

Product Information

The Highbay.C.RL is a no-nonsense,, multi-functional, energy-efficient LED lighting solution.

This LED fixture features a Noribachi proprietary design featuring aluminum housing and superior powdercoat finish.

The Highbay.C.RL is the perfect LED lighting solution for Manufacturing facilities, Sports Complexes, Storage Facilities and a variety of other indoor applications.

Performance Ratings and Certifications

UL 1598
UL 8750
CSA C22.2#250.0
CSA C22.2#250.13
IP Rating: IP65

Performance Summary

Lumens:	29,172 lm
Lumens Per Watt (typ.):	140 LPW
Power Consumption:	208.40 W
Light Engine:	L70 Rated Lifetime of 100,000+ hours.
CRI:	Minimum 70 CRI. Optional custom CRI.
CCT (Typical):	3000K, 4000K, 5700K, optional tight bins.
Light Dist. Pattern:	Multiple distribution patterns available.
Manufactured in the U.S. with parts from U.S. and imported.	

Fixture Information

Housing:	Aluminum 3003
Color:	White with clear coat. Custom color available.
Finish:	Superior powdercoat.
Optional Lens:	Clear or frosted polycarbonate
Mounting:	Yoke, surface, trunnion, chain or eye hook available.
Diffusion:	None. Clear polycarbonate or frosted optional.
Length:	12"
Width:	24"
Depth:	3.5", 4.15" with occupancy sensor
Weight:	8.10 lbs.
Shipping Weight:	11.10 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.
Daylight Harvesting Sensor:	Optional.
Occupancy Sensor:	Optional.

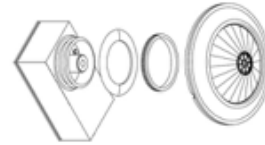
Warranty

Five-Year Limited Warranty. Optional 10-Year Manufacturer's Warranty Available. Full Warranty Terms Available At www.noribachi.com/products/warranty

HBC.R Options

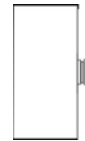
Occupancy Sensor

Sensor Mounting:	Attached to LED plate
Sensor Lens Options:	360° lens
Functionality	60' diameter coverage from 40' height 30 seconds to 30 minutes
Width:	4.34"
Height:	4.44"
Depth:	1.58"



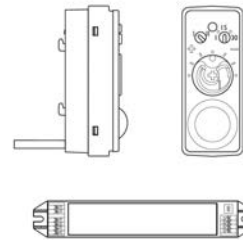
Photocell

Wiring	12" Leads
Switch Type	Thermal Switch
Lens Type	Polycarbonate Enclosure & Eye 1/2" CdS Photocell
Attachment type	3/8" – 19 Thread Nipple with Rubber Gasket & Plastic Lock-Nut
Depth with Lens:	1.7"
Depth:	1.1"
Width:	2.1"



Daylight Harvesting Sensor

Sensor Mounting:	Attached to LED plate
Functionality	Enables daylight regulations and dimming when no presence is detected
Delay:	1 to 30 minutes
Sensor Depth:	0.78"
Sensor Height:	0.74"
Sensor Width:	1.84"
Switchbox Length:	7.1"
Switchbox Width:	1.18"



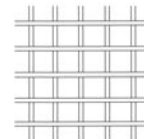
Frosted or Clear Lens

Lens:	Either clear or frosted polycarbonate
Dimensions:	Per fixture



Wire Guard

Wire Guard:	Steel Wire with chromized coating
Dimensions:	Per fixture



Electrical System Specifications

Electrical Load				
Standard Order Code	Drive Current (Amps@120VAC)	Drive Current (Amps@277VAC)	Drive Current (Amps@480VAC)	System Power (Watts)*
HBC.RL-HEX-126-B-CW-MT	1.74	0.75	0.43	208.40
* ideal wattage				

Operating Characteristics (Typical @5700K CCT)				
Standard Order Code	Lumens (Medium Dist)	Input Power (Watts)	Lumens per Watt	Replaces
HBC.RL-HEX-126-B-CW-MT	29,172	173.60	140.00	550-800W

Fixture Specifications

Construction

Durable aluminum 3003 housing with durable powdercoat finish.

Optional Finishes

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

Mounting Options

Surface mount is standard with commercial grade steel bracket mounting available.

Lens Options

Clear or frosted polycarbonate lens optional.

Light Distribution Patterns

T5 standard. T4, Wide, Narrow and Skinny distribution optional.

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 (010V), 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.

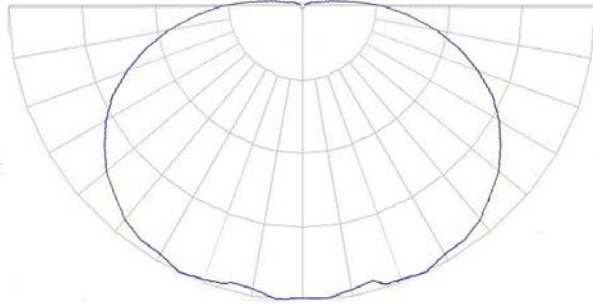
Note

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).

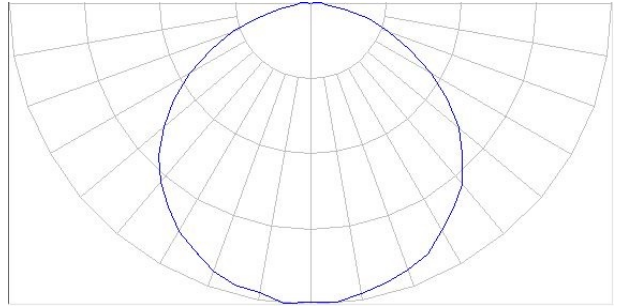
Light Distribution Patterns

Power and Lumens by Light Engine				
Light Engine	Wide	Medium	Narrow	Skinny
HEX-126-B	Optional	29,172	Optional	Optional

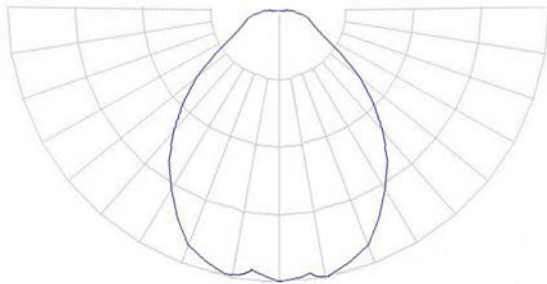
Wide Pattern



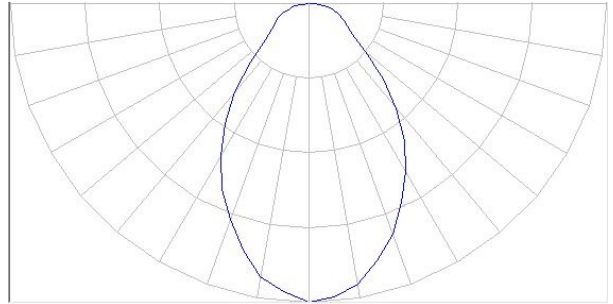
Medium Pattern
(standard on all configurations)



Narrow Pattern



Skinny Pattern



Optics Specifications

White LED Optics

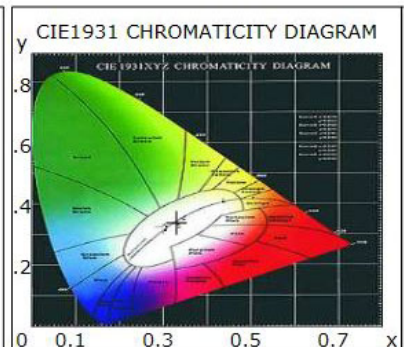
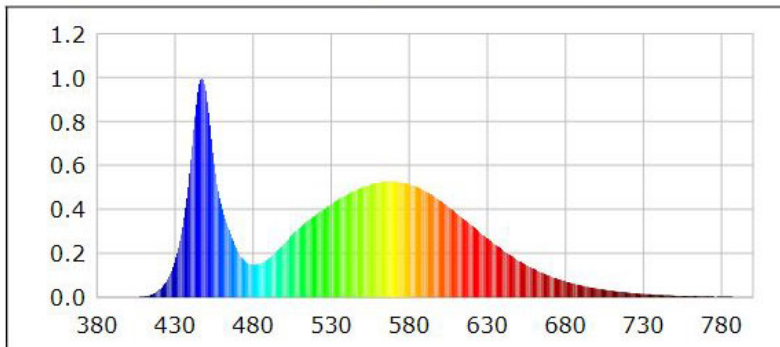
High brightness, high efficiency LEDs. Standard color temperature is Cool White (5700K typical). Neutral White (4000K typical) and Warm White (3000K typical) also available. All with minimum 70 CRI. Tight bins (<+/-50degK variability) also available – recommended for WW installations as the eye is sensitive 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 great 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



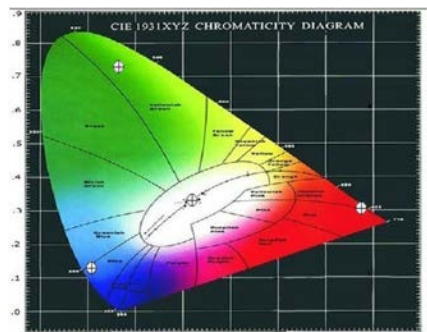
Chromaticity coordinates: $x=0.3305$ $y=0.3424$ $u(u')=0.2050$ $v=0.3186$ $v'=0.4779$
 CCT: $T_c=5700K$ ($duv=0.00156$) Color Ratio: $R=0.133$ $G=0.827$ $B=0.040$
 Peak Wavelength: 447.2nm Half Bandwidth: 19.1nm
 Dominant Wavelength: 535.2nm Color Purity: 0.020
 Color Render Index: $R_a=75.0$, $avgR(1\sim14)=65.6$,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

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	

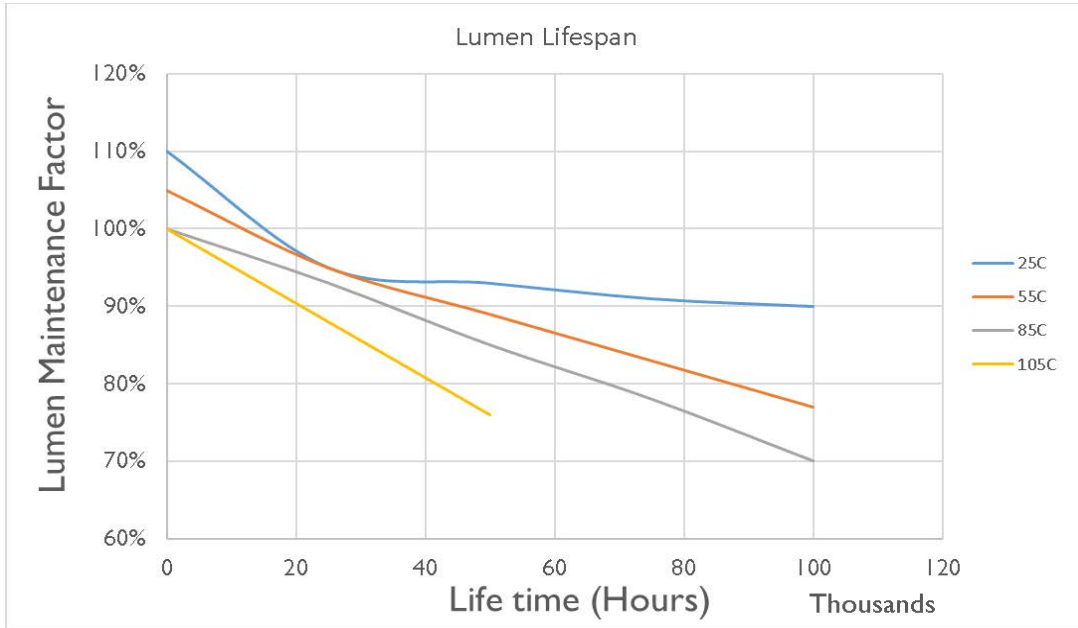
Photometric Data for RGBW LED Light Engine

Chromaticity coordinates:

White $x=0.3264$ $y=0.3427$
 Red $x=0.6977$ $y=0.3014$
 Green $x=0.1897$ $y=0.7174$
 Blue $x=0.1104$ $y=0.1298$



Lumen Performance



Lumen Maintenance Factors (B Drive)					
T _j (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.

HBC.RL	-	HEX	-	I26	-	B	-	CW	-	MT	-	COL-5004	-
Fixture (required)		Light Board (required)		Number of Diodes (required)		Drive Current (required)		LED Color Temperature (required)		Voltage (required)		Custom Fixture Color (optional)	

L615+6' CORD	-	CORD 6'	-	FR	-	WG	-	TR	-	BLD[50]	-
Twist Lock Plug (optional)		Cord (optional)		Lens (optional)		Wire Guard (optional)		Mounting (optional)		Dimming (optional)	

EMC	-	OS	-	PC2	-	DHS	-	SGI	-	PUL	-	T4	-	80D
Emergency Battery Backup (optional)		Occupancy Sensor (optional)		Photocell (optional)		Daylight Harvesting Sensor (optional)		Surge Protector (optional)		Controller (optional)		Distribution (optional)		Beam Angle (optional)



ELECTRICAL CHARACTERISTICS AND PERFORMANCE DATA VERIFIED BY NATIONALLY RECOGNIZED TESTING LABS (NRTL). FOR FULL REPORTS AND RESULTS, VISIT WWW.NORIBACHI.COM/REPORTS. ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. ALL VALUES TYPICAL UNLESS OTHERWISE NOTED. LUMEN VALUES MAY VARY BY +/-10%. COLOR TEMPERATURE MAY VARY ACCORDING TO ANSI C78.377.
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How to Order (continued)

Numbering Order	Specification	Required or Optional	Allowed Values	Description
1	Fixture	Required	HBC.RL	For HBC.RL
2	Light Board	Required	HEX	For HBC.RL models
3	Number of Diodes	Required	126	For HEX-126 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]
			RGBW	Red/Green/Blue/White light engine
6	Voltage	Required	SCOL [R/G/B]	Single color light engine
			MT	Standard AC input: 120VAC - 277VAC
			HV1	High Voltage (480VAC) option
7	Custom Fixture Color	Optional	HV2	High Voltage (480VAC) option
			COL-[RAL]	Custom Fixture Color (RAL code) for all Highbay models
8	Twist Lock Plugs	Optional	L515 + 6' CORD	L515P 125V Twist lock plug with 6' cord
			L615 + 6' CORD	L615P 240V Twist lock plug with 6' cord
			L715 + 6' CORD	L715P 277V Twist lock plug with 6' cord
			L720 + 6' CORD	L720P 277V Twist lock plug with 6' cord
			L820 + 6' CORD	L820P 480V Twist lock plug with 6' cord
			L830 + 6' CORD	L830 480V Twist lock plug with 6' cord
9	Cord	Optional	CORD6	6' 16/3 600V STW cord
10	Lens	Optional	LENS	For polycarbonate lens adder
11	Wire Guard	Optional	WG	For Wire Guard
12	Mounting	Optional	YOKE	For Yoke mount
			SUR	For Surface mount
			TR	For Trunnion mount
			CHAIN	Chain with "S" Hook
			EYE	Eye hook with aircraft cable
13	Dimming	Optional	0-10V	0-10V dimming
			STEP	Step dimming
			BLD [%]	Bi-level dimming
			LVDIM	Line voltage dimming
14	Emergency Battery Backup	Optional	EM	Emergency Battery Backup
15	Occupancy Sensor	Optional	EMC	Emergency Battery Backup, Cold
16	Photocell	Optional	OS	Occupancy Sensor
			PC1	120V Button Photocell
17	Daylight Harvest Sensor	Optional	PC2	240-277V Button Photocell
			DHS	For Daylight Harvest Sensor
18	Surge Protector	Optional	SG1	Enhanced surge protector for 120-277VAC
			SG2	Enhanced surge protector for 480VAC
19	Pulse Wireless Controller	Optional	PUL	Pulse Wireless Controller
20	Beam Distribution	Optional	TRS	Optional right slant beam distribution
			TLS	Optional left slant beam distribution
21	Beam Angle	Optional	80D	Optional 80deg beam angle
			40D	Optional 40deg beam angle