

NEWCONTM OPTIK





### DEAR CUSTOMER

Thank you for choosing Newcon Optik. With this brochure, we introduce our latest designs along with the items that gained deserved recognition throughout the globe during the past years.

The anticipation of market trends, innovative electronic engineering essential for our digital era, and our commitment to high quality and customer satisfaction procured us with steady successful growth in our market niche. Our achievements are reflected not only in constantly growing sales; the Newcon Optik trademark is becoming approved as one of the leading brand names across the world.

We wish to share our pace and our vision with existing and future customers.

The catalogue that you are currently reading will serve you as a guideline on this way.

We attribute our ongoing success in the marketplace to many factors including:

- Our R&D team of engineers and technicians
- Production facilities that are well equipped and maintained
- Well planned marketing strategy
- Superior Customer Service team

The result of our success is quality products at competitive prices.

It's been a long journey to get where we are today

- Our factories have been manufacturing quality optics as far back as 1909
- Our first night vision system was designed and produced in 1952
- We have produced sophisticated optical devices for the space program since the early 1960's
- In 1976, we manufactured a 6m diameter telescope with a single full thickness mirror, the largest in the world
- We produced the first portable Laser Rangefinder Binoculars in 1980 for military purposes

During the 80's and 90's we continued our development of 2nd and 3rd generation night vision equipment as well as thermal imaging technology

Our marketing, distribution and sales efforts were consolidated in 1991 when we established Newcon International Ltd. We offer a single point of contact for marketing, sales, customer service and post sale warranty.

Warehouses and service depots are maintained in U.S.A., Canada and Europe for the convenience of our customers.

We have developed a global sales program, exporting 90% of our products to over 40 countries worldwide. Our traditional expertise in European optics and mechanics coupled with the best of modern manufacturing technologies (miniature electronics and advanced material handling technologies) has led to a unique product line. Many of our items are fully exclusive allowing our distributors to execute a proper marketing strategy. As a result, our sales have doubled for 7 years in a row. This growth was recognized in the past 5 years when Newcon International Ltd. was nominated as one of the fastest growing companies in Canada.

We look forward to a successful year with our existing and new customers. We will continue our growth, through alliances with strong business partners and by establishing more distributors worldwide. You can count on Newcon Optik for a long term mutually beneficial relationship.

Sincerely,

Michael Beker, President and C.E.O.

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### LASER RANGE FINDERS



Distance Measurement Function

This compact Laser Rangefinder Monocular measures distances accurately and quickly. Being shock and water resistant, light-

weight and rubber armored, LRM 800 is suitable for any

environment. Accurate to ±1 meter, Newcon Optik rangefinders change the way people

estimate distance.

### **FEATURES:**

- · Instant and Accurate distance measurement
- · Units of Measurement (Yards, Meters )
- · Laser Active Indicator
- · Target Quality Indicator (optional)
- · Reticle selection (cross or rectangular)
- · Last 10 Readings recall





**Speed Measurement Function** 



Azimuth (Compass) Function

These advanced Laser Rangefinder models provide instant distance and speed (LRM 1500SPD) measurements consistently and accurately. The outstanding optics allows a sharp, clear image. LRM series utilizes a revolutionary digital design, which outperforms any other product in its class and range.

LRM 2000Pro Laser Rangefinder Monocular is the most advanced system currently available on the market. Besides quick and reliable distance measurements up to 2 kilometres, the unit is equipped with digital compass. This makes it absolutely irreplaceable for hunters, travellers and nature lovers. This device can also measure the speed of a moving object.



LRM 1500 LRM 1500SPD LRM 2000 PRO

- Instant and accurate distance measurements
- Speed (LRM 1500SPD, LRM 2000Pro) and azimuth (LRM 2000Pro) measurements
  - Variable measurement units (Meters, Yards, KMH, MPH, Degrees)
  - Low battery indicator Laser active indicator Target quality indicator
    - Reticle selection (cross or rectangular) Last 10 readings recall

MODEL	MEASURING RANGE, M	MAGNIFICATION	FIELD OF VIEW	OBJECTIVE LENS,mm	ACCURACY,M	COMPASS	BATTERY	WEIGHT,kg	DIMENSIONS,mm
LRM 800	20-800	8	8.13 °	25	± 1	NO	9 V	0.450	123x120x78
LRM 1200	20-1,200	7	8 °	25	± 1	NO	9 V	0.420	120x122x60
LRM 1500	20-1,500	7	8 °	25	± 1	NO	9 V	0.420	120x122x60
LRM 1500 SPD	20-1,500	7	8°	25	± 1	NO	9 V	0.420	120x122x60
LRM 2000 PRO	20-2000	7	8 °	25	± 1	YES	9 V	0.420	120x122x60

### LASER RANGE FINDERS



Actual photo taken through LRB 7x50 eye piece



**Speed Measurement Function** 



This compact Laser Rangefinder Binocular provides instant distance measurements consistently and accurately. Therefore, there is no need to carry a binocular and a laser rangefinder separately. Modern design contributes to customer satisfaction.

Rubberized finish and water resistant / shockproof construction makes the unit workable under the harshest conditions. Advanced 7x40Pro model doubles the maximum distance range to the astonishing 3 kilometres, which earlier was possible only with military devices available at skyrocketing prices.

Besides, LRB 7x40Pro is equipped with digital compass, which makes it absolutely irreplaceable for hunters, travellers and nature lovers. The units have automatic display illumination for better readability in darkness.

Additional speed detector is incorporated in both SPD and Pro models.

The LRB 7x50 provides users with a true binocular rangefinder that offers high quality optics and completely new digital technology, achieving better distance accuracy. The unit substitutes a set of 7x50 binocular and a monocular rangefinder. The outstanding 50 millimetres fast objective lenses allow a sharp and clear image under all conditions. LRB 7x50 shutters the price barrier. Selling retail bellow 1,000\$ US, it has absolutely no competition in its class. **LRB 7X50** LRB 7X50SPD

**LRB 7X40** 

LRB 7X40SPD LRB 7X40PRO

- Instant and accurate distance measurements
- Speed (LRB 7x40SPD, LRB 7x50SPD, LRB 7x40Pro) and azimuth (LRB 7x40Pro) measurements
  - Variable measurement units (Meters, Yards, KMH, MPH, Degrees)
  - Low battery indicator, Laser active indicator, Target quality indicator
    - Reticle selection (cross or rectangular), Last 10 readings recall

MODEL	MEASURING RANGE, M	MAGNIFICATION	FIELD OF VIEW	OBJECTIVE LENS,mm	ACCURACY, M	SPEED READING	COMPASS	BATTERY	WEIGHT,kg	DIMENSIONS,mm
LRB 7x40	20 - 1,500	7	6 °	40	± 1	NO	NO	9 V	0.970	158x45x69
LRB 7x40 SPD	20 - 1,500	7	6 °	40	± 1	YES	NO	9 V	0.970	158x45x69
LRB 7x40 PRO	20 - 3,000	7	6 °	40	± 1	YES	YES	9 V	0.970	158x45x69
LRB 7x50	20 - 1,500	7	5 °	50	± 1	NO	NO	9 V	1.300	210x150x80
LRB 7x50 SPD	20 - 1,500	7	5 °	50	± 1	YES	NO	9 V	1.300	210x150x80

# STABILIZED BINOCULA

These unique optical instruments utilize a revolutionary patented mechanical system (no need for batteries!) to produce a steady image. With image stabilizers, an observer can use high power binoculars within moving / vibrating surroundings such as aboard an aircraft, land vehicles, vessels or other mobile environment. The newest SIB 20x50 is the only model in the world, which provides resolution of 3 angular seconds in stabilization mode. This makes the recognition range five times better than any competition.



**FEATURES:** 

- Rigid construction
- No batteries required
- · Value priced up to 80% below competition
- Water resistant
- Surveillance under any motion condition
- Wide angle image
- Tripod socket

SIB 16X50 M

SIB 16×40GR Gyro Stabilizing Binocular incorporates gyroscopic image stabilization technology. It enables the user to observe distant objects from moving platforms without degradation of the image resolution, which is typically caused by mechanical vibrations or normal hand tremors. Combining fully coated, computer designed optics with high-speed internal gyro stabilizing system the SIB 16×40GR is the ultimate instrument for long-range observation, tracking and surveillance. High magnification optics and ease of handling allows shake free observation under any demanding conditions

- · Rigid construction
- · Value priced 70% below competition
- · Wealth of accessories
- · Water Resistant
- · Night Vision eyepieces (optional)
- · Amber filters (included)
- · 12V adapter (included)







SIB 16x40GR with Night Vision Attachments

MODEL NUMBER	Newcon Optik	Newcon Optik	Newcon Optik	CANON *	FUJINON *	ZEISS *
WODEL NOWBER	SIB 16x50M	SIB 20x50	SIB 16x40GR	15x50 IS	S1640	20x60 S
Magnification	16	20	16	15	16	20
Objective lens, mm	50	50	40	50	40	60
Field of View, deg.	4.3	3.2	3.4	4.5	3.4	2.9
Apparent FOV, deg.	68.8 (Wide Angle)	66	54.4	67.5	54.4	58
Resolution in the center, "	5.3	2.8	5	5.3	?	?
Stabilization System	Mechanical	Mechanical	Mechanical-Gyro	Electronic	Mechanical-Gyro	Mechanical
Delay for Stabilization start	0	0	1 minute	0	1 minute	0
Batteries	Not required	Not required	6x AA	2x AA	4x AA	Not required
Compensation Angle, deg.	± 5	± 4	± 11	± 0.7	± 11	± 5
Dimensions, mm	230x162x72	217x158x59	215x190x96	141x185x73	200x210x90	161x275x78
Weight, kg	1.380	1.250	1.980	1.250	1.900	1.660
	•					

### DAY/NIGHT EQUIPMENT

With these devices, Newcon Optik has replied to repeated requests from professional users to have a single day/night observation instrument. Now one can have a single optical device that serves you 24 hours / day: from bright sunny daylight through misty twilight to total darkness. Day/night integrated monocular and binocular instruments combine a perfect clear daytime optics with advanced night vision image intensified technology. Large fast lenses, coupled with high quality image intensifier tubes and wide field of view contribute to the best image possible to achieve with the 1st generation technology. The devices are very easy to use: you just slide a single lever to switch between day and night modes. Ergonomic, lightweight, weather and shock proof, MDN 7x50 and BDN 7x50 are the most compact and robust integrated Day/Night

### **FEATURES**:

- Compact and lightweight

devices currently available on the market.

- Automatic shut-off
- Built-in infrared illuminator
- Weather resistant
- Rubberized body
- Anti-blooming construction

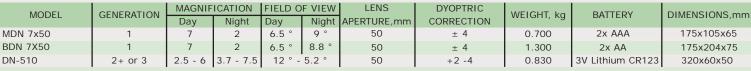


**BDN 7X50** 

**MDN 7X50** 

The DN 510 is the best variable power day/night weapon scope available on the market. Interchangeable eyepieces allow 24 hours precise shooting without readjustment. From the ground up, this unit was designed as a day/night scope. The system unique high quality optics delivers almost twice larger field of view, longer range of vision (450-1000 m at low light levels) and a significantly brighter image than of competing devices.

- Interchangeable day and night eyepieces maintain rifle's zero
- Unique high quality special day/night optics (F/2.0)
- Long range of vision (450-1000 m at low levels of light)
- Wide field of view
- Variable power
- Wide range focus adjustment
- Comfort of observation
- Water resistant
- Optional powerful IR illuminator (35, 75 or 200 mW)
- Optional camera/video adapter





DN-510

This is the most affordable Night Vision device in the world, period! Patented lever activated power supply substitutes expensive electronics, and the reduced manufacturing cost is passed to the customers. Ideal for camping, hiking and all outdoor activities, when you do not want to depend on batteries. Do not be fooled by the low price - the fast lens coupled with a good image intensifier provides a sharp image which is as good or better than products at 2-3 times the cost.

#### **FEATURES:**

- · No batteries required
- · Compact size
- · Strong metal body
- · High quality intensifier
- · Light weight





The Pygmy, named for it's small size - is feather light, compact, very durable, has excellent resolution and an enhanced light gain. This is a high quality, yet affordable night vision device. Built in InfraRed illuminator allows observation in total darkness. Ideal for hikers, hunters and birdwatchers.

FEATURES:

- · Light weight
- · Ergonomic
- · Compact
- · Built-in I/R Illuminator
- · Automatic brightness control





Phantom 20 night vision viewer is the latest addition to our line. It provides a quality image for the customer on a budget. Camera/Video adapters allow the viewed images to be recorded.

- · Waterproof
- · Compact
- · Built in I/R illuminator
- Automatic delayed shut off for the tube and/or illuminator prevents accidental drain of battery







MODEL	GENERATION	MAGNIFICATION	FIELD OF VIEW	LENS APERTURE,mm	DYOPTRIC CORRECTION	WEIGHT, kg	BATTERY	DIMENSIONS,mm
STARGATE M	1	2	20 °	35	± 4	0.470	Not Required 123 Lithium(I/R)	165x98x75
PYGMY 2M	1	2.2	12 °	42	± 4	0.440	2x AA	172x80x60
PHANTOM 20	1	2.3	16 °	42	± 4	0.535	3V Lithium CR2	185x85x65



This unit is optimally suited for outdoor usage. Totally waterproof body will float on the water if accidentally dropped. Currently, there is no comparable product on the market, and it will serve well both amateur and professional needs.

### MB-3 YELLOW BODY MB-2 BLACK BODY

#### **FEATURES:**

- · Totally waterproof
- · Floats on the water
- · Built in I/R illuminator
- · Automatic brightness control
- · Nitrogen filled to prevent fogging

The unit is designed to address any Military, Law Enforcement or other professional user requirements to see under the darkest conditions. Waterproof, lightweight and compact - this advanced system is the most affordable gen 2+ system on the market. Camera/Video adapters allow the viewed images to be recorded.



- · Totally waterproof
- · Interchangeable lens
- · Built in I/R illuminator
- · Automatic brightness control
- · Camera/Video adapters (Included)









PHANTOM 150

MODEL	GENERATION	MAGNIFICATION	FIELD OF VIEW	LENS APERTURE,mm	DYOPTRIC CORRECTION	WEIGHT, kg	BATTERY	DIMENSIONS,mm
MB-2 / MB-3	1	2.4	26 °	56	± 4	0.470	2x AAA	165x98x75
PHANTOM 150	2+	2.3	16 °	42	± 4	0.535	3V Lithium CR2	185x85x65

Many years of improvements and modifications have contributed to the device that is considered one of the best 1st generation binocular on the market. The unit uses two image intensifiers, which provide true stereo vision for better spatial perception. The rubberized body is shock proof and conven-

the highest appreciation.

#### **FEATURES:**

- · Lightweight
- · Compact size
- · Automatic shut-off
- · Weather resistant
- · Anti-blooming construction
- · Built-in I/R illuminator
- · Rubberized body



These binocular models are the pinnacle of contemporary night vision technology. NVS 7-2/4xHD arms you with almost daytime vision in the night. You can observe the terrain with almost the same degree of reality as you do it during day. 2+ generation image intensifier tube provides the user with the ability to see under the darkest conditions. Totally waterproof, extremely reliable, weighting even less than daytime analogues, this advanced system is also more affordable against all other competition. NVS 7-2/4xHD features high definition image intensifier tube.

NVS7-2/4XHD

- **FEATURES:** Waterproof
- · Light weight
- · Automatic brightness protection
- · Large objective Lens
- · Built-in powerful I/R illuminator

MODEL	GENERATION	MAGNIFICATION	FIELD OF VIEW	LENS APERTURE,mm	DYOPTRIC CORRECTION	WEIGHT, kg	BATTERY	DIMENSIONS,mm
BN-5	1	2.4	26 °	56	± 4	1.200	2x AA	165x204x67
NVS7-2/4xHD	2+	4	10 °	67	± 4	0.690	2x AA	168x170x120

The NZT 22 provides the highest quality, clearest optics and best over all performance in its class. This is one of the most affordable systems on the market, an excellent choice for law enforcement, recreational or personal use. Two image intensifier tubes provide real stereo vision

NVS7-2

### **FEATURES:**

- · Hands free
- · Flip/flop mechanism
- · Built-in infrared illuminator



NVS7-2 goggles represent the best existing contemporary technology. You can hike, hunt and enjoy similar activities in a nighttime while keeping your both hands free. The goggles are waterproof and extremely lightweight. Having only 480 grams in weight,

they let you feel comfortable allowing sterling orientation under darkest conditions. HD model features high definition image intensifier tube. WA model represents 2.5 times wider field of view than regular without distortion and image degradation.



- · Hands free · Superior optics
- · Flip/flop mechanism · Built-in infrared illuminator
- · 2 meters waterproof (HD and WA modifications)
- · Low battery' and 'I/R on' indicators (HD and WA modifications)
- · Compact and light weight



NVS 14 monocular / goggles were designed for users who would like to use the night vision in the most flexible way. It can be used as a regular monocular, regular goggles or being installed on a rifle. The unit combines extremely low weight (only 300 grams) with unprecedented image quality, which distinguishes this device from other com-

petitors.

- · Hands free · Superior optics
- · Flip/flop mechanism · Built-in infrared illuminator
- · 2 meters waterproof · Low battery' and 'I/R on' indicators
- · Compact and light weight
- · Possible to attach 2 units for a binocular configuration



MODEL	GENERATION	MAGNIFICATION	FIELD OF VIEW	LENS APERTURE,mm	DYOPTRIC CORRECTION	WEIGHT, kg	BATTERY	DIMENSIONS,mm
NZT-22	1	1	40 °	22	± 5	0.740	CR-123 Lithium	180x120x170
NVS7-2*	2+ or 3	1 or 4	40 °	25	± 5	0.480	2x AA	150x120x55
NVS7-2HD*	2+ or 3	1 or 4	40 °	25	± 5	0.480	2x AA	150x120x55
NVS7-2WA*	2+ or 3	1 or 4	60 °	25	± 5	0.480	2x AA	150x120x55
NVS-14*	2+ or 3	1 or 4	40 °	25	± 5	0.300	CR123 or 1x AA	115x42x62

<sup>\*</sup> Products may require export Licience.

NS 156 combines affordability with high optical quality. As an extra feature, the scope incorporates illuminated reticle with adjustable brightness for individual viewing preferences.



#### **FEATURES:**

- · Most affordable scope on the market
- · Illuminated reticle · Adjustable reticle brightness

This versatile unit is more than a compact weapon scope; it also can be used as an excellent lightweight hand-held viewer or a night vision attachment to a camera / camcorder. The DN 140M

features powerful infrared illuminator, long eye relief, low power consumption and automatic brightness protection. Optional lens, which doubles the magnification, is sold sepa-

rately. - DN 141 **Improved** 

version with red projected reticle



DN-140M DN-141

#### **FEATURES:**

- · Automatic brightness protection
- · Long eye relief · Low power consumption
- · Accepts optional 2x doubler

DN 310 is a multipurpose instrument, which is suitable for both civilian and law enforcement applications. The model includes many features that usually are sold as add-ons, such as close focus ability, automatic brightness protection and manual brightness override. The unit withstands 500g recoil; it has long eye relief and low power consumption. Optional lens, which doubles the magnification, is

sold separately. Besides main designation, the unit can be used as an excellent lightweight hand-held viewer or a night vision attachment to a camera /

camcorder.

### **FEATURES:**

- · Withstands 500 g recoil
- · Long eye relief
- · Close focus ability
- · Low power consumption · Camera / Video adaptable
- · Automatic brightness protection
- · Manual brightness override
- · Accepts optional 2x doubler



Real picture shot with DN-310, from 50m, total darkness.

DN-310

All Newcon weapon scopes are made with the finest quality optics and include many standard features including: - Standard Weaver Mount - Precision windage & elevation adjustment

- I/R illuminator -Weather resistance

MODEL	GENERATION	MAGNIFICATION	FIELD OF VIEW	LENS APERTURE,mm	DYOPTRIC CORRECTION	WEIGHT, kg	BATTERY	DIMENSIONS,mm
NS-156	1	3	10 °	57	± 4	0.980	2x AA	310x96x73
DN-140M	1	2.8 or 5.6	12 °	53	+3 - 4	0.850	2x AA	180x97x65
DN 141	1	4	9°	53	± 5	1.000	CR123A Litium	250x87x116
DN 310	2(25mm)	2.8 or 5.6	17 °	53	+3 - 4	0.970	2x AA	225x82x74

### Specialty Binoculars

### **Extra Wide Angle Binoculars**

This line of wide-angle binoculars was developed with the latest optical technologies. The binoculars in the series vary in size and range of magnification, covering most popular variants. They provide 25-30% wider field of view and 10-15% longer eye relief than regular models.

EWA 6X30 EWA 7X35 EWA 8X40 EWA 10X50



#### **FEATURES:**

Green camouflage pattern, achromatic lenses for true color transmission and bright/sharp images even in unfavorable weather conditions.

### **Military Binoculars**

The military type binoculars were designed for use under the most severe conditions in accordance with strict requirements. They represent the following outstanding features: virtually indestructible; unique adjustable ultra

long eye relief mechanism; extra large eyepieces for easier image acquisition; operational temperature from -40°C to +50°C

#### **FEATURES:**

- · High quality achromatic lenses
- · Rubberized body
- · Water-resistant
- · Variable eye relief distance
- $\cdot \ \, \text{Extra large eyepieces}$
- · Range meter reticle (optional)



### Giant Binoculars

This series of binoculars represents the best optical achievements in long-distance viewing. Precisely polished lenses provide true color reproduction and high resolution even in twilight and cloudy weather. The binoculars come with amber filters and tripod mount.



#### **FEATURES:**

- · High quality achromatic lenses
- · Extremely durable & rugged
- · Value priced



### **Roof Prism Binoculars**

The roof prism design provides compact size. The line incorporates three models varying in size and magnification. Multicoated optics and precisely polished lenses bring sharp and clear images. These units are very affordable in price without compromising in quality.

- · Compact size
- · Precise optics
- Reliable construction





MODEL NUMBER	BPC	BPC	EVVA	EWA	EWA	EWA	BLO	BPO	FOTON	FOTON	FOTON 10x40
MODEL NUMBER	20x60	26x70	6x30	7x35	8x40	10x50	7x30	10x42	5x25	7x35	FOTON TOX40
Magnification	20	26	6	7	8	10	7	10	5	7	10
Objective diameter, mm	60	70	30	35	40	50	30	42	25	35	40
Field of View	3°34′	2.5°	12° 30′	11°	9° 30′	7° 50′	8° 30′	5°86′	12°	8°35′	6°
Exit pupil,mm	3	2.7	5	5	5	5	4.3	4.2	5	5	4
Resolution in the center	3″	3″	8″	6"	5″	4.5"	7″	4.29"	9"	7.7"	5.5"
Dimensions, mm	265x218x73	274x226x87	66x115x173	60x125x173	60x145x178	60x185x188	65x175x185	220x220x70	118x117x44.5	265x218x73	265x218x73
Weight, kg	1.45	1.70	0.65	0.78	0.88	1.00	1.10	1.35	0.48	0.52	0.63

### LRF's Terminology

### How does it work?

The rangefinder sends an invisible, eye safe laser to the target. The laser hits the target and bounces back. The circuitry measures the time elapsed multiplied by the speed of laser (=speed of light) and delivers the distance to the target as a result.

#### Precision!

In our laser range finder systems we utilize latest digital circuitry, with a dedicated built in microprocessor. Ease of Operation and wealth of options: All of our laser range finder systems have several modes of operation, controlled by a mode selection button ergonomically positioned on the top.

#### The modes include:

- 1. Yards / Meters selection for distance measurement.
- 2. Miles/hour (MPH) or Kilometers/hour (KMH) selection for speed detection. Please note this is an optional feature available on selected models only.
- 3. Recall of the last 10 measurements.
- 4. Rectangular / Crosshair reticle shape selection.
- 5. Automatic scanning mode (kicks in after the action button has been pressed for over 3 seconds).
- \* Note: Not all the modes are available on all models.

The range finders are made in Canada, mainly from American and Canadian components. The product delivers better price and features than the competition

### How far will I see?

The maximum measuring range for most objects will be 1512m. The maximum measured distance will vary greatly depending on the reflectivity of the target, weather conditions and more.

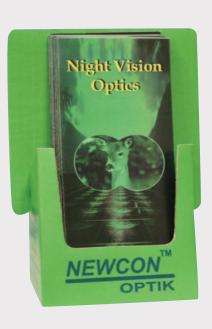
- . Target reflectivity depends on its color, surface finish, shape etc. Bright colors are more reflective than dark.
- . A polished surface is more reflective than a rough one. Larger targets are easier for distance measuring.
- Measuring a target faced at 90° (perpendicular to the laser beams path) provides optimal results.
- . Bad weather conditions (rain, fog, snow, and mist) will reduce the maximum measured range. . Bright sunny days will reduce performance as well.
- . While the unit will work through many glass types, measuring through glass will affect the results.



### New!

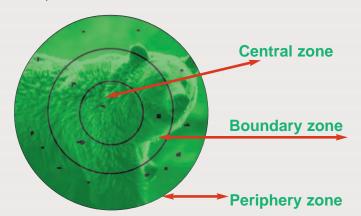
### ADD THESE POP'S TO YOUR NEWCON PRODUCT DISPLAY

Our POP holders will carry up to 100 of our product pamphlets at a time. Conveniently place them alongside your NEWCON Product display, for your customers



### N.V. TERMINOLOGY

**Black Spots** - These are the cosmetic blemishes in the image intensifier which do not affect the performance or reliability of a night vision device and some number of varying size are inherent in the manufacturing processes. They can also be dirt or debris between the lenses which should be removed by careful cleaning if the system is designed with interchangeable optics.



Type of black spots	ZONE	Size of black spots, mm	Number of spots
	Central (circle of diameter 5.5 mm)	Up to 0.073 From 0.073 to 0.150 From 0.150 to 0.294	Not limited 5 1
Immovable	Boundary (circle of diameter 5.5-9.0 mm)	From 0.073 to 0.150 From 0.150 to 0.294 From 0.294 to 0.400	10 3 1
ovabio	Periph (circle of diameter 9.0-11.0mm)	Not limited	Not limited
Moving	Entire field (circle of diameter11.0 mm)	From 0.150 to 0.294	1

The number of allowed dots is strictly regulated and is shown in the table above.

**Diopter** - The unit of measure used to define eye correction or the refractive power of a lens. Usually adjustments to an optical eyepiece accommodates for differences in individual eyesight. Typically ranges from +5 to -5.

Eye Relief - The distance your eyes must be from the last element of an eyepiece in order to achieve the optimal image .

Gain - Also called brightness, gain, or light amplification. This is the number of times a night vision device amplifies light input. It is usually measured as tube gain and system gain. This figure can vary from several hundred to tens of thousands. If tube gain is pushed too high, the tube will be "noisier" and the signal-to-noise ratio may go down. On the other hand, system gain is usually seen in the thousands. In any night vision system, the tube gain is reduced by the system's lenses and is affected by the quality of the optics or any filters; therefore, system gain is a more important measurement to the user. There has been a lot of 'misrepresentations' in the industry in regards to those figures, therefore we have made a decision not to provide those figures in writing: If we will provide the correct figures, our product will look bad in comparison; if we have to provide 'inflated' figures, we would be lying knowingly.

**Generation (Gen.)** - Image intensifier tube is probably the most important component of Night Vision Device, which determines the received image quality. Historically, they have been available in 3 quality levels :

- Gen. I Typically uses an S-20 photocathode (with photosensitivity of 180-200 mA/lm), electrostatic inversion, and electron acceleration to achieve gain. Consequently, Gen. I was the first passive image intensifier. Gen. I is characterized by geometric distortion, weak performance at low light levels, and blooming. On the other hand, those are the most affordable systems.
- Gen. II Usually an S-25 (extended red) photocathode (with photosensitivity of 240-600 mA/lm) and a microchannel plate to achieve gain. Can be found with either electrostatic or fiber-optic inversion. Gen. II tubes provide good Zperformance at low light levels and exhibit low distortion.
- Gen. III Uses gallium-arsenide for the photocathode and microchannel plate for gain. The microchannel plate is also coated with an ion barrier film to increase tube life. Photosensitivity of more than 800 mA/lm. Gen. III provides very good to excellent low-light-level performance, long tube life.

Microchannel Plate (MCP) - A metal-coated glass disk that multiplies the electrons produced by the photocathode. MCP is found only in Gen. II and Gen. III systems. These devices normally have anywhere from 2 to 6 million holes (or channels) in them. The number of holes in the MCP is a major factor in determining resolution.

**Photocathode** - The input wavelengths of the intensifier that absorbs light energy and in turn releases energy in the form of an electron image. The type of material used is a distinguishing characteristic of the different generations of image intensifiers.

**Resolution** - The ability of an image intensifier or night vision system to distinguish between objects close together. Image intensifier resolution is measured in lines per millimeter (ln/mm). Often the resolution in the same night vision device is very different when measured at the center of the image or at the periphery of the image. This is especially important for devices selected for photography or video where the entire image resolution is important.

