



LN-TRS35-LRF

LN-TRS55-LRF

THERMAL IMAGING
RIFLESCOPE WITH BUILT-IN
LASER RANGEFINDER

INSTRUCTION MANUAL

IMPORTANT: Please read this manual in its entirety prior to using this device!

WARNING: NEVER POINT THIS DEVICE DIRECTLY AT THE SUN OR ANY HEAT SOURCE WITH TEMPERATURE OF OVER 500C/930F!

Thank you for purchasing a quality LUNA OPTICS® product. With proper care and maintenance your device will provide many hours of operation and outstanding reliability. Please read this manual – it is your key to enjoying this exciting and hi-tech product!

THERMAL IMAGING

Without getting too technical and confusing, let's try to understand how this device works and what it can and cannot do:

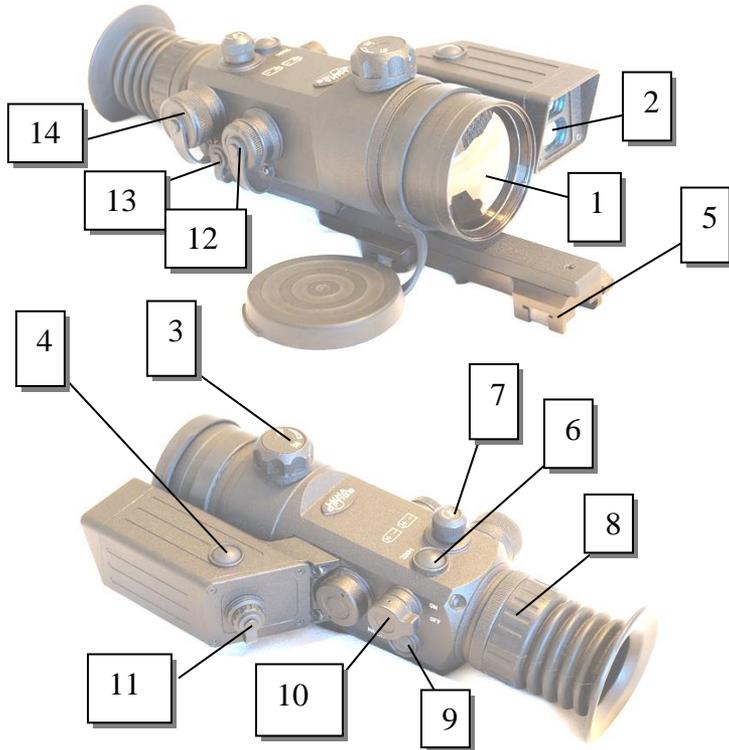
1. Your thermal device works on the principle of detecting infrared radiation, also known as energy. Instead of operating in a visible light spectrum of 400-700nm (such as regular binoculars or cameras), thermal imagers detect waves as high as 17,000nm or 17µm, which are beyond our capability to observe with naked eye. The infrared signal is received by the thermal device and is then converted into an electrical signal by the thermal sensor (called microbolometer), located inside the unit and that electrical signal is then displayed on the micro display located near the ocular (eyepiece).
2. Your device operates with batteries. Unlike a daylight scope, where you see the image due to light traveling through the glass and the prisms, the thermal imaging device works by projecting the image onto a screen. While the thermal sensor is the crucial component of any thermal device, the optical parts of the unit are also very important, as they gather the light into the sensor and bring the projected image to your eyes. Since the image is projected on the screen, it has certain limited resolution...so please ----->>> do not expect your night vision device to provide the same crystal clear image, as you see through your daylight binoculars – after all, you are using this device in the dark environment, where normally your vision would be very limited...

OPERATION:

Now that we've covered some of the basics of the technology behind the thermal imaging, let's learn how to operate your new device:

Please look below to identify all the parts of the unit.

LN-TRS35-LRF (shown) & LN-TRS55-LRF (same but with larger 75mm front lens)



Glossary:

1 – Germanium Objective Lens

2 – Laser Rangefinder Lens

3 – Distance Focusing Knob

4 – Rangefinder Button

5 – Weapon Mount (shown attached)

6 – Zoom Button

7 – Image Gain / Display Brightness Control

8 – Ocular Lens Focusing Ring

9 – Invert Button

10 – Power Switch

11 – Rangefinder Remote Switch Connection

12 – Battery Compartment

13 – External Power Supply Connection

14 – Windage & Elevation Adjustments

INSTALLING THE BATTERIES:

Your night vision unit operates on commonly available 3V Lithium batteries, CR123-type. You need 2 batteries to operate the device.

To install the batteries, unscrew the battery compartment cover and install the batteries inserting the positive (+) end first. Once the batteries are inside, replace the cover.

TURNING THE UNIT ON AND OFF:

Your night vision unit has a power switch (10), which allows you to easily switch between OFF & ON modes. To turn the unit ON, first remove the objective lens cover and rotate the switch by one dial counterclockwise to ON position. Look through the ocular – the unit will become operational within approximately 4-5 seconds. To turn the unit OFF rotate the same switch backwards (clockwise) one dial to OFF position. It is always recommended to turn the unit to OFF position if you are not planning to operate the unit for more than a few minutes in order to conserve battery power. Always replace the objective lens cover after the unit is turned off and is no longer in use.

FOCUSING THE UNIT:

To obtain the sharp image, you must first rotate Ocular Focusing Ring (8) in either direction, until you notice in which position the image is at its best. Since you are looking at a display, it will be easier to adjust the ocular by simply focusing your attention on the displayed letters and numbers. After that, rotate the Distance Focusing Knob (3) also until the image is at its best. You may have to repeat the process again, until the image is sharp and clear. Once the clear image is obtained, you no longer need to adjust the Ocular, just rotate the Distance Focusing Knob to adjust the distance to the object you are viewing.

MOUNTING THE SCOPE:

To mount the unit onto a weapon, you must have either a Picatinny Rail, or a Weaver Rail present on your gun. Attach the included mount with the two screws onto the baseplate of the scope. Use Loctite blue to secure the screws. Align the front and rear mounting plates of the scope mount with the rails, so that scope mounting indents are inside the rails and slightly tighten the screws. Make sure your eye can comfortably see inside the rubber eyecup, as the eye-relief in this scope is augmented by the long suction cup, which shields your eye from any damage from the recoil, therefore the eye must be positioned exactly at the end of the suction cup and not at a distance, as you would normally do in daylight scopes. Once the ideal position is obtained, we recommend using Loctite blue to secure the scope in place.

IMAGE GAIN / DISPLAY BRIGHTNESS CONTROL:

Your thermal riflescope comes with Manual Gain Control allowing you to adjust the image to the best possible resolution even when atmospheric conditions change rapidly, especially during high humidity and/or rapid temperature changes.

- To adjust the Image Gain, rotate the GAIN switch (7) either clockwise or counterclockwise while viewing the image – you will see word **GAIN** and either positive or negative number appear in the image display. There are 10 negative and 10 positive image gain levels and a Zero level. Lowering the Image Gain will allow for better facial and shape recognition. Increasing the Image Gain will allow for better recognition of surroundings, such as houses/buildings, trees and bushes and so on, allowing you to better see the surroundings and to better orient in the terrain.
- To adjust the Display Brightness level press the GAIN switch momentarily and letters **BRGT** will appear in the display – you can now rotate the same switch and Display Brightness will change. There are multiple levels of display brightness. Please note that switch will return to the default GAIN mode if no action is taken within 2 seconds after momentarily pressing the switch.

IMAGE ZOOM FUNCTION

The standard (optical) magnification of your thermal riflescope is 3.5x (5.5x on model LN-TRS55-LRF) (you will see the objects 3.5x closer than if looking with the naked eye). It is possible to increase the magnification by applying a digital zoom function. There are two zoom levels (2x and 4x) meaning your combined magnification will be either 7x or 14x. (11x and 22x on the larger model) To utilize zoom function press the Zoom Button (6) once to achieve 2x zoom (7x (11x) magnification) or twice to achieve 4x zoom (14x (22x) magnification). To return to standard optical image press the Zoom Button once more. Please note the image display will show either 1x, 2x or 4x, depending on how many times you press the Zoom Button.

IMAGE INVERSION / COLOR PALETTES

It is possible to change the way the heat signatures are displayed – the default image is “WHITE HOT” meaning the heat signatures will appear in white color with most of the background appearing in black or dark color. You may switch (invert) this setting by pressing the Invert Button (9) once and then heat signatures will appear in dark color on otherwise light color background. Generally, it may be better to have White Hot setting during daylight observation, especially outdoors, while having Black Hot setting may be preferable during nighttime outdoors. In addition, the unit also has options of 9 color palettes with each invert mode,

which highlight heat signatures in various colors. To change between the color palettes, press the Invert Button for approximately 3-5 seconds until word "Palette" and its number is displayed on the bottom of the image display. Then short-press Invert Button (9) to switch between various colors. Generally, it may be better to have White Hot setting during daylight observation, especially outdoors, while having Black Hot setting may be preferable during nighttime outdoors. You may also try each color setting to see which one renders images best during various atmospheric conditions and humidity levels. Once finished, press Invert Button for 3-5 seconds until word "Palette" disappears from the image display. Your color and invert setting is automatically saved and will appear next time you turn on the device.

USING LASER RANGEFINDER:

Your thermal riflescope comes with fully integrated Laser Rangefinder allowing you to accurately measure the distance to the viewing object up to approximately 700m (760yds) To measure the distance you must first activate the feature by pressing once the Rangefinder Button (4). You will see the shutter box appear in the display. At this point you can aim at the viewing object and press the Rangefinder Button once more while aiming – the distance will appear after a brief pause and it will look like this "25m", which is displayed in Meters (1m=1.09yds), so 25m is approximately 27yds. Should you see "ERR" message it may be because you are aiming at an object that is beyond 700m or too close (closest measured range is approximately 5m). The rangefinder function will be disabled after several seconds of no activity.

IMPORTANT: just like any laser rangefinder, the ability to accurately read distance will depend on the reflective characteristics of the object, as well as its size and ability to view it unobstructed. We suggest to measure distance 3 times for the same object to determine the most precise reading.

EXTERNAL POWER SUPPLY

It is possible to connect an optional external power supply to the riflescope through the special connection (13) in order to operate it for a longer periods of time, or during extreme cold temperature of minus 10 degrees C (14F) and lower. Please inquire about the external power supply availability from your local dealer or write to us at info@lunaoptics.com

CHOICE OF AIMING MARK (RETICLE) AND ITS COLOR:

Your thermal riflescope gives you a choice of 5 different aiming marks (reticles) to better aim during various conditions, distances and target sizes. To choose between the reticle press onto the

GAIN switch for approximately 5 seconds and word RETICLE will appear on the image display. Now rotate the GAIN switch in either direction to pick the reticle you want. At the same time, you can press momentarily onto GAIN switch to select a variety of reticle colors or switch the reticle off completely. Once reticle type and color is chosen, press onto the GAIN switch again for approximately 5 seconds until word RETICLE disappears. You can now use the GAIN switch to adjust the image contrast, as usual. Your setting of reticle and its color is automatically saved and will appear next time you turn on the scope.

WINDAGE AND ELEVATION ADJUSTMENTS:

Your thermal riflescope allows for the aiming mark correction in either horizontal (windage) or vertical (elevation) direction. To make the adjustments, first remove the protective cap from the adjustment turret (14) and press onto the knob for approximately 5 seconds until you see current reticle position appear on the display. To switch between horizontal and vertical adjustments press onto the knob (14) momentarily and check which position is displayed on the Image Display: if it says LEFT or RIGHT, then you are in the horizontal adjustment mode, if it says UP or DOWN, you are in the vertical mode. One rotation click equals approximately 1/3" movement at 100yds in either direction. To exit press the turret (14) for 5 seconds again. Once the adjustments are made you can write them down and if you ever need to remove the scope from your weapon and then replace it again onto the same weapon, you can just dial the same settings and be either on target or very close to it, which will save ammo when re-zeroing the weapon.

TROUBLESHOOTING:

1. **Unit does not turn on:**
 - a) please check if the batteries are inserted correctly and if they are fresh
2. **Unable to obtain sharp and clear image:**
 - a) you may need to repeat the process of rotating the ocular and distance knob several times until you get a good feel of it
 - b) You may be viewing an object that it too close – the minimum focusing distance is approximately 3m or 9 feet
3. **Unable to see heat signatures behind visible barriers, such as glass:**

PLEASE NOTE: THERMAL DEVICES ARE UNABLE TO SEE HEAT SIGNATURES IF THE OBJECT IS BEHIND ANY BARRIER THAT HAS REFLECTIVE NATURE, SUCH AS GLASS, THEREFORE YOU WILL NOT BE ABLE TO SPOT PEOPLE INSIDE A VEHICLE UNLESS THE WINDOWS ARE LOWERED DOWN, OR A PERSON STANDING BEHIND THE WINDOW IN A HOUSE OR IN SIMILAR SITUATIONS. LIKEWISE YOU WILL NOT BE ABLE

TO SEE ANY HEAT SIGNATURES WHILE OBSERVING FROM BEHIND A WINDOW – YOU MUST HAVE UNOBSTRUCTED VIEW.

NEVER:

1. Point this device directly at the sun or any heat source over 500 degrees Celsius (930 degrees Fahrenheit)
2. Try to disassemble the unit by yourself or by anyone who is not our authorized technician. Doing so may result in injury and will void any warranty claims
3. Leave the batteries inside the unit for a long period of time during extremely hot temperatures – the batteries may overheat, which may render the unit inoperable and will void the warranty
4. Submerge the unit into water or use during heavy rain.

TECHNICAL SPECIFICATIONS:

Imaging Sensor	ULIS Pico384 384x288 17µm
Frame Rate	50 Hz (Shutter-free)
Image Display	800x600 OLED
Optical Magnification	3.5x (5.5x)
Digital Zoom	2x & 4x
Focusing Distance	3m - ∞
Objective Lens Aperture	50mm (75mm)
Field Of View	6.2° x 4.6°
Diopter Adjustment	+/- 4
Detection range (1.8m object)	1200 - 1700m
Power Supply	2 x CR123 Lithium
Working time	2.5-3hrs
Temperature Range	-10C / +50C (14F – 122F)
Dimensions	240mm x 90mm x 81mm
Weight	850g (1,500g)

WARRANTY:

Your device is covered by a warranty of One Year (1yr) from manufacturing defects only. Warranty includes parts and labor. To obtain warranty repair contact us at info@lunaoptics.com

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