

FP3 SERIES LENSES *for SEOUL SEMICONDUCTOR Z-POWER P3™ LEDs*

- **High efficiency**
- **Available in 2 different beams**
- **35mm diameter, sized for MR11 lamp applications**
- **Patent Pending**

The FP3 series offers a complete range of lenses especially designed for the Seoul Semiconductor LEDs : Z-Power P3™.
www.seoulsemiconductor.com

A software-optimized aspheric profile combined with front shaped micro-lens arrays enable the generation of two different lens models: narrow beam and medium beam.

The high collection efficiency reaches 85% of the total flux emitted from the LED.

These lenses are assembled with a 35mm diameter holder. The holder assures the proper relative placement between the lens and the Z-Power P3™ LEDs. Heat staking the three legs of the holder to the customer's PCB or heat sink provides excellent optical and mechanical assembly (see Fraen Application Note FAN01-EN, at www.fraensrl.com).

Typical applications are:

- Reading lamps
- Internal fittings with MR11 standard
- Architectural Lighting
- Flash lights
- Application where uniformity and high intensity over a wide angle is required.



- (1) Z-Power is a trademark of Seoul Semiconductor. For technical specification on LEDs please refer to the Z-Power datasheet or visit www.seoulsemiconductor.com

For ordering instructions, please contact

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Website: www.fraensrl.com



General Characteristics

Lens Material	Optical Grade PMMA
Holder and ring spacer Material	PC ABS
Operating Temperature range	-40deg C / + 80 deg C
Storage Temperature range	-40deg C / + 80 deg C

Average transmittance in visible spectrum (400 – 700nm) >90%, as measured using 3mm thick Optical Grade PMMA.

Please note that flow lines and weld lines on the external surfaces of the lenses are acceptable if the optical performance of the lens is within the specification described in the section "OPTICAL CHARACTERISTICS"

IMPORTANT NOTE – Lenses handling and cleaning:

Handling: Always use gloves to handle lenses and/or handle the lenses only by the flange. Never touch the outside surfaces of the lenses with fingers; finger oils and contamination will absorb or refract light.

Cleaning: Clean lenses only if necessary. Use only soap and water to clean the surfaces and lenses. Never expose the lenses to alcohol, as it will damage the plastic.



Optical Characteristics:

		Typical total divergence (degrees)			
Lens Part Number	Type of lens	Blue LEDs ●	Green LEDs ●	Red LEDs ●	White LEDs ○
FP3-HNB1-SSP3-H	Narrow beam	18.0	13.0	8.5	13.0
FP3-HMB1-SSP3-H	Medium beam	16.5	17.0	16.0	19.5

The typical divergence varies with LED color due to different chip size and chip position tolerance. The typical total divergence is the full angle measured where the luminous intensity is half of the peak value.

		Typical on-axis efficiency (cd/lm) (3)(4)			
Lens Part Number	Type of lens	Blue LEDs ●	Green LEDs ●	Red LEDs ●	White LEDs ○
FSP-HNB1-SSP3-H	Narrow beam	7.2	13.1	18.6	10.0
FSP-HMB1-SSP3-H	Medium beam	5.0	7.7	4.5	5.5

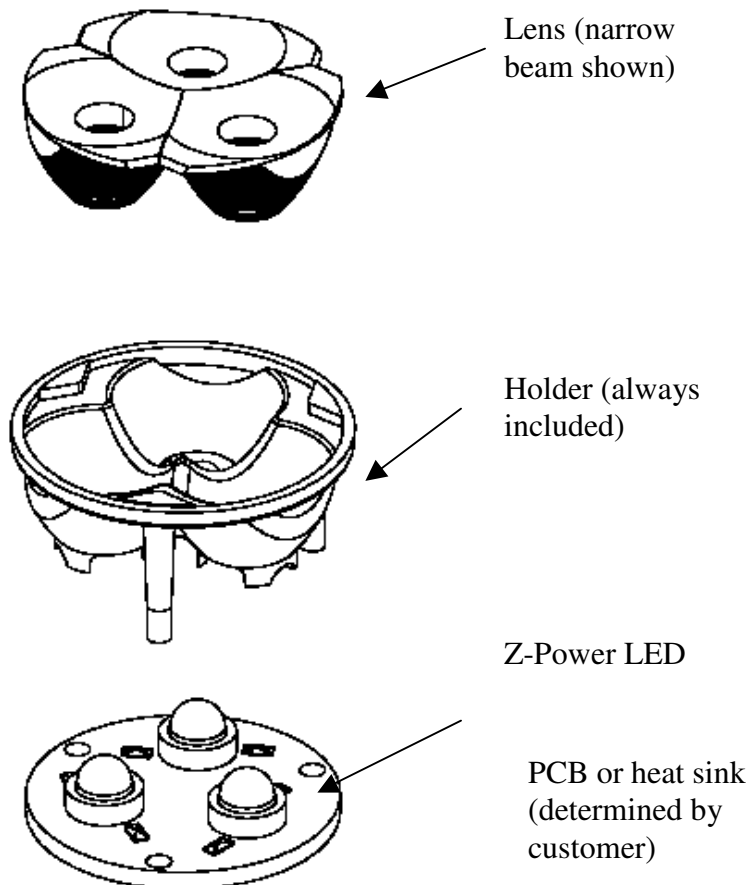
- (2) To calculate the on-axis intensity, multiply the on-axis efficiency of the lens (cd/lm) by the total flux of the Z-Power LED used. For more detail on flux binning please check the Z-Power LED datasheet at <http://www.seoulsemiconductor.com/>.
- (3) Luminous intensity depends on the flux binning and tolerances of the LEDs. Please refer to the Z-Power datasheet for more details on flux binning and mechanical tolerances.

Mechanical Characteristics

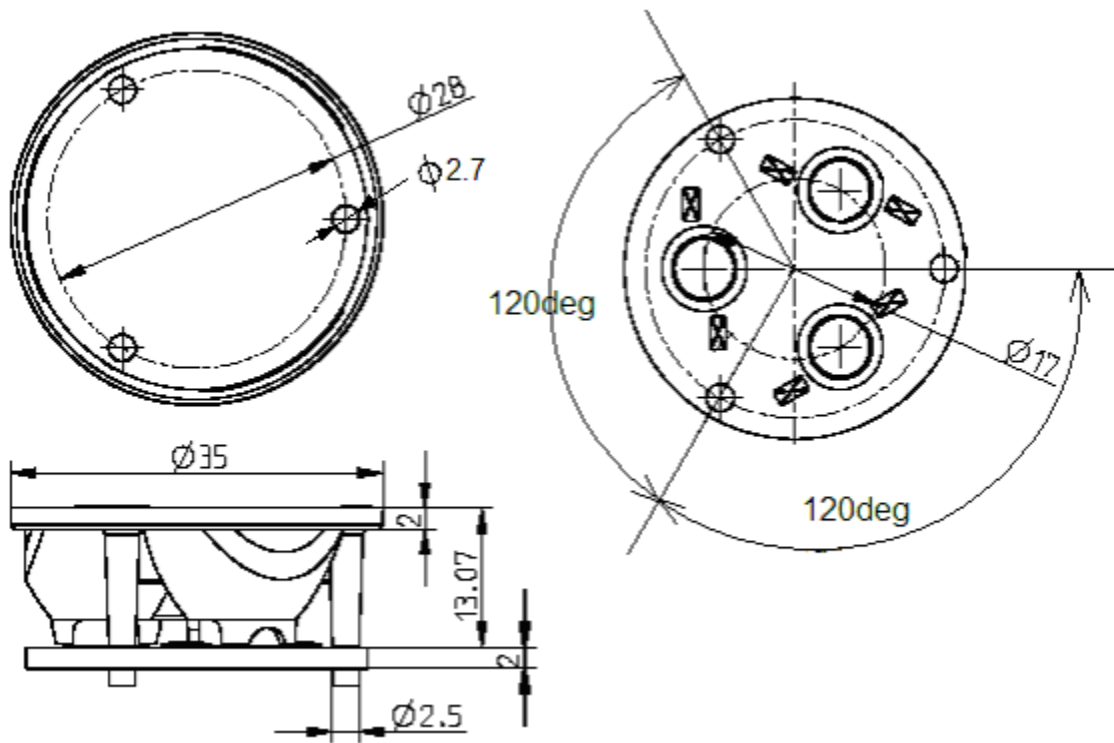
The FP3 series of tri-lenses has been specifically optimized for the Z-Power P3 LEDs.

For best optical performance (shown above), correct mechanical position of the lens on the LEDs is critical. To achieve correct lens position on the LED, the module comes pre-assembled in a holder.

View of the assembly lens + holder:



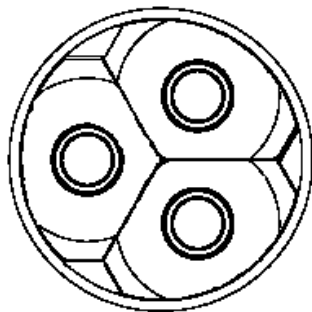
Lens + holder assembly view and dimensions:



The outer geometries of the Tri-lenses (Narrow and Medium beam) are the same for both except the top of the lens. The lens can be identified by the top view:

Top Lens views:

Narrow beam lens



Medium beam lens (*light texture on the top lens*)





Ordering part numbers

FP3-HxB1-SSP3-H



LENS TYPE:

N = Narrow beam lens
M = Medium beam lens

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Document Revision Record

Rev	Date	Author	Description
00	09-27-2006	S.A.H	Initial Release