

# **MCL100**

## **Universal Output Conditioner**

### **User Manual**

Ver. 1.2



Spectral Products

## Installation and Operation

### Warranty and Liability

This 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, the improper or inadequate maintenance by the Buyer, 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 MCL100 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:** 46.3mm x 63.5mm
- **Lens:** Uncoated Fused Silica, f#= 1.5

## 2. Installation and Operation

Snap the light shield off the MCL100 and orient the slot to face up (or another direction that provides easy access to the sliding screw with a hex-head wrench).

Notice that the body of the MCL100 has a divot on one end, on the same side as the slot.

**For focusing:** Orient the MCL100 so that the end with the divot is away from the monochromator.

**For collimating:** Remove the screws on the face of the monochromator output flange of the CM or DK monochromator. 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. Orient the MCL100 so that the end with the divot is toward the monochromator.

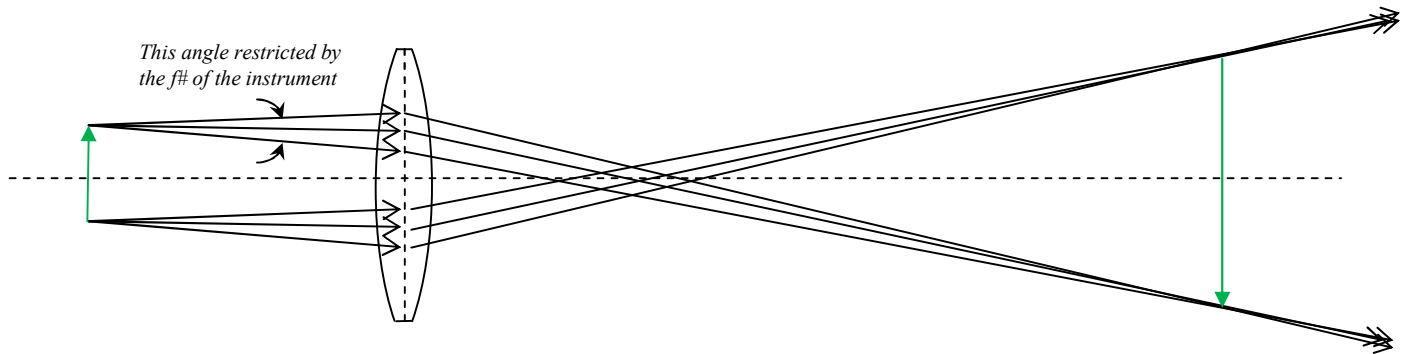
Loosen the small set screws around the perimeter of the end of the MCL100 enough to slide the end over the monochromator's exit flange. Tighten the set screws, taking care to keep the conditioner straight and flush to the monochromator.

The internal lens may be moved by loosening the hex head screw in the 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 MCL100. Make sure the light shield is positioned between the end mounting set screws so that it may sit all the way down.

## 2.1. Focusing

	Range of Focus (from end of Conditioner)		
	$\lambda=200\text{nm}$	$\lambda=500\text{nm}$	$\lambda=2500\text{nm}$
DK	25mm - $\infty$	40mm - $\infty$	48mm - $\infty$
CM	40mm - $\infty$	80mm - $\infty$	105mm - $\infty$

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 planes stated above.



## 2.2. Collimating with Aperture

The MCL100 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**

$\lambda$	Aperture Diameter	
	1.6mm	3.0 mm
200nm	1.8°	3.4°
500nm	1.6°	2.9°
2500nm	1.4°	2.7°

**Beam Diameter at Exit (mm)**

$\lambda$	Aperture Diameter	
	1.6mm	3.0 mm
200nm	10.0	13.1
500nm	10.7	13.3
2500nm	11.0	13.5

Measuring from the end of the MCL100 closest to the monochromator, set the lens adjuster screw to the following positions for collimation:

**Collimation Settings**

$\lambda$	Distance
200nm	26 mm
500nm	31 mm
2500nm	34 mm



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## 2.2. *Input Option*

# Installation and Operation

The MCL100 may also be used to assist in focusing input by mounting on the input flange of the CM or DK monochromator. The input angles ( $15^\circ$  to  $20^\circ$ ) will be somewhat higher than optimum as the monochromators would prefer  $7.4^\circ$  (or  $3.7^\circ$  in the case of DK480). These unusable, high-angle rays will be almost entirely scrapped by the internal baffling in the monochromators.

Install the unit as for focusing but on the input flange of the monochromator. Adjust lens position for maximum throughput.