



# MANUAL



## LED Fluorescence Illuminator

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# LED FLUORESCENCE ILLUMINATOR

Multi-wavelength LED epi-fluorescence illumination utilizes long lifespan LEDs as a light source, converting a traditional upright microscope (with infinity optical design) into an energy-saving and high-efficiency fluorescence microscope. Brightfield observation is preserved with either an open position in the fluorescence channel selector (for 1 and 2-channel illuminators), or it uses the emission characteristics of the UV illumination channel for brightfield observation. Our illuminators are available in 1, 2 or 3 channel configurations with a standard set of fluorescence channel specifications. Please contact your ACCU-SCOPE dealer if you have other requirements – special orders may be available.

## SPECIFICATIONS

### STANDARD FLUORESCENCE CHANNEL SPECIFICATION

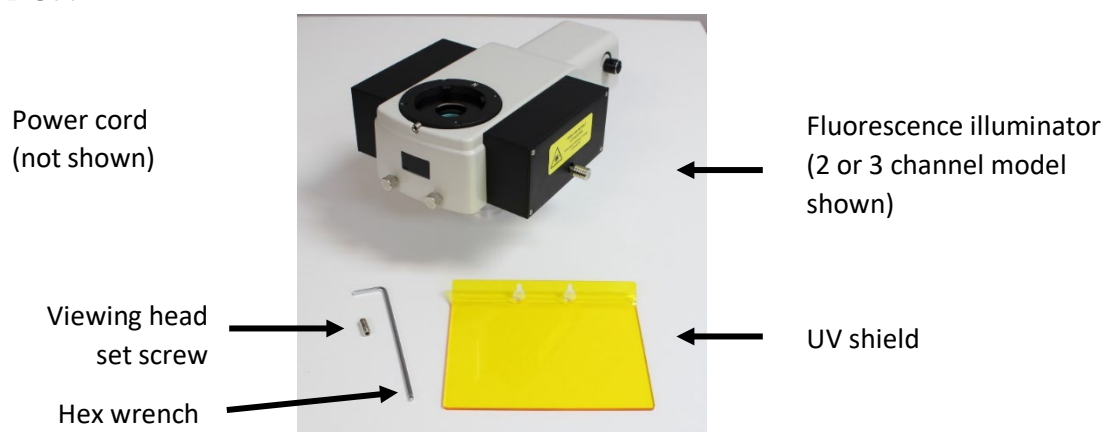
Excitation Color	Excitation Filter	Dichroic Mirror	Emission Filter
UV	330-380nm	>400nm	420nmLP
B	475/40nm	>500nm	535/45nm
B longpass	475/40nm	>500nm	510nmLP
G	510-550nm	>560nm	590nmLP
Y	560/40nm	>600nm	610nmLP

Optional filters are available by special order.

### EXAMPLES OF COMMON FLUOROPHORES (STAINS, DYES) BY EXCITATION COLOR

Excitation Color	Fluorophores
UV	DAPI / Hoechst 33258 / AlexaFluor 350
B	GFP / FITC / EGFP / Malaria diagnostic / Alexa 488 / Cy2 / Fluo-4 / Fluoro-Jade
B longpass	GFP / wtGFP / Auramine O / Cy2 / DiO / YO-PRO-1 / YOYO-1
G	TRITC / Cy3 / DsRed / AlexaFluor 546 / PI / EB / EH
Y	mCherry / Texas Red / AlexaFluor 594

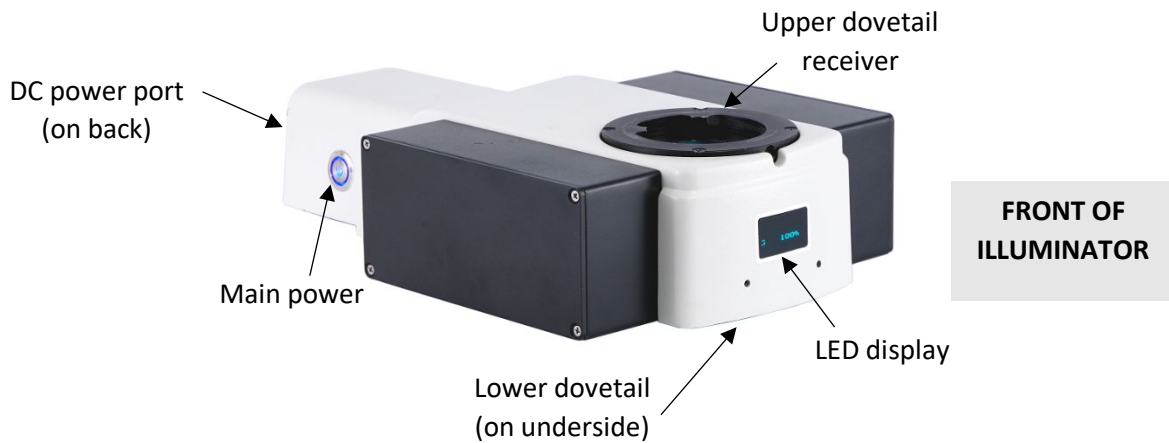
## IN THE BOX



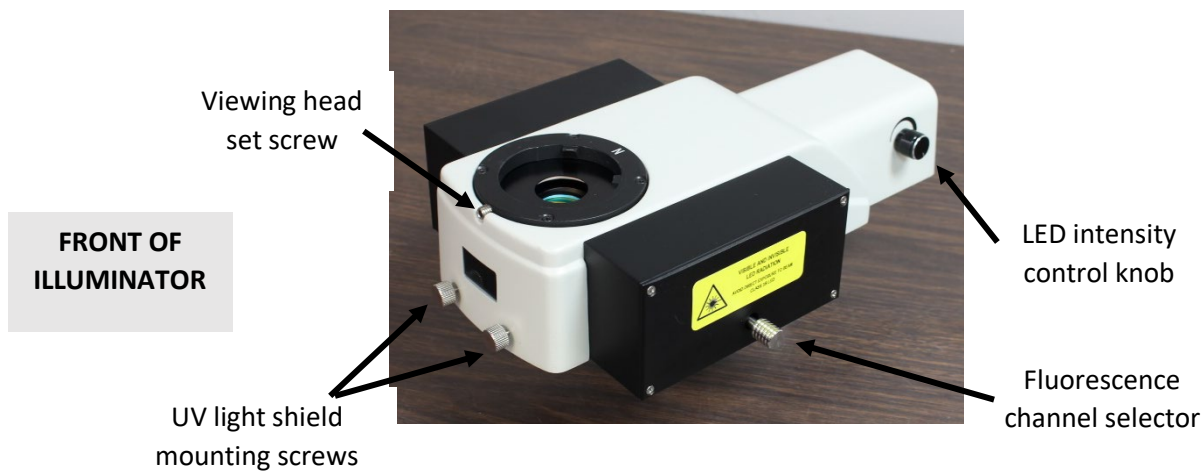
# LED FLUORESCENCE ILLUMINATOR

## COMPONENTS

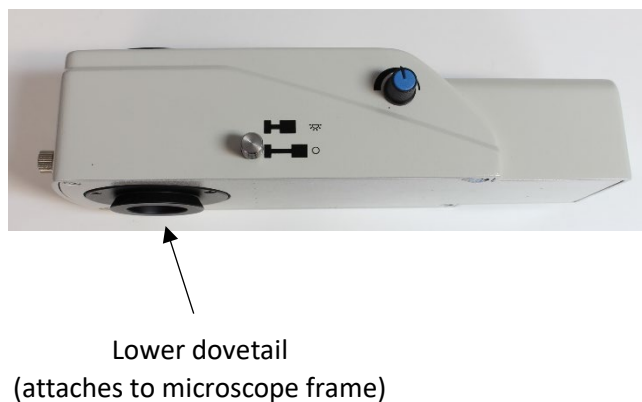
Illuminator: Left Side View



Illuminator: Right Side View



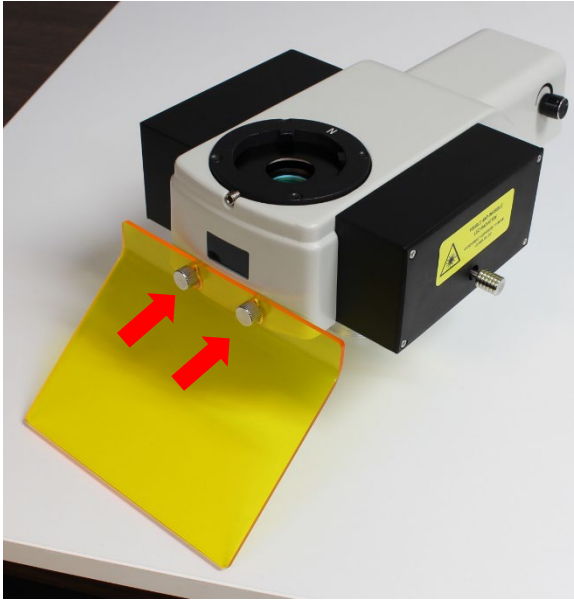
Illuminator: Bottom View



# LED FLUORESCENCE ILLUMINATOR

## INSTALLATION INSTRUCTIONS

These installation instructions apply to all our LED fluorescence illuminators for upright microscopes, regardless of 1-, 2- or 3-channel configurations. Note that your illuminator may vary slightly in appearance than the one used to illustrate the following procedures.



1. Loosen the set screw that secures the head to the frame. Note that some microscopes have a thumb screw and others may use a hex screw.
2. Remove the two thumbscrews from the front of the fluorescence illuminator.
3. Attach UV shield to the front of the fluorescence illuminator using these two thumbscrews.

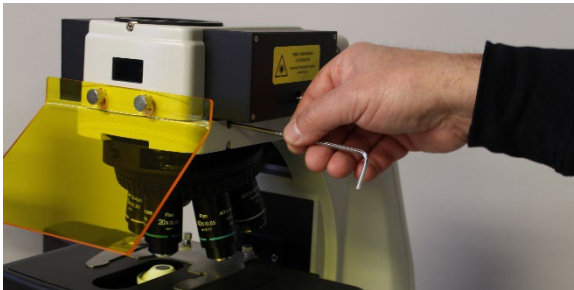


4. Remove viewing head from the microscope frame and place on the counter/bench top.

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5. Place the LED fluorescence illuminator on the top of the microscope frame. Align the bottom dovetail of the illuminator to the dovetail receiver on the frame. If the dovetail does not fully enter the receiver, you may need to loosen the set screw some more.



6. When aligned, tighten the set screw on the microscope frame to secure the illuminator to the frame.

7. With the provided hex screwdriver, loosen the viewing head set screw.

If the set screw is not already in place on the viewing head dovetail receiver, use the provided hex wrench to thread the provided set screw into the front of the hole for the viewing head dovetail receiver.

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8. Align the viewing head dovetail to the dovetail receiver on the top of the illuminator. If the dovetail does not fully enter the receiver, you may need to loosen the set screw some more.
9. When aligned, tighten the set screw on the illuminator to secure the viewing head to the top of the illuminator.



10. Insert the round plug of the DC power adapter cable into the DC power port on the back of the illuminator. Insert the standard 2-prong plug of the DC power adapter into an AC outlet.

## OPERATION INSTRUCTIONS

These operation instructions apply to all of our LED fluorescence illuminators for upright microscopes, regardless of 1-, 2- or 3-channel configurations. Note that your illuminator may vary slightly in appearance and features than the one used to illustrate the following procedures.

### Good To Know 😊

- Main power button turns power on to the unit.
- The LED display located on the front of the unit shows the current fluorescence channel selector position and LED power in % of maximum. If the LED display is not on, the main power to the unit is off.
- LED intensity control knob has two functions.
  - Rotate the knob to increase or decrease the LED intensity for that fluorescence channel.
  - Press the knob to turn off the LED. Press again to turn the LED back on.
- As long as the main power is on, the illuminator will “remember” the LED intensity that is set for each channel. This is ideal for repeatability and qualitative comparisons between samples.



1. Place a positive control slide (i.e., demonstrated and known to have strong fluorescence staining) on the stage. Focus on the specimen. You may need to close the condenser aperture diaphragm to create enough contrast to see the specimen.
2. Press the main power button on the left side of the illuminator to turn power on. The button will turn blue to indicate that main power is on.
3. Turn off the transmitted light on the microscope.



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- Slide the fluorescence channel selector in or out to the desired position.

**NOTE:** 1-channel illuminators have 2 positions – one for brightfield observation, and one for fluorescence. 2-channel illuminators have 3 positions – one for brightfield observation, one for one fluorescence channel, and another position for the second fluorescence channel. 3-channel illuminators also have 3 positions – the 3<sup>rd</sup> channel marked UV/O is used for both UV fluorescence observation of DAPI or similar UV fluorophores, and it is also used for brightfield observation. To use the UV/O position for brightfield, press the LED intensity control knob in to turn off the LED and confirm that the front LED display says “Off”.



- While viewing the sample, adjust LED intensity to the desired level by rotating the LED intensity control knob clockwise for more power, or counterclockwise to reduce intensity.

**NOTE:** The illuminator remembers the LED intensity by channel, until the main power is turned off.

**NOTE:** Press the intensity knob in to turn off the LED. Press the intensity knob again to turn the LED back on.



- Change fluorescence channels and/or samples as desired.

## TROUBLESHOOTING

ISSUE	SOLUTION
Image does not fill the field of view.	<ol style="list-style-type: none"> <li>1. Ensure that the fluorescence channel selector is fully seated in a position. Push in or pull out to confirm.</li> <li>2. Ensure the illuminator is fully aligned with the microscope frame dovetail receiver and the viewing head is fully aligned with the dovetail receiver on the top of the illuminator.</li> <li>3. Check that the eyepieces are fully inserted and the diopters are set appropriately.</li> </ol>
Field of view is too bright and overwhelms the sample.	<ol style="list-style-type: none"> <li>1. Perform fluorescence observation under dark surroundings. Avoid stray light from entering the light path (e.g., eyepiece, camera adapter and other adapters which do not have light barrier) and from lighting the sample.</li> <li>2. If the microscope has a trinocular head and no camera is attached, cover the trinocular tube with non-reflective black paper.</li> <li>3. Check that the microscope transmitted light for brightfield has been turned off.</li> <li>4. Lower the condenser position and close the condenser aperture diaphragm. This will reduce or eliminate autofluorescence from the transmitted light lamphouse. If possible, use a piece of non-reflective black paper to cover the condenser aperture diaphragm.</li> </ol>
Specimen is not sharp.	<ol style="list-style-type: none"> <li>1. Change microscope observation to brightfield to confirm the specimen image is clear and sharp.</li> </ol>
Cannot focus on the sample.	<ol style="list-style-type: none"> <li>1. Change microscope observation to bright field to check if it is work well, focusing system has been adjusted to correct position.</li> </ol>
No fluorescence excitation light coming from the illuminator (shining onto the sample).	<ol style="list-style-type: none"> <li>1. Rotate LED illumination control knob.</li> <li>2. Check the front LED display is illuminated and does not say "Off". If it says "Off", depress the LED intensity control knob, confirm that the LED display no longer says "Off", then turn the LED illumination control knob to adjust intensity.</li> <li>3. Confirm the fluorescence channel selector is in position (it should "click" into each channel position).</li> <li>4. Confirm the illuminator is secure to the microscope frame, and the viewing head is secure to the illuminator body.</li> <li>5. The objective is in position.</li> </ol>

## ATTENTION

1. LED brightness can be freely adjusted as needed and based on the sample being observed. As a general guideline, a setting of 80% maximum intensity is recommended to prolong the service life of the LED lamp.
2. To reduce reflection and other extraneous light during fluorescence observation, block any fluorescence light from entering the condenser lens with non-reflective black paper or metal sheet. You may also close the condenser aperture diaphragm and lower the condenser.
3. Prolonged illumination of the sample during fluorescence observation can result in fluorescence quenching or bleaching. Turn off the LED when not directly observing the sample. It is also recommended to establish optimal LED power settings on an area of the sample away from the region of interest.
4. To use brightfield observation with a 3-channel fluorescence illuminator, switch the channel selection lever to the UV/O position and turn off the LED by pressing the LED intensity control knob, then turn on the transmitted light. Turn off the transmitted light and press the LED intensity control knob again to resume fluorescence observation in the UV channel.
5. To avoid uneven illumination, ensure the microscope and LED fluorescence illuminator are secure and stable on an appropriate bench or work surface.
6. Use on the provided 12V 2A power adapter that was included with the unit. The manufacture is not responsible for any damage to the illuminator if the incorrect power adapter is used.

## LIMITED WARRANTY

This illuminator, the LED lamp and its electronic components are warranted to be free from defects in material and workmanship for a period of one year from the date of invoice to the original (end user) purchaser. This warranty does not cover damage caused in-transit, misuse, neglect, abuse or damage resulting from improper servicing or modification by other than ACCU-SCOPE approved service personnel. This warranty does not cover any routine maintenance work or any other work, which is reasonably expected to be performed by the purchaser. Normal wear is excluded from this warranty. No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage or other conditions beyond the control of ACCU-SCOPE INC. This warranty expressly excludes any liability by ACCU-SCOPE INC. for consequential loss or damage on any grounds, such as (but not limited to) the non-availability to the End User of the product(s) under warranty or the need to repair work processes. Should any defect in material, workmanship or electronic component occur under this warranty contact your ACCU-SCOPE distributor or ACCU-SCOPE at (631) 864-1000. This warranty is limited to the continental United States of America. All items returned for warranty repair must be sent freight prepaid and insured to ACCU-SCOPE INC., 73 Mall Drive, Commack, NY 11725 – USA. All warranty repairs will be returned freight prepaid to any destination within the continental United States of America, for all foreign warranty repairs return freight charges are the responsibility of the individual/company who returned the merchandise for repair.