# MetaBright™
# Collimated Backlights

PRODUCT DATA SHEET

**METAPHASE**
LIGHTING TECHNOLOGIES

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## MB-CBL

The Collimated Backlight Series is a high performance, uniform, and collimated light source for high precision silhouetting and transmissive applications.  Using precision optics, these lights are collimated in both the X and Y dimensions. The light exits at a low divergence angle making it perfect for applications requiring high precision measurements when used with a telecentric lens.  These lights incorporate a full array LED layout with more LEDs per square inch to provide greater intensity and uniformity.  The Collimated Backlight is available with a wide variety of LED colors: White, Red, Green, Blue, IR, UV and RGB with optional independent intensity control.



### FEATURES

- High density LED array makes our backlights the brightest and most stable backlights
- Exclusive optical lens provides high uniformity (±5%), shadow-free backlight illumination
- Thermal management design draws heat directly from the die ensuring long life
- Available in large custom sizes and in square and rectangular footprints
- Flicker free performance and instant start up with Metaphase analog driver technology
- Optional Constant Current driver with 0-10VDC intensity control (-Z option)

### WAVELENGTHS

| Order ID | Description / nanometers |
|---|---|
| W | White (6000K), Nominal |
| R | Red / 630nm |
| G | Green / 530nm |
| B | Blue / 470nm |
| IR850 | Infrared / 850nm |
| IR880 | Infrared / 880nm |
| IR940 | Infrared / 940nm |
| UV365 | Ultraviolet Short / 365nm |
| UV395 | Ultraviolet Long / 395nm |

For other IR wavelengths, see our SWIR Backlights

### 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 |
| **Glass Cover:** | Surface Quality 80/50 scratch/dig or better |

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**215-639-8699**

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# MB-CBL

| MODEL* | Width and Length Inches (cm) | Height Inches (cm) | Active Area Inches (cm) | Weight lbs (kg) | Cable QTY | Cable Length | AWG/ Wires | Maximum Input Current (Amps) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Visible | IR |
| MB-CBL1x1 | 2.75 x 2.75 (6.985 x 6.985) | .93 (2.356) | .93 x .93 (2.357 x 2.357) | .22 (.010) | 1 | 10ft | 24/4 | .15 | .20 |
| MB-CBL2x2 | 3.75 x 3.75 (9.525 x 9.525) | .938 (2.383) | 2.03 x 2.03 (5.166 x 5.166) | .40 (.181) | | | | .50 | .70 |
| MB-CBL2x4 | 3.75 x 5.75 (9.525 x 14.60) | .938 (2.383) | 2.02 x 4.02 (5.141 x 10.22) | .70 (.318) | | | | .85 | 1.1 |
| MB-CBL3x3 | 4.35 x 4.50 (11.05 x 11.43) | .938 (2.383) | 3.09 x 3.09 (7.849 x 7.856) | .79 (.358) | | | | .85 | 1.1 |
| MB-CBL3x4 | 4.50 x 5.35 (11.43 x 13.59) | .938 (2.383) | 3.09 x 4.09 (7.856 x 103.9) | .82 (.372) | | | | 1.0 | 1.4 |
| MB-CBL4x4 | 5.41 x 6.38 (12.88 x 12.88) | 1.67 (4.24 | 4.0 x 4.0 (10.16 x 10.16) | 1.3 (.590) | | | | 1.2 | 1.6 |
| MB-CBL5x5 | 6.41 x 7.38 (16.28 x 18.75) | 1.67 (4.24) | 5.0 x 5.0 (12.70 x 12.70) | 2.0 (.907) | | | 18/4 | 1.4 | 1.9 |
| MB-CBL6x12 | 7.75 x 13.75 (19.68 x 34.92) | .938 (2.383) | 5.91 x 11.91 (15.01 x 30.25) | 3.6 (1.63) | | | | 2.2 | 3.4 |
| MB-CBL12x12 | 13.75 x 13.75 (34.92 x 34.92) | .938 (2.383) | 11.91 x 11.91 (30.25 x 30.25) | 5.0 (2.27) | | | | 4.5 | 6.0 |

*Custom sizes available

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# MB-CBL

| Wiring (4 conductors, flying leads)** ||
| Wire Color | Function |
| --- | --- |
| RED | +24VDC |
| WHITE | 0-10VDC INTENSITY CONTROL |
| BLACK | GROUND (24V RTN) |
| GREEN | SIGNAL GROUND |

| Wiring (4 conductors, without Intensity Control) ||
| Wire Color | Function |
| --- | --- |
| RED | +24VDC |
| WHITE | +24VDC |
| BLACK | GROUND (24V RTN) |
| GREEN | 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

| Wiring with ULC-2 ||
| 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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# METAPHASE
## LIGHTING TECHNOLOGIES

## MB-CBL

| PART NUMBER KEY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MODEL | SIZE | - | WAVELENGTH | - | DRIVER* (most common) | - | CABLE LENGTH | - | CONN.** (most common) |
| MB-CBL | XXXX | - | XXXXX | - | XXX-XXXXXX | - | XXX | - | XXXX |
| **MB-CBL** | **1x1** **2x2** **2x3** **2x4** **3x3** **4x4** **5x5** **6x12** **12x12** | | **W** (White 6000K, Nominal) **R** (Red 630nm) **G** (Green 530nm) **B** (Blue 470nm) **IR850** (Infrared 850nm) **IR880** (Infrared 880nm) **IR940** (Infrared 940nm) **UV365** (UV Long 365nm) **UV395** (UV Long 395nm) | | **24CV** **24Z** **24-ILZ** **24-ILSXXX** **24-ILD** **U[1]** XXX=rate in µs Example: 250 | | **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 |

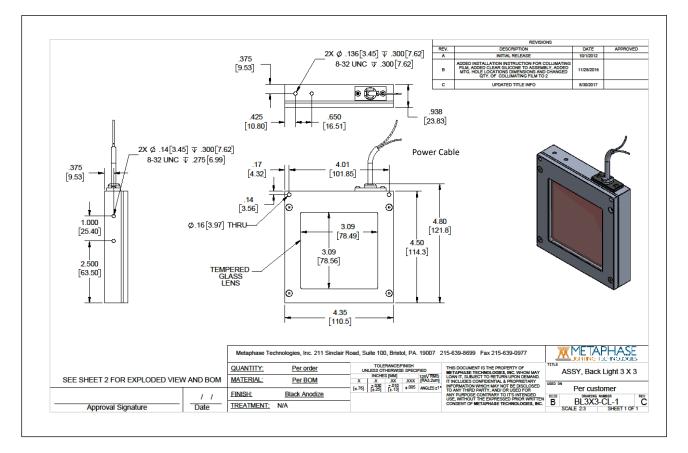| | |
|---|---|
| Example 1: **MB-CBL2x4-W-24CV** | [1]Not available in lights exceeding 4A input current |
| Example 2: **MB-CBL6x12-R-24Z** | [2]Default cable length for an M12D connector is 19 inches |
| | [3]Default cable length for a Barrel Connector is 10 feet |

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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# MB-CBL

Sample Model Number: **MB-CBL3x3-W-24CV**



### REVISIONS

| REV. | DESCRIPTION | DATE | APPROVED |
|------|-------------|------|----------|
| A | INITIAL RELEASE | 10/1/2012 | |
| B | ADDED INSTALLATION INSTRUCTION FOR COLLIMATING FILM, ADDED CLEAR SILICONE TO ASSEMBLY, ADDED MTG. HOLE LOCATIONS DIMENSIONS AND CHANGED QTY. OF COLLIMATING FILM TO 2 | 11/28/2016 | |
| C | UPDATED TITLE INFO | 8/30/2017 | |

2X ⌀ .136[3.45] ▽ .300[7.62]
8-32 UNC ▽ .300[7.62]

.375 [9.53]
.425 [10.80]
.650 [16.51]
.938 [23.83]

2X ⌀ .14[3.45] ▽ .300[7.62]
8-32 UNC ▽ .275[6.99]

.375 [9.53]
1.000 [25.40]
2.500 [63.50]

.17 [4.32]
.14 [3.56]
⌀.16[3.97] THRU

4.01 [101.85]
3.09 [78.49]
3.09 [78.56]
4.80 [121.8]
4.50 [114.3]
4.35 [110.5]

Power Cable

TEMPERED GLASS LENS

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 |
| MATERIAL: | Per BOM |
| FINISH: | Black Anodize |
| TREATMENT: | N/A |

TOLERANCE/FINISH
UNLESS OTHERWISE SPECIFIED
INCHES [MM]

| X | .X | .XX | .XXX |
|---|-----|------|------|
| [±.76] | ±.030 [±.25] | ±.010 [±.13] | ±.005 |

ANGLES ±1°

125V RMS [RA3.2um]

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TITLE: ASSY, Back Light 3 X 3
USED ON: Per customer

| SIZE | DRAWING NUMBER | REV |
|------|----------------|-----|
| B | BL3X3-CL-1 | C |

SCALE 2:3      SHEET 1 OF 1

Approval Signature     Date

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## CONTACT US

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

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