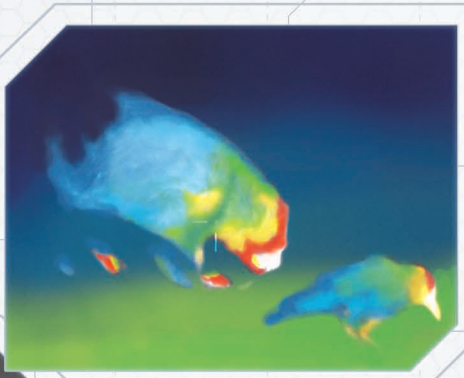
FORTUNA

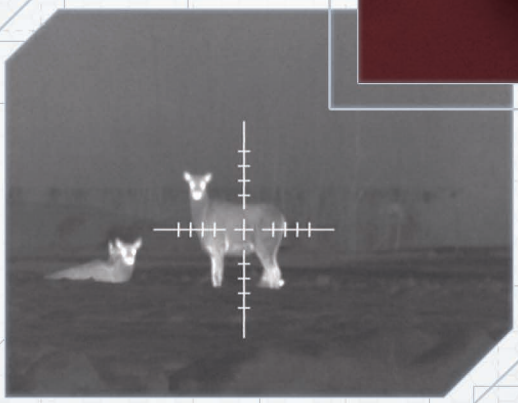
THERMAL IMAGING SCOPES

FORTUNA GENERAL ONE

3S/6S | 3M/6M | 3L/6L | 3XL/6XL

USER'S MANUAL





User's manual

Thermal Imaging Scope
FORTUNA General One

CONTENT

1. General Information

In this manual you can find the instructions for use, maintenance and servicing of the thermal imaging scopes FORTUNA GENERAL One series. In the further manual these scopes are referred to as "device", "scope", "thermal imaging scope" or "FORTUNA scope".

2. Scope Features and Application

2.1. Application.

The thermal imaging scope is developed to be installed on a weapon for shooting both in the darkness (at night) and in the daytime in normal or severe weather events, such as the mist, light rain, snow, fog and smoke. The scope detects passively the thermal radiation of objects and landscapes, is flash resistant and does not need additional source of light. Although the device limits the visibility through glass, water, heavy rain or snow. The scope can be used as a portable thermal viewer (monocular).

The thermal imaging scope is designed with the shutterless calibration technology enabling quick start and continuous image without stops and delays. The specially developed control electronics of the device works without complicated menu. Ballistic corrections (10 zeroing profiles) enable sighting in the weapon against different distances or for different types of ammunition. The scope can display the readings of the connected laser rangefinder for better target detection.

The scope is reliable, compact and user-friendly. All the main functions are easily and ergonomically controlled. Each scope has passed the impact resistance test.

Attention!
It is absolutely forbidden to point the device at the high-temperature objects (the sun, welding, fire, etc.)

2.2. FORTUNA Scope Features:

- observing and aiming at any time of the day and in poor weather conditions;
- 384x288/640x480 core, 17 μm, 50/25 Hz;
- maximal detecting distance – from 1100 to 2400 meters (depending on the model);
- high-aperture (F/1,0), high-quality germanium lens with internal focusing;
- light waterproof enclosure of aluminium alloy with rubber grips;
- impact-resistant design, standing against the recoil of large-calibre weapon;
- colour high-resolution OLED display;
- electronic calibration;
- user-friendly digital menu;
- «white - hot», «black - hot» modes; colour palettes;
- up to 10 zeroing profiles to be saved;
- up to four image settings profiles to be saved;
- digital zoom with the reticle in the centre of the view field: 2x, 4x, 8x (depending on the model);
- PAL video output;
- possible connection to a laser rangefinder with the measured distance displayed on the scope screen;
- possible connection to external power supply of high capacity and video-recorder to save the image on the SD card.

3. Shipping Kit

The shipping kit of the FORTUNA scope is listed in table 1.1

Table 1.1.

FORTUNA scope	1
Power batteries CR123A	2
External power supply cable	1
User's manual	1
Pouch (case)	1

4. Accessories

Upon request the shipping kit can include:

- ► laser rangefinder;
- ► mount for any weapon allowing the installation of this type of scopes;
- ► hard case for carrying and storage of the scope.

5. Specifications

Table1.2. provides the information on physical, electrical, mechanical, optical and performance specifications of FORTUNA thermal imaging scopes.

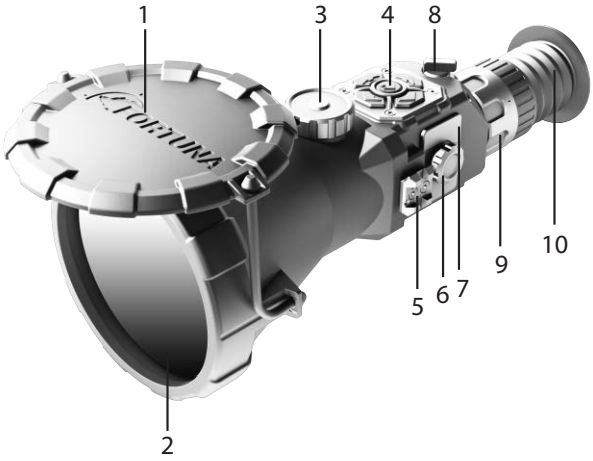
Table 1.2.

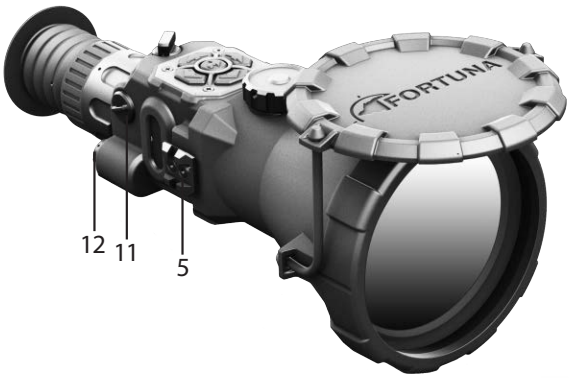
Model	3S	3M	3L	3XL	6S	6M	6L	6XL
Thermal imaging core	384x288, 17 µm				640x480, 17 µm			
Spectral range, µm	7.5...14							
Frequency, Hz	50				25			
Sensitivity, mK	<50							
Calibration	silent, electronic							
Lens, F/1.0	40mm	52mm	75mm	100mm	40mm	52mm	75mm	100mm
Optical zoom	2.8	3.7	5.3	7.1	1.7	2.2	3.2	4.2
Field of View, deg	9.3x7.0	7.2x5.4	5.0x3.7	3.7x2.8	15.2x11.5	11.8x8.9	8.3x6.2	6.2x4.7
Lens focusing, m	from 5 to ∞		from 10 to ∞		from 5 to ∞		from 10 to ∞	
Pace of corrections, distance 100m, cm	2.1	1.6	1.1	0.9	3.5	2.7	1.9	1.4
Eye relief, mm	52							
Dioptric adjustment	- 5....+5							
Display	AMOLED 800x600							
Power supply	up to 8.5 V (CR123A x 2 pcs. or RCR123A x 2pcs.)							
Minimal continuous run time at 25°	5 hours							
Protection class	IP67							
Maximum impact load	500g							
Operating temperature range, °C	-30...+50							
Dimensions, mm	80x72 x210	80x88 x240	100x100 x275	116x116 x290	80x72 x210	80x88 x240	100x100 x275	116x116 x290
Weight with batteries (CR123A x 2 pcs),g	850	900	1000	1200	850	900	1000	1200

The producer reserves the right to change without notice technical specifications and shipping kit of the device.

6. Scope Design and Controls

Fig.1 – Fortuna Scope configuration





1. Protective lens cap
2. Lens
3. Lens focus knob
4. Control panel
5. Picatinny rail
6. Battery case cover knob
7. Battery case cover
8. Profile switch
9. Eyepiece dioptric adjustment ring
10. Eyeguard
11. Output with protective cap
12. On/off lever

8. Profile switch
13. "Up" button
14. "Left" button
15. "Menu" button
16. "Right" button
17. "Down" button

Fig. 2 – Button control panel

Fig. 1 and 2 show the view, main units and controls of the scope.

High-aperture germanium lens (2) in the enclosure focuses thermal radiation of the object on the sensitive area of the detector - uncooled bolometer core. When not operated the lens is closed with the protective cap (1).

The lens is focused by turning the lens focus knob (3). On top of the scope there is the panel (4) with the mode control buttons and the profile switch (8).

The enclosure contains the whole electronics of the scope which transforms the detector signal into the digital image of the object shown on the colour OLED display through the eyepiece with the eyeguard (10).

Dioptric adjustment of the eyepiece is performed with the ring (9).

The electrical circuit for the device is powered with two batteries CR123A (or rechargeable batteries RCR-123A) placed in the battery case.

The battery case cover is locked with the knob (6).

The scope turns on and off with the lever (12).

On the right of the device there is a socket for external power supply covered with the safety cap (11).This socket is also used for displaying the video image on the monitor or attaching the recorder to save the image on the SD card.

The impact-resistant design of the scope stands against the recoil of the weapon of the largest calibre. The scope can be mounted on the weapon with various rails (prism, MAK adapter, Picatinny rail). To install the detachable equipment (external battery pack, recorder etc.) there are Picatinny mounts (5) on both sides of the scope.

7.1. Unpacking.

Prior to unpacking the scope, make sure that all the main components listed in table 1.1. are present. If some of the items from the table are missing, please, address the Supplier. Prior to turning on the scope, visually inspect the enclosure, optical surfaces and other parts of the device. Make sure there are no fractures, scratches, caverns, cracks and other faults in the view of the scope and its parts. Otherwise address the Supplier or the Manufacturer of the device.

7.2. Installing the Batteries.

Prior to inserting the batteries make sure they do not have any cracks, caverns, leaks or bubbles. Never insert defective batteries. Do not use together new and old batteries or batteries of different types (of different manufacturers). The thermal scope FORTUNA is powered with two CR123A batteries or rechargeable batteries of RCR123A (16340) type.

Insert the batteries:
1. Open the battery case cover (7) by turning the knob (6) counterclockwise;
2. Insert the batteries observing the polarity marked on the outer surface of the device;
3. Close tightly the battery case cover with click.

Attention!
Li-Ion battery contains SO2 (sulphur dioxide) under pressure. Do not heat, pierce, disassemble, short-circuit, recharge or in any other way put pressure on the battery. Turn the device off if the battery case is overheated. Wait until the battery cools prior to reinstall it.
Do not store or transport the device with the inserted batteries.

7.3. Turning On and Off

The scope turns on and off with the lever (12) on the right of the device. The switch has two positions: upper for "ON" and lower for "OFF".

7.4. Dioptric Adjustment of Eyepiece.

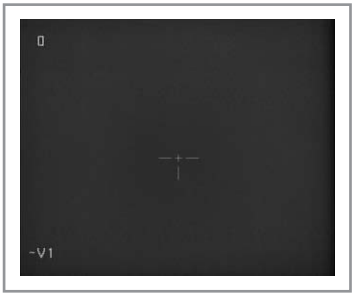
The eyepiece's dioptric adjustment range is from -5 to +5 dioptres. Turn the eyepiece dioptric adjustment ring (9) to achieve the sharp display image (icons, reticle) .

7.5. Lens Focusing.

The scope lens (2) focuses by turning the lens focus knob (3) in order to get the sharp image of observed objects on various distances. To focus the lens remove the protective lens cover (1), point the turned on scope on the observed object and turn the knob (3) to achieve the sharp image of the object's details and outlines and the landscape elements.

7.6. Calibration.

This thermal imaging scope model features the electronic calibration. The user does not need to calibrate the scope while operating it. The scope is calibrated automatically as required.



8.1. Main Menu.

When the scope is started the main (operating) menu is loaded. The dispaly shows: at the top center of the screen – digital zoom (if any); in the lower left corner – the image profile number; in the upper left corner – the selected zeroing profile and the reticle in the centre of the screen.

This menu enables the following adjustments:

- ► adjustable parameters (brightness, contrast, sensitivity) (see cl. 8.2);
- ► digital zoom (see cl. 8.3);
- ► image colour (see cl. 8.4);
- ► image profile (see cl. 8.5);
- ► closed lens calibration (see cl. 8.6);
- ► settings menu (see cl. 8.7);
- ► zeroing profiles (see cl. 8.8).

8.2. Selecting Adjustable Parameters.

The device features manual adjustment of brightness, contrast and thermal sensitivity aimed to make the viewing conditions more comfortable.

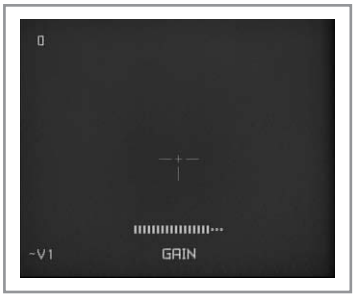
8.2.1. Brightness Adjustment.

To adjust brightness in the main menu press shortly the "Menu" button (15) on the button control panel (4) until the brightness adjustment menu appears.

Select the required brightness level by pushing "left" (14) or "right" (16) buttons. Press and hold the "Up" button (13) for more than 2 sec to exit the adjustment menu or select another parameter to adjust by pressing shortly the "Menu" button (15).

8.2.2. Contrast Adjustment.

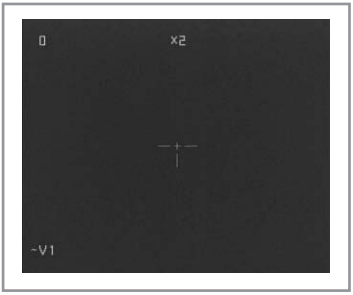
To adjust contrast in the main menu press shortly the "Menu" button (15) on the button control panel (4) until the contrast adjustment menu appears. Select the required contrast level by pushing "left" (14) or "right" (16) buttons. Press and hold the "Up" button (13) for more than 2 sec to exit the adjustment menu or select another parameter to adjust by pressing shortly the "Menu" button (15).



8.2.3. Manual Adjustment of Thermal Sensitivity.

To improve the quality of the observed image (depending on the contrast of the observed object and the background temperature) the device features the manual adjustment of the core (microbolometer) sensitivity.

To adjust the thermal sensitivity press shortly the "Menu" button (15) on the button control panel (4) until the sensitivity adjustment menu appears. Select the required sensitivity level by pushing "left" (14) or "right" (16) buttons. Press and hold the "Up" button (13) for more than 2 sec to exit the adjustment menu or select another parameter to adjust by pressing shortly the "Menu" button (15).



8.3. Digital zoom.

The "Up" button (13) on the button control panel (4) pressed shortly changes the digital zoom of the scope to 2x, 4x (for models with 640x480 core resolution – 2x, 4x and 8x). The display shows the digital zoom rate (2x, 4x and 8x).

8.4. Selecting the Image Colour.

The "Down" button (17) on the button control panel (4) pressed shortly selects one of the modes: "white – hot" or "black – hot". To select the colour mode press the "Down" button (17) for more than 2 sec.

8.5. Selecting the Image Profile.

The "right" button (16) pressed for more than 2 sec selects one of four saved image profiles (V1, V2, V3, V4) or the A profile that features 50% brightness and contrast settings and only thermal sensitivity level can be changed. When a parameter in the saved profile is changed, the symbol "~" appears in front of the profile icon indicating that the profile changes are not saved.

8.6. Closed Lens Calibration.

When using the device the image quality can be slightly deteriorated. To improve the image quality the device features the manual calibration of the thermal imaging core.

1. Close the protective cap (1) on the lens (2);
2. Press the "left" button (14) for more than 5 sec to launch the calibration function; the reminder to close the protective lens cap appears on the display;
3. Press and hold for more than 2 sec the "Menu" button (15) to calibrate the scope.

8.7. Settings Menu.

To enter the settings menu press and hold for 2-3 sec the "Menu" button (15) on the button control panel (4). The settings menu looks as follows:

RETICLE SETTINGS – the menu of reticle and zeroing settings (see cl. 8.10);

IMAGE PROFILE SAVING – image profile saving (see cl.8.7.1);

DISPLAY – the display settings menu (see cl. 8.9);

LANGUAGE – the menu language selection (see cl. 8.7.2);

CORRECTION – the core's dead pixel correction (see cl. 10);

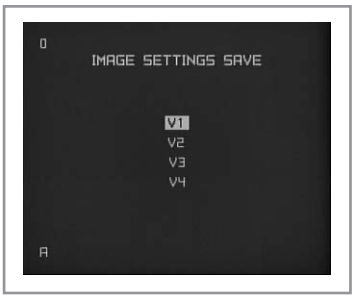
RESET – reset to the factory settings (see cl. 8.7.3);

RANGEFINDER – rangefinder settings (see cl. 11).

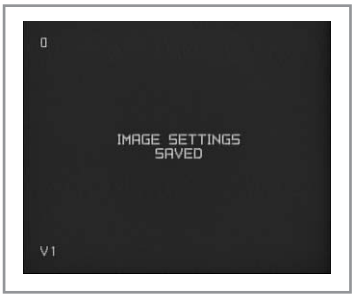
The menu is navigated with the buttons "up" (13) and "down" (17) on the button control panel (4). To enter the menu sub-point press shortly the "Menu" button (15), to exit the menu sub-point press and hold for more than 2 sec the "up" button (13) (to one menu level back up) or the "down" button (17) (to the main menu).

8.7.1. Image Profile Saving.

The user's settings of brightness, contrast and thermal sensitivity can be saved into four image profiles V1, V2, V3 and V4. The profile A allows the manual adjustment of thermal sensitivity only (the brightness and contrast levels are preset to 50%) and cannot be saved. To save the image profile:



1. Set the required levels of brightness, contrast and thermal sensitivity (see cl. 8.2.);
2. Enter the device menu by holding the "Menu" button (15);
3. Select the point "Image profile saving" with the buttons "up" (13) or "down" (17) and enter it by pressing shortly the "Menu" button (15);



4. Select the image profile number to save using the buttons "up" (13) and "down" (17);
5. Save the profile by holding the "Menu" button (15) for more than 2 sec. The saving confirmation appears on the display. To exit the profile saving menu without saving the profile press and hold the "up" button (13) for more than 2 sec.

8.7.2. Language.

The device menu is available in several languages.
To change the menu language:
1. Enter the menu "Language" by pressing shortly the "Menu" button (15);
2. Select the menu language using the buttons "up" (13) and "down" (17);
3. Save the language by holding the "Menu" button (15) for more than 2 sec;
4. To exit the menu without saving press and hold the "up" button (13) for more than 2 sec.

8.7.3. Reset.

ATTENTION: ALL the settings including the zeroing profiles will be reset!

To reset the device to the fabric settings:
1. Enter the menu "Reset" by pressing shortly the "Menu" button (15);
2. Using the buttons "up" (13) and "down" (17) select "yes" to confirm;
3. Reset all settings by holding the "Menu" button (15) for more than 5 sec. To exit the menu without saving press and hold the "up" button (13) for more than 2 sec.
4. The reset confirmation appears on the display.

8.8. Zeroing profiles.

The scope has ten zeroing profiles to be saved (see cl.9). Select one of the profiles (from 0 to 9) with the switch (8), the active profile number will be shown in the left upper corner.

8.9. Display.

To enter the "Display" menu:

1. Press and hold for more than 2 sec the "Menu" button (15) to enter the settings menu;
2. Select the "Display" sub-point using the buttons "up" (13) and "down" (17);
3. Press the "Menu" button (15) to enter the "Display" menu.

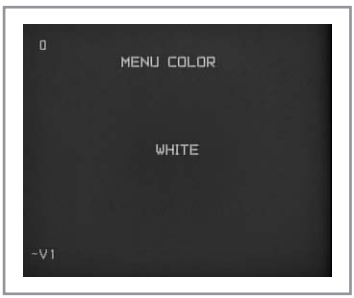
The following settings are available in this menu:

- ► The menu colour – to select the colour of the menu (see cl. 8.9.1);
- ► The display brightness – to select the display brightness level (see cl. 8.9.2).

The menu is navigated with the buttons "up" (13) and "down" (17) on the button control panel (4). To enter the menu sub-point press shortly the "Menu" button (15), to exit the menu sub-point press and hold for more than 2 sec the "up" button (13) (to one menu level back up) or the "down" button (17) (to the main menu).

8.9.1. Menu Colour.

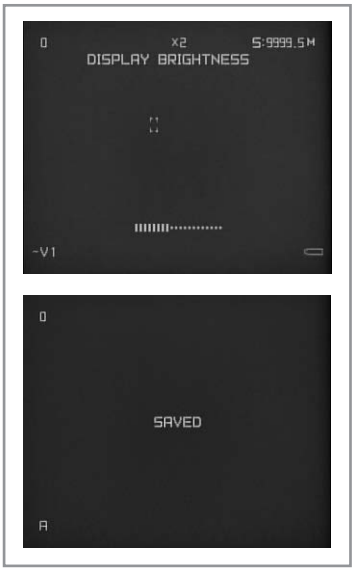
In this menu you can select the colour of all the menu symbols except the reticle. To make the selection more convenient the display shows all possible symbols (profile number 1, image profile V1, digital zoom 2x, low battery etc.).
To select the colour:



1. Press shortly the "Menu" button (15) to enter the "Menu colour" menu;
2. Using the buttons "left" (14) or "right" (16) select the menu colour (red, yellow, green, blue, orange, black, white);

3. Save the menu colour by holding the "Menu" button (15) for more than 2 sec. The saving confirmation appears on the display (for 2 sec).

4. To exit the "Menu colour" menu press and hold for more than 2 sec the "up" button (13) (to one menu level back up) or the "down" button (17) (to the main menu).



8.9.2. Display Brightness.

Besides the thermal imaging core brightness adjustment the scope features the display brightness adjustment.

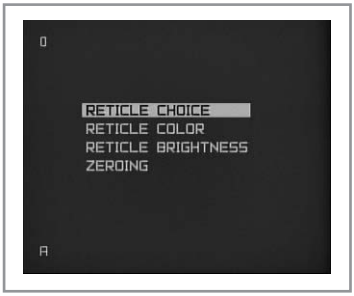
To adjust the display brightness:

1. Press shortly the "Menu" button (15) to enter the "Display brightness" menu;

2. Using the buttons "left" (14) or "right" (16) select the display brightness level;

3. To save and exit to the "Display" menu press and hold the "Menu" button (15) for more than 2 sec. The saving confirmation appears on the display (for 2 sec).

4. To exit the "Display brightness" menu press and hold for more than 2 sec the "up" button (13) (to one menu level back up) or the "down" button (17) (to the main menu).



8.10. Reticle Settings.

Press shortly the "Menu" button (15) to enter the reticle settings menu.

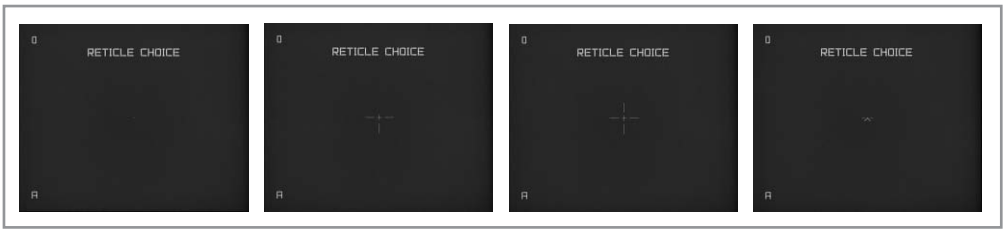
This menu enables the following adjustments:

- ► reticle type (see cl. 8.10.1);
- ► reticle colour (see cl. 8.10.2);
- ► reticle brightness (see cl. 8.10.3);
- ► zeroing (see cl. 9).

The menu is navigated with the buttons "up" (13) and "down" (17) on the button control panel (4). To enter the menu sub-point press shortly the "Menu" button (15), to exit the menu sub-point press and hold for more than 2 sec the "up" button (13) (to one menu level back up) or the "down" button (17) (to the main menu).

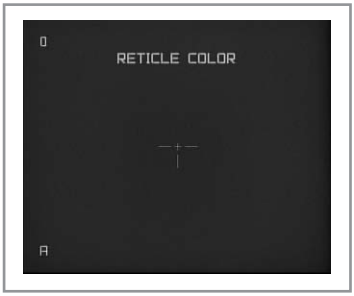
8.10.1. Reticle Type.

The menu "Reticle Type" has four options of the reticle type – centre dot, German post, crosshair and chevron.



To select the reticle type:

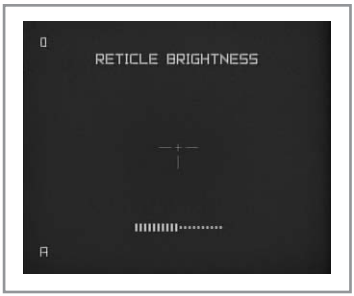
1. Enter the menu "Reticle type" by pressing shortly the "Menu" button (15);
2. Select the reticle using the buttons "left" (14) and "right" (16);
3. Save the reticle type by holding the "Menu" button (15) for more than 2 sec To exit the menu without saving press and hold the "up" button (13) for more than 2 sec



8.10.2. Reticle Colour.

To make the reticle more distinct against the observed objects you can select the reticle colour.

1. Enter the menu "Reticle Colour" by pressing shortly the "Menu" button (15);
2. Select the reticle colour using the buttons "left" (14) and "right" (16);
3. Save the reticle colour by holding the "Menu" button (15) for more than 2 sec To exit the menu without saving press and hold the "up" button (13) for more than 2 sec.



8.10.3. Reticle Brightness.

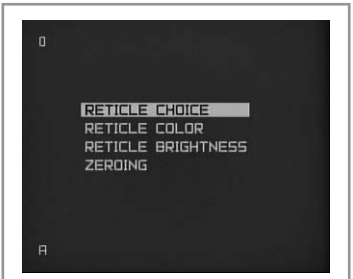
To make the reticle more distinct against the observed objects you can also select the reticle brightness. To adjust the reticle brightness level:

1. Enter the menu "Reticle Brightness" by pressing shortly the "Menu" button (15);
2. Select the reticle brightness level using the buttons "left" (14) and "right" (16);
3. Save the reticle brightness by holding the "Menu" button (15) for more than 2 sec. To exit the menu without saving press and hold the "up" button (13) for more than 2 sec.

9. Zeroing

Set the test-target at the zeroing distance (for example, 100 m). Turn on the scope (switch lever (12)). Adjust the scope as specified above to achieve the best target image.

The scope has ten profiles to save the corrections (for example, for different distances, for different types of ammunition etc.).



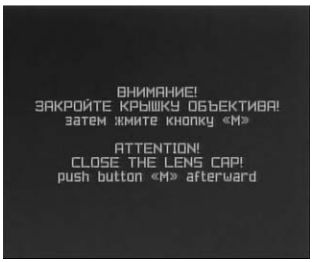
To perform zeroing:

1. Select the required profile with the profile switch (8);
2. Point the weapon at the target center with the sight;
3. If the target center does not match the reticle, make corrections. In the main menu press and hold the "Menu" button (15) on the button control panel (4) until the settings menu appears.
4. In the settings menu select the point "Reticle Settings" with the buttons "up" (13) and "down" (17) and press shortly the "Menu" button (15).
5. Select the point "Zeroing" with the buttons "up" (13) and "down" (17) and press shortly the "Menu" button (15).
6. Move the reticle by pressing the buttons "up" (13), "down" (17), "left" (14) and "right" (16). On the top the display shows X and Y coordinates with respect to the screen center. Match the target centre with the reticle centre.
7. Fire 3-4 trial shots. Specify the shooting accuracy and the mean point of impact (MPI).
8. If MPI deviates more than by the permitted value (pace of corrections in table 1.2), re-enter the corrections.

Attention: When the corrections are entered it is the reticle that moves, not the MPI.

If the zeroing results are satisfactory, save the profile by pressing and holding the "Menu" button (15). The display shows the successful saving confirmation and the device returns in the "Reticle Settings" menu.
To exit the zeroing menu to one menu level back without saving press and hold the "up" button (13) for more than 5 sec.
To exit the zeroing menu to the main menu without saving press and hold the "down" button (17) for more than 5 sec.

10. Pixel Correction



Due to the impact loads, black and white dots may appear in the scope. The device features the correction function to delete these dots.

ATTENTION:
Correction shall be performed with the lens cap CLOSED!

1. Turn on the scope (switch lever (8));
2. Press and hold the "Menu" button (15) until the settings menu appears.
3. Select the point CORRECTION with the buttons "up" (13) and "down" (17) select and press shortly the "Menu" button (15). The reminder to close the protective lens cap appears on the screen.
4. Press hold the "Menu" button (15) for more than 2 sec to enter the "Correction" menu.

Switch between the modes by pressing shortly the "Menu" button (15).
Modes:
AUTO – automatic dead pixels correction;
SAVE – saving;
RESET – cancelation of the automatic dead pixels removal;
EXIT – exit.

10.1. Automatic Dead Pixels Removal.

To remove automatically the dead pixels press and hold the "Menu" button (15) with the option "Auto" selected. The display shows the message confirming the successful removal.

Attention: sometimes after the automatic correction some dead pixels may be left. In this case remove the remained pixels in manual mode (see cl. 10.3).

10.2. Cancelling the Automatic Dead Pixels Removal.

To cancel the automatic dead pixels removal press and hold the "Menu" button (15) for more than 2 sec with the option "Reset" selected. The display shows the confirmation request.
To navigate upwards press "up" button (13);
To navigate downwards press "down" button (17);
To confirm press and hold the "Menu" button (15) for more than 2 sec.

10.3. Manual Dead Pixels Removal.

Using the buttons "up" (13), "down" (17), "left" (14) and "right" (16) align the cursor with the dead pixel and press and hold the "Menu" button (15) for more than 2 sec.

10.4. Saving the Correction Results.

To save the dead pixel correction results press and hold the "Menu" button (15) for more than 2 sec with the option "Save" selected. The display shows the message confirming the successful saving.

10.5. Exiting the Correction Menu.

To exit the correction menu press and hold the "Menu" button (15) for more than 2 sec with the option "Exit" selected.

11. Rangefinder (not included)

The rangefinder enables to detect the exact distance to the target to get better shooting results. The scope features the possibility to attach the external rangefinder (Fortuna LRF). The measured distance is displayed in the right upper corner of the screen.

1. Install the external laser rangefinder on the scope or the weapon (the scope and the rangefinder are connected via radio channel, so the distance between them should not exceed 50 cm);
2. Turn on the rangefinder;
3. Press and hold (more than 2 sec) the "Menu" button (15) on the button control panel (4) to enter the settings menu;
4. Select the point "Rangefinder" using the buttons "up" (13) and "down" (17) on the button control panel (4);
5. Press the "Menu" button (15) to enter the "Rangefinder" point;

Navigate the menu with the buttons "up" (13) and "down" (17).

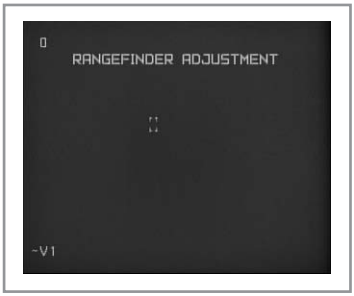
11.1. Turning on/off the rangefinder readings

To turn on/off the rangefinder readings on the scope display press and hold the "Menu" button (15) with the option "Rangefinder on/off" selected. When the rangefinder turns on, the display shows the message "Rangefinder on", when it turns off – "Rangefinder off". The receiver card is turned on/off.

When turning on the rangefinder the icon "S:" is flashing in the right upper corner. It is flashing until the device is connected to the rangefinder, then the icon "S:" is displayed continuously.

11.2. Rangefinder Adjustment.

Attention: When the rangefinder is installed on the scope for the first time, the rangefinder needs to be adjusted – to align the rangefinder optical axis with the measurement area on the display.



1. Turn on the target finder on the rangefinder unit;
2. Press shortly the "Menu" button (15) to enter the "Rangefinder adjustment" menu;
3. Point the laser target finder on the thermally contrast object at distance of 50-100 meters;
4. Viewing through the scope align the measurement area with the object using the buttons "up" (13), "down" (17), "left" (14) and "right" (16);

5. Save the measurement area adjustment by holding the "Menu" button (15) for more than 2 sec. The display shows the successful saving confirmation and the device returns in the "Rangefinder" menu.

For more details about the rangefinder operation consult "The Rangefinder User's Manual".

12.1. Attaching the External Power Supply (not included).

To increase the run time of the device it is possible to attach the external 5V power supply with a USB connector. Take off the safety cap (11) from the socket and using the cable supplied with the device, connect the external power supply to the device.

12.2. Attaching Video-Recorder (not included).

To record the process of zeroing, hunting, observation etc, the video-recorder (Newton CVR640 type) can be attached to save the image on the SD card. Take off the safety cap (11) from the socket and using a cable adapter (not included), connect the device to the video-recorder.

The device does not start.	1. No batteries. 2. The batteries are low. 3. Poor contact.	1. Insert the batteries. 2. Replace the batteries. 3. Clean the contact pads.
Poor image quality. *Blurred image.*	1. Dirty inlet objective lens or eyepiece. 2. The lens is not focused. 3. Low contrast due to rough conditions of observation; heavy rain, heavy fog, low temperature gradient of the observed objects.	1. Clean the optics with spirit - ether mixture. 2. Focus the optics.
Diagonal lines on the monitor.	The batteries are low.	Replace the batteries.
No image.	1. Contrast and brightness are not adjusted. 2. The batteries are low.	1. Adjust contrast and brightness. 2. Replace the batteries.

14.1. Maintenance of the Scope

The maintenance of the scope includes visual inspection of its parts, cleaning and installing standard and optional accessories.

14.2. Cleaning

A) Cleaning the scope.

1. Remove carefully the dirt from the device enclosure with clean and soft cloth.
2. Wet the cloth with water and wipe thoroughly the device surface (except optics).
3. Wipe the wet and clean enclosure with dry and clean cloth.
4. Using a soft brush remove carefully dust, sand and dirt from the optical surfaces.
5. Wet soft woollen cloth with the spirit-ether mixture and clean the optical surface of the lens and eyepiece with light twisting movements from the centre edgewards. Change the cloth after each wiping cycle. Repeat the actions until complete cleaning of the optics.

B) Cleaning the accessories.

Wipe the accessories with a brush or cloth wetted with soapy water (if required).

Attention!

Prior to put the scope in the pouch or the case for storage, dry thoroughly each item from the scope kit.

14.3. Preparing for Storage

1. Check the condition of the device.
2. Remove the batteries.
3. Clean the device and its accessories.
4. Put the device and the accessories in the case (the pouch).

14.4. Storage

After usage and maintenance the scope should be stored in the factory package as described in clause 14.3. This ensures that the scope is kept ready to use for the whole guarantee period of storage and usage.

15. Warranty

Guarantee service life of the device is 24 months from the delivery date. Without the note on the delivery the guarantee period begins on the manufacturing date from the factory.

The warranty is effective only with the correctly filled user's manual with the serial number, delivery date and clear stamps of the supplier and manufacturer.

The guarantee repair is performed free of charge (including the cost of work, materials, and, if required, transportation) on the manufacturing factory or in the service company.

Any complaints about the item quality are considered after the quality inspection on the manufacturing factory. The decision on replacement or repair of the item or its parts is within the competence of the specialists of the manufacturing factory or the service. The replaced parts and units become the property of the manufacturer or the service-centre.

After the guarantee service the warranty period is not renewed but continues.

The liability under this warranty is limited with the liabilities specified in this document unless otherwise specified by the applicable law.

If during the usage of the item it is revealed that the parameters of the item do not correspond with the user's manual, please consult immediately with the manufacturer on the address and the phone numbers specified in the user's manual.

Within the whole guarantee period the owner has the right to free repair of the item's defaults resulting from the manufacturing faults.

The acquired item requires special installation (adaptation) on the weapon.

The items are accepted for the guarantee repair in set with the factory mount.

The manufacturer is released from all the warranty obligations in case of unassisted (unauthorized) installation of the item on the weapon or usage of self-made mounts (bars).

Remember! The competent item adaptation on the weapon influences significantly on its following correct function and warranty service.

The manufacturer's warranty does not cover the following:

- Loss of the user's manual for the item;
- Alterations of the user's manual text, damage and alteration of the serial number or in the manual in case of their mismatch;
- Mechanical damage, damage due to the chemicals exposure or misuse;
- Usage of the item for improper applications;
- Damage or malfunctioning due to exposure to fire, corrosive substances, actions of animals or insects;
- Defaults due to force-majeure (fire, natural disasters etc.);
- Incompetent repair, disassemble or adaptation to the weapon and other interference of unauthorized persons not provided for by the manual;
- Damage resulting from disregard of rules of usage, storage and/or transportation by the fault of the owner, the transport company, service firm, persons or firms authorized for adaptation;
- Unauthorised alteration of the item's design.

Warranty and post-warranty service and repair are performed at:

Fortuna Optics EOOD

district "Vitosha", "Karpusitsa", Damyanitsa str. 2, Office 1, section "G"
1619, Sofia, Bulgaria
tel.: +359 88 2399915
e-mail: info@fortuna-optic.com
fortuna-optic.com

16. Acceptance Certificate

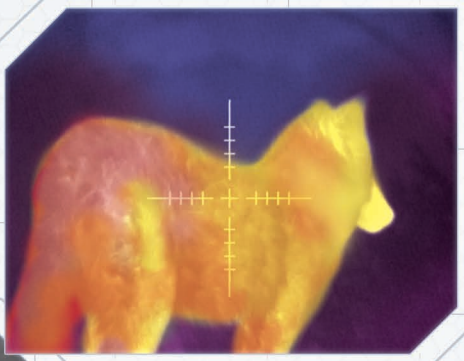
The thermal imaging scope FORTUNA _____
Serial number _____,
complies with the design documents of the manufacturer and is considered ready for operations.
This type of products is not under mandatory certification.

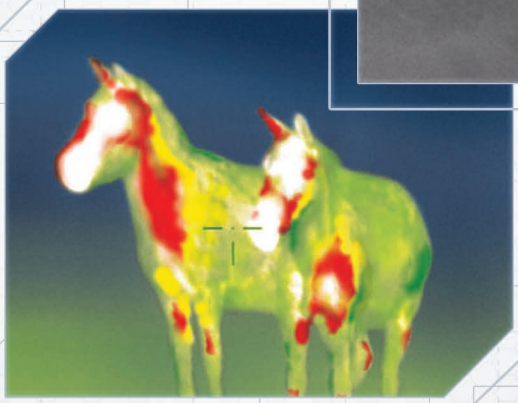
Date of sale _____
Seller _____

Seal

Profile	Weapon	Calibre	Distance, m	coordinates	
				X	Y
EXAMPLE1	*Blaser*	*.30-06*	*100*	*+ 3*	*- 6*

Notes





Manufacturer of
thermal vision devices FORTUNA

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