

# DEFENDER

**NVECTECH**

Manual for the thermal imaging device

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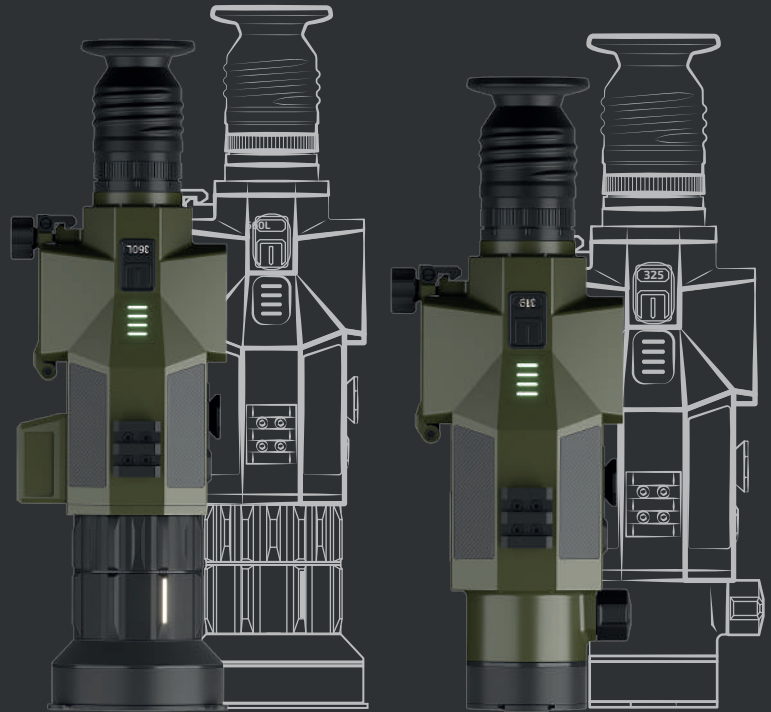
# INTRODUCTION

## DEVICE DESCRIPTION

NVECTECH Defender: the highest quality in the world of thermal imaging technologies.

Especially for the defenders of Ukraine, the company NVECTECH Ukraine has created a thermal imaging device Defender.

It is fully optimized to work in difficult conditions and is equipped with with advanced technologies. It is a benchmark in the world of thermal imaging technology.



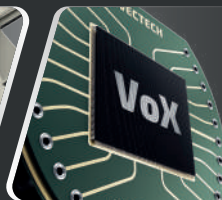
UKRAINE 

# FEATURES

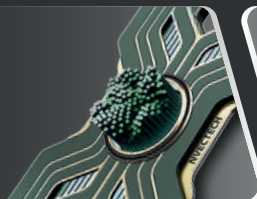
**The body is made of aviation aluminum alloy housing:**  
Impact resistance 10000J.



**The new most sensitive sensor**  
**<20mK (384x288px, 640x512px)**  
Even faster, even more sensitive.



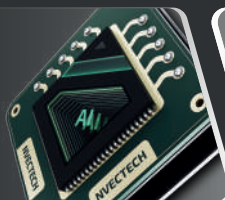
**Height and temperature sensors:**  
Additional analysis of the  
of the environment.



**Rangefinder 1200m:**  
Multifunctional rangefinder.



**The software is based on AI:**  
Thanks to more than five sensors  
the device adapts itself  
to the needs of the user.



**User-friendly controls:**  
Durable, comfortable  
and sensitive.



**Wide range of lenses:**  
19 mm – 1200 m; 25 mm – 1500 m;  
35 mm – 2000 m; 20-60 mm – 3300 m.

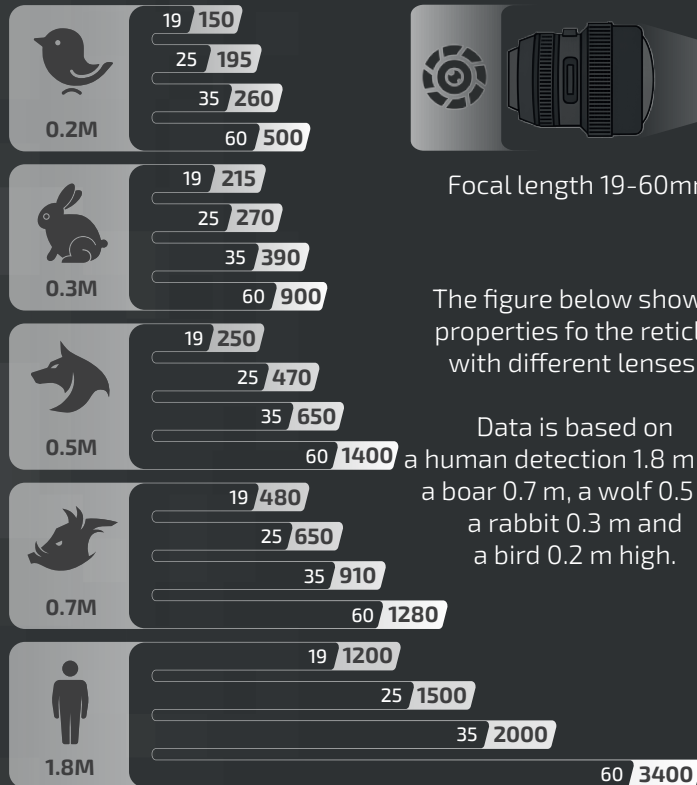


**The latest lenses with double focus:**  
Allows you to clearly see more  
more distant objects.



## DETECTION RANGE

LENS F RANGE M



Focal length 19-60mm

The figure below shows properties for the reticle with different lenses.

Data is based on a human detection 1.8 m tall, a boar 0.7 m, a wolf 0.5 m, a rabbit 0.3 m and a bird 0.2 m high.

## APPLICATION SCENARIOS

- Observation of animals
- Adventures in nature
- Protection of law and order
- Emergency search and rescue

## WARNING

- Avoid hard objects
- Do not point the lens directly at the sun or high-temperature light sources
- Do not overuse the device in cold or hot environment
- Charge the battery once every three months when it was not in use
- Make sure the Type-C cover is tight closed in the water environment
- Do not disassemble or modify the device in any way

## PACKAGE CONTENT



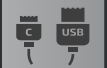
ONE DEFENDER DEVICE



TWO VIEWERS (BASIC AND CAT'S EYE)



PORTABLE BATTERY CHARGER



CABLE TYPE-C - USB



2 SETS OF RECHARGEABLE BATTERIES 18650



FASTENERS WEAVER, SCREWS



ROBUST CASE



INSTRUCTION

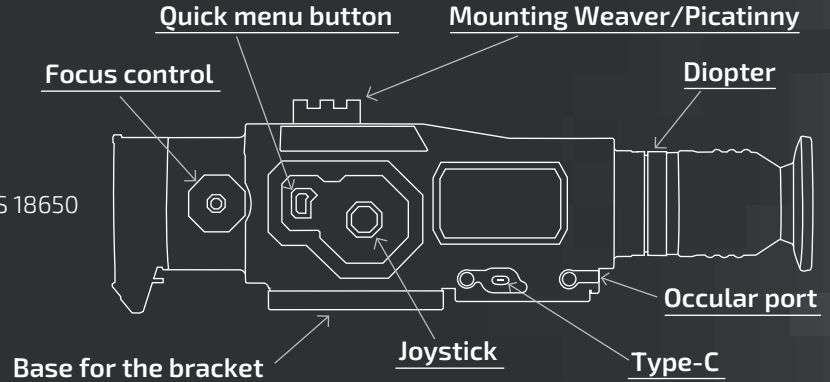


EYEPIECE (OPTIONAL)

## CHARGING

Before using the battery should be fully charged before use.

**Note:** To charge the battery the kit includes a charger



**Note:** 1 bulb - <=25% charge,  
2 bulb - <=50% charge,  
3 bulb - <= 75% charge,  
4 bulb - <=100% charge,  
The indicator blinks while charging.

## BUTTONS



### ON/OFF

Long press for 3 seconds to turn on/off.  
Short press to enter/exit standby mode



### QUICK MENU BUTTON

Click to access the to the quick menu functions



### TILT THE JOYSTICK TO THE LEFT

Picture-in-picture function



### TILT THE JOYSTICK TO THE RIGHT

Selecting a color palette



### TILT THE JOYSTICK UPWARDS

Zoom



### TILT THE JOYSTICK DOWN

Zoom



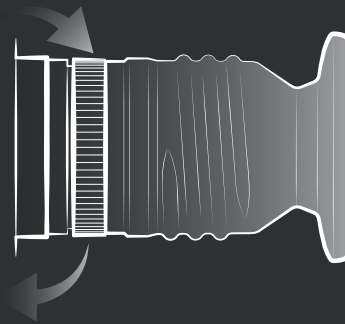
### PRESSING THE CENTRAL JOYSTICK

One click to take a photo, double click to take a video

## ADJUSTING LENSES

### Diopter adjustment

Adjust the position by looking through the eyepiece eyepiece diopter level to optimize sharpness image on the AMOLED display.

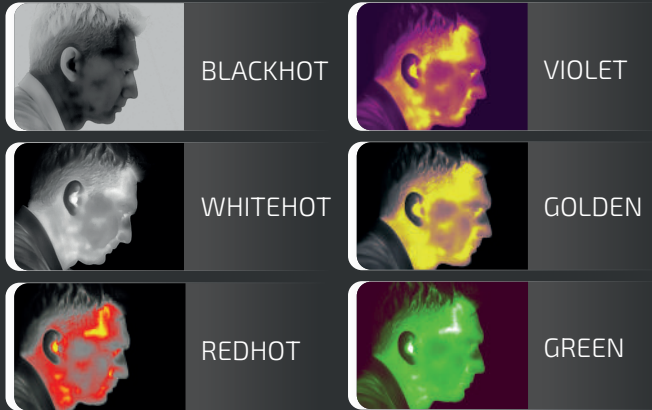


### Focus

Adjust the lens focus manually.



## PSEUDO-COLORS PALETTE



### RIGHT JOYSTICK PRESS

Changes the pseudo-color to the following



Pseudo-color palette label

Pseudo color - the thermal distribution of objects converted into visual images using an infrared thermal imaging system and displayed on a monitor in shades of gray or pseudo color.

## AI RANGE-FINDER



### LEFT JOYSTICK PRESS

Activate AI Range-finder function

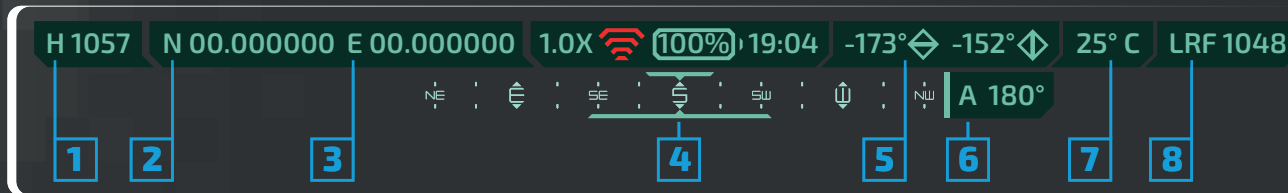


AI Range-finder label

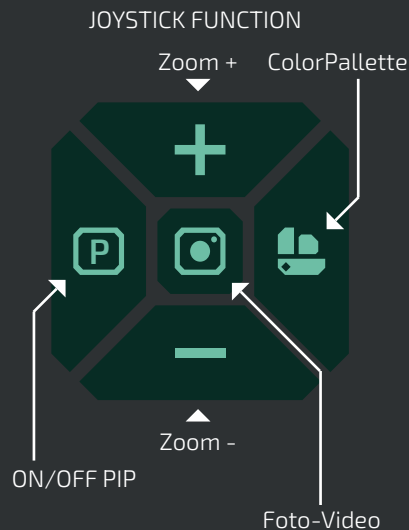
AI Range-finder - Artificial Intelligence function that distinguishes targets of known size, determines the distance of these targets and notices them on the screen.



# MAIN INFO BAR



- 1** GPS H - Height above sea level in meters.
- 2** GPS N - North coordinate.
- 3** GPS E - East coordinate.
- 4** Compass
- 5** Vertical and horizontal tilt
- 6** Azimuth shown allways when compass is on
- 7** Temperature
- 8** LRF data
- (80%)** Battery charge level.
- 19:04 Time.



# TOP MENU BAR

## Openable mod buttons

Process description



To open the quick menu, press this button

Image button ▶



Ballistic calculator ▶



Wire + File ▶



Settings ▶



Sensors ▶



System ▶



## QUICK MENU WITHOUT LRF

Show/Hide InformPanel ON/OFF Stadiometric Rangefinder



ON/OFF Compass

ON/OFF Tracking

ON/OFF Gyroscope

## QUICK MENU WITH LRF

Show/Hide InformPanel ON/OFF LRF

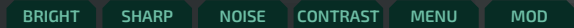


ON/OFF Compass

ON/OFF Tracking

Determining Target Coordinates

Image button ▶



Ballistic calculator ▶



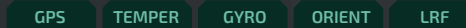
Wire + File ▶



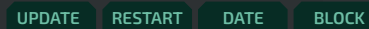
Settings ▶



Sensors ▶



System ▶



# IN MENU DESCRIPTION

## **IMAGE BUTTON**

Description of the functions of the Picture menu

## **BALISTIC CALCULATOR**

Description of the functions of the Ballistic Calculator menu

## **WIRE + FILE**

Description of the functions of the "Wire + File" menu

## **SETTINGS**

Description of the functions of the Settings menu

## **SENSORS**

Description of the "Sensors" menu functions

## **SYSTEM**

Description of the System menu functions

# MAIN MENU



## CENTRAL JOYSTICK DOUBLE PRESS

To enter the menu settings.

**Note:** select by moving the lever and short press the lever to confirm the selection.



## IMAGE

Thermal image processing settings.



## RETICLE

Adjusting the reticle properties.



## WIRE+FILE

Wireless connection and saved files.



## SETTINGS

General settings of monocular.



## SENSORS

Monocular sensor settings.



## SYSTEM

Basic settings and system lock.



**IMAGE** Thermal image processing settings.

## BRIGHTNESS

Brightness of the picture.

## SHARPNESS

Sharpness of the picture.

## NOISE

Noise level of the picture.

## CONTRAST

Contrast of the picture.

## MENU


Brightness of the menu buttons.

## SHOW MENU

Show or hide the top menu.

## MODE

Image enhancement mode - WDR or OBJECT.

 **RETICLE** Adjusting the reticle properties.

**RETICLE**  
ON/OFF the reticle.

**BRIGHTNESS**  
Brightness of the reticle.

**POINT**  
Color of the central point of the reticle.


**TYPE**  
Form of the reticle.

 **WIRE+FILE** Wireless connection and saved files.

**Makes monocular position visible!!!** **HOTSPOT**  
ON/OFF wireless connection.

**FOTO**  
Saved photos.

**VIDEO**  
Saved videos.

 **SETTINGS** General settings of monocular.

**PIP**  
ON/OFF picture in picture function.

**REC. MENU**  
ON/OFF menu display on photos and videos.

**BLINDPIXEL**  
Fixes damaged pixels on the thermal imaging matrix.

**OLED**  
Brightness and color of the monitor backlight.

**TRECKING**  
ON/OFF function that marks the hottest areas.

**BATT. INDIC.**  
Set the operating mode of the battery level indicator.

**SP**  
Stabilisation picture (vibration compensation).

 **SENSORS** Monocular sensor settings.

**GPS**

ON/OFF GPS and separately height above sea level.

**TEMPERAT.**

Set the operating mode of the temperature sensor.

**COMPASS**

ON/OFF compass and separately azimuth.

**RANGING**

Changes mode of the Range-finder (AI or MIL).

**CORRECTION**

Change mode of the shutter - auto or manual.

 **SYSTEM** Basic settings and system lock.

**UPDATE**

Update soft.

**RESTART**

Restart monocular.

**VERSION**

Show the version of the installed soft.

**DATE/TIME**

Set the time and date.

**LANGUAGE**

Set the language.

**BLOCK**

Set the password to start the monocular.

# APPLICATION

**Use application that you can find in the AppStore or PlayMarket.**

## FUNCTIONALITY

The application allows you to control the device in real time, view photos and video recordings and share them.

Fix target coordinates and share them (if the device supports this function or manual).

You can also find other NVECTECH products in the application.

# SPECIFICATION

MODELS	DEFENDER	319	325	335L	360L	660L	
MICROBO LOMETER	RESOLUTION	384X288				640X512	
	PIXCEL PITCH	12μm					
	NETD	≤20mk@300k					
	SPECTRAL RANGE	8-14μm					
	FRAME RATE	50Hz					
OPTICS	OBJECTIVE LENS	19mm (F1)	25mm (F1)	35mm (F1)	20/60mm (F1)		
	FOV	13.8° x 10.4°	10.5° x 7.9°	7.5° x 5.6°	13.1° x 9.8° / 4.4° x 3.3°	21.7° x 17.4° / 7.3° x 5.9°	
	MAGNIFICATION	1.8X	2.4X	3.2X	1.8X/5.5X	1.1X/3.2X	
	DIGITAL ZOOM	1.0 - 4.0X smooth & rapid zoom					
	EYE RELIEF	45mm					
	EXIT PUPIL	6mm					
	DIOPTER	±5D					



MODELS	DEFENDER	319	325	335L	360L	660L
DISPLAY	TYPE	AMOLED				
	OLED COLORS	6				
	DISPLAY SIZE	0.39inch				
	COLOR PALETTE	6				
	IMAGE MODE	«WDR» (Wide Dynamic Range) mode and «OBJECT»				
BATTERY	BATTERY TYPE	REPLACEABLE high capacity lithium ion battery (18650 x 2)				
	BATTERY LIFE	Continuous working time ≥18h			≥16h	
INTERFACE	TYPE-C	Supports battery charging, data transfer, UVC video output				
	WIRELESS	Hotspot connection, App remote control				
ENVIRONMENT	WORK TEMPER.	-20°C — +50°C				
	IP RATING	IP67				
	SIZE	379x75x110		379x100x110		
ACCESSORY	ACCESSORIES	Video cable, USB data cable, Wrist strap, Protective bag, User manual				

MODELS	DEFENDER	319	325	335L	360L	660L
FUNCTION	FOTO/VIDEO PLAY			YES		
	AI DIST. MASURE.			YES		
	MIL DIST. MASURE.			YES		
	RETICLE			YES		
	INBUILD MEMORY			64GB		
	PIP			YES		
	HEAT TRACK			YES		
	GPS			YES		
	TERMOMETER			YES		
	GYROSCOPE			YES		
	REAL TIME REC.			YES		
	OSD RECORDING			YES		

# NVECTECH

Model:

Serial number:

Date of sale:

Seal and signature of the seller:

Kosmichna st. 49-g,  
Dnipro, Ukraine

site: [www.nvectech.com](http://www.nvectech.com)

[www.nvectech.ua](http://www.nvectech.ua)

e-mail: [info@nvectech.com](mailto:info@nvectech.com)

Manufacturer: LTD NVECTECH

+38 093 698 11 67

+38 098 758 75 85

+38 063 785 78 55

+38 095 761 13 92

**Warranty 2 years!**

[www.nvectech.com](http://www.nvectech.com)

