



A33.1501

3.5" LCD Digital Microscope

Instruction Manual



Please read this manual carefully before use microscope!

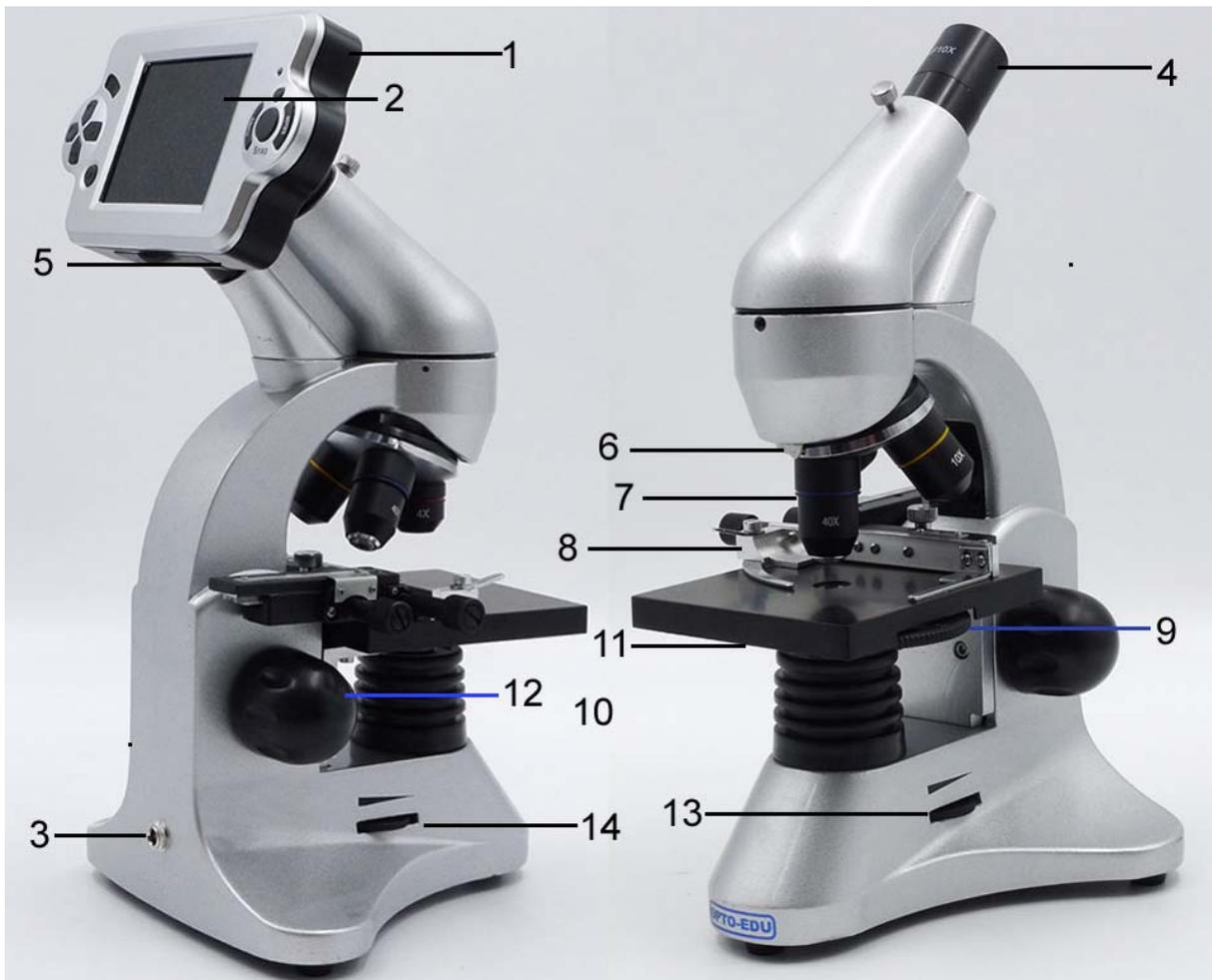
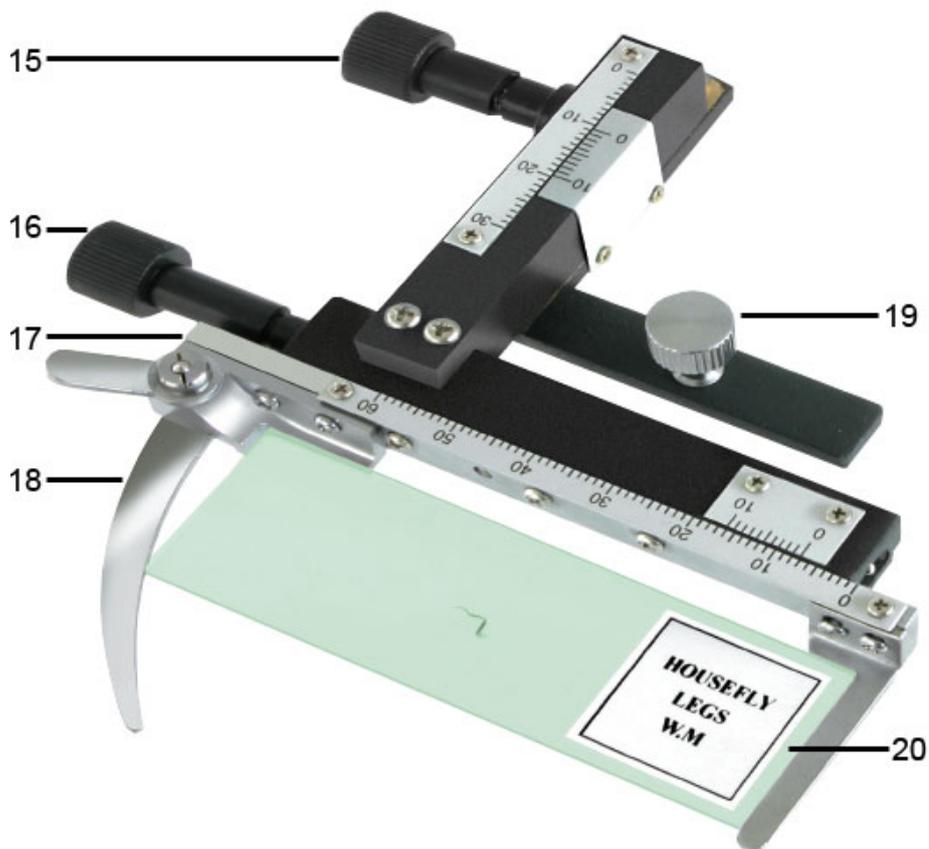


Diagram of Digital Microscope Parts

- 1. Screen module
- 2. LCD monitor
- 3. Power connection
- 4. Eyepiece
- 5. Tube
- 6. Lens turret
- 7. Objective
- 8. Vernial scale, sliding ruler (Optional)
- 9. Disc Diaphragm & Colour filter disc
- 10. LED lighting (transmitted light)
- 11. Working Stage
- 12. Focusing wheel
- 13. Dimmer for top LED lighting
- 14. Dimmer for bottom LED lighting (transmitted light)



- 15. Sliding ruler moving knob forwards/back
- 16. Sliding ruler moving knob left/right
- 17. Levers for clamping mounting plate
- 18. Mounting plate clamp
- 19. Clamping screw
- 20. Prepared slide

Note: Sliding ruler is optional, may not included in box.

1. Location, connection types

Before you begin with the assembly of your microscope, you must select a suitable location. First you should ensure that your microscope is set up on a stable, vibration free surface.

Power connection (220 V or 110V) is required for observations using the electrical LED lighting and the electronic LCD eyepiece (screen module). Furthermore the microscope possesses an interface to a PC (USB connection).

2. Start-up, electrical LED lighting

Before start-up, please check that the lighting switch is in the “OFF position”. The microscope has two lighting units: the transmitted light from below and direct light from top. The transmitted light unit is used for transparent specimens. To view solid non-transparent specimens use the direct light unit (Top Lighting). Use of both forms of lighting simultaneously is only recommended for semi-transparent specimens. The brightness of light can be adjusted by turning the switch.

To start-up, the power supply plug, which is provided, is connected to the power connection at the rear of the microscope foot and to a convenient outlet (220V or 110V). Finally, switch on the desired lighting using the lighting switch and set the required brightness turning the switch.

3. Observation

3.1 Microscope observation in general

Once you have assembled the microscope and appropriately adjusted the illumination, the following principles apply:

a) Begin each observation with the lowest magnification, thus centering and positioning of the object to be observed will be easier.

Move the microscope table, using the focusing wheel completely down and then turn the lens turret until it engages on the lowest magnification (the 4X-objective is vertical).

b) Begin with a simple observation. Place a prepared slide directly under the objective on the microscope table, by clamping it into the stage. For this, move the lever for the clamping mounting plate to the side, put the prepared slide onto the stage and carefully allow the clamping mounting plate to return onto the prepared slide. The object which is to be observed must be exactly above or below the illumination. In order to achieve this, there are two milled thumb screws on the stage. This is the so-called stage drive. By turning these screws it is possible to precisely position the object, in the left or right direction and forwards or backwards.

c) Then switch on the LCD monitor, by pressing the power switch on the screen module; the red operating light will light up. Then look at the LCD monitor and carefully turn the focusing wheel until the image is sharp. With the stage you can now centre the object at the desired place on the LCD monitor.

d) For higher magnification turn the lens turret to a higher setting (objectives 10X and 40X).

Note:

Before you change the objective setting, first move the microscope table fully downwards. This will avoid possible damage!

The higher the magnification, the more light is needed for a good image quality.

Important notes:

Depending on the preparation in use, higher magnification in individual cases will not lead to a better picture! The magnification is altered by changing the objective. This alters the sharpness of the image which must be adjusted by the focusing wheel. Proceed here very carefully. If you raise the microscope table too quickly, the objective and the slides can touch each other and be damaged!

e) The magnification factor of the LCD eyepiece amounts to 10x. In combination with the 4X-objective we obtain a total magnification of 40X, i.e. 1 mm of the object is shown as 40 mm on the LCD monitor. With the 10X objective we have a total magnification of 100X, correspondingly, with the 40X objective 400X.

f) The colour filter disc, beneath the microscope table helps you when viewing very brightly or transparent preparations. For this please select the suitable colour depending upon the object being observed. The components of colourless or transparent objects (e.g. grain containing starch, single-celled organisms) will be much easier to recognise.

3.2 Operation of the screen module

3.2.1 Observing the screen

If you switch on the LCD monitor (see section 3.1 c), you will see the live image of your object as well as three different displays.

a) Lower right is the remaining internal storage capacity of the screen module available for image files and showing picture's revolution above it.

b) In the centre alongside a magnifying glass symbol, is the electronic zoom factor. By pressing the arrow keys "up" or "down" electronic magnification of the image can be set with a factor from 1 to 8. For a fast run keep the keys pressed down.

c) At the top right hand corner, is a camera symbol. (photographic mode or video mode)

3.2.2 Producing photographs

By pressing of the photo button "SNAP" a photograph is taken of the live image, which is stored.

3.2.3 Photograph management

By pressing "MODE" again you change from video record mode to photo

management mode. You can see the photos and videos. By pressing “LEFT” or “RIGHT”, you can select a required picture or video. By pressing “MODE” you can return to live image.

By pressing the “MENU” button whilst displaying the picture (video), a menu bar appears, which you can control using the appropriate arrow keys.

Here you can also change certain settings and bring them into force by pressing the “OK” input key.

Overview of the menu:

- a) Delete. By pressing “OK”, you can select Single (delete selected image file), All(delete all image files) or Select(you can delete the one you want to)
- b) Copy to Card.
- c) Slide show
- e) Protect (writing and delete protection for image file). By pressing “OK”, you can select Single (protect selected image file), All(protect all image files) or Select(the one you want to protect).

3.2.4 Capture settings

By pressing the “MENU” button whilst displaying the live image a menu bar appears, which you can control using the appropriate arrow keys. Here you can also change settings and bring them into force by pressing the “OK” input key.

Overview of the menu:

- a) Size (picture resolution, number of pixels width x height):
12M(4023x3024), 8M(3264x2448), 5M(2560x1290), 3M(2048 x 1536),
2M(1600 x 1200), 1.3M(1280 x 1024), VGA(640 x 480).
- b)Quality: Fine, Standard, Economy.
- c) EV: you can select EV from -2.0-----+2.0
- d) White Balance. Auto for the default
- e) ISO: Auto for the default.
- f) Color: Standard, Vivid, Sepia, Monochrome.
- g) Saturation: Normal, High, Low
- h) Sharpness: Normal, Normal, Soft.
- i) Time Stamp: OFF, Date only (can show the date on the picture or video),
Date &Time (can show the date and time on the picture or video).

3.2.5 Camera setup

By pressing the “MENU” button whilst displaying the live image a menu bar appears, which you can control using the appropriate arrow keys. Then by

pressing the “RIGHT” button, you can setup the camera setting.

- a) Format: Execute (warning: all the files will be lost), Cancel.
- b) Language: There are 9 kinds of languages. The default is English.
- c) Auto off: 1Min, 3Min, 5Min, off
- d) Sys. Reset: Execute (warning: all the setting will be to the default), Cancel.
- e) Light Freq: 60HZ, 50HZ
- f) TV Output: NTSC, PAL
- g) Date Input: Off, Set
- h) USB: PC Cam, Disk Drive, Printer

3.2.6 Video record

By pressing button “MODE” in the photographic mode during live image display, a symbol of a movie camera appears on the top left and on the right beneath the volume of free internal storage capacity for photographs. You take the photograph with the “SNAP” photograph button, by renewed pressing of this button you terminate it. During the photograph the movie camera symbol blinks and the current time of the photograph is indicated. You can set sizes of QVGA(320 x 240) or VGA(640 x 480) in the menu, with the “ menu” and the “OK” buttons. Furthermore with “EV” the same picture effects can be selected as with photos.

4. Image output and storage

The LCD Micro offers you three possibilities for image output and storage:

- a) You can view the image directly on the LCD monitor. The equipment offers SD card 2G for your photographs.
(See section 3.2.)
- b) You can store your photographs on a suitable memory card (SD = Secure Digital)(NOT INCLUDED). The memory card slot of the LCD Micro is on the bottom of the screen module beside the USB connection. To use, push the memory card, with the contacts at the front, into the slot, until they engage with a faint click. If the installation is correct, a memory card symbol appears above on the LCD monitor. This is again released by pressing and releasing the memory card, which after a faint click, can be taken out of the slot. Your photographs are now transportable.
- c) If you connect your microscope to the PC using the USB cable provided, you can transfer the photographs to the PC. The USB connection of the LCD Micro is on the bottom of the screen module beside the memory card slot. Put the smaller B-plug (Micro) into the socket on the microscope and the larger A plug (PC) into a free USB port in your computer. After a

successful USB connection, the operating system will recognise new hardware and then two new drive assemblies will be initialized. These are marked as “removable data carrier e” and “removable data carrier f”, the letters vary depending upon the number of drive assemblies in your computer. They are made available on the work station, as well as in Windows Explorer. The first drive assembly recognized (e:) is the internal memory of the screen module. The second (f:) contains – if a memory card is inserted – the contents of the card.

Caution:

When taking a photograph, no USB connection between PC and microscope may exist. Before you interrupt the USB connection or switch the screen module off, you must remove the screen module (removable data carrier e:) in the PC with the help of the hardware assistant and “deactivate” the card drive assembly (removable data carrier f:) ! If the drive assemblies are not deactivated, the PC might “crash” or there might even be a loss of data!

5. Technical data

System requirements for USB connection / memory card use:

Windows operating system

Main board with USB connection

Media programme (e.g. Image processing programme, programme for playing films)

Memory card

Memory card reader

6. Using the Microscope with eyepiece

6.1 Remove the LCD eyepiece from the tube and place the ordinary eyepiece into the tube.

6.2 Place a prepared slide directly under the objective on the microscope table, by clamping it into the stage. For this, move the lever for the clamping mounting plate to the side, put the prepared slide onto the stage and carefully allow the clamping mounting plate to return onto the prepared slide. The object which is to be observed must be exactly above or below the illumination. In order to achieve this, there are two milled thumb screws on the stage. This is the so-called stage drive. By turning these screws it is possible to precisely position the object, in the left or right direction and forwards or backwards.

6.3 After you have set up the microscope with the corresponding illumination, look through the Eyepiece.

6.4 Always start observing using the lowest magnification with the microscope. Use the 4X Objective Lens by rotating the Objective Lens Turret so that the 4X Objective Lens is aiming at the center of the Stage (when it is in the proper position it will click into place). The 4X Objective Lens will give a 40X (40 power) view with the 10X Eyepiece. Final Power is calculated by multiplying the Objective Lens Power by the Eyepiece Power (e.g., $4 \times 10 = 40$).

6.5 Focus the microscope by slowly turning the Focusing Knob, until an image forms in the Eyepiece.

6.6 The colour filter disc, beneath the microscope table helps you when viewing very brightly or transparent preparations. For this please select the suitable colour depending upon the object being observed. The components of colourless or transparent objects (e.g. grain containing starch, single-celled organisms) will be much easier to recognise.

6.7 To increase magnification, rotate the Objective Lens Turret to center the 10X Objective Lens over the specimen for 100X, or the 40X Objective Lens for 400X, or change the eyepiece from 10X to 16X. When using higher magnifications focusing becomes more critical and the objective lens will come closer to the specimen in order to reach focus. Don't let the lens touch the slide as you may break the slide and damage the lens.

7. Care and maintenance

7.1 The microscope is a high quality optical appliance. Therefore you should make sure that dust or moisture do not come into contact with your microscope.

7.2 Avoid putting fingerprints on any optical surfaces.

7.3 If dust or dirt should nevertheless have gotten onto your microscope, or the accessories, you should first remove this with a soft brush. Then clean the soiled area with a soft, lint-free cloth. To remove fingerprints from the optical surfaces it is best to use a lint-free, soft cloth, to which you have applied some alcohol.

7.4 After usage, you should stow the microscope and the accessories in their correct containers again.

Remember:

A well maintained microscope will keep its optical quality for years and thus maintain its value.