

Gen-Eye Fusion™ Video Pipe Inspection/Location Systems Operating Instructions



Your Gen-Eye Fusion Video Pipe Inspection/Location System is designed to give you years of trouble-free, profitable service. However, no machine is better than its operator.

Read, understand and follow all safety warnings and instructions provided with the product. Failure to follow the warnings and instructions may result in electric shock and/or serious injury. Save all warnings and instructions for future reference.

SAVE THESE INSTRUCTIONS!

General
PIPE CLEANERS



WARNING

Read and understand operator's manual before using this machine. Failure to follow operating instructions could result in death or serious injury.

WARNING! Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious personal injury. Replacement manuals are available upon request at no charge, or may be downloaded from our website, www.drainbrain.com. Instructional videos are available for download on our website, and may be ordered. If you have any questions or problems, please call General's customer service department at 412-771-6300.

SAVE THESE INSTRUCTIONS!

These instructions are intended to familiarize all personnel with the safe operation and maintenance procedures for the Gen-Eye Fusion™ Video Pipe Inspection/Location Systems.

SAFETY SYMBOLS



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazard with a low level of risk which, if not avoided, will result in minor or moderate injury.

WARNING



Electric shock resulting in death can occur if you plug this machine into an improperly wired outlet. If the ground wire is electrified, you can be electrocuted by just touching the machine, even when the power switch is off. A ground fault circuit interrupter will not protect you in this situation. Use a UL approved tester to determine if the outlet is safe.



Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Power tools create sparks which may ignite the dust or fumes.



Always wear safety glasses and rubber soled, non-slip shoes. Use of this safety equipment may prevent serious injury.

GENERAL SAFETY RULES



WARNING

Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

SAVE THESE INSTRUCTIONS!

Work Area

1. **Keep work area clean and well lit.** Cluttered benches and dark areas invite accidents.
2. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
3. **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control.

Electrical Safety

1. **Grounded tools must be plugged into an outlet, properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.** If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
2. **Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is grounded.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately.** Damaged cords increase the risk of electric shock.
5. **When operating a power tool outside use an outdoor extension cord marked "W-A" or "W".** These cords are rated for outdoor use and reduce the risk of electric shock.
6. **Keep all electric connections dry and off the ground.** Reduces the risk of electric shock.
7. **Do not touch plugs or tools with wet hands.** Reduces the risk of electric shock.

Personal Safety

1. **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
2. **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
3. **Remove adjusting keys or switches before turning the tool on.** A wrench or key that is left attached to a rotating part of the tool may result in personal injury.

4. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.
5. **Always wear safety glasses and rubber soled, non-slip shoes.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.
6. **Rubber glove inserts should be worn for health and safety reasons.** Sewer lines are unsanitary and may contain harmful bacteria.
7. **Check to make sure pipes are not electrically hot.** In some cases, ground circuits may be returned to cast iron pipes causing them to be electrically charged. Care should be taken to check the entire length on any pipe you are going to inspect.
8. **Prevent object and liquid entry.** Never push objects of any kind into this product through the openings as they may touch dangerous voltage points or short circuit to parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

Tool Use and Care

1. **Use clamps or other practical way to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
2. **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
3. **Do not use tool if switch does not turn it on or off.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
4. **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventative safety measures reduce the risk of starting the tool accidentally.
5. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
6. **Maintain tools with care.** Keep cutting tools sharp and clean. Properly maintained tools, with sharp cutting edges are less likely to bind and are easier to control.
7. **Inspect for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation.** If damaged, have the tool serviced before using. Many accidents are caused by poorly maintained tools.
8. **Only use accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

Service

1. **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified repair personnel could result in injury.
2. **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

SPECIFIC SAFETY RULES

1. **Do not use tool if switch does not turn it ON or OFF.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.



2. **Be sure that the unit is plugged into a properly grounded receptacle.** If in doubt, check receptacle before plugging in machine. Check the power cord to see that there are no cuts or frays, and that the grounding prong on the plug is still in place.
3. **If the power cord supplied with the machine is not long enough, be sure to use a 16 gauge heavy duty extension cord no more than 50 feet long and in good condition.** Using lighter cords can result in severe power loss and motor overheating.
4. **Be careful when cleaning drains where cleaning chemicals have been used.** Avoid direct contact with corrosive drain cleaners. Drain cleaning chemicals can cause serious burns, as well as damage the cable. Neutralize or remove corrosive drain cleaners in the drain before starting the job.
5. **Do not operate machine if operator or machine is standing in water.** Will increase risk of electrical shock.
6. **Wear safety glasses and rubber soled, non-slip shoes.** Use of this safety equipment may prevent serious injury.
7. **Protect against lightning.** For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power surges.
8. **Protect against excessive heat.** The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
9. **Only operate the Gen-Eye Fusion with the 15 volt power supply included with the Command Module or the Gen-Pack battery adapter using the Milwaukee M18 battery or equivalent.**
10. **Do not plug a hard drive into the external USB port.** External hard drives are not supported with Gen-Eye Fusion monitors.
11. **Do not use a USB flash drive larger than 64 GB.** The recording drive could be damaged and data could be lost if a larger flash drive is used.
12. **Do not operate the Gen-Eye Fusion Command Module with both the 10-pin reel connector and the Probe Rod connected at the same time.**

FEATURES



BATTERY ADAPTER



Back View attached to Docking Arm



ABOUT THE INSPECTION CAMERA

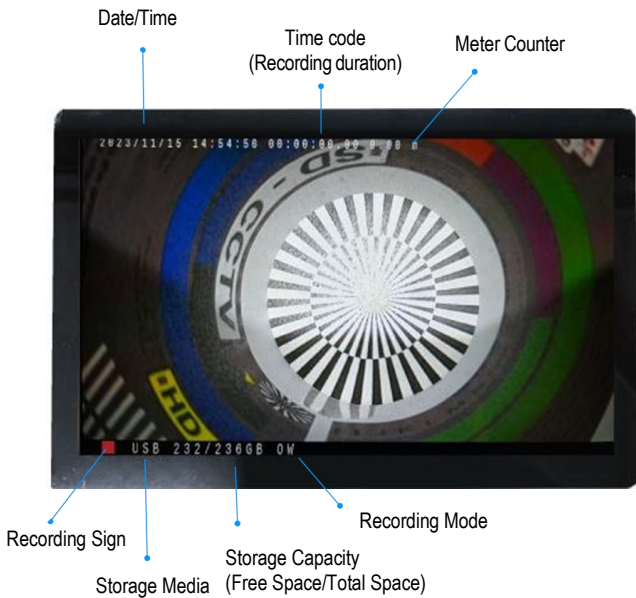
The Gen-Eye Fusion video pipe inspection and location system is manufactured for harsh environments, however, it should be handled with care. Use the Gen-Eye Fusion as an inspection tool only, never as a drain cleaning tool. Damage may occur if the camera head is dropped or “buted” severely against the pipe or any other hard surface. Once you see the obstruction, remove the camera head from the line and use the proper tool to clear the stoppage.

The stainless steel camera housing is made to protect the camera and internal electronics. However, it can be damaged by severe impacts which could cause failure of the O-ring seals or the electronics within. The camera, housing, and lens should be checked thoroughly after each use for signs of damage and, if required, should be corrected prior to further use.

COMMAND MODULE DISPLAY INFORMATION















GEN-EYE FUSION COMMAND MODULE

The Command Module should not be used in wet locations or in the rain, as moisture may cause damage to the unit.






TOUCH HOT KEY DEFINITION




- Slightly tap the LCD touch display, 8 functional touch hot keys will display.
- Touch hot keys will automatically disappear under below scenarios:
 - after 15 seconds without any operation
 - touch the panel again
- Touch hot keys is available when in live view & during text overlay input. When entering MENU setting & playback file browser, touch hot keys wouldn't be enabled.

Touch Hotkey	Definition
 ↔ 	Click REC to start recording. A red square will be displayed on the live view to indicate the AVR is recording. Once recording starts, REC will automatically become Pause key. Click Pause key to pause recording and the red square on the live view will become pause icon. To resume recording, click REC again and AVR will start recording again, continually in the same file.
	When entering Playback File Browser or display setting menu for configuration, AVR will automatically stop recording.
	When the AVR is recording, click Stop key to stop recording and save the file.
	In live view and during playback, click SNAP to take snapshot and a photo icon  and a yellow square will be displayed on the live view.
 ↔ 	Click TX key to generate text comment during recording. During text input, AVR will pause recording and a transparent area will pop up for user to input text via on screen Virtual Keyboard, or standard USB 101 keyboard. At this time, TX key will become TX OK key. After user finishes text input, please click TX OK key and AVR will resume recording with the text overlaid on the video for a certain period of time (configurable on the OSD menu, 5s/10s/20s/40s). After the pre-set recording time with text is up, the input text will disappear automatically and AVR will continue recording. During text input, only TX OK & Brightness buttons are enabled.
 ↔ 	TGL enabled  means that display overlay in live view (such as date/time, meter counter, storage status, etc.) will be off (i.e. only the camera image will be displayed). TGL disabled  means that OSD overlay in live view (such as date/time, meter counter, storage status, etc.) will be displayed.
	Adjust the brightness of LCD panel. Total 10 levels.
	Playback the recording videos.
	Enter OSD menu for parameter configuration.


ON-SCREEN-DISPLAY STRUCTURE TREE

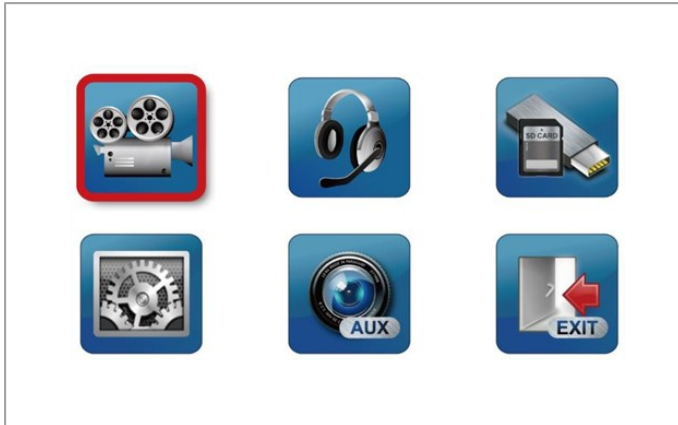
Icon		1st Layer	2nd Layer	3rd Layer
	Storage	Preferred Storage	USB Flash / SD Card	
		Recording Mode	Fullstop / Overwrite	
		Format Storage	USB Flash / SD Card	Yes / No
	Record	Recording Length	60 minutes per file	
			4GB per file	
		Date/Time	Adjust Date/Time	
			Stamp Format (YYYY/MM/DD, MM/DD/YYYY, DD/MM/YYYY, Off)	
			Stamp Color (Black, White, Red, Green)	
			Stamp Position (Upper right, Upper left, Upper center)	
		Text Overlay Recording Duration	5s / 10s / 20s / 40s	
		Text Template	Company Name	
			Project Name	
			Operator	
Pipe Material (Mtrl.)				
Pipe Dimension (Dia.)				
Delete All				
	System	Status OSD	On/Off/Only show REC	
		Distance Counter Analog	Enabled	Yes/No
		Distance Counter Analog	Unit: Meter / Feet	
			Current Length	Current Length
			Current Length Reference Length: 1 / 5 / 10	Reset Zero Manual
			Reference Steps	
		Display Brightness	Calibrate	
			Manual	
			1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10	

ON-SCREEN-DISPLAY STRUCTURE TREE CONT.

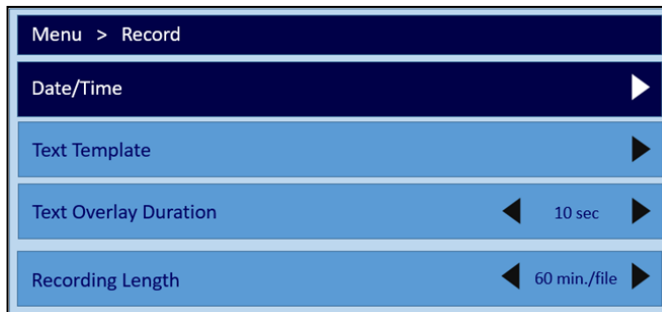
		Language	English, German, French, Italian, Spanish	
		Load Factory Default	Yes/No	
		Firmware Status	Firmware Version : x.x.x	
		Firmware Status	Firmware Upgrade through SD	
		Microphone	Firmware Upgrade through USB	
			On	
	Sound	Microphone	Off	
		Buzzer	On	
		Buzzer	Off	
		Customer's camera control unit		
	AUX			
	Exit			









ON-SCREEN-DISPLAY OPERATION



Click Menu  to enter display menu setting. Six Menu icons will display as below figure.



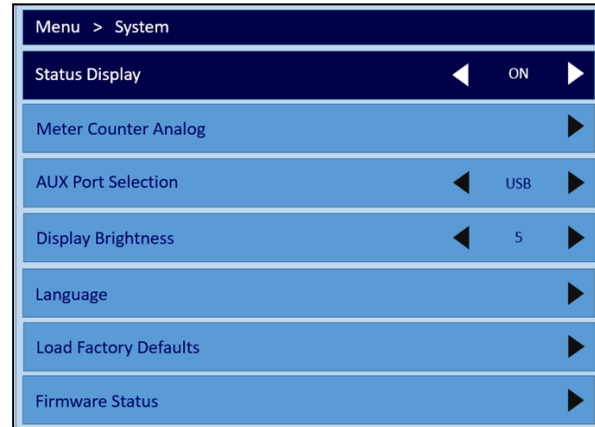
1. Record








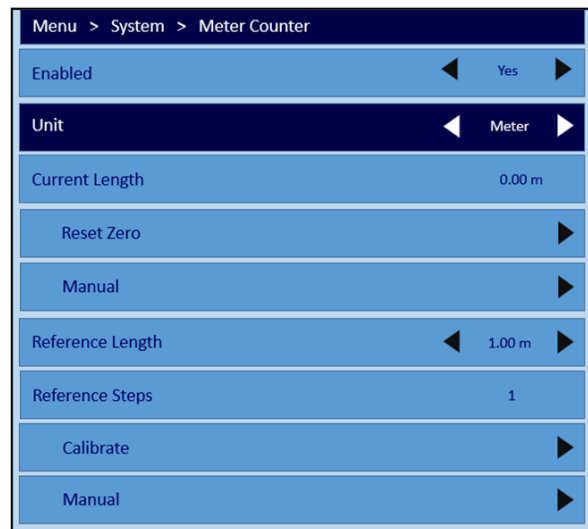
- Date/Time: Click OK  to enter next layer to configure date/time, stamp format, stamp color & stamp position
- Recording Length: Click Left  or Right  to change value (60 minute/file; 4GB/file). Value will be set after you leave this setting item.
- Text Overlay Duration: Click Left  or Right  to change value (5s; 10s; 20s; 40s). During text input, AVR will pause recording. After user finishes inputting text, AVR will resume recording with text overlaid on the image for a short period of time, configured by user. When the pre-set recording time with text overlay is up, the text overlay will disappear automatically and recording will continue without text overlay.
- Text Template: Click OK  to enter next later to configure company name, project name, operator, pipe material, pipe dimension setting. Once text template is configured, the template will be applied when activating text input function . The pre-set company name, project name & operator will be shown at the first three lines on the left hand side of the text input area. The pre-set pipe material and pipe dimension will be shown at the first two lines on the right hand side of the text input area.
- Click ESC Hotkey  to exit this setting page.





Note: If you're using the integrated 10.1" LCD touch panel, click  to change value or enter next layer for setting. The configuration path is on the top, and click Menu on the top  to return to display menu homepage.

2. System




- Status Display: Click left  or Right  to change value (ON; OFF; Only show REC). Value will be set after you leave this setting item.
- AUX Port Selection: Click Left  or Right  to change value (USB; RS485). Default as USB Port.
- Distance Count: Click OK  to enter next layer to calibrate distance counter (workable when connecting incremental encoder).

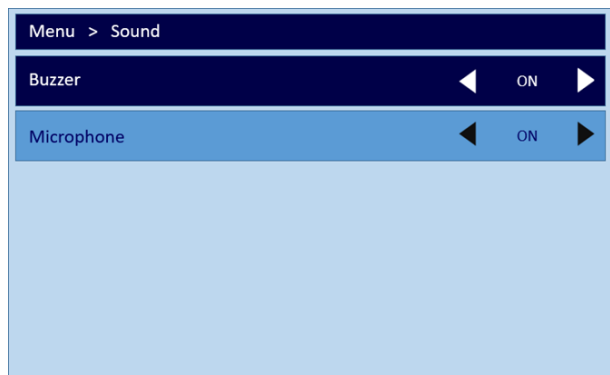






- Display Brightness: Click Left  or Right  to change value (1~10).
- Language: Click OK  to enter next layer to return the device parameters to factory default values as below.
- Load Factory defaults: Click  to enter next layer to return the device parameters to factory default values as below.


Recording Mode: Fullstop
 Recording Length: 60 min./file
 Stamp Format: YYYY/MM/DD
 Stamp Color: White
 Stamp Position: Upper Left
 Status Display: On
 WiFi: On
 Microphone: On
 Text Overlay Duration: 10 s
 Brightness: 5
 Measurement Unit: Meter
 Reference Length: 1.0 m

- g. Firmware Status: Click  to enter next layer for checking firmware version and upgrade firmware through SD card or USB Flash drive. To upgrade firmware, please put the firmware file "update.img" in the root directory of the storage and execute firmware upgrade. After firmware upgrade is completed, system will reboot automatically.

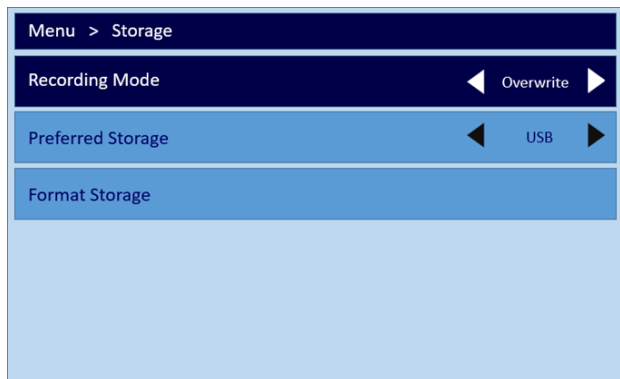
3. Sound 




- a. Buzzer: Click Left  or Right  to change value (ON; OFF). Value will be set after you leave this item.
- b. Microphone: Click Left  or Right  to change value (ON; OFF).

4. AUX  Connecting with user's Auxiliary Control Unit, AVR can communicate with this ACU provided a pre-programmed firmware and communicating protocol is established.


5. Storage 




- a. Recording Mode: Click Left  or Right  to change value (overwrite; Full Stop). Value will be set after you leave this setting item.
- b. Preferred Storage: Click Left  or Right  to change value (USB; SD).
- c. Format Storage: Select Storage Media to format storage.




6. Exit  :Go back to live view

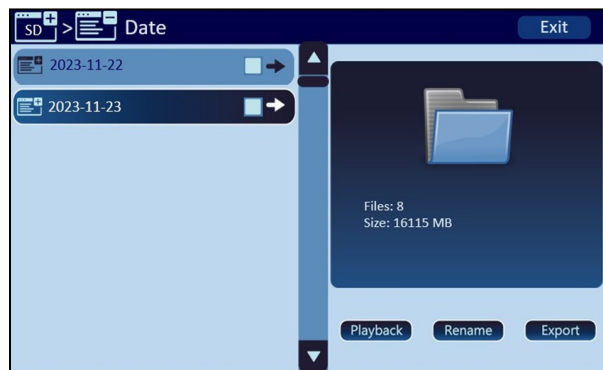
PLAYBACK FILE BROWSER OPERATION


1. Click Playback Hotkey  to enter playback file browser, and it'll show the storage that is detected. Select storage to enter the next layers for the recording files. After selecting the storage, the storage information will be displayed on the right hand side.

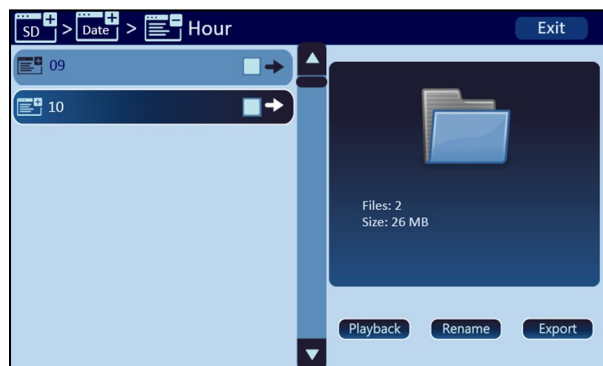


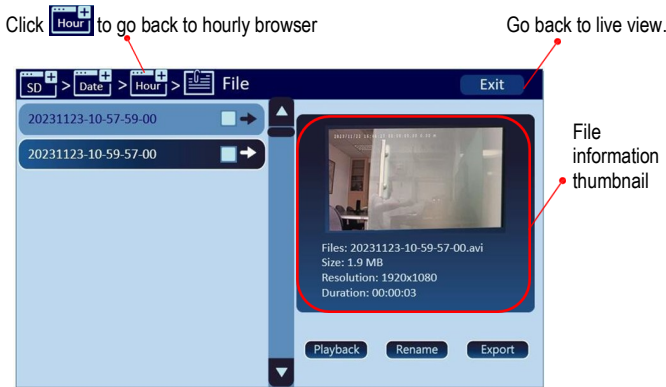
Click Exit button  in every layer, you'll go back to live view.

2. After entering the storage, please select the date folder of the recording files. If you'd like to go back to Storage Browser, click ESC Hotkey  or  touch button. It'll go back to te previous layer Storage Browser. Click the icon in Storage Path, and system will jump to the folder you've selected. Click Exit button , you'll go back to live view.



Click  to go back to Date Browser





To playback recording file, you can click the file directly; or select the checkbox of the recording file and then click Playback button **Playback**. File name accepts alphabet (capital and lower case letters), numbers, and space. Minimum length of file name is 1 digit and maximum length of filename is 31 digits.

To rename recording file, please select the checkbox of the recording file and then click Rename button **Rename**. Then a window will pop up for you to rename the file name via USB Keyboard or virtual keyboard. Please kindly notice that the sequence of the recording files/folders won't be re-arranged after rename. Maximum characters in the file name is 28 characters.

For Export function, it's to export recording files from SD card to USB Flash drive, as a video backup. It's effective only when both SD card and USB Flash drive are detected. Select the checkbox of the date/hour/recording files and move the cursor to Export button **Export** to transfer files to USB Flash Drive. During file exporting, it'll display exporting status on the screen. Please kindly notice that it cannot export recording files from USB Flash drive to SD card.

3. Playback recording file
After selecting the recording file and click Playback button **Playback**, it'll start playing back on the recording file.

Battery Warnings

- **Charge in a well-ventilated area.** Do not block charger vents. Keep clear to allow proper ventilation. Do not allow smoking or open flames near a charging battery pack. Vented gases may explode.
- **Do not short circuit.** A battery pack will short circuit if a metal object makes a connection between the positive and negative contacts on the battery pack. Do not place a battery pack near anything that may cause a short circuit, such as coins, keys, or nails in your pocket. A short circuited battery pack may result in fire and personal injury.
- **Store battery pack and charger in cool, dry place.** Do not store battery pack where temperatures may exceed 120° F (50° C). Do not store in direct sunlight, in a vehicle or metal building during the summer.
- **Do not burn or incinerate battery packs.** Battery packs may explode, causing personal injury or damage. Toxic fumes are created when battery packs are burned.

- **Battery chemicals cause serious burns.** Never allow contact with skin, eyes, or mouth. If a damaged battery pack leaks battery chemicals, use rubber or neoprene gloves to dispose of it. If skin is exposed to battery fluids, wash with soap and water and rinse with vinegar. If eyes are exposed to battery chemicals, immediately flush with water for 20 minutes and seek medical attention. Remove and dispose of contaminated clothing.

Voice-Over Microphone

This unit includes an internal microphone so you can add commentary to your videos. You can switch the microphone on or off. To do so, touch the touch screen monitor. A series of icon will appear at the top of the screen. Touch the icon that looks like a set of headphones. Then press the on or off button.

Wi-Fi Transmitter

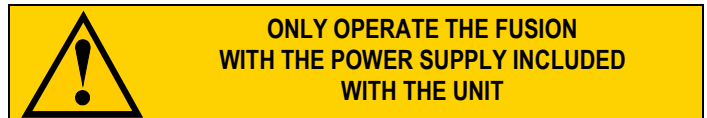
The internal Wi-Fi Transmitter allows you to monitor and record inspections on your smartphone or tablet. See "How to set up the Wi-Fi feature" on page 16 (for Apple devices) and page 17 (for Android devices).

SET UP

Connecting Gen-Eye Fusion Command Module to GL Reel

The Docking Arm allows the Command Module to be mounted on any GL Reel. To attach the Command Module to the Docking Arm:

1. Thread the two bolts through the mounting plate and into the holes in the back of the Command Module, then tighten.
2. Adjust the Command Module on any axis to allow for the best viewing angle, then tighten the knobs.
3. Attach the 10-pin connector from the camera reel to the connector at the bottom of the Command Module.
4. Connect the AC power supply cord or Gen-Pack cord to the Power-In jack on the left side of the Command Module.



CAMERA AND REELS



Table 1—Reel Selection Guide

Reel Type	Pipe Sizes	Lengths Available
Standard Reel	3" to 10" (75 to 250mm)	200, 300, or 400 ft. (60, 90 or 120m)
Mini Reel	1-1/2" to 4" (38 to 100mm)	175 ft. (44m)

HIGH-DEF SELF-LEVELING COLOR CAMERA

The self-leveling color camera automatically keeps the picture right side up as the camera glides through the line. You always have an upright picture on the monitor, making it easier for you and your customers to follow the action.

CAMERA TRANSMITTER (512HZ)

The camera assembly includes a 512 Hz transmitter, located safely in the spring behind the camera head. When the Command Module is turned on, the transmitter is automatically activated.

NOTE: CARE SHOULD BE TAKEN WHEN GUIDING THE CAMERA IN THE LINE AS EXCESSIVE BENDING AND TWISTING MORE THAN 180 DEGREES MAY DAMAGE ELECTRONICS IN THE SPRING.

SKIDS


It is highly recommended that you use a skid at all times to protect the camera head from abrasion in the pipe. Skids lift the camera off the bottom of the pipe and center it in the line for a better view and to allow the camera to glide more easily through the line.

The standard reel comes with 2", 3", and 6" trap skids. Other optional skids are available for 6", 8" and 10" lines:



To attach the skid, slide it over the front of the camera head, with the lip of the skid at the front. Make sure the camera body is clean and the set screws are tightened only until they touch the camera body. Do not over tighten, as you may damage the camera housing.

INSPECTION CAMERA OPERATION

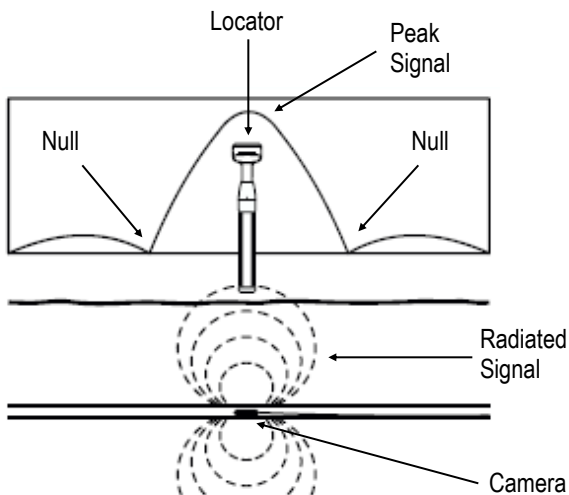
1. Connect camera cable and power cord.
2. Insert USB Flash Drive (Part #184490) into port of the left side of the Command Module. 
3. Press and hold POWER button. Start up screen will appear in a few seconds.
4. When the image from the camera appears on the screen, begin the inspection. To adjust the brightness of the camera lights, use the LED Dimmer Control located at the right side of the Command Module.
5. Release the reel lock and loosen the drag break on the side of the reel.
6. Slide the camera into the line. Be sure that the push rod is rated for the size pipe you are inspecting. Be careful not to force the camera around tight bends. If you see an obstruction, stop. Do not attempt to clear the pipe by using the camera head as a battering ram. Always use the proper tool for the job.
7. Once the camera is in the pipe, adjust the lights to a level which produces the best picture with the least amount of light. This will vary depending on pipe conditions. In some cases white or lighter colored objects may cause the picture to "flare" or "wash out". If this happens, simply adjust the light level until a good picture is achieved.
8. Push the camera slowly and carefully during the inspection - taking note of the pipe condition for possible hazards that may entangle or damage the camera on entry or retrieval.
9. When negotiating a corner, care should be taken not to butt the nose of the camera against the sidewall with any force. It would be better to let the camera "work" its way around the corner.
10. Should resistance become extreme, or the camera gets entangled or stuck, slowly push and pull back and forth to free it. Do not force the camera through a collapsed pipe.
11. To record video or snapshots of inspection, see page 8.
12. When inspection is complete, retract Push-Rod from drain and secure in the reel.

Tip: It's often helpful to have a small stream of water running in the line to clean the Push-Rod and Camera Head while it's still in the drain line.



CAMERA LOCATION

1. Turn on Gen-Eye Fusion Camera system.
2. Press and hold the Hot Spot Locator On/Off button. Check battery strength on display.
3. Press MODE icon until indicator displays Sonde/Camera Head mode.
4. Press Antenna Select icon until indicator displays Total Field configuration.
5. Set Locator to 512Hz by pressing FREQ button until 512 Hz appears on display.
6. Press up arrow button to increase GAIN to maximum sensitivity.
7. Push camera head/Sonde only 10 to 15 feet into the line before starting the location process.
8. Stand near pipe entrance and hold the Gen-Eye Hot Spot Locator so that the blade is pointed at 45 degree angle, out and down towards the ground at the approximate distance of the transmitter.
9. Rotate in a circle, listening to the signal strength indicator tone. If you receive full signal strength in every direction, press and release the DOWN ARROW button to reduce the GAIN, or sensitivity of the device. Repeat process until you receive a strong-steady tone from just one direction. Reduce gain further if necessary to clarify exact direction.
10. Hold Hot Spot Locator blade perpendicular to the ground and walk in the direction of the strongest signal.
11. As you walk, reduce gain by pressing and releasing down arrow button as often as necessary to keep signal strength indicator near the 50% level. (Signal Strength levels in the 100% range will erode accuracy. Always aim to keep the signal strength near 50%.)
12. The radio waves propagating from the transmitter look like this:



Notice that there is a PEAK signal over the exact location of the transmitter, and two NULL points on either side of the PEAK, lined up parallel with the lay of pipe.

13. Watch the Gen-Eye Hot Spot monitor display as you approach the transmitter's location.
14. When you reach the vicinity of a NULL point the screen will produce this display:



Simply follow the arrows to find the exact spot. When you are over the NULL point, the screen will produce this display.

15. When you reach the vicinity of the PEAK the screen will produce this display:



Follow the arrow to pinpoint the location of the transmitter. Simply rotate the flat edge of the locator blade relative to the arrows on the outside of the 'compass' to determine the orientation of the transmitter. When the display shows this graphic:



you will have the exact location of the transmitter and the lay of the pipe.

16. Find and mark the location of both the NULL and the PEAK points.
17. Push the camera ahead another 10-20 feet and repeat the process. Duplicate every 10-20 feet until the problem area is visible on the Command Module. At the completion of this process the entire line will be traced and marked.

MAINTENANCE

CAMERA AND MONITOR CLEANING

After every use, the camera should be cleaned and checked for possible damage that may have occurred during the inspection. External scuffing of the camera housing is normal and should be of no concern; however, use the trap skid to protect the camera and help it slide around elbows more easily.

The camera lens is made of sapphire and should be cleaned with a soft, damp cloth. Grease, dirt, or scratches will affect the quality of the video picture.

Use only soft cloth and non-ammonia glass cleaner to clean the LCD monitor.

CABLE AND REEL ASSEMBLY CLEANING

The cable and reel assembly should be kept clean from dirt. When rewinding the cable back onto the reel after an inspection, it is good practice to use a clean rag to wipe off any debris the cable may have.

DO NOT USE A PRESSURE WASHER TO CLEAN REEL ASSEMBLY. WATER MAY GET INTO UNSEALED AREAS CAUSING DAMAGE AND VOIDING THE WARRANTY.

CAMERA REMOVAL

The camera and associated electronics are not user serviceable. Servicing should be left to qualified personnel (your distributor can advise you with regards to service, etc.).

CAMERA FOCUS

All Gen-Eye Fusion cameras are pre-focused at the factory from approximately 3" to infinity and should not require any focus adjustments. Should focus adjustments be required, please call the factory.

ADDITIONAL MAINTENANCE TIPS

- The camera should always be cleaned and inspected after every use as dirt, grime and grease can cause unnecessary problems such as failure of the camera seals.
- The camera spring is attached to the cable via three (3) 4-40 x 1/2" stainless steel hex socket cap screws. This connection includes an O-ring sealing the connection from water leakage. This connection should be checked after every use to ensure that the screws have not loosened during the course of the inspection.
- If disconnecting the camera from the push rod, make sure that the O-ring is in good condition and/or replaced when replacing the camera onto the push rod.
- The camera lens, front nose piece and lights should be cleaned and checked after every use for possible damage to the lens or light covers and to prevent a build-up of dirt and grime which may cause a degradation of the video picture.
- Should camera disassembly be required for any reason (for replacing seals, etc.) always ensure the camera has first been cleaned and taken to a clean area for disassembly. Take extra precaution to avoid dirt getting into the camera body and any mating components such as the nosepiece, main body, and connectors.

TROUBLESHOOTING COMMAND MODULE

No Picture AND No Lights:

- Press and hold the Power Switch on the Command Module for 5 seconds to turn on unit.
- If using AC power source, make sure power source is "live". If using DC power source, make sure battery is charged, check Gen-Pack power lights, and check fuse.
- Check to make sure that the camera lens is not covered or looking at a surface that provides no detail, therefore any image detail.
- Check all connections and connectors from the camera back to the Command Module, including the cable reel.
- Disconnect main power and contact the factory service department.

Picture BUT No Lights:

- Check if Power switch is ON.
- Check to see if LED Dimmer control (located at the bottom of the Command Module) is turned up.
NOTE: Dimmer buttons on the face of the Command Module are for Probe-Rod only, not the inspection camera (reel).
- Check cable for possible breaks or intermittent open circuits by flexing the cable.
- Disconnect main power and contact the factory service department.

No Picture, Lights OK

- Press and hold the Power Switch on the Command Module for 5 seconds to turn on unit.
- If using AC power source, make sure power source is "live". If using DC power source, make sure battery is charged, check Gen-Pack power lights, and check fuse.
- Check the interface cord for possible damage or intermittent problem by flexing the cable.
- Check the Push-Rod for possible breaks or intermittent open circuits by flexing the cable.
- Disconnect the main power source and contact the factory service department.

Dark Picture

- Check the Light Head to see if it is not supplying sufficient light due to weak, dirty, or burned out bulbs.
- Check to see if the Light LED Dimmer control is turned up.
- Disconnect the main power source and contact the factory service department.


Bad or Grainy Picture





- Check the camera lens for dirt, grime, scratches or other foreign matter.
- Check the lights in the camera head to see if they are not supplying sufficient light due to weak, dirty, or burned out bulbs.
- Check for external electrical noise being radiated by outside sources, such as a power station, etc.
- Check the Push-Rod for possible breaks or intermittent open circuits by flexing the cable.
- Disconnect the main power source and contact the factory service department.

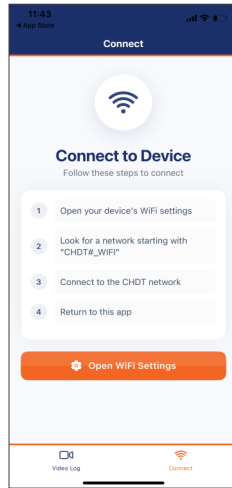
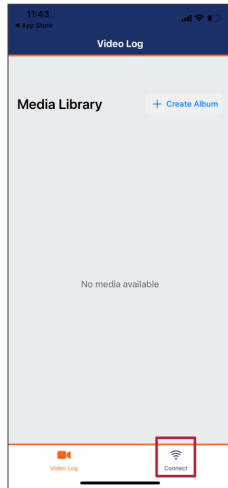
No Power from Gen-Pack Battery Adapter

- Check switch on cradle is switched on.
- Incorrect battery. Use only Milwaukee M18 or equivalent.
- Allow the battery to fully recharge.
- Check fuse. Replace with 3A.
- Cold weather can reduce battery life. Keep unit warm in cold weather.
- Do not charge the battery in extreme weather (temperatures below 30°F or above 104°F).
- Do not store battery pack where temperatures may exceed 120° F (50° C).
- Battery is worn out and needs to be replaced.
- Contact the factory service department.





How to Set-Up the Wi-Fi Feature for Gen-Eye Fusion Camera Systems On an Apple device

1. Make sure the Command Module is turned ON and you are next to the unit.
2. On your cell phone, tablet, or other Wi-Fi enabled device, go to the App Store. **NOTE:** You must have an Apple account set up before proceeding.
3. Search for and download: "General Pipe Cleaners App".  iOS icon
4. Upon opening the App, you will be routed to the Media Library Screen.

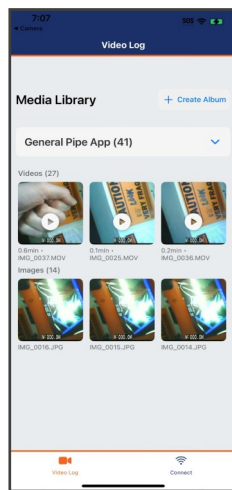
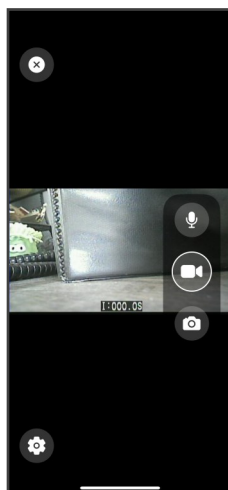
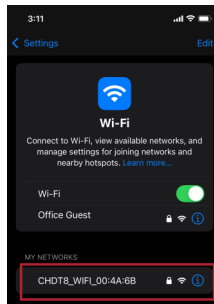
	Icon Key: Settings—Allows you to adjust the brightness and contrast.
	Microphone—Tap to record audio. *NOTE to include audio in your recording, you must tap the microphone first, then tap the video camera icon to begin recording.
	Video Camera—tap to begin/end recording.
	Camera—tap to take screenshots.




The number of photos and/or the length of video you can shoot will depend on the amount of storage available on your device.





1. You are now ready to record video or take snap shots. 
2. To include audio in your video recording, tap the microphone icon first, then tap the video camera icon to begin recording with audio. 
3. To start recording video, tap the video camera icon. (Tap it again to end recording). 
4. To adjust the brightness, contrast, tap the settings icon and select your desired settings. 
5. To view your snap shots and recordings, navigate to Library or the photo/video gallery application on your device. You can view your photos/videos in your device's gallery.

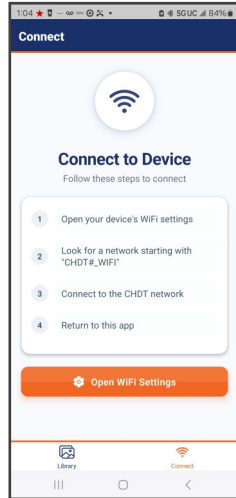
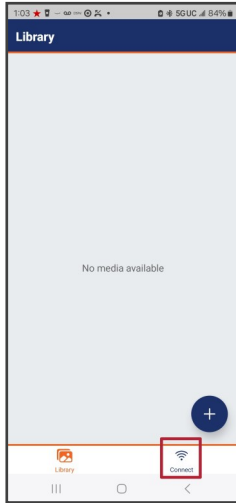
5. From the Media Library screen, select "Connect".
6. From the connect screen, select "Open WiFi Settings".
7. Open your device's WiFi Settings. Look for a network starting with "CHDT#_WIFI". Connect to the CHDT Network. **Password: 12345678**
8. Return to the General Pipe Cleaners App.
9. When the app opens, you should see the image transmitted by the camera on your screen.
10. Grant the General Pipe Cleaners App access to your devices microphone, camera, and photo gallery when prompted.







How to Set-Up the Wi-Fi Feature on Gen-Eye X-POD Plus Camera Systems On an Android device

1. Make sure the Command Module is turned ON and you are next to the unit.
2. On your cell phone, tablet, or other Wi-Fi enabled device, go to the Play Store (Android). **NOTE:** You must have a Google account set up before proceeding.
3. Search for and download "General Pipe Cleaners App".  Android icon
4. Upon opening the app you will be routed to the media library.

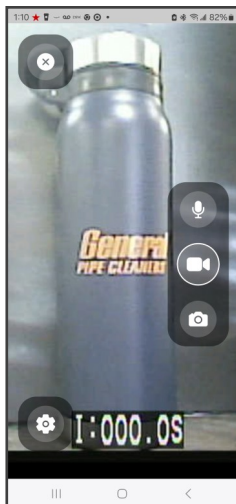
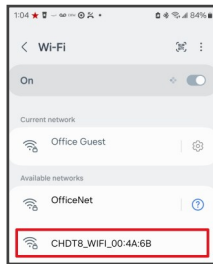
	Icon Key: Settings—Allows you to adjust the brightness and contrast.
	Microphone—Tap to record audio. *NOTE to include audio in your recording, you must tap the microphone first, then tap the video camera icon to begin recording.
	Video Camera—tap to begin/end recording video.
	Camera—tap to take snap shots.



The number of photos and/or the length of video you can shoot will depend on the amount of storage available on your device.

1. You are now ready to record video or take snap shots. 
2. To include audio in your video recording, tap the microphone icon first, then tap the video camera icon to begin recording with audio. 
3. To start recording video, tap the video camera icon. (Tap it again to end recording). 
4. To adjust the brightness, contrast, tap the settings icon and select your desired settings. 
5. To view your snap shots and recordings, navigate to Library or the photo/video gallery application on your device. You can view your photos/videos in your device's gallery.

5. From the media library screen, select "Connect".
6. From the Connect screen, select "Open WiFi Settings".
7. Look for a network starting with "CHDT#_WIFI". Connect to the CHDT network. **Password: 12345678**
8. Return to the General Pipe Cleaners App.
9. When the app opens, you should see the image transmitted by the camera on your screen.
10. Grant the General Pipe Cleaners App access to your devices microphone, camera, and photo gallery when prompted.



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