

Nikon D Series With DX5 Mini EPI Module
PLEASE READ THIS BEFORE SCRAMBLER INSTALLATION

Scrambler Installation requires a VOM or Multimeter that reads Ohms. To set up this system quickly and efficiently you must use the LOP (light output photodiode), a device made by Technical Video, Ltd. specifically for maximizing light throughput in the system.

The Fiberoptic Light Scrambler is an optical instrument that requires accurate alignment to function properly. Once it is precisely installed realignment will be necessary only when replacing the arc lamp bulb. If you experience any problems please call or fax Technical Video, Ltd. We will be happy to assist you. Installation instructions must be followed or guarantee is void.

Unpack and inspect the parts. Do not move knobs or make adjustments until called for in the Instructions as they have been approximately set at the factory.

*If the Fiberoptic and lens have been installed in your Scrambler Input Module, please follow the instructions from Part 1 "Now secure the Input Module to the tripod..." Ignore further references to the red banded lamp end. The Input end of the Fiberoptic within the Module has been installed with a new heat-dissipating device called Fintip. Please contact us if it is necessary to remove the fiberoptic from the module.

Unloop and uncoil the fiber. Leave the protective bags on the fiberoptic ends. Note that the lamp end is red banded. Do not reverse ends! Never sharply bend the fiber. The ends are optically polished flat surfaces and should not be touched. Treat them as you would any lens. If it becomes necessary to clean, place a drop of acetone on lens tissue and draw it across the surface.

The Input Module has been grooved to aid in heat dissipation. Twist and pull the WHITE Z-axis knob completely out. Now insert the collector lens (see schematic drawing) into the MODULE, with the small lens end toward the fiberoptic holder, until the slot in the lens housing is visible in the Z-knob hole. Next, put the Z- knob end pin in the slot and turn it so that the lens is in the approximate middle of its travel.

Open the tripod legs fully and lock. *Now secure the INPUT MODULE to the tripod using the 1/4" tapped hole in the body. Loosen the upper lock knob and rotate the Input Module so that the lamphouse will be mounted over the long leg of the tripod for stability.

LAMP SET UP & FILTER WHEELS

IMPORTANT! Wear UV blocking eye protection glasses!

An arc lamp is required. Leave the existing collector lens in the lamphouse. Now turn on the lamp. Align the arc so the mirror image is not directly on the cathode. This precaution will prolong lamp life. Keep the mirror image toward the anode but do NOT make a double image. Next adjust the lamp collector lens to focus the electrodes at infinity or a surface 15-20 feet away. Mount the lamphouse to the Input Module. (We recommend turning the arc lamp on no more than 30 minutes before use and shutting it off when through in order to conserve bulb life.)

Do not defocus the lamphouse or make other adjustments to the fiber to attenuate the light.

CURVE CALIBRATOR ROD

These instructions refer, only to the black-sleeved output end of the fiber.

Always thread the fiber through the hole on the "dimpled" side of the CCR.

First, remove the ziploc bag and the lock collar from the black-sleeved output end of the fiberoptic.

Thread the fiber end through the outermost hole at one end of the CCR.

Slide the CCR along the fiber a distance of about 30" (76 cm).

Thread the fiber end through the closer hole at the opposite end of the CCR.

Pull and gently work the fiber through this hole until it forms an approximate semi-circle of 2 1/8" (5.4 cm.) radius, measured from the CCR surface.

Thread the fiber through the closer hole at the opposite end.

Adjust the loop to 2 1/8 (54 mm.) height, as in Step 4.

Thread the fiber through the last hole; adjust the loop to 2 1/8"; replace the S.S. lock collar.

The following graphic illustrates the fiberoptic properly threaded through a CCR. The CCR forces the fiber through three right angle bends when viewed along its axis.

Microscope end (Black)

Lamphouse end (Red)

USING THE LOP

PLEASE DO NOT remove the red tape or move the X and Y screws of the Input Module until instructed! The fiberoptic has been carefully precentered at the factory; setting up the Scrambler System correctly involves bringing the arc into alignment with the pre-centered fiberoptic, not vice-versa.

Put the LOP that is attached to the fiberoptic into the jack on your digital ohmmeter. Next, loosen the fiber locking screw on the Fiber holder of the Input Module. Slowly move the fiber into the Module while observing the ohmmeter for lowest ohms (maximum throughput).

Lock the fiber in place when you read the lowest Ohms setting. Now turn the white Z-axis knob of the Input Module lens to fine tune this adjustment.

Next make all adjustments that are available on the lamphouse until you get the lowest ohms reading. Find the 'center' of each adjustment. Repeat the previous adjustments on the Input Module and the lamphouse twice more to "tweak" the system. A difference of 0.1 ohm makes a significant difference! Remove the red tape carefully and if you have done the foregoing correctly you will only have to adjust the X and Y knobs very slightly to maximize throughput. Your ohms reading should now approximate the "test" reading done at the factory if you are using an HBO100 W/2 arc lamp.

When you have maximized the light throughput then slide the lock collar on the red Input fiber ferrule until it seats against the fiber holder and tighten it; if there is a need to remove the fiberoptic it will then be reseated in the same place. Remove the free end of the fiber from the LOP, and aim it at a smooth surface 6" to 8" away. You should see a virtually flat white disk of light with a very narrow shadow around the periphery.

OUTPUT MODULE

Hold the dovetail adapter/DX-5 Output Module assembly, carefully insert the fiber into the fiber holder. Position the fiber so that the projected image is in focus at approximately 11 cm from the front of the Module lens. The fiber tip will then be about 12.7 mm from the lens. Snug up the fiber holder set screw. Slide the lock collar until it seats against the fiber holder, and secure it.

MICROSCOPE SET UP FOR THE DX-5 OUTPUT MODULE

Have the stage focus already set for the objective used. Position the adapter/DX-5 assembly as close as practicable to the filter cube. Lock the adapter to the dovetail slide through the access hole on the right side. (Yellow handled Allen wrench.) An additional wrench is provided for centering the Module, and then the fiber X-Y screws.

Rotate the nosepiece to an empty hole. Place a piece of white paper at the specimen plane and, if necessary, loosen the FIBER HOLDER set screw and fine adjust the focus of the fiber so the edge of the projected circle of light is in sharp focus. Rotate the desired objective into place. Place specimen on stage. If necessary, center the DX-5 Module to the filter cube with the X & Y screws provided. Adjust the X and Y screws of the DX-5 fiber holder for final centration. Proceed with experiment.

MAXIMIZE ILLUMINATION THROUGHPUT

Careful adjustment of all variables will result in maximum effectiveness of the Scrambler. Critical coaxial alignment of the arc, its collector lens, the INPUT MODULE collector lens and the fiber tip will optimize uniformity of the illumination. To maximize illumination, throughput, use the LOP and fine-tune the X, Y and Z Scrambler INPUT MODULE adjusters and all lamp and mirror adjusting screws Mount filter wheels, electronic shutters, diaphragms and other light attenuators between the lamphouse and the INPUT MODULE. This isolates vibration, heat and EMI from the microscope and specimen area. To decrease excessive light use a neutral density filter in the path or a diaphragm (available from Technical Video, Ltd.) between the lamphouse and the Input Module.

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