

**Motic®**

Cold Light Power Supply

**MLC-150C**

Instruction Manual

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MOTIC INCORPORATION LTD.

**CE**  UL Listed Product E250223

We are constantly endeavoring to improve our instruments and to adapt them to the requirements of modern research techniques and testing methods. This involves modification to the mechanical structure and optical design of our instruments.

Therefore, all descriptions and illustrations in this instruction manual, including all specifications are subject to change without notice.

To ensure proper use, please read this manual carefully before using the MLC-150 cold light source.

To meet the demands of both international and domestic markets, Motic has developed the new MLC-150C cold light source. Besides a switching power supply that ensures a regulated voltage for the lifetime of the halogen bulb, many other safety precautions have been taken to provide a safe and reliable cold light source. In addition, an infrared filter and filter assembly have been incorporated to minimize halogen light heat output in order to achieve cold light illumination and meet the objectives of many kinds of color temperature light rays.

The MLC-150C can be applied extensively in various fields that require bright light illumination including, microscopy, medicine, education, and many other areas of scientific research. With a sturdy construction, practical and aesthetic design, minimal working noise and user friendly controls, it is a welcome addition to any laboratory. A large selection of additional fiber lights are also available to choose from.

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## 1. Specifications

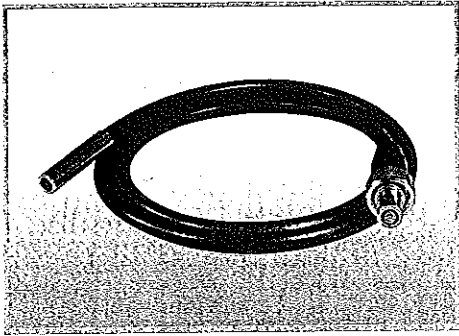
1. Input rating : AC115V/AC230V  $\pm 15\%$  50/60Hz 200W
2. Output rating : DC3V~DC21V  $\pm 10\%$  (halogen lamp working voltage)  
7A (MAX)  $\checkmark$
3. Internal illuminator : 21V/150W EKE Halogen lamp; Working life 200H
4. Illumination output :  $> 120000\text{LX}$
5. Color temperature output : A. With no filter: 2500K~3200K  
B. With filter: 5000K (Max)
6. Environment : A. Active temperature :  $0^{\circ}\text{C}\sim 45^{\circ}\text{C}$   
B. Storage temperature:  $-10^{\circ}\text{C}\sim 60^{\circ}\text{C}$   
C. Active and storage humidity:  
At 31 degrees, corresponding humidity at 80%,  
At 40 degrees, decrease corresponding humidity to 50%.  
D. Elevation: 2000m max  
E. Installation Category: II  
F. Pollution rating: 2  
G. Active environment quality: conductive dust and corrosive  
gas free.  
H. Indoor use only
7. Breaking capacity : 1750VAC / 5MA / one minute without breaking
8. Internal fuse : T5AL250V low breaking capacity glass tube fuse (with delay)
9. Average problem-free usage : MTBF  $> 10000\text{H}$
10. Total area : 220 (W) X 193 (L) X 112 (H) mm
11. Weight : 3Kg

## 2. Fiber optic lights

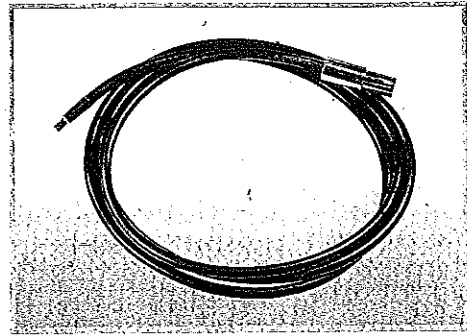
| Serial No. | Length | Type               | Diameter | Output plug                   | Microscope                                     |
|------------|--------|--------------------|----------|-------------------------------|--|
| SP990072   | 1.5M   | Flexible           | φ 7      | Straight                      | K-model stereomicroscope, vertical illuminator |
| SP990073A  | 2M     | Flexible           | φ 5      | Straight                      | Industrial microscopes                         |
| SP990073B  | 2M     | Flexible           | φ 5      | Elbowed                       | Industrial microscopes                         |
| SP990074   | 1M     | Flexible           | φ 5      | Inner diameter 61MM Ring lamp | Stereomicroscopes K and SMZ168 models          |
| SP990075   | 0.5M   | Hard-tube (single) | φ 8      | Straight                      | Gemological microscopes GM168 and GM143 models |
| SP990076   | 0.5M   | Hard-tube (twin)   | φ 5.6    | Straight                      | K-model stereomicroscope                       |

**Table 1**

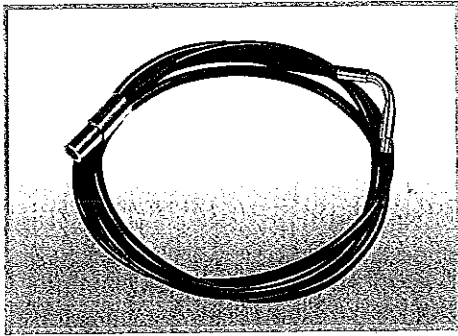
**Note:** Customizations can be made for user-specific requirements.



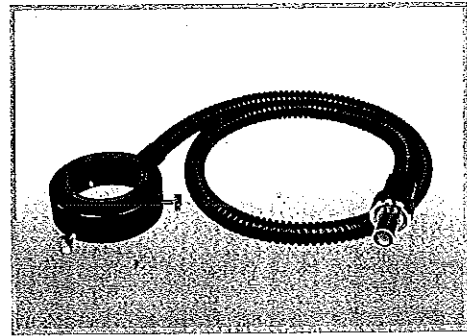
Flexible fiber optic light -  
SP990072



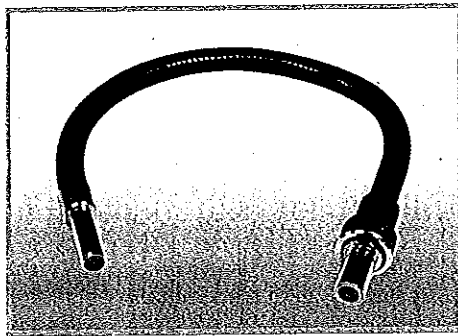
Industrial microscope fiber optic light -  
SP99007A



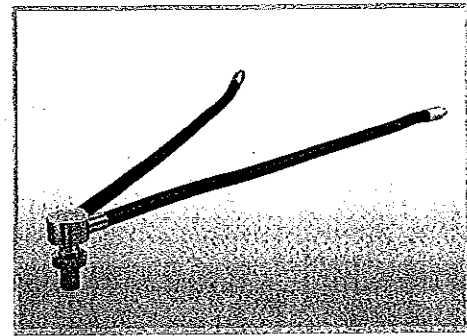
Industrial microscope fiber optic light -  
SP99007B



Ring light -  
SP990074



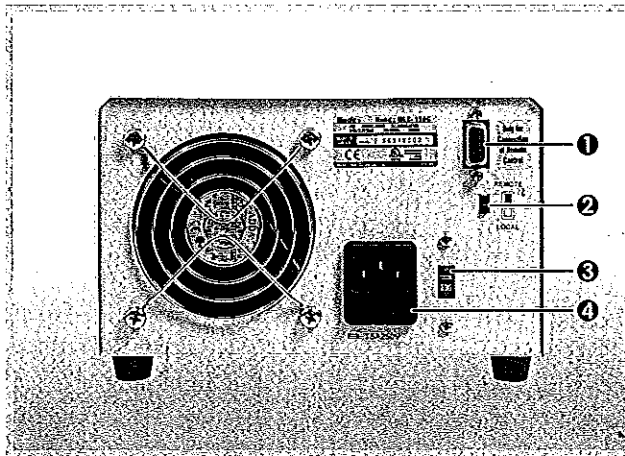
Hard-tube single fiber optic light -  
SP990075



Hard-tube twin fiber optic light -  
SP990076

### 3. Usage

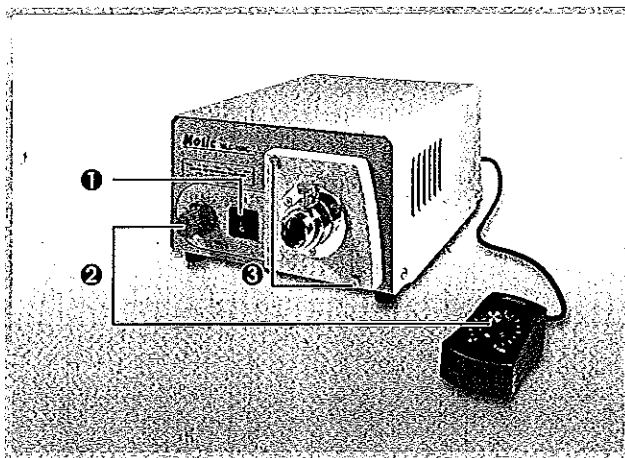
1. Confirm your local power supply rating and then at the back of the unit adjust the voltage conversion switch accordingly (115V or 230V).



1. Controller cable input
2. Light control mode switch
3. Voltage conversion switch
4. AC input

Diagram 1

2. Users are able to choose the light intensity control method as required. Short-range control method: Switch the 'Light control mode switch' to 'LOCAL' (see diagram 1). Place the unit on your desk and use the light intensity adjustment knob on the front panel of the unit to adjust the light intensity. Remote control method: Switch the 'Light control mode switch' to 'REMOTE' (see diagram 1). Place the unit anywhere within 1.5 meters (as the cable allows) of your person, plug the remote control cable into the main unit using the DB9 plug and begin to adjust light intensity using the remote control.



1. AC power switch
2. Light intensity adjustment dial
3. Lamp housing screws

Diagram 2



3. Select the appropriate fiber optic light from table 1 as required. Next, insert the light into the socket as shown in diagram 3 and tighten the holding screws on the lamp housing.

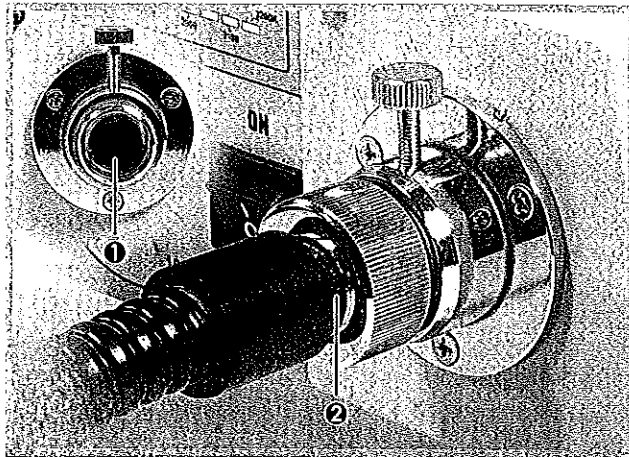


Diagram 3

1. Fiber optic light socket
2. Fiber optic light plug

4. Plug the power cable into the AC input socket on the back panel of the unit (see diagram 1). From the front panel, turn the power on, at which point the LED indicator light will illuminate indicating the power has been connected and the cold light source has begun working. Adjust the light intensity dial making sure the output light changes from bright to dark or vice versa. Install the light-output end of the fiber optic light in the appropriate location on your microscope or any other location that requires cold light illumination and begin use.
5. Once the cold light source has been properly assembled and tested it can be placed alongside (effective within a 1.5 meter range) and used with your microscope or any other device requiring cold light. Be sure the front panel of the control box is free from obstruction as this will ensure the user is able to conveniently adjust the light intensity and/or switch fiber lights as necessary. (see diagram 4 for suggested setup)

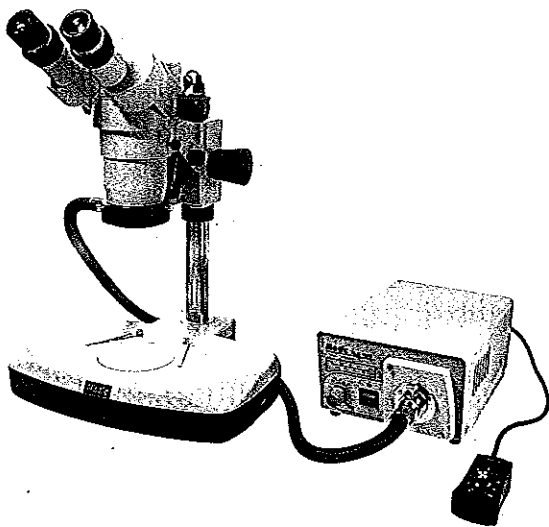
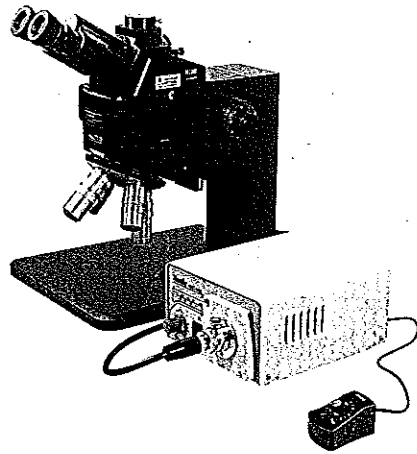
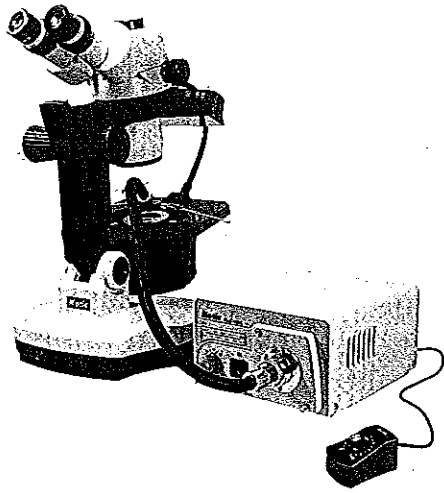
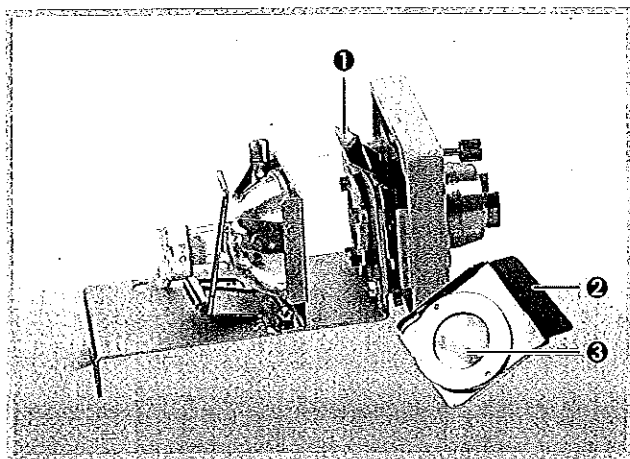


Diagram 4

## 4. Installing the filter

Users may install filters as required. To install a filter: Loosen the holding screws on the lamp housing and remove the lamp housing from the main unit. Find the filter installation location (at the front of the housing, against the fiber optic light socket) and insert the filter (making sure it is facing the right direction) as shown in diagram 5 below. Generally, a glass filter unit has been installed at the point of manufacture. If it is required that the glass filter slice be changed, please note that it must be installed facing the proper direction. The side of the glass with the coated film must be installed facing the incoming light ray or the glass slice will become damaged.



1. Filter installation location
2. Filter unit
3. Filter plating

Diagram 5

## 5. Changing the Bulb

If the bulb is used passed its specified lifetime, it may lead to damage and should thus be changed. To change the bulb: pull out the power cable plug, make sure the lamp housing has cooled sufficiently, loosen the lamp housing screws and remove the lamp housing from the unit. Next, push down the steel wire holding the bulb in place, and gently remove the bulb. Replace with a bulb of the same specifications (21V/150W), insert the lamp housing back into the main unit and tighten the holding screws (see diagrams 6 and 7 below).

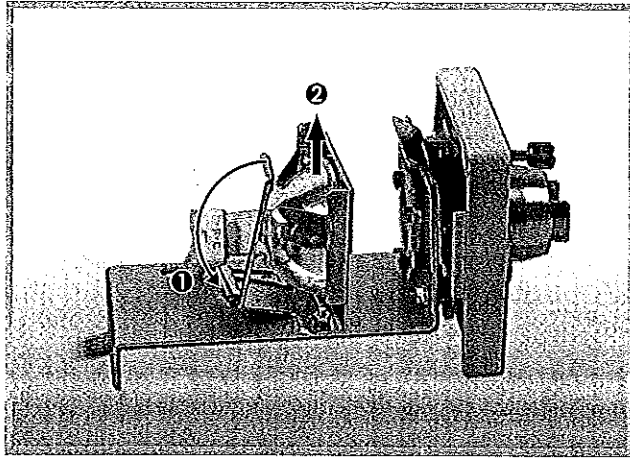


Diagram 6

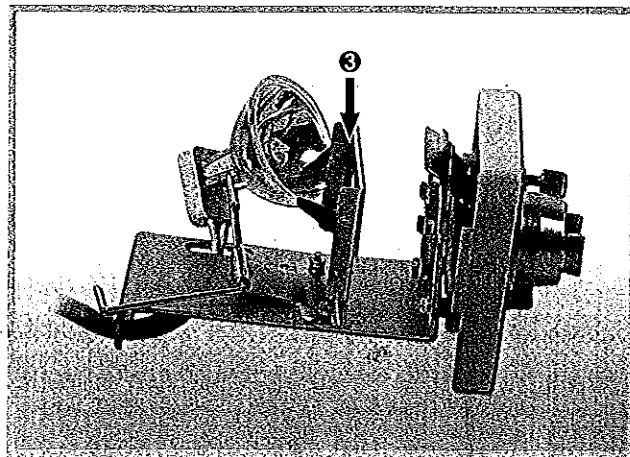


Diagram 7

## 6. Color temperature display

An LED indicator is employed to display the current light output color temperature value. When the light intensity dial is adjusted, the output light intensity and color temperature value will change in accordance. The value displayed on the LED indicator (the light moves from left to right with intensity) represents the current light output color temperature value when no filter has been installed. If a standard filter has already been installed, a value of 500 must be added to the value displayed on the LED. For example, if the LED is displaying its maximum value of 3200K, add 500 to this value to calculate the real color temperature (3700K). If a different color filter is being used, the color temperature displayed by a color temperature measurement instrument should be taken as standard.

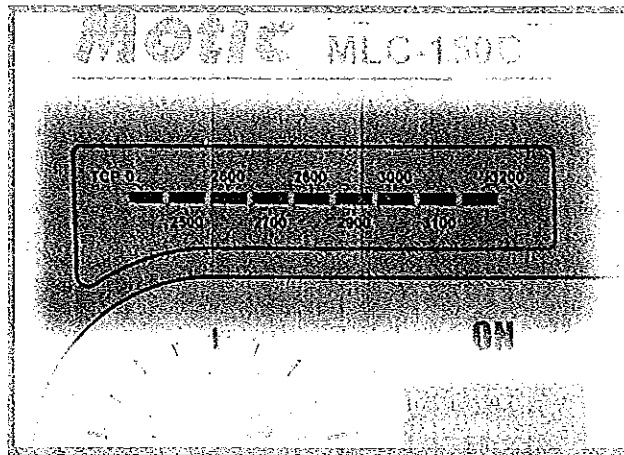


Diagram 8

## 7. Maintenance and Care

1. Use the instrument in an area with good air circulation. Do not place large devices or devices that emit large amounts of heat near the instrument. When the instrument is in use, make sure the air intakes at the base and sides and the fan at the back of the unit are kept free from obstructions as this will ensure proper heat dispersal. As well, do not cover the outer surface of the instrument with paper, cloth or any other object that will affect heat dispersal.
2. If the instrument has been used for a period time and suddenly does not illuminate, it is possible the bulb has reached the end of its life. A new bulb of the same specifications should be installed. When in use, the instrument should not be frequently turned on and off as this will shorten the life of the bulb and damage the electronics.
3. When installing and using the internally housed halogen bulb and filter, protect from oil stains by avoiding contact with bare hands. If contaminated, use absorbent cotton dipped slightly in an ethyl-alcohol mixture to wipe clean.
4. Do not position the equipment so that it is difficult to unplug the power supply cord from the unit.
5. The instrument should be kept clean and free of dust, moisture and oil to ensure the machine's proper electrical insulation. When cleaning the outer surface of the instrument, do not use water or any corrosive cleaning agents. Use a clean piece of silk cloth dipped slightly in benzene to wipe clean. If the instrument is not to be used for an extended period of time, place it back into its box and store in a low humidity environment.
6. When using the fiber optic light, do not bend at a right-angle or even slightly less than a right-angle as this will cause the optic fiber to break. The light's input/output plugs and the flexible tube's joints are especially susceptible to breakage.
7. Before using this instrument, ensure the local power supply voltage rating is the same as at least one of the voltage conversion switch settings on the back panel of the unit. As well, be sure not to randomly switch the voltage setting at any time as this may damage the instrument.
8. Users should respect local safety protocol and must bear full responsibility for the safe operation of this instrument. Should the instrument become damaged, do not attempt to disassemble and/or repair. Contact the distributor's service department or send the instrument directly to the manufacturer for repairs.

