GSCI

PROFESSIONAL ELECTRO-OPTICAL EQUIPMENT

WOLFHOUND

THERMAL WEAPON SIGHTS

USER MANUAL

Why Read This Manual?

We recommend that you take some time to get to know your device by reading this manual. The more you know about your device, the greater the safety and pleasure you will get from using it.

Please note that without full understanding of the manual, you may miss very important and useful features of the device and, thus, not be able to fully enjoy the great performance of this GSCI product.

For your own safety and a longer product life, follow the instructions and warning notices in this User Manual. Ignoring them could result in damage to the device or personal injury to you or others. Any damage caused by misusing the device or failure to follow instructions is not covered by the GSCI Manufacturer's Warranty.

Do not hesitate to reach out to our Customer Support if something in this manual is unclear. Send your questions to gsci@gsci1.com

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Warnings and Safety Notices

Do not point the device to any bright, intense heat sources such as sun or laser! In some cases light/radiation overload may cause irreversible reduction of FPA responsivity or permanent damage. Due to high sensitivity of FPA it may react to muzzle flash by turning off the sensor for short moments after shots are made.

Do not attempt to disassemble, alter, or modify the device. The GSCI Manufacturer's Warranty will become null and void.

Never leave batteries inside the battery compartment if the device is not in use for a prolonged period of time. Some batteries may leak and cause device's malfunction. Usage of incorrect batteries or incompatible external power supply can cause serious damage to the device that is not covered by the GSCI Manufacturer's Warranty.

The GSCI devices are precise electro-optical systems and must be handled carefully at all times to prevent damage. Do not scratch the lens surfaces or touch them with your fingers.

Head gears and helmet mount assemblies arrive at the GSCI facility from various third-party suppliers. Due to variable tolerances in manufacturing processes, suppliers of the mentioned accessories allow slight wobbling/play when an accessory is mated to a device. Such wobbling does not have any effect on device's/assembly's performance and/or reliability.

Manufacturers of thermal sensors and displays allow certain cosmetic imperfections of video image such as black or white dots, spots or lines of small sizes. These do not affect reliability of the device and certain amount of imperfections are inherent to the manufacturing processes and may appear during usage.

Warnings and Safety Notices

Usage of the device with white reticle or white SRF rulers turned on and being at the same position for prolonged periods of time may cause the so-called "ghost effect", also known as "burn-in". This effect manifests itself by leaving a darker, noticeable mark (like a shadow) in the shape of the reticle or SRF rulers and at the same position when these functions have been turned off. The icons at the top bar may also cause "ghost" effect that may be seen in bad pixel masking mode.

Pixels that make up a white reticle or a white icon are constantly running at maximum brightness and, as a result, age faster.

Such memory effect occurs in all types of OLED, AMOLED, Plasma displays regardless of size.

To avoid or minimize this effect:

- avoid prolonged use at high display brightness level
- if possible, use black reticle pattern/SRF

# Models

WOLFHOUND. 50mm f/1.0 Lens

WOLFHOUND-L. 100mm f/1.4 Lens

Disclaimer

All GSCI products are sold with the understanding that the PURCHASER (Also referred to as the End User) has independently determined the suitability of such products for their purposes. GSCI products are warranted to the original purchaser to be free from defects in material or workmanship as per GSCI Standard terms and conditions, and warranty. GSCI will provide products compliant to the specifications listed in the manual accompanying the said product. Necessary installation, commissioning, demonstration, training and integration with the existing equipment will be the responsibility of the end user. GSCI will supply a product that can be used as a standalone device. It can optionally be a support product for a larger and more complex system. This option for integration is the responsibility of the end user; however GSCI is available to perform the service at a cost. GSCI discharges all responsibilities and does not accept any claims if the end user performs ANY improper/unauthorized modifications or alterations. GSCI can and is able to offer assistance to the End User in performing modifications and/or alterations of the named device. Such services come as optional and at an extra cost. Manufacturer's Warranty is null and void if any damages to the device however caused occurred as a result of incorrect implementation of any customization processes described in the present manual. GSCI has no other obligation or liability for defects or malfunction than set forth above.

At a Glance: Controls and Components

WOLFHOUND with 50mm lens and low profile mount shown
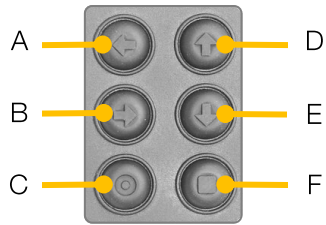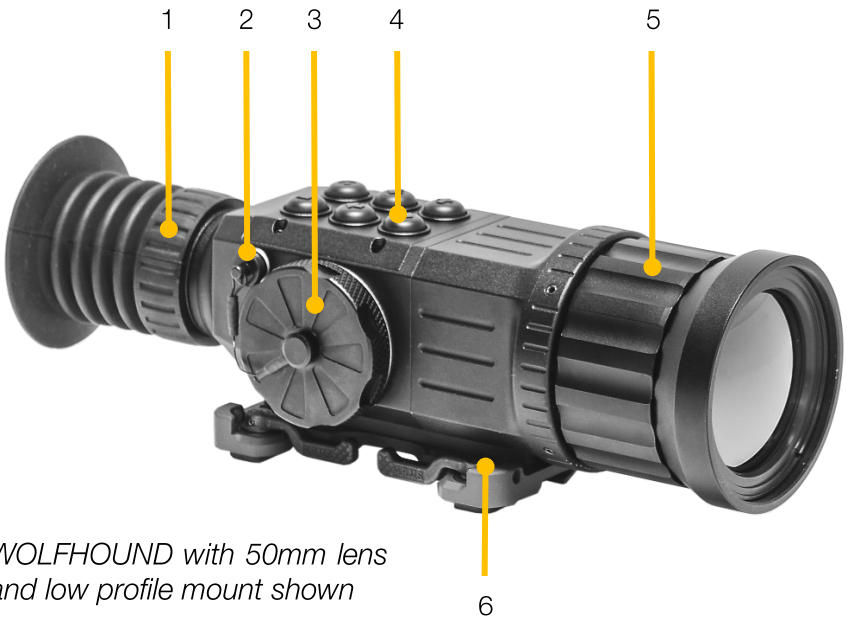
	SYSTEM
1.	Eyepiece with Rubber Eyecup
2.	Universal Power Port
3.	Battery Compartment
4.	Keypad
5.	Objective Lens w/ Focusing Ring
6.	Weapon Mount

|	KEYPAD
A.	ZOOM Button / LEFT
B.	Polarity Switch Button / RIGHT
C.	Power Button (ON/OFF)
D.	UP Button
E.	DOWN Button
F.	MODE Button

Setting Up Your Device

The unit can be powered in two ways: using four AA batteries or an approved external power supply with voltage rating between 4.5 and 15 Volts DC (for example, a 5V USB cell phone power bank, a 12V car adapter, etc.)

USING AA BATTERIES

Insert 4 (four) AA batteries into the battery pack observing polarity as per markings on the inside of each battery chamber. Usage of new AA lithium batteries is highly recommended for optimal operating time.

Remove the battery compartment cap by unscrewing it in counter-clockwise direction.

Insert the battery pack with batteries inside the battery compartment of the device as shown on the battery pack ("◄◄◄THIS WAY IN").

Close and tighten the battery compartment cap by screwing it in clockwise direction.
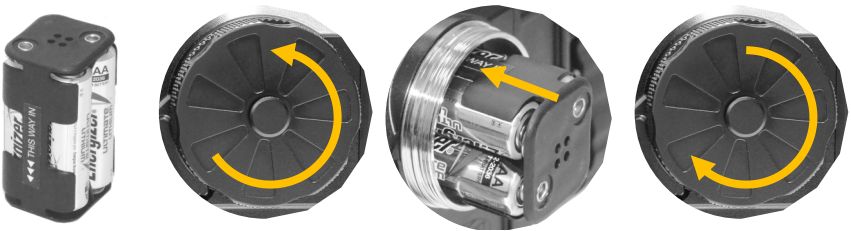
Actual operating time of the device is dependent on quality of batteries, condition (new or used), type/chemistry (Alkaline, Ni-MH, Lithium, etc.) and their capacity.

Setting Up Your Device

Remove the Universal Power Port cap and insert the reciprocal connector of the USB Power Cable (included).
Insert the other connector of the cable into an available USB port of a USB power bank (5VDC). Make sure the power bank is sufficiently charged and turned on.

Attention: always consult your dealer prior to using the device with any other external power sources.

With AA batteries inserted (or external power supply attached) as described above, press and hold ON/OFF button until the internal display of the device lights up. Right after that the GSCI logo shall be displayed for a few seconds at the centre of the screen.

Setting Up Your Device

Look through the eyepiece and adjust focus of the eyepiece to your individual sight by turning the focusing ring. Make sure you have a sharp view of the icons at the top of the internal display.
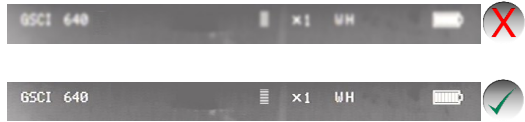
CONNECTING AN EXTERNAL DISPLAY

If your application requires more than 1 crew member to look at the image produced by the device, you may need to connect the unit to an external display/monitor.

Remove the Universal Power Port cap and insert the reciprocal connector of the Video-Out Cable (included). Connect the RCA connector into the corresponding port of your external display. The external display must have analog video input.

Make sure the external display is powered on. If connected correctly, the image on the internal AMOLED screen should match the one shown on the external display.

Setting Up Your Device

After the eyepiece focus adjustment is done, remove the objective lens cover and point the device at any object. Look through the eyepiece or at an external display. Turn the objective lens focusing ring to achieve a sharp image of that object. Objects located at different distances shall require objective lens focus adjustments to achieve sharp and clear image.

Operating Instructions

Upon the startup the GSCI logo will be shown (if enabled). After the logo disappears, the selected reticle will be shown along with the following indication at the bottom of the display:
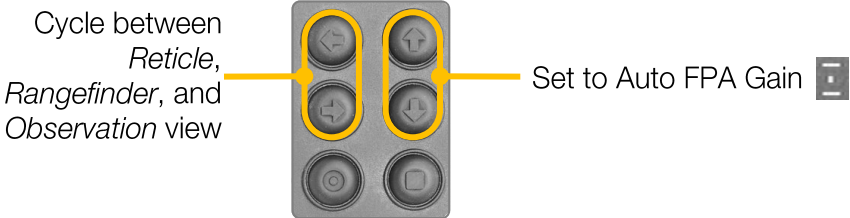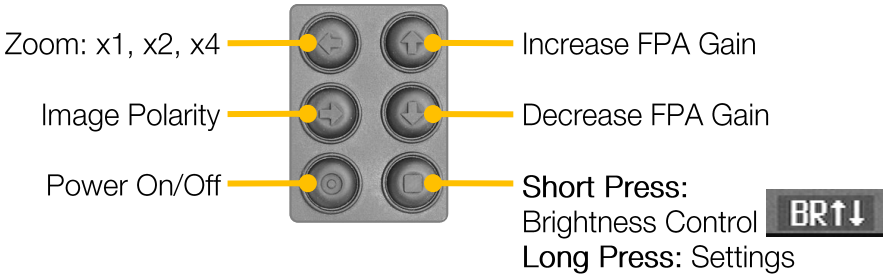
Operating Instructions

Top bar icons and indications:

1

2 3 4 5

GSCI 640 ☰ ×1 WH 🔋

1. FPA resolution (*shown: 640x480*)

2. FPA gain (sensitivity) setting (*shown: manual gain*)

3. Electronic zoom factor (*shown: x1*)

4. Image polarity setting (*shown: white hot*)

5. Battery indicator (*if flashes, replace batteries or the whole pack*).

Zoom: x1, x2, x4 ⟶ ← ↑ ⟵ Increase FPA Gain

Image Polarity ⟶ ⟳ ↓ ⟵ Decrease FPA Gain

Power On/Off ⟶ ◉ ▣ ⟵ **Short Press:**
Brightness Control BR↑↓
Long Press: Settings

Cycle between
Reticle,
Rangefinder, and
Observation view ⟶ ← ↑
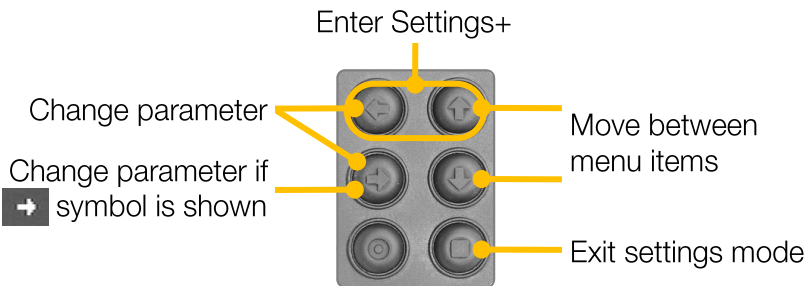⟳ ↓ ⟵ Set to Auto FPA Gain ▣

SETTINGS

The device has a set of parameters that can be configured by the end user to "tailor" the unit to their needs and maximize operational convenience. There are "Settings" (for frequently used parameters) and "Settings+" (to perform specific adjustments).

List of Settings in every mode is invoked by long-

Operating Instructions

```
Settings
Color palette        [ M ]
Reticle type            ➜
Reticle polarity     [ ✓ ]
Profile              [ 1 ]
Stow safety          [    ]
```

Enter Settings+

Change parameter

Change parameter if ➜ symbol is shown

Move between menu items

Exit settings mode

```
Settings +
Color palette        [ M ]
Reticle type            ➜
Reticle polarity     [ ✓ ]
Profile              [ 1 ]
Battery type         [LIT]
Auto power down      [ 30]
Logo                 [ ✓ ]
Lens focal length    [ 50]
DVR always active    [    ]
```

Operating Instructions

DESCRIPTION OF SETTINGS

COLOR PALETTE. Cycles through the available pseudo colour palettes (one monochrome - "M" and 8 colour).

RETICLE TYPE. Refer to page 15.

RETICLE POLARITY. If checked, the reticle will appear black on White Hot setting, and white on Black Hot setting.

If unchecked, reticle will appear white on White Hot setting and black on Black Hot setting.

PROFILE. The device provides 8 selectable profiles for memorizing different setups such as reticle type, reticle polarity, reticle zeroing and lens focal length.

STOW SAFETY. Enables or disables Stow Safety Feature (SSF).

BATTERY TYPE. Switches the battery type profile for accurate battery indicator reading. Available profiles: Alkaline (ALK), Lithium (LIT), Nickel-Metal-Hydride (NMH), External Pack (EXT).

AUTO POWER DOWN. Enables the device to save batteries in case if unintentionally left on. The device automatically turns itself off if there has not been keypad activity for the selected number of minutes. If blank, the device will not turn off automatically.

LOGO. Enables or disables displaying of GSCI logo at the startup.

LENS FOCAL LENGTH. Specifies interchangeable lens focal length (in millimeters: 20, 25, 50, 75, 100, 150) for correct Stadiametric Rangefinder calculations.

DVR ALWAYS ACTIVE. When enabled it turns on the optional Digital Video Recorder (DVR) and sets it in stand-by mode. If disabled, DVR must be manually activated before recording.

Operating Instructions

From **Settings** Menu

Reticle Type selection can be invoked in two ways:

1. From the settings menu.

2. Using the shortcut: RIGHT and DOWN arrow buttons pressed simultaneously while reticle is shown.

Once the mode is engaged, the following indication appears at the bottom of the display:

```
[↔ZP]Inv          Reticle Select↑↓
```

Reticle type can be selected by UP and DOWN arrow buttons. Once reticle is selected. Reticle polarity can be switched by simultaneously pressing LEFT and RIGHT arrow buttons.

Pressing MODE button will return to the menu screen.
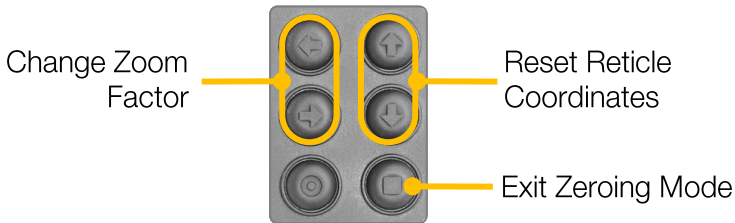
RETICLE ZEROING

Enter Zeroing Mode   Move the Reticle
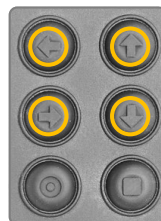
Operating Instructions

Use the arrow buttons to match reticle's position with the impact point. Zoom factor is cycled through by simultaneously pressing LEFT and RIGHT arrow buttons. For better accuracy reticle zeroing should be performed at zoom x4.

Change Zoom Factor

Reset Reticle Coordinates

Exit Zeroing Mode

Zeroing [↔↑↓]   Wind 0   Elev 0

RETICLE CALIBRATION

Reticle calibration is accessed from reticle zeroing mode by simultaneously pressing LEFT and UP arrow buttons and is only available when "Settings +" is active.

Enter Reticle Calibration from Reticle Zeroing
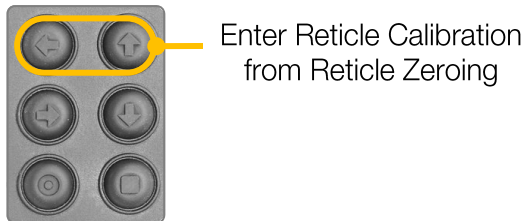
Calibr. [↔↑↓]   Wind 0   Elev 0

Reticle calibration must be performed for each of the zoom factors individually. The purpose of reticle calibration is to ensure the reticle points at the same spot regardless of the selected zoom factor.
NOTE: the device comes pre-calibrated, reticle calibration done by end user is seldomly needed. Moving the reticle is done with the same buttons as during Reticle Zeroing.

# Operating Instructions

STADIAMETRIC RANGEFINDER

Stadiametric rangefinder (SRF) enables an operator to estimate a distance to an object based on object's size.

Once enabled, horizontal and vertical SRF rulers appear at the centre along with SRF indication at the bottom of the display:

Estimating a distance to an object consists of two steps: setting the object's size (in vertical or horizontal dimension) and adjusting the SRF rulers to object's respective dimension.

1. Set the estimated object size (horizontal or vertical) by UP and DOWN buttons (make sure the word SIZE is in brackets). This value can be varied from 0.2m to 25m with a step of 0.1m.
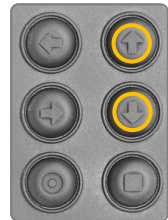
2. Press MODE button and to get the estimated distance, aim at the object with your thermal device and adjust SRF rulers to span the object (horizontally or vertically) by pressing UP and DOWN buttons. Distance to the object is instantly calculated at every adjustment of object size or SRF rulers.

To switch between SIZE and DISTANCE modes anytime, press MODE button.

Operating Instructions

Zoom: x1, x2, x4

Image Polarity

Alter colour of
SRF Rulers
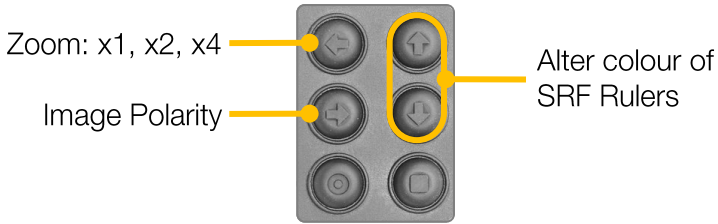
NOTE: ACCURACY IN CALCULATING THE DISTANCE TO AN
OBJECT DEPENDS ON HOW PRECISELY THE OBJECT SIZE WAS
ESTIMATED BY A USER.

CALIBRATION OF STADIAMETRIC RANGEFINDER

SRF **Calibration** is initiated by simultaneously pressing **LEFT** and
UP arrow buttons while in SRF mode and "Settings +" is active.

`SRF Cal ↑↓ Size  0,9 M  [Dist   110 M]`

In this mode, Zoom and Polarity buttons retain their functions. UP
and DOWN arrow buttons are used to adjust the distance reading to
the actual distance.

Pressing the MODE button exits the SRF Calibration Mode and
returns back to regular SRF mode.

PROCEDURE FOR CALIBRATION

1. Pick an object of a known size at a known distance
2. Adjust SRF rulers to match the object boundaries
3. Switch to SRF Calibration Mode
4. Adjust the distance reading to actual distance to the object
5. Exit SRF Calibration Mode.

Operating Instructions

If your device is equipped with the optional Shock Sensor, it has a Shot-Initiated FOV Increase feature and the menu item associated with it.
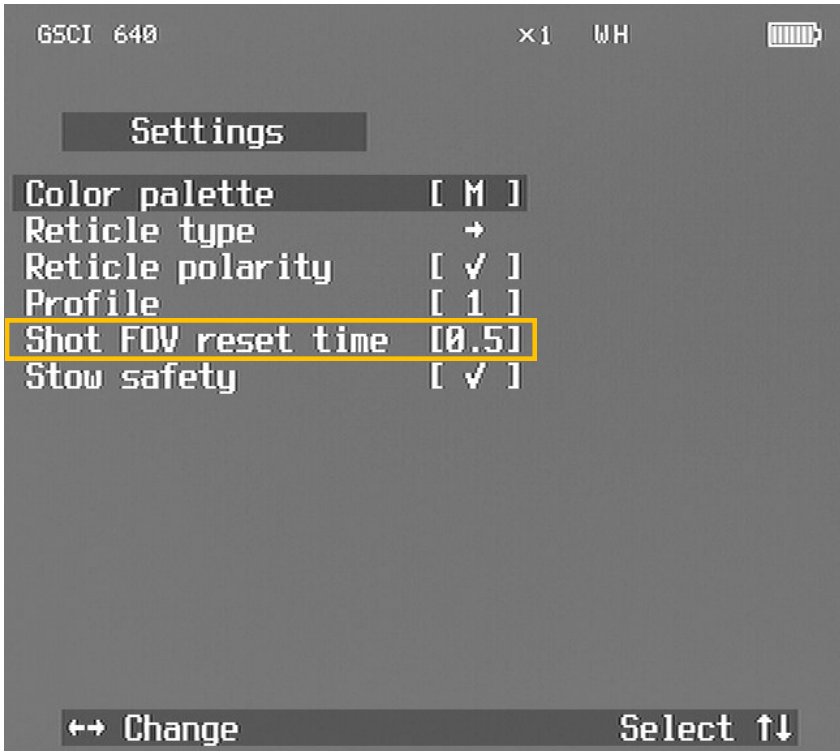
If you aim and shoot at a target at zoom x2 (or zoom x4), right after the shot, the system goes one step down - to zoom x1 (or zoom x2). The operator can control how much the system stays in lower zoom and higher FOV before going back to the original setting. This is controlled in "Shot FOV reset time", the setting is in seconds. If set to "0", the feature is disabled. If set to "HLD" ("hold"), the device does not go back to the original zoom (x2 or x4).

Operating Instructions

Stow Safety Feature (SSF) helps an operator to stay covert during night-time operations by turning off the display of the device when it is moved down in the vertical plane (in stowed position).
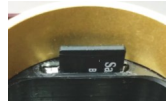
DISPLAY ON

DISPLAY ON

DISPLAY OFF

Operating Instructions

Insert a microSD card into the slot as shown. Push in until it clicks. To remove - push until it clicks, card will come out.

To prolong battery life, DVR can be switched off (default setting) and activated only when needed.

To start recording, the DVR needs to be set in stand-by mode. This is done by simultaneously pressing MODE and DOWN buttons.

During DVR start-up process, a dashed progress line is shown at top of the display: `-----`
When the DVR is ready to record, the indication "SET" will replace the progress line.

In order to begin recording from stand-by, simultaneously press MODE and DOWN buttons again, the flashing indication "REC" will replace "SET": `REC`

If there is any problem with the microSD card (no card installed, unformatted card, poor contact, card full, etc.) the following indication will appear for a few seconds: `ERROR`

If during video recording the card runs out of space or any other issues arise, the following indication will appear: `CARD`

Operating Instructions

FPA may sporadically produce pixels that are of opposite polarity (black or white) that are visible to an operator. These pixels do not affect performance or reliability of the system, however in certain cases a user may want to mask them.

To enter or exit Bad Pixel Management Mode, simultaneously press RIGHT+UP+MODE buttons.
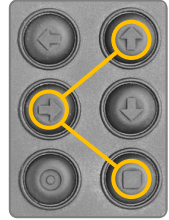
A special cross-shaped cursor with a flashing center dot will appear. It will be further referred to as a BP cursor.
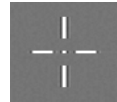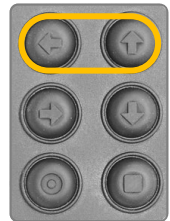
Bad pixels can be masked two ways: Manual or Automatic.

AUTOMATIC BP MASKING STEPS

1. Cover the objective lens in order to get an uniform background
2. Simultaneously press the LEFT and UP buttons
Auto BP masking will be done in a second and will be indicated by the following notification:

Auto BP Mask

If desired, the Auto BP masking map can be erased by simultaneously pressing the RIGHT and DOWN buttons. The following indication will appear for a few seconds:

Auto BP Clr
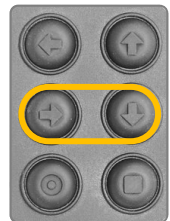
Operating Instructions

NOTE: If the objective lens is not covered during Automatic BP masking, many pixels could get wrongfully marked as bad, which would lead to unpleasant image artifacts. This can be undone by the Auto BP Map Erase.
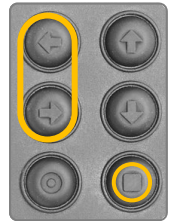
MANUAL BP MASKING STEPS

Pressing the MODE button will toggle the pointed pixel as masked or unmasked. Moving the BP cursor across the image is done by the four arrow buttons.

Manual BP map can be shown or hidden by simultaneously pressing buttons LEFT+RIGHT.
Manual BP map state will be indicated by:
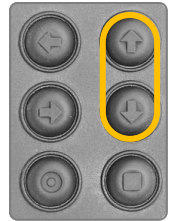
BP Map Show   BP Map Hide

After finishing Manual BP manipulation, the BP map needs to be saved. This is done by simultaneously pressing buttons UP+DOWN.
The following indication will appear to confirm:

BP Map Save

REMOTE CONTROL

The device can be equipped with an optional wired remote control that allows more convenient operation of the device for certain environments/scenarios.
The remote control unit has two ports: KEYPAD and VIDEO. KEYPAD port is connected to a device's Universal Service Connector via a data cable (included). Optionally, you can connect VIDEO port of the remote control to a display via video cable (Male-RCA to Male-RCA) and stream (mirror) video from the device to the display.

Operating Instructions

A user can control functions of the thermal device and apply key combinations using device's buttons and remote control buttons at the same time.

The device can operate in conjunction with a daytime optics. Conversion to clip-on system is done by replacing the device's eyepiece with a clip-on adapter (COA) and mounting the unit in front of daytime sight.

Turn off the device. Remove the eyepiece by unscrewing it in counter-clockwise direction. Attach the COA by screwing it in clockwise direction until a significant resistance is felt.

Operating Instructions

Mount the device on the rail of your firearm in front of the day scope. Important: the device should be mounted on the low-profile weapon mount (ACOG #19) to ensure matching of optical axes of the device and the day scope.

Look though the day scope and engage clip-on mode on the device: <u>press and hold</u> ON/OFF, MODE, RIGHT and DOWN buttons until the display lights up. You shall see the image in upright position, indications appear at the centre of the display (not at the bottom as in standalone sight configuration).

Manufacturer's Warranty

GSCI Warrants its Optical Products against genuine manufacturer's defects in materials and workmanship for a period of 7 (seven) years from the original date of purchase. All optical electronic parts, components which used in covered products, such as image intensifier tubes, focal plain arrays (thermal cores) are covered by their original Manufacturer's warranty for the period not less than 1 year. Any device returned for warranty service or repair must be assessed by GSCI's Technical Control Department (TCD) as having been used according to its original design intents. Any misuse, neglect, or any abnormal use are not covered by this warranty. Product's malfunction or deterioration due to normal use is not covered by the present warranty. GSCI will repair or replace such products or parts which, upon inspection by TCD are found to be defective in either materials or workmanship. As a condition of GSCI obligation regarding a warranty work, the product must be returned to the place where it has been purchased with satisfactory proof of purchase (sales invoice must be presented). This warranty is null and void if equipment has been altered, tampered with, modified, or otherwise abused, mishandled or subjected to unauthorised repairs. GSCI disclaims any other warranties, either expressed or implied, except as expressed herein. The sole obligation of GSCI is to repair or replace the covered device. GSCI expressly disclaims responsibility for any lost profits, general, specific, direct, undirect, or consequential damages which may result from breach of any warranty, or resulting from the use, or inability to use any GSCI's product. Further, GSCI disclaims any responsibility, liabilities for the User's bodily injures or death which may occur while using GSCI products. Do not return merchandise directly to GSCI without expressed permission of our Customer Service Representative who has to issue a Return Authorisation Number (RAN). GSCI takes no responsibility for unauthorised returns. All items returned for exchange, upgrade, repair, service etc. must be with all accessories, in original packaging, shipping and insurance cost prepaid both ways. Items received by GSCI without RAN, missing parts or accessories, or damaged due to inadequate packaging, or customer's abuse (i.e. scratched, cracked body, burned IIT/FPA or broken lens) will be returned back to customer or repaired for the cost. With any warranty-related or technical issues please contact GSCI via e-mail: gsci@gsci1.com fully describing a problem. Please see the enclosed GSCI Limited Warranty terms and Warranty Activation Form.

WARRANTY LIMITATIONS. This product has been built in accordance to and fully complies with GSCI specifications. All electronic, mechanical and optical parts in this system have been fully factory tested, aligned and calibrated. However, due to limited ability of GSCI to conduct the final mounting and zeroing of this system on the End User's gun or a day time scope – GSCI waives and discharges all further claims related to the possible problems, discrepancies and/or inability of the final End User to do the proper mounting and zeroing of this system.

User's Notes

This Product is Manufactured By:
General Starlight Co., Inc.
120 Whitmore Road, Unit 20,
Woodbridge, Ontario, L4L6A5, Canada
Tel: +1 905 850 0990
www.gsci1.com

IMPORTANT! Night Vision, Thermal Imaging, Fusion Equipment in general is subject to export control. Please consult your Local and Federal Government Authorities prior further shipment, exporting or transferring of the Controlled Merchandise. General Starlight Company Inc. relieves itself from any liabilities, claims or accusations if its equipment is found in certain places without proper export documentation. General Starlight Company Inc. under NO circumstances will export or ship its products without fully approved export authorization.

MODEL NAME ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

SERIAL NUMBER ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯