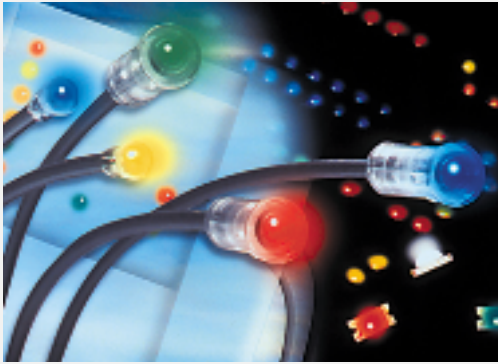- Highly Transmissive Optical Grade Materials
- Secure Press-Fit Panel Mounting
- Wide, Ultra-Bright Color Selections
- Through-Hole and Surface Mount Versions
- Wide Selection of Lens Shapes and Sizes
- **Custom Lenses Available** *(Subject to Quotation and Minimum Orders)*

FLP Series

Award winning Flexible Light Pipes were introduced in 1999 to eliminate daughter cards and hard-wired front panel LEDs and to provide designers unmatched flexibility in indicator placement and design. BivarOpto's patented flexible light pipe technology allows for LEDs to be placed anywhere on a PCB or within an enclosure. Installation is by means of a simple press-fit application. Retention is vibration and shock resistant. Non-conducting 94V-0 Polycarbonate lenses protect static sensitive components from accidental ESD damage by eliminating potential contact with circuitry. For more information on Bivar's Flexible Light Pipe technology visit us on line at www.bivar.com.

Flexible Light Pipes for Through-Hole and Surface Mount LEDs

Mounting Information:
Front Panel: 0.040" (1mm) - 0.125" (3.2mm)
SMFLP Adapter Hole Size: 0.094" (2.4mm) diameter
+ 0.002" (0.05mm), - 0.000" (0.0mm) on 0.296" (7.5mm) centers ±0.002"

Material Specifications Plastic Optical Fiber:
Fiber Core: PMMA 94-HB
Fiber Cladding: Fluorinated Polymer TFE
Fiber Jacket: 94V-0 PVC Alloy

Material Specifications Housings & Adapters:
SMFLP: UL 94V-0 rated, Black 6 Nylon
Oxygen Index: +28%
FLP: UL 94V-0 rated, Black 6 Nylon
Oxygen Index: +28%

Application Notes:
Available in lengths from 2.5" (63.5mm) to 328.0' (100m) After initial captured light loss of approximately 4% for the fiber and 4% for the Fresnel detail there is no significant degradation over practical lengths.

Minimum bend radius of fiber is 10x the diameter or 0.800"(20.3mm). 0603, 0805 and 1206 size SMFLP LEDs are recommended for use with the SMFLP adapter with minimum brightness levels of 20 mcd.
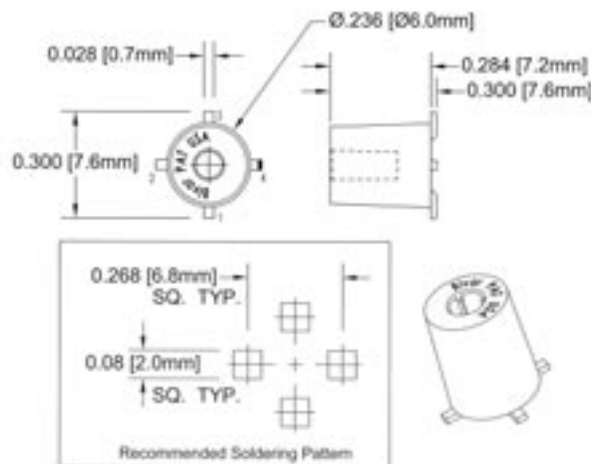
- Eliminates need for Thru-Hole Drilling of PCBs
- Exclusively Designed for Flexible Light Pipe Lens Cap Assemblies *(see page 17-18)*
- Brilliant LED Display Capable of Being Extended from 2.5" (63.5mm) to 328' (100m) Via the FLP Mono-Fiber
- Available in All Standard Colors Including RGB and Red/Green Bi-Color
- Patents issued and Patents Pending

SMPT Series

The all-new (patented and patents pending) SMPT Series of Surface Mount LED devices exclusively designed to accept the company's patented Flexible Light Pipes (FLP Series), create a new design and installation style that eliminates the need for through-hole PCBs typically required for installation of light pipes.

The SMPT Series significantly expands the benefits of using Bivar's original award-winning FLP series, which introduced a two-piece flexible light pipe system capable of transmitting the light from an LED to a display panel up to 100m [328'] away. While the original FLP series provided an adapter for use with surface mount (SMD) LEDs, the adapter still required through-holes in the PCB for mounting purposes. The SMPT Series eliminates not only the need for PCB through-holes, but also the costly secondary post-reflow operations by integrating the adapter and LED into a single surface-mountable package that is compatible with all modern, automated pick-and-place equipment.

LED Part No.	Chip			Lens Appearance	Absolute Max. Ratings				Electro-Optical Data @20mA			Viewing Angle 2 θ 1/2 (deg)
	Material	Peak Wave Length λp(nm)	Emitted Color		Δλ (nm)	Pd (mW)	If (mA)	Peak If (mA)	Vf (V) TYP	Vf (V) MAX	Iv (mcd) TYP	
SMPT-UBWC	GaInN	470	BLUE	OPTICAL	68	150	30	150	3.4	4.0	288	DIRECT
SMPT-UGC	InGaN	525	GREEN	OPTICAL	40	150	30	150	3.2	3.8	460	DIRECT
SMPT-UYC	AlGaInP	595	YELLOW	OPTICAL	32	100	30	150	2.0	2.5	456	DIRECT
SMPT-URC	AlGaInP	640	HE RED	OPTICAL	23	80	30	150	1.9	2.4	416	DIRECT
SMPT-UWC	GaInN	-	WHITE	OPTICAL	68	150	30	150	3.4	4.0	250	DIRECT
SMPT-SBC	GaInN	640	HE RED	OPTICAL	23	80	30	150	1.9	2.4	416	DIRECT
	GaInN	525	GREEN		40	150	30	150	3.2	3.8	460	
SMPT-RGB	AlGaInP	640	HE RED	OPTICAL	23	80	30	150	1.9	2.4	416	DIRECT
	GaInN	470	BLUE		68	150	30	150	3.4	4.0	288	
	InGaN	525	GREEN		40	150	30	150	3.2	3.8	460	

Ø0.236 [Ø6.0mm]
0.028 [0.7mm]
0.284 [7.2mm]
0.300 [7.6mm]
0.300 [7.6mm]
0.268 [6.8mm] SQ. TYP.
0.08 [2.0mm] SQ. TYP.
Recommended Soldering Pattern

Ordering Information

FLP	5	R	6.0	-	SR
Series	Lens	Orientation	Length	-	Color

Color Options and Suffixes:

Suffix	Color	Peak (nm)	Typ.Vf	Iv (mcd) Typ.
SR	Super Red	660	1.7	250
SG	Super Green	568	2.2	120
SY	Super Yellow	585	2.1	65
H	High Efficiency Red	635	2.0	100
SA	Super Amber	610	2.2	350
UBW.6K	Ultra Blue	470	3.5	600
UT	Ultra Turquoise	502	3.5	900
UG	Ultra Green	563	2.2	800
UR	Ultra Red	660	1.7	400
UY	Ultra Yellow	588	2.0	600

Flexible Light Pipe Length Tolerances:

2.5" through 12"=　±.250"
13" through 24"=　±.500"
Tighter tolerances available at extra charge.

Series Choices:
FLP (Through-hole)
SMFLP *(Surface Mount Adapter)*

Lens Choices:
"Blank"　3mm clear lens
5　　　　7mm clear lens
0　　　　Oval clear lens
R1　　　Rectangular 2x7 clear lens
IP　　　Black Anodized Watertight Lens
IPS　　Stainless Steel Watertight Lens

Orientation:
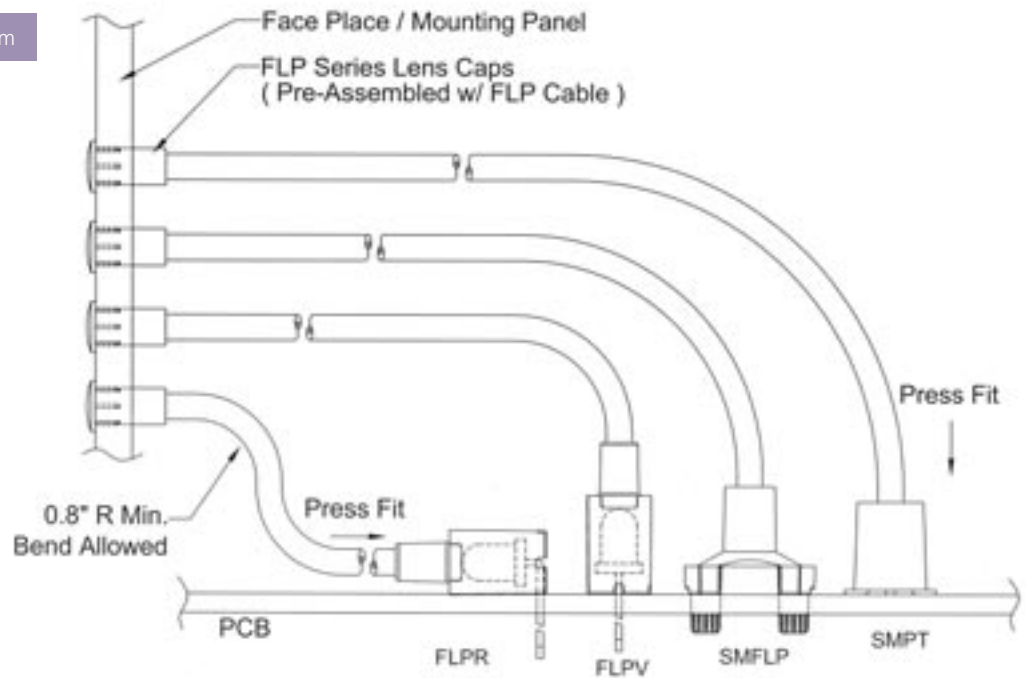*(Through-hole only. For SMFLP Series, Leave Blank)*
R　　　Right Angle
V　　　Vertical

Length:
Expressed in inches from 2.5" to 3940.0"
± 0.250"(6.35) per 1.0'(304.8)

Functional Diagram

Face Place / Mounting Panel
FLP Series Lens Caps (Pre-Assembled w/ FLP Cable)
Press Fit
0.8" R Min. Bend Allowed
Press Fit
PCB
FLPR
FLPV
SMFLP
SMPT
Press Fit

FLPR-XX Series

Right Angle Flexible Light Pipe Assembly.

Part No.	Description
FLPR-XX	Adapter with LED with Right Angle Leads. Specify LED Color.

Note:

New and Improved. To Order Complete Assembly by One Part Number–See Page 20
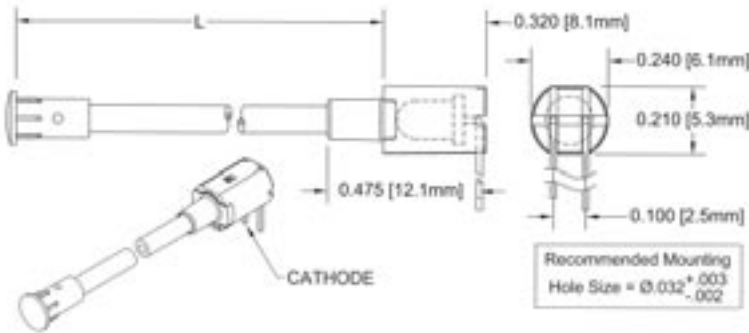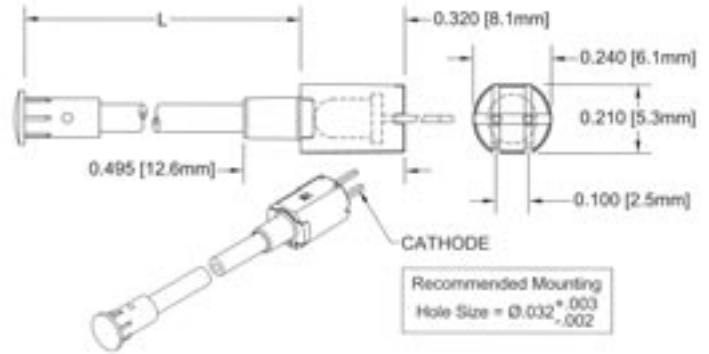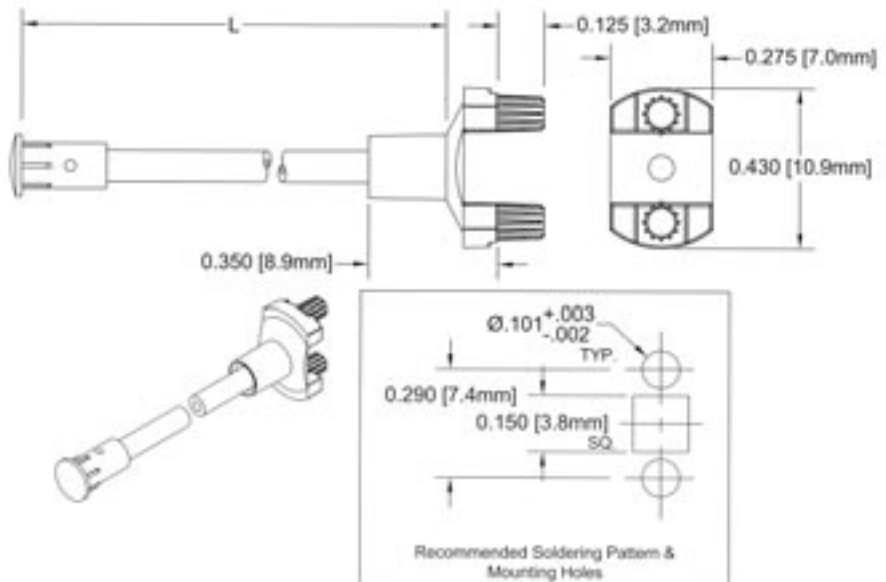
FLPV-XX Series

Vertical Flexible Light Pipe Assembly

Part No.	Description
FLPV-XX	Adapter with LED with Vertical Leads. Specify LED Color.

Note:

New and Improved. To Order Complete Assembly by One Part Number–See Page 20

SMFLP Series

Flexible Light Pipe SMD LED Adapter

Part No.	Description
SMFLP	Surface Mount Adapter Only

Note:

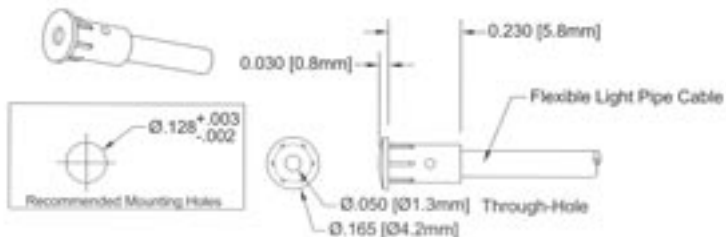*Surface Mount LED Sold Separately. See SM0603, SM0805, SM1206 Series.*

• Micro-Frensel Lens Design Allows Uninterrupted IR Beam Transmission

FLP-IR Series

Infrared Round Lens Cap Assembly

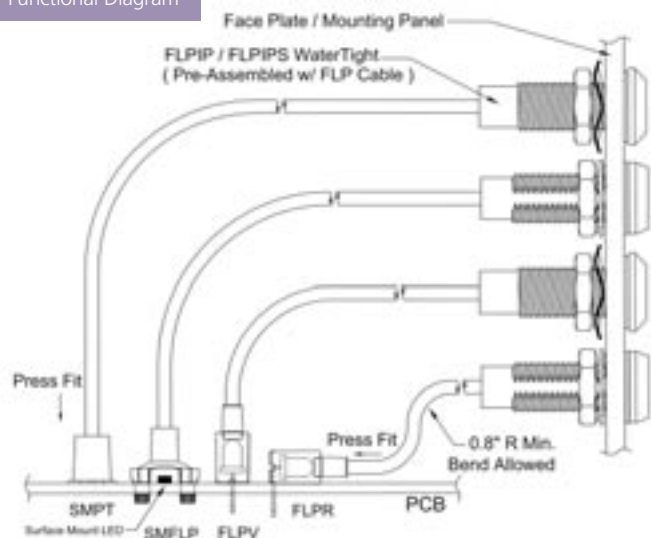| Part No.	Description
FLPIR-XX.X	Infrared Round Lens Cap Assembly
FLP-LC-IR	Lens Cap Only

XX.X = Length in inches to the nearest 1/2"

• Certified IP67 Watertight and Splash Proof Design
• Micro-Frensel Lens Focusing and Near 160˚ Viewing Angle Patented Technology
• Transports Original LED Intensity up to 328 Feet (100m)
• Black Anodized or Stainless Steel Finish
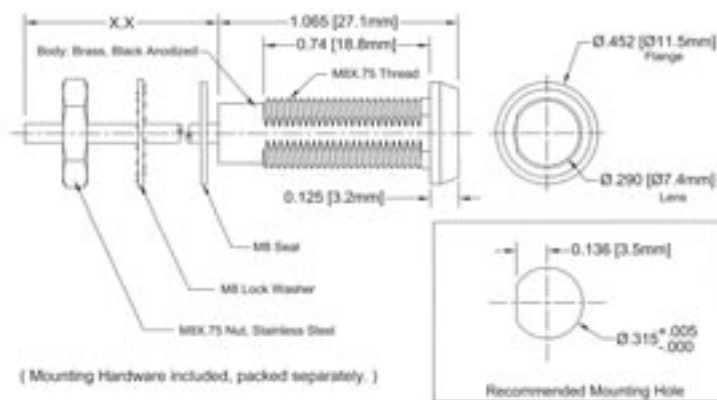
IP 67 Series
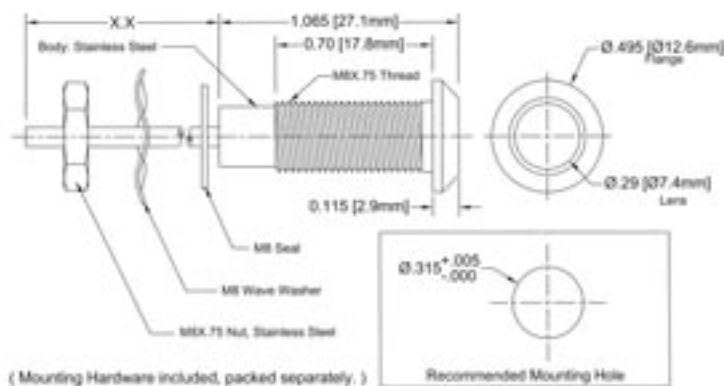
Watertight Panel Mount Assembly

Functional Diagram

FLPIP

Part No.	Description
FLPIP-X.X	Watertight Black Anodized Lens Cap Assembly.

FLPIPS

Part No.	Description
FLPIPS-XX.X	Watertight Stainless Steel Lens Cap Assembly.

FLEXIBLE LIGHT PIPES
Flexible Light Pipe Lens Caps

- Press-Fit Panel Mount Light Pipes for Through-Hole and SMD LEDs
- Oval, Rectangular and Round Lens Choices
- May be Ordered as a Lens Cap Assembly or Lens Cap Only
  (To order as a complete Flexible Light Pipe Assembly, See page 20)

Flexible Light Pipe Length Tolerances:
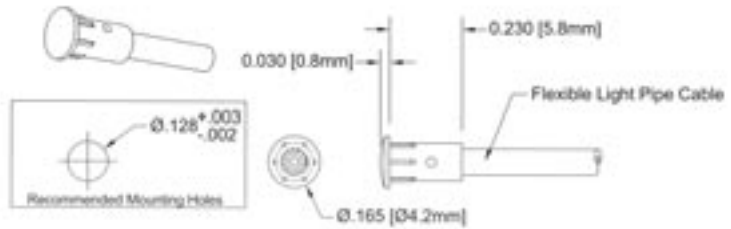2.5" through 12"=   ±.250"
13" through 24"=   ±.500"
Tighter tolerances available at extra charge.

FLP Series

4mm Round Lens Cap Assembly

Part No.	Description
LC-XX.X	4mm Round Lens Cap Assembly
FLP-LC	Lens Cap Only

*XX.X = Length in inches to the nearest 1/2"

FLP-O Series

Oval Lens Cap Assembly

Part No.	Description
FLPO-XX.X	Oval Len Cap Assembly
FLP-LC-O	Lens Cap Only

*XX.X = Length in inches to the nearest 1/2"
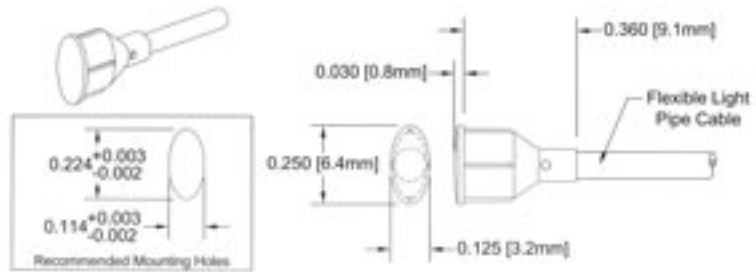
FLP-5 Series

7mm Round Lens Cap Assembly

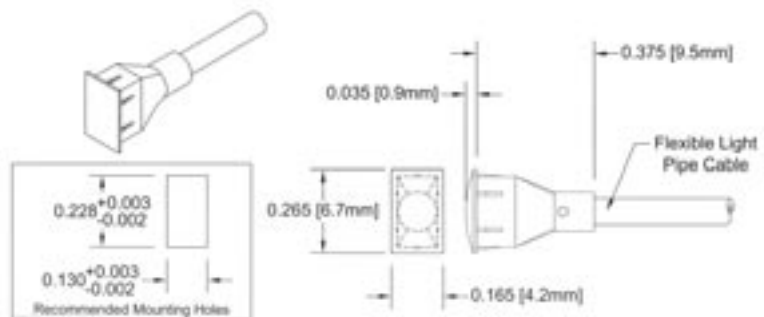| Part No.	Description
FLP5-XX.X	7mm Round Lens Cap Assembly
FLP-LC-5-02	Lens Cap Only (2-piece Lens Cap)
FLP-LC-5-01	Fiber Retaining Insert Only

*XX.X = Length in inches to the nearest 1/2"
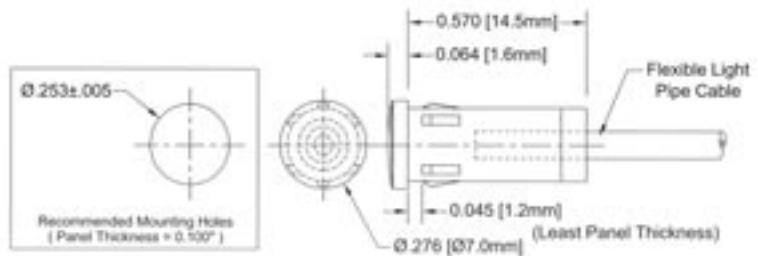
FLP-R1 Series

Rectangular Lens Cap Assembly

Part No.	Description
FLPR1-XX.X	Rectangular Lens Cap Assembly
FLP-LC-R1	Lens Cap Only

*XX.X = Length in inches to the nearest 1/2"

- Cuts 1mm and 2mm Fiber *(Top row of holes)*
- Strips 1mm Fiber *(Bottom row of holes)*
- Compatible with POF *(Plastic Optical Fiber)* and Glass Fiber

Optical Fiber Cutter BOFC-100

0.33 [8.5mm]

1.78 [45.1mm]

1.11 [28.2mm]

BIVAR
Irvine, CA 92618

Cuts 1mm / 2mm Fiber

Strips 1mm Fiber