

DIPLe

Model IIF

User Manual and Datasheet

v 1.0



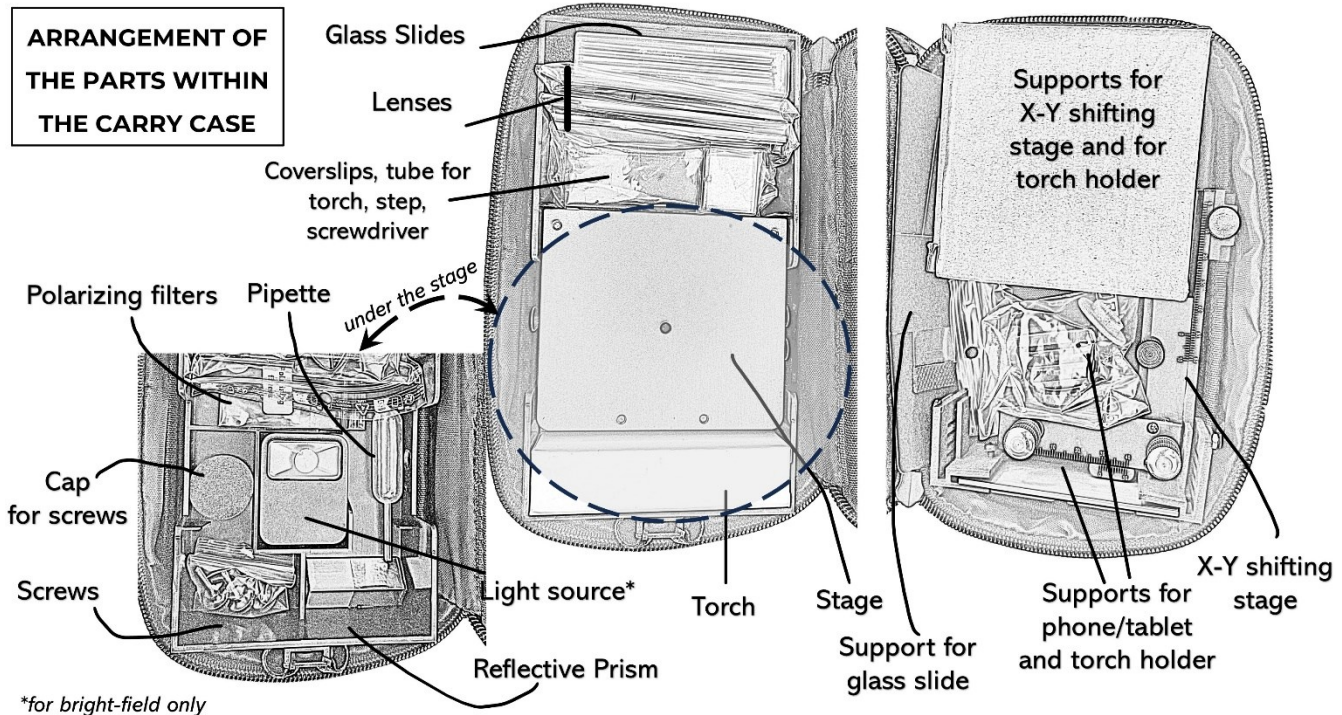
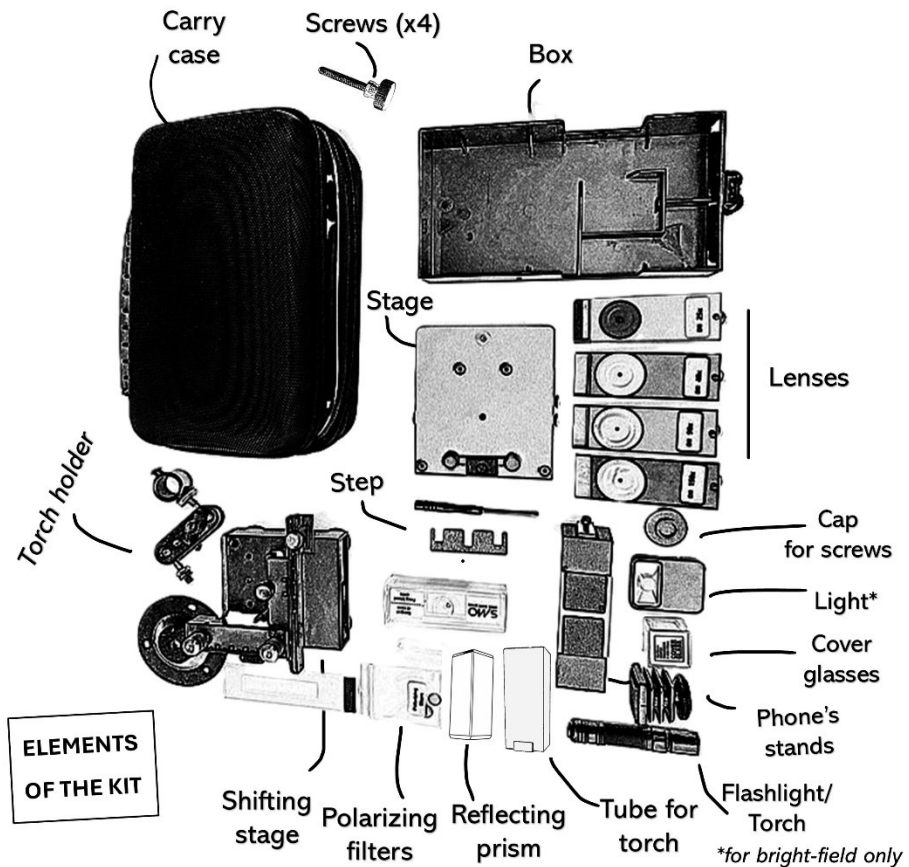
DIPL.EE[®]

Model: IIF

Tutorials & Instructions



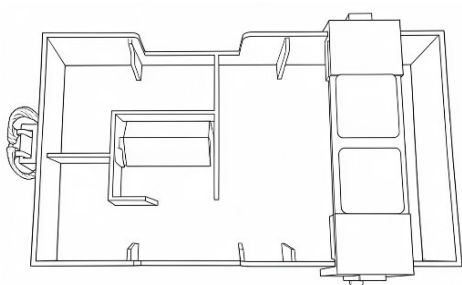
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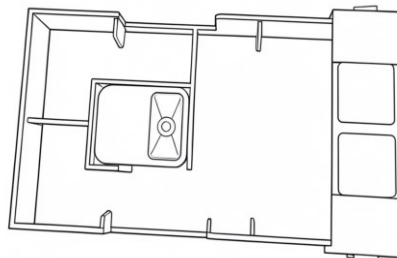
INSTRUCTIONS

These instructions outline the essential steps for getting started with DIPLE-E kits.

In this manual, you will find a QR code linking to the official page, where video tutorials and instructions—which are constantly updated—are available.

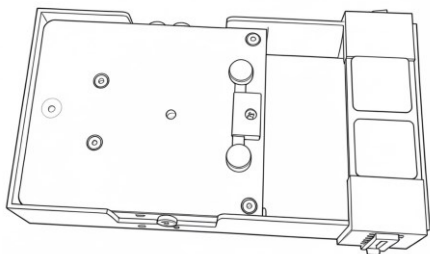


1

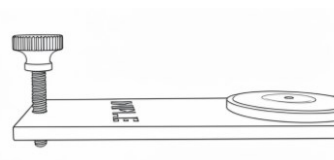


Select your preferred lighting method. Position the prism if you wish to use the light source outside the box. Alternatively (if available), for brightfield illumination, you can position the rectangular light as shown in the diagram and turn it on.

Attach the phone stand to the box.

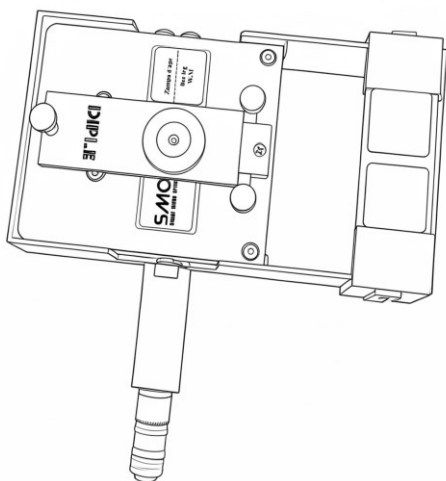


2



Insert the stage in the box.

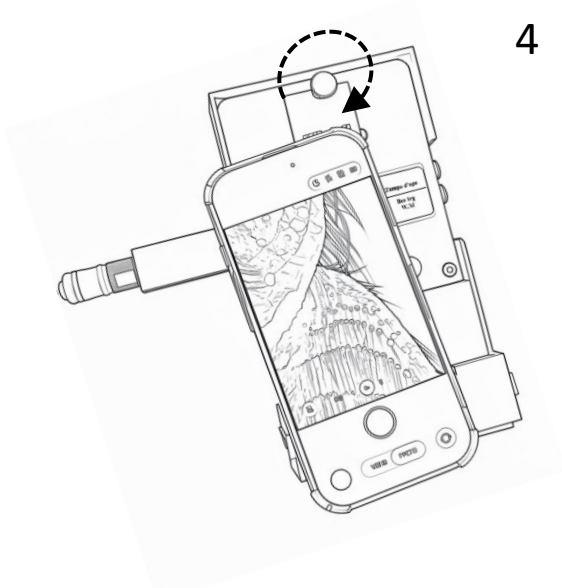
Insert the screw in the lens' tile.



3

Place your sample on the stage, over the light, and the lens on it. Connect the lens to the magnet on the stage.

If you want to use the torch (flashlight), connect the tube with magnet to the stage, put the torch inside it and switch the light on.



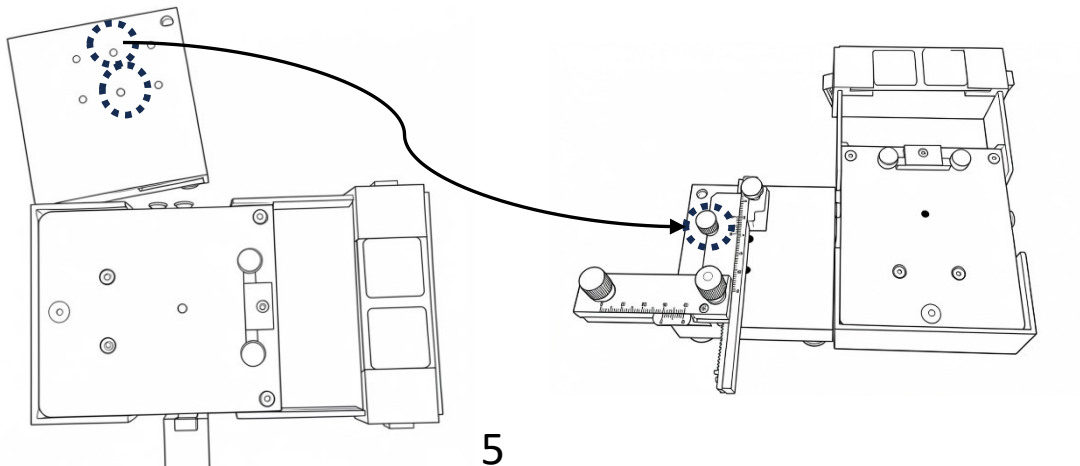
4

Lay your phone/tablet on the stand(s), keeping the light coming out from the lens visible in the center of the screen.

In some phones you have to de-activate the automatic switch to *macro* camera (clicking on the macro icon).

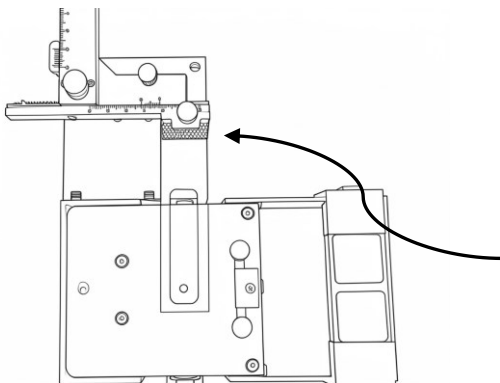
Rotate the screw on the lens to focus the image on the screen. Zoom in 2x and adjust the focusing, if needed.

SETTING of the X-Y SHIFTING STAGE

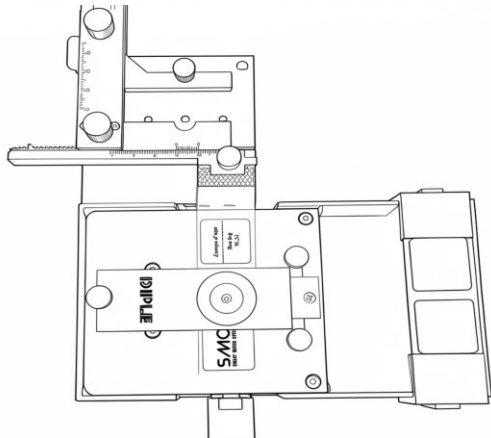


5

Magnetically connect the black base to the two screws on the side of the stage. Fasten the screw in X-Y shifting group into one of the two threaded holes (two possible options; use the one furthest from the stage if you need longest travel range).

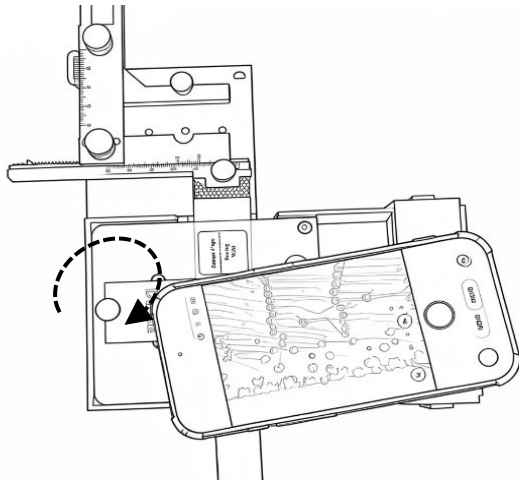


Fasten the flexible support for the glass slide with the screw, as in the drawing.



6

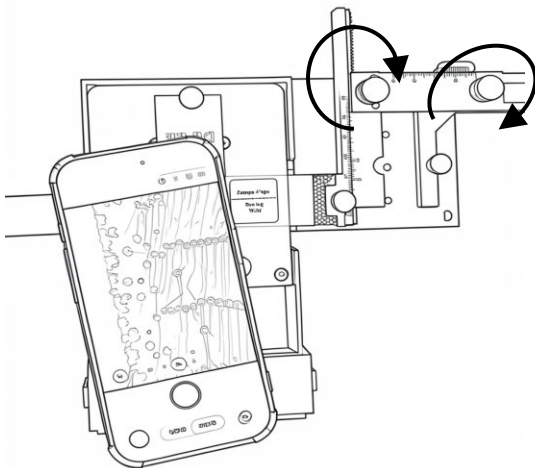
Place the glass slide on the flexible support; magnetically connect the lens with the magnet on the stage.



7

Repeat point 4.

Adjust the height of the phone's support to get your device in a stable position. Its best height depends on the lens in use and on the sample thickness.

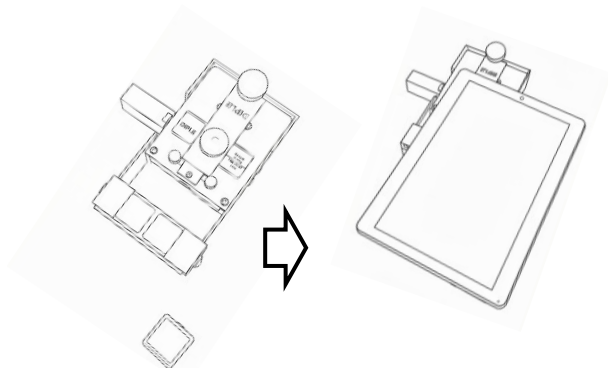


8

Move the glass slide with your specimen under the lens rotating the two knobs on the X-Y shifting stage.

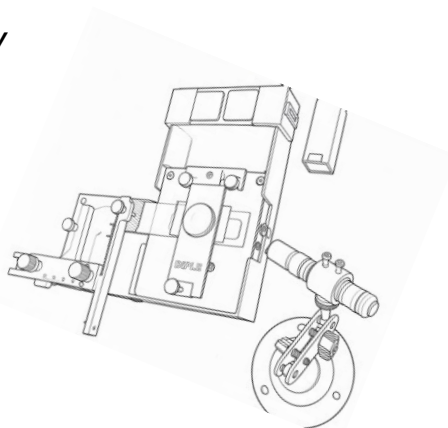
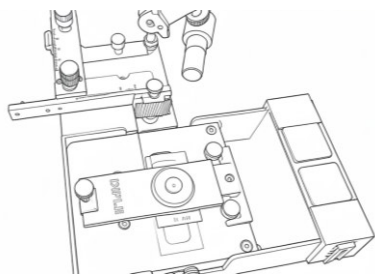
You can take pics or video activating the camera app of your device.

TABLETS – LARGE DEVICES



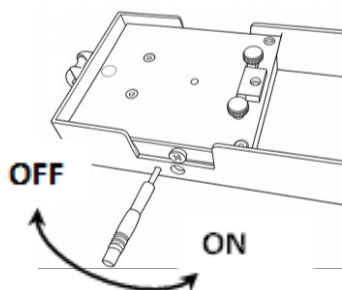
For the use with tablets, lay your device on the support connected to the box and on the foot with adjustable height. Find the stable position moving the foot, and changing the height of the supporting parts.

REFLECTED LIGHT MICROSCOPY



To use the kit in reflected light mode, you can attach the torch holder to the threaded hole near the corner of the X-Y translation stage or place it on its circular base. Adjust the position to direct the light toward the sample, beneath the objective.

TURN ON-OFF THE LIGHT WITHOUT REMOVING THE STAGE



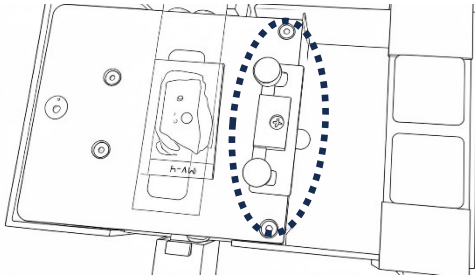
If your kit has the light under the stage and you want to switch it on or off without removing the stage you can do it using the little hole on the side of the box and the screwdriver:

Insert the little screwdriver in the hole on one side of the box, until you touch the light switch.

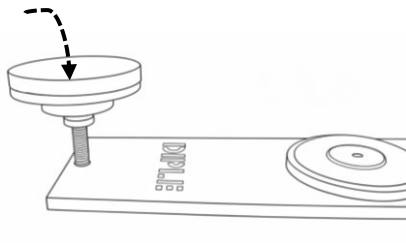
Shift the light switch with the tip of the screwdriver.

Keep the other end of the screwdriver touching the table surface, when shifting.

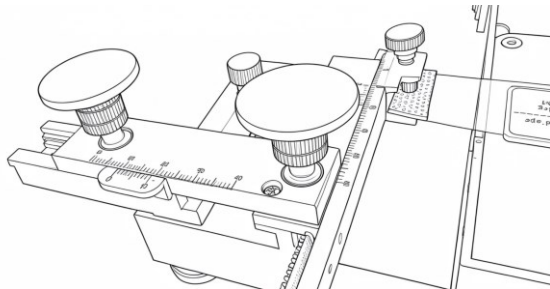
ACCESSORIES FOR ADVANCED USES



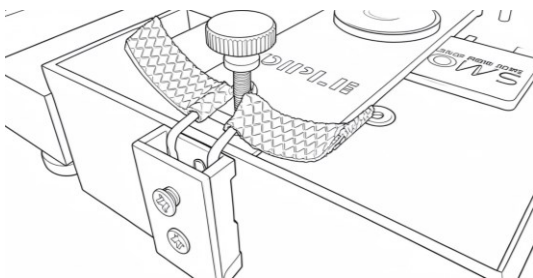
If you observe thick samples, you can add one (or more) **step(s)** under the magnetic block to raise the lens.



For a more accurate adjustment of the lens-sample distance you can add the large cap on the DIN-464 screw. You can rotate it pressing from its top side.



For a more accurate adjustment of the X-Y shift you can add the large cap on the two knobs.



At high magnification, little vibrations affect the focusing conditions. You can improve the stability of the lens rounding the DIN-464 screw with the elastic connected to the box. So, the elastic force presses on the lens dampening little movements.

REFLECTED LIGHT MICROSCOPY

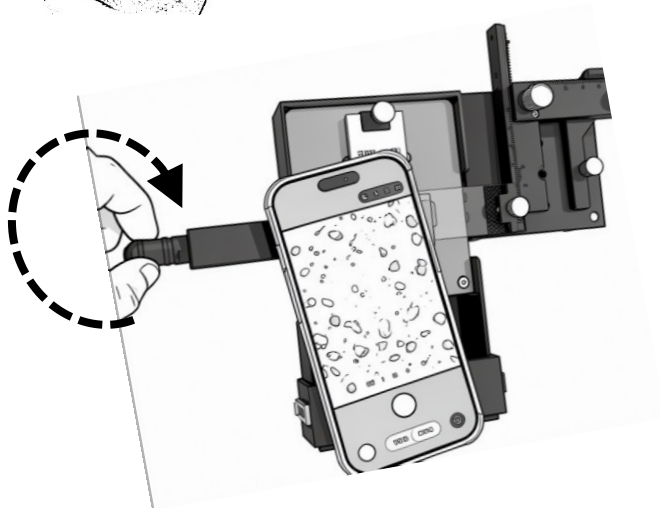
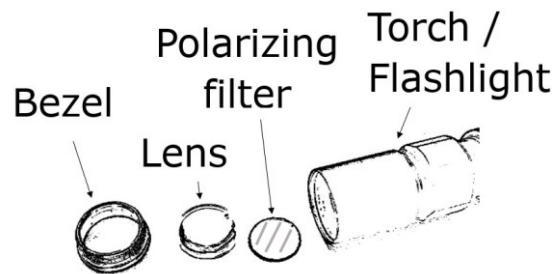
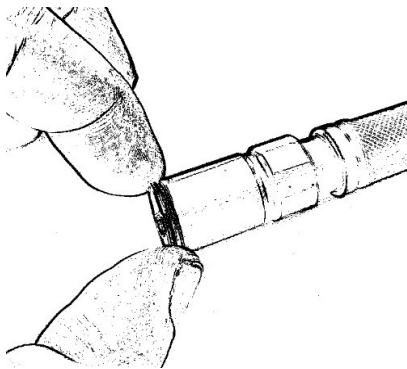


Insert the torch holder in

the threaded hole near the corner of the X-Y shifting support, or on its round base, and aim the light toward the sample.

Adjust the angle and position with your sample in focus until you get the best imaging conditions.

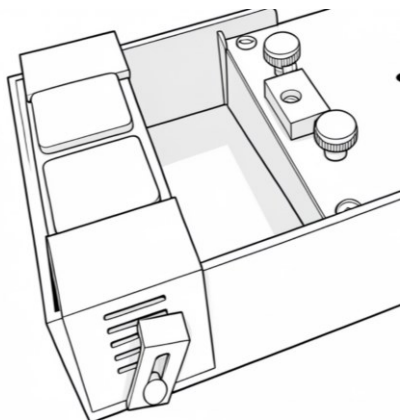
POLARIZED LIGHT MICROSCOPY



For polarized light microscopy you have to insert the polarizing filter in front of the LED of the flashlight, behind the lens in the torch fastened with the bezel.

With the filter in the torch, you can see the effects of polarized light rotating the torch inside the tube connected to the stage.

HEIGHT-ADJUSTABLE PHONE STAND



This element provides a solid support base for the phone or tablet. The base can be raised by inserting the L-shaped component at the desired level. This is useful when working with thick samples or slides, or when using long-focal-length lenses. Furthermore,

since the shapes of various models can differ significantly, it helps adapt the support base to your specific device.

WARNING

CHOCKING HAZARD – Small parts inside the kit. Keep it out of reach of children

Do not shine the light directly into eyes. This may cause temporary blindness or damage to the eyes

DIPLE IS NOT A TOY.

Children should only use DIPLE with adult supervision.

⚠ WARNING	
• INGESTION HAZARD: This product contains a button cell or coin battery. • DEATH or serious injury can occur if ingested. • A swallowed button cell or coin battery can cause Internal Chemical Burns in as little as 2 hours. • KEEP new and used batteries OUT OF REACH of CHILDREN • Seek immediate medical attention if a battery is suspected to be swallowed or inserted inside any part of the body.	

VIDEO TUTORIALS

FIND THE TUTORIAL BEST SUITED TO YOUR NEEDS ON THE PAGE LINKED TO THIS QR CODE:



DATASHEET

DIPLE-II LENSES

The DIPLE & DIPLE-II lenses are objective lenses designed with multiple internal optical components.

The color identifies the magnification level and the optical resolution of the lens.

On the top side of all the DIPLE-E-II lenses there is a polarizing filter, working as “analyzer” when the system is used for polarized light microscopy.

In the DIPLE-II lenses there are components allowing to use them in reflected light microscopy.

DIPLE-II lenses can work in bright-field, polarized light and reflected light/dark field.

The high magnification of DIPLE lenses is coupled with a shallow depth of field. For proper focusing distance adjustment, an M3-DIN464 screw controls the elevation of each lens.

The Silver lens, thanks to its greater working distance, is more suitable for reflected light microscopy and can also be used outside the DIPLE box, without the stage. A rubber insert at one end of this lens improves stability on flat surfaces.

Lens	Magnification factor*	Optical resolution* (μm)	Working distance* (mm)
<i>Silver</i>	25x-250x	3	2.5
<i>Red</i>	40x-400x	2	2
<i>Grey</i>	90x-900x	0.9	0.6
<i>Black</i>	150x-1500x	0.7	0.3

**Approximated values - they depend on the phone/tablet optics, too.*

The range in magnification factors is based on a 10x zoom on the phone (which is achievable on most devices).

DIPLE-E'S STAGE

At high magnification, a good stability of objective lens and phone camera are critical requirements. For this reason, DIPLE-E has a stage with a strong magnet, allowing to use the objective lens exploiting a peculiar “magnetic hinge”. Moreover, the phone does not touch the lens, standing on the two screws next to the magnet. These two DIN-464 screws have anti-slip pads to enhance the stability of the device.

X-Y Shifting Stage:

In many applications, a controlled movement of the sample is a mandatory requirement. For this reason, the DIPLE-E's stage can be magnetically coupled with an external X-Y shifting stage.

Travel ranges: 15mm and 35mm along two perpendicular directions

MAINTENANCE AND MATERIALS

DIPLE is a system that needs minimal maintenance. Here below the main points.

MAINTENANCE OF THE DIPLE II LENSES:

If the rear of the lens becomes dirty, clean it with a soft cloth; glass cleaner may also be used. For resin spots, the tip of a toothpick can be used, provided care is taken to avoid applying excessive pressure.

If the front opening of the lens becomes dirty, clean it gently with a soft, damp cloth. This front surface is made of polarized polymer and therefore requires more care than the rear surface to avoid scratching.

Replace the lenses inside their plastic bags when you do not use the system for long time.

MATERIALS:

The metallic parts of the lens, of the flashlight body and of the stage are of Aluminum.

Magnets are of neodymium.

Screws, screwdrivers and other little metallic parts are made of steel.

Plastic of the box is ABS.

Glass slides can be cleaned and re-used for common experiments.

PLEASE CONTACT US IF YOU NEED ANY FURTHER ASSISTANCE.



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