
THORLABS

MDFM-QFXL

Nikon E200-E1000, TS100, TE200, and TE300 Microscopy Filter Cube

Assembly Manual



Table of Contents

<i>Part 1. Safety</i>	3
<i>Part 2. Assembly Instructions</i>	3
<i>Part 3. Regulatory</i>	9
3.1. Waste Treatment is Your Own Responsibility	9
3.2. Ecological Background	9
<i>Part 4. Thorlabs Worldwide Contacts</i>	10

Part 1. Safety

All statements regarding safety of operation and technical data in this instruction manual will only apply when the unit is assembled and operated correctly. Handle all optics with care. Gloves are recommended for optic installations. Take care when tightening optics, as overtightening optics may cause the optic to break or shatter.

Part 2. Assembly Instructions

Step 1

Carefully unpack the Nikon MDFM-QFXL Filter Cube assembly. Take note where the emitter and exciter sides of the cube are (see Figure 1).



Figure 1. MDFM-QFXL Filter Cube

Step 2

Unscrew the exciter retaining ring, noting that the mounting adapter is inside the exciter retaining ring. The mounting adapter fits into the recess in the filter cube and should be oriented with the thin side facing into the filter cube.

Remove the emitter retaining ring by twisting the ring. Note the orientation of the emitter ring as shown in Figure 2.

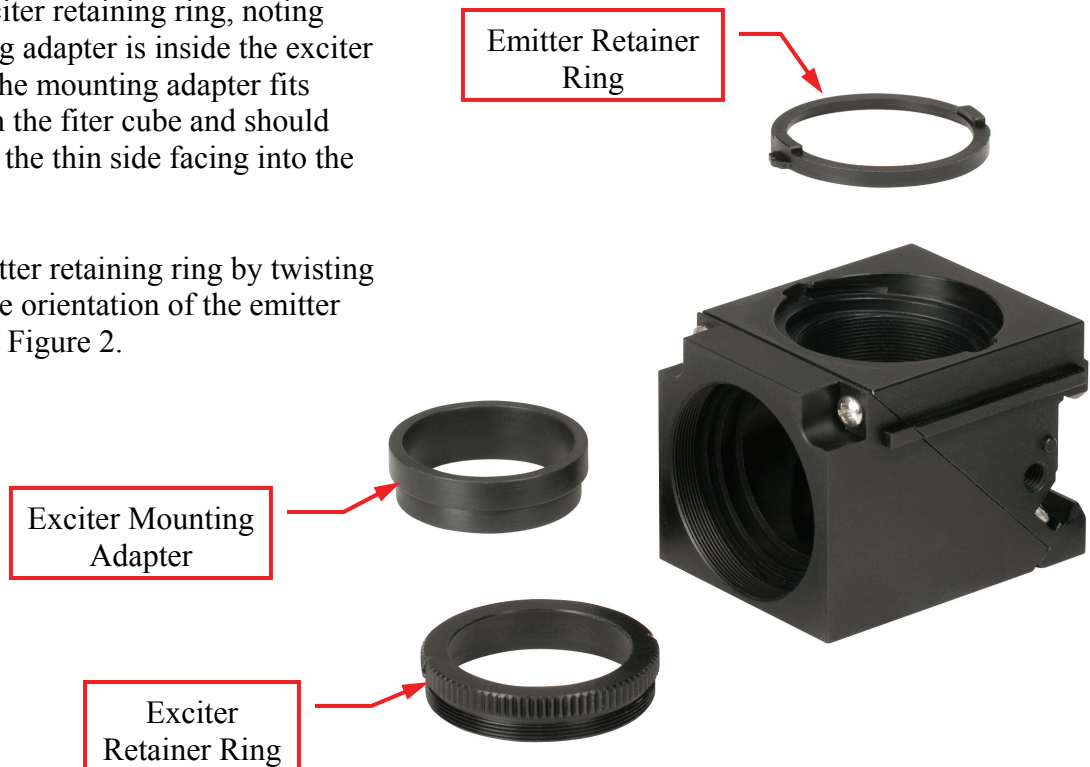


Figure 2. Exciter retaining ring and mounting sleeve

Step 3

Unscrew the four screws holding the emitter and exciter halves together. The location of the screws is shown in Figure 3. Note the screw lengths, the two screws on the exciter side are longer than the screws on the backside of the cube.

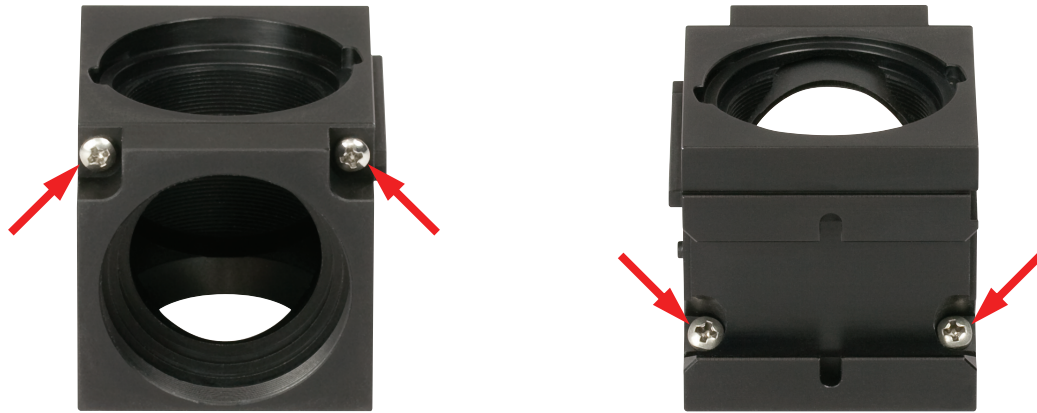


Figure 3. Disassembling the filter cube

Step 4

Separate the two halves as shown in Figure 4. The exciter half is shown on the left, and the emitter side is shown on the right. The dichroic mirror retainer spring may already be installed in the recess in the emitter half. If so, remove the spring so the dichroic mirror can be installed.



Figure 4. Separating the filter cube halves

Step 5

The MDFM-QFXL Filter Cube holds a standard set of Thorlabs MDF Series Dichroic Mirror, Emission, and Excitation Filter Set, sold separately. The MDF-CY3.5 Filter set is shown in Figure 5.

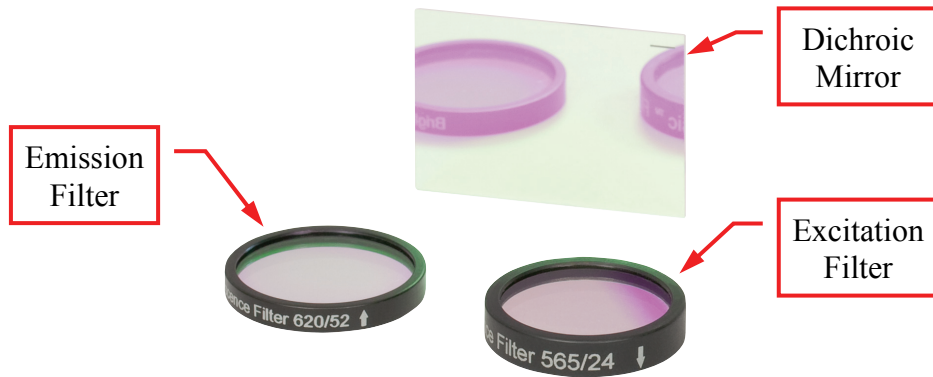


Figure 5. Dichroic mirror set

The emission and excitation filters can be easily differentiated by the thickness of the filter mount rings: emission (3.5 mm) and excitation (5.0 mm). Note that the dichroic mirror has a coated and an uncoated side (see Figure 6).

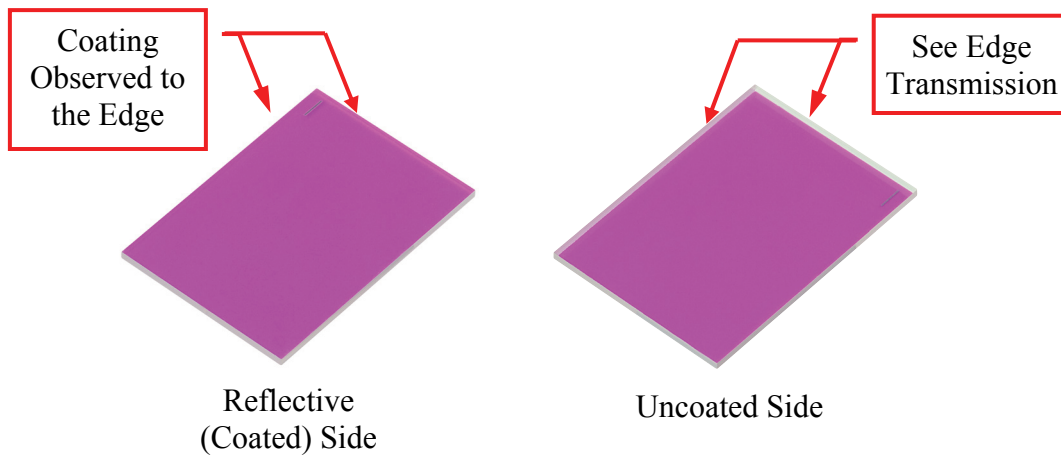


Figure 6. Dichroic mirror orientation

When held at an angle, the coated side will appear uniform in reflection all the way to the edge. The uncoated side, when held at the same angle, will not have a uniform reflection near the edge. There will be a band of transmission that appears through the uncoated substrate. It is important to determine the coated and uncoated sides of the dichroic mirror as there is only one orientation that will work with the Filter Cube.

Step 6

Place the dichroic mirror in the recess provided in the filter cube such that the reflective (coated) surface faces **UP**. Place the dichroic mirror spring clip over the mirrors.

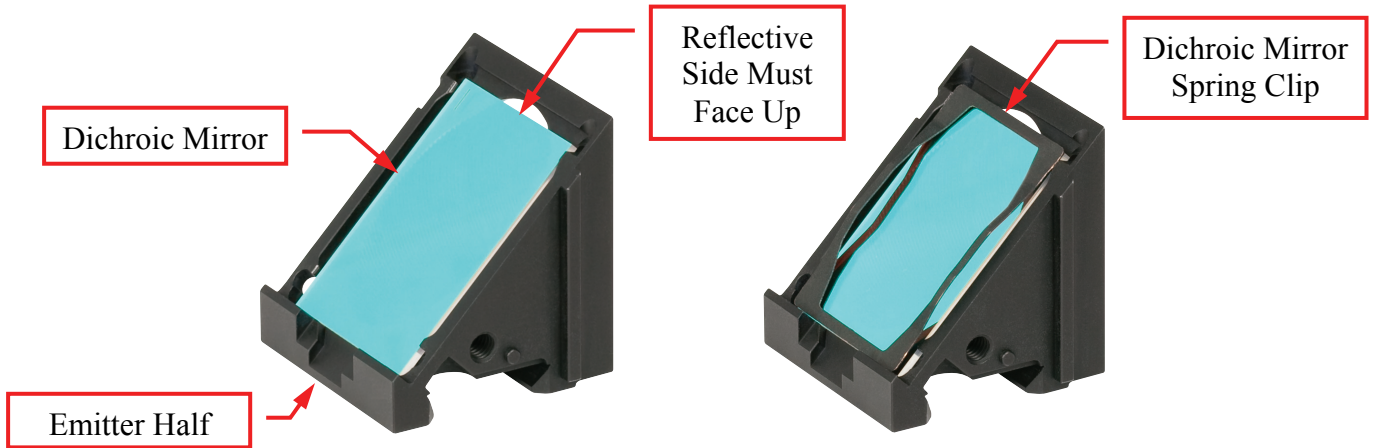


Figure 7. Dichroic mirror (Part # MD568) placed in the emitter half, reflective side up. Place the dichroic mirror spring clip over the mirror.

Step 7

Align the exciter filter half with the notch on the emitter half as shown in Figure 8. Alternate tightening between the four assembly screws taking care not to allow movement of the dichroic mirror.

Check the orientation of the dichroic mirror by looking into the exciter and emitter sides of the filter cube. The reflective (coated) side should face the exciter side of the cube.

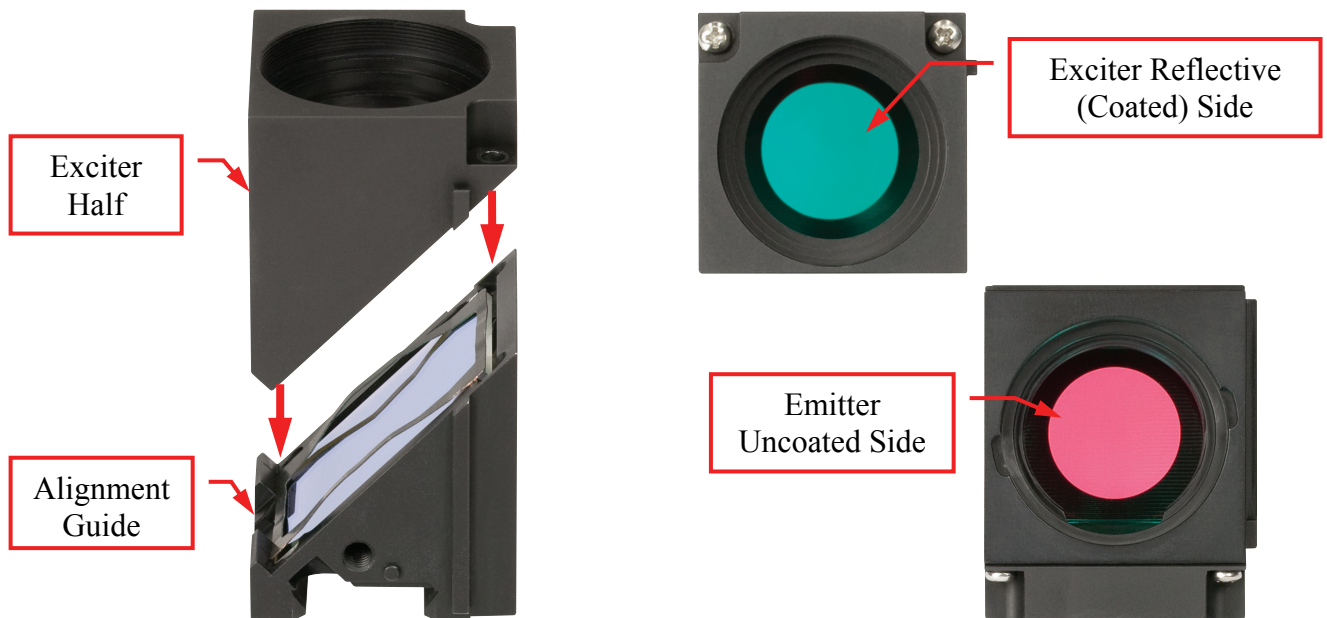


Figure 8. Reassembling the filter cube and checking dichroic mirror (Part # MD568) orientation

Step 8

Orient the filter cube so the emission side is facing up. Insert the emission filter in the filter cube with the arrow facing away from the cube as shown in Figure 9. Place the emission filter retaining ring on the filter and twist to secure. The retaining ring should rotate clockwise approximately 1/8 turn to secure the filter.

Important Note: The emission filter will not be parallel with the face of the cube as shown in Figure 9.

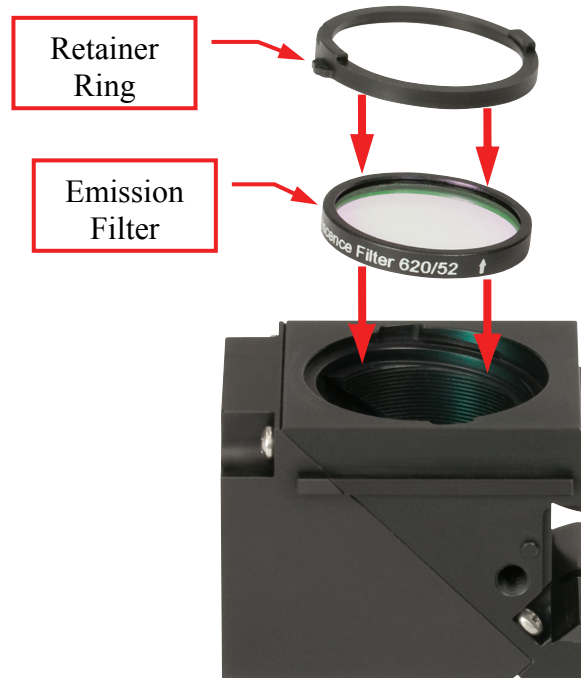


Figure 9. Installing the emission filter

Step 9

Orient the filter cube so the excitation side is facing up. Insert the exciter adapter into the filter cube with the thinner section facing into the cube. Insert the excitation filter onto the adapter with the arrow pointing towards the cube and dichroic mirror. The orientation of the adapter and excitation filter is shown in Figure 10.

Slowly thread the exciter retaining ring, onto the filter cube. The retaining ring should thread easily onto the filter cube and over the excitation filter and adapter.

Important Note: The retaining ring may not thread completely onto the filter cube. This is fine and should not affect the performance of the filter cube.

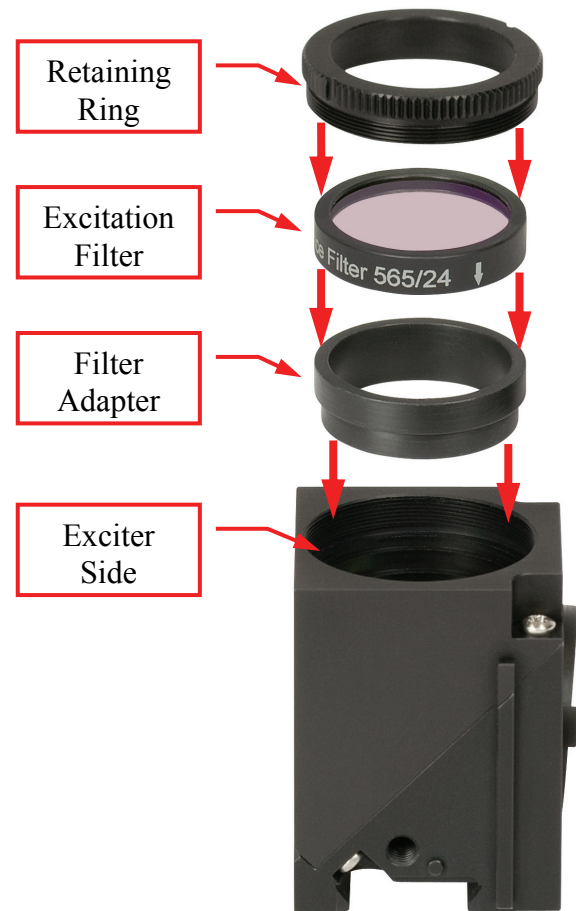


Figure 10. Excitation filter orientation and mounting

Step 10

The completed Nikon MDFM-QFXL Filter Cube is shown in Figure 11.



Figure 11. The MDFM-QFXL Filter Cube with emission filter, excitation filter, and dichroic mirror installed

Part 3. Regulatory

As required by the WEEE (Waste Electrical and Electronic Equipment Directive) of the European Community and the corresponding national laws, Thorlabs offers all end users in the EC the possibility to return “end of life” units without incurring disposal charges.

- This offer is valid for Thorlabs electrical and electronic equipment:
- Sold after August 13, 2005
- Marked correspondingly with the crossed out “wheelie bin” logo (see right)
- Sold to a company or institute within the EC
- Currently owned by a company or institute within the EC



Wheelie Bin Logo

- Still complete, not disassembled and not contaminated

As the WEEE directive applies to self-contained operational electrical and electronic products, this end of life take back service does not refer to other Thorlabs products, such as:

- Pure OEM products, that means assemblies to be built into a unit by the user (e. g. OEM laser driver cards)
- Components
- Mechanics and optics
- Left over parts of units disassembled by the user (PCB's, housings etc.).

If you wish to return a Thorlabs unit for waste recovery, please contact Thorlabs or your nearest dealer for further information.

3.1. Waste Treatment is Your Own Responsibility

If you do not return an “end of life” unit to Thorlabs, you must hand it to a company specialized in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site.

3.2. Ecological Background

It is well known that WEEE pollutes the environment by releasing toxic products during decomposition. The aim of the European RoHS directive is to reduce the content of toxic substances in electronic products in the future.

The intent of the WEEE directive is to enforce the recycling of WEEE. A controlled recycling of end of life products will thereby avoid negative impacts on the environment.

Part 4. Thorlabs Worldwide Contacts

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