What Is The Best Thermal Monocular To Purchase?

Technical advancements have now allowed for more affordable thermal monocular models. That's why they have increasingly become an indispensable tool for many hunters, enthusiasts, and wildlife professionals to spot wildlife. Thanks to highly advanced sensors and other functions, a thermal monocular can produce clear images in the darkness or daylight.

What Is A Thermal Monocular?

Every object around us, be it natural or artificial, constantly emits infrared energy.

It happens because heat is the primary source of this energy. Even objects such as snow and ice emit this energy. At the same time, the energy increases if the object becomes hotter.

You can easily determine even very small changes in this energy with a thermal monocular. This is the core of how a thermal monocular works.

Thus, unlike traditional devices which capture visible light, thermal monoculars use infrared radiation or emitted heat, which is omnipresent yet invisible, to form the images. This can be done with the integration of advanced sensors which can capture the wavelength of up to 14000 nanometers. So, unlike night vision IR units, thermal imaging requires **no** light source in which to operate.

As a result, these devices can ignore visual camouflage and see through any warm-blooded animals in the total darkness under most weather conditions. Though the resolution of those thermal monoculars is typically lower than that of other visual devices, the high contrast it provides is great for viewing the wildlife.

Why Do You Need A Thermal Monocular?

1) Nighttime Vision

Many animals are typically active during the night and use the darkness to protect themselves. This makes it challenging for video makers or hunters to track with just binoculars. But with a thermal monocular, you can view these animals without any light source.

2) Daytime Vision

In addition to providing exceptional vision at night, thermal monoculars can also be helpful during the day, although they have limitations in the summer months because the surrounding objects such as trees emit a greater amount of infrared energy. Many animals have their own mechanisms to blend in with the surroundings, making it challenging for wildlife professionals, enthusiasts, or hunters to find with traditional tools. Case in point is a squirrel that can effectively disappear in a tree canopy and remain still for hours. However, a quality higher resolution thermal monocular would usually make the camouflaged squirrel visible. This is what led me on my quest for an effective thermal monocular in which to find the aforementioned squirrels.

3) Great Range Performance

Another benefit of using a thermal monocular is that you can use it to take thermal videos. In most cases, a standard (lower cost) unit can spot/record a larger animal up to ~50 yards. However, if you desire to keep track of smaller animals (mammals/birds) or larger animals at greater distances it will require more resolution.

A thermal monocular can be a great investment and tool for any hunter, enthusiasts, or wildlife organization to keep track of animals at night or day.

What To Look For When Purchasing A Thermal Monocular?

Below are a **few** important factors that you should consider when choosing a thermal monocular:

a) Durability and Portability

Since you will mostly use a thermal monocular to view wildlife in many conditions including inclement weather, it is important to choose a model with a rugged, waterproof, shock-resistant, and durable construction. Also, a compact and portable design will make it easier to carry.

b) Black & White versus Color Monocular

Basically, a black & white device would be more affordable and simpler to track the animals. However, you can't detect the ranges of temperature based on the color, which can be useful for hunters. The decision will totally depend on your needs and personal preferences.

c) Battery Time

Another important feature to consider is the battery time of the monocular. As a rule of thumb, it should last at least a few hours without recharging or replacement. Currently, lithium-ion is perhaps one of the most popular types because it can last from 5 to 12 hours and requires only 2 or 3 hours to recharge.

d) Resolution

Resolution (sensor) is the **biggest** thing to look for when considering purchasing a thermal monocular. Again, the resolution that you need for your wildlife thermal monocular will depend on your budget and personal preferences. Higher resolutions will certainly allow you to see more details and thus better identify targets and take clearer videos, but these units are much more expensive. In general, 384 x 288 is an acceptable level, but you should aim for 640 x 512 to ensure ideal quality if you can afford it.

e) Refresh Rate

In general, the refresh rate will determine how quickly an image would refresh. A higher refresh rate means that the thermal monocular can make more precise images in a smoother manner, but it also increases the costs. Ideally, you should choose a device with a refresh rate of at least 30 HZ to allow for ease of use and smoother operation, especially on moving animals.

f) Digital versus Optical Zoom

This is perhaps one of the more important factors that you should spend a little time researching. While both types of zoom have their own pros and cons, an optical unit basically doesn't pixelate as its digital counterpart. If you often spot animals from a long distance then an optical zoom or the combination of the two might be suitable for you.

Leading Brands of Thermal Monoculars

Currently there are many brands of thermal monoculars including but not limited to AGM, Pulsar, ATN, FLIR, Leupold, Seek Thermal, as well as others. The numerous choices can be frustrating. One of the market leaders in the wildlife thermal monocular industry is:

1) FLIR

FLIR is undoubtedly one of or the most popular brand in the wildlife thermal monocular industry. They provide a diversified portfolio which serves a variety of applications. With innovation sensing solutions, their products are used widely in thermal imaging, video analytics, visible-light imaging, or advanced detection systems. FLIR thermal monoculars are used worldwide by many wildlife professionals and enthusiast.

The Scout III series is the one to consider if you're looking for monoculars that capture sharp thermal imaging at a fast frame rate. The end result is a smooth clear vision especially on moving objects and running targets.

These monoculars are specifically designed to increase situational awareness. You can use them at any time of day or night and you're still guaranteed high definition images. With these monoculars, you can detect humans, objects or animals even in complete darkness or in glaring light.

The units have IP67-rated housing so they can withstand harsh weather and wet conditions. Wildlife professionals, hunters, law enforcement personnel, and outdoor enthusiasts will find monoculars in this series to be the best choice. For example:

FLIR Scout III 320 (example of an acceptable medium resolution)

Within the FLIR Scout III series, you'll find the FLIR Scout III 320 model which is slightly more expensive than the 240 and offers better resolution. It comes with a higher refresh rate (optional 60Hz) compared to the other models while having an impressive range performance of 600 yards. You can detect moving objects (especially larger animals) clearly from a distance.

The thermal resolution is 336x256 and optical magnification is 1.1x with a 2.2x digital zoom. The field of view is 17° × 13°.

It also comes with a 640 × 480 LCD display screen which is the standard size for monoculars in this series. It's also powered by lithium-ion battery cells and operates for a little under five hours on a charge.

FLIR Scout III 640 (example of a higher resolution)

This is the most expensive model in the FLIR Scout line. It allows for long-range detection thanks to the 1,246 yard range performance. You can zoom in on images with the digital zoom to get a better view of the objects.

The thermal resolution is 640x512 ensuring high quality thermal images (to better identify a target) and the 30Hz refresh rate is allows for tracking of moving targets. The optical magnification is 1x with digital zoom of up to 4x. The field of view is 18° × 14°.

It also has a battery operating life of approximately five hours, but this will depend on the frequency of usage.

While more expensive than the other models, if you are looking for the highest thermal resolution the **FLIR Scout III 640** could be the best one for your money.

Last Thoughts

Ultimately, it comes down to what you are looking for and what you will be using your thermal monocular for. The old phrase "you get what you pay for" is certainly true here. Regardless of the brand you buy, remember if your goal is to thermal small mammals and birds, it is best to go with a minimum thermal sensor resolution of 320x256 and a minimum refresh rate of 30 Hz (50-60 Hz is even better). A higher thermal sensor resolution 640x512 is best for higher quality (large or small mammals/birds). You won't be disappointed. But…the higher the thermal resolution the more money you fork out. That is a certainty.

Think about it like this…a thermal monocular is an **effective** tool to utilize as is the weapon, scope, spotting scope, binocular, bipod, tripod, rangefinder, etc.

Look at all the brands (including the specs & prices), read all you can about thermal monoculars, view videos (with a grain of salt), and make an informed decision that is best for you but keep in mind the aforementioned information, especially the resolution and refresh rate.

I hope this helps!
