

UL-CLL

Using Metaphase's proprietary optics, the UL-Collimated Line Light works like a traditional line light but can project its light at a lower divergence angle. This helps keep a tight, structured beam of light at longer working distances, possibly many meters away while delivering high intensity light and for applications where you cannot have the light close to the object or web. These features are useful for creating clearances for robotics, imaging high tunnel ceilings, creating distances from hot objects or applications requiring precise backlight imaging. The UL-Collimated Line Light is a great tool for any line scan or machine vision lighting application.



FEATURES

- Proprietary collimated lens for low divergence angle
- High intensity, over 1.5 million Lux
- Lens options for various beam widths and working distances
- Lengths range from 5 inches to 120 inches
- High Uniformity using Metaphase's unique diffuser technology
- 24Z version has a built-in Constant Current Driver(s) with 0-10VDC Intensity Control
- Compatible with DDC-3 and ILD-35 Dimmers
- Compliance: ETL listed (UL compliant), CE and RoHS.

APPLICATIONS

- Geometry measurements of long targets
- Direct position measurement
- Web inspection (foil, plastic film, PCBs, glass, paper, web converting, etc.)
- Printed circuit board inspection
- Long working distance applications such as tunnels, rails, or ceiling inspections
- Tube or bottle inspection
- Quality control in food, chemicals, and textile industry
- Fabrics
- Solar Cells

GENERAL SPECIFICATIONS

Power Source:	24VDC \pm 5%
Cable (Standard):	10-foot cable with flying leads
Housing:	Black Anodized Aluminum
Ambient Temp:	-20°C to 40°C
Lifetime Expectancy:	75,000 hours (except UV)

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UL Collimated Line Lights														
MODEL	Overall Length Inches / cm	Lens Length Inches / cm	Weight lbs/Kg	Quantity	Cable(s)		*Typical Current (Amps) @24VDC							
					Length	AWG/ Conductors	WHITE	RED	GREEN	BLUE	IR850	UV365	UV395	
UL-CLL209	5.90 / 14.98	5.0 / 12.7	1.4 / .635	1	10ft	18/4	0.7	0.7	0.7	0.7	0.8	0.9	0.8	
UL-CLL309	10.94 / 27.80	10.0 / 25.4	2.6 / 1.18	2		18/4(1) 24/4(1)	1.5	1.4	1.3	1.4	1.7	1.8	1.5	
UL-CLL409	16.00 / 40.64	15.0 / 38.1	3.8 / 1.72				2.3	2.3	2.0	2.0	2.4	2.7	2.3	
UL-CLL509	21.06 / 53.50	20.0 / 50.8	5.0 / 2.27				3.0	3.0	2.7	2.8	3.2	3.6	3.0	
UL-CLL609	26.17 / 66.48	25.0 / 63.5	6.2 / 2.81				3.8	3.7	3.4	3.5	3.9	4.6	3.9	
UL-CLL709	31.20 / 79.25	30.0 / 76.2	7.4 / 3.36				4.6	4.6	4.2	4.2	4.8	5.5	5.7	
UL-CLL809	36.30 / 92.20	35.0 / 88.9	9.4 / 4.26				5.5	5.5	4.9	5.0	5.6	6.6	5.5	
UL-CLL909	42.03 / 106.8	40.0 / 101.6	12.2 / 5.53			6.3	6.3	5.7	5.8	6.4	7.6	6.4		
UL-CLL1009	47.03 / 119.5	45.0 / 114.3	15.0 / 6.80			7.2	7.2	6.4	6.5	7.4	8.6	7.3		
UL-CLL1109	52.03 / 132.2	50.0 / 127.0	17.7 / 8.03			8.1	8.1	7.2	7.3	8.3	9.7	8.2		
UL-CLL1209	57.03 / 144.9	55.0 / 139.7	20.0 / 9.07			9.0	9.0	8.0	8.2	9.2	10.8	9.1		
UL-CLL1309	62.03 / 157.6	60.0 / 152.4	21.7 / 9.84			9.9	9.9	8.8	9.0	10.1	12.0	10.0		
UL-CLL1409	67.03 / 170.3	65.0 / 165.1	23.5 / 10.7			10.8	10.8	9.6	9.8	10.9	13.2	11.0		
UL-CLL1509	72.03 / 183.0	70.0 / 177.8	25.2 / 11.4	3		20ft	16/4(2) 24/4(1)	11.8	11.8	10.5	10.7	12.0	14.4	12.0
UL-CLL1609	77.03 / 195.7	75.0 / 190.5	28.5 / 12.9					12.8	12.8	11.4	11.6	13.0	15.7	13.0
UL-CLL1709	82.03 / 208.4	80.0 / 203.2	31.2 / 14.2					13.9	13.9	12.3	12.5	14.1	17.1	13.9
UL-CLL1809	87.03 / 221.1	85.0 / 215.9	34.0 / 15.4				14.9	14.9	13.2	13.4	15.0	18.5	15.0	
UL-CLL1909	92.03 / 233.8	90.0 / 228.6	36.8 / 16.7				16.0	16.0	14.1	14.4	16.3	20.0	16.2	
UL-CLL2009	97.03 / 246.5	95.0 / 241.3	38.9 / 17.6		17.2		17.2	15.1	15.4	17.2	21.6	17.3		
UL-CLL2109	102.03 / 259.1	100.0 / 254.0	44.8 / 20.3		16/6(2) 24/4(1)	18.4	18.4	16.1	16.5	18.6	23.0	18.6		
UL-CLL2209	107.03 / 271.9	105.0 / 266.7	48.1 / 21.8			19.5	19.4	17.3	17.6	19.6	24.5	19.4		
UL-CLL2309	112.03 / 284.6	110.0 / 279.4	51.5 / 23.4			20.6	20.6	18.4	18.6	20.7	26.1	20.6		
UL-CLL2409	117.03 / 297.3	115.0 / 292.1	56.0 / 25.4			21.8	21.8	19.5	19.7	22.2	27.7	22.0		
UL-CLL2509	122.03 / 310.0	120.0 / 304.8	61.0 / 27.7			23.0	23.0	20.8	21.0	23.3	29.2	23.1		

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1 Cable Wiring	
Wire Color	Function
RED	+24VDC
GREEN	SIGNAL GROUND
BLACK	GROUND (24 RTN)
WHITE	0-10VDC Intensity Control

2 Cable Wiring			
Wire Color	Function	Wire Color	Function
RED	+24VDC	RED	No Connection
GREEN	GROUND (24V RTN)	GREEN	SIGNAL GROUND
BLACK	GROUND (24 RTN)	BLACK	No Connection
WHITE	+24VDC	WHITE	0-10VDC Intensity Control

3 Cable Wiring (4 conductor power cables)					
Wire Color	Function	Wire Color	Function	Wire Color	Function
RED	+24VDC	RED	+24VDC	RED	No Connection
GREEN	GROUND (24V RTN)	GREEN	GROUND (24V RTN)	GREEN	SIGNAL GROUND
BLACK	GROUND (24V RTN)	BLACK	GROUND (24V RTN)	BLACK	No Connection
WHITE	+24VDC	WHITE	+24VDC	WHITE	0-10VDC Intensity Control

3 Cable Wiring (6 conductor power cables)					
Wire Color	Function	Wire Color	Function	Wire Color	Function
RED	+24VDC	RED	+24VDC	RED	No Connection
BROWN	+24VDC	BROWN	+24VDC	GREEN	SIGNAL GROUND
ORANGE	+24VDC	ORANGE	+24VDC	BLACK	No Connection
BLACK	GROUND (24V RTN)	BLACK	GROUND (24V RTN)	WHITE	0-10VDC Intensity Control
BLUE	GROUND (24V RTN)	BLUE	GROUND (24V RTN)		
YELLOW	GROUND (24V RTN)	YELLOW	GROUND (24V RTN)		

M12 (5 position male)	
Pin #	Function
1	+24VDC
2	0-10VDC Intensity Control
3	GROUND (24V RTN)
4	SIGNAL GROUND
5	No Connection
The M12 connector option is not recommended for lights rated more than 4 amps	

ULC-2 Wiring	
Wire Color	Function
RED, WHITE (+)	LED INPUT
BLACK, GREEN (-)	
Terminated within a 2 position ULC-2 output connector (Phoenix Contact P/N: BCP-508-2)	

Note: The 0-10VDC Intensity Control input can accept voltages from 0-24VDC where the light will operate at full intensity in the 10-24VDC range. The light is proportionally dimmer for any Intensity Control voltage less than 10VDC and the light is OFF at approximately 0V or not connected (floating).

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PART NUMBER KEY											
MODEL	SIZE	-	WAVELENGTH	-	DRIVER* (most common)	-	POLARIZER	-	COVER	-	CABLE LENGTH
UL-CLL	XXXX	-	XXXXXX	-	XXX-XXXXXX	-	XXXX	-	XX	-	XXX
UL-CLL	209 to 2509		W (White 6000K, Nominal) R (Red 630nm) G (Green 530nm) B (Blue 470nm) IR850 (Infrared 850nm) IR880 (Infrared 880nm) IR940 (Infrared 940nm) UV365 (UV Short 365nm) UV395 (UV Long 395nm) RGB (Red-Green-Blue) RGBIR850 (Red-Green-Blue-IR850) IR05 (Infrared 1050nm) IR20 (Infrared 1200nm) IR30 (Infrared 1300nm) IR45 (Infrared 1450nm) IR55 (Infrared 1550nm) IR65 (Infrared 1650nm)		24Z 24Z-TRG 24-ILD U¹ 24-ILSXXX XXX=rate in μ s Example: 250		POLO Must use CC with Polarizer Select or leave blank for no polarizer		CC Select or leave blank for no cover		5M 10M Length can be customized: ex. 7M=7meters Select or leave blank for 3 meters
Example 1: UL-CLL609-W-24-ILD					¹ Not available in lights exceeding 4A input current						
Example 2: UL-CLL1509-WIR45-24Z											

When ordering the Backlight version diffuser, add a B designator before CLL. Example: UL-BCLL609-W-24-ILD

Contact Metaphase Technologies or your local representative for options such as custom diffusers, lenses, polarizers, IP-rated enclosures for harsh environments, higher intensity, custom wavelengths, higher uniformity, etc. Not all options are available for all lights.

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Sample Model Number: **UL-CLL609-W-24Z**

Technical drawing showing dimensions and components of the UL-CLL line light assembly. Dimensions are provided in inches and millimeters. Components include a lens, mounting holes, power cable, and heat sink.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	2/23/2013	
B	METAPHASE LOGO ADDED TO SIDE PLATE - M2 HOLES ADDED TO FIXTURE TO MOUNT OPTIONAL CLEAR COVER ASSY.	4/18/2016	
C	CHANGED LOGO SIZE	11/7/2016	

SEE SHEET 2 FOR EXPLODED VIEW AND BOM.

Metaphase Technologies, Inc. 211 Sinclair Road, Suite 100, Bristol, PA. 19007 215-639-8699 Fax 215-639-0977			
QUANTITY: Per order	TOLERANCE/FINISH UNLESS OTHERWISE SPECIFIED	THIS DOCUMENT IS THE PROPERTY OF METAPHASE TECHNOLOGIES, INC. WHOM MAY LOAN IT. SUBJECT TO RETURN UPON DEMAND. IT INCLUDES CONFIDENTIAL & PROPRIETARY INFORMATION WHICH MAY NOT BE DISCLOSED TO ANY THIRD PARTY, AND OR USED FOR ANY PURPOSE CONTRARY TO ITS INTENDED USE, WITHOUT THE EXPRESSED PRIOR WRITTEN CONSENT OF METAPHASE TECHNOLOGIES, INC.	
MATERIAL: Per BOM	INCHES (MM)	TITLE: Top Assy - 25" Col. Line Light	
FINISH: Clear/Black Anodize	X .X .XX .XXX ±.125 (FRS) [RA3.2UM]	USED ON: Per customer	
TREATMENT: N/A	[.75] ±.030 [2.29] ±.015 [1.13] ±.005 ANGLES ±1°	DRAWING NUMBER: UX-CLL609-1	
Approval Signature	Date	SCALE 1:2 SHEET 1 OF 3	

COMPLIANCE



CONTACT US

Contact Metaphase Technologies at **215-639-8699** or your local representative for additional details, options and customizations.

MB-CLL

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- Compatible with DDC-3 and ILD-35 Dimmers

APPLICATIONS

- Geometry measurements of long targets
- Direct position measurement
- Web inspection (foil, plastic film, PCBs, glass, paper, web converting, etc.)
- Printed circuit board inspection
- Long working distance applications such as tunnels, rails, or ceiling inspections
- Tube or bottle inspection
- Quality control in food, chemicals, and textile industry
- Fabrics
- Solar Cells
- Hot Steel Inspection

WAVELENGTHS

Order ID	Description / nanometers
W	White (6000K), Nominal
R	Red / 630nm
G	Green / 530nm
B	Blue / 470nm
IR850	Infrared / 850nm
UV395	Ultraviolet Long / 395nm
RGB	Red-Green-Blue

GENERAL SPECIFICATIONS

Power Source:	24VDC ±5%
Cable (Standard):	10-foot cable with flying leads
Housing:	Black Anodized Aluminum
Ambient Temp:	-20°C to 40°C
Lifetime Expectancy:	75,000 hours (except UV)

MB-CLL

SINGLE COLOR MetaBright COLLIMATED LINE LIGHTS							*Typical Current (Amps) @24VDC							
MODEL	Overall Length Inches / cm	Lens Length Inches / cm	Weight lbs/Kg	Quantity	Length	Cable(s) AWG/ Conductors	WHITE	RED	GREEN	BLUE	IR	UVS	UVL	
							MB-CLL206	5.90 / 14.98	5.0 / 12.7	1.4 / .635	1	10ft	18/4	1.4
MB-CLL306	10.94 / 27.80	10.0 / 25.4	2.6 / 1.18	2	18/4(1) 24/4(1)	2.8	2.1	2.8	2.8	2.0	1.8		1.5	
MB-CLL406	16.00 / 40.64	15.0 / 38.1	3.8 / 1.72			4.1	3.1	4.1	4.2	3.0	2.7		2.3	
MB-CLL506	21.06 / 53.50	20.0 / 50.8	5.0 / 2.27			5.5	4.1	5.5	5.6	4.0	3.5		3.0	
MB-CLL606	26.17 / 66.48	25.0 / 63.5	6.2 / 2.81			6.9	5.1	6.9	7.0	5.0	4.4		3.8	
MB-CLL706	31.20 / 79.25	30.0 / 76.2	7.4 / 3.36			8.3	6.2	8.3	8.4	6.0	5.3		4.5	
MB-CLL806	36.30 / 92.20	35.0 / 88.9	9.4 / 4.26			9.7	7.2	9.7	9.8	7.0	6.2		5.3	
MB-CLL907	42.03 / 106.8	40.0 / 101.6	12.2 / 5.53		16/4(1) 24/4(1)	11.0	8.2	11.0	11.2	8.0	7.1		6.1	
MB-CLL1007	47.03 / 119.5	45.0 / 114.3	15.0 / 6.80			12.4	9.2	12.4	12.6	9.0	8.0		6.8	
MB-CLL1107	52.03 / 132.2	50.0 / 127.0	17.7 / 8.03			13.8	10.3	13.8	14.0	10.0	8.8		7.6	
MB-CLL1207	57.03 / 144.9	55.0 / 139.7	20.0 / 9.07			15.2	11.3	15.2	15.4	11.0	9.7		8.3	
MB-CLL1307	62.03 / 157.6	60.0 / 152.4	21.7 / 9.84			16.5	12.3	16.6	16.8	12.0	10.6		9.1	
MB-CLL1407	67.03 / 170.3	65.0 / 165.1	23.5 / 10.7			17.9	13.4	17.9	17.2	13.0	11.5		9.8	
MB-CLL1507	72.03 / 183.0	70.0 / 177.8	25.2 / 11.4	3	20ft	16/4(2) 24/4(1)	19.3	14.4	19.3	19.6	14.0		12.4	10.6
MB-CLL1607	77.03 / 195.7	75.0 / 190.5	28.5 / 12.9				20.7	15.4	20.7	21.0	15.0		13.3	11.4
MB-CLL1707	82.03 / 208.4	80.0 / 203.2	31.2 / 14.2				22.1	16.4	22.1	22.4	16.0		14.1	12.1
MB-CLL1807	87.03 / 221.1	85.0 / 215.9	34.0 / 15.4				23.4	17.5	23.4	23.8	17.0		15.0	12.9
MB-CLL1907	92.03 / 233.8	90.0 / 228.6	36.8 / 16.7				16/6(2) 24/4(1)	24.8	18.5	24.8	25.2		18.0	15.9
MB-CLL2007	97.03 / 246.5	95.0 / 241.3	38.9 / 17.6					26.2	19.5	26.2	26.6	19.0	16.8	14.4
MB-CLL2107	102.03 / 259.1	100.0 / 254.0	44.8 / 20.3		27.6	20.5		27.6	28.0	20.0	17.7	15.1		
MB-CLL2207	107.03 / 271.9	105.0 / 266.7	48.1 / 21.8		29.0	21.6		29.0	29.4	21.0	18.6	15.9		
MB-CLL2307	112.03 / 284.6	110.0 / 279.4	51.5 / 23.4		30.4	22.6		30.3	30.9	22.0	19.4	16.7		
MB-CLL2407	117.03 / 297.3	115.0 / 292.1	56.0 / 25.4		31.7	23.6		31.7	32.3	23.0	20.3	17.4		
MB-CLL2507	122.03 / 310.0	120.0 / 304.8	61.0 / 27.7		33.1	24.6	33.1	33.7	24.0	21.2	18.2			

*Add 20-25% to all input current calculations for cooling fans.

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1 Cable Wiring	
Wire Color	Function
RED	+24VDC
GREEN	SIGNAL GROUND
BLACK	GROUND (24 RTN)
WHITE	0-10VDC Intensity Control

2 Cable Wiring			
Wire Color	Function	Wire Color	Function
RED	+24VDC	RED	No Connection
GREEN	GROUND (24V RTN)	GREEN	SIGNAL GROUND
BLACK	GROUND (24 RTN)	BLACK	No Connection
WHITE	+24VDC	WHITE	0-10VDC Intensity Control

3 Cable Wiring (4 conductor power cables)					
Wire Color	Function	Wire Color	Function	Wire Color	Function
RED	+24VDC	RED	+24VDC	RED	No Connection
GREEN	GROUND (24V RTN)	GREEN	GROUND (24V RTN)	GREEN	SIGNAL GROUND
BLACK	GROUND (24V RTN)	BLACK	GROUND (24V RTN)	BLACK	No Connection
WHITE	+24VDC	WHITE	+24VDC	WHITE	0-10VDC Intensity Control

3 Cable Wiring (6 conductor power cables)					
Wire Color	Function	Wire Color	Function	Wire Color	Function
RED	+24VDC	RED	+24VDC	RED	No Connection
BROWN	+24VDC	BROWN	+24VDC	GREEN	SIGNAL GROUND
ORANGE	+24VDC	ORANGE	+24VDC	BLACK	No Connection
BLACK	GROUND (24V RTN)	BLACK	GROUND (24V RTN)	WHITE	0-10VDC Intensity Control
BLUE	GROUND (24V RTN)	BLUE	GROUND (24V RTN)		
YELLOW	GROUND (24V RTN)	YELLOW	GROUND (24V RTN)		

M12 (5 position male)	
Pin #	Function
1	+24VDC
2	0-10VDC Intensity Control
3	GROUND (24V RTN)
4	SIGNAL GROUND
5	No Connection
The M12 connector option is not recommended for lights rated more than 4 amps	

ULC-2 Wiring	
Wire Color	Function
RED, WHITE (+)	LED INPUT
BLACK, GREEN (-)	
Terminated within a 2 position ULC-2 output connector (Phoenix Contact P/N: BCP-508-2)	

Note: The 0-10VDC Intensity Control input can accept voltages from 0-24VDC where the light will operate at full intensity in the 10-24VDC range. The light is proportionally dimmer for any Intensity Control voltage less than 10VDC and the light is OFF at approximately 0V or not connected (floating).

MB-CLL

PART NUMBER KEY									
MODEL	SIZE	-	WAVELENGTH	-	DRIVER* (most common)	-	CABLE LENGTH	-	CONN.** (most common)
MB-CLL	XXXX	-	XXXXX	-	XXX-XXXXXX	-	XXX	-	XXXX
MB-CLL	206 to 2507		W (White 6000K, Nominal) R (Red 630nm) G (Green 530nm) B (Blue 470nm) IR850 (Infrared 850nm) UV395 (UV Long 395nm) RGB (Red-Green-Blue)		24Z 24Z-ILT 24-ILSXXX 24-ILD U¹		5M 10M Length can be customized: ex.7M=7meters Select or leave blank for 3 meters		M12D^{1 2} BC^{1 3} Select or leave blank for flying leads
Example 1: MB-CLL406-W-24Z-M12D Example 2: MB-CLL2007-R-24Z					¹ Not available in lights exceeding 4A input current ² Default cable length for an M12D connector is 19 inches ³ Default cable length for a Barrel Connector is 10 feet				

When ordering the Backlight version diffuser, add a B designator before CLL. Example: MB-BCLL206-W-24Z

Contact Metaphase Technologies or your local representative for options such as custom diffusers, lenses, polarizers, IP-rated enclosures for harsh environments, higher intensity, custom wavelengths, higher uniformity, etc. Not all options are available for all lights.

For more information please contact:

BOCK OPTRONICS INC.
 14 Steinway Blvd., Unit 7
 Toronto, Ontario M9W 6M6

Tel: (416) 674-2804
sales@bockoptronics.ca
www.bockoptronics.ca

