MCL-100

Universal Output Conditioner

User Manual

Ver. 1.1

January, 2016

Spectral Products
2659 Pan American Fwy, Suite A, NE Albuquerque, NM 87107 Ph. (505) 343-9700 Fax (505) 343-9705

Warranty and Liability

This SP's product is warranted against defects in material and workmanship for a period of one year from the date of shipment. During the warranty period, Spectral Products will, without charge, repair or replace, at its discretion, the defective product or component parts.

For warranty service or repair, this product must be returned to a service facility designated by Spectral Products (SP). For products returned under warranty, the Buyer shall prepay shipping charges (including shipping charges, duties, and taxes for products returned to SP from another country), and SP will pay for shipping charges to return the product to the Buyer.

This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations, modifications or repairs, if the serial number is altered, defaced or removed, the improper or inadequate maintenance by the Buyer, Buyer-supplied software or interfacing, or improper site preparation or maintenance. No other warranty is expressed or implied. SP shall not be liable for any consequential damages, including without limitation, damages resulting from loss of use, as permitted by law.

1.1. Product Overview

The MCL-100 is an output module designed to work with both CM and DK model monochromators. The adjustable position of the internal lens allows the user to condense or collimate for UV to NIR wavelengths.

1.2. Product Specifications

- **Wavelength Range:** 180-2500nm
- **Size:** 19mm x 64mm
- **Lens:** Uncoated Fused Silica, f#= 1.5

2. Installation and Operation

Remove the spring steel light shield from the unit. Notice that the body of the conditioner has a divot on one end.

2.1. Focusing

When using the unit for focusing it is best to place the divot AWAY from the monochromator. Attach unit to the CM or DK monochromator output flange using the small set screws on the perimeter.

The internal lens may be moved by loosening the hex head screw in the side slot and moving the screw along the slot (use the hex wrench to do this) and re-tightening at the desired position. When finished, snap the light shield over the body of the unit.

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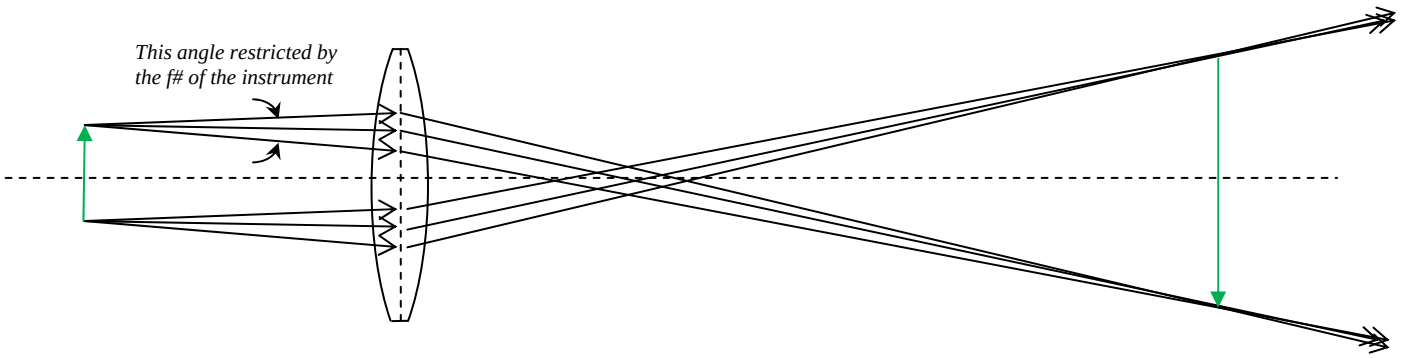
	Range of Focus (from end of Conditioner)		
	λ=200nm	λ=500nm	λ=2500nm
DK xxx	45mm - 265mm*	65mm - ∞	75mm - ∞
CM xxx	50mm - ∞	80mm - ∞	105mm - ∞

*Range of DK focus may be extended by installing the Conditioner in collimating orientation but without the aperture.

Because the monochromator restricts the angles of the emitted rays from the exit slit, this convex lens placed in front of the exit to re-image the slit has a narrowed waist on the way to the focal plane. The waist occurs at the effective focal length for the lens for the given wavelength, offering an extended range for working closer than the focal plane.



2.2. Collimating

The MCL-100 comes with two optional apertures for cleaner collimation. The smaller of the two is designed to limit optical shifts in filters to 1%.

Max Divergence Half Angle

λ	Aperture Diameter	
	1.6mm	3.0 mm
200nm	1.8°	3.4°
500nm	1.6°	2.9°
2500nm	1.4°	2.7°

Beam Size at Exit

λ	Aperture Diameter	
	1.6mm	3.0 mm
200nm	10.0	13.1
500nm	10.7	13.3
2500nm	11.0	13.5

To set the unit for collimation, remove the output flange from the CM or DK monochromator using the screws on the face of the flange. Install either the 1.6mm diameter or 3.0mm diameter aperture over the flange and re-mount the flange plus aperture using the same flange screws. When using the unit for collimating place the divot TOWARD the monochromator. Using a 1/16" hex wrench, attach the unit to the CM or DK monochromator output flange using the #6-32 set screws on the perimeter.

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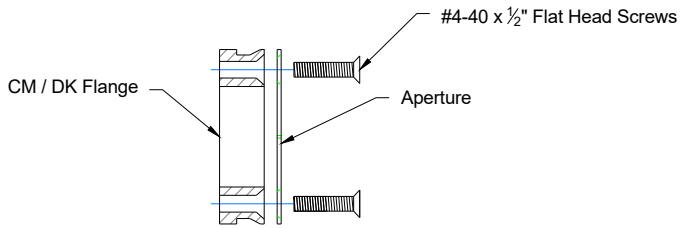

Figure 1: Attaching the aperture to the monochromator.

The internal lens may be moved by loosening the #4-40 flat head screw in the side slot and moving the screw along the slot (use the 1/16" hex wrench to do this) and re-tightening. Caution: This screw is very short. Do not fully remove it. Loosen just enough to facilitate movement. Measuring from the end of the unit closest to the monochromator, set the adjuster screw to the following positions for collimation:

Collimation Settings

λ	Distance
200nm	26 mm
500nm	31 mm
2500nm	34 mm

When finished, tighten the screw and snap the light shield over the body of the unit.

2.2. Input Option

The Conditioner may also be used to assist in focusing input, although the input angles will be somewhat higher than optimum at 15 to 20°, whereas the monochromators would prefer 7.4° (or 3.7° in the case of DK480). Install the unit as for focusing but on the input flange of the monochromator. Adjust lens position for maximum throughput.

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