



ANGRY



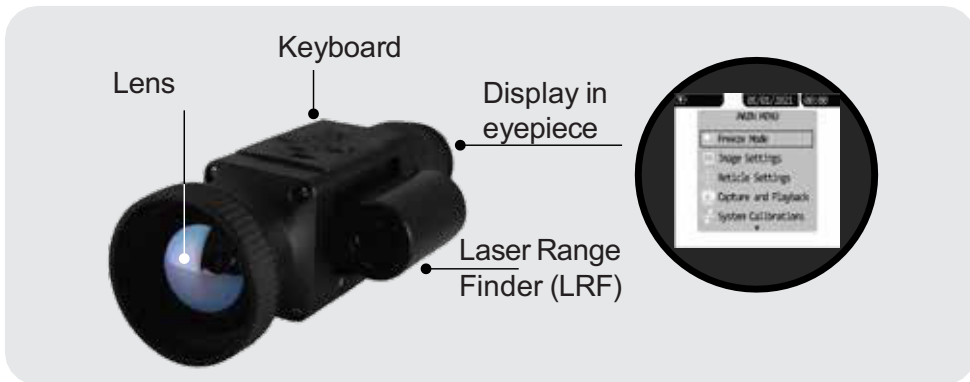
Thermal Scopes
User Guide

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Get to Know Your Scope



Basic Operation and Control

21 Charging

Connect the power source to the USB C type port; the  icon should appear on the LED screen in the eye piece, and it will flash when charging or disappear when full charged.



22 Turn the Scope ON/OFF

USB

The scope will turn automatically when connected to power via USB (TBD?).



23 Turn the Scope ON/OFF

Battery

Turn on

Press and hold the Enter button for 5s until the unit turns on.

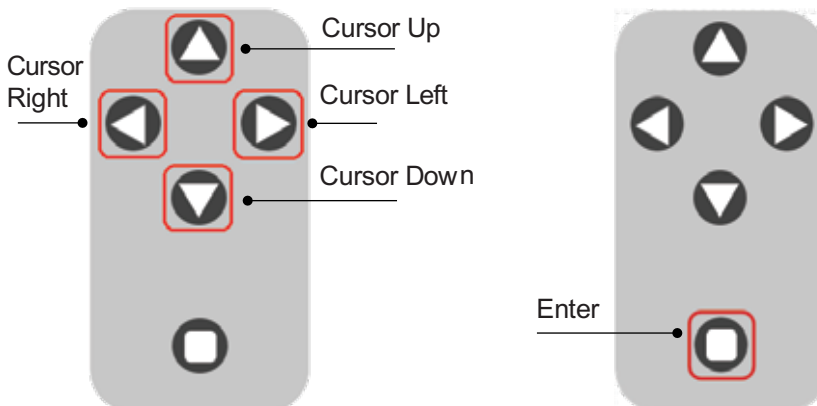
Turn off

Press and hold the Enter button for 5s until the unit turns off.



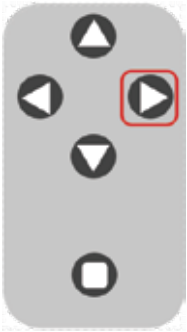
2.3 Buttons and Menu Navigation

At the top of the unit there is a keyboard to navigate the scope's options and applications. In addition to navigating the applications, the buttons have special functions.



2.3.1 Special Keyboard Apps

Lens correction:
Press and hold the button for 2 seconds until the message "lens correction" appears on the screen.



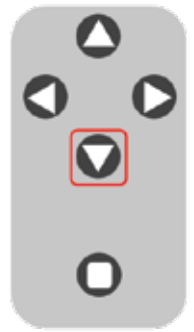
Camera calibration:
Press and hold for 2 seconds until the message "camera calibration" appears on the screen.



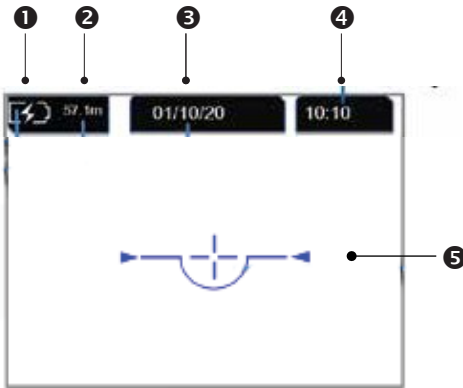
Zoom +:
Press the button to zoom in the image.



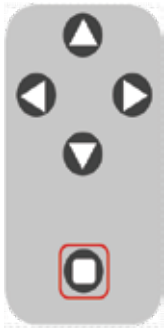
Zoom -
Press the button to zoom out the image.



2.4 Main Icons on LED Screen



- ① Battery Icon - shows the battery level. When the battery is too low the icon blinks. While the unit is charging the icon will look like this
- ② LRF Measure
- ③ date
- ④ Time
- ⑤ Reticle



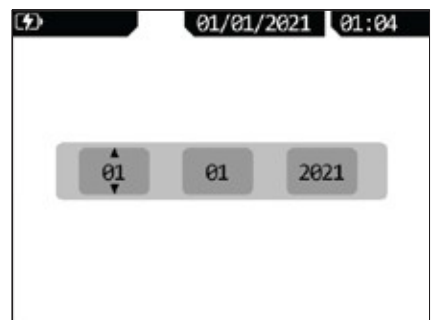
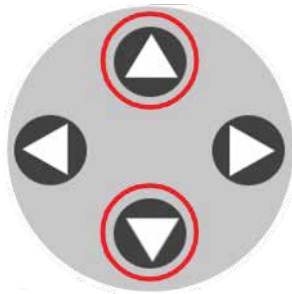
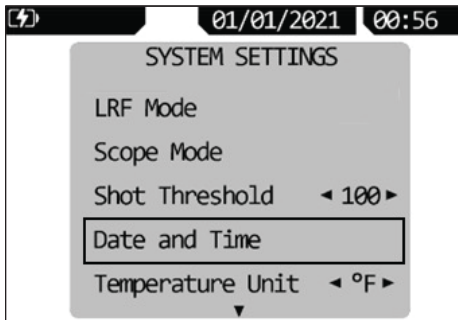
2.5 Language change, Temperature unit, Distance unit and Date and Time

Language - Press the Enter button, enter the Main Menu, scroll to System Settings. Look for the Language option and select your language. To return to System Settings, scroll to the bottom of the languages and choose the <<< option, and press Enter.

Temperature - To select the Temperature unit (F or C), press the Enter button, enter the Main Menu, go to System Settings. Look for the Temperature option and select using the forward and back buttons on the keyboard.

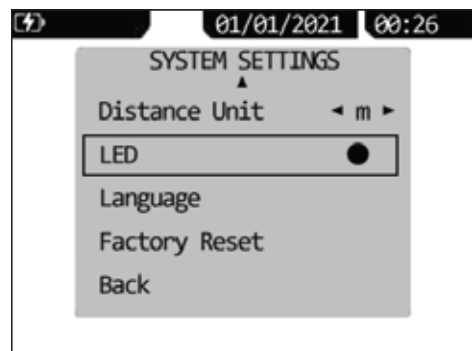
Distance - To select the Distance unit (M or Yd), press the Enter button, enter the Main Menu, go to System Settings. Look for the Distance option and select using the forward and back buttons on the keyboard.

Date and Time - To set the Date and Time, press the Enter button, enter the Main Menu, go to System Settings. Look for the Date and Time option and select it. Use the cursor to set the current date and time.



2.6 User LED

The user LED can be turned on/off in the menu. Go to Main Menu and select System Settings, look for the LED option, and press the Enter button. The round circle indicates the LED is on.



The user LED indicates several of the unit's states:

- When the unit is connected to a power source the user LED changes to blinking if the unit is charging.
- If the unit is connected to a power source and the battery is 100% charged, the user LED will be on solid.
- If the unit is 100% charged and not connected to a charging source, the user LED will be on solid.
- When the unit is initializing, the LED status flashes until the system stabilizes. After system initialization the user LED will stay blinking if the unit is charging.

Image Quality

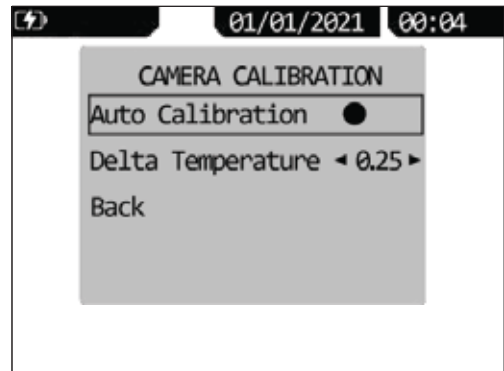
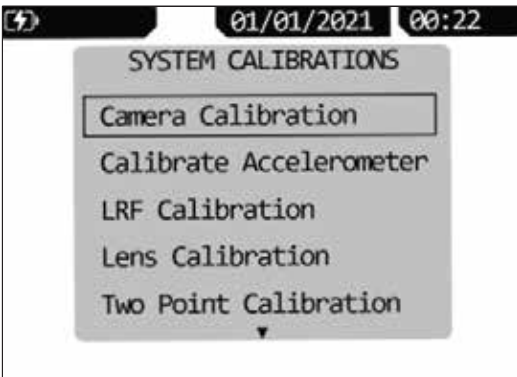
3.1 Camera Calibration

The camera calibration sets the phase shift of each of the pixels in relation to the change in temperature: in this way each of the sensor pixels is calibrated and adjusted to reduce noise. The camera calibration can be performed automatically or manually:

Automatic

Camera calibration can be activated and deactivated in the System Calibration menu. Automatic camera calibration is performed when there is a change in the temperature of the camera; the delta temperature that will activate the calibration can be changed in the Camera Calibration menu.

- To activate automatic Camera Calibration, go to the Main Menu, select System Calibration, select Camera Calibration and change the Auto Calibration state option.
- To change the Delta Temperature, go to the Main Menu, select System Calibration, go to the Camera Calibration option and look for the Delta Temperature option. Using the right and left arrows on the keyboard select the desired delta.



Change delta temperature

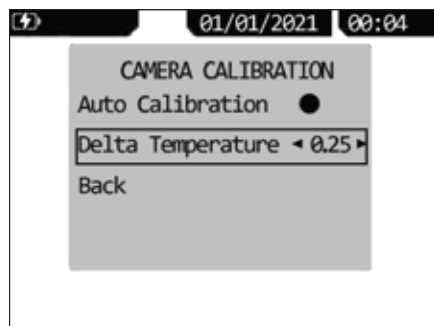
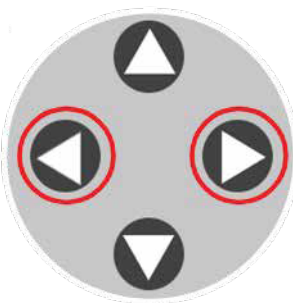
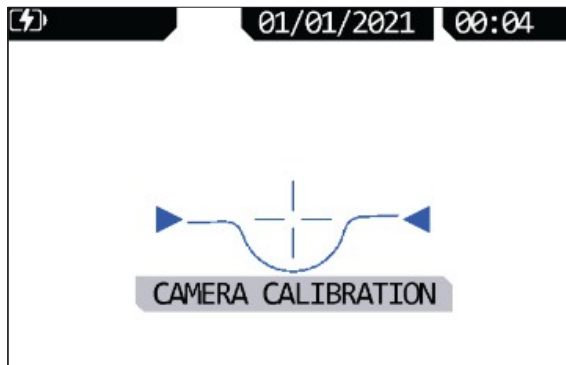
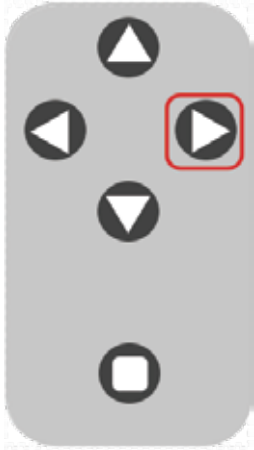


Image Quality

3.1 Camera Calibration, continued

Manual

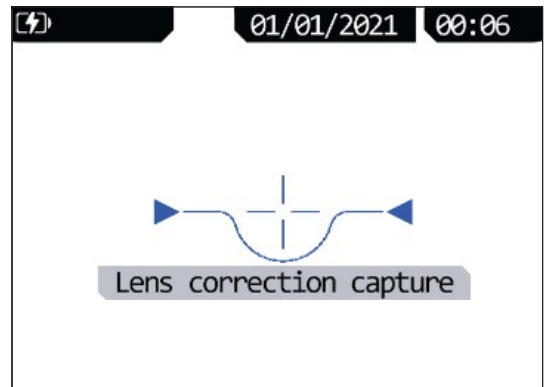
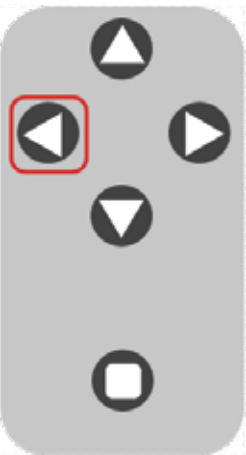
With manual calibration you will adjust the image quality when it is necessary to focus on a target. An advantage of using manual camera calibration is battery saving. If the scope's image presents noise, the camera calibration can be performed manually. To perform a manual calibration, press and hold the right arrow button for 2 seconds until the Camera Calibration message appears on the screen.



3.2 Lens Correction

Lens correction is the method to eliminate the noise generated by the lens. If you observe a lot of noise in the image, try to perform a lens correction to improve the image quality.

To perform lens correction, you must cover the lens with the lens cap on the unit, press and hold the left arrow button for 2 seconds until a lens correction message appears on the screen.



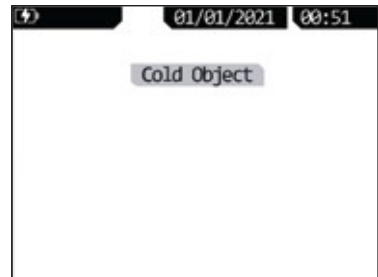
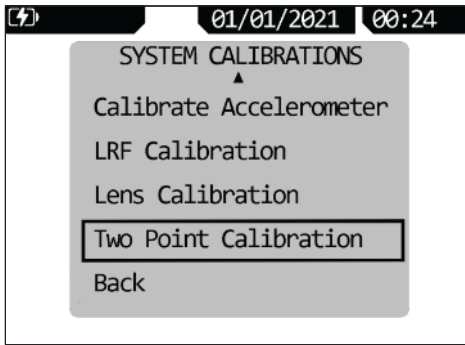
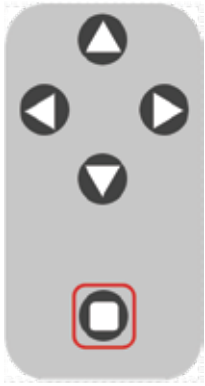
NOTE: if the camera lens is not covered with the cap, an overlapping image will be perceived on the screen. If this happens, cover the lens with the cap and perform the lens correction again.

Image Quality

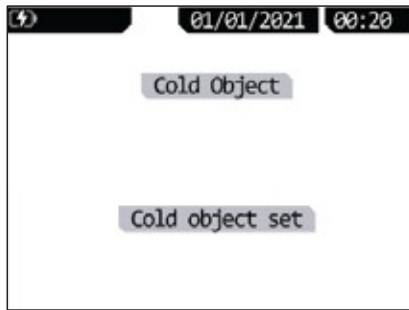
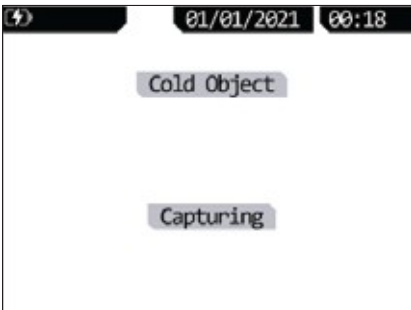
33 Two-Point Calibration

Two-point calibration is used to give a minimum and maximum temperature range to the unit. In this way the image will be adjusted to the captured temperature scale, achieving a more uniform image and reducing a large amount of noise in the image.

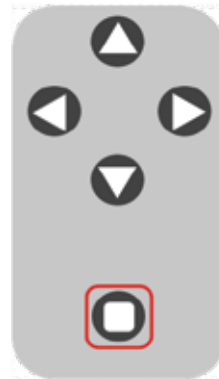
To perform two-point calibration, go to Main Menu and select System Calibration, then under System Calibrations choose two-point calibration.

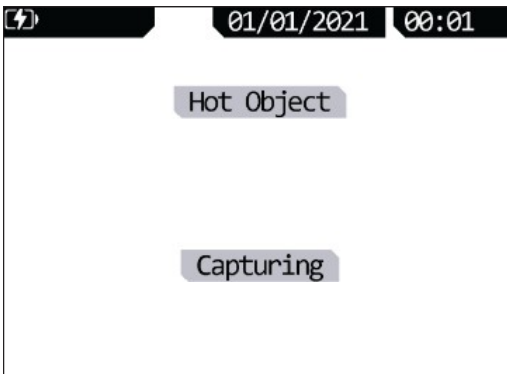


1) When the message cold object appears, close the lens cap, then press and release the Enter button. A message will appear saying Capturing. Wait until you see the message Cold Object Set and then press and release the Enter button to go to the next step.

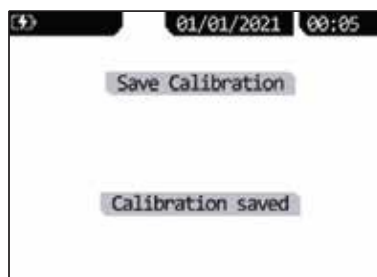
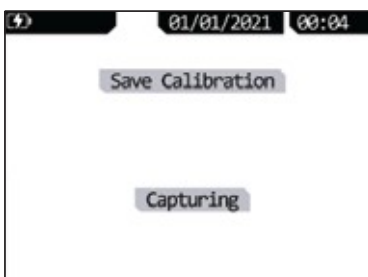
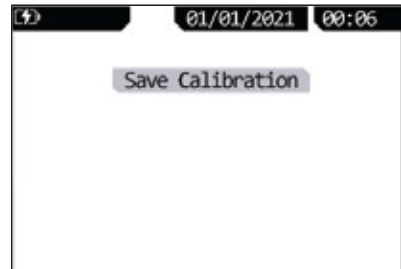
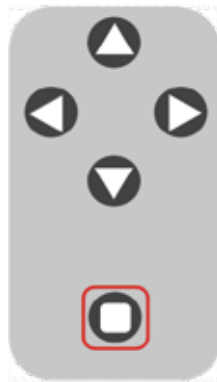


2) When the message hot object appears, open the lens cap and point the camera at a hot object, then press and release the Enter button. A message will appear saying Capturing. Wait until you see the message Hot Object Set, then press and release Enter to go to the next step.





3) When the Save Calibration message appears, press and release the Enter button. A message saying Capturing will appear. Wait until you see the Calibration Saved message, then press and release Enter to exit.

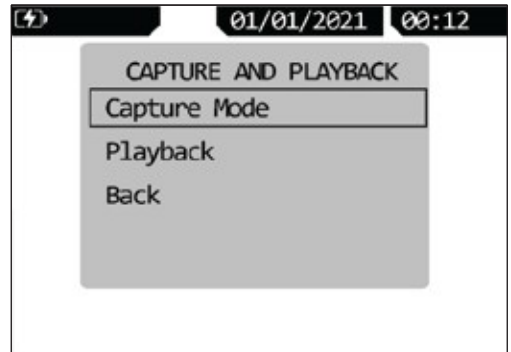


Record, Play, and Delete images and video

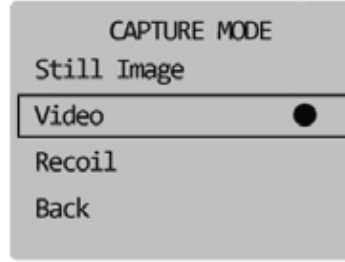
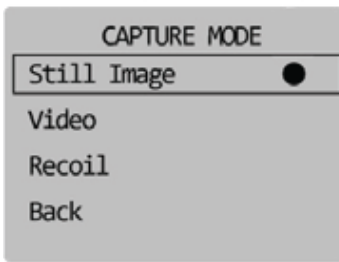
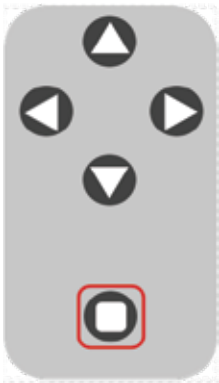
4.1 Capture Mode

The unit can record and play video and images. In the Capture Mode menu you can change the type of video or image capture you want. To change the type of capture follow the steps below.

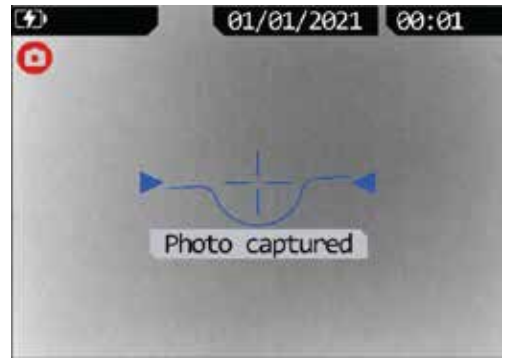
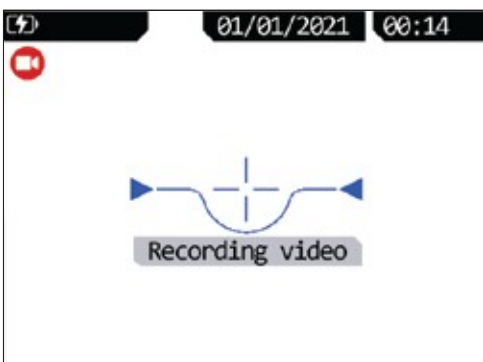
Press the Enter button, go to the Main Menu. Look for the Capture and Playback option, press the Enter button again. A menu will appear as shown in the screen image.



Go to Capture Mode option and select the capture mode you want, as shown in the image. Press the Enter button to select.



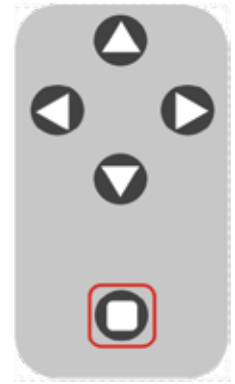
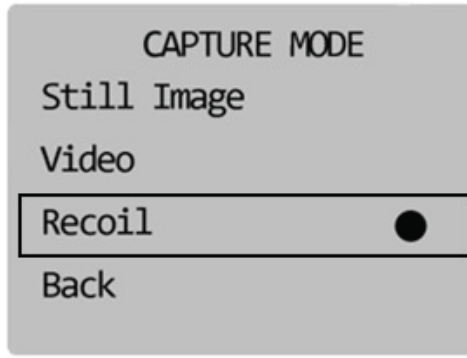
To capture an image or video, return to the Main screen, focus on a target and press the right arrow button. If you selected the Still Image Capture mode, the camera will take a picture. If you selected the Video Capture mode, the camera will start recording video. To stop video recording press the Enter button again.



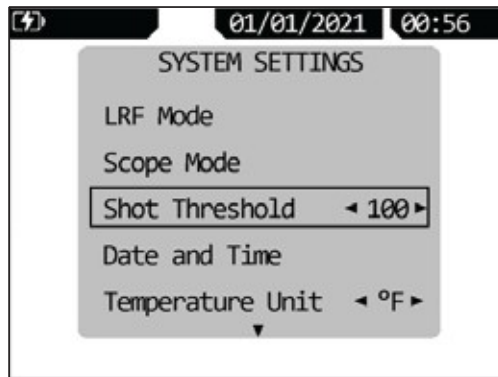
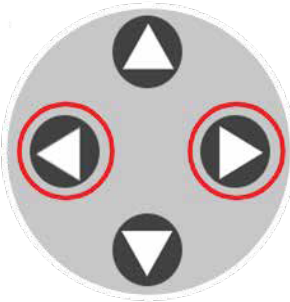
4.1 Capture Mode

Shot Detection

There is a special Capture Mode called Shot Detection. The Shot Detection is a feature that records video for some time before and after shooting. To activate this option, you must go to the Recoil option and press the Enter button.

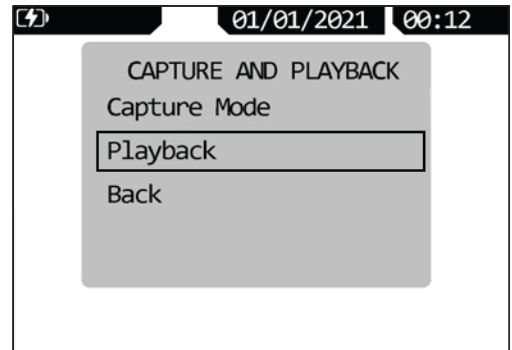
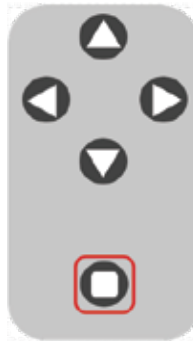


The Recoil option is activated with the sudden movement detected by the accelerometer at the time of taking a shot. The sensitivity of the impact to start recording a video can be modified. To change the sensitivity value press the Enter button, select the System Settings option. Go to the Shot Threshold option, and with the cursor, select the Shot Threshold value you want.

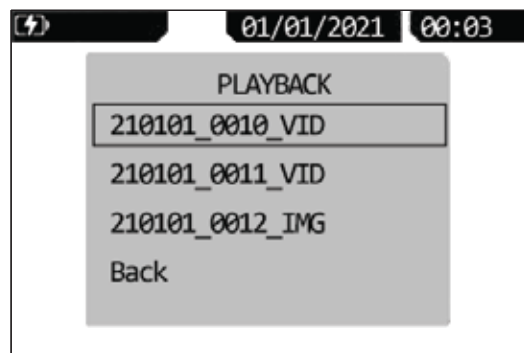


4.2 Show and Delete image or video

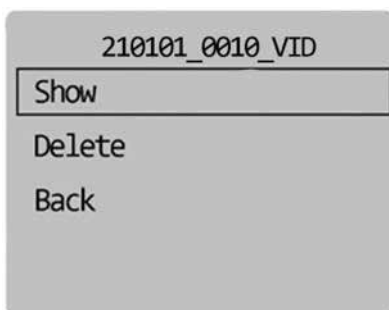
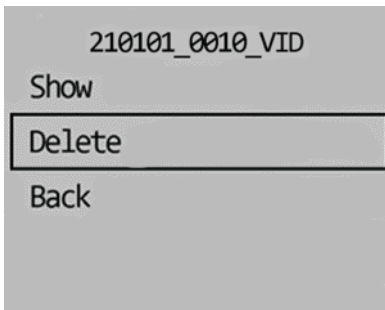
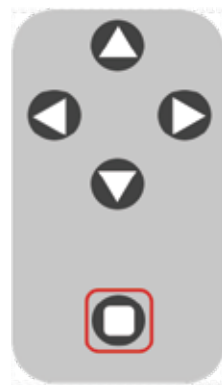
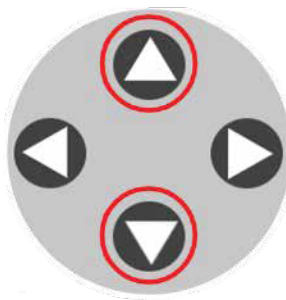
To play an image or video, enter the Main Menu by pressing the Enter button, and find the Capture and Playback option as shown in the image.



Press the Enter button again and enter the Playback option. A list of images and videos that have been saved in the scope's memory will be displayed.



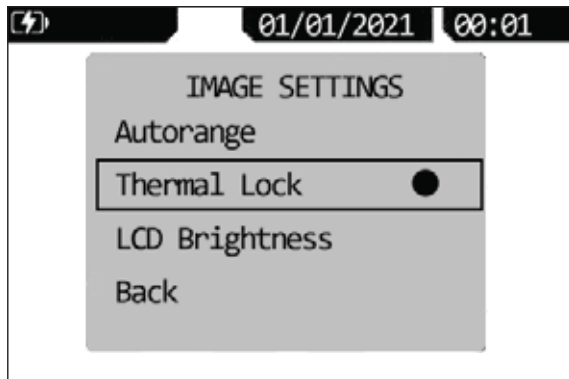
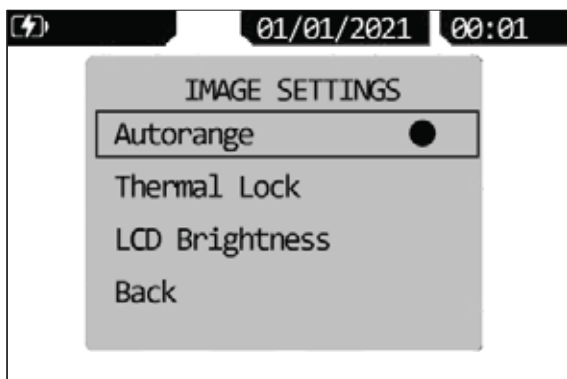
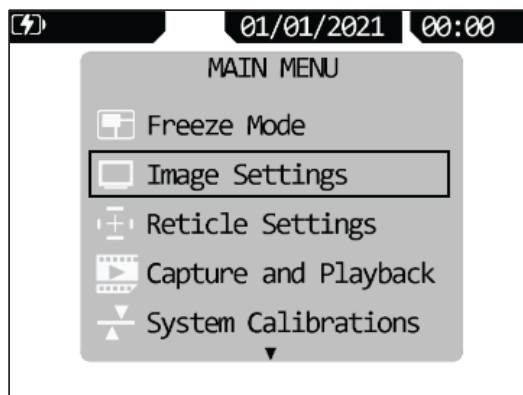
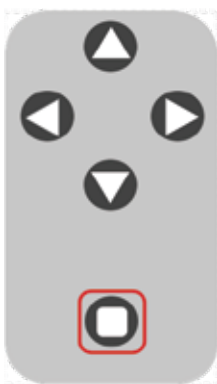
Use the cursor to search for the video or image you want to play or delete. Press the Enter button again on the video or image: you will see two options, Show or Delete. Place the cursor on the desired option and press the Enter button.



If you select the Show option in a video, you can press the Enter button to pause or continue the video. To exit video playback, press and hold the Enter button for 3 seconds.

5 Image Settings

The scope has two image modes: Automatic Adjustment Autorange and Manual Adjustment Thermal Lock. To change the image mode, press the Enter button and go to the Main Menu. Find the Image Setting option and choose the Image mode by pressing the Enter button again.



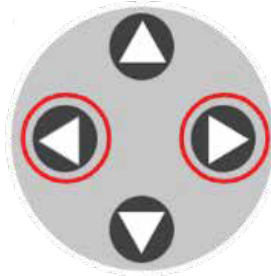
5.1 Autorange

Video Brightness and Video Contrast

When you enter the Autorange option you will be able to navigate to the Video Brightness, Video Contrast and Default Value options. To change the value of these parameters place the cursor on the desired option and press the Enter button.



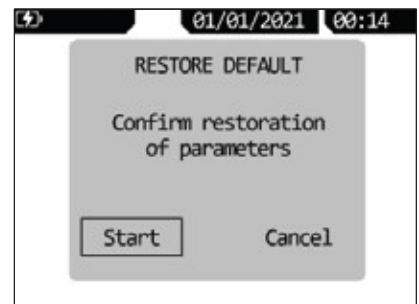
When you enter the Video Brightness or Video Contrast options, the following images will be displayed on the screen. To change the parameters, press the cursor buttons until you get the desired image.



To save the configuration press the Enter button. The parameters will remain constant until you make a new change.

Default Value

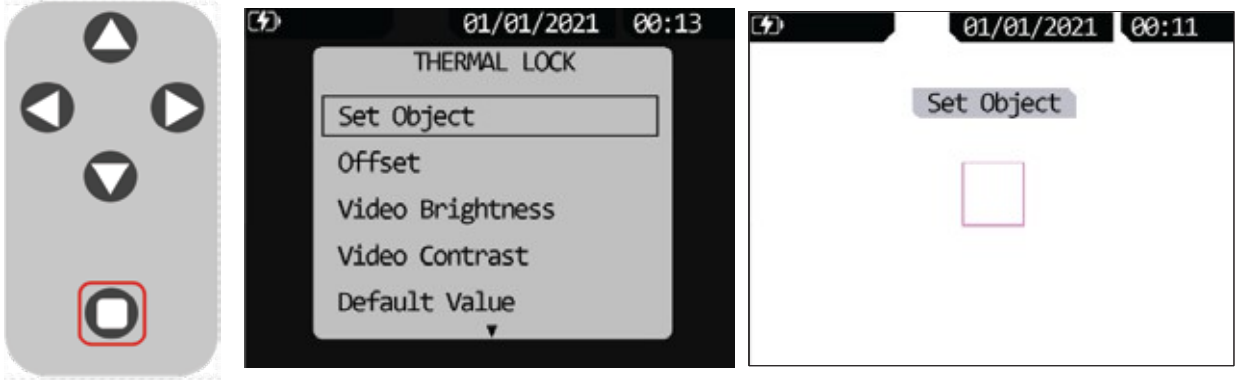
The Default Values option returns the parameters to the default values. To restore the values choose the Default Value option, press the Enter button to enter the option, and press the Enter button again in the Start option.



52 Thermal Lock

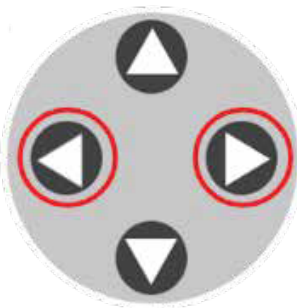
Thermal Lock is the option to adjust the image in the scope manually. Thermal Lock allows you to capture an object which will act as the reference for the image in the scope. With this feature the scope will adjust to the temperature range of the captured object. You can also change the temperature offset to display more details in the image.

To use the Thermal Lock, first, capture the reference object. Go to the Set Object option by pressing the Enter button. The Set Object message will appear on the screen, and a box will show in the center of the screen. Point to the reference object; the object must be centered inside of the box. To capture the object press the Enter button again.

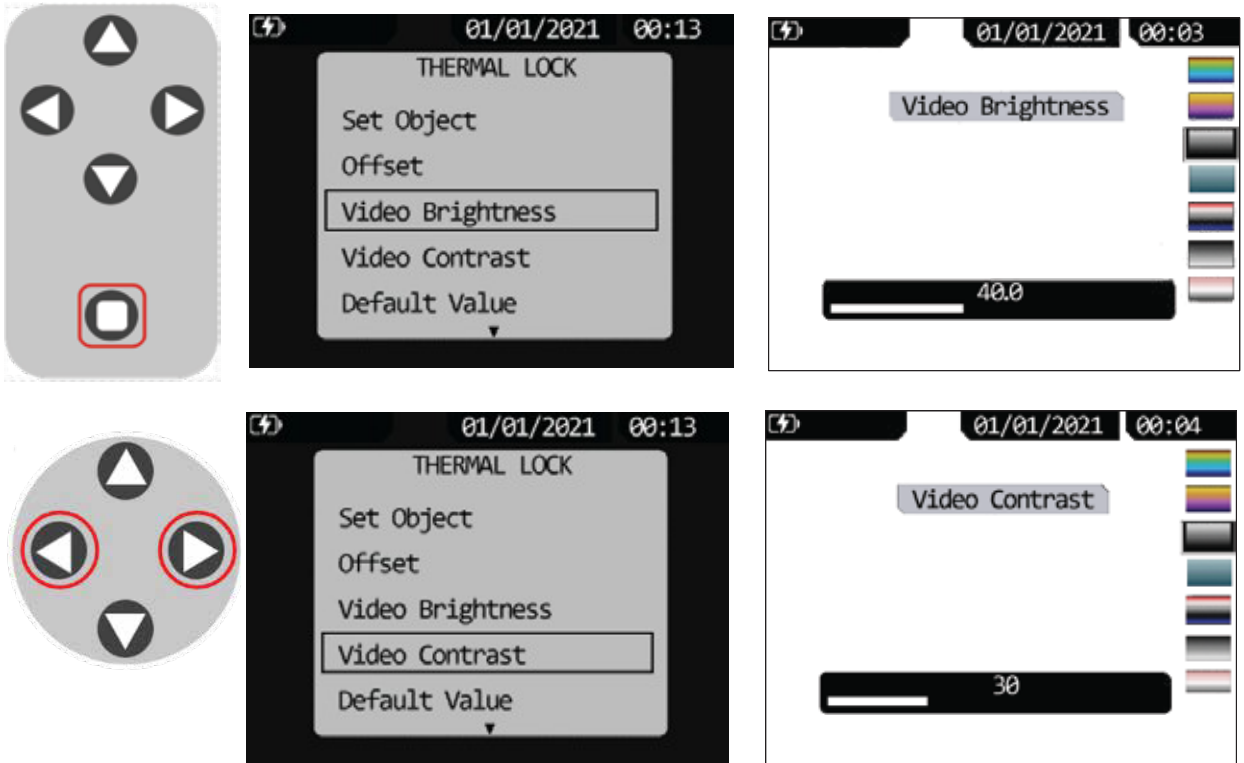


After capturing the object with Set Object, go to the Offset option. Enter the option by pressing the Enter button: an image will be displayed on the screen as shown. Point at a target with the scope and change the Offset value with the cursor until you find an image with the best detail.

To save, press the Enter button again.

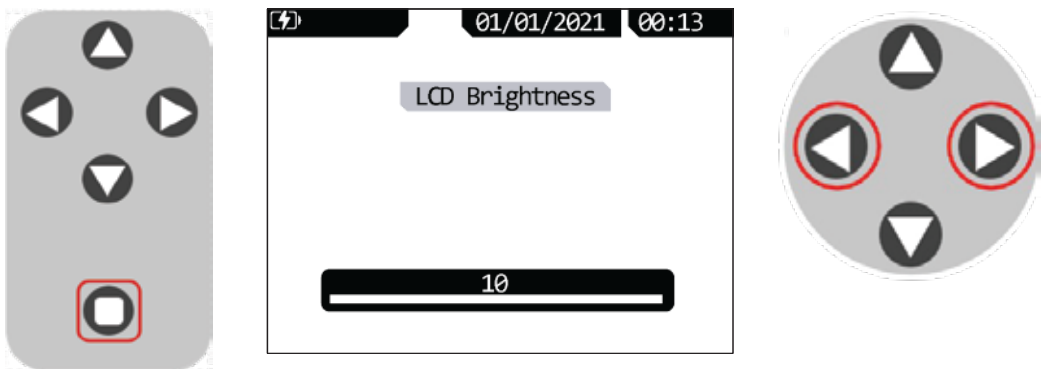


The last step to adjust the image with the Thermal Lock is the brightness and contrast adjustment. Enter the Video Brightness or Video Contrast option by pressing the Enter button. After pressing the Enter button, the following images will be displayed on the screen. Using the right and left arrows you can increase the brightness or contrast value until you find an image you like.



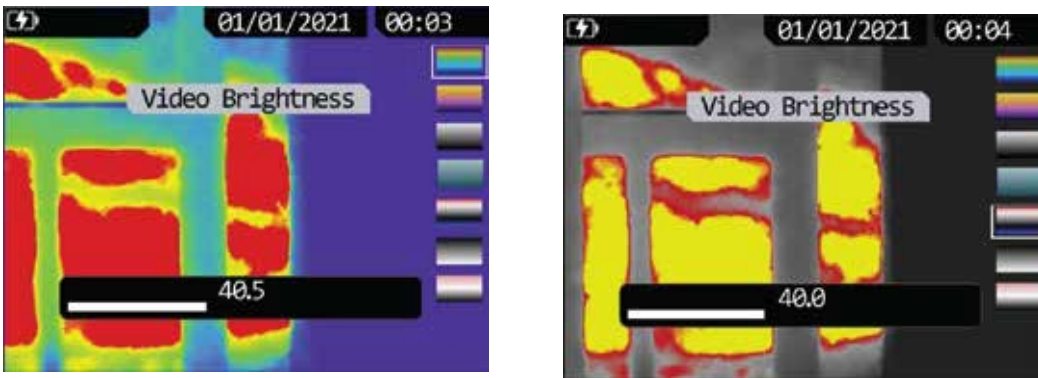
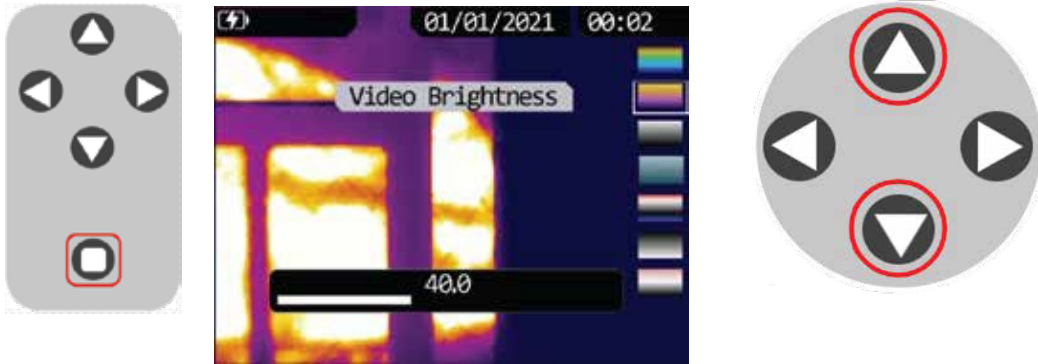
53 LCD brightness

The display has the option to adjust the brightness intensity to your preference. If you want to modify this option, enter the Main Menu by pressing the Enter button. Look for the Image Settings option, and choose the LCD Brightness option. When you have entered the option, use the right and left arrows to scroll to the desired brightness value. To save changes, press the Enter button.



54 Color Modes

The color mode is a feature of the scope that allows you to see the image using different color modes. There are 7 color modes. They can be changed in the Video Contrast or Video Brightness screen. To change the color mode, press the Enter button, go to Main Menu and select Image Settings. Go to Autorange or Thermal Lock, then select video contrast or video brightness.

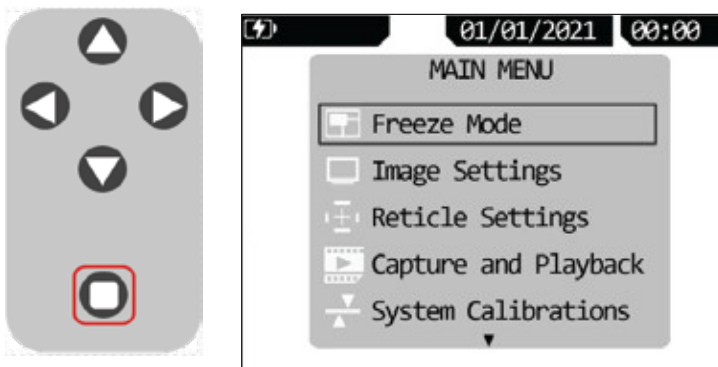


To change the color mode, select the color of your preference by navigating with the up and down arrows. Save the changes by pressing the Enter button.

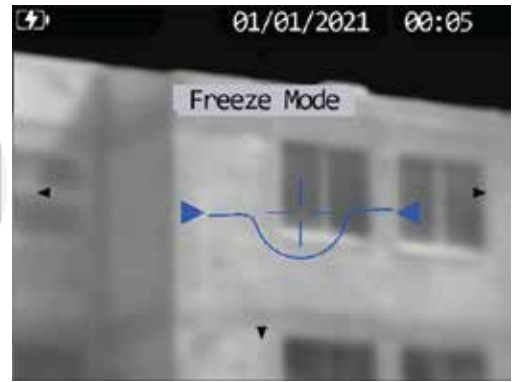
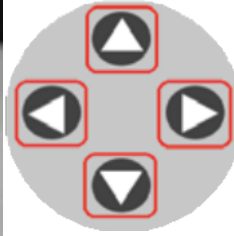
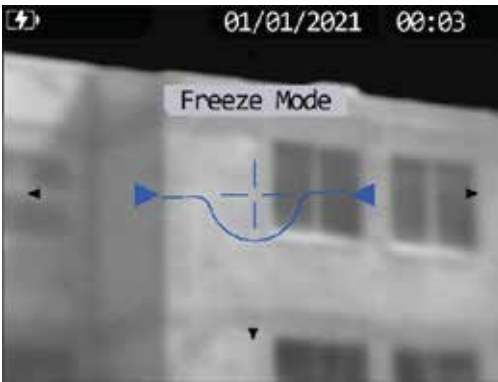
6 Features

61 Freeze Mode

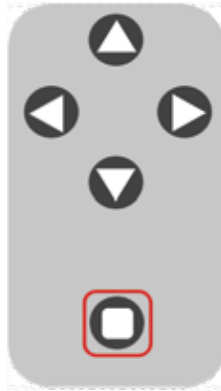
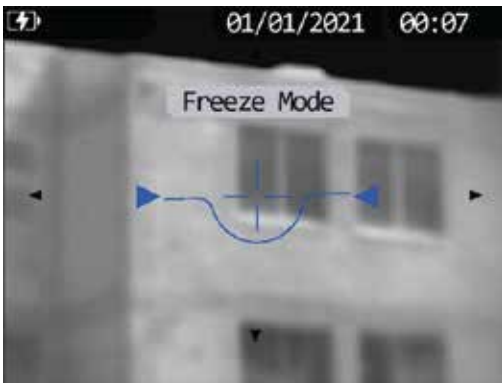
The Freeze Mode is a feature that allows you to freeze the image and move it so that the reticle points at the shooting location. To enter the Freeze Mode, press the Enter button, go to the Main Menu and select the Freeze Mode option by pressing the Enter button again.



When entering the Freeze Mode option, the following image will be displayed on the screen. To freeze an image, point at a target and press the Enter button again.



After freezing the image, you can move the reticle across the image with the arrow buttons.

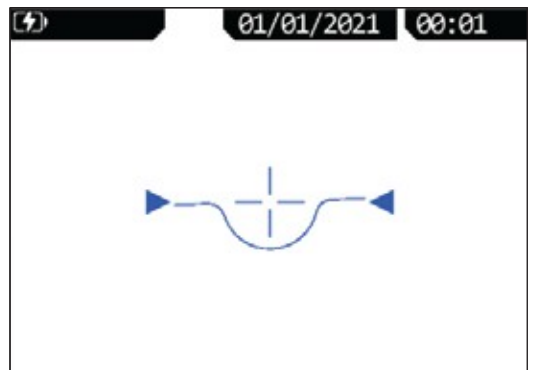
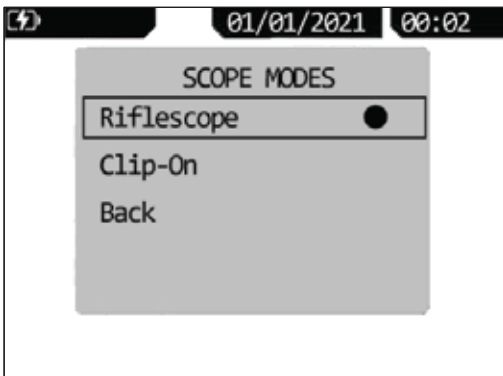


When the reticle is at the shot position, press the Enter button to lock the position and center the image.

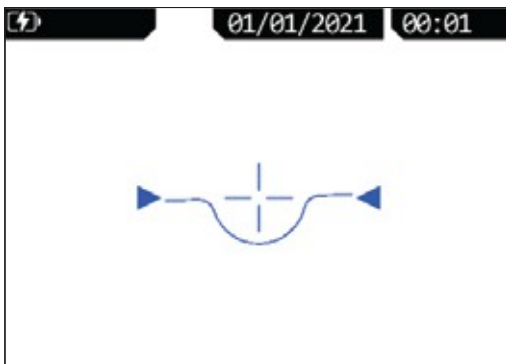
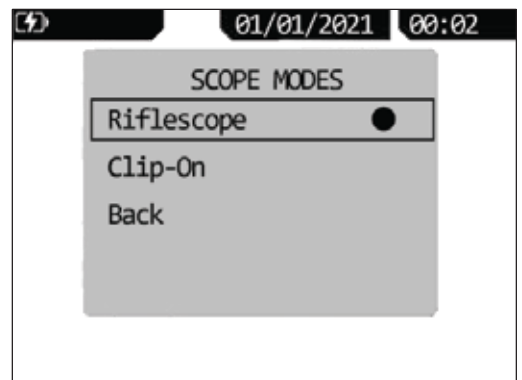
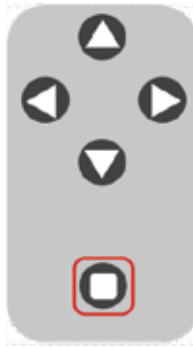
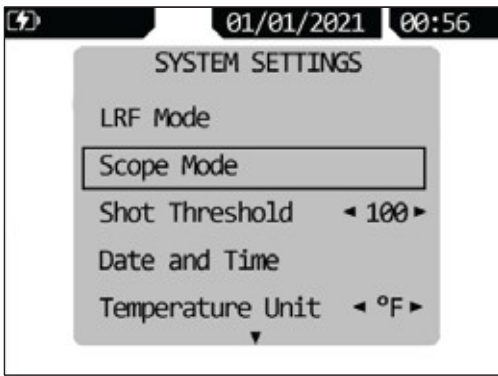
To restore the image, press and hold the Enter button for 2s. If you want to exit the Freeze Mode, press the Enter button again and you will return to the Main Menu.

62 Scope Modes

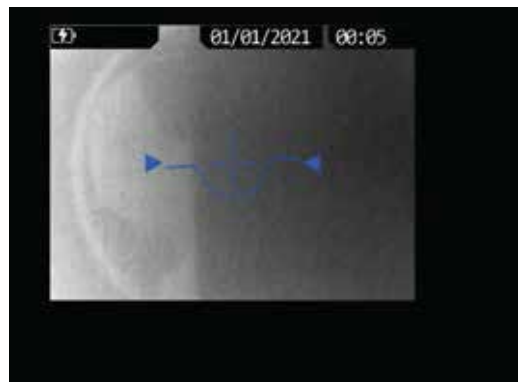
Scope mode is a feature of the scope that allows you to change the screen size. The default screen mode is called Riflescope. Riflescope is full screen mode, 1024x768 px. The other screen display mode is Clip-on mode. Clip-on mode reduces the size of the screen and allows you to move the image across the screen.



To change the scope mode, press the Enter button and enter the Main Menu. Go to the System Settings option and find the Scope Mode option and press the Enter button to enter. The setting will be set to the default, Riflescope.



To change to Clip-On mode, scroll to Clip-On and press the Enter button. The image size will be reduced to 368x278 or 736x555 px.

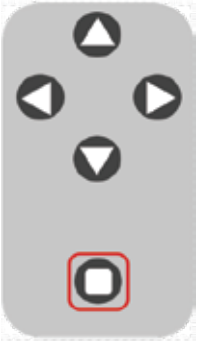


If the Clip-On mode option is activated, a new option appears on the screen: Clip-On Alignment. This option allows you to move the screen that has been reduced. Use the cursor buttons to move the screen.

If you want to return the screen to its initial position, just press and hold the Enter button.

63 Video Streaming

The scope can stream video via Wi-Fi. With this feature you can see the camera video in other devices. To enable this, press the Enter button. Go to Main Menu and select Power Management and look for the Wi-Fi option. Press the Enter button again to create a Wi-Fi network with the name odi_ap_xxx.

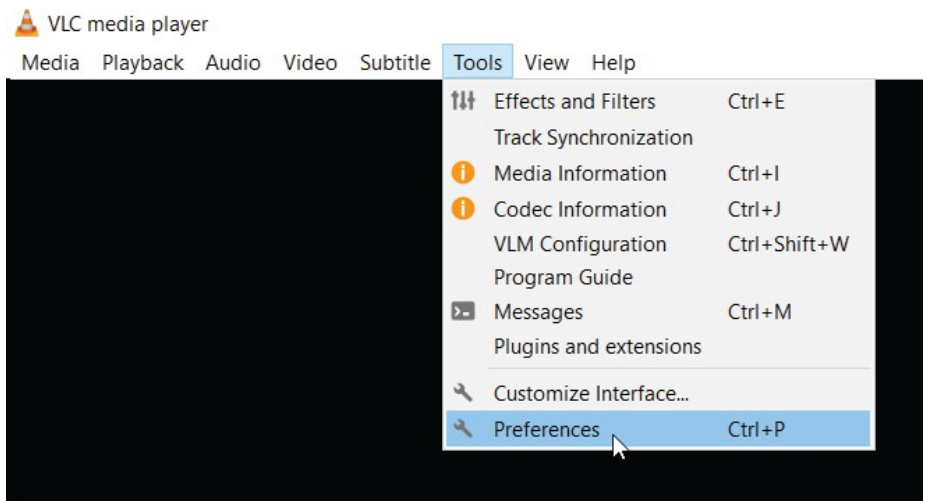


To connect a device to the newly created Wi-Fi network, the VLC tool will be required. We will do a step-by-step process on how to configure the VLC tool to stream video.

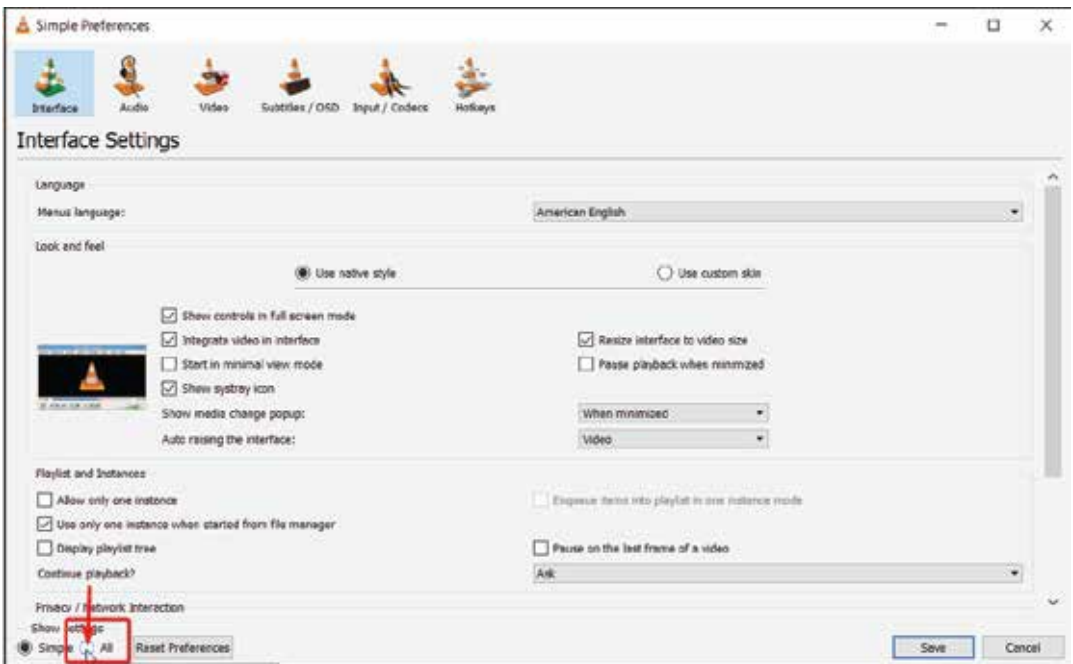
1) Open VLC on your computer. The version used is shown in the image to the right.



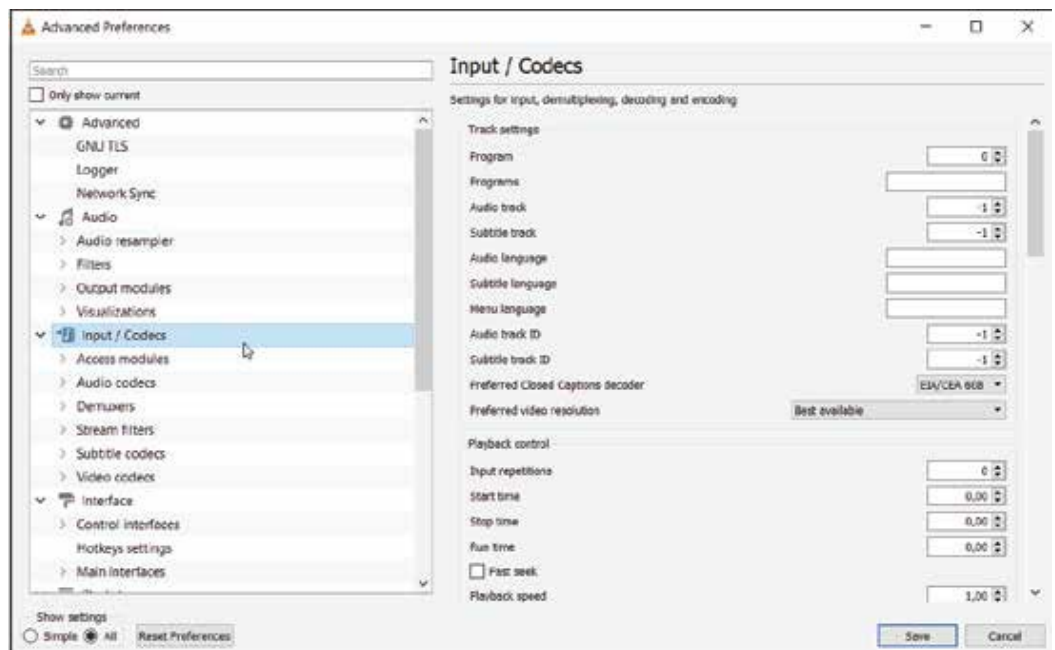
2) Go to Tools and select Preferences.



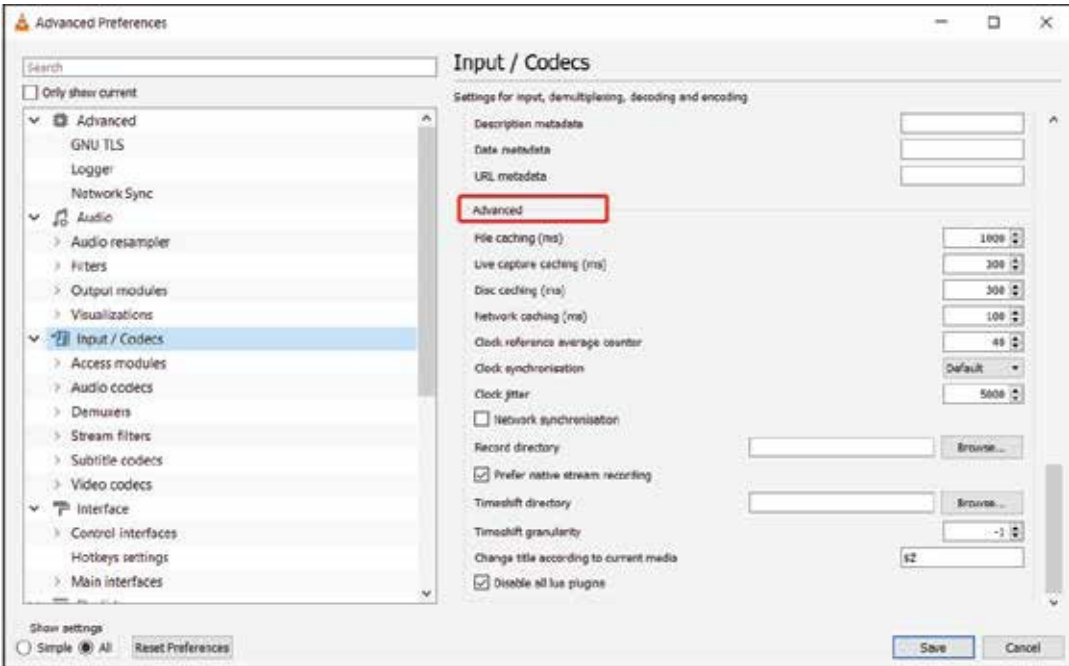
3) Click on All.



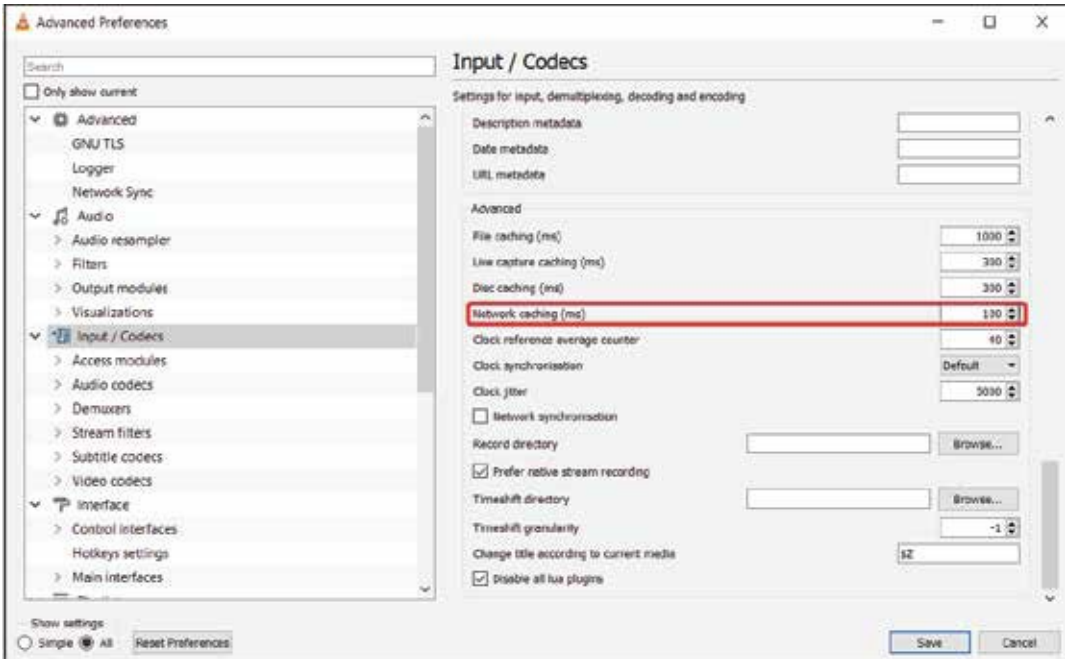
4) Go to Input/Codecs.



5) Go to Advanced.



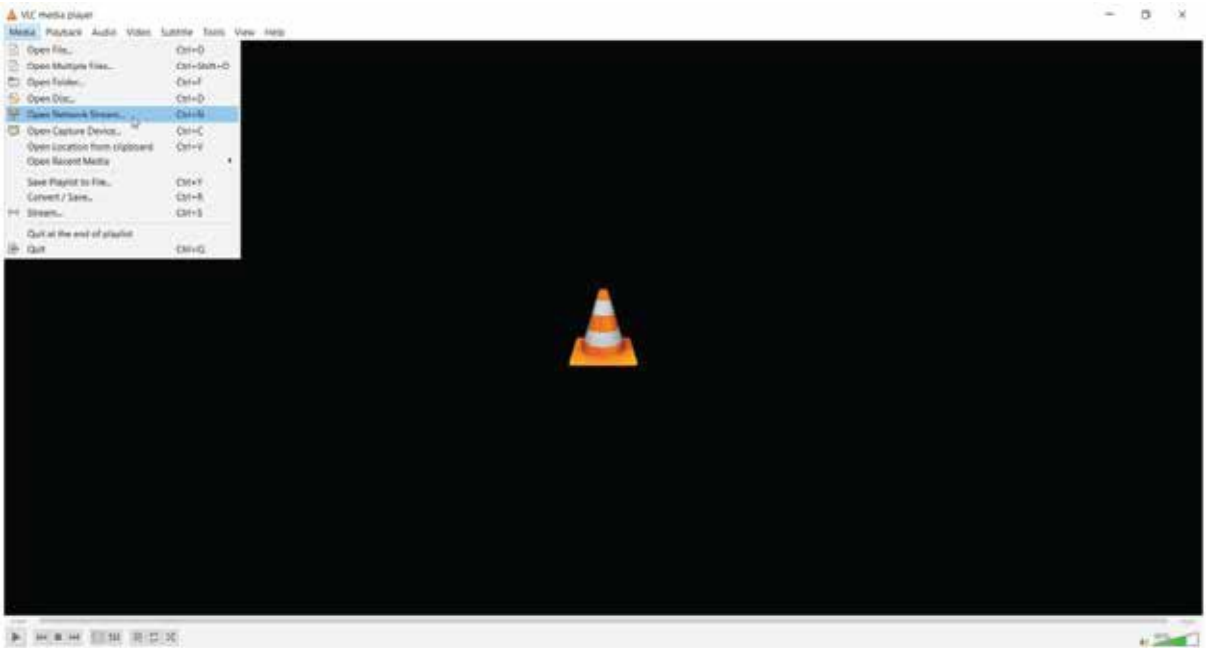
6) Change the Network Caching. Note: 100ms will reduce the latency.



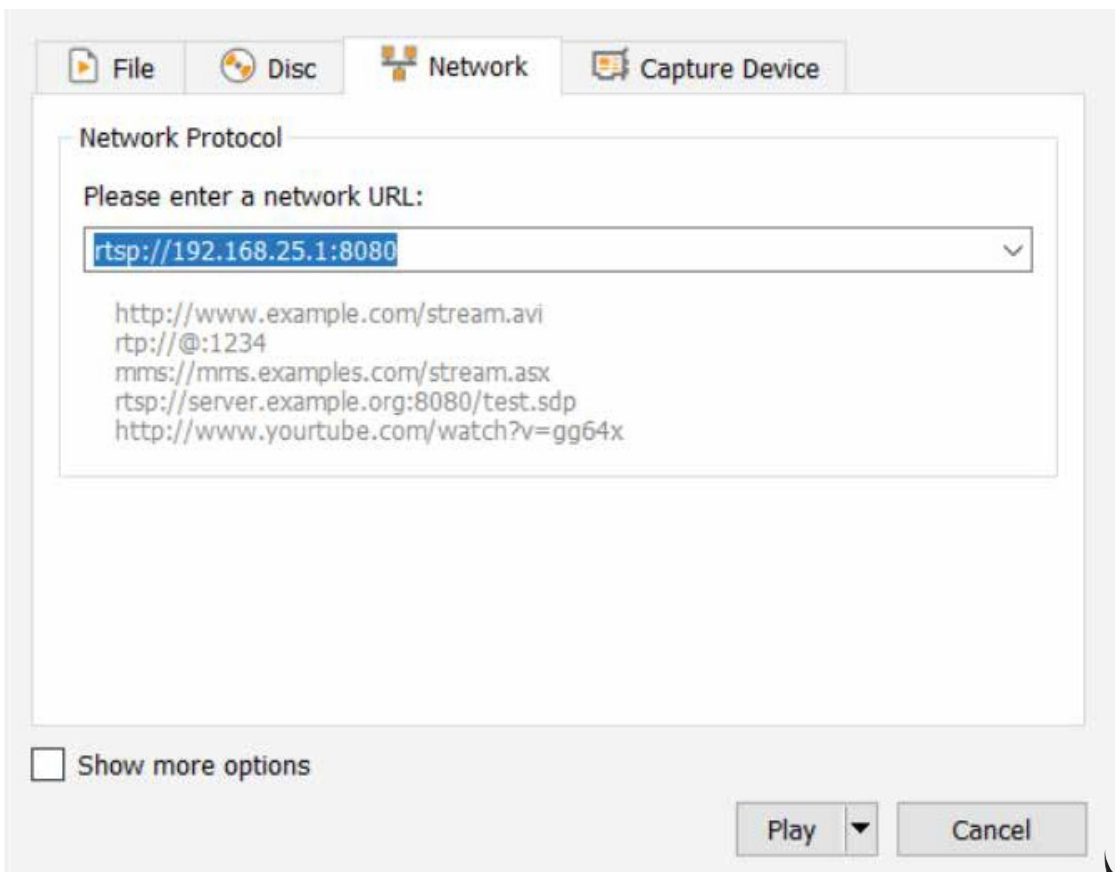
7) Click on Save.

To watch: to see the streaming open VLC, go to Media option, and select Open Network Stream.





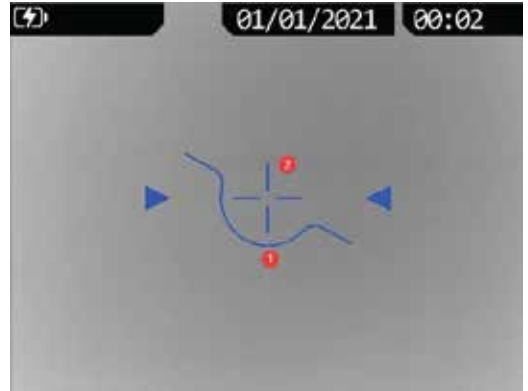
The Window shown below will be displayed. Look for the Network tab and enter the following address `rtsp://192.168.25.1:8080`. Click on Play.



7 Peripherals

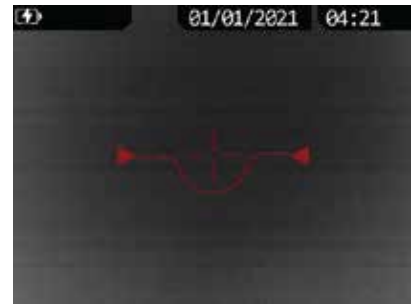
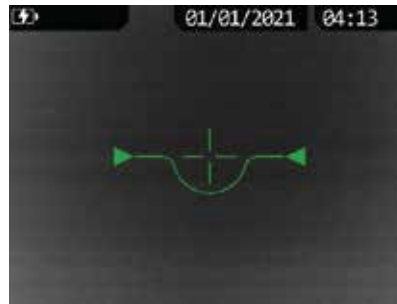
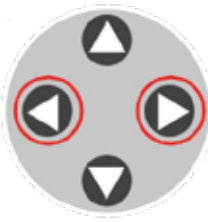
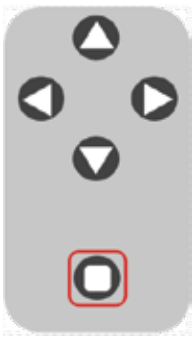
7.1 Reticle

A reticle is a feature of the scope used to aim at a target. The reticle has two parts: the rotating part (1) and the stationary part (2). The rotating part helps you to know the balance of the scope: it moves due to the accelerometer embedded into the scope. By moving the scope from one side to the other you will be able to see the movement of the rotating part of the reticle. The stationary part remains still and is used to aim at a target.



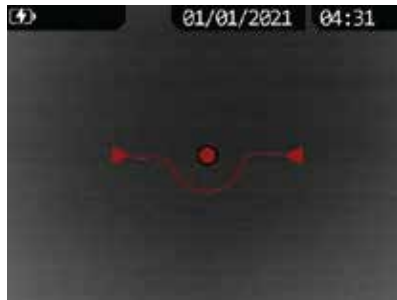
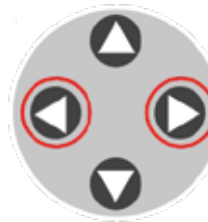
Change color

You have the option to change the reticle color: it can be blue, green or red. To change the color press the Enter button, go to Main Menu and find the Reticle Settings menu. Select Reticle Color. Use the cursor buttons to change the color. Click the Enter button to save and go back.



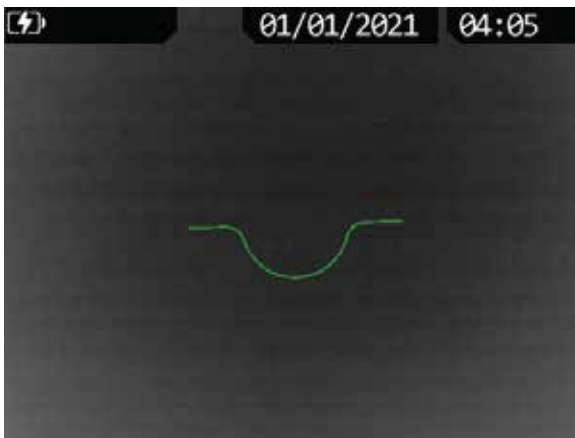
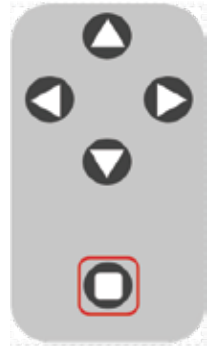
Change type

There are five options for the stationary part of the reticle. To change it, press the Enter button, go to Main Menu. Find the Reticle Settings menu and select Reticle Type. Use the cursor buttons to change the type, and click the Enter button to save and go back.



Mute the icons

The stationary part of the reticle and the rotating part can be muted. To mute the reticle or the rotation, press the Enter button and go to Main Menu. Look for Reticle Settings menu, select Mute Icons, then choose which one to mute.



Calibration

If the unit is on a flat surface and the rotating part of the reticle is not aligned with the arrows it means that the accelerometer needs to be calibrated.

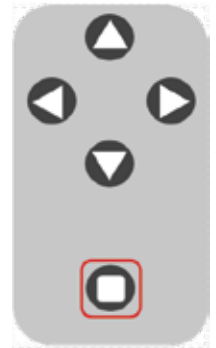
To calibrate the accelerometer, go to Main Menu and select System Calibration. Then look for and select the Calibrate Accelerometer option and follow the instructions that appear on the screen:





72 Laser Range Finder (LRF) (?)

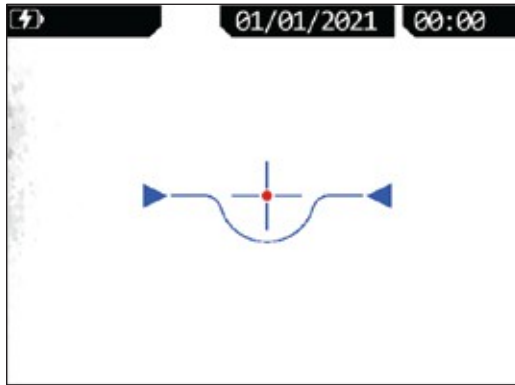
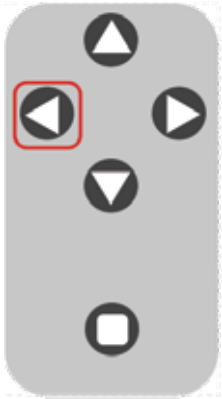
The LRF is used to provide distance measurement. To be able to take measurements it must be enabled first. To enable, go to Main Menu and select System Settings. Select LRF modes and press the Enter button in the option LRF. When it is selected, the sampling options will be displayed.



The LRF has two sampling modes: every 15s to take samples every 15 seconds, and single mode to take only one sample. Go to the desired option and click the Enter button to select.

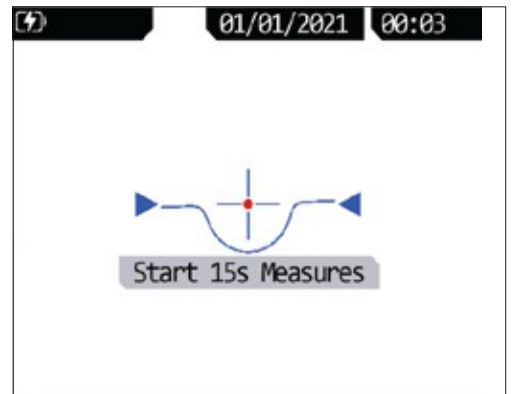
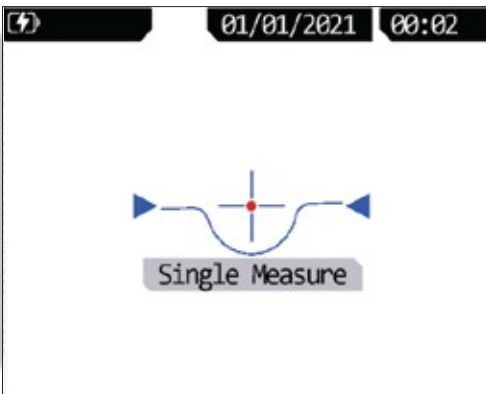
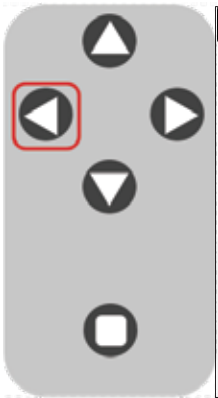
Take a Measurement

After activating the LRF option, here are the steps to follow to take the measurement; press the left arrow button in each step.



First press: Shows the Aiming mark.

Second press: Take Measurement, in Single Measure mode or In Every 15s mode.



Third press: Shows Measurement.

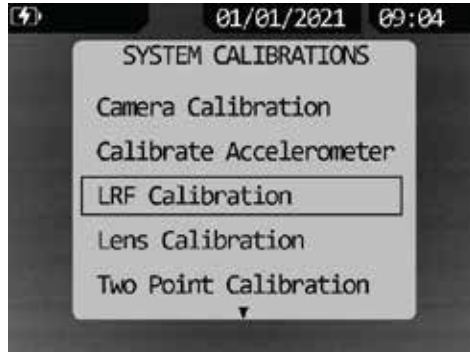


The Aiming mark will disappear, and the measurement will appear in the upper left corner next to the battery icon.

If the LRF is in single mode, the measure will disappear after 15 seconds. Or, if you take a measurement at that time, it will show the new measurement.

If it is in Every 15s mode, it will keep taking samples every 15 seconds and show the new sample every time. To stop taking measurements, press the left arrow button two times and it will show the message "Stop 15s Measures".

LRF Calibration: it is important to calibrate the LRF so you can take a measurement of the target accurately. To calibrate the LRF, press the Enter button, go to the Main Menu, and enter the System Calibrations option by pressing the Enter button again. Find the LRF Calibration option and press the Enter button again; a message will be displayed on the screen. To calibrate the RLF, point at a wall that is at a distance of 13.12' (13 ft 1.5in) (4m) from the scope, press the button again and wait until the message "The calibration was successful" appears.



73 Brightness Sensor: The scope has a brightness sensor: this sensor takes the measurement of light intensity. You can see this information in the Information menu. Press the Enter button, go to Main Menu, select the Information option by pressing the Enter button again, and look for the Brightness option. The brightness intensity is measured in lux (lx) as shown in the image below.

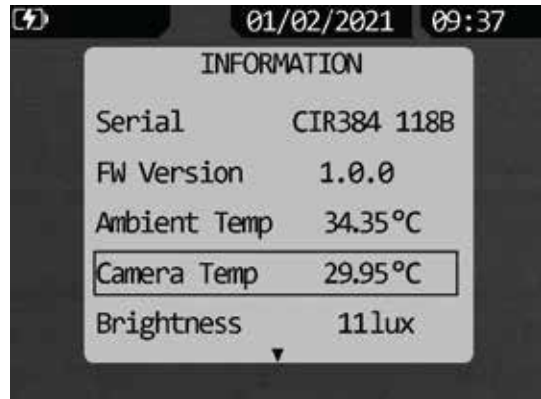
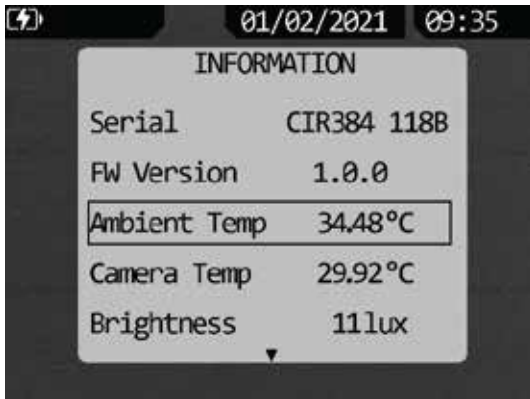


7.4 Temperature Sensor

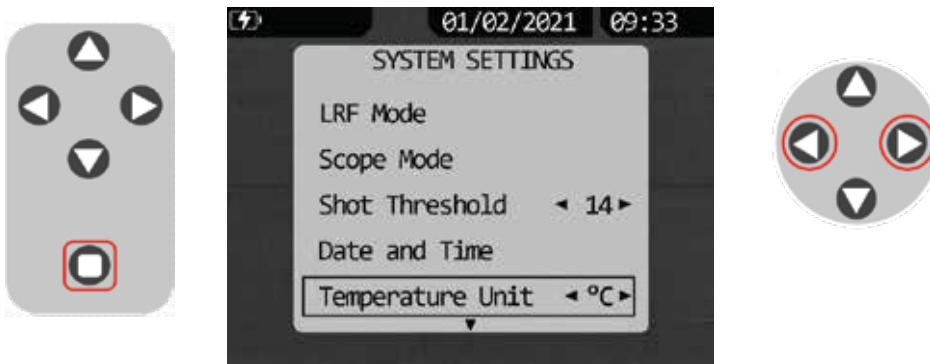
The scope has two temperature sensors: one temperature sensor to measure the ambient temperature a second sensor to measure the temperature of the camera sensor.

The camera sensor is used exclusively for image calibration. The image quality is related to the temperature changes in the camera sensor.

You can see the sensor temperature measure by pressing the Enter button, going to Main Menu, and selecting the Information option. Find the Ambient Temp or Camera Temp readings



You can change the temperature unit from °F to °C. To change the temperature unit, press the Enter button to go to Main Menu, select System Settings and find the Temperature Unit option. To change the temperature go to Temperature Unit and press the arrow button.



7.5 Battery

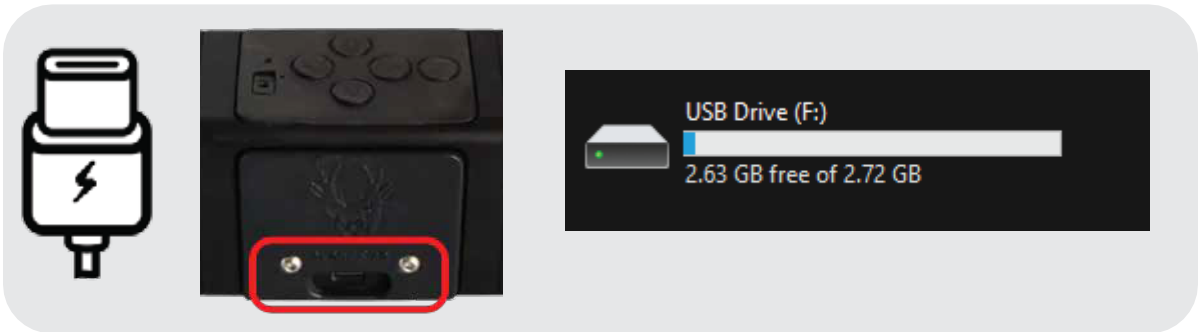
The scope has a 2400mAh battery. To charge the battery connect a power source to the USB type C connector. When connected to a power source the User LED changes to flashing if you have set the User LED to be on. When the battery is charged the LED changes to solid on.

In addition to the User LED, you can see the battery level percentage in the Information menu. Press the Enter button, go to Main Menu, select Information by clicking the Enter button again, and look for the Battery Level option.



7.6 Internal Storage

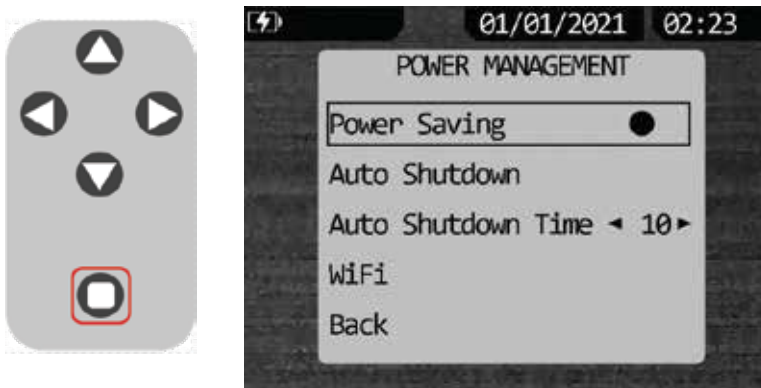
The scope has a USB type C connector. Through this connector you can access the scope's memory. If you connect the scope to a computer, you will find the video and image captures that you took using the scope.



8 Power Management

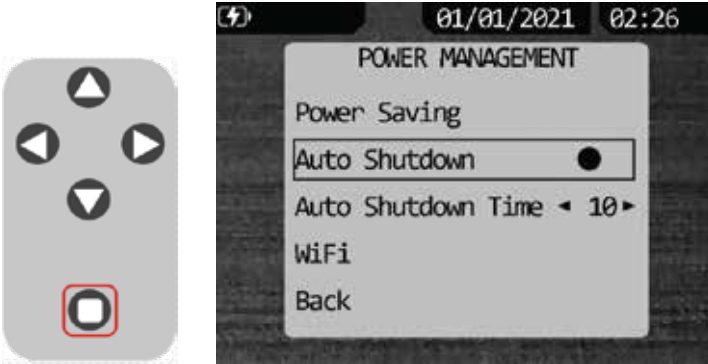
8.1 Power Saving

When the scope has the camera facing down, the display will turn off to save power. To enable this feature, press the Enter button, go to the Main Menu and select the Power Management option by clicking the Enter button again. Find the Power Saving option.



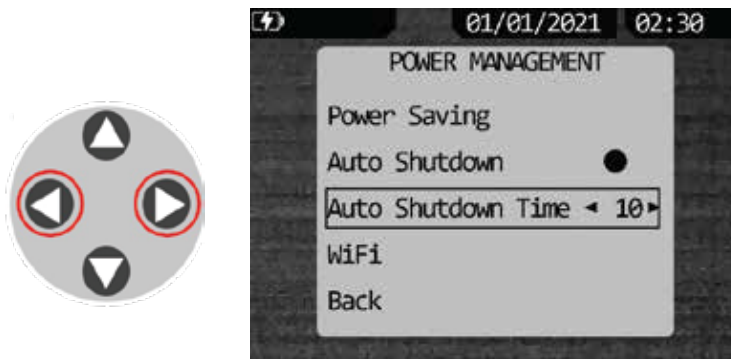
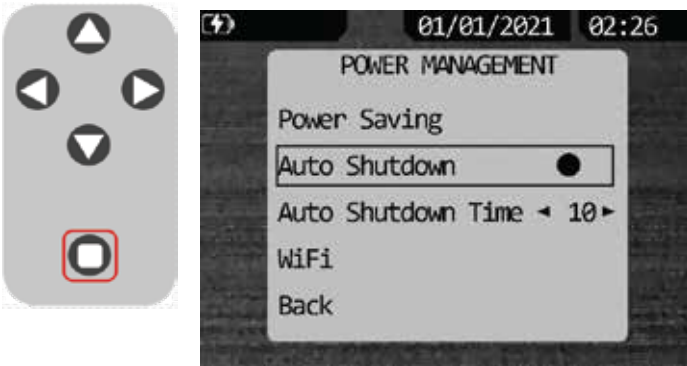
82 Auto Shutdown

With the Auto Shutdown functionality, the scope turns off if a set amount of time passes without pressing the buttons or moving the scope. To enable this, press the Enter button, go to Main Menu and select the Power Management option by clicking the Enter button. Look for Auto Shutdown option.



Set shutdown time.

Press the Enter button, go to Main Menu, select the Power Management option and look for Auto Shutdown Time option. Use the cursor to change the number of minutes that must pass for automatic shutdown.



FCC Declaration

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications to this equipment not expressly approved by Angry Stag could void your warranty and your ability to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocated the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RF Warning Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Warranty

Angry Stag® warrants its products against defects or malfunctions in material and workmanship under normal use and service, with the exceptions stated below.

This warranty lasts for three year from the original date of purchase. Coverage terminates if you sell or otherwise transfer the product. In order to keep this warranty in effect, the product must have been handled and used as prescribed in the instructions accompanying the product. Angry Stag® shall (at its option) repair or replace a defective unit covered by this warranty, or shall refund the product purchase price. Repair, replacement with a new or reconditioned unit, or refund, as provided under this warranty, is your exclusive remedy. This warranty does not cover any damages due to accident, misuse, abuse, wear or negligence. Angry Stag® shall not be liable for any incidental or consequential damages.

Some states do not allow limitation or exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Implied warranties of merchantability and fitness for a particular purpose are limited in duration to the duration of this warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

To make a warranty claim, the purchaser must obtain a return authorization number (RA) from Angry Stag® (serial number and purchase date required), and then return the product to Angry Stag® at purchaser's expense. A copy of the original dated receipt or shipping document must accompany the product. To obtain a return authorization, see Warranty on our website www.angrystag.com, e-mail buck@angrystag.com, or contact us at:

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