

# QZ3 Video Inspection Pole Camera User Guide

P/N QT901, v (4)



**WIRELESS & WATERPROOF**



CUES Manhole Inspection Division

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**CUES**® equipment is designed to be easy to use during day to day operation. However, it is powered electrically and thus must be operated with care and safety. PLEASE READ THE INFORMATION ON SAFETY AND MAINTENANCE EVEN IF THE SYSTEM IS SET UP BY SOMEONE ELSE.

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We would be pleased to hear from you. If you see any errors or desirable extensions or improvements, please write us at the following address, C/O Operator's Manuals: **CUES**® Corporate Office 3600 Rio Vista Avenue Orlando, Florida 32805

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Styles and specifications are subject to change without notice.

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## SAFETY PRECAUTIONS

Precautions must always be taken when operating electronic equipment. Exposed wires, damaged equipment, or improper operation can lead to a dangerous situation.

Please take a few minutes and read this entire manual prior to operating the equipment. Follow all safety procedures and thoroughly inspect equipment prior to use each day. This will help the equipment retain its full value and will reduce the risk of injury, property, and/or equipment damage.



- Read the entire manual before attempting to connect or operate any equipment.
- Connect and disconnect cables only when the electric power is turned OFF.
- Never remove protection covers from the equipment or power generator. Internal repairs should only be done by an authorized CUES technician.
- If using a portable generator, always place it in an open area away from other equipment, manholes or obstructions prior to start-up; do not use a portable generator in an enclosed area.
- Upon receipt of the equipment, check for visible damage. If there is any evidence of rough handling, if damage is found, or if any equipment is missing, please contact the CUES Customer Service at 1-800-327-7791.

## PERSONAL SAFETY EQUIPMENT & TRAINING

CUES stresses the use of appropriate safety equipment while working in and around manholes and during system operation. Safety should constantly remain the utmost priority. NOTE: The user of CUES products is responsible for all training and operation under federal, state and local guidelines and regulations for both confined space entry and traffic control. Recommended safety equipment includes but is not limited to the following:

- Safety goggles
- Work gloves
- Steel-toed boots
- Reflective vests
- Hard hats
- Filter masks (full respirators may be necessary)
- Flashlights
- Safety lines
- Traffic warning signs
- Traffic cones
- Gas detectors
- Ventilation fans

***CUES ® makes no warranty for the use of its products and assumes no responsibility for any errors or omissions in this document or for incidental or consequential damages resulting from misuse of the products.***



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## INTRODUCTION (ADVANCED MODEL)

This manual provides setup, operation, troubleshooting, and maintenance instructions for the CUES QZ3 Portable Video Inspection Camera. The CUES QZ3 camera uses proven video technology to provide a versatile tool for areas that are difficult to access, such as manholes, pipelines, vessels, and tanks.

QZ3 is a lightweight, portable, video inspection system that can be operated by one person. Accomplish safe-viewing in industrial or environmental areas with no man entry. Perform swift inspections and surveys of pipelines, wet wells, manholes, sewer treatment plants, steam generators, tanks, vessels, and other areas that are difficult to reach. QZ3 can also be used to locate lateral services or to identify a blockage at a manhole, access port, or other entry point without entering the line or structure. QZ3's wireless streaming enables cable-free inspections within the immediate manhole area. For additional range up to 100+ feet from the manhole ask about the Wi-Fi Range Extender accessory!

QZ3 is mounted on a lightweight carbon fiber adjustable telescopic pole that can extend up to 24' (optional 34' pole is available). Get full HD views of cracks, breaks, pipe separations, scale, and various defect conditions from hundreds of feet away!

For additional information or questions regarding your specific system, please contact the CUES Customer Service Department at 1-800-327-7791 or email: [QZ3@CUESINC.com](mailto:QZ3@CUESINC.com)



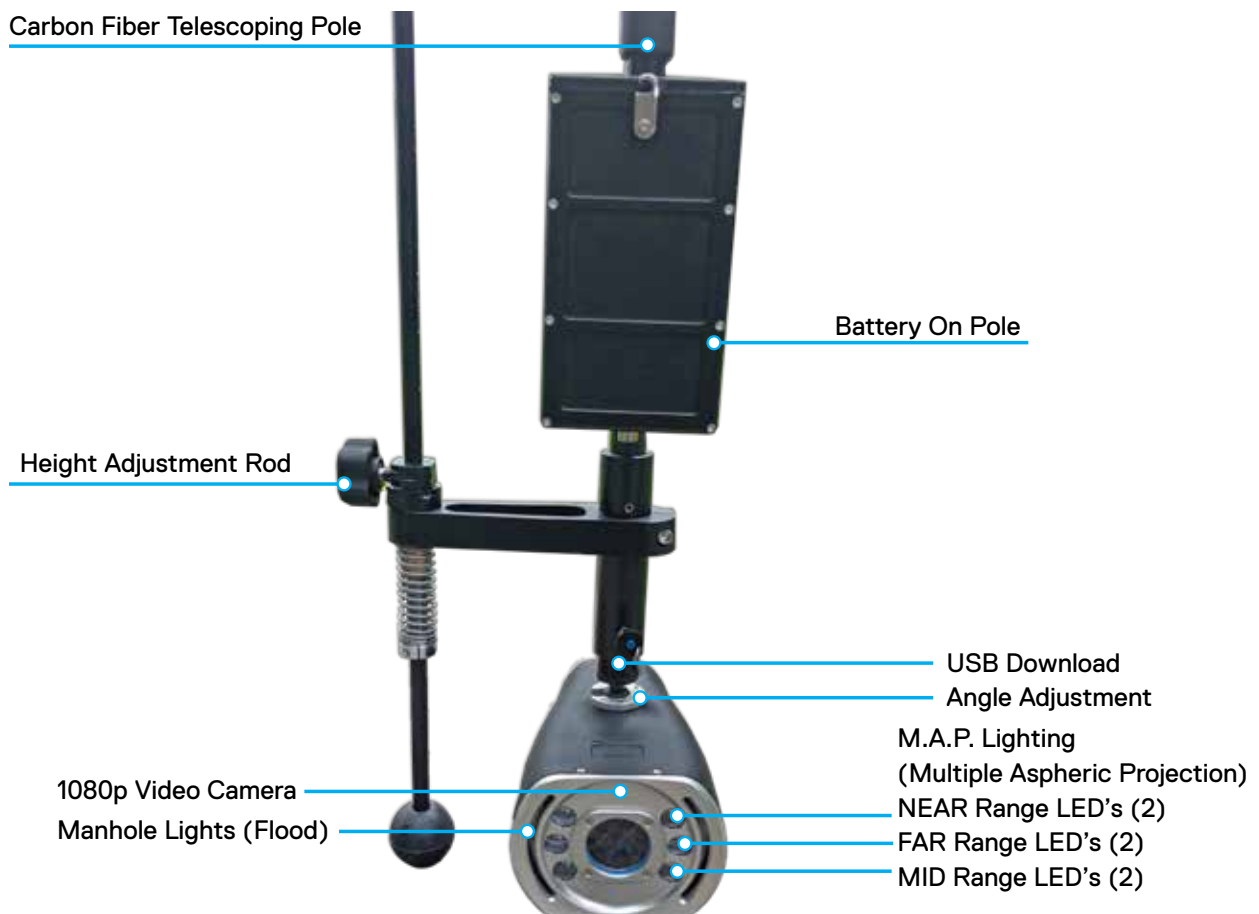
## INTRODUCTION (BASIC MODEL)

This manual provides setup, operation, troubleshooting, and maintenance instructions for the CUES QZ3 Portable Video Inspection Camera. The CUES QZ3 camera uses proven video technology to provide a versatile tool for areas that are difficult to access, such as manholes, pipelines, vessels, and tanks.

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For additional information or questions regarding your specific system, please contact the CUES Customer Service Department at 1-800-327-7791.



## QZ3 SPECIFICATIONS

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### Video Specs

- Imager: 1/2.8 CMOS
- Zoom: 360x (30x Optical, 12x Digital)
- Resolution: FULL HD 1080p (1920 x 1080)
- Functions
  - Zoom
  - Focus (auto/manual)
  - Zoom (auto/manual)
  - Exposure (auto/manual)
  - Automatic Image Stabilization
- Field of View: 63.7-2.3 degrees (Wide to Tele)
- Sensitivity: 0.01 lux

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### Illumination

- Multiple Aspheric Projection (M.A.P.) Lighting
  - Six LEDs illuminated in pairs for NEAR/MID/LONG range lighting
  - Lighting overlaps to eliminate dead spots in center of image
- 2 LED flood lights- evenly illuminate surrounding for close range inspection

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### Camera Head

- Connections- USB Download Port
- Submersible to 1m
- Construction: Anodized Aluminum, High Strength Polymer, Rubber
- Sensors- Humidity, Pressure, Temperature, Incline

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### Wireless System

- Wi-Fi Standard-IEEE 802.11g/n
- Frequency: 2.4GHz
- Optional Wi-Fi Range Extender Allows for operation up to 100+ feet away from the immediate manhole area

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### Height Adjustment Rod

- Pipe Diameter Compatibility: 6-72"
- Mechanism: Depth Rod (Basic)/Height Adjustment Actuator (Advanced)

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### Battery

- Battery Quantity: 2
- Battery Capacity: 100Wh
- Optional Extended Battery Pack Available: 120 Wh (QZ3 Basic Model Only)

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### Pole/Bipod/Tripod

- Length: 24ft Telescoping Carbon Fiber (34ft available)
  - Convertible Tripod/Bipod Accessory
-



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#### Motor Controls

- Tilt
- Height
- Tablet/Interface

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#### Measurements

- Focus Based Distance to Defect Approximation
- Laser Distance Measuring (Standard on Advanced Model Only)

---

#### Tablet/Interface

- Samsung Ruggedized Android Tablet
- Protective Case
- Anti-Glare Screen Treatment
- Connection: Connect to any QZ3 in range
- Controls for Illumination, Zoom, Focus, Exposure, Motor, Laser
- Battery Life Indication
- Capture: Record Video and Still Images
- Manage/Transfer Captured Media
- Text Overlay-Asset ID (Video)
- User Interface Compatible With Most Any Wi-Fi Enabled Device\*

\*Chrome Browser preferred – Some devices may require cellular data to be disabled\*

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#### Warranty

- CUES Standard 1 Year Warranty
- 



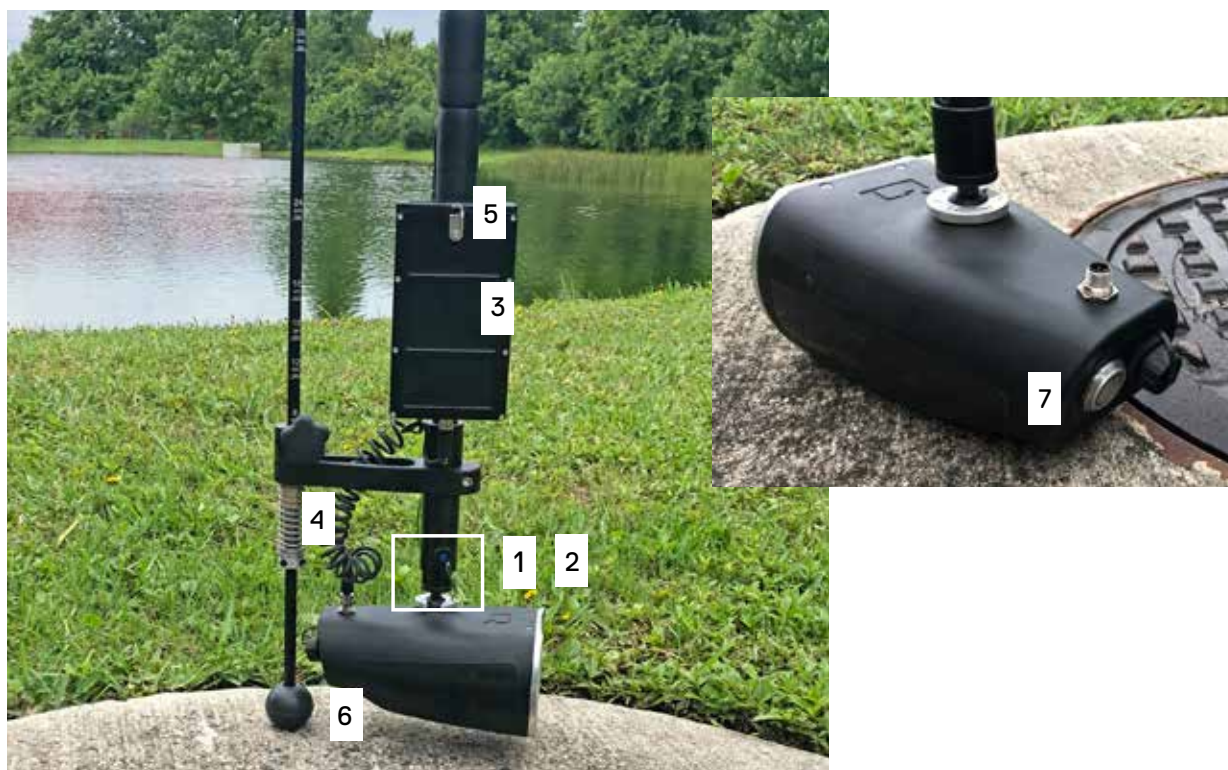


## PHYSICAL SETUP (BASIC VERSION)



**IMPORTANT! Ensure that the camera is shut off and the batteries are disconnected when not in use.**

1. Remove the quick release pin from the bottom of the deployment pole.
2. Insert the camera head mounting into the pole, align pin holes, and reinstall the pin to secure the camera.
3. Install the battery housing assembly onto the thinnest section of the telescoping pole. It's recommended to install the housing between the pole and depth rod to minimize the footprint for tight spaces.
4. Install the coil cable between the camera head and battery housing. If utilizing the housing orientation in Step #3, it's recommended, to pass the coil cord through the opening in the depth rod arm (between the depth rod and pole).
5. Unlatch the housing lid, open, and install the battery. Close the lid and secure with the latch.
6. Adjust the camera tilt position to the desired location. The same adjustment ball can be used to rotate the position of the camera head, as well.
7. Press the power button on the rear of the camera head to begin the operation (the switch is touch-sensitive and will not move in/out).
  - To power ON, press the power button on the rear of the camera head firmly and in the center of the switch once for approximately 1 second.
  - To turn OFF, firmly press the power switch button twice for 1 second each time.



## PHYSICAL SETUP (ADVANCED VERSION)

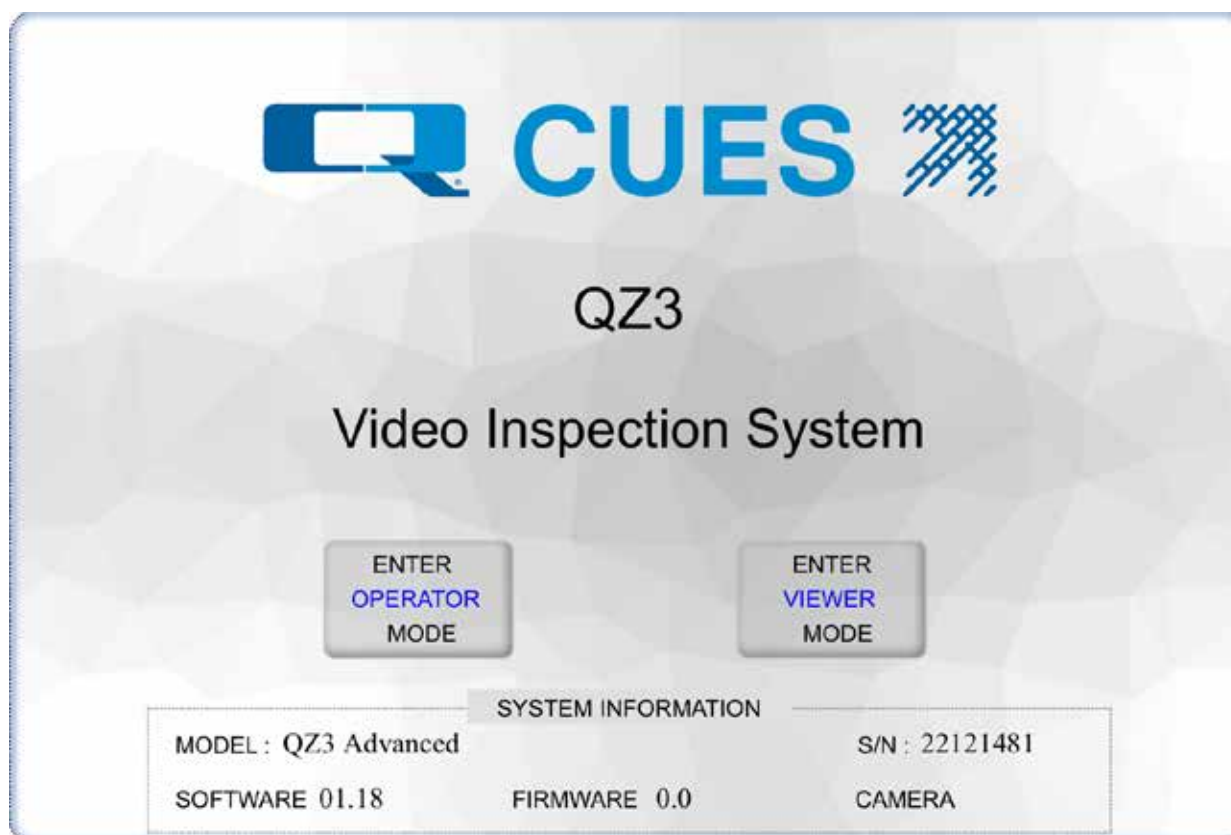


**IMPORTANT! Ensure that the camera is shut off and the batteries are disconnected when not in use.**

1. Remove the quick release pin from the bottom of the deployment pole.
2. Insert the camera head mounting into the pole, align pin holes, and reinstall the pin to secure the camera.
3. Install the battery housing assembly onto the thinnest section of the telescoping pole. It's recommended to install the housing between the pole and depth rod to minimize the footprint for tight spaces.
4. Install the coil cable from the battery housing to the port on the top left of the camera, and the cable from the height actuator to the port on the top right of the camera. If utilizing the battery housing orientation noted in Step #3, it's recommended to pass the coil cord through the opening in the depth rod arm (between the depth rod and pole). Unlatch the housing lid, open, and install the battery. Close the lid and secure with the latch.
5. Press the power button on the rear of the camera head to begin the operation (the switch is touch-sensitive and will not move in/out).
  - To power ON, press the power button on the rear of the camera head in the center of the switch once for approximately 1 second.
  - To turn OFF, press the power switch button once for approximately 1 second.



## USER INTERFACE HOME SCREEN



The home screen allows the user to select between operator and viewer mode (one each), and provides useful information about the camera model, serial number, software and firmware versions.

### TO ACCESS THE USER INTERFACE HOME SCREEN

1. Power on the QZ3 and wait approximately 30s to 1min until the unit broadcasts its Wi-Fi network. The camera lens will zoom in/out as part of its initialization. Once this happens, the QZ3 is ready to broadcast its network.
2. Connect to the network using the optional tablet or any other Wi-Fi enabled device. From the Wi-Fi settings, select "QZ3-XXXX" from the available networks. If prompted to enter a network password to join, enter the following password: "QZ3@CUES".
3. After connecting to the network, ensure all applications are closed and then open a browser tab in the chrome browser.
4. From the browser, type into the address bar: 192.168.8.1 to access the HOME screen.

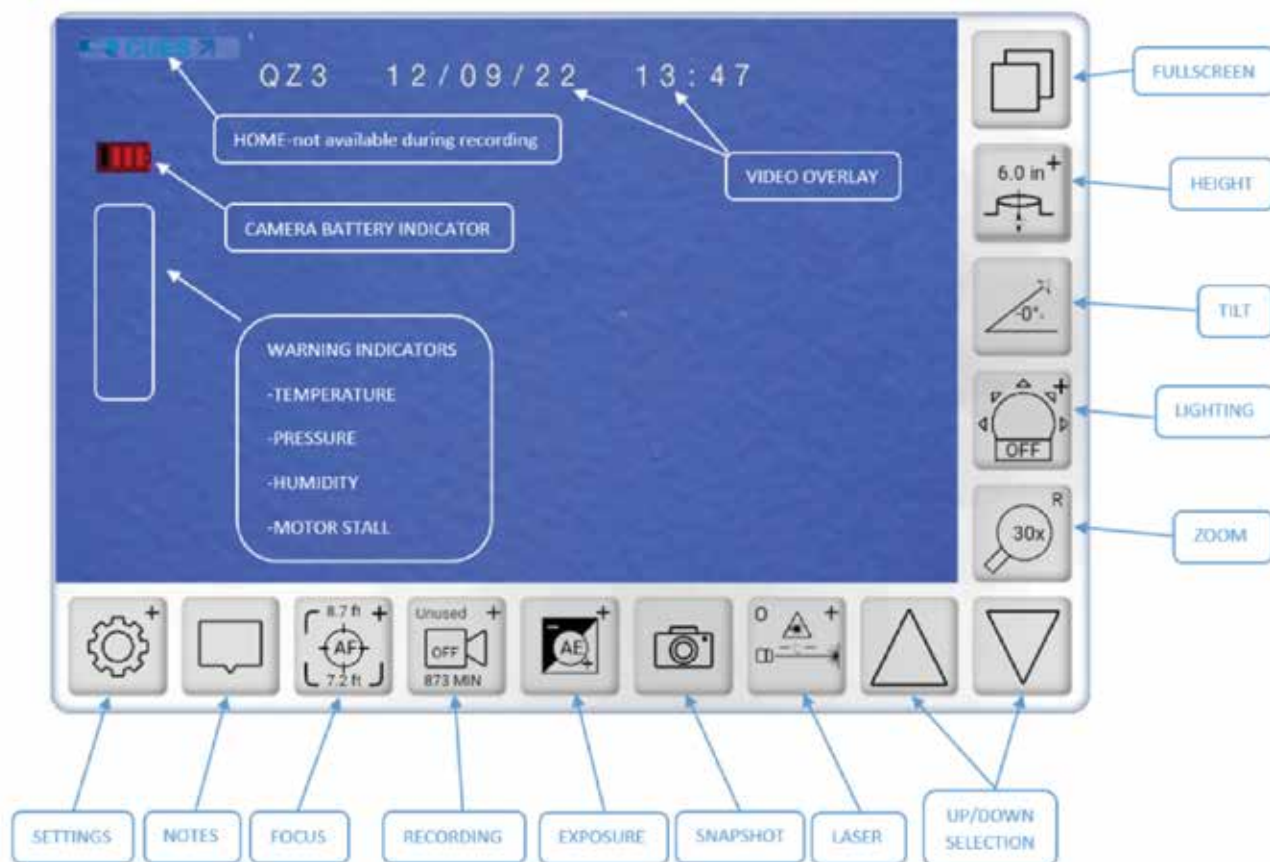
## VIEWER MODE SCREEN



“Enter operator mode” button will appear if the operator seat is available.



## CONTROLS PAGE (OPERATOR MODE)



CONTROLS WITH A “+” INDICATE ADDITIONAL OPTIONS AVAILABLE WITH A LONG PRESS OF THE BUTTON  
 MANY CONTROLS PROVIDE STATUS OF THE FEATURE BEING CONTROLLED (ex. ZOOM FACTOR)

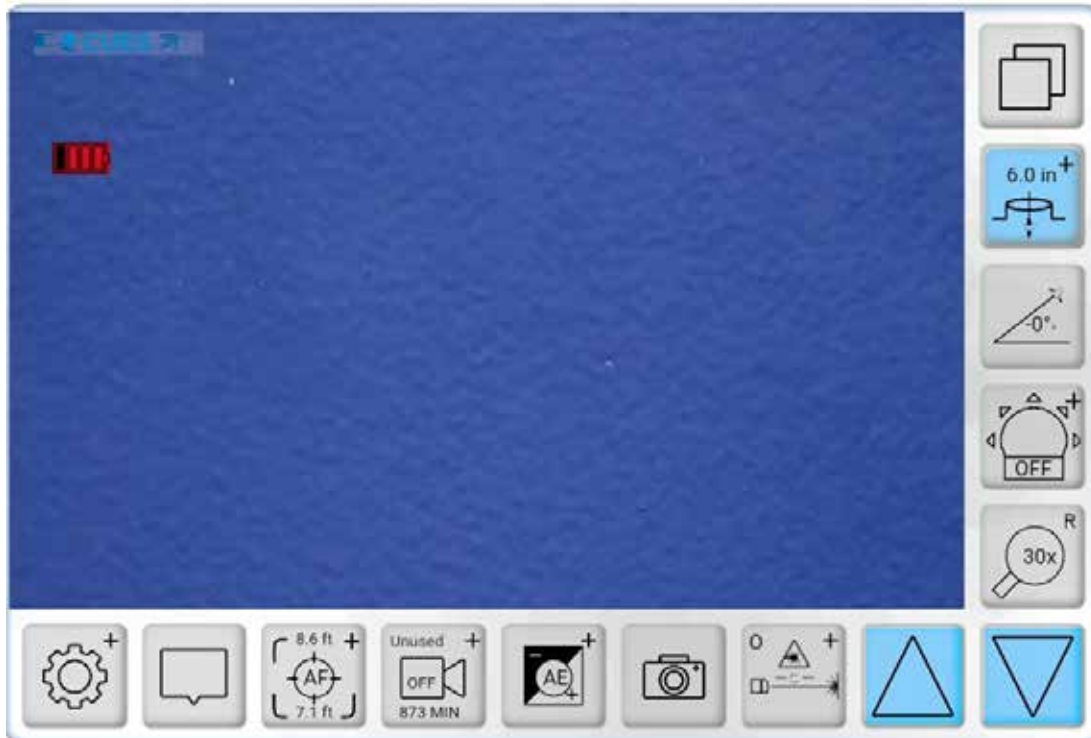
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## FULL SCREEN MODE

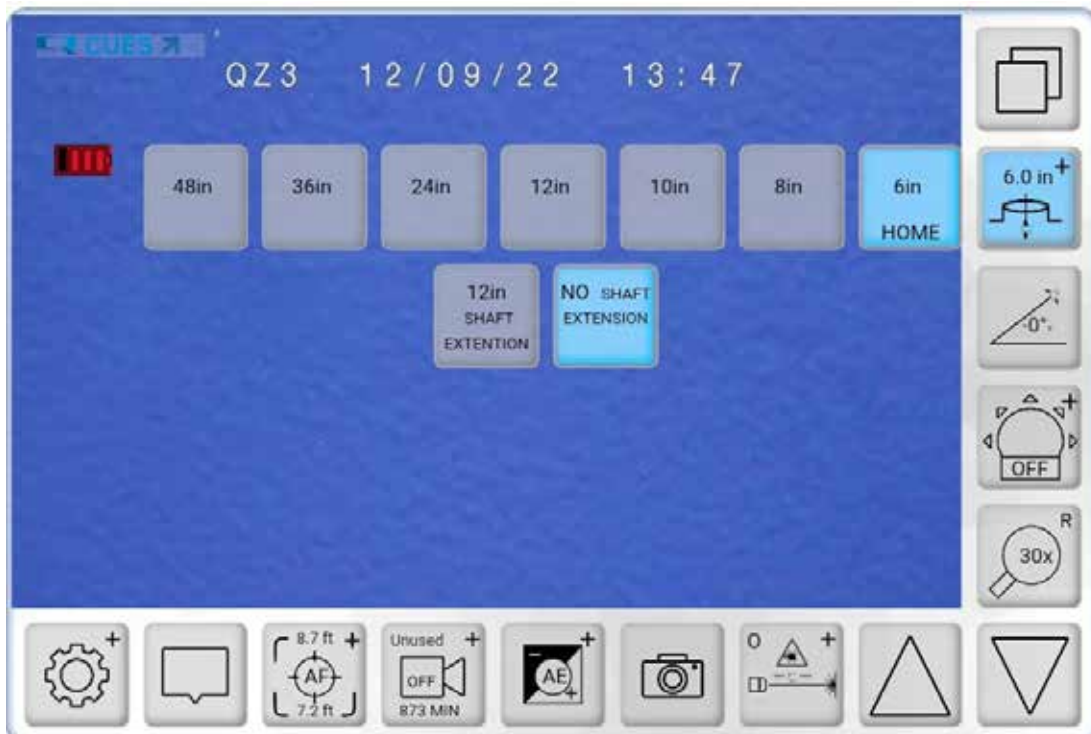


Full screen mode is accessed by pressing the full screen icon at the top right of the operator screen. To exit full screen mode double tap anywhere on the screen.

## MOTORIZED HEIGHT ADJUSTMENT (ADVANCED MODEL)



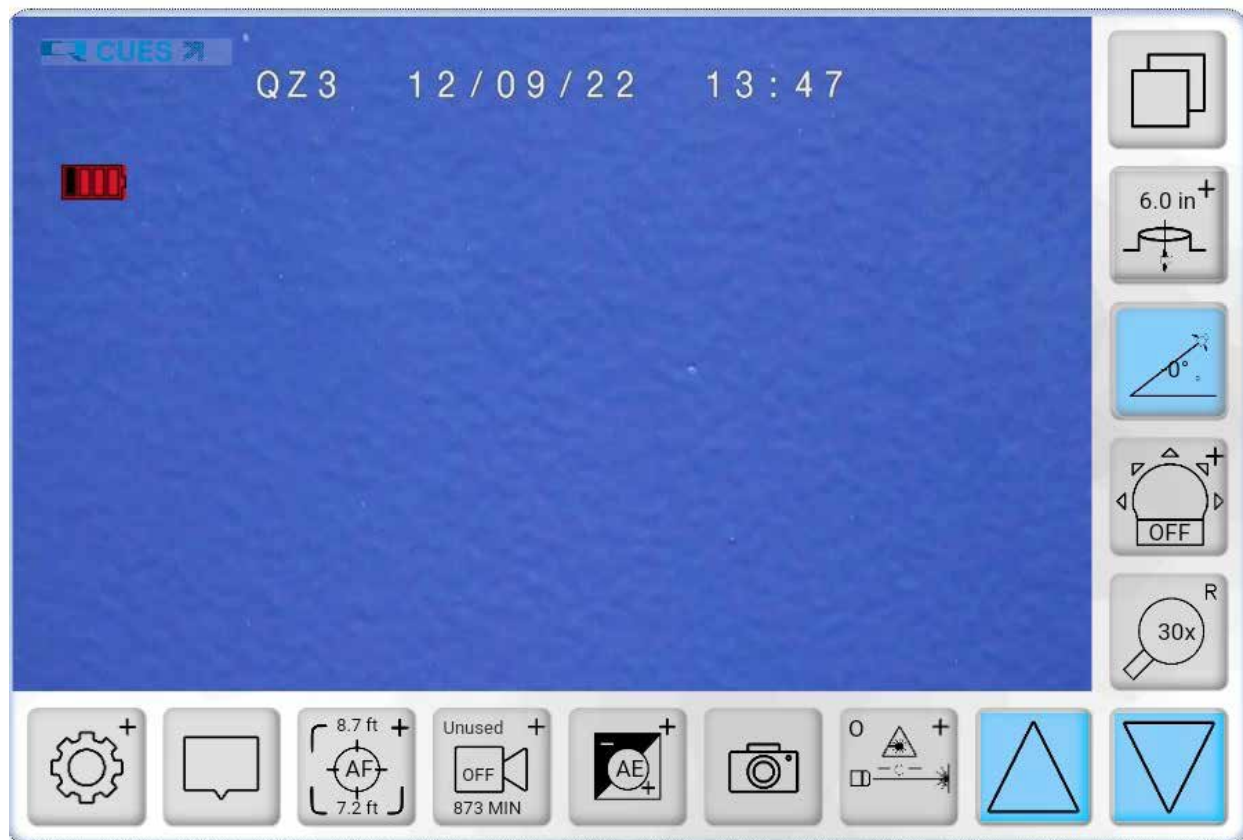
Short press the height adjustment icon to control with up/down arrows.



Long press the height adjustment icon to show preset height settings. Remember to select whether or not the shaft extension is being used for pipes larger than 48in (120cm)

Motorized tilt adjustment (advanced only)

## TILT MOTOR CONTROL (ADVANCED ONLY)



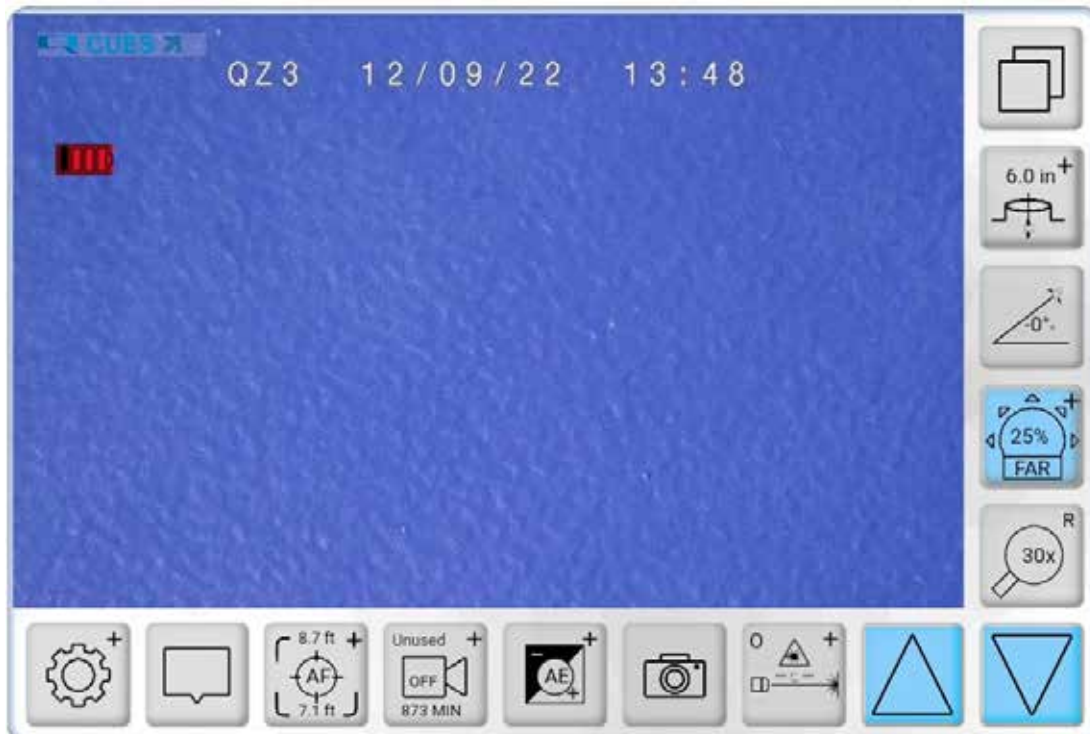
Short press the tilt adjustment icon to control with up/down arrows. The tilt icon displays the camera's tilt relative to gravity.



## LIGHTING CONTROLS



Press and hold the lighting icon to enable lighting option.



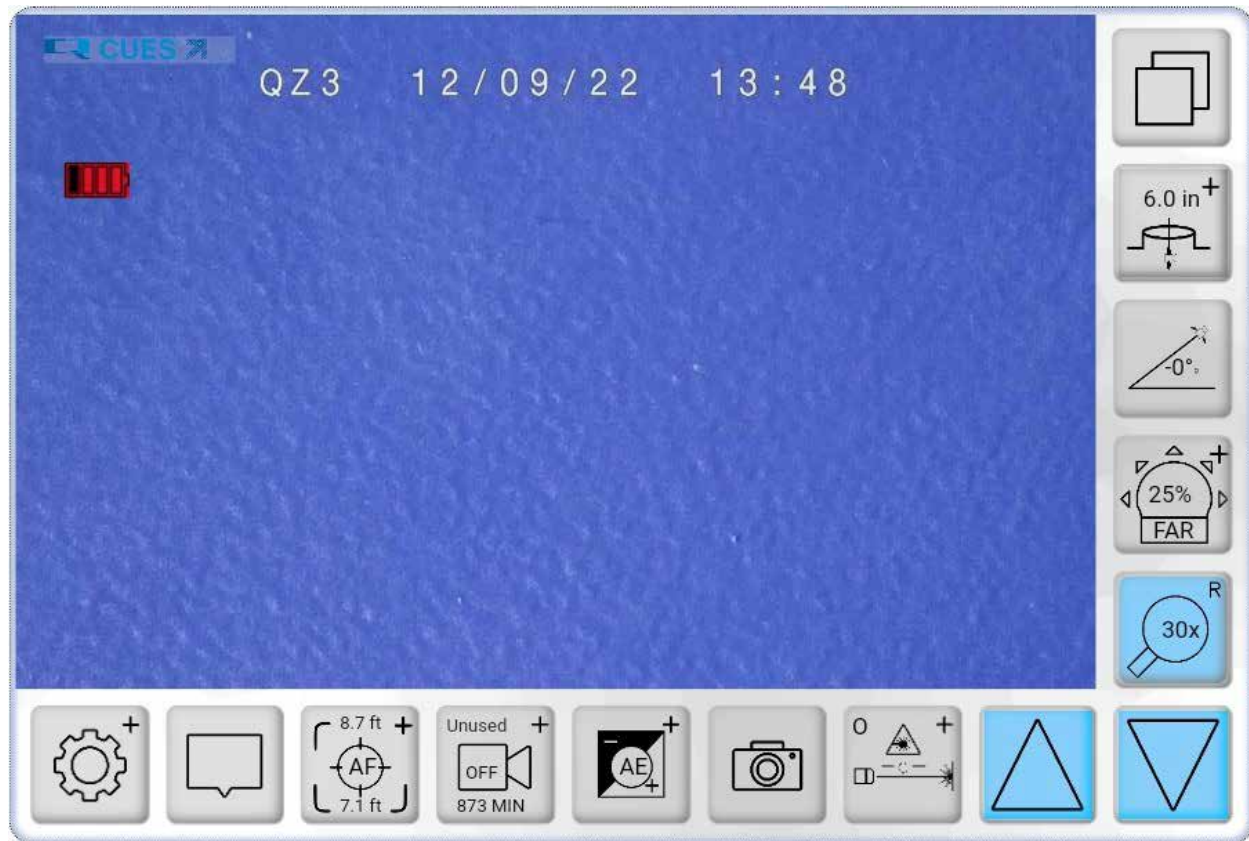
Selected lighting intensity can be controlled with up/down arrows (except flood and high beam)

## LIGHTING CONTROLS (CONTINUED)

The images below illustrate how the different lighting modes throw light at different distances of the pipe. The high beam mode combines all lighting modes but is intended to be used for short durations to preserve battery life.

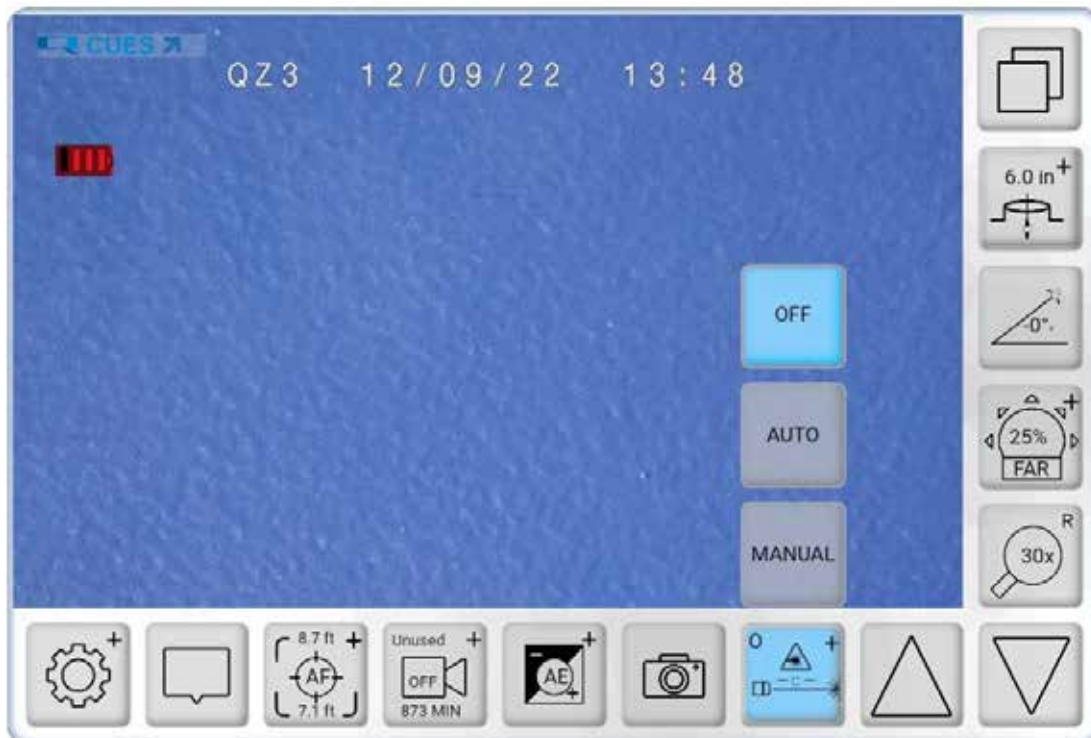


## ZOOM CONTROLS

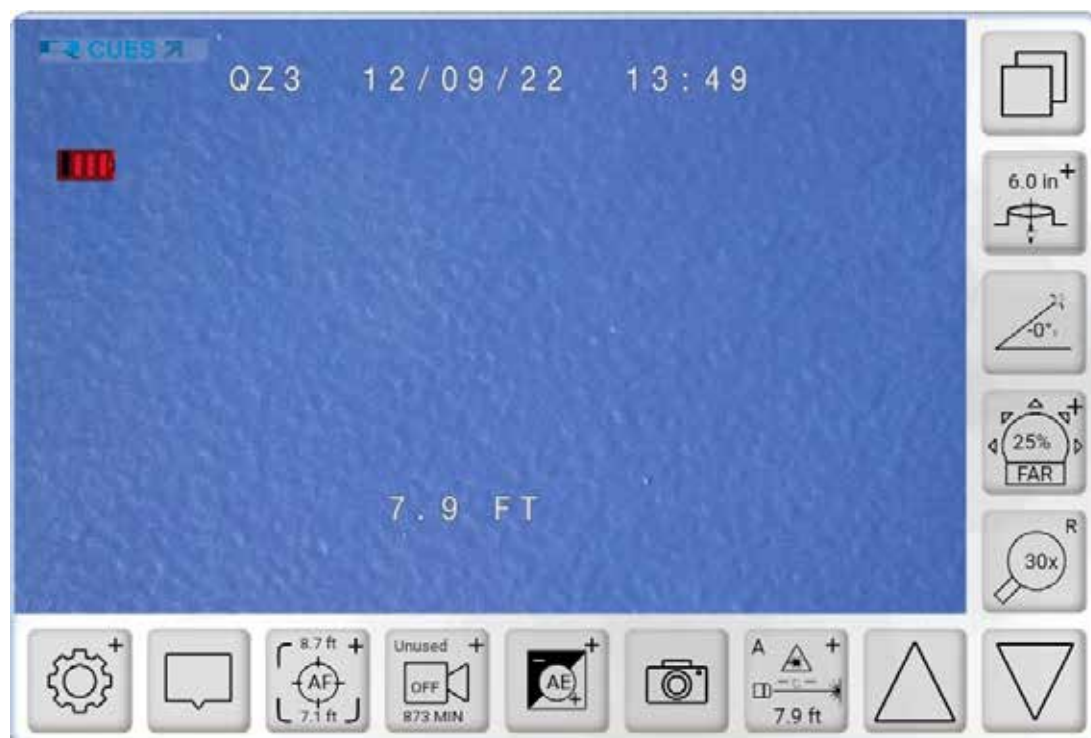


Camera zoom is adjusted by selecting the zoom icon and using the up/down arrows. Pressing and holding the zoom button will reset the zoom to the home position.

## LASER MEASUREMENT CONTROL (ADVANCED ONLY)



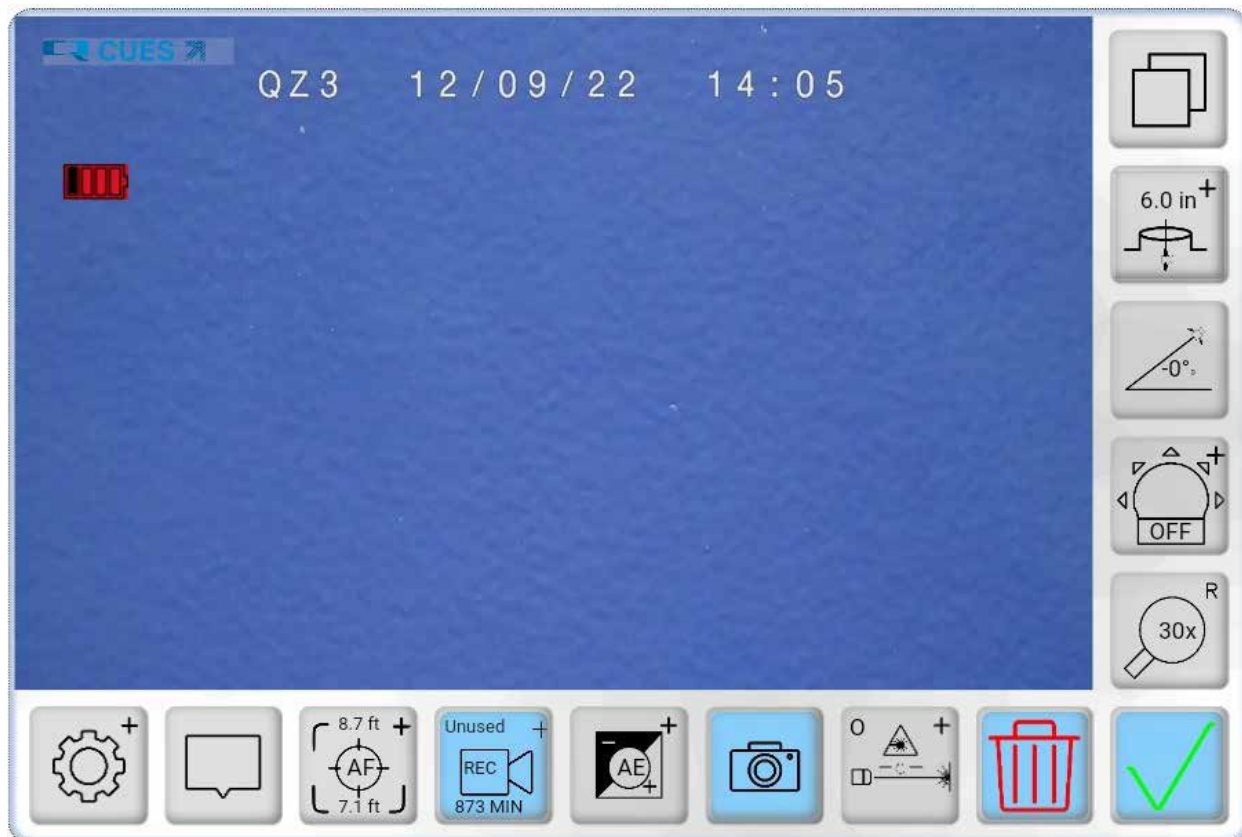
Press and hold the laser icon to select mode of operation. In manual mode, the laser will record a new measurement each time the laser icon is short pressed.



Laser measurements can be displayed on the video overlay in addition to the control. In auto mode, the laser will update these continuously.



## SNAPSHOT CONTROL



Snapshots are only available during a recording. To capture a snapshot, press the snapshot icon. The interface will freeze the image and provide the option to save/delete using the green check mark or red waste bin. If it is desired to add notes to the snapshot, press the notes icon at this screen first.

## SNAPSHOT NOTES



NOTES  
["PICTURE"]

Picture Note

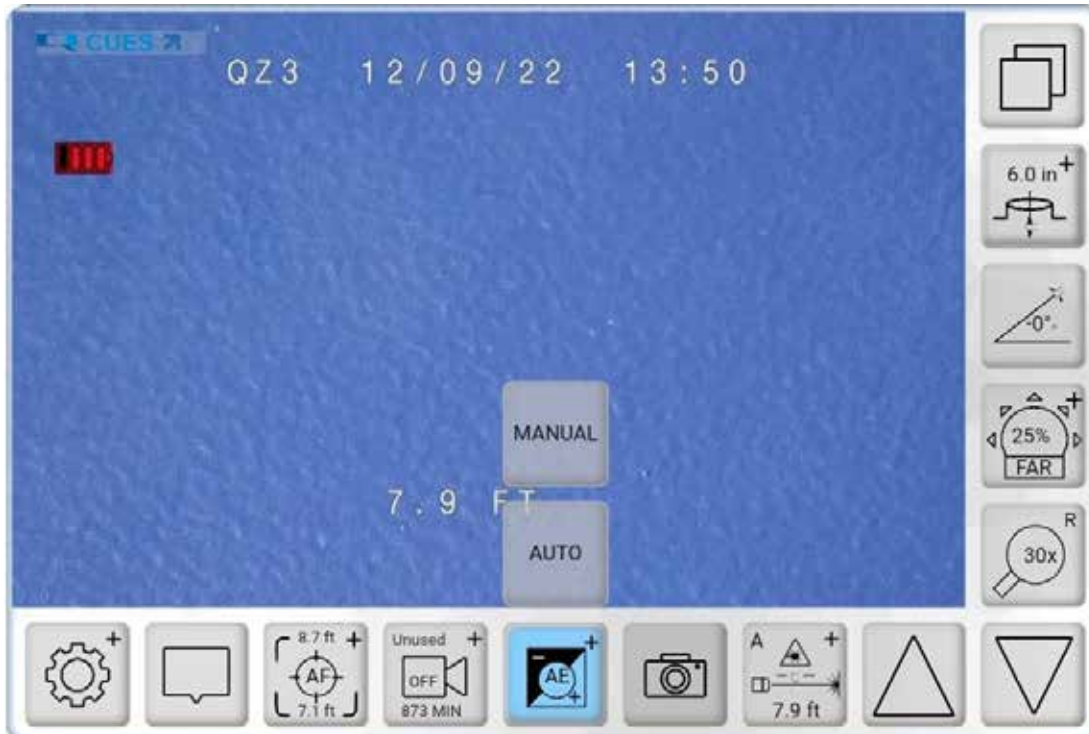
TITLE = ASSET                      DATE = 2022-12-15  
ID = QZ3                              TIME = 14-30-05  
VIEW = UPSTREAM      MODEL = QZ3 Advanced      S/N = 22121481  
LAT =                              GTIM =                      LON =

Buttons: [Grey] [Speech Bubble] [Grey] [Red Trash] [Grey] [Green Checkmark] [Grey] [Grey with Arrow]

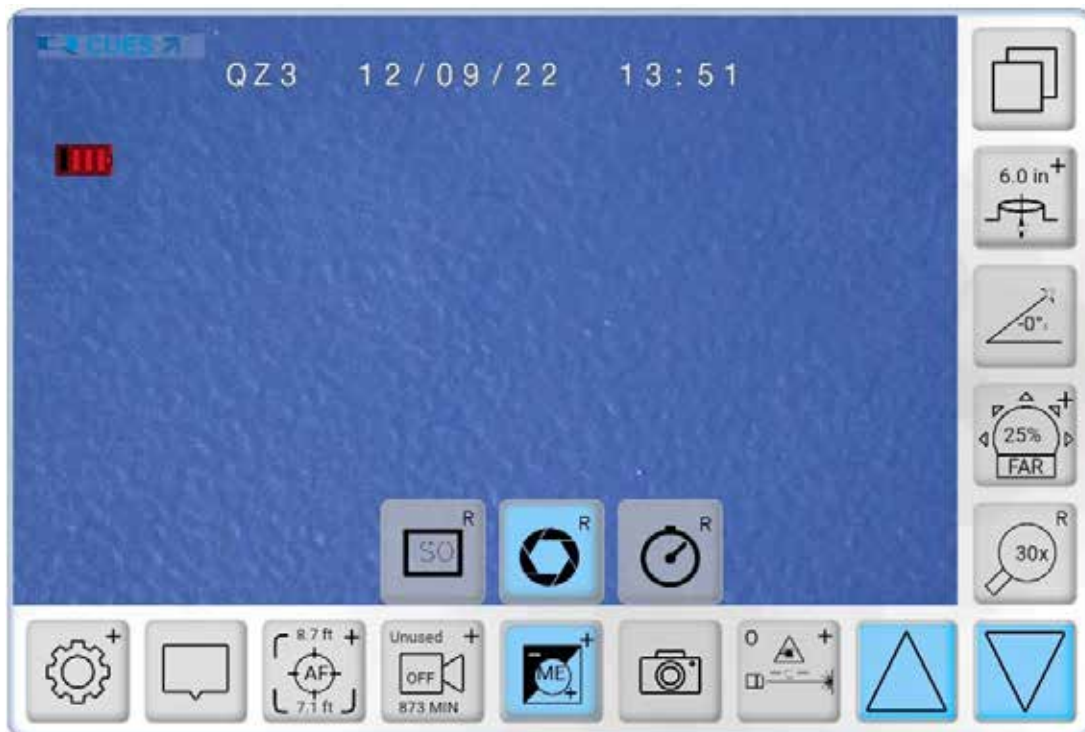
At this screen, the operator can enter notes which will be associated with the snapshot in meta-data along with the other fields populated automatically. Once the notes have been added these can be saved with the snapshot by pressing the green check mark.

(NOTE GPS coordinates are fetched from the operating device where available and are not meant for surveying purposes)

## EXPOSURE CONTROLS

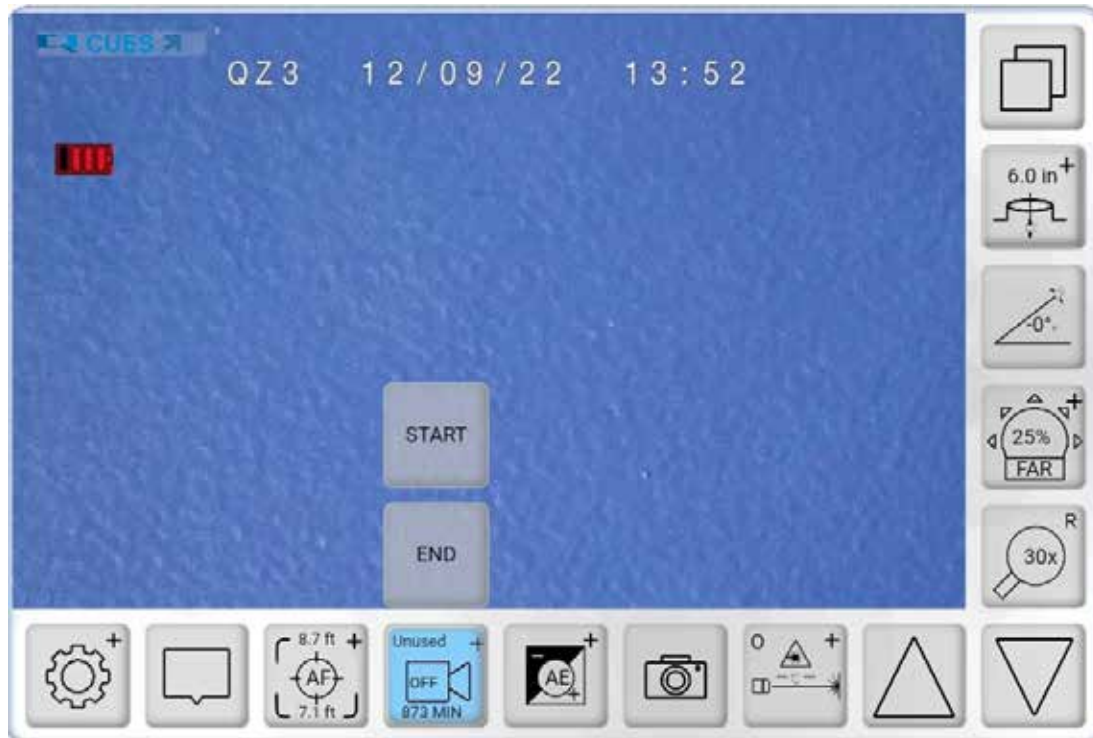


Pressing and holding the exposure icon allows the operator to select manual/auto controls.



With manual controls enabled, a short press provides the exposure options available for control via the up/down arrows.

## RECORDING CONTROLS



Press and hold the recording icon to start/end a recording. During recording the icon will display “REC”.



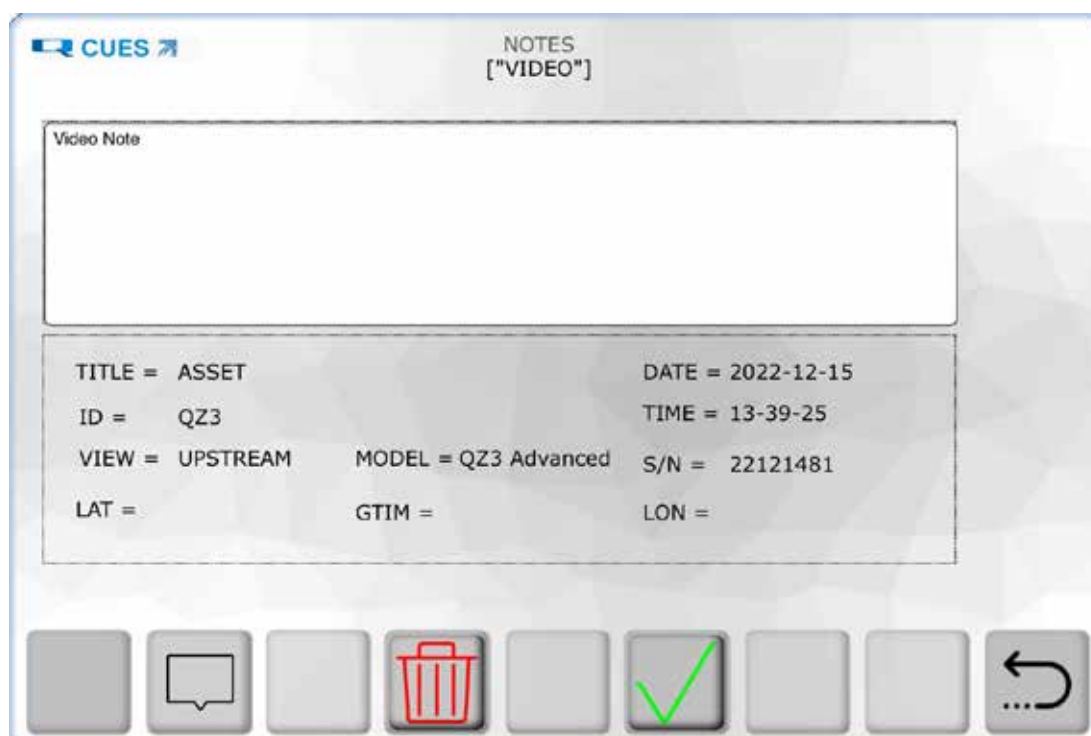
Short press the recording icon during a recording to pause a recording. Press again to resume. While paused the icon will flash and display “PSD”.



## RECORDING CONTROLS CONTINUED

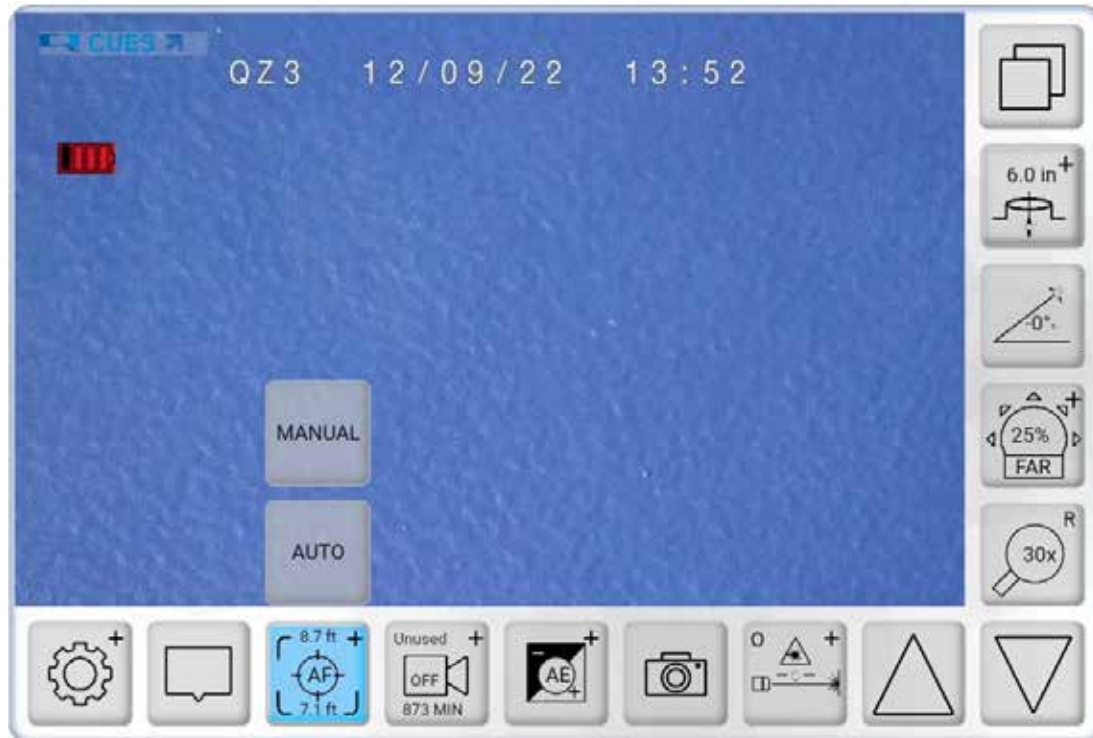


After a recording is ended the recording button will briefly display “XFR” to indicate the save progress of the file. (NOTE that this will be nearly instantaneous for short recordings)

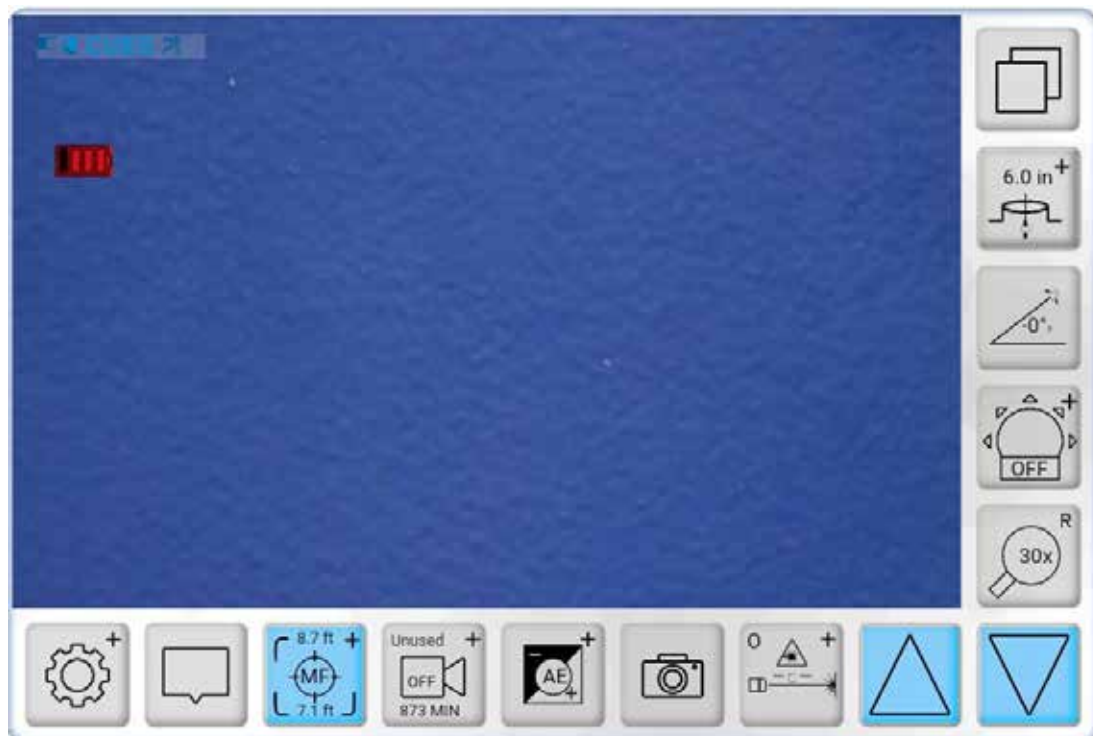


Notes can be added to a video during a recording by pressing the notes icon and typing in the available field. Notes and auto populated data will be saved in metadata.

## FOCUS CONTROLS



Press and hold the focus icon to select between auto/manual modes.



In manual mode focus can be adjusted using the up/down arrows.

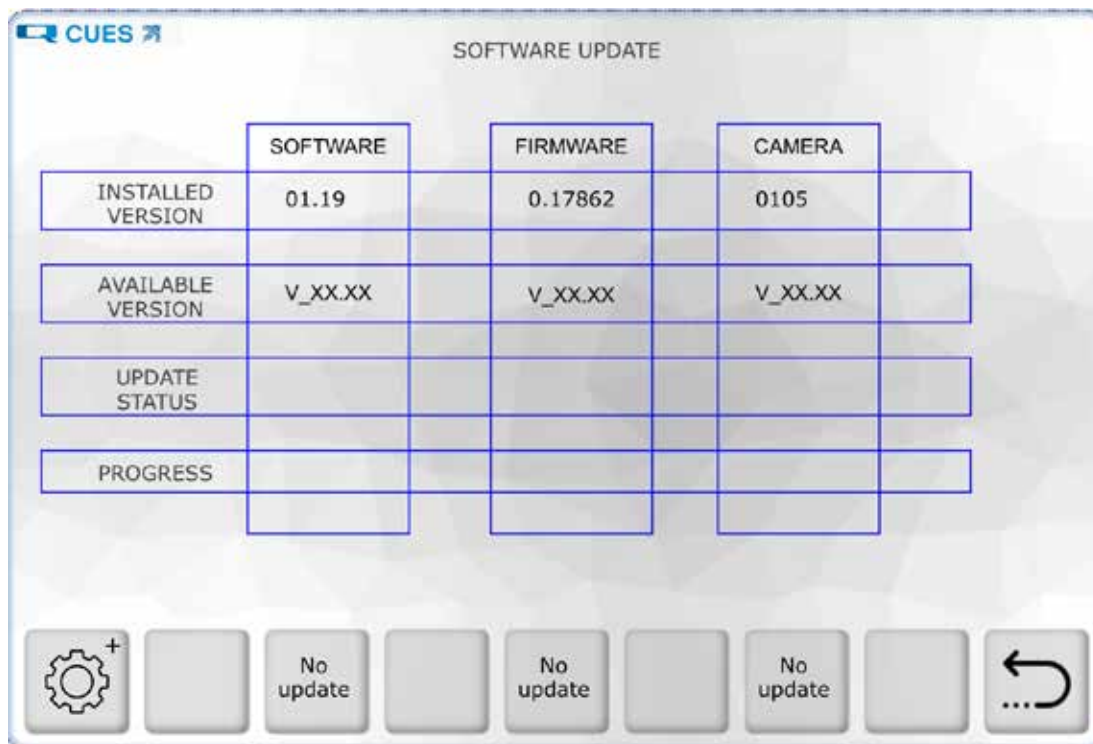
## FOCUS CONTROLS CONTINUED



The focus icon provides upper and lower range approximation of the distance to an object in focus. To use this feature the operator must use zoom to ensure only the object of interest is in view. For best results, manual focus is not recommended for focus based distance approximation.





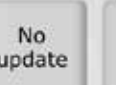


The approximation is estimated to be accurate to +/- 20% from the upper/ lower range approximation, up to 100ft (30m). This feature is not recommended outside of this range.

## NOTES CONTROLS



SOFTWARE UPDATE

	SOFTWARE	FIRMWARE	CAMERA
INSTALLED VERSION	01.19	0.17862	0105
AVAILABLE VERSION	V_XX.XX	V_XX.XX	V_XX.XX
UPDATE STATUS			
PROGRESS			

Access this page by pressing the notes icon on the control screen. Notes added before an active recording will be saved to the next video.



NOTES  
["VIDEO"]


Video Note

TITLE = ASSET  
 ID = QZ3  
 VIEW = UPSTREAM  
 LAT =

DATE = 2022-12-15  
 TIME = 13-39-25  
 MODEL = QZ3 Advanced  
 GTIM =

S/N = 22121481  
 LON =

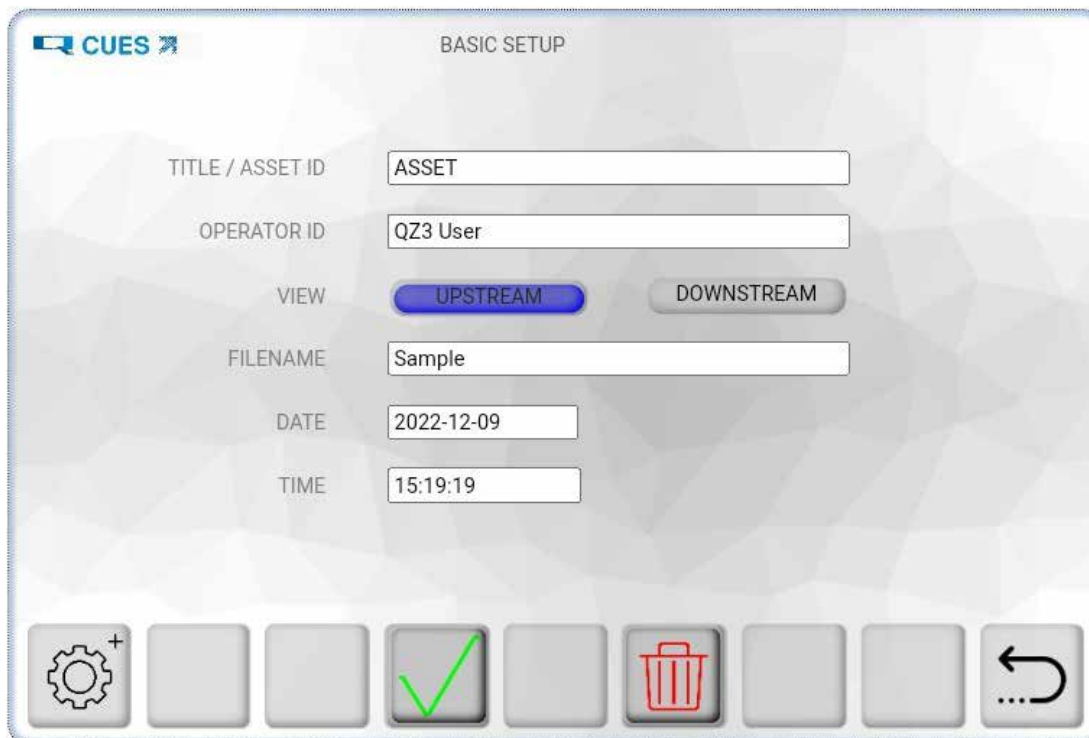





Use the check mark/waste bin to save/delete notes. The back arrow will return to the controls screen.



## NOTES CONTROLS CONTINUED



**CUES** BASIC SETUP

TITLE / ASSET ID: ASSET

OPERATOR ID: QZ3 User

VIEW: **UPSTREAM** DOWNSTREAM

FILENAME: Sample

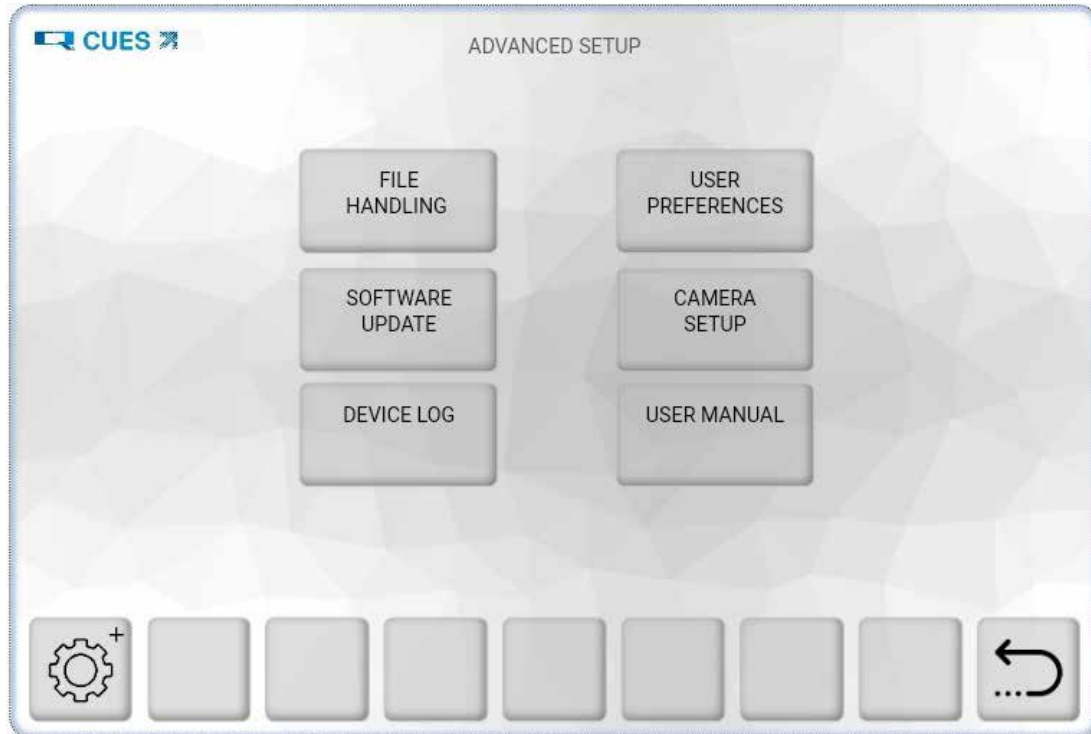
DATE: 2022-12-09

TIME: 15:19:19

Icons: Settings, Plus, Checkmark, Trash, Back

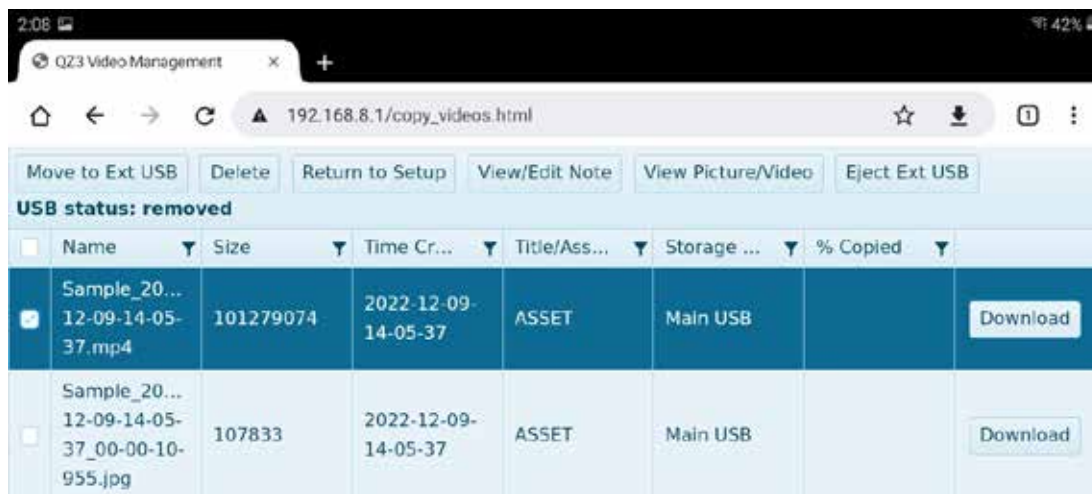
This page is accessed with a short press of the settings icon. Here the fields displayed can be edited before a recording. Date/time are automatically populated from the control device. Title/asset, operator, view, date, and time can all be displayed as video overlays under user preferences.

## SETTINGS



This screen can be accessed by a long press of the settings icon.

## SETTINGS > FILE HANDLING

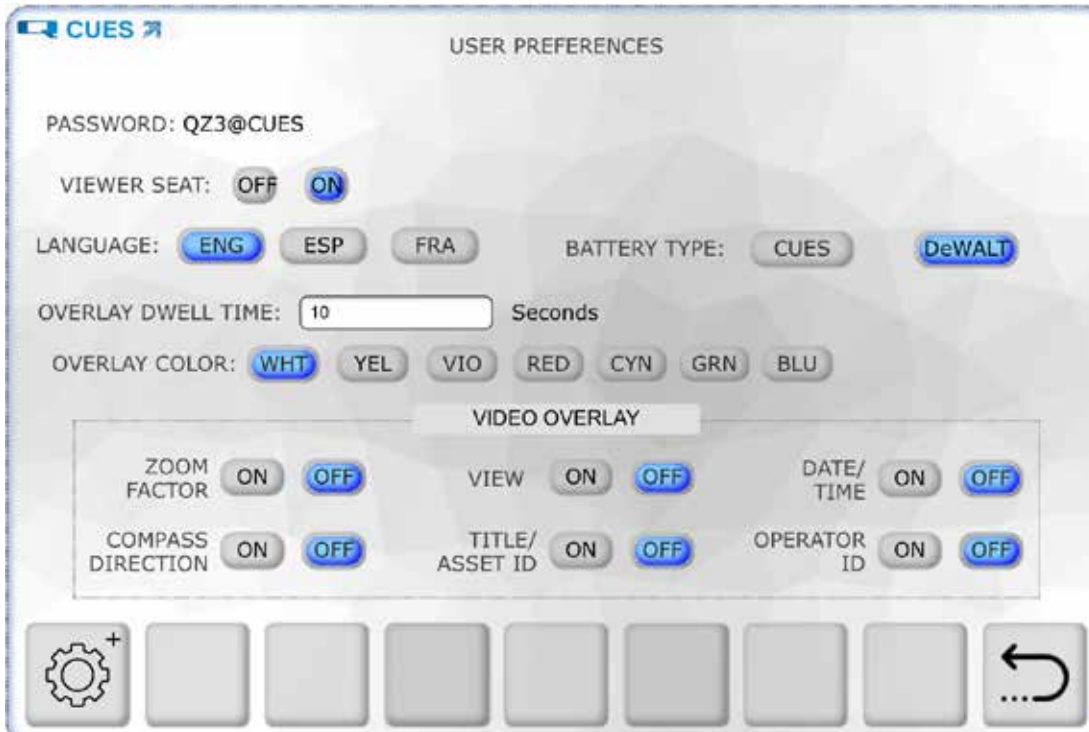



This screen shows saved videos and snapshots. Selecting a video or snapshot on the left side of the screen allows the operator to access one of the options above.

To move files to an external USB, a drive formatted as fat32 should be inserted into the USB port at the rear of the camera. Files can then be selected and moved to the external USB. The % copied column displays the progress of a file transfer.

The download icon next to each file can also be used to transfer individual files straight to the controlling device (tablet, phone, laptop).

## SETTINGS > USER PREFERENCES



**CUES**  **USER PREFERENCES**

PASSWORD: QZ3@CUES

VIEWER SEAT: ☐ OFF ☒ ON










LANGUAGE: ☒ ENG ☐ ESP ☐ FRA BATTERY TYPE: ☐ CUES ☒ DeWALT

OVERLAY DWELL TIME:  Seconds

OVERLAY COLOR: ☒ WHT ☐ YEL ☐ VIO ☐ RED ☐ CYN ☐ GRN ☐ BLU

**VIDEO OVERLAY**

ZOOM FACTOR <input type="radio"/> ON <input checked="" type="radio"/> OFF	VIEW <input type="radio"/> ON <input checked="" type="radio"/> OFF	DATE/TIME <input type="radio"/> ON <input checked="" type="radio"/> OFF
COMPASS DIRECTION <input type="radio"/> ON <input checked="" type="radio"/> OFF	TITLE/ASSET ID <input type="radio"/> ON <input checked="" type="radio"/> OFF	OPERATOR ID <input type="radio"/> ON <input checked="" type="radio"/> OFF


Bottom row of buttons:         

This page offers the operator control over a number of settings.

- Viewer mode can be turned on/off
- Language settings can be changed
- Battery type can be changed between CUES/DeWalt
- Video overlay dwell time can be set
- Overlay colors can be changed for various pipe conditions
- Overlay fields can be turned on/off



## SETTINGS > SOFTWARE UPDATES


**QZ3**

DEVICE LOG  
 PRESENT

MODEL	S/N	SW_VER	FW_VER	CAM_VER	LOG_DATE	LOG_TIME
QZ3 Advanced	22121481	01.18	0.0	0106	2022-12-15	03:22:46






  

PARAMETER	PRESENT VALUE	HISTORICAL VALUE
Total Runtime	4 MIN	1864 MIN
Average Runtime	undefined	85 MIN
Height Motor Warnings	0	0
Tilt Motor Warnings	0	0
Pan Motor Warnings	0	0
High Temp Warnings	0	0
High Pressure Warnings	0	0
High Humidity Warnings	0	0

	MAX	AVG	MIN	MAX	AVG	MIN
uP Core Temp	46.0 °C	44.2 °C	39.0 °C	47.0 °C	38.7 °C	31.0 °C
Camera CPU Temp	39.0 °C	36.5 °C	34.0 °C	42.2 °C	39.1 °C	26.0 °C
Camera FPGA Temp	36.5 °C	34.6 °C	32.8 °C	39.5 °C	37.6 °C	24.8 °C
Camera Lens Temp	34.0 °C	33.9 °C	33.0 °C	41.0 °C	38.6 °C	23.0 °C
Power Board Temp	32.0 °C	31.3 °C	0.0 °C	72.6 °C	34.6 °C	0.0 °C
Internal Relative Humidity	0 %	0 %	0 %	0 %	0 %	0 %
Internal Pressure	0 mb	0 mb	0 mb	0 mb	0 mb	0 mb

This screen shows installed software/firmware aboard the QZ3 camera. To update the camera software/firmware, insert a fat32 formatted USB drive into the USB port at the rear of the camera containing a valid update file. If an update is available, press the start update icon under the applicable column to install the update. Monitor update progress and wait until the update is completed (approximately 2 minutes) before turning off the unit. Do not turn off the unit during an update.


The latest software/firmware update files, as well as detailed instructions on the update process, are available on the CUES website support section.

## SETTINGS > CAMERA SETUP



At this screen various camera settings can be changed by the operator. Invert image is a handy feature for walking large pipes while holding the QZ3 inverted by its pole attachment.

## SETTINGS > DEVICE LOG





 QZ3

DEVICE LOG  
PRESENT

MODEL	S/N	SW_VER	FW_VER	CAM_VER	LOG_DATE	LOG_TIME
QZ3 Advanced	22121481	01.18	0.0	0106	2022-12-15	03:22:46

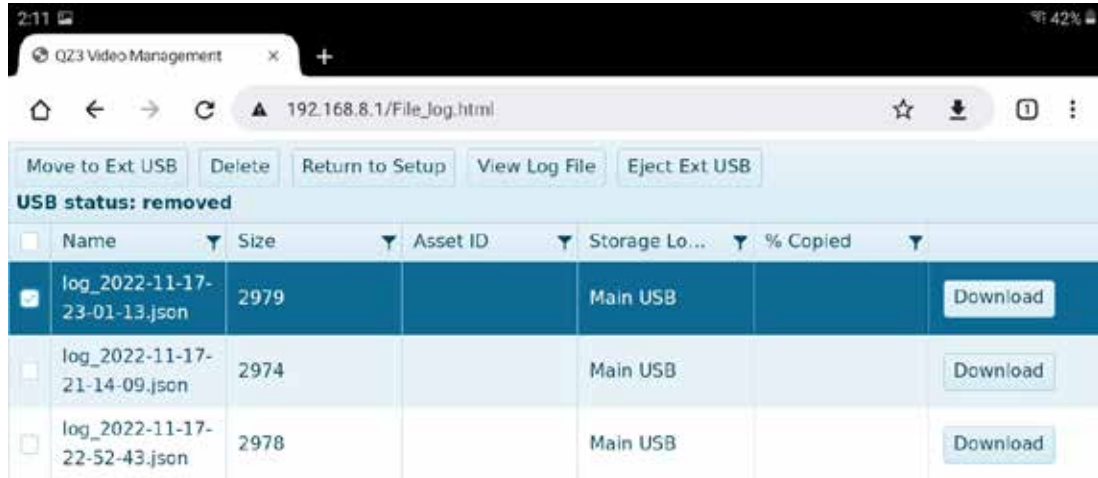
PARAMETER	PRESENT VALUE	HISTORICAL VALUE
Total Runtime	4 MIN	1864 MIN
Average Runtime	undefined	85 MIN
Height Motor Warnings	0	0
Tilt Motor Warnings	0	0
Pan Motor Warnings	0	0
High Temp Warnings	0	0
High Pressure Warnings	0	0
High Humidity Warnings	0	0

	MAX	AVG	MIN	MAX	AVG	MIN
uP Core Temp	46.0 °C	44.2 °C	39.0 °C	42.0 °C	38.7 °C	31.0 °C
Camera CPU Temp	39.0 °C	36.5 °C	34.0 °C	42.2 °C	39.1 °C	26.0 °C
Camera FPGA Temp	36.5 °C	34.6 °C	32.8 °C	39.5 °C	37.6 °C	24.8 °C
Camera Lens Temp	34.0 °C	33.9 °C	33.0 °C	41.0 °C	38.6 °C	23.0 °C
Power Board Temp	32.0 °C	31.3 °C	0.0 °C	72.6 °C	34.6 °C	0.0 °C
Internal Relative Humidity	0 %	0 %	0 %	0 %	0 %	0 %
Internal Pressure	0 mb	0 mb	0 mb	0 mb	0 mb	0 mb

This screen shows information around the QZ3s current and historic use. For instance, here an operator can see the max or minimum temperature seen by components aboard the QZ3 on a current power cycle or the max/min values for all time. This screen helps CUES customer service when assisting with troubleshooting equipment. A log can be saved with the green check mark and then transferred to a USB or downloaded to the control device and emailed to CUES if needed (see log file manager).

## SETTINGS > DEVICE LOG > FILE MANAGER



This screen is accessed by pressing the files icon in the device log screen. Here saved log files can be viewed, transferred to an external USB, or downloaded to the controlling device (tablet, phone, laptop) using the download icon next to each file.

To move files to an external USB, a drive formatted as fat32 should be inserted into the USB port at the rear of the camera. Files can then be selected and moved to the external USB. The % copied column displays the progress of a file transfer.



## ADJUSTMENTS AND MAINTENANCE

### TILT BALL FRICTION ADJUSTMENT (BASIC MODEL ONLY) -

- To adjust friction on the tilt ball, use a Philips head screwdriver to tighten the screws around the tilt horseshoe clamp starting at one end in a clockwise or counter-clockwise fashion, adjusting each screw a half turn at a time. Repeat as necessary.

### TELESCOPIC POLE LATCH ADJUSTMENT -

- To tighten the latches, open the latch into the free position and use a Phillips screwdriver to turn the adjustment screw a half turn. Repeat as necessary.



## LITHIUM ION BATTERY SAFETY AND CHARGING INFORMATION

### Battery/Charging Precautions and Recommendations -

- Do not allow battery pack to short-circuit, even for a moment.
- Always protect battery packs from shock, puncture, and impact, i.e., do not drop or transport in a tool box, trunk, back of van, etc. where they can “bang around”. The best practice is to keep them in the padded case while not in use.
- Do not use or attempt to charge a battery pack that is leaking or shows any signs of damage.
- Never charge a battery pack at temperatures below or above 0°C/40°C respectively.
- Do not operate a battery pack at temperatures below or above -30°C/55°C respectively.
- Keep the battery packs away from rain/ moisture when not enclosed in housing/case.
- Always charge battery packs on a non-flammable surface and away from all flammable material.
- Remove packs from equipment or case compartment before charging.
- Do not attempt to tamper with or disassemble batteries or chargers.
- Batteries may become warm during use or charge.
- Remaining charge on battery is indicated by pressing the button beneath the LED display on left side.
- Battery packs should be recharged as soon as possible after discharge unless they are not in the appropriate temperature range. Ideally, charging should occur at room temperature on packs that have been allowed to warm up or cool down to room temperature.
- Battery pack sets should be “rotated”, even if second set is not needed during an inspection session, i.e. once the first has been partially or fully used remove it from the pole for recharge and use the second set of batteries for the next session.
- Partial charges or discharges are acceptable without causing “memory effect”, although constant operation under those conditions should be avoided.



QZ3 Battery Packs can be used to charge the optional tablet accessory.

## TROUBLESHOOTING THE QZ3

### BASIC TROUBLESHOOTING CHECKS

- Ensure tablet or other connected device is connected to QZ3 Wi-Fi network (needs to be connected at each power up)
- Power cycle camera
- Change batteries
- Close all applications on tablet/connected device
- Close all tabs in web browser (Google Chrome is recommended)
- Clear Google Chrome browser cache
- In the browser select three vertical dots on upper right corner of screen>Settings>Privacy>Clear Browsing Data>Clear Data (ensure time range “all time” is selected)
- Perform any required updates to tablet/connected device
- All lights on; no Wi-Fi/video- QZ3 is in warm up mode. This will occur in extreme cold situations to allow camera to safely turn on fully
- Power cycle tablet/connected device

### COMMON TROUBLESHOOTING

- Power button light on; no Wi-Fi - Battery may be low
- No Zoom Controls- Restart QZ3 and wait 1 minute before connecting to Wi-Fi
- Weak Signal- Check distance between operator and pole. For best result, operator should be within arm's length of the pole. Ask about Wi-Fi Range Extender to extend the reach of the camera's signal up to 100+ feet from the manhole.
- Camera stopped/won't show video/Wi-Fi - QZ3 battery may be low or camera may have gone into over temperature mode to protect itself due to high temperature. Shut off unit and allow to cool down in a cool environment.
- Additional Troubleshooting- Contact our Manhole Products Customer Service Specialist at 407.550.0603



## OPTIONAL QZ3 ACCESSORY INSTRUCTIONS/RECOMMENDATIONS

### Ruggedized Tablet -

- It is important to note that the optional ruggedized tablet has an “Adaptive Brightness” under its brightness settings which should be enabled in addition to full brightness for optimum picture clarity.
- It is recommended to close all applications other than the browser used for viewing QZ3 inspections for best performance.



### Wi-Fi Range Extender -

- The Wi-Fi Range Extender attaches to the top of the QZ3 pole and extends the Wi-Fi range up to 100+ feet from the manhole.



## QZ3 TRIPOD/BIPOD

- The optional QZ3 tripod/bipod is made to be a 2-in-1 accessory. One leg on the assembly is removable using the repositionable locking handle.
- To avoid losing the handle we recommend reinstalling into the base after removal of the third tripod leg.
- For pipeline inspections we recommend the bipod configuration, using the depth rod on the pole as the third leg.
- To suspend the pole, first collapse all three legs of the tripod so that the weight of the assembly rests on the unextended legs. The assembly is NOT meant to carry full weight of the pole while legs are extended.
- When the tripod is not being used for stabilization, the Pole Stand-in accessory can be fitted in place of the pole and the Pole Mount Tablet Holder can be fit onto the Stand-in to hold the tablet on the tripod.

### Adjustments -

- Slipping
  - Turn button at top of leg clockwise to increase locking
- Sticking
  - Turn button at top of leg counter-clockwise to decrease locking
  - Inspect for damage on outside of leg
  - **Do NOT lubricate legs.** This may cause excessive slipping.







## POLE MOUNT TABLET HOLDER

- Spread cross arms of holder to fit tablet (horizontally) into the holder. Secure with rubber straps over the corners of the tablet.
- The pole mount tablet holder clamps to the largest section of the telescopic deployment pole.
  - For a tighter fit, open the clamp handle and rotate the handle clockwise by one rotation and re-clamp. Repeat as necessary.
- To mount the tablet on a tripod not being used for inspections use the Pole Stand-in to hold the tablet independent of the pole.





## HARNESS MOUNT TABLET HOLDER

- Attach the tablet mount to the harness with the thumb screw on the harness. Adjust harness straps to fit user. Place tablet (horizontally) between the clamping surfaces and secure with the two thumb screws at the top of the holder.
- The tablet can be tilted by adjusting a thumb screw at the base of the harness.





## CUES MATERIAL RETURN POLICY

To ensure the orderly return of CUES products from our customers and to assure proper credit and warranty replacements handled in a timely manner, CUES has implemented a MATERIAL RETURN AUTHORIZATION (MRA) SYSTEM. Please read and follow the instructions below to ensure your MRA is handled properly and efficiently:

1. Once it is determined that a CUES product needs to be returned, call the CUES Parts Department in Orlando at 1-800-327-7791.
2. CUES will provide an MRA number by phone and ask a few questions.
3. CUES will then mail or fax the MATERIAL RETURN AUTHORIZATION (MRA) FORM with the MRA number, or include it with the replacement parts, if applicable.
4. Follow all instructions on the MRA Form. Make 2 copies - one for your records and the other will be used as a packing list.
5. Place an MRA sheet in with the parts that are shipped back to CUES along with a copy of the original packing slip or invoice, if possible. Send only the parts originally agreed upon with your Parts Representative. Any deviations/changes will require an additional MRA.
6. Make sure to include a copy of the MRA form for a packing slip.
7. Write the MRA number on the outside of the box.
8. Please take care in packing the parts that are to be shipped back to CUES. Parts must be individually protected from each other and appropriate packing material must be used to prevent damage during shipping.
9. Freight on the material returned is to be prepaid by the customer. Depending on the warranty determination, CUES, at its' option, may credit freight charges both ways.
10. The parts must be returned to CUES within 5 days of receipt of the MRA for credit to be granted.

Under normal circumstances, a warranty determination can be made within 30 days, and if under warranty, the part will be replaced at no charge. A credit will be issued if you have already received a replacement part. No credits will be issued until CUES receives the defective part.

\*\*\*\*\*NOTE\*\*\*\*\*

CUES will not warrant look-alike parts sold by competitors and reserves the right to charge a restocking fee. CUES shall not be liable for any loss or damage resulting, directly or indirectly, from the use of the materials, or for special, indirect, or consequential damages, economic losses, loss of profits, loss of business, or loss of business opportunity.

Without limiting the generality of the foregoing, this exclusion from liability embraces purchaser's expenses for downtime or for making up downtime, damages to property, and injury to or death of any persons.

CUES neither assumes nor authorizes any person (including employees, agents, or representatives of CUES) to assume for it any other liability, guarantee, or warranty in connection with the sale or use of the materials, and no oral agreements, warranties, or understandings exist collateral to or affecting this warranty. This warranty shall not be extended, altered, modified, or waived except by a written instrument signed by an authorized CUES representative.

## CUES MATERIAL RETURN AUTHORIZATION

Cust #:	Name:			Contact:	Date: 4/21/2004
Original SO #: N/A	SO Orig:	Dated:	New SO #:	S.O. To Be Credited:	
Return For:	Reason:	Territory	Prod. Ref. Cd: 51200	Orig:	
Explanation:					
Items Returned					
1					
2					
3					
4					
5					
6					

To ensure your MRA is handled properly and efficiently, please follow the instructions below.

1. Ship parts back within five (5) business days of receiving your MRA number. Parts ordered in error are subject to a restocking fee.
  2. Send only the parts originally agreed upon with your customer service representative. Any deviations will require an additional MRA.
  3. Make a copy of this sheet and keep the original for your records. Use the copy as a packing slip.
  4. Write the MRA number on the outside of the box.
  5. Parts must be individually protected from each other (original packaging would be best) and appropriate packing material must be used to prevent against damage during shipping.
- Note: If parts are not well protected and arrive at our facility damaged in any manner, we will automatically reject them and return them to you without credit.

**PARTS WILL BE RETURNED TO CUSTOMER AT CUSTOMER EXPENSE WITHOUT AN MRA NUMBER DOCUMENTED ON BOX. CUES IS NOT RESPONSIBLE FOR SHIPMENT FROM CUSTOMER TO CUES.**

Use this section as a Packing Slip.

Please remember to write the  
MRA number on the box.

**MRA #:**  
XXXX

**Return To:**

Cues  
3600 Rio Vista Avenue  
Orlando, Fl. 32805  
(407) 849-0190  
FAX (407) 425-1569  
WATS 800-327-7791

## CUES PARTS & SERVICE

At CUES, we realize your return on investment is directly related to daily production in the field. By stocking the largest inventory of OEM equipment in our industry, CUES strives to ship all parts orders on the same day or within 24 hours after receipt of the order.

Whether you need a camera or a fuse, CUES will quickly process and ship your order in accordance with your schedule requirements! Our experienced parts professionals can help you with parts identification, shipping methods, equipment operation questions, and connect you to the correct specialist for troubleshooting!

CUES offers four convenient stocking locations that contain a large assortment of parts, finished products, portable, and truck mounted systems. Texas, Arizona, Oklahoma and Louisiana customers can be serviced by our local dealerships. Contact us at your most convenient stocking location! For authorized dealer locations, log onto our website at [www.cuesinc.com](http://www.cuesinc.com).

Parts can be ordered via phone or facsimile! For operating hours, contact information, and locations, log onto our website at [www.cuesinc.com](http://www.cuesinc.com). Contact us at your most convenient stocking location! Log onto our website at [www.cuesinc.com](http://www.cuesinc.com) to view the CUES Parts Department & Dealers hours & locations.

**CUES Parts Department:** Parts turnaround is normally within 24 hours after receipt of order. Please note that special shipping arrangements can be made at the time of the order. All return shipments received at CUES freight collect will be refused upon delivery unless previously authorized by CUES personnel. Normal operating hours are 8am to 5pm, EST., Phone: 800-327-7791, Fax: 800-831-1184.

**CUES Service Depot:** Service turnaround is normally 72 hours or less upon receipt at our depot, excluding weekends and holidays. All return shipments received at CUES freight collect will be refused upon delivery unless previously authorized by CUES personnel. Normal operating hours are 8am to 5pm, EST., Phone: 800-327-7791.

### *West Coast*

**For West Coast Customers:**

The parts and service depot is located at 1943 S. Augusta Court, Ontario, CA, 91761. Normal operating hours are 8am to 5pm, PST  
Phone: 800-544-8695

### *Canada*

**For Canadian Customers:**

The parts and service depot is located at 1675 Sismet Road, Unit 2 & 3, Mississauga, Ontario L4W1P9  
Phone: 905-238-9178

### *Midwest*

**CUES Midwest:**

[www.cuesmidwest.com](http://www.cuesmidwest.com)  
2325 Parklawn Drive, Suite K  
Waukesha, WI 53186  
Phone: 262-717-3165  
Fax: 262-717-3167

## RECORD OF REVISIONS

This Record of Revision page is designed to allow the manual user to determine the engineering/manufacturing level to which the manual is written. As engineering changes to this hardware are made at CUES, necessary information in the manual will be revised to reflect those changes. The latest change level and the rationale for any change(s) will be explained in tabular format on this page to allow the manual user to be better equipped should the need arise to call CUES regarding technical information.

Manual Title	Revision	Date	Change Description
QZ3	1	07.12.19	Preliminary In-Process Manual Released to Documentation
	2	11.08.19	Various instructions and pictures updated throughout the manual
	3	03.15.21	Revised procedures/instructions to include QZ3 Advanced.
	4	12.15.22	Manual updated to reflect new user interface

Innovation for over

50  
Years

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection, rehabilitation, pipe profiling equipment and asset inspection/decision support software. For over 50 years, CUES has provided innovative pipeline inspection technology and solutions to enable accurate condition assessment and proactive maintenance programs for buried infrastructure.

In addition to inspection equipment, CUES also designs, manufactures, and sells a broad range of pipeline rehabilitation and profiling equipment. These include chemical grouting systems for sewer line pipe joints capable of using a wide variety of grouting products. CUES also makes lateral reinstatement cutting systems which enable the reinstating of laterals in mainline sewers after they have been relined with any of a wide variety of liner materials. Pipe profiling is accomplished via Laser for Sonar based systems.

CUES has the most locations and dealers available to serve you! To find a local CUES facility, find the operating hours for a particular location, or to contact us at your most convenient stocking location, please log onto our website at [www.cuesinc.com](http://www.cuesinc.com) or call the CUES Corporate Headquarters in Orlando, Florida for more information.