

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
W	White (6000K), Nominal
R	Red / 630nm
G	Green / 530nm
B	Blue / 470nm

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

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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
Discontinued 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
Discontinued 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
FR-BL	3.5x6 Discontinued 5.8x10 9x16 16x16 21x21 Discontinued		W (White 6000K, Nominal) R (Red 630nm) G (Green 530nm) B (Blue 470nm)		24Z 24NZ 24-ILSXXX 24-ILD U¹ XXX=rate in μ s 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: FR-BL9x6-W-24NZ-BC Example 2: FR-BL21x21-B-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				

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**

Technical drawing showing dimensions for the FR-BL backlight. Dimensions include: 19.85 [499.11], 19.05 [483.87], 11.87 [301.50], 3.50 [88.90], 4.00 [101.60], 16.00 [406.40], 9.00 [228.60], 9.36 [237.74], 0.87 [21.97], 0.44 [11.05], and 8x Ø.28 [7.14] MOUNTING. A power cable is also indicated.

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			
QUANTITY: Per order	TOLERANCE/FINISH UNLESS OTHERWISE SPECIFIED INCHES (MM) 125√ FMS X .X .XX .XXX (R3.2MM) [±.76] [±.38] [±.13] [±.05] ANGLES ±1°	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: See BOM			
FINISH: Black Polane		TITLE: ASSY, BACKLIGHT	
TREATMENT: N/A		USED ON: Per customer	
Approval Signature	Date	SIZE: B	REV: C
SEE SHEET 2 FOR EXPLODED VIEW AND BOM.		DRAWING NUMBER: FRBL9X16-1	SHEET 1 OF 1
		SCALE: 1:8	

COMPLIANCE



CONTACT US

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

