



FDP SERIES LENSES **For OSRAM GOLDEN DRAGON LEDs**

- **High efficiency**
- **Available in 2 different beams**
- **Patent pending**

The FDP Series offer low-profile lenses especially designed for the Golden Dragon ⁽¹⁾ LEDs from Osram Optosemiconductor.

A software-optimized aspheric profile combined with front shaped micro-lens arrays enables the generation narrow beam and medium beam output patterns (2).

The high collection efficiency reaches 85% of the total flux emitted by the LEDs. Lens holders are available either in white PC/ABS or transparent PC, and provide the proper alignment between the LEDs and the lenses.

Heat staking the four 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
- Signs
- Architectural Lighting
- Street Lights



- (1) Golden Dragon is a trademark of Osram OptoSemiconductor. For technical specification on LEDs please refer to the Golden Dragon datasheet or visit www.osram-os.com
- (2) Typical beam divergence may change with different color LEDs.

For ordering instructions, please contact

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Website: www.fraensrl.com



General Characteristics

Lens Material	Optical Grade PMMA
Holder Material	PC ABS or Transparent PC
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 beam
total divergence
(degrees)**

		Blue / Green Dragon 	Yellow / Red Dragon 	White Dragon 		
		ThinGaN	ThinFilm	NOTA	Volume casting	Chip coating
Lens Part Number	Type of lens	LxW5SG	LxW5SF	LWW5SG	ZWW5SG	LWW5SG
FDP-N1-D01-xx	Narrow beam	9.0	9.0	13.0	11.0	9.5
FDP-M1-D01-xx	Medium beam	14.5	15.0	18.0	16.0	13.5

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

**Typical on - axis
efficiency (cd/lm)**

		Blue Dragon 	Green Dragon 	Yellow Dragon 	Red Dragon 	White Dragon 		
		ThinGaN	ThinGaN	ThinFilm	ThinFilm	NOTA	Volume casting	Chip coating
Lens Part Number	Type of lens	LBW5SG	LGW5SG	LxW5SF	LxW5SF	LWW5SG	ZWW5SG	LWW5SG
FDP-N1-D01-xx	Narrow beam	13.1	18.4	12.8	14.9	9.6	12.4	17.1
FDP-M1-D01-xx	Medium beam	5.8	8.4	6.0	6.5	5.2	6.5	9.0

To calculate the on axis intensity, multiply the on axis efficiency of the lens (cd/lm) by the total flux of the Dragon LEDs you use. For more detail on flux binning please check the datasheet of the Golden Dragon LEDs by Osram OS.

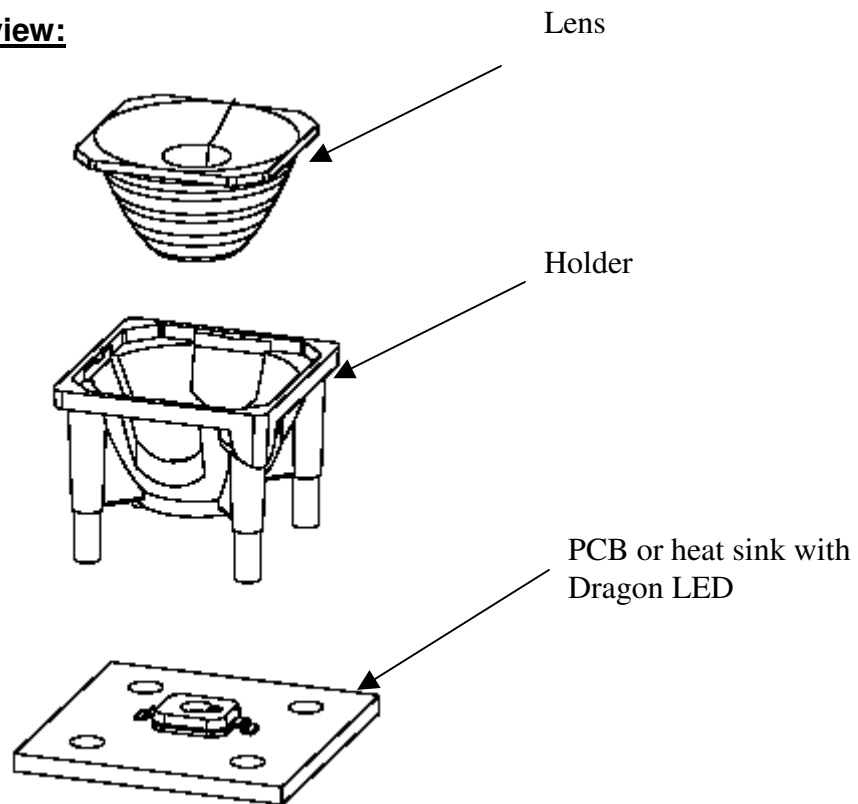
Mechanical Characteristics

IMPORTANT - Assembly information:

For best optical performance (shown above), correct mechanical position of the lens on the LED is critical.

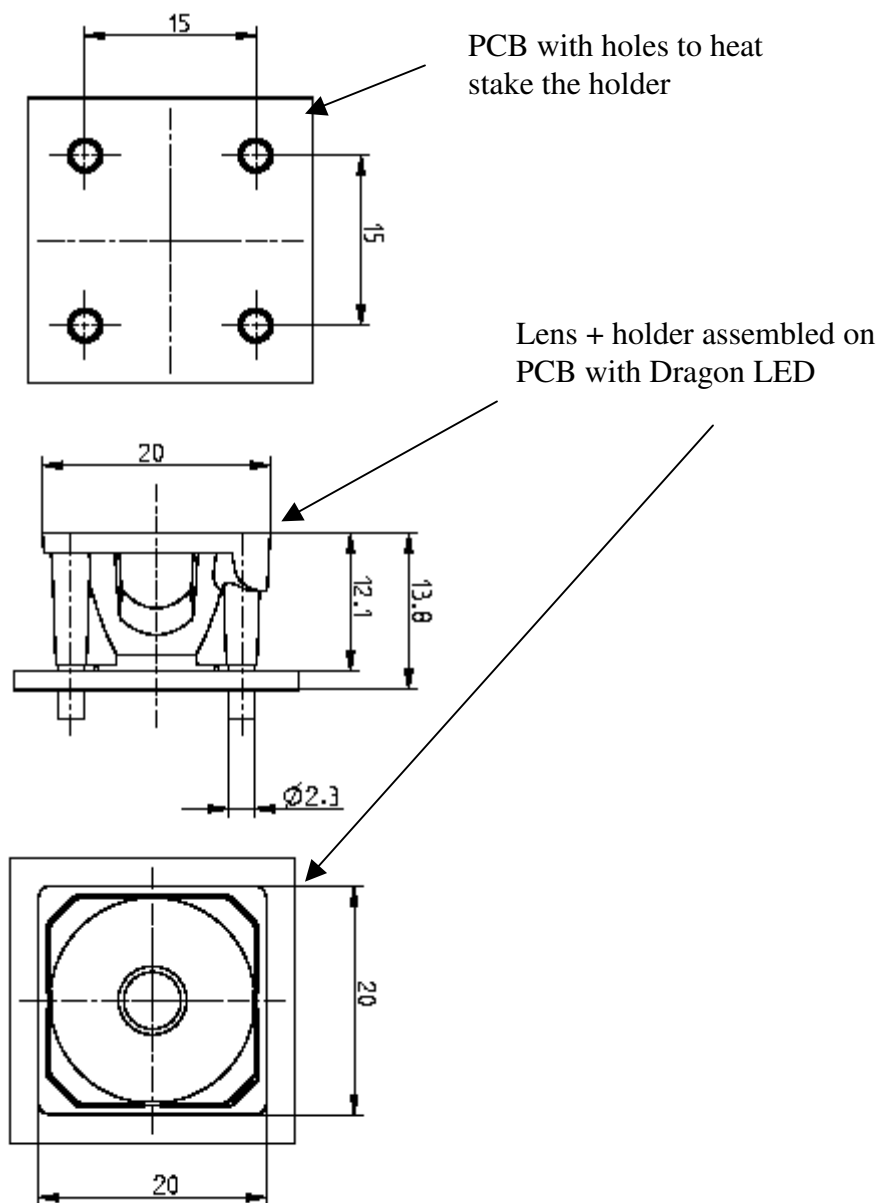
To achieve correct lens position the lens must be used with a lens holder. If the lens is used alone (without a Fraen lens holder), the user should provide mechanical features in their lamp or fixture to assure the lens is concentrically aligned to the LED.

Lens + holder assembly view:

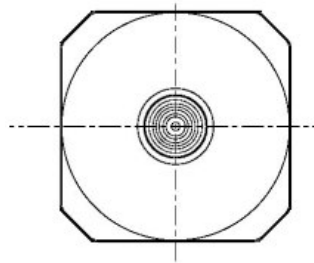


Lens + Holder assembly dimensions on PCB board:

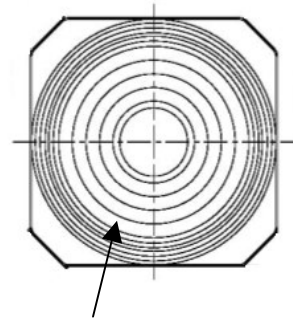
tolerances : $\pm 0.2\text{mm}$



The lens can be identified by the top view:



Narrow beam lens:



Medium beam lens:

Light texture on the top lens

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".



Ordering part numbers

FDP-xx-D01-zz

HS square flange with PC ABS holder
HST square flange with transparent PC holder
0 lens alone

N1 Narrow beam
M1 Medium beam

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Document Revision Record

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