PumIR-M™

Manual

Version: 04/2023

FW:

PumIR-M™:	1.0.02
PumIR-M.5™:	5.0.02
PumIR-M20™:	1.0.02
PumIR-M20.5™:	5.0.02

EN

PumIR™ Quick start guide

Valid for:
PumIR-M™
PumIR-M.5™
PumIR-M20™
PumIR-M20.5™

For more information please visit our website:
www.andres-industries.de

Battery usage

1. Open the battery compartment by turning the latch to the left.
2. Insert two CR123 batteries or one battery type 18650/16650 with the positive terminal facing inside. When using two CR123 batteries or a battery type 16650, please use the enclosed Battery Casing. When using a battery type 18650 without circuit protection or USB port, please use the SB adapter.
3. Close the battery compartment again.
4. (optional): To ensure correct display of remaining battery, adapt the device to the battery type via the PWR menu (p.14).

For further information on compatible battery types and detailed instructions please look on p.18.

Operation

Button 2
Press long: change filter
Press short: zoom
zoom levels:
PumIR-M™/PumIR-M20™: 1x, 2x, 3x, 4x, 8x
PumIR-M.5™/PumIR-M20.5™: 0.5x, 1x, 1.5x, 2x, 4x

Button 1
Press short:
display brightness, alternating
Press long:
manual calibration, menu confirmation

Switch on:
1. Lift the flap and fold it back **completely**
2. Device starts automatically

Switch off:
1. Close flap
2. Device switches off automatically

Button 4
Press long in the menu:
save
Press long (e.g. w/o flap):
on/off

Button 3
Press long in the menu:
back/cancel
Press long: outline mode
Press short:
shutter

Button 1 & 3
Press long both buttons:
start menu

Display text and symbols

1. Display brightness (displayed momentarily during change, p.11)
2. Current thermal filter (p.8-10)
3. Current zoom level (p.13)
4. Shutter flag (p.11)
5. Battery symbol/battery warning (p.14)

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

Table of contents

Scope of delivery

The standard scope of delivery contains the following components:

PumIR™

Big outdoor case

Thread cap

Cleaning cloth

2 Batteries CR123

Battery Sleeve

Manual

SB-Adapter

You can find further information on power accessories on p.18-20.

Thermal imaging features

Switching on/off

Switch the device on by unlocking the protective flap and opening it up completely until it snaps. Opening the flap exposes the thermal sensor and the instrument powers up within a few seconds. The thermal image is then displayed on the screen. If required, this automatic switch-on function can also be deactivated in the menu, which reliably prevents accidental switch-on in the pocket (p.14). To switch off, simply close the protective flap again.

switch on

switch off

Operating time

The operating time depends on different factors:

- Quality of the battery used
- Low ambient temperatures may shorten the operating time considerably
- Bright display illumination reduces the operating time
- Operating time for the PumIR™ under optimum conditions is approx. 8 hours with rechargeable batteries, 4 hours and 30 minutes with CR123 batteries.

To extend the operating time, please also refer to the the external power supply and information on battery types on p.18-19.

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

Due to its low state of charge or its use at low temperatures (0° to -20°C), the battery may no longer be able to provide the comparatively high currents required to operate the automatic shutter (calibration). The device then automatically switches to manual calibration mode and remains ready for use.

The following is then changed:

1. If necessary, the shutter flag (small unfilled square at the top right) will appear.
2. Not reacting to the shutter flag with a manual calibration (p.11) may deteriorate the image as follows:

– Vignette formation (deterioration of contrast, increasing from the outside to the inside)
– Possibility of vertical stripes appearing
– General reduction of contrast
– Increased image noise

If the device is started at low temperatures or with an almost empty battery, the above-mentioned restrictions already occur at the beginning, but can also be eliminated by manual calibration. Overall, the operating time increases by using the manual calibration.

Note: Image quality and battery life improve by using manual calibration.

Screen texts

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

Thermal filters

The PumIR™ has fifteen different thermal filters, which can be selected one after the other by pressing and holding the button #2.

The thermal filters have different functions for different situations. All tactical filters also exist as a "boost" version. These are characterized by an increased contrast and a pronounced edge reinforcement. However, this also increases the image noise. The Boost mode is particularly suitable for poor thermal conditions, such as rain.

CR = Cold Red

In this filter, the heat sources are shown in black, while the coldest areas are shown in red. It is a tactical filter for use at night, to avoid getting blinded by the bright screen.

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 facilitates orientation, e.g. in interiors where often all objects have the same temperature. It is often also more suitable in humid weather. In boost mode, sharpness is also optimized. In sunshine, this filter may also be unsuitable.

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 facilitates orientation, e.g. in interiors where often all objects have the same temperature. It is often also more suitable in humid weather. In boost mode, sharpness is also optimized. In sunshine, this filter may also be unsuitable.

CG = Cold Green

Comparable to the Cold Red filter, except that the brightest color used here is green. With this filter e.g. stray light reflected by the eye is far less perceptible by image intensifiers. So it is also a tactical filter. However, the nocturnal glare effect for the user 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 facilitates orientation, e.g. in interiors where often all objects have the same temperature. It is often also more suitable in humid weather. In boost mode, sharpness is also optimized. In sunshine, this filter may also be unsuitable.

WH = White Hot

In this classic black-and-white filter, which is preferred tactically, the strongest heat sources are shown most brightly. Thus, humans and animals can be easily identified under normal circumstances. Compared to even brighter heat sources (e. g. fire), they can also recede into the background.

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 facilitates orientation, e.g. in interiors where often all objects have the same temperature. It is often also more suitable in humid weather. In boost mode, sharpness is also optimized. In sunshine, this filter may also be unsuitable..

BH = Black Hot

Heat sources are shown as dark. The picture is more natural and allows easier orientation. Since the filter is lighter overall, mind stronger blinding effects when used 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 displayed better. This facilitates orientation, e.g. in interiors where often all objects have the same temperature. It is often also more suitable in humid weather. In boost mode, sharpness is also optimized. In sunshine, this filter may also be unsuitable.

RB = Rainbow

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

RBHC = Rainbow HC

HC filter is similar to the Rainbow filter, except that each color transition still contains a brightness coding to black. This ensures even stronger contrasts at the transitions from one color to the other and makes even smaller temperature differences visible. With this filter, thermally largely homogeneous surfaces such as walls can be particularly well inspected for changes (e.g. wet areas).

IRON = Iron Bow

Also a technical filter, in which heat sources are displayed in a limited false color range. The process from warm to cold takes place in the colors white, yellow, orange, purple and blue. Heat sources are highlighted by an increased contrast. The dynamics of less warm areas are high.

GLOW = Glowbow

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

HOT = Hottest

A very popular filter among hunters. Heat sources such as animals and humans are shown in orange, while all cooler areas remain black and white. This allows a better orientation. This filter is especially recommended in the second half of the night, when inanimate objects have cooled down significantly. Otherwise, it may happen that e.g. trees and larger stones still radiate too much residual heat and thus also appear orange.

Note: Only one selection of filters is activated at the factory (underlined). The (de)activation of further filters is carried out via the submenu FILT (p.13).

Manual calibration with flap

To perform manual calibration, close the flap for approx. 0.5s and then open it again. After the manual calibration has been performed, automatic calibration no longer takes place. This will only be carried out again after restarting the device. Manual calibration results in better image quality and longer battery life.

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 edge of the screen. It is not harmful for the device to refrain from calibration. After manual calibration, the shutter flag disappears again.

Manual calibration without flap

Is carried out if the flap is defective or is not usable.

1. Point the device towards a surface with the following qualities:
2. a. it shall be thermally uniform
3. b. it shall not glare
4. c. it should have nearly the surrounding tempe-
5. rature
6. Press and hold button 1 until „B1 for FFC“ appears on the screen.
7. Within five seconds press again button 1 briefly. Now the calibration (FFC) is completed.

Advice

Suitable surfaces on which you can calibrate are:

- Foamed plastic (e.g. sponge)
- Sheet of paper
- Tree or forest soil if the lens is close enough (few inches) The surfaces should have nearly the surrounding temperature.

The aids should correspond to the surrounding temperature.

Not suitable are:

- Metal parts (see 1. b) except ones with matte surfaces.
- Palm of a hand (see 1. c)
- Sky (see 1. c. and a)

Brightness adjustment (display brightness)

Display brightness can be changed alternatingly by pressing button 1. Each time the button is pressed, the brightness decreases until it reaches the darkest setting. With every further press, the brightness increases again until the brightest level is reached. Afterwards the procedure starts again. The last setting used is saved and automatically recalled the next time the device is switched on. Please note that the best results are obtained with brightness levels 4-5 (indication see p.4).

Note: Especially for nighttime use, it is recommended to set the display very dark to reduce the glare effect. When the PumIR™ is then switched on the next day, the display appears so dark that it could be mistaken for being defective. Therefore, if the screen appears black, always press button #1 a few times first.

Zoom

Pressing button #2 briefly switches between the zoom levels listed below. Some of these can be turned off in corresponding menu (p.13).

1x (0,5x for the .5 variants): This zoom level provides the best overview and is particularly helpful for orientation. In this setting, all objects on the display are the same size as in reality. This setting is especially useful outdoors for a natural estimation of the distance to people or animals.

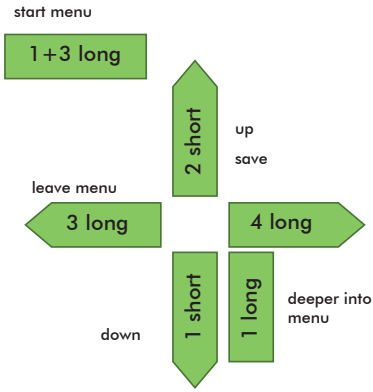
2x, 3x, 4x, 8x (1x, 1,5x, 2x, 4x for the .5 variants): The higher zoom levels are especially good for observation and identification. Often one finds heat sources in settlements or also in the forest, whose origin cannot be determined without further effort. For example, rotting tree stumps, anthills or larger stones produce distinct heat signatures that may well be mistaken for people or animals. With a high zoom setting, objects can be better classified by closely observing their movements - stones, for example, do not move very much.

Menu Special Functions

Menu

You can access the menu through simultaneous pressing of buttons #1 and #3. As long as you are in the menu, the normal functions of the buttons are deactivated. The buttons now have the following functions:

Overview



Operation	Operating time
press short	0.1s to 0.5s
press long	1s to 3s

IMG menu

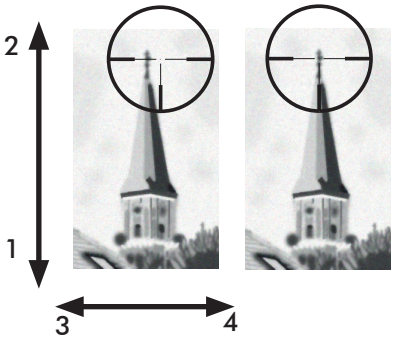
In this menu it is possible to make individual image settings on your device in order to adapt it to your operational requirements.

Submenu COLL

In this submenu you can adapt the collimation of your PumIR™.

Procedure of colllimation

1. Take the firearm with the scope and aim at an object that is visible in both visible and thermal image spectrum. This may be a halogen lamp or a spire. The object should be at a distance of at least 50m/165ft. Point the scope so that it is aligned with the object.
2. Fixate the firearm with a bench rest, sandbags, or a second person who can reliably hold the weapon in position.
3. Switch on the PumIR™. Access the collimation menu by
   a. accessing the IMG menu via the main menu
   b. accessing the sub-menu COLL
   c. selecting the memory position (1-6) in which you want to store your collimation
   d. starting collimation by using the SET function
4. Mount the PumIR™ in the proper position in front of the scope without moving the weapon. The object should ideally already be in the center of the reticle at 1x zoom. If that is the case, please continue with step 6.
5. When the object is not yet in the center of the reticle, you can align the image by pressing the buttons briefly. Button #1 moves the image down, button #2 moves it up, button #3 moves it left, and button #4 moves it right.



By removing the PumIR™ briefly, check whet-

her the object is still in the center of the reticle even in the visible spectrum. Repeat this step if necessary.

6. Now change to the next zoom level by pressing and holding button #2 and perform the collimation according to step 5. Repeat step 6. until all zoom levels are collimated. After collimation of the highest zoom level pressing and holding button #2 changes back to the lowest zoom level etc.
7. Save the settings by pressing and holding button #4.

Fine collimation

After completion of the pre-collimation, the system weapon - scope - PumIR™ can be test-fired. Now a group of hits with a radius of about 2-4cm at 100m should be achieved. To improve this to 1-2cm, fine collimation will be done afterwards.

1. Switch to the collimation menu (see pre-collimation 3.) and fire test shots at the target.
2. To correct aiming errors, adjust the reticle according to the process shown in precollimation step 5. For fine collimation, observe the step sizes in the tables on p. 25.
3. Repeat the cycle of test shooting and adjusting until your aim is properly set up.

Submenu ZOOM

All zoom levels are activated in the delivery state. Via this submenu you can deactivate (or re-activate) unwanted zoom levels. Select the desired zoom level, then change the setting to OFF (or ON to re-activate). Exit this selection by pressing and holding button #3. However, the corresponding zoom level is only deactivated (or re-activated) after being saved by pressing and holding button 4. This process is confirmed by an „SAVED“.

Submenu FILT

Only the filters CR, BCR, BRH and RBHC are activated in the delivery state.
In the FILT submenu you can activate or deactivate all filters (except CR), so that only the filters required are displayed.

Select the desired filter, then change the setting to ON or OFF. Exit this selection by pressing and holding button #3.

The corresponding filter is only activated or deactivated after saving by pressing and holding button #4. This process is confirmed by an „SAVED“.
For use at night, the CR and RH filters are especially useful (p.9).

Submenu OSD – On Screen Display

SYM: The annunciation of symbols can be deactivated. This is e.g. useful for video recording when you do not want the symbols to interfere with the recording.

NFOV (Narrow Field Of View): When the PumIR™ is mounted in front of a spotting scope or something similar, only parts of the screen may be visible (depending on the objective lens). With NFOV the symbols and menus can be placed further in the middle.

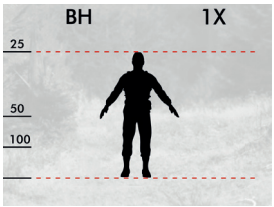
DIS: In this submenu you can set the distance estimator. You can choose between three different settings, depending on the purpose for which you want to use PumIR™.

MEN = standing person (1.76m/5‘9“)
HOG = wild boar (1m/3,28ft/39,4in)
BUCK = buck (0.75m/2,46ft/29,5in)
OFF = deactivated

Use of the distance estimator

Bring the bottom line into alignment with the bottom of the silhouette (soles of the feet). At the same time, align the top of the silhouette (vertex) with one of the other lines. The number above that line then corresponds to the distance in meters. The most accurate results are obtained by estimating at the highest possible magnification.

Example Distance Estimation MEN



MISC menu

In this menu you can access submenus that are not constantly needed.

Submenu PWR

BAT: The correct battery type (CR123/18650) should be selected in the BAT menu so that the battery warning (p.4) is displayed correctly and the low voltage detection and related safety functions work properly.

FLAP: To prevent the PumIR™ from accidentally activating by opening the lens cover (e. g. while carrying in a bag), this function can be disabled. The device is then switched on manually by pressing and holding button #4. Switching off and calibration or deactivation of the shutter using the flap remains functional.

SHUT: The shutter can be deactivated/reactivated. The image quality deteriorates.

Submenu PIN

Secure your PumIR™ reliably against loss with your own PIN code. If this is entered incorrectly 5 times in a row, the PumIR™ will be permanently blocked. Other users will not be able to use the device anymore and might contact us. Using the serial number we can identify you and return the device to you. If you find it too cumbersome to enter the PIN each time before using the PumIR™, you can set a cycle number between 1 and 255 in the PIN submenu CYC. In the latter case, the PIN is only requested after 255 startup cycles. 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 startup cycles.To avoid being surprised by the PIN request, you can also set a warning period WARN. If you select e.g. 5, a warning message (PIN) will appear on the screen 5 cycles before the actual PIN request.

Setting the PIN

The PIN request is usually deactivated in the delivery state. It must first be activated in the PIN menu under REQ. In the delivery state, the PIN is set to 0000. You can enter your own sequence of numbers in the PIN menu under SET. To save, press and hold button 4.

PUK: If the PIN has been entered 5 times incorrectly or if the entry is cancelled, a lock screen is displayed with the message „Please enter PUK or contact andres-defence.de“. Press and hold button 1 to enter the PUK request; if it is entered correctly, the PIN is reset to 0000. The PUK of your PumIR™ can be found on your proof of purchase or as a sticker on your manual. To confirm a number, press and hold button 1, to delete a number, press and hold button 2.

Submenu NVFFC – Non-Volatile Flat Field Correction

NVFFC: Hereby the last manual calibration can be saved in order to obtain the optimum quality after switching on the device. It is recommended to perform this procedure every 1-2 weeks, as the sensor changes over time. However, the sensor will not be damaged if the NVFFC is not used permanently.

ATTENTION:
While performing NVFFC, which takes around 15 seconds, the power source/supply must not be disconnected!

Note: NVFFC can only be done if a manual calibration has been performed shortly before (p.11). After initiating NVFFC, „WAIT“ appears, then the screen turns dark and the device starts itself again.

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 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, the display of a reticle is disabled. Pressing and holding button 4 saves the selection which is confirmed by a „SAVED“.

Submenu CROS – Crosshair types

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“. The reticles do not zoom in when the zoom level is changed.

Submenu CAL – Calibration

In this submenu, the 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 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.25).
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“.

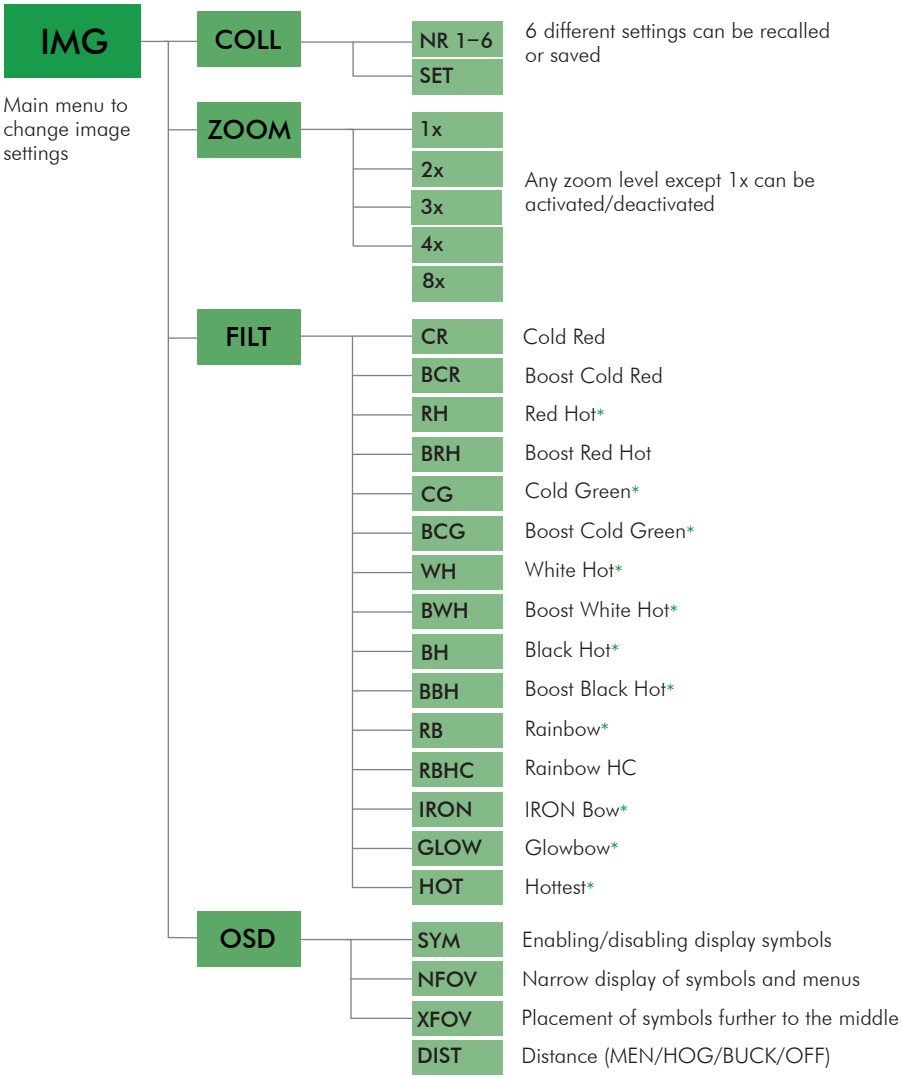
Submenu RES – Reset

This function resets the selected and stored individual name of the active memory location to the factory setting. The settings of the X and Y values are also reset to 0. Pressing and holding button 4 saves the selection which is confirmed by a „SAVED“

INFO menu

Here you will find information about your device such as the serial number of the device, version number of the firmware, battery voltage, serial number of the core, frame rate of the sensor and running time in hours:minutes.

Menu overview



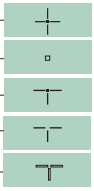
MISC

Menu for further functions

- **PWR**
  - **BAT** — (CR123/18650)111ww
  - **FLAP** — Enables/disables the on/off function of the lens flap
  - **SHUT** — (De)Activates the shutter
- **PIN**
  - **REQ** — PIN request (ON/OFF)
  - **CYC** — Request cycle (after 1-255 uses)
  - **WARN** — Warning at device start (0-10 starts before the query is warned)
  - **SET** — Change PIN
- **NVFFC**

WPN

Menu for weapon functions

- **WPN**
  - **NONE**
  - **1-6** — Select weapon name (6 slots available)
- **CROS**
  -  — Choose between 5 different crosshair types
- **CAL** — The crosshairs can be aligned in the x and y axis
- **NAME** — Create or change the name using letters from A to Z, Numbers from 0 to 9 and +/-
- **RES** — Reset WPN and CAL settings

INFO

Info menu for the device

- **SN** — PumIR™ serial number
- **FW** — Firmware version
- **BV** — Battery voltage
- **ERROR** — Error display

*Are not activated in the delivery state and can be activated in the user menu (p.14)

Power supply

Lithium CR123 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.

Battery Sleeve

Rechargeable battery RC123

Just like the CR123 batteries the rechargeable RC123 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.

Rechargeable battery 16650

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.

Rechargeable battery 18650

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.

18650 with protection circuit

These batteries are equipped with a special protection circuit that prevents deep discharge and short circuit. This makes the cells slightly longer than 6.5cm. However, the battery compartment is designed for this and the battery can be inserted directly.

18650 with USB port

These cells also have a protection circuit. In addition, however, they have a micro USB port that can be used to charge the cell. Unlike the 18650 type before, the capacity of this cell is reduced.

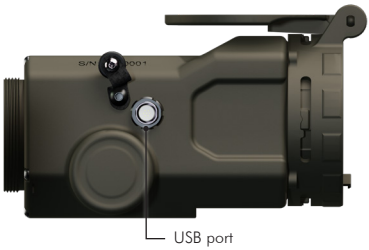
18650 without protection circuit

These less common batteries are significantly shorter than the first two mentioned. They do not have a protection circuit, but can still be used in the PumIR, since it has an internal protection circuit. Due to their shorter length, however, it is necessary to insert the supplied SB-adapter beforehand. This is the only way to ensure a reliable power supply even during strong acceleration (gun shock).

SB-Adapter

Power supply with USB port

The PumIR can be connected to a commercially available power bank using the USB cable (p.20). Please note that the USB side of the cable is not waterproof. On customer request, the cable can also be assembled with a customized waterproof connector instead of the USB connector. When the PumIR is powered via the cable, the batteries are conserved.



Cell type	approx. battery life (in hrs)	recharge-able	usable in cold tempe-ratures	battery sleeve	SB adapter	PWR menu setting
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 with pro-tective circuit	8	Yes	No	No	No	18650
18650 with USB	7	Yes	No	No	No	18650
18650 without protective circuit	8	Yes	No	No	Yes	18650

Security advice

The battery compartment is sealed to the inside of the device. This means that you can change the batteries even during rain. Water entering the battery compartment cannot damage the internal electronics. On occasion, however, it should be dried with a cloth and should be left open for a few hours so that the remaining moisture can evaporate.
Always use the chargers we recommend for maximum safety and performance.
NEVER charge accumulators with more than 4.20 V.
NEVER charge accumulators with incorrect polarity.
NEVER heat or burn batteries or accumulators.
NEVER puncture, crack or mechanically damage batteries or accumulators.
NEVER charge accumulators under the influence of high temperatures, such as e.g. near a fire.
NEVER short-circuit the batteries or accumulators.
NEVER allow the batteries or accumulators to get wet or immersed in water.
NEVER use batteries or accumulators with different states of charge together.
NEVER try to charge CR123 Batteries.
For long storage periods, the storage temperature should be below 45°C/113°F.
For long storage periods, the state of charge should be between 3,65V and 3,80V.
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.

Power Accessories


Image similar

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. 240722

Battery charger 18650

This useful charging device charges almost all sizes of Li-ion-batteries. It operates fully automatically. The charging voltage is also displayed. The operation runs via USB.
– Input: voltage 5V DC, current 2.1A
– Charging current: 2A
No. 382016

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: 3500mAh, 3.7V, 9.25Wh.
No. 240706

Rechargeable battery 16650

Sanyo-cell with long service-life and high cycle stability in the temperature range between 0°C/32°F and +60°C/160°F.
Specifications: 2500mAh, 3.7V, 9.25 Wh.
No. 382015

Lithium CR123 battery

Long-lasting battery in the temperature range between -30°/-22°F and +60°/160°F.
Specifications: 1550mAh, 3.0V
No. 270025

Power accessories are available in our webshop: www.andres-defence.de

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 fully compatible with the universal Rusan system ARM52 / AD540. It provides a suitable adapter for basically every objective outer diameter of your camera or spotting scope (30mm-80mm or 1 3/16“ - 3 5/32“).

The application is very easy: the adapter is simply screwed onto the thread on the eyepiece side and can be secured by turning the clamping screw clockwise until the adapter cannot be twisted any more. The other side of the Rusan adapter is attached to the objective of the riflescope or observation glass and locked by the lever.

Once this has been done, collimation can also be performed, but this is rarely necessary as the PumIR™ is already pre-collimated at the factory.

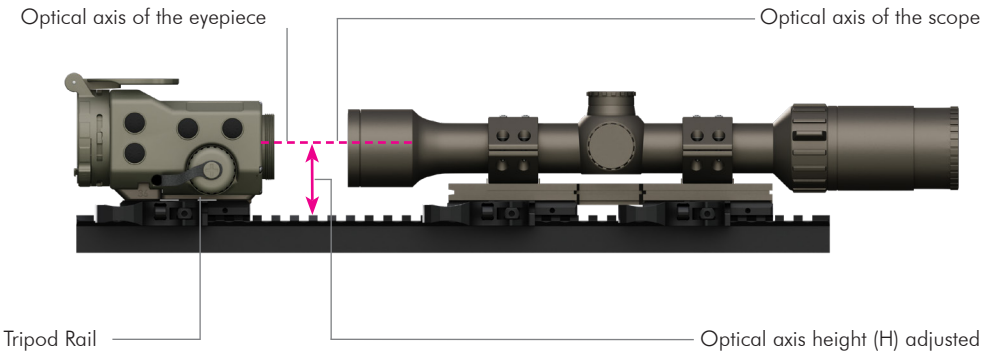
Overview of Rusan adapters in our store.
https://www.andres-industries-shop.de/ep.s/78133167.sf/de_DE/?ObjectID=59671401

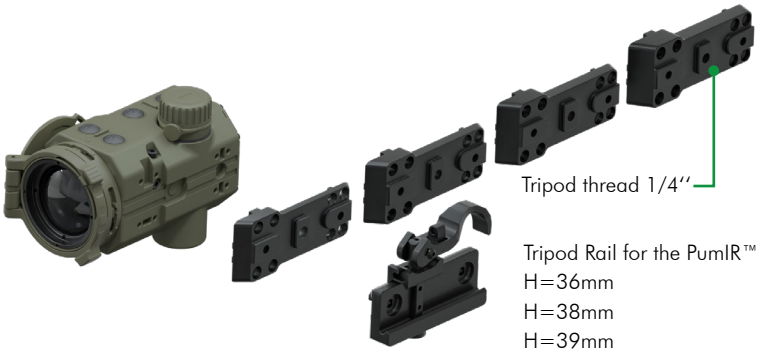
Overview of Präzise Jagen adapters in our store.
https://www.andres-industries-shop.de/epages/78133167.sf/de_DE/?ObjectPath=/Shops/78133167/Products/388830

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.
Art. No. 240705

Tripod Mounts and ERATAC-Mount





Tripod Rail for the PumIR™-M:	
H=36mm	No. 240736
H=38mm	No. 240738
H=39mm	No. 240739
H=41mm	No. 240741
ERATAC mounting clamp	No. 240500

PumIR™ Magnifier Eyepiece

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.24).

No. 240781

PumIR™ magnification

Zoom level:	magnification:
1x	2x
2x	4x
3x	6x
4x	8x
8x	16x

PumIR.5™ magnification

Zoom level:	magnification:
0.5x	1x
1x	2x
1.5x	3x
2x	4x
4x	8x

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.

Note: Please pay attention to the attached markings during assembly.
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.

Thread cap

A thread cap is delivered with your PumIR™. Its use is optional and has an aesthetic function only.
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™.

Note: 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.

Note: Please remove the thread cap before applying the bayonet cap.

Step widths for collimation

The step width for collimation (p.12.) of single keystrokes is shown in the following table for each zoom level. The success is checked step by step by test shots until no improvement can be observed in the selected zoom level. **Adjustment per keystroke in cm depending on the distance**

PumIR™ and PumIR.5™

PumIR-M.5™	0.5x	1x	1.5x	2x	4x
PumIR-M™	1x	2x	3x	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

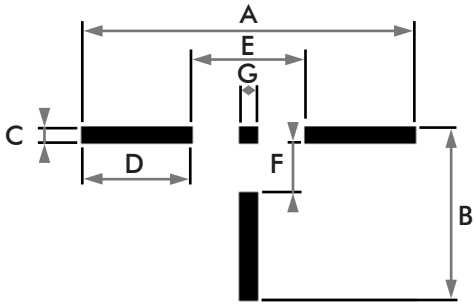
Max. adjustment in cm/100m		windage	elevation
0.5x	1x	80	80
1x	2x	256	204
1.5x	3x	336	268
2x	4x	384	308
4x	8x	448	458

PumIR™ and PumIR.5™ with Afocal Lens

PumIR-M.5™	0.5x	1x	1.5x	2x	4x
PumIR-M™	1x	2x	3x	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

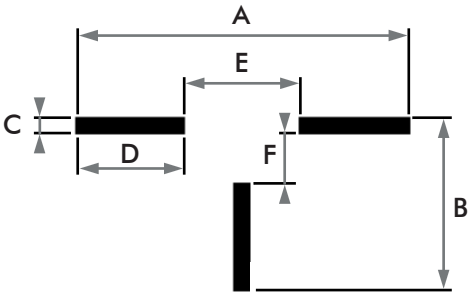
Max. adjustment in cm/100m		windage	elevation
0.5x	1x	40	40
1x	2x	128	102
1.5x	3x	168	134
2x	4x	192	154
4x	8x	224	229

Coverages



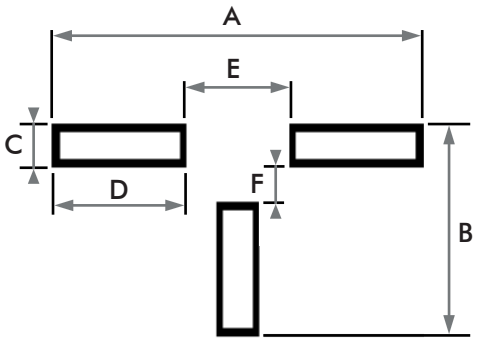
zoom*		units	A	B	C	D	E	F	G
1x	0.5x	cm/100m	133.30	69.93	6.56	30.9	45.89	19.67	6.56
		mrad	19.96	10.47	0.98	6.54	6.87	2.95	0.98
		in/100yd	47.99	25.17	2.36	15.73	16.52	7.08	2.36
		MOA	45.75	24.00	2.25	15.00	15.75	6.75	2.25
2x	1x	cm/100m	66.65	34.96	3.28	21.85	22.94	9.83	3.28
		mrad	9.98	5.24	0.49	3.27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

* zoom levels for PumIR™ (left) and PumIR.5™ (right)



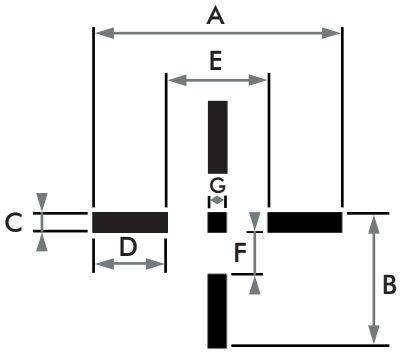
zoom*		units	A	B	C	D	E	F
1x	0.5x	cm/100m	133.30	69.93	6.56	30.9	45.89	19.67
		mrad	19.96	10.47	0.98	6.54	6.87	2.95
		in/100yd	47.99	25.17	2.36	15.73	16.52	7.08
		MOA	45.75	24.00	2.25	15.00	15.75	6.75
2x	1x	cm/100m	66.65	34.96	3.28	21.85	22.94	9.83
		mrad	9.98	5.24	0.49	3.27	3.44	1.47
		in/100yd	23.99	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 levels for PumIR™ (left) and PumIR.5™ (right)



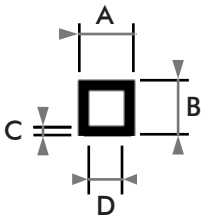
zoom*		units	A	B	C	D	E	F
1x	0.5x	cm/100m	137.67	76.48	15.30	52.45	32.78	24.04
		mrad	20.62	11.45	2.29	7.85	4.91	3.60
		in/100yd	49.56	27.53	5.51	18.88	11.80	8.65
		MOA	47.25	26.25	5.25	18.00	11.25	8.25
2x	1x	cm/100m	68.83	38.24	7.65	26.22	16.39	12.02
		mrad	10.31	5.73	1.15	3.93	2.45	1.80
		in/100yd	24.78	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

* zoom levels for PumIR™ (left) and PumIR.5™ (right)



zoom*		units	A	B	C	D	E	F	G
1x	0.5x	cm/100m	89.59	45.89	6.56	26.22	37.15	15.30	6.56
		mrad	13.42	6.87	0.98	3.93	5.56	2.29	0.98
		in/100yd	32.25	16.52	2.36	9.44	9.44	5.51	2.36
		MOA	30.75	15.75	2.25	9.00	9.00	5.25	2.25
2x	1x	cm/100m	44.80	22.94	3.28	13.11	18.57	7.65	3.28
		mrad	6.71	3.44	0.49	1.96	2.78	1.15	0.49
		in/100yd	16.13	8.26	1.18	4.72	6.69	2.75	1.18
		MOA	15.88	7.88	1.13	4.50	6.38	2.63	1.13
3x	1.5x	cm/100m	30.33	15.54	2.22	8.88	12.58	5.18	2.22
		mrad	4.54	2.33	0.33	1.33	1.88	0.78	0.33
		in/100yd	10.92	5.59	0.80	3.20	4.53	1.86	0.80
		MOA	10.41	5.33	0.76	3.05	4.32	1.78	0.76
4x	2x	cm/100m	22.40	11.47	1.64	6.56	9.29	3.82	1.64
		mrad	3.35	1.72	0.25	0.98	1.39	0.57	0.25
		in/100yd	8.06	4.13	0.59	2.36	3.34	1.38	0.59
		MOA	7.69	3.94	0.56	2.25	3.19	1.31	0.56
8x	4x	cm/100m	11.20	5.74	0.83	3.28	4.64	1.91	0.82
		mrad	1.68	0.86	0.13	0.49	0.49	0.29	0.12
		in/100yd	4.03	2.07	0.30	1.18	1.18	0.69	0.30
		MOA	3.84	1.97	0.28	1.13	1.59	0.66	0.28

* zoom levels for PumIR™(left) and PumIR.5™ (right)



zoom*		units	A	B	C	D
1x	0.5x	cm/100m	15.30	15.30	2.19	10.93
		mrad	2.29	2.29	0.33	1.64
		in/100yd	5.51	5.51	0.79	3.93
		MOA	5.25	5.25	0.75	3.75
2x	1x	cm/100m	7.65	7.65	1.09	5.46
		mrad	1.15	1.15	0.16	0.82
		in/100yd	2.75	2.75	0.39	1.97
		MOA	2.63	2.63	0.38	1.88
3x	1.5x	cm/100m	5.18	5.18	0.74	3.70
		mrad	0.78	0.78	0.11	0.55
		in/100yd	1.86	1.86	0.27	1.33
		MOA	1.78	1.78	0.25	1.27
4x	2x	cm/100m	3.82	3.82	0.55	2.73
		mrad	0.57	0.57	0.08	0.41
		in/100yd	1.38	1.38	0.20	0.98
		MOA	1.31	1.31	0.19	0.94
8x	4x	cm/100m	1.91	1.91	0.27	1.37
		mrad	0.29	0.29	0.04	0.20
		in/100yd	0.69	0.69	0.10	0.49
		MOA	0.66	0.66	0.09	0.47

* zoom levels for PumIR™ (left) and PumIR.5™ (right)

Cleaning and care

The PumIR™ can be cleaned with clear water (optionally with detergent - do not use strong chemical cleaning agents) and a brush or cleaning cloth.

Repair and spare parts service

We have built the PumIR™ as small and light as possible. Nevertheless, it is very sturdy and therefore hardly any damage is to be expected in daily use. Nevertheless, if damage should occur nonetheless or components are lost, we will gladly send you spare parts.

Repair

If the device should be 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. As a rule, you will receive an updated version with the latest firmware version.

Update service

Our products are constantly being developed. Further developments of the PumIR™ are also taking place continuously. In order that your PumIR™ is always up to date, we offer an update service with costs. You can 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. You will find information on this on our website.
We would also be happy to advise you personally.

Troubleshooting

Problem	Cause	Solution
Device can't be switched on / OLED display stays dark	Battery empty or wrongly polarized	Check polarity or insert fresh battery.*
	Screen set too dark	Use button #1 to make it brighter*
	Protective flap is damaged	The device can also be switched on/off without the flap by pressing and holding key #4*
	Device was previously switched off by pressing a key	The device can also be switched on/off without the flap by pressing and holding key #4*
	Protective Flap is not completely opened	open Flap completely (p.3)
The image quality is inferior	• Device is in manual calibration mode • Calibration was interrupted	• perform manual calibration (p.12) • if unsuccessful, perform NVFFC (p.15) • if unsuccessful, turn device off and on again*

If malfunctions persist, please refer to higher level maintenance.

Your opinions and ideas are important to us

For the further development of our products, it is important to us to include the feedback of our customers in order to be able to improve and expand our range of products four you. We are looking forward to your ideas and suggestions. We have already received a lot of feedback from our customers in the past. In this context, we have been able to give free upgrades to the latest model to particularly committed users according to their feedback.

Contact us:
mail: info@andres-industries.de
phone: +49 30 45 80 39 00
web: www.andres-industries.de

Technical data sheet

Model		PumIR-M™	PumIR-M20™	PumIR-M.5™	PumIR-M20.5™
Order number		240701	240713	240713	240714
User group		authorities only			
Temperature resolution		<20mK	20mK	<20mK	20mK
Sensor resolution microbolometer		640×512 (60Hz)			
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
Detection range	without afocal lens	2000m			
	with afocal lens	4000m			
Object distance		> 12.20m			
Focal length		36mm			
Spectrum / Pixel pitch		7.5–12.5µm / 12µ uncooled microbolometer			
FFC (Calibration modes)		internal mechanical shutter (can be switched off) + software calibration (NUC) + external calibration via front flap			
Sunlight sensitivity		no			
Filter modes		(Boost) White Hot, (Boost) Black Hot, (Boost) Red Hot, (Boost) Cold Red, (Boost) Cold Green, Rainbow, Rainbow HC, Iron Bow, Glowbow, Hottest, Outline			
Brightness control		8 Levels			
Video output		analog video output			
Display		(Micro-)OLED 873×500 Pixel			
Eyepiece configuration suitable for riflescopes with			~2x magnification	~2x magnification	~4x magnification
Eyepiece magnification			1x	1x	0,5x
FOV field of view Eyepiece			horizontal 12° vertical 9,6°	horizontal 12° vertical 9,6°	horizontal 6° vertical 4,8°
FOV field of view Objective (at 100m)			horizontal 12° (21m) vertical 9,6° (16,8m)		
Angular resolution horizontal			0.019°/1.13'/68" corresponds to 3,28cm/px (at 100m)		
Battery life CR123		up to 4h 30min			
Rechargeable battery life		18650 approx. 8h			
Temperature range		operating: - 32°C to +50 °C; storage: - 40°C to +80°C			
Waterproofness		IP68			
Impact resistance		MIL-STD-810G (CHG 1) 516.7 Shock: Procedure IV – Transit Drop (26 drops from 1.22m)			
Conformities		MIL-STD-810G (CHG 1) 510.6 Sand and Dust: Procedure 1 & Procedure 2 MIL-STD-810G (CHG 1) 506.6 Rain: Procedure 1 & Procedure 2 & Procedure 3 MIL-STD-810G (CHG 1) 516.7 Shock: Procedure 1 & Procedure IV MIL-STD-810G (CHG 1) 519.7 Gunfire Shock: Procedure 2 – Kaliber7, 62x51 mm NATO (3600J), Firing sequence 250x40 @ 650-800/min mounted onto Picatinny rail MIL-STD-810H 501.7 High Temperature: Procedure 1 & Procedure 2 MIL-STD-810H 502.7 LowTemperature: Procedure 1 & Procedure 2 MIL-STD-810H 503.7 Procedure 1-D Temperature Shockv			
Material		Aerospace aluminum with ceramic coating (Magpul foliage green)			
Dimensions (without accessories)		L:104mm; W:80mm; H: 56mm			
Weight (without accessories/battery)		approx. 300g			
Connection possibilities		Eyepiece: M35x1; Bottom: 8x M3-4 for elevation adjustment and Picatinny mounting, 20 UNC tripod thread			
Accessories (optional)		afocal lens, magnifier eyepiece, video and power cables, tripod rail for QD mounts (e.g. ERATAC) according to STANAG 4694 and MIL-STD-1913/STANAG 2324			

Warranty statement

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 and proof 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)

CE

Andres Industries AG
Weißenseer Weg 37
13055 Berlin

declares that the thermal imaging devices

PumIR-M™
PumIR-M.5™
PumIR-M20™
PumIR-M20.5™

comply with the Low Voltage Directive **2014/35/EU**.

The follwing harmonized standards related to conformity have been applied:

EMC interface without cable:	**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 cable:	**DIN EN 61000-6-2**	**industrial area**
EMC immunity with cable	**DIN EN 61000-6-4**	**industrial area**
ESD resitance	**DIN EN 61000-6-2** **(Contact/air discharge with 4 / 8kV)**	

Andres Industries AG
Berlin, April 2023
Dr. Björn Andres, CEO

Andres Industries AG

Vorstand/CEO: Dr. Björn Andres
Weißenseer Weg 37
13055 Berlin
Deutschland/Germany

Service & Support

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Web: www.andres-industries.de

CE PumIR-M™
RoHS compliant
IP68 MIL-STD-810G

PUK

Seriennummer / serial number

Produktionsdatum / production date

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