

## Product Information

The Bollard.F is an architectural ground LED lighting fixture

This LED fixture is designed to deliver clear and efficient downward illumination. While being OK for all wet locations, the Bollard.F fixture features an extruded aluminum housing with custom color options, and an internal ballast for easy maintenance

Applications: Entryways, Pathways, Walkways and a wide range of outdoor lighting applications.

## Performance Ratings and Certifications

UL 1598  
UL 8750  
CSA C22.2#250.0  
CSA C22.2#250.13

## Performance Summary

Lumens: 4,862 – 5,557 lm  
Lumens Per Watt (Typical): 140 LPW  
Power Consumption: 35 – 40 W  
Light Engine: L70 Rated Lifetime of 100,000+ hours.  
CRI: Minimum 70 CRI. Custom CRI available upon request.  
CCT (Typical): 3000K, 4000K, 5700K  
Light Dist. Pattern: T5  
Manufactured in the U.S. with parts from U.S. and imported.

## Fixture Information

Housing: Extruded Aluminum  
Color: Bronze, custom color, marine grade paint, or epoxy coating  
Finish: Powdercoat finish  
Lens: Clear Polycarbonate  
Mounting: Ground mounting with 8" bolts  
Diffusion: None  
Height: 41.63"  
Width: 7.00"  
Weight: 17.80 lbs  
Shipping Weight: 20.40 lbs

## Electrical System Characteristics / Data

AC Input: 120/277 VAC (standard), 480 VAC (upgrade)  
FCC: Title 47, Part 2, Part 15, Class A  
EM: Compliance to EN55015, EN55022 (CISPR22) Class B, EN61000-3-2 Class C (60% load); EN61000-3-3  
EM Immunity: Compliance to EN61000-4-2,3,4,5,6,8,11, EN61547, EN55024, light industry level (surge 4KV), criteria A  
Withstand Voltage: I/P-O/P:3.75KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC  
Isolation Resistance: I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25 / 70% RH  
Power Factor: PF > 0.98/115VAC, PF > 0.92/277VAC  
Total Harmonic Distortion: THD < 20%  
Standard Surge Protection: All-Around Protection: OVP, SCP, OLP.  
Enhanced Surge Protection: Protects against surges according to IEEE C62.41.2 C and ANSI C136.2  
Emergency Battery Backup: Optional upgrades available.

## Optional Controls

Wireless Controls: Optional via Pulse Wireless Mesh Network Dimming 0-10V, step, line voltage and bi-level available.

## Warranty

Five-Year Limited Warranty. Optional 10-Year Manufacturer's Warranty Available. Full Warranty Terms Available At [www.noribachi.com/products/warranty](http://www.noribachi.com/products/warranty)

## Performance Specifications

Electrical Load				
Standard Order Code	Drive Current (Amps@120VAC)	Drive Current (Amps@277VAC)	Drive Current (Amps@480VAC)	System Power (Watts)*
BOF-HEX-021-B-CW-MT	0.29	0.13	0.07	34.73
BOF-LIN-024-FIN-B-CW-MT	0.33	0.14	0.08	39.69
* ideal wattage				

Operating Characteristics (Typical @5700K CCT)				
Standard Order Code	Lumens (Medium Dist)	Input Power (Watts)	Lumens per Watt	Replaces
BOF-HEX-021-B-CW-MT	4,862	34.73	140.00	75-175W
BOF-LIN-024-FIN-B-CW-MT	5,557	39.69	140.00	90-185W

## Fixture Specifications

### Construction

Durable, extruded aluminum housing, with highly durable, textured bronze powdercoat finish.

### Optional Finishes

Custom colors available (specify RAL code). Epoxy finish and marine-grade coating available. Marine grade coating is green.

### Mounting Options

Standard ground mounting with 8" bolts.

### Lens Options

Standard polycarbonate lens provides durable protection and clear light emission.

### Light Distribution Patterns

T5 standard.

## Electrical System Specifications

### Electrical System

Standard AC input of 120 – 277VAC. Optional upgrade to 480VAC. Driver meets maximum harmonic distortion (THD) of 20% and is ROHS compliant. Power Factor = > 0.9. Standard Surge protection according to IEC/EN 61000-4-5 EMC test standard and can protect against up to 4KV transient surge. Optional, enhanced Surge Protection protects Line-Ground, Line-Neutral, and Neutral-Ground. Protects against surges according to IEEE C62.41.2 C(10kA and 10kV) and ANSI C136.2.

### Controls

Optional controls include: 0-10V (0/10V), Step, line voltage and Bi-Level Dimming functionality (not guaranteed to work with all dimming systems). Occupancy and Daylight Harvest Sensors available. Optional Emergency Battery Backup: Nickel-Cadmium Batteries, 5W, 600 Lumens for 90 minutes. Optional Cold Emergency Battery Backup: 23W, 2000 Lumens for 90 minutes. The battery has a 7-10 year lifespan.

### Driver

All LED drivers provide constant current to give flicker free lighting. Two different drive currents are provided; A (350 mA) and B (525 mA). Highly reliable. Suitable for dry, damp and wet locations. Compliant to worldwide safety regulations for lighting.

### Ambient Temperature

We provide fixtures that can sustain ambient temperature ranging from -40F to 140F (-40C to 60C).

### Wireless Control Options

Optional wireless networking using the Noribachi Pulse Wireless controller. Pulse is an Arduino-based hardware platform that provides communication between fixtures and a base station using Digi's XBEE based mesh network. Pulse controls up to 16 independent LED lighting fixtures using an FCC approved 900 MHz frequency with up to 200 Kbps data transmission speed. Transmit power output 50 mW. Data transmission rate is 156.25 kbps. 128 bit AES Encryption.

### Occupancy Sensor and Daylight Harvesting

Sensor provides 60' diameter coverage from a 40' height. Time can be set from 30 seconds to 30 minutes.

### RGBW Controls

Optional RGBW controls with communication to fixture via DMX512 or DMX256 and four channel controls. Four channel control uses red, green, blue and white (to control intensity). DMX controller optional, either software DMX master (via CD and USB adapter) or a physical DMX master. 2.4 GHz wireless DMX networking optional. Other frequencies available upon request.

### Testing Compliance

Noribachi complies with and exceeds standards set forth by UL and CSA. All luminaires comply with UL 1598 (CSA C22.2#250.13), and UL 8750 (CSA C22.2#250.0) standards for safety. Performance testing is done in accordance with LM-79 color measurements and LM-79 distribution measurements, and LM-80 lumen maintenance testing.

### Manufacturing

Manufactured in beautiful Harbor City, CA. ARRA Compliant. NAFTA Compliant. Test and burn-in of 100% of all luminaires before shipment. No less than 8-years experience in manufacturing LED-based products.

### Warranty

Standard limited 5-year warranty, first year includes labor. Optional 10-year warranty available. See details at [www.Noribachi.com](http://www.Noribachi.com).

### Note

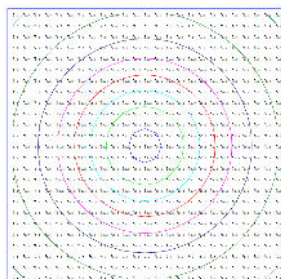
All safety tests and performance data is done in ambient (STP) conditions. Specifications subject to change without notice. Actual performance may differ as a result of end-user environment application. Actual wattage may differ by +/- 8%. Lumen values may vary within compliance with ANSI C78-377 (unless specifying tight color bins).

## Distribution Types

Power and Lumens by Light Engine							
Distribution							
Light Engine	Drive	CCT	T1	T2	T3	T4	T5
HEX-02I	B	5700	N/A	N/A	N/A	N/A	4,862
LIN-024-FIN	B	5700	N/A	N/A	N/A	N/A	5,557

### Type Distribution LIN-024-FIN

#### T-5



### Distribution

120° Standard Beam Spread. 80° Optional Beam Spread available for certain light engines. 40° Optional Beam Spread available for certain light engines. Other Light Engine Type Distribution available upon request.

Distribution types may not be applicable for all fixture configurations.

- IES Type Distributions are generated in an open space.
- Light Distribution images are mounted at 10 feet.

## Optics Specifications

### White LED Optics

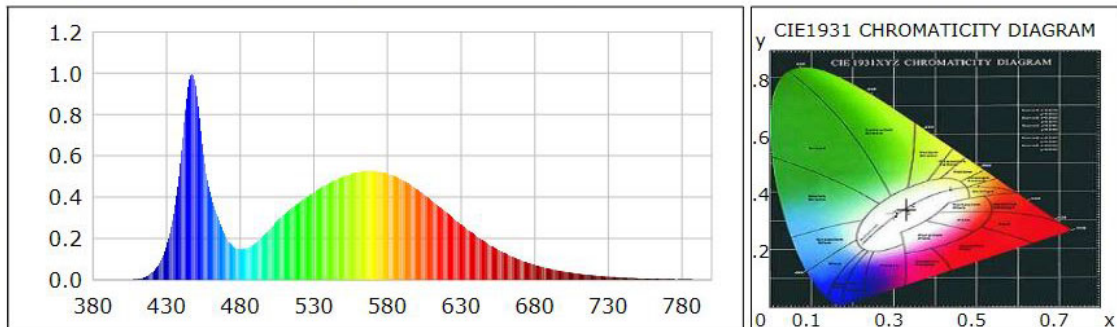
High brightness, high efficiency LEDs. Standard color temperature is Cool White (5700K typical). Neutral White (4000K typical) and Warm White (3000K typical) also available. All with minimum 70 CRI. Tight bins ( $\pm 50$ degK variability) also available – recommended for WW installations as the eye is sensitive to variations in this color range. 40deg and 80deg beam angle optional (n/a for RGBW).

### RGBW Light Engine Optics

RGBW light engine also available, compatible with DMX controller. RGBW colors, to allow changing from pure white light to any hue available. Multiple channels of LEDs produce a full spectrum of light anywhere from deepest red to farthest violet. CRI greater than 75 in the 2700K – 4000K range.

Single color light engines also available. Red=630 nanometers, Green=525 nanometers. Blue=475 nanometers.

### Photometric Data for White LED Light Engine



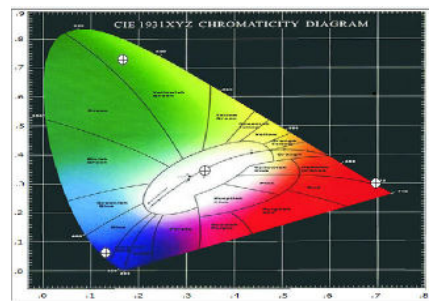
Chromaticity coordinates:  $x=0.3305$   $y=0.3424$   $u(u')=0.2050$   $v=0.3186$   $v'=0.4779$   
 CCT:  $T_c=5700K$  ( $duv=0.00156$ ) Color Ratio:  $R=0.133$   $G=0.827$   $B=0.040$   
 Peak Wavelength: 447.2nm Half Bandwidth: 19.1nm  
 Dominant Wavelength: 535.2nm Color Purity: 0.020  
 Color Render Index:  $R_a = 75.0$ ,  $avgR(1\sim14) = 65.6$ ,  $avgR(1\sim15) = 65.9$   

R1 =74	R2 =76	R3 =76	R4 =81	R5 =75	R6 =66	R7 =84	R8 =67
R9 =0	R10=41	R11=78	R12=40	R13=73	R14=86	R15=71	

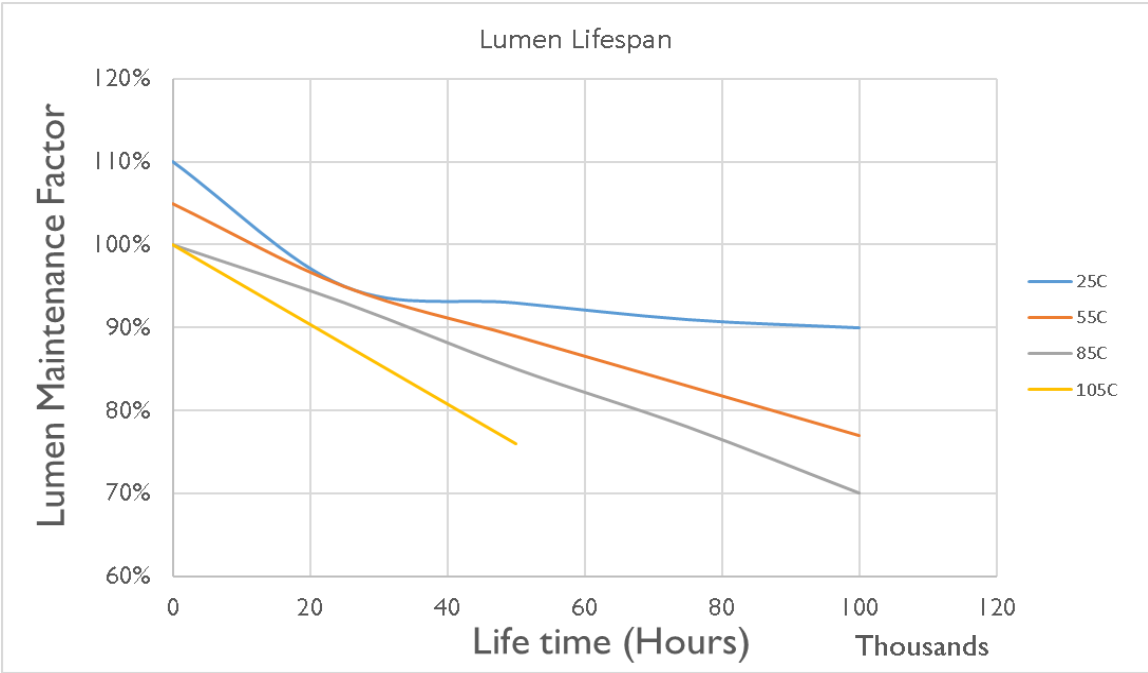
### Photometric Data for RGBW LED Light Engine

#### Chromaticity coordinates:

White  $x = 0.3405$ ,  $y = 0.3459$   
 Green  $x = 0.1687$ ,  $y = 0.7296$   
 Red  $x = 0.6968$ ,  $y = 0.3024$   
 Blue  $x = 0.1316$ ,  $y = 0.0636$



## Lumen Performance



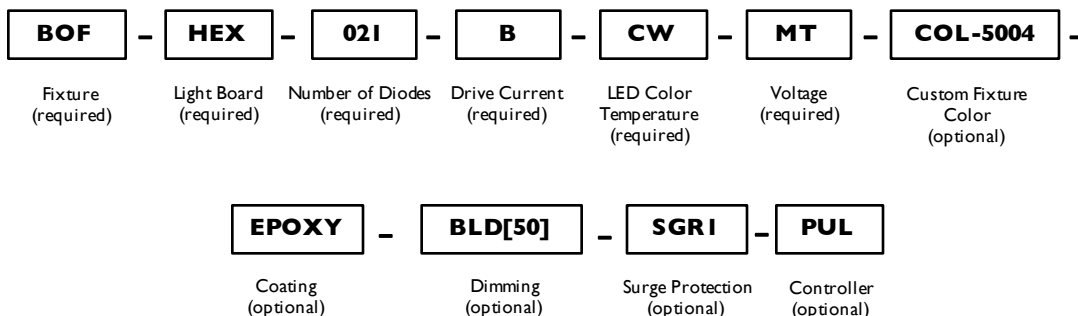
Lumen Maintenance Factors (B Drive)					
T <sub>j</sub> (Junction Temp)	INITIAL LMF	25K HR PROJECTED LMF	50K HR PROJECTED LMF	75K HR PROJECTED LMF	100K HR PROJECTED LMF
25°C	1.10	0.95	0.93	0.91	0.90
55°C	1.05	0.95	0.89	0.83	0.77
85°C	1.00	0.93	0.85	0.78	0.70
105°C	1.00	0.88	0.76	N/A	N/A

Each temperature has an independent initial value. In accordance with IESNA TM021011, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip. In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing (DUT) i.e. the packaged LED chip.

Lumen Multiplier	
AMBIENT TEMPERATURE	LUMEN MULTIPLIER
10°C	1.032
15°C	1.021
25°C	1.000
40°C	0.968
50°C	0.946

## How to Order

Sample Order Code: Only include the optional upgrades you need.



## Ordering Information

Numbering Order	Specification	Required or Optional	Allowed Values	Description
1	Fixture	Required	BOF	BOLLARD.F fixture
2	Light Board	Required	HEX	For HEX board options
			LIN	For LIN board options
3	Number of Diodes	Required	021	For HEX-021 models
			024	For LIN-024-FIN models
4	Drive Current	Required	B	B (525mA) drive current
5	LED Color Temperature	Required	CW	Standard Cool white LEDs (5700K)
			NW	Neutral White LEDs (4000K)
			WW	Warm White LEDs (3000K)
			[Specific degree Kelvin]	Specific color temp LEDs [Specific degree Kelvin]
			TB1 [Specific degree Kelvin]	Tight Bin LED Color [Specific degree Kelvin]
			TB2 [Specific degree Kelvin]	Tight Bin LED Color [Specific degree Kelvin] for > 150W
			RGBW	Red/Green/Blue/White light engine
6	Voltage	Required	SC-[R,G,B]	Single color Red, Green or Blue light engine
			MT	Standard AC input: 120VAC - 277VAC
			HV1	High Voltage (480VAC) option for up to 150W
7	Custom Fixture Color	Optional	HV2	High Voltage (480VAC) option for over 150W
8	Coating	Optional	COL-[RAL]	Custom Fixture Color (RAL code)
9	Dimming	Optional	EPOXY	Epoxy Coating
			MARINE	Marine Grade Fixture Coating
			010V	0 - 10V dimming
			STEP	Step dimming (Up to 100W)
			STEP100	Step dimming (100-299W)
			STEP300	Step dimming >300W
			BLD[%]	Bi-level dimming
10	Surge Protection	Optional	LVDIM	Line Voltage Dimming
			SRG1	Enhanced surge protection for 120-277VAC
11	Controller	Optional	SRG2	Enhanced surge protection for 480VAC
			PUL	Pulse Wireless Controller