



Andres Defence

protection for action

/ a branch of Andres Industries AG

Thermal imaging & Night vision technology



2021 CATALOG

Thermal imaging devices made in Germany

We develop and produce our thermal imaging devices in Germany. This is the only way we can guarantee the high precision and quality. All customers are welcome to pick up their equipment personally at our Berlin manufacturing facility and combine this with a company tour. It is important to us that our technology can be used with maximum

success both in hunting and use by authorities. Therefore we offer our customers and people who want to become one the possibility to participate in our thermal imaging and night vision workshops. Our staff will also be happy to visit you on site at your agency or hunting organization.



Development, production and training in our Berlin premises.



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Our own products

All of the devices developed by us in Berlin have functions that have proven themselves in the field and are now partly copied by our competitors. For example, we were the first to develop a thermal imaging device with automatic flap control. In addition, the sub-pixel collimation we introduced has revolutionized the precision of in-line thermal

imagers. Many of these innovations have been inspired by direct interaction with users. We will continue to listen to our customers' wishes in the future. On the following pages you will find a description of the features that can be found worldwide exclusively in our devices.



Automatic flap control

All our thermal imaging devices are equipped with the patented automatic flap. When the lens flap is raised, the thermal imager switches on automatically. When it is closed, it switches off. So you can never forget to switch off the device after use. The flap can also be used for particularly accurate calibration of the thermal imaging sensor.

This also works with devices that already have an automatic shutter. Should the flap be damaged during use, switching the device on and off is of course also possible by pressing the buttons. With our new PumIR in-line thermal imager, the flap can even be removed and replaced by a 2x afocal lens, which can be collimated.

3 level concept

Have you ever been annoyed with your thermal imager that you first have to enter the menu for the simplest settings? All our thermal imagers can be operated intuitively via three levels:

1. Level: Simply open the flap and get started. The device starts with the last selected settings. You do not need to press a button.
2. Level: With 2 buttons, you can access more advanced functions, like zoom, filter selection and brightness without having to switch to a menu.
3. Level: Only here you reach the settings menu, where the collimation e.g can be set.

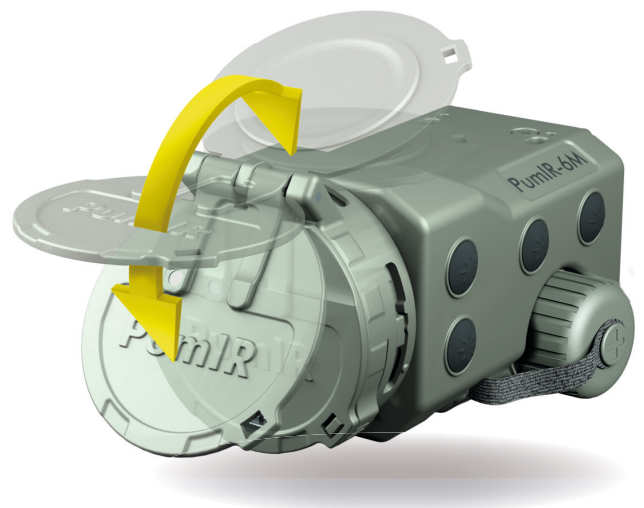


Illustration of the automatic flap control

High precision

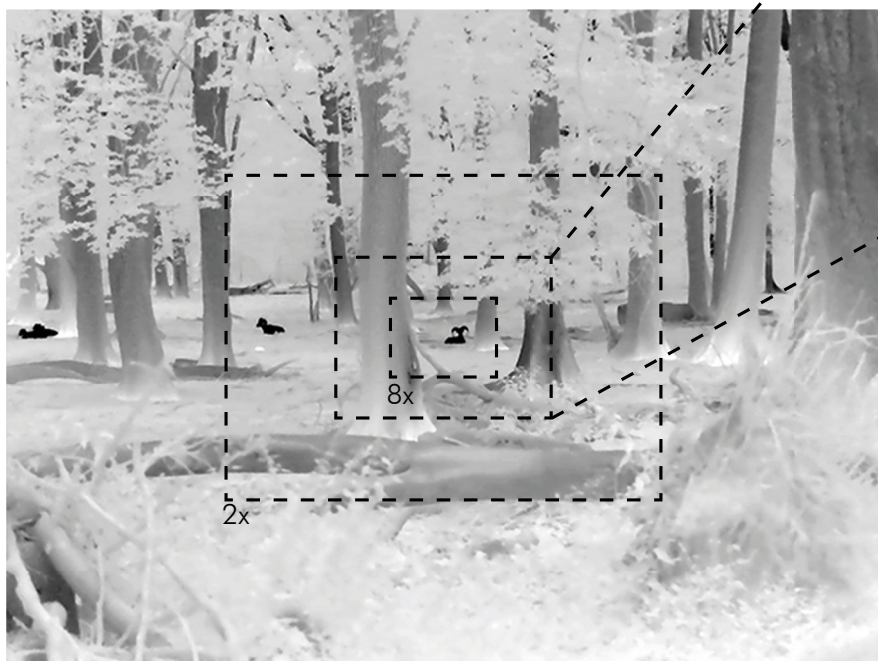
Our devices a precision which is approx. 100% higher than conventional in-line thermal imagers. The high-quality manufacturing technology of the housing contributes to this. It is milled from a block of high-strength aluminum for each device and is robust enough to withstand shot acceleration forces of up to 1,200g. It has been our experience that other techniques, such as die casting, do not achieve the repeatability in the field that our customers demand from us. However, AI upscaling and sub-pixel collimation have the greatest impact on the outstanding precision of our devices. With these techniques, we get twice the performance out of the microbolometer we use. For example, the TigIR achieves a scattering circle of 6cm at a shooting distance of 500m, although the sen-

sor-related angular resolution at this distance is already over 10cm.

AI upscaling

This technique is not just a simple edge smoothing. With the help of an AI algorithm, the sensor image is vectorized at digital zoom, reinterpreted and output in higher resolution on the display. Even at 8x digital magnification, individual pixels are barely visible. This results in a sharper, but above all high-resolution image.

For this reason, we also recommend using the digital zoom levels when used as a in-line thermal imagers, as they can significantly increase the range.



Sensor information 4x digital zoom

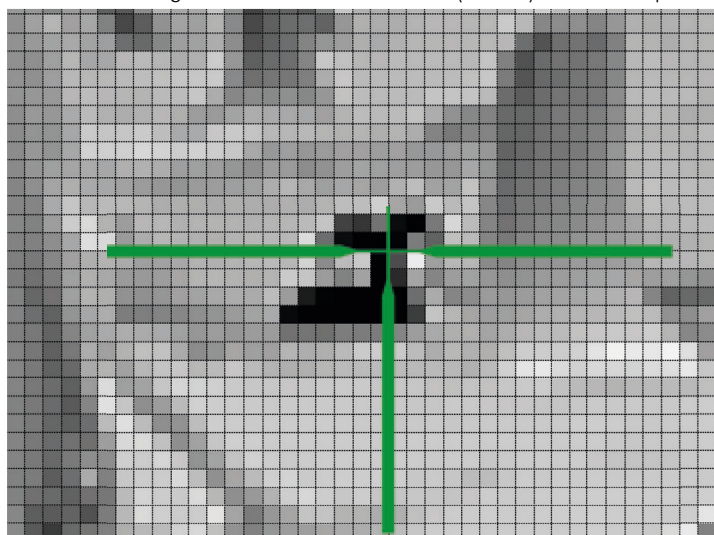


Screen display after AI upscaling

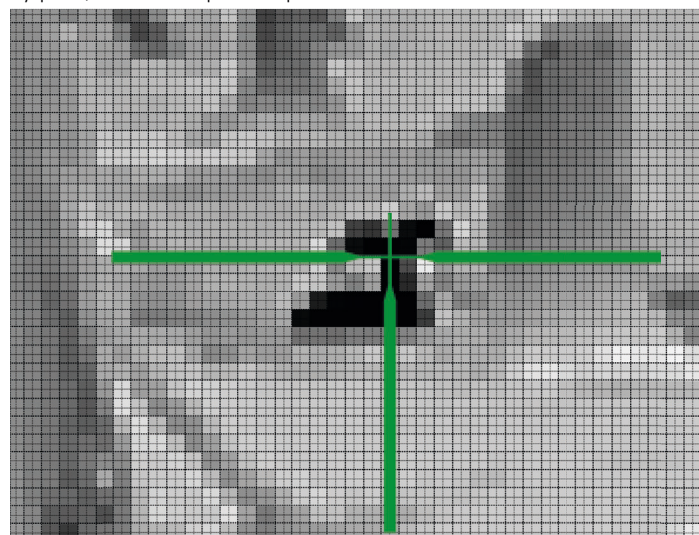
Sub-pixel collimation (SPC)

The AI upscaling described above only leads to increased precision if the thermal imager can also be collimated (zeroed) with correspon-

ding precision. Therefore, our devices can not only be collimated pixel by pixel, but in half pixel steps.



Step size for collimation with conventional thermal imagers



Smaller step size for TigIR, TILO and PumIR

Thermal filter palettes

All our devices have 15 different thermal filters. The sensor signal is processed differently and displayed to the user according to his application requirements.

The user himself selects in the settings menu which of the filters he wants to use.

Tactical filters

Here, the heat differences are displayed in monochrome brightness gradients. In this way, a largely natural representation is possible. The red filter variants reduce the glare effect considerably.

Boost-Mode

Each tactical filter is also available in a boost version. Here, the dynamic distribution is optimized similar to an HDR image. This makes many more details visible that only have ambient temperature.



Black Hot



Boost Black Hot

Heat sources such as people and trees are displayed dark. This results in a more natural representation.



Cold Red



Boost Cold Red

As before, but in red. This reduces the glare effect.



Cold Green



Boost Cold Green

As before, but in green. Any stray light that may escape is harder to be detected by opposing image intensifiers.



White Hot



Boost White Hot

Heat sources are displayed brightly. This makes the reticle more visible when the device is being used as an in-line thermal imager.



Red Hot



Boost Red Hot

As before, but in red. This filter has the least glare when used at night, as only the heat sources are illuminated.

Technical filters

The technical filters represent the temperature differences in a special way. They can be used e.g. to evaluate the the insulation of buildings.



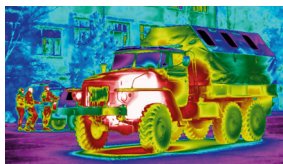
Hottest



Ironbow



Rainbow



Rainbow HC



Glowbow

Rusan adapter

The Mikron company now offers over 50 different adapters with which night vision and thermal imaging devices can be mounted in front of a wide variety of cameras and spotting scopes. For the selection of the correct Rusan diameter, it is important to measure the outer diameter of the optics accurately, since the manufacturer's specifications are often inaccurate.

For the TigIR, the Rusan adapters with M52x0.75 thread can be screwed directly to the housing. For the PumIR, adapters with M35x1 thread fit.

Even our small TILO thermal imaging goggles can be mounted in front of an optic using the TILO Rusan adapter (see p. 38) in combination with the actual Rusan adapter.



„Präzise Jagen“ adapter

Much more repeatable and thus significantly more precise than the Rusan system are the adapters from „Präzise Jagen“ - developed and manufactured in Germany. Via a bayonet connection, the attachment is always fixed in exactly the same position in which it was zeroed. In this way, the zoom levels of our thermal imagers TigIR, PumIR and TILO can also be used with repeatable precision. The high precision results from the two-part design consisting of a clamping sleeve, which is mounted on the target optics, and a duo adapter for the respective thermal device.



Duo adapter, suitable for PumIR™ | Art. Nr. 388813

For attaching a PumIR to a target optic with clamping sleeve.

Duo adapter, suitable for TigIR™ | Art. Nr. 388815

For attaching a TigIR to a target optic with clamping sleeve.

Rusan adapter M52x0.75, suitable for TigIR-6Z+				Rusan adapter M35x1, suitable for PumIR		Präzise Jagen clamping sleeves	
Diameter in mm	Order number	Diameter in mm	Order number	Diameter in mm	Order number	Diameter in mm	Order number
30	382023-1	57	382023-25	30	384000-30	30	388830
30 SR	382023-2	57.5	382023-26	47	384000-47	34	388834
34	382023-3	58	382023-27	48	384000-48	48	388848
36	382023-4	58.4	382023-28	50	384000-50	50	388850
36 ZM	382023-5	59	382023-29	54	384000-54	51	388851
38	382023-6	59.5	382023-30	56	384000-56	54	388854
40	382023-7	60	382023-31	57	384000-57	56	388856
41	382023-8	60.5	382023-32	58	384000-58	57	388857
42	382023-9	61	382023-33	58.4	384000-58.4	58	388858
42.5	382023-10	62	382023-34	59	384000-59	59	388859
44	382023-11	62.7	382023-35	60	384000-60	61	388861
46	382023-12	63	382023-36	62	384000-62	62	388862
46.7	382023-13	63.5	382023-37	63	384000-63	63.5	388863
47	382023-14	64	382023-38	63.5	384000-63.5	64.5	388864
48	382023-15	64.5	382023-39	64	384000-64	65	388865
49	382023-16	65	382023-40	65	384000-65	67	388867
50	382023-17	66	382023-41	67	384000-67		
51	382023-18	67	382023-42	69	384000-69		
52	382023-19	68	382023-43				
53	382023-20	69	382023-44				
54	382023-21	71	382023-45				
55	382023-22	72	382023-46				
56	382023-23	80	382023-47				
56.7	382023-24						

Product range is constantly
being expanded

PumIR™ – The Modular Talent

Range extendable to 4km with afocal lens

Our latest thermal imaging device is the PumIR. With a total weight of less than 300g and a length of 10cm, it is certainly much smaller than the TigIR, but in combination with the matching afocal lens, the device has a 30% higher range of 4km. Especially this long range combination with a weight clearly be-

low 500g is unique in its compactness worldwide. Due to its low profile design, it is well usable with tactical scopes that have a reflex sight on top, such as the Trijicon 4x32 ACOG with RMA from Trijicon. Of course, the PumIR series also has all the popular features of thermal imagers developed by Andres Industries.

Integrated lens cover with the following functions:

- device on/off
- manual calibration
- 90° rotatable for mounting a reflex sight
- removable

High performance thermal imaging sensor with 640x512 pixels, <40mK thermal sensitivity and 36mm f/1.0 lens. Like all our thermal imaging systems, the PumIR is only available with 60Hz sensors

ERATAC mount with safety lock and the ability to adapt to various Picatinny rails (PumIR-6M/PumIR-6M.5)

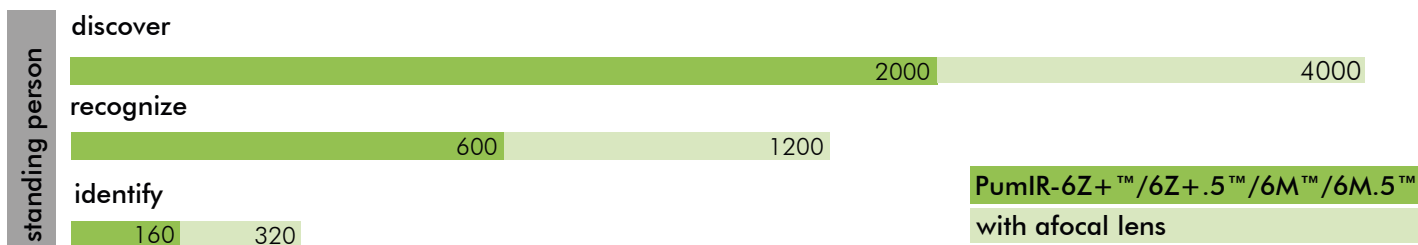


4 waterproof rubber keys for controlling the thermal imaging functions and changing the thermal filters

The waterproof battery compartment for 2 CR123 batteries or one rechargeable battery (18650) allows a runtime of up to 8 hours

Ranges of the PumIR™ models

in meters



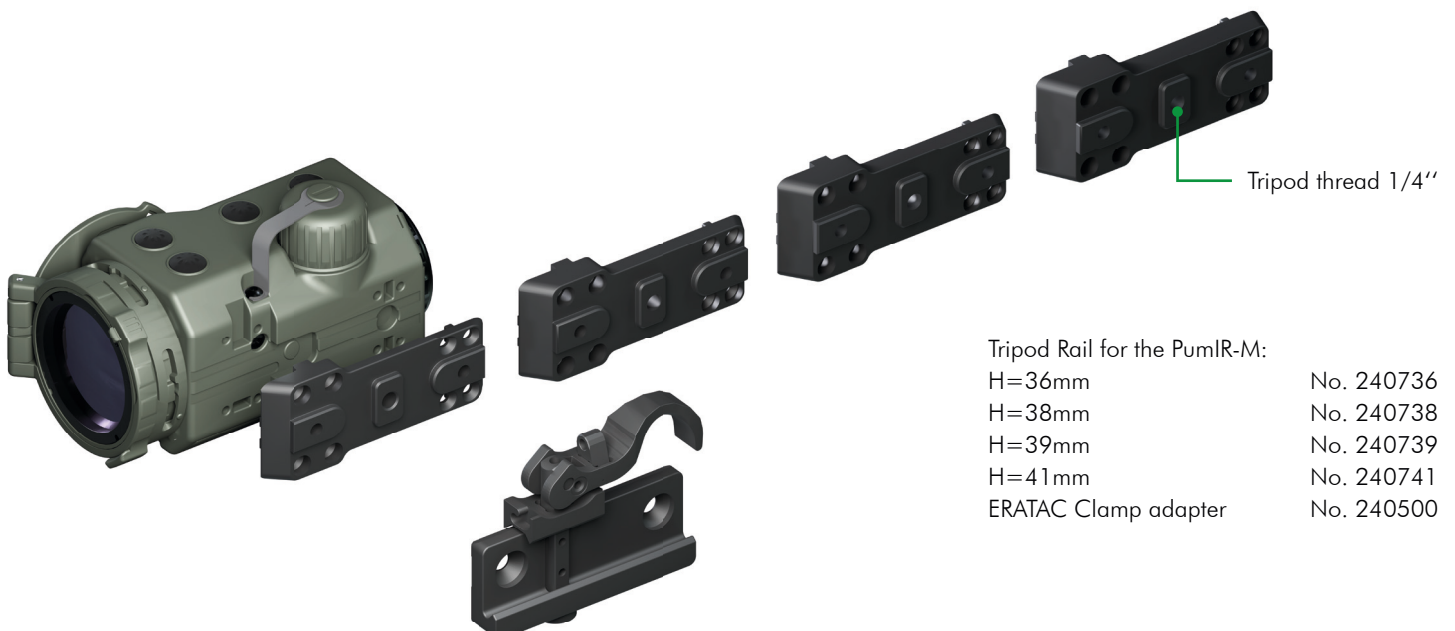
PumIR™ features



PumIR-6M™ series

The PumIR-6M was developed for military users such as police and military, where the device can be mounted directly on firearms (STANAG rail) using the particularly repeatable ERATAC mounting. With the different Tripod Rails the device can be adapted to different optical axis heights. We also manufacture special versions upon customer request. The M versions of our PumIR series also have an integrated reticle.

This means that the device can be used directly as a thermal imaging device even without a scope. Military users especially appreciate the advantages of the PUMIR-6M.5, as tactical target optics with 4x magnif. can be used while retaining full angle of view (see p. 10 & 11). The Tripod Rails can also be used to attach the PumIR to tripods when it is used as a stationary instrument for observation.



PumIR™ afocal Lens

Instead of the objective flap, a 2x afocal lens can be attached. This increases the detection range up to 4000m. The instrument detects the lens automatically and the collimation information of the lens is retrieved from memory. This means that the PumIR does not have to be re-zeroed after the afocal lens has been fitted. The automatic on/off function (see p. 4) also works with the flap of the afocal lens.



PumIR-6M with afocal lens | Art. Nr. 240704

Combination with reflex sights

A new feature of the PumIR is that there is space on its top for special accessory options. This makes it possible to use scopes with reflex sights, alternatively a small ACRO reflex sight from Aimpoint can be mounted on the top via an adapter plate (see p. 35).



PumIR-6M with reflex sight

Calibration

The PumIR also has the same three calibration options that all of our instruments have:

The simplest option is to use the built-in automatic shutter. It starts automatically after switching on or opening the lens cap. If you are disturbed by the clicking noise, it can be deactivated. To do this, simply

close the lens cap briefly. In this way, the device is calibrated manually. In addition, the process is virtually silent and can be repeated as often as desired. Additionally, a software shutter works in the background to continuously optimize the image without noise.

The .5 variants

Why is the image in my attachment so bad? You have powerful optics and the best thermal imager in the world. But when you combine the two, the image is pixelated and blurry? Then they are not properly matched. With the PumIR, we have a solution to this problem for the first time. Both the civilian and military versions are available with a reducing eyepiece optic. This allows the use of riflescopes that

have a higher magnification than the recommended 2x magnification. Thus, even with scopes with a 3-4x magnification, the entire image can still be seen. Please note that adjusting the PumIR.5 to the rifle and firing it, is mandatory (for more information see next page).

Technical data of the PumIR™ see page 15.

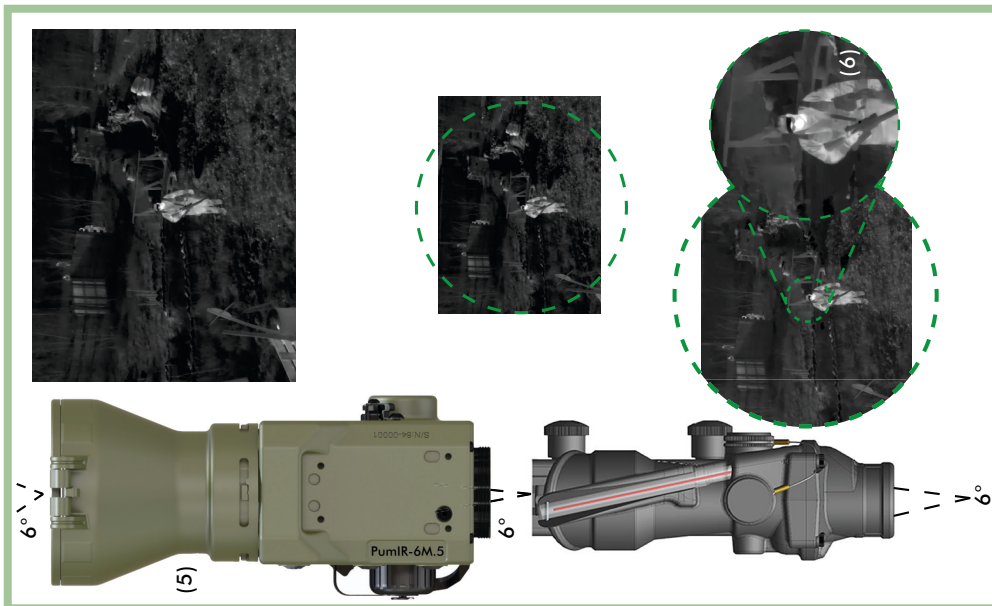


4x scope with conventional thermal imaging clip-on (36mm)



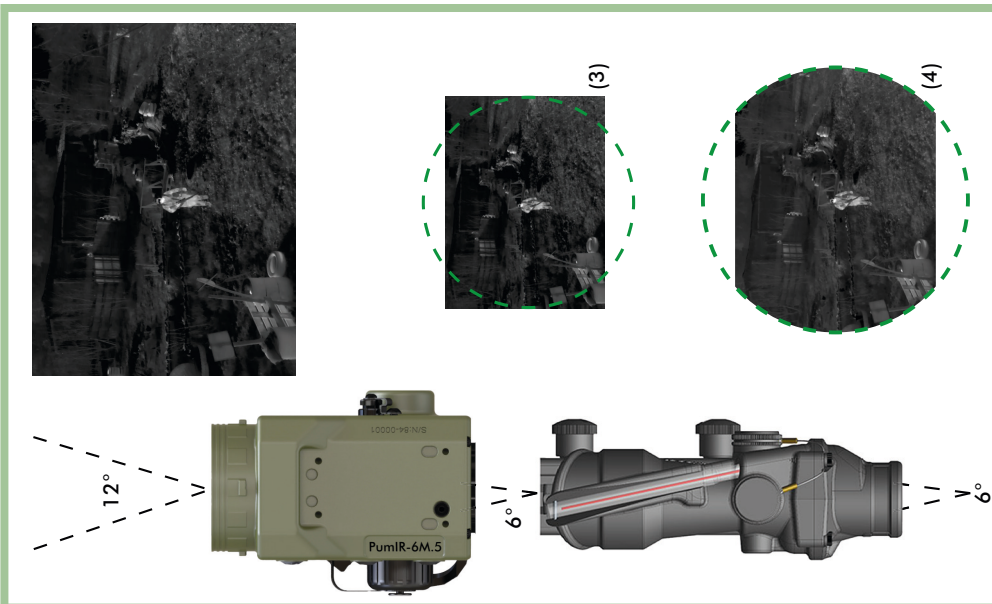
and PumIR-6M.5

PumIR-6M.5™ with afocal lens



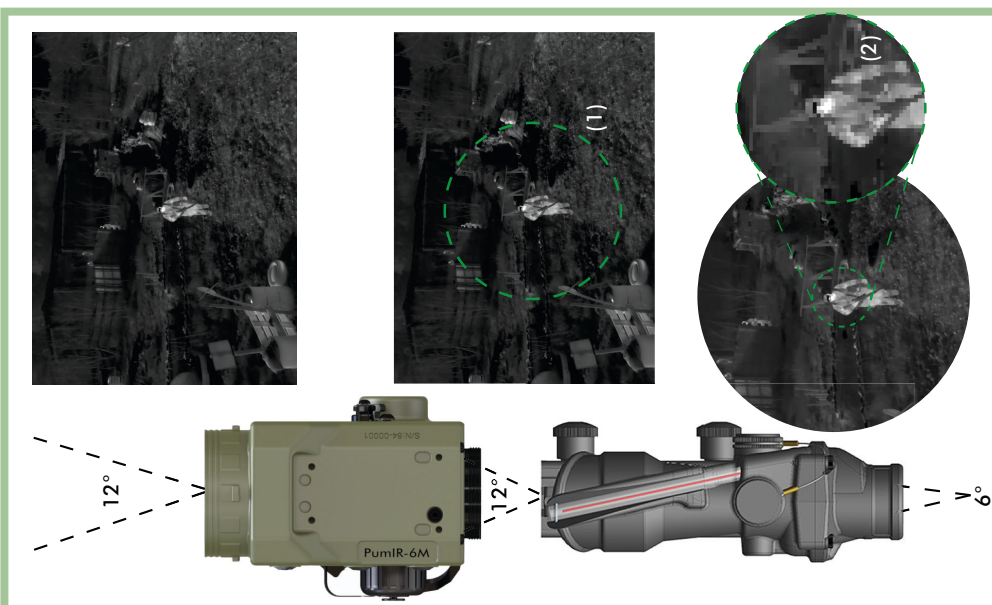
Through the afocal magnification lens (5), the PumIR-6M.5™ achieves the same as before with the digital zoom, but here, of course, the image quality is 4x better, since it is an optical and not a digital magnification (6). With this combination, the full resolution of the sensor with its 640 pixels is visible in the ACOG.

PumIR-6M.5™



With the PumIR-6M.5™, the objective viewing angle is the same as with the 6M. So the range remains the same. But we have installed a special eyepiece, which only has a 6° viewing angle. This results in an overall reduction of the OLED image in the eyepiece (3). Advantage: The 6° viewing angle in the eyepiece now corresponds exactly to the 6° viewing angle that the 4x ACOG also has. Thus, the ACOG can see almost the entire OLED in the eyepiece (4). This results in a 100% increased overview and a 4x sharper image. Disadvantage: Depending on a distance, the markings in a ballistic reticle are no longer correct with a simple digital magnification. To make the ballistic reticle markings correct again for greater distances, the PumIR must be operated in 2x digital zoom.

PumIR-6M™



The PumIR-6M™ is similar in design to conventional thermal imaging clip-ons. It has 1x magnification and a range of 2km with its 12° field of view (horizontal). It works best with scopes that also have a 12° field of view. Such scopes usually have a magnification of about 2x. Then almost the entire thermal sensor image is also being displayed in the scope. Advantage: Since the PumIR in this case has a 1:1 magnification, the reticle with its markings can be used directly for range estimation or correction of point of impact. Disadvantage: An ACOG with a 4x magnification usually has an angle of view of about 6°. This results in only a small part of the image being displayed in the center of the OLED (1). The high magnification then leads to disturbing pixelation of the image (2).

Objective
Microbolometer

PumIR eyepiece
OLED

User
Scope

TigIR™ series

The shortest thermal imaging device with 3km range

High performance thermal imaging sensor with 640x512 pixels, <40mK thermal sensitivity and 55mm f/1.0 lens with <40mK thermal sensitivity. Like all our thermal imaging systems, the TigIR is only available with 60Hz sensors

Waterproof case made of hard anodized, ceramic coated aerospace aluminum filled with nitrogen

ERATAC mount with safety lock and the ability to adapt to various Picatinny rails (TigIR-6M).



Waterproof interface connector for:

- analog video output PAL/NTSC
- external power supply
- remote control

4 waterproof rubber buttons to control the thermal imaging functions

TigIR-6M

The TigIR (Thermal imaging Infra Red) is currently the lightest and shortest thermal imaging device with 55mm optics. No other device with a total length of only 111mm reaches a range (standing person) up to 3000m. These small dimensions could only be achieved by developing a special folded eyepiece optic. This makes it possible to use the

TigIR in front of different scopes (3-6x) without loss of quality. The housing surface is hard anodized and coated with Cerakote. The TigIR can withstand even hard impacts in a harsh environment, although it weighs only about 500g, making it lighter than any other comparable instrument.

Optics

Since the entire housing is made of very robust aluminum and the lens is athermal, the TigIR has excellent precision even under extreme temperature conditions. This also ensures that the hit accuracy remains the same regardless of the weather or daytime.

Thermal resolution

The TigIR has a particularly high thermal resolution of <40mK. This means that heat sources are not only visible over long distances. Equipment, clothing and hidden objects can also be detected very well.

TigIR™ features

Integrated lens cover with the following functions:

- device on/off
- manual calibration
- fixed to the device

The waterproof battery compartment for 4 CR123 batteries or two rechargeable batteries (16650) allows a runtime of up to 9 hours

Adaptable to different axis heights of scopes by means of intermediate rails

TigIR-6M™ with military backplate

Eyepiece optics for cameras and scopes with 3-6x magnification

Civil backplate

The civil version of the TigIR has a thread (M52x0.75) for mounting adapters directly

Hunting with the TigIR-6Z+

The civilian version, the TigIR-6Z+, is also very popular with hunters. Thanks to the AI upscaling technology, the TigIR shows an increased precision by 100% compared to conventional

devices. Therefore precise hits are possible beyond 400m distance even at night.

TigR-6Z+™ – for Civil Version

With 640x512 pixels and a focal length of 55mm, the TigR-6Z+ is currently the most powerful thermal imager in the civilian sector. Since the TigR-6Z+ interfaces with adapters from various manufacturers, the device can be mounted directly in front of various optics.

Compared to other thermal imagers, the leverage on the optics is low due to its light weight and extremely short length of only 11 cm. That significantly improves precision.

TigR™ compatibility and adapters

For almost every objective diameter (30mm - 80mm) there is a suitable adapter for the TigR-6Z+. The adapter is simply screwed onto the thread of the eyepiece side and locked there. The other side of the adapter is pushed onto a e.g. spotting scope and secured by a lever. After mounting, collimation is possible, but not mandatory, since the

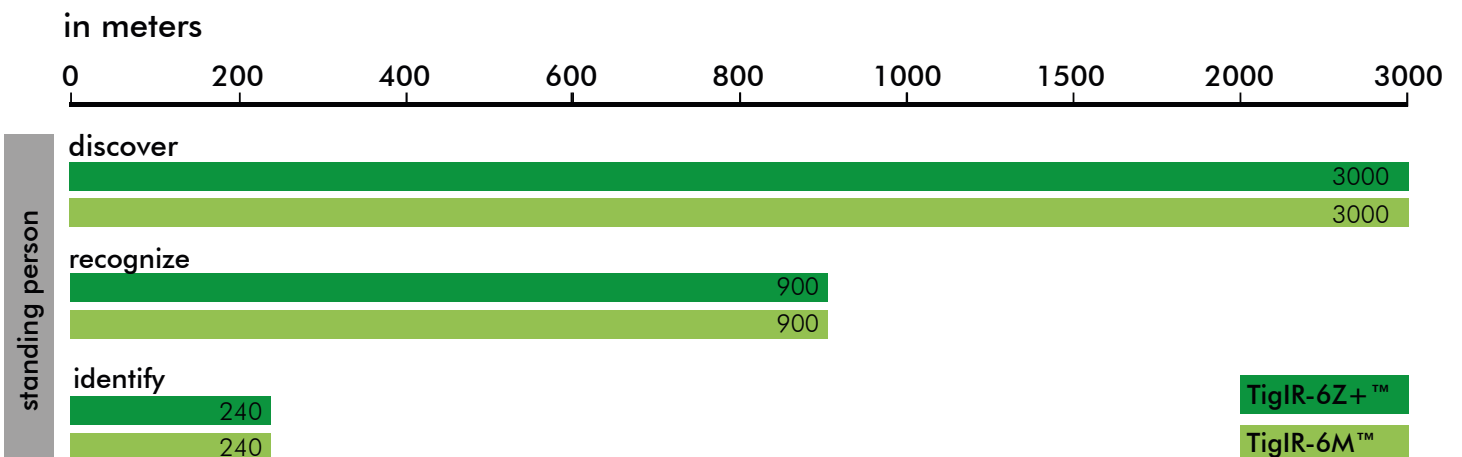
TigR is already pre-collimated at the factory.

The even better „Präzise Jagen“ adapters are also compatible and the selection for different lens diameters is constantly being expanded. Please check our store for the available models.



TigR-6Z+ with Rusan adapter mounted on spotting scope

Ranges of the TigR™ models



Technical data TigIR™ and PumIR™

		TigIR™		PumIR™			
Model		TigIR-6Z+™	TigIR-6M™	PumIR-6Z+™	PumIR-6Z+.5™	PumIR-6M™	PumIR-6M.5™
Order number		240401	240400	240700	240703	240701	240702
User group		civil user	authorities only	civil user		authorities only	
Temperature resolution		<40mk	<40mK				
Sensor resolution microbolometer		640×512 (60Hz)					
Zoom (digital)		0.8x, 1x, 2x, 4x, 6x		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	3000m		2000m			
	with afocal lens	-		4000m			
Object distance		> 27m		>12,20m			
Focal length		55mm		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 PAL/NTSC		digital video output USB webcam			
Display		(Micro-)OLED 873×500 Pixel					
Eyepiece configuration suitable for riflescopes with		Magnification between ~3x and ~6x		~2x magnification	~4x magnification	~2x magnification	~4x magnification
Eyepiece magnification		1x		1x	0,5x	1x	0,5x
FOV field of view Eyepiece		horizontal 8° vertical 6°		horizontal 12° vertical 9.6	horizontal 6° vertical 4,8°	horizontal 12° vertical 9,6°	horizontal 6° vertical 4,8°
FOV field of view Objective (at 100m)		horizontal 8° (14m) vertical 6° (10,5m)		horizontal 12° (21m) vertical 9,6° (16,8m)			
Angular resolution horizontal		0.0125°/0.75'/45" corresponds to 2,18 cm/px (at 100m)		0.019°/1.13'/68" corresponds to 3,28cm/px (at 100m)			
Battery life CR123		up to 10h 30min		up to 4h 30min			
Rechargeable battery life		16650 up to 10:30h		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 Shock					
Material		Aerospace aluminum with ceramic coating (Magpul foliage green)					
Dimensions (without accessories)		L: 112mm; W: 82mm; H: 80mm		L:104mm; W:80mm; H: 56mm			
Weight (without accessories/battery)		approx. 527g		approx. 320g			
Connection possibilities		Eyepiece: M52x0.75		Eyepiece: M35x1; Bottom: 8x M3-4 for elevation adjustment and Picatinny mounting, 20 UNC tripod thread			
Accessories (optional)		observation eyepiece, video and power cables, tripod rail for QD mounts (e.g. ERATAC) according to STANAG 4694 and MIL-STD-1913/STANAG 2324		Afocal lens, observation eyepiece, video and power cables, tripod rail for QD mounts (e.g. ERATAC) according to STANAG 4694 and MIL-STD-1913/STANAG 2324			

TigIR-6M™ – the Military Version

NSN: 5855-12-416-6304 NCAGE: CB068

The German-made TigIR-6M is currently the shortest thermal imaging scope with 55mm optics and is already in use in some NATO armies. The device is ideal for use in combination with 3-6x magnifying scopes. In addition, the rugged aluminum housing provides good protection

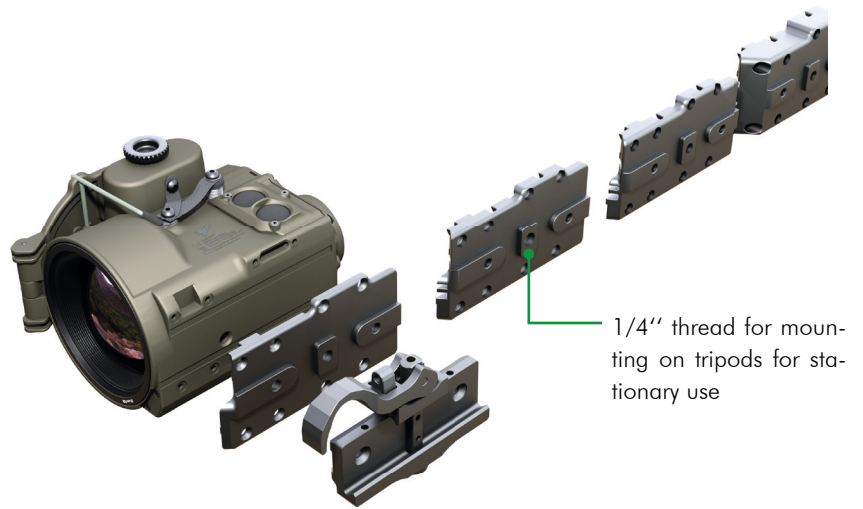
against drops and ensures consistently high precision even in varying ambient temperatures.

The TigIR-6M is sold to authorities only.



Tripod Rail

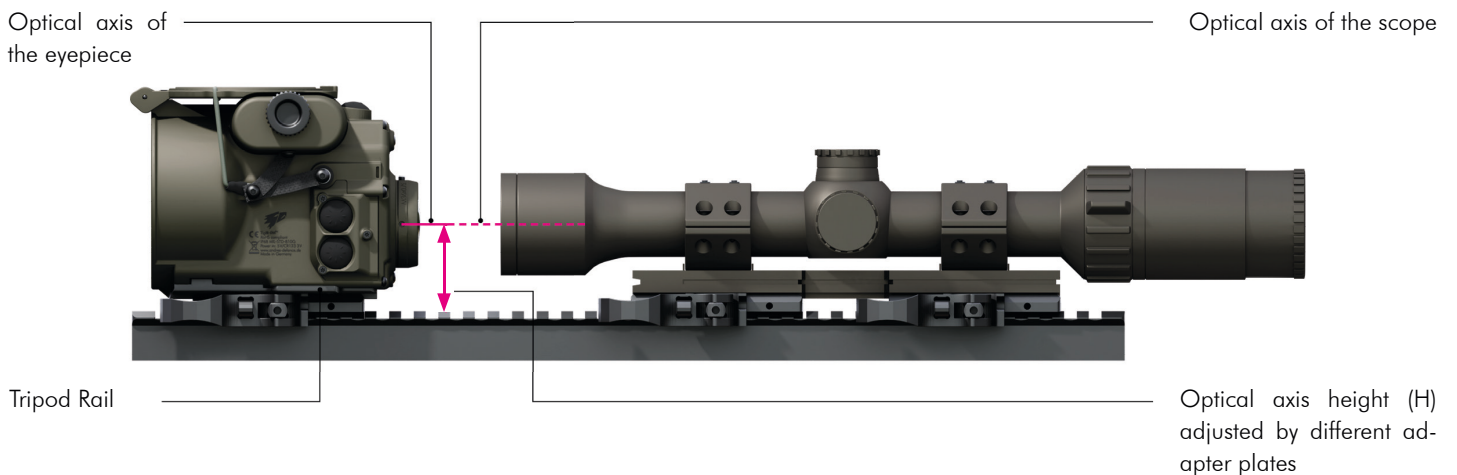
For mounting the TigIR-6M on STANAG rails, the use of a robust ERATAC mount is recommended. Various tripod rails are available for connection of the TigIR-6M, allowing height adjustment. Since the TigIR-6M is very flat, it has an optical axis height (H) of only 36mm with the thinnest adapter plate. This height is measured from the top of the Picatinny rail to the optical axis of the eyepiece.



1/4" thread for mounting on tripods for stationary use

Tripod Rail:	
H=36mm	No. 240405
H=38mm	No. 240408
H=39mm	No. 240406
H=48mm	No. 240407
ERATAC Picatinny clamp	No. 240500

TigIR-6M with Tripod Rail and Picatinny clamp



Use on machine guns

The extremely short design of the TigIR-6M of only 112mm allows mounting on machine guns where, due to the design, only little space is available for a mount. Thus, in combination with certain scopes such as the ELCAN Specter (see p. 25), the device protrudes only

10cm above the optics.

With most MGs, the belt feeder cover can be fully opened even with the TigIR-6M being mounted. The robust housing and the special optics withstand the strong forces that occur.



TigIR-6M mounted on MG

TILO™ series

The smallest thermal imaging goggles in the world



The TILO stands for „Thermal Imaging Light Optic“ and was developed as thermal imaging goggles. With 4-6cm length and 100g-150g weight, it is the smallest and lightest thermal imaging goggles in the world. It can be worn on helmets as well as caps and headbands. Currently, there is no comparable device with such high technical performance in such a small form factor. The performance is comparable

to larger hand-held systems. The TILO-6, for example, features a thermal sensor with a high resolution of 640x512 pixels. In addition, all devices in the series are equipped with high-power LEDs. Some TILO models have a thermal resolution of at least 40mK. Thus, temperature differences of less than 0.04°C can be displayed, which can be very helpful in bad weather conditions or indoors.

TILO™ features



Thermal mode

When the TILO is folded down and the lens flap is opened, the device switches on automatically and becomes a pair of thermal imaging goggles. The high thermal resolution enables orientation even indoors or under poor weather conditions. The large field of view of 24° for

thermal imaging devices also helps in this respect. This makes it ideal for use by hunters for stalking and tracking or by authorities for observation and reconnaissance.



Frontal view of the TILO-3M mounted on the helmet



Side view of the TILO-3M mounted on the helmet

Headlamp mode

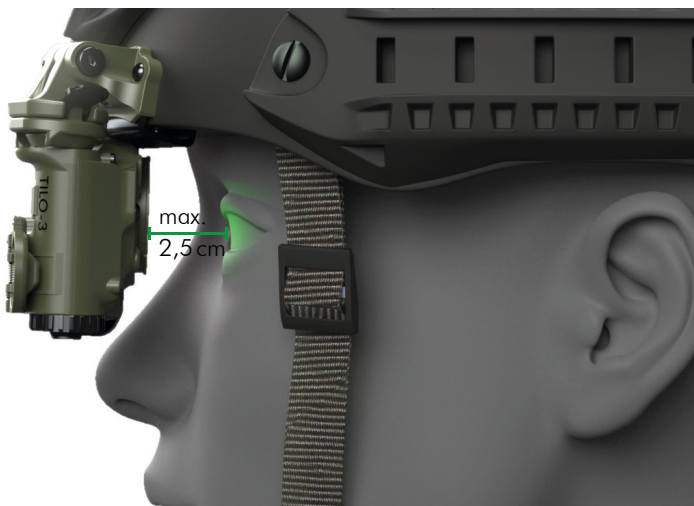
If the TILO is used only in headlamp mode, the energy consumption is merely dependent on the brightness setting. For this purpose, the three high-power LEDs (white, red, IR) can be selected from 5 different brightness levels. The thermal function can also be used simultaneously with the headlamp mode. Only the LED boost mode is excluded from this.

Eyepiece optics

With conventional linear optics, the TILO would not be the shortest thermal imaging goggles in the world. Therefore, a specially folded eyepiece optics was developed for the devices, which is also very tolerant with regard to the eye position. Thus, both eye distance and eye position are tolerated over a wide range. This is an important prerequisite for use as thermal imaging goggles on a tactical helmet. In addition, the maximum possible eye distance of 25mm means that glasses can be worn comfortably between the eye and the TILO.



TILO head lamp mode



TILO-3™ series

320×256 pixel sensor resolution

The TILO-3 is currently the smallest of the small. With a CR123 battery, it achieves an impressive runtime of over 3 hours. With a 16650 rechargeable battery even up to 6 hours. The simple Z-version has a lower thermal resolution, but is particularly inexpensive and therefore very popular.



TILO-3Z+2×™

Double optical magnification

A TILO-3Z+ with a more powerful lens that makes it more usable for reconnaissance and observation. Due to the stronger magnification, it has a longer range of 1000 meters. This makes it an affordable alternative to the powerful TILO-6, but the field of view is reduced to 12° due to the higher magnification. Thus, it is rather unsuitable for use as thermal imaging goggles.



TILO-6™ series

Highest sensor resolution

With the sensor resolution of 640×512 pixels and a thermal resolution of <40mK the TILO-6Z+ offers, no wishes remain open. The Z version, on the other hand, offers a cost-effective entry with <60mK thermal resolution.



Range comparison of the TILO™ models

Erweitert die Reichweite der TILO™-Geräte auf bis zu 2000m

With the 2x afocal lens, the range of application of the TILO-6 can be considerably extended. It is thus possible to upgrade the world's smallest thermal imaging goggles to a medium-range observation device. Unlike conventional afocal lenses, the thermal resolution deteriorates only slightly despite high magnification. The afocal lens covers the entire lens surface of the TILO™, therefore there is almost no light loss

(thermal radiation loss). Using the buttons, the afocal lens can be calibrated within seconds and vignetting is maximally reduced or prevented. The afocal lens comes with a convenient bayonet mount. This allows the lens to be both attached and detached quickly. However, this accessory is limited only to the TILO-6 series and the TILO-3Z+2x. Another feature of the new version is water resistance (see p. 28).

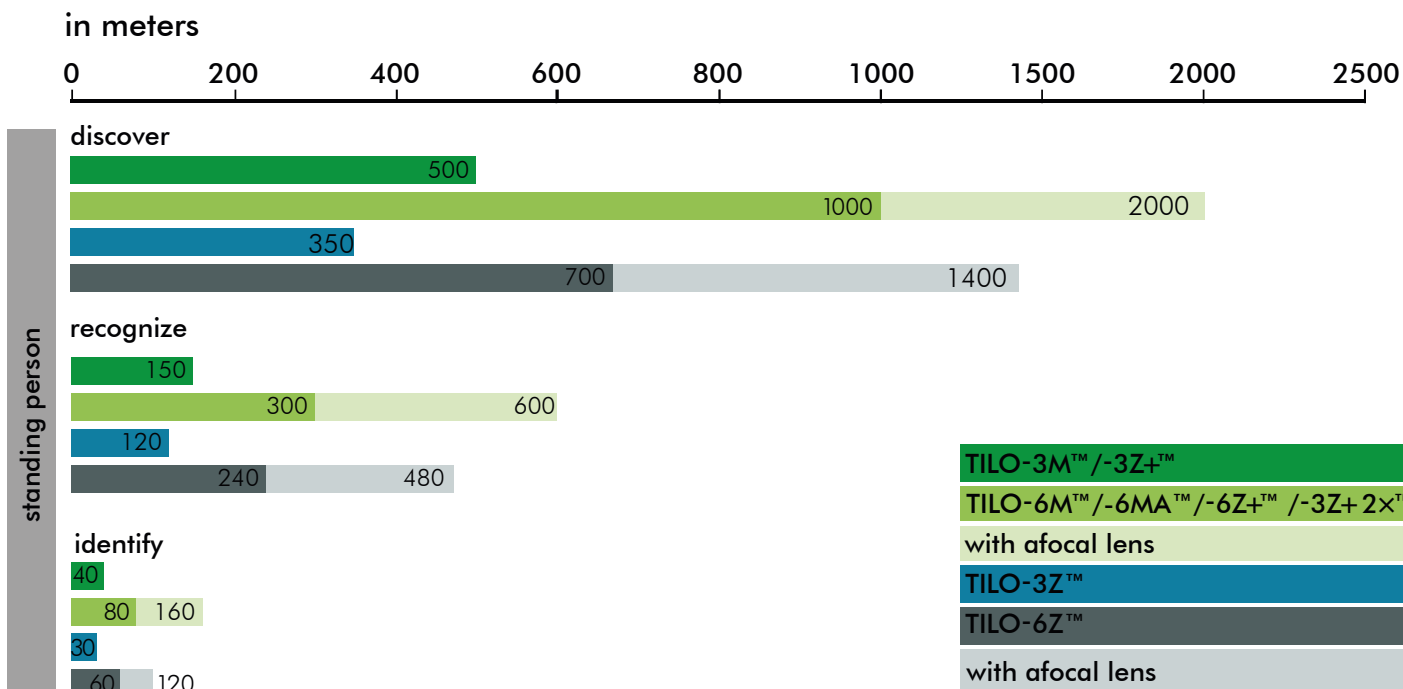


TILO-6Z+ with adapter for the afocal lens



TILO-6Z+ with afocal lens | Art. Nr. 382017

Range comparison of the TILO™ models



TILO™ comparison video

To provide an overview of the performance of the different TILOs, we have created a comparison video. The image of the TILO-3Z+ corresponds to that of the TILO-3M and that of the TILO-6Z+ to that of the TILO-6M. You can access the video via the QR code.

<http://marketing.andres-industries.de/TILO/TILO-Vergleichsvideo.mp4>



Setup to compare the TILO models

TILO-3Z+™



TILO-6Z+™



TILO-3Z+2x™



TILO-6Z+™ with afocal lens



TILO-6M/MA™ – the Military Versions

NSN: 5855-12-416-6303 NCAGE: CB068

The TILO-M series is sold to authorities only. It is equipped with a bayonet adapter on the eyepiece side. On the one hand, this serves to securely attach the shutter eyecup (see p.36), and on the other hand,

to attach the TILO to a wide variety of target optics. In this way, the TILO-6M/6MA can be mounted with repeatable accuracy, e.g. on an ELCAN Specter 1x/4x.





Use as thermal clip-on

In principle, all TILO-M versions can be used as thermal clip-ons. However, for better repeatability, we recommend the TILO-6MA due to its mounting interface being integral part of the housing. Several

adapters for different target optics are already available. However, it should be noted that the result is best with an optic that has a magnification of 1x.



TILO-6M as thermal clip-on mounted on a 30mm scope



Bayonet adapter for attaching shutter eye cup (see p. 36) or attachment adapter

ELCAN-Adapter

Die TILO ist das einzige Wärmebildgerät, das sich direkt an einem ELCAN Specter 1x/4x befestigen lässt, was mit dem neuen ELCAN-Adapter in nur wenigen Sekunden bewerkstelligt werden kann. Die grundlegend überarbeitete Adapter-Version verfügt über eine bessere Arretierung und auch die Befestigung am Specter ist nun deutlich vereinfacht worden. So wird eine noch höhere Präzision und Wieder-

holgenauigkeit erreicht. Auch bei diesem Vorsatzadapter raten wir zur Verwendung der TILO-6MA, da diese komplett aus Metall gefertigt ist.

Camera Adapter 40mm | Art. Nr. 380214



TILO-6MA, ELCAN adapter and ELCAN mounted



TILO-6MA, ELCAN adapter and ELCAN in exploded view

We are also pleased to offer you the ELCAN Specter in its different versions in our webshop
www.andres-industries-shop.de



TILO-6MA™

The TILO-6MA is the particularly robust military version of the series. The housing was specially developed for the special requirements of marine units and is therefore completely milled from corrosion-resistant aluminum. For this reason, the TILO-6MA offers the following additional features:

- waterproof up to 10m
- bayonet adapter is part of the housing: better precision as a clip-on
- increased impact resistance
- corrosion resistant housing



TILO-6MA



TILO-6MA attached to helmet

Red Dot Flipper

With the Red Dot Flipper (RDF), the TILO-6M(A) can also be used in front of a reflex sight. It is attached to the RDF within seconds. In combination with a flip mount like SAMSON's, the system can be flipped out of the field of view in less than a second. For optical reasons, the angle of view through the RDF is only 12°, but this is also about the same as the usual angle of view through the reflex sight. The RDF should be collimated with the TILO before use to achieve the highest possible precision.

Red Dot Flipper I Art. Nr. 382019



TILO-6MA folded down in front of a scope.
(We recommend a maximum magnification of 2x).



Front and back of the Red Dot Flipper on a SAMSON flip-to-side mount



Holosight reticle with thermal image

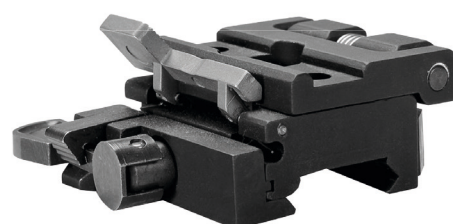


TILO-6MA folded forward or down in front of a red dot sight device



Technical data









	Red Dot Flipper
Order number	382019
Weight	76g (without Flip-to-side-mount)
Dimensions (mm)	48x48x42
Color	black matte
Waterproofness	IP68
Magnification	0.5
Impact resistance	MIL-STD-810G



Quick Release Base with Flip-to-side-mount I Art. Nr. 382021

SAMSON - patented side-folding mount technology for users and shooters who need a quick solution for optics and accessories.

Technical data

		TILO™ Thermal imaging goggles							
									
Model		TILO-3M™	TILO-3Z+™	TILO-3Z™	TILO-3Z+2x™	TILO-6M™	TILO-6MA™	TILO-6Z+™	TILO-6Z™
Order number		380101	380104	380103	380105	380108	380109	380107	380106
User group		authorities only	civil use			authorities only		civil use	
Sensor resolution		320x256 Pixel, 60Hz				640x512 Pixel, 60Hz			
Temperature resolution		<40mK		<60mK		<40mK			<60mK
Zoom (digital)		0,8x, 1x, 2x, 4x, 8x			1,6x, 2x, 4x, 8x, 16x	0,8x, 1x, 2x, 4x, 8x			
Optical magnification		1x			2x		1x		
Spectrum/Pixel pitch		7.5 - 13.5µm / 12µm uncooled microbolometer							
Sunlight sensitivity		no							
Filters		(Boost) White Hot, (Boost) Black Hot, (Boost) Red Hot, (Boost) Cold Red, (Boost) Cold Green, Rainbow, Rainbow HC, Iron Bow, Glowbow, Hottest							
Video output		PAL/NTSC							
Field of view (FOV)		horizontal 24° / vertical 19°			horizontal 12° / vertical 9.5°	horizontal 24° / vertical 19°			
Display		(Micro-)OLED 873×500 Pixel							
Battery	Light	up to 24h							
	thermal	approx. 3:15h				approx. 1:45h			
2x CR123 (only thermal)		approx. 7:00h				approx. 4:00h			
Rechargeable battery 16650 (only thermal)		approx. 6:00h				approx. 3:15h			
Helmet mounting		Adapter for ballistic helmets optional (see p. 36/37)							
Headband		Adapter for headband optional (see p. 37)							
Light		white: (boost: 160 ANSI lumen) normal 45 ANSI lumen, red (626nm): 24 ANSI lumen, IR (940nm): 15 ANSI lumen							
Flashing, SOS		yes							
Brightness control		8 levels							
Usage temperature		-30°C up to +60°C		-32°C up to +60°C		-30°C up to +60°C			-20°C up to +60°C
Storage temperature		-40°C bis +80°C							
Waterproof		IP68		IP65		IP68		IP68	IP65
Impact resistance		MIL-STD-810G 4.6.5 Procedure IV - Transit Drop (military grade)							
Material		Polyamide housing, cold-break resistant reinforced with nanotubes; cover eyepiece optics made of sapphire glass		Polyamide housing; surface-hardened PMMA eyepiece optics cover	Polyamide housing; surface-hardened PMMA eyepiece optics cover		Housing: aerospace aluminum; cover eyepiece optics made of sapphire glass	Polyamide housing, cold-break resistant reinforced with nanotubes; cover eyepiece optics made of sapphire glass	Polyamide housing; surface-hardened PMMA eyepiece optics cover
Dimensions (without accessories such as eyecups)		Length: 40mm; Width: 64mm; Height: 67mm			Length: 58mm; Width: 64mm; Height: 67mm		Length: 58mm; Width: 64mm; Height: 70mm	Length: 58mm; Width: 64mm; Height: 67mm	
Weight (without accessories)		approx. 100g			approx. 128g		approx. 152g	approx. 128g	

TISCAM™

Thermal imaging devices for covert observation

The extremely small outdoor thermal imaging camera is particularly easy to conceal due to its size. It is barely thicker than a thumb while producing high quality images with 320×256 pixels (also available with 640x512 pixels). The standard version has a built-in jack for connecting a waterproof cable. This cable transmits the video data (PAL or NTSC) and supplies the device with power (5V). To save weight, the device can also be supplied with a highly flexible special cable with an open end or a connector according to customer requirements (e.g. Fischer connector).



FOV 90°



FOV 50°



FOV 34°



FOV 24°



Different angles of view of the TISCAM

	TISCAM-3™				TISCAM-6™		
Model	TISCAM-3.24	TISCAM-3.34	TISCAM-3.50	TISCAM-3.90	TISCAM-6.24	TISCAM-6.50	TISCAM-6.95
Order number	240324	240334	240350	240390	240394	240396	240397
Resolution microbolometer	320×256 9Hz / 60Hz				640×512 60Hz		
Temperature resolution	<60mK (special version with <40mK available)						
Spectrum/Pixel pitch	7.5-13.5µm / 12µm uncooled microbolometer						
Sunlight sensitivity	no						
Filters	White Hot (more filters on demand)						
Field of view horizontal	24°	34°	50°	92°	24°	50°	95°
Input voltage	5-12V						
Video output	PAL (standard), NTSC (possible), USB (special version)						
Image/video memory	None						
FFC (Shutter)	Flagshutter corrected by software shutter						
Operating / storage temperature	-20° up to +60°C / -40° up to +80°C						
Waterproofness	IP68						
Maximum height	12km						
Impact resistance	1.500g @ 0.4msec						
Material	Housing: aerospace aluminum anodized, lens: germanium						
Dimensions (without any attachments)	Length: 60mm; Width: 24mm; Height: 29mm				Length: 78mm Width: 35mm Height: 40mm	Length: 86mm Width: 35mm Height: 40mm	Length: 90mm Width: 35mm Height: 40mm
Weight	57.7g				approx. 100g	approx. 130g	approx. 120g
Accessories	Video/power cable customized or standard						

Jerry-C5

Cost effective fusion thermal imaging upgrade

The Jerry-C5 is a clip-on thermal imager. Due to the included adapter, it is compatible with most night vision devices and extends their viewing spectrum with four different thermal imaging modes:

- White Hot
- Highlight
- Outline mode
- clear thermal imaging

The Jerry makes image intensifiers usable even in absolute darkness or in bad weather conditions without the need for IR illumination.

Outline/Thermal mode

A thermal imaging attachment can turn an image intensifier into a powerful device. In this way, the advantages from both devices can be optimally combined: The image intensifier provides a largely natural and high-resolution image of the surroundings with a large field of view. The fusion device projects all detectable heat sources into this image. The combination of image intensifier and Jerry-C5 makes it possible to detect thermal image sources such as wild boars over hundreds of meters, even in the darkest forest.



Fusion of night vision and thermal imaging technology

The contour mode is particularly helpful here. If it is activated, the heat source is only outlined and blending into the background. Nevertheless, an IR illuminator can be used for image brightening. In the pure thermal mode, the display is completely based on the thermal image information. Depending on the weather-related thermal dynamics, these representations are sufficiently rich in contrast and clear. The deer is clearly visible here.



same scene without thermal image function



Outline mode



thermal mode



Combination of DTNVS (see p. 33) and Jerry-C5

Jerry-C5	
Order number	250200
Manufacturer	Infray
Weight	110g
Dimensions (mm)	85 x 66 x 40
Sensor resolution	640x512
Battery level indicator	yes
Waterproofness	IP67
Pixel pitch	12 μm
Field of view	30.5°
Focal length	f11.52
Spectral Range	8 μm ~ 14 μm
Screen mode	White Hot / Highlight / Outline / thermal mode
Battery	1x C123A
Temperature range	-40°C to +60°C (Operating)

Clip-on from the far east

In addition to our own products such as TigIR, PumIR and TILO described above, we also do not want to deprive newcomers to the thermal imaging market of affordable alternatives. The clip-on of Chinese manufacture and also the thermal imaging drone used by us are already widely used in the hunting sector and are well suited for short and medium distances. The thermal clip-on can only be mounted to the target optics using an adapter

(see page 7). Please observe the respective legal situation of your country. If you already know the devices under another name, this could be due to the fact that most of our competitors no longer maintain their own production, but only buy Chinese devices and relabel them. We use the original names of the Far East manufacturers.

Thunder TH35C

The Thunder TH35C is solid dual-use/prefix device for beginners on the market. Thanks to the built-in 748x561 OLED monitor and an outstanding thermal sensitivity of below 35mK, the device still delivers clean and sharp images even under the most adverse conditions. The sensor works with a resolution of 384x288 pixels and thus achieves a maximum detection range of about 1.2km, 20% more than the well-known TILO-6Z+ and is with 15cm just about three times as long. The user can choose from a total of four different filters. Video and photo recordings can be stored on the permanently installed 16GB flash storage, which can then be retrieved and shared via app. With a reduction ring (not included), you can connect the Thunder TH35C to an adapter (see p. 7). If you don't want to use the Thunder as a clip-on device, you can also use it individually as a digital optic with the included observation eyepiece.

Reduction ring for Rusan

The reduction ring allows you to adapt the thread of the Thunder TH35C to the M52x0.75 thread.

Reduction ring for Rusan I Art. Nr. 250101



Xeye CH50

The Xeye CH50 from the Chinese manufacturer Infiray is a more affordable variant compared to the TigIR-6Z+. The CH50 offers features like a microbolometer with 640x512 pixel sensor resolution, a high-contrast OLED screen and an integrated recording function. On top of that, the manufacturer claims a detection range of 2.6km.

Nevertheless, it has some disadvantages compared to the TigIR-6Z+. For example, the individual digital zoom levels cannot be collimated again. Furthermore, it is a good 5cm longer and does not offer a mounting option for the Picatinny rail. Furthermore, the TigIR has a higher detection range of 3000m and offers a larger thermal filter range. Thus, the device achieves only almost 50% of the precision of the TigIR.

	Thunder TH35C	Xeye CH50
Order number	250100	250300
Manufacturer	HIKMICRO	Infiray
Weight	420g	420g
Dimensions (mm)	153x63x59	166x60x68
Color	black matte	black matte
Battery level indicator	yes	yes
Waterproof	yes	yes
Zoom (digital)	1x, 2x, 4x, 8x	1x 2x, 4x
Field of view	10.0° x 8°	8,8° x 7,0°
Aperture	F1.0	F1.0
Batteries	2x CR123A	2x CR123A
Runtime	approx. 4:00h (with WiFi-Hotspot) or 4:30h (without WiFi-Hotspot)	approx. 4:00 h

Image intensifiers/ night vision devices

Sale to authorities and civil users



Locking System NEW

DTNVS

The best binocular night vision device on the market today has many helpful features. For example, it switches off automatically when flipped up. This prevents telltale stray light. This even works with individual tubes when they are just folded to the side, for example to aim a gun. Of course, there are also many accessory options for this device (see p. 38) such as the locking system, which keeps the interpupillary distance absolutely constant after folding it down.

The purchase of night vision equipment requires a special relationship of trust. Often the performance of night vision devices is difficult to describe in numbers. That is why we always specify a minimum FOM value to our customers in the performance of the devices we sell, which we exceed without exception, regularly by a considerable margin. Of course, we also offer all buyers the opportunity to take part in our

training events free of charge and subsequently test the performance of devices before purchasing them from us. Once a selection has been made, the desired device is custom-made exactly according to these customer requirements.

This can take from two to 2-25 weeks depending on the choice of tubes.

1 | MINI-14 (aka MUM-14 / NT940)

The MINI-14 is one of the lightest 18mm monoculars on the market. Although it is waterproof up to 20m, meeting the highest military requirements, it is ITAR-free. It has a wide range of accessories, making it extensively expandable. For example, with the bino bridge (see p. 39), two units can be used as one system. It is also possible to connect one with the weapon mount (see p. 38) and use it as a clip-on.



2 | PVS-14

ACT's PVS-14 is completely ITAR-free and there are no shipping restrictions. This night vision device is a monocular and has been used by the US military for decades. The single tube technology makes it very user friendly to use. The automatic shut-off function when the night vision device is mounted on the helmet and flipped up makes it perfectly suited for professional use in urban environments. Thanks to the rugged housing, the PVS-14 is extremely durable. There is a wide range of accessories also available on the civilian market, from rail mounts to magnifying lenses. Thus, the PVS-14 can be adapted to almost any requirement. An integrated IR illuminator can be activated to provide a good image even in the darkest places where no light is available, such as in closed buildings and underground structures.



3 | DTNVS

The new DTNVS from ACT is currently the most powerful binocular night vision device. It is extremely lightweight due to its carbon housing and offers many options for individual configuration. For example, it is available with inexpensive ECHO tubes, which are sufficient for private use. For professional users, however, we recommend the ECHO+ tubes, which are also inexpensive. For special units and other users who need highest performance, there is a configuration with up to 2600 FOM.

Likewise, the eyepieces can be tailored to the user's needs. In addition to the normal eyepiece, there is also a particularly lightweight one (LWT40), as well as one with a particularly large eyepiece (LWT40D), which offers significantly improved ergonomics.



Tubes

The night vision devices can be equipped with different tubes. However, for such high-quality devices, it makes sense to use particularly powerful tubes. For authority customers, tubes with 1600 FOM and autogated are therefore the minimum standard today. The most po-

werful tubes in Europe are currently Gen3 tubes with an FOM of up to 2600. These are available with the usual green phosphor, but also with white phosphor, which results in less fatigue and increased perceptual sharpness.

Tubes, FOM, equipment	Residual light amplifiers and night vision devices				
	MINI-14	PVS-14	DTNVS-14	DTNVS-14-LWT40	DTNVS-14-LWT40D
Photonis Echo 1600 Autogated EGC	Request	120084	Request	Request	Request
Photonis Echo 1600 Autogated EGC White Phosphor	Request	120085	Request	Request	Request
Photonis Echo 1600 Autogated	120124	Request	120503	120521	120539
Photonis Echo 1600 Autogated White Phosphor	120125	Request	120504	120522	120540
Photonis 4G 1800 Autogated	120109	120097	120509	120528	120545
Photonis 4G 1800 Autogated White Phosphor	120110	120098	120511	120529	120546
Harder Gen3 Alpha 1800 FOM Autogated White Phosphor	Request	120086	Request	Request	Request
Photonis Echo+ 2000 Autogated EGC	Request	120092	Request	Request	Request
Photonis Echo+ 2000 Autogated EGC White Phosphor	Request	120093	Request	Request	Request
Photonis Echo+ 2000 Autogated	120121	Request	120505	120523	120542
Photonis Echo+ 2000 Autogated White Phosphor	120122	Request	120506	120524	120541
Photonis 4G 2000 Autogated	120115	Request	120513	120530	120548
Photonis 4G 2000 Autogated White Phosphor	120116	120091	120512	120531	120547
Harder Gen3 2100 FOM Autogated	120104	120157	120507	120525	120543
Harder Gen3 2100 FOM Autogated White Phosphor	120105	120158	120508	120526	120544
Photonis 4G 2100 Autogated White Phosphor	Request	Request	120514	120532	120549
Harder Gen3 2200 FOM Autogated White Phosphor	Request	Request	120510	120527	Request
Photonis 4G 2200 Autogated White Phosphor	Request	120083	120517	120534	120550
Photonis 4G 2300 Autogated White Phosphor	Request	120082	120518	120536	120553
Harder Gen3 2400 FOM Autogated	Request	120090	120515	120533	120551
Harder Gen3 2400 FOM Autogated White Phosphor	Request	120089	120516	120535	120500
Harder Gen3 2600 FOM Autogated	Request	120088	120519	120537	120554
Harder Gen3 2600 FOM Autogated White Phosphor	120123	120087	120520	120538	120555



Order numbers of different devices/tube combinations. Since each device is assembled individually for you anyway, we are happy to accommodate your wishes.

Technical data

Model	Image intensifiers and night vision devices				
	MINI-14	PVS-14	DTNVS-14	DTNVS-14-LWT40	DTNVS-14-LWT40D
Order number	depending on the tube used				
Surface	black matte, fiber reinforced plastic				
Dimensions (mm)	107.5×68.5×49.5	110×51×55		111×105×76	
Weight	260g	350g		441-510g	
Power supply	One CR123 lithium cell or one AA battery			One CR123 lithium cell	
Operating time	approx. 40h			approx. 25h	
Waterproofness	2h	0,5h		up to 20m for 2h	
Warranty	1 year manufacturer warranty				
Binocular bridge	optional			-	
Data sheet	Original from manufacturer with serial number				
Magnification	1×				
FOM	Depending on the tube used from 1400-2600				
lp/mm	57-72				
Field of view	40°				
Lens aperture	F/1.2				
Diopters	+6 up to -4		+2 up to -6		+2 up to -2
Focus	15cm up to ∞		25cm up to ∞		
Accessories	Weapon mount, head mount, j-arm, eyecup (US standard), carrying case, shoulder strap, cleaning cloth, daylight filter, lens cap, sacrificial filter, manual, battery, battery adapter, afocal lens	Eyecup (US standard), carrying case, shoulder strap, cleaning cloth, daylight filter, lens cap, sacrificial filter, manual, battery, close-up lens, head mount, j-arm	Eyecups, carrying case, carrying bag, cleaning cloth, daylight caps, lens caps, sacrificial filter, manual, afocal lens		

Accessories



Video cable | Art. Nr. (TILO) 380215 | (TigIR) 240431 (PumIR) 240720

After connection to TILO™ the video signal can be output via the cinch connector. Compatible with the TILO video recorder and all other common PAL/NTSC compatible systems.

Power cable | Art. Nr. (TILO) 380210 | (TigIR) 240430 (PumIR) 240721

Video/Power cable | Art. Nr. (TILO) 380216 | (TigIR) 240432 (PumIR) 240722

Extrene power supply possible (USB).



Rechargeable Battery 18650 | Art. Nr. 240706

Suitable only for the PumIR series.
3500mAh
Height: 65.2mm | Diameter: 18.5mm

Rechargeable Battery 16650 | Art. Nr. 382015

Suitable for TILO and TigIR series.
2500mAh (Li-Ion battery protected).
Height: 68.0mm | Diameter: 16.7mm

Lithium CR123 Battery | Art. Nr. 270025

Suitable for TILO, TigIR and PumIR series.
1550mAh
Height: 34.5mm | Diameter: 17.0mm



Magnifier eyepiece 3,5x | Art. Nr. 250250

Although the TigIR was actually developed as a clip-on for cameras and spotting scopes, it can also be used as a handheld instrument with the 90g lightweight magnifier eyepiece. With this setup, a magnification ratio of 1:1 is achieved. In addition, the magnifier eyepiece is adjustable from +3 to -3 diopters. With the digital zoom, effective magnifications of 6x, 12x and 18x can be achieved. Due to AI image processing, the image rarely "pixels" even at high digital magnification.



Battery Charger | Art. Nr. 382016

- Charging current 0.5A (500mA) or 1A (1000mA)
- Charging mode CC-CV (constant current, constant voltage)
- Compatible with all USB ports up to 5V 2100mA output
- High safety due to electronic protection: overvoltage, overcharge, short circuit and reverse polarity protection
- Display of charging voltage and battery status in percent



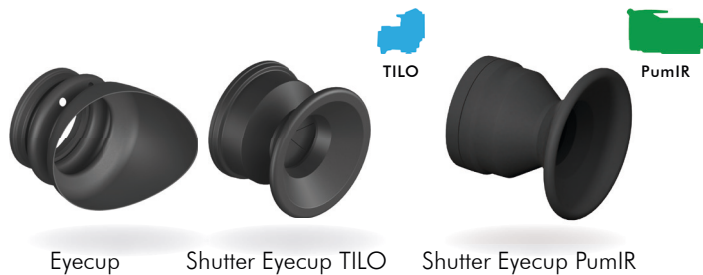
Video Recorder | Art. Nr. 382025

Being about the size of a cigarette pack, the device can record up to 3 hours depending on the SD card used.



PumIR adapter plate ACRO | Art. Nr. 240705

Adapter plate for mounting an Aimpoint ACRO on the PumIR (see p. 10).



Eyecup I Art. Nr. 240061

The standard eyecup protects against stray light.

Shutter Eyecup TILO I Art. Nr. 240070

Suitable for the TILO series. The shutter eyecup opens by pressure against the rubber rim.

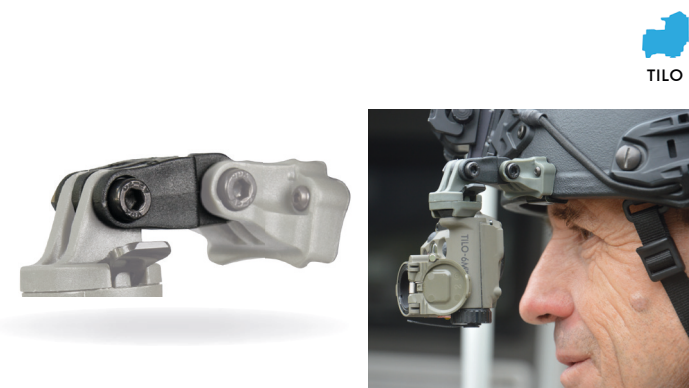
Shutter Eyecup PumIR I Art. Nr. 240710

Suitable for the TILO series. The shutter eyecup opens by pressure against the rubber rim.



Shroud Mount I Art. Nr. 380219

For attaching the TILO directly to the helmet or other soft caps. The TILO is worn in front of the right eye.



Extension piece for Helmet Mount I Art. Nr. 382018

The extension arm for the helmet adapter can be used to additionally increase the distance between the TILO and the eye.



External Power Supply TILO I Art. Nr. 380206

The external battery can be attached to the back of the helmet or also carried in the pocket

This increases the operating time in thermal imaging mode up to 24 hours. Available with power cable.

Also available for the TigIR and the PumIR on request.



Tripod mount I Art. Nr. 382013

The TILO can be mounted on a standard tripod using the tripod adapter. In this case, it is mounted upside down. The video recording function is sideways in this orientation, so it is not upside down.



Spacer for Helmet Mount I Art. Nr. 382022

With the spacer, the TILO can also be attached to bump helmets and other helmets with thinner shells.



TILO

Camera Adapter 40mm (auth. only) | Art. Nr. 380214
(see p. 25)



TILO

Camera Adapter 30mm (auth. only) | Art. Nr. 380213
With the 30mm camera adapter, our distributor ACTinBlack offers a practical adapter with which the TILO can be mounted in front of corresponding digital cameras. In this way, photos can be taken directly via the TILO eyepiece optics.



TILO

Headband incl. adapter | Art. Nr. (TILO) 380202
(TILO-MA) 382029

Suitable for ballistic helmets. The cover remains free to attach other NVDs. Suitable for all TILO models.

By operating the release lever, the TILO can be removed within one second. Included are spacers for non-ballistic helmets and for a larger distance to the eye.



TILO

Standard Helmet Mount | Art. Nr. (TILO) 380203
(TILO-MA) 382030

Suitable for ballistic helmets. The Shroud remains free to attach other NVDs. Suitable for all TILO models. By pressing the release lever, the TILO can be removed within one second. Incl. spacer for non-ballistic (shock) helmets and extension piece for for a larger distance to the eye.



TILO

Battery Extension | Art. Nr. (TILO) 382014
(TILO-MA) 382029

If this is screwed onto the TILO instead of the normal battery cap, either two normal batteries or an extended battery, e.g. TILO Rechargeable Battery, can be used. This way, the operating time of the TILO can be more than doubled to 6-7h.



TILO

Pouch MOLLE | Art. Nr. (Black) 380209 | (Olive) 380212
(Coyote) 380211

The modular TILO Pouch MOLLE is a small padded pouch for cameras and GPS devices. It can be attached to the belt and MOLLE systems. It offers space for a TILO incl. accessories such as headband and eyecup. The padding can be removed if necessary.



TILO

TILO-Rusan adapter | Art. Nr. 382023

The TILO-Rusan adapter from Andres Industries allows you to connect the Rusan Adapter to the TILO. With the Rusan adapter you are able to connect a TILO e.g. with spotting scopes.



DTNVS

DTNVS IPD Locking System | Art. Nr. 120502

IPD=Interpupillary Distance. With this accessory, you can define the perfect distance of the eyepieces once and then always refer back to it (see p. 32).

Compatible with all DTNVS housings.



MINI-14



DTNVS



PVS-14

Weapon Mount | Art. Nr. 120410

The MINI-14 can also be mounted on firearms. It is best mounted behind a red dot sight so that the interpupillary distance to the eyepiece optics is as small as possible. Equipped with high-resolution tubes, it can even be mounted in front of a riflescope (up to 4x).



MINI-14



DTNVS

Cadex Low Profile Mount | Art. Nr. (DTNVS) 120402 (MINI-14) 120403

The Cadex helmet mount has a very low profile, is ITAR-free, light-weight and very stable. Thus, the NVG can be folded out of sight in a second and locks in the raised state. Additional fastening as with conventional systems is therefore no longer necessary. It can be adjusted precisely and in all directions to the user's needs without tools.



MINI-14

Training filter for MINI-14 | Art. Nr. 120406

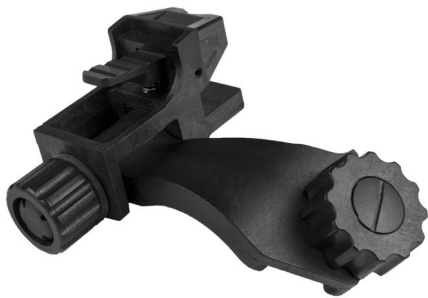
The training filter for the MINI-14 reduces the incidence of light by 99% and thus enables training in daylight.



MINI-14

Sacrificial Lens | Art. Nr. (MINI-14) 120407

Protects the NVG lens against dust and other damage.



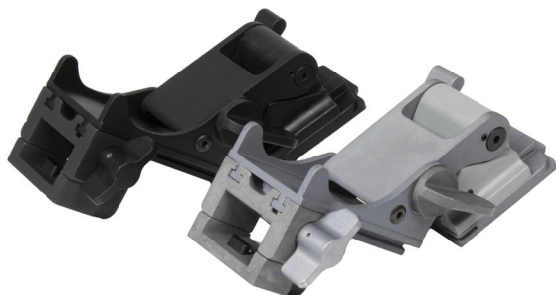
J-Arm suitable for MINI-14 | Art. Nr. 120409

The MINI-14 J-Arm with NVG Interface Shoe provides a permanent connection for mounting a MINI-14 to a Norotos Helmet Interface Mount. It can be easily attached and detached from the MINI-14 using a thumb-screw. The user can select the height and angle for comfort and make fine adjustments to the arm to adjust the position of the night vision device for proper eye position.



Binocular bridge | Art. Nr. 371001

Different binocular bridge are available to combine two monoculars into one stereoscopic view. Please contact our sales team to find a perfect solution for your needs.



Norotos RHNO II Helmet Mount | Art. Nr. (Black) 230256 (Titan) 230257

The Norotos RHNO II Helmet Mount is the standard articulated NVG helmet mount for the MINI-14 and PVS-14. This mount promotes natural alignment of the head and neck, reducing muscle strain and fatigue.



Magnifying Lens | Art. Nr. (3x) 120400 | (5x) 120401

The observation range is increased with the magnifying lens. A little of the amplifier power is always lost, the image becomes darker, or the noise increases. Therefore, the use of high power tubes is particularly helpful here. Please specify your night vision device or contact our sales team to find a perfect solution for your needs.



Raptor Skull Crusher | Art. Nr. (Multicam) 371007 (Ranger Green) 371006

The world's most comfortable carrier for night vision devices. The Skull Crusher with Universal Shroud is made of a hybrid composite nylon and mesh fabric. It features an ultra-lightweight, rugged platform used to attach helmet accessories in environments where ballistic and impact protection is not required.

<https://www.raptortactical.com/home/106-raptor-tactical-sentinel-skull-crusher-gen-20.html>

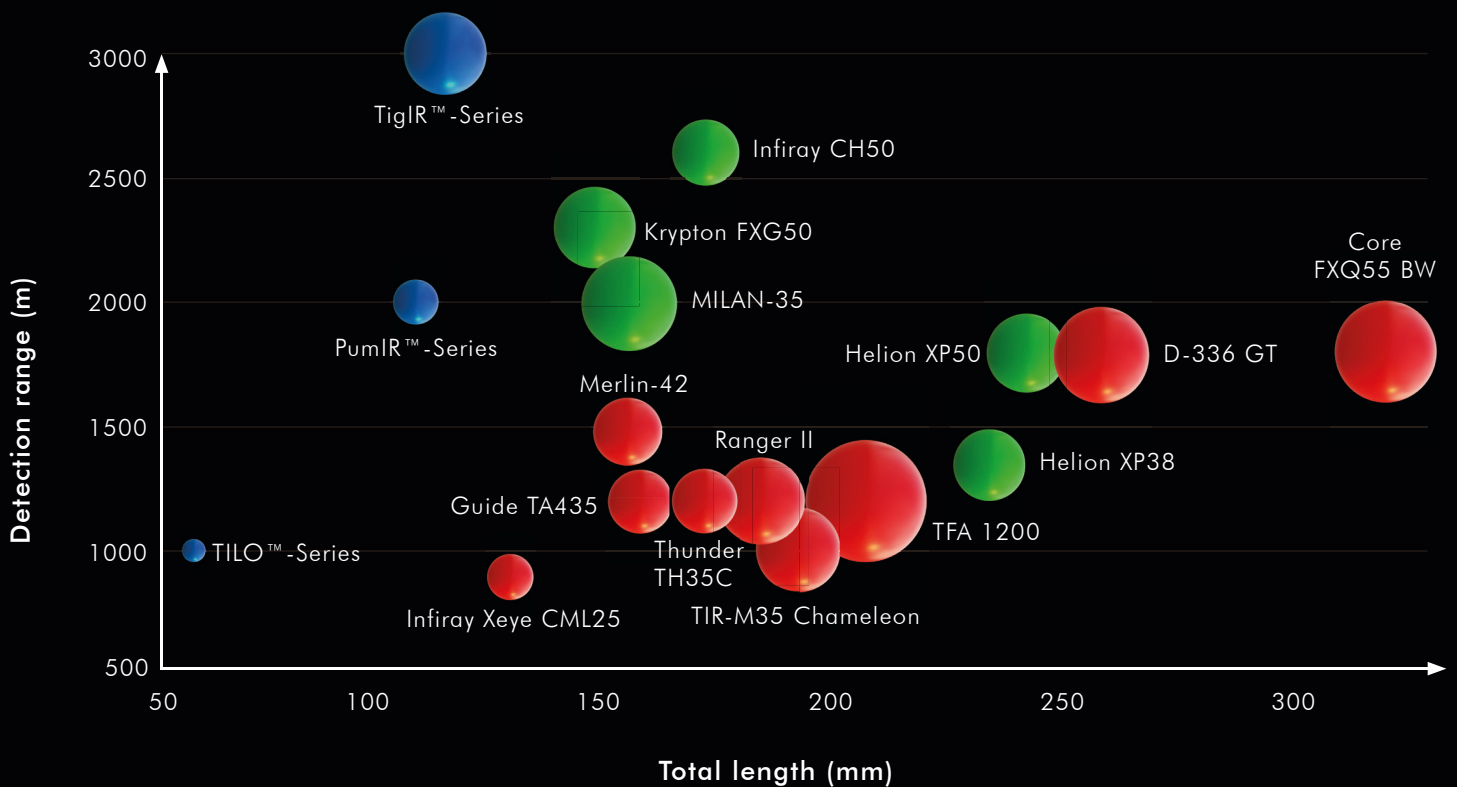
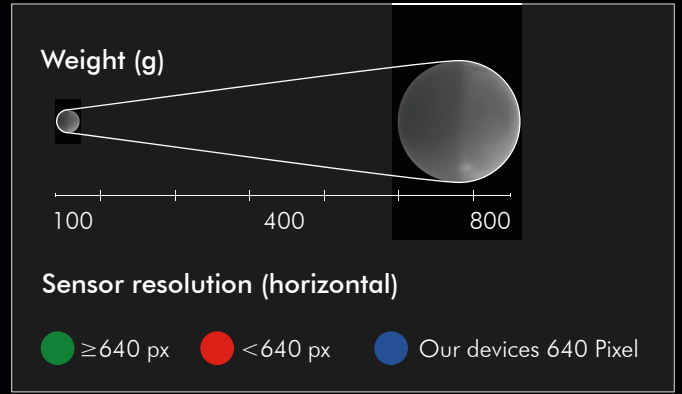


Head mounting for MINI-14 | Art. Nr. 371005

Lightweight, flexible headgear for the MINI-14. It is space-saving - so it is ideal to carry along - and its simple handling makes it easy to use in just a few seconds. Lower jaw and temple strap are individually adjustable.

Range comparison table

If you compare our thermal imaging devices with conventional products on the market, it becomes clear that with comparable performance, devices from Andres Industries are always significantly more compact and lighter.



Your distributor



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