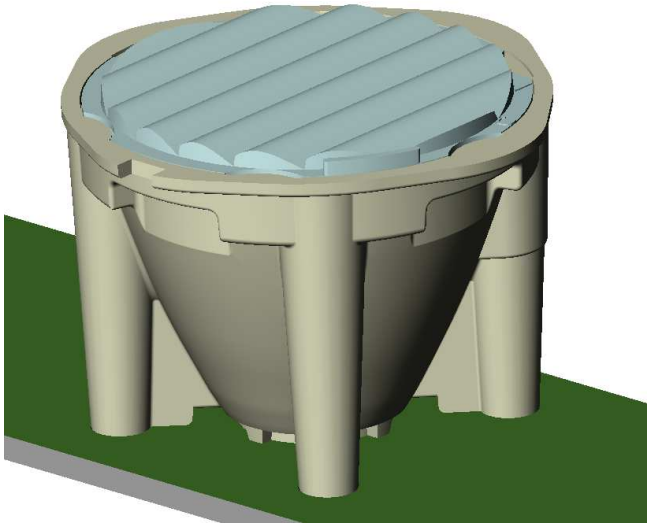
Fraen Optical Solutions for CE (EU) and IESNA Street Lights

- **High efficiency**
- **Scalable solution**
- **European and US compatibility**
- **Excellent uniformity**
- **Compatible with major LED brands**



This series of high-performance optics was developed specifically for LED streetlights, to produce the illumination patterns required to meet demanding CE (European) and IES (North American) specifications. The design features are transferrable to many high-power LEDs, enabling OEMs to integrate LED technology into this class of streetlight to realize the energy savings offered by LED sources.

FRAEN OMG
80 Newcrossing Road
Reading, MA 01867
Phone: 781.205.5300
Fax: 781.942.2426

FRAEN S.r.l.
Via Stelvio, 12
20019 Settimo M. (MI) – Italy
Phone: +39-02-35.456.1
Fax: +39-02-335.456.239

Email: streetlightoptics@fraen.com

Website: www.fraenomg.com

Classification:

- 3.4:1 pole spacing ratio
- European CE or S
- IESNA Type II short

LEDs Supported:

CREE
PHILIPS LUMILEDS
OSRAM Opto Semiconductors
NICHIA
SEOUL SEMICONDUCTOR

General Characteristics

Lens Material	Optical Grade PMMA
Holder Material	PC, white color
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 solvents such as alcohol, as it will damage the plastic.*

Scope

This datasheet provides general information about a standard Fraen optical solution that can be used to meet European CE or S, and IES (North American) Type II Short streetlamp illumination patterns.

Optical Characteristics

- Designed for high-traffic and pedestrian density routes, residential, car parks, cycling paths, etc.
- European CE or S classification
- US Type II short classification
- 3.4:1 pole height to spacing ratio

Figure 1. The illumination pattern produced by each lens is asymmetrical on 2 planes, as shown below.

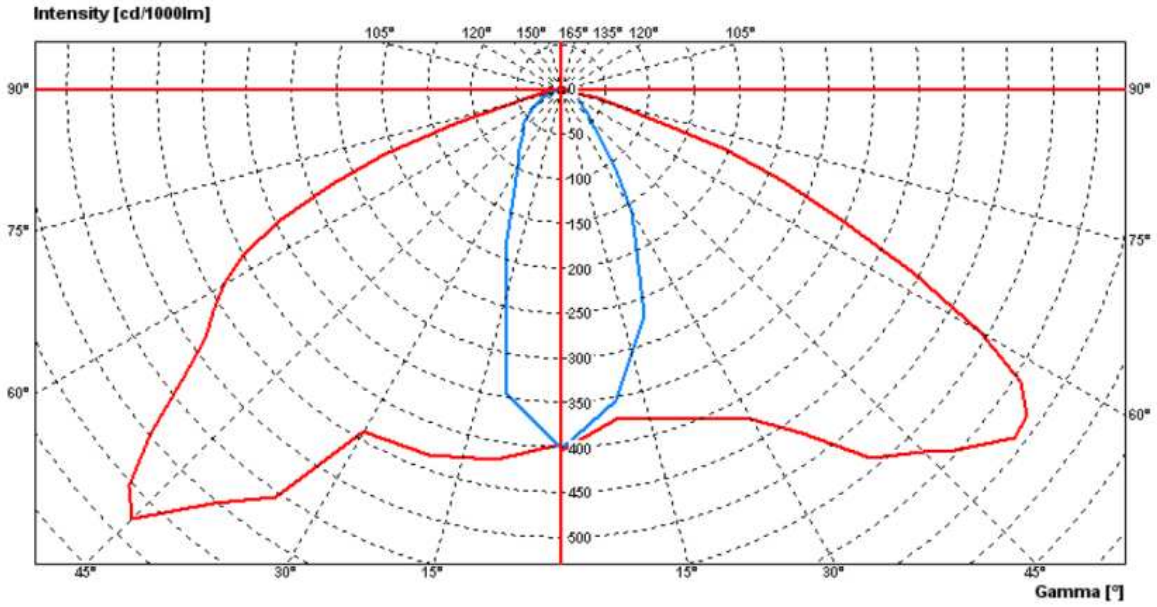
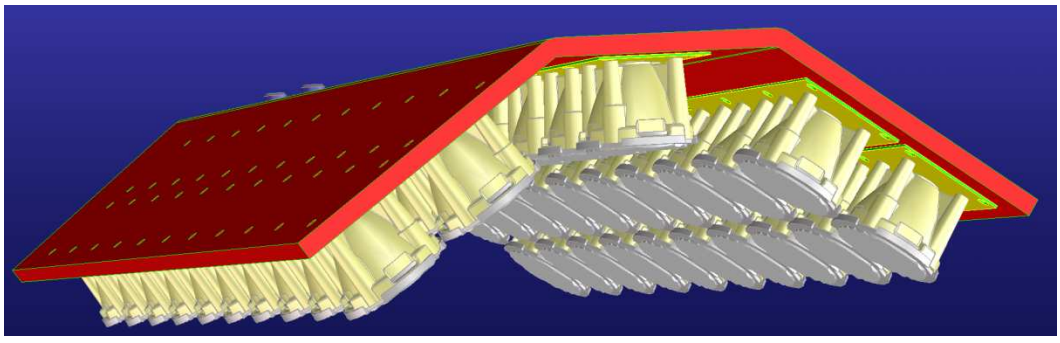


Figure 2. A complete optical solution requires the correct quantities of lenses, positioned on "left", "center", and "right" planes as shown below. The exact quantities and plane angles depend on several parameters including the LEDs selected, illumination pattern specified, and lamp mounting.



Mechanical Characteristics

Figure 3. A typical LED + optic layout consists of a multiple of this pattern of 5 LEDs and 5 lenses.

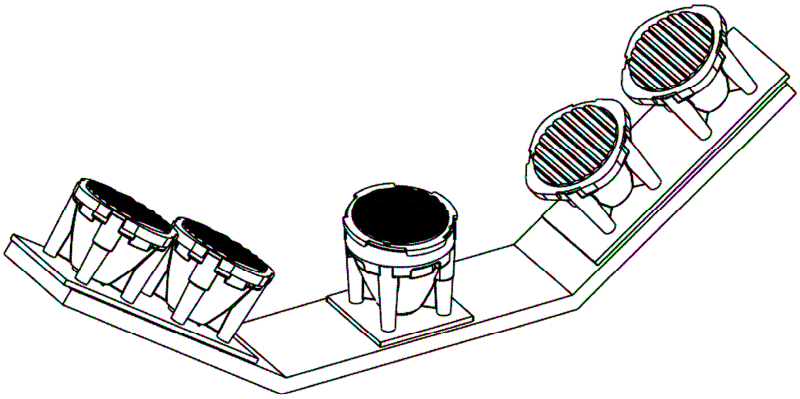


Figure 4. Example of LEDs and optics positioning: Exact angles may depend on illumination specification and LEDs selected. Spacing and locations may depend on enclosure geometry and illumination specification.

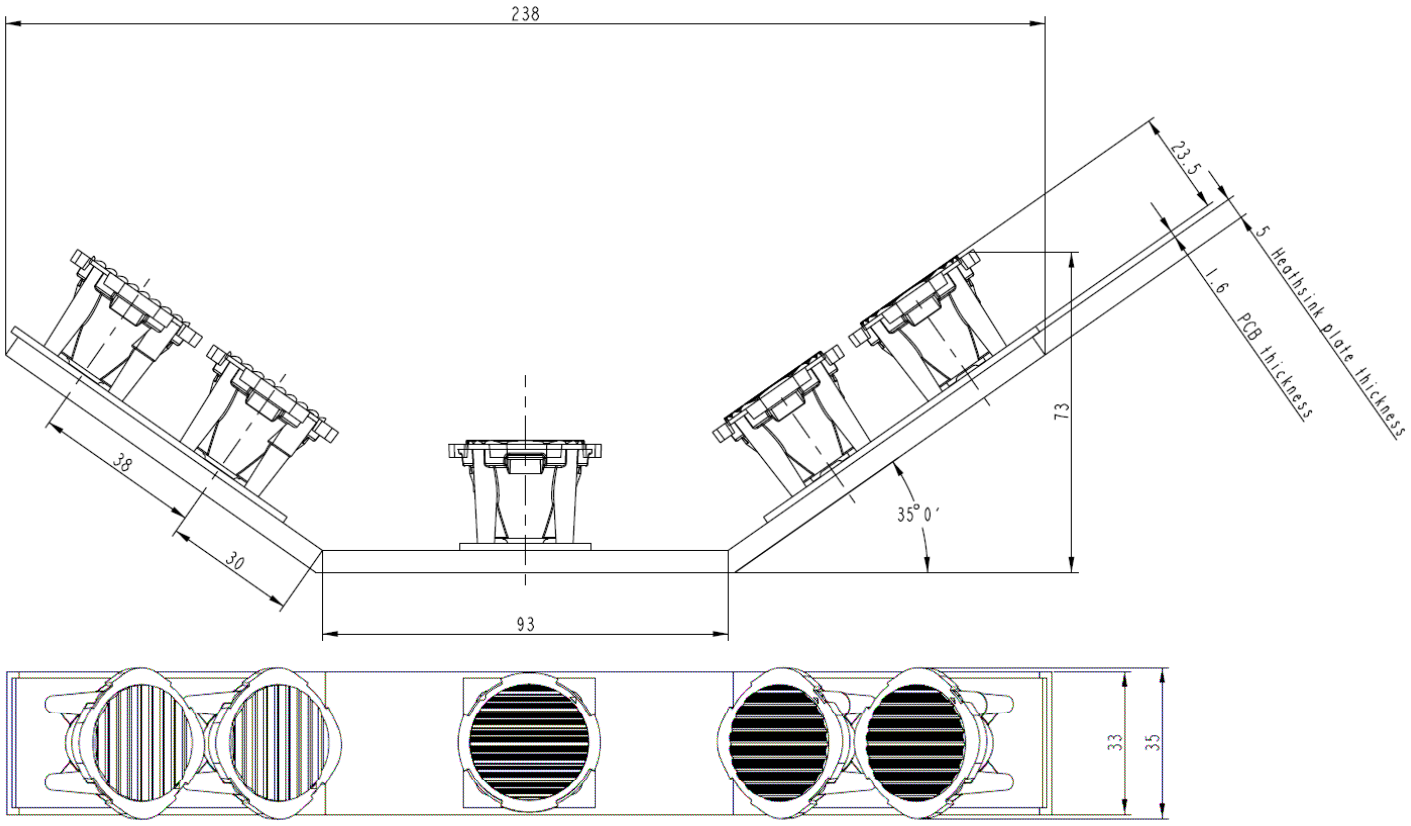
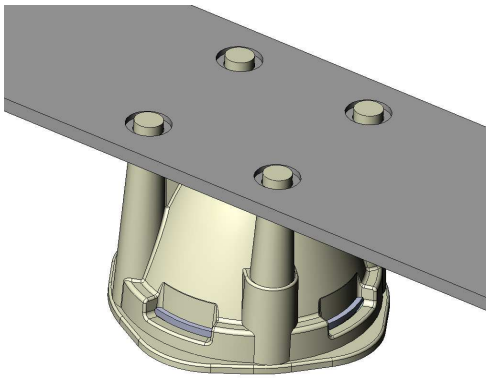
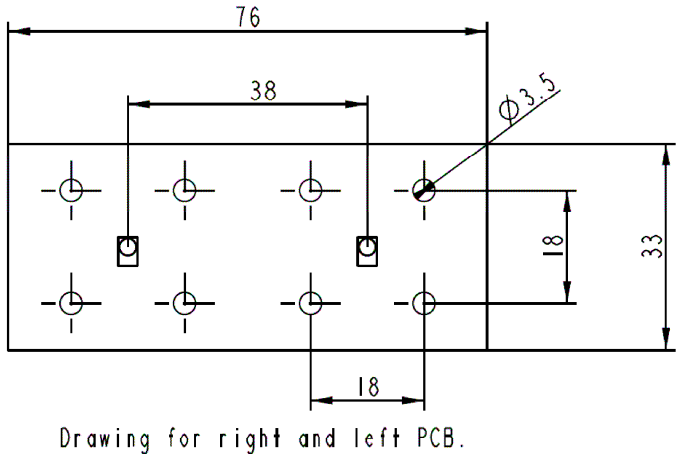


Figure 5. Standard lens assembly includes lens holder with 4 legs. These legs can be inserted thru holes in the PCB, and secured by heat-staking process (recommended) or with glue. Clearance for legs should be provided in the heat-sink.





Drawing for right and left PCB.

Ordering part numbers

F1G-__-HRL-__

Lens placement:
L1: Left lens group
C1: Central lens group
R1: Right lens group

LED used:
XPE1: Cree XP-E
RE1: Luxeon Rebel
DP1: Osram DragonPlus
N183: Nichia 183
SP4: Seoul P4

Rev	Date	Author	Description
00	17 April 2009	C. Jones	Initial Release