

# DEFENDER

**NVECTECH**

Manual for the thermal imaging device



# CONTENT

<b>INTRODUCTION</b>	<b>2</b>
<b>FEATURES</b>	<b>3</b>
Detection range	4
Application scenarios	4
Warning	4
Package content	5
Charging	5
Buttons	6
Lenses settings	6
Pseudo colors pallete	7
AI Range - finder	7
<b>TOP MENU</b>	<b>8</b>
<b>MAIN MENU</b>	<b>11</b>
Joystick	11
Image	11
Reticle	12
WLAN+File	12
Settings	12
Sensors	13
System	13
<b>APPLICATION</b>	<b>14</b>
<b>SPECIFICATION</b>	<b>15</b>

# INTRODUCTION

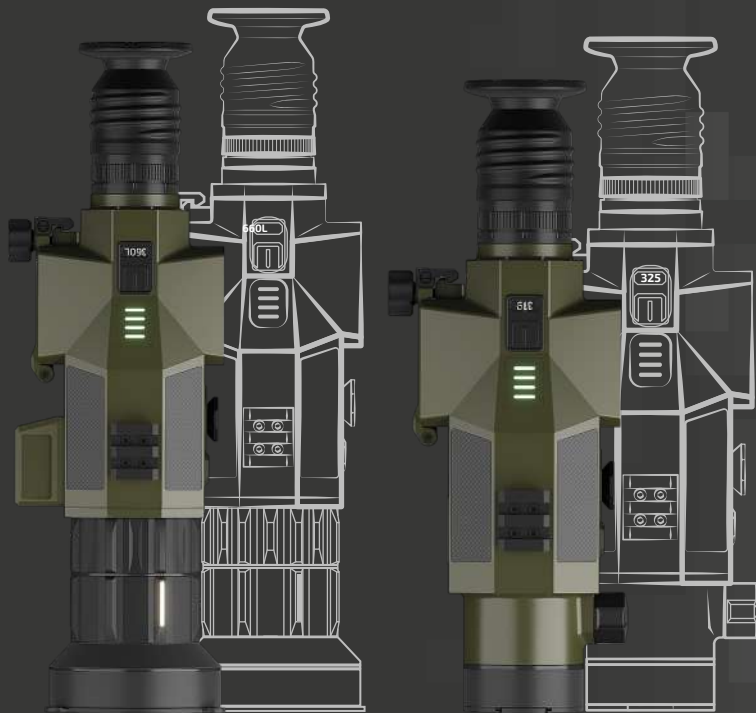
## DEVICE DESCRIPTION

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

Especially for extreme conditions, NVECTECH Ukraine has developed the Defender thermal imaging device.

It is fully optimized for operation in challenging environments and equipped with advanced technologies.

It is a benchmark in the world of thermal imaging technologies.



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.



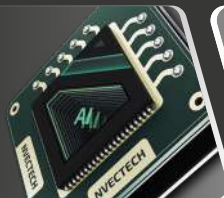
**Height and temperature sensors:**  
Additional analysis of the  
of the environment.



**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 – 3400 m.

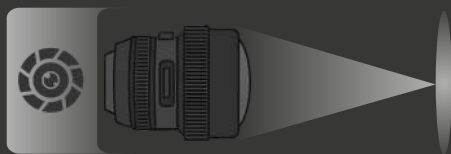
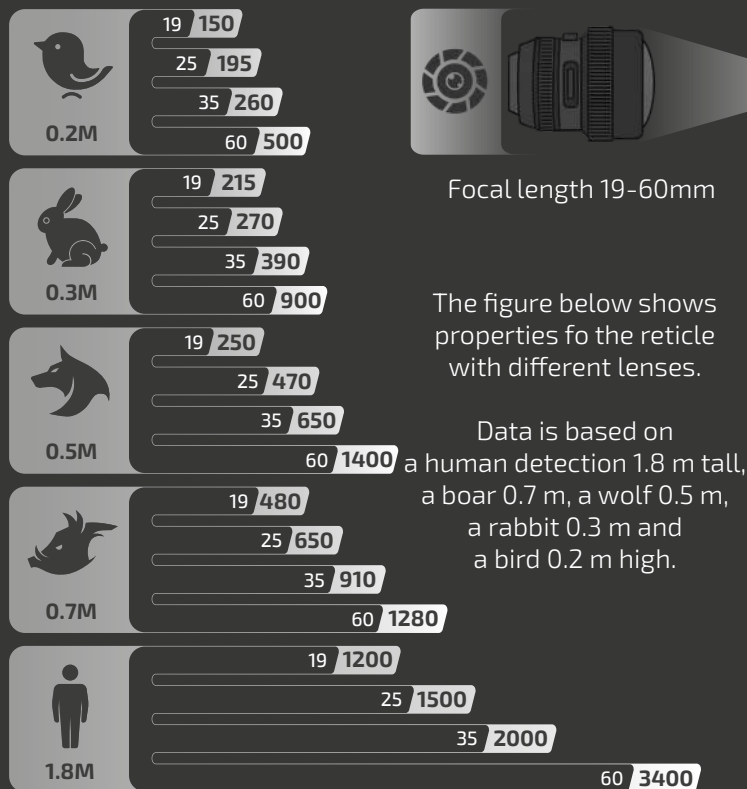


**The latest lenses with double focus:**  
Allows you to clearly see more  
more distant objects.



## DETECTION RANGE

LENS F RANGE M



Focal length 19-60mm

## 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 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

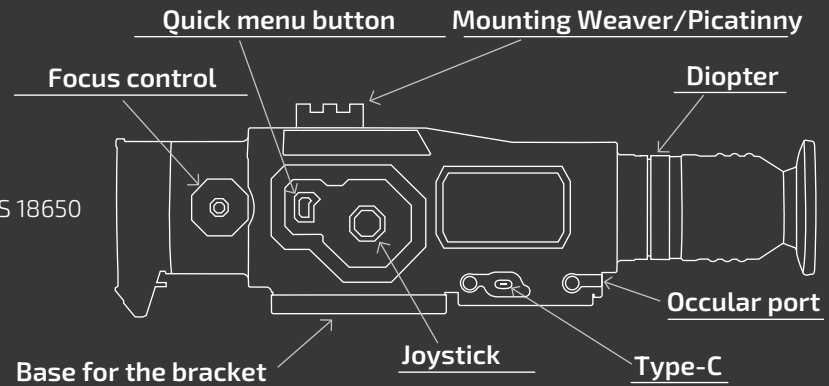


OCULAR (OPTIONAL)

## CHARGING

Before using the battery should be fully charged before use.

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



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

## BUTTONS



### ON/OFF

Hold for 3 seconds  
to turn on/off.  
Press to  
enter/exit standby mode  
Double-click to restart the matrix (shutter)



### QUICK MENU BUTTON

Click to access the quick  
menu functions



### TILT THE JOYSTICK TO THE LEFT

Color palette selection



### TILT THE JOYSTICK TO THE RIGHT

«Picture-in-picture» function



### TILT THE JOYSTICK UPWARDS

Hide/show information panel



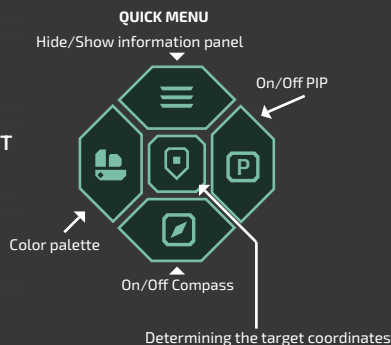
### TILT THE JOYSTICK DOWN

On/Off Compass



### PRESS THE CENTRE OF JOYSTICK

On/Off. Gyroscope (without LRF) | Target coordinates On/Off



### PRESS THE CENTRE OF JOYSTICK

One click – photo capture, double click – main menu  
Long press for 3 seconds – video recording



### TILT THE JOYSTICK TO THE LEFT

On/Off Ballistic calculator



### TILT THE JOYSTICK TO THE RIGHT

On/Off Rangefinder (AI or LRF)



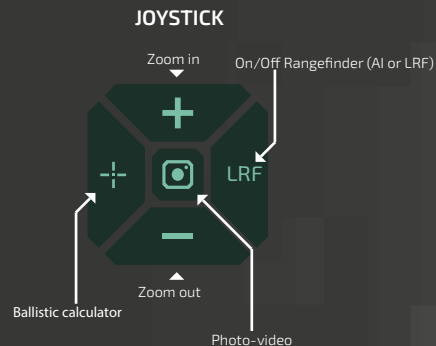
### TILT THE JOYSTICK UPWARDS

Zoom in ⊕

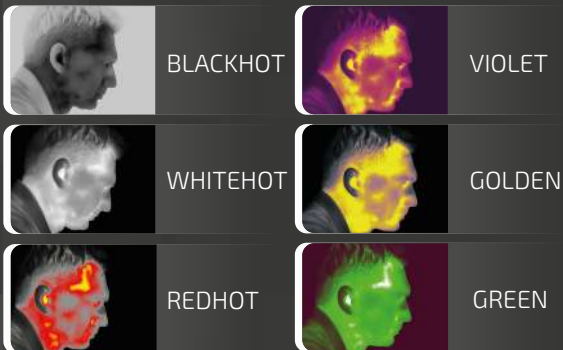


### TILT THE JOYSTICK DOWN

Zoom out ⊖



## PSEUDOCOLORS PALLETTE



### RIGHT JOYSTICK PRESS

Changes the pseudocolor to the following

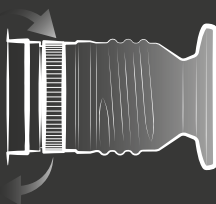


Pseudocolor palette label

## ADJUSTING LENSES

### Diopter adjustment

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



## AI RANGE-FINDER



### LEFT JOYSTICK PRESS

Activate AI Range-finder function



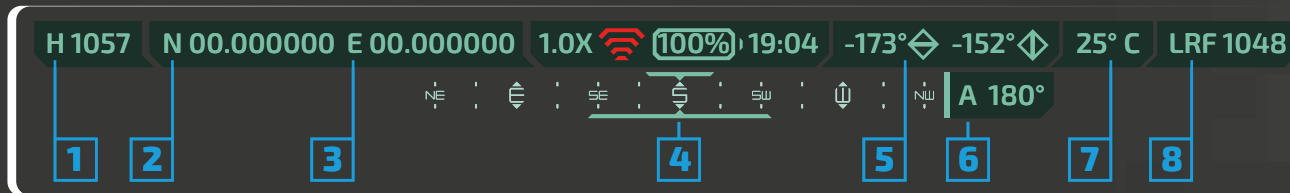
AI Range-finder label

### Focus

Adjust the lens focus manually.



# 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 is always displayed 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 ▶



Shooting (zeroing) ▶



WLAN + File ▶



Settings ▶



Sensors ▶



System ▶



Image button ▶

BRIGHT

SHARP

NOISE

CONTRAST

MENU

S. MENU

MOD

Shooting (zeroing) ▶

PROFILE

BALLISTIC

ZEROING

RETICLE

WLAN + File ▶

HOTSPOT

FOTO

VIDEO

TARGETS

RAV

Settings ▶

RAV

FIXPIXEL

DISPLAY

SCALE

TRACKING

RANGEF.

Sensors ▶

GPS

TEMPER

GYRO

ORIENT

LRF

JOYSTICK

System ▶

UPDATE

RESET

DATE

LANG

BATT. IND.

BLOCK

# 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.



## WLAN+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.

## **BALLISTIC CALCULATOR**

### **BC. DIST.**

Saved setting profiles for the calculator.

### **BALLISTIC**

Adjustment of ballistic calculator settings.

### **ZEROING**

Settings for zeroing the scope.

### **RETICLE**

Adjustment of the scope reticle.



## **WLAN+FILE** Wireless connection and saved files.

**Makes monocular position visible!!!**

### **HOTSPOT**

ON/OFF wireless connection.

### **FOTO**

Saved photos.

### **VIDEO**

Saved videos.

### **OBJECTIVE**

Saved coordinates.

### **RAV**

Saved videos of a shot



## **SETTINGS** General settings of monocular.

### **PIP**

ON/OFF picture in picture function.

### **BLINDPIXEL**

Fixes damaged pixels on the thermal imaging matrix.

### **DISPLAY**

Brightness, color, PIP (picture-in-picture).

### **ZOOM**

Smooth & rapid zoom.

### **TRACKING**

Turns the hottest areas on/off.

### **RANGEFINDER**

AI set - set. AI distance, LRF and AI - on/off

## **SENSORS** Monocular sensor settings.

### **GPS**

ON/OFF GPS and separately height above sea level.

### **TEMPERAT.**

Set the operating mode of the temperature sensor.

### **GYROSCOPE**

On/Off. Gyroscope.

### **ORIENTATION**

Compass and azimuth mode.

### **LRF**

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

### **JOYSTICK**

Setting up the joystick operation and its sensitivity.

## **SYSTEM** Basic settings and system lock.

### **UPDATE**

Update software.

### **RESTART**

Restart monocular.

### **DATE/TIME**

Set the time and date.

### **LANGUAGE**

Set the language.

### **BATTERY INDICATION**

Setting the battery indicator.

### **BLOCK**

Set the password to start the scope.

# APPLICATION

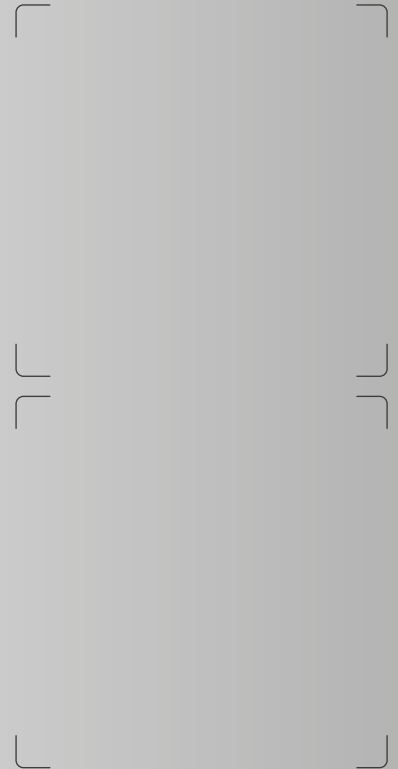
**Use application that you can find  
in the AppStore or PlayMarket.**

## 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.



# Ocular Defender

## ОБСЕРВАНДУ

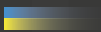
NVECTECH Defender Ocular - додатковий модуль для приціла Defender.  
NVECTECH Defender Ocular - an additional attachment for the Defender.

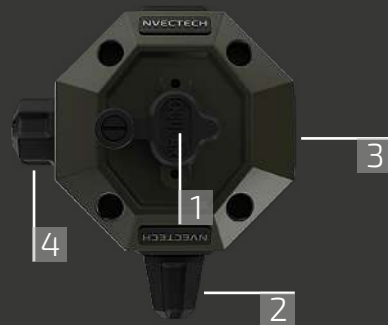
Додатковий окуляр до тепловізійного приціла Defender проектує зображення з приціла за допомогою кабелю, що дозволяє вести вогонь із-за укриття.  
Additional lens for the Defender thermal imager projects the image from the scope via a cable, allowing firing from behind cover.



---

UKRAINE





- 1 Connector for cable
- 2 Zoom adjustment
- 3 Brightness adjustment
- 4 Diopters adjustment
- 5 Connection between cables
- 6 Connection to the scope/ocular



# SPECIFICATION

MODELS		DEFENDER	319	325	335	335L	360L	660L		
MICROBO LOMETER	RESOLUTION	384X288						640X512		
	PIXEL PITCH	12μm								
	NETD	≤20mk@300k								
	SPECTRAL RANGE	8-14μm								
	FRAME RATE	50Hz								
OPTICS	OBJECTIVE LENS	19mm (F 0.8)	25mm (F 0.8)	35mm (F0.8)	35mm (F0.8)	20/60mm (F1)				
	FOV	13.8° x 10.4°	10.5° x7.9°	7.5° x5.6°	7.5° x5.6°	13.1° x9.8° /4.4° x3.3°	21.7° x17.4° /7.3° x5.9°			
	MAGNIFICATION	1.8X	2.4X	3.3X	3.3X	1.8X/5.5X	1.1X/3.2X			
	DIGITAL ZOOM	1.0 - 5.0X smooth & rapid zoom								
	DIST. TO EYEPIECE	45mm								
	EXIT PUPIL	6mm								
	DIOPTER	±5D								

MODELS	DEFENDER	319	325	335	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	Data transfer					
	WIRELESS	Hotspot connection, App remote control					
ENVIRON- MENT	WORK TEMPER.	-25°C — +50°C					
	IP RATING	IP67					
	SIZE	379x75x110				379x100x110	
ACCESSORY	ACCESSORIES	USB data cable, charger, Protective bag, User manual, 2 eyecups					

MODELS		DEFENDER	319	325	335	335L	360L	660L
FUNCTION	PHOTO/VIDEO PLAY		YES					
	AI DIST. MEASURE.		YES					
	MIL DIST. MEASURE.		YES					
	RETICLE		YES					
	IN-BUILT MEMORY		64GB					
	PIP		YES					
	HEAT TRACK		YES					
	GPS		YES					
	TERMOMETER		YES					
	GYROSCOPE		YES					
	REAL TIME REC.		YES					
	OSD RECORDING		YES					
	AZIMUT		YES					
	COMPASS		YES					
	HEIGHT SENSOR		YES					
	LRF		NO			YES		

# NVECTECH

Model:

Serial number:

Date of sale:

Seal and signature of the seller:

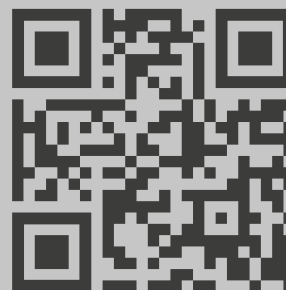
Kosmichna st. 49-g,  
Dnipro, Ukraine

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: NVECTECH LLC

+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)



# DEFENDER



