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## Operation Manual

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### NIGHT VISION SYSTEM **NIGHT WITNESS**

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105 Sparks Ave., Toronto, ON, M2H 2S5, Canada



# IMPORTANT INFORMATION

Read prior to activation.

You have purchased a sophisticated electronic device. To operate it properly, please read this manual carefully.

**Ignoring the operation procedures described in this manual will void your warranty.**

- **NEVER** disassemble the unit. This device contains a source of high voltage, which may be hazardous to your health.
- **NEVER** open the objective lens of an active unit in bright light, including daylight. In the daytime the objective lens must be covered by cap. A tiny hole in the cap provides enough light for daytime testing.
- **NEVER** aim an active unit at intense light sources, such as lights, headlamps, campfires, the Moon, etc.
- **NEVER** reverse the polarity of a battery.
- **ALWAYS** remove battery when not in use for a long period.
- **ALWAYS** keep the objective lenses covered when not in use.
- **ALWAYS** store the device in a warm dry place.

## **PRECAUTIONS**

Night Witness is a sophisticated precise optical instrument equipped with electronics.

Therefore, it should be handled with due care.

- Avoid strong heat, direct sunlight, impacts, dust, moisture and sudden changes of temperatures. Keep it in mind that, although being very durable, Night Witness contains fragile components.
- Do not touch the optical surfaces with fingers. Doing so may damage the antireflection coating.
- Cleaning of optical surfaces should only be performed with professional camera lens cleaning supplies.
- Use only a soft clean cloth to clean the exterior of the device.
- Make sure to switch off the unit and remove the battery during periods of non-operation and when storing the device for long period of time.
- Do not apply unnecessary pressure to the lens assembly, agile elements & thread connections.

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# 1. OVERVIEW

Compact lightweight night vision system Night Witness is intended for low light observation & photo/video surveillance. This miniature monocular device is equipped with high gain, high resolution Image Intensifier of 2+ Generation..

Night Witness is the most versatile observation & orientation electro-optical system for law-enforcement and rescue team. Durable waterproof corrosion-proof body made from light aluminum and titanium alloys guarantees long trouble-free operation. Replaceable desiccant cartridge improves its reliability substantially.

Night Witness is distinguished by its handy modular design along with an intelligent control system. It can be equipped with wide variety of accessories including interchangeable lenses, adapters for coupling CCTV, 35 mm, digital photo and video cameras.

Night Witness is provided with a unique high-light cut off circuit to protect image intensifier tube.

‘Intellectual’ TTL sensor measures a luminance level directly on the photocathode surface. If it exceeds the overload capacity for an Image Intensifier used in the device– blue LED in a field of view warns an operator that after 5 – 7 seconds power supply of the device will be switched off. When the brightness goes down below that level – the Image Intensifier power supply recovers automatically. So the operator has plenty of time to protect the device from bright light sources and at the same time not to lose the sight of an object to be controlled.

## 2. DELIVERY SET

### 2.1 Standard delivery set

	QUANTITY
Night Witness	1
100mm / F1.7 standard lens	1
Interchangeable 25mm / F1.4 lens	1
Adapter for photo-video & CCTV Cameras with 5 step-up rings	1
Wrist strap	1
Desiccant cartridge	2
Spanner for the cartridge	1
AA Batteries	2
Cleaning tissue	1
Users manual	1
Soft case	1

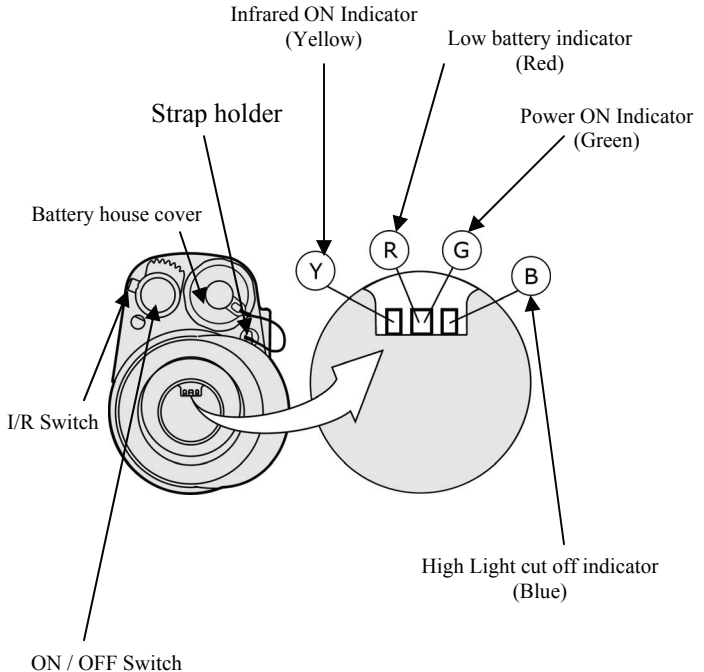
### 2.2 Optional accessories

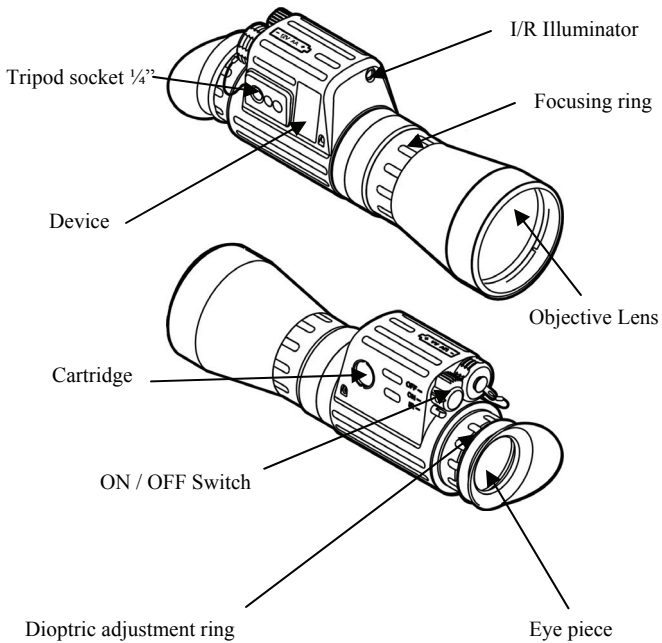
Interchangeable tele-lens      External power adapter  
External IR illuminator      Car adapter

### 3. SPECIFICATIONS

Magnification	1x	5x
Image Intensifier Tube (IIT)	18 mm Gen. 2+	
Resolution, min	57 lp/mm	57 lp/mm
Focal length / F Number	25 mm / F1.4	100 mm / F1.7
Field of view	40°	10.5°
Focus range	3 m - infinity	
Focal length	20 mm	
Eye relief	16 mm	
Exit pupil	7 mm	
Dioptric adjustment range	-4 ... +4	
Operation temperature	-40°C ... +55°C	
Storage temperature	-40°C ... +65°C	
Relative humidity	Up to 98%	
Lens mount	C-mount, 1" – 32 TPI	
Battery type	1xAA or external power supply 3.5-15 V, 50 mA	
Battery life	10 hours (5 hours with infrared illuminator)	
Tripod socket	standard 1/4", 20 TPI	
Dimensions	104x70x45 mm	220x70x60 mm
Weight	390 g	540 g

## 4. UNIT DESIGN





## 5. OPERATION INSTRUCTIONS

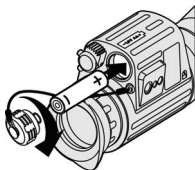
### 5.1 Precautions

Never disassemble the unit by yourself.

There are no wires or modules that require user cleaning or adjustment.

### 5.2 Operational procedures

- Twist off the battery house cap.
- Insert one battery type «AA» 1.5V make sure that polarity is correct.
- Screw the battery cap back on.
- Take the unit into your hand. Put on the wrist wrap.
- Take the protective cover off the objective lens.

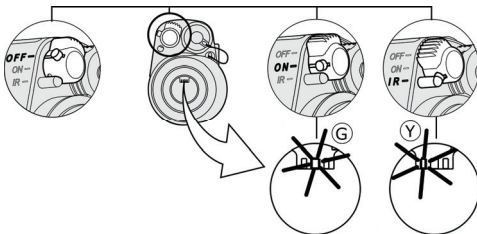


### **NEVER OPERATE YOUR NIGHT VISION DEVICE IN DAYLIGHT WITHOUT THE LENS COVER ON**

- Turn ON the unit, by moving the position of the switch to **(ON)**.
- The Green Indicator light will come on and will be visible at the top portion of the ocular
- Adjust the ocular to your eye sight by rotating the dioptic adjustment ring.
- Aim the unit towards the object of your surveillance.

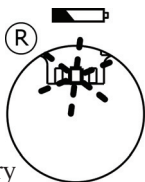
## NEVER DIRECT THE LENS IN THE DIRECTION OF BRIGHT LIGHT

- For maximum performance focus in on your object by rotating the focusing ring on the objective lens.
- For IR operation: depress fixated button IR illuminator , keeping the button depressed move it in to
- IR “ON” position. At this stage the Yellow light indicator light will come on the top portion of the ocular.
- After the operation make sure that the unit is turned OFF, by moving the switch to OFF position on the unit.
- Close the objective cover.



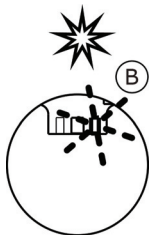
### 5.3 Low Battery Indicator

Low battery indicator is RED and is located in ocular field of view, the indicator will start to blink if voltage of the power supply is between 0.9 - 1.0V, in this case the Green unit ON indicator is off. If the voltage is very low (less than 0.9V), all indicators of NVD (Night Vision Device) will automatically turn off. Turn OFF the unit and replace the battery.



### 5.4 Indicator High-Light cut off

High-light indicator is blue color and is located in the ocular field of view; this indicator light will blink if the unit is exposed to bright light source that can damage the unit. If the unit is exposed continuously for more than 5 - 7s, the unit will turn OFF and the indicator light will glow continuously. At low light levels below normal parameters High-Light indicator will turn off, and the unit is operational again automatically. Should you require to operate the unit in high light situations cover the objective lens with protective cap.



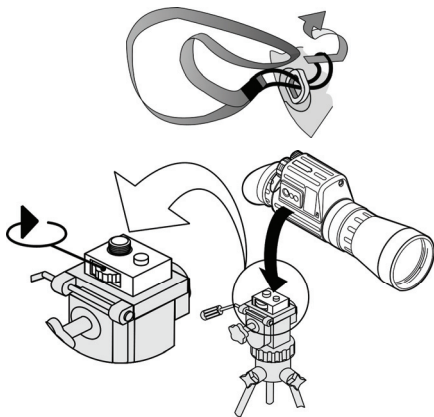
## 5.5 Use of accessories

### Wrist strap

- Insert the end of the wrist strap in the hole located on the back of the unit.
- Tighten the wrist strap by passing it through hinge, as it is shown on the picture in the right.

### Mounting the unit on a tripod

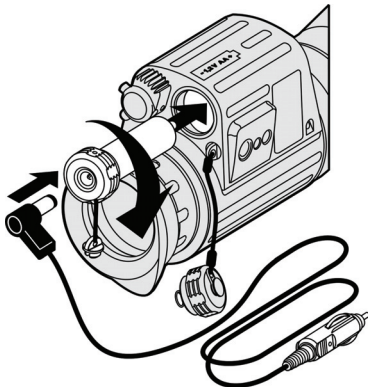
- Align tripod screw with tripod thread 1/4" located on the right hand side of the body of the unit.
- Tighten the tripod screw.
- Place the tripod on a stable ground and fully extend the legs of a tripod.



## Using the unit with external power supply of car adapter

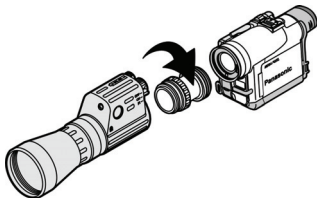
- Remove battery house cover.
- Remove the battery «AA» and insert a external power adapter (optional). Lock the cap of an adapter into place.
- Connect the power source to slot of external power supply cable (or car adapter) with a standard low voltage plug type 5,5/ 2,1.
- Connect second end of the cable to external power source, make sure that polarities are correct or connect the cable to cigarette lighter slot.

**Turn ON the unit.**



## Operation with Photo cameras, Video Cameras and CCTV-Systems

- Remove the ocular from the unit by unscrewing it from the body of the unit.
- Install instead of the ocular, proper photo-video or CCTV-adapter.
- Connect the NVD with an adapter to photo-, video- or CCTV - camera (further referred to as camera) with reference to instruction related to specific adapter.
- If required place the unit along with the camera on a tripod.
- Turn on the unit and the camera.
- Focus the unit with the help of focusing ring on a adapter or camera.
- Point the NVD with the camera on the object of your choice.
- Establish maximum resolution of the image by focusing the objective ring located on the objective lens of the unit.
- At this stage you can take photos or make a video at night.



## **Environmental Conditions**

Night Witness functions equally reliable in normal as well as extreme weather conditions.

Although the unit performs reliably in harsh weather conditions and high moistures it is expected that user will do due diligence and pay more close attention to operation instructions, in order to keep unit in good working order and prevent early demise of the unit.

## **Low temperature operation**

- Unit functions properly at temperatures below  $-20^{\circ}\text{C}$ . In low temperatures the objective focusing ring as well as dioptic correction ring may become stiffer. Do not force the adjustment rings as they may become nonoperating.
- The unit should never be subjected to extreme weather fluctuations. If it is required to move the unit from one extreme environment to other, the unit should be placed in waterproof container and closed it tight etc. The container should not be opened until it reaches same temperature as the new environment, if this is not performed the unit will have moisture condensation on optical surfaces.

- The capacity of the battery in low temperature is decreased. If possible the batteries should always be protected from low temperatures.

### **High temperature operation**

- Unit functions properly at temperatures up to +40°C.
- If possible please make sure that battery is protected from high heat and direct sun light.

### **Operation in high moisture environments**

In the areas of high moisture the optical surfaces of the unit should always be clean and dry.

Moisture on surfaces of the unit can be discarded with clean dry cloth.

Optical surfaces should be cleaned with special optical cloth.

## 7. MOISTURE COLLECTOR CAP REPLACEMENT

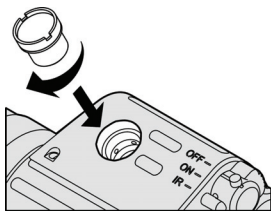
### Replacing the moisture cap

Moisture cap should be replaced in a clean dry place. New Moisture cap can be exposed for no more than 1-2 minutes.

The following is required for replacement of cartridge:

- Prepare spare cartridge supplied with your unit;
- With supplied key unscrew the moisture collector cartridge that is full of moisture from the NVD and immediately replace it with a new cartridge;
- Screw in the replacement cartridge until rubber O-ring is visibly deformed.
- In order to restore moisture filled cartridge it is required to unscrew the cap of Moisture collector cartridge with the key provided, empty the silica gel into clean metallic container and place the container in the heat source (i.e. electric stove, camping stove etc.)

Silica gel can never be directly exposed to fire. To restore silica gel the temperature should be between 150 to 170°Ñ. Silica gel will dry with in 3 to 4 hours.



## 8. WARRANTY

**NEWCON** warrants this product against defects in materials and workmanship for one year from the date of the original purchase, longer warranty is available, subject to the terms of the specific sales contract. Should your Newcon product prove to be defective during this period, please deliver the product securely packaged in its original container or an equivalent, along with the proof of the original purchase date, to your Newcon Dealer.

Newcon will repair (or, at its option, replace with the same or comparable model), the product or part thereof, which, on inspection by Newcon, is found to be defective in materials or workmanship.

### *What This **Warranty Does Not Cover:***

NEWCON is not responsible for warranty service should the product fail as a result of improper maintenance, misuse, abuse, improper installation, neglect, damage caused by disasters such as fire, flooding, lightning, improper power supply, or service other than by a NEWCON Authorized Service.

Postage, insurance and shipping costs incurred while presenting your NEWCON product for warranty service are your responsibility.

If shipping from North America please include a cheque or money order payable to NEWCON OPTIK for the amount of \$15.00 to cover handling and return shipping.

## 9. CUSTOMER SUPPORT

Should you experience any difficulties with your Newcon Optik product, consult this manual first.

If the problem remains, contact our customer support department at +1(416) 663-6963 or toll free at 1-877-368-6666 (North America only). Our operating hours are 9am-5pm, Monday - Friday, Eastern Standard Time.

**Under no circumstances should the equipment be sent to Newcon without authorisation from our technical support department.**

**Newcon accepts no responsibility for unauthorized returns.**

To locate NEWCON Authorized Dealer call +1(416) 663-6963 or fax +1(416) 663-9065

Email: [newconsales@newcon-optik.com](mailto:newconsales@newcon-optik.com)

Web: [www.newcon-optik.com](http://www.newcon-optik.com)

The defective products should be shipped to:

**US Customers:**

2498 Superior Ave. Cleveland, OH 44114, USA

**From all other countries:**

105 Sparks Ave., Toronto ON, M2H 2S5, CANADA

## 10. ACCEPTANCE CERTIFICATE

Night Witness serial number:

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	Minimum	Measured
Resolution, lp/mm	57	
Photocathode sensitivity, integral, $\mu\text{A}/\text{lm}$	400	
Light amplification	20000	

Date of production:

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Quality Inspector's signature:

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