

Newton microscope



The Nm1 can be tripod mounted for bench operation, XY stage attachable & digital camera attachable.

The Newton Nm1

The Nm1 is a truly high quality, unique, compact, go anywhere, use anywhere, research grade, portable field microscope, offering a wide magnification range from 100x to 1600x with comparable performance and resolution to mid-priced bench compound microscopes but within the smallest product size possible and minimal compromise on usability.

The Nm1 is quick and simple in operation and a bright, sharp image can be viewed or photographed within seconds. To extend the range and usefulness of what is essentially a hand portable instrument attachment methods have been created to allow tripod and/or digital camera mounting, and the attachment of a XY micrometer slide indexer/stage.

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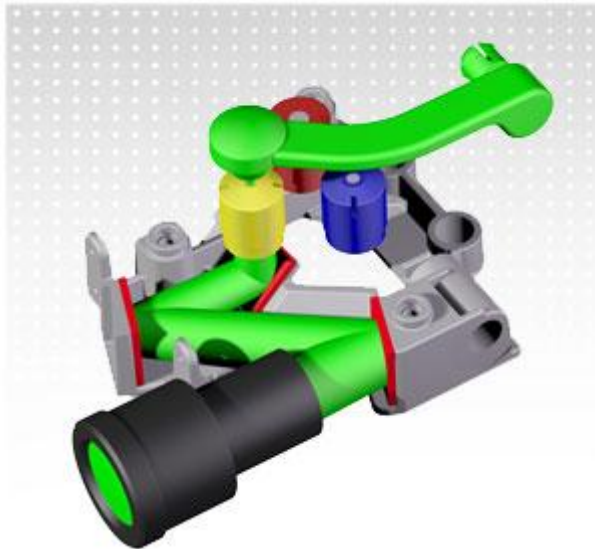
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Nm1 OPTICAL SYSTEM



The optical system is based on the RMS 160mm 'tube' length and uses the standard RMS eyepiece mounting. The compact hand held form factor required an inverted design with the optical path three dimensionally folded using 3 multi-coated front silvered precision ground glass mirrors. The objective lenses, designed and manufactured by Cambridge Optronics, are significantly miniaturised in order to reduce overall product size and weight. The precision ground multi coated glass elements are laser aligned and set within custom mounts.



The optical chassis and mechanism is an arrangement of anodised high pressure Aluminium die-cast parts with CNC precision machined surfaces. The optical chassis is relatively independent of the external casing, which is intended to provide numerous levels of protection with precision injection moulded rubber coated PC/ABS parts.

A hand held portable design and typical Tropical field conditions required a miniaturised in-built low energy illumination system. The Nm1 uses a white LED light source controlled by an energy management circuit, driven by AAA battery pack or a USB connection.

Nm1 PRODUCT FEATURES AND OPERATION

MAGNIFICATION

The Nm1 can simultaneously carry up to 3 objective lenses. The factory fitment is 1 x10, 1 x40, and 1 x blanking plug. The blanked third position is a user option to allow higher magnifications to be installed, including x60, or x100 oil. Each objective position is numbered 1 to 3, with No1 as x10, No2 as x40, and No3 as the expansion option. The actual power of individual objectives are marked on their top surfaces with the x magnification value and the standard RMS colour coding. Objectives are selected by rotating the magnification knob located in the centre underneath the main body. This can be rotated in either direction but a clockwise turn starting from x10 indexes the objective to the next power up. The selected power should lightly click into position when correctly aligned, with a

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visible alignment check indicator on the top surface using two red dots and a corresponding number for each objective location.



ILLUMINATION BRIGHTNESS

The viewing brightness can be increased or decreased by rotating the thumb wheel underneath in the direction indicated by the graphic. Higher magnifications require higher lighting levels. To avoid potential over-brightness at x10 pre-set the illumination to the lowest level before viewing. Further reduction in brightness can be achieved by lifting the lighting arm slightly. At x1000 magnification the internal 3 x AAA primary cells offer approximately 300 hours of continuous operation and at x100 and x400 magnifications approximately 1000 hours.

EXTERNAL POWER

The Nm1 has a circuit designed to allow external power sources to drive the lighting system instead of relying on the internal battery pack. When using external power sources the automatic cut out is overridden. External power sources can also deliver a slightly brighter light if required. The supplied USB cable connects into the socket in the side, and can be driven from a PC/Lap top or a USB mains plug adaptor (often found with smart phones)



MOUNTING

As this is primarily a hand held instrument tripod mounting frees up the operators hands allowing faster and more convenient access to various controls simultaneously. This is particularly useful for longer periods of investigation and reduces fatigue. There are two standard tripod mounting points underneath and the mount nearest the brightness control tends to give clearer access to the magnification changer when mounted. Cambridge Optronics recommend a specific tripod combining smallness of size and weight but with sufficient stability and reliable positioning lock.

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The Newton NM1 in its standard form is supplied as follows:

- 10x and 40x objectives
- RMS standard 10x wide field eyepiece
- Removable slide clips
- Integrated LED lighting
- Rugged foam lined carry case
- Instructions
- USB cable
- 3 x AAA batteries



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