

# 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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### Carclo Technical Plastics

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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



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 20mm assembled in holder 10012

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
10800	Plain Tight	8.0	84%	20	10.4	81%	16	9.6	82%	13	9.0	80%	10
10801	Frosted Narrow	12	87%	12	15	83%	11	15	87%	8.3	14	84%	7.0
10802	Ripple Medium	19	81%	5.2	13	81%	7.2	15	88%	7.3	17	81%	4.6
10803	Frosted Medium	22	83%	3.4	20	77%	4.8	20	80%	3.7	22	76%	3.0
10804	Ripple Wide	34	81%	2.3	16	80%	3.4	28	86%	2.7	18	80%	3.0
10805	Frosted Wide	35	81%	2.6	43	74%	1.6	34	78%	2.1	44	72%	1.3
10806	Wide angle reflector	79	91%	1.0	77	85%	1.3	78	92%	1.1	64	93%	1.4
10807	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
10808	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

\*Orthogonal is the elliptical beam turned through 90deg.

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



# LUXEON® I 20mm assembled in holder 10026

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
10809	Plain Tight	8.0	84%	20	10.4	81%	16	9.6	82%	13	9.0	80%	10
10810	Frosted Narrow	12	87%	12	15	83%	11	15	87%	8.3	14	84%	7.0
10811	Ripple Medium	19	81%	5.2	13	81%	7.2	15	88%	7.3	17	81%	4.6
10812	Frosted Medium	22	83%	3.4	20	77%	4.8	20	80%	3.7	22	76%	3.0
10813	Ripple Wide	34	81%	2.3	16	80%	3.4	28	86%	2.7	18	80%	3.0
10814	Frosted Wide	35	81%	2.6	43	74%	1.6	34	78%	2.1	44	72%	1.3
10815	Wide angle reflector	79	91%	1.0	77	85%	1.3	78	92%	1.1	64	93%	1.4
10816	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
10817	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

\*Orthogonal is the elliptical beam turned through 90deg.

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

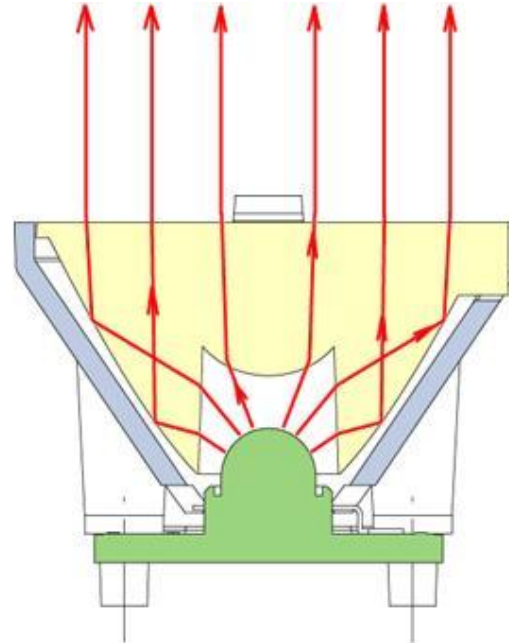


# LUXEON® I 26.5mm range

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 X 11	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



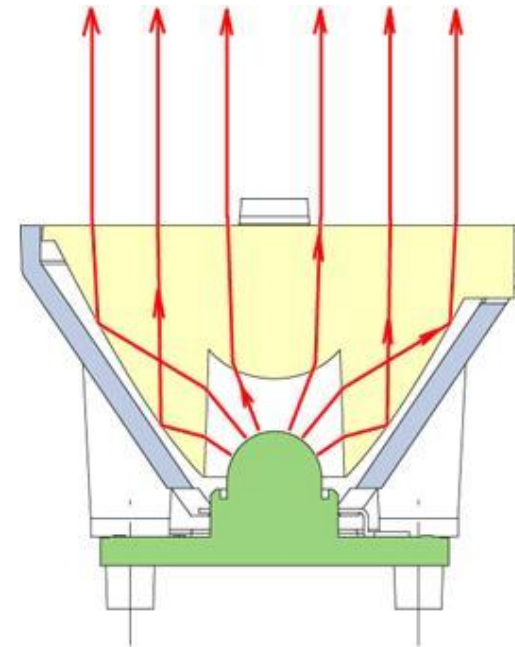
Part No.	Colour	Description
10064	Black	Holder long legs
10065	White	Holder long legs
10172	Black	Holder 0.8mm legs
10173	White	Holder 0.8mm legs
10174	Black	Holder no legs
10175	White	Holder no legs

# LUXEON® I 26.5mm assembled in holder 10064

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
10900	Plain Tight	5.4	89%	50	6.8	85%	30	6.5	87%	35	11	79%	9.4
10901	Frosted Narrow	7.1	87%	29	9.8	84%	22	9.8	87%	23	13	79%	7.2
10902	Frosted Medium	18	87%	5.0	20	84%	5.2	20	85%	5.2	25	77%	2.7
10903	Frosted Wide	36.1	82%	2.3	36	84%	2.2	37	81%	2.1	49	71%	1.0
10904	Elliptical	47 X 6.8	83%	6.4	42 X 12	81%	4.5	45 X 11	82%	5.5	41 X 17	75%	2.5
1090	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
10906	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



# 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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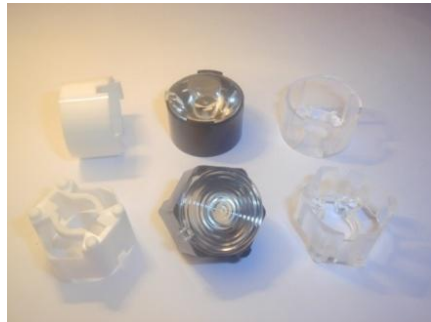
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# LUXEON® III 20mm range

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 20mm assembled in holder 10012

Part No.	Description	White			Red			Blue			Green		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm
10800	Plain Tight	6.9	82%	17	14	82%	8.1	9.0	87%	16	10	87%	19
10801	Frosted Narrow	14	88%	6.2	18	88%	6.5	14	87%	10	14	87%	10
10802	Ripple Medium	20	86%	4.7	22	88%	4.5	16	87%	6.0	16	87%	6.0
10803	Frosted Medium	20	85%	2.9	25	86%	3.5	19	84%	4.2	20	84%	4.3
10804	Ripple Wide	32	84%	2.2	26	87%	2.8	31	86%	2.8	27	85%	2.7
10805	Frosted Wide	35	80%	1.6	43	81%	1.5	37	80%	1.5	37	80%	1.5
10806	Wide Angle Reflector	72	91%	0.9	68	90%	1.2	75	93%	1.6	75	93%	1.6
10807	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
10808	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

\*Orthogonal is the elliptical beam turned through 90deg.

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



# LUXEON® III 20mm assembled in holder 10043

Part No.	Description	White			Red			Blue			Green		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm
10818	Plain Tight	6.2	89%	17	14	82%	8.1	9.0	87%	16	10	87%	19
10819	Frosted Narrow	14	88%	6.2	18	88%	6.5	14	87%	10	14	87%	10
10820	Ripple Medium	20	86%	4.7	22	88%	4.5	16	87%	6.0	16	87%	6.0
10821	Frosted Medium	20	85%	2.9	25	86%	3.5	19	84%	4.2	20	84%	4.3
10822	Ripple Wide	32	84%	2.2	26	87%	2.8	31	86%	2.8	27	85%	2.7
10823	Frosted Wide	35	80%	1.6	43	81%	1.5	37	80%	1.5	37	80%	1.5
10824	Wide Angle Reflector	72	91%	0.9	68	90%	1.2	75	93%	1.6	75	93%	1.6
10825	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
10826	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

\*Orthogonal is the elliptical beam turned through 90deg.

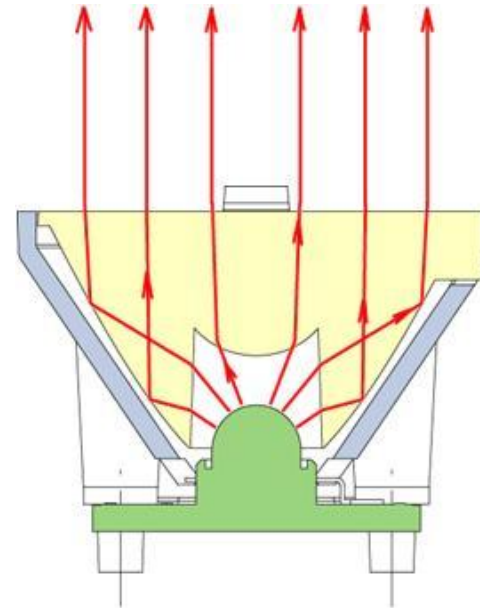
#Full Width Half Maximum i.e. total viewing angle



# 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



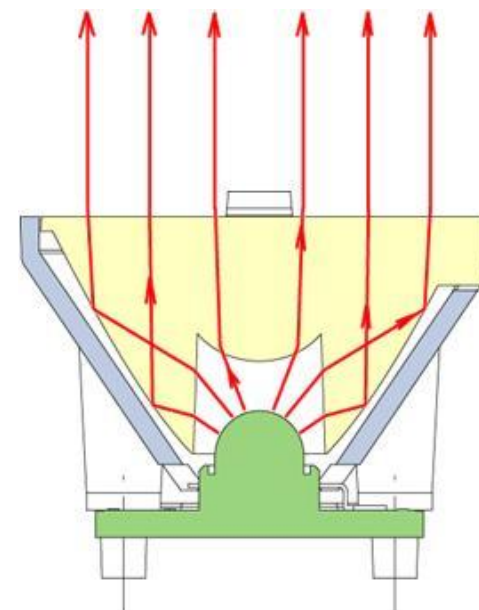
Part No.	Colour	Description
10076	Black	Holder long legs
10077	White	Holder long legs
10111	Black	Holder 0.8mm legs
10112	White	Holder 0.8mm legs
10174	Black	Holder no legs
10175	White	Holder no legs

# LUXEON® III 26.5mm assembled in holder 10076

Part No.	Description	White			Red			Blue			Green		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm
10048	Plain Tight	5.7	89%	28	10.7	99%	16.5	5.6	91%	53	6.4	92%	53
10124	Frosted Narrow	9	89%	16	15	93%	9.2	8.3	90%	25	9.3	92%	25
10108	Frosted Medium	20	88%	3.7	24	89%	3.8	18	87%	5.4	18.2	87%	5.4
10260	Frosted Wide	35.7	81%	2	39.3	82%	1.8	37.2	81%	2.7	37.3	81%	2.7
10049	Elliptical	45 x 10	88%	3.7	41 x 14	88%	4.7	46 x 11	87%	4.3	44 x 13	85%	4.3
10224	Elliptical Orthogonal	10 x 45	88%	3.7	14 x 46	88%	4.1	11 x 46	87%	4.3	13 x 44	85%	4.3
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%	5.0

\*Orthogonal is the elliptical beam turned through 90deg.

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



# 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.” Reproduced from Future Lighting Solutions web site



Available from Future Lighting Solutions  
[www.futurelightingsolutions.com](http://www.futurelightingsolutions.com)



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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 20mm assembled in holder 10012

Part No.	Description	White			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10800	Plain Tight	17	83%	6.4	18	86%	10
10801	Frosted Narrow	19	88%	5.0	21	83%	8
10802	Ripple Medium	27	87%	3.3	27	87%	5.7
10803	Frosted Medium	25	85%	3.1	29	83%	4.6
10804	Ripple Wide	54	85%	1.8	34	84%	3.6
10805	Frosted Wide	42	80%	1.5	46	80%	2.5
10806	Wide angle reflector	77	92%	1.1	75	95%	2.9
10807	Elliptical	39 X 19	84%	3.0	43 X 20	83%	4.6
10808	Elliptical Orthogonal*	19 X 39	84%	3.0	22 X 46	83%	4.4

\*Orthogonal is the elliptical beam turned through 90deg.

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



# LUXEON® V 20mm assembled in holder 10043

Part No.	Description	White			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10818	Plain Tight	17	83%	6.4	18	86%	10
10819	Frosted Narrow	19	88%	5.0	21	83%	8
10820	Ripple Medium	27	87%	3.3	27	87%	5.7
10821	Frosted Medium	25	85%	3.1	29	83%	4.6
10822	Ripple Wide	54	85%	1.8	34	84%	3.6
10823	Frosted Wide	42	80%	1.5	46	80%	2.5
10824	Wide angle reflector	77	92%	1.1	75	95%	2.9
10825	Elliptical	39 X 19	84%	3.0	43 X 20	83%	4.6
10826	Elliptical Orthogonal*	19 X 39	84%	3.0	22 X 46	83%	4.4

\*Orthogonal is the elliptical beam turned through 90deg.  
 #Full Width Half Maximum i.e. total viewing angle

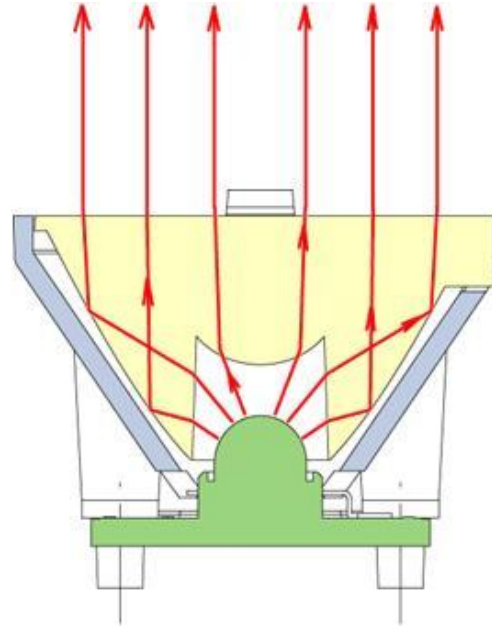




# LUXEON® V 26.5mm range

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

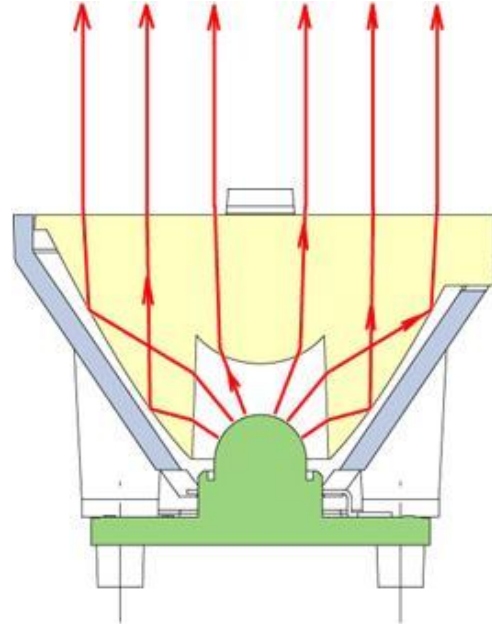


Part No.	Colour	Description
10076	Black	Holder long legs
10077	White	Holder long legs
10111	Black	Holder 0.8mm legs
10112	White	Holder 0.8mm legs
10174	Black	Holder no legs
10175	White	Holder no legs

# LUXEON® V 26.5mm assembled in holder 10076

Part No.	Description	White			Blue		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm
10907	Plain Tight	12	88%	13	12	91%	18
10908	Frosted Narrow	13	87%	12	16	90%	13.3
10909	Frosted Medium	22	87%	4.4	26	90%	5.3
10910	Frosted Wide	36.4	81.4%	2	38.5	80.3%	1.8
10911	Elliptical	42 x 14	86%	3.9	45 x 15	87%	6.1
10912	Elliptical Orthogonal	14 x 42	86%	3.9	16 x 46	84%	3.1
10913	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



# LUXEON® K2

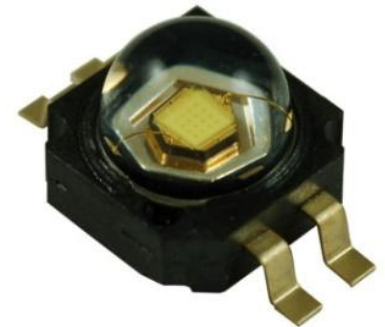
## 20 & 26.5mm Range

“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.” Reproduced from Future Lighting Solutions web site



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### Carclo Technical Plastics

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# LUXEON® K2 20mm range

Part No.	Description	White			TTFC 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	Frosted Wide												
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

**Please note the 10140 does not current fit on a K2**



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 20mm assembled to holder 10119

Part No.	Description	White			TFC White			Red/Amber			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10827	Plain Tight	7.9	84%	28	7	855	28.7	8.2	89%	28	8.6	91%	18
10828	Frosted Narrow	15	88%	9.2	10	88%	17.5	11	89%	18	14	89%	8.7
10829	Ripple Medium	19	82%	5.4	27	84%	4.4	13	90%	11	14	90%	7.3
10830	Frosted Medium	20	80%	4.1	18	87%	5.4	20	90%	6.1	20	88%	3.9
10831	Ripple Wide	32	81%	2.3	42	87%	2.1	15	90%	5.2	18	90%	3.3
10832	Frosted Wide												
10833	Wide angle reflector	70	92%	0.73	69	92%	0.71	72	91%	2.2	62	91%	0.7
10834	Elliptical	45 X 10	87%	5.36	44 X 8	87%	6.62	43 X 10	93.3%	6.4	47.5 X10	88%	4.9
10835	Elliptical Orthogonal*	10 X 47.5	87.6%	4.9	8 X 44	88.%	5.8	9 X 45.5	93%	6.1	10 X 47.4	89%	4.8

\*Orthogonal is the elliptical beam turned through 90deg.

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

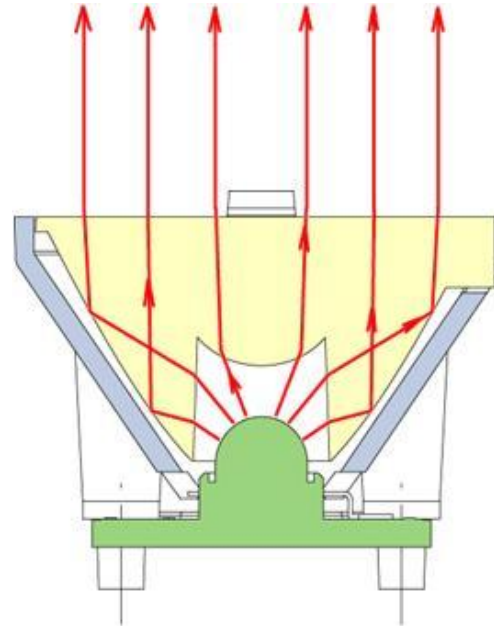
**Please note the 10140 does not current fit on a K2**



# LUXEON® K2 26.5mm range

Part No.	Description	White			Natural White			Red/Amber			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/l <sub>cd/lm</sub>	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



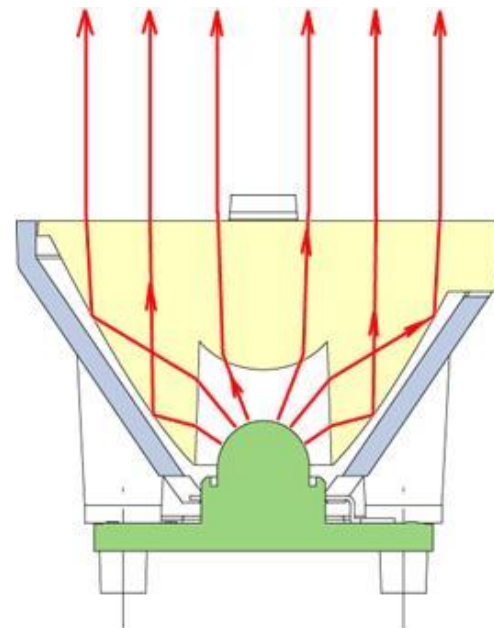
Part No.	Colour	Description
10230	Black	With stake able legs
10231	White	With stake able legs
10232	Black	legs flat on Board
10233	White	legs flat on Board
10256	Black	K2 legged with 2.4 feet
10257	White	K2 legged with 2.4 feet
10258	Black	K2 Legged with 1.2 Feet
10259	White	K2 Legged with 1.2 Feet

# LUXEON® K2 26.5mm assembled in holder 10230

Part No.	Description	White			Natural White			Red/Amber			Cyan/Green		
		FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/l <sub>cdlm</sub>	FWHM#	EFF	Cd/lm	FWHM#	EFF	Cd/lm
10915	Plain Tight	6.5	85%	48	7.1	89%	43	6.6	89%	30	6.9	90%	45
10916	Frosted Narrow	7.9	86%	33	5	85%	20	10.2	89%	27	9.4	89%	20
10917	Frosted Medium	18	83%	5.8	21	86%	4.6	19	86%	6	19	85%	4.2
10918	Frosted Wide	33	82%	2.5	32.25	82.6%	2.7	29	87%	3.1	33	81%	2.4
10919	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
10920	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
10921	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



# 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 mm<sup>2</sup>), 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



Available from Future Lighting Solutions  
[www.futurelightingsolutions.com](http://www.futurelightingsolutions.com)



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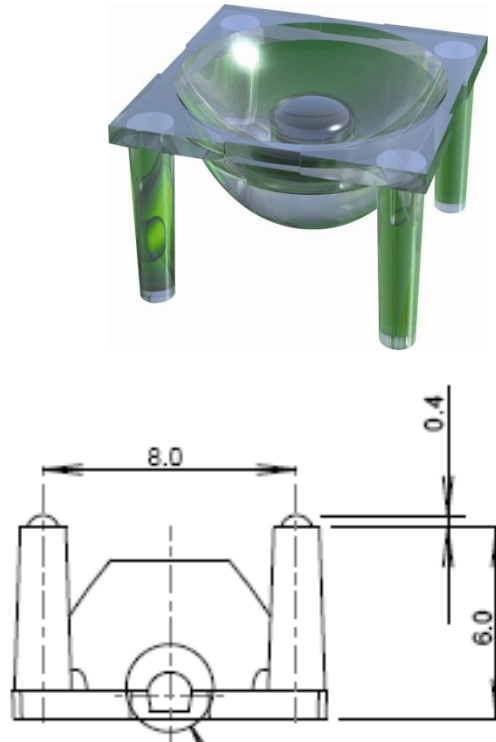
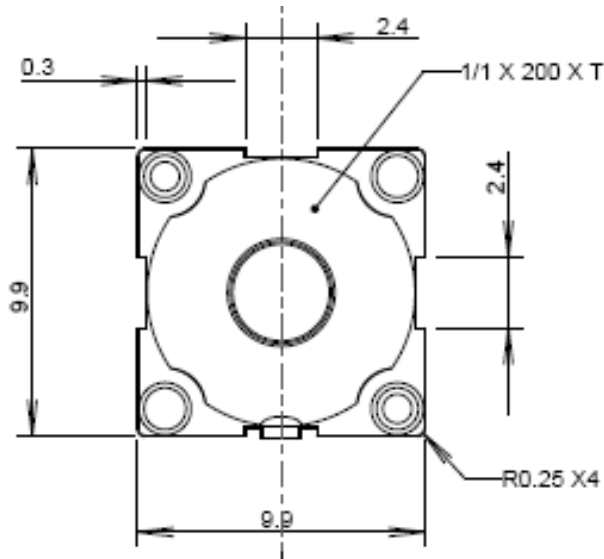




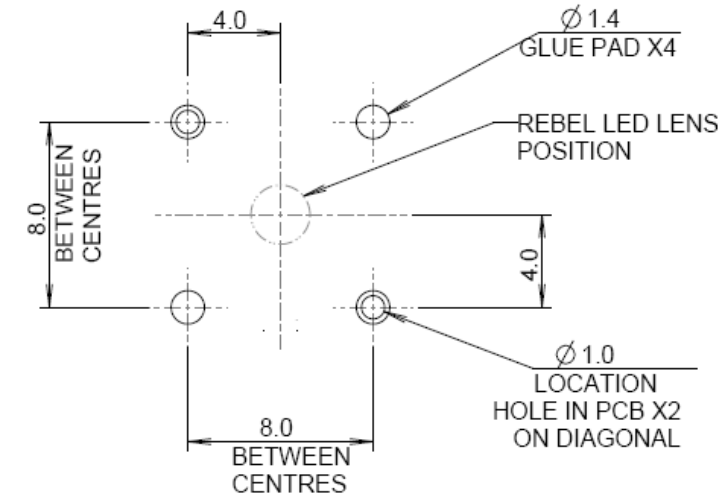
# LUXEON<sup>®</sup> REBEL 10mm range

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	21.8	84.6%	4.5	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



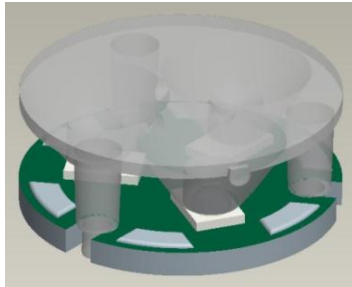
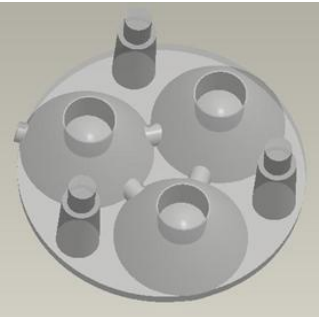
PCB GLUE PAD AND ALIGNMENT HOLE LAYOUT DIMENSIONS



# LUXEON<sup>®</sup> REBEL 10mm Triple Optic

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
10507	Lens front Narrow	17.7	84.5%	6.9	18.25	86%		16.6	84.3%	7.33	18.1	83.4%	6.61	19	86%	5
10508	Frosted medium	21.8	84.6%	4.5	23.2	83%	5.0	21.4	85%	4.2	23.3	81%	5.5	21.9	80%	5.7
10509	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
10510	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
10511	Frosted Narrow															

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



PCB HOLE & GLUE PAD LOCATION

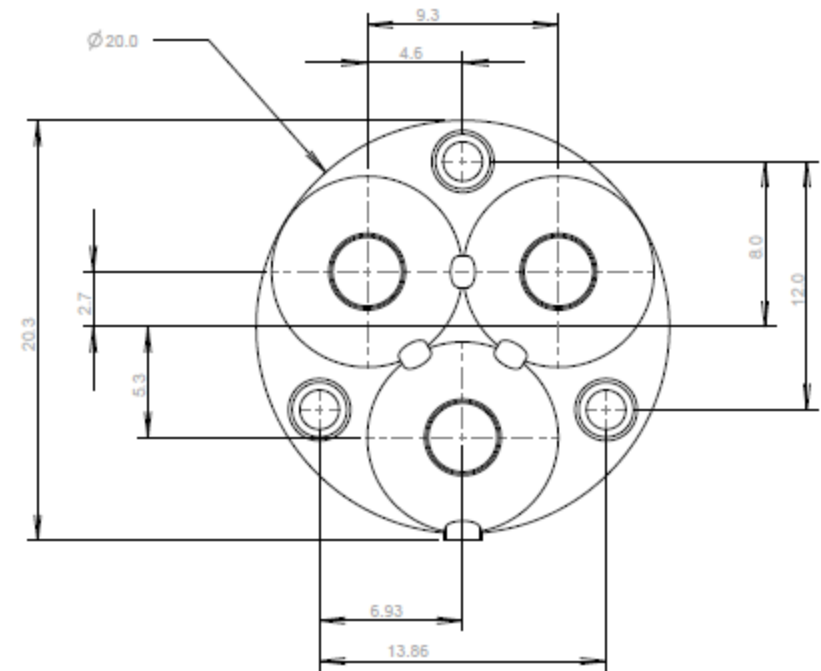
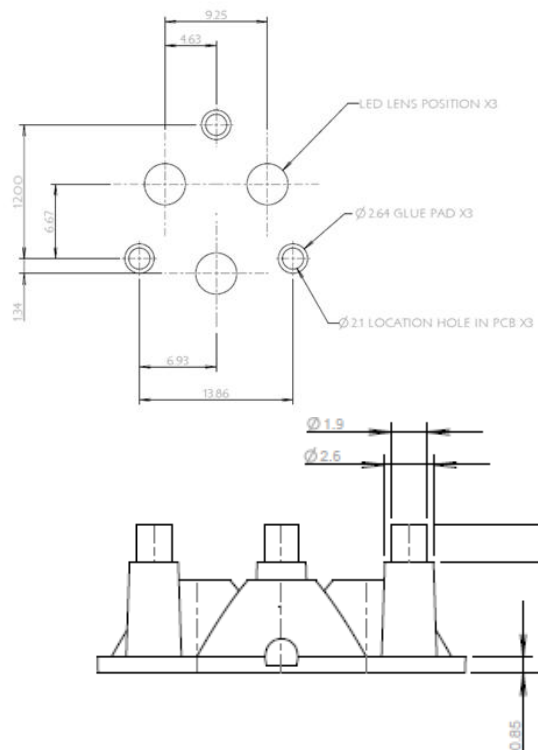
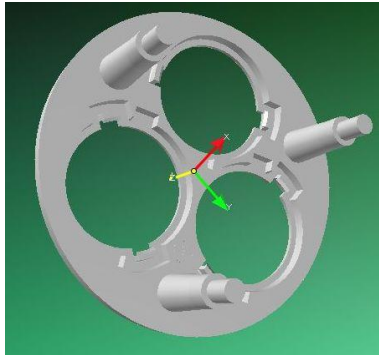


Image from RGB and 10507

# LUXEON<sup>®</sup> 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



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<sup>®</sup> REBEL assembled in Holder 10235

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
10845	Plain tight	8.7	86%	24	8.4	87.1%	32.5	7	87%	37	6.5	84%	49	6.5	84%	49
10846	Frosted Narrow	12	83%	16	10.65	86.8%	19.4	10.8	88%	19	10	85%	25	10	85%	25.4
10847	Ripple medium	16	81%	6.6	20	86%	6.85	13	81%	11	19	86%	13.8	19	86%	13.8
10848	Frosted medium	18	83%	5.0	18.1	82.5%	5.8	17	86%	6.3	19	82%	10	19	82%	10
10849	Ripple Wide	22	81%	2.5	37	81.9%	2.6	14	81%	4.9	23	83%	6.3	23	83%	6.3
10850	Frosted Wide	35	74%	2	34.1	78.2%	2.2	35	74%	2	40	77%	3.9	40	78%	3.9
10851	Elliptical	40 X 9.5	81%	6	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
10852	Elliptical Orthogonal*	9.5 X 40	81%	6	8.95*47.1	85.6%	6.1	9.4 X 40	84%	7.3	10 X 46	85%	10.8	10 X 46	85%	10.8

\*Orthogonal is the elliptical beam turned through 90deg.  
#Full Width Half Maximum i.e. total viewing angle

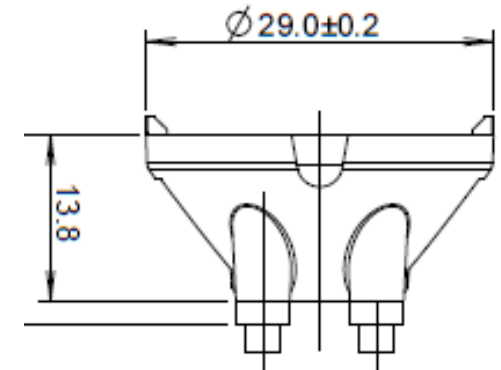
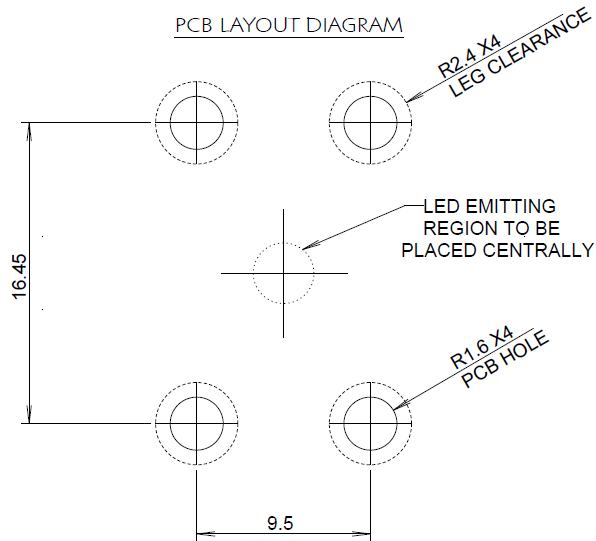


# LUXEON® Rebel 26.5mm Optics

Part No. Optics on their own	Description	White			Red			Blue			Green		
		FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	FWHM	EFF	Cd/lm	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
10440	White	4.3mm foot
10450	White	2.0mm foot
10460	White	0.8mm foot
10470	Black	4.3mm foot
10480	Black	2.0mm foot
10490	Black	0.8mm foot

\*Orthogonal is the elliptical beam turned through 90deg.  
#Full Width Half Maximum i.e. total viewing angle



# 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](http://www.futurelightingsolutions.com)

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# 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](http://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](http://www.carclo-optics.com) e-mail: [sales@carclo-optics.com](mailto:sales@carclo-optics.com)

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

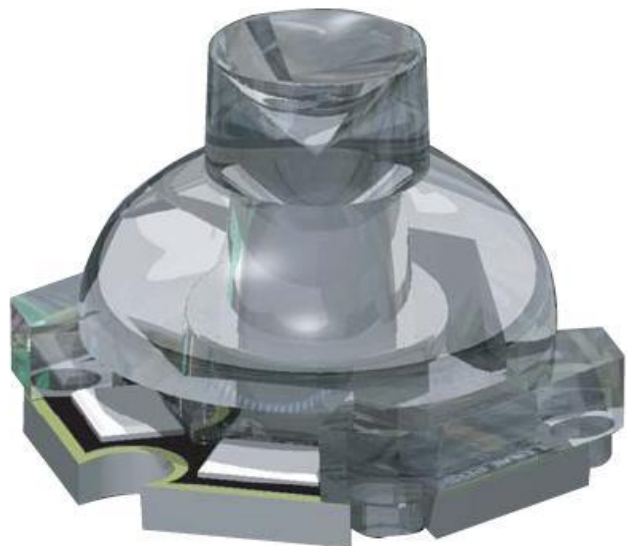




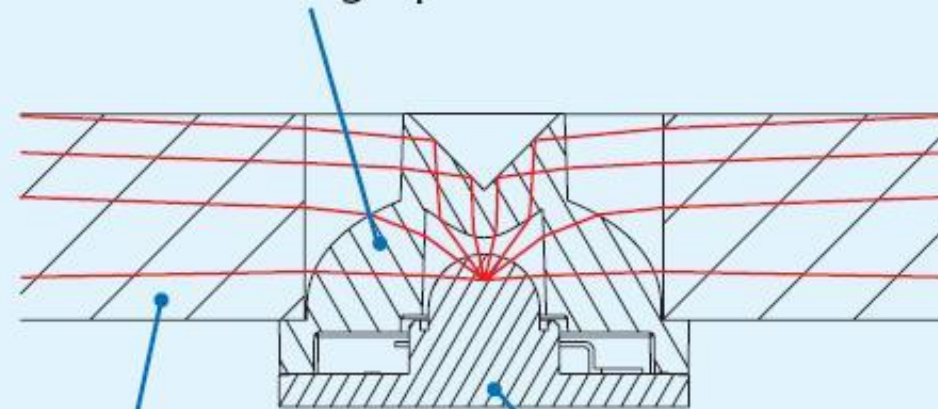
# Side Emitters for LUXEON® LED's

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-Emitting Optic

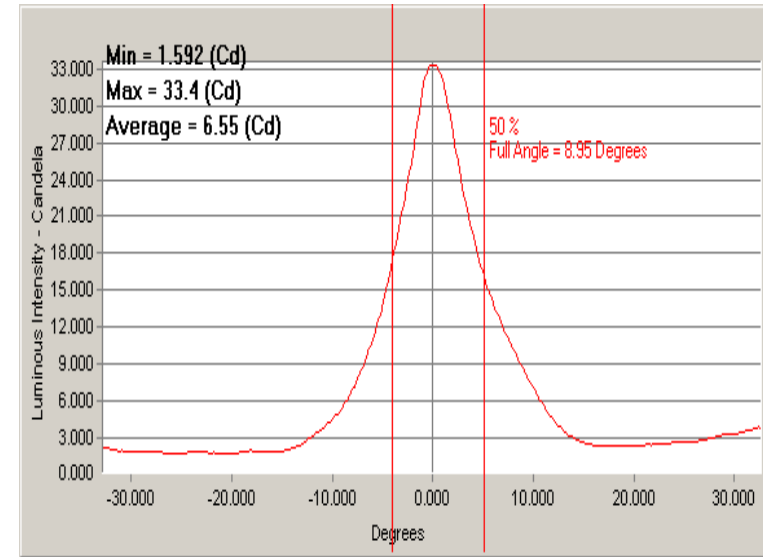
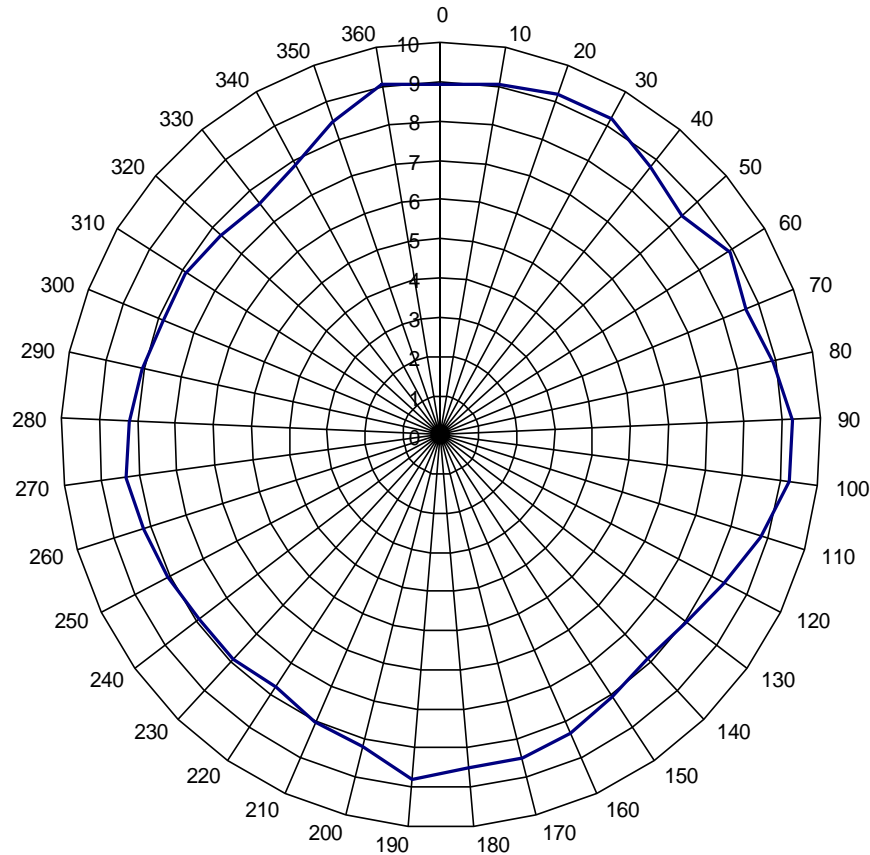


Clear Acrylic or Polycarbonate Sheet

Luxeon LED

# Side Emitter 10267 Rebel

FWHM divergence versus side emitter rotation angle



## FWHM:

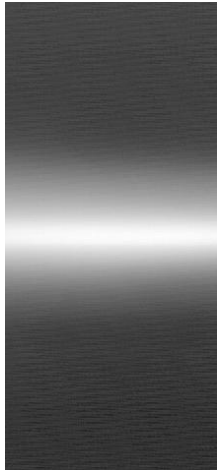
Average FWHM: 8.4degree;

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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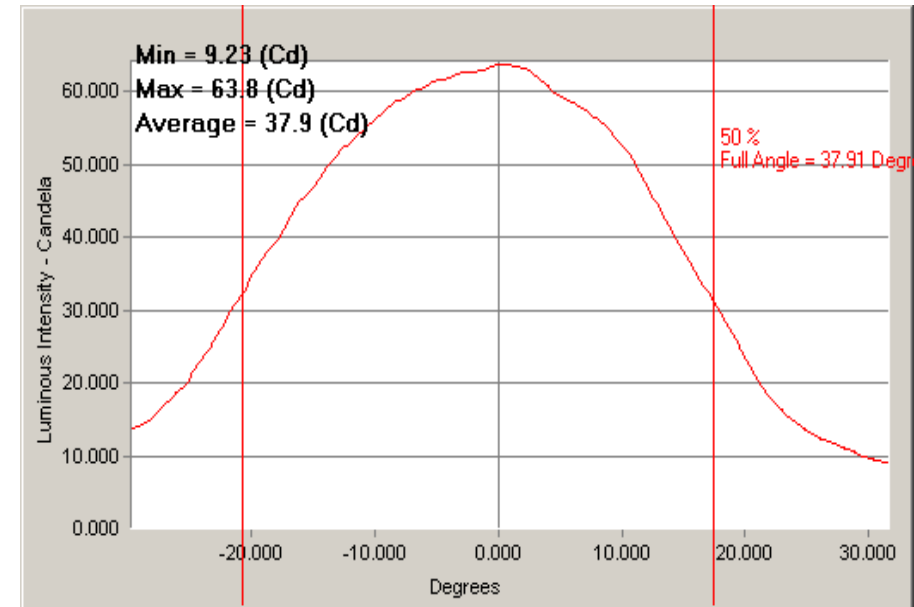
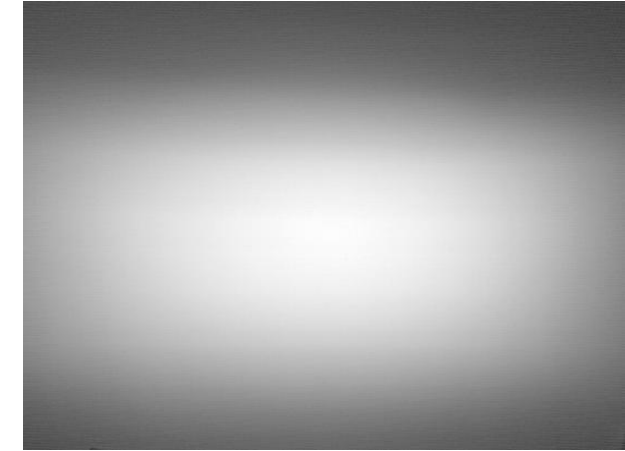
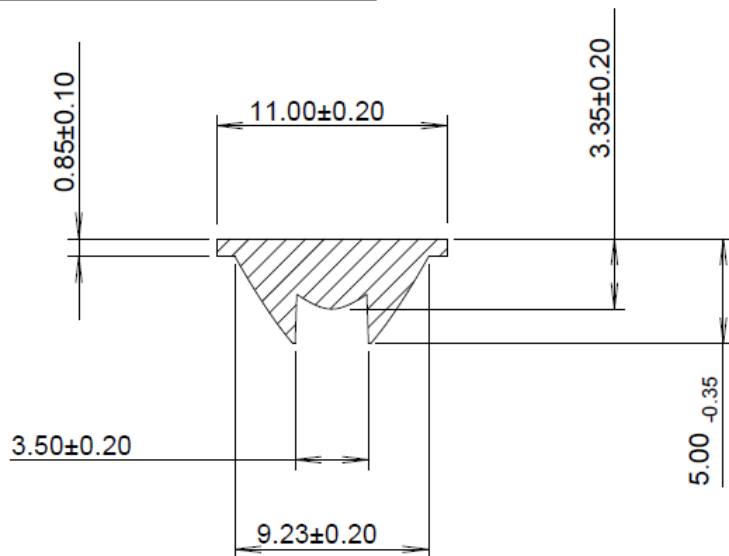
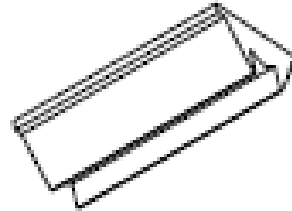
Web: [www.carclo-optics.com](http://www.carclo-optics.com) e-mail: [sales@carclo-optics.com](mailto:sales@carclo-optics.com)

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

# Continuous Strip Optic

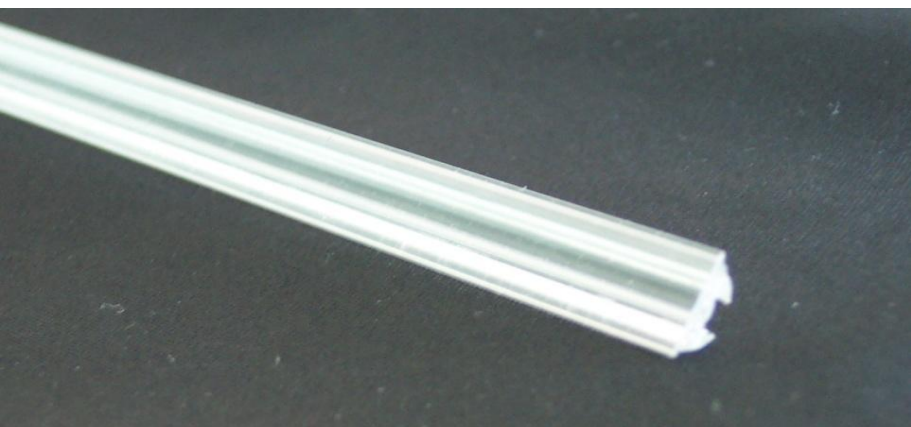
- A single piece optic that can be made in lengths to suit your needs
- Will be standard in 1.2m (4') and 300mm (1') lengths tol -0.0 /+3.0
- Easily cut to your required length using a fine tooth saw
- Made from optical quality PC for optimal temperature and system performance
- Designed for the Rebel
- 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%



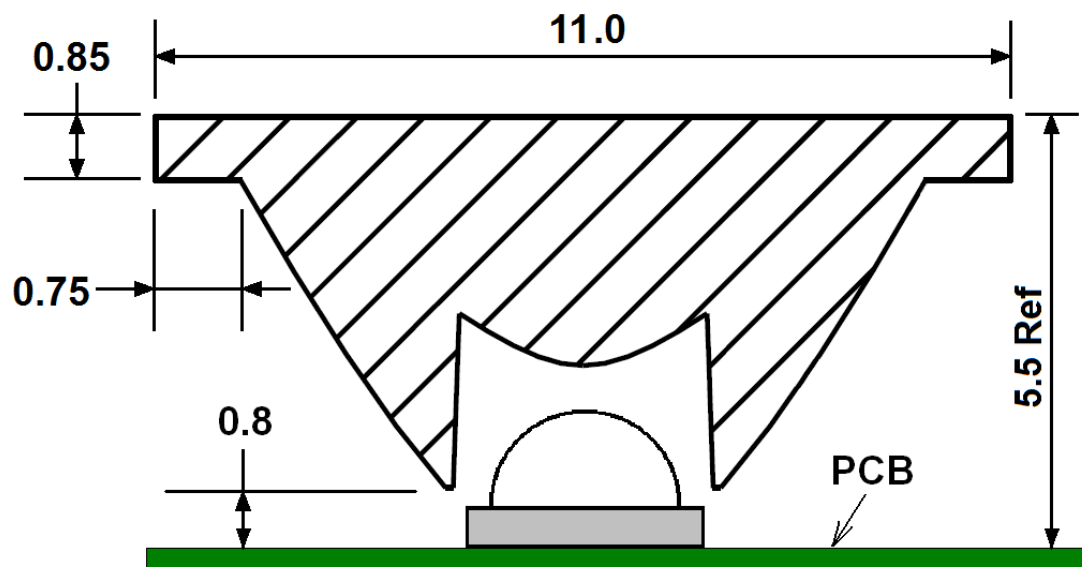
# Application notes

- 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 idea for wide area lighting designed for the LUXEON® Rebel and K2



Available from Future Lighting Solutions  
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# Ultra Wide Angle Optics

## Optics for Producing uniform illuminance over wide areas

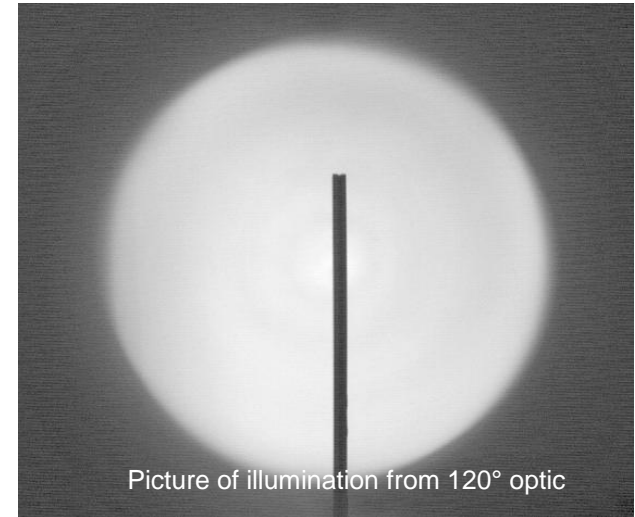
Carclo Ultra Wide Angle Optics are designed to meet the needs of Luminaire designers who need to efficiently light wide areas with very even illumination. These optics are suitable for applications such as emergency lighting, parking facility illumination and many other general illumination areas.

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.



# Application notes

- 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	Holder
Rebel	10403	10406	not needed
K2	10403	10406	10381

