PumIR-M™

Manual

Version of: 03/2025
FW: from 1.0.09M

PumIR-M™ Quick start guide

Valid for (from firmware 1.0.09M):
PumIR-M™
PumIR-M.5™
PumIR-M20™
PumIR-M20.5™

Switch on:
1. lift the flap and fold it back
2. device starts automatically
(Uptime approx. 4s.)

Switch off:
1. close flap
2. device switches off automatically
(Downtime approx 4s.)

Operation

Button 1 & 3
Press and hold simultaneously: Open menu

Battery compartment with
Locking screw

Button 2:
Press and hold: change filter
Press briefly: Change zoom level
PumIR-M/M20: 1x, 2x, 3,x, 3x, 8x
PumIR-M.5/M20.5: 0.5x, 1x, 1.5x, 2x, 4x

Button 1
Press briefly:
display brightness, alternating
Press and hold:
manual FFC (p.11)

Insert/change of battery

Open the battery compartment by turning the lock to the left.
Insert two CR123 batteries or two rechargeable Li-ion batteries (type 16650) according to the polarity indicated on the battery compartment. Close the battery compartment again.

Note
Only use externally intact CR123 brand batteries. The battery compartment is sealed to the inside of the device. This means that you can change the batteries even in the rain. Water entering the battery compartment cannot damage the electronics inside. However, it should be dried with a cloth if necessary. It should then be left open for a few hours to allow the last of the moisture to evaporate. If you insert the batteries with the polarity reversed, this will not damage the device. The PumIR™ is protected against this both mechanically and electronically.

Note
When the device connector is not in use, it must always be sealed watertight with the cap provided.

Button 3:
Press briefly: manual calibration
Press and hold: Outline mode on/off

Button 4:
Press and hold:
On/Off (uptime/downtime approx. 4 sec.)

Display text and symbols

NORM

NFOV

XFOV

Preface by the inventor

Following the great success of our TigIR series among users who place particular emphasis on precision, some customers expressed a desire for an even more compact device for shorter ranges. However, in similar numbers, there were also customers who wanted an even longer range. So the idea for the PumIR was born. Its basic configuration was to be much more compact than the TigIR, but optionally extendable to a range of up to 4km with its attachment lens. Of course, the PumIR also has the proven features already known from the TigIR, such as AI upscaling and subpixel collimation, which help the device to achieve its well-known high precision. But there is one more wish we will fulfill for our customers with the PumIR: Many users use high-magnification riflescopes, which are rather unsuitable for attachments. For this group of customers, too, we are leaving the well-trodden path of 1:1 attachments and offering the .5 series, in which the image is displayed 50% smaller. This means that even users of 4x magnifying night glasses get a sharp image with a large field of view. Now I am glad that you have decided to purchase a PumIR and wish you much success in its use. I am grateful if we also receive your suggestions for the further development of our products. This way we can continue to manufacture devices here in Berlin that are always a little bit ahead of their time.

April 2023
Dr. Björn Andres
(CEO of Andres Industries AG)

Thermal picture of the developers

Foreword to the current edition

Technology has developed very quickly in recent years. Uncooled thermal imaging sensors from the USA now exceed the performance of cooled systems from Europe. We no longer want to withhold from our customers this performance performance of currently <15mK, an outline mode and improved image optimization All other proven functions and performance data of the PumIR have been retained, so I would now like to wish you continued success with the new models.

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Scope of delivery

PumIR

2 Batteries CR123

Manual

Quick Start guide

Thread cap

Cleaning cloth

Big outdoor case

Battery Sleeve

Thermal imaging functions

Switching on/off

To switch on, open the protective flap. Opening the flap releases the thermal sensor and the device starts up within a few seconds. The thermal image is then displayed on the screen. This automatic switch-on function can also be deactivated in the menu if required, which reliably prevents accidental switch-on in the pocket (p.15).

Operating time

The operating time depends on various factors:

- Quality of the battery used
- Low ambient temperatures reduce the operating time considerably in some cases
- Bright display lighting reduces the operating time
- IIn pure thermal imaging mode, the operating time under optimum conditions is approx. 08:00 hours

To extend the operating time, please also refer to the notes on p. 12 and the external power supply on p. 21.

Operating time under extreme conditions (e.g. cold temperatures)

It may happen that the battery can no longer provide the comparatively high currents required to operate the automatic shutter (calibration) due to its low state of charge or use at low temperatures (0° to -30°C). The device then automatically switches to manual calibration mode and remains ready for use. The following is then changed:

If a calibration is expected to improve the image, this is indicated by the appearance of the shutter flag (small unfilled square at the top right, p.4). If the shutter flag is not responded to with a manual calibration (p.11), the image may deteriorate in the following ways: Vignetting (increasing contrast deterioration from the outside), possible vertical stripes, general contrast reduction, increased noise

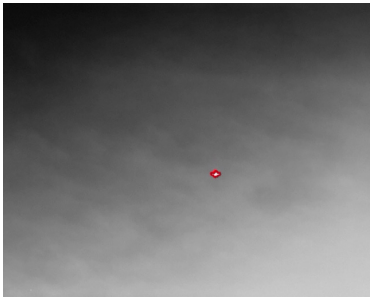
If the device is started at low temperatures or with an almost empty battery, the limitations mentioned above will occur right from the start, but can also be eliminated by manual calibration. Overall, the operating time is increased if manual calibration is used as exclusively as possible.

Screen texts

The currently selected filter (left) and the current zoom level (right) are displayed at the top of the screen.

Outline mode

In outline mode, the warmest objects are outlined in red so that even very small or distant objects that are only a few pixels or just one pixel in size are clearly highlighted. This is particularly helpful for drone detection. Press and hold button 3 to switch outline mode on or off.



Thermal filters

The PumIR has ten different thermal filters, which can be selected one after the other by pressing and holding button 2. The thermal filters have different functions for different situations. All tactical filters are also available in a “boost version”. This is characterized by increased contrast and pronounced edge enhancement. However, this also increases the image noise. Boost mode is particularly helpful in poor thermal conditions such as rain, fog or lack of sunlight.

CR = Cold Red
With this filter, the heat sources are shown in black and the coldest areas of the image in red. This tactical filter is preferably used at night to reduce glare.

BCR = Boost Cold Red
The boost variant of the CR filter optimizes the brightness dynamics. This means that even less warm objects are displayed better. This makes orientation easier, e.g. indoors, where all objects often have the same temperature. It is often also more suitable in damp weather. Sharpness is also optimized in boost mode.

RH = Red Hot
This filter is similar to the white hot filter. Instead of white, red is used as the brightest color. It is a tactical filter for use at night.

BRH = Boost Red Hot
The boost variant of the RH filter optimizes the brightness dynamics. This means that even less warm objects are displayed better. This makes orientation easier, e.g. indoors, where all objects often have the same temperature. It is often also more suitable in damp weather. Sharpness is also optimized in boost mode.

CG = Cold Green
Comparable to the cold red filter, except that green is used as the brightest color here. With this filter, stray light that is reflected by the eye, for example, is far less perceptible by residual light amplifiers. It is therefore also a tactical filter. However, the glare effect for the user at night is very pronounced, as the color green is also perceived by the rods as one of the brightest colors.

BCG = Boost Cold Green
The boost variant of the CG filter optimizes the brightness dynamics. This means that even less warm objects are displayed better. This makes orientation easier, e.g. in interiors where all objects often have the same temperature. It is often also more suitable in damp weather. Sharpness is also optimized in boost mode. This filter may also be unsuitable in bright sunshine.

WH = White Hot
With this classic black and white filter, which is preferred for tactical purposes, the strongest heat sources are shown at their brightest. This means that people and animals are easy to recognize under normal circumstances. However, they can also fade into the background compared to even brighter heat sources (e.g. fire).

BWH = Boost White Hot
The boost variant of the WH filter optimizes the brightness dynamics. This means that even less warm objects are displayed better. This makes orientation easier, e.g. indoors, where all objects often have the same temperature. It is often also more suitable in damp weather. Sharpness is also optimized in boost mode. This filter may also be unsuitable in bright sunshine.

BH = Black Hot

In contrast to the white-hot filter, the heat sources are displayed in black here. This makes the thermal image look much more natural. However, as a much larger area of the image is displayed in lighter shades of gray, the glare effect is more pronounced at night.

BBH = Boost Black Hot

The boost variant of the BH filter optimizes the brightness dynamics. This means that even less warm objects are better displayed. This makes orientation easier, e.g. indoors, where all objects often have the same temperature. It is often also more suitable in damp weather. Sharpness is also optimized in boost mode. This filter may also be unsuitable in bright sunshine.

RB = Rainbow

The rainbow filter is a technical filter that can be used to assess building insulation, for example. The color gradient is no longer displayed in monochrome as with the previously described filters. Instead, a false color representation takes place. The gradient goes from warm to cold via the colors white, red, yellow, green, blue and black.

RBHC = Rainbow HC

The Rainbow-HC filter is comparable to the Rainbow filter, except that each color transition also contains a brightness coding to black. This ensures even stronger contrasts at the transitions from one color to another and makes even smaller temperature differences visible. With this filter, thermally largely homogeneous surfaces such as walls can be examined particularly well for changes (e.g. damp areas). However, the orientation and classification of temperature ranges is hardly possible any more.

IRON = Iron Bow

Also a technical filter in which heat sources are displayed in a limited range of false colors. The gradient from warm to cold is created using the colors white, yellow, orange, violet and blue. Heat sources are emphasized by an increased contrast. The dynamic range of less warm areas is high.

GLOW = Glowbow

A simple filter in which heat sources are displayed in yellow and colder areas remain red. In this way, people and animals are highlighted. If it is used at night in the forest, a reduced glare effect can be expected, but this is significantly better with the tactical red filters.

HOT = Hottest

A filter that is very popular with hunters. Heat sources such as animals and people are displayed in orange, while all cooler areas remain black and white. This enables better orientation. This filter is particularly recommended in the second half of the night, when inanimate objects have cooled down considerably. Otherwise, trees and larger stones, for example, may still radiate too much residual heat and therefore also appear orange.

Calibration

Automatic calibration

As soon as the device is started, the temperature-dependent actual and optimum image display is calculated. If differences are detected, the sensor calibrates itself automatically to keep the image quality at the highest level - unless the automatic function has been deactivated by manual intervention (see below).
The process is characterized by the brief appearance of the shutter flag, a quiet click of the electromechanical shutter during which the image freezes for a fraction of a second, and the disappearance of the shutter flag (see below). As the operating temperature increases, the number of automatic calibration processes continues to decrease until the maximum time interval of 20 minutes is reached.

Manual calibration

Once manual calibration has been performed, automatic calibration will no longer take place. This only starts again when the device is switched on again. Manual calibration results in better image quality compared to uncalibrated operation and a longer battery life than in automatic mode. Manual calibration can be carried out in 2 ways:

- With button 3: To trigger manual calibration, press button 3 shortly.

- Without flap: Is carried out if the flap is defective or cannot be used.
    1. Point the device a few centimeters away from a surface with the following properties:
       a. It must be thermally uniform.
       b. It must not reflect.
       c. It should be at approximately the ambient temperature.
    2. Press and hold button 1 until “Push B1 for FFC” appears on the screen.
    3. Now briefly press button 1 again within five seconds. Calibration (FFC) is now complete.

Note
Suitable tools that can be calibrated to if they correspond to the ambient temperature are:
- **Foam (e.g. sponge)**
- **Sheet of paper**
- **Tree or forest floor within a few centimeters from the objective lens**

Unsuitable are:
- **Metal parts (except matte surfaces, zinc sheet window sill is suitable)**
- **Hand surface**
- **Sky**

Shutter Flag

If the device is in manual calibration mode, the need for a new calibration is indicated by a small empty square at the top right of the screen (p.4). It means that the thermal image will improve with a new calibration. It is not harmful for the device to do without calibration. After manual calibration, the shutter flag disappears again.

Use of rechargeable batteries

Attention
Please read the safety instructions carefully and observe them thoroughly!

It is possible to use the PumIR with 2 batteries type CR123 or 1 rechargeable battery type 18650. It is possible to use the PumIR with 2 batteries type CR123 or rechargeable battery types 18650 and RCR123

Improper handling and incorrect use of lithium-ion batteries can lead to damage to health, injury or property damage due to electrolyte leakage, ignition or explosion. To ensure safety, please contact us to clarify any questions or uncertainties regarding charging and discharging specifications, construction, warning labels, general use of our product and other important details. It is best to use the chargers recommended by us.

- NEVER charge batteries to a final voltage of more than 4.20 V
- NEVER charge batteries with incorrect polarity
- NEVER heat or incinerate batteries
- NEVER pierce, break or in any other way mechanically damage batteries
- NEVER charge batteries under the influence of high temperatures, e.g. near a fire
- NEVER cause a short circuit on the batteries
- NEVER allow the batteries to get wet or lie in water
- NEVER use batteries with different charge levels together
- For long storage periods, the storage temperature should be below 45°C
- For long storage periods, the voltage should be between 3.65V and 3.80V.

Brightness adjustment

Briefly press button 1 to set the display brightness. If the brightness has not been changed for at least 10 seconds, the brightness decreases each time the button is pressed until it reaches the darkest setting. Each time the button is pressed again, the brightness increases again until the brightest level is reached, and so on. The last setting is saved and automatically recalled the next time the device is switched on. Please note that you will get the best results with levels 4-5.

Note
Especially during nighttime it makes sense to set the display to a very low setting to reduce glare. If the PumIR is then switched on the next day, the display will appear so low that it may be mistaken for defective. Therefore, if the screen appears to be black, always press button 1 a few times first.

Zoom

Briefly press button 2 to switch between the following zoom levels (see page 4 for display), some of which can also be deactivated via the menu (page 14):

0.5x: This zoom level offers the best overview and is particularly helpful for orientation. However, as this is a negative zoom, it is more difficult to estimate distances.

1x: In this setting, all objects on the display are shown in the same size as in reality. This setting is particularly useful outdoors for a natural estimation of the distance to people or animals.

1.5x, 3x, 4x and 8x: The higher zoom levels are particularly suitable for observation and identification. You often find heat sources in settlements or forests whose origin cannot be easily determined. For example, rotting tree stumps, anthills or large stones produce clear heat signatures that can easily be mistaken for people or animals. With the help of a higher zoom level, objects can be better classified by closely observing their movements - stones, for example, move very little.

Menu
Special Functions

Menu

You can access the menu by pressing buttons 1 and 3 simultaneously (for at least one second). As long as you are in the menu, the normal functions of the buttons are deactivated and they now have the following functions:

Overview

Button 1 short:
cursor down, in the collimation menu image downwards.
Button 2 short:
cursor upwards, in the collimation menu image upwards.
Button 3 short:
in menus with character input, select to the left, in the collimation menu, move picture to the left.
Button 4 short:
in menus with character input selection to the right, in the Collimation menu image to the right.
Button 1 long:
confirm selection, confirm active number when entering PIN.
Button 2 long:
zoom level change in the collimation menu, with PIN delete digit.
Button 3 long:
exit menu/selection, cancel in collimation menu.
Button 4 long:
save settings.

Navigating and saving in the menu

Briefly press buttons 2 or 1 to navigate up and down the menu (similar to the arrow buttons on a computer). Pressing and holding button 1 is comparable to pressing "Enter" on a computer (p.19). This allows you to confirm a selection or move deeper into the menu. Press and hold button 3 to exit the respective submenu or the entire menu without saving. Press and hold button 4 to exit the menu and save the changed settings.

IMG menu

In this sector you can adjust individual settings on your device to adapt it to your application requirements.

Submenu AVID – video output

All PumIR have an analog video output that you can select or activate. The function for this can be found in the AVID submenu. In normal mode, image output via the video output is deactivated and the selection is OFF.

To activate the video output, use buttons 1 or 2 to select the PAL or NTSC output format and then confirm the selection by pressing and holding button 4. "WAIT" appears to confirm. The screen goes dark and the device restarts in the selected output mode. The image data is now output via the video interface of the device connector. You will need an appropriate screen or recording device to display the data. A suitable video cable can be found among the accessories on page 22 (not supplied).

Attention
If PAL or NTSC video output is activated, no image is displayed on the device's own OLED screen. This will remain black until the video output is deactivated again. If you want to deactivate the video output, press button 1 for 7 seconds. After releasing the button, the device restarts in normal mode. The video output is then deactivated again.

Note
The video output of the CR, RH and CG filters is not in the corresponding colors, but in black and white.

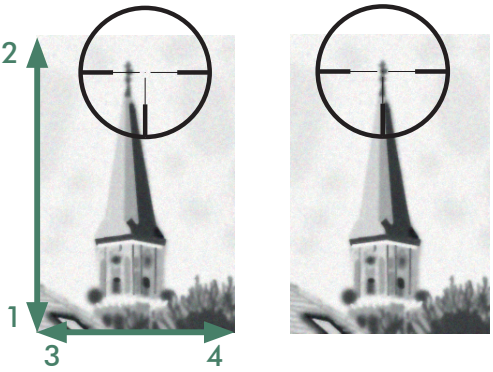
Note
When the device connector is not in use, it must always be sealed watertight with the cap provided.

Submenu COLL

In this submenu you can adjust the collimation of your PumIR.

Pre-collimation

1. Point the weapon and scope at an object that is visible in both the visible and the thermal imaging spectrum. This can be a halogen lamp, for example, but also a church spire. The object should be at least 50 m away. Align the scope so that it is in line with the object.
2. Fixate the weapon firmly into position. This can be done using rifle rest, for example, or using sandbags or other supports to hold the weapon in position.
3. Switch on the PumIR.
   a. Press and hold buttons 1 and 3 simultaneously for one second,
   b. press and hold button 1 to select the IMG submenu, then
   c. press button 1 briefly to move down one line
   d. briefly press button 1 to go to the COLL sub-item, then
   e. press and hold button 1 to select the COLL collation menu
   f. select the memory position (1-6) in which you want to save your collimation by pressing and holding button 1 again and start the collimation by pressing and holding button 1 on SET
4. Now mount the PumIR in the appropriate position in front of the scopes without moving the weapon. Ideally, the object should already be in the center of the reticle at 1x digital zoom. If this is the case, please continue with 6.
5. If the object is not yet in the center of the reticle, you can move the image step by step by briefly pressing the buttons (button 1 down, button 2 up, button 3 to the left and button 4 to the right). Briefly remove the PumIR to check whether the object is still in the center of the reticle in the visible spectrum.
6. Now change to zoom level 2x by pressing and holding button 2 and carry out the collimation as described in 5. Repeat 6. until all zoom levels have been collimated. After the highest zoom level, a long press on button 2 switches back to the lowest zoom level, etc. A long press on button 1 changes to a lower zoom level.
7. Save the settings by pressing and holding button 4.



Fine collimation

Once the pre-collimation has been completed, the system consisting of weapon - scope - PumIR can be test fired. A group of hits pattern with a radius of approx. 2-4cm at 100m should now be achieved. To improve this to 1-2cm, fine collimation is then carried out.

1. Switch to the collimation menu and fire a shot at the target.
2. If the hit is to the right of the target, for example, press button 3 (moves the image to the left) to correct it. If it is too high, for example, press button 1 (moves the image downwards) to correct the error.
3. After completing the adjustment, be sure to fire a test shot to check the result. If necessary, repeat step 2. Observe the step sizes in the tables for fine collimation (p. 26). Please note that the zoom level 1x can only be collimated to a limited extent for technical reasons. If an exact collimation of this zoom level is not possible, it is better to deactivate this zoom level.

Submenu ZOOM

All zoom levels are activated by default. In the ZOOM submenu, you can deactivate or reactivate unwanted zoom levels (except zoom level 1x). To do this, select the desired zoom level and then change the setting to ON or OFF. Exit this selection with button 3 (long) to activate or deactivate further zoom levels, or save the setting by pressing and holding button 4. This process is confirmed by a “SAVED”.

Submenu FILT

When delivered, only the CR, BCR, BRH, WH and BWH filters are activated. In the FILT submenu, you can activate or deactivate all filters so that only the filters required for use are displayed. To do this, select the desired filter (except for CR) and then change the setting to ON or OFF. Leave this selection by pressing and holding button 3 to activate or deactivate further filters, or save the setting by pressing and holding button 4. This process is confirmed by a "SAVED". The CR and RH filters are particularly useful for night-time use (p. 9-10).

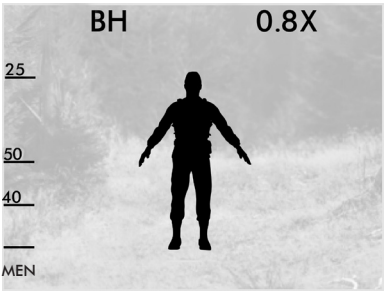
Submenu OSD – On Screen Display

SYM: The symbol display can be deactivated. This is useful for video recordings, for example, if they are not to be affected by the distracting symbols.
FOV: Depending of your optics' field of view, the symbols and menus can be placed at different positions. NORM places everything towards the edges of the OLED. With NFOV, the icons and menus can be placed further in the center. XFOV: Like NFOV, but the icons and menus are placed further in the center and their size is halved.
DIS: Set the range estimator in this submenu. You can choose between different settings - depending on the application for which you want to use the PumIR.

MEN = standing person (1,76m / 5'9")
HOG = hog (1m / 3.28ft / 39.4")
BUCK = roebuck (0.75m / 2.46ft / 29.5")
OFF = deactivated

Example Range Estimation MEN:

Align the bottom end of the silhouette (soles of the feet) with the bottom line. At the same time, align the upper end of the silhouette (crown of the head) with one of the other lines. The number above the line then corresponds to the distance in meters. The most accurate results are obtained in the highest possible digital zoom.



MISC menu

In this sector you can call up submenus that are not always required.

Submenu PWR

BAT:
The correct type of power supply (CR123/ RCR123/16650/18650) must be selected in the BAT menu so that the automatic calibration, the low voltage detection and the safety functions that depend on it work correctly and the low battery warning is displayed correctly. It is not harmful to the device if this setting is not made.
FLAP:
To prevent the PumIR from switching itself on in the pocket by accidentally opening the lens flap, this function can be deactivated. The device is then switched on manually by pressing and holding button 4 (p.3). Switching off and calibrating or deactivating the shutter using button 3 or the flap remain functional (p.11).
SHUT:
Automatic calibration can be deactivated here. Calibration is possible via button 3, the flap or manually (p.11).

Submenu PIN

Secure your PumIR reliably against loss with your own PIN code. If this is entered incorrectly 3 times in a row, the PumIR will be permanently blocked. Other users will then no longer be able to do anything with the device and may contact us. We can then use the serial number to identify you and return the device to you.

Setting the PIN

The PIN query is usually deactivated on delivery. If the PIN query is deactivated, it must first be activated in the PIN menu under REQ. On delivery the PumIR is protected with a 4-digit PIN code. The PIN request can be deactivated in the PIN menu under REQ. if you switch it to OFF.
You can enter your own 4-digit code in the PIN menu under SET: press button 1 or 2 briefly to change a digit, press and hold button 1 to confirm (the entry automatically jumps to the next digit). A long press on button 2 deletes the last digit. To save, press and hold button 1 for 1 second. This process is confirmed by a "SAVED".

If you find it too inconvenient to enter the PIN for every use, you can set a number of cycles between 1 and 255 in the PIN menu under CYC. With the

latter, the PIN is only requested after 255 switch-on processes. Each time you enter the PIN in the PIN menu, the cycle is automatically reset and starts counting again. According to the above example, the PIN would only be requested again after 255 switch-on processes (cycles).

To prevent being surprised by the PIN request, you can also define a warning interval WARN (0-10). If you select 5, for example, a "PIN" warning message will appear on the screen 5 cycles before the actual PIN request.

PUK

If the PIN is entered incorrectly 3 times or the entry is canceled, a lock screen with the message "Please enter PUK or contact andres-defence.de" is displayed. Press and hold button 1 to access the PUK query; if this is entered correctly, the PIN is reset to "0000". The PUK of your PumIR can be found on your proof of purchase or in some cases as a sticker on your manual. The PUK is also stored by us as the manufacturer. For security reasons, however, this is only ever issued to the original purchaser.

Submenu NVFFC Non-Volatile Flat Field Correction

This can be used to save the last calibration so that the device starts with it and the picture reaches the optimum quality more quickly. If, for example, the device is often started with an internal temperature equal to the ambient temperature, it makes sense to save the calibration immediately after starting the device so that the best possible image is available the next time it is switched on. It is advisable to always carry out this procedure if the ambient conditions have changed since the last calibration. However, the sensor will not be damaged if the NVFFC is not carried out.

Attention
During the execution of the NVFFC, which takes approx. 15 seconds, the power supply must not be interrupted under any circumstances!

Note
An NVFFC can only be performed after calibration has been carried out shortly beforehand (p. 11). In addition, the voltage must be sufficient, i.e. the low battery warning must not appear. NVFFC is initiated with the word "WAIT", after which the screen goes dark and the device restarts.

WPN menu

In this menu, all settings related to the reticles and their adjustment can be made. In the delivery state, no reticle is displayed.

Submenu WPN – Weapon

There are 6 memory locations available for reticles, which can be individually adjusted and stored. They are marked A-F ex works but can be individually named (see NAME submenu). Thus, settings for 6 different scopes, weapons, barrel lengths, loadings etc. or combinations thereof can be stored. To select a memory location, enter the selection by pressing and holding button 1, then go to the desired memory location by pressing buttons 1 or 2. When NONE is selected, no reticle is displayed. Pressing and holding button 4 saves the selection which is confirmed by a „SAVED".

Submenu CROS – Crosshairs

In this submenu, you can select from 5 different reticles. To select a reticle, switch to the selection by pressing and holding button 1, then switch to the desired reticle by pressing buttons 1 or 2. Pressing and holding button 4 saves the selection which is confirmed by a „SAVED".

ATTENTION: Some reticles do not zoom in when the zoom level is changed, i.e. their relative size compared to the target varies.
Other reticles retain their proportions relative to the target. For details see table „Coverages" (p.27)

Submenu CAL – Calibration

In this submenu, a reticle can be adjusted independently of the collimation of the image. The prerequisite for high precision is collimation according to this instruction (p. 12-13). However, unlike collimation, the values of the X and Y axes in this submenu refer to the position of the reticle in relation to the

center of the image. By default, the values are automatically selected to X=0 and Y=0 – thus the reticle is located in the center of the displayed image. If this is not sufficient, the elevation and windage can be corrected according to the step width table (p. 26).
If you are satisfied with the result of the adjustment, save it by pressing and holding button 4. „SAVED“ appears briefly to confirm.

Submenu NAME

An individual designation can be assigned for each memory location, comprising a maximum of 8 characters (no spaces). You can select from the following characters: A-Z, -, +, 0-9. A character can be changed by pressing button 1 or 2, confirmed by pressing and holding button 1 (the entry automatically jumps to the next digit). Pressing and holding button 2 deletes the last digit. Pressing and holding button 4 saves the selection which is confirmed by a „SAVED“.

Submenu RES – Reset

This function resets the selected and stored individual name of the active memory location to the factory setting (A-F). The settings of the X and Y values from the CAL submenu are also reset to 0. Pressing and holding button 4 saves the selection which is confirmed by a „SAVED“. Collimation values are not affected.

INFO menu

Here you will find information about your device such as the serial number, temperature and frame rate of the sensor as well as the operating time.

Button functions in the menu

Tastennutzung	Duration of use
Press briefly	0.1 sec. - 0.55 sec.
Long press	1 sec - 3 sec

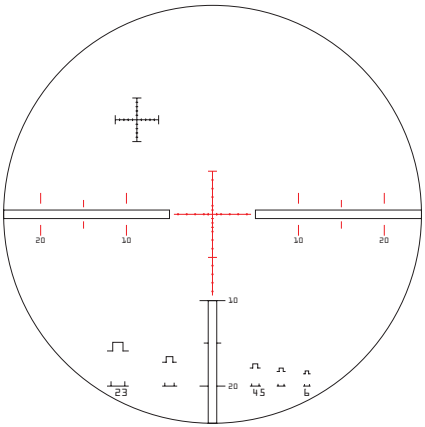
Button 1+3 = start menu
Button 1 short = down
Button 1 long = select menu item
Button 2 short = up
Button 3 long = exit menu
Button 4 long = save

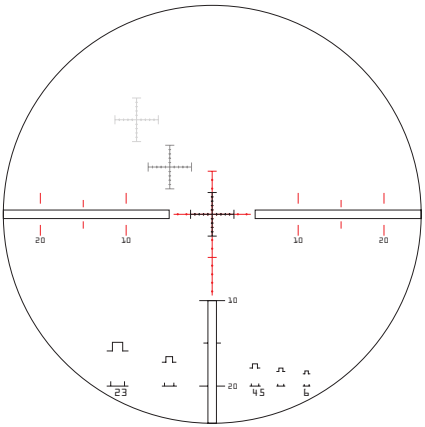
Mount Check

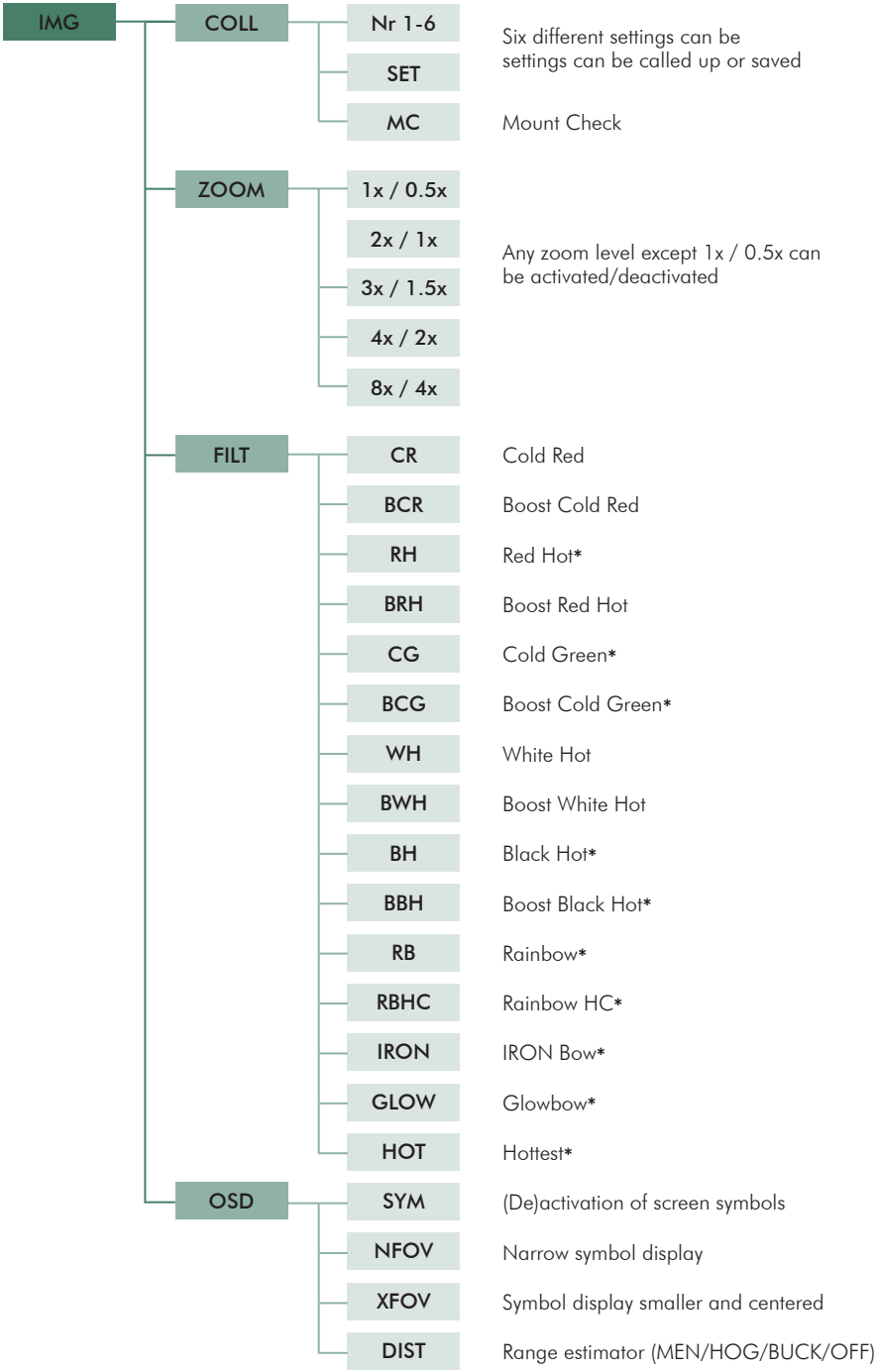
The MC function can be used to check the repeat accuracy of the PumIR in front of an optic with reticle, e.g. a rifle or spotting scope. Mount the PumIR in front of the target scope. Switch on the device and call up the COLL submenu in the IMG menu (see p. 14), go to the MC submenu by briefly pressing button 1 and select it by pressing and holding button 1. The display of the thermal image is then suppressed and crosshairs show up, which can now be moved vertically and horizontally using buttons 1-4 in the same way as collimation.

Position the crosshairs so that they are congruent with the reticle of the optics. Save the settings by pressing and holding button 4; pressing and holding button 3 takes you back to the main menu.

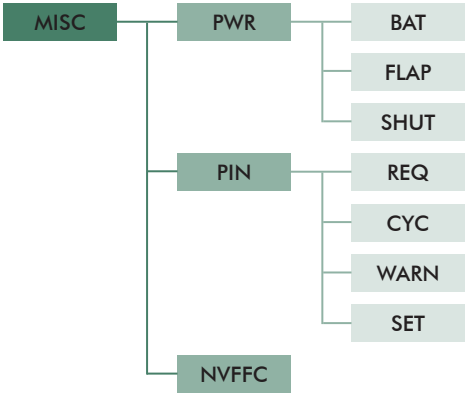
If the PumIR is now dismounted and remounted in front of the same optic, the MC function can be used to check whether the reticle and crosshairs are in alignment and thus whether the mounting is repeatably precise.







* Are not activated on delivery and can be activated in the user menu (p.15)



Power supply (CR123/16650/18650)

(De)activation of the on/off function of the lens flap

(De)activation of the shutter

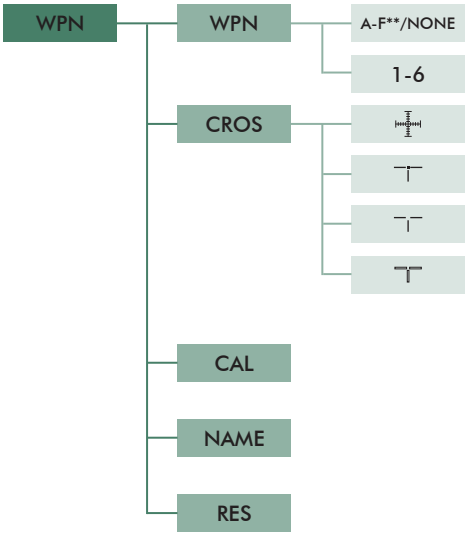
PIN query (ON/OFF)

Frequency of request (after 1-255x switching on)

Warning at device start (0-10 starts before the query is warned)

Change PIN

Saving the calibration



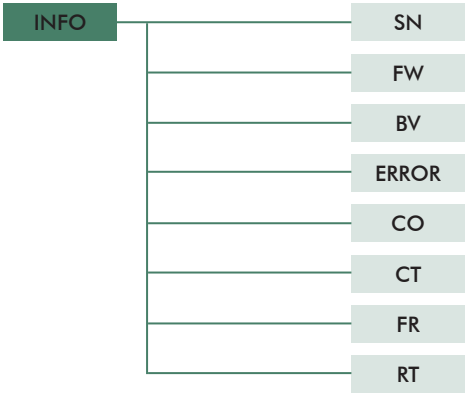
Select weapon name (6 slots available)

Choose between 5 different different reticles

The reticles can be aligned in the X and Y axis

Create or change the name using letters from A to Z, numbers from 0 to 9 and +/-

Reset WPN and CAL settings



PumIR serial number

Firmware version

Battery voltage

Error code display

Boson core number

Boson core temperature

Boson core frame rate

Operating time hh:mm

Power supply

CR123 Lithium battery

The PumIR is supplied and operated with two CR123 batteries. In particularly cold environments, reliable operation is only possible with batteries. At very low temperatures (for example -30°C) the runtime of batteries is also reduced. To compensate the difference in thickness it is necessary to use the battery sleeve.

RCR123 Rechargeable battery

Just like the CR123 batteries the rechargeable RCR123 batteries are placed one behind the other and also have a similar runtime at normal temperatures. To compensate the difference in thickness, the use of the battery sleeve is also necessary here.

16650 Rechargeable battery

Although 16650 batteries can also be used, it is not recommended due to the shorter runtime. Compensating the difference in thickness with the battery sleeve is also necessary here.

18650 Rechargeable battery

This battery provides the longest runtime at normal temperatures. However, there are different variants here, all of which can be used. In any case, it is advisable to set up the device correspondingly inside the submenu PWR (p. 14) when using 18650 batteries. Otherwise no correct runtime warning can be given when the battery is empty.

Cell type	Maximum Battery life (in h)	Rechargeable	Below freezing point	Battery Sleeve	SB Adapter	PWR settings
CR123	4:30	No	Yes	Yes	No	CR123
RCR123	4:15	Yes	No	Yes	No	CR123
16650	3:30	Yes	No	Yes	No	18650
18650	8	Yes	No	No	No	18650

Use of Accessories

PumIR™ Magnifier Eyepiece 2x

Although the PumIR™ was actually developed as a clip-on device, it can also be used as a handheld device with the lightweight magnifier eyepiece. Before application, make sure to remove the thread cap (also see „Thread cap“ p.23).

No. 240781

Zoom level	Zoom level .5	Magnification	Magnification .5
1x	0.5x	2x	1x
2x	1x	4x	2x
3x	1.5x	6x	3x
4x	2x	8x	4x
8x	4x	16x	8x

Battery Charger

This device charges almost all sizes of Li-ion batteries. It works fully automatically. The charging voltage is also displayed. Operation is via USB.

- Input: Voltage 5V DC, current 2.1A
- Charging current: 2A

No. 382016

Rechargeable battery 16650

Cost-effective solution for operating the Pin the temperature range between 0°C/32°F and +60°C/160°F.

Specifications: 2500mAh | 3.7V | 9.25Wh

No. 382015

Rechargeable battery 18650

Cost-efficient solution to operate the PumIR™ in the temperature range between 0°C/32°F and +60°C/160°F.

Specifications: 2500mAh| 3.7V| 9.25Wh.

No. 240706

Lithium Battery CR123

The PumIR is supplied and operated with two CR123 batteries. In particularly cold environments, reliable operation is only possible with batteries.

No. 270025

PumIR Video- and Power Cable

After connecting to the PumIR™ to a PC, it gets recognised as a webcam and can be used accordingly. Also usable as power connection via USB (PC or powerbank). Connection to PumIR™ is waterproof. Cable also available with waterproof connections instead of an USB connection.

No. 240433

Remote Control

The remote control for the PumIR has 4 particularly large buttons and can therefore be easily operated even when wearing winter gloves. The connecting cable to the PumIR is interchangeable and is available in various lengths. On request, it can also be customized.

The remote control has a second connection. The video and power cable can be connected there. This makes it possible to use the remote control while the image is displayed on a PC and the PumIR is supplied with external power.

There are various fastening options on the back, so that the remote control can be attached to the hand guard using M-Lock, but can also be attached using Velcro.

Attention
Only switch on the PumIR after the Remote Control has been attached

Dimensions: L:84mm | W:58mm | H:21mm
Weight: 55g

No. 240750

The .5-Variants

If you combine a powerful scope with the PumIR™, the view can look pixelated. The reason for this is that they are not properly matched to one another. We provide a solution to this problem by introducing a version with a reducing eyepiece optic.

This allows the use of riflescopes with higher magnification than the recommended 2x. Thus, even with 3-4x scopes, the entire image is visible and looks smooth. Please note that collimating the PumIR.5™ to the rifle and test firing is mandatory.

4x sight with conventional thermal imager (36mm)

PumIR.5™

Mounting options

The PumIR is compatible with the universal M35x1 thread. There is a suitable adapter for practically every external lens diameter of rifle scopes, spotting scopes or other optics. It is very easy to use: the adapter is simply screwed onto the thread on the eyepiece side of the PumIR and fixed in the optimum position by unscrewing the locking screw, provided the adapter does not have its own locking system. The other side of the adapter is then slid onto a the objective of e.g. a scope and locked in place. Once this has been done, collimation can also be carried out.

Overview of Rusan adapters in our store

Overview of Präzise Jagen adapters in our store.

PumIR™ Adapter Plate ACRO™

The PumIR™ has a top-platform for special accessory options. Using an adapter plate, it is therefore possible to mount an additional reflex sight as a backup sight.
Particularly compatible for this purpose is the ACRO™ series from Aimpoint.
No. 240705

PumIR™ Afocal Lens

The regular objective flap can be replaced with a 2x afocal lens. This increases the detection range up to 4000m. The PumIR™ detects the lens automatically. The collimation for the lens is retrieved from memory. You can apply changes via the collimation menu if needed - your device will save these as specific settings for your afocal lens. Collimation settings for your PumIR™ without afocal lens will not be altered. Settings will switch automatically when you remove or apply the lens.The automatic on/off function also works with the flap of the afocal lens.

Attention
The dynamic of the picture through the afocal lens is reduced which improves the view through a PumIR™ with 20mK resolution. In poor visual conditions it may be advisable to remove the afocal lens.

Flip-2Side Mount for PumIR™

With the robust Flip-2Side, the PumIR is the first device that can be folded out of the field of view within a second despite its powerful 36 mm optics. The overall system remains ergonomic as the PumIR is particularly flat and lightweight and the Flip-2Side is preferably folded to the left. In combination with magnifiers, the weapon therefore remains more balanced.

It has suitable adapter plates that bring the device to an optical axis height of 38 and 39 mm. Plates are also planned for greater axis heights.

For larger procurements, special versions with shaft heights of at least 36 mm can also be realized quickly.

No. 240750

Thread cap

A thread cap is delivered with your PumIR™ to protect the thread from fall damage

Before mounting for example an adapter, the thread cap should be removed so that the Rusan adapter is not blocked by it.

You can remove the thread cap by pulling it off by hand or carefully levering it out through the holes in the thread with the help of a screwdriver.

PumIR™ Shutter Eyecup

For handheld use the shutter eyecup allows efficient shielding of stray light. It is applied right onto the PumIR™. The shutter eyecup is the most stable and durable add-on to your PumIR™.

Attention
Please remove the thread cap before applying the shutter eyecup.

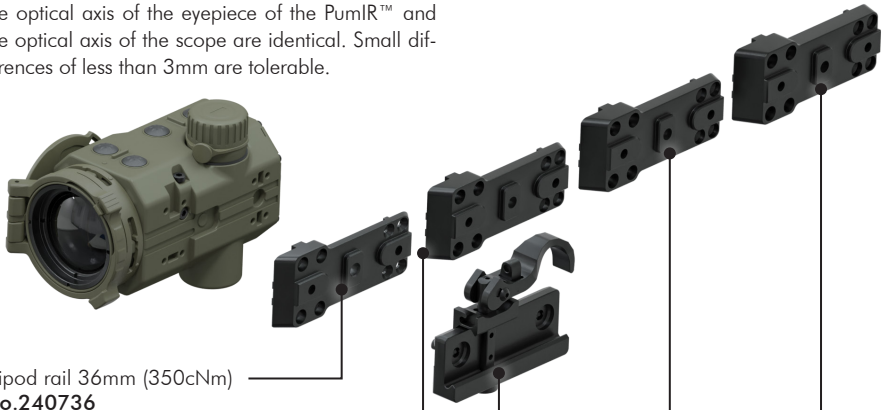
PumIR™ Eyecup

This type of eyecup shines when you mount your PumIR™ on top of a tripod. It sits comfortably around the eye and allows efficient shielding of stray light. It is applied to your PumIR™ through a bayonet cap.

Attention
Please remove the thread cap before applying the bayonet cap.

Tripod rail for Weapon/Picatinny

The PumIR™ should be mounted in such a way that the optical axis of the eyepiece of the PumIR™ and the optical axis of the scope are identical. Small differences of less than 3mm are tolerable.



Tripod rail 36mm (350cNm)
No.240736

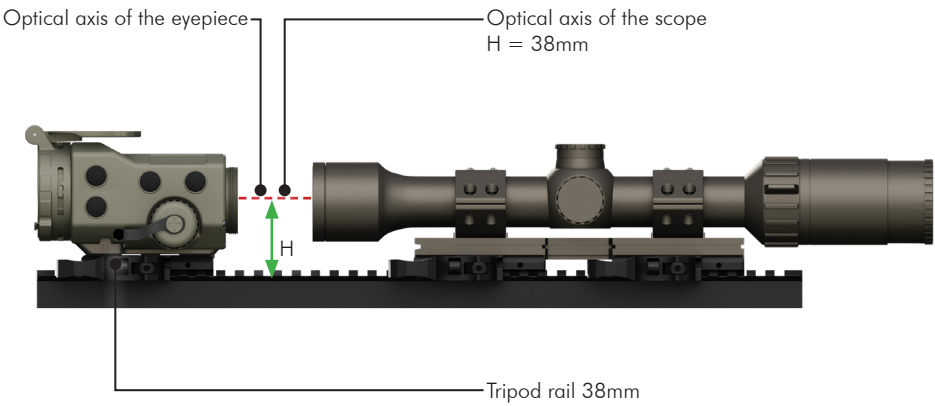
Tripod rail 38mm* (400cNm)
No.240738

ERATAC mount**
No.240500

Tripod rail 39mm* (400cNm)
No.240739

Tripod rail 41mm* (400cNm)
No.240741

*For the 8 screws on the Tripod Rail = 80 cNm
**For the 2 screws of the Eratac clamp = 400 cNm



Collimation step sizes

The step width of single keystrokes and and the possible total adjustment range of the collimation (see p. 11) are shown in the following table for each zoom level.

Adjustment per keystroke in cm depending on the distance and zoom level

PumIR.5 / PumIR

Distance	0.5x 1x	1x 2x	1.5x 3x	2x 4x	4x 8x
50m	1.6	1.6	0.8	0.8	0.8
100m	3.2	3.2	1.6	1.6	1.6
150m	4.8	4.8	2.4	2.4	2.4
200m	6.4	6.4	3.2	3.2	3.2

PumIR.5 / PumIR with Afocal Lens

Distance	0.5x 1x	1x 2x	1.5x 3x	2x 4x	4x 8x
50m	0.8	0.8	0.4	0.4	0.4
100m	1.6	1.6	0.8	0.8	0.8
150m	2.4	2.4	1.2	1.2	1.2
200m	3.2	3.2	1.6	1.6	1.6

Max. Adjustment range depending on the zoom level in cm/100m

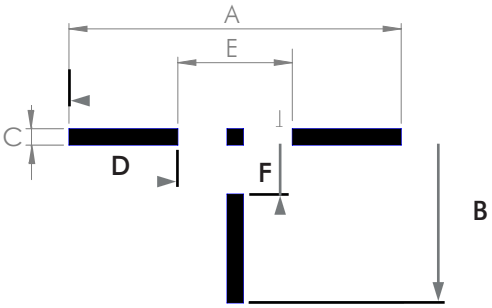
PumIR.5 / PumIR

Zoom level		Windage	Elevation
0.5x	1x	80	80
1x	2x	256	204
1.5x	3x	336	268
2x	4x	384	308
4x	8x	448	458

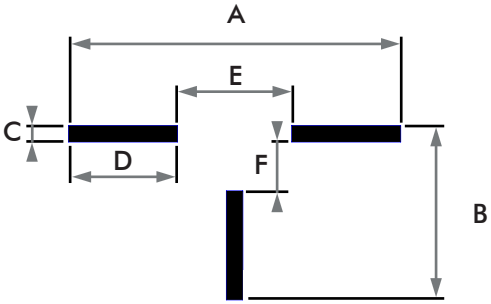
PumIR.5 / PumIR with Afocal Lens

Zoom level		Windage	Elevation
0.5x	1x	40	40
1x	2x	128	102
1.5x	3x	168	134
2x	4x	192	154
4x	8x	224	229

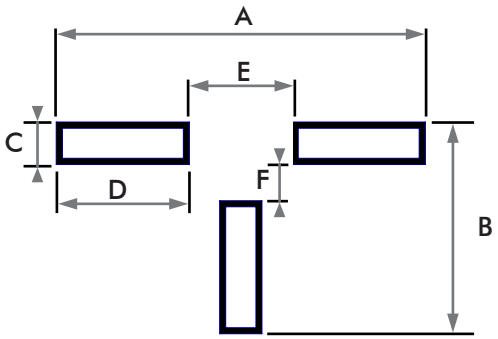
Coverages



Zoom		Units	A	B	C	D	E	F
1x	0.5x	cm/100m	133.30	69.93	6.56	30.9	45.89	19.67
		mrad	19.96	10.47	0.98	6.54	6.87	2.95
		in/100yd	47.99	25.17	2.36	15.73	16.52	7.08
		MOA	45.75	24.00	2.25	15.00	15.75	6.75
2x	1x	cm/100m	66.65	34.96	3.28	21.85	22.94	9.83
		mrad	9.98	5.24	0.49	3.27	3.44	1.47
		in/100yd	23.99	12.59	1.18	8.26	8.26	3.54
		MOA	22.88	12.00	1.13	7.88	7.88	3.38
3x	1.5x	cm/100	45.13	23.67	2.22	10.93	15.54	6.66
		mrad	6.76	3.55	0.33	2.22	2.23	1.00
		in/100yd	16.25	8.52	0.80	5.33	5.59	2.40
		MOA	15.49	8.13	0.76	5.08	5.33	2.29
4x	2x	cm/100m	33.32	17.48	1.64	10.93	11.47	4.92
		mrad	4.99	2.62	0.25	1.64	1.72	0.74
		in/100yd	12.00	6.29	0.59	3.93	4.13	1.77
		MOA	11.44	6.00	0.56	3.75	3.94	1.69
8x	4x	cm/100m	16.66	8.74	0.82	5.46	5.74	2.46
		mrad	2.50	1.31	0.12	0.82	0.86	0.37
		in/100yd	6.00	3.15	0.30	1.97	2.07	0.89
		MOA	5.72	3.00	0.28	1.88	1.97	0.84



Zoom		Units	A	B	C	D	E	F
1x	0.5x	cm/100m	133.30	69.93	6.56	30.9	45.89	19.67
		mrad	19.96	10.47	0.98	6.54	6.87	2.95
		in/100yd	47.99	25.17	2.36	15.73	16.52	7.08
		MOA	45.75	24.00	2.25	15.00	15.75	6.75
2x	1x	cm/100m	66.65	34.96	3.28	21.85	22.94	9.83
		mrad	9.98	5.24	0.49	3.27	3.44	1.47
		in/100yd	23.99	12.59	1.18	8.26	8.26	3.54
		MOA	22.88	12.00	1.13	7.88	7.88	3.38
3x	1.5x	cm/100	45.13	23.67	2.22	10.93	15.54	6.66
		mrad	6.76	3.55	0.33	2.22	2.23	1.00
		in/100yd	16.25	8.52	0.80	5.33	5.59	2.40
		MOA	15.49	8.13	0.76	5.08	5.33	2.29
4x	2x	cm/100m	33.32	17.48	1.64	10.93	11.47	4.92
		mrad	4.99	2.62	0.25	1.64	1.72	0.74
		in/100yd	12.00	6.29	0.59	3.93	4.13	1.77
		MOA	11.44	6.00	0.56	3.75	3.94	1.69
8x	4x	cm/100m	16.66	8.74	0.82	5.46	5.74	2.46
		mrad	2.50	1.31	0.12	0.82	0.86	0.37
		in/100yd	6.00	3.15	0.30	1.97	2.07	0.89
		MOA	5.72	3.00	0.28	1.88	1.97	0.84



Zoom		Units	A	B	C	D	E	F
1x	0.5x	cm/100m	137.67	76.48	15.30	52.45	32.78	24.04
		mrad	20.62	11.45	2.29	7.85	4.91	3.60
		in/100yd	49.56	27.53	5.51	18.88	11.80	8.65
		MOA	47.25	26.25	5.25	18.00	11.25	8.25
2x	1x	cm/100m	68.83	38.24	7.65	26.22	16.39	12.02
		mrad	10.31	5.73	1.15	3.93	2.45	1.80
		in/100yd	24.78	13.77	2.75	9.44	5.90	4.33
		MOA	23.63	13.13	2.63	9.00	5.63	4.13
3x	1.5x	cm/100m	46.61	25.89	5.18	17.76	11.10	8.14
		mrad	6.98	3.88	0.78	2.66	1.66	1.22
		in/100yd	16.78	9.32	1.86	6.39	4.00	2.93
		MOA	16.00	8.89	1.78	6.09	3.81	2.79
4x	2x	cm/100m	34.42	19.12	3.82	13.11	8.19	6.01
		mrad	5.15	2.86	0.57	1.96	1.23	0.90
		in/100yd	12.39	6.88	1.38	4.72	2.95	2.16
		MOA	11.81	6.56	1.31	4.50	2.81	2.06
8x	4x	cm/100m	17.21	9.56	1.91	6.56	4.10	3.00
		mrad	2.58	1.43	0.29	0.98	0.61	0.45
		in/100yd	6.20	3.44	0.69	2.36	1.48	1.08
		MOA	5.91	3.28	0.66	2.25	1.41	1.03

Troubleshooting

Problem	Cause	Solution
Device does not switch on / screen remains dark	Batteries flat or wrong polarity	Check polarity or insert fresh battery
	Brightness set too dark	Increase brightness with button 1
	Device was previously switched off by pressing a button	Open the flap and press button 4 for 1 second
	Device may be in PAL or NTSC video mode	Press button 1 for 7 seconds (p.13)
Device cannot be switched off	Flap defective or torn off	The Device can also be switched on/ off without the flap by pressing and holding button 4 (see quick guide p.3)
Image quality is inferior	• Device is in manual calibration mode • Calibration was interrupted	• Calibrate manually (p.11) • If the attempt is unsuccessful, perform NVFFC (p.16) • If unsuccessful, switch the device off and on again
	Incorrect battery type set	Set the correct battery type in the BAT menu so that the shutter can work. If necessary, activate the autoshutter in the SHUT menu

Your opinion is important to us

For the further development of our products, it is important to us to incorporate feedback from our customers so that we can continue to improve and expand our range for you. We look forward to your ideas and suggestions.

Contact us:
Mail: info@andres-industries.de
Telephone: +49 30 45 80 39 00
Web: www.andres-industries.de

Cleaning and care

The PumIR can be cleaned with clean water (e.g. with some dish liquid) and a soft paintbrush or soft cloth. Do not use strong chemical cleaning agents.

Repair

If the device is defective, please send us an e-mail with the date of purchase and a copy of the invoice before sending it to us for repair:

info@andres-industries.de

You will then receive an RMA number. If the repair takes place within the warranty period, we cannot guarantee that you will receive exactly your device back.

Repair and Spare part service

We have made the PumIR as small and light as possible. Nevertheless, it is very stable and therefore damage is hardly to be expected in daily use. However, should damage occur or components be lost, we will be happy to send you spare parts.

Update service

Our products are constantly being developed further. To ensure that your PumIR is always up to date, we offer an update service for a fee. You can then send your PumIR to us and we will update the firmware. Finally, the device is checked for watertightness and provided with a fresh nitrogen filling, then it is returned to you completely refurbished. We will also be happy to advise you personally.

Technical data

	PumIR			
Model	PumIR-M™	PumIR-M20™	PumIR-M.5™	PumIR-M20.5™
Order number	240701	240713	240713	240714
User group	Military/Law Enforcement only			
Temperature resolution	20mK	20mK	20mK	20mK
Sensor resolution	640x512			
Zoom (digital)	1x, 2x, 3x, 4x, 8x	0.5x, 1x, 1.5x, 2x, 4x	1x, 2x, 3x, 4x, 8x	0.5x, 1x, 1.5x, 2x, 4x
Spectrum / Pixel pitch	7.5–13.5 µm / 12 µm uncooled microbolometer			
FFC (calibration modes)	internal mechanical shutter (can be deactivated) + software calibration (NUC) + manual calibration			
Sunlight sensitivity	harmless			
Filter	(Boost) White Hot, (Boost) Black Hot, (Boost) Red Hot, (Boost) Cold Red, (Boost) Cold Green, Rainbow, Rainbow HC, Iron Bow, Glowbow, Hottest			
Video output modes	analog video output			
Display resolution	(Micro-) OLED 873x500 Pixel			
FOV (100m)	horizontal 12° vertical 9,6°	horizontal 6° vertical 4,8°	horizontal 12° vertical 9,6°	horizontal 6° vertical 4,8°
Angular resolution	0.019°/1.13‘/68“ corresponds to 3,28cm/px (at 100m)			
CR123 (only thermal)	about 04:30h			
Akku 18650 (only thermal)	about 8h			
Temperature range	operating: –32°C (–25°F) to +50°C (+122°F) storage: –40°C (–40°F) to +80°C (+176°F)			
Water resistance / Shock resistance	IP68 acc. MIL-STD-810G 516.7 I (26 drops out of 1.22m/4ft)			
Material	Aircraft grade aluminum (hard anodized and scratch-resistant ceramic-coated)			
Dimensions (without accessories)	L:104mm; W:80mm; H: 56mm			
Weight (without mounts/battery)	300g			
Mounting options	Eyepiece: M35x1; Bottom: 8x M3-4 for elevation adjustment and Picatinny mounting, 20 UNC tripod thread			

Warranty declaration

1. Warranty protection

Andres Industries AG guarantees the consumer and/or the entrepreneur that the PumIR™ has the properties promised in the performance/article description and that it is free from design faults, material and manufacturing defects.
The state-of-the-art technology and scientific knowledge at the time of manufacture of the product shall be decisive. The warranty of two years covers the proper functioning of the thermal image sensor, the built-in electronic components and the use of defect-free materials, especially their surfaces. The warranty becomes void if housing screws or optical elements are adjusted. The device may only be opened by the manufacturer. Otherwise, damage to the device may occur that is not covered by the warranty.

2. Warranty terms

The warranty is valid under the following conditions:
if the PumIR™ is used properly in accordance with the operating instructions;
if the PumIR™ is maintained and cared for in accordance with the operating instructions;
for mounting and installation in accordance with the operating instructions and the installation regulations;
if the limit values for supply voltage and environmental influences are observed in accordance with the operating instructions and installation regulations;
by avoiding chemical and physical influences as well as the use of unsuitable cleaning agents and the use of unsuitable tools;
if unauthorised additions and conversions are not carried out;
if the PumIR™ is used as intended;
if the buyer registers the product with Andres Industries AG within one month of purchasing it, giving the name and address as well as the type designation and serial number of the purchased product, unless the buyer has already purchased the product directly from Andres Industries AG.

A settled warranty case does not lead to a new warranty of two years, the remaining warranty period from the original warranty period also applies to the replacement product.

Should the English translation differ from the German original, the German original version is legally binding.

3. Warranty service

In the event of a defect or deficiency of the PumIR™, the guarantee comprises, at the reasonable discretion of Andres Industries AG, a free repair or a free delivery of spare parts or replacement of the similar or corresponding product. Andres Industries AG reserves the right to adapt the warranty service to technical progress. Costs for assembly, disassembly and transport as well as expenses, postage and the like are excluded from the warranty. Consequential damage, loss of business and loss of profits due to a defective or faulty Andres Industries product are also not covered by the warranty.

4. Exclusion of warranty

The claim to warranty services is only valid if the faulty product is presented to Andres Industries AG or the authorised entrepreneur within the warranty period, but at the latest by the end of the working day following the end of the warranty period, together with the corresponding sales receipt or the dated invoice. The corresponding proofs of purchase must therefore be kept until the end of the warranty period.

5. Beginning of the warranty

The warranty period of two years begins with the handover of the PumIR™ to the consumer or authorized entrepreneur. The warranty entitled entrepreneur are not credited to those of the consumer.

6. Warranty extension

Within the registration period of two weeks after purchase a warranty extension of 1-5 years is possible. Please ask for the necessary steps at:
info@andres-industries.de

EU Declaration of Conformity (No. 0012)

Andres Industries AG
Weißenseer Weg 37
13055 Berlin
states that the thermal imaging devices

PumIR-M™ (240701)
PumIR-M.5™ (240713)
PumIR-M20™ (240713)
PumIR-M20.5™ (240714)

comply with the relevant harmonization legislation of Directive 2014/35/EU.
The following harmonized standards relating to conformity have been applied:

EMC interference without cabel	DIN EN 61000-6-1	living area
	DIN EN 61000-6-2	industrial area
EMC immunity without cable	DIN EN 61000-6-3	living area
	DIN EN 61000-6-4	industrial area
EMC interference with cabel	DIN EN 61000-6-1	living area
	DIN EN 61000-6-2	industrial area
EMC immunity with cable	DIN EN 61000-6-4	industrial area
ESD resistance	DIN EN 61000-6-2 (Contact/air discharge with 4 / 8 kV)	

Thermal resolution NETD measurement

NETD (Noise Equivalent Temperature Difference) is a measure of the sensitivity of a thermal imaging system. It describes the smallest temperature difference that a thermal imaging system can just detect before the signal is lost in the image noise. The lower the NETD value, the more sensitive the camera is, as it is able to detect smaller temperature differences. The NETD value is given in Millikelvin (mK) and depends on various factors, including the quality of the detector, the optics and the signal processing of the system. In our NETD measurement method, we use VDI 5585 as a basis and take a large number of images (> 128) to obtain statistically reliable results. From these images, we calculate the signal strength, the noise and finally the NETD value pixel by pixel. For easy interpretation, we communicate the average of the NETD values of all pixels, with detailed measurement data available. The detectors we use are carefully calibrated in advance. We use calibrated blackbody emitters to generate accurate reference temperatures. By using these references and analyzing many individual images, we can precisely determine the NETD value of the camera. This gives us a realistic value that reflects the actual performance of the camera.

Andres Industries AG
Berlin, September 2024
Dr. Björn Andres, CEO

Notes

Notes

Andres Industries AG

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Weissenseer Weg 37
13055 Berlin
Germany

Service & Support

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E-Mail: info@andres-industries.de
Web: www.andres-industries.de

CE PumIR
RoHS compliant
IP68 MIL-STD-810G

Power in: 5V/CR123 3V
www.andres-industries.de
Made in Germany

PUK

serial number

production date