

LUXEON® I

20 & 26.5mm Range

“LUXEON® I, the original power LED, is the perfect solution for everyday purposes including automotive LED lighting, traffic signalling, signage, and a wide-range of general LED lighting applications. LUXEON® gives you total design freedom and unmatched brightness allowing you to create never before possible lighting solutions.” Reproduced from Future Lighting Solutions



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www.futurelightingsolutions.com



Carclo Technical Plastics

111 Buckingham Avenue, Slough, Berkshire SL1 4PF ENGLAND / 600 Depot Street Latrobe PA. 15650 USA

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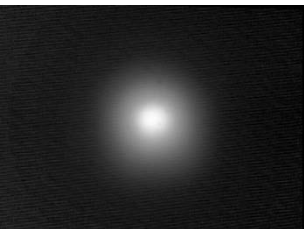


LUXEON® I 20mm range

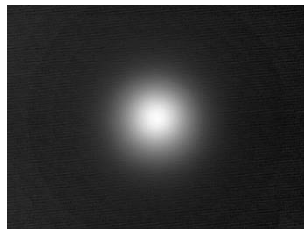
Part No.	Description	White			Red/Amber			Cyan/Green			Warm White		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10003	Plain Tight	8.0	84%	20	10.4	81%	16	9.6	82%	13	9.0	80%	10
10138	Frosted Narrow	12	87%	12	15	83%	11	15	87%	8.3	14	84%	7.0
10003/15	Ripple Medium	19	81%	5.2	13	81%	7.2	15	88%	7.3	17	81%	4.6
10139	Frosted Medium	22	83%	3.4	20	77%	4.8	20	80%	3.7	22	76%	3.0
10003/25	Ripple Wide	34	81%	2.3	16	80%	3.4	28	86%	2.7	18	80%	3.0
10140	Frosted Wide	35	81%	2.6	43	74%	1.6	34	78%	2.1	44	72%	1.3
10170	Wide angle reflector	79	91%	1.0	77	85%	1.3	78	92%	1.1	64	93%	1.4
10003/L25	Elliptical	40 X 11	78%	5.1	38 X 12	80%	4.4	40 X 14	85%	4.2	54 X 13	79%	3.0
10192	Elliptical Orthogonal*	10.6 X 40	78	5.1	1.9 X 38.2	80	4.4	13.7 X 39	85	4.2	12.8 X 35.5	79	3.0
10034	Fibre	Optimised for coupling into 0.5NA fibre bundles of 8 - 12mm diameter											

*Orthogonal is the elliptical beam turned through 90deg.

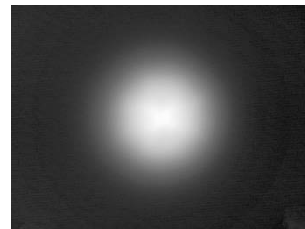
#Full Width Half Maximum i.e. total viewing angle



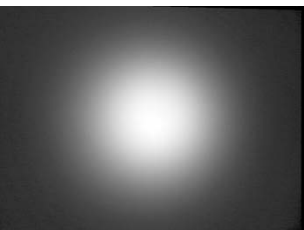
10003



10138



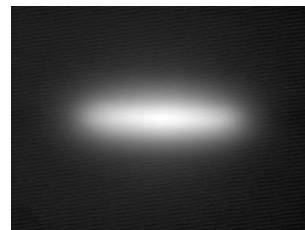
10003/15



10140



10170



10003/L25 & 10192

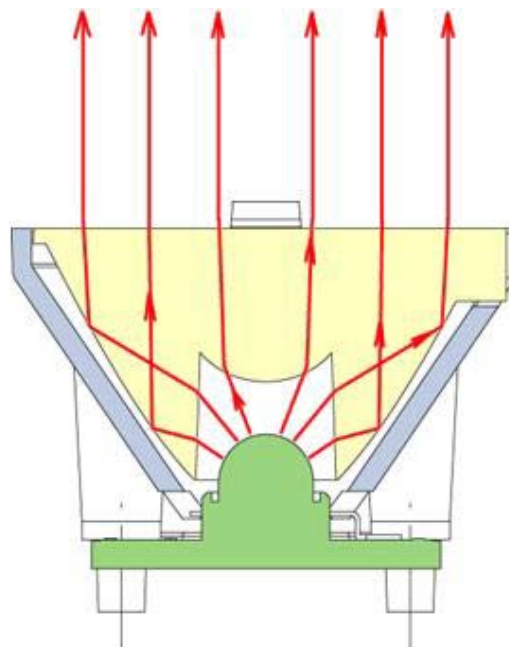
Part No.	Colour	Description	Part No.	Colour	Description
10012	Black	Circular custom boards	10109	Black	Triple holder 50 mm dia
10024	Clear	Circular custom boards	10110	White	Triple holder 50 mm dia
10035	White	Circular custom boards	10270	White	50mm Triple holder long leg
10026	Black	Star boards	10280	White	50 mm Triple holder short leg
10036	Clear	Star boards	10290	Black	50 mm Triple holder Long leg
10037	White	Star boards	10300	Black	50 mm Triple holder short leg
10041	Black	Triple holder 45 mm dia			
10042	White	Triple holder 45 mm dia			

LUXEON® I 26.5mm range

Part No.	Description	White			Red/Amber			Cyan/Green			Warm White		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10048	Plain Tight	5.4	89%	50	6.8	85%	30	6.5	87%	35	11	79%	9.4
10124	Frosted Narrow	7.1	87%	29	9.8	84%	22	9.8	87%	23	13	79%	7.2
10108	Frosted Medium	18	87%	5.0	20	84%	5.2	20	85%	5.2	25	77%	2.7
10260	Frosted Wide	36.1	82%	2.3	36	84%	2.2	37	81%	2.1	49	71%	1.0
10049	Elliptical	47 X 6.8	83%	6.4	42 X 12	81%	4.5	45 X11	82%	5.5	41 X 17	75%	2.5
10224	Elliptical Orthogonal*	6.8 X 47	83%	6.4	12 X 42	81%	4.5	11 X 45	82%	5.5	17 X 41	75%	2.5
10234	Elliptical Ramp optic	45 x 9	86%	14.8	44 x 11.8	87%	5.2	45 x 13	88%	4.9	45 x 20	80%	2.2

*Orthogonal is the elliptical beam turned through 90deg.

#Full Width Half Maximum i.e. total viewing angle



Part No.	Colour	Description
10064	Black	Holder long legs
10065	White	Holder long legs
10172	Black	Holder 0.8mm legs
10173	White	Holder 0.8mm legs
10174	Black	Holder no legs
10175	White	Holder no legs

LUXEON[®] III

20 & 26.5mm Range

“LUXEON[®] III LEDs, the industry's most widely used high-power LEDs, deliver leading performance and value that enable lighting designers and engineers to develop applications at significantly lower costs, speeding the migration from conventional lamps to solid-state technology. With its rugged package design, superior thermal management and zero-stress encapsulation system, LUXEON[®] III is a clear technical and performance leader. “ Reproduced from Future Lighting Solutions web site



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LUXEON® III 20mm range

Part No.	Description	White			Red			Blue			Green		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm
10003	Plain Tight	6.9	82%	17	14	82%	8.1	9.0	87%	16	10	87%	19
10138	Frosted Narrow	14	88%	6.2	18	88%	6.5	14	87%	10	14	87%	10
10003/15	Ripple Medium	20	86%	4.7	22	88%	4.5	16	87%	6.0	16	87%	6.0
10139	Frosted Medium	20	85%	2.9	25	86%	3.5	19	84%	4.2	20	84%	4.3
10003/25	Ripple Wide	32	84%	2.2	26	87%	2.8	31	86%	2.8	27	85%	2.7
10140	Frosted Wide	35	80%	1.6	43	81%	1.5	37	80%	1.5	37	80%	1.5
10170	Wide Angle Reflector	72	91%	0.9	68	90%	1.2	75	93%	1.6	75	93%	1.6
10003/L25	Elliptical	40 x 11	83%	4.2	42 x 18	84%	3.5	39 x 12	85%	3.7	38 x 13	84%	3.8
10192	Elliptical Orthogonal	11 x 40	83%	4.2	17 x 44	87%	3.3	12 x 39	85%	3.9	13 x 38	84%	3.8
10034	Fibre	Optimised for coupling into 0.5NA fibre bundles of 8 - 12mm diameter											

*Orthogonal is the elliptical beam turned through 90deg.

#Full Width Half Maximum i.e. total viewing angle



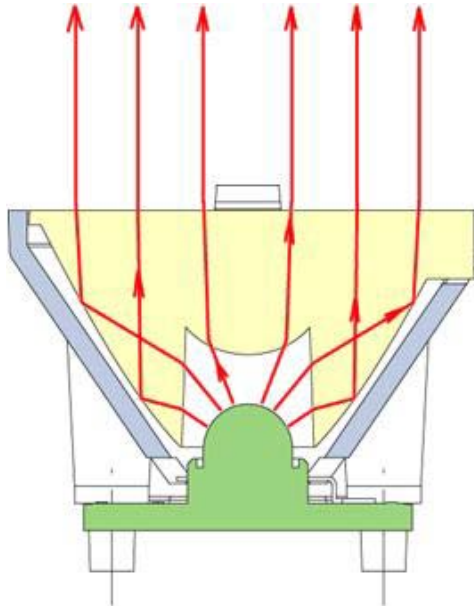
Part No.	Colour	Description	Part No.	Colour	Description
10012	Black	Circular custom boards	10109	Black	Triple holder 50 mm dia
10024	Clear	Circular custom boards	10110	White	Triple holder 50 mm dia
10035	White	Circular custom boards	10270	White	50mm Triple holder long leg
10043	Black	Star boards	10280	White	50 mm Triple holder short leg
10045	Clear	Star boards	10290	Black	50 mm Triple holder Long leg
10044	White	Star boards	10300	Black	50 mm Triple holder short leg
10041	Black	Triple holder 45 mm dia			
10042	White	Triple holder 45 mm dia			

LUXEON® III 26.5mm range

Part No.	Description	White			Red			Blue			Green	
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF
10048	Plain Tight	5.7	89%	28	10.7	93%	16.5	5.6	91%	53	6.4	92%
10124	Frosted Narrow	9	89%	16	15	93%	9.2	8.3	90%	25	9.3	92%
10108	Frosted Medium	20	88%	3.7	24	89%	3.8	18	87%	5.4	18.2	87%
10260	Frosted Wide	35.7	81%	2	39.3	82%	1.8	37.2	81%	2.7	37.3	81%
10049	Elliptical	45 x 10	88%	3.7	41 x 14	88%	4	46 x 11	87%	4.3	44 x 13	85%
10224	Elliptical Orthogonal	10 x 45	88%	3.7	14 x 46	88%	3.75	11 x 46	87%	4.3	13 x 44	85%
10234	Elliptical Ramp optic	45 x 10	88%	5.9	44 x 14	91%	4.6	47 x 9	88%	8.2	45 x 12	88%

*Orthogonal is the elliptical beam turned through 90deg.

#Full Width Half Maximum i.e. total viewing angle



Part No.	Colour	Description
10076	Black	Holder long legs
10077	White	Holder long legs
10111	Black	Holder 0.8mm legs
10112	White	Holder 0.8mm legs
10174	Black	Holder no legs
10175	White	Holder no legs

LUXEON[®] V

20 & 26.5mm Range

“LUXEON[®] V LEDs offer extreme luminous density, providing lumens per package 4X that of a LUXEON[®] I LED or up to 50X that of an alternative solid state light source. LUXEON[®] V creates new opportunities for solid state lighting to displace conventional lighting technologies. LUXEON[®] V LEDs serve a wide range of applications. For example, LUXEON[®] V white LEDs are ideally suited for portable lighting applications.”
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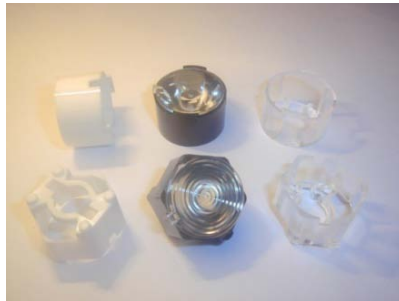


LUXEON® V 20mm range

Part No.	Description	White			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10003	Plain Tight	17	83%	6.4	18	86%	10
10138	Frosted Narrow	19	88%	5.0	21	83%	8
10003/15	Ripple Medium	27	87%	3.3	27	87%	5.7
10139	Frosted Medium	25	85%	3.1	29	83%	4.6
10003/25	Ripple Wide	54	85%	1.8	34	84%	3.6
10140	Frosted Wide	42	80%	1.5	46	80%	2.5
10170	Wide angle reflector	77	92%	1.1	75	95%	2.9
10003/L25	Elliptical	39 X 19	84%	3.0	43 X 20	83%	4.6
10192	Elliptical Orthogonal*	19 X 39	84%	3.0	22 X 46	83%	4.4
10034	Fibre	Optimised for coupling into 0.5NA fibre bundles of 8 - 12mm diameter					

*Orthogonal is the elliptical beam turned through 90deg.

#Full Width Half Maximum i.e. total viewing angle



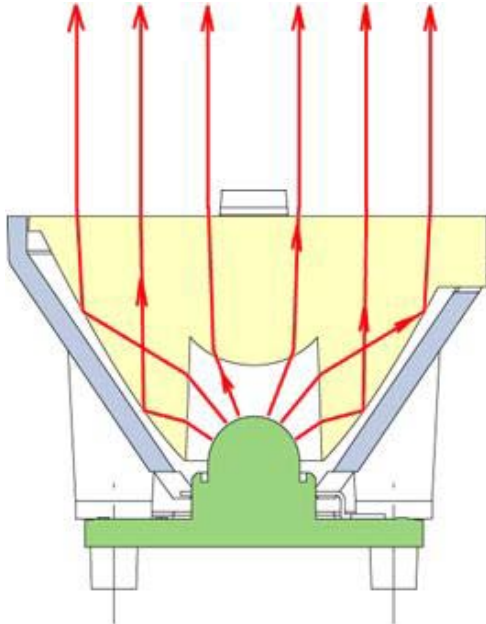
Part No.	Colour	Description	Part No.	Colour	Description
10012	Black	Circular custom boards	10109	Black	Triple holder 50 mm dia
10024	Clear	Circular custom boards	10110	White	Triple holder 50 mm dia
10035	White	Circular custom boards	10270	White	50mm Triple holder long leg
10043	Black	Star boards	10280	White	50 mm Triple holder short leg
10045	Clear	Star boards	10290	Black	50 mm Triple holder Long leg
10044	White	Star boards	10300	Black	50 mm Triple holder short leg
10041	Black	Triple holder 45 mm dia			
10042	White	Triple holder 45 mm dia			

LUXEON® V 26.5mm range

Part No.	Description	White			Blue		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm
10048	Plain Tight	12	88%	13	12	91%	18
10124	Frosted Narrow	13	87%	12	16	90%	13.3
10108	Frosted Medium	22	87%	4.4	26	90%	5.3
10260	Frosted Wide	36.4	81.4%	2	38.5	80.3%	1.8
10049	Elliptical	42 x 14	86%	3.9	45 x 15	87%	6.1
10224	Elliptical Orthogonal	14 x 42	86%	3.9	16 x 46	84%	3.1
10234	Elliptical Ramp optic	45 x 14	86%	4.1	45 x 14	87%	4.1

*Orthogonal is the elliptical beam turned through 90deg.

#Full Width Half Maximum i.e. total viewing angle



Part No.	Colour	Description
10076	Black	Holder long legs
10077	White	Holder long legs
10111	Black	Holder 0.8mm legs
10112	White	Holder 0.8mm legs
10174	Black	Holder no legs
10175	White	Holder no legs

LUXEON[®] K2

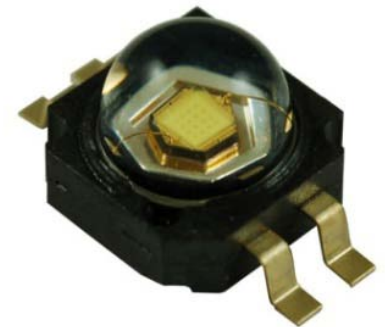
20 & 26.5mm Range

“LUXEON[®] K2 Power LEDs establish elevated standards for light output, thermal management, cost and manufacturability. LUXEON[®] K2 gives you the world's best LED light output with 140 or more lumens in white, outstripping the performance of other power LEDs by 15 to 30% and significantly lowering the cost per lumen.”

“**LUXEON K2 with TFFC** is the first of a new class of products that will deliver more light and higher efficacy and lower the cost of light. Binned and tested at 1A, and with minimum flux bins of 160, 180 and 200 lumens, LUXEON K2 with TFFC LEDs are enabling never before possible lighting solutions.”
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LUXEON® K2 20mm range

Part No.	Description	White			TTCF White			Red/Amber			Cyan/Green		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm
10003	Plain Tight	7.9	84%	28	7	85%	28.7	8.2	89%	28	8.6	91%	18
10138	Frosted Narrow	15	88%	9.2	10	88.3%	17.5	11	89%	18	14	89%	8.7
10003/15	Ripple Medium	19	82%	5.4	27	84%	4.4	13	90%	11	14	90%	7.3
10139	Frosted Medium	20	80%	4.1	18	87.4%	5.4	20	90%	6.1	20	88%	3.9
10003/25	Ripple Wide	32	81%	2.3	42	87.2%	2.1	15	90%	5.2	18	90%	3.3
10140 R2	Frosted Wide	35	78.6%	2.2									
10170	Wide angle reflector	70	92%	0.73	69	92.5%	0.87	72	91%	2.2	62	91.5%	0.7
10003/L25	Elliptical	45 X 10	87%	5.36	44 x 8	87.8%	6.62	43 x 10	93.3%	6.4	47.5 x 10	88%	4.9
10192	Elliptical Orthogonal*	10 X 47.5	87.6%	4.91	48 x 8	88.9%	5.8	9 x 45.5	93%	6.1	10 x 47.4	89%	4.8
10034	Fibre	Optimised for coupling into 0.5NA fibre bundles of 8 - 12mm diameter											

*Orthogonal is the elliptical beam turned through 90deg.

#Full Width Half Maximum i.e. total viewing angle



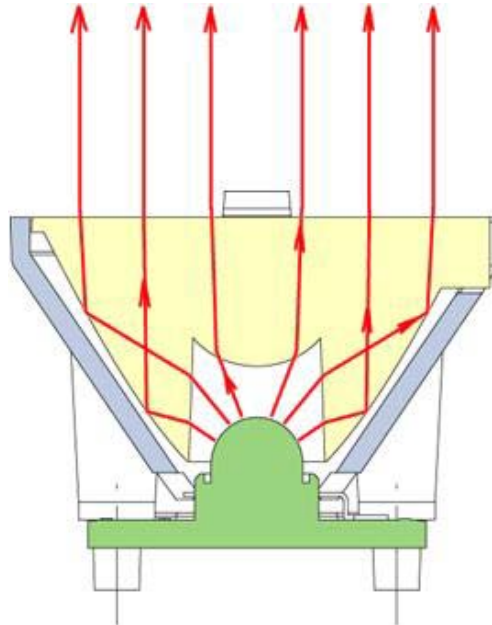
Part No.	Colour	Description	Part No.	Colour	Description
10119	Black	Holder Circular	10261	Black	Star board Feet
10120	Clear	Holder Circular	10262	White	Star board Feet
10121	White	Holder Circular	10263	Clear	Star board Feet
10272	White	50mm Triple holder long leg	10264	Black	Star board no Feet
10282	White	50 mm Triple holder short leg	10265	White	Star board no Feet
10292	Black	50 mm Triple holder Long leg	10266	Clear	Star board no Feet
10302	Black	50 mm Triple holder short leg			

LUXEON® K2 26.5mm range

Part No.	Description	White			Natural White			Red/Amber			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10048	Plain Tight	6.5	85%	48	7.1	89%	43	6.6	89%	30	6.9	90%	45
10124	Frosted Narrow	7.9	86%	33	5	85%	20	10.2	89%	27	9.4	89%	20
10108	Frosted Medium	18	83%	5.8	21	86%	4.6	19	86%	6	19	85%	4.2
10260	Frosted Wide	33	82%	2.5	32.25	82.6%	2.7	29	87%	3.1	33	81%	2.4
10049	Elliptical	40 x 8.7	89%	7.0	43 x 7.6	86%	7.9	40 x 7.3	86%	10.3	41 x 7.5	87%	7.8
10224	Elliptical Orthogonal*	8.7 x 40	89%	7.0	8.3 x 48	85%	6.9	7.3 x 40	86%	10.3	7.5 x 41	87%	7.8
10234	Elliptical Ramp optic	46 x 7.4	90%	7.5	45 x 7.6	89%	7.9	45 x 7.4	90%	8.7	45 x 7.4	88%	7.8

*Orthogonal is the elliptical beam turned through 90deg.

#Full Width Half Maximum i.e. total viewing angle



Part No.	Colour	Description
10230	Black	With stake able legs
10231	White	With stake able legs
10232	Black	legs flat on Board
10233	White	legs flat on Board
10256	Black	K2 legged with 2.4 feet
10257	White	K2 legged with 2.4 feet
10258	Black	K2 Legged with 1.2 Feet
10259	White	K2 Legged with 1.2 Feet

LUXEON[®] Rebel

10,20,26.5mm Range

“LUXEON[®] Rebel is the smallest surface mountable power LED available today. With the industry's best lumens per package, highest light density (lumens per mm²), and the highest packing density, LUXEON[®] Rebel is ideal for both space-constrained and conventional solid-state lighting applications.” Reproduced from Future Lighting Solutions web site



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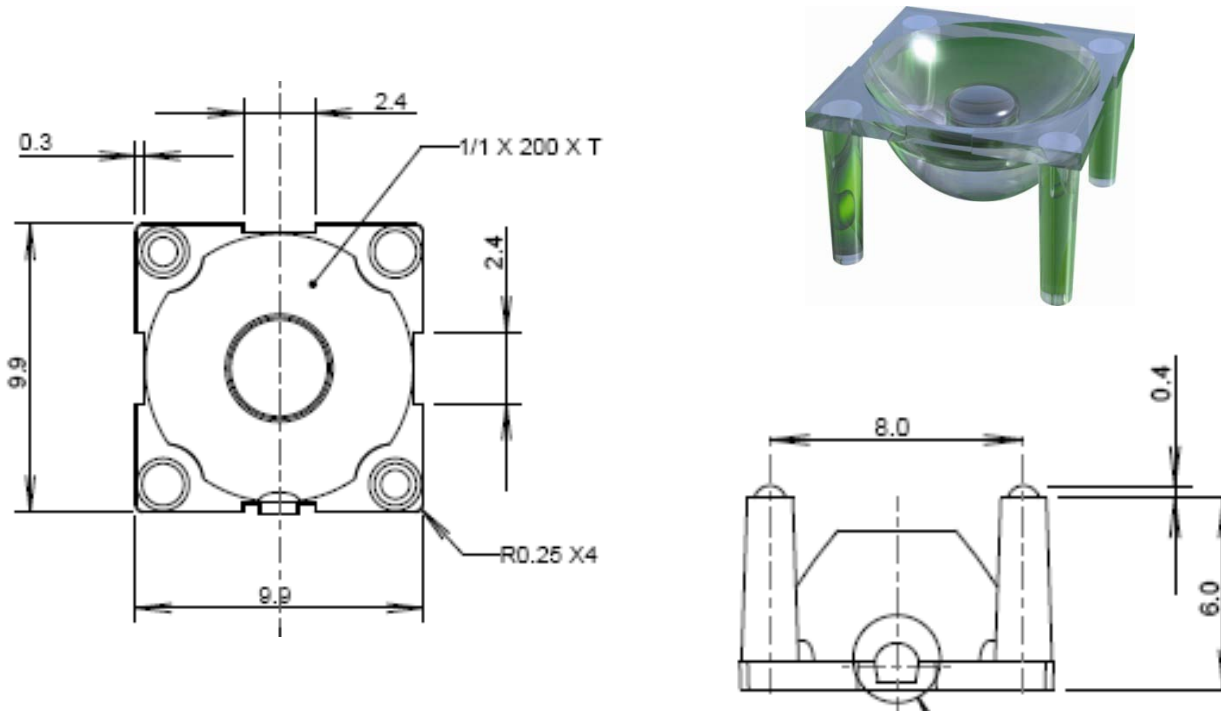
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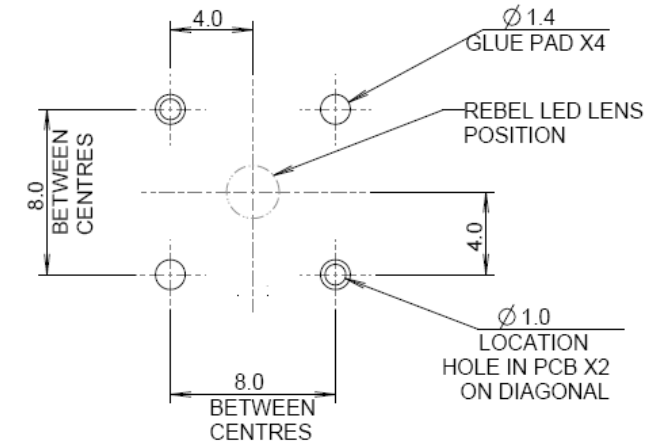
LUXEON® REBEL 10mm range

Part No.	Description	White			Neutral White			Red/Amber			Green			Blue		
		FWHM*	EFF	Cd/lm	FWHM*	EFF	Cd/lm	FWHM*	EFF	Cd/lm	FWHM*	EFF	Cd/lm	FWHM*	EFF	Cd/lm
10412	Plain medium Flat front	18.4	89.6%	6.5	17.8	84%	7.9	16.4	82%	6.3	18.6	84%	7	16.8	84%	6.3
10417	Plain medium Lens front	17.7	84.5%	6.9	18.25	86%	7.4	16.6	84.3%	7.33	18.1	83.4%	6.61	19	86%	5
10413	Frosted medium	29.8	83%	2.3	23.2	83%	5.0	21.4	85%	4.2	23.3	81%	5.5	21.9	80%	5.7
10414	Frosted Wide	39.2	78%	1.35	41.4	77%	1.43	40.3	75.8%	1.4	43.7	75.8%	1.2	44.8	79%	1.18
10415	Elliptical	46X19	84.3%	3.1	43*19	85.5%	2.9	44*20	82.7%	2.6	44*20	82.7%	2.6	45*22	84.6%	1.62

#Full Width Half Maximum i.e. total viewing angle



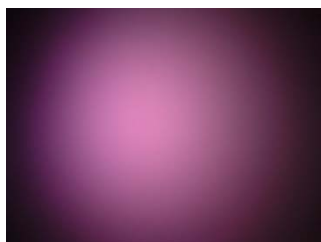
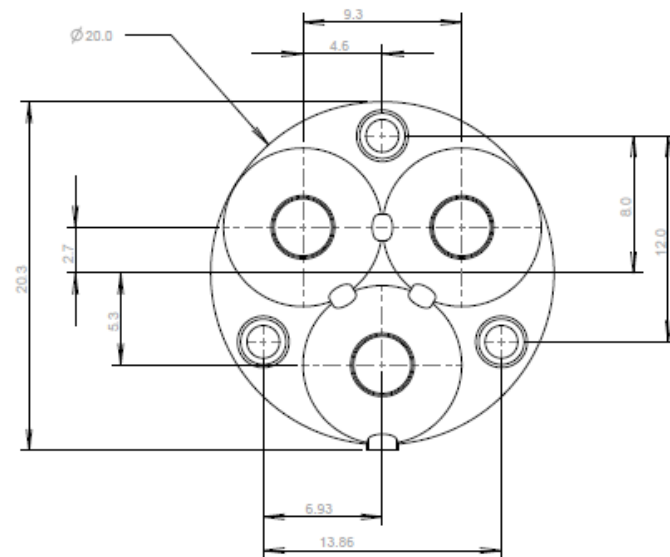
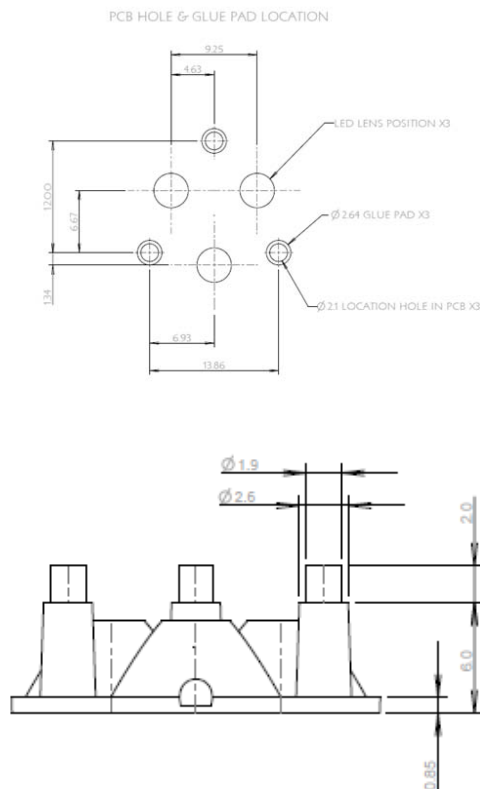
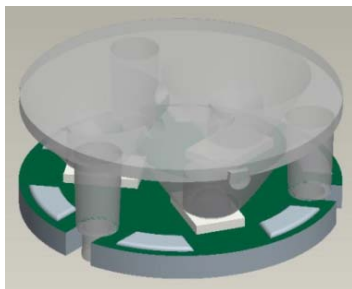
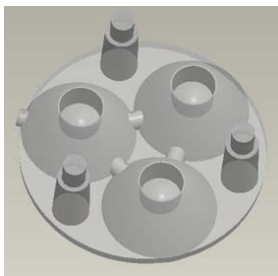
PCB GLUE PAD AND ALIGNMENT HOLE
LAYOUT DIMENSIONS



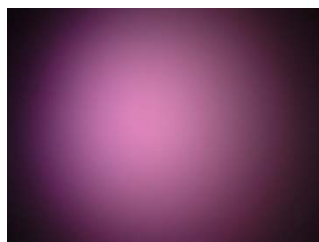
LUXEON® REBEL 10mm Triple Optic

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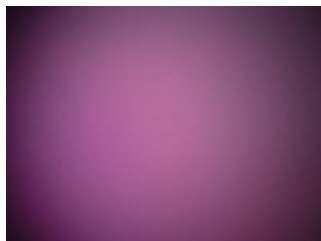
#Full Width Half Maximum i.e. total viewing angle



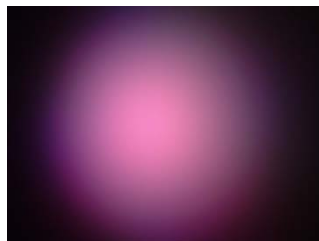
RGB and 10507



RGB and 10508



RGB and 10509



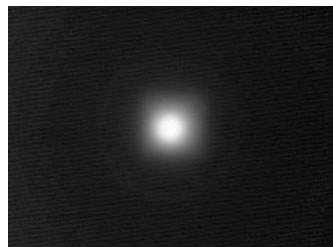
RGB and 10511

LUXEON® REBEL 20mm range

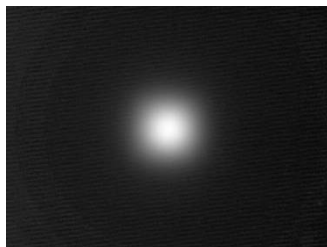
Part No.	Description	White			Natural White			Red/Amber			Green			Blue		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10193	Plain Tight	8.7	86%	24	8.4	87.1%	32.5	7	87%	37	6.5	84%	49	6.5	84%	49
10194	Frosted Narrow	12	87%	16	10.65	86.8%	19.4	10.8	88%	19	10	85%	24.3	10	85%	25.4
10208	Ripple Medium	19	83%	6.7	20	86%	6.85	13	81%	11	19	86%	13.8	19	86%	13.8
10195	Medium Frosted	19	83%	5.0	18.1	82.5%	5.8	17	86%	6.3	19	82%	10	19	82%	10
10209	Ripple Wide	24	79%	3.1	37	81.9%	2.6	14	81%	4.9	23	83%	6.3	23	83%	6.3
10196	Wide Frosted	35	74%	2.0	34.1	78.2%	2.2	35	74%	2.0	40	77.5%	3.9	40	78%	3.9
10197	Elliptical	45 x 9.5	82%	6.0	47.8*8.8	84.8%	6	40 x 9.4	84%	7.3	46 x 10	84%	11.7	46 x 10	84%	11.7
10198	Elliptical Orthogonal*	9.5 x 40	81%	6.0	8.95*47.1	85.6%	6.1	9.4 x 40	84%	7.3	10 x 50	85%	10.8	10 X 50	85%	10.8
10356	Fibre	Optimised for coupling into 0.5NA fibre bundles of 8 - 12mm diameter														

*Orthogonal is the elliptical beam turned through 90deg.

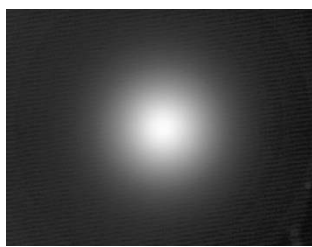
#Full Width Half Maximum i.e. total viewing angle



10193



10194



10195

Part No.	Colour	Description	Part No.	Colour	Description
10235	Black	Round Holder	10431	Black	Star Board holder feet
10236	White	Round Holder	10432	Clear	Star Board holder feet
10237	Clear	Round Holder	10433	White	Star Board holder feet
10279	White	50mm Triple holder long leg	10434	Black	Star Board holder no feet
10289	White	50 mm Triple holder short leg	10435	Clear	Star Board holder no feet
10299	Black	50 mm Triple holder Long leg	10436	White	Star Board holder no feet
10309	Black	50 mm Triple holder short leg			

LUXEON® Rebel 26.5mm Optics

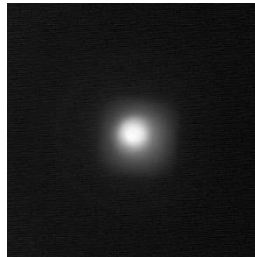
Part No. Optics on their own	Description	White		
		FWHM	EFF	Cd/lm
10048	Plain tight	6.7	85.9%	44.8
10124	frosted narrow	10.1	82.35%	17.9
10108	Frosted medium	20.25	80.4%	4.5
10260	Frosted Wide	33.2	78.61%	2.2
10049	Elliptical	43.5*7.1	82.11%	7.6
10224	Elliptical Orthogonal	7.9*47.65	82.73%	7.2
10234	Elliptical Ramp Optic	44.4*6.64	82.6%	7.34



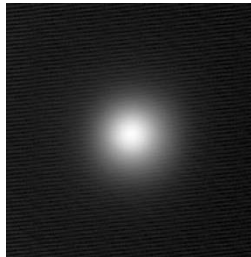
Part No.	Colour	Description
10442	White	4.3mm foot (not Stocked)
10452	White	2.0mm foot (Not Stocked)
10462	White	0.8mm foot (Stocked)
10472	Black	4.3mm foot (Not Stocked)
10482	Black	2.0mm foot (Not Stocked)
10492	Black	0.8mm foot (Not Stocked)

*Orthogonal is the elliptical beam turned through 90deg.

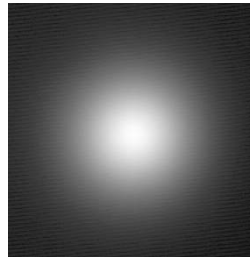
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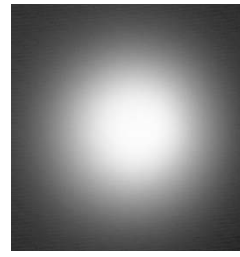
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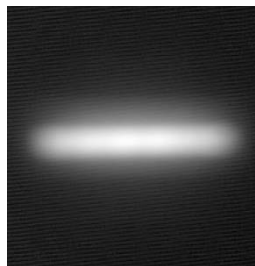
10124



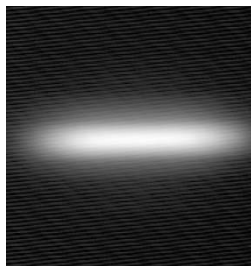
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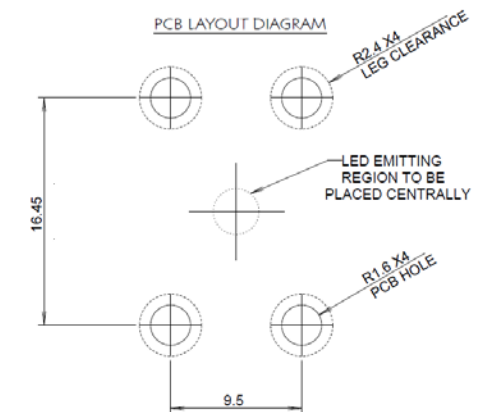
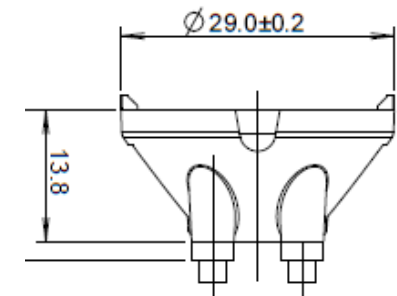
10260



10049 & 10224



10234



LUXEON[®]

Other Optics

Here are further range's of different optics that suit some of the different LUXEON[®] LED's please look for the correct part number for the LED of your choice



Available from Future Lighting Solutions
www.futurelightingsolutions.com

Carclo Technical Plastics

111 Buckingham Avenue, Slough, Berkshire SL1 4PF ENGLAND / 600 Depot Street Latrobe PA. 15650 USA

Web: www.carclo-optics.com e-mail: sales@carclo-optics.com

Tel UK: 0044 (0) 1753 575011 Tel USA 00 (1) 724 539 6982



Other Optics for the LUXEON® range

Part No.	Description	White			Neutral White			Warm White			Red/Amber			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10025	50mm Optic LUXEON® I	3.0	74%	145	N/A	N/A	N/A	7.0	76%	91	4.6	80%	72	4.9	72%	60.3
10025	50mm Optic LUXEON®III	3.0	75%	89	N/A	N/A	N/A	N/A	N/A	N/A	5	80%	46	3.9	73%	96
10025	50mm Optic LUXEON®V	6.2	73%	35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.4	67%	24
10144	60mm Optic LUXEON®I	3.8	81%	145	N/A	N/A	N/A	2.7	88%	92	3.0	84%	136	2.9	80%	222
10144	60mm Optic LUXEON®III	3.2	82%	74	N/A	N/A	N/A	N/A	N/A	N/A	5	81%	79	3.1	71%	221
10144	60mm Optic LUXEON®V	6.0	82%	37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7	75%	34
10144	60mm Optic LUXEON®K2	3.1	77%	187	3.2	80%	181	2.9	80%	189.9	3	83%	209	3.1	78%	169
10144+10145	60mm Optic LUXEON®I	38 X 3	79%	17	N/A	N/A	N/A	37 X 3	79%	10.6	37 X 3	80%	15.6	38 X 3	79%	14.5
10144+10145	60mm Optic LUXEON®III	38 X 3	80%	15	N/A	N/A	N/A	N/A	N/A	N/A	38 X 5	76%	10.1	38 X 3	73%	16.5
10144+10145	60mm Optic LUXEON®V	37 X 6	78%	7.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	38 X 7	73%	7.1
10144+10145	60mm Optic LUXEON®K2	38 X 3.1	73%	14.5	38 X 3	75%	14.6	38x2.4	75%	16	38 X 3	79%	16.5	38 X 3	74%	13.8

#Full Width Half Maximum i.e. total viewing angle



- We have a holder Part number 10146 which holds the optic 10144 and the spreader lens 10145 in the correct place
- This can be brought as a built up assembly of Optic 10144 and holder 10146 under part number 10147
- New Part 10158 is the same beam angle as the 10144 and the look is the same but due to using a AL coating the efficiency is reduced by about 8% but with big part price savings



LUXEON®

Side Emitter Range

Here is a range's of optics that convert the standard different LUXEON® LED's into side emitting units please look for the correct part number for the LED of your choice



Available from Future Lighting Solutions
www.futurelightingsolutions.com

Carclo Technical Plastics

111 Buckingham Avenue, Slough, Berkshire SL1 4PF ENGLAND / 600 Depot Street Latrobe PA. 15650 USA

Web: www.carclo-optics.com e-mail: sales@carclo-optics.com

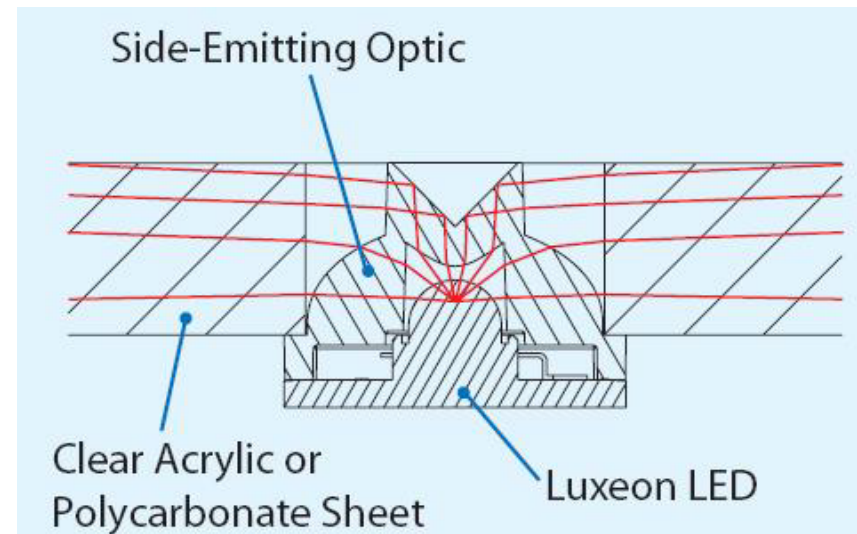
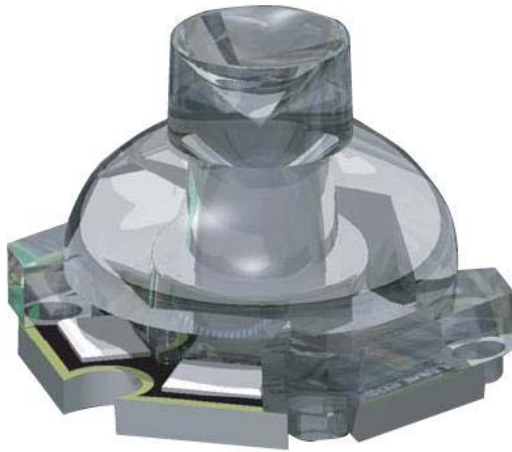
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Side Emitters for LUXEON® LED's

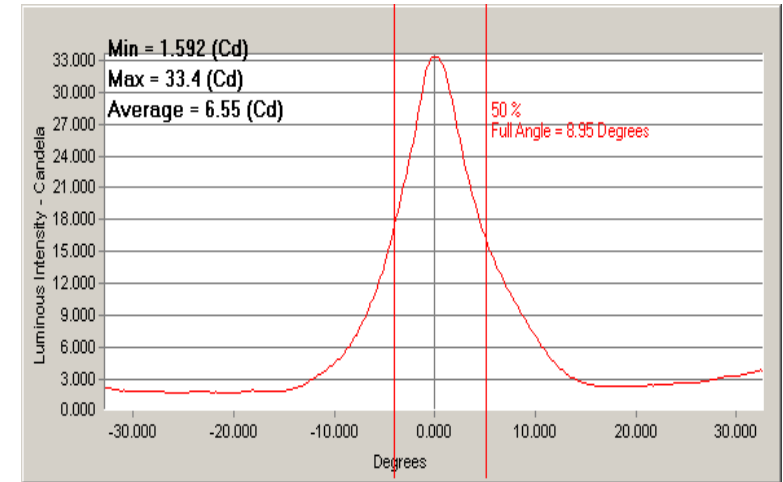
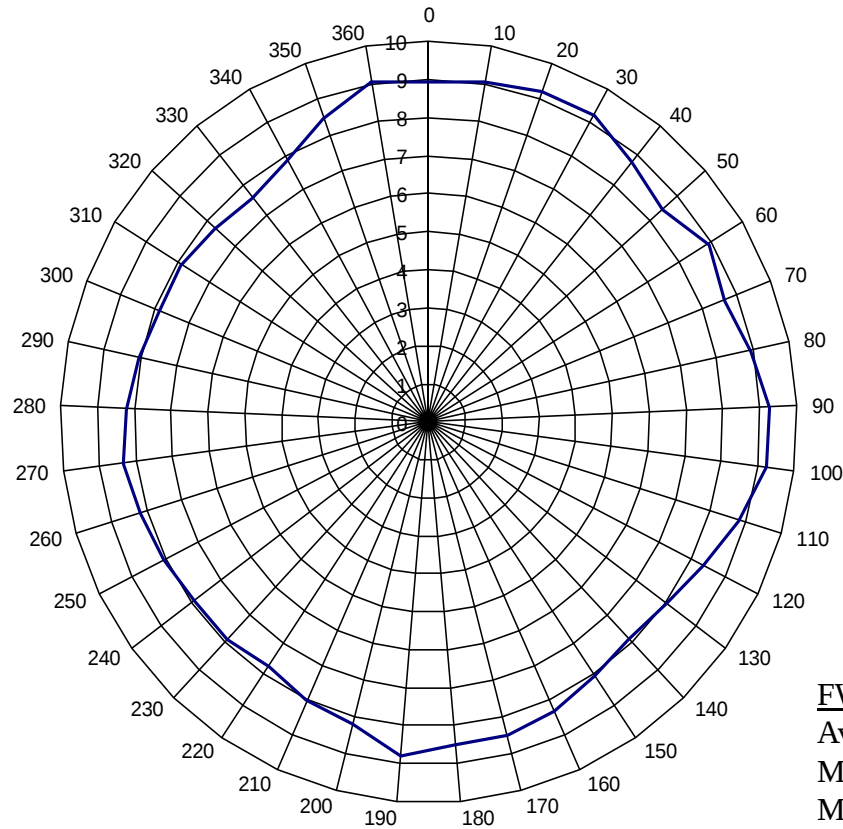
Part No.	Description	White			Natural White			Warm White			Red/Amber			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10071	LUXEON® I Star				N/A	N/A	N/A									
10040	LUXEON® III Star				N/A	N/A	N/A	N/A	N/A	N/A						
10040	LUXEON® V Star				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10099	LUXEON® I/flat base				N/A	N/A	N/A									
10099	LUXEON® III flat base				N/A	N/A	N/A	N/A	N/A	N/A						
10099	LUXEON® V flat base				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10126	LUXEON® K2															
10267	LUXEON® Rebel	8.4	87%	0.8												

#Full Width Half Maximum i.e. total viewing angle



Side Emitter 10267 Rebel

FWHM divergence versus side emitter rotation angle



FWHM:

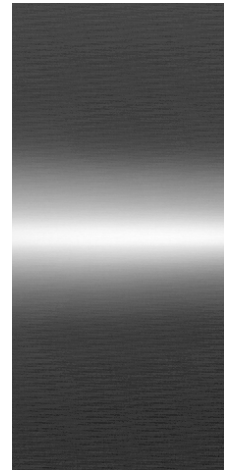
Average FWHM: 8.4degree;

Minimum FWHM: 7.45degree ;

Maximum FWHM: 9.3degree

Efficiency : 87%

Cd/lm: $38/46=0.8$ @ 350mA (average of 8 readings)



Continuous Strip Optic

Here is a optic to fit over a linear strip of LED's to give good even mix along the length whilst controlling the beam in the other direction designed for LUXEON® Rebel



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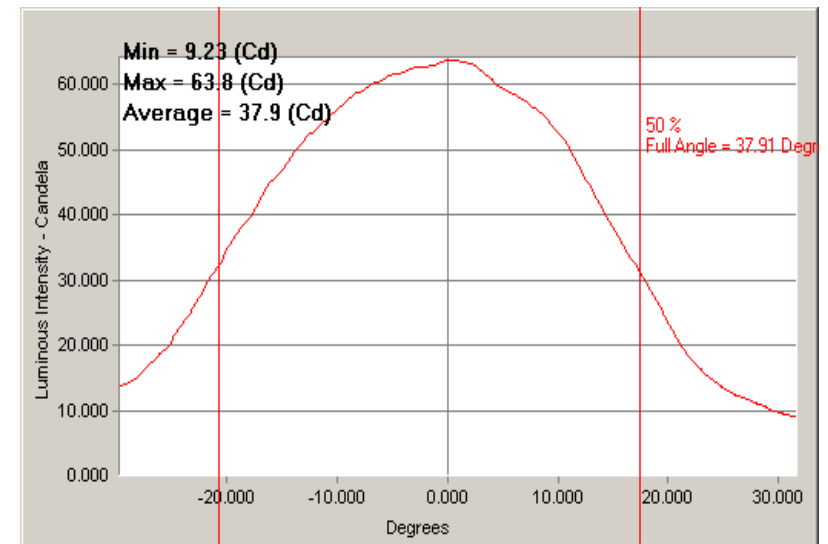
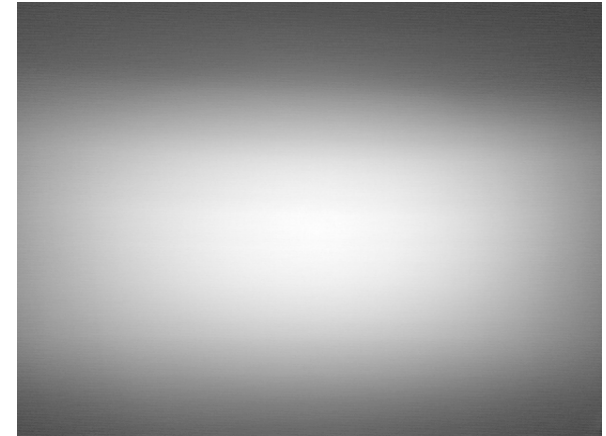
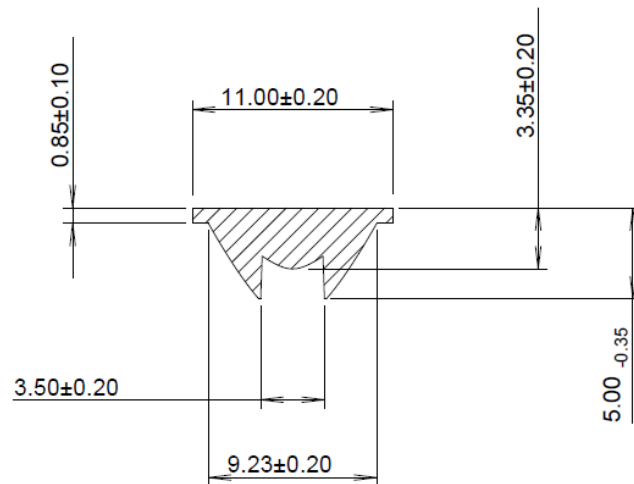
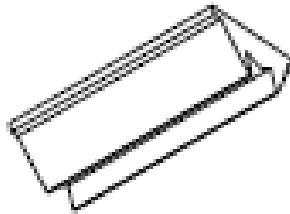
08 January 2010



Continuous Strip Optic

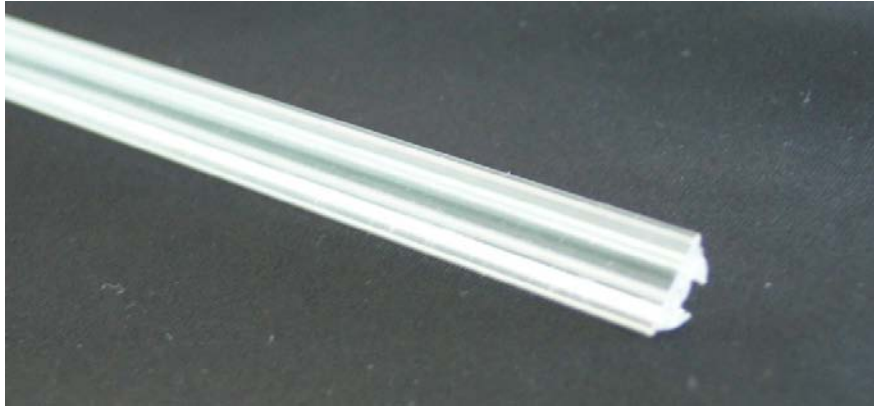
- A single piece optic that can be made in lengths to suit your needs
- Will be standard in 1.2m (4') and 300mm (1') lengths tol -0.0 /+3.0
- Easily cut to your required length using a fine tooth saw
- Made from optical quality PC for optimal temperature and system performance
- Designed for the Rebel
- Surface mount height tolerance less critical due to diffused front optical surface
- Variable beam angles to mounting heights as show in the table below based on Rebel LED

Z height from Package	FWHM	Eff
0 mm	38	85%
0.5 mm	34	81%
1 mm	30.7	75.5%



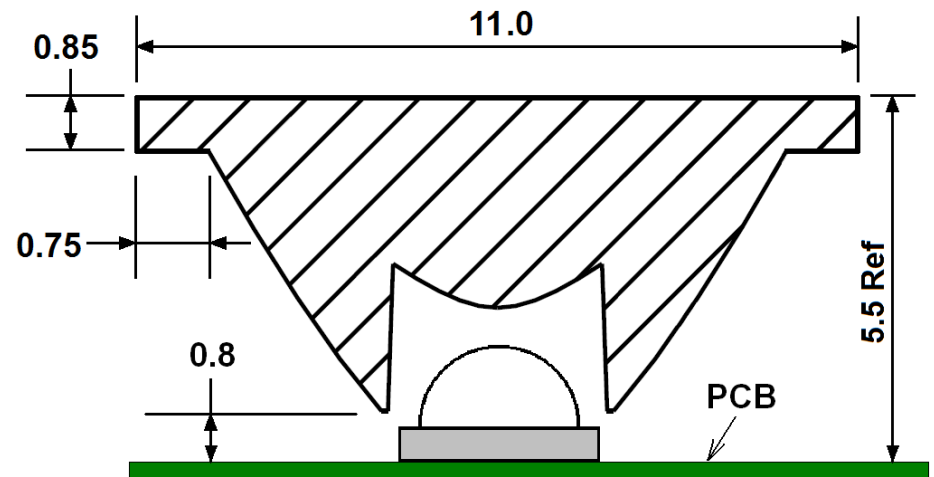
Application notes

- Two-part epoxies such as Loctite 3430 can be used to join or mount the continuous strip optic without fogging the PC lens
- Ideal for florescent tube replacement fixtures, refrigeration lighting, cove lighting, under cupboard lighting, retail lighting, wall washing, and other general illumination applications, in both single colour as well as RGB mixing.
- Colour binning LED's less critical in most applications as the light is mixed in the long plane.
- Easily mounted in an extruded aluminium housing that can serve as both a heat sink as well as a base unit for a light fixture or a light engine module



Part no	Description
10397	1.2m, (4 foot) Long
10398	300mm, (1 foot) Long

STRIP OPTIC MOUNTING DIMENSIONS



Bubble Optics Ultra wide

This is a new design and the start of our range of 'Bubble Optics'. These optics produce a very wide but even beam on a flat surface. Ideal for wide areas lighting designed for the LUXEON® Rebel and K2



Available from Future Lighting Solutions
www.futurelightingsolutions.com

Carclo Technical Plastics

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Web: www.carclo-optics.com e-mail: sales@carclo-optics.com

Tel UK: 0044 (0) 1753 575011 Tel USA 00 (1) 724 539 6982



Ultra Wide Angle Optics

Optics for Producing uniform illuminance over wide areas

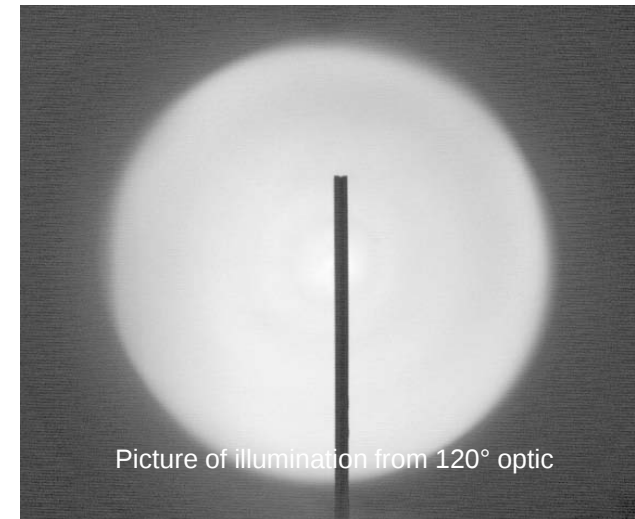
Carclo Ultra Wide Angle Optics are designed to meet the needs of Luminaire designers who need to efficiently light wide areas with very even illumination. These optics are suitable for applications such as emergency lighting, parking facility illumination and many other general illumination areas.

These optics work by re-mapping the light output from the Led to the far-field. Their hemi-spherical outer shape has given rise to their generic name “Bubble optics”.

Mounted at 2.5m (~8 ft.) the 120° optic will evenly illuminate an area 8m (~26 ft.) in diameter, the 130° optic will illuminate a 10m (~33 ft.) diameter.

Features

- Beam widths of 120 deg FWHM (Part No. 10403) and 130 deg FWHM (Part No. 10406)
- Greater than 90% efficiency.
- Optimised for Led's with Lambertian 1.5 x 1.5 mm emitting area.
- One piece design for small footprint LED's like the Rebel.
- Additional holders available for use with K2 Led's.
- Manufactured in lens grade polycarbonate with UL certification.
- Suitable for continuous operation up to 120 °C.

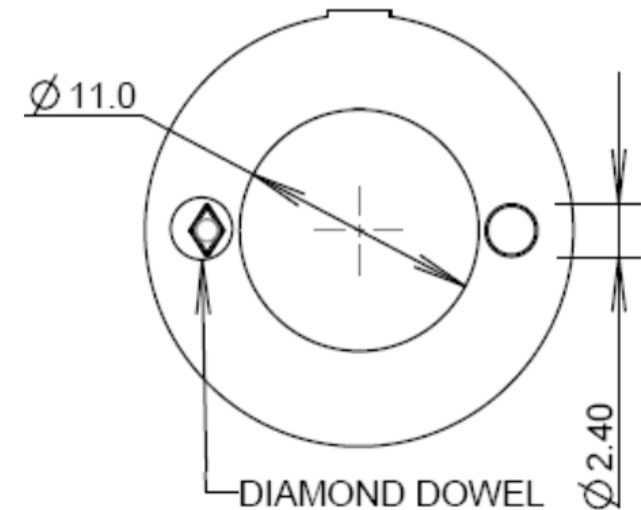
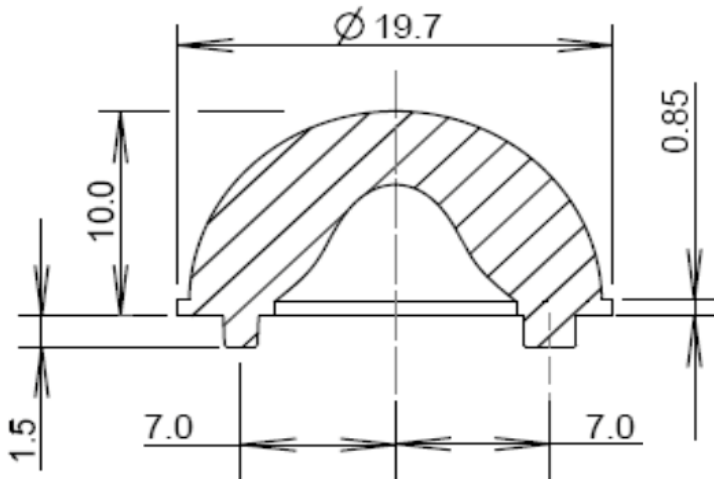
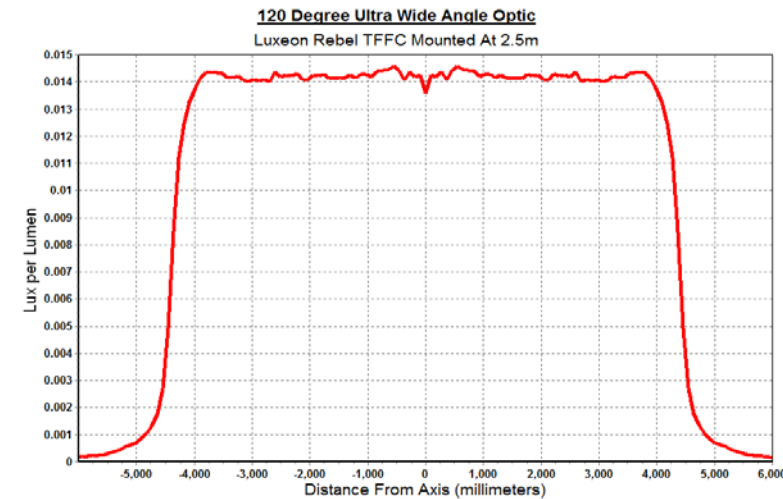


Picture of illumination from 120° optic

120 degree Bubble Optic

- Arrays of 19.7mm diameter Ultra wide optics should be placed no closer than 27mm between centres to avoid shading.
- Locate on PCB using 2x $\varnothing 2.5\text{mm}$ holes equi-spaced 7mm either side of Led emitting area.
- Always use a very low vapour adhesive such as Loctite 3430 when mounting polycarbonate optics.

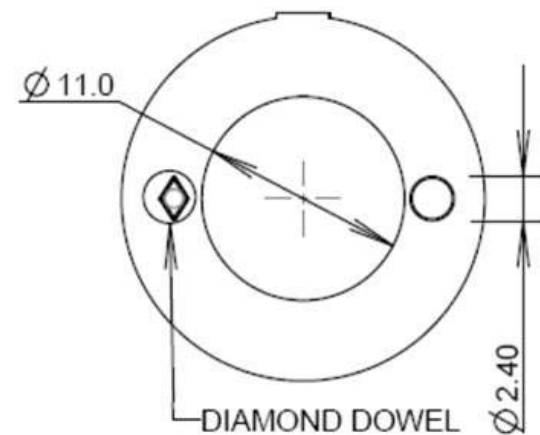
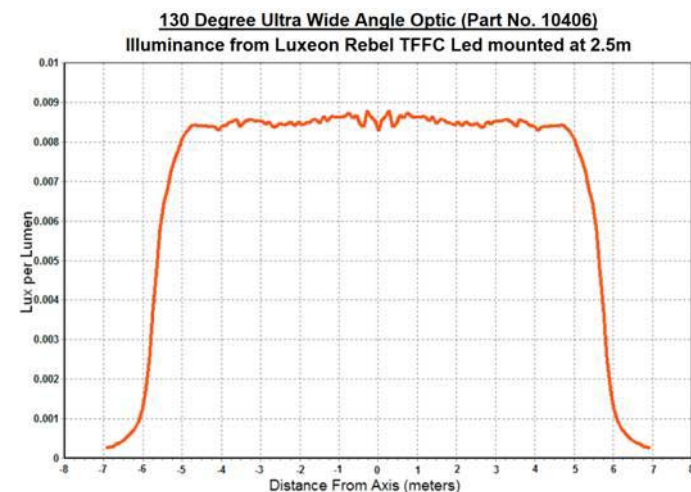
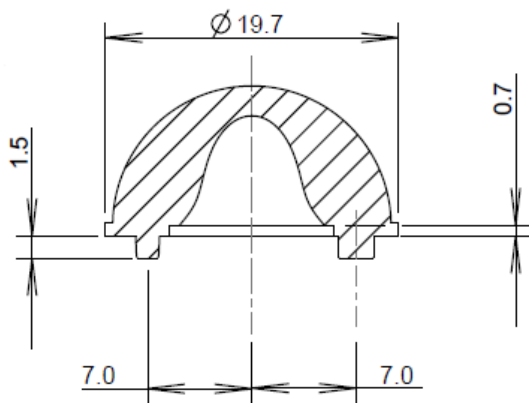
LED	120 deg	130 deg	Hemispherical	Downlight	Holder
Rebel	10403	10406	10620	10628	not needed
K2	10403	10406	10620	10628	10381



130 degree Bubble Optic

- Arrays of 19.7mm diameter Ultra wide optics should be placed no closer than 27mm between centres to avoid shading.
- Locate on PCB using 2x $\varnothing 2.5\text{mm}$ holes equi-spaced 7mm either side of Led emitting area.
- Always use a very low vapour adhesive such as Loctite 3430 when mounting polycarbonate optics.

LED	120 deg	130 deg	Hemispherical	Downlight	Holder
Rebel	10403	10406	10620	10628	not needed
K2	10403	10406	10620	10628	10381



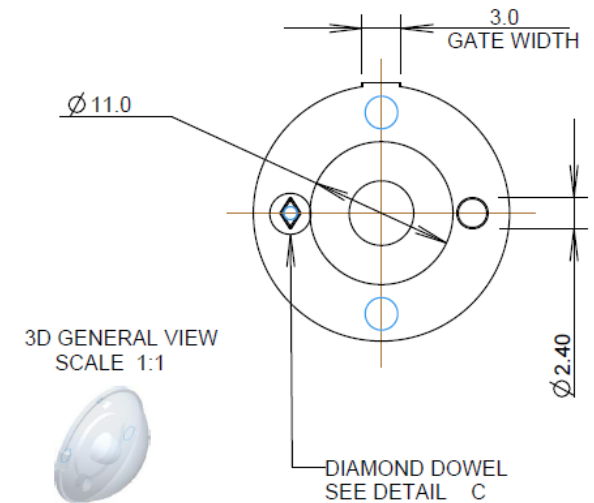
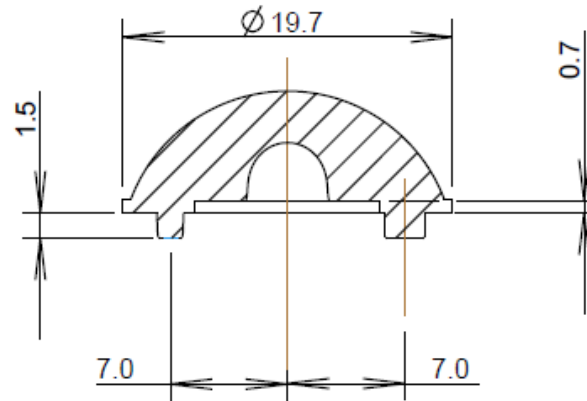
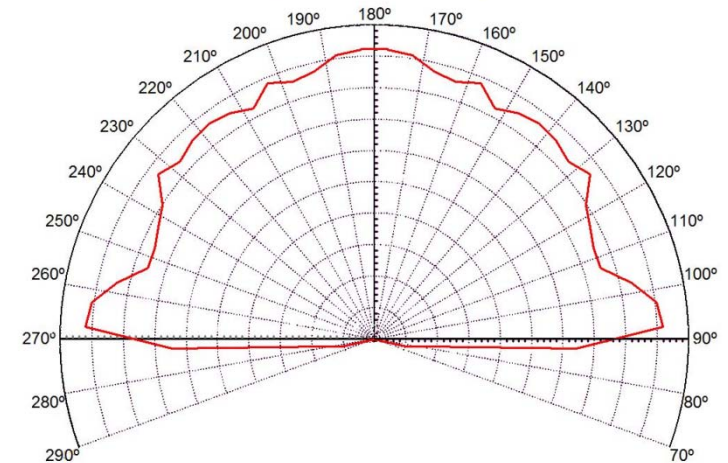
Hemi-spherical Bubble Optic

LED	120 deg	130 deg	Hemispherical	Downlight	Holder
Rebel	10403	10406	10620	10628	not needed

Isotropic Bubble Optic (Part No. 10620)

Rebel TFFC White

On Axis Luminance 0.141 Candela per Lumen



Downlight Bubble Optic

LED	120 deg	130 deg	Hemispherical	Downlight	Holder
Rebel	10403	10406	10620	10628	not needed
K2	10403	10406	10620	10628	10381

