PANTHER

High Performance Thermal Riflescopes

Operator Manual

ver 1.0.2014

TABLE OF CONTENTS

ATTENTION!

For the most optimal user experience we ask that you first read this manual carefully before using this product.

This device contains highly specialized and sensitive internal electronics. Handle with care. This device contains no operator serviceable components. Contact Night Optics customer support if you cannot diagnose an issue. Opening the device housing WILL void the warranty.

WARNING

Ensure that the device is powered off before installing or removing batteries, and connecting or disconnecting to any external power source. Failure to do so could result in the damage sensitive internal electronics.

WARNING

Ensure that the input power source does not exceed **24v DC** - Use a power converter if needed. Failure to do so could result in the damage sensitive internal electronics.

WARNING

Do not mix rechargeable and non rechargeable CR123.

CAUTION

Do not store the device with the batteries installed.

WARNING

Do not connect the device to any external power source while the unit is turned on.

WARNING

Do not aim this deice at the high-intensity sources like the sun, fire etc. - damage will occur.

WARNING

Do not aim this deice at the high-intensity sources such as the sun.

ALERT

Presence of one or several segments (spots, stripes) of a brighter or darker gradation in the field of view is normal. The segments often appear in cases of large temperature difference between the observer's location and surrounding space (for example, viewing from a warm room through an open window).

WARNING

Avoid exposure to water - Even though the device is water resistant, excessive exposure could damage the electronics.

Always remember to power off the device when not in use and store in a cool dry place.

Failure to observe warnings may void the warranty.

PRODUCT OVERVIEW

The Panther Thermal Riflescope is a no-nonsense, purpose built shooting system for those who are serious about Infrared performance and quality!

Precise Optical Focus
2x High Grade Germanium Optics
1x, 2x, 4x Digital Zoom
Extremely Lightweight
Immediate Startup
Brilliant 600x800 AMOLED Display
Display Brightness Control

4+ Hours Battery Life
Auto or Manual Calibration
Mil-Dot or Cross Hair Reticles
7 Color Palette Options
Automatic Brightness Control
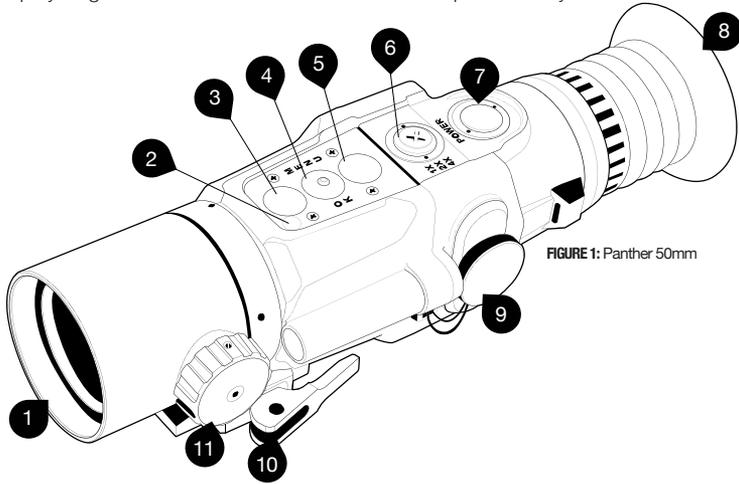Video-Out (Optional)
Simple Menu System

FIGURE 1: Panther 50mm

PRODUCT BREAK-DOWN		Figure 1
[1] 50mm Germanium Objective Lens	**[7]** Power/Multi-function button	
[2] Ambient Light Sensor	**[8]** Soft Rubber Eye Guard / Diopter	
[3] Multi-function button	**[9]** Battery Compartment	
[4] Menu/Multi-function button	**[10]** Quick Release Weapon Mount	
[5] Multi-function button	**[11]** Focus Adjustment	
[6] Digital Zoom/Multi-function button	**[12]** Plug-in interface (Other side - not shown)	

PACKAGE CONTENTS

What's in the box?	
[1] Panther Thermal Riflescope	**[2]** Hard Storage Case
[3] Quick Release Weapon Mount	**[4]** Flip-up Objective cover
[5] Lens Cloth	**[6]** (2) 3v CR123 Batteries
[7] Operator Manual	

PRODUCT SPECIFICATIONS

Resolution (FPA Format)	336x256	640x480
Technology	VOx II Microbolometer
Optics	50mm f1.2 High-Grade Germanium
Magnification (Optical)	2x
Digital Zoom	1x (2x), 2x (4x), 4x (8x)
Refresh Rate	Smooth Real-time 60 Hz
Field of View (standard)	12°x9°
Spectral Response Sensitivity	7.5-13.5 µm
Pixel Pitch	17 µm
NETD (Thermal Sensitivity)	<50mk
Detect Human Activity	+/- 1500 m
Diopter Adjustment	-4 to +3
Eye Relief	50mm
Range of Focus	10m to ∞
Eyepiece Adjustment	Manual Focus
Additional Controls	Ambient Light Sensor; Shutter
Reticle	Mil-Dot & Crosshairs
Reticle Options	5 Colors	Windage & Elevation
Polarity Control	Black Hot / White Hot / Sepia
Color Palette	7 color options
Display	600 x 800 AMOLED
Video Output	NTSC (STD) PAL (On Request)
Power Requirement	(2) 3v CR123 Batteries
Continuous Operation	4+ Hours
Environmental	Water Resistant
Weight (with mount & batteries)	630g
Dimensions (mm)	260x78x92
Operating Temperature	-40°F to 140°F

OPERATION

BATTERY INSTALLATION
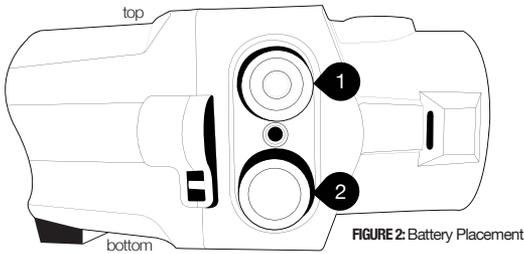
BATTERY PLACEMENT	Figure 2
[1] CR 123 Battery "+" facing up	
[2] CR 123 Battery "-" facing up	

FIGURE 2: Battery Placement

Loosen the battery cover thumb screw to reveal the battery compartment.

The side wall of each battery compartment is clearly labeled with an instructive diagram illustrating the direction for which each battery should be inserted.

After installing new batteries, replace the battery cover and tighten the thumb screw.

WARNING
- If new CR123 batteries are inserted and the unit does not power up, ensure that the batteries were properly installed.
- Lithium Batteries contain Sulfur dioxide gas under pressure - Do not puncture - Dispose of properly.
- If the unit becomes hot to the touch around the battery compartment, power down and allow to cool before removing faulty batteries.
- It is not recommended to use mismatched batteries.
- Do not use rechargeable and non-rechargeable batteries at the same time in this device.
- Remove batteries when not in use or when planning to store for long periods of time.

POWERING ON AND OFF

To power on, press and hold the power button (fig. 1-7) for 3 seconds.

The shutter will click 2 times followed by the Night Optics logo shown momentarily on the display before showing the thermal image.

To power down, press and hold the power button for 2 seconds.

A message will appear on screen ("POWER OFF Please, release POWER button") to confirm that the unit has been properly shut down.
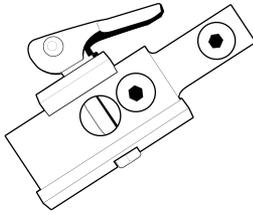
RAIL MOUNTING

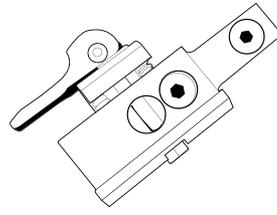**FIGURE 3:** Closed Mount   **FIGURE 4:** Open Mount

The Panther riflescope uses a simple single lever spring loaded picatinny rail mount (fig. 1-10).

To mount the rifle scope, pull the lever to the open position (fig. 4). The spring loaded clamp should be extended.

Test fit the mount on the rail and attempt to close the lever. If too tight or loose, remove and adjust accordingly. To adjust the clamp, open the lever, with manually squeeze the mount towards the closed position (fig. 5).
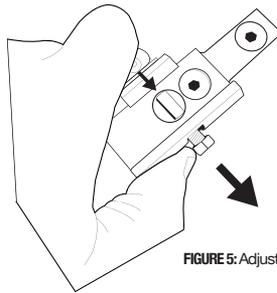

FIGURE 5: Adjustment

The lever post with retaining nut will extend out of the mount.

Turn the screw to the left or right to adjust and repeat the test fit procedure until mount lever can be completely closed but not loose.

Once the mount has been set up to fit the rail properly mount the riflescope for the most comfortable eye relief.

ATTENTION!
• Replacing the riflescope mounting hardware with an untested after-market component will void the warranty. Improper installation of after-market mounting hardware can lead to permanent damage and/or affect the units ability to hold zero. Contact Night Optics for assistance.
• If mounting on a "high-recoil" rifle, for safety purposes, allow at least .5" or more additional eye relief.

BUTTON LAYOUT
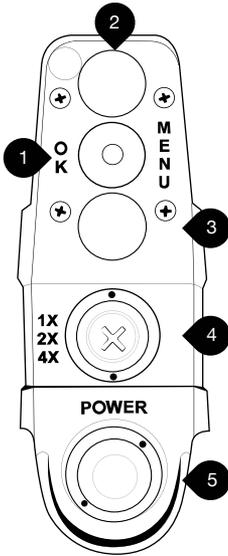
FIGURE 6: Buttons

SYSTEM CONTROLS	Figure 6
[1] Menu / OK (Accept Selection) / Polarity	
[2] Menu Navigation (Up) / Display Brightness (Increase)	
[3] Menu Navigation (Down) / Display Brightness (Decrease)	
[4] Digital Zoom / Back / Exit	
[5] Power On/Off / Manual Shutter	

Menu System / Select / **Polarity** (fig. 6.1): To enter the menu press and hold (fig 6-1) for 3 seconds. To navigate through the menu screen use (fig. 6-2 - UP) and (fig. 6-3 - Down). Make selections by momentarily pressing (fig. 6-1). To navigate to previous menu screens or to exit the menu momentarily press (fig. 6-4) until the menu screen disappears from the display. Adjust polarity by momentarily pressing (fig. 6-1).

Display Brightness / Navigation (fig. 6-2, 3): Increase display brightness by pressing (fig. 6-2) repeatedly. Decrease display brightness by pressing (fig. 6-3) repeatedly until the desired setting is reached. There are 30 levels of display brightness

Digital Zoom / Back / Exit (fig. 6.4): Adjust digital zoom by pressing (fig. 6-4) momentarily. This button also manages menu navigation functions and exit from the menu screen. *See "Menu System / Select" for information on this function.*

Power / Shutter (fig. 6-5): Press and hold (fig. 6-5) for 3 seconds to power on, press and hold for 2 seconds to power down. *See "Powering on/off" on page 5 for more detail on this procedure.* Manual shutter calibration can be done by pressing (fig. 6-5) momentarily. An audible click sound from the shutter will be heard.

FOCUSING (OPTICAL AND DIOPTER)

Optical Focus: To Adjust optical Focus, rotate the optical focus adjustment knob (fig. 1-11) located on the objective lens, from left to right until desired image clarity is achieved.

Diopter Focus: The Diopter (fig. 1-8) adjustment is used to focus the eyepiece to the display. When adjust properly, on-screen information, such as - Battery indicator and reticle, should appear sharp and clear. Adjust this setting by rotating the ribbed area of the rubber eye guard closest to the body of the scope until the on-screen image becomes clear.

COMPLETE MENU SYSTEM

Main Menu

SCOPE SETTINGS
RETICLE SETTINGS
COLOR SCHEME
SERVICE
INFO

Level 2 Menu

RETICLE SETTINGS
RETICLE TYPE
RETICLE COLOR
ELEVATION ADJUST.
WINDAGE ADJUST.

COLOR SCHEME
NO SCHEME
RED-GREEN
RED-BLUE
SPECTRUM 1
SPECTRUM 2
SPECTRUM 3
BLACK-YELLOW

SERVICE
SHUTTER
LANGUAGE
AUTO BRIGHTNESS

Level 3 Menu

RETICLE TYPE
NO RETICLE
CROSS HAIR
MIL-DOT

RETICLE SETTINGS
GREEN
RED
YELLOW
WHITE
BLACK

On Screen Display (Up/Down)
XX.XX cm / 100m

On Screen Display (Left/Right)
XX.XX cm / 100m

SHUTTER
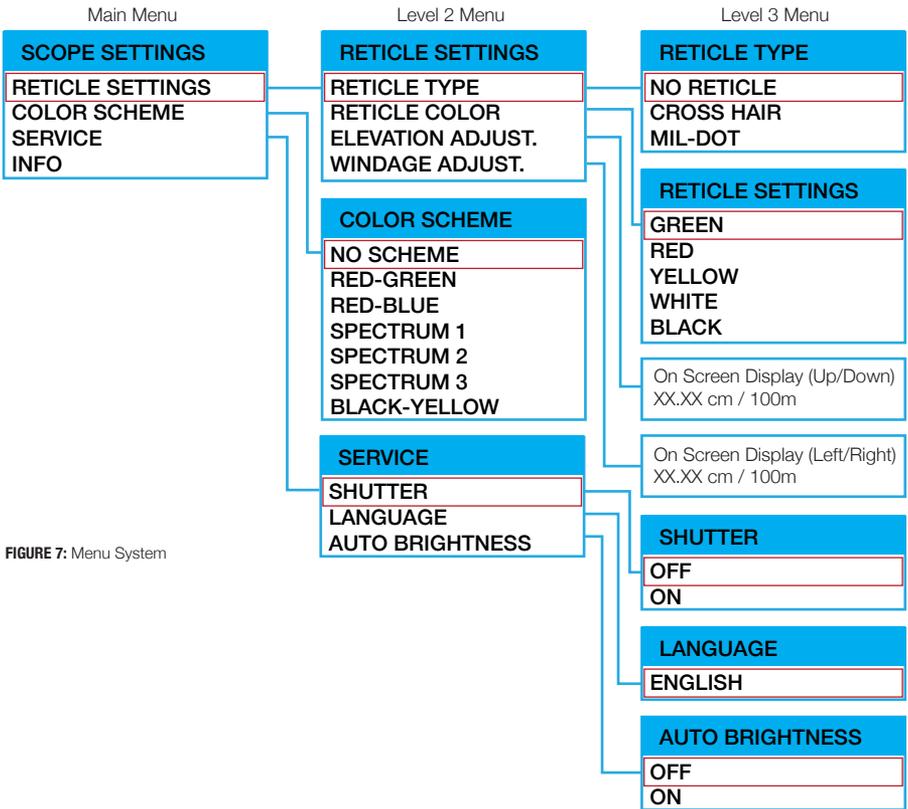OFF
ON

LANGUAGE
ENGLISH

AUTO BRIGHTNESS
OFF
ON

FIGURE 7: Menu System

DISPLAY, MENUS AND SYMBOLOGY
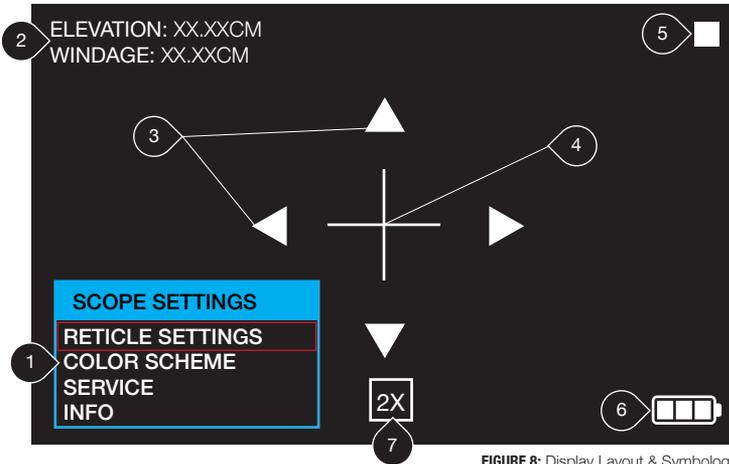
FIGURE 8: Display Layout & Symbology

DISPLAY LAYOUT AND SYMBOLOGY	Figure 6
[1] Menu	**[2]** Windage/Elevation Setting Display
[3] Windage/Elevation Adjustments	**[4]** Reticle
[5] Shutter Calibration (Auto)	**[6]** Battery Life
[7] Digital Zoom	

ZEROING THE RIFLESCOPE

Before zeroing, ensure that the riflescope is securely mounted to the weapon. In order to properly zero the thermal riflescope, the target should be heated or have a source of heat behind it so that it can be seen in the field of view. Third party tools like laser boresighters can be used to assist in this process.

If the reticle does not appear in the field of view, activate it by entering:
Menu > Reticle Settings > Reticle Type > On

Once weapon has been set up, proceed to the device menu, under "Reticle Settings" (fig. 7), scroll down to "Elevation and Windage adjust." Use the directional buttons (fig. 6-2, 3) to align the impact point of the riflescope with that of the weapon. When a setting changes have been made to elevation and windage, setting information will appear in the upper left corner of the display (fig. 8-2).

A setup chart is available in the back of this manual to record settings for future reference.

RETICLE SETTINGS

The "Reticle Settings" menu controls the reticle position parameters, color and type on the display of the riflescope. Press and hold the "Menu button (fig. 6-1)" to enter the menu system. "Reticle Settings" is the first option. Tapping the "Menu button" again will advance into the sub-menu where addition options are available.

RETICLE TYPE

To adjust the reticle type or turn off the reticle, enter the "Reticle Settings" menu, advance into the Reticle Type menu screen, and use the directional buttons (fig. 6-2, 3) to select: **NO RETICLE, CROSS HAIR or MIL-DOT** and press (fig. 6-1) to select the desired option. Reticles can be programmed into the system, however the reticles supplied by default are the most commonly used. If a custom reticle is desired, contact a Night Optics customer service associate for assistance.
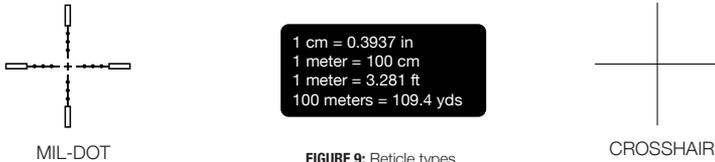

MIL-DOT

```
1 cm = 0.3937 in
1 meter = 100 cm
1 meter = 3.281 ft
100 meters = 109.4 yds
```

FIGURE 9: Reticle types

CROSSHAIR

RETICLE COLOR

To adjust the reticle type or turn off the reticle, enter the "Reticle Settings" menu, advance into the Reticle Color menu screen, and use the directional buttons (fig. 6-2, 3) to select: **GREEN, RED, YELLOW, WHITE and BLACK** and press (fig. 6-1) to select the desired option.

WINDAGE AND ELEVATION

See "Zeroing the Riflescope" on page 9 to learn more about this feature.

COLOR SCHEME

To adjust the color palette type or turn off all color settings, enter the "Color Scheme" menu, advance into the Color Scheme options screen, and use the directional buttons (fig. 6-2, 3) to select: **NO SCHEME, RED-GREEN, RED-BLUE, SPECTRUM 1, SPECTRUM 2, SPECTRUM 3 or BLACK-YELLOW** and press (fig. 6-1) to select the desired option.

The "Color Scheme setting works with the polarity options White Hot, Black Hot and a 3rd Option.

See "Menu System / Select / Polarity" on page 7 to learn more about the polarity feature.

SERVICE

The "Service" menu controls the Automatic Shutter control, Language and Ambient Light Sensor or the Automatic Brightness Control. Press and hold the "Menu button (fig. 6-1)" to enter the menu system. "Service" is the third option. Tapping the "Menu button" again will advance into the sub-menu where the additional options are available.

SHUTTER

To adjust the Automatic Shutter On or Off, enter the "Service" menu, advance into the Shutter menu screen, and use the directional buttons (fig. 6-2, 3) to select: **OFF or ON** and press (fig. 6-1) to select the desired option.

LANGUAGE

Currently the only option is English.

AUTO BRIGHTNESS

To adjust the Automatic Brightness Control On or Off, enter the "Service" menu, advance into the Automatic Brightness menu screen, and use the directional buttons (fig. 6-2, 3) to select: **OFF or ON** and press (fig. 6-1) to select the desired option.

STORAGE AND MAINTENANCE

Store and carry the riflescope in the closed bag (if mounted) or in its hard case with the protective objective lens cover on.

Avoid impacts, dust, moisture and sharp changes in temperature.

Store the unit in a dry location without batteries and away from sources of heat.

Do not store the riflescope in extreme temperatures (Hot or Cold) for long periods of time.

Remove the batteries from the riflescope during extended periods of non-operation to avoid leakage.

The riflescope does not require and special maintenance service.

Clean optical surfaces with a clean lens cloth (Included).

Wipe the device housing, rub eye guard and mount with a lightly dampened clean lint-free cloth.

SYMPTOMS	PROBABLE CAUSE	CORRECTIVE ACTION
No visible Image	**a.** Device is not powered on. **b.** Objective lens cap not been removed. **c.** Battery cover is loose. **d.** Incorrect battery polarity **e.** Weak battery	**a.** Power on the device **b.** Remove cap **c.** Tighten cover **d.** Reinsert battery **e.** Replace battery
Image not clear	**a.** Focus is not adjusted. **b.** Too close to object **c.** The diopter is out of focus	**a.** Adjust focus **b.** Increase viewing distance. **b.** Increase viewing distance.
Image brighter/dimmer than usual.	**a.** Display brightness requires adjustment **b.** Ambient light sensor is auto-adjusting the image	**a.** Adjust brightness to desired setting **b.** Turn off the ambient light sensor
Device is warm/hot to the touch	**a.** An issue with the batteries.	**a.** Replace batteries **b.** If condition continues contact manufacturer for assistance

Contact a Night Optics representative if a problem is encountered that cannot be resolved using the steps listed above.

WARRANTY

The Panther Thermal Riflescope is covered by a limited 3 year warranty from time of sale. The warranty is valid only for the original purchaser. The manufacturer warrants its products to be free from defects in material and workmanship during the warranty period. If the product proves to be defective during this period, the manufacturer will repair the original product or replace it with a like product at the sole discretion of the manufacturer.

This limited warranty does not cover:

1. Any product on which the serial number has been defaced, modified, or removed.
2. Any product that has experienced deterioration or a malfunction from: accidents, misuse, neglect, fire, water, lighting or other acts of nature, unauthorized product modification or failure to follow instructions supplied with the product, repair or attempted repair by anyone not authorized to do so, use of supplies or parts not meeting manufacturer's specifications, normal wear and tear, and/or extreme wear and tear caused by battlefield conditions or other extreme environments.

No other warranties, expressed or implied, are valid without an agreement in writing provided by the manufacturer. All shipping involved in warranty work / replacement is the sole responsibility of the purchaser.

LIMITATIONS OF LIABILITY

Night Optics USA, Inc. will not be liable for any claims, actions, suits, proceedings, costs, expenses, damages or liabilities arising out of the use of this product. Operation and use of this product are the sole responsibility of the Customer. Night Optics USA, Inc.'s sole responsibility is limited to providing the products and service outlined herein in accordance with the terms and conditions of this Agreement. The provision of products sold and services performed by Night Optics USA, Inc. to the Customer shall not be interpreted, construed, or regarded, either expressly or implied, as being for the benefit or creating any obligation toward any third party of legal entity outside Night Optics USA, Inc. and Customer; Night Optics USA, Inc.'s obligations under this Agreement extend solely to the Customer.

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ZERO SETTINGS RECORD

Weapon Type	Ammo Type	Distance from Target	Ambient Temp	Current Position of the Center Impact Point
				V
				H
				V
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