

# AMY-50-WW-C

~60° wide beam. Assembly with holder C compatible with LEDiL HEKLA. Black version.

#### **SPECIFICATION:**

Dimensions	Ø 49.9 mm
Height	13.1 mm
Fastening	socket
ROHS compliant	yes 🛈



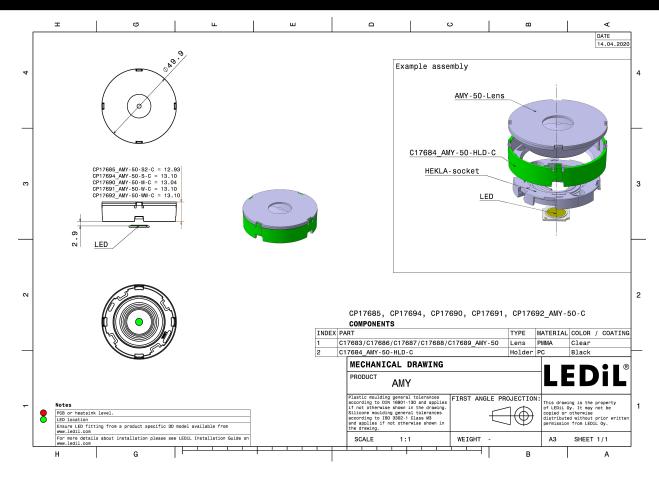
#### **MATERIALS:**

Component	Туре	Material	Colour	Finish
AMY-50-WW	Single lens	PMMA	clear	
AMY-50-HLD-C	Holder	PC	black	

#### **ORDERING INFORMATION:**

Component	Qty in box	MOQ	MPQ	Box weight (kg)
CP17692_AMY-50-WW-C	510	120	30	8.2
» Box size: 480 x 280 x 300 mm				





R

See also our general installation guide: www.ledil.com/installation\_guide



bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15255_HEKLA		32*         32*           35*         400           90*         60*           90*         60*           90*         60*
bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone Bender Wirth: 63		
bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA		201 201 201 201 201 201 201 201
bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15253_HEKLA		90 <sup>4</sup> 90 <sup>4</sup> 9



bridgelux. LED	V6 HD Gen 7		29°
FWHM / FWTM	58.0° / 75.0°		
Efficiency	92 %		60 <sup>6</sup>
Peak intensity	1.2 cd/lm		
LEDs/each optic	1		
Light colour	White		5.
Required compone	nts:		
F15255_HEKLA	-SOCKET-C		
			31-
bridgelux.		 -	10 <sup>57</sup> 0 <sup>47</sup> 10 <sup>57</sup>
LED	V8 Gen 8		
FWHM / FWTM	61.0° / 78.0°		75
Efficiency	93 %		
Peak intensity	1.1 cd/lm		60°-
LEDs/each optic	1		
Light colour	White		g
Required compone			
F15253_HEKLA			×
bridgelux.			
bridgelux. LED	V9 HD Gen7		
	V9 HD Gen7 57.0° / 76.0°		22 <u>9</u> <u>22</u>
LED			
LED FWHM / FWTM	57.0° / 76.0°		
LED FWHM / FWTM Efficiency	57.0° / 76.0° 91 %		
LED FWHM / FWTM Efficiency Peak intensity	57.0° / 76.0° 91 % 1.2 cd/lm		22 <u>0</u> 0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	57.0° / 76.0° 91 % 1.2 cd/lm 1 White		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts:		201 202 202 202 202 202 202 202 202 202
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts:		201 00 100 100 100 100 100 100 100 100 1
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts:		310
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts:		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgeluX. LED FWHM / FWTM	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0°		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgeLUX. LED FWHM / FWTM Efficiency	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0° 92 %		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgelux. LED FWHM / FWTM Efficiency Peak intensity	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0°		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0° 92 % 1.1 cd/lm 1		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0° 92 % 1.1 cd/lm 1 White		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgetux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0° 92 % 1.1 cd/lm 1 White nts:		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0° 92 % 1.1 cd/lm 1 White nts:		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F15859_HEKLA bridgetux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts: -SOCKET-I VERO10 58.0° / 77.0° 92 % 1.1 cd/lm 1 White nts:		



bridgelux.		90*	90°
LED	Vesta DTW 13mm (21W)		
FWHM / FWTM	53.0° / 78.0°		13.
Efficiency	89 %		60*
Peak intensity	1.2 cd/lm		
LEDs/each optic	1		
Light colour	White	97	45°
Required compone	ents:		
C16142_HEKLA			
Bender Wirth: 49			
		30 <sup>+</sup> 1250 127 0 <sup>+</sup> 12 <sup>+</sup>	30°
bridgelux.		90°	90°
LED	Vesta DTW 15mm (33W)		
FWHM / FWTM	52.0° / 78.0°		75*
Efficiency	89 %		
Peak intensity	1.2 cd/lm		60*
LEDs/each optic	1		
Light colour	White	e <sup>r</sup>	45°
Required compone			
C16142_HEKLA			
Bender Wirth: 49			
Dender Wirth. 48			
		30° 15° 0° 15°	36.
bridgelux.		99*	90°
bridgelux. LED	Vesta TW 13mm (18W) DP		90*
	Vesta TW 13mm (18W) DP 54.0° / 80.0°	30*	90° 75°
LED			90° 75° 60°
LED FWHM / FWTM	54.0° / 80.0°		90° 75° 60°
LED FWHM / FWTM Efficiency	54.0° / 80.0° 89 %	99* 75 69* 	90°
LED FWHM / FWTM Efficiency Peak intensity	54.0° / 80.0° 89 % 1.1 cd/lm	99* 95 60* 90 90	90° 75° 60°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White	99* 99* 60* 60* 60* 60* 60* 60*	90°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints:	91 <sup>-</sup> 27 60 <sup>-</sup> 400 7- 7- 80	90* 75* 60*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White Ints: SOCKET-K	91 <sup>4</sup> 72 61 61 60 60 60 60	90* 75* 60*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White Ints: SOCKET-K		90* 25* 69* 63*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White Ints: SOCKET-K		90° 75° 60° 63°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 49	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White Ints: SOCKET-K		90°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 49	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White Ints: IN-SOCKET-K 92 Typ L8		22. 90. 22. 23. 24. 26. 26. 26. 26.
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 49 bridgeLUX. LED FWHM / FWTM	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ents: A-SOCKET-K 32 Typ L8 Vesta TW 15mm DP		10 10 10 10 10 10 10 10 10 10 10 10 10 1
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 45 bridgeLux. LED FWHM / FWTM Efficiency	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints: -SOCKET-K 32 Typ L8 Vesta TW 15mm DP 52.0° / 81.0° 89 %		61 25 26 26 26 26 26 26 26 26 26 26 26 26 26
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 4S bridgeLUX. LED FWHM / FWTM Efficiency Peak intensity	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints: -SOCKET-K 32 Typ L8 Vesta TW 15mm DP 52.0° / 81.0°		10 10 10 10 10 10 10 10 10 10 10 10 10 1
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 49 bridgelux LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints: -SOCKET-K 32 Typ L8 Vesta TW 15mm DP 52.0° / 81.0° 89 % 1.1 cd/lm		20 20 20 20 20 20 20 20 20 20 20 20 20 2
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 45 bridgeLux LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints: A-SOCKET-K 32 Typ L8 Vesta TW 15mm DP 52.0° / 81.0° 89 % 1.1 cd/lm 1 Tunable White		10 10 10 10 10 10 10 10 10 10 10 10 10 1
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 45 bridgeLUX LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints: INSOCKET-K 92 Typ L8 Vesta TW 15mm DP 52.0° / 81.0° 89 % 1.1 cd/lm 1 Tunable White ints:		10 10 10 10 10 10 10 10 10 10 10 10 10 1
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 45 bridgetux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints: -SOCKET-K 22 Typ L8 Vesta TW 15mm DP 52.0° / 81.0° 89 % 1.1 cd/lm 1 Tunable White ints: -SOCKET-K		10 10 10 10 10 10 10 10 10 10 10 10 10 1
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone C16142_HEKLA Bender Wirth: 45 bridgeLUX LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	54.0° / 80.0° 89 % 1.1 cd/lm 1 Tunable White ints: -SOCKET-K 22 Typ L8 Vesta TW 15mm DP 52.0° / 81.0° 89 % 1.1 cd/lm 1 Tunable White ints: -SOCKET-K		10 10 10 10 10 10 10 10 10 10 10 10 10 1



r			
bridgelux.			90° 90
LED	Vesta TW 6mm DP		
FWHM / FWTM	57.0° / 74.0°		
Efficiency	91 %		
Peak intensity	1.2 cd/lm		
LEDs/each optic	1	and the second se	$     \times /       \times   \times  $
Light colour	Tunable White		ar a
Required compone	ents:		
C16142_HEKLA	A-SOCKET-K		
Bender Wirth: 50	04 Typ L8		
			30 <sup>4</sup> 1270 25 <sup>4</sup>
bridgelux.			90°
LED	Vesta TW 9mm (9W) DP		
FWHM / FWTM	55.0° / 75.0°		
Efficiency	90 %		
Peak intensity	1.2 cd/lm		
LEDs/each optic	1		
Light colour	Tunable White		95*
Required compone	ents:		
C16142_HEKLA			
Bender Wirth: 48			
			15° 0° 15°
I			
CITIZE	N		90*
			9)*
CITIZE	CLL02x/CLU02x (LES10)		95 <sup>4</sup> 35 <sup>5</sup>
LED FWHM / FWTM	CLL02x/CLU02x (LES10)		95 <sup>4</sup> 25 <sup>4</sup>
LED FWHM / FWTM Efficiency	CLL02x/CLU02x (LES10) 57.0° / 77.0°		99* 25 99* 00
LED FWHM / FWTM Efficiency Peak intensity	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 %		99 <sup>4</sup> 99 <sup>4</sup> 99 <sup>4</sup> 90 <sup>4</sup> 400
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White		90 <sup>4</sup> 95 <sup>4</sup> 95 <sup>4</sup> 95 <sup>4</sup> 95 <sup>4</sup> 900
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents:		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents:		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents:		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C		3 <sup>2</sup> , 12 <sup>3</sup> , 12 <sup>3</sup> , 22 <sup>3</sup> , 27
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C		135 <sup>7</sup> 0 <sup>6</sup> 155 <sup>8</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C		135 <sup>7</sup> 0 <sup>6</sup> 155 <sup>8</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: k-G2-C		135 <sup>7</sup> 0 <sup>6</sup> 155 <sup>8</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA CITTIZE LED FWHM / FWTM	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: k-G2-C <b>CLL03x/CLU03x</b> 55.0° / 80.0°		135 <sup>7</sup> 0 <sup>6</sup> 155 <sup>8</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA CITTIZE LED FWHM / FWTM Efficiency	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C <b>N</b> CLL03x/CLU03x 55.0° / 80.0° 90 %		135 <sup>7</sup> 0 <sup>6</sup> 155 <sup>8</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA <b>CITTIZE</b> LED FWHM / FWTM Efficiency Peak intensity	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C <b>CLL03x/CLU03x</b> 55.0° / 80.0° 90 % 1.1 cd/lm		135 <sup>7</sup> 0 <sup>6</sup> 155 <sup>8</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA <b>CITTIZE</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C <b>'N</b> CLL03x/CLU03x 55.0° / 80.0° 90 % 1.1 cd/lm 1 White		80%         400         40           32,         22         23
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA <b>CITTIZE</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C <b>CLL03x/CLU03x</b> 55.0° / 80.0° 90 % 1.1 cd/lm 1 White ents:		80%         400         40           32,         22         23
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA CITTIZE LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C <b>CLL03x/CLU03x</b> 55.0° / 80.0° 90 % 1.1 cd/lm 1 White ents:		80%         400         40           32,         22         23
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17435_HEKLA CITIZE LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CLL02x/CLU02x (LES10) 57.0° / 77.0° 91 % 1.1 cd/lm 1 White ents: A-G2-C <b>CLL03x/CLU03x</b> 55.0° / 80.0° 90 % 1.1 cd/lm 1 White ents:		80%         400         40           32,         22         23



CITIZE	N		90° 90°
LED	CLU700/701/702/703		
FWHM / FWTM	58.0° / 75.0°		73*
Efficiency	92 %		
Peak intensity	1.2 cd/lm		60° 60°
LEDs/each optic	1		
Light colour	White		gyr
Required compone			
F17435_HEKLA			
			30° 1200 30*
			15° 0° 15°
CITIZE	Ν		90*
LED	CLU7A2/7A3		
FWHM / FWTM	58.0° / 74.0°		
Efficiency	92 %		60° 400 mm
Peak intensity	1.2 cd/lm		$\wedge$ / / $\wedge$ $\wedge$ $\wedge$
LEDs/each optic	1		
Light colour	White		φ <sup>2</sup> φ <sup>2</sup>
Required compone	nts:		
F17435_HEKLA			
			30° 1220 30*
			15° 0° 15°
CITIZE	N		90° 90°
LED	CLU7B2		
FWHM / FWTM	58.0° / 73.0°		75.
Efficiency	92 %		400 cot
Peak intensity	1.2 cd/lm		$\wedge / / / \wedge \wedge /$
LEDs/each optic	1		
Light colour	White		g.,
Required compone	nts:		
F17435_HEKLA	-G2-C		
			300 300 300
			15 <sup>9</sup> 0 <sup>0</sup> 15 <sup>9</sup>
			90* 90*
LED	CMA1516	And in case of the local division of the loc	73* 75*
FWHM / FWTM	57.0° / 77.0°	1000	
Efficiency	91 %		60° 60°
Peak intensity	1.1 cd/lm		
LEDs/each optic	1		
Light colour	White		
Required compone			
F17436_HEKLA	-G2-D		
			30* 1230 36*
			15° 0° 18°



			90*	90'
LED	 CMA1825			
FWHM / FWTM	58.0° / 80.0°		75*	
Efficiency	91 %			
Peak intensity	1.1 cd/lm		601	400
LEDs/each optic	1			
Light colour	White		950	
Required compone	nts:			$\mathcal{A}$
F15254_HEKLA				200
			300	36
			90°	0° 333
LED	CMT14xx			
LED FWHM / FWTM	CMT14xx 57.0° / 77.0°		25*	- 75
	91 %			
Efficiency Peak intensity	91 % 1.1 cd/lm		60.*	400 60
LEDs/each optic	1			
Light colour	White		45°	
Required compone				200
F17435_HEKLA				
T TT+55_HEREA	-02-0			
			30°	1200 0° 35°
			90*	90
	CMT19xx		90*	99'
			90* 75	22
LED	CMT19xx		90 <sup>4</sup>	30
LED FWHM / FWTM	CMT19xx 56.0° / 81.0°		60z 75:	90 50
LED FWHM / FWTM Efficiency	CMT19xx 56.0° / 81.0° 90 %		60× 22: 30×	407.
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White		61, 62, 35.	466
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts:		97 97 97	20 60 60 60
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts:		97 97 92	99 - 400 - 800
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts:		602 602 264	50 50 50
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts:		24, 24, 24, 22, 22, 22, 23,	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-I		204 204 204 204 205 205	00 - 10 - X
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-I		202 202 202 202 202 202 202 202	0.0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-I CMU10xx		25 26 26 26 26 27 25 25 25 25 25 25 25 25 25 25 25 25 25	00 - 10 - X
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-I CMU10xx 57.0° / 76.0°		204 204 204 204 205 205 205	00 - 10 - X
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-I CMU10xx 57.0° / 76.0° 91 %		6%. 28 29 20 20 20 20 20 20 20 20 20 20 20 20 20	0.0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-1 CMU10xx 57.0° / 76.0° 91 % 1.2 cd/lm		60 20 20 20 20 20 20 20 20 20 2	0.0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-1 CMU10xx 57.0° / 76.0° 91 % 1.2 cd/lm 1			0.0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-1 CMU10xx 57.0° / 76.0° 91 % 1.2 cd/lm 1 White		82. 80. 30. 30. 30. 30. 30. 30. 30. 3	0.0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA CREE (LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-1 CMU10xx 57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts:		82. 84. 27. 29. 29. 29. 29. 20. 20. 20. 20. 20. 20. 20. 20. 20. 20	0.0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-1 CMU10xx 57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts:			0.0
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA CREE (LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	CMT19xx 56.0° / 81.0° 90 % 1.1 cd/lm 1 White nts: -G2-1 CMU10xx 57.0° / 76.0° 91 % 1.2 cd/lm 1 White nts:			



			9	20.4	90*
LED	CXA/B 13xx				
FWHM / FWTM	58.0° / 75.0°		7	75'	
Efficiency	93 %			> N	$\langle \cdot \rangle$
Peak intensity	1.2 cd/lm		e	30° - 400	
LEDs/each optic	1			$\times$ / / –	$\times \Lambda$
Light colour	White		9	e.	65.
Required compone				- 800	
F17439_HEKLA					
				$\times$ $\wedge$	$\land X$
			э	100	30°
				15° o <sup>p</sup>	15,
			و		90*
LED	CXA/B 15xx		2	75.	3"
FWHM / FWTM	58.0° / 77.0°				$\backslash \land$
Efficiency	92 %		6	50° 400	60.
Peak intensity	1.1 cd/lm				
LEDs/each optic	1			$\times / /$	$\times \Lambda$
Light colour	White		9	5°	da.
Required compone					
F17436_HEKLA	-G2-D				
				$\times$ $\wedge$	$\land X$
			9	30° 1200	36.
				15% 0%	15*
			9	15 <sup>°</sup> 0°	355
LED	LEDIM/C6		9	75° °°	350
LED FWHM / FWTM	57.0° / 76.0°		2	137 Ø	35°
LED FWHM / FWTM Efficiency	57.0° / 76.0° 91 %		2	25° 0°	99 25
LED FWHM / FWTM Efficiency Peak intensity	57.0° / 76.0° 91 % 1.1 cd/lm		2	25° 0° 98° 99° 400	22°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	57.0° / 76.0° 91 % 1.1 cd/lm 9		, , ,	135 0° 9° 9°	52°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	57.0° / 76.0° 91 % 1.1 cd/lm 9 White		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	127 0° 99° 99° 99° 99°	10 <sup>4</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts:		9 9 9	137 0° 194 195 195 195 195 195 195 195 195 195 195	35°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts:			137 0° 197 197 197 197 197 197 197 197 197 197	35°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts:		, , , ,	137 Ø	32" 99"
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts:			25° (° 25° (°) 25° (°) 25° (°) 25° (°)	32" 39" 99" 99" 99"
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I			g* 400 -	12,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I			25° 400 25° 100 100 100 100 100 100	12,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I EDS LUXEON CoB 1202/1203			25° 400 25° 100 100 100 100 100 100	10 <sup>2</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I EDS LUXEON CoB 1202/1203 56.0° / 75.0°			25° 400 27° 100 100 100 100 100 100	12,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I EDS LUXEON CoB 1202/1203 56.0° / 75.0° 91 %			25° 400 27° 100 100 100 100 100 100	12,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I EDS LUXEON CoB 1202/1203 56.0° / 75.0° 91 % 1.2 cd/lm			25° 400 27° 100 100 100 100 100 100	12,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I <b>EDS</b> LUXEON CoB 1202/1203 56.0° / 75.0° 91 % 1.2 cd/lm 1			25° 400 27° 100 100 100 100 100 100	15°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-I EDS LUXEON CoB 1202/1203 56.0° / 75.0° 91 % 1.2 cd/lm 1 White			25° 400 27° 100 100 100 100 100 100	15°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-1 EDS LUXEON CoB 1202/1203 56.0° / 75.0° 91 % 1.2 cd/lm 1 White nts:			25° 400 25° 100 100 100 100 100 100	15°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-1 EDS LUXEON CoB 1202/1203 56.0° / 75.0° 91 % 1.2 cd/lm 1 White nts:			25° 400 25° 100 100 100 100 100 100	12,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	57.0° / 76.0° 91 % 1.1 cd/lm 9 White nts: -G2-1 EDS LUXEON CoB 1202/1203 56.0° / 75.0° 91 % 1.2 cd/lm 1 White nts:			25° 400 25° 100 100 100 100 100 100	12°



LUMIL	EDS	59*	90°
LED	LUXEON CoB 1204HD		
FWHM / FWTM	56.0° / 76.0°		75*
Efficiency	91 %		
Peak intensity	1.2 cd/lm		60.
LEDs/each optic	1		
Light colour	White	a.	45°
Required component	nts:		
F17437_HEKLA			
		3/* 2250	36*
	FDS	35° 0° 35°	
		59°	90°
	LUXEON CoB M02/M03	79	75*
FWHM / FWTM	58.0° / 77.0°		
Efficiency Peak intensity	92 %	₩ <sup>4</sup>	60*
	1.2 cd/lm		
LEDs/each optic	1 White		45*
Light colour			
Required component F17436_HEKLA			
F17430_HEKLA	-02-0		
		36 <sup>4</sup> 1230 15 <sup>4</sup> 0 <sup>5</sup> 15 <sup>5</sup>	30.
	EDS	5)*	90°
		30'	90*
LUMIL     LED     FWHM / FWTM	EDS LUXEON CoB S01 58.0° / 75.0°	34* 75*	90* 75*
LED	LUXEON CoB S01	99* 79 10	90°
LED FWHM / FWTM	LUXEON CoB S01 58.0° / 75.0°	99 <sup>4</sup> 75 100	804 32.
LED FWHM / FWTM Efficiency	LUXEON CoB S01 58.0° / 75.0° 92 %	35 <sup>4</sup>	90°
LED FWHM / FWTM Efficiency Peak intensity	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm	54* 75* 57* 57*	90* 75*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White	54* 75* 00* 	90° 75° 60°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts:	54* 75* 6* 6* 60 60	90° 75° 604
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required component	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts:	54* 75* 64* 60* 60* 60*	90* 75* 60*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required component	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts:		95° 13° 62° 53°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required component F17439_HEKLA	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J		90° 75° 60° 30°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J		90° 25° 67° 67°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required component F17439_HEKLA:	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24)		90° 27° 60° 30°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA:	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0°		99° 73° 60° 83° 83°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA:	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0° 85 %		90* 75* 60* 35* 25* 25*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA:	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0° 85 % 1.1 cd/lm		99* 75* 66* 90*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA: <b>WIN</b> Efficiency Peak intensity LEDs/each optic	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0° 85 % 1.1 cd/lm 12		99* 75* 60* 95* 95*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA: <b>WIM</b> / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0° 85 % 1.1 cd/lm 12 White		99* 73* 60* 93* 95*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA:	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0° 85 % 1.1 cd/lm 12 White nts:		90* 73* 90* 90* 90*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA: <b>WIM / FWTM</b> Efficiency Peak intensity LEDs/each optic Light colour Required componen C16142_HEKLA	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0° 85 % 1.1 cd/lm 12 White nts: -SOCKET-K		90* 72* 43* 92* 92* 92*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required componen F17439_HEKLA:	LUXEON CoB S01 58.0° / 75.0° 92 % 1.2 cd/lm 1 White nts: -G2-J EDS LUXEON Fusion 12-up (20x24) 56.0° / 78.0° 85 % 1.1 cd/lm 12 White nts: -SOCKET-K -RZ-LENS		90* 72* 63* 95* 95*



🥙 LUMIL	.EDS	50*
LED	LUXEON Fusion 21-up (20x24)	
FWHM / FWTM	56.0° / 78.0°	29
Efficiency	83 %	
Peak intensity	1 cd/lm	
LEDs/each optic	21	
Light colour	White	a. a.
Required compone	ents:	
C16142_HEKL/	A-SOCKET-K	
F18158_HEKLA	A-RZ-LENS	
Bender Wirth: 4	42 Typ L8	30 <sup>4</sup> 25 <sup>5</sup> 26 <sup>4</sup> 25 <sup>5</sup>
	.EDS	90° 90°
LED	LUXEON Fusion 27-up (20x24)	
FWHM / FWTM	55.0° / 81.0°	
Efficiency	83 %	
Peak intensity	1 cd/lm	
LEDs/each optic	27	
Light colour	White	
Required compone	ents:	
C16142_HEKL	A-SOCKET-K	
F18158_HEKLA	A-RZ-LENS	
Bender Wirth: 4	42 Typ L8	26
<b>E</b> LUM	INUS	30*
LED	CXM-3	
FWHM / FWTM	58.0° / 74.0°	
Efficiency	92 %	60 <sup>1</sup> 400
Peak intensity	1.2 cd/lm	
LEDs/each optic	1	
Light colour	White	a, a.
Required compone		
F17435_HEKLA	A-G2-C	
		30* <u>200</u> 30*
(C) LUM	INUS	50* 50*
LED	CXM-4	
FWHM / FWTM	58.0° / 74.0°	
Efficiency	92 %	601 - 400 - 60
Peak intensity	1.2 cd/lm	
LEDs/each optic	1	
LEDs/each optic Light colour	White	gr et
LEDs/each optic Light colour Required compone	White ents:	ør
LEDs/each optic Light colour	White ents:	¢. (1990)
LEDs/each optic Light colour Required compone	White ents:	er.
LEDs/each optic Light colour Required compone	White ents:	



	90*
LED COB L-Type (LES 11)	
FWHM / FWTM 56.0° / 78.0°	- 25
Efficiency 91 %	
Peak intensity 1.1 cd/lm	400
LEDs/each optic 1	
Light colour White	67
Required components:	800
F17437_HEKLA-G2-H	
**	
	12200 00 15°
	90"
LED COB L-Type (LES 9)	
FWHM / FWTM 57.0° / 76.0°	
Efficiency 91%	400
Peak intensity 1.1 cd/lm	
LEDs/each optic 1	
Light colour White	
Required components:	
F17437_HEKLA-G2-H	
300	
	1200 30° 0° 15°
	1220 30 0 <sup>0</sup> 25 <sup>4</sup>
	220039"
	2200 0 <sup>4</sup> 15 <sup>4</sup> 30 <sup>4</sup>
LED COB S-Type (LES 7)	2200 0 <sup>2</sup> 15 <sup>2</sup> 5 <sup>2</sup> 5 <sup>2</sup> 5 <sup>2</sup> 5 <sup>2</sup>
LED         COB S-Type (LES 7)           FWHM / FWTM         59.0° / 76.0°	2200 04 15° 040 0° 15° 050 0° 15° 050 0
LED         COB S-Type (LES 7)           FWHM / FWTM         59.0° / 76.0°           Efficiency         92 %	200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
LED     COB S-Type (LES 7)       FWHM / FWTM     59.0° / 76.0°       Efficiency     92 %       Peak intensity     1.1 cd/lm	2200 04 15° 0 15° 0 15° 100 100 100 100 100 100 100 10
LED     COB S-Type (LES 7)       FWHM / FWTM     59.0° / 76.0°       Efficiency     92 %       Peak intensity     1.1 cd/lm       LEDs/each optic     1	2200 AF
LEDCOB S-Type (LES 7)FWHM / FWTM59.0° / 76.0°Efficiency92 %Peak intensity1.1 cd/lmLEDs/each optic1Light colourWhite	200 0 <sup>3</sup> 15 <sup>2</sup> 400 60 60 60 60 60 60 6
LED       COB S-Type (LES 7)         FWHM / FWTM       59.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       **	200 0 <sup>3</sup> 15 <sup>2</sup> 400 600 600
LED       COB S-Type (LES 7)         FWHM / FWTM       59.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       ***	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G FHILIPS	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G PHILLPS LED Fortimo SLM L09 CoB	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G PHILEPS LED Fortimo SLM L09 CoB FWHM / FWTM 56.0° / 76.0°	00 00 00 00 00 00 00 00 00
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G PHILLPS LED Fortimo SLM L09 CoB FWHM / FWTM 56.0° / 76.0° Efficiency 91 %	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/m LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G PHILLPS LED Fortimo SLM L09 CoB FWHM / FWTM 56.0° / 76.0° Efficiency 91 % Peak intensity 1.2 cd/m	
LED       COB S-Type (LES 7)         FWHM / FWTM       59.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         ***********************************	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G PHILLPS LED Fortimo SLM L09 CoB FWHM / FWTM 56.0° / 76.0° Efficiency 91 % Peak intensity 1.2 cd/lm LEDs/each optic 1 Light colour White Hite State	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G PHILLPS LED Fortimo SLM L09 CoB FWHM / FWTM 56.0° / 76.0° Efficiency 91 % Peak intensity 1.2 cd/lm LEDs/each optic 1 Light colour White Required components:	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G PHILLPS LED Fortimo SLM L09 CoB FWHM / FWTM 56.0° / 76.0° Efficiency 91 % Peak intensity 1.2 cd/lm LEDs/each optic 1 Light colour White Hite State	
LED COB S-Type (LES 7) FWHM / FWTM 59.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G	



SAMSI	JNG	55*
LED	LC003D / LC006D / LC009D / LC013D	
FWHM / FWTM	57.0° / 77.0°	
Efficiency	91 %	
Peak intensity	1.1 cd/lm	
LEDs/each optic	1	
Light colour	White	
Required compone	ents:	
F17435_HEKLA	A-G2-C	
		30-
SAMS	UNG	90*
LED	LC016D / LC019D / LC026D / LC033D	
FWHM / FWTM	56.0° / 82.0°	
Efficiency	90 %	
Peak intensity	1.1 cd/lm	
LEDs/each optic	1	
Light colour	White	gr /
Required compone	ents:	
F17438_HEKLA		
		30*
0		
SANS		90*
		35°
LED	LC030C/040C G2	25*
LED FWHM / FWTM	LC030C/040C G2 56.0° / 78.0°	59* 75
LED FWHM / FWTM Efficiency	LC030C/040C G2 56.0° / 78.0° 91 %	59°
LED FWHM / FWTM Efficiency Peak intensity	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm	55° 75 65
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1	55°
FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White	59° 73° 69° 400 400
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required component	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents:	99°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents:	99° 755 601 757 750 750 750 750 750 750 750 750 750
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents:	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents:	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents:	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents:	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: I-G2-I	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA seoul semiconductor LED FWHM / FWTM	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: I-G2-I MJT COB LES 14.5	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA seconstruction LED FWHM / FWTM Efficiency	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: G2-I MJT COB LES 14.5 56.0° / 82.0°	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA stout semiconductor LED FWHM / FWTM Efficiency Peak intensity	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: G2-I MJT COB LES 14.5 56.0° / 82.0° 90 %	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: A-G2-I MJT COB LES 14.5 56.0° / 82.0° 90 % 1.1 cd/lm	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA stout semiconductor LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: -G2-I MJT COB LES 14.5 56.0° / 82.0° 90 % 1.1 cd/lm 1 White	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA stout stanconductor LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: A-G2-I MJT COB LES 14.5 56.0° / 82.0° 90 % 1.1 cd/lm 1 White ents:	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA SEOUL SEMICONDUCTOR LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: A-G2-I MJT COB LES 14.5 56.0° / 82.0° 90 % 1.1 cd/lm 1 White ents:	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone F17438_HEKLA SEQUESTION SEQUESTION SEQUESTION EFFICIENCY Peak intensity LEDs/each optic Light colour Required compone	LC030C/040C G2 56.0° / 78.0° 91 % 1.1 cd/lm 1 White ents: A-G2-I MJT COB LES 14.5 56.0° / 82.0° 90 % 1.1 cd/lm 1 White ents:	



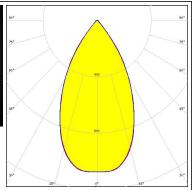
SEQUEL SEMICONDUCTOR         LED       MJT COB LES 6         FWHM / FWTM       58.0° / 75.0°         Efficiency       92 %         Peak intensity       1.2 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       **         F17435_HEKLA-G2-C       **	
LED MJT COB LES 6 FWHM / FWTM 58.0° / 75.0° Efficiency 92 % Peak intensity 1.2 cd/lm LEDs/each optic 1 Light colour White Required components:	
FWHM / FWTM       58.0° / 75.0°         Efficiency       92 %         Peak intensity       1.2 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       ***	
Efficiency 92 % Peak intensity 1.2 cd/lm LEDs/each optic 1 Light colour White Required components:	
Peak intensity 1.2 cd/lm LEDs/each optic 1 Light colour White Required components:	
LEDs/each optic 1 Light colour White Required components:	
Light colour White Required components:	
Required components:	
	$\sum_{i=1}^{n}$
30° 1209 137 0 <sup>0</sup> 135	15°
SECUL SEMICANDUCTOR	9
LED MJT COB LES 9.8	
FWHM / FWTM 57.0° / 77.0°	1-1
Efficiency 92 %	
Peak intensity 1.1 cd/lm	6
LEDs/each optic 1	
Light colour White	
Required components:	
F17435_HEKLA-G2-C	
30.	
	12°, 3
	722, 3
TRIDONIC	323
TRIDONIC LED SLE G7 LES09	9 32 <sup>3</sup>
TRIDONIC           LED         SLE G7 LES09           FWHM / FWTM         57.0° / 76.0°	9 9 9
TRIDONIC           LED         SLE G7 LES09           FWHM / FWTM         57.0° / 76.0°           Efficiency         92 %	3
TRIDONIC       LED     SLE G7 LES09       FWHM / FWTM     57.0° / 76.0°       Efficiency     92 %       Peak intensity     1.1 cd/lm	3
TRIDONIC       LED     SLE G7 LES09       FWHM / FWTM     57.0° / 76.0°       Efficiency     92 %       Peak intensity     1.1 cd/lm       LEDs/each optic     1	
TRIDONIC       LED     SLE G7 LES09       FWHM / FWTM     57.0° / 76.0°       Efficiency     92 %       Peak intensity     1.1 cd/lm       LEDs/each optic     1       Light colour     White	
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       6°	
TRIDONIC       LED     SLE G7 LES09       FWHM / FWTM     57.0° / 76.0°       Efficiency     92 %       Peak intensity     1.1 cd/lm       LEDs/each optic     1       Light colour     White	33 <sup>10</sup>
TRIDONIC LED SLE G7 LES09 FWHM / FWTM 57.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G	
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       6°	
TRIDONIC LED SLE G7 LES09 FWHM / FWTM 57.0° / 76.0° Efficiency 92 % Peak intensity 1.1 cd/lm LEDs/each optic 1 Light colour White Required components: F15848_HEKLA-SOCKET-G	
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         TRIDONIC       #************************************	27°
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/m         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         TRIDONIC       #         LED       SLE G7 LES13	27°
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         TRIDONIC       LED         LED       SLE G7 LES13         FWHM / FWTM       56.0° / 80.0°	27°
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         TRIDONIC	27°
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         F15848_HEKLA-SOCKET-G       #         LED       SLE G7 LES13         FWHM / FWTM       56.0° / 80.0°         Efficiency       90 %         Peak intensity       1.1 cd/lm	27°
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         TRIDONIC       Image: Component State of the state o	27°
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         TRIDONIC	19 19 19
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/m         LEDs/each optic       1         Light colour       White         Required components:       ************************************	19 19 19
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White         Required components:       F15848_HEKLA-SOCKET-G         FXIDONIC       LED         LED       SLE G7 LES13         FWHM / FWTM       56.0° / 80.0°         Efficiency       90 %         Peak intensity       1.1 cd/lm         LEDs/each optic       1         Light colour       White	19 19 19
TRIDONIC         LED       SLE G7 LES09         FWHM / FWTM       57.0° / 76.0°         Efficiency       92 %         Peak intensity       1.1 cd/m         LEDs/each optic       1         Light colour       White         Required components:       ************************************	19 19 19



TRI	DON	IIC

LED	SLE G7 LES15
FWHM / FWTM	55.0° / 81.0°
Efficiency	90 %
Peak intensity	1.1 cd/lm
LEDs/each optic	1
Light colour	White
Required componer	its:
F17438_HEKLA-	G2-I







# **OPTICAL RESULTS (SIMULATED):**

bridgelux.		90* 90*
LED	V8 Gen7	
FWHM / FWTM	61.0° / 78.0°	73*
Efficiency	90 %	
Peak intensity	1.1 cd/lm	60° - 400
LEDs/each optic	1	
Light colour	White	gre
Required components:		
F15253_HEKLA-SOC	CKET-A	
		15° 0° 15°
CITIZEN		90* 90*
LED	CLU712/713	
FWHM / FWTM	59.0° / 77.0°	
Efficiency	90 %	
Peak intensity	1.1 cd/lm	
LEDs/each optic	1	
Light colour	White	gr gr
Required components:		800
F17438_HEKLA-G2-I		
		30° 30°
		30* 220 30* 15% 0* 15%
		20° 20°
	CXA/B 1830	39° 125° 30°
	CXA/B 1830 58.0° / 82.0°	39° 120° 29° 39° 29° 39° 29°
LED		94 <sup>4</sup> 75
LED FWHM / FWTM	58.0° / 82.0°	59° 59° 59° 50° 50° 50° 50° 50° 50° 50° 50° 50° 50
LED FWHM / FWTM Efficiency	58.0° / 82.0° 89 %	59° 50° 50° 50° 50° 50° 50° 50° 50° 50° 50
LED FWHM / FWTM Efficiency Peak intensity	58.0° / 82.0° 89 % 1.1 cd/lm	40         90           23         90           34         90
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	58.0° / 82.0° 89 % 1.1 cd/lm 1	5° 60° 90° 10° 10° 10° 10° 10° 10° 10° 1
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 82.0° 89 % 1.1 cd/lm 1 White	5° 5° 6° 6° 6° 6° 6° 6° 6° 6° 6° 6° 6° 6° 6°
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 82.0° 89 % 1.1 cd/lm 1 White	5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 82.0° 89 % 1.1 cd/lm 1 White	30 <sup>-</sup> 10 <sup>-</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b H	58.0° / 82.0° 89 % 1.1 cd/lm 1 White	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b F	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Nekla	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b F	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Nekla COB S-Type (LES 7)	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b F	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Hekla COB S-Type (LES 7) NULL	30,         30,         30,         30,           30,         10,         6,         96,           60,         60,         60,         60,           13,         70,         70,         70,           13,         70,         70,         70,           13,         70,         70,         70,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b F MICHIA LED Assembly FWHM / FWTM	58.0° / 82.0° 89 % 1.1 cd/lm 1 White White COB S-Type (LES 7) NULL 62.0° / 78.0°	30,         30,         30,         30,           30,         10,         6,         96,           60,         60,         60,         60,           13,         70,         70,         70,           13,         70,         70,         70,           13,         70,         70,         70,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b F MICHIA LED Assembly FWHM / FWTM Efficiency	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Nekla COB S-Type (LES 7) NULL 62.0° / 78.0° 89 %	30         30,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b H MICHIA LED Assembly FWHM / FWTM Efficiency Peak intensity	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Mekla COB S-Type (LES 7) NULL 62.0° / 78.0° 89 % 1 cd/lm	30         30,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b H MICHIA LED Assembly FWHM / FWTM Efficiency Peak intensity LEDs/each optic	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Hekla COB S-Type (LES 7) NULL 62.0° / 78.0° 89 % 1 cd/lm 1	Na         Na           202         00         00           000         00         00           000         00         00           000         00         00           000         00         00           000         00         00           000         00         00           000         00         00
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b H MICHIA LED Assembly FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Mekla COB S-Type (LES 7) NULL 62.0° / 78.0° 89 % 1 cd/lm	Na         Na           202         00         00           000         00         00           000         00         00           000         00         00           000         00         00           000         00         00           000         00         00           000         00         00
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b H MICHIN LED Assembly FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Null 62.0° / 78.0° 89 % 1 cd/lm 1 White	30         30,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Bender Wirth: 637b H MICHIA LED Assembly FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 82.0° 89 % 1.1 cd/lm 1 White Null 62.0° / 78.0° 89 % 1 cd/lm 1 White	30         30,



# **OPTICAL RESULTS (SIMULATED):**

-		
OSRAM Opto Semiconductors		90*
LED	Soleriq S15	
FWHM / FWTM	58.0° / 83.0°	
Efficiency	89 %	00C
Peak intensity	1 cd/lm	
LEDs/each optic	1	
Light colour	White	gr er
Required components	6:	
F17438_HEKLA-G	2-1	
		24
		127 0 127
TRIDON	IC	90 <sup>4</sup>
LED	SLE SNC8 LES06	
FWHM / FWTM	58.0° / 76.0 + 74.0°	3. 2.
Efficiency	93 %	60
Peak intensity	1.2 cd/lm	
LEDs/each optic	1	
Light colour	White	gr de
Required components	6:	
F17435_HEKLA-G	2-C	
		204



#### **GENERAL INFORMATION:**

NOTE: The typical beam angle will be changed by different color, chip size and chip position tolerance. The typical total beam angle is the full angle measured where the luminous intensity is half of the peak value.

Due to use of high power COB's with this product, special attention to proper thermal design is highly recommended. LEDiL has no liability for direct, indirect or consecutive damages arising from the LEDiL products being used outside of the recommended temperature range.

#### **MATERIALS:**

As part of our continuous research and improvement processes, and to ensure the best possible quality and availability of our products, LEDiL reserves the right to change material grades without notice.

#### PRODUCT DATA USER AGREEMENT AND DISCLAIMER:

The measured data in the provided downloadable LEDiL Product Datasheets and Mechanical 2D-Drawings is rounded and provided as reference for planning. LEDiL Oy's optical specifications have been verified by conducting performance testing of the products in accordance with the company's quality system. The reported data are averaged results of multiple measurements with typical variation. LEDiL Oy reserves the right to without prior notification make changes and improvements to its products.

LEDiL Oy assumes neither warranty, nor guarantee nor any other liability of any kind for the contents and correctness of the provided data. The provided data has been generated with highest diligence but the provided data may in reality not represent the complete possible variation range of all intrinsic parameters. Therefore, in certain cases a deviation from the provided data could occur.

LEDiL Oy reserves the right to undertake technical changes of its products without further notification which could lead to changes in the provided data. LEDiL Oy assumes no liability of any kind for the possible deviation from any provided data or any other damage resulting from the usage of the provided data.

The user agrees to this disclaimer and user agreement with the download or usage of the provided files.

#### LEDiL Oy

Joensuunkatu 13 FI-24240 SALO Finland

#### LEDiL Inc.

228 West Page Street Suite D Sycamore IL 60178 USA

Ledil Optics Technology (Shenzhen) Co., Ltd. # 405 , Block B Casic Motor Building Shenzhen 518057 P.R.CHINA

#### Local sales and technical support www.ledil.com/ where\_to\_buy

Shipping locations

Salo, Finland Hong Kong, China

#### Distribution Partners www.ledil.com/

where\_to\_buy