

**FR-BL**

Florescent Replacement Economical Backlights combine the latest super bright LEDs with Metaphase’s laser-edged Lumiform technology to produce highly uniform ( $\pm 10\%$ ) illumination. Light-guiding diffusion makes this one of Metaphase’s most affordable models.



**FEATURES**

- Lean manufacturing model for affordable pricing
- High brightness – up to 10,000 Lux
- Streamline design allows for maximum active area
- Utilizes high-brightness, high efficiency LEDs
- “Lumiform” technology for Diffuse Uniformity across the entire active area
- Built-in Constant Current driver with optional 0-10VDC intensity control

**APPLICATIONS**

- Absence/presence of objects
- Defect detection in glass/plastic containers
- Printed circuit board through-hole inspection
- Object tracking
- Bottle cap inspection
- Screw/Bolt thread inspection
- Glass sheet defect inspection
- Sorting and packaging facilities
- Medical products inspections

**WAVELENGTHS**

Order ID	Description / nanometers
<b>W</b>	White (6000K), Nominal
<b>R</b>	Red / 630nm
<b>G</b>	Green / 530nm
<b>B</b>	Blue / 470nm

**GENERAL SPECIFICATIONS**

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

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Economical Backlights									
MODEL	Overall Width and Length Inches (cm)	Height Inches (cm)	Active Area Inches (mm)	Weight lbs (kg)	Cable QTY	Cable Length	AWG/ Conductors	Typical Input Current (Amps)	
								White	Red
FR-BL89x155	5.00 x 8.48 (127.0 x 215.4)	.79 (2.0)	3.49 x 6.12 (89 x 155)	.72 (.336)	1	10ft	24/4	0.20	0.15
FR-BL146x254	9.77 x 13.25 (24.82 x 33.66)	.83 (2.1)	5.76 x 10.0 (146 x 254)	2.2 (1.00)				0.25	0.20
FR-BL228x406*	13.36 x 19.61 (33.93 x 49.81)	.87 (2.2)	9.0 x 16.0 (228 x 406)	4.5 (2.04)				0.50	0.40
FR-BL412x412**	16.87 x 19.42 (42.85 x 49.33)	.84 (2.1)	16.25 x 16.25 (412 x 412)	5.6 (2.54)			18/4	1.30	1.20
FR-BL533x533	25.94 x 26.38 (65.88 x 67.00)	.87 (2.2)	21.0 x 21.0 (533 x 533)	11.6 (5.26)				1.50	1.35
*FR-BL9x16 replaces the FR-BL228x406 as of September 2018									
**FR-BL16x16 replaces the FR-BL412x412 as of September 2018									
FR-BL9x16*	11.87 x 19.65 (30.15 x 49.91)	.87 (2.2)	9.0 x 16.0 228.6 x 406.4	4.3 (1.95)	1	10ft	24/4	0.50	0.40
FR-BL16x16**	18.15 x 19.65 (46.10 x 49.91)	.87 (2.2)	16.0 x 16.0 406.4 x 406.4	5.8 (2.63)			18/4	1.30	1.20

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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PART NUMBER KEY									
MODEL	SIZE	-	WAVELENGTH	-	DRIVER* (most common)	-	CABLE LENGTH	-	CONN.** (most common)
FR-BL	XXX	-	XXXXX	-	XXXXXXXX	-	XXX	-	XXXX
<b>FR-BL</b>	<b>3.5x6</b> <b>5.8x10</b> <b>9x16</b> <b>16x16</b> <b>21x21</b>		<b>W</b> (White 6000K, Nominal) <b>R</b> (Red 630nm) <b>G</b> (Green 530nm) <b>B</b> (Blue 470nm)		<b>24Z</b> <b>24NZ</b> <b>24-ILSXXX</b> <b>24-ILD</b> <b>U<sup>1</sup></b>  XXX=rate in $\mu$ s Example: 250		<b>5M</b> <b>10M</b>  Length can be customized: ex.7M=7meters  Select or leave blank for 3 meters		<b>M12D<sup>1 2</sup></b> <b>BC<sup>1 3</sup></b>  Select or leave blank for flying leads
Example 1: <b>FR-BL9x6-W-24NZ-BC</b> Example 2: <b>FR-BL21x21-B-24Z</b>					<sup>1</sup> Not available in lights exceeding 4A input current <sup>2</sup> Default cable length for an M12D connector is 19 inches <sup>3</sup> 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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Sample Model Number: **FR-BL9x16-W-24NZ-BC**

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	4/2/2018	
B	BOM UPDATES	4/10/2018	
C	ADDED 4 MTG HOLES FROM OLDER DESIGN	9/29/2018	

Metaphase Technologies, Inc. 211 Sinclair Road, Suite 100, Bristol, PA. 19007 215-639-8699 Fax 215-639-0977													
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FINISH: Black Polane	TREATMENT: N/A												
Approval Signature _____	Date / / _____												
SEE SHEET 2 FOR EXPLODED VIEW AND BOM.		<small>TOLERANCE/FINISH UNLESS OTHERWISE SPECIFIED</small> <small>INCHES (MM)</small> <table border="1" style="font-size: 8px;"> <tr> <td>X</td> <td>.X</td> <td>.XX</td> <td>.XXX</td> <td>125V FINISH</td> </tr> <tr> <td>[±.76]</td> <td>[±.38]</td> <td>[±.13]</td> <td>[±.05]</td> <td>[R0.3 2MM]</td> </tr> </table> <small>ANGLES ±1°</small>		X	.X	.XX	.XXX	125V FINISH	[±.76]	[±.38]	[±.13]	[±.05]	[R0.3 2MM]
X	.X	.XX	.XXX	125V FINISH									
[±.76]	[±.38]	[±.13]	[±.05]	[R0.3 2MM]									
		<small>TITLE</small> ASSY, BACKLIGHT <small>USED ON</small> Per customer <small>SIZE</small> B <small>DRAWING NUMBER</small> FRBL9X16-1 <small>REV</small> C <small>SCALE</small> 1:8 <small>SHEET</small> 1 OF 1											

**COMPLIANCE**



**CONTACT US**

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