STANDARD RANGE

45 mm PMMA collimator — LLC59

Last update : November, 2024

LLC59: presentation

Given the current increasing demand on applications of color mixing or tunable white, GAGGIONE is launching its ø 45 mm collimator range without sprue as well as **new versions**.

11 references

LLC59R
Ultra narrow beam

LLC59U
Ultra narrow beam

LLC59RF

LLC59N

LLC59NF

Narrow beam

LLC59C
Color beam

LLC59CM
Medium Color beam

LLC59M
Medium beam

LLC59W
Wide beam

LLC59V
Very large beam

LLC59E
Elliptical beam

LLC59: presentation

We have developed a series of accessories dedicated to the LLC59 to **avoid backlight**.

3 accessories

LLH59GWB*

Grained Window

LLH59FMB*

Flat Mask

LLH59HMB*

High Mask

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LLC59: LED specifications

LES size: 8mm² max without dome / 4mm² max with dome

Type of LED: High Power, Cluster High Power, Mid Power, Cluster Chip Scale Package, Chip Scale Package.

Type of Led	LLC59R	LLC59U	LLC59RF	LLC59N	LLC59NF	LLC59C	LLC59CM	LLC59M	LLC59W	LLC59E
RGBW	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓
Tunable White	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓
Single chip	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multi chip	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓

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LLC59: applications

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LLC59: 2D drawing

except LLC59E

For missing elements, please refer to the 2D plan.
Without holder, all dimensions are in millimeters.
General tolerance +/- 0.1mm (standard NF T 58-000 cat. 4, reduced class).

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LLC59E: 2D drawing

For missing elements, please refer to the 2D plan.
Without holder, all dimensions are in millimeters.
General tolerance +/- 0.1mm (standard NF T 58-000 cat. 4, reduced class).

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LLC59R: Ultra intensive narrow beam

Compatibility matrix

	OSRAM	LUMILEDS	CREE	NICHIA
LLC59R	OSLON COMPACT CL LUW CEUP	LUXEON Z ES	XHP35.2 HI	NV4WB35AM
FWHM (°)	1,8	3,4	7	7,6
FWTM (°)	3,8	7,6	12,2	14,8
Efficacy (cd/lm)	572,9	160,4	48,6	34,8
CCI*	3,1	1,8	4,0	1,4

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 M
100 lumens per LED

Intensity pattern

Visit the product page

LED: XHP35.2HI

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LLC59U: Ultra narrow beam

Compatibility matrix

LLC59U	OSRAM OSLON COMPACT CL LUW CEUP	LUMILEDS LUXEON Z ES	CREE XHP35.2 HI	NICHIA NV4WB35AM
FWHM (°)	3,7	4,4	7,3	7,6
FWTM (°)	6,3	8,2	13,1	14,0
Efficacy (cd/lm)	181,6	112,2	43,7	37,1
CCI*	1,0	1,5	-	1,1

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 M
100 lumens per LED

Intensity pattern

Visit the product page

LED: XHP35.2HI

LLC59RF: Narrow beam

Compatibility matrix

LLC59RF	OSRAM OSLON COMPACT CL LUW CEUP	LUMILEDS LUXEON Z ES	CREE XHP35.2 HI	NICHIA NV4WB35AM
FWHM (°)	3,6	4,6	7,3	8,4
FWTM (°)	7,9	9,8	14,2	15,9
Efficacy (cd/lm)	120,1	79,2	35,5	28,1
CCI*	1,9	0,7	2,8	1.0

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Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

LED: XHP35.2HI

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LLC59N: Narrow beam

Compatibility matrix

LLC59N	OSRAM	LUMILEDS	CREE	NICHIA
	OSLON COMPACT CL LUW CEUP	LUXEON Z ES	XHP35.2 HI	NV4L144AR
FWHM (°)	4,4	5,4	7,6	7,6
FWTM (°)	8,3	10,1	14,1	15,1
Efficacy (cd/lm)	118,7	77,8	40,2	32,7
CCI*	-	1,5	-	1,3

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 M
100 lumens per LED

Intensity pattern

Visit the product page

LED: XHP35.2HI

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LLC59NF: Narrow beam

Compatibility matrix

	OSRAM	LUMILEDS	CREE	NICHIA
LLC59NF	OSLON COMPACT CL LUW CEUP	LUXEON Z ES	XHP35.2 HI	NV4WB35AM
FWHM (°)	5,5	6,1	8,1	9,4
FWTM (°)	10,8	12,1	15,7	18,0
Efficacy (cd/lm)	61,7	50,7	29,5	22,3
CCI*	0,4	0,9	1,9	0,9

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

Visit the product page

LED: XHP35.2HI

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LLC59C: Color beam

Compatibility matrix

	OSRAM	LUMILEDS	CREE	NICHIA
LLC59C	OSTAR STAGE LE RTDUW S2WN	LUXEON Z ES	XHP35.2 HI	NV4WB35AM
FWHM (°)	9,4	9,2	10,3	10,9
FWTM (°)	18,2	18,1	19,9	21,1
Efficacy (cd/lm)	27,0	25,6	21,1	17,0
CCI*	4,8	1,4	-	1,1

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

Visit the product page

LED: LERTDUW_S2WN

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LLC59M: Medium beam

Compatibility matrix

	OSRAM	LUMILEDS	CREE	NICHIA
LLC59M	OSTAR STAGE LE RTDUW S2WN	LUXEON M	XHP35.2 HI	NF2W757G MT
FWHM (°)	24,0	24,2	25,2	23,8
FWTM (°)	40,2	44,1	42,7	40,8
Efficacy (cd/lm)	4,7	3,9	4,1	4,6
CCI*	2,3	1	-	0,9

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

Visit the product page

LED: LERTDUW_S2WN

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LLC59CM: Medium Color beam

Compatibility matrix

LLC59CM	OSRAM OSTAR STAGE LE RTDUW S2WN	LUMILEDS LUXEON Z RGBW	CREE XM-L COLOR GEN 2 HI	CREE XHP50.3
FWHM (°)	11.9	13.7	13.3	15.4
FWTM (°)	23.6	27.3	27.1	30.3
Efficacy (cd/lm)	14	10.7	11	8.4
CCI*	2,9	9.6	6.1	0.4

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

Visit the product page

LED: LERTDUW_S2WN

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LLC59W: Wide beam

Compatibility matrix

	OSRAM	LUMILEDS	CREE	NICHIA
LLC59W	OSTAR STAGE LE RTDUW S2WN	LUXEON M	XHP35.2HI	NV4WB35AM
FWHM (°)	31,8	32,1	33,0	32,2
FWTM (°)	57,7	59,9	60,1	58,4
Efficacy (cd/lm)	2,3	2,0	2,1	2,2
CCI*	3,1	0,6	-	1,5

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

Visit the product page

LED: LERTDUW_S2WN

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LLC59V: Very large beam

Compatibility matrix

LLC59W	OSRAM OSTAR STAGE LE RTDUW S2WN	LUMILEDS LUXEON Z CLUSTER TW	CREE XHP50.3 HD	CREE XM-L COLOR GEN 2 HI
FWHM (°)	48,6	48	48,2	48,8
FWTM (°)	75,5	76,2	77,9	77,4
Efficacy (cd/lm)	1,3	1,3	1,2	1,2
CCI*	4,5	1,4	1,3	5

Visit the product page

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

LED: LERTDUW_S2WN

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LLC59E: Elliptical beam

Compatibility matrix

LLC59E	OSRAM OSTAR STAGE LE RTDUW S2WN	LUMILEDS LUXEON Z ES	CREE XHP35.2HI	NICHIA NV4WB35AM
FWHM (°)	6,4 – 32,8	5,9 – 32,0	7,6 – 33,4	8,2 - 31,5
FWTM (°)	11,7 – 41,3	11,5 – 39,9	41 - 43,9	15,3 – 43,1
Efficacy (cd/lm)	13,4	13,2	10,6	9,1
CCI*	6,8	1,4	-	1,7

This collimator still has a sprue.

Visit the product page

Dialux simulation

Values in lux, scale 1 : 32
Distance from wall: 0,3 m
100 lumens per LED

Intensity pattern

LED: LERTDUW_S2WN

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LLC59: compatible holders

LLH59SPB0x

	Clear holder	Black holder
Without adhesive:	LLH59SPB00	LLH59SPB02
With adhesive:	LLH59SPB001	LLH59SPB021

Holder reference	Diameter (mm)	PCB to LES (mm)	Height (H)	Note
LLH59SPB0**	47.54	0.5	28.95	With pins

→ Adhesive : 1 (Yes), Nothing (No)

→ Colors : 0 (clear), 2 (black)

If you need another color of holder, please contact us

All dimensions are in millimeters.

General tolerance +/- 0.1mm (standard NF T 58-000 cat. 4, reduced class).

⚠ Positioning holes need to be created into the PCB.

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LLC59: Assembled set

LLH59SPB* + LLC59x

Type of Led	Color	Adhesive	LLC59R	LLC59U	LLC59RF	LLC59N	LLC59NF
LLH59SPB001	Clear	✓	LLS59R59SPB001	LLS59U59SPB001	LLS59RF59SPB001	LLS59N59SPB001	LLS59NF59SPB001
LLH59SPB021	Black	✓	LLS59R59SPB021	LLS59U59SPB021	LLS59RF59SPB021	LLS59N59SPB021	LLS59NF59SPB021

Type of Led	Color	Adhesive	LLC59C	LLC59M	LLC59CM	LLC59W	LLC59E
LLH59SPB001	Clear	✓	LLS59C59SPB001	LLS59M59SPB001	LLS59CM59SPB001	LLS59W59SPB001	LLS59E59SPB001
LLH59SPB021	Black	✓	LLS59C59SPB021	LLS59M59SPB021	LLS59CM59SPB021	LLS59W59SPB021	LLS59E59SPB021

LLC59: compatible holders

LLH59AAA0x

Clear holder

White holder

Black holder

	Clear holder	White holder	Black holder
Without adhesive:	LLH59AAA00	LLH59AAA01	LLH59AAA02
With adhesive:	LLH59AAA001	LLH59AAA011	LLH59AAA021

Holder reference	Diameter (mm)	PCB to LES (mm)	Height (H)	Note
LLH59AAA0**	47.54	-	28.95	With pins

→ Adhesive : 1 (Yes), Nothing (No)

→ Colors : 0 (clear), 2 (black)

If you need another color of holder, please contact us

All dimensions are in millimeters.

General tolerance +/- 0.1mm (standard NF T 58-000 cat. 4, reduced class).

⚠ Positioning holes need to be created into the PCB.

GAGGIONE

LLH59AAA* + LLC59x

LLC59: Assembled set

Type of Led	Color	Adhesive	LLC59R	LLC59U	LLC59RF	LLC59N	LLC59NF
LLH59AAA00	Clear	X	LLS59R59AAA00	LLS59U59AAA00	LLS59RF59AAA00	LLS59N59AAA00	LLS59NF59AAA00
LLH59AAA01	White	X	LLS59R59AAA01	LLS59U59AAA01	LLS59RF59AAA01	LLS59N59AAA01	LLS59NF59AAA01
LLH59AAA02	Black	X	LLS59R59AAA02	LLS59U59AAA02	LLS59RF59AAA02	LLS59N59AAA02	LLS59NF59AAA02

Type of Led	Color	Adhesive	LLC59C	LLC59M	LLC59CM	LLC59W	LLC59E
LLH59AAA00	Clear	X	LLS59C59AAA00	LLS59M59AAA00	LLS59CM59AAA00	LLS59W59AAA00	LLS59E59AAA00
LLH59AAA01	White	X	LLS59C59AAA01	LLS59M59AAA01	LLS59CM59AAA01	LLS59W59AAA01	LLS59E59AAA01
LLH59AAA02	Black	X	LLS59C59AAA02	LLS59M59AAA02	LLS59CM59AAA02	LLS59W59AAA02	LLS59E59AAA02

LLC59: compatible holders

LLH59ABA0x

Clear holder

White holder

Black holder

	Clear holder	White holder	Black holder
Without adhesive:	LLH59ABA00	LLH59ABA01	LLH59ABA02
With adhesive:	LLH59ABA001	LLH59ABA011	LLH59ABA021

Holder reference	Diameter (mm)	Nominal distance from PCB (mm)	Height (H)	Note
LLH59ABA0**		-	28.95	With pins

- Adhesive : 1 (Yes), Nothing (No)
- Colors : 0 (clear), 2 (black)

If you need another color of holder, please contact us

All dimensions are in millimeters.

General tolerance +/- 0.1mm (standard NF T 58-000 cat. 4, reduced class).

⚠ Positioning holes need to be created into the PCB.

GAGGIONE

LLC59: Assembled set

* LLH59ABA+ LLC59x

Type of Led	Color	Adhesive	LLC59R	LLC59U	LLC59RF	LLC59N	LLC59NF
LLH59ABA00	Clear	X	LLS59R59ABA00	LLS59U59ABA00	LLS59RF59ABA00	LLS59N59ABA00	LLS59NF59ABA00
LLH59ABA01	White	X	LLS59R59ABA01	LLS59U59ABA01	LLS59RF59ABA01	LLS59N59ABA01	LLS59NF59ABA01
LLH59ABA02	Black	X	LLS59R59ABA02	LLS59U59ABA02	LLS59RF59ABA02	LLS59N59ABA02	LLS59NF59ABA02

Type of Led	Color	Adhesive	LLC59C	LLC59M	LLC59CM	LLC59W	LLC59E
LLH59ABA00	Clear	X	LLS59C59ABA00	LLS59M59ABA00	LLS59CM59ABA00	LLS59W59ABA00	LLS59E59ABA00
LLH59ABA01	White	X	LLS59C59ABA01	LLS59M59ABA01	LLS59CM59ABA01	LLS59W59ABA01	LLS59E59ABA01
LLH59ABA02	Black	X	LLS59C59ABA02	LLS59M59ABA02	LLS59CM59ABA02	LLS59W59ABA02	LLS59E59ABA02

LLC59: Nominal distance

Nominal distance from PCB surface to best focus point of optic

Achieving an optimal focus position of the lens is the key factor for a successful LED/Collimator integration.

The best focus position will be achieved when matching the collimator's focus position with LED's Light Emission Surface position.

Different holder references will achieve specific PCB to Collimator's focus point distance in order to adapt to the considered LED.

Holder reference	Diameter (mm)	Nominal distance from PCB (mm)	Height (H)	Note
LLH59SPB0**	47,54	0,5	28,95	With pins

→ Adhesive : 1 (Yes), Nothing (No)

→ Colors : 0 (clear), 1 (white), 2 (black)

If you need another color of holder, please contact us

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LLC59: Pac kaging

LLC59x

5 thermoformed trays
with 30 parts each

150 parts
Box: A13 - 387x283x170 mm
Weight: 4,36 kg

LLS59x

5 thermoformed trays
with 30 parts each

150 parts
Box: A13 - 387x283x170 mm
Weight: 6 kg

Code form standard range

LENS

HOLDER

LLS0 1W01ABC001

OPTICAL

01: 16 mm
02: 16 mm
12: 16 mm
22: 16 mm RGBW
05: 32 mm
15: 32 mm
25: 32 mm RGBW
07: 35 mm
45: 45 mm UFO
49: 45 mm RGBW
59: 45 mm RGBW gen 2
56: 67mm in PMMA
66: 67 mm in silicone
76: 67mm in silicone
67: 67 mm UFO

PRODUCT

LL**C**: Collimator
LL**H**: Holder
LL**L**: Linear collimator
LL**R**: Reflector
LL**S**: Set
UFO: Ultra Flat Optic

BEAM ANGLE

U/R: Ultra Narrow
N: Narrow
M: Medium
W: Wide
X: Extra large
S: Super large
L: Large
V: Very large
E: Elliptical
Z: Zoom

MATERIAL

0 or nothing : PMMA
1: PC
2: PC anti-UV
7: Silicone

ABC: Holder type according to LED package

COLORS & DECORS

0: Translucent
1: White
2: Black

ADHESIVE OPTION

1: Yes
Nothing: No

VERSION

TYPE

1: 16mm
2: 32mm
3: 3x16mm
4: 4x16mm
9: 45mm

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