



# LN-EM1-MS

*ELITE NIGHT VISION MONOCULAR*

## INSTRUCTION MANUAL

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

## INTRODUCTION

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!

## NIGHT VISION

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

**1.** Your night vision device works on the principle of amplifying (intensifying) available light. The process is called light amplification. A special tube inside the device does the job – all you have to do is to power the device on and the tube starts amplifying whatever the light is available at the moment – therefore it is important to understand that this device is not suitable for daylight operation, since there is already enough light available during daytime to see without any additional help.

**Therefore, the first and most important rule of any night vision device is – never use it during daylight, or in any bright light condition, which allows you to see well with your naked eye!**

**2.** Your night vision device operates with batteries. Unlike a daylight binocular, where you see the image due to light traveling through the glass and the prisms, the night vision device works by projecting the amplified image onto a screen. While the tube is the crucial component of any night vision device, the optical parts of the unit are also very important, as they gather the light into the tube and bring the projected image to your eye. Since the image is projected on the screen, just like any TV, 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... All night vision devices have green monochrome image – why green? Because human eye can distinct most details of the viewing image when presented in green color...other colors do not show you everything...

**3.** Since your night vision device amplifies available light thousands of times – please be sure not to turn the unit on

during daylight or in a well-lit room – the image will be way too bright for your comfortable viewing and it also may permanently burn the tube inside the unit and will surely void your warranty. Please note that for the safety of this device it has a lens cover with a little pinhole – to test the unit during daytime when you bring your newly bought unit home, or in the shop before you buy it. Please keep this lens cover on during daytime – even if the unit is turned off. In addition to the lens cover, as a protection, this unit is equipped with automatic gain control, which protects the tube from being exposed to bright light. It is an effective way to escape most dangerous situations; however we urge you to still care for this unit as if this protection is not present and please avoid any prolonged exposure to bright light.

### **OPERATION:**

Now that we've covered some of the basics of the technology behind the night vision, let's learn how to operate your new device: Please look at the image below and the glossary to identify all the parts of the unit.

### ***LN-EM1-MS ELITE NIGHT VISION MONOCULAR***



## **Glossary:**

- 1 – Objective Lens**
- 2 – Infrared Illuminator**
- 3 – Power/IR Switch**
- 4 – Battery compartment cover**
- 5 – Ocular Focusing Ring**
- 6 – Rubber Eyecup**
- 7 – Head-Mask Mounting Bracket**
- 8 – Body**
- 9 – Protective Lens Cover**

### **INSTALLING THE BATTERIES:**

Your night vision unit operates on 1 AA type battery, commonly available in electronic stores, as well as in your local drug stores and supermarkets.

To install the battery, unscrew the battery compartment cover (4) and install the battery according to the diagram shown on the body of the monocular inserting the positive (+) end first. Once the battery is inside, replace the cover.

### **TURNING THE UNIT ON AND OFF:**

Your night vision unit has a convenient Power/IR Switch (3). To turn the unit ON, first remove the objective lens cover (9) (ONLY IN THE DARK!) and turn the Switch (3) one dial to ON position. Look through the Eyecup (6) – you should see green glow. Even if the image is not yet sharp, the unit is operating. To turn the unit OFF, turn the Switch (3) back one dial. The green glow will disappear if you turn the unit off correctly. Always replace the objective lens cover after the unit is turned off and no longer is in use.

### **FOCUSING THE UNIT:**

To obtain the sharp image, you must first rotate the Ocular Focusing Ring (5) in either direction, until you notice in which

position the image is at its best. After that, rotate the Objective Lens (1) 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 Ring, just rotate the front objective lens ring to adjust according to the distance of the object you are viewing.

### **USING INFRARED ILLUMINATOR:**

Your night vision monocular is equipped with a built-in 2-stage Infrared illuminator light (2). This light operates in a spectrum, which is invisible to a human eye, however with the help of the tube, located inside the unit, you will see a beam of light when looking through the ocular lens. This Infrared light is here to assist your viewing over the very short distances in especially dark conditions, where there is not enough light for the tube to amplify.

To turn the Infrared illuminator on, first turn on the unit by rotating the Switch (3) one dial to ON position and then you must slide forward the top moving plate of the switch and at the same time rotate the switch (3) one more dial to IR position. Please note that if you do not slide the top moving plate of the switch, you will not be able to switch on the IR illuminator. This feature preserves the battery life by preventing accidentally turning on the IR light. When looking through the Eyecup (6), you will notice a little red indicator turning on – this is to remind you that the infrared light is on. You may further rotate the Switch (3) to IR+ position to increase the brightness of the IR illuminator (IMPORTANT: to switch between IR and IR+ positions you are not required to slide the top moving plate of the Switch).

To turn the infrared light off, press the same button again and make sure the red light indicator in the field of view is off.

When using the built-in infrared illuminator it is important to remember that it is only meant to be used on very short distances. As the distance increases, the intensity of the infrared light fades away.

### **AUTOMATIC GAIN CONTROL:**

Please note that the unit is equipped with the special Auto-Gain control, which would not allow you to turn on the unit without

the lens cover in a well-lit area, as well as will protect your unit in case of an accidental, or sudden exposure to a bright light. Please note that even though this is an effective protection source, we at Luna Optics still strongly recommend avoiding any such exposures to bright light, especially prolonged ones in order to preserve the full life of the tube.

## **ACCESSORIZING YOUR NV MONOCULAR:**

Your night vision monocular can be used on a head-mask, providing hands-free operation. It is supplied with the Head Mask Mounting Bracket (7) which allows you to comfortably mount the monocular to the head-mounting system. This bracket comes attached to both sides of the body of the monocular. To purchase the head-mask, please e-mail us at [info@lunaoptics.com](mailto:info@lunaoptics.com) and ask for model LN-HMS head-mask and please indicate your monocular's model number: LN-EM1-MS

It is also possible to attach an external IR illuminator, which provides an extended range IR beam. To order such illuminator please mention model LN-EIR2 (LED IR illuminator) or LN-ELIR2 (laser IR illuminator).

Last but not the least, it is possible to replace the 1x lens with higher magnification lens (100mm (4x) or 165mm (7x)). Please ask for either model LN-L100 or LN-L165.

## **TROUBLESHOOTING:**

1. Unit does not turn on:
  - a) please check if the battery is inserted according to the diagram
  - b) please make sure the battery is fresh
2. I checked the battery, but I still cannot see the image:
  - a) you may be turning the unit on in a well-lit area and the auto-gain control is activated
  - b) you may be turning the unit on in a dark area with the lens cover still on the unit
  - c) You may need to turn on the infrared light
3. Unable to obtain sharp and clear image:
  - a) you may need to repeat the process of rotating the ocular and objective lens 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 25cm or 10 inches
  - c) You may have dirty objective or ocular lens – you may clean them with soft lens cleaning cloth
4. There are black dots (specs) in the field of view:

**THIS IS NORMAL – BLACK DOTS ARE MICROSCOPIC PARTICLES INSIDE THE TUBE AND RESULT FROM THE TUBE MANUFACTURING PROCESS, WHICH IS NEVER COMPLETELY SPEC-FREE**

**NEVER:**

1. Turn on the unit without protective lens cover (9) during daylight or in a well-lit area
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 battery inside the unit for a long period of time – the battery may overheat and leak, which will render the unit inoperable and will void the warranty
4. Submerge the unit into water – the unit does have a certain weather-resistant protection, but is not submersible on any depths for any period of time

**TECHNICAL SPECIFICATIONS:**

Tube Generation \_\_\_\_\_ 2+

Tube Sensitivity \_\_\_\_\_ 310- 340 $\mu$ A/lm

Image Resolution \_\_\_\_\_ 38-40lp/mm

Image Magnification \_\_\_\_\_ 1x

Focusing Distance \_\_\_\_\_ 25cm (9.8") -  $\infty$

Viewing Distance \_\_\_\_\_ 150m (492ft)

Objective Lens \_\_\_\_\_ f 1.1/27mm

Field Of View \_\_\_\_\_ 40°

Dimensions \_\_\_\_\_ 129mm x 68mm x 55mm  
(5.1" x 2.7" x 2.2")

Weight \_\_\_\_\_ 340g (12 oz)

Power Supply \_\_\_\_\_ 1 x AA type Battery

Operating Time \_\_\_\_\_ 25hrs (without IR)

Operating Temperature \_\_\_\_\_ -20C/+50C (-4F/+122F)

**WARRANTY INFORMATION:**

Your night vision monocular is guaranteed to be free of manufacturing defects for a period of one (1) year from the date of purchase. Please refer to the enclosed warranty card for complete warranty details.