

APPLIED BALLISTICS
THE SCIENCE OF ACCURACY



ECHO™

CV25 THERMAL CLIP-ON



OPERATOR'S MANUAL

SIGSAUER®



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Scan the QR code to visit sigsauer.com where you will find additional information about SIG SAUER products, SIG SAUER Academy and the SIG Experience Center, Special Programs, and additional support.



UPDATE WARNING

Congratulations on the purchase of your ECHO thermal product. For the best possible user experience, download the BDX 2.0 mobile app and update your ECHO firmware. Click on the store links below or scan the QR code.





INTRODUCTION

Leveraging years of experience blending innovative electronic technologies with rugged optical systems, SIG SAUER's new ECHO thermal category provides a comprehensive spectrum of performance-driven optics to deliver the innovation and quality that has become synonymous with the SIG SAUER name.

Equipped with BDX 2.0 and a Quick Disconnect mount, the ECHO CV25 Thermal Clip-On adapts to your situation at any given moment, with all the knowledge you need right in the palm of your hand.

The ECHO Clip-On measures only 5 inches in size and features a parallax-free eyepiece, intuitively adjusting on the fly for quick detection and engagement. With the ability to easily swap and configure between firearms, you can eliminate variables and meticulously dial in your shot without losing time. The ECHO is covered by the SIG SAUER® Infinite Guarantee™.

CONTENTS

- ECHO CV Thermal Clip-On
- Bikini Lens Cover
- EVA Zippered Case
- (2) 18650 Lithium-ion Rechargeable Battery
- USB-C to USB-C Data Cable
- 1.93" Centerline Riser Kit
- Quick Reference Instructions



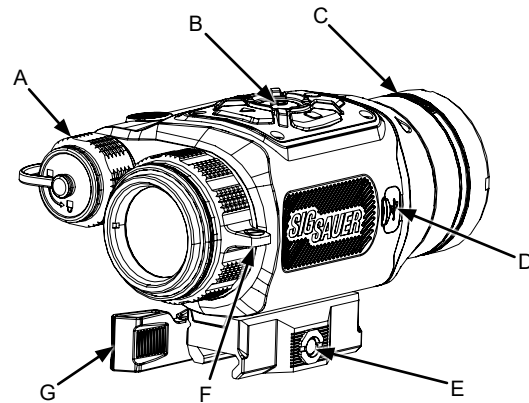
KEY FEATURES

- Compact at only 5" with a QD mount.
- Eyepiece optimized for parallax-free clip-on application.
- LWIR 640x512 VGA 12um 50Hz thermal core with <20mK sensitivity.
- Record still photos and video with audio.
- Configurable via the BDX App.
- Rechargeable and removable 18650 lithium-ion battery.
- IP67 Waterproof rating, 25mm Objective, 17° FOV, 1024x768 AMOLED microdisplay.
- Industry standard 1.535" centerline.
- SIG SAUER® Infinite Guarantee™.

PRODUCT IDENTIFICATION

- A. Battery Compartment
- B. Keypad
- C. Ocular Lens
- D. USB-C Port

- E. Mount Tension Adjuster
- F. Image Focus
- G. Quick Release (QR) Lever





SAFETY AND OPERATION PROCEDURES



WARNING UNLOAD/CLEAR



BEFORE WORKING ON A FIREARM MOUNTED ECHO SIGHT, ALWAYS ENSURE THAT THE FIREARM IS UNLOADED, CLEARED, AND THE SAFETY IS ENGAGED TO PREVENT SERIOUS INJURY OR DEATH TO YOU OR A BYSTANDER.

CAUTION

USE ONLY 18650 LITHIUM-ION BATTERIES. THE USE OF CR123A BATTERIES WILL DAMAGE THE DEVICE AND WILL VOID THE LIFETIME WARRANTY.

DO NOT POINT SIGHT AT THE SUN, IT WILL DAMAGE THE THERMAL SENSOR.



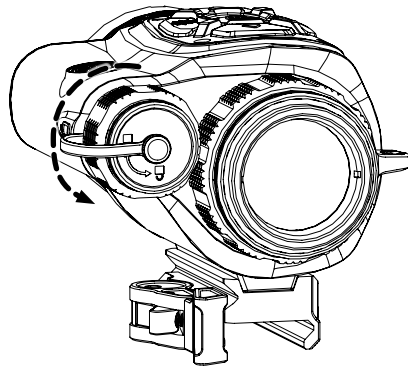
WARNING: CANCER AND REPRODUCTIVE HARM—www.P65warnings.ca.gov

OPERATION

Installing the battery

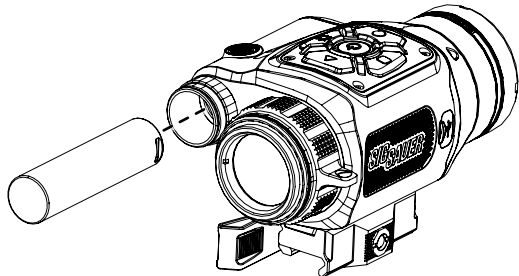
The battery compartment is located on the front of the sight.

1. Remove the battery cap by unscrewing the cap counterclockwise (CCW).

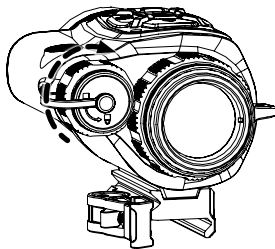




2. Insert the 18650 battery.



3. Install the battery cap by screwing the cap clockwise (CW) until cap bottoms out.



RECHARGING 18650 HIGH-CAPACITY LI-ION RECHARGEABLE BATTERY

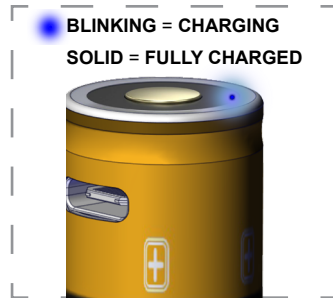
To recharge the supplied 18650 rechargeable battery use the supplied USB-C cable and insert the USB-C end of the cable into the USB-C port on the battery. Insert the USB side of the cable into a USB outlet. When the battery is fully charged the LED on the (+) end of the battery will stop blinking and turn solid blue.

NOTE

Plugging into the device's USB-C port will NOT charge installed battery however, the device can be powered through the external USB-C port.



18650



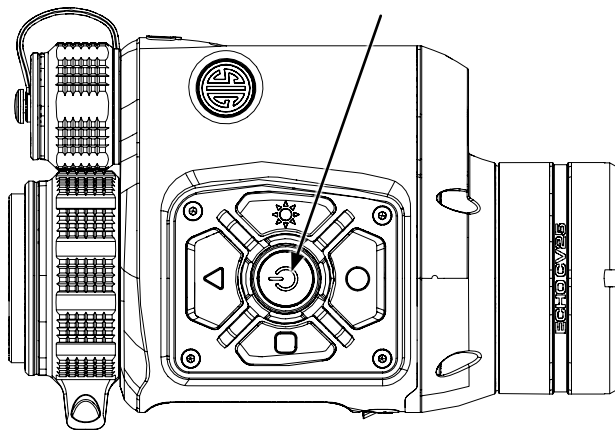


MOUNTING THE SIGHT

- The CV25 is placed in front of your day optic.
- Open the QR latch and place the CV25 on the Pic. rail.
- Close the QR latch.
- If the latch does not close or there is insufficient tension, open the latch, remove the device, press the latch into the mount to expose the adjuster nut, adjust nut to desired tension.

POWER ON THE SIGHT

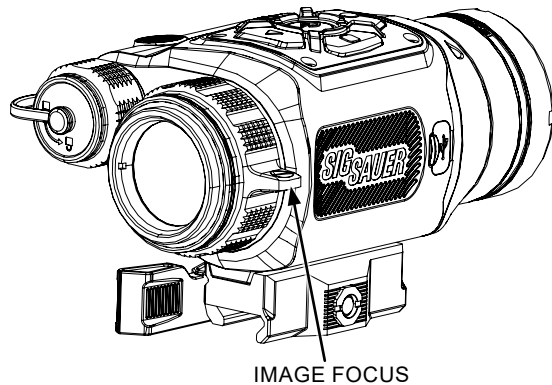
Press the center button of the keypad for approximately 5 seconds until the screen illuminates.





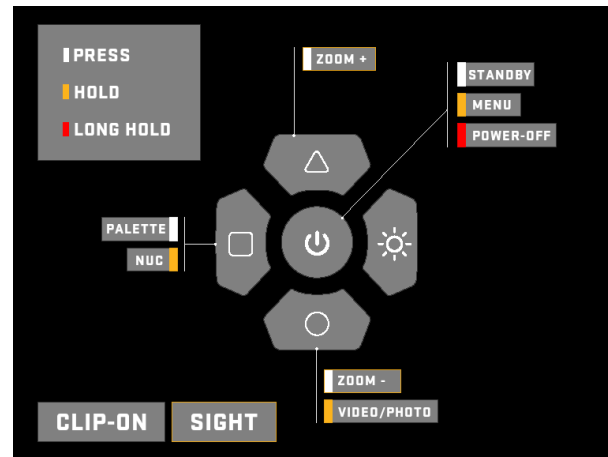
FOCUSING THE SIGHT

- Adjust the Image Focus Ring to bring your target into focus. This adjustment will need to be made frequently as you use your device to observe different distances.



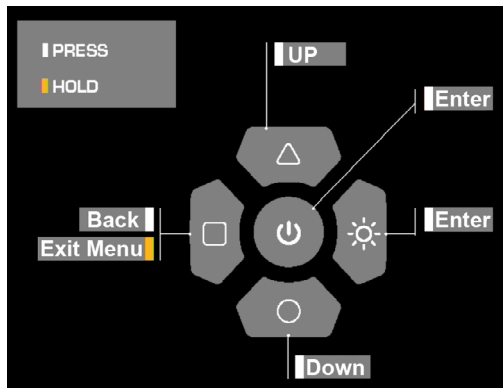
QUICK KEY BUTTON ACTIONS

From the sighting screen, the following button actions are active.



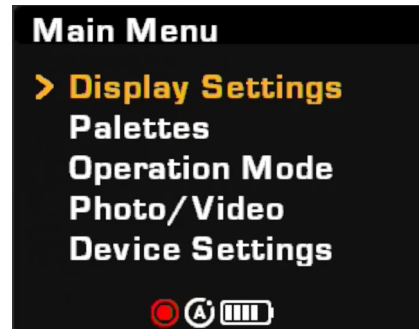


NAVIGATION



MAIN MENU

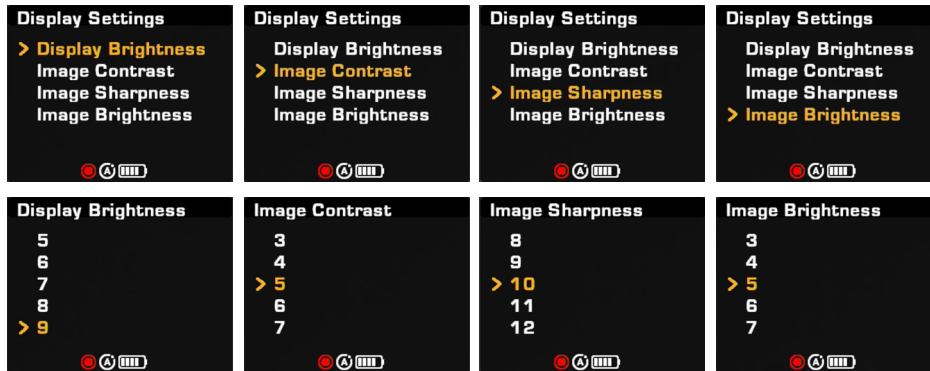
- Holding the center button will bring up the settings menu.
- In Clip-on Mode the menu is centered and undersized to enable viewing at 3x zoom.
- Icons for recording status, NUC mode, and battery status are displayed at the bottom.





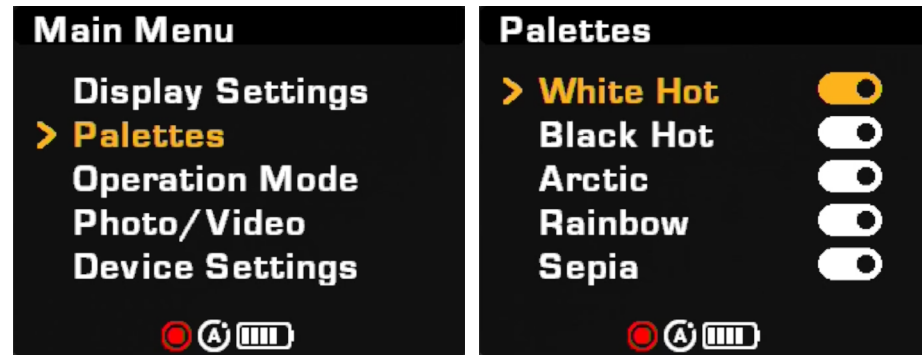
DISPLAY SETTINGS

- Display Brightness: adjust OLED display light output.
- Image Contrast: adjust the dynamic range of the image.
- Image Sharpness: apply levels of image sharpening effect to the image.
- Image brightness: adjust palette bias of the image.



PALETTES

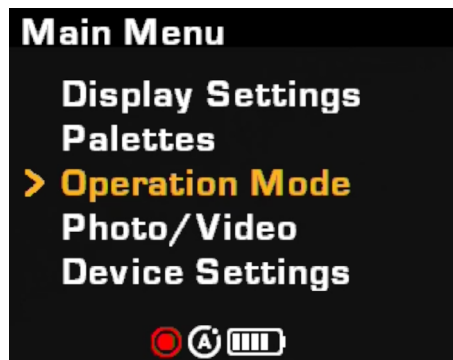
Select to enable or disable each palette for use with the Palette Quick Key Button.







OPERATION MODE

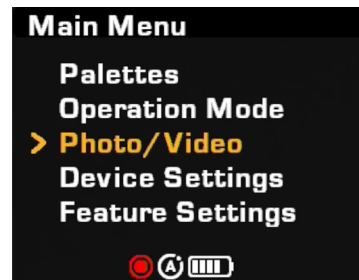
- The CV25 has two modes of operation; Clip-on and Sight
- Clip-on Mode is for use with a day optic and the menu is optimized for that use case
- Sight Mode allows you to use the CV25 as a stand-alone thermal optic and includes features for reticles, zeroing, and zoom.



PHOTO/VIDEO

The Photo/Video Menu allows you to:

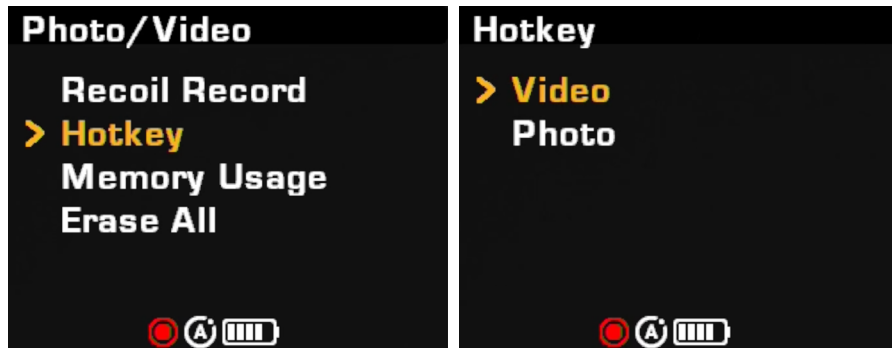
- Toggle recoil recording.
- Assign video or photo recording to the Video/Photo Hotkey.
- Check memory usage.
- Erase stored media.
- Recoil Record will detect the recoil of your firearm and record a 20s video clip. Recording will be captured 10s before and 10s after the recoil event.
- Enabled 
- Disabled 





PHOTO/VIDEO – HOTKEY

- Select the assignment of the Video/Photo Quick Key from the Sighting Display.
- Video – A long press of the down button will start/stop recording a video.
- Photo – A long press will record a still image of the Sight Display.



PHOTO/VIDEO – MEMORY USAGE

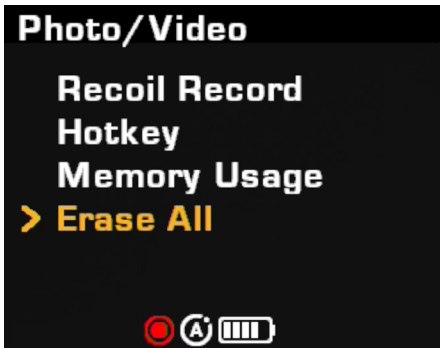
Displays the percentage of the media memory used. This example has 0% used and 100% free.





PHOTO/VIDEO – ERASE ALL

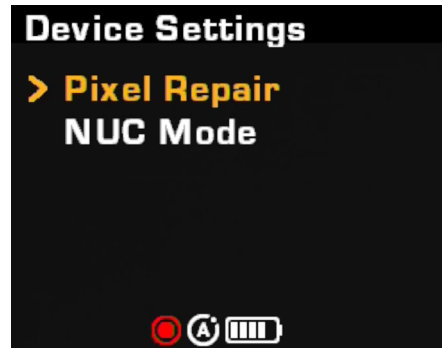
- Erases all saved video and photo media stored on the device.
- Cancel will exit this menu and abort the erase procedure.
- Erase Images will delete all media.



DEVICE SETTINGS

The Device Settings Menu allows you to:

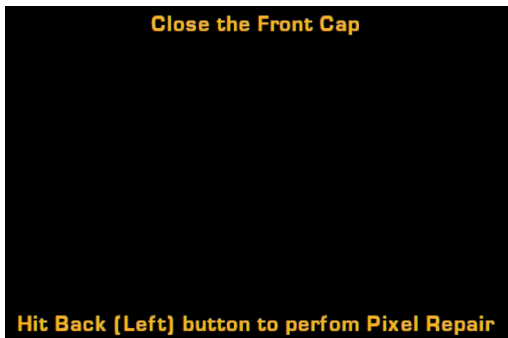
- Repair any damaged sensor pixels.
- Configure how you would like NUC events to occur.





DEVICE SETTINGS – PIXEL REPAIR

- Pixel Repair will fix any sensor pixels which may become “stuck”.
- Before initiating the repair, install the front bikini cover to provide a uniform temperature throughout the sensor.
- Press left to initiate the repair. The device will return to the Device Settings Menu when complete.




DEVICE SETTINGS – NUC MODE


NUC (Non-Uniformity Correction)

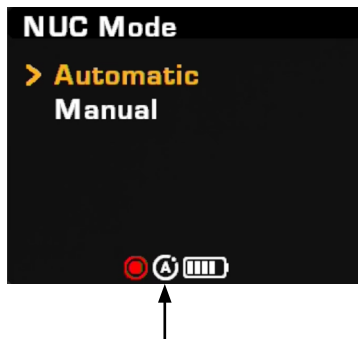
- Thermal sensors need to be normalized or trained to reproduce a clear thermal image. Thermal detectors are influenced by their own heat and this normalization can drift over time. NUC is the renormalizing of the thermal sensor pixels.
- NUC is performed with an internal shutter, which you will hear as a click during the operation.
- The NUC operation will interrupt your video momentarily while it completes.
- Automatic NUC will occur approximately once every 3 minutes.
 - A countdown warning will appear near the center of the screen 5 seconds before the NUC occurs.
 - A manual NUC performed by a long press of the left button will perform a NUC immediately and restart the 3 minute timer.
- Manual NUC will never automatically perform the operation and relies on the user to initiate a NUC. This gives the operator complete control of their image quality and NUC timing.



- NUC Mode will be displayed at the bottom of the Main Menu (Clip-on Mode) or in the status bar at the top of the Sight Display (Sight Mode).

- Automatic 

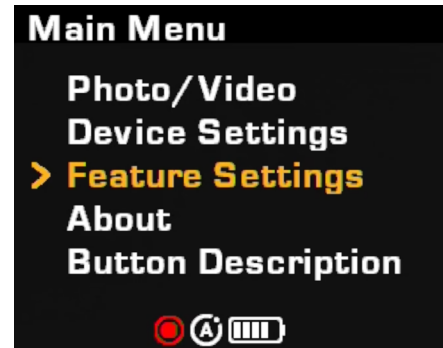
- Manual 



FEATURE SETTINGS

The Feature Settings Menu allows you to:

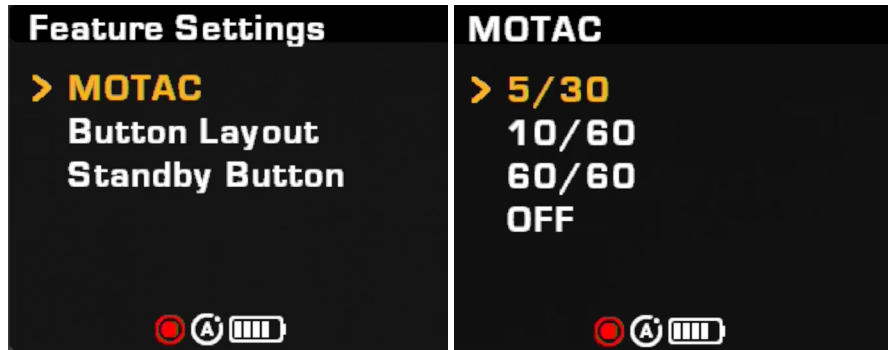
- Set a no motion standby and power off timer.
- Assign the buttons for the palette/NUC Quick Key.
- Enable/Disable the center button press standby feature.





FEATURE SETTINGS – MOTAC

- 5/30 turns off the display after 5 minutes of the sight sensing no motion and turns off the entire unit after 30 minutes of no motion.
- The other options work the same way for the times stated.
- OFF turns MOTAC off such that the unit will not shut itself off.
- If the display has turned off, the press of any button will wake it back up.



FEATURE SETTINGS – BUTTON LAYOUT

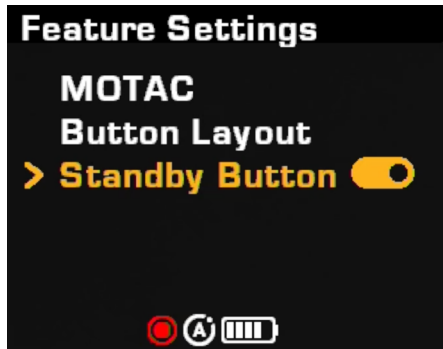
- Assign the NUC/Palette button
 - Left (Square, □)
 - Right (Star, ☆)
 - Ambi (Square □ and Star ☆)





FEATURE SETTINGS – STANDBY BUTTON

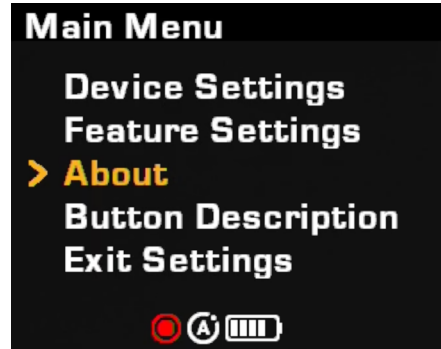
- Toggle whether a single press of the center power button will turn off/on the display.



ABOUT

Display device info:

- Model Name
- Firmware Version
- Wifi Software Version





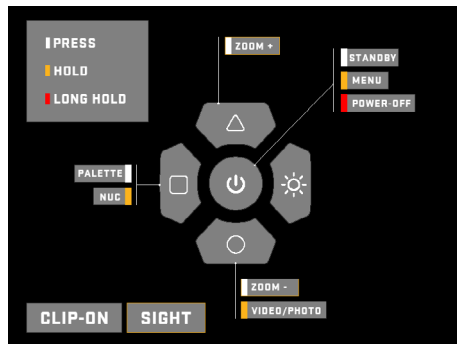
BUTTON DESCRIPTION

Quick Reference guide to the Quick Key actions.

Main Menu

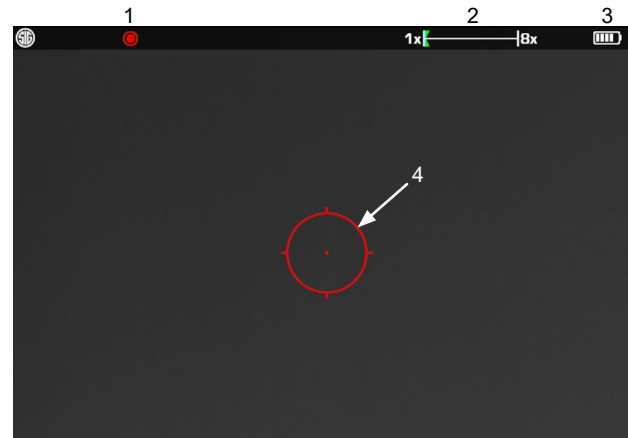
Device Settings
Feature Settings
About

> Button Description
Exit Settings



SIGHT MODE – SIGHT DISPLAY INFORMATION

1. Video Recording Active
2. Digital Zoom Level
3. Battery Level Indicator
4. Rifle Reticle

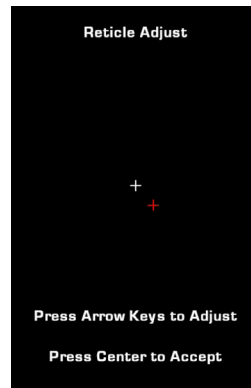
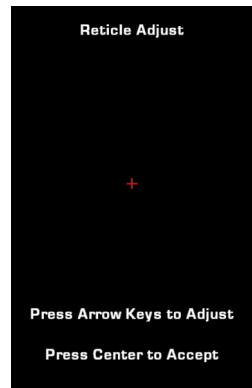
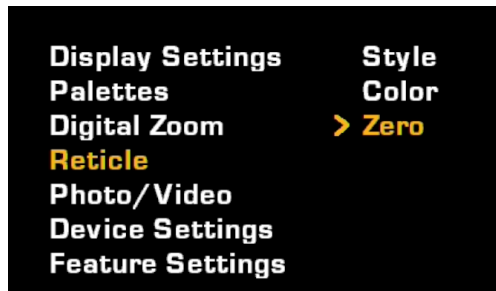




SIGHT MODE – ZEROING THE SIGHT

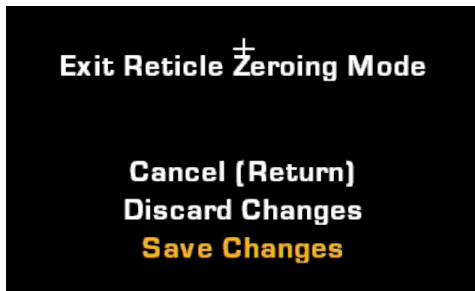
1. Enter the Menu by holding the center button.
2. Press down to navigate to the 'Reticle', and then select 'zero'.

3. Use the outer keys to adjust the red aiming feature to coincide with your bullet impacts.
4. The white feature will remain still. Use it as a reference and keep it aligned with the point of aim for your group.
5. In this example, our group was low right.





6. Follow the on-screen instructions. Press center to accept or abort. You have the choice to return to the reticle adjustment menu, discard and abandon changes, or save and apply the reticle adjustment.



SIGHT MODE – DIGITAL ZOOM

- Your SV sight has a fixed zoom objective lens. All zoom is performed digitally.
- Digital zoom is multiplied by the base magnification of your model.
- Select to enable or disable each digital zoom level for use with the Zoom Quick Key Buttons.
- Zoom levels are designed to apply a consistent field of view adjustment between zoom settings.

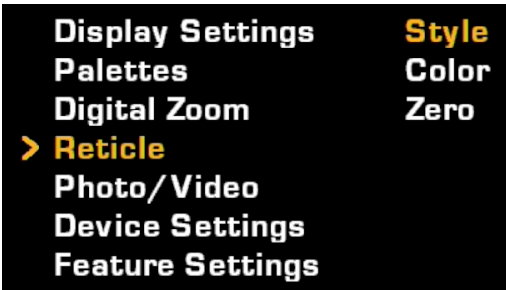




SIGHT MODE – RETICLE

The Reticle Menu allows you to:

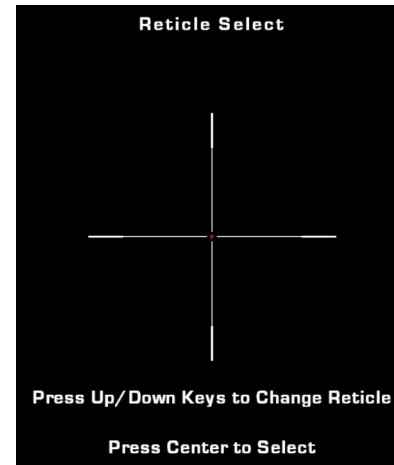
- Choose your reticle shape and attributes.
- Change the color properties.
- Adjust the point of impact.



RETICLE STYLE

Follow the on-screen instructions.

- Reticles fall into one of three categories.
 - Static Reticles
 - Digital Ballistic Reticle
- Static reticles act as a second focal plane reticle and provide a static aiming point.
- Digital Ballistic Reticles provide custom ballistic drop reference points and are configured with the help of the SIG BDX 2.0 App. The points are customizable to the distances you choose and are calculated with the help of a Ballistic Profile created for your firearm and ammo combination.





RETICLE COLOR

- Pressing the Up and Down keys will cycle through the available color combinations for that reticle style.
- Press the center button to accept and exit.

Display Settings	Style
Palettes	> Color
Digital Zoom	Zero
Reticle	
Photo/Video	
Device Settings	
Feature Settings	

FEATURE SETTINGS – ZOOM SHORTCUT

- Configures the behavior of the Zoom Minus Quick Key (press down).
- Zoom Out will zoom out the display the same as Zoom Plus (press up) zooms in, one step out per press.
- Zoom 1x will instantly zoom out all the way back to the device's native zoom.

Reticle	MOTAC	Zoom Out
Photo/Video	> Zoom Shortcut	Zoom 1x
Device Settings		
Feature Settings		
About		
Button Description		
Exit Settings		



INSTALLING / USING THE BDX APP

To get the most out of your thermal sight, download the SIG Ballistic App (SIG BDX) and synchronize your smartphone with your ECHO. Use the BDX App to load custom BDC reticles to your CV25 built from custom ballistic profiles and fine tune your CV25 optical axis calibration.

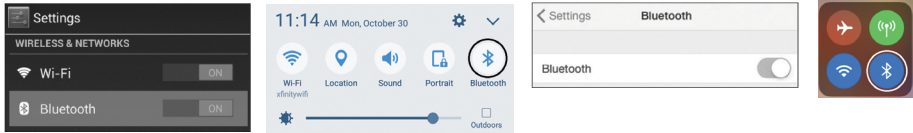
In this section you will download the SIG Ballistic App (SIG BDX), set up a Ballistic Profile, configure your thermal sight by selecting one profile and then downloading to your thermal sight.

BALLISTICS DATA XCHANGE – DOWNLOADING AND CONFIGURING THE FREE BDX APP

In this section you will download the BDX App, pair the App with your ECHO®, and create a custom bullet profile.

1. Turn Bluetooth on

Check in Settings on your Android or iOS device to make sure that Bluetooth is on. If Bluetooth is off, switch it on.





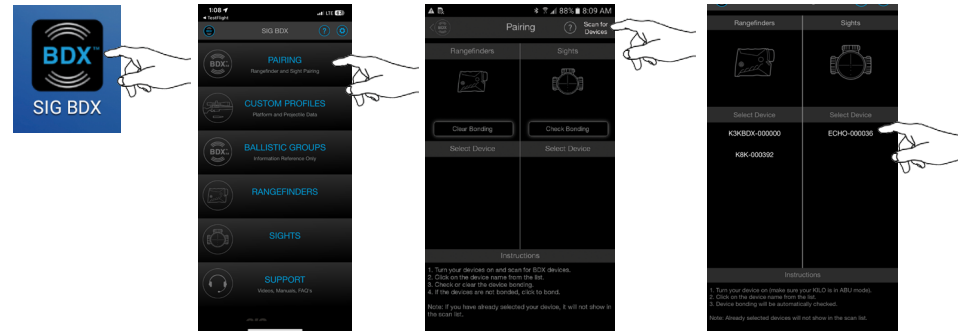
2. Download the BDX® App from the App Store / Google Play Store

Go to the App Store or the Google Play store and download the SIG SAUER BDX App. Search for the word SIG SAUER or BDX.



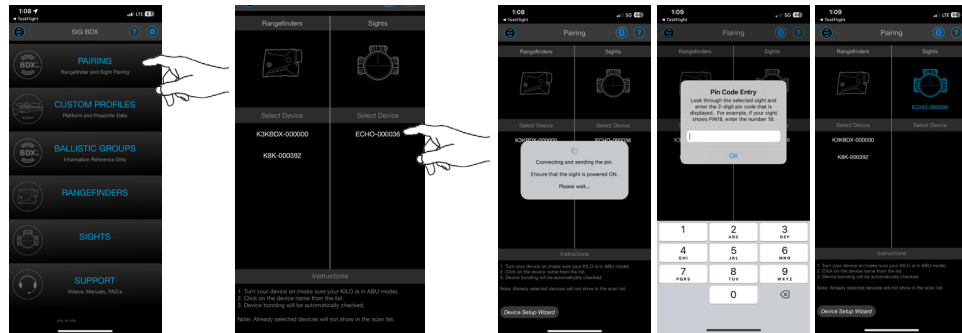
3. Launch the free SIG SAUER BDX® App and Pair with your ECHO® (Enter your PIN code)

On your smartphone, open the BDX App, click on PAIRING, turn on your ECHO by holding the center button and then press “Scan for Devices” on the App. Your ECHO should be listed in the SIGHTS column and “Select Device”. Your sight serial number should be listed in white letters. Touch the ID in white.



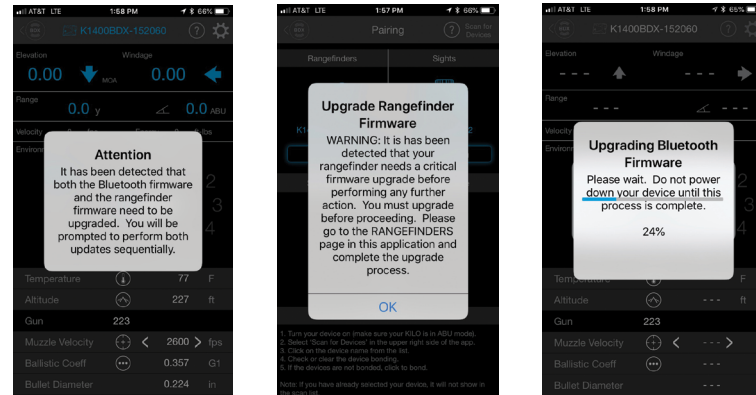


You will be prompted to enter a pin number. The number will be displayed on the screen of your ECHO. Once completed, press “OK” to complete the pairing operation. You will now see your ECHO ID in blue listed below the Sights column. You can now exit this screen. If you enter the incorrect PIN code you can restart this process over again.



3a. Updating your ECHO® to the latest software during Pairing

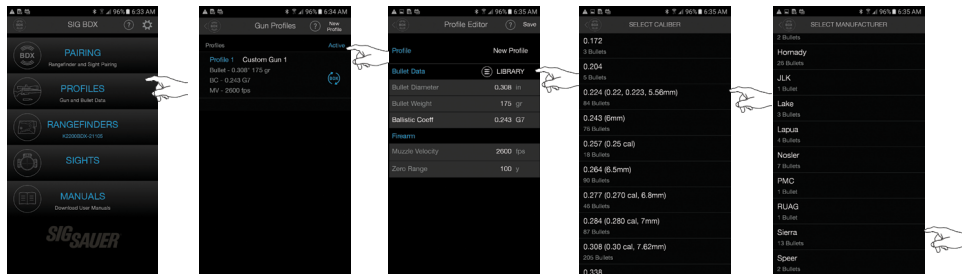
You may be prompted to update the software on your ECHO. These software updates are mandatory and allow SIG SAUER to ensure that your BDX® App and ECHO perform optimally. Most updates take less than 5 minutes. Ensure that your ECHO is turned on and that your smartphone has at least 25% battery life remaining before installing any software updates. For best operation, be sure to keep your smartphone awake during the entire installation process.



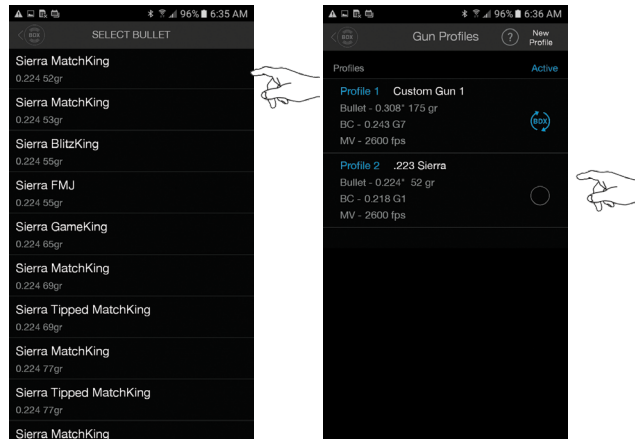


4. Configure up to 25 custom bullet profiles

The BDX® App allows you to create and modify up to 25 profiles. From the home screen of the App, touch **PROFILES**. Only one profile can be active at any time and is denoted by the BDX Icon in blue to the right of the screen. The BDX App comes with one default .308 profile. You can edit this profile by touching “Profile 1” or create a new one by touching the “New Profile” in the upper right corner of the App. Next, touch **LIBRARY**, then select a caliber and bullet manufacturer. On the Gun Profiles page, you can rename the profile by touching on the “Custom Gun 1” and typing in a new name.



After selecting a bullet manufacturer, select the actual bullet you intend to use. Once selected, you will return to the Gun Profile page where you will need to click on the sync icon to the right to activate this profile. In this example, the new profile is called “.223 Sierra” – be sure to activate this profile.



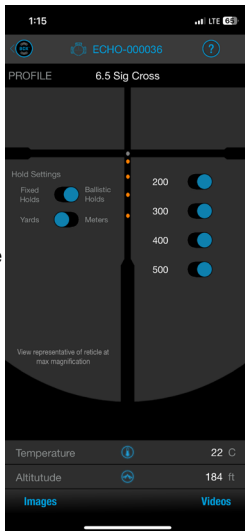


LOADING A BALLISTIC PROFILE AND CREATING A DIGITAL BALLISTIC RETICLE

After pairing with your ECHO, navigate to the Sights Screen.

Upon connection your selected ballistic profile and Digital Ballistic Reticle (DBR) will be sent to your ECHO. The active profile is displayed at the top of the Sights Screen.

Modifications to the DBR will be synchronized with your ECHO in real-time. You have the option of using fixed holds or ballistic holds. If you choose fixed holds you can enter in your desired hold overs in either MILS or MOA. You have the ability to illuminate up to 4 hold over dots. If you choose ballistic holds you can choose up to 4 different distances to illuminate. These distances can be in either meters or yards. The default is 100 yard increments. To change these increments, tap on the yardage you would like to change and enter your new value. You are able to toggle each hold over on and off. The ballistics for these hold overs correspond to the gun profile that you have chosen as active.



DOWNLOAD MEDIA

App

Media can be downloaded to your smartphone through the SIG BDX 2.0 APP. Access the files through the sights page while connected to your ECHO.

Cable

Using the external USB-C port on your ECHO you can plug into a computer. The ECHO will enumerate as an external drive. Photos and Videos will be organized into two self named folders.

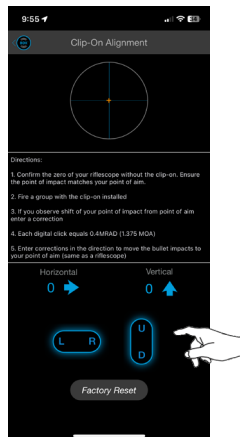
NOTE

The recording of media functionality is disabled while connected as a computer drive.



OPTICAL AXIS CALIBRATION

If you experience any point of impact shift induced by the CV25 use the Clip-on Alignment feature located in the sights page of the BDX app. Follow the on-screen instructions to remove any optical axis misalignment.



CLEANING

CAUTION

ALWAYS BLOW DUST OR DEBRIS FROM LENSES PRIOR TO USING ANY CLOTH OR LENS PEN. FAILURE TO DO THIS MAY RESULT IN SCRATCHING OF THE LENSES.

- Keep lenses clear by using a soft cloth or provided Lens Pen.
- The best way to maintain image quality is by keeping lenses clear of dirt and dust that cause scratches.
- Always use the provided bikini lens covers to ensure that the sight optics remain protected.

TROUBLESHOOTING

POI changes between groups.

- Check that the mount is affixed tightly to the rail.
- Check/Clean firearm.
- Check for variations in ammunition.

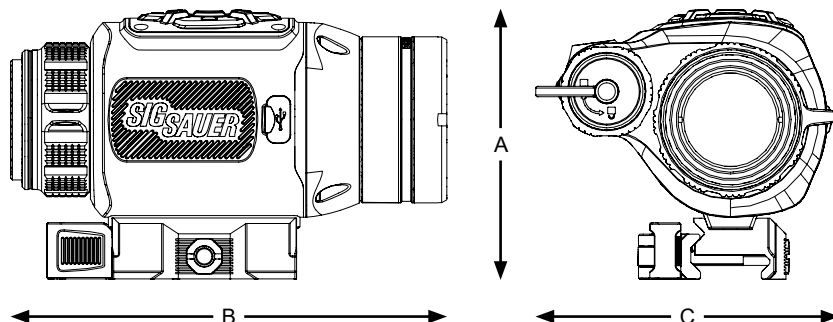
Product will not power-on.

- Install new 18650 battery.
- Tighten battery cap.



ECHO CV25 SPECIFICATIONS	
Magnification	1 – 8x
Field of View	17.6°
Frame Rate	50 Hz
Resolution	640 x 512
Color Palettes	8
Video Recording	Yes
BDX Enabled	Yes
Runtime	9+ Hours
Battery	(1) 18650
Waterproofing	IP67
OLED Screen Resolution	1024 x 768
Pixel Pitch	12 µm
Communications	Wi-Fi / Bluetooth
Media Storage	32 GB

MEASUREMENTS	IMPERIAL	METRIC
OVERALL HEIGHT (A)	3.07 in	78 mm
OVERALL LENGTH (B)	4.96 in	126 mm
OVERALL WIDTH (C)	2.99 in	76 mm
WEIGHT W/O BATTERY	18.8 oz	535 g





SIG SAUER® INFINITE GUARANTEE™

SIG SAUER® has a history of quality and reliability that dates back more than 250 years. We understand the importance of true dependability whether it be in the line of duty, at the shooting range or on your next hunt and we continually strive to deliver products that meet and exceed the expectations of even the most demanding customers. That's why SIG SAUER is proud to offer our INFINITE GUARANTEE* on all our firearms, optics, and suppressors.

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SIG SAUER® Infinite Guarantee

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- No Warranty Card Required
- No Receipt Required
- No Time Limit Applies
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