



OZ OPTICS LTD.

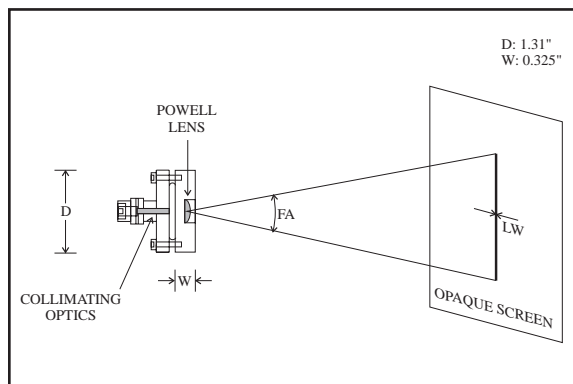
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FIBER OPTIC DELIVERY SYSTEM FOR FLOW VISUALIZATION



Flow visualization systems are useful tools for process automation and quality control in liquid and gas production and transport. A visible wavelength laser beam is coupled into an optical fiber, recollimated at the fiber output, and then sent through a lens, generating a line. The line of laser light is then shone through the flowing liquid under inspection. As the light passes through the moving fluid, it refracts and scatters. Any particulate matter present, or changes to the flow pattern within the fluid, causes fluctuations in the output beam pattern which are visually observed.

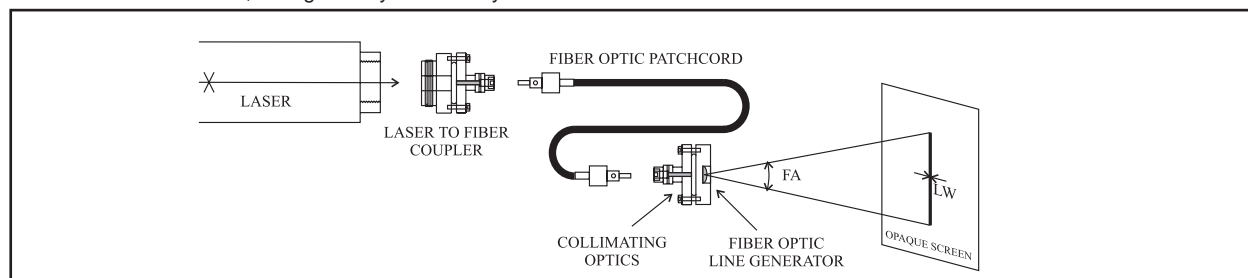
OZ Optics offers complete delivery systems for flow visualization, consisting of a laser to fiber coupler, fiber optic patchcord, fiber optic collimator, and fiber optic line generator. The line generator uses a Powell lens. **This lens offers the unique ability to take a collimated beam, and transform it into a line with a uniform output intensity along its entire length. This is a major improvement over standard line generators, that use simple cylindrical lens.** With cylindrical lenses, the output intensity is highest at the centre of the beam, then gradually fades away to either



side. With the Powell lens you get a sharply defined line from end to end.

Fiber optic delivery systems are available for 488nm, 514nm, and 633nm wavelengths. Other wavelengths are available on request. The maximum power transmission possible depends upon the fiber size chosen - 4/125 fiber can handle 1 to 3 Watts, 10/125 fiber can handle 3 to 5 Watts, 25/125 fiber can handle 5 to 10 Watts, and 50/125 fiber can handle 10 to 20 Watts. For best repeatability and stability, FC connectors are recommended for the fiber couplers and collimators. Pigtail style couplers and collimators are also recommended.

By choosing different focal lengths for the collimating and Powell lenses, different line widths and fan angles are possible. Standard line widths for singlemode fibers are 0.8mm and 1.2mm. Standard fan angles are 10, 30 and 45 degrees. Contact OZ Optics for further information on available line widths and fan angles.



ORDERING INFORMATION:

Part Number	Description
HPUC-2X-W-F-f-LH	Laser to fiber coupler with a connector receptacle.
FMJ-XY-W-a/b-JD-L	Singlemode or multimode fiber optic patchcord.
FOLM-2X-W-F-f-FA	Fiber optic line generator.
START-0X-V-WR	Alignment kit for singlemode laser to fiber couplers with receptacles (V refers to the video format. Specify NTSC for North American format, PAL for European PAL format).

Where: **X,Y** are the connector receptacle types for connector style couplers and collimators. For fiber optic patchcords they refer to the male connectors on the fiber ends (3 for NTT-FC, 5 for SMA 905 connectors, etc. See table 1 below.),
W is the operating wavelength in nm,
a,b are the fiber core and cladding sizes, respectively, in microns. Available sizes include 4/125, 10/125, 25/125, 50/125, and 100/140,
F is the type of fiber being used (S for singlemode, M for multimode, P for polarization maintaining fibers, QS for fused silica core singlemode, QM for fused silica multimode, QP for fused silica polarization maintaining fibers. 10/125 fiber is considered to be singlemode fiber. It is constructed with a fused silica core.),
f is the lens focal length, in mm, and type of lens being used. The following achromatic lenses are available: 3.5AC, 6AC, and 10AC,
JD is the fiber jacket type (1 for uncabled fiber, 3 for 3mm OD loose tube kevlar, 3A for 3mm OD armored cable, and 5A for 5mm armored cable.),
L is the fiber length in meters,
LH is the laser head adapter number for the laser to fiber couplers (See table 2 below.),
FA is the fan angle of the laser line from the line marker. Fan angles of 10°, 30°, or 45° are available .
WR is wavelength range, IRVIS for 400-1600nm, UVVIS for 180-700nm.

When ordering the delivery system please specify the source laser beam characteristics (beam diameter, divergence angle, laser power, wavelength, and laser head adapter). OZ Optics provides a questionnaire to help you choose the best system for your application. Please complete it and fax it back before ordering.

CONNECTOR TYPE	CONNECTOR RECEPTACLE NUMBER (X)
2mm OD Ferrule	1
1.8mm OD Ferrule	1.8
AT&T Biconic	2
Universal Receptacle for connectors with 2.5mm OD ferrules	2.5U
Standard NTT-FC/PC	3
Super NTT-FC/PC	3S
Ultra NTT-FC/PC	3U
Angled NTT-FC/PC	3A
Angled NTT-FC/AFC	3AF
NEC-D4	4
SMA905	5
SMA906	6
Diamond 3.5mm OD	7
AT&T-ST®	8
Super AT&T-ST®	8S
Ultra AT&T-ST®	8U
Diamond HMS-10/HP 2.5mm OD	9
DIN Standard 2.5mm OD	0
SC	SC
Angled SC	SCA
Ultra SC	SCU
No Connector	X

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LASER HEAD ADAPTER	ADAPTER NUMBER (LH)	BAR CODE #
1"-32 TPI Male Threaded Adapter	1	817
1.75" Disk Adapter with 4 holes on corners of 1" square	2	830
3/4" - 32TPI Male Threaded Adapter	3	825
5/8" - 32TPI Male Threaded Adapter	4	826
1/2"-20 TPI Male Threaded Adapter for Amoco lasers	5	824
5/8"-24 TPI Male Threaded Adapter	6	919
1.75" O.D. Female Adapter for cylindrical lasers without any mounting holes	7	834
1.50" O.D. Female Adapter for cylindrical lasers without any mounting holes	8	938
1.38" O.D. Female Adapter for cylindrical lasers without any mounting holes	9	929
1.25" O.D. Female Adapter for cylindrical lasers without any mounting holes	10	841
Post Mount with 1/4"-20 TPI hole	11	835
25mm O.D. Male Adapter for Spindler and Hoyer Optical Bench	12	851
Polytec Laser Head Adapter	13	931
Disk Adapter with 4 holes on 0.625" square for Lightwave Electronic lasers	14	800
1.75" O.D. Disk Adapter with 4 holes on 1" square and 1"-32 TPI female thread in the middle	15	836
1/2"-40 TPI UNF-2A Male Threaded Adapter	16	802
Disk Adapter with 4 holes on 27mm bolt circle Siemens Lasers	17	850
5/8"-24 TPI Female Laser Head Adapter for ILT lasers	18	765
Disk Adapter with 3 holes on a 2.25" diameter bolt circle for Omnichrome lasers	19	928
1.75" Disk Adapter with 4 holes on a 35mm diameter bolt circle	20	837