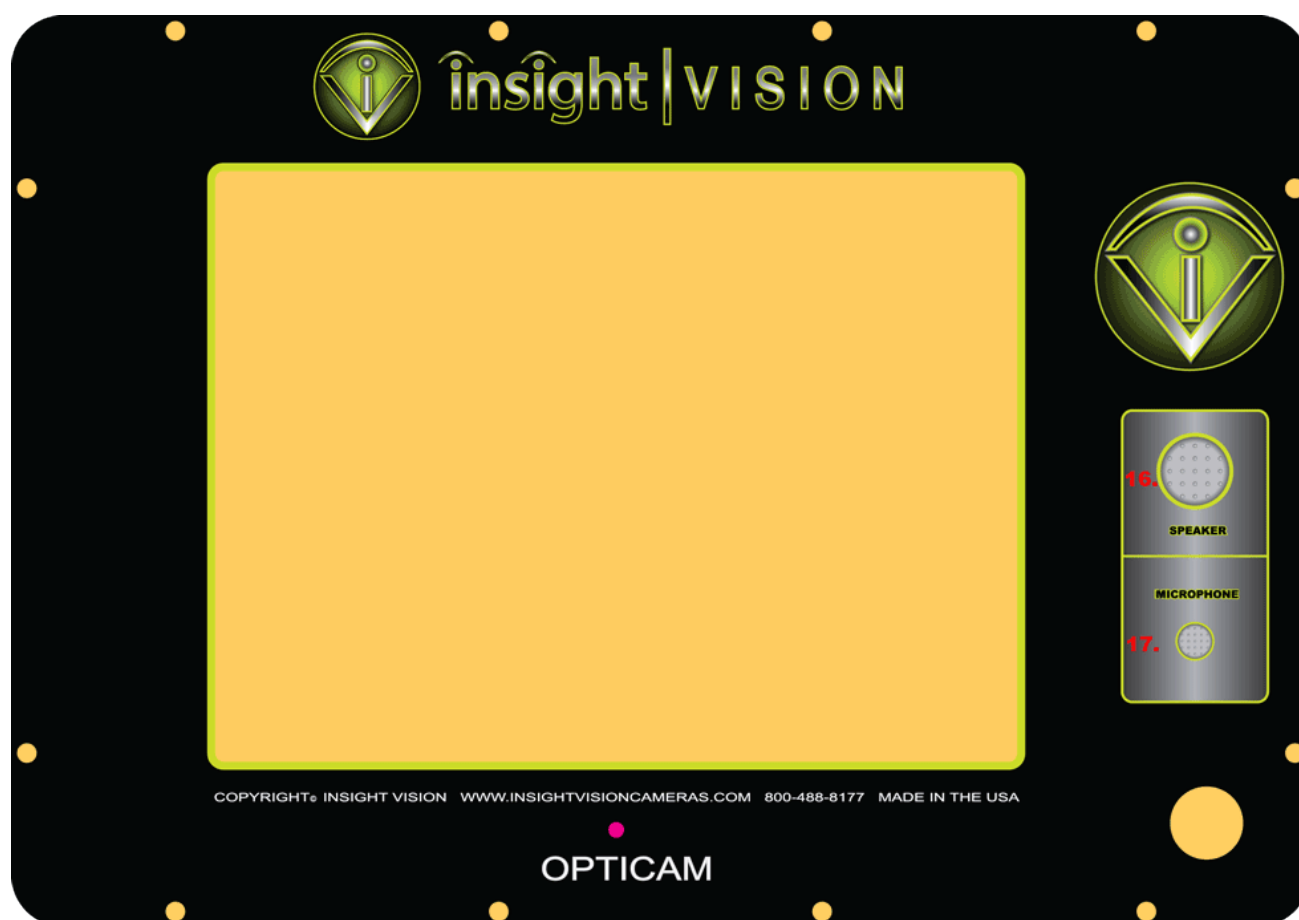




7. Record/Pause - Allows for recording of live video. Pressing the button during recording will pause current recording until the button is pressed.
8. Stop/Back – Pressing during recording will end the current recording.
  - Pressing while in the Menu will move the menu back 1 step.
9. Menu and Up/Down arrows- These buttons along with the stop/back button allow for movement through the menu.
  - During recording, the Up arrows turns **ON** the microphone & Down arrows turn **OFF** the microphone
  - Menu button is also the selector in the settings
10. Info – Allows for quick access for serial number and software revision.
11. Aux and Aux 2 buttons are not currently utilized
12. Text-Writer Page Selector - 4 Pages
  - A. Pg. 1 = No text. Distance counter only
  - B. Pg. 2 = Contractor Form Page
  - C. Pg. 3 = Client Form Page
  - D. Pg. 4 = Free Form Page
13. Main System Connection - Connection Port for the Video Interconnect Cable.
  - This connection will power your Opticam Inspection Camera System.
  - Make sure the two arrows are align, push to connect
  - Twist and pull to disconnect
14. Main System Power Connection – Connection for the external 12V DC Power Supply cord.
15. USB Port – Used to record video using a USB memory stick.
16. Built-In Speaker - For audio playback
17. Built-In Microphone - For voice recordings
  - Microphone is always activated.
  - To change microphone option, go into the menu setting, step 9.

## MAIN SYSTEM CONTROLS (CONTINUE ON NEXT PAGE)





## **SAFETY INFORMATION**

### **CAUTION:**

- To reduce the risk of injury, user must read operator's manual. Wear eye protection and observe all applicable safety precautions.

### **NOTICE:**

- Use only the power supply recommended by Insight Vision. A non-approved 12 volt DC power supply may cause damage or render equipment non-operable.

### **WARNING:**

- To reduce the risk of injury and prevent equipment damage. Do not remove the display and keyboard cover on this command module without the supervision of a trained service technician.



## How to Record

The built in recorder is activated along with the main system power. Before recording assure a USB recording device is inserted into the USB jack on the top panel, an 8GB USB jump drive is included with the purchase of an Insight Vision command module.

### **Video Recording:**

1. To start recording press the Record/pause button once
2. To pause/continue an active recording press the Record/Pause button
3. To mute/unmute recording in process
  - a. Press the menu down button to mute the recording
  - b. Press the menu up button to unmute the recording
4. To end recording press the Stop/Back button
5. To view/ playback recorded videos
  - a. Press the menu button and select “play video” prompt, videos are labeled with a time and date code with the most recent recording at the top of the list.
  - b. Press the up and down to select videos
  - c. Press the menu to play the video
6. Utilize the volume increase/decrease and mute button to adjust volume during playback

### **Capture Snapshots:**

1. To take a JPG picture press the “SNAP” button on the keypad. This feature can be utilized while video recording is actively running, or when just live viewing.
2. To view stored JPG files press the menu button when recording is not active.
  - a. Press arrow down to “View snapshots” option and
  - b. Press menu to select option. Snapshots are arranged by time and date code with the most recent picture at the top of the list.

## WiFiAV-HD Inspection App

Your Opticam inspection system has an integrated wireless module built into the command module to stream live video to a smart phone or tablet. The live streaming application is supported by Apple and Android operating systems. With this app you can view, record and save both video and pictures on your mobile device.

Free to download, the WIFI AV-HD App is on the Apple Store for Apple devices, or the Google Play Store for Android devices. In the search section enter "WIFI AV-HD". Select the WIFI AV-HD app and download it to your device.

To operate wireless streaming from your Opticam command module, the Opticam unit must be powered on.

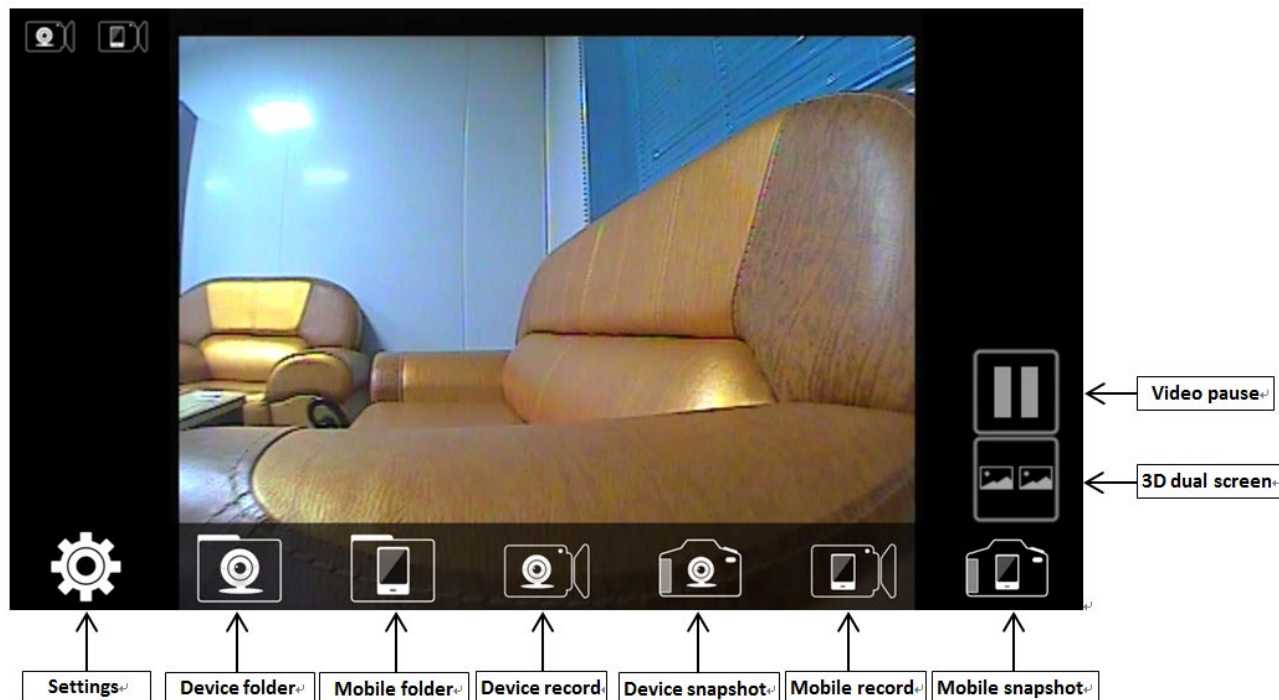
**Step 1:** Download the "WIFI AV-HD" app from app store on the mobile device you want to use.

**Step 2:** Go to your WiFi settings on your mobile device and select or connect to the command module's WiFi network. If it is the first time your mobile device is connecting to the Opticam unit you will be prompted to enter a password. The password is "12345678" – Important: See notice below about passwords.

**Step 3:** Open the "WIFI AV-HD" app on your mobile device. The image from your Opticam camera should be showing on your mobile device through the "WIFI AV-HD" app. (Repeat step 2 if an image from your camera is not showing on your mobile device.)

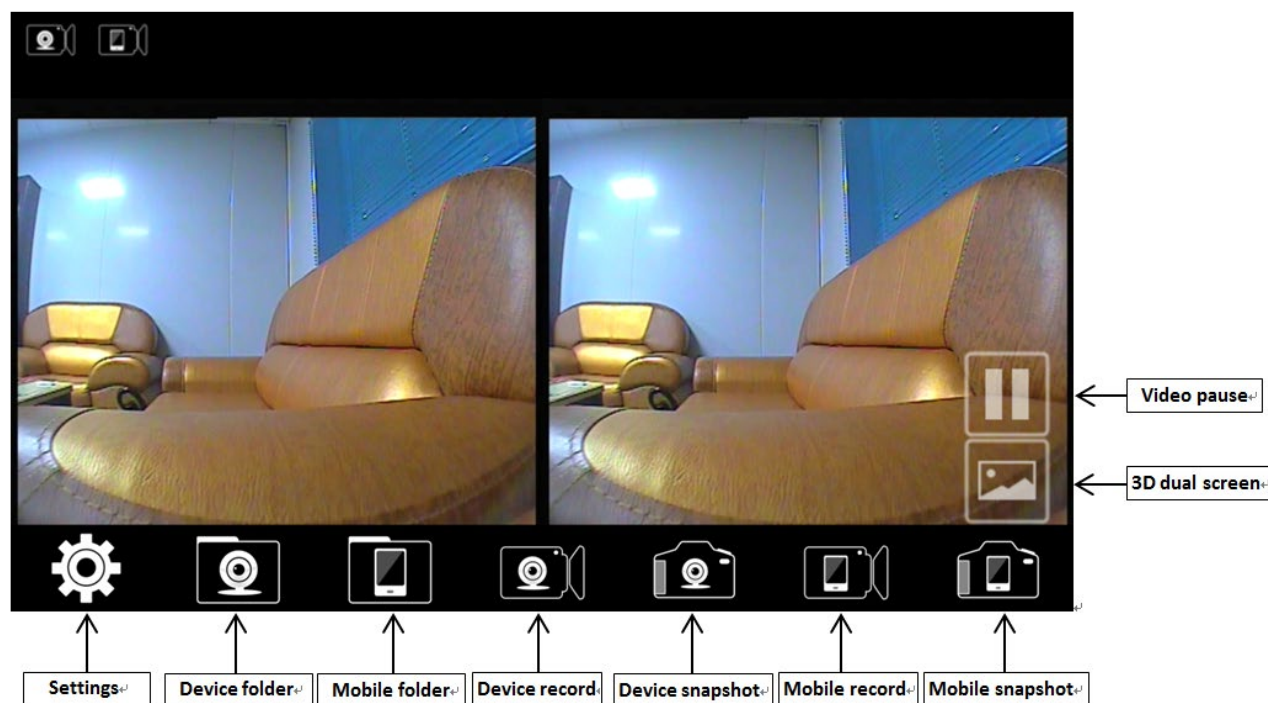
### Notice:

The default password is 12345678. It is not advised to change your SSID or password on the Opticam wireless module, there is no master reset if the SSID or password are changed and the password is forgotten. The system will have to be sent or brought to your nearest dealer for factory reset, not covered under warranty. (ONLY ONE DEVICE MAY BE CONNECTED TO THE APP AT A TIME)



## Mobile App Controls

1. **\*Settings\*** Use with caution, changes to your **Wi-Fi SSID and PASSWORD**  
 Once changes are made, do not lose your password or you will have to send in your camera system for a factory reset. ***\*Not Covered Under Warranty***
2. Device / mobile folder- accesses the folder on the device or mobile device, if available.
3. Device record / Device Snapshot- allows you to record or take a snapshot on the device.
4. Mobile record / Mobile Snapshot- allows you to record or take a snapshot from the mobile phone.
5. 3D dual screen- allows you to split the screen into two viewing areas.
6. Video pause- allows you to pause the current recording.



### NOTICE:

If you are experiencing unusual background noise on your unit while using the WIFI app, adjust your WIFI app device settings to channel 10, then restart your command module.



## Base Frame

### Vertical Frame

The large base frame is a rugged aluminum reel designed to house 200', 300' and 400' of rigid (A) type rod.

This base frame comes with an integral digital footage counter. The design of this frame brings the push rod out from the front to allow for easy operation. When camera is not in use please store in basket. All anti-slide supports are made with a non-marring material safe for all floor surfaces. The top part of the base frame includes a mounting bracket for any of the Opticam command modules.

### Push Rod

This push rod is .475" in diameter and has been specifically designed for longer pushing distances in 2"-12" pipe. Attempts should not be made to push this rod type through 2" 90 degree bends as rod breakage may occur. This rod type is available in 200', 300' and 400' lengths on the large vertical base frame.

### Debris Bag

The Debris bag is intended to minimize drippings while working indoors.

It is easily removable for cleaning.

**Notice: Included with the system.**



### Video Connection Port

The video connection port is installed on the frame and on the command module.

You will need to connect the command module to the reel before starting up the camera system.

### Spring Removal Tool

This S-tool is used to removal the spring from the push rod.

**Caution: Always wear safety glasses while preforming any repairs.**

**Notice: Included with the system.**

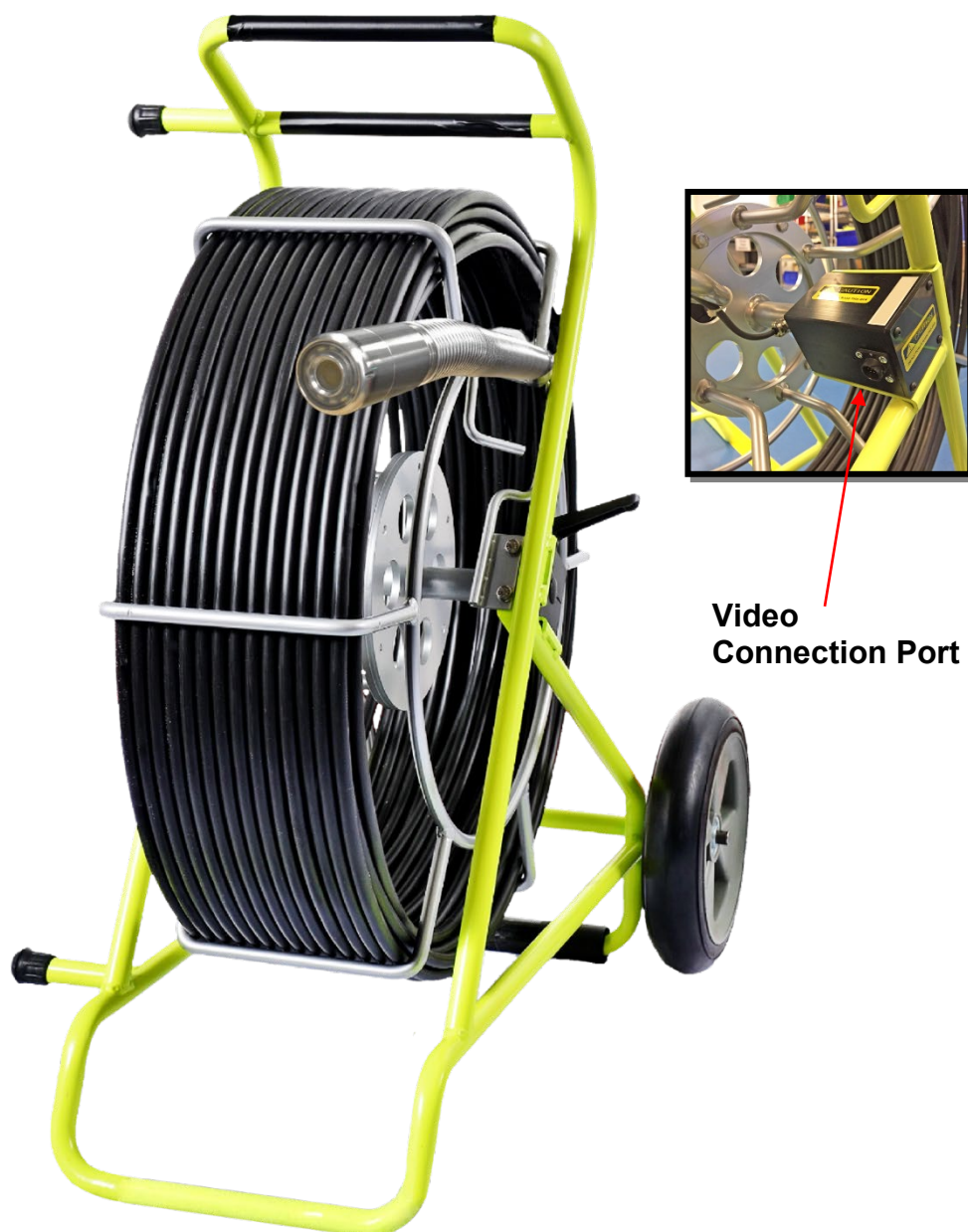
How to remove spring from push rod video link.

<https://www.youtube.com/watch?v=i5k3kmLG3tl>





**NOTICE: DO NOT POWER WASH THE REEL!**



**Video  
Connection Port**



## Camera Head

This camera has a self-leveling feature that will position the camera so that the top of the pipe will appear on the top of the display. This is a color camera with a LED light ring for illumination of the sewer pipe being inspected. This camera is intended for operation in pipes 2-12" I.D. This camera will function with any of our Insight Vision command module. The diameter of the camera head is 1.30" x 2" long. Designed best for 3" up to 12" sewer pipes inspections. New modular design for quick change service repair. Most repairs are done within 24 to 48 hours after receiving the equipment.

### CAMERA FEATURES:

- Modular Design Camera
- Clearview Picture and Video
- Stainless Steel Housing
- Water-Resistant Camera Head
- Ultra-bright LED Lights
- Tough 2mm Sapphire Glass



### WARNING:

- To prevent eye damage, **DO NOT** stare directly into the light beam at a close range.
- The camera head is not intrinsically safe or explosion proof!

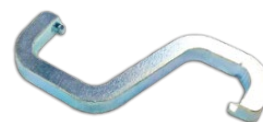
### NOTICE:

- The sonde is not built into the camera head. It is a removable sonde connector.

## Camera Head Removal Tool

This S-tool is used to remove the camera head from the spring.

**Caution: Always wear safety glasses while performing any repairs.**



How to remove camera head video link:

<https://www.youtube.com/watch?v=tGLEGj2H5Us>

## Flexi-spring Wire form

This flexi-spring is connected to the end of the push cable that protects the sonde and assist with bends inside pipes.





## Sonde/Spring Assembly

The removable sonde is connected inside the spring assembly. It continually transmits a signal at 512Hz, while the camera is turned on, and can be located with any locator capable of picking up a 512Hz signal.



## Skid Set

The skids are intended to protect the camera from damage due to debris in the pipe being inspected. The standard skids come in two sizes. The 2" small skid is for use in 3-4" diameter pipes. The 3" large skid is for use in 4-6" diameter pipes.

**Notice: Included with the system.**



## Skids Allen Wrench

The skid is one-piece device that affixes over the camera head. The skid is used to protect the integrity of the camera head and normal usage wear and tear. It is held down by three set screws. Use the Allen wrench provided by Insight Vision in the accessory bag to loosen the skids to slide out the camera head.

## Auxiliary Power Adapter

Use this auxiliary power adapter to power up the camera system.

**Notice: This is a 12 volt system. Included with the system**



## 12 Volt Power Cord

The 12 DC volt power cord is used to power up your camera system.

**Notice: This is a 12 volt system. Included with the system.**



## Video Inter-connect Cord

The video inter-connect cord will need to be connected from the reel to the command module to display video.

**Notice: Included with the system.**

<https://www.youtube.com/watch?v=orwmYRtK78M>





## F.A.Q

1. How do I know if I am recording on my new Opticam System?
  - a. "Recording" along with the time will be displayed in the upper left corner of the command module.
2. How do I playback my recording on my computer?
  - a. The Insight Vision Media Player is installed on to your 8GB USB stick that is included with the purchase of new Opticam system. The Insight Vision Media Player can also be downloaded from Insight Vision website to your USB stick or computer.
  - b. Insert USB Memory Stick into your computer. From the USB Memory Stick, launch the Opticam Media Player. Simply use the open file functions in the player to open and play recorded videos. Please contact your computer support person for additional information on playing videos on your specific computer.
3. How to clean the LCD screen and keypad?
  - a. Use wipes and spray cleaner that are designed to clean screens i.e. TV, Computer screen. Do not spray directly onto the screen or keypad. Spray onto the cotton cloth (to prevent scratches) first and then wipe.
4. How often should I clean the camera head?
  - a. After every use, always take off your camera head and clean it.
5. How often should I clean the reel?
  - a. After every use, always shut-down your camera system first and wipe down.
  - b. Do not power wash the camera system.

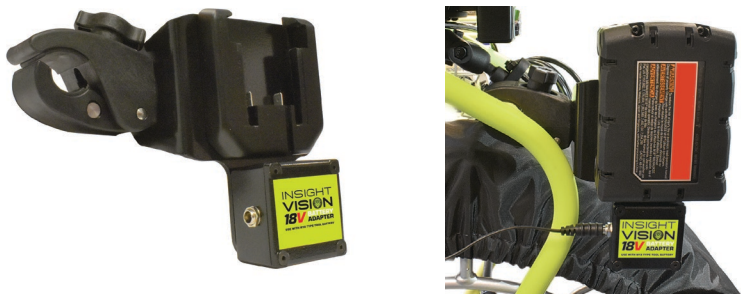
## Trouble Shooting Guide

1. Why is there fog inside my camera lens?
  - a. Water moisture indicates a failure of the camera head seal. The Opticam camera head was manufactured to the highest standards and procedures.  
  
***Please contact Insight Vision for assistance in returning your system to its optimum performance.***
2. What happens if I lose video during operation?
  - a. Always shut-down your camera system before removing or reconnecting any part of the camera system.
  - b. The loss of video during operation could indicate a number of different situations. Your Opticam system includes exclusive live-personal support. Please contact Insight Vision for assistance in returning your system to its optimum performance.
  - c. Power down the camera system and remove camera from push rod and reconnect.
  - d. Disconnect push rod from basket at basket hub and connect camera to hub connection.
3. Why don't I see my distance counter on the screen?
  - a. Press the "PG1" button on the front of your Opticam command module. Use the up and down arrow on the QWERTY keypad to move the location of the distance counter.
  - b. Please contact Insight Vision for assistance if the distance counter fails to reappear after pressing the "PG1" button.
4. What happens if I lose the LED lights on my camera head during an inspection?
  - a. Verify that the LED lights are fully bright by press and hold the lights "UP" button, on the front of your Opticam command module, a number of times.
  - b. Disconnect push rod from basket at basket hub and connect camera to hub connection.
  - c. If the LED lights do not increase to full brightness contact Insight Vision for additional support.

5. What should I do for services repairs, and warranty returns?
- All services repairs and warranty returns will need an RMA (Return Material Authorization) number.
  - Simply call us directly at 800-488-8177.
  - Ship to Insight Vision, 600 Dekora Woods Blvd. Saukville, WI 53080.
6. Does the Opticam sewer camera have an internal battery options?
- No. The Opticam camera does not have an internal battery option.
  - You can purchase a M18 Milwaukee Tool Battery Adapter. Use a M18 Milwaukee Tool Battery to power your Opticam unit.
  - You can purchase a portable lithium battery pack, holds up to 6 hrs. **See below.**

***Internal Battery not included.***

***M18 Battery Adapter is available for purchase***



***External Battery Pack is available for purchase – Use 12V port***



**CAUTION**  
**DO NOT USE**  
**20V**



## **Technical Specifications**

### **Camera:**

Self-Leveling:	Yes
Camera Dimensions:	2" L x 1.3" Diameter
Video Resolution:	640 x 480
Weight:	5.9 Ounce
Light Ring:	12 LED <b>*See camera section in the manual for safety information</b>
Image Sensitivity:	.025 Lux
Image Size & Type:	1/4" CMOS
Construction:	Stainless Steel Body
LED Window:	Polycarbonate
Camera Window:	Sapphire Glass

### **System Control:**

Case Dimensions:	12"L x 9"W x 11"H
Video Format:	640 x 480
Data Storage:	8 GB USB stick <b>*Included with the system</b>
Keyboard:	Full "QWERTY" style membrane
Recording format:	H.264
Image Capture:	JPG
Text Generator:	Yes
Distance Counter:	Displays on screen FT/M
Video Out:	No
Controls:	One Touch Recording
Power Source:	12V 5Amp DC <b>*Included with the system</b>
Weight:	8 lbs.
LCD Size:	10.4"
External Battery:	Lithium-ion <b>*Optional Add-on</b>

### **Push Rod/Frame:**

Cable Length:	200-300-400ft.
Pipe Size:	3" to 12"
Cable Jacket:	Polypropylene jacket
Cable Core:	Spiral Wound Fiberglass push rod
Push Rod Diameter:	0.475" OD
Frame Dimensions:	30"L x 16-1/2"W x 32-1/2"H
Weight:	62 lbs. (200 ft.)
Sonde Frequency:	512Hz
Finish Coating:	Powder Coated
Protective Skids:	2" & 3" <b>*Included with the system</b>