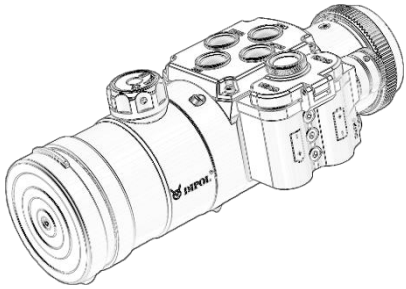
DIPOL

Explore Your Night



TFA 2.0 SL / 2.8 SL

Thermal imaging monocular/
front attachment

MANUAL

EN

CONTENT

Scope of delivery	2
Important notes & warnings	3
Application	3
Design	4
Technical Data	6
Operation & Quick Settings	10
Main Menu	14
Adjustment	24
Accessories	26
Possible errors & troubleshooting	27
Storage and transport	28
Quality Certificate	29
Warranty	30
Manufacturer & Sales	31
Certificate of conformity	

ATTENTION!
BEFORE PUTTING THE APPLIANCE INTO OPERATION, CAREFULLY READ THE OPERATING INSTRUCTIONS!

SCOPE OF DELIVERY
- TFA device
- Kordura pouch
- Lens cleaning cloth
- Manual
- USB cable with locking cap

IMPORTANT NOTES & WARNINGS

Never look with the device in the sun or other intense heat sources, this can lead to damage of the sensor!

- Protect the device from strong side impacts.
- Only use optical cleaning cloths when cleaning glass surfaces.
- Remove the batteries to store.
- Use batteries and power supplies from reputable manufacturers.
- Wait 3-5 seconds before switching the device on again.

APPLICATION

The device is designed to observe moving and immovable objects in different lighting conditions as well as limited visibility (fog, dust, etc.).

The device can be used to display locations and objects of a temperature different from the environment. It can e.g. used by guardians, tourists, hunters, fishermen to explore the terrain, detection and recognition of different objects and nature observation.

Please note that the use of the device on a riflescope is restricted in many European countries without a special permit. Follow state laws and applicable legislation!

DESIGN

1. ON/OFF button
2. Objective rubber cover
3. Focusing knob
4. MENU controller
5. Battery compartment
6. Power-on indicator
7. INVERT button
8. REC button
9. TABLE button
10. USER button
11. USB type C sloth
12. Jack 2.1 sloth
13. Support weaver rail
14. Eyepiece (optional)
15. Locking ring
16. Clamp adaptor (optional).


3
14
6
5
1
2


3
13
REC
CR123A
8
11
7
9
INVERT
TABLE
5
10
12
USER
6
4
15


14


16

TECHNICAL DATA	2.0 SL / 2.8 SL
Sensor, pixel/pitch	384x288, 17µm
Micro display, pixel	OLED 1024x768
Focal length/ aperture ratio	F40, 1,0/ F55, 1,0
Exit pupil, mm	30
Magnification: clip-on mode monocular mode	1x 2x
Field of view	9,3°x7,0°/7,5°x5,6°
Detection range by Johnson criteria(for objects 0.5x1.8m),m	up to 2000 / 2800
Spectral range, micrometre	8-14
Frequency, Hz	50
Colors / Inversion	9 +1 / yes
Max. impact load, G	600
Batteries, type	2 x CR123A
Accumulators, type	2 x LC16340**
Outer supply: Jack 2.1 USB	Jack 2.1/9,5-14,5 V USB Type C/5 V
Operation time with full batteries (+20°)	not less than 4 h
Operational temperature, °C	- 20 ... +50 °C
Videorec. temperature, °C	-15... +50 °C
Internal SD card capacity	32 Gb
Degree of protection	IP66
Dimensions, mm	175x76x105 / 201x76x105
Weight, kg	0,57 / 0,6

The technical characteristics can be changed by the manufacturer without prior notice, while maintaining the existing functionality of the device

Strongly recommend to use LC16340 batteries with a voltage of 3.7-4.2 V for correct display of the charge level

OPERATION & QUICK SETTINGS

Insert the batteries according to the polarity shown on the battery compartment (5) and remove the lens cover (2). Switch on the device by pressing the ON / OFF button (1). The control indicator (6) now lights up red. The complete switching on process should not take longer than 3-5 seconds. The device is completely ready for operation after the following view appears.

If the light indicator does not light up or blinking and the battery status indicator at the bottom right of the display is not visible or blinking, the battery charging or charging of external power sources must be checked.

If the power supply taking place via the USB type C slot, a USB symbol will be displayed instead of the battery status sign.

While using rechargeable elements instead of batteries, the battery indicator changes its color to blue.

The image on display can be warm to cold tones; it is not a defect.

To be able to use the thermal imaging monocular with other optical devices you may need a suitable adapter.

First, loosen the locking screw on the locking ring (15) on the ocular side of the device with the enclosed key. Now screw the adapter (16) on, place it into desired position and fix it with the locking ring (16). The locking ring have to be tightened again after that.
After using the device, close the objective with the lens rubber cover (2) and switch off the device by pressing the ON/OFF button.

Use as stand-alone device
With the optional eyepiece (14) you can use your TFA device as an independent observation device. First, attach an eyepiece to the ocular part of the device with a suitable adaptor. After that, adjust the sharpness of all display indications with the eyepiece (14). Then point the device at the object to be observed and adjust the sharpness of it with the focusing knob (3).
Choose in Main menu (for enter in Main menu press and hold MENU button): Main menu – Type of device – Monocular.

Use with day optics
To be able to use your TFA device with other (day) optics, the suitable adapter is required with inside diameter corresponding to the outside diameter of the day optics' objective. As described above, firsts the display sharpness has to be adjusted with daytime optics. After that, the observed objects' sharpness to be adjusted with the focusing knob (3).
Choose in Main menu (for enter in Main menu press and hold MENU button): Main menu – Type of device – Clip-on.

Color inversion
Hot black / hot white colours are usual default setting.
Briefly press the INVERT button (7) to select the required image polarity: e.g. “hot black” or “hot white”.
For change the palette please use suited chapter in main menu (Main menu – Color palette) or use the programmable button USER (for more details see p. Main menu)
All existing colours palettes can be inverted. The selected polarity is shown on the display for a moment ◆ (normal) or ◆ (inverted).

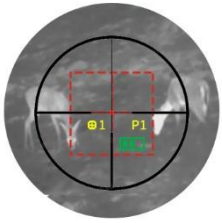
Quick settings: display & thermal sensor
With the MENU controller (4) you can adjust the *brightness of the display* (Display Brightness / BR), the *sensor sensitivity* (Thermal sensitivity / SN), *digital image enhancement* (Image Detail Enchancement / IDE) and *sensor performance level* (Thermal image gain / GN).

The individual setting modes can be seen on the display as shortcuts (here e.g. GAIN):

To set the optimal *sensor performance* (GN), choose the suitable value from -10 to +10 by turn the MENU controller (4).
To adjust the *brightness* of the display, short press MENU controller (4) for selecting BR

adjustment mode and choose the suitable value from 1 to 30 by turn the MENU controller (4).
To set the optimal *sensor sensitivity* (values from 40 to 80) short press MENU controller (4) for selecting SN adjustment mode and turn the MENU controller (4) for optimal result.
To set the optimal level of *digital image enhancement* (values from 0 to 7), press the MENU controller (4) until (IDE) mode appears on the screen then rotate controller (4) to set optimal level.

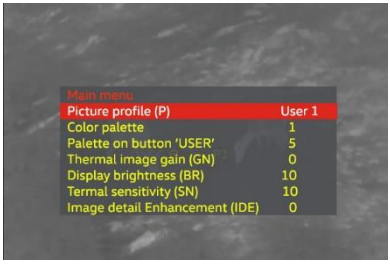
For repeatability control, the OSD table can be called up by pressing TABLE button (9) briefly every time you re-attach your TFA device, the adapter opened and device moved slightly so, that the four-field matrix lies on the marking of the day optics. The adapter must then be closed up again.



This control procedure is usually not necessary though, with a good adapter the devices are repeatable.
Read about the Position profiles in the following chapter.

MAIN MENU

To call up the main menu, keep the MENU multifunction button (4) pressed until the main menu appears in the field of view.



To move up and down in the menu, turn the MENU controller (4) in each direction. Choose menu lines by briefly pressing the MENU controller (4). Exit menu lines by pressing the MENU controller (4) again.

To exit the main menu, press and hold the MENU controller (4). The main menu also disappears automatically after 15 seconds of inactivity.
The selected setting modes with their current values are shown at the bottom of the status bar.

Picture Profile (P)

The TFA device already has three User profiles (User 1, User 2 and User 3), which can be customized and three pre-installed profiles (Fix 1 Woods, Fix 2 City, Fix 3 Mountains), which have initial adjustments setups for those conditions.
Each profile can be customized. All your adjustments (color palette, polarity, sensor gain level, etc) automatically will be saved in current profile, but in case to repeated choosing “Fix ...”

profile all your adjustments will be cancelled and restore to initial for this “Fix” profile.
Note: Switching the profiles should be done with a delay of 3-4 seconds for change settings.

Color palette

You can choose from 10 available colour palettes, which are displayed when you first call up the "Color palette" menu item.
Note: the settings of the selected palette are saved after the device is switched off.

Palette on button “USER”

You can quickly select a different color palette than defined in the basic setting (Color Palette).
Note: This menu item will be displayed only if in item “USER button function” will be chosen item “Color palette”.

Thermal image gain (GN)

Here you can determine the performance of the thermal imaging sensor. This setting process is also described in detail in the *operation & quick settings* chapter.

Display brightness (BR)

The display brightness will be adjust in this unit.

Thermal sensitivity (SN)

The sensitivity of the thermal sensor can be adjusted here.

Image Detail Enhancement (IDE)

Settings for increasing the general image detail/smooth.

Image Polarity Inversion

In this item you can choose image polarity (hot – black or hot – white). Color palettes also can be inverted.

Super contrast display mode

Increases the contrast and image quality, especially with insignificant temperature differences for observed objects or backgrounds.

USB data transfer to PC

Enables the copying and deletion of video files from the built-in memory card. Plug USB type C cable to slot (11) and other cable side connect to PC USB slot, then select this chapter and press MENU controller (4) for confirm.

You will see the sign "Establishing connection ..." on the screen, and the device will soon be visible as a flash drive in PC.

For prevent troubles with connection or if sign “Replace the power source” strongly recommended to use branded USB cable and plug device to 2.0 USB sloth or higher in your computer.

For exit data transfer mode turn off the device and disconnect it from PC.

Video recording mode

You can choose either *normal start* or *quick start* for video recording.

In *normal start* mode, the video recording starts with a slight delay (up to 10 seconds) after the "REC" button (8) is pressed to switch on the corresponding module and load the software.

In the *quick start*, modules and software loading are activated just after the pressing the "REC" button. Videos are recorded up to 5 seconds faster after the REC button is pressed.

The following indicators are visible in the status bar during video recording:

REC (blinking)	- recording module active
REC	- ready to record
REC • 00:01:20	- recording
REC Saving	- internal storaging running

Note: the battery consumption is greater in the video recording mode as well as during the quick start.

To reduce power consumption, you can press and hold the "REC" button (8) for a few seconds and turn off the video module.
After that, it takes some time for to start recording video again, similar as during the normal start mode.
Note: video recording is not possible if the internal or external power sources are not sufficiently charged. Due to that reason, the recording also can stop automatically.

Date and time stamp position

In this chapter you can choose location place either set or not a date and a time of the video recording that can be displayed during recording time.

Auto bad pixel correction

After an automatic correction of defective pixels, press and hold the MENU controller (4) to save changes or briefly press the MENU controller (4) to cancel the changes.

PLEASE NOTE, THAT THE OBJECTIVE LENS MUST BE COVERED DURING THE AUTO PIXEL CORRECTION!

Manual bad pixel correction

In this mode, individual defective pixels or pixel groups can be corrected manually. Please note that the correction of a pixel group from its edges to the center must be done by gradually reducing the radius of the group.
By turning the MENU controller (4), the marking cross can be moved over the field of view (note: with constant rotation, the increment of the shift increases!).
The coordinate axis of the cross movement can be changed by briefly pressing the MENU controller (4). After the cursor is positioned as

precisely as possible over the defective pixel, briefly press the ON / OFF button (1). The pixel then changes colour.
Repeat the process with other defective pixels if necessary. To save the changes, press and hold the MENU controller (4).

PLEASE NOTE, THAT THE OBJECTIVE LENS MUST BE COVERED DURING THE AUTO PIXEL CORRECTION!

'ON-OFF' button function
In this unit you can select one of the available functions for quick access via the ON-OFF button:
- display ON-OFF,
- Super contrast,
- Picture profile.

If you chose a "monocular" mode in the section "Type of device" (see suited section) than functions list will be the same.
'User' button function
In this unit, you can select one of the available functions for quick access via the USER button on the top of the device:
- Picture profile,
- Color palette,
- Super contrast.

If you chose the "monocular" mode in the section "Type of device" (see next up) than functions list will be the same.
Status bar position
Allows to choose a spot of the status line/bar during video recording process in the field of view.

Status bar delay time, s
Here you can set the inactive time (in seconds), after which the status bar disappears from the screen.

The following chapter available in menu only in "Monocular" mode!
Menu position
In this chapter you can set status line location in the field of view.

OSD transparency
In this chapter you can increased/decreased Main menu/table/status line transparency on the screen.
Auto power-off, minutes
Allows the device to turn off automatically after a period of inactivity (in minutes).

The following 4 chapters available in menu only in "Clip-on" mode!
Position profile
This MENU mode allows quick switch between *Image position* and *OSD position* setting pairs (each setting pair = *correction/sight in profile*). There are 5 profiles avaliable.

Important: here you do not change your Picture profiles (s. page 11).
Important: all correction profiles are saved automatically after changing them!

Image position correction
Here you can move the image on the micro display according to the sight in of your day optics (see chapter ADJUSTMENT).

OSD position correction
Here you can place the quick settings table in the position on the micro display, which allows your to check the mounting correctness of the re-attached TFA device (see chapter ADJUSTMENT).
Restore position settings
Allows to reset Image position and Table position to factory defaults.

Date set
In this section you can set the date to be displayed during video recording. The setting is made by pressing and turning the MENU controller (4).
Time set
Here you can set the time that is displayed during video recording or video transmission.
The setting is made by pressing and turning the MENU controller (4).

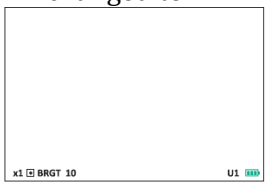
Please note that the date and time settings are not lost after the power elements are switched off or removed.
However, if the device has been switched off for a longer period (longer than 4 months), the date and time settings may need to be made again.

Clear video record storage
Here you can delete ALL video recordings from the internal SD memory card without having to connect the device to a PC.
Language
Allows you to select the language for the user interface. Russian, English, German, Spanish are available.

Type of device.

You can choose device type: *clip-on* or *monocular*.

In *monocular* mode you can use device with additional ocular for observation. Also in this mode changed Basic menu position and main screen view will changed to :



In this mode you can use digital zoom: press TABLE button for desired level (2x, 4x).

Note: digital zoom multiply device optical magnification (for example, in monocular mode with 2x magnification ocular on zoom level 4x the device will have 8x magnification).

Version of the video recording module.

Shows video recording module version.

Software version

Displays the version of the installed device software.

Settings reset

Here the current device settings can be reset to the factory settings. Please note that the quick settings of the image and sensor, as well as the settings in the user profiles remain unchanged!

Briefly press the MENU controller (4) and select “Yes” by turning. Briefly press the controller to confirm.

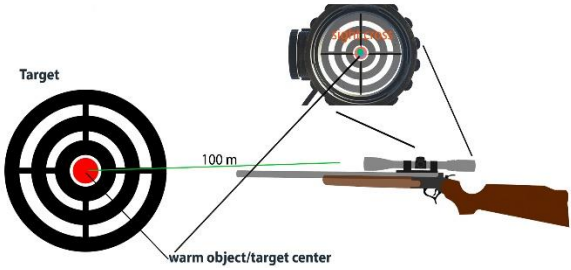
Please note that a reset is not possible during video recording!

Note: Menu content may vary very insignificantly to improve the operation of the device depending to software version. In case of any questions, please, contact to the company-manufacturer.

ADJUSTMENT

Make sure that your day optic is sighted in at 100 m.

• Point your day optic exactly at a relatively small warm object (e.g. a hand warmer) at a distance of approx. 100 m and fix it solidly in this position e.g. in a vice.



• Mount the TFA device on the objective of your day optics using a high-quality clamp adapter.

• Switch on the TFA device, open the objective cover and look through the whole system again.

• If the observed object is no longer in the centre of the reticle, it must be “moved” back there.

• To do so, press and hold the MENU controller (4) and select the ***"Image position correction"*** in the main menu (make sure that Clip-on mode has been enabled first).

• First move the object along the X-axis (horizontal directional arrows) by turning the MENU controller (4) and confirm the correction.

• Now move the object along the Y-axis (vertical directional arrows) in the same way and confirm the correction.
• Go back to the main menu (press and hold the MENU controller (4) and select the menu line ***"Table position correction"***.
• In the same way as described above, move the square table that appears so, that its centre lies exactly above the object/reticle.
• Confirm and exit the main menu.

For repeatability control, the quick settings table can be called up briefly every time you re-attach your TFA device, the adapter opened and device moved slightly so, that the four-field matrix lies on the marking of the day optics. The adapter must then be closed up again. This control procedure is usually not necessary though, with a good adapter the devices are repeatable.

ACCESSOIRES

The device offers the possibility of connecting an external power source with 9.5-14.5 V with a JACK 2.1 connector (12).
It is also possible to supply the device with an external power source via the USB type C connector (11) with a voltage of 5 V.

POSSIBLE ERRORS & TROUBLESHOOTING

Your device is a complex optomechanical device. A repair or maintenance may only be carried out under the conditions of the manufacturer.
If the display does not appear or flash after switching on and the image is missing or flashing, the batteries may be dead or the contacts in the battery compartment may be broken.
Replace the batteries and check the contacts to the battery compartment cover (11) and contacts in the battery compartment for traces of corrosion and dirt.
If the device still does not work as intended after the batteries have been replaced and cleaning the contacts does not help, do not attempt to disassemble and repair the device yourself, even if other defects or faults occur. This can be cause major failures and loss of warranty. Please contact the seller or the manufacturer.
Make sure that the maximum operating time of the device is achieved by using batteries of known manufacturers with a temperature of +20°C. Using batteries of unknown manufacturers and during the wintertime, the operating time of the device may be reduced, and it does not indicate a technical defect.

STORAGE & TRANSPORT

The device should be stored in a dry, warm and ventilated room with a relative humidity of up to 80% at a temperature of 5 ° C - 30 ° C. There should be no acid fumes, alkali and other aggressive airborne contaminants in the room. Even if the device is only to be stored for a relatively short time, remove the batteries from the battery compartment.
The transport conditions depend on climatic factors (temperature from -50°C to +50°C, relative humidity not more than 98% at 25°C).
The device can be transported with any type of covered vehicles according to the transport regulations of the respective mode of transport.

QUALITY CERTIFICATE

Thermal imaging monocular
TFA2.0 ☐ / 2.8 SL ☐

Serial №
……

Sensor №
……

Release date
……

Quality control department
……

WARRANTY

The manufacturer guarantees that the quality of the thermal monocular meets the technical requirements, if the rules and conditions for storage, transport and operation are observed.
The warranty period is 24 months.
The manufacturer repairs the unit or changes it in the event of a manufacturer's fault during the warranty period.

MANUFACTURER & SALES

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COMPLIANCE NOTE

CE This device complies with the EMC Directive and Waste Electrical and Electronic Equipment Directive, as well as other applicable European directives, in accordance with the essential requirements and other regulations.


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