HBEAM 2

HB2 | SUSPENDED, WALL

STANDARD SIZES
2" Aperture
Configurable in linear shapes and straight run sections

LAMPING
LED - Direct & Indirect - 80/90 CRI - 2700K/3000K/3500K/4000K
Output Options: LOW/MED/HI/DECOR/BIOS/Tunable White/RGB/RGB+W
Dimming down to 0%

FINISH
18 standard finishes available at no extra charge
RAL classic colors, TCI / Tiger Drylac catalog colors, and custom color match also available

CONSTRUCTION
Extruded 6061 Aluminum

SPECIFYING FOR WELL™?
See pages 7-8 for recommended options that contribute to meeting the WELL Building Standard™

QuickShip Eligible

Intertek ETL Listed 1598

enlighted

VIVE by LUTRON

bios ILLUMINATED

PRODUCT SUBMITTAL WORKSHEET

SAMPLE PRODUCT CODE

HB2S — S10 — HI/90/3500 — 0/10V/S — EXT/F — MED/90/3500 — 0/10V/S — WD — WH — UNV — EMB/1 — ENLGHT/INT/2 — COMBO — SB

1 2 3 4 5 6 7 8 9 10 11A 11B 11C

1. BASE MODEL (CHOOSE ONE)

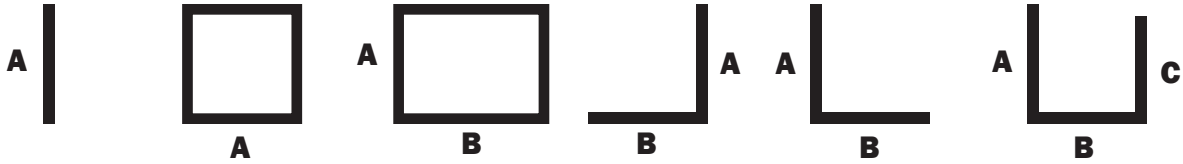
☐ **HB2S** QS 2" Suspended
☐ **HB2W** QS 2" Wall-Mount *(incl. optional 3/8" stand-off brackets)*

Suspended | Wall-Mount | Wall-Mount w/ Bracket

2. SHAPE/LENGTH (CHOOSE ONE & ENTER LENGTH IN FEET — FOR CUSTOM ANGLES, CONTACT ALW)

☐ **S__** QS Individual/Straight Run Section *(enter length, ex. S5)*
☐ **SQ__** QS Square Configuration *(enter side length A, ex: SQ5)*
☐ **R_-_** QS Rectangular Configuration *(enter side lengths A and B, ex. R5-7)*
☐ **LL_-_** QS L-Shaped, Left Configuration *(enter side lengths A and B, ex. LL5-7)*
☐ **LR_-_** QS L-Shaped, Right Configuration *(enter side lengths A and B, ex. LR5-7)*
☐ **U_-_-_** QS U-Shaped Configuration *(enter side lengths A, B, and C, ex. U5-7-4)*

*Lengths are nominal and may vary based on lamping and other specification selections. Consult ALW when exact lengths are required.
*Shape orientation (Looking from the Ceiling down to the floor).



Straight Run (S) | Square (SQ) | Rectangle (R) | L-Shaped, Left (LL) | L-Shaped, Right (LR) | U-Shaped (U)

3. LED LAMPING — DIRECT (CHOOSE NONE OR ONE UNDER A, B, & C, AS NECESSARY)

☐ **N** QS None. *Select when direct lamping is not desired.*

A. OUTPUT*

☐ QS **LOW**
☐ QS **MED**
☐ QS **HI**[1]
☐ **DECOR**
☐ **TUNE** (2700K-6500K, 80CRI)
☐ **RGB**
☐ **RGBW** (White Chip: 3500K, 80CRI)

B. CRI[2]

☐ QS **80**
☐ QS **90**
☐ **BIOS**** (STATIC BIOS)
☐ **BIOSD**** (DYNAMIC BIOS)

C. CCT[3]

☐ **2700K** (90 CRI Only)
☐ QS **3000K**
☐ QS **3500K**
☐ QS **4000K**

DELIVERED LUMENS (LM/FT)	WATTS (W/FT)	EFFICACY (LM/W)
See pages 9-10 for complete details.		Up to 98 lm/W

*Consult ALW for custom lumen packages.
**Static BIOS SkyBlue® 490nm LED is always on. Dynamic BIOS SkyBlue® 490nm LED can be tuned out with most LED driver and dimmer combinations. See page 10-11 for details.
[1]Cannot select HI for both Direct & Indirect lamping due to heat limitations.
[2]CRI options not applicable for DECOR, TUNE, RGB, or RGBW lamping.
[3]2700K is not available in BIOS options. CCT options not applicable for TUNE, RGB, or RGBW lamping.

QS = QuickShip-qualifying option. For the entire luminaire configuration to be QuickShip-eligible, ALL options specified in the configuration must be ones notated with "QS". NOTE: Maximum 800 ft. of QuickShip-eligible product per order.

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5. DRIVER[4] — DIRECT (CHOOSE ONE .STD, DECOR, TUNE & RGB(W) TABLE INDICATES COMPATIBLE LED LAMPING)

			STD/BIOS[5]	DECOR	TUNE	RGB(W)	
☐	**0/10V/S**	QS	●	●	●		0-10V dimming down to 5% (Standard Dimming — Down to 10% for DECOR and TUNE lamping)
☐	**0/10V/1%**	QS	●	●	●		0-10V dimming down to 1%
☐	**0/10V/0%**	QS	●	●	●		0-10V premium dimming down to 0%
☐	**ECOSYS1**		●	●			(LDE1) Lutron Hi-lume 1% EcoSystem LED driver with Soft-on, Fade-to-Black dimming technology
☐	**TSERIES[6]**				●		Lutron T-Series Tunable White Class 2 LED Driver (For use with Lutron Quantum Control Systems)
☐	**DALI**		●	●	●		DALI flicker-free dimming down to 0%(Down to 1% for Lutron Vive Lighting Control System)
☐	**DMX**		●	●	●	●	DMX flicker-free dimming down to 0%

[4]Driver specifications provided upon request.
[5]Lutron Vive Control Systems is compatible only with STD lamping. See more information for compatible Driver under 'Sensor Options'.
[6]For use with TUNE Lamping. Lutron T-Series Driver is not compatible with Lutron Vive Lighting Control System.

5. LENS — DIRECT (CHOOSE ONE)

☐	**N**	QS	None. *Select when direct lamping is not desired.*
☐	**EXT/F**	QS	Extra diffuse, flush

6. LED LAMPING — INDIRECT (CHOOSE NONE OR ONE UNDER A, B, & C, AS NECESSARY)

☐ **N** QS None. *Select when indirect lamping is not desired*

A. OUTPUT*

- ☐ QS **LOW**
- ☐ QS **MED**
- ☐ QS **HI**[7]
- ☐ **DECOR**
- ☐ **TUNE** (2700K-6500K, 80CRI)
- ☐ **RGB**
- ☐ **RGBW** (White Chip: 3500K, 80CRI)

B. CRI[8]

- ☐ QS **80**
- ☐ QS **90**
- ☐ **BIOS**** (STATIC BIOS)
- ☐ **BIOSD**** (DYNAMIC BIOS)

C. CCT[9]

- ☐ **2700K** (90 CRI Only)
- ☐ QS **3000K**
- ☐ QS **3500K**
- ☐ QS **4000K**

DELIVERED LUMENS (LM/FT)	WATTS (W/FT)	EFFICACY (LM/W)
See pages 9-10 for complete details.		Up to 98 lm/W

**Consult ALW for custom lumen packages.*
***Static BIOS SkyBlue® 490nm LED is always on. Dynamic BIOS SkyBlue® 490nm LED can be tuned out with most LED driver and dimmer combinations. See pages 10-11 for details.*
[7]Cannot select HI for both Direct & Indirect lamping due to heat limitations.
[8]CRI options not applicable for DECOR, TUNE, RGB, or RGBW lamping.
[9]2700K is not available in BIOS options. CCT options not applicable for TUNE, RGB, or RGBW lamping.

QS = *QuickShip-qualifying option. For the entire luminaire configuration to be QuickShip-eligible, ALL options specified in the configuration must be ones notated with "QS". NOTE: Maximum 800 ft. of QuickShip-eligible product per order.*

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7. DRIVER[10] — INDIRECT (CHOOSE ONE .STD, DECOR, TUNE & RGB(W) TABLE INDICATES COMPATIBLE LED LAMPING)

			STD/BIOS[11]	DECOR	TUNE	RGB(W)	
☐	**0/10V/S**	QS	●	●	●		0-10V dimming down to 5% (Standard Dimming — Down to 10% for DECOR and TUNE lamping)
☐	**0/10V/1%**	QS	●	●	●		0-10V dimming down to 1%
☐	**0/10V/0%**	QS	●	●	●		0-10V premium dimming down to 0%
☐	**ECOSYS1**		●	●			(LDE1) Lutron Hi-lume 1% EcoSystem LED driver with Soft-on, Fade-to-Black dimming technology
☐	**TSERIES[12]**				●		Lutron T-Series Tunable White Class 2 LED Driver (For use with Lutron Quantum Control Systems)
☐	**DALI**		●	●	●		DALI flicker-free dimming down to 0%(Down to 1% for Lutron Vive Lighting Control System)
☐	**DMX**		●	●	●	●	DMX flicker-free dimming down to 0%

[10]Driver specifications provided upon request.
[11]Lutron Vive Control Systems is compatible only with STD lamping. See more information for compatible Driver under 'Sensor Options'.
[12]For use with TUNE Lamping. Lutron T-Series Driver is not compatible with Lutron Vive Lighting Control System.

8. LENS — INDIRECT (CHOOSE ONE)

☐	**N**	QS	None. *Select when indirect lamping is not desired.*
☐	**EXT/F**	QS	Extra diffuse, flush
☐	**WD**	QS	Frosted *(LEDs may be visible when dimmed)*

7. FINISH (CHOOSE ONE. SEE PAGE 12 FOR LARGER SWATCHES AND ADDITIONAL INFORMATION)

STANDARD FINISHES

ALUMINUM

☐	**AL**	QS		Anodized Aluminum

BASIC POWDER COAT

☐	**GW**			Gloss White
☐	**SW**	QS		Satin White
☐	**AW**			Antimicrobial Satin White
☐	**TW**			Textured Matte White
☐	**TB**			Textured Matte Black

METALLIC POWDER COAT

☐	**SG**	Silver Gray
☐	**CG**	Charcoal Gray
☐	**CU**	Copper
☐	**BR**	Brass

SATIN ANODIZED EFFECT POWDER COAT

☐	**CS**		Clear Silver
☐	**OB**		Oil-Rubbed Bronze
☐	**DB**		Dark Bronze
☐	**SB**	QS	Satin Black

GLOSS POWDER COAT (80-95% GLOSS)

☐	**GO**	Orange (RAL 2003)
☐	**GR**	Red (RAL 3020)
☐	**GM**	Magenta (RAL 4010)
☐	**GB**	Blue (RAL 5015)

SPECIAL ORDER FINISHES

☐	**RAL____**	Specify RAL Classic Color (Ex: RAL 3003) - Most RAL Colors are available for powder coat. See www.alwusa.com/finishes
☐	**CAT____**	Specify Catalog Colors - Specify colors from the Tiger Drylac and TCI catalogs
☐	**CCM____**	Custom Color Match - Specify a custom powder coat color match

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10. VOLTAGE (CHOOSE ONE)

- ☐ **UNV** — QS Universal Voltage (120VAC-277VAC)
- ☐ **347** — 347 Volt *(Driver options may be limited. Not available with EMB)*

11. ADDITIONAL OPTIONS (OPTIONAL — CHOOSE ONE UNDER A, B, & C, IF DESIRED)

A. EMERGENCY OPTIONS

- ☐ **EMB/__**[13] — QS Emergency Battery *(indicate QTY — each battery powers 4ft. section @ 1492lm. Not available in 347V)*
- ☐ **EMC/__**[13] — QS Emergency Circuit *(indicate QTY of 4ft sections to be illuminated by emergency circuit)*

[13]*For fixtures under 4ft in length, entire fixture will be illuminated with a proportional lumen output. Consult ALW for more details.*

B. SENSOR OPTIONS (DEFAULT QUANTITY IS 1 SENSOR PER 8FT, INDICATE ALTERNATE QUANTITY IF DESIRED)

- ☐ **VRF/__**[14] — Lutron® Vive integral RF wireless fixture control (Lutron Part: DFCSJ-OEM-RF)
- ☐ **VDO/__**[14] — Lutron® Vive integral RF wireless fixture control + daylight/occ sensor (Lutron Part: DFCSJ-OEM-OCC)
- ☐ **FCJS/__**[15] — Lutron® Vive remote RF wireless fixture control (Lutron Part: FCJS-ECO or FCJS-010)
- ☐ **FCJS/S/__**[15] — Lutron® Vive remote RF wireless fixture control + daylight/occ sensor (Lutron Part: FCJS-ECO or FCJS-010, & FC-Sensor)
- ☐ **ENLGHT/__**[16] — QS Enlighted® remote connected lighting smart sensor (Enlighted Part: SU-5S-H) *(occupancy, daylight, networking, and more)*
- ☐ **ENLGHT/INT/__**[16] — QS Enlighted® integral connected lighting smart sensor (Enlighted Part: SU-5E) *(occupancy, daylight, networking, and more)*
- ☐ **OS/__*** — QS 0-10V integral occupancy sensor
- ☐ **PH/__*** — QS 0-10V integral photocell/daylight sensor

**Quickship availability on occupancy and photocell/daylight sensors may vary. Contact ALW for more information.*
[14]*Lutron® Vive integral sensors are compatible with the following drivers: DALI driver or ECOSYS. Vive Sensors are not compatible with the Lutron T-Series Tunable White Driver. Programming required by Lutron Commissioner.*
[15]*Lutron® Vive remote sensors are compatible with the following drivers: 0/10V/S, 0/10V/1, 0/10V/0 driver or ECOSYS. Vive Sensors are not compatible with the Lutron T-Series Tunable White Driver. Programming required by Lutron Commissioner.*
[16]*Enlighted® sensors are compatible with the following drivers: 0/10V/S, 0/10V/1, 0/10V/0. Programming required by Enlighted Commissioner. Additional Enlighted sensor families included IoT Sensors and Enlighted One Sensors are also available as a custom order but not available as a QuickShip option. Contact Customer Support for more information.*

C. ADDITIONAL OPTIONS (COMPATIBLE ONLY WITH SUSPENDED MOUNT)

- ☐ **COMBO** — QS Combination 4.5" canopy at power feed locations to accommodate both power cord & suspension mount hardware.
- ☐ **SB** — QS Seismic Bracing

QS = *QuickShip-qualifying option. For the entire luminaire configuration to be QuickShip-eligible, ALL options specified in the configuration must be ones notated with "QS". NOTE: Maximum 800 ft. of QuickShip-eligible product per order.*

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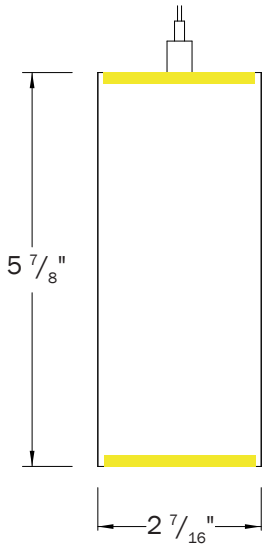
MECHANICAL DIAGRAMS

SUSPENDED

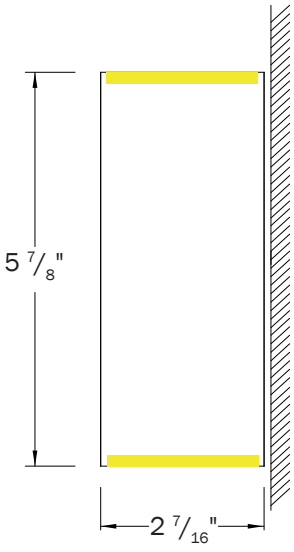
Suspended mounting can be specified with direct, indirect, or both direct and indirect lamping.



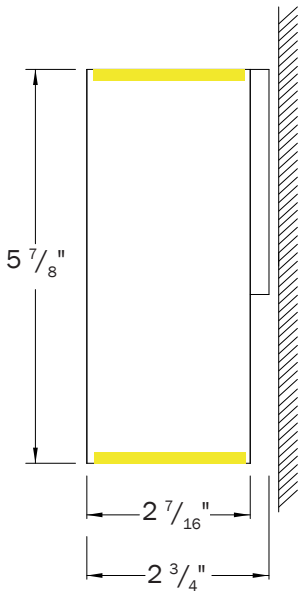
HB2S

WALL MOUNT

Wall mounting can be specified with direct, indirect, or both direct and indirect lamping. The optional wall mount bracket adds 3/8" to the dimensions of the fixture.



HB2W
WALL MOUNT



HB2W
Shown with included, optional 3/8" stand-off bracket

SUSPENSION MOUNTING

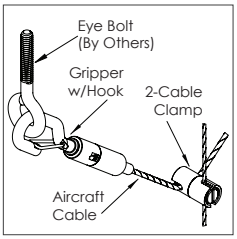
CEILING HARDWARE

(1) 4.5" canopy per power feed location,
(1) bullet mount,
(1) 8' aircraft cable
(1) 2" canopy (for use with T-bar mounting) per suspension point

COMBO CANOPY

Choose option COMBO to specify 4.5" canopies at feed locations with power feed and aircraft cable suspension mounting.

Canopy finish is always white. Contact ALW for alternate colors.



SEISMIC BRACING

Add-on hardware includes cable gripper with hook, 2-cable clamp and specified length of aircraft cable per suspension point.

SPECIFYING FOR THE WELL BUILDING STANDARD™ - WELL™

ALW is committed to providing the highest quality luminaires for a multitude of applications, with many versatile lighting solutions that contribute to satisfying the WELL Building Standard. WELL is currently transitioning from WELL V1 to WELL V2. Below is a quick guide to assist you in specifying appropriate product configurations for WELL V2 features. Links to official WELL standards can be found here: WELL V1 & WELL V2.

CIRCADIAN LIGHTING DESIGN

WELL V2: FEATURE L03

The Circadian Lighting Design feature requires projects to provide users with appropriate exposure to light for maintaining circadian health and aligning the circadian rhythm with the day-night cycle.

To conform to these requirements, the project must meet one of the following 4 light level options (a, b, c, or d) below. These light levels are measured on the vertical plane at eye level of the occupant. The light levels are achieved at least between the hours of 9 a.m. and 1 p.m. and may be lowered after 8 p.m. at night.

DESIGNING WITH ELECTRIC LIGHT ONLY	DESIGNING WITH BOTH ELECTRIC LIGHT & DAYLIGHT	POINTS
a. At least 150 EML [136 melanopic equivalent daylight D65]	b. The project achieves at least 120 EML [109 melanopic equivalent daylight D65] with electric light and at least 2 points in Feature L05: Enhanced Daylight Access	1
c. At least 240 EML [218 melanopic equivalent daylight D65]	d. The project achieves at least 180 EML [163 melanopic equivalent daylight D65] with electric light and at least 2 points in Feature L05: Enhanced Daylight Access	3

Choose from a BIOS Static or BIOS Dynamic light engine to assist in a healthy, circadian lighting design. CCT, CRI, Luminous Flux Multipliers, and Melanopic Ratios are shown below for easy specification.

CIRCADIAN LIGHTING DESIGN (3PT MAX)	BIOS STATIC (BIOS)			BIOS DYNAMIC (BIOSD)			HOW TO SPECIFY
CCT	3000K	3500K	4000K	3000K	3500K	4000K	1. Select **BIOS** or **BIOSD** for **LED LAMPING** 2. Select the appropriate Lumen **OUTPUT** 3. Select the appropriate **CCT**
CRI / R9	83 / 80+	83 / 80+	83 / 80+	83 / 80+	83 / 80+	83 / 80+	
LUMINOUS FLUX MULTIPLIER	0.95	0.98	1.00	0.95	0.98	1.00	See BIOS LED Lamping and Performance Details at the back of this spec sheet for lumen outputs, COI index values, and other additional information.
MELANOPIC RATIO (R)*	0.70	0.80	0.90	0.74	0.83	0.95	

GLARE CONTROL

WELL V2: FEATURE L04

Glare is defined as excessive brightness of a light-source, excessive brightness-contrasts and excessive quantities of light. Glare has been associated with a host of health issues that range from visual discomfort and eye fatigue to headaches and migraines.

To conform to Glare Control requirements, each luminaire must meet one of the following options (a, b, or d) for regularly occupied spaces.

GLARE CONTROL CRITERIA (3PT MAX)	COMPLIANT	VALUE	HOW TO SPECIFY
a. Indirect (100% emission above horizontal)	✓	100%	1. Select **N** (None) for **LED LAMPING - DIRECT** 2. Select **any of the options** for **LED LAMPING - INDIRECT**
b. Unified Glare Rating (UGR)*	✓	If looking to meet UGR requirements, ALW recommends specifying the Superplane 2.5 (SP2.5) series products here: https://alwusa.com/products/superplane-2-5/	
c. Shielding Angle	No	-	-
d. Max. Luminance (45°–90°) Max. Intensity (45°–90°)	✓	If looking to meet Max. Luminance and Max. Intensity requirements, ALW recommends specifying the Superplane 2.5 (SP2.5) series products here: https://alwusa.com/products/superplane-2-5/	

SPECIFYING FOR THE WELL BUILDING STANDARD™ - WELL™ (CONTINUED)

ELECTRIC LIGHT QUALITY - PART 1: COLOR RENDERING QUALITY + PART 2: FLICKER

WELL V2: FEATURE L07

Using light sources that have characteristics similar to daylight, including high color rendering and minimal flicker can improve comfort and well-being of users in a space and contribute to creating a healthy environment.

Part 1: Each luminaire must meet one of the following requirements (a or b) for regularly occupied spaces.
Part 2: Each luminaire must meet the IEEE 1789-2015 Standard Recommended Practice to manage flicker.

PART 1 - ENSURE COLOR RENDERING QUALITY (1PT MAX)	COMPLIANT	VALUE	HOW TO SPECIFY
a. CRI > 90	✓	CRI = 93 - 95	• Select **90** (90CRI) for **LED LAMPING**
b. CRI > 80 with R9 > 50	✓	CRI = 83, R9 > 90	• Select **BIOS** or **BIOSD** for **LED LAMPING**
c. IES Rf ≥ 78, IES Rg ≥ 100, -1% ≤ IES Rcs, h1 ≤ 15%	No	-	-
PART 2 - MANAGE FLICKER (1PT MAX)	**COMPLIANT**	**VALUE**	**HOW TO SPECIFY**
Meets IEEE 1789-2015 Standard Recommended Practice	✓	Modulation = 1% Flicker Frequency = 120 - 2000Hz	• Select **0/10V/S, 0/10V/1%, ECOSYS1, DALI** or **DMX** for **LED DRIVER**

PERFORMANCE DETAILS – DIRECT OR INDIRECT LAMPING

OUTPUT	DELIVERED LUMENS (LM/FT)	WATTS (W/FT)	EFFICACY (LM/W)	CRI OPTIONS	CCT OPTIONS
LOW[17]	525	5.3	Up to ~98	80 90	2700K (90CRI Only) 3000K 3500K 4000K
MED[17]	700	7.2			
HI[17]	900	9.1			
DECOR	240	5.9	40	N/A	3000K 3500K 4000K
TUNE	WW: 358 CW: 394 Total: 752	8.8	Up to ~89		2700K-6500K
RGB[18]	RGB: 105	4.4	N/A		N/A
RGBW[19]	RGB: 105 RGB+W: 193 White Only: 88	4.4		80 (White Chip)	3500K (White Chip)

[17]*Performance calculations are based on the following LM-79 test: 4000K, 80CRI, HIGH output. MED and LOW values are extrapolated distributions.*
[18]*Performance calculations are derived from LM-79 test with all RGB LEDs illuminated (Red, Green, Blue).*
[19]*Performance calculations are derived from the following LM-79 tests: 1) RGB LEDs illuminated, 2) RGB+W LEDs illuminated, 3) White LED only illuminated.*

LAMPING OPTIONS

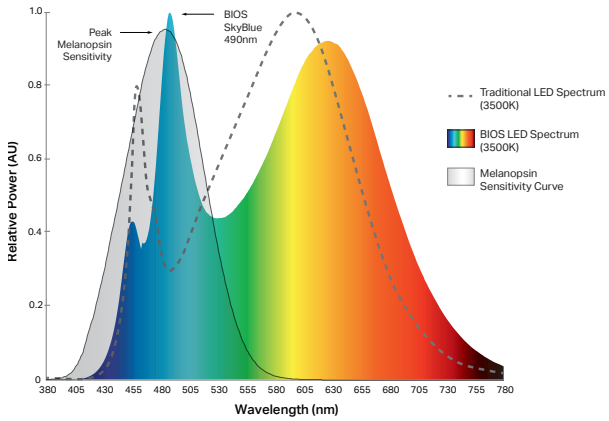
		Indirect			
		NONE	*LOW*	*MED*	*HI*
Direct	*NONE*	×	✓	✓	✓
	LOW	✓	✓	✓	✓
	MED	✓	✓	✓	✓
	HI	✓	✓	✓	×

Limitations exist due to heat. Please follow above guidelines when specifying.

BIOS OVERVIEW

BIOS SkyBlue® technology is designed to provide the specific circadian stimulus required to improve overall sleep by **featuring a distinct peak in the 'skyblue' spectral power at 490nm**. Unlike traditional white LEDs, BIOS SkyBlue® makes it possible to achieve **high EML (Equivalent Melanopic Lux) and Melanopic/Photopic ratios** without harsh CCTs or high, glare-inducing light levels.

BIOS light engines are available in **Static** or **Dynamic** options for use with a variety of applications. In Static light engines, the SkyBlue 490nm signal always remains on while the fixture is powered. Dynamic options include a dynamic board and Bio-Dimmer module to allow the user to dim-out the SkyBlue 490nm signal during night time hours.



	BIOS STATIC (BIOS)	BIOS DYNAMIC + BIO-DIMMING™ (BIOSD)
DESCRIPTION	490nm SkyBlue light signal always remains on while the fixture is powered.	Dynamic light engine with Bio-Dimming add the ability to fine-tune and dim-out the 490nm SkyBlue signal during night time hours or as desired.
TYPICAL APPLICATIONS	Environments typically occupied only during daylight hours (6am - 8pm) such as offices and schools.	Environments occupied for a 24-hour period such as hospitals, security facilities, behavioral health facilities, factories, etc.
CONTROLS & DIMMING*	Works with any standard dimming controls (0-10V, Dali, EcoSystem, ELV, Triac, DMX, Wireless, etc.). BIOS melanopic ratio remains constant as you dim down the light intensity.	Works with any standard dimming controls (0-10V, Dali, EcoSystem, ELV, Triac, DMX, Wireless, etc.). BIOS SkyBlue® LED can be dimmed-out using a standard control/dimmer.

**No unique wiring instructions required. However, Dynamic + Bio-Dimming™ option must be set up properly during initial startup to the desired light level setpoint. See installation guide for details.*

BIOS LED LAMPING DETAILS (STATIC OR DYNAMIC)

OUTPUT	DELIVERED LUMENS (LM/FT) *direct indirect*	WATTS (W/FT)	EFFICACY (LM/W) *direct indirect*	CRI OPTIONS
LOW[19]	525	8.2	Up to ~60.4	82+
MED[19]	700	11.5		
HI[19]	900	14.9		

BIOS LED PERFORMANCE DETAILS

CCT	CRI (Ra) *Static BIOS Dynamic BIOS*	CRI (R9) *Static BIOS Dynamic BIOS*	DAYTIME M/P RATIO[20] *Static BIOS Dynamic BIOS*	NIGHTTIME M/P RATIO[21] *Static BIOS Dynamic BIOS*	COI[22] *Static BIOS Dynamic BIOS*
3000K	82 83	94 90	0.70 0.73	0.70 0.45	3.0 3.3
3500K	83 83	91 90	0.80 0.84	0.80 0.50	3.1 3.1
4000K	83 83	91 90	0.90 0.95	0.90 0.55	3.1 3.1

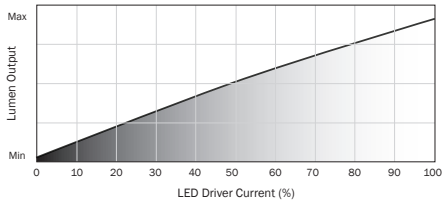
[19]*Performance calculations are based on LM-79 test of BIOS 4000K, MAX output. MIN, LOW, MED and HIGH calculations are extrapolated values.*
[20]*Milanopic to photopic (M/P) ratios are used to help calculate equivalent melanopic lux (EML) values which is the metric used for circadian lighting in the WELL™ Building Standard.*
[21]*Static LED nighttime M/P ratios remain the same as daytime M/P ratios as BIOS SkyBlue®® always remains at full output.*
[22]*BIOS SkyBlue® meets the Cyanosis Observation Index (COI) requirements for visual assessment of cyanosis, providing a COI up to 3.3.*

BIOS STATIC DIMMING CONTROL CHARACTERISTICS

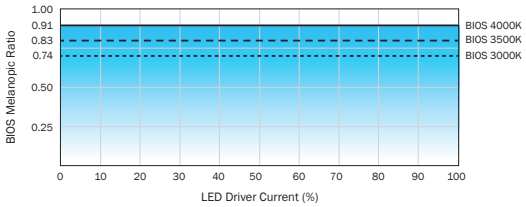
DIMMER SETTING	LIGHT OUTPUT* (BIOS SKYBLUE® + WHITE LED)	
100%* (Full On)	100%	BIOS + White LED Intensity Dimming
99% - 51%	Linear Dimming 99% - 51%	
50%	Linear Dimming 50%	
49% - 0%	Linear Dimming 49% - 0%	

BIOS SkyBlue® LED and White LED dim with a 1-to-1 ratio.

Static BIOS Lumen Output vs. Driver Current



Static BIOS Melanopic Ratio vs. Driver Current



*While melanopic ratio remains constant, dimming/reducing light output will have an overall impact on Equivalent Melanopic Lux (EML). That is because EML = Vertical Lux * melanopic ratio. Therefore, if you reduce light levels by dimming the LEDs, you will reduce your effective EML, even when the melanopic ratio stays constant.

BIOS DYNAMIC + BIO-DIMMING™ DIMMING CONTROL CHARACTERISTICS

DIMMER SETTING	BIOS SKYBLUE® LED	WHITE LED	LIGHT OUTPUT	
100%* (Full On)	100%	100%	100%	Bio-Dimming
99% - 51%	100% - 0%	100%	100% - 90%	
50%	NO BIOS	100%	~90%	White LED Intensity Dimming
49% - 0%	NO BIOS	100% - 0%	Linear Dimming 90% - 0%	

BIOS SkyBlue® maintained for maximum circadian impact.

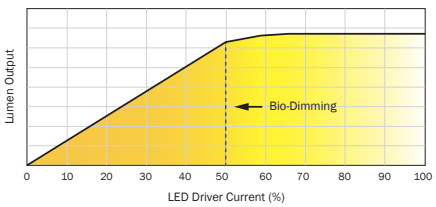
Light output remains relatively constant.

BIOS SkyBlue® removed to provide minimal circadian impact.

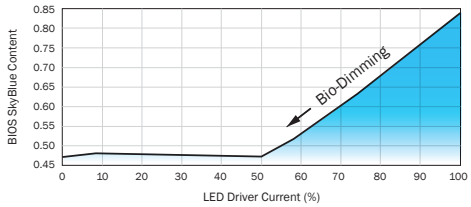
White LED output dims linearly.

**No unique wiring instructions required. However, Dynamic + Bio-Dimming™ option must be set up properly during initial startup to the desired light level setpoint. See installation guide for details.*

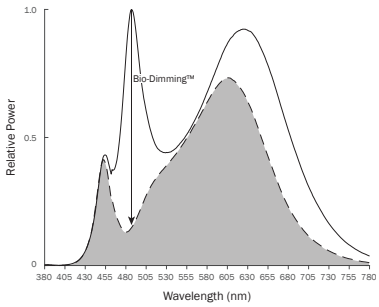
Dynamic BIOS Lumen Output vs. Driver Current



Dynamic BIOS SkyBlue vs. Driver Current



BIOS + Bio-Dimming™



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STANDARD FINISHES

Standard finishes are available at no additional charge.

ALUMINUM

Anodized Aluminum
QS

BASIC POWDER COAT

Gloss White

Satin White
QS

Antimicrobial Satin White

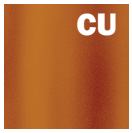
Textured Matte White

Textured Matte Black

METALLIC POWDER COAT

Silver Gray

Charcoal Gray



Copper

Brass

SATIN ANODIZED EFFECT POWDER COAT

Clear Silver

Oil-Rubbed Bronze

Dark Bronze

Satin Black
QS

GLOSS POWDER COAT (80-95% GLOSS)

Orange RAL 2003

Red RAL 3020

Magenta RAL 4010

Blue RAL 5015

SPECIAL ORDER FINISHES*

RAL CLASSIC COLORS (80-95% GLOSS): RAL_ _ _ _

Most RAL Classic Colors are available for a minimum setup fee. On your specification submittal choose your RAL color by entering the 4-digit RAL code (Ex: RAL 3003).
See www.alwusa.com/finishes

CATALOG COLORS: CAT_ _ _ _

The complete range of powder coat colors from Tiger Drylac and TCI catalogs are available for a minimum setup fee. Consult ALW for a catalog color you would like to specify.

CUSTOM COLOR MATCH: CCM_ _ _ _

Custom powder coat color matching is available for a premium setup fee. Consult ALW for additional information.

*An individual setup fee will apply to each unique Special Order Finish per purchase order.
(ex: RAL 5023 and RAL 2008 are specified for multiple line items on a purchase order. 2x setup fees will apply)

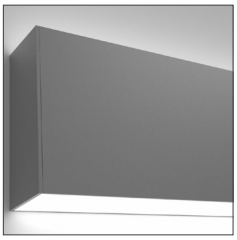
ADDITIONAL OPTIONS & SPECIFICATIONS

LED PERFORMANCE

For standard LOW-HI lampings: L_{70} > 54,000 hours.
Luminous flux +/- 5%.

LENS

Extruded, twin-layered, high-impact acrylic. EXT is white and extra diffuse with minimal-to-no source visibility. WD (indirect only) is lightly frosted with greater light output, but possible source visibility.



FLUSH LENS – EXT/F, WD

HOUSING

100% recyclable, extruded architectural grade 6061 aluminum with a 0.08" minimum wall thickness.

SAFETY & REGULATORY

ETL Listed (U.S. & Canada). Suitable for dry or damp locations.
Conforms to UL std. 1598, Luminaires.
Certified to CSA std. C22.2#250.0:2008 Ed. 3+G1;G2.

OPERATING TEMPERATURE

Luminaire should be installed and operated ONLY in dry or damp environments where the ambient temperature ranges from -4°F to 122°F (-20°C to 50°C). Luminaire operation in environments outside the listed temperature range voids the warranty AND may damage the product or adversely impact lamp life, lumen output and color consistency.

WARRANTY

Limited 5-year warranty. Details: alwusa.com/warranty

POWER CABLES

Power cables come standard in a transparent sheathing to match steel aircraft suspension cables. Please contact customer support if custom cables are required for your application. Power cables cannot be swapped in the field as it will void the ETL Safety Listing and Product Warranty.

CONTROLS, SENSORS, & LED DRIVER

ALW lighting fixtures are intended for use with a wide range of sensors, lighting controls, LED drivers, and building management systems. Our component portfolio is continually expanding to adopt to the latest technologies and specification needs. We currently support integration with Lutron, Enlighted, EldoLED, nLight, Osram, Philips, and more. If there's a component or system needed that you don't see on the spec sheet please contact ALW customer support today so we can review your requirements.