



# In-Line Fiber Optic Filter Holder

56200 (SMA) & 56300 (ST)

www.wpiinc.com

## INSTRUCTION MANUAL

Serial No. \_\_\_\_\_

071201



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**World Precision Instruments**



# Warranty

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of one year\* from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

# Claims and Returns

- Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within 10 days after receipt of shipment. Claims for lost shipments must be made within 30 days of invoice or other notification of shipment. Please save damaged or pilfered cartons until claim settles. In some instances, photographic documentation may be required. Some items are time sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container.
- WPI cannot be held responsible for items damaged in shipment en route to us. Please enclose merchandise in its original shipping container to avoid damage from handling. We recommend that you insure merchandise when shipping. The customer is responsible for paying shipping expenses including adequate insurance on all items returned.
- Do not return any goods to WPI without obtaining prior approval and instructions (RMA#) from our returns department. Goods returned unauthorized or by collect freight may be refused. The RMA# must be clearly displayed on the outside of the box, or the package will not be accepted. Please contact the RMA department for a request form.
- Goods returned for repair must be reasonably clean and free of hazardous materials.
- A handling fee is charged for goods returned for exchange or credit. This fee may add up to 25% of the sale price depending on the condition of the item. Goods ordered in error are also subject to the handling fee.
- Equipment which was built as a special order cannot be returned.
- Always refer to the RMA# when contacting WPI to obtain a status of your returned item.
- For any other issues regarding a claim or return, please contact the RMA department.

**Warning: This equipment is not designed or intended for use on humans.**

\* Electrodes, batteries and other consumable parts are warranted for 30 days only from the date on which the customer receives these items.

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**Replacement Parts**

<b>WPI Part No.</b>	<b>Description</b>
<b>300051</b>	Fiber Optic Collimator for connecting to an SMA terminated optical fiber
<b>300052</b>	Fiber Optic Collimator for connecting to an ST terminated optical fiber

**Accessories**

<b>WPI Part No.</b>	<b>Description</b>
<b>FO-50-SMA</b>	Fiber Optic cable, SMA, 50mM Core, UV-Enhanced
<b>FO-100-SMA</b>	Fiber Optic cable, SMA, 100mM Core, UV-Enhanced
<b>FO-200-SMA</b>	Fiber Optic cable, SMA, 200mM Core, UV-Enhanced
<b>FO-400-SMA</b>	Fiber Optic cable, SMA, 400mM Core, UV-Enhanced
<b>FO-400SMA/ST</b>	Fiber Optic cable, SMA/ST adapter, 400mM Core, UV-Enhanced
<b>FO-600-SMA</b>	Fiber Optic cable, SMA, 600mM Core, UV-Enhanced
<b>FO-1000-SMA</b>	Fiber Optic cable, SMA, 1000mM Core, UV-Enhanced

optic cable is used, the collimator may require adjustments to optimize its performance.

**Collimator Adjustment**

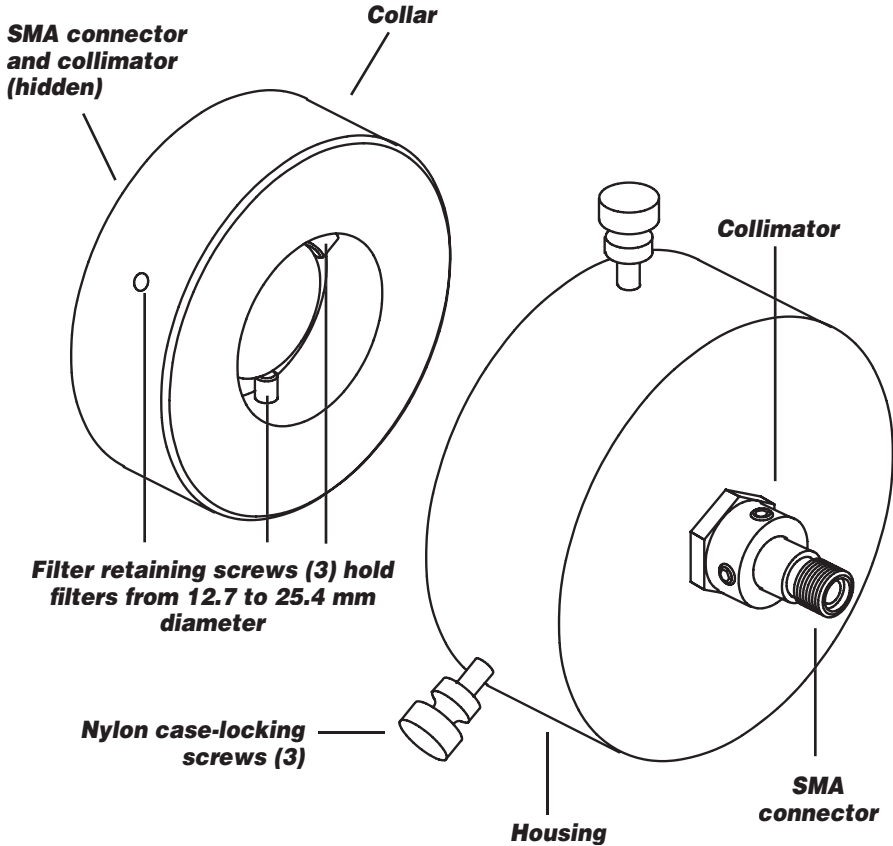
The setscrews on the collimator body are used to adjust the collimated output beam. Using any light source and a fiber optic cable, shine the light from the collimator onto a flat white surface (at more than 1m from the collimator) and watch the beam. If the light beam appears collimated (a high contrast beam) then it may not require any adjustment. If the beam appears diffused, then some focusing adjustments may be required. With the supplied wrench, loosen the set screws on the collimator. Hold the collimator body and slide the cable slowly in and out to obtain the best collimated beam. Then, tighten the setscrews. Collimation adjustments can also be made for other distances, if required, by following the same procedure described above.

Take care not to introduce contamination on the lens surface.

NOTE: The collimating optics in the filter holder are designed for multimode applications with large core fiber optic cables. Use of the in-line filter with fibers of less than 200  $\mu\text{m}$  in diameter may result in a significantly reduced transmission of light.

**Specifications**

- Lens diameter.....5 mm
- Lens focal distance ..... 10 mm
- Lens material.....Ultraviolet grade synthetic fused silica (KU-1)
- Wavelength range ..... 170 nm-2  $\mu\text{m}$
- Mounting threads .....3/8-24 UNF
- Divergence.....< 0.1 rad for 1 mm core fiber
- Fiber connector interface .....SMA (#300051) or ST (#300052)



WPI's In-Line Fiber Optic Filter Holder allows insertion of optical filters within a fiber optic pathway. The connectors of the filter holder assembly are compatible with WPI's range of fiber optic jumper cables and can be coupled using SMA (WPI #56200) and ST (WPI #56300) connectors.

Filters with outer diameters from 12.7 to 25.4 mm and thickness from 2 to 10 mm can be accommodated. The design limits lateral and axial movement of the filter when secured in the holder.

Two pre-aligned fiber optic collimators are mounted in the holder so as to pass collimated light through the filter and then refocus the filtered light into the aperture of the output fiber. Spectral range will be largely limited by the bandpass of the optical fibers (from UV to near IR using WPI UV-enhanced cables; see “Accessories”).

**Unpacking**

Upon receipt of this product, make a thorough inspection of the contents and check for possible damage. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. Please read the section entitled “Claims and Returns” on the Warranty page of this manual.

Returns: Do not return any goods to WPI without obtaining prior approval (RMA number is required) and instructions from our Returns Department. Goods returned (unauthorized) by collect freight may be refused. If a return shipment is necessary, use the original container. If the original container is not available, use a suitable substitute that is rigid and of adequate size. Wrap the instrument in paper or plastic surrounded with at least 100 mm (four inches) of shock absorbing material. Please read the section entitled “Claims and Returns” on the Warranty page of this manual.

**Parts List**

The package should contain:

<b>Part No.</b>	<b>Description</b>
<b>56200</b> (SMA) or <b>56300</b> (ST)	In-Line Fiber Optic Filter Holder
	Allen Wrench
	Instruction Sheet

**Mounting the filter**

1. Disassemble the Holder by loosening the thumbscrews until the unit comes apart.
2. Place the filter in the center of the collar (use mounted filter, if possible).

3. Using the Allen wrench provided, gently secure the filter by tightening the filter retaining setscrews. Do not over-tighten.
4. Place the collar back into the filter housing. The collar is held in position by the three thumb screws. Tighten these thumb screws by hand. Do not use pliers or other tools.
5. Attach the fibers to the SMA or ST connectors of the collimators.

**Fiber Optic Collimators**

The two collimators are prealigned and can be used separately as stand-alone units for different applications, such as collimating light coming from a fiber or focusing collimated light into a fiber. For this purpose they need be simply unscrewed from the body of the In-Line Fiber Optic Filter Holder.

WPI's Fiber Optic Collimator can be used for both collimating a light beam emitted by an optical fiber or coupling light from a collimated light beam into an optical fiber. The numerical aperture of the collimator is optimized for maximum coupling efficiency into typical fused silica fibers. The collimator can, for example, be used to guide a parallel light beam through a sample cuvette or an optical filter with very little optical losses. In this application, one collimator collimates the light into a parallel beam 5 mm in diameter, enabling it to pass a long distance without a significant change in beam diameter. After the light passes the sample media, a second collimator can be used to collect the beam into the receiving fiber. A unique design feature of this collimator is that the distance between the lens and the optical fiber can be easily adjusted. This permits it to be used as a focusing device or for fine-tuning the color balance when coupling light from a light source into a fiber.

**Optical fibers**

Fiber Optic Collimator 300051 connects to SMA-terminated optical fiber. Fiber Optic Collimator 300052 connects to ST-terminated optical fiber.

NOTE: The collimator is factory-set to collimate light from a 200-micron diameter quartz fiber optic cable. No adjustment is required for this diameter cable. Other quartz and plastic fiber optic cables with various core sizes are available from WPI. If a fiber optic cable other than the 200 µm quartz fiber