

The **Trekker** Microscope

TREKKER

product datasheet

Trekker Portable Microscope



At last! - a portable, inexpensive, high quality microscope with precision optics which is perfect for field, classroom and laboratory study. Simple to use, ultra-compact and capable of delivering instant results, it appeals to all age groups - from young children to the mature professional user.

The Trekker field microscope – an exciting and affordable microscope with precision optics and fully integrated lighting. Simply place the specimen on the top of the microscope and focus using the thumbwheel underneath. It's that easy! The special magnetic holder can also be used to hold the specimen if you wish.



Perfect Magnification

The x 35 magnification – chosen on the recommendation of teachers and professional field workers – is powerful enough to provide great detail but provides images that are not so greatly magnified that the sense of what you are viewing is lost.

Crisp, Sharp Images

This makes the Trekker perfect for general study in the field or in the classroom. The Trekker's small size (105mm diameter x 25mm depth) comes from the use of folded optics and the high resolution, coated glass optics provide beautifully clear, sharp images.

Built-in Lighting

The high light-gathering power of the large objective lens allows transparent and semi-transparent objects to be easily viewed using outdoor or room lighting. Solid specimens can be observed using the microscope's inbuilt white LED lighting system.

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In the Box

The Trekker comes complete with slides, soft carry case, magnetic specimen retainer, battery and full instructions in English, French, German, Spanish, Italian and Japanese. Attractively packaged in a gift pack with window and cut-foam interior. A professional hard case and a camera adaptor are also available. Please go to Accessories to see these.

Using your Trekker microscope

It's really simple; the top of the Trekker forms the specimen stage with a centrally placed viewing aperture protected by a hardened glass window. If you want to view slides simply place the slide on the stage with the cover slip uppermost. You can use the magnetic ring holder to hold the slide in place, or simply use your fingers. The Trekker is held with both thumbs underneath the microscope and with your fingers curled over the top to move the slide around so that you can view all parts of the specimen. Because most slides are semi-transparent there is no need to use the internal lighting – available light will be sufficient. Focus by turning the precision thumb-wheel located under your left thumb.

If you decide to view a solid object – for example a coin – place the coin on the stage, switch on the internal LED and move the coin around with your fingers. The LED provides white daylight-adjusted light which illuminates the coin from underneath. The LED is offset to create shadow relief – great for revealing fine detail. Just about any object can be viewed in this way; insects, fossils, geological samples, cloth, newsprint, postal stamps, small circuit boards, botanical samples, miniature engineering artefacts, scene-of-crime forensic material, fish and animal parasites, diseased plants, environmental monitoring material – the list is literally endless.

The Trekker can also be used to view waterborne objects. Simply place a small drop of pond water on the clear slide provided. You will be amazed at what this reveals!



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More About Trekker

The Trekker portable microscope is extremely compact, just 105mm in diameter and 25mm thick and weighing a mere 225 gms. It is robustly constructed from tough ABS materials with a metal stage and it will survive a one metre drop test without internal damage. It is also splash-proof and the viewing aperture on the specimen stage is sealed against the ingress of fluids. The eyepiece is easily cleaned – just pull it out, remove the rubber eyecup and split the eyepiece mouldings to access the lenses.

Reviews

The Trekker portable microscope has received impressive reviews from users all over the world.

Photography with Trekker

If you are an SLR camera owner, whether it's digital or film, the Treblink adaptor is available. This camera connector enables you to capture images permanently from the Trekker field microscope.

A simple mechanical connector which allows owners of SLR (single lens reflex) cameras to capture images seen through the Trekker microscope. It is shown above both on and off the camera. Note: an SLR camera is the type with removable lenses and these may be digital, or use conventional film. The Treblink is not suitable for use with the simple 'point-and-shoot' digital cameras.

The Treblink will require a T mount appropriate to the camera make; the T mount will have the correct bayonet/thread on the rear face to mate with the camera body and an M42 internal thread on the front face which mates with an M42 external thread on the Treblink. Owing to the very wide range of SLR cameras available we are unable to stock T mounts, but they are widely available from good camera stores

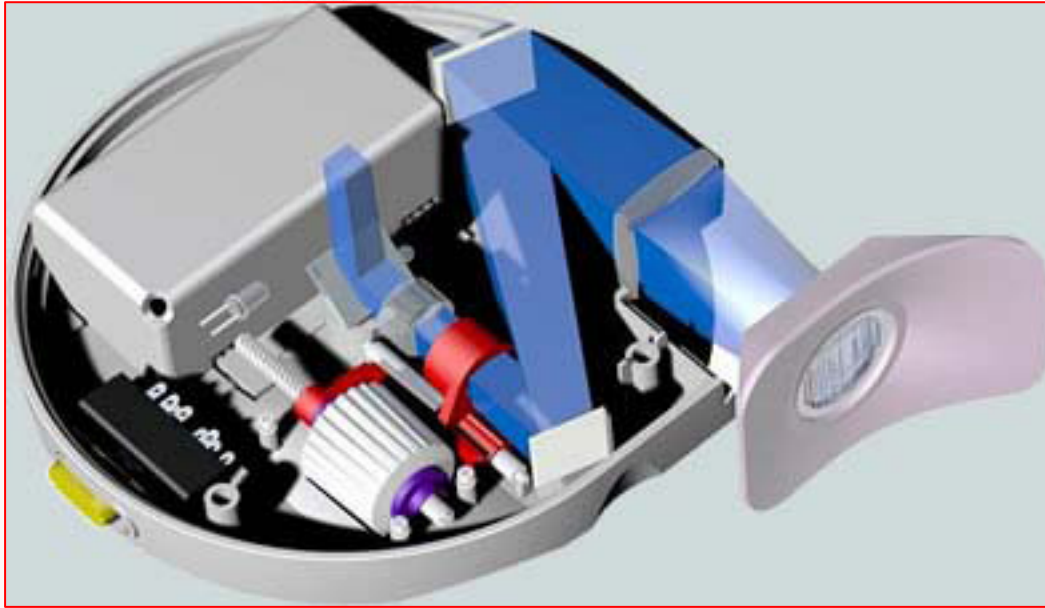


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Getting Technical

The Trekker microscope adopts a highly unconventional approach to microscope design. The Trekker comes from the industrial design studio of Rick Dickinson, former Head of Design for Sir Clive Sinclair - Rick is the man behind a great many ground-breaking, innovative and classic designs.

Trekker's ultra compact shape is achieved by the use of folded optics which compress the normal 150mm tube length of a conventional microscope by the use of precision mirrors. A similar method is used in the McArthur and Swift microscopes which use two-dimensional optical folding, but the Trekker takes the concept a stage further by using a third mirror to fold the light path three-dimensionally. This allows the top of the microscope to be used as a large uncluttered specimen stage with all the optics arranged beneath the stage in an incredibly neat and compact package.

Optical layout

The optical layout consists of eight elements - three mirrors, a two-element objective and a three-element eyepiece. The objective power is $\times 3.5$ and that of the eyepiece $\times 10$, giving an overall magnification of $\times 35$. The eyepiece may be removed, for cleaning and for use as $\times 10$ loupe.

Objective

This is a two-element achromatic 'doublet' comprising two elements cemented together; one element is bi-convex and the other convex/concave. The diameter of the objective is 10mm, with 8mm clear. The NA (numerical aperture) is 0.12 and the working distance 32mms. Resolution is typically 3-4 microns.

The objective travels in a precision focusing mechanism consisting of a machined brass leadscrew of 4mm pitch which is attached to a machined aluminium focus wheel. This assembly is mounted on a sub chassis which also holds the three mirrors in perfect alignment. It is possible for focus to be reached from a point slightly below the specimen stage to a point approximately 15mm above the stage. This generous focus range allows a wide range of objects to be viewed easily.

Eyepiece

The eyepiece is of modified Ramsden design and comprises three elements - a single element field lens air-spaced from a two element eye lens. This gives a wide field of view with excellent eye relief. Because the field lens is contained within the body of the microscope it was possible to add a unique feature in that the field lens is enlarged to form a square. This gives a modern 'user-friendly' image in line with current day presentation of photographic images and documentation. Furthermore the eyepiece can be pulled out for cleaning, or for use as a handy $\times 10$ loupe.

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Getting Technical continued..

Mirrors

The three mirrors are front silvered and are polished to a high degree of flatness – typically 2-3 fringes. The first mirror is situated between the object plane and the objective and the second and third mirrors are positioned between the objective and the eyepiece.

Coating

All optical air surfaces are coated with magnesium fluoride.

Illumination

Transmitted lighting for examining transparent specimens is simply achieved by the use of available light, whether in or outdoors. With the lower magnification of x 35 a sub stage is unnecessary and would furthermore complicate the simplicity of the Trekker and impede the use of the specimen stage.

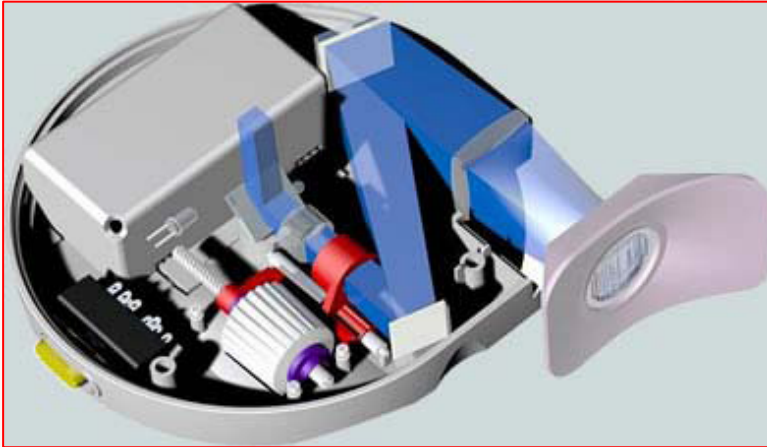
Solid objects, however, do require illumination because the object blocks light from the viewing aperture. This is achieved with a daylight- corrected white LED which is situated adjacent to a clear annular ring surrounding the viewing aperture. This light ring is manufactured from highly polished acrylic which disperses light through 360° around the specimen. The light output is biased to one side to create shadow relief which is a useful feature when viewing very fine detail on objects like coins and jewellery. Power is provided by a single 9 volt battery which is enclosed within the microscope case. Depending on the quality of the battery employed this can give over 100 hours of continuous light

Specimen stage

This is manufactured from steel to provide a durable specimen stage and this material enables specimens, and in particular slides, to be held using a simple ring magnet. The magnetic principle will also be used for the attachment of various planned accessories.

Tripod bush

A tripod location is centrally placed on the underside of the microscope. This consists of the photographic standard 1/4" UNC internal thread fitted to all cameras. A small table tripod is thus ideal for converting the Trekker microscope into a simple bench instrument.



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Trekker Hard Case Accessory

A professional quality case manufactured from tough polypropylene with integral hinge and two snap fasteners. Foam lined with recesses for the Trekker microscope, Tremlink, magnetic holder and slides. Splash-proof and extremely robust, this quality case provides total security for the Trekker.

Just some of Trekker's many reviews.....

ROYAL BOTANIC GARDEN EDINBURGH

to use it will always find a place in my rucksack or pocket. Only the other day I was using it when beach combing; it adds a whole new dimension to rock pool exploration. Be it bugs, botany, or beasties, it opens a whole new world in a user-friendly way. The next best thing to a pair of binoculars. *David Mitchell Curator Royal Botanic Garden Edinburgh*

No serious naturalist should be without one. Slim, compact, and easy to use it will always find a place in my rucksack or pocket. Only the other day I was using it when beach combing; it adds a whole new dimension to rock pool exploration. Be it bugs, botany, or beasties, it opens a whole new world in a user-friendly way. The next best thing to a pair of binoculars. *David Mitchell Curator Royal Botanic Garden Edinburgh*



I tried the scope this morning, and I'm REALLY impressed. Excellent image quality, ease of use, etc. That magnet is clever. The light-gathering ability is remarkable; the LED is only needed for really opaque specimens. *Caroline Schooley Project MICRO Coordinator Microscopy Society of America*

CALIFORNIA ACADEMY OF SCIENCES STEINHART AQUARIUM • NATURAL HISTORY MUSEUM • RESEARCH • EDUCATION

I am so impressed with the Trekker microscope; this is a wonderful instrument! I looked at sand, ants, live spiders in vials, pine nut wings, dragonfly wings and anything else I could lay my hands on. Leaves of various plants too – I could even see the oil glands! Everybody in the group took a turn with the Trekker, and there was a constant explosion of "Wow! You just gotta see THIS!!" I was able, with this little scope, to identify a spider the size of a pinhead as a mature female Linyphiid – a LIVE spider, in a vial, which I simply held in place with two fingers. I accidentally spilled alcohol on the scope, and there was no trace at all. Most of the time I used it with ambient light and it had great depth of field and resolution. I shut my eyes, clenched my jaw and dropped the Trekker. Not even a scratch on the housing. It's a full working scope! This one is becoming my personal scope – I'm buying it a tripod this weekend. I really like the way it fits in a pocket of my field vest. I also pulled out the eyepiece and used it as a loupe, with very satisfactory results. All in all, this is an excellent instrument. I love it! Thank you for sending it for review! *Suzanne Ubick, California Academy of Sciences*

The Daily Telegraph

The great British summer has returned with a soggy vengeance. With that in mind, a round-up of these weeks gadgets to keep the children occupied and entertained during the summer holiday, whatever the weather They were tested on a panel aged 2 to 14. This rugged and portable £50 microscope from www.looksmall.com was developed by Rick Dickinson, Sir Clive Sinclair's former product designer. It kept three small boys occupied for hours, investigating leaves, insects and even bits of fluff. It uses natural light or batteries, is small enough to fit into a jacket pocket and is very easy to use. Simply place a specimen on a ring on the top of the microscope (there's a magnetic holder) and focus using the thumb wheel on the bottom. The 35x magnification, chosen on the recommendation of teachers, is powerful enough to see things in great detail without losing the sense of what you are looking at. The eyepiece doubles as a 10x magnifier, perfect for peering into flowers. TREKKER MICROSCOPE

Rating: Excellent ****