

Innovative Optical Solutions for Maximizing Light

As one of the world's premier optics providers for high-powered LEDs, Fraen continues to develop leading-edge standard optical components. These innovative solutions have all been specifically engineered, designed, and optimized for each individual LED.



Features ▶

- High-efficiency TIR and reflector solutions
- Adjustable beam solutions available
- Complete range of lenses
- Software-optimized aspheric profile
- Optimized lens holders and spacer rings available

Benefits ▶

- Custom solutions available
- Fully-automated lens injection molding in United States
- New flat-top geometry allows for a wider range of beam shaping options
- Provides the maximum performance possible utilizing the benefits of this new LED technology
- New reflectors use faceted structure technology providing excellent color mixing and uniformity

Applications ▶

- Architectural lighting
- Street lights
- Portable lighting
- Emergency lighting
- General illumination (MR11, MR16, and downlights)
- White goods and power tools



Product Specifications ▶

Part Number	Type	LED Type	Distribution Type	Material Type	Distribution Angle (θ)	Attachment Method	Optical Holder (Y/N)	Max. Operating Temp. (°C)	Markets	
FC-N2-XR79-ZZ	Secondary	Cree XR-E 7090 LED	Narrow beam	Optical grade PMMA	8	Holder can be glued to PCB	zz=OR or HRF	80	CL FL TR BL SI	
FC-M2-XR79-ZZ		Cree XR-E 7090 LED	Medium beam	Optical grade PMMA	21	Holder can be glued to PCB	zz=OR or HRF	80	CL FL TR BL SI	
FC-W2-XR79-ZZ		Cree XR-E 7090 LED	Wide beam	Optical grade PMMA	29	Holder can be glued to PCB	zz=OR or HRF	80	CL FL TR BL SI	
FC-E2-XR79-ZZ		Cree XR-E 7090 LED	Elliptical beam	Optical grade PMMA	8 x 44	Holder can be glued to PCB	zz=OR or HR	80	CL FL TR BL SI	
FCT3-N2-XR79-ZZZZ		Cree XR-E 7090 LED	Narrow beam	Optical grade PMMA	8	Holder can be glued to PCB	ZZZZ=HRLC or HRCN	80	CL FL TR BL SI	
FCT3-M2-XR79-ZZZZ		Cree XR-E 7090 LED	Medium beam	Optical grade PMMA	21	Holder can be glued to PCB	ZZZZ=HRLC or HRCN	80	CL FL TR BL SI	
FCT3-W2-XR79-ZZZZ		Cree XR-E 7090 LED	Wide beam	Optical grade PMMA	29	Holder can be glued to PCB	ZZZZ=HRLC or HRCN	80	CL FL TR BL SI	
FCG-N1-XR79-ZZ		Cree XR-E 7090 LED	Narrow beam	Optical grade PMMA	6	Holder can be heat staked to PCB	zz=OR or HR	80	CL FL TR BL SI	
FCG-M1-XR79-ZZ		Cree XR-E 7090 LED	Medium beam	Optical grade PMMA	28	Holder can be heat staked to PCB	zz=OR or HR	80	CL FL TR BL SI	
FCG-W1-XR79-ZZ		Cree XR-E 7090 LED	Wide beam	Optical grade PMMA	42	Holder can be heat staked to PCB	zz=OR or HR	80	CL FL TR BL SI	
FCG-E1-XR79-ZZ		Cree XR-E 7090 LED	Elliptical beam	Optical grade PMMA	7 x 45	Holder can be heat staked to PCB	zz=OR or HR	80	CL FL TR BL SI	
FC3-N1-XR79-H		Cree XR-E 7090 LED	Narrow beam	Optical grade PMMA	6	Holder can be heat staked to PCB	N	80	CL FL TR BL SI	
FC3-M1-XR79-H		Cree XR-E 7090 LED	Medium beam	Optical grade PMMA	28	Holder can be heat staked to PCB	N	80	CL FL TR BL SI	
FC3-W1-XR79-H		Cree XR-E 7090 LED	Wide beam	Optical grade PMMA	42	Holder can be heat staked to PCB	N	80	CL FL TR BL SI	
FNP-N1-N083-ZZ		Nichia 083 Rigel LED	Narrow beam	Optical grade PMMA	10	Holder can be glued to PCB	zz=OR or HRF	80	CL FL TR BL SI	
FNP-M1-N083-ZZ		Nichia 083 Rigel LED	Medium beam	Optical grade PMMA	27	Holder can be glued to PCB	zz=OR or HRF	80	CL FL TR BL SI	
FNP-W1-N083-ZZ		Nichia 083 Rigel LED	Wide beam	Optical grade PMMA	40	Holder can be glued to PCB	zz=OR or HRF	80	CL FL TR BL SI	
FNP-E1-N083-ZZ		Nichia 083 Rigel LED	Elliptical beam	Optical grade PMMA	13 x 42	Holder can be glued to PCB	zz=OR or HRF	80	CL FL TR BL SI	
FRC-N1-XR79-OR		Reflector	Cree XR-E 7090 LED	Narrow beam	PC	7	Holder can be glued to PCB	N	120	CL FL TR BL SI
FRC-N1-MCE-OR			Cree MC-E LED	Narrow beam	PC	11†	Holder can be glued to PCB	N	120	CL FL TR BL SI
FRC-M1-MCE-OR	Cree MC-E LED		Medium beam	PC	25†	Holder can be glued to PCB	N	120	CL FL TR BL SI	
FRC-W1-MCE-OR	Cree MC-E LED		Wide beam	PC	45†	Holder can be glued to PCB	N	120	CL FL TR BL SI	
FRC-W1-XR79-OR	Cree XR-E 7090 LED		Flood beam	PC	60	Holder can be glued to PCB	N	120	CL FL TR BL SI	

MARKETS LEGEND

CL COMMERCIAL LIGHTING FL FLASHLIGHTS TR TRANSPORTATION BL BACKLIGHTING SI SIGNAGE

*Distribution angle changes with LED color (see product datasheets); FWHM=full beamwidth measured at one-half of peak intensity; lenses can be ordered either alone, or with a spacer ring, or assembled with a holder; spacers must be ordered separately (when required); OS: lens only; OR: lens only; HS: square flange with holder; HR: round flange with holder; HST: square flange with transparent holder; HRF: round holder with flat bottom; If using FDG lens without holder, a spacer ring (p/n FDS-OS) is required and must be ordered separately. See Fraen datasheet for more details. †Beam angle is estimated from computer simulation



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Staying consistent with its philosophy to introduce “revolutionary” products, Fraen is planning to release a new family of variable focus optical systems in Q4 2008. These systems have been specifically designed to set a new standard by exceeding the variable beam requirements within the portable lighting market.



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FDP-N1-D01-ZZ	Secondary	OSRAM® Golden DRAGON®	Narrow beam	Optical grade PMMA	13	Holder can be heat-staked to PCB	zz=OS, HS, or HSA	80	CL FL TR BL SI
FDP-M1-D01-ZZ		OSRAM Golden/Platinum DRAGON	Medium beam	Optical grade PMMA	18	Holder can be heat-staked to PCB	zz=OS, HS, or HSA	80	CL FL TR BL SI
FDG-N1-D01-ZZ		OSRAM Golden/Platinum/Diamond DRAGON	Narrow beam	Optical grade PMMA	6.5	Holder can be heat-staked to PCB	zz=OS, HS	80	CL FL TR BL SI
FDG-M1-D01-ZZ		OSRAM Golden/Platinum/Diamond DRAGON	Medium beam	Optical grade PMMA	20.5	Holder can be heat-staked to PCB	zz=OS, HS	80	CL FL TR BL SI
FDG-W1-D01-ZZ		OSRAM Golden/Platinum/Diamond DRAGON	Wide beam	Optical grade PMMA	33.5	Holder can be heat-staked to PCB	zz=OS, HS	80	CL FL TR BL SI
FDG-E1-D01-ZZ		OSRAM Golden/Platinum/Diamond DRAGON	Elliptical beam	Optical grade PMMA	10 x 20	Holder can be heat-staked to PCB	zz=OS, HS	80	CL FL TR BL SI
FD3-N1-D01-H		OSRAM Golden/Platinum DRAGON	Narrow beam	Optical grade PMMA	10	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI
FD3-M1-D01-H		OSRAM Golden/Platinum DRAGON	Medium beam	Optical grade PMMA	13	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI
FD4-M1-D01-O		OSRAM Golden/Platinum DRAGON	Medium beam	Optical grade PMMA	21.5	Custom MR 16	N	80	CL FL TR BL SI
FSP-N1-SSP4-ZZ		Seoul Semiconductor z-power P4	Narrow beam	Optical grade PMMA	10	Holder can be heat-staked to PCB	zz=OR or HRF	80	CL FL TR BL SI
FSP-M1-SSP4-ZZ		Seoul Semiconductor z-power P4	Medium beam	Optical grade PMMA	24	Holder can be heat-staked to PCB	zz=OR or HRF	80	CL FL TR BL SI
FSP-W1-SSP4-ZZ		Seoul Semiconductor z-power P4	Wide beam	Optical grade PMMA	38	Holder can be heat-staked to PCB	zz=OR or HRF	80	CL FL TR BL SI
FSP-E1-SSP4-ZZ		Seoul Semiconductor z-power P4	Elliptical beam	Optical grade PMMA	10 x 50	Holder can be heat-staked to PCB	zz=OR or HRF	80	CL FL TR BL SI
FP3-N1-SSP4-H		Seoul Semiconductor z-power P4	Narrow beam	Optical grade PMMA	10	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI
FP3-M1-SSP4-H		Seoul Semiconductor z-power P4	Medium beam	Optical grade PMMA	24	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI
FP3-W1-SSP4-H		Seoul Semiconductor z-power P4	Wide beam	Optical grade PMMA	38	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI
FSG-N1-SSP4-ZZ		Seoul Semiconductor z-power P4	Narrow beam	Optical grade PMMA	8†	Holder can be heat-staked to PCB	zz=OR or HR	80	CL FL TR BL SI
FSG-M1-SSP4-ZZ		Seoul Semiconductor z-power P4	Medium beam	Optical grade PMMA	25†	Holder can be heat-staked to PCB	zz=OR or HR	80	CL FL TR BL SI
FSG-W1-SSP4-ZZ		Seoul Semiconductor z-power P4	Wide beam	Optical grade PMMA	45†	Holder can be heat-staked to PCB	zz=OR or HR	80	CL FL TR BL SI
FSG-E1-SSP4-ZZ		Seoul Semiconductor z-power P4	Elliptical beam	Optical grade PMMA	10 x 50†	Holder can be heat-staked to PCB	zz=OR or HR	80	CL FL TR BL SI
FS3-N1-SSP4-H	Seoul Semiconductor z-power P4	Narrow beam	Optical grade PMMA	8†	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI	
FS3-M1-SSP4-H	Seoul Semiconductor z-power P4	Medium beam	Optical grade PMMA	25†	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI	
FS3-W1-SSP4-H	Seoul Semiconductor z-power P4	Wide beam	Optical grade PMMA	45†	Holder can be heat-staked to PCB	N	80	CL FL TR BL SI	
FCM-N1-SSP5-Z	Seoul Semiconductor z-power P5	Narrow beam	Optical grade PMMA	17	Holder can be heat-staked to PCB	z=O or H	80	CL FL TR BL SI	
FCM-M1-SSP5-Z	Seoul Semiconductor z-power P5	Medium beam	Optical grade PMMA	32	Holder can be heat-staked to PCB	z=O or H	80	CL FL TR BL SI	
FCM-W1-SSP5-Z	Seoul Semiconductor z-power P5	Wide beam	Optical grade PMMA	42	Holder can be heat-staked to PCB	z=O or H	80	CL FL TR BL SI	
FCM-E1-SSP5-Z	Seoul Semiconductor z-power P5	Elliptical beam	Optical grade PMMA	15 x 50	Holder can be heat-staked to PCB	z=O or H	80	CL FL TR BL SI	
FRC-N1-0E2B-O	Reflector	OSRAM 4/6-chip OSTAR LED	Narrow Beam	Ultem	11	Holder can be glued	N	150	CL FL TR BL SI
FRC-M1-0E2B-O		OSRAM 4/6-chip OSTAR LED	Medium beam	Ultem	25	Holder can be glued to PCB	N	150	CL FL TR BL SI
FRC-N1-A3P7-OR		Seoul Semiconductor P7 LED	Narrow beam	PC	11†	Holder can be glued to PCB	N	120	CL FL TR BL SI
FRC-M1-A3P7-OR		Seoul Semiconductor P7 LED	Medium beam	PC	25†	Holder can be glued to PCB	N	120	CL FL TR BL SI
FRC-W1-A3P7-OR		Seoul Semiconductor P7 LED	Wide beam	PC	45†	Holder can be glued to PCB	N	120	CL FL TR BL SI

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