AL116 Series

High Dispersion Wide Bar Lights | Product Datasheet

ADVANCED ILLUMINATION by Exaktera

High Dispersion Output
Produces a highly uniform, scattered light output that results in soft shadows and reduced specular reflections.

Scalable Extrusion-Based Housing
Engineered with extrusion-based aluminum construction allowing for scalability while maintaining structural rigidity and durability.

Wider Form Factor
Designed with a wider profile to illuminate larger target areas and accommodate a higher density of LEDs for increased overall intensity compared to the AL126.

M4 Mounting Channel
Equipped with an M4 mounting channel on its base, allowing for highly adjustable positioning.

AL116 Series Description

The AL116 High Dispersion Wide Bar Light Series delivers uniform, soft illumination across a broad area, ideal for machine vision applications sensitive to harsh shadows and certain specular reflections. With twice the number of LEDs as the narrower AL126, the AL116 provides increased intensity over a wider area while maintaining soft shadowing.

Furthermore, its diffuse characteristics make it highly suitable for close working distances, eliminating the potential for intensity hotspots often produced by focused bar lights.

- **Scalable Design**
- **Diffuser and Polarizer Available**
- **13 Available Wavelengths**
- **1-2 Week Lead Times**

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 365 nm, 375 nm, 385 nm, 395 nm, 405 nm, 455 nm, 470 nm, 530 nm, 590 nm, 625 nm, 850 nm, 940 nm	
	Available Lensing			No Lenses	
	Available Light Conditioning			Diffuser or Polarizer	
Electrical	Power Consumption Info			See Power Requirements on Page 10	
	Cable Info			80” -0/+6” Long (2 m -0/+150 mm), -105°C Rated, Foil Shield w/ Drain	
Mechanical	Sizing Info	Standard	Length	3.15”(80.1mm) to 21.15”(537.2mm)	See Page 8 For More Details
			Width	1.27”(32.2mm)	
			Height	0.79”(20.0mm)	
		Sealed	Length	3.27”(83.1mm) to 21.27”(540.3mm)	
			Width	1.27”(32.2mm)	
			Height	0.81”(20.5mm)	
	Weight Info (Standard)			~ 1.88 lbs (~852 g) per 4” Unit Length	
	Mounting Info			M4 Mounting Nut Channel	
	Material Info			Anodized Aluminum Housing, Acrylic Window, Nickel Plated Brass Strain Relief, PVC Cable Jacket, Steel Black Oxide Fasteners, Optional: Silicone Sealant, Neoprene Gasket, Nylon Washers	
Thermal	Operating Case Temperatures			25 °C to 60 °C	
	Operating Ambient Temperatures			0 °C to 35 °C	
Certification	Compliance			CE, RoHS, IEC 62471	
	IP Rating			Not Rated or IP65	
	Lumen Maintenance - White Only			L70 (50,000 Hours)	

General Information - Continued

Part Number Key

Model	Emitting Length (in)	-	Peak Wavelength	Connector/ Control	Washdown Option	Light Conditioning Option	-	Alternative Connector
AL116	XX	-	XX	XX	X	X	-	XXX
	02" increments from 02" to 20"		365 (UV)[3]	C1	W	D (Diffuser)		M8[1]
			375 (UV)[3]	C5		P[2] (Polarizer)		M12[1]
			385 (UV)[3]	IC				
			395 (UV)[3]	I3				
			405 (UV)[3]	I3S				
			455 (royal blue)	I4				
			470 (blue)	24				
			530 (green)					
			590 (amber)					
			625 (red orange)					
			850 (IR)					
			940 (IR)					
			WHI (white)					
more info on page	8		5	10		6		12

Example Part Numbers:
AL11602-WHIIC
AL11618-625C5W

[1] Available with IC, I3, I3S, I4, and 24 V options only
[2] 470 (blue) will reduce life of the polarizer
[3] Not available with (D) diffuser or (P) polarizer options

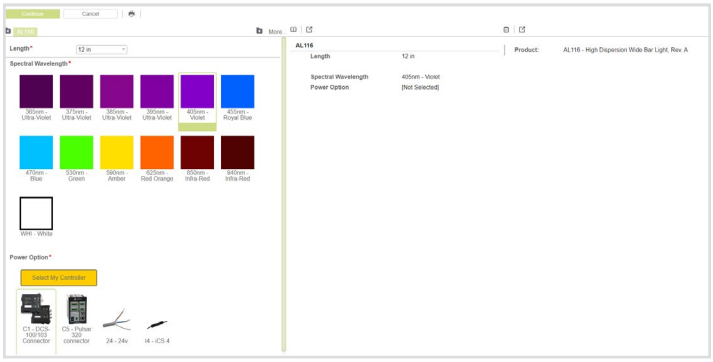
In Stock

Unavailable

Lead Times

Stock products ship within three days.
Build-to-Order custom products ship within one to two weeks (typical).

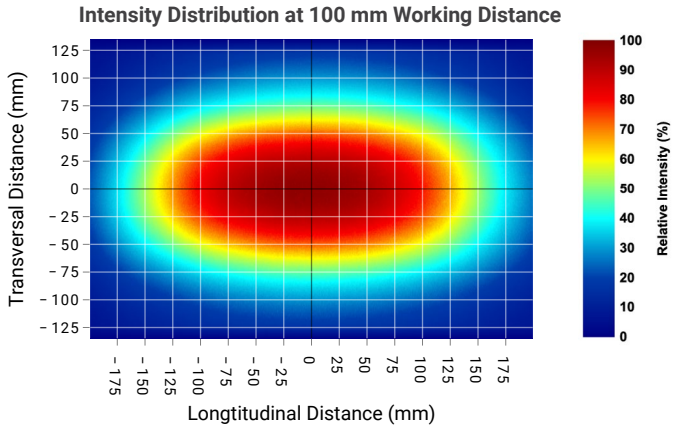
Configurator

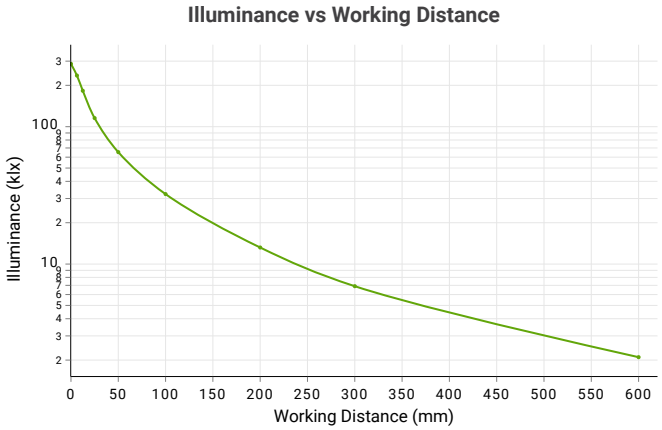


Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our AL116 High Dispersion Wide Bar Light Series to your specific needs. For a guided configuration, visit our online configurator.

Optical Information

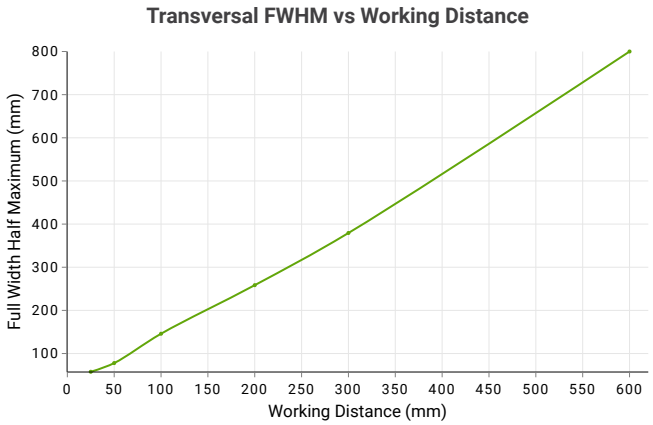
Intensity Characteristics

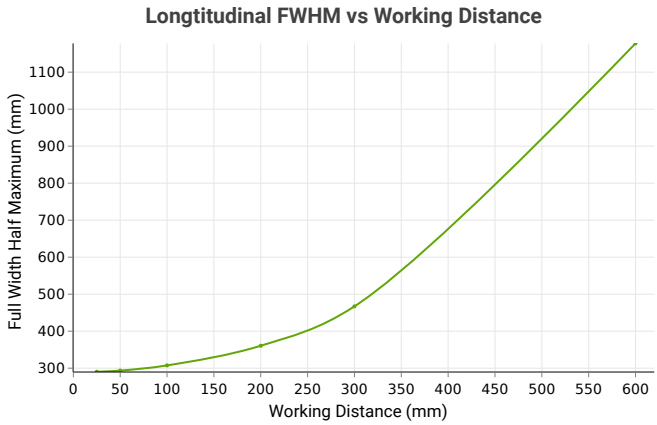




Data shown above have been collected using a 12-inch white AL116 unit.

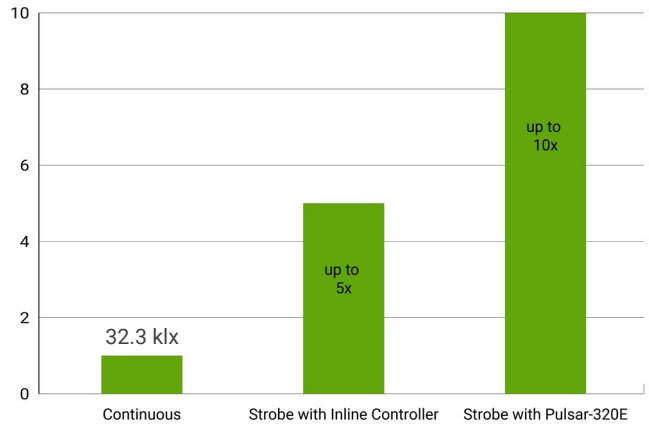
FWHM vs Working Distance





Both Full Width Half Maximum (FWHM) vs Working Distance plots shown above have been measured using a 12-inch white AL116 unit.

Continuous vs Pulsed Intensity

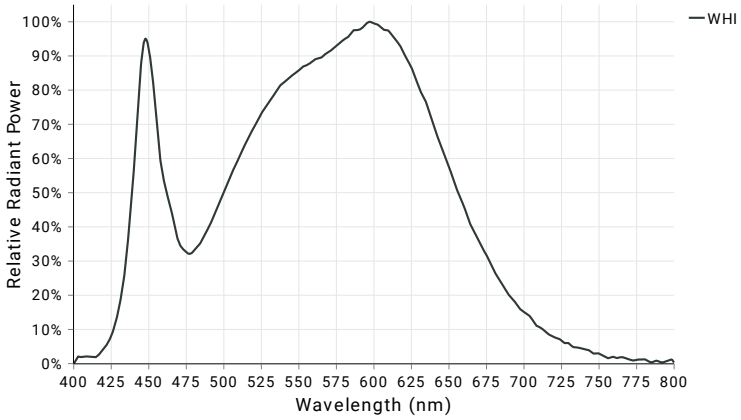


Under continuous operation, a 12-inch white AL116 unit will output an **illuminance of 32.3 klx** and an **irradiance of 110.3 W/m²** at a 100 mm working distance. For applications that require higher output, the AL116 Series has been engineered to be overdrive strobe capable. When configured with AI's strobe enabled Inline Controller (I3, I3S, and I4), the AL116 is capable of outputting up-to 5X continuous levels. When configured with a C5 connector, compatible with AI's Pulsar 320E, an **AL116 can be strobed up-to 10X continuous intensity levels.**

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

White Spectral Profile

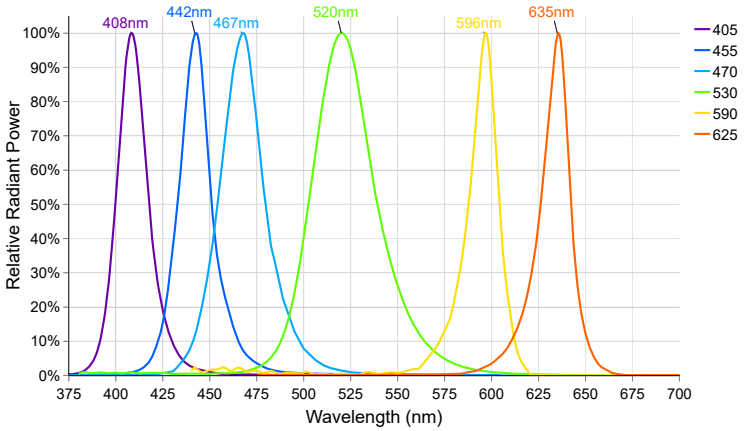


White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, white LEDs can vary in color temperature, which can impact machine vision systems, specifically when matching white light sources.

The AL116 Series white LEDs have a relatively warm color correlated temperature (CCT) of **5000k.**

For a more detailed look at the white spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Visible Spectral Profiles

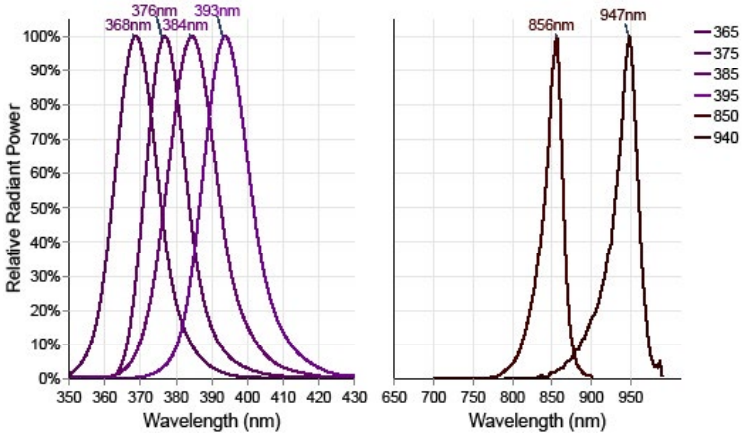


Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a features color hue. When referring to a color wheel, simply remember the following; like colors reflect and brighten surfaces; conversely, opposing colors absorb and darken surfaces.

The AL116 is available in **405 nm**, **455 nm, 470 nm, 530 nm, 590 nm, and 625 nm,** visible color configurations.

For a more detailed look at the visible color spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Non-Visible Spectral Profiles



Near-infrared (NIR) and ultraviolet A (UVA) imaging are machine vision techniques that utilize wavelengths outside the visible spectrum. NIR light, with wavelengths between 700-1000 nm, can penetrate certain materials opaque to visible light, making it ideal for circuit board analysis, food safety inspection, and medical imaging. In contrast, UVA light, typically ranging between 315-400 nm, interacts with specific materials to induce fluorescence or highlight surface features, useful in applications like counterfeit detection, leak detection, and contamination detection.

The AL116 Series is available in **365 nm, 375 nm, 385 nm, 395 nm, 405 nm, 850 nm, and 940 nm** configurations.

For a more detailed look at the NIR or UVA spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

Polarization Option Detail

Non-polarized

Polarized

Polarization can be used in a variety of ways, such as to reduce glare on specular surfaces or to increase edge clarity of transparent injection-molded objects, as shown above. This is known as cross-polarization. When unpolarized light passes through two cross-polarized filters (oriented 90 degrees perpendicular to each other), it is completely blocked. However, if the light is already polarized, it will only be blocked if its polarization is perpendicular to the axis of the second polarizer, creating the cross-polarization effect shown above.

Photobiological Risk Factors

Group	Description	Affected Wavelengths
Exempt	No Photobiological Hazard	850 nm, 940 nm
Group 1	No Photobiological hazard under normal behavioral limitations	455 nm, 470 nm, 530 nm, 590 nm, 625 nm, WHI
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	365 nm, 375 nm, 385 nm, 395 nm, 405 nm

Advanced Illumination's lighting products have been tested and classified to IEC standards by accredited testing services. For more information on photobiological risk factors, please view the following PDF: https://www.advancedillumination.com/wp-content/uploads/2019/04/IEC-040119.pdf

Cleaning Guidelines

To clean our light's optics, it is best to only clean when necessary. Dusting is always the first step in cleaning your optics. Wiping a dusty optic is like cleaning it with sandpaper. So always dust with a canned air duster or compressed and filtered air before wiping any optic. If the dusted optic has no visible stains after you dust it, then remember: "If it's not dirty, don't clean it." Avoid wiping optics when possible.

If dusting did not clean the lens or the lens has stains, use only de-ionized water and mild dish soap with a low lint cloth designed for optics to avoid damage to the optic by any harsh chemicals.

Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

The aluminum housing can be wiped down when dusting is not a sufficient means to thoroughly clean.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix

Not finding the optical specifications you are looking for with the AL116 Series? Refer to the bar light comparison matrix below to compare and contrast Advanced Illumination's comprehensive product offering:

Attributes	AL325					AL295		LL174		
Lens Type	Narrow (N)	Medium (M)	Wide (W)	Extra Wide (Z)	Eliptical (E)	Medium (M)	Wide (W)	Narrow (N)	Medium (M)	Wide (W)
Beam Angle	14°	25°	36°	55°	45° x 15°	20°	32°	10°	25°	40°
Beam Direction	Normal or Oblique					Normal		Normal		
Intensity at 100 mm WD	163 klx	134 klx	110 klx	80 klx	TBD	88 klx	65 klx	75 klx	57 klx	45 klx
	456 W/m^2	427 W/m^2	352 W/m^2	254 W/m^2	TBD	288 W/m^2	208 W/m^2	250 W/m^2	187 W/m^2	146 W/m^2
Transversal FWHM at 600 mm WD	8.54 in (217 mm)	11.73 in (298 mm)	14.25 in (362 mm)	17.12 in (450 mm)	TBD	12.79 in (325 mm)	15.12 in (384 mm)	9.06 in (230 mm)	13.90 in (353 mm)	16.06 in (408 mm)
Longitudinal FWHM at 600 mm WD	12.05 in (306 mm)	14.25 in (362 mm)	16.34 in (415 mm)	19.45 in (494 mm)	TBD	15.95 in (405 mm)	17.72 in (450 mm)	13.50 in (343 mm)	16.69 in (424 mm)	18.35 in (466 mm)
Minimum Working Distance	3.94 in (100 mm)	3.94 in (100 mm)	3.94 in (100 mm)	1.97 in (50 mm)	TBD	0.98 in (25 mm)	0.79 in (20 mm)	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)
Light Width	1.57 in (39.8 mm)					0.79 in (20.0 mm)		1.33 in (33.8 mm)		
Light Height	1.78 in (45.2 mm)					0.79 in (20.1 mm)		1.12 in (28.4 mm)		
Longest Emitting Window Length	84.28 in (2140 mm)					41.61 in (1057 mm)		96.72 in (2457 mm)		
Sizes Available	14	14	14	14	14	14	14	16	16	16
Visible Wavelengths Available	9	9	9	8	8	9	8	8	9	8
UV Wavelengths Available	4	4	4	0	0	4	0	0	4	0
IR Wavelengths Available	3	3	3	3	3	3	3	3	3	3
Polarization Available	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Diffusion Available	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Rating	IP50					IP50		IP50		
Price	$$	$$	$$	$$	$$	$$	$$	$$	$$	$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Continued

Refer to the continued bar light comparison matrix below to compare and contrast Advanced Illumination's product offering:

Attributes	AL247			AL116	AL126	AL150
Lens Type	Narrow (N)	Medium (M)	Wide (W)	No Lenses	No Lenses	Aimed
Beam Angle	10°	25°	40°	70°	60°	N/A
Beam Direction		Normal		Normal	Normal	Oblique
Intensity at 100 mm WD	84 klx	67 klx	48 klx	32 klx	14 klx	2.2 klx
	277 W/m^2	218 W/m^2	155 W/m^2	110 W/m^2	48 W/m^2	8.5 W/m^2
Transversal FWHM at 600 mm WD	9.57 in (243 mm)	11.38 in (289 mm)	15.87 in (403 mm)	31.54 in (801 mm)	23.31 in (592 mm)	N/A
Longitudinal FWHM at 600 mm WD	13.58 in (345 mm)	14.65 in (372 mm)	18.03 in (458 mm)	46.34 in (1177 mm)	31.26 in (794 mm)	N/A
Minimum Working Distance	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)	0.47 in (12 mm)	0.47 in (12 mm)	0.47 in (12 mm)
Light Width		1.69 in (42.9 mm)		0.79 in (20 mm)	1.27 in (32 mm)	1.33 in (34 mm)
Light Height		0.95 in (24.0 mm)		0.79 in (20 mm)	0.79 in (20 mm)	1.12 in (28 mm)
Longest Emitting Window Length		24 in (610 mm)		20.27 in (515 mm)	41.42 in (1052 mm)	82.12 in (2086 mm)
Sizes Available	4	4	4	10	20	80
Visible Wavelengths Available	8	8	8	7	8	4
UV Wavelengths Available	0	0	0	4	4	1
IR Wavelengths Available	3	3	3	2	2	1
Polarization Available	No	No	No	Yes	Yes	Yes
Diffusion Available	No	No	No	Yes	Yes	Yes
IP Rating		IP69K		IP50	IP50	IP50
Price	$$$	$$$	$$$	$$	$	$$$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

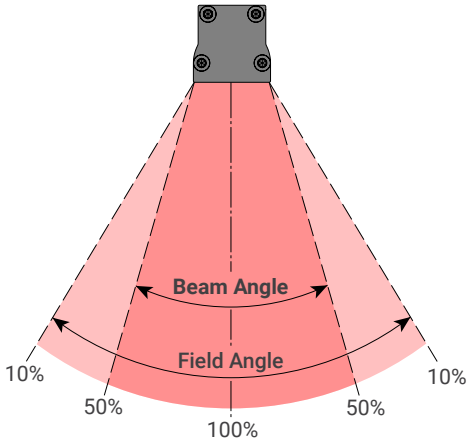
Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Definitions

For definitions on the terminology used on the previous page, please refer to the table below:

Definitions

Beam Angle

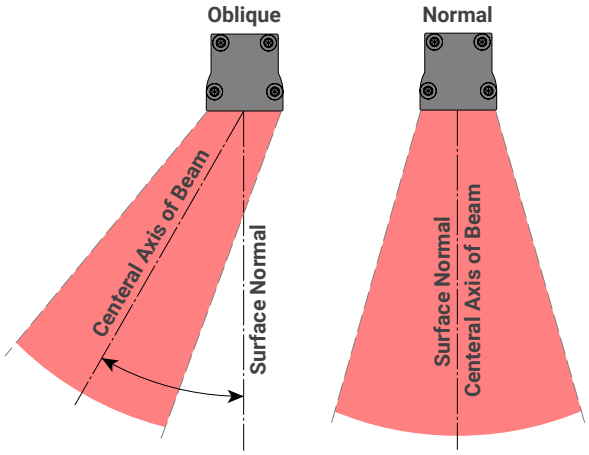


Beam Angle defines the spread of usable light from a projected machine vision light source. It's the angle where the intensity drops to 50% of its peak (FWHM). Beam angle dictates the concentrated, higher-intensity portion of the Field of View (FOV). Field angle is wider, encompassing the total spread of light down to 10% of peak intensity.

FWHM (Full Width Half Maximum)

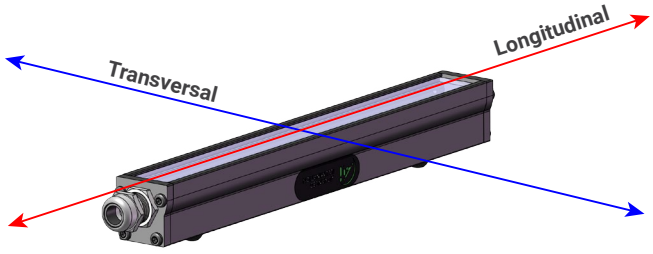
FWHM (Full Width Half Maximum) is a measure of the width of a light source's intensity distribution. Specifically, it defines the distance between the points on the intensity profile where the light intensity drops to 50% of its peak value. This FWHM distance is often used to determine the usable FOV (Field of View) when aiming a light at a surface for inspection.

Beam Direction



A normal beam direction refers to light emitted perpendicular to the light source's emitting surface, in which the central optical axis is co-linear to the surface normal of the emitting window. An oblique beam direction describes light emitted at an angle relative to the light source's surface normal. Oblique sources can be useful when imaging specular surfaces, depending on system geometry.

Longitudinal vs Transversal



The longitudinal direction refers to the direction that runs parallel to the long axis of the light source. This is typically the longest dimension of the light source housing or emitting surface.

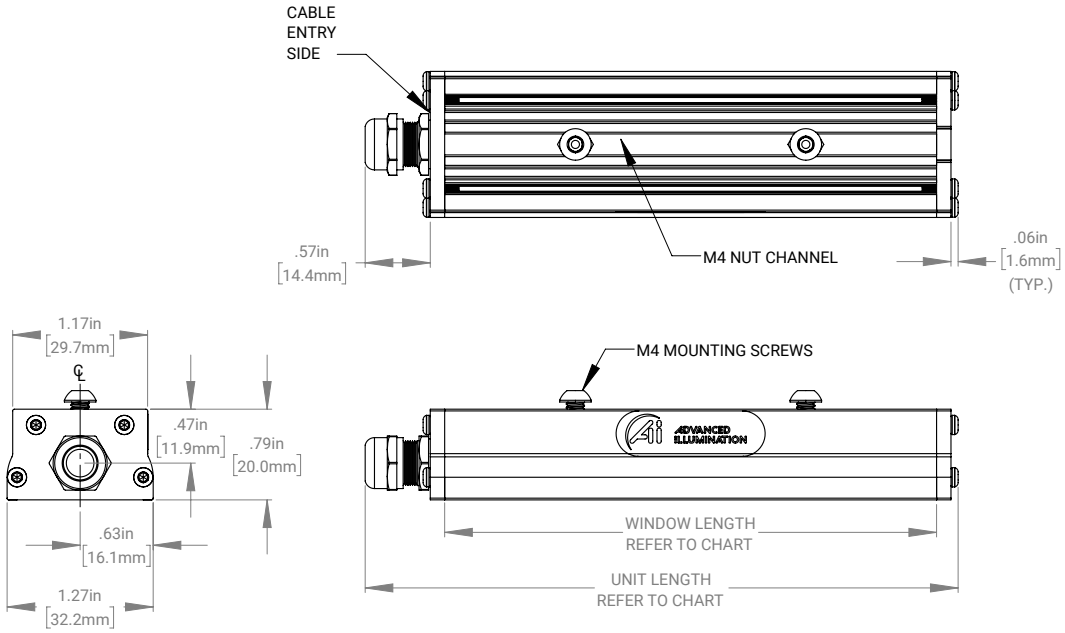
The transversal direction, in contrast, refers to any direction that is perpendicular to the longitudinal direction. It essentially describes any direction that "cuts across" the long axis of the light source.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Mechanical Information

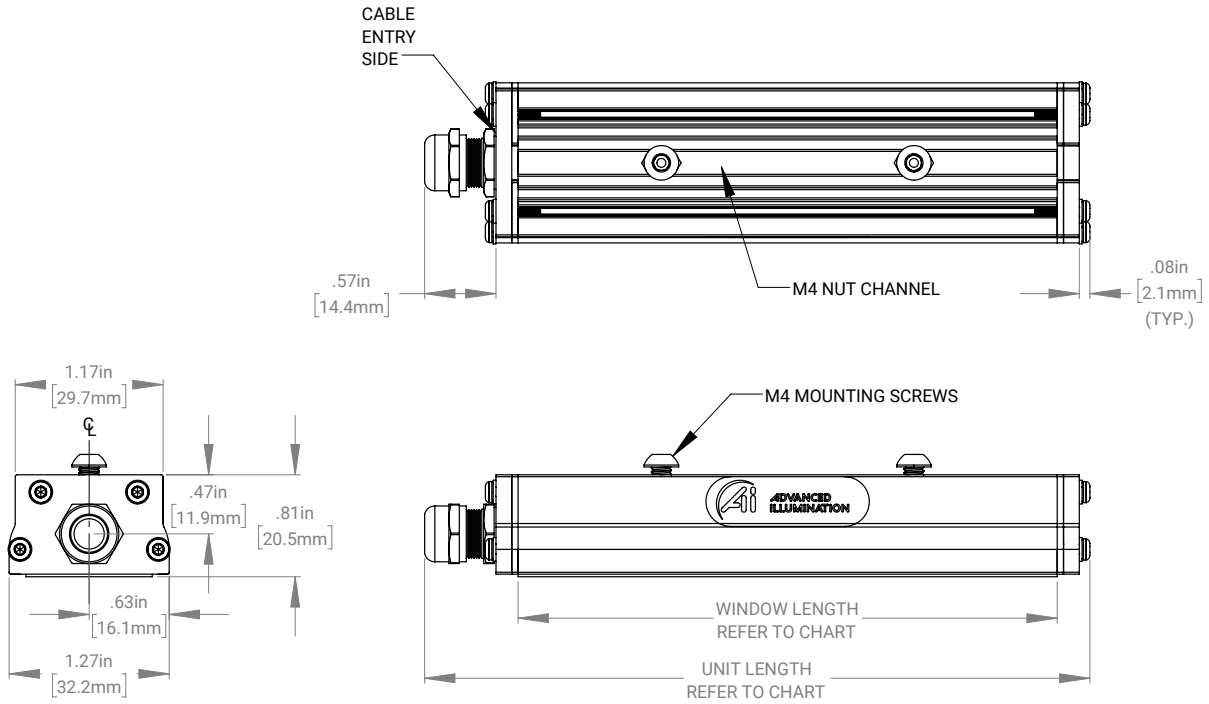
Installation Drawings

Non-Sealed Configuration



For full installation drawings and complete CAD models of this non-sealed configuration, please visit the downloads section of the product webpage.

Sealed Configuration



For full installation drawings and complete CAD models of this sealed configuration, please visit the downloads section of the product webpage.

Mechanical Information - Continued

Sizing Chart

Part Number	Length (Inches)				Length (Millimeters)			
	Non-Washdown		Washdown		Non-Washdown		Washdown	
	Unit	Window	Unit	Window	Unit	Window	Unit	Window
AL11602	3.15	2.27	3.27	2.27	80.01	57.66	83.06	57.66
AL11604	5.15	4.27	5.27	4.27	130.81	108.46	133.86	108.46
AL11606	7.15	6.27	7.27	6.27	181.61	159.26	184.66	159.26
AL11608	9.15	8.27	9.27	8.27	232.41	210.06	235.46	210.06
AL11610	11.15	10.27	11.27	10.27	283.21	260.86	286.26	260.86
AL11612	13.15	12.27	13.27	12.27	334.01	311.66	337.06	311.66
AL11614	15.15	14.27	15.27	14.27	384.81	362.46	387.86	362.46
AL11616	17.15	16.27	17.27	16.27	435.61	413.26	438.66	413.26
AL11618	19.15	18.27	19.27	18.27	486.41	464.06	489.46	464.06
AL11620	21.15	20.27	21.27	20.27	537.21	514.86	540.26	514.86

Electrical Information

Power Requirements

Current Required for Power Supply Sizing

Wavelengths	Configured w/ Voltage Drive (24)	Configured w/ Standard Controller (IC, I3, I3S, I4, C1, C5)
WHI, 365 nm, 375 nm, 385 nm, 405 nm, 455 nm, 530 nm, 590 nm, 625 nm, 850 nm, 940 nm	0.006A per linear inch	0.120A per linear inch

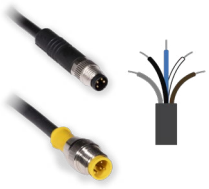
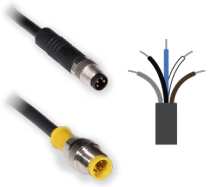
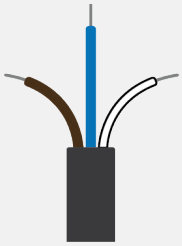
Note: All Advanced Illumination lights and controllers are nominally powered by 24V DC unless otherwise noted. Strobe overdriving with controller based models may require more current and voltage overhead. The values above do not include background current draw from the controller (~100 mA total).

Control Options

Controller Image	Controller Details	Connector Image
	**DCS Single Output Controller - Compatible with C1 Configurations** *PN: DCS-100E* The DCS-100E is a compact, din-rail mounted general-purpose external controller with one C1 output connector, wired with three channels. Capable of providing single channel control or multi-channel control for RGB compatible lights. **Output Power:** 90 W Max Continuous, 540 W Max Pulsed (Overdrive Strobe) **Output Current:** 4.5A Max Continuous, 15 A Max Pulsed **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-100E, please visit the controller product page.	
	**DCS Triple Output Controller - Compatible with C1 Configurations** *PN: DCS-103E* The DCS-103E is a din-rail mounted general-purpose multi-light controller with three C1 output connectors. Capable of driving three lights in sync or asynchronously. **Output Power:** 30 W Max Continuous / Output, 180 W Max Pulsed / Output **Output Current:** 1.5A Max Continuous / Output, 5 A Max Pulsed / Output **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-103E, please visit the controller product page.	
	**Pulsar 320E High Current Controller - Compatible with C5 Configuration** *PN: Pulsar 320E* The Pulsar 320E is a high-power, dual output, pulse-only controller geared for overdriving driving lights at very short flash durations with very high current. **Output Power:** 2500 W Max Pulsed / Output **Output Current:** 50 A Max Pulsed / Output I**/Os:** 2 External Trigger Inputs **Interface:** 10/100 Ethernet with Software GUI. SDKs are also available. For more information about our Pulsar 320E, please visit the controller product page.	

Electrical Information - Continued

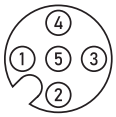
Control Options - Continued

Controller Image	Controller Details	Connector Image
	**Inline Controller - Continuous Only - IC Configurations** *PN: N/A* The IC is an inline, cable-mounted continuous-only controller configured/wired directly for the ordered light head. **Output Power:** 25 W Max Continuous **Output Current:** 1.25 A Max Continuous **I/O:** 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**Inline Controller - Strobe and Continuous - I3 & I3S Configurations** *PN: N/A* The I3 and I3S are inline, cable-mounted continuous and pulse (overdrive strobe) capable controllers configured/wired directly for the ordered light head. When operated in pulsed mode, the I3 is a default-on device on power up, whereas the I3S is default-off, requiring a trigger to illuminate. **Output Power:** 25 W Max Continuous, 125 W Max Pulsed **Output Current:** 1.25 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our I3/I3S Controller, please visit the controller product page.	
	**Inline Controller - Strobe and Continuous - I4 Configurations** *PN: N/A* The I4 is an inline, cable-mounted continuous and pulse (overdrive strobe) capable controller configured/wired directly for the ordered light head. The I4 can either be operated with a PNP or NPN trigger signal. **Output Power:** 50 W Max Continuous, 150 W Max Pulsed **Output Current:** 2.1 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**24V Driver - Continuous Only - 24 Configurations** *PN: N/A* 24V option allows lights to operate continuous output with 24V connection and no additional controllers. **Modes:** Continuous, can be wired to some 3rd party controllers or external relays for gated operation **Interface:** Direct cable (flying leads or connector options)	

Electrical Information - Continued

Inline Control Option Wiring Information

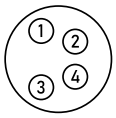
Standard Flying Lead and Optional M12 Connector Pinout Functions

Pin (M12)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M12 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	NPN/Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	PNP/Active High Trigger	PNP/Active High Trigger	
5	GRAY	N/A	N/A	0-10V Analog Control	0-10 V Analog Dimming	

5-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M12 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Optional M8 Connector Pinout Functions

Pin (M8)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M8 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	Active High Trigger	Active High Trigger	

4-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M8 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Accessories

Advanced Illumination offers a variety of accessories designed to pair with our lighting and control products. Below you will find a table of accessories which are compatible with many configurations of the BL2 series.

Category	Accessory Image	Accessory Detail
Power Supply		**24 Volt DC Power Supply** *PN: PS24-TL* This convenient power source is a universal AC input switching power supply with a regulated output DC current. The power supply comes with an LED Power Indicator, tinned leads marked Positive (+) and Negative (-) and 2 WAGO connectors for simplified assembly. For more information about our 24 Volt DC Power Supply, please visit this webpage.
Dimmer		**Manual Dimming Accessory for the IC, I3, I3s and I4** *PN: DCS-MP* The DCS-MP is a 30-position potentiometer, detented for precision level control and provides repeatable dimming with cable inline controllers. Features include DIN-rail mountable, a flip up cover to prevent accidental adjustments, spring clamp wiring terminal for flying leads or an M12 connector for use with the IC, I3/I3S or I4 Inline Controllers. For more information about our Manual Dimming Accessory please visit this webpage.

Accessories - Continued

Category	Accessory Image	Accessory Detail
Dimmer		**Manual Dimming Accessory for the IC** *PN: MP-ICS* The MP-ICS is a dimmer which is designed for use on lights with the IC Inline Controller. This unit provides for 0 – 100% intensity control. It is NOT COMPATIBLE with LLI37, BLI38, LLI67, and BLI68 "IC" Lights or lights built with the "24v controller" option. For more information about our Manual Dimming Accessory, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Single Light Power Cable - C1 Configuration** *PN: LC-XX-S* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female 7 pin locking connector (C1) and can be purchased in 3 - 15-meter lengths. For more information about our DCS-100E/103E Extension Cable, Single Output, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Dual Light Power Cable - C1 Configuration** *PN: LC-XX-Y* This extension cable was designed for applications requiring two identical lights to be powered through a single controller. These Y cables feature a single male and dual female 7 pin locking connectors (C1) and can be purchased in 3 - 15-meter lengths. See attached spec sheet for compatible light configuration. For more information about our DCS-100E/103E Extension Cable, Split Output, please visit this webpage.
Extension Cable		**Pulsar 320E Extension Cable - C5 Configuration** *PN: LC-XX-S-C5* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female Pulsar 320 connector (C5) and can be purchased in 3 - 15 meter lengths. For more information about our Pulsar 320E Extension Cable, please visit this webpage.
Adaptor Cable		**Cognex Gen2 Inline Controller Adaptor Cable** *PN: AD-I3-CGX2* This cable adaptor is for connecting I3/I3S configured lights with Cognex Gen2 Cameras, and comes with a male to female M12 connectors. For more information about our Cognex Gen2 Inline Controller Adaptor Cable, please visit this webpage.
Filters		**Camera Lens Band Pass FIlters** *PN: BPXXX-YYY* Eliminating all but a narrow band of light (+/- 40nm) centered on the specified wavelength, band pass filters are used to enhance colors, or to stop unwanted ambient light from reaching the camera. Filtering can replace existing shrouds, simplifying the physical set up of an inspection site. Ai offers 635nm and 660nm band pass filters to fit several different lens sizes. For more information about our Camera Lens Band Pass FIlters, please visit this webpage.

Additional Information

Warranty

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty. No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Compliancy

Our lighting products are designed and tested to meet CE, RoHS, and IEC standards. As a global ISO 9001 certified company, we understand the importance of compliance and perform accelerated testing on every product before shipment. For more information on our compliance standards, please see our compliancy documentation here: https://www.advancedillumination.com/services/compliance-statements/

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: +1 (802) 767 3830
Fax: +1 (802) 767 2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2023 Advanced illumination Inc. All rights reserved

AL126 Series

High Dispersion Narrow Bar Lights

Product Datasheet

ADVANCED ILLUMINATION by Exaktera

High Dispersion Output

Produces a highly uniform, scattered light output that results in soft shadows and reduced specular reflections.

Scalable Extrusion-Based Housing

Engineered with extrusion-based aluminum construction allowing for scalability while maintaining structural rigidity and durability.

Narrow Form Factor

Designed with a narrower profile to facilitate integration into space-constrained machine vision applications where the wider AL116 may not fit.

M4 Mounting Channel

Equipped with an M4 mounting channel on its base, allowing for highly adjustable positioning.

AL126 Series Description

The AL126 High Dispersion Narrow Bar Light Series delivers uniform, soft illumination, providing a solution for machine vision applications sensitive to harsh shadows and certain specular reflections. Its narrower form factor compared to the wider AL116 allows it to better integrate into space-constrained machine builds.

Furthermore, its diffuse characteristics make it highly suitable for close working distances, eliminating the potential for intensity hotspots often produced by focused bar lights.

- **Scalable Design**
- **Polarization Available**
- **13 Available Wavelengths**
- **1-2 Week Lead Times**

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 365 nm, 375 nm, 385 nm, 395 nm, 405 nm, 455 nm, 470 nm, 530 nm, 590 nm, 625 nm, 850 nm, 940 nm,	
	Available Lensing			No Lenses	
	Available Light Conditioning			Diffuser or Polarizer	
Electrical	Power Consumption Info			See Power Requirements on Page 10	
	Cable Info			80" -0/+6" Long (2 m -0/+150 mm), -105°C Rated, Foil Shield w/ Drain	
Mechanical	Sizing Info	Standard	Length	3.15"(80.1mm) to 21.15"(537.2mm)	See Page 8 for More Details
			Width	0.79"(20.0mm)	
			Height	0.79"(20.0mm)	
		Sealed	Length	3.27"(83.1mm) to 21.27"(540.3mm)	
			Width	0.79"(20.0mm)	
			Height	0.79"(20.0mm)	
	Weight Info (Standard)			~ 0.14 lbs (~63 g) per 4" Unit Length	
	Mounting Info			M4 Mounting Nut Channel	
	Material Info			Anodized Aluminum Housing, Acrylic Window, Nickel Plated Brass Strain Relief, PVC Cable Jacket, , Steel Black Oxide Fasteners, Optional: Silicone Sealant, Neoprene Gasket, Nylon Washers	
Thermal	Operating Case Temperatures			25 °C to 60 °C	
	Operating Ambient Temperatures			0 °C to 35 °C	
Certification	Compliance			CE, RoHS, IEC 62471	
	IP Rating			IP50 or IP65	
	Lumen Maintenance - White Only			L70 (50,000 Hours)	

General Information - Continued

Part Number Key

Model	Emitting Length (in)	-	Peak Wavelength	Connector/ Control	Washdown Option	Light Conditioning Option	-	Alternative Connector
AL126	XX	-	XX	XX	X	X	-	XXX
	02" increments from 02" to 40"		365 (UV)[3]	C1	W	D (Diffuser)		M8[1]
			375 (UV)[3]	C5		P[2] (Polarizer)		M12[1]
			385 (UV)[3]	IC				
			395 (UV)[3]	I3				
			405 (UV)[3]	I3S				
			455 (royal blue)	I4				
			470 (blue)	24				
			530 (green)					
			590 (amber)					
			625 (red orange)					
			850 (IR)					
			940 (IR)					
			WHI (white)					
more info on page	8		5	10		6		12

Example Part Numbers:
AL12602-WHIIC
AL12618-625C5W

[1] Available with IC, I3, I3S, and 24 V options only
[2] 470 (blue) will reduce life of the polarizer
[3] Not available with (D) diffuser or (P) polarizer options

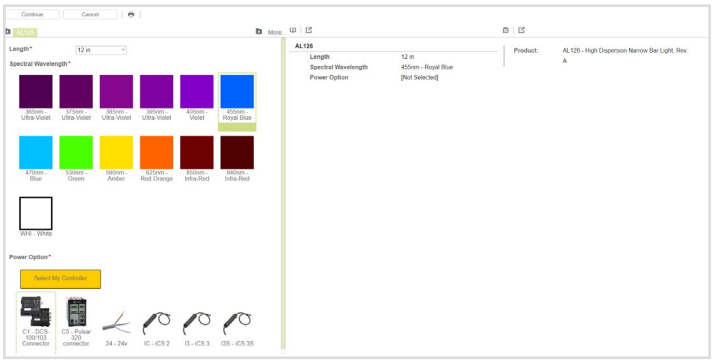
In Stock

AL126-WHIIC

Lead Times

Stock products ship within three days.
Build-to-Order custom products ship within one to two weeks (typical).

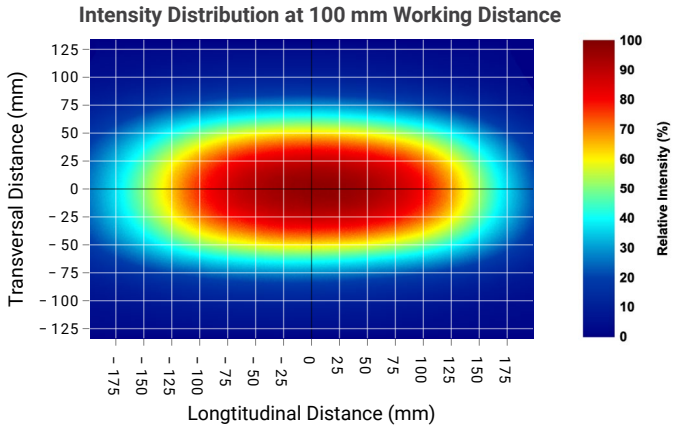
Configurator

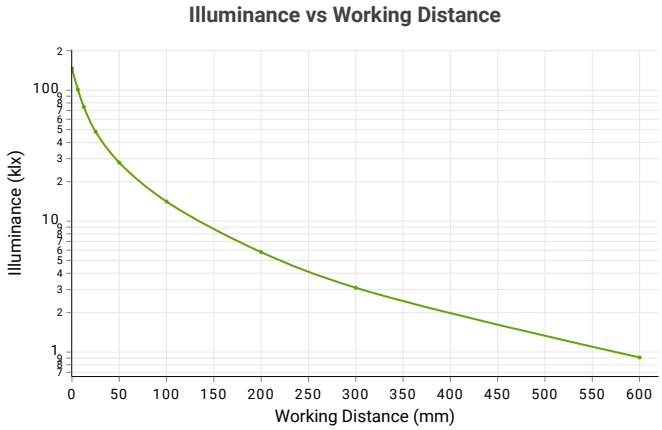


Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our AL126 High Dispersion Narrow Bar Light Series to your specific needs. For a guided configuration, visit our online configurator.

Optical Information

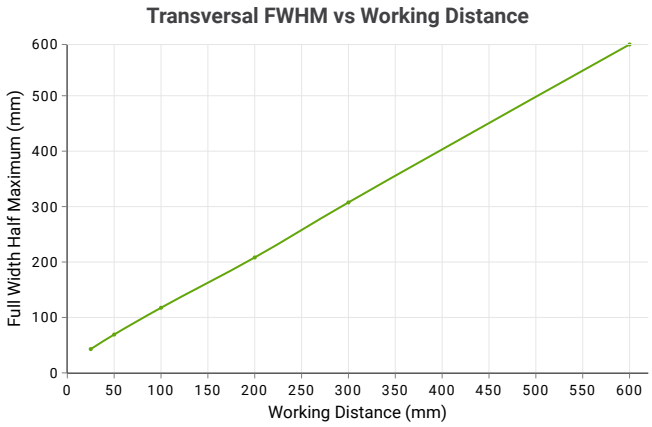
Intensity Characteristics

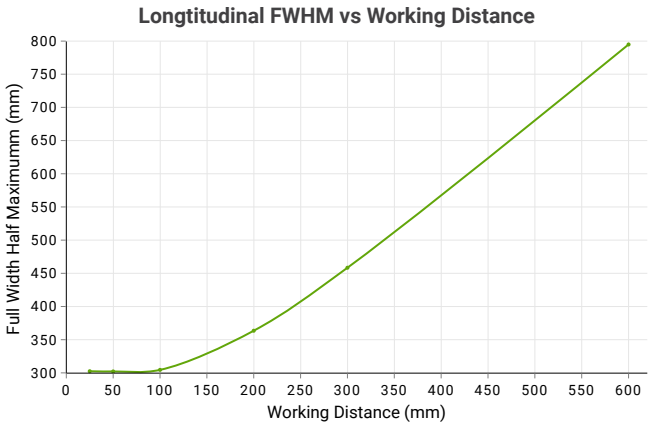




Data shown above have been collected using a 12-inch white AL126 unit.

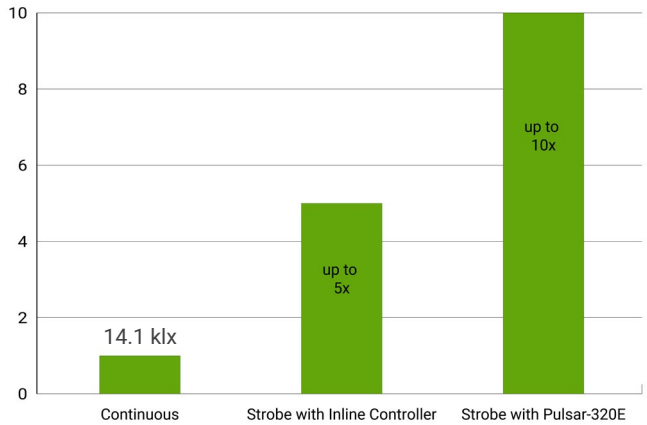
FWHM vs Working Distance





Both Full Width Half Maximum (FWHM) vs Working Distance plots shown above have been measured using a 12-inch white AL126 unit.

Continuous vs Pulsed Intensity

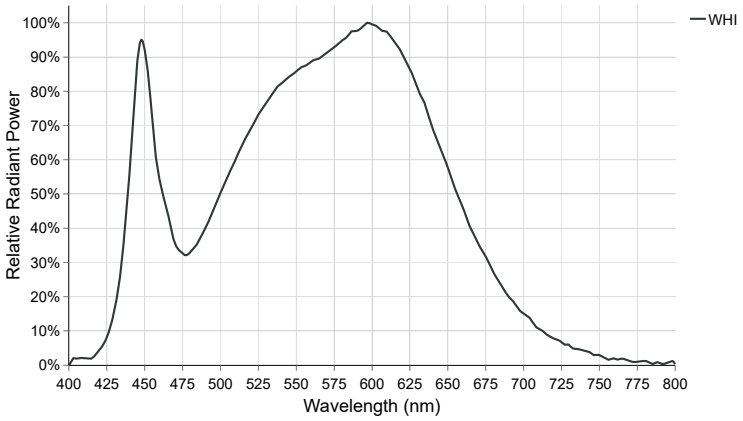


Under continuous operation, a 12-inch white AL126 unit will output an **illuminance of 14.1 klx** and an **irradiance of 48.2 W/m²** at a 100 mm working distance. For applications that require higher output, the AL126 Series has been engineered to be overdrive strobe capable. When configured with AI's strobe enabled Inline Controller (I3, I3S, and I4), the AL126 is capable of outputting up-to 5X continuous levels. When configured with a C5 connector, compatible with AI's Pulsar 320E, an **AL126 can be strobed up-to 10X continuous intensity levels.**

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

White Spectral Profile

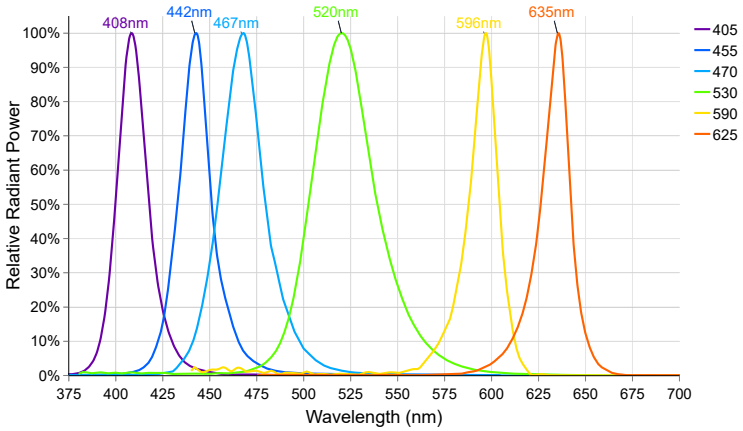


White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, white LEDs can vary in color temperature, which can impact machine vision systems, specifically when matching white light sources.

The AL126 Series white LEDs have a relatively neutral color correlated temperature (CCT) of **5000k.**

For a more detailed look at the white spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Visible Spectral Profiles

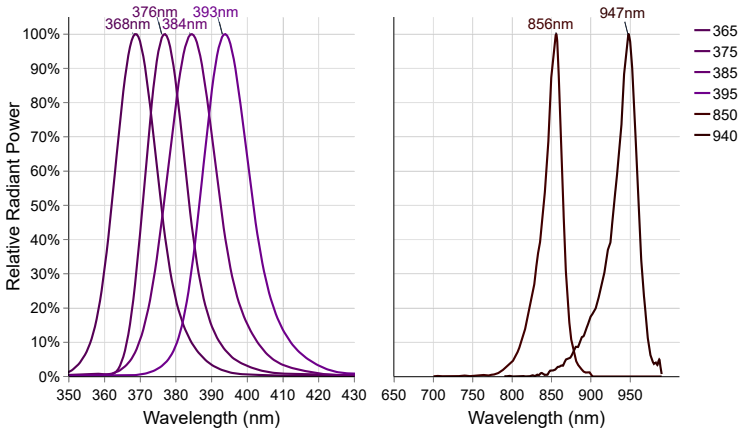


Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a features color hue. When referring to a color wheel, simply remember the following; like colors reflect and brighten surfaces; conversely, opposing colors absorb and darken surfaces. The

AL126 is available in **405 nm, 455 nm, 470 nm, 530 nm, 590 nm, and 625 nm** visible color configurations.

For a more detailed look at the visible color spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Non-Visible Spectral Profiles



Near-infrared (NIR) and ultraviolet A (UVA) imaging are machine vision techniques that utilize wavelengths outside the visible spectrum. NIR light, with wavelengths between 700-1000 nm, can penetrate certain materials opaque to visible light, making it ideal for circuit board analysis, food safety inspection, and medical imaging. In contrast, UVA light, typically ranging between 315-400 nm, interacts with specific materials to induce fluorescence or highlight surface features, useful in applications like counterfeit detection, leak detection, and contamination detection.

The AL126 Series is available in **365 nm, 375 nm, 385 nm, 395 nm, 850 nm, and 940 nm** configurations.

For a more detailed look at the NIR or UVA spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

Polarization Option Detail

Non-polarized

Polarized

Polarization can be used in a variety of ways, such as to reduce glare on specular surfaces or to increase edge clarity of transparent injection-molded objects, as shown above. This is known as cross-polarization. When unpolarized light passes through two cross-polarized filters (oriented 90 degrees perpendicular to each other), it is completely blocked. However, if the light is already polarized, it will only be blocked if its polarization is perpendicular to the axis of the second polarizer, creating the cross-polarization effect shown above.

Photobiological Risk Factors

Group	Description	Affected Wavelengths
Exempt	No Photobiological Hazard	850 nm, 940 nm
Group 1	No Photobiological hazard under normal behavioral limitations	455nm, 470nm, 530nm, 590nm, 625 nm, WHI
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	365nm, 375nm, 385nm, 395nm, 405nm

Advanced Illumination's lighting products have been tested and classified to IEC standards by accredited testing services. For more information on photobiological risk factors, please view the following PDF: https://www.advancedillumination.com/wp-content/uploads/2019/04/IEC-040119.pdf

Cleaning Guidelines

To clean our light's optics, it is best to only clean when necessary. Dusting is always the first step in cleaning your optics. Wiping a dusty optic is like cleaning it with sandpaper. So always dust with a canned air duster or compressed and filtered air before wiping any optic. If the dusted optic has no visible stains after you dust it, then remember: "If it's not dirty, don't clean it." Avoid wiping optics when possible.

If dusting did not clean the lens or the lens has stains, use only de-ionized water and mild dish soap with a low lint cloth designed for optics to avoid damage to the optic by any harsh chemicals.

Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

The aluminum housing can be wiped down when dusting is not a sufficient means to thoroughly clean.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix

Not finding the optical specifications you are looking for with the AL126 Series? Refer to the bar light comparison matrix below to compare and contrast Advanced Illumination's comprehensive product offering:

Attributes	AL325					AL295		LL174		
Lens Type	Narrow (N)	Medium (M)	Wide (W)	Extra Wide (Z)	Eliptical (E)	Medium (M)	Wide (W)	Narrow (N)	Medium (M)	Wide (W)
Beam Angle	14°	25°	36°	55°	45° x 15°	20°	32°	10°	25°	40°
Beam Direction	Normal or Oblique					Normal		Normal		
Intensity at 100 mm WD	163 klx	134 klx	110 klx	80 klx	TBD	88 klx	65 klx	75 klx	57 klx	45 klx
	456 W/m^2	427 W/m^2	352 W/m^2	254 W/m^2	TBD	288 W/m^2	208 W/m^2	250 W/m^2	187 W/m^2	146 W/m^2
Transversal FWHM at 600 mm WD	8.54 in (217 mm)	11.73 in (298 mm)	14.25 in (362 mm)	17.12 in (450 mm)	TBD	12.79 in (325 mm)	15.12 in (384 mm)	9.06 in (230 mm)	13.90 in (353 mm)	16.06 in (408 mm)
Longitudinal FWHM at 600 mm WD	12.05 in (306 mm)	14.25 in (362 mm)	16.34 in (415 mm)	19.45 in (494 mm)	TBD	15.95 in (405 mm)	17.72 in (450 mm)	13.50 in (343 mm)	16.69 in (424 mm)	18.35 in (466 mm)
Minimum Working Distance	3.94 in (100 mm)	3.94 in (100 mm)	3.94 in (100 mm)	1.97 in (50 mm)	TBD	0.98 in (25 mm)	0.79 in (20 mm)	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)
Light Width	1.57 in (39.8 mm)					0.79 in (20.0 mm)		1.33 in (33.8 mm)		
Light Height	1.78 in (45.2 mm)					0.79 in (20.1 mm)		1.12 in (28.4 mm)		
Longest Emitting Window Length	84.28 in (2140 mm)					41.61 in (1057 mm)		96.72 in (2457 mm)		
Sizes Available	14	14	14	14	14	14	14	16	16	16
Visible Wavelengths Available	9	9	9	8	8	9	8	8	9	8
UV Wavelengths Available	4	4	4	0	0	4	0	0	4	0
IR Wavelengths Available	3	3	3	3	3	3	3	3	3	3
Polarization Available	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Diffusion Available	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Rating	IP50					IP50		IP50		
Price	$$	$$	$$	$$	$$	$$	$$	$$	$$	$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Continued

Refer to the continued bar light comparison matrix below to compare and contrast Advanced Illumination's product offering:

Attributes	AL247			AL116	AL126	AL150
Lens Type	Narrow (N)	Medium (M)	Wide (W)	No Lenses	No Lenses	Aimed
Beam Angle	10°	25°	40°	70°	60°	N/A
Beam Direction		Normal		Normal	Normal	Oblique
Intensity at 100 mm WD	84 klx	67 klx	48 klx	32 klx	14 klx	2.2 klx
	277 W/m^2	218 W/m^2	155 W/m^2	110 W/m^2	48 W/m^2	8.5 W/m^2
Transversal FWHM at 600 mm WD	9.57 in (243 mm)	11.38 in (289 mm)	15.87 in (403 mm)	31.54 in (801 mm)	23.31 in (592 mm)	N/A
Longitudinal FWHM at 600 mm WD	13.58 in (345 mm)	14.65 in (372 mm)	18.03 in (458 mm)	46.34 in (1177 mm)	31.26 in (794 mm)	N/A
Minimum Working Distance	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)	0.47 in (12 mm)	0.47 in (12 mm)	0.47 in (12 mm)
Light Width		1.69 in (42.9 mm)		0.79 in (20 mm)	1.27 in (32 mm)	1.33 in (34 mm)
Light Height		0.95 in (24.0 mm)		0.79 in (20 mm)	0.79 in (20 mm)	1.12 in (28 mm)
Longest Emitting Window Length		24 in (610 mm)		20.27 in (515 mm)	41.42 in (1052 mm)	82.12 in (2086 mm)
Sizes Available	4	4	4	10	20	80
Visible Wavelengths Available	8	8	8	8	8	4
UV Wavelengths Available	0	0	0	4	4	1
IR Wavelengths Available	3	3	3	2	2	1
Polarization Available	No	No	No	Yes	Yes	Yes
Diffusion Available	No	No	No	Yes	Yes	Yes
IP Rating		IP69K		IP50	IP50	IP50
Price	$$$	$$$	$$$	$$	$	$$$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

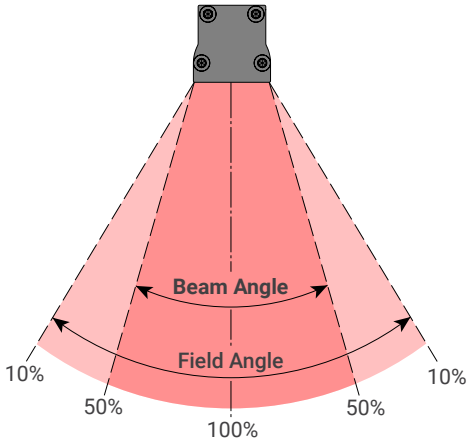
Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Definitions

For definitions on the terminology used on the previous page, please refer to the table below:

Definitions

Beam Angle

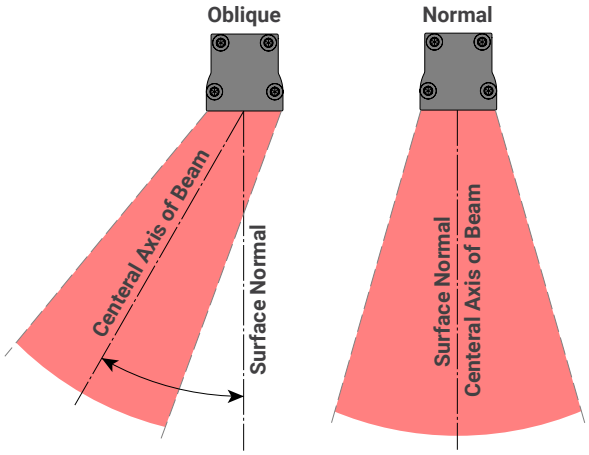


Beam Angle defines the spread of usable light from a projected machine vision light source. It's the angle where the intensity drops to 50% of its peak (FWHM). Beam angle dictates the concentrated, higher-intensity portion of the Field of View (FOV). Field angle is wider, encompassing the total spread of light down to 10% of peak intensity.

FWHM (Full Width Half Maximum)

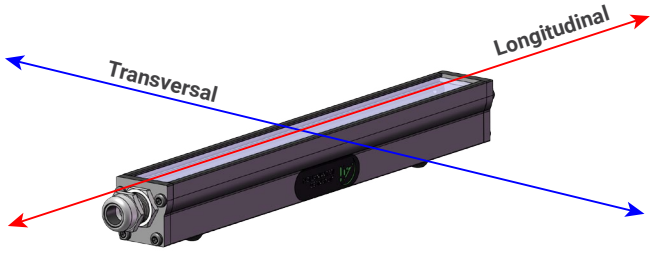
FWHM (Full Width Half Maximum) is a measure of the width of a light source's intensity distribution. Specifically, it defines the distance between the points on the intensity profile where the light intensity drops to 50% of its peak value. This FWHM distance is often used to determine the usable FOV (Field of View) when aiming a light at a surface for inspection.

Beam Direction



A normal beam direction refers to light emitted perpendicular to the light source's emitting surface, in which the central optical axis is co-linear to the surface normal of the emitting window. An oblique beam direction describes light emitted at an angle relative to the light source's surface normal. Oblique sources can be useful when imaging specular surfaces, depending on system geometry.

Longitudinal vs Transversal



The longitudinal direction refers to the direction that runs parallel to the long axis of the light source. This is typically the longest dimension of the light source housing or emitting surface.

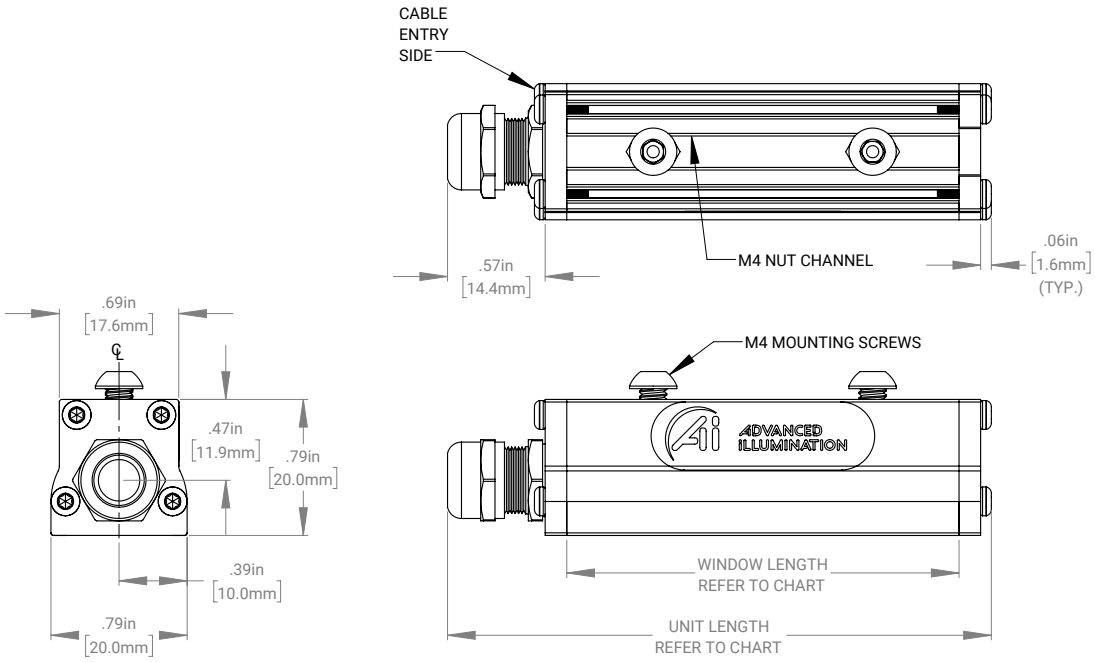
The transversal direction, in contrast, refers to any direction that is perpendicular to the longitudinal direction. It essentially describes any direction that "cuts across" the long axis of the light source.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Mechanical Information

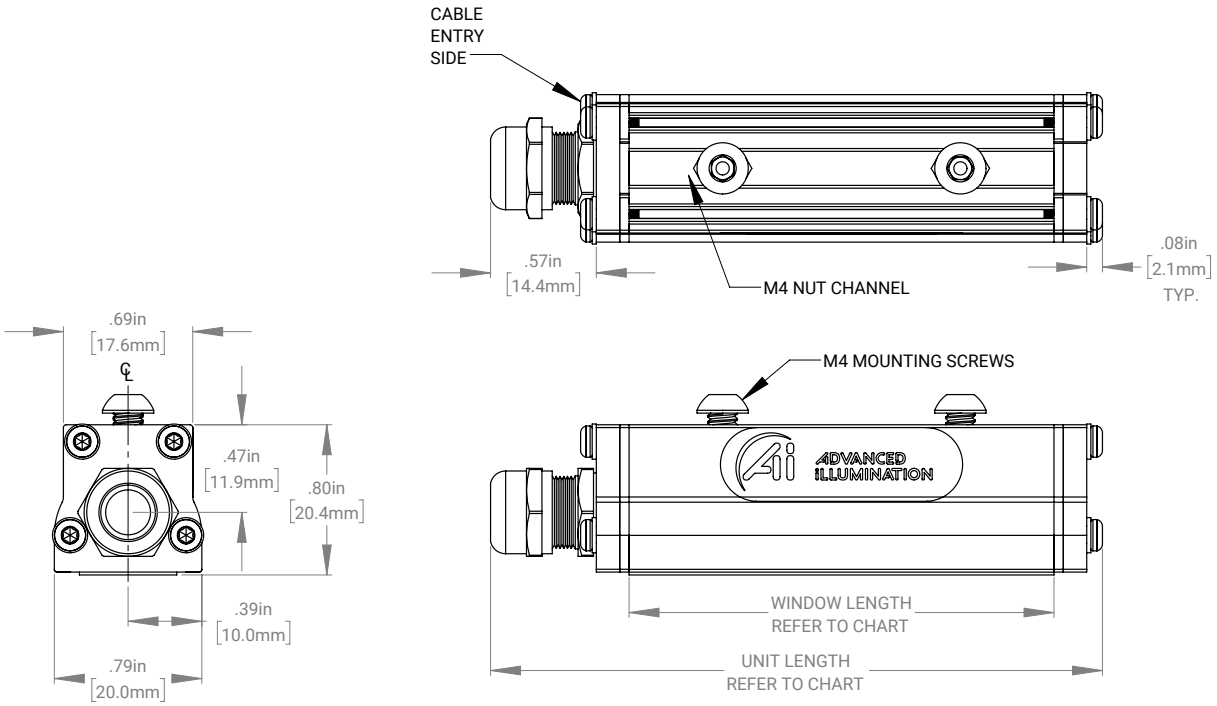
Installation Drawings

Non-Sealed Configuration



For full installation drawings and complete CAD models of this non-sealed configuration, please visit the downloads section of the product webpage.

Sealed Configuration



For full installation drawings and complete CAD models of this sealed configuration, please visit the downloads section of the product webpage.

Mechanical Information - Continued

Sizing Chart

Part Number	Length (Inches)				Length (Millimeters)			
	Non-Washdown		Washdown		Non-Washdown		Washdown	
	Unit	Window	Unit	Window	Unit	Window	Unit	Window
AL12602	3.15	3.42	3.27	3.42	80.01	86.87	83.06	86.87
AL12604	5.15	5.42	5.27	5.42	130.81	137.67	133.86	137.67
AL12606	7.15	7.42	7.27	7.42	181.61	188.47	184.66	188.47
AL12608	9.15	9.42	9.27	9.42	232.41	239.27	235.46	239.27
AL12610	11.15	11.42	11.27	11.42	283.21	290.07	286.26	290.07
AL12612	13.15	13.42	13.27	13.42	334.01	340.87	337.06	340.87
AL12614	15.15	15.42	15.27	15.42	384.81	391.67	387.86	391.67
AL12616	17.15	17.42	17.27	17.42	435.61	442.47	438.66	442.47
AL12618	19.15	19.42	19.27	19.42	486.41	493.27	489.46	493.27
AL12620	21.15	21.42	21.27	21.42	537.21	544.07	540.26	544.07
AL12622	23.15	23.42	23.27	23.42	588.01	594.87	591.06	594.87
AL12624	25.15	25.42	25.27	25.42	638.81	645.67	641.86	645.67
AL12626	27.15	27.42	27.27	27.42	689.61	696.47	692.66	696.47
AL12628	29.15	29.42	29.27	29.42	740.41	747.27	743.46	747.27
AL12630	31.15	31.42	31.27	31.42	791.21	798.07	794.26	798.07
AL12632	33.15	33.42	33.27	33.42	842.01	848.87	845.06	848.87
AL12634	35.15	35.42	35.27	35.42	892.81	899.67	895.86	899.67
AL12636	37.15	37.42	37.27	37.42	943.61	950.47	946.66	950.47
AL12638	39.15	39.42	39.27	39.42	994.41	1001.27	997.46	1001.27
AL12640	41.15	41.42	41.27	41.42	1045.21	1052.07	1048.26	1052.07

Electrical Information

Power Requirements

Current Required for Power Supply Sizing

Wavelengths	Configured w/ Voltage Drive (24)	Configured w/ Standard Controller (IC, I3, I3S, I4, C1, C5)
365 nm, 375 nm, 385 nm, 405 nm	0.012A per linear inch	0.170A per linear inch
455 nm, 530 nm, 590 nm, 625 nm, 850 nm, 940 nm, WHI	0.012A per linear inch	0.240A per linear inch

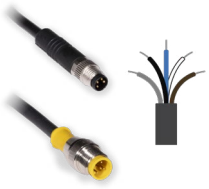
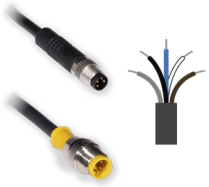
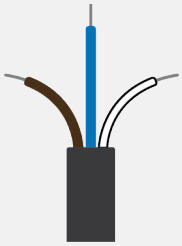
Note: All Advanced Illumination lights and controllers are nominally powered by 24V DC unless otherwise noted. Strobe overdriving with controller based models may require more current and voltage overhead. The values above do not include background current draw from the controller (~100 mA total).

Control Options

Controller Image	Controller Details	Connector Image
	**DCS Single Output Controller - Compatible with C1 Configurations** *PN: DCS-100E* The DCS-100E is a compact, din-rail mounted general-purpose external controller with one C1 output connector, wired with three channels. Capable of providing single channel control or multi-channel control for RGB compatible lights. **Output Power:** 90 W Max Continuous, 540 W Max Pulsed (Overdrive Strobe) **Output Current:** 4.5A Max Continuous, 15 A Max Pulsed **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-100E, please visit the controller product page.	
	**DCS Triple Output Controller - Compatible with C1 Configurations** *PN: DCS-103E* The DCS-103E is a din-rail mounted general-purpose multi-light controller with three C1 output connectors. Capable of driving three lights in sync or asynchronously. **Output Power:** 30 W Max Continuous / Output, 180 W Max Pulsed / Output **Output Current:** 1.5A Max Continuous / Output, 5 A Max Pulsed / Output **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-103E, please visit the controller product page.	
	**Pulsar 320E High Current Controller - Compatible with C5 Configuration** *PN: Pulsar 320E* The Pulsar 320E is a high-power, dual output, pulse-only controller geared for overdriving driving lights at very short flash durations with very high current. **Output Power:** 2500 W Max Pulsed / Output **Output Current:** 50 A Max Pulsed / Output I**/Os:** 2 External Trigger Inputs **Interface:** 10/100 Ethernet with Software GUI. SDKs are also available. For more information about our Pulsar 320E, please visit the controller product page.	

Electrical Information - Continued

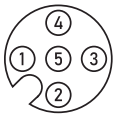
Control Options - Continued

Controller Image	Controller Details	Connector Image
	**Inline Controller - Continuous Only - IC Configurations** *PN: N/A* The IC is an inline, cable-mounted continuous-only controller configured/wired directly for the ordered light head. **Output Power:** 25 W Max Continuous **Output Current:** 1.25 A Max Continuous **I/O:** 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**Inline Controller - Strobe and Continuous - I3 & I3S Configurations** *PN: N/A* The I3 and I3S are inline, cable-mounted continuous and pulse (overdrive strobe) capable controllers configured/wired directly for the ordered light head. When operated in pulsed mode, the I3 is a default-on device on power up, whereas the I3S is default-off, requiring a trigger to illuminate. **Output Power:** 25 W Max Continuous, 125 W Max Pulsed **Output Current:** 1.25 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our I3/I3S Controller, please visit the controller product page.	
	**Inline Controller - Strobe and Continuous - I4 Configurations** *PN: N/A* The I4 is an inline, cable-mounted continuous and pulse (overdrive strobe) capable controller configured/wired directly for the ordered light head. The I4 can either be operated with a PNP or NPN trigger signal. **Output Power:** 50 W Max Continuous, 150 W Max Pulsed **Output Current:** 2.1 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**24V Driver - Continuous Only - 24 Configurations** *PN: N/A* 24V option allows lights to operate continuous output with 24V connection and no additional controllers. **Modes:** Continuous, can be wired to some 3rd party controllers or external relays for gated operation **Interface:** Direct cable (flying leads or connector options)	

Electrical Information - Continued

Inline Control Option Wiring Information

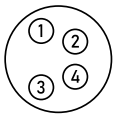
Standard Flying Lead and Optional M12 Connector Pinout Functions

Pin (M12)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M12 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	NPN/Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	PNP/Active High Trigger	PNP/Active High Trigger	
5	GRAY	N/A	N/A	0-10V Analog Control	0-10 V Analog Dimming	

5-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M12 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Optional M8 Connector Pinout Functions

Pin (M8)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M8 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	Active High Trigger	Active High Trigger	

4-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M8 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Accessories

Advanced Illumination offers a variety of accessories designed to pair with our lighting and control products. Below you will find a table of accessories which are compatible with many configurations of the BL2 series.

Category	Accessory Image	Accessory Detail
Power Supply		**24 Volt DC Power Supply** *PN: PS24-TL* This convenient power source is a universal AC input switching power supply with a regulated output DC current. The power supply comes with an LED Power Indicator, tinned leads marked Positive (+) and Negative (-) and 2 WAGO connectors for simplified assembly. For more information about our 24 Volt DC Power Supply, please visit this webpage.
Dimmer		**Manual Dimming Accessory for the IC, I3, I3s and I4** *PN: DCS-MP* The DCS-MP is a 30-position potentiometer, detented for precision level control and provides repeatable dimming with cable inline controllers. Features include DIN-rail mountable, a flip up cover to prevent accidental adjustments, spring clamp wiring terminal for flying leads or an M12 connector for use with the IC, I3/I3S or I4 Inline Controllers. For more information about our Manual Dimming Accessory please visit this webpage.

Accessories - Continued

Category	Accessory Image	Accessory Detail
Dimmer		**Manual Dimming Accessory for the IC** *PN: MP-ICS* The MP-ICS is a dimmer which is designed for use on lights with the IC Inline Controller. This unit provides for 0 – 100% intensity control. It is NOT COMPATIBLE with LLI37, BLI38, LLI67, and BLI68 "IC" Lights or lights built with the "24v controller" option. For more information about our Manual Dimming Accessory, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Single Light Power Cable - C1 Configuration** *PN: LC-XX-S* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female 7 pin locking connector (C1) and can be purchased in 3 - 15-meter lengths. For more information about our DCS-100E/103E Extension Cable, Single Output, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Dual Light Power Cable - C1 Configuration** *PN: LC-XX-Y* This extension cable was designed for applications requiring two identical lights to be powered through a single controller. These Y cables feature a single male and dual female 7 pin locking connectors (C1) and can be purchased in 3 - 15-meter lengths. See attached spec sheet for compatible light configuration. For more information about our DCS-100E/103E Extension Cable, Split Output, please visit this webpage.
Extension Cable		**Pulsar 320E Extension Cable - C5 Configuration** *PN: LC-XX-S-C5* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female Pulsar 320 connector (C5) and can be purchased in 3 - 15 meter lengths. For more information about our Pulsar 320E Extension Cable, please visit this webpage.
Adaptor Cable		**Cognex Gen2 Inline Controller Adaptor Cable** *PN: AD-I3-CGX2* This cable adaptor is for connecting I3/I3S configured lights with Cognex Gen2 Cameras, and comes with a male to female M12 connectors. For more information about our Cognex Gen2 Inline Controller Adaptor Cable, please visit this webpage.
Filters		**Camera Lens Band Pass FIlters** *PN: BPXXX-YYY* Eliminating all but a narrow band of light (+/- 40nm) centered on the specified wavelength, band pass filters are used to enhance colors, or to stop unwanted ambient light from reaching the camera. Filtering can replace existing shrouds, simplifying the physical set up of an inspection site. Ai offers 635nm and 660nm band pass filters to fit several different lens sizes. For more information about our Camera Lens Band Pass FIlters, please visit this webpage.

Additional Information

Warranty

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty. No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Compliancy

Our lighting products are designed and tested to meet CE, RoHS, and IEC standards. As a global ISO 9001 certified company, we understand the importance of compliance and perform accelerated testing on every product before shipment. For more information on our compliance standards, please see our compliancy documentation here: https://www.advancedillumination.com/services/compliance-statements/

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: +1 (802) 767 3830
Fax: +1 (802) 767 2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2023 Advanced illumination Inc. All rights reserved

AL150 Series

BALA Bar Lights

Product Highlights

- Providing a broad area of illumination with controlled fall off for machine vision applications.

General Specifications

Electrical Specifications	Color	24V Current	All Other Controls
	625, 660	0.10 A	0.04 A
	395, 470, 520, WHI	0.08 A	0.06 A
	880	0.09 A	0.03 A
Normal Operating Temperature	0 - 60°C		
Weight	Varies by size		
Standard Cable Information	2 m long -0/+150 mm (80" -0/+6") - 105°C RATED PVC JACKET, FOIL SHIELD WITH DRAIN.		
Photobiological Risk Factor	EXEMPT APPLICABLE WAVELENGTHS: 880 GROUP 1 (LOW-RISK) APPLICABLE WAVELENGTHS: 470, 520, 625, 660, WHI GROUP 2 (MODERATE-RISK) APPLICABLE WAVELENGTHS: 395		
Compliance	CE, RoHS, IEC 62471		
IP Rating	IP50		
Lumen Maintenance	L70 = 50,000 Hours		

Part Number Key

Model	Model Extension	Number of LEDs	-	Peak Wavelength	Connector/ Control	Light Conditioning Option	-	Alternative Connector
AL	XXXXX	XX	-	XXX	XX	X	-	XXX
AL	150	Refer to Emitting Length Chart[4]		395 (UV)[2]	C1	D (Diffuser)		M8[1]
	4424			470 (blue)	C5	P[3] (Polarizer)		M12[1]
	4554			520 (green)	IC			
	46120			625 (red orange)	I3			
				660 (red)	I3S			
				880 (IR)	I4			
				WHI (white)	24			

EX:
AL15012-660C1
AL15084-66024

[1]Available with IC, I3, I3S, I4, and I4 options only
[2]Not available with 24 V or IC options
[3]470 (blue) will reduce the life of the polarizer
[4]Only applicable for model extension AL150

Change Notice

PCN No: 166

Date Issued: May 5, 2023
Notice Type: Product Change
Product Type: 660nm Wavelength on traditional 5mm Lights Discontinuation

Change Notification Summary

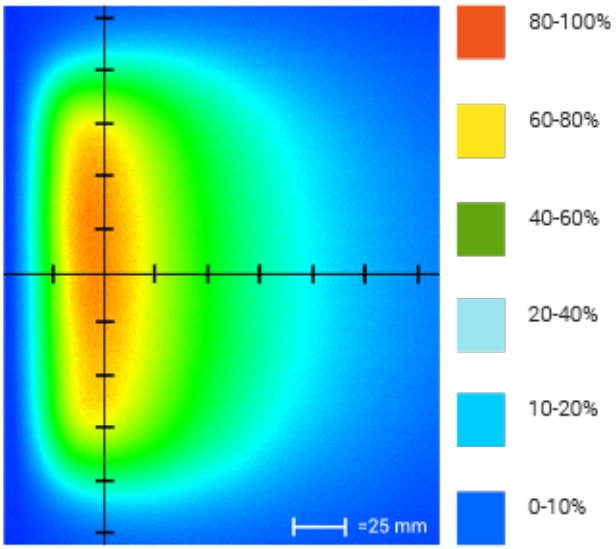
Advanced illumination (Ai) will be ending the manufacture of the 660nm color option on our classic aimed lights due to the LEDs being discontinued from the manufacturer. We expect to have six months of inventory to fulfill orders, after that we suggest purchasing the same light but with the 625nm wavelength.

Please contact your Ai Sales Representative if you have any questions.

PCN 166

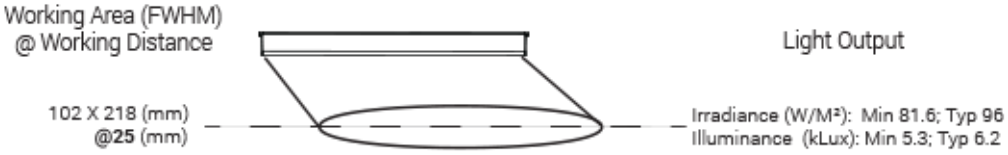
Optical Specs

Intensity Distribution

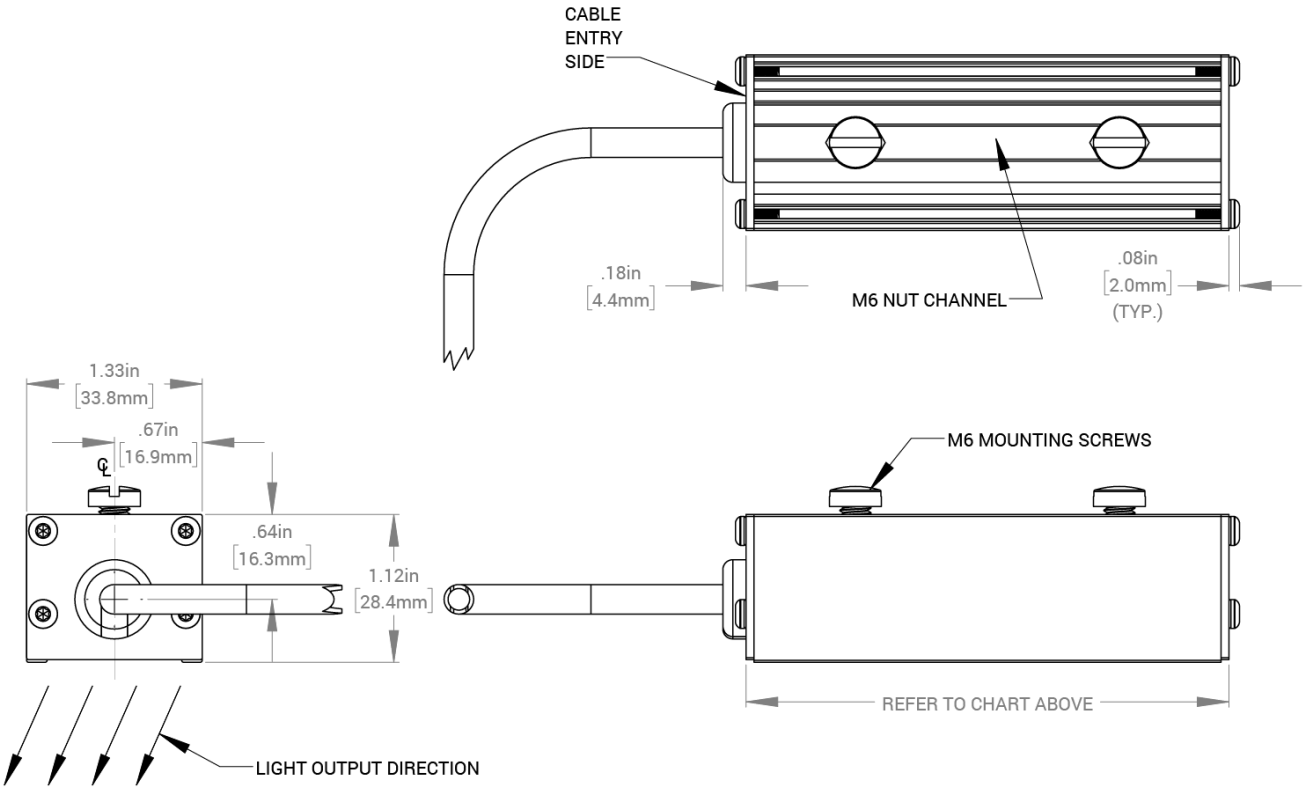


Optical measurement taken using AL4554-660C5 @ 25mm

Area of Illuminance & Intensity



Mechanical Specs

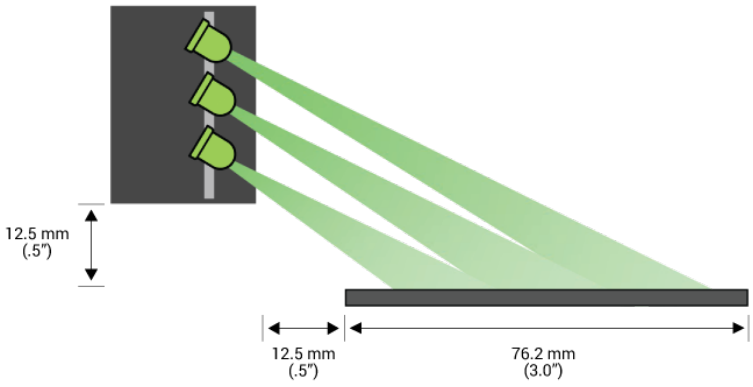


AL150 Emitting Length Chart

Emitting Length (in)	Part Number	Emitting Length (in)	Part Number	Emitting Length (in)	Part Number	Emitting Length (in)	Part Number
1.5″	AL150006	21.9″	AL150126	42.3″	AL150246	62.7″	AL150366
2.5″	AL150012	22.9″	AL150132	43.3″	AL150252	63.7″	AL150372
3.5″	AL150018	23.9″	AL150138	44.4″	AL150258	64.8″	AL150378
4.6″	AL4424[1]	25.0″	AL150144	45.4″	AL150264	65.8″	AL150384
5.6″	AL150030	26.0″	AL150150	46.4″	AL150270	66.8″	AL150390
6.6″	AL150036	27.0″	AL150156	47.4″	AL150276	67.8″	AL150396
7.6″	AL150042	28.0″	AL150162	48.4″	AL150282	68.8″	AL150402
8.6″	AL150048	29.0″	AL150168	49.5″	AL150288	69.9″	AL150408
9.7″	AL4554[1]	30.1″	AL150174	50.5″	AL150294	70.9″	AL150414
10.7″	AL150060	31.1″	AL150180	51.5″	AL150300	71.9″	AL150420
11.7″	AL150066	32.1″	AL150186	52.5″	AL150306	72.9″	AL150426
12.7″	AL150072	33.1″	AL150192	53.5″	AL150312	73.9″	AL150432
13.7″	AL150078	34.1″	AL150198	54.6″	AL150318	75.0″	AL150438
14.8″	AL150084	35.2″	AL150204	55.6″	AL150324	76.0″	AL150444
15.8″	AL150090	36.2″	AL150210	56.6″	AL150330	77.0″	AL150450
16.8″	AL150096	37.2″	AL150216	57.6″	AL150336	78.0″	AL150456
17.8″	AL150102	38.2″	AL150222	58.6″	AL150342	79.0″	AL150462
18.8″	AL150108	39.3″	AL150228	59.7″	AL150348	80.1″	AL150468
19.9″	AL150114	40.3″	AL150234	60.7″	AL150354	81.1″	AL150474
20.9″	AL46120[1]	41.3″	AL150240	61.7″	AL150360	82.1″	AL150480

[1] *AL4424, AL4554, and AL46120 represent legacy part numbers*

BALA Light Function Diagram



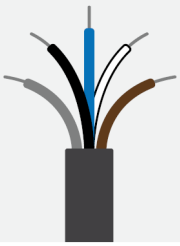
The Broad Area Linear Array (BALA) design is exclusive to Ai.

Originally designed for inspecting circuit boards, BALAs are aimed to create illumination that is very even in intensity along the length of the light, with controlled “fall off” in the transverse direction.

To create a wider area of illumination, two BALAs can be placed parallel to and facing each other.

Electrical Specs

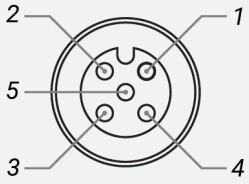
Standard Flying Lead Functions for 24V, IC, I3, I3S, and I4 Control Options



COLOR	24V FUNCTIONS	IC FUNCTIONS	I3/I3S FUNCTIONS	I4 FUNCTIONS
BROWN	24 V DC	24 V DC	24 V DC	24 V DC
WHITE	N/A	0-10 V ANALOG DIMMING	RESERVED	NPN/ACTIVE LOW TRIGGER
BLUE	DC GND	DC GND	DC GND	DC GND
BLACK	N/A	PNP/ACTIVE LOW GATE	PNP/ACTIVE HIGH TRIGGER	PNP/ACTIVE HIGH TRIGGER
GRAY	N/A	N/A	0-10 V ANALOG DIMMING	0-10 V ANALOG DIMMING

The functions listed above are applicable when this product is configured with built-in 24V, IC, I3, I3S, or I4 control, without the optional A-coded 5-position Male M12 or A-coded 4-position Male M8 connector.

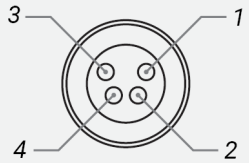
M12 Connector Pinout Functions for 24V, IC, I3, I3S, and I4 Control Options



PIN	24V FUNCTIONS	IC FUNCTIONS	I3/I3S FUNCTIONS	I4 FUNCTIONS
1	24 V DC	24 V DC	24 V DC	24 V DC
2	N/A	0-10 V ANALOG DIMMING	RESERVED	NPN/ACTIVE LOW TRIGGER
3	DC GND	DC GND	DC GND	DC GND
4	N/A	PNP/ACTIVE LOW GATE	PNP/ACTIVE HIGH TRIGGER	PNP/ACTIVE HIGH TRIGGER
5	N/A	N/A	0-10 V ANALOG DIMMING	0-10 V ANALOG DIMMING

The functions listed above are only applicable when this product is configured with built-in 24V, IC, I3, I3S, or I4 control, with an A-coded 5-position Male M12 connector.

M8 Connector Pinout Functions for 24V, IC, I3, I3S, and I4 Control Options



PIN	24V FUNCTIONS	IC FUNCTIONS	I3/I3S FUNCTIONS	I4 FUNCTIONS
1	24 V DC	24 V DC	24 V DC	24 V DC
2	N/A	0-10 V ANALOG DIMMING	0-10 V ANALOG DIMMING	0-10 V ANALOG DIMMING
3	DC GND	DC GND	DC GND	DC GND
4	N/A	PNP/ACTIVE LOW GATE	PNP/ACTIVE HIGH TRIGGER	PNP/ACTIVE HIGH TRIGGER

The functions listed above are only applicable when this product is configured with built-in 24V, IC, I3, I3S, or I4 control, with an A-coded 4-position Male M8 connector.

For details on operating configurations without built-in control (C1, C5, Q1, and Q4 control, when available), please refer to Advanced illumination's controller manuals.

Control Specs

C1 CONNECTOR	C5 CONNECTOR	ICS 2 (IC)	ICS 3
For use with: **DCS Series Controllers** Strobe/Continuous Controllers	For use with: **Pulsar 320** High Power Strobe only Controller	In-line Continuous Controller Powered with: **24V Power Supply**	In-line Strobe/ Continuous Controller Default On Powered with: **24V Power Supply**

ICS 3S (I3S)	I4	24 VOLT
In-line Strobe/ Continuous Controller Default Off Powered with: **24V Power Supply**	In-line Strobe/ Continuous Controller Powered with: **24V Power Supply**	Flying/Tinned Leads Powered with: **24V Power Supply**

Warranty Information

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty.
No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: 802.767.3830
Fax: 802.767.2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2021 Advanced illumination Inc. All rights reserved

AL179 Expandable Series High Power Bar Lights

Expandable Washdown

Product Highlights

- 3x brighter than the LL5806/LL6212/LL6324
- For use in long distance or large area inspections
- Expandable in 152mm (6") increments up to 1,219mm (48")
- Wash down option provides IP compliance

General Specifications

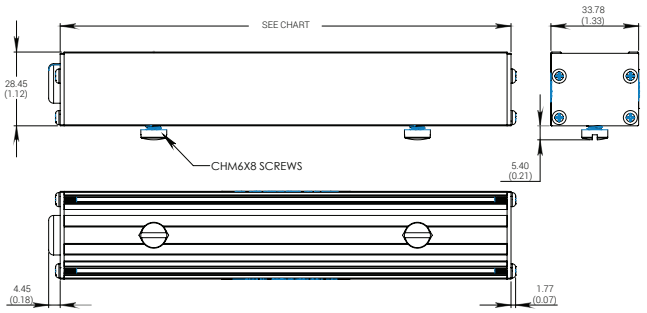
Electrical Specifications	Color	24v Current	All Other Controls
	WHI	0.5 A per 6 inch	0.39 A Max per 6 inch
Normal Operating Temperature	0 - 60°C		
Weight (g)	**Wash Down Option** - 201.9 g (7.12 oz) **Non Wash Down** - 196.9 g (6.95 oz)		
Standard Cable Information	Up to 2 meters (80") long - 105°C rated PVC jacket, foil shield with drain.		
Photobiological Risk Factor IEC 62471	**Group 1 (Low-Risk) Applicable Wavelengths:** WHI		
Compliance	CE RoHS IEC 62471		
IP Rating	**Wash Down Option** - IP65 **Non Wash Down** - IP50		
Lumen Maintenance	L70 = 50,000 hours		

Released 7/15/2015
Updated 7/25/2016
Updated 5/12/2017 DCN 2272

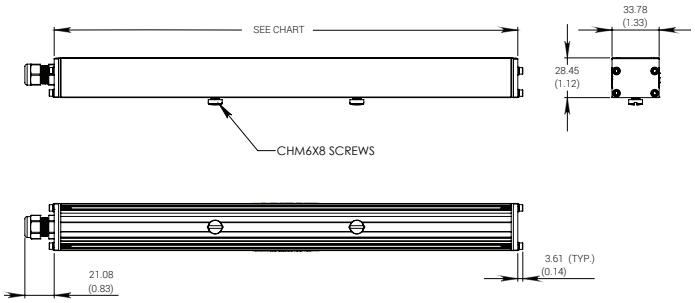
AL179 Expandable Series

Mechanical Specifications

Non Washdown Option



Washdown Option



DIMENSIONS ARE IN MILLIMETERS (INCHES)

Non Washdown

Part #	Length in mm (inches)	
AL17906	179.7	(6.84)
AL17912	326.1	(12.84)
AL17918	478.6	(18.84)
AL17924	630.9	(24.84)
AL17930	783.3	(30.84)
AL17936	935.7	(36.84)
AL17942	1088.1	(42.84)
AL17948	1240.5	(48.84)

Washdown Option

Part #	Length in mm (inches)	
AL17906	180.1	(7.09)
AL17912	332.5	(13.09)
AL17918	484.9	(19.09)
AL17924	637.3	(25.09)
AL17930	789.7	(31.09)
AL17936	942.1	(37.09)
AL17942	1094.5	(43.09)
AL17948	1246.9	(49.09)

Part Number Key

Model	Illuminated Length	—	Spectral Wavelength	Connector/ Control	Heat Sink Option	Wash Down Option	Optional Light Conditioning	—	Alternative Connector
AL179	XX	—	XXX	XX	X	X	X	—	XXX
AL179	(6" increments from 6" to "48)		WHI (white)	C1 C5 IC [2] I3 [2] I3S [2]	H	W	D (diffuser)		M12 [1]

Ex: AL17906-WHIC1
AL17918-WHIC1HW

[1] Available with IC, I3 and I3S options only
[2] Maximum length is 12"

Stock Product: *shipped within 3 days*
None

Build to Order: *shipped within 2 weeks*

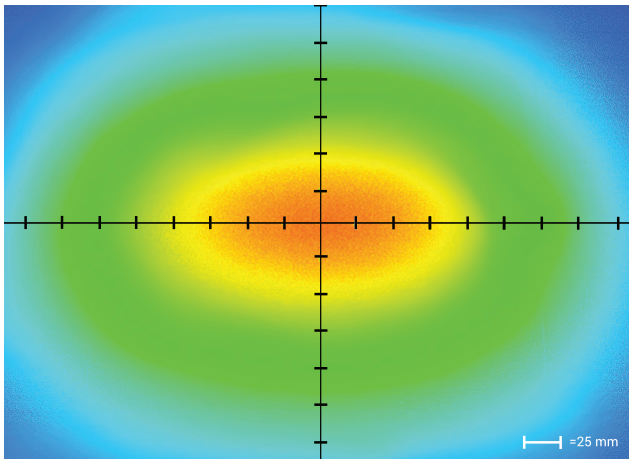
Connector | Control Options

C1 Connector	C5 Connector	ICS 2 (IC)	ICS 3 (I3)	ICS 3S (I3S)
For use with: DCS Series Controllers	*For use with:* Pulsar 320 Strobe Controller.	Continous in-line controller *Powered with:* 24V power supply	Combination strobe/continous in-line controller *Powered with:* 24V power supply	Default-OFF strobe/continous in-line controller *Powered with:* 24V power supply

Released 7/15/2015
Updated 7/25/2016
Updated 5/12/2016 DCN 2272

Optical Performance

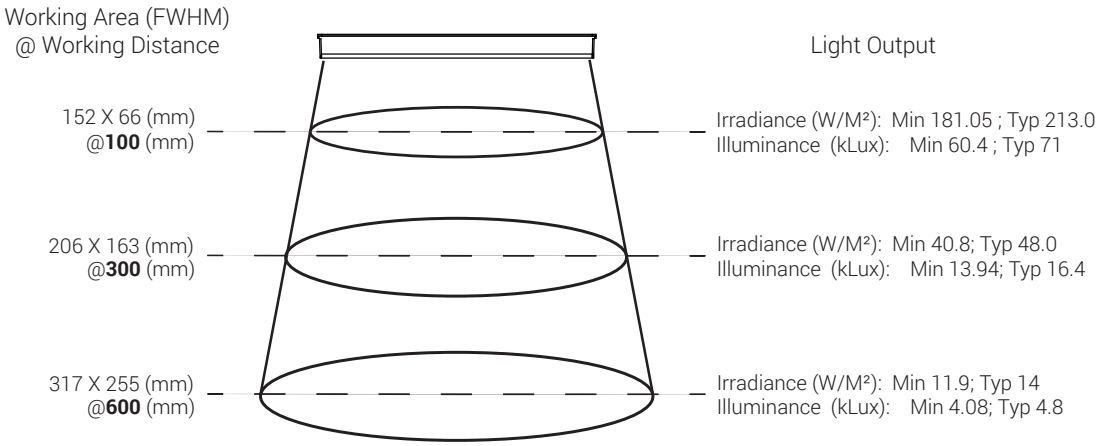
Intensity Distribution



80-100%
60-80%
40-60%
20-40%
10-20%
0-10%

Optical measurement taken using AL17906-WHII3 @ 300 mm

Area of Illuminance & Intensity



Operation and Wiring

ICS 2 (IC)

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	0-10 VDC Analog Control	White
3	DCGND	Blue
4	GLO	Black

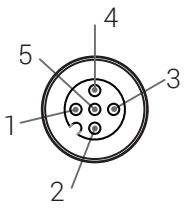
ICS 3 (I3 and I3S)

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	Reserved	White
3	GND	Blue
4	PNP/Active High Trigger	Black
5	0-10 VDC Analog Control	Gray

24 Volt

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	N/A	White
3	GND	Blue
4	N/A	Black

Optional M12 Pinout



male
5-position

Released 7/15/2015
Updated 7/25/2016
Updated 5/12/2016 DCN 2272

Warranty Information

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of two years from the original date of purchase. Should a defect develop during this period, please contact Ai Customer Service or your Ai distributor for a Return Merchandise Authorization (RMA), and return the complete product, freight prepaid, to Ai. If a defect is found, Ai will - at our discretion - repair or replace the product without charge. Ai claims no liability for any implied warranties, including “merchantability” and “fitness for a specific purpose.”

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm, EST or send an email to orders@advill.com.

Company Information

Advanced Illumination

440 State Garage Road, Rochester VT. 05767

Phone: 802.767.3830

Fax: 802.767.3831

Email: info@advancedillumination.com

Web: advancedillumination.com

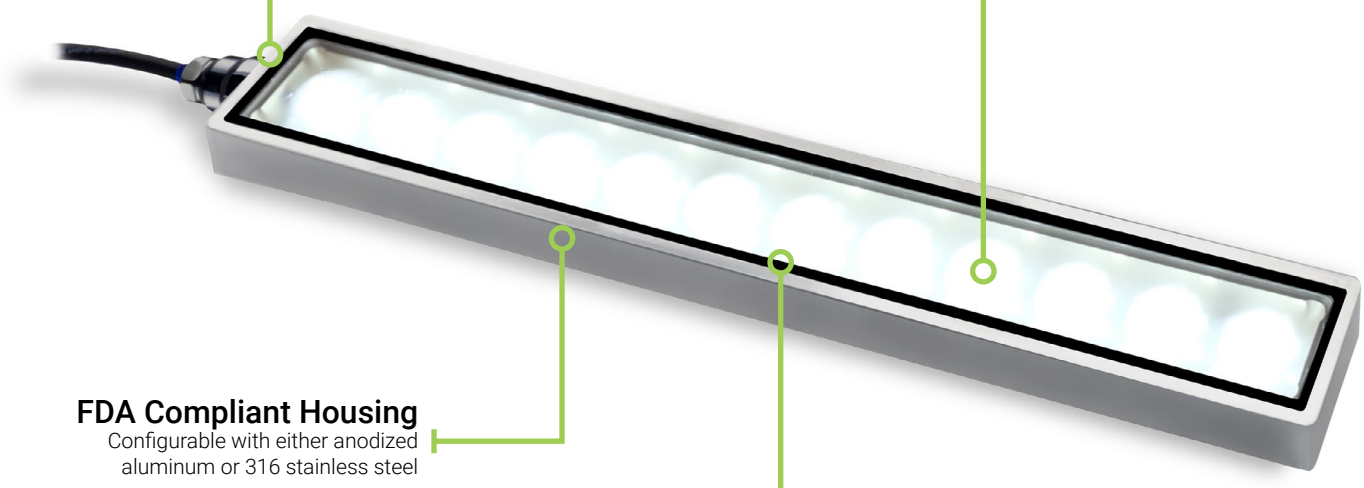
© 2015 Advanced Illumination Inc. All rights reserved

Released 7/15/2015
Updated 7/25/2016
Updated 5/12/2016 DCN 2272

AL247 Series

UltraSeal Bar Lights | Product Datasheet

ADVANCED ILLUMINATION by Exaktera



***Patented Design**

AL247 Series Description

Engineered for the most demanding washdown applications, the AL247 Series, our UltraSeal™ Bar Light, provides exceptionally rugged illumination. Achieving IP69K certification, conducted by a 3rd party lab, these lights ensure complete protection against dust ingress and high-pressure, high-temperature steam cleaning.

Furthermore, their patented design is virtually crevice-free and features no exposed fasteners, significantly minimizing surfaces where contaminants like food, dust, or debris can collect.

These characteristics make the AL247 UltraSeal™ Bar Lights ideal for hygienic inspection environments, aseptic manufacturing, and food and beverage applications.

- **IP69K Certified**
- **Crevice Free Design**
- **High Intensity**
- **11 Wavelengths Available**
- **1-2 Week Lead Times Typical**

General Information

General Specifications

Certification	Specification		Detail	
Optical	Available Wavelengths		White, 455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, 850 nm, 940 nm	
	Available Lensing		Narrow (10°), Medium (25°), Wide (40°)	
	Available Light Conditioning		None	
Electrical	Power Consumption Info		See Power Requirements on Page 9	
	Cable Info		80" -0/+6" Long (2 m -0/+150 mm), 105 °C Rated, Foil Shield w/ Drain	
Mechanical	Sizing Info	Length	8.12" (206.25 mm) to 26.12" (663.45 mm)	See Page 8 for More Details
		Width	1.69" (42.9 mm)	
		Height	0.95" (24.0 mm)	
	Weight Info (Standard)		~ 0.92 lbs (~417 g) per 6" Unit Length	
	Mounting Info		M4 Mounting Holes	
	Material Info		Anodized Aluminum or Stainless Steel Housing, Acrylic Window, Stainless Steel Strain Relief, PVC Cable Jacket, 18-8 Stainless Steel Fasteners, Rubberized Epoxy	
Thermal	Operating Case Temperatures		25 °C to 60 °C	
	Operating Ambient Temperatures		0 °C to 35 °C	
Certification	Compliance		CE, RoHS, IEC 62471	
	IP Rating		IP69K	
	Lumen Maintenance - White Only		L70 (50,000 Hours)	

General Information - Continued

Part Number Key

Model	Lens Type	-	Emitting Length (in)	Peak Wavelength	Connector/ Control	Housing Material	-	Alternative Connector
AL247	X	-	XX	XXX	XX	XX	-	XXX
AL247	N (Narrow)		06	455 (royal blue)	C1	SS (Stainless Steel)		M8[1]
	M (Medium)		12	470 (blue)	C5	AL (Anodized Aluminum)		M12[1]
	W (Wide)		18	505 (cyan)	IC			
			24	530 (green)	I3			
				590 (amber)	I3S			
				625 (red orange)	I4			
				660 (red)	24			
				730 (IR)				
				850 (IR)				
				940 (IR)				
				WHI (white)				
more info on page			8	5	9			11

Example Part Numbers:
AL247N-0645513-M12
AL247M-18WHIC1

Beam Angle (FWHM):
Narrow = 10°
Medium = 25°
Wide = 40°

[1] Available with IC, I3, I3S, I4, and 24 options only

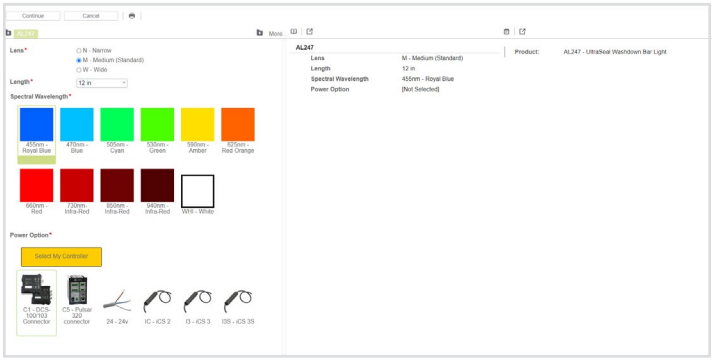
In Stock

Unavailable

Lead Times

Stock products ship within three days.
Build-to-Order custom products ship within one to two weeks (typical).

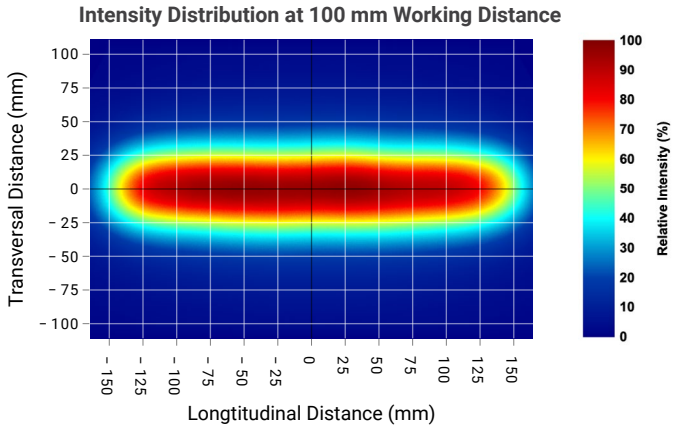
Configurator



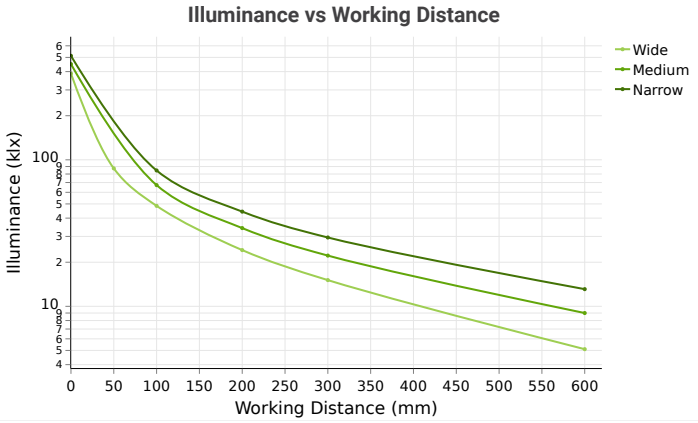
Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our AL247 UltraSeal Bar Light Series to your specific needs. For a guided configuration, visit our online configurator.

Optical Information

Intensity Characteristics

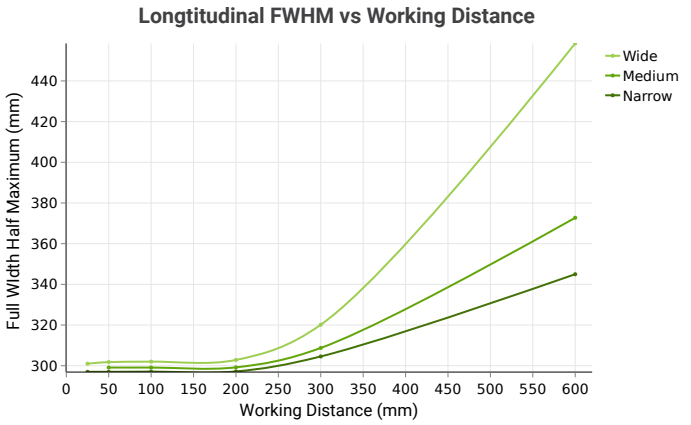


Intensity distribution sample image above taken with a 12-inch white medium lensed AL247 unit.



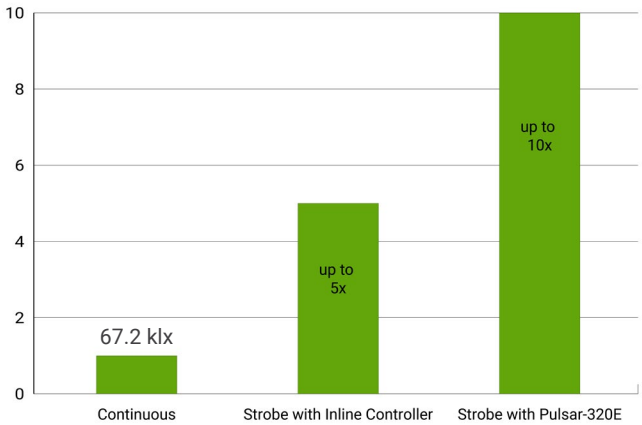
Data shown above have been collected using a 12-inch white AL247 unit.

FWHM vs Working Distance



Both Full Width Half Maximum (FWHM) vs Working Distance plots shown above have been measured using a 12-inch white AL247 unit.

Continuous vs Pulsed Intensity

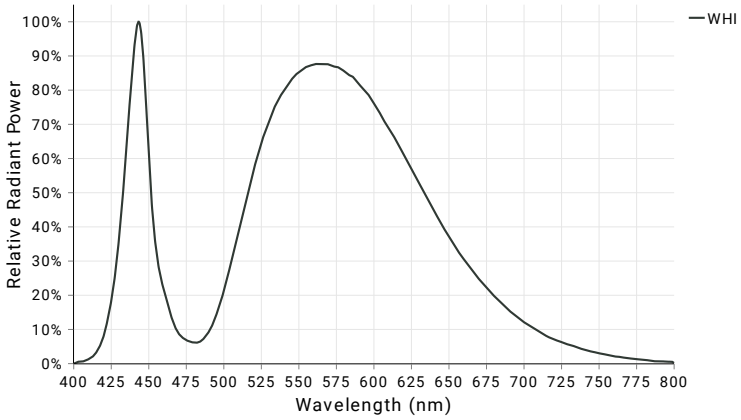


Under continuous operation, a 12-inch white medium lensed AL247 unit will output an **illuminance of 67 klx** and an **irradiance of 218 W/m²** at a 100 mm working distance. For applications that require higher output, the AL247 Series has been engineered to be overdrive strobe capable. When configured with AI's strobe enabled Inline Controller (I3, I3S, and I4), the AL247 is capable of outputting up-to 5X continuous levels. When configured with a C5 connector, compatible with AI's Pulsar 320E, an **AL247 can be strobed up-to 10X continuous intensity levels.**

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

White Spectral Profile

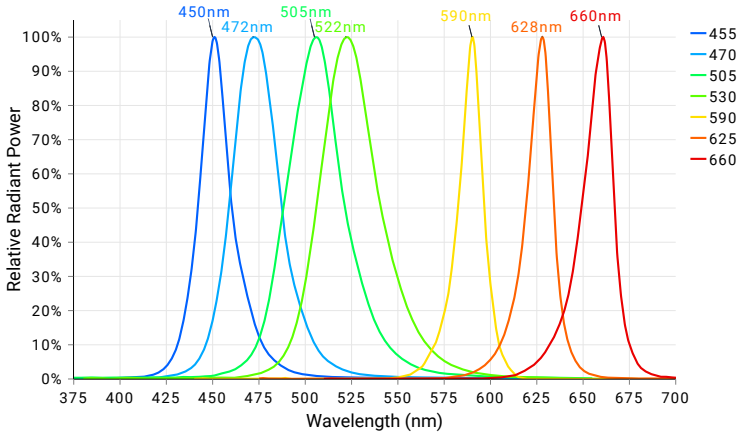


White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, white LEDs can vary in color temperature, which can impact machine vision systems, specifically when matching white light sources.

The AL247 Series white LEDs have a relatively neutral color correlated temperature (CCT) of **5500k.**

For a more detailed look at the white spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Visible Spectral Profiles

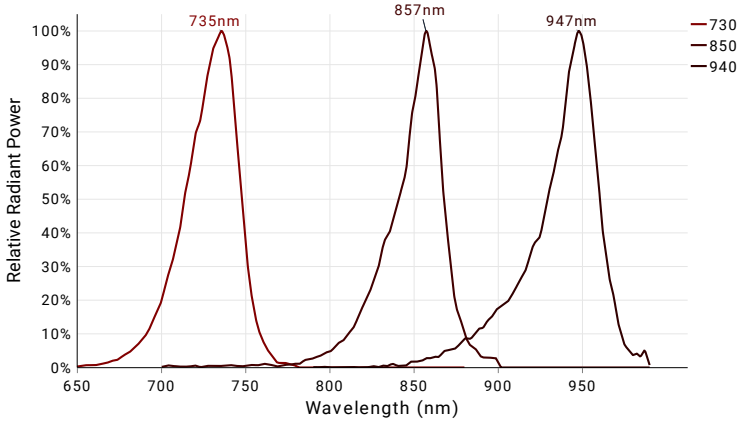


Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a features color hue. When referring to a color wheel, simply remember the following; like colors reflect and brighten surfaces; conversely, opposing colors absorb and darken surfaces.

The A325 is available in **455 nm, 470 nm, 505 nm, 530 nm, 590nm, 625 nm, and 660 nm** visible color configurations.

For a more detailed look at the visible color spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Non-Visible Spectral Profiles



Near-infrared (NIR) imaging is a machine vision techniques that utilize wavelengths outside the visible spectrum. NIR light, with wavelengths between 700-1000 nm, can penetrate certain materials opaque to visible light, making it ideal for certian food safety inspections and medical imaging.

The AL247 Series is available in **730 nm, 850 nm, and 940 nm** configurations.

For a more detailed look at the NIR spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

Photobiological Risk Factors

Group	Description	Affected Wavelengths
Exempt	No Photobiological Hazard	730 nm, 850 nm, 940nm
Group 1	No Photobiological hazard under normal behavioral limitations	455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, WHI
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	N/A

Advanced Illumination's lighting products have been tested and classified to IEC standards by accredited testing services. For more information on photobiological risk factors, please view the following PDF: https://www.advancedillumination.com/wp-content/uploads/2019/04/IEC-040119.pdf

Cleaning Guidelines

To clean our light's optics, it is best to only clean when necessary. Dusting is always the first step in cleaning your optics. Wiping a dusty optic is like cleaning it with sandpaper. So always dust with a canned air duster or compressed and filtered air before wiping any optic. If the dusted optic has no visible stains after you dust it, then remember: "If it's not dirty, don't clean it." Avoid wiping optics when possible.

If dusting did not clean the lens or the lens has stains, use only de-ionized water and mild dish soap with a low lint cloth designed for optics to avoid damage to the optic by any harsh chemicals.

Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

The aluminum housing can be wiped down when dusting is not a sufficient means to thoroughly clean.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix

Not finding the optical specifications you are looking for with the AL247 Series? Refer to the bar light comparison matrix below to compare and contrast Advanced Illumination's comprehensive product offering:

Attributes	AL325					AL295		LL174		
Lens Type	Narrow (N)	Medium (M)	Wide (W)	Extra Wide (Z)	Eliptical (E)	Medium (M)	Wide (W)	Narrow (N)	Medium (M)	Wide (W)
Beam Angle	14°	25°	36°	55°	45° + 15°	20°	32°	10°	25°	40°
Beam Direction	Normal or Oblique					Normal		Normal		
Intensity at 100 mm WD	163 klx	134 klx	110 klx	80 klx	TBD	88 klx	65 klx	75 klx	57 klx	45 klx
	456 W/m^2	427 W/m^2	352 W/m^2	254 W/m^2	TBD	288 W/m^2	208 W/m^2	250 W/m^2	187 W/m^2	146 W/m^2
Transversal FWHM at 600 mm WD	8.54 in (217 mm)	11.73 in (298 mm)	14.25 in (362 mm)	17.12 in (450 mm)	TBD	12.79 in (325 mm)	15.12 in (384 mm)	9.06 in (230 mm)	13.90 in (353 mm)	16.06 in (408 mm)
Longitudinal FWHM at 600 mm WD	12.05 in (306 mm)	14.25 in (362 mm)	16.34 in (415 mm)	19.45 in (494 mm)	TBD	15.95 in (405 mm)	17.72 in (450 mm)	13.50 in (343 mm)	16.69 in (424 mm)	18.35 in (466 mm)
Minimum Working Distance	3.94 in (100 mm)	3.94 in (100 mm)	3.94 in (100 mm)	1.97 in (50 mm)	TBD	0.98 in (25 mm)	0.79 in (20 mm)	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)
Light Width	1.57 in (39.8 mm)					0.79 in (20.0 mm)		1.33 in (33.8 mm)		
Light Height	1.78 in (45.2 mm)					0.79 in (20.1 mm)		1.12 in (28.4 mm)		
Longest Emitting Window Length	84.28 in (2140 mm)					41.61 in (1057 mm)		96.72 in (2457 mm)		
Sizes Available	14	14	14	14	14	14	14	16	16	16
Visible Wavelengths Available	9	9	9	8	8	9	8	8	9	8
UV Wavelengths Available	4	4	4	0	0	4	0	0	4	0
IR Wavelengths Available	3	3	3	3	3	3	3	3	3	3
Polarization Available	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Diffusion Available	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Rating	IP50					IP50		IP50		
Price	$$	$$	$$	$$	$$	$$	$$	$$	$$	$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Continued

Refer to the continued bar light comparison matrix below to compare and contrast Advanced Illumination's product offering:

Attributes	AL247			AL116	AL126	AL150
Lens Type	Narrow (N)	Medium (M)	Wide (W)	No Lenses	No Lenses	Aimed
Beam Angle	10°	25°	40°	70°	60°	N/A
Beam Direction	Normal			Normal	Normal	Oblique
Intensity at 100 mm WD	84 klx	67 klx	48 klx	32 klx	14 klx	2.2 klx
	277 W/m^2	218 W/m^2	155 W/m^2	110 W/m^2	48 W/m^2	8.5 W/m^2
Transversal FWHM at 600 mm WD	9.57 in (243 mm)	11.38 in (289 mm)	15.87 in (403 mm)	31.54 in (801 mm)	23.31 in (592 mm)	N/A
Longitudinal FWHM at 600 mm WD	13.58 in (345 mm)	14.65 in (372 mm)	18.03 in (458 mm)	46.34 in (1177 mm)	31.26 in (794 mm)	N/A
Minimum Working Distance	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)	0.47 in (12 mm)	0.47 in (12 mm)	0.47 in (12 mm)
Light Width	1.69 in (42.9 mm)			0.79 in (20 mm)	1.27 in (32 mm)	1.33 in (34 mm)
Light Height	0.95 in (24.0 mm)			0.79 in (20 mm)	0.79 in (20 mm)	1.12 in (28 mm)
Longest Emitting Window Length	24 in (610 mm)			20.27 in (515 mm)	41.42 in (1052 mm)	82.12 in (2086 mm)
Sizes Available	4	4	4	10	20	80
Visible Wavelengths Available	8	8	8	8	8	4
UV Wavelengths Available	0	0	0	4	4	1
IR Wavelengths Available	3	3	3	2	2	1
Polarization Available	No	No	No	Yes	Yes	Yes
Diffusion Available	No	No	No	Yes	Yes	Yes
IP Rating	IP69K			IP50	IP50	IP50
Price	$$$	$$$	$$$	$$	$	$$$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

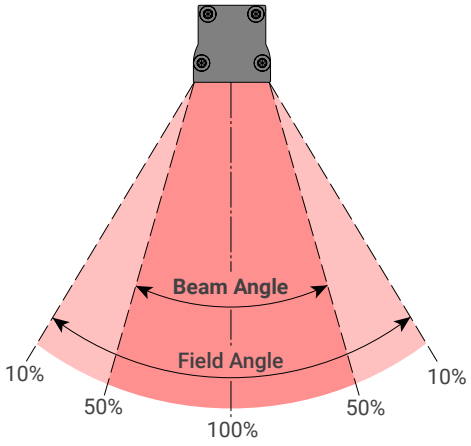
Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Definitions

For definitions on the terminology used on the previous page, please refer to the table below:

Definitions

Beam Angle

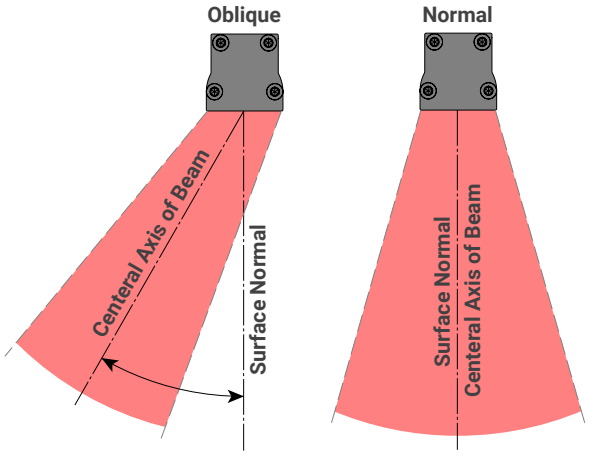


Beam Angle defines the spread of usable light from a projected machine vision light source. It's the angle where the intensity drops to 50% of its peak (FWHM). Beam angle dictates the concentrated, higher-intensity portion of the Field of View (FOV). Field angle is wider, encompassing the total spread of light down to 10% of peak intensity.

FWHM (Full Width Half Maximum)

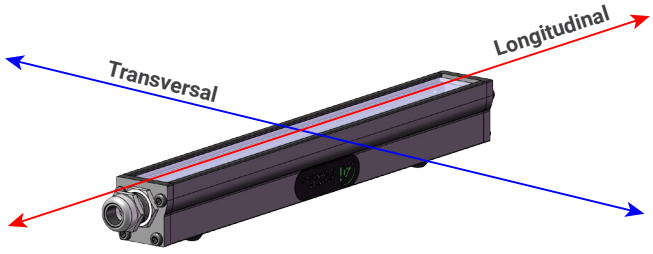
FWHM (Full Width Half Maximum) is a measure of the width of a light source's intensity distribution. Specifically, it defines the distance between the points on the intensity profile where the light intensity drops to 50% of its peak value. This FWHM distance is often used to determine the usable FOV (Field of View) when aiming a light at a surface for inspection.

Beam Direction



A normal beam direction refers to light emitted perpendicular to the light source's emitting surface, in which the central optical axis is co-linear to the surface normal of the emitting window. An oblique beam direction describes light emitted at an angle relative to the light source's surface normal. Oblique sources can be useful when imaging specular surfaces, depending on system geometry.

Longitudinal vs Transversal



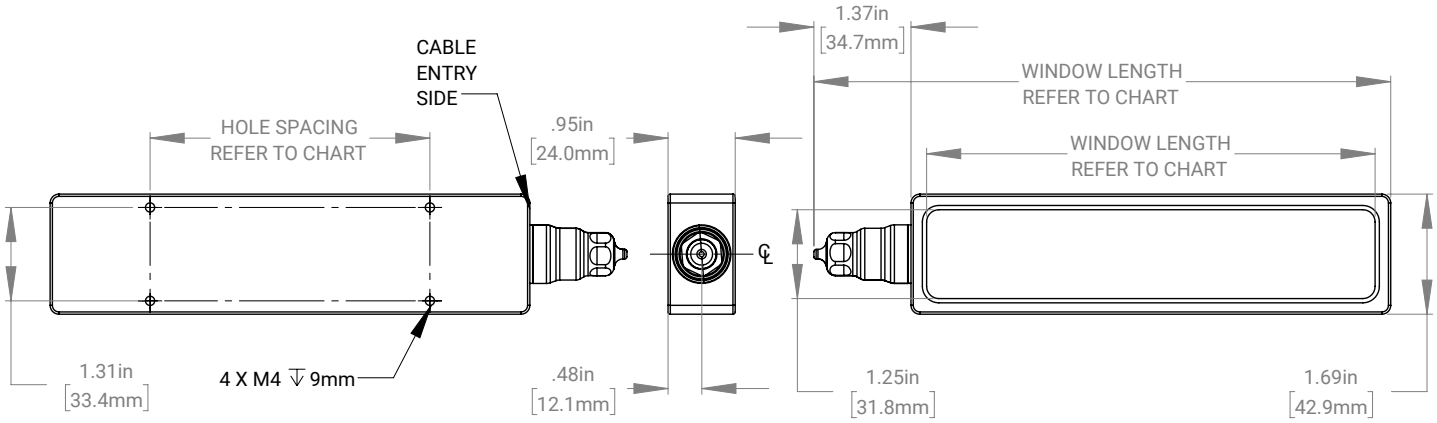
The longitudinal direction refers to the direction that runs parallel to the long axis of the light source. This is typically the longest dimension of the light source housing or emitting surface.

The transversal direction, in contrast, refers to any direction that is perpendicular to the longitudinal direction. It essentially describes any direction that "cuts across" the long axis of the light source.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Mechanical Information

Installation Drawings



For full installation drawings and complete CAD models of this configuration, please visit the downloads section of the product webpage.

Sizing Chart

Part Number	Length (Inches)		Length (Millimeters)	
	Unit	Window	Unit	Window
AL247-06	8.12	6	206.25	152.4
AL247-12	14.12	12	358.65	304.8
AL247-18	20.12	18	511.05	457.2
AL247-24	26.12	24	663.45	609.6

Power Requirements

Current Required for Power Supply Sizing

Wavelengths	Configured w/ Voltage Drive (24)	Configured w/ Standard Controller (IC, I3, I3S, I4, C1, C5)
WHI, 455 nm, 470 nm, 505 nm, 530 nm	0.062A per linear inch	0.068A per linear inch
625 nm, 660 nm, 730 nm, 850 nm, 940 nm	0.064A per linear inch	0.068A per linear inch

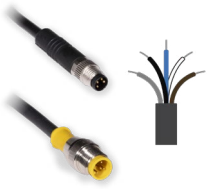
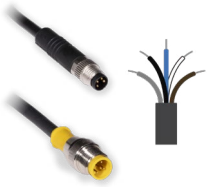
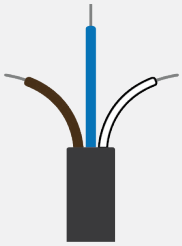
Note: All Advanced Illumination lights and controllers are nominally powered by 24V DC unless otherwise noted. Strobe overdriving with controller based models may require more current and voltage overhead. The values above do not include background current draw from the controller (~100 mA total).

Control Options

Controller Image	Controller Details	Connector Image
	**DCS Single Output Controller - Compatible with C1 Configurations** *PN: DCS-100E* The DCS-100E is a compact, din-rail mounted general-purpose external controller with one C1 output connector, wired with three channels. Capable of providing single channel control or multi-channel control for RGB compatible lights. **Output Power:** 90 W Max Continuous, 540 W Max Pulsed (Overdrive Strobe) **Output Current:** 4.5A Max Continuous, 15 A Max Pulsed **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-100E, please visit the controller product page.	
	**DCS Triple Output Controller - Compatible with C1 Configurations** *PN: DCS-103E* The DCS-103E is a din-rail mounted general-purpose multi-light controller with three C1 output connectors. Capable of driving three lights in sync or asynchronously. **Output Power:** 30 W Max Continuous / Output, 180 W Max Pulsed / Output **Output Current:** 1.5A Max Continuous / Output, 5 A Max Pulsed / Output **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-103E, please visit the controller product page.	
	**Pulsar 320E High Current Controller - Compatible with C5 Configuration** *PN: Pulsar 320E* The Pulsar 320E is a high-power, dual output, pulse-only controller geared for overdriving driving lights at very short flash durations with very high current. **Output Power:** 2500 W Max Pulsed / Output **Output Current:** 50 A Max Pulsed / Output I**/Os:** 2 External Trigger Inputs **Interface:** 10/100 Ethernet with Software GUI. SDKs are also available. For more information about our Pulsar 320E, please visit the controller product page.	

Electrical Information - Continued

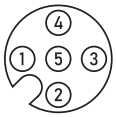
Control Options - Continued

Controller Image	Controller Details	Connector Image
	**Inline Controller - Continuous Only - IC Configurations** *PN: N/A* The IC is an inline, cable-mounted continuous-only controller configured/wired directly for the ordered light head. **Output Power:** 25 W Max Continuous **Output Current:** 1.25 A Max Continuous **I/O:** 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**Inline Controller - Strobe and Continuous - I3 & I3S Configurations** *PN: N/A* The I3 and I3S are inline, cable-mounted continuous and pulse (overdrive strobe) capable controllers configured/wired directly for the ordered light head. When operated in pulsed mode, the I3 is a default-on device on power up, whereas the I3S is default-off, requiring a trigger to illuminate. **Output Power:** 25 W Max Continuous, 125 W Max Pulsed **Output Current:** 1.25 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our I3/I3S Controller, please visit the controller product page.	
	**Inline Controller - Strobe and Continuous - I4 Configurations** *PN: N/A* The I4 is an inline, cable-mounted continuous and pulse (overdrive strobe) capable controller configured/wired directly for the ordered light head. The I4 can either be operated with a PNP or NPN trigger signal and is IP68 rated. **Output Power:** 50 W Max Continuous, 150 W Max Pulsed **Output Current:** 2.1 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**24V Driver - Continuous Only - 24 Configurations** *PN: N/A* 24V option allows lights to operate continuous output with 24V connection and no additional controllers. **Modes:** Continuous, can be wired to some 3rd party controllers or external relays for gated operation **Interface:** Direct cable (flying leads or connector options)	

Electrical Information - Continued

Inline Control Option Wiring Information

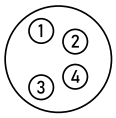
Standard Flying Lead and Optional M12 Connector Pinout Functions

Pin (M12)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M12 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	NPN/Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	PNP/Active High Trigger	PNP/Active High Trigger	
5	GRAY	N/A	N/A	0-10V Analog Control	0-10 V Analog Dimming	

5-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M12 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Optional M8 Connector Pinout Functions

Pin (M8)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M8 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	Active High Trigger	Active High Trigger	

4-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M8 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Accessories

Advanced Illumination offers a variety of accessories designed to pair with our lighting and control products. Below you will find a table of accessories which are compatible with many configurations of the BL2 series.

Category	Accessory Image	Accessory Detail
Power Supply		**24 Volt DC Power Supply** *PN: PS24-TL* This convenient power source is a universal AC input switching power supply with a regulated output DC current. The power supply comes with an LED Power Indicator, tinned leads marked Positive (+) and Negative (-) and 2 WAGO connectors for simplified assembly. For more information about our 24 Volt DC Power Supply, please visit this webpage.
Dimmer		**Manual Dimming Accessory for the IC, I3, I3s and I4** *PN: DCS-MP* The DCS-MP is a 30-position potentiometer, detented for precision level control and provides repeatable dimming with cable inline controllers. Features include DIN-rail mountable, a flip up cover to prevent accidental adjustments, spring clamp wiring terminal for flying leads or an M12 connector for use with the IC, I3/I3S or I4 Inline Controllers. For more information about our Manual Dimming Accessory please visit this webpage.

Accessories - Continued

Category	Accessory Image	Accessory Detail
Dimmer		**Manual Dimming Accessory for the IC** *PN: MP-ICS* The MP-ICS is a dimmer which is designed for use on lights with the IC Inline Controller. This unit provides for 0 – 100% intensity control. It is NOT COMPATIBLE with LLI37, BLI38, LLI67, and BLI68 "IC" Lights or lights built with the "24v controller" option. For more information about our Manual Dimming Accessory, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Single Light Power Cable - C1 Configuration** *PN: LC-XX-S* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female 7 pin locking connector (C1) and can be purchased in 3 - 15-meter lengths. For more information about our DCS-100E/103E Extension Cable, Single Output, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Dual Light Power Cable - C1 Configuration** *PN: LC-XX-Y* This extension cable was designed for applications requiring two identical lights to be powered through a single controller. These Y cables feature a single male and dual female 7 pin locking connectors (C1) and can be purchased in 3 - 15-meter lengths. See attached spec sheet for compatible light configuration. For more information about our DCS-100E/103E Extension Cable, Split Output, please visit this webpage.
Extension Cable		**Pulsar 320E Extension Cable - C5 Configuration** *PN: LC-XX-S-C5* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female Pulsar 320 connector (C5) and can be purchased in 3 - 15 meter lengths. For more information about our Pulsar 320E Extension Cable, please visit this webpage.
Adaptor Cable		**Cognex Gen2 Inline Controller Adaptor Cable** *PN: AD-I3-CGX2* This cable adaptor is for connecting I3/I3S configured lights with Cognex Gen2 Cameras, and comes with a male to female M12 connectors. For more information about our Cognex Gen2 Inline Controller Adaptor Cable, please visit this webpage.
Filters		**Camera Lens Band Pass FIlters** *PN: BPXXX-YYY* Eliminating all but a narrow band of light (+/- 40nm) centered on the specified wavelength, band pass filters are used to enhance colors, or to stop unwanted ambient light from reaching the camera. Filtering can replace existing shrouds, simplifying the physical set up of an inspection site. Ai offers 635nm and 660nm band pass filters to fit several different lens sizes. For more information about our Camera Lens Band Pass FIlters, please visit this webpage.

Additional Information

Warranty

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty. No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Compliancy

Our lighting products are designed and tested to meet CE, RoHS, and IEC standards. As a global ISO 9001 certified company, we understand the importance of compliance and perform accelerated testing on every product before shipment. For more information on our compliance standards, please see our compliancy documentation here: https://www.advancedillumination.com/services/compliance-statements/

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: +1 (802) 767 3830
Fax: +1 (802) 767 2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2023 Advanced illumination Inc. All rights reserved

AL295 Series

MicroBrite™ Bar Lights | Product Datasheet

ADVANCED ILLUMINATION by Exaktera

Compact and High Performance
Provides high performance illumination in the most compact form factor available in its class

Scalable Extrusion-Based Housing
Engineered with extrusion-based aluminum construction allowing for scalability while maintaining structural rigidity and durability

M4 Mounting Channel
Equipped with an M4 mounting channel on its base, allowing for highly adjustable positioning

Superior Output Uniformity
Delivers uniform light output at closer working distances due to its shorter LED pitch when compared to other bar light designs.

AL295 Series Description

The AL295 Series, part of the MicroBrite™ Family, delivers high-intensity bar light illumination within a compact, space-saving form factor. This reduced size allows for a naturally shorter LED pitch, resulting in superior uniformity, particularly at close working distances compared to larger lights like Advanced Illumination's LL174 Series. This enhanced close-range performance makes the AL295 MicroBrite™ Bar Light ideal for applications demanding close-up inspections within tight spatial constraints.

Machine builders seeking effective, general-purpose machine vision illumination for confined spaces will find the AL295 to be an excellent solution.

- **Compact**
- **High Intensity**
- **Scalable Design**
- **16 Wavelengths Available**
- **1-2 Week Lead Times Typical**

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 365 nm, 375 nm, 385 nm, 395 nm, 405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 850 nm, 940 nm	
	Available Lensing			Medium (20°), Wide (32°)	
	Available Light Conditioning			Diffuser	
Electrical	Power Consumption Info			See Power Requirements on Page 9	
	Cable Info			80" -0/+6" Long (2 m -0/+150 mm), 105 °C Rated, Foil Shield w/ Drain	
Mechanical	Sizing Info	Standard	Length	4.14"(105.2mm) to 19.14"(486.2mm)	See Page 8 for More Details
			Width	.79"(20.0mm)	
			Height	.79"(20.0mm)	
	Weight Info (Standard)			~ 1.68 lbs (~762 g) per 150 mm Unit Length	
	Mounting Info			M4 Mounting Nut Channel	
	Material Info			Anodized Aluminum Housing, Acrylic Window, Nickel Plated Brass Strain Relief, PVC Cable Jacket, Steel Black Oxide Fasteners	
Thermal	Operating Case Temperatures			25 °C to 60 °C	
	Operating Ambient Temperatures			0 °C to 35 °C	
Certification	Compliance			CE, RoHS, IEC 62471	
	IP Rating			IP50	
	Lumen Maintenance - White Only			L70 (50,000 Hours)	

General Information - Continued

Part Number Key

Model	Lens Type	-	Emitting Length (mm)	Peak Wavelength	Connector/ Control	Light Conditioning Option	-	Alternative Connector
AL295	X	-	XX	XXX	XX	X	-	XXX
AL295	M (Medium)		075	365 (UV)[2]	C1	D[3] (Diffuser)		M8[1]
	W (Wide)		150	375 (UV)[2]	C5			M12[1]
			225	385 (UV)[2]	IC			
			300	395 (UV)[2]	I3			
			375	405 (UV)[2]	I3S			
			450	455 (royal blue)	I4			
			525	470 (blue)				
			600	505 (cyan)				
			675	530 (green)				
			750	590 (amber)				
			825	625 (red orange)				
			900	660 (red)				
			975	730 (IR)				
			1050	850 (IR)				
				940 (IR)				
				WHI (white)				
more info on page				5	10	6		12

Example Part Numbers:
AL295-075WHIIC
AL295W-225625IC-M12

[1] Available with IC, I3, I3S, and I4 options only
[2] Not available with (W) wide lens option
[3] Not available with UV options

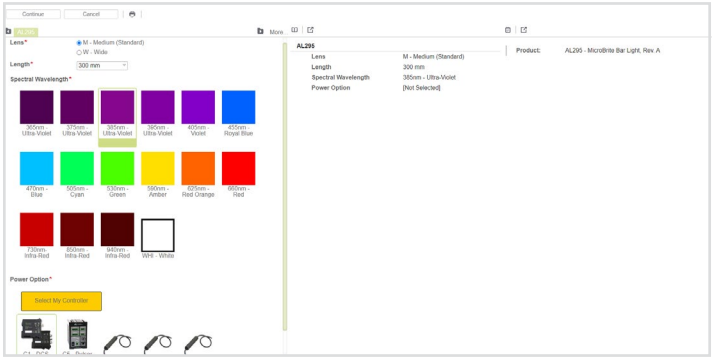
In Stock

AL295-150WHII3

Lead Times

Stock products ship within three days.
Build-to-Order custom products ship within one to two weeks (typical).

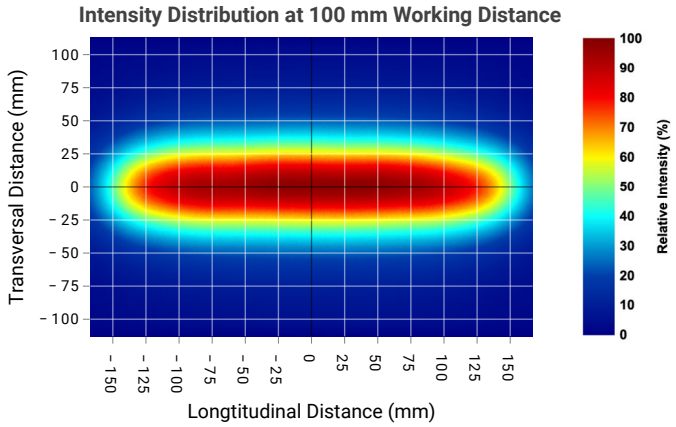
Configurator



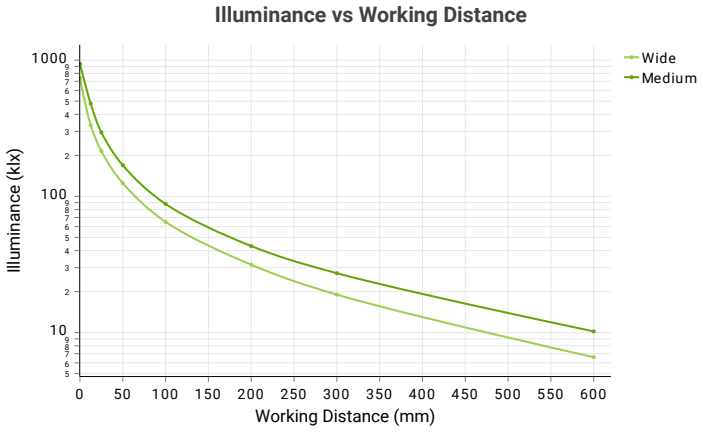
Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our AL295 Microbrite Bar Light Series to your specific needs. For a guided configuration, visit our online configurator.

Optical Information

Intensity Characteristics

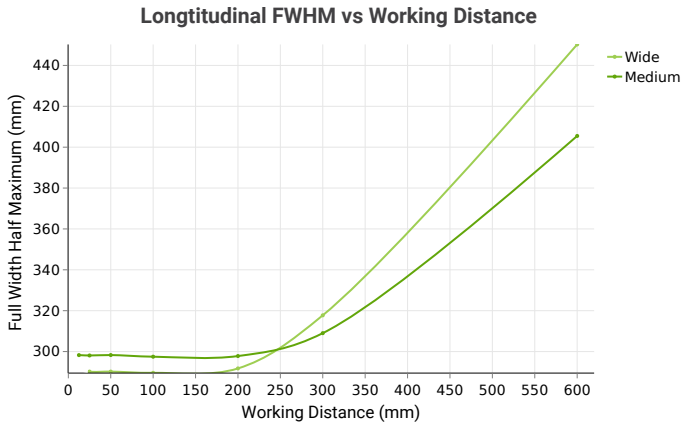


Intensity distribution sample image above taken with a 300 mm white medium lensed AL295 unit.



Data shown above have been collected using a 300 mm white AL295 unit.

FWHM vs Working Distance



Both Full Width Half Maximum (FWHM) vs Working Distance plots shown above have been measured using a 300 mm white AL295 unit.

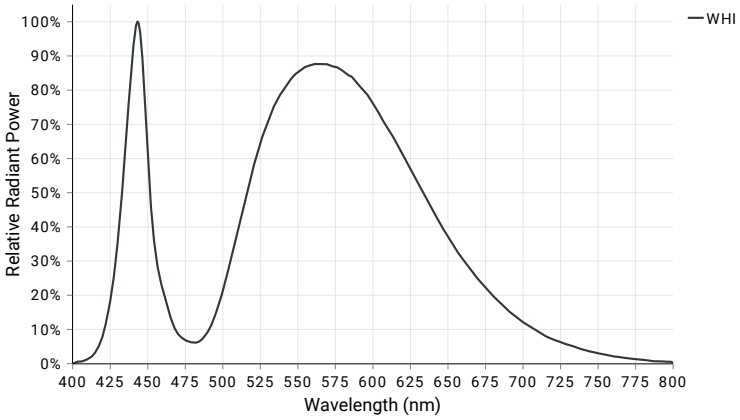
Continuous vs Pulsed Intensity

Under continuous operation, a 12-inch white medium lensed AL295 unit will output an **illuminance of 88 klx** and an **irradiance of 288 W/m²** at a 100 mm working distance. For applications that require higher output, the AL295 Series has been engineered to be overdrive strobe capable. When configured with AI's strobe enabled Inline Controller (I3, I3S, and I4), the AL295 is capable of outputting up-to 5X continuous levels. When configured with a C5 connector, compatible with AI's Pulsar 320E, an **AL295 can be strobed up-to 10X continuous intensity levels.**

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

White Spectral Profile



White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, white LEDs can vary in color temperature, which can impact machine vision systems, specifically when matching white light sources.

The AL295 Series white LEDs have a relatively neutral color correlated temperature (CCT) of **5500k.**

For a more detailed look at the white spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Visible Spectral Profiles

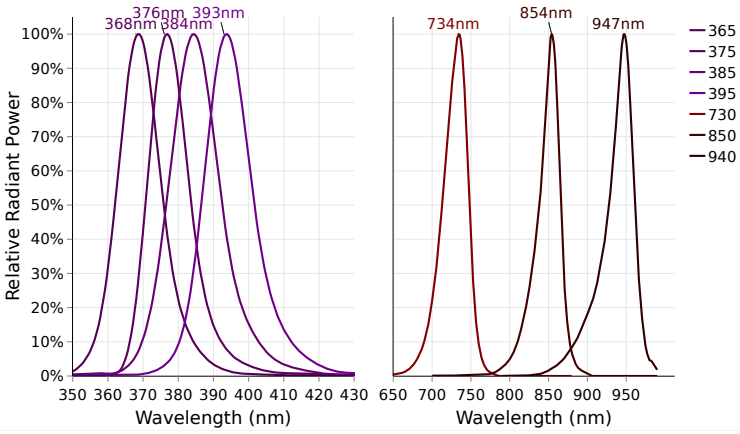
455

Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a features color hue. When referring to a color wheel, simply remember the following; like colors reflect and brighten surfaces; conversely, opposing colors absorb and darken surfaces.

The A325 is available in **405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590nm, 625 nm, and 660 nm** visible color configurations.

For a more detailed look at the visible color spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Non-Visible Spectral Profiles



Near-infrared (NIR) and ultraviolet A (UVA) imaging are machine vision techniques that utilize wavelengths outside the visible spectrum. NIR light, with wavelengths between 700-1000 nm, can penetrate certain materials opaque to visible light, making it ideal for circuit board analysis, food safety inspection, and medical imaging. In contrast, UVA light, typically ranging between 315-400 nm, interacts with specific materials to induce fluorescence or highlight surface features, useful in applications like counterfeit detection, leak detection, and contamination detection.

The AL325 Series is available in **365 nm, 375 nm, 385 nm, 395 nm, 730nm, 850 nm and 940 nm** configurations.

For a more detailed look at the NIR or UVA spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

Photobiological Risk Factors

Group	Description	Affected Wavelengths
Exempt	No Photobiological Hazard	850 nm, 940 nm
Group 1	No Photobiological hazard under normal behavioral limitations	455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, WHI
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	365 nm, 375 nm, 385 nm, 395 nm, 405 nm

Advanced Illumination's lighting products have been tested and classified to IEC standards by accredited testing services. For more information on photobiological risk factors, please view the following PDF: https://www.advancedillumination.com/wp-content/uploads/2019/04/IEC-040119.pdf

Cleaning Guidelines

To clean our light's optics, it is best to only clean when necessary. Dusting is always the first step in cleaning your optics. Wiping a dusty optic is like cleaning it with sandpaper. So always dust with a canned air duster or compressed and filtered air before wiping any optic. If the dusted optic has no visible stains after you dust it, then remember: "If it's not dirty, don't clean it." Avoid wiping optics when possible.

If dusting did not clean the lens or the lens has stains, use only de-ionized water and mild dish soap with a low lint cloth designed for optics to avoid damage to the optic by any harsh chemicals.

Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

The aluminum housing can be wiped down when dusting is not a sufficient means to thoroughly clean.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix

Not finding the optical specifications you are looking for with the AL295 Series? Refer to the bar light comparison matrix below to compare and contrast Advanced Illumination's comprehensive product offering:

Attributes	AL325					AL295		LL174		
Lens Type	Narrow (N)	Medium (M)	Wide (W)	Extra Wide (Z)	Eliptical (E)	Medium (M)	Wide (W)	Narrow (N)	Medium (M)	Wide (W)
Beam Angle	14°	25°	36°	55°	45° + 15°	20°	32°	10°	25°	40°
Beam Direction	Normal or Oblique					Normal		Normal		
Intensity at 100 mm WD	163 klx	134 klx	110 klx	80 klx	TBD	88 klx	65 klx	75 klx	57 klx	45 klx
	456 W/m²	427 W/m²	352 W/m²	254 W/m²	TBD	288 W/m²	208 W/m²	250 W/m²	187 W/m²	146 W/m²
Transversal FWHM at 600 mm WD	8.54 in (217 mm)	11.73 in (298 mm)	14.25 in (362 mm)	17.12 in (450 mm)	TBD	12.79 in (325 mm)	15.12 in (384 mm)	9.06 in (230 mm)	13.90 in (353 mm)	16.06 in (408 mm)
Longitudinal FWHM at 600 mm WD	12.05 in (306 mm)	14.25 in (362 mm)	16.34 in (415 mm)	19.45 in (494 mm)	TBD	15.95 in (405 mm)	17.72 in (450 mm)	13.50 in (343 mm)	16.69 in (424 mm)	18.35 in (466 mm)
Minimum Working Distance	3.94 in (100 mm)	3.94 in (100 mm)	3.94 in (100 mm)	1.97 in (50 mm)	TBD	0.98 in (25 mm)	0.79 in (20 mm)	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)
Light Width	1.57 in (39.8 mm)					0.79 in (20.0 mm)		1.33 in (33.8 mm)		
Light Height	1.78 in (45.2 mm)					0.79 in (20.1 mm)		1.12 in (28.4 mm)		
Longest Emitting Window Length	84.28 in (2140 mm)					41.61 in (1057 mm)		96.72 in (2457 mm)		
Sizes Available	14	14	14	14	14	14	14	16	16	16
Visible Wavelengths Available	9	9	9	8	8	9	8	8	9	8
UV Wavelengths Available	4	4	4	0	0	4	0	0	4	0
IR Wavelengths Available	3	3	3	3	3	3	3	3	3	3
Polarization Available	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Diffusion Available	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Rating	IP50					IP50		IP50		
Price	$$	$$	$$	$$	$$	$$	$$	$$	$$	$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Continued

Refer to the continued bar light comparison matrix below to compare and contrast Advanced Illumination's product offering:

Attributes	AL247			AL116	AL126	AL150
Lens Type	Narrow (N)	Medium (M)	Wide (W)	No Lenses	No Lenses	Aimed
Beam Angle	10°	25°	40°	70°	60°	N/A
Beam Direction		Normal		Normal	Normal	Oblique
Intensity at 100 mm WD	84 klx	67 klx	48 klx	32 klx	14 klx	2.2 klx
	277 W/m^2	218 W/m^2	155 W/m^2	110 W/m^2	48 W/m^2	8.5 W/m^2
Transversal FWHM at 600 mm WD	9.57 in (243 mm)	11.38 in (289 mm)	15.87 in (403 mm)	31.54 in (801 mm)	23.31 in (592 mm)	N/A
Longitudinal FWHM at 600 mm WD	13.58 in (345 mm)	14.65 in (372 mm)	18.03 in (458 mm)	46.34 in (1177 mm)	31.26 in (794 mm)	N/A
Minimum Working Distance	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)	0.47 in (12 mm)	0.47 in (12 mm)	0.47 in (12 mm)
Light Width		1.69 in (42.9 mm)		0.79 in (20 mm)	1.27 in (32 mm)	1.33 in (34 mm)
Light Height		0.95 in (24.0 mm)		0.79 in (20 mm)	0.79 in (20 mm)	1.12 in (28 mm)
Longest Emitting Window Length		24 in (610 mm)		20.27 in (515 mm)	41.42 in (1052 mm)	82.12 in (2086 mm)
Sizes Available	4	4	4	10	20	80
Visible Wavelengths Available	8	8	8	8	8	4
UV Wavelengths Available	0	0	0	4	4	1
IR Wavelengths Available	3	3	3	2	2	1
Polarization Available	No	No	No	Yes	Yes	Yes
Diffusion Available	No	No	No	Yes	Yes	Yes
IP Rating		IP69K		IP50	IP50	IP50
Price	$$$	$$$	$$$	$$	$	$$$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

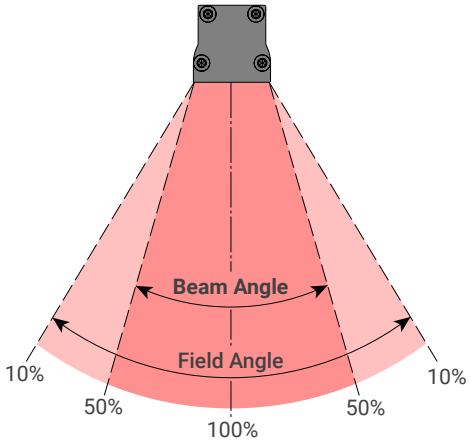
Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Definitions

For definitions on the terminology used on the previous page, please refer to the table below:

Definitions

Beam Angle

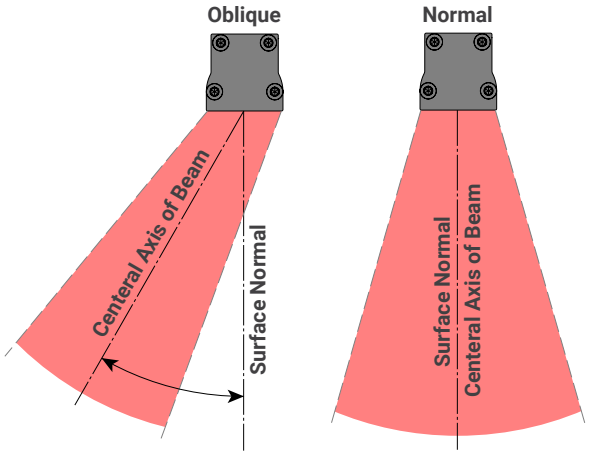


Beam Angle defines the spread of usable light from a projected machine vision light source. It's the angle where the intensity drops to 50% of its peak (FWHM). Beam angle dictates the concentrated, higher-intensity portion of the Field of View (FOV). Field angle is wider, encompassing the total spread of light down to 10% of peak intensity.

FWHM (Full Width Half Maximum)

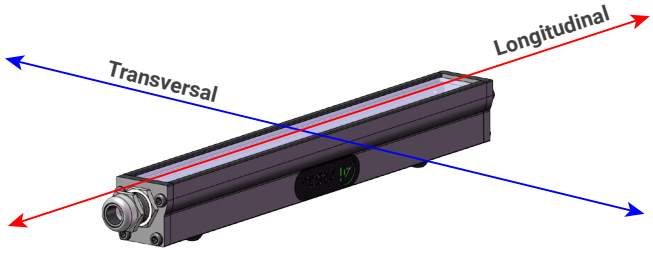
FWHM (Full Width Half Maximum) is a measure of the width of a light source's intensity distribution. Specifically, it defines the distance between the points on the intensity profile where the light intensity drops to 50% of its peak value. This FWHM distance is often used to determine the usable FOV (Field of View) when aiming a light at a surface for inspection.

Beam Direction



A normal beam direction refers to light emitted perpendicular to the light source's emitting surface, in which the central optical axis is co-linear to the surface normal of the emitting window. An oblique beam direction describes light emitted at an angle relative to the light source's surface normal. Oblique sources can be useful when imaging specular surfaces, depending on system geometry.

Longitudinal vs Transversal



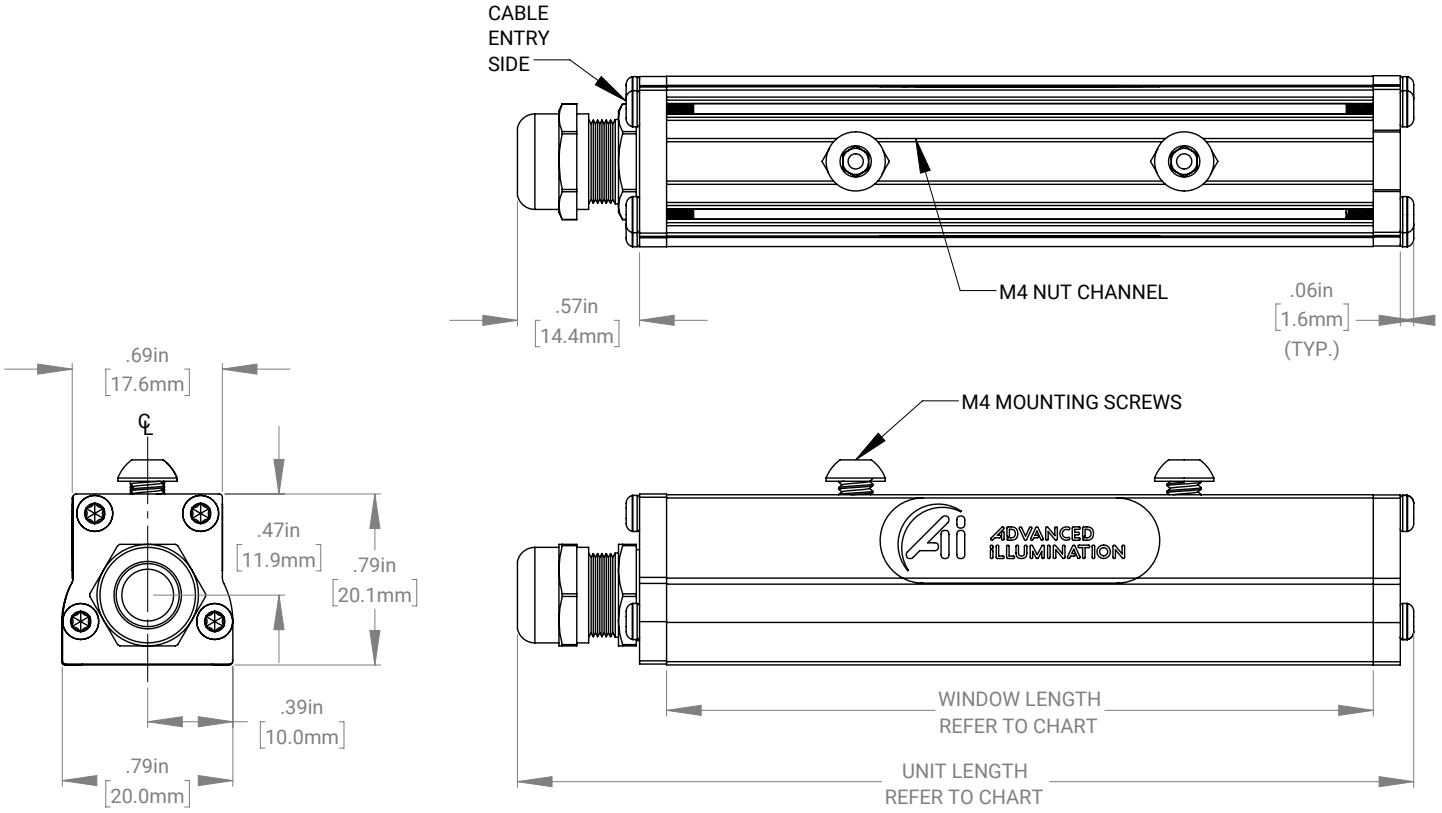
The longitudinal direction refers to the direction that runs parallel to the long axis of the light source. This is typically the longest dimension of the light source housing or emitting surface.

The transversal direction, in contrast, refers to any direction that is perpendicular to the longitudinal direction. It essentially describes any direction that "cuts across" the long axis of the light source.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Mechanical Information

Installation Drawings



For full installation drawings and complete CAD models of this configuration, please visit the downloads section of the product webpage.

Sizing Chart

Part Number	Length (Inches)		Length (Millimeters)	
	Unit	Window	Unit	Window
AL295-075	4.15	3.27	105.4	83.1
AL295-150	7.15	6.27	181.6	159.3
AL295-225	10.15	9.27	257.8	235.5
AL295-300	13.15	12.27	334.0	311.7
AL295-375	16.15	15.27	410.2	387.9
AL295-450	19.15	18.27	486.4	464.1
AL295-525	22.15	21.27	562.6	510.3
AL295-600	25.15	24.27	638.8	616.5
AL295-675	28.15	27.27	715.0	692.7
AL295-750	31.14	30.27	791.2	768.9
AL295-825	34.15	33.27	867.4	845.1
AL295-900	37.15	36.27	943.6	921.3
AL295-975	40.15	39.27	1019.8	997.5
AL295-1050	43.15	42.27	1096.0	1073.7

Electrical Information

Power Requirements

Current Required for Power Supply Sizing

Wavelengths	Configured w/ Standard Controller (IC, I3, I3S, I4, C1, C5)
365 nm, 375 nm, 385 nm, 395 nm .405 nm	0.150A per 75 mm increment
455 nm, 470 nm, 505 nm, 530 nm, 590 nm, WHI	0.230A per 75 mm increment
625 nm, 660 nm, 730 nm	0.340A per 75 mm increment
850 nm, 940 nm	0.270A per 75 mm increment

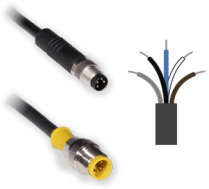
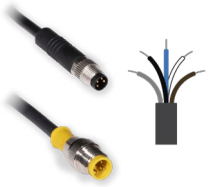
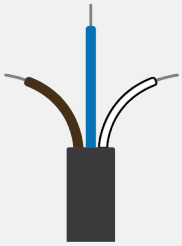
Note: All Advanced Illumination lights and controllers are nominally powered by 24V DC unless otherwise noted. Strobe overdriving with controller based models may require more current and voltage overhead. The values above do not include background current draw from the controller (~100 mA total).

Control Options

Controller Image	Controller Details	Connector Image
	**DCS Single Output Controller - Compatible with C1 Configurations** *PN: DCS-100E* The DCS-100E is a compact, din-rail mounted general-purpose external controller with one C1 output connector, wired with three channels. Capable of providing single channel control or multi-channel control for RGB compatible lights. **Output Power:** 90 W Max Continuous, 540 W Max Pulsed (Overdrive Strobe) **Output Current:** 4.5A Max Continuous, 15 A Max Pulsed **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-100E, please visit the controller product page.	
	**DCS Triple Output Controller - Compatible with C1 Configurations** *PN: DCS-103E* The DCS-103E is a din-rail mounted general-purpose multi-light controller with three C1 output connectors. Capable of driving three lights in sync or asynchronously. **Output Power:** 30 W Max Continuous / Output, 180 W Max Pulsed / Output **Output Current:** 1.5A Max Continuous / Output, 5 A Max Pulsed / Output **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-103E, please visit the controller product page.	
	**Pulsar 320E High Current Controller - Compatible with C5 Configuration** *PN: Pulsar 320E* The Pulsar 320E is a high-power, dual output, pulse-only controller geared for overdriving driving lights at very short flash durations with very high current. **Output Power:** 2500 W Max Pulsed / Output **Output Current:** 50 A Max Pulsed / Output I**/Os:** 2 External Trigger Inputs **Interface:** 10/100 Ethernet with Software GUI. SDKs are also available. For more information about our Pulsar 320E, please visit the controller product page.	

Electrical Information - Continued

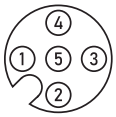
Control Options - Continued

Controller Image	Controller Details	Connector Image
	**Inline Controller - Continuous Only - IC Configurations** *PN: N/A* The IC is an inline, cable-mounted continuous-only controller configured/wired directly for the ordered light head. **Output Power:** 25 W Max Continuous **Output Current:** 1.25 A Max Continuous **I/O:** 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**Inline Controller - Strobe and Continuous - I3 & I3S Configurations** *PN: N/A* The I3 and I3S are inline, cable-mounted continuous and pulse (overdrive strobe) capable controllers configured/wired directly for the ordered light head. When operated in pulsed mode, the I3 is a default-on device on power up, whereas the I3S is default-off, requiring a trigger to illuminate. **Output Power:** 25 W Max Continuous, 125 W Max Pulsed **Output Current:** 1.25 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our I3/I3S Controller, please visit the controller product page.	
	**Inline Controller - Continuous Only - I4 Configurations** *PN: N/A* The I4 is an inline, cable-mounted continuous and pulse (overdrive strobe) capable controller configured/wired directly for the ordered light head. The I4 can either be operated with a PNP or NPN trigger signal. **Output Power:** 50 W Max Continuous, 150 W Max Pulsed **Output Current:** 2.1 A Max Continuous, 8 A Max Pulsed (Load Dependent) **I/Os:** 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input **Interface:** Direct Cable (flying leads or optional connector) For more information about our IC Controller please visit the controller product page.	
	**24V Driver - Continuous Only - 24 Configurations** *PN: N/A* 24V option allows lights to operate continuous output with 24V connection and no additional controllers. **Modes:** Continuous, can be wired to some 3rd party controllers or external relays for gated operation **Interface:** Direct cable (flying leads or connector options)	

Electrical Information - Continued

Inline Control Option Wiring Information

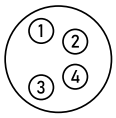
Standard Flying Lead and Optional M12 Connector Pinout Functions

Pin (M12)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M12 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	NPN/Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	PNP/Active High Trigger	PNP/Active High Trigger	
5	GRAY	N/A	N/A	0-10V Analog Control	0-10 V Analog Dimming	

5-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M12 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Optional M8 Connector Pinout Functions

Pin (M8)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M8 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	Active High Trigger	Active High Trigger	

4-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M8 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Accessories

Advanced Illumination offers a variety of accessories designed to pair with our lighting and control products. Below you will find a table of accessories which are compatible with many configurations of the AL295 series.

Category	Accessory Image	Accessory Detail
Power Supply		**24 Volt DC Power Supply** *PN: PS24-TL* This convenient power source is a universal AC input switching power supply with a regulated output DC current. The power supply comes with an LED Power Indicator, tinned leads marked Positive (+) and Negative (-) and 2 WAGO connectors for simplified assembly. For more information about our 24 Volt DC Power Supply, please visit this webpage.
Dimmer		**Manual Dimming Accessory for the IC, I3, I3s and I4** *PN: DCS-MP* The DCS-MP is a 30-position potentiometer, detented for precision level control and provides repeatable dimming with cable inline controllers. Features include DIN-rail mountable, a flip up cover to prevent accidental adjustments, spring clamp wiring terminal for flying leads or an M12 connector for use with the IC, I3/I3S or I4 Inline Controllers. For more information about our Manual Dimming Accessory please visit this webpage.

Accessories - Continued

Category	Accessory Image	Accessory Detail
Dimmer		**Manual Dimming Accessory for the IC** *PN: MP-ICS* The MP-ICS is a dimmer which is designed for use on lights with the IC Inline Controller. This unit provides for 0 – 100% intensity control. It is NOT COMPATIBLE with LLI37, BLI38, LLI67, and BLI68 "IC" Lights or lights built with the "24v controller" option. For more information about our Manual Dimming Accessory, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Single Light Power Cable - C1 Configuration** *PN: LC-XX-S* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female 7 pin locking connector (C1) and can be purchased in 3 - 15-meter lengths. For more information about our DCS-100E/103E Extension Cable, Single Output, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Dual Light Power Cable - C1 Configuration** *PN: LC-XX-Y* This extension cable was designed for applications requiring two identical lights to be powered through a single controller. These Y cables feature a single male and dual female 7 pin locking connectors (C1) and can be purchased in 3 - 15-meter lengths. See attached spec sheet for compatible light configuration. For more information about our DCS-100E/103E Extension Cable, Split Output, please visit this webpage.
Extension Cable		**Pulsar 320E Extension Cable - C5 Configuration** *PN: LC-XX-S-C5* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female Pulsar 320 connector (C5) and can be purchased in 3 - 15 meter lengths. For more information about our Pulsar 320E Extension Cable, please visit this webpage.
Adaptor Cable		**Cognex Gen2 Inline Controller Adaptor Cable** *PN: AD-I3-CGX2* This cable adaptor is for connecting I3/I3S configured lights with Cognex Gen2 Cameras, and comes with a male to female M12 connectors. For more information about our Cognex Gen2 Inline Controller Adaptor Cable, please visit this webpage.
Filters		**Camera Lens Band Pass FIlters** *PN: BPXXX-YYY* Eliminating all but a narrow band of light (+/- 40nm) centered on the specified wavelength, band pass filters are used to enhance colors, or to stop unwanted ambient light from reaching the camera. Filtering can replace existing shrouds, simplifying the physical set up of an inspection site. Ai offers 635nm and 660nm band pass filters to fit several different lens sizes. For more information about our Camera Lens Band Pass FIlters, please visit this webpage.

Additional Information

Warranty

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty. No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Compliancy

Our lighting products are designed and tested to meet CE, RoHS, and IEC standards. As a global ISO 9001 certified company, we understand the importance of compliance and perform accelerated testing on every product before shipment. For more information on our compliance standards, please see our compliancy documentation here: https://www.advancedillumination.com/services/compliance-statements/

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: +1 (802) 767 3830
Fax: +1 (802) 767 2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2023 Advanced illumination Inc. All rights reserved

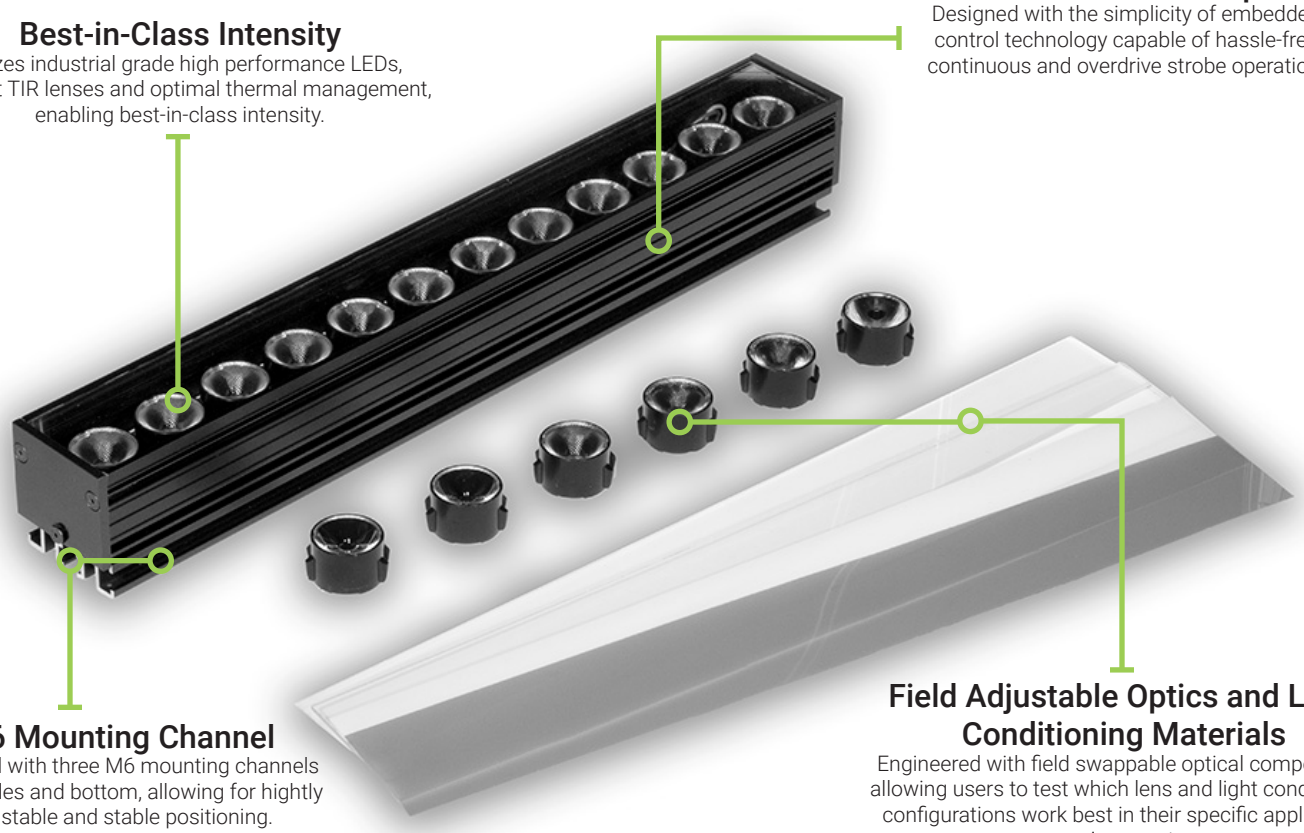
AL325 Series

Modular Bar Light | Product Datasheet

ADVANCED ILLUMINATION by Exaktera

Best-in-Class Intensity
Utilizes industrial grade high performance LEDs, efficient TIR lenses and optimal thermal management, enabling best-in-class intensity.

Embedded Control Capable
Designed with the simplicity of embedded control technology capable of hassle-free continuous and overdrive strobe operation.



M6 Mounting Channel
Equipped with three M6 mounting channels on the sides and bottom, allowing for hightly adjustable and stable positioning.

Field Adjustable Optics and Light Conditioning Materials
Engineered with field swappable optical components, allowing users to test which lens and light conditioning configurations work best in their specific application environments.

AL325 Series Description

Solve your unique machine vision lighting challenges with the AL325 Modular Bar Light Series. This innovative modular system offers best-in-class performance and unmatched flexibility through its user-swappable efficient optical components. Eliminate the guesswork of selecting the correct optics.

Easily transition between narrow and wide beam angles, or experiment with different light conditioning materials, directly in the field. Embedded control options provide hassle-free continuous and overdrive strobe functionality. The AL325 adapts to your evolving needs, delivering optimal illumination for applications ranging from detailed component gauging to logistics scan tunnel lighting, all with industry-leading build-to-order lead times of one to two weeks.

- **High Intensity**
- **Scalable Design**
- **16 Wavelengths Available**
- **Polarization and Oblique Films Available**
- **1-2 Week BTO Lead Times**

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 365 nm, 375 nm, 385 nm, 395 nm, 405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, 850 nm, 940 nm	
	Available Lensing Options			Narrow (14°), Medium (25°), Wide (36°), Extra Wide (55°), Elliptical (45°+15°), Non Lensed	
	Available Light Conditioning			Homogenizer, Diffuser, Polarizer, Transversal Oblique, Longtitudinal Oblique	
Electrical	Power Consumption Info			See Page 11 for Details	
	Cable Info			Cable not included for EC/ES and 24V Variants All others: 80" -0/+6" Long (2 m -0/+150 mm), 105 °C Rated, Foil Shield w/ Drain, 24V	
Mechanical	Sizing Info	Standard	Length	6.27" (159.3 mm) to 84.53" (2147.1 mm)	See Page 9 for Details
			Width	1.57" (39.8 mm)	
			Height	1.78" (45.2 mm)	
		Sealed	Length	TBD	
			Width	TBD	
			Height	TBD	
	Weight Info (Standard)			~ 1.16 lbs (~526 g) per 300mm Unit Length	
	Mounting Info			M6 Mounting Nut Channel	
	Material Info			Anodized Aluminum Housing, Acrylic Window, Nylon Strain Relief, PVC Cable Jacket, Steel Black Oxide & Zinc Plated Steel Fasteners, Optional Silicone Sealant, Optional Neoprene Gasket/ Nylon Washers	
Thermal	Operating Case Temperatures			25 °C to 60 °C	
	Operating Ambient Temperatures			0 °C to 35 °C	
Certification	Compliance			CE, RoHS, IEC 62471	
	IP Rating			TBD	
	Lumen Maintenance - White Only			L70 (50,000 Hours)	

General Information - Continued

Part Number Key

Model	Lens	Emitting Length (mm)	-	Peak Wavelength (nm)	Connector/ Control	-	Window Material	Light Conditioning 1 (Optional)	Light Conditioning 2 (Optional)	-	IP Rating (Optional)
AL325	X	XXXX	-	XXX	XX	-	X	X	X	-	
AL325	N (Narrow)	0150 to 2100		365 [4]	EC		A (Clear)	P (Polarizer) [3]	T (Transversal Oblique)		W (IP65) [2,3]
	M (Medium)	(scalable in 150 mm increments)		375 [4]	ES		H (Homogenizer) [2]		L (Longtitudinal Oblique)		
	W (Wide)			385 [4]	24		D (Diffuser) [1]				
	Z (Extra Wide)			395 [4]	C1						
	E (Elliptical)			405 [4]	C5						
	X (No Lens)			455							
				470							
				505							
				530							
				590							
				625							
				660							
				730							
				850							
				940							
				WHI							
more information on page		10		5	11			6			

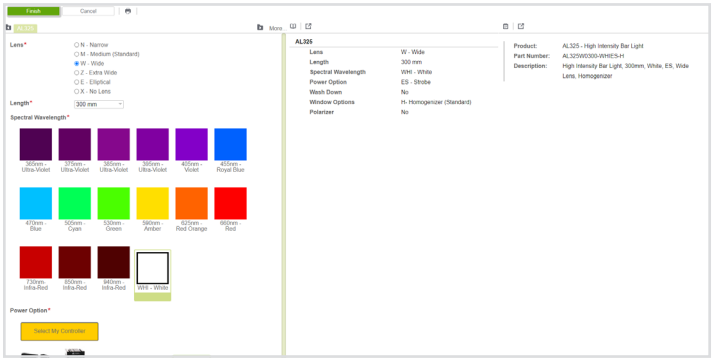
Example Part Numbers:
AL325M0300-WHIES-H
AL325N0600-660EC-APT

[1] The diffuser is available up to 900 mm in emitting length
[2] The homogenizer is available up to 600 mm in emitting length when configured with the IP65 rating
[3] The polarizer is available up to 900mm in emitting length when configured with the IP65 rating
[4] Only available with narrow, medium, wide or no lensing

Lead Times

Build-to-Order products ship within one to two weeks.

Configurator

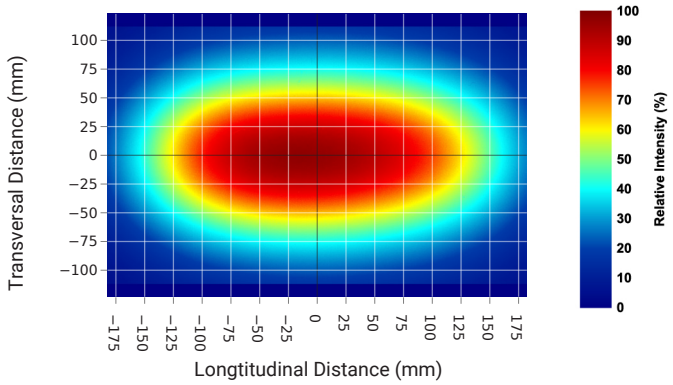


Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our AL325 Modular Bar Light Series to your specific needs. For a guided configuration, **visit our online configurator**.

Optical Information

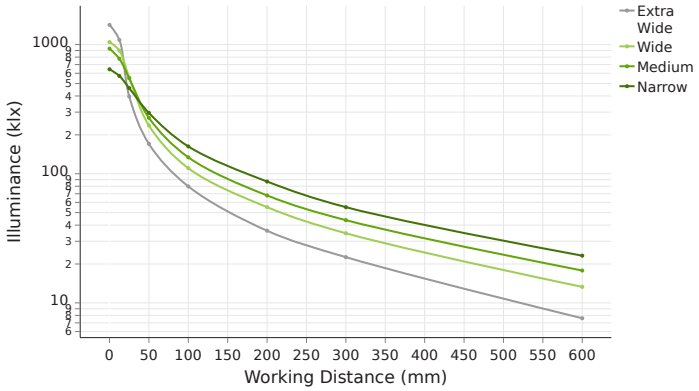
Intensity Characteristics

Intensity Distribution at 300 mm Working Distance



Intensity distribution sample image above taken with a 300 mm white medium lensed AL325 unit w/ a homogenizer.

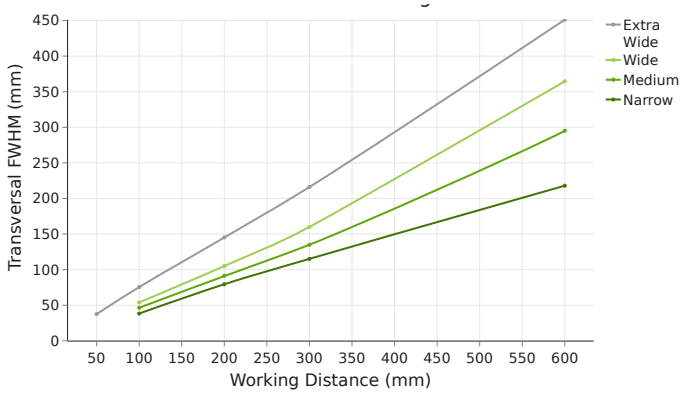
Illuminance vs Working Distance



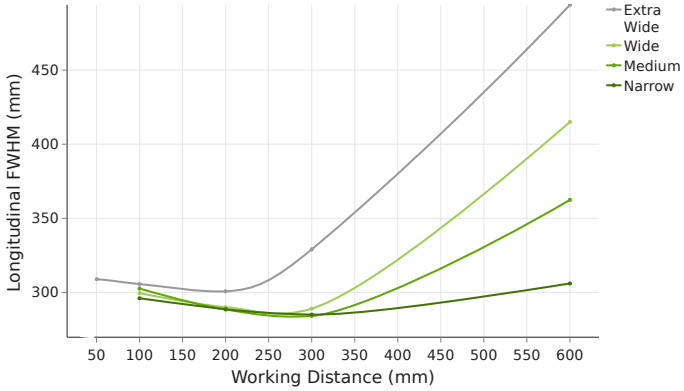
Data shown above have been collected using a 300 mm white AL325 unit w/ a homogenizer.

FWHM vs Working Distance

Transversal FWHM vs Working Distance

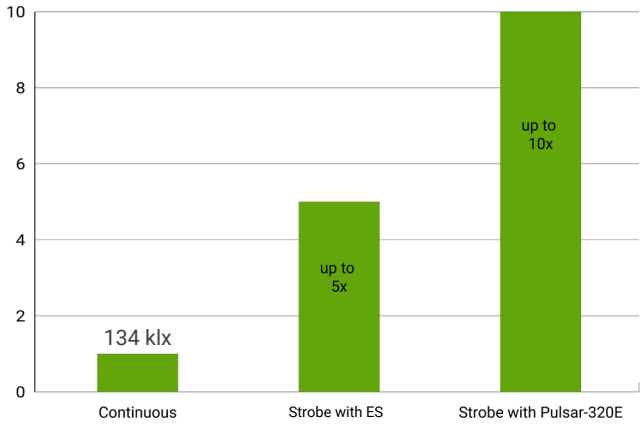


Longtitudinal FWHM vs Working Distance



Both Full Width Half Maximum (FWHM) vs Working Distance plots shown above have been measured using a 300 mm white AL325 unit w/ a homogenizer.

Continuous vs Pulsed Intensity

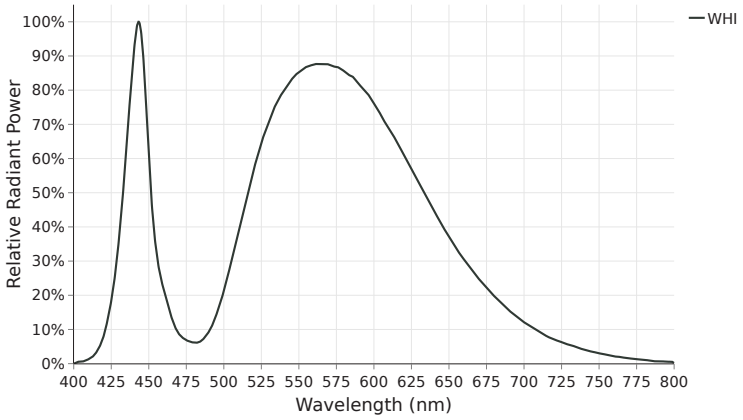


Under continuous operation, a 300 mm white medium lensed AL325 unit with a homogenizer will output an **illuminance of 134 klx** and **an irradiance of 427 W/m2** at a 100 mm working distance. For applications that require higher output, the AL325 Series has been engineered to be overdrive strobe capable. When configured with AI's strobe enabled embedded control option (ES), the AL325 is capable of outputting up-to 5X continuous levels. When configured with a C5 connector, compatible with AI's Pulsar 320E, an AL325 can be **strobed up-to 10X continuous intensity levels.**

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

White Spectral Profile

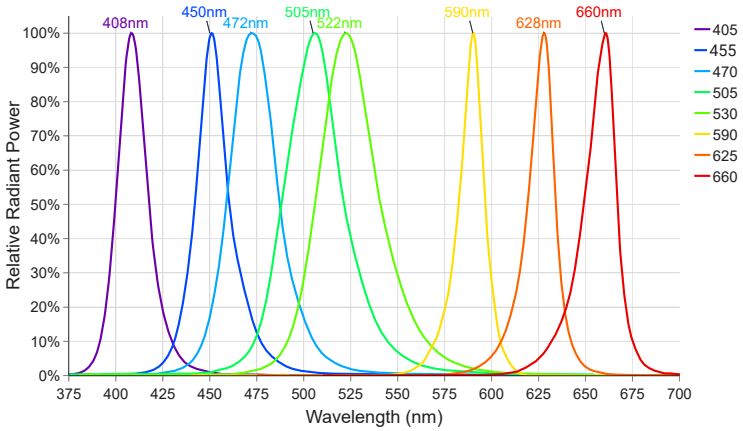


White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, **white LEDs can vary in color temperature, which can impact machine vision systems**, specifically when matching white light sources.

The AL325 Series white LEDs have a relatively neutral color correlated temperature (CCT) of **5500k.**

For a more detailed look at the white spectral data, download the **csv file of the raw spectral values** and refer to our **Product Spectra Distribution Charts PDF**.

Visible Spectral Profiles

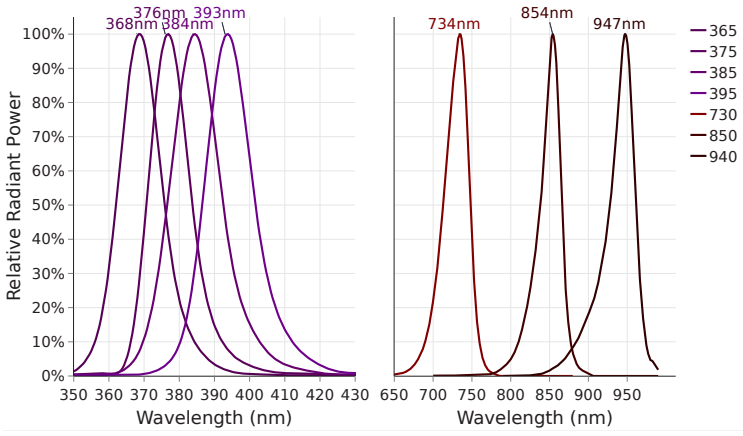


Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a features color hue. When referring to a color wheel, simply remember the following; like colors reflect and brighten surfaces; conversely, opposing colors absorb and darken surfaces.

The A325 is available in **405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590nm, 625 nm, and 660 nm** visible color configurations.

For a more detailed look at the visible color spectral data, download the **csv file of the raw spectral values** and refer to our **Product Spectra Distribution Charts PDF**.

Non-Visible Spectral Profiles



Near-infrared (NIR) and ultraviolet A (UVA) imaging are machine vision techniques that utilize wavelengths outside the visible spectrum. NIR light, with wavelengths between 700-1000 nm, can penetrate certain materials opaque to visible light, making it ideal for circuit board analysis, food safety inspection, and medical imaging. In contrast, UVA light, typically ranging between 315-400 nm, interacts with specific materials to induce fluorescence or highlight surface features, useful in applications like counterfeit detection, leak detection, and contamination detection.

The AL325 Series is available in **365 nm, 375 nm, 385 nm, 395 nm, 730nm, 850 nm and 940 nm** configurations.

For a more detailed look at the NIR or UVA spectral data, download the **csv file of the raw spectral values** and refer to our **Product Spectra Distribution Charts PDF**.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

Polarization Option Detail

Non-polarized

Polarized

Polarization has various applications, but it is most commonly used to reduce glare on specular surfaces when imaging reflective materials like plastic, metal, glass, or wet surfaces. By placing a linear polarizer over the light source and another over the camera lens, oriented perpendicularly, reflected light that causes glare can be selectively blocked. This allows for the observation of details that would otherwise be obscured by the reflection, such as printed text on packaging. However, since polarization inherently blocks some light, you may need to increase exposure to compensate for the reduced intensity, or consider alternative lighting geometries to lessen glare without polarization.

Photobiological Risk Factors

Group	Description	Affected Wavelengths
Exempt	No Photobiological Hazard	850 nm, 940 nm
Group 1	No Photobiological hazard under normal behavioral limitations	455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, WHI
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	365 nm, 375 nm, 385 nm, 395 nm, 405 nm

Advanced Illumination's lighting products have been tested and classified to IEC standards by accredited testing services. For more information on photobiological risk factors, please view the following PDF: **https://www.advancedillumination.com/wp-content/uploads/2019/04/IEC-040119.pdf**

Cleaning Guidelines

To clean our light's optics, it is best to only clean when necessary. Dusting is always the first step in cleaning your optics. Wiping a dusty optic is like cleaning it with sandpaper. So always dust with a canned air duster or compressed and filtered air before wiping any optic. If the dusted optic has no visible stains after you dust it, then remember: "If it's not dirty, don't clean it." Avoid wiping optics when possible.

If dusting did not clean the lens or the lens has stains, use only de-ionized water and mild dish soap with a low lint cloth designed for optics to avoid damage to the optic by any harsh chemicals.

Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

The aluminum housing can be wiped down when dusting is not a sufficient means to thoroughly clean.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Continued

Not finding the optical specifications you are looking for with the AL325 Series? Refer to the bar light comparison matrix below to compare and contrast Advanced Illumination's comprehensive product offering:

Attributes	AL325					AL295		LL174		
Lens Type	Narrow (N)	Medium (M)	Wide (W)	Extra Wide (Z)	Eliptical (E)	Medium (M)	Wide (W)	Narrow (N)	Medium (M)	Wide (W)
Beam Angle	14°	25°	36°	56°	45° + 15°	20°	32°	10°	25°	40°
Beam Direction	Normal or Oblique					Normal		Normal		
Intensity at 100 mm WD	163 klx	134 klx	110 klx	80 klx	TBD	88 klx	65 klx	75 klx	57 klx	45 klx
	456 W/m²	427 W/m²	352 W/m²	254 W/m²	TBD	288 W/m²	208 W/m²	250 W/m²	187 W/m²	146 W/m²
Transversal FWHM at 600 mm WD	8.54 in (217 mm)	11.73 in (298 mm)	14.25 in (362 mm)	17.12 in (450 mm)	TBD	12.79 in (325 mm)	15.12 in (384 mm)	9.06 in (230 mm)	13.90 in (353 mm)	16.06 in (408 mm)
Longitudinal FWHM at 600 mm WD	12.05 in (306 mm)	14.25 in (362 mm)	16.34 in (415 mm)	19.45 in (494 mm)	TBD	15.95 in (405 mm)	17.72 in (450 mm)	13.50 in (343 mm)	16.69 in (424 mm)	18.35 in (466 mm)
Minimum Working Distance	3.94 in (100 mm)	3.94 in (100 mm)	3.94 in (100 mm)	1.97 in (50 mm)	TBD	0.98 in (25 mm)	0.79 in (20 mm)	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)
Light Width	1.57 in (39.8 mm)					0.79 in (20.0 mm)		1.33 in (33.8 mm)		
Light Height	1.78 in (45.2 mm)					0.79 in (20.1 mm)		1.12 in (28.4 mm)		
Longest Emitting Window Length	84.28 in (2140 mm)					41.61 in (1057 mm)		96.72 in (2457 mm)		
Sizes Available	14	14	14	14	14	14	14	16	16	16
Visible Wavelengths Available	9	9	9	8	8	9	8	8	9	8
UV Wavelengths Available	4	4	4	0	0	4	0	0	4	0
IR Wavelengths Available	3	3	3	3	3	3	3	3	3	3
Polarization Available	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Diffusion Available	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Rating	TBD					IP50		IP50		
Price	$$	$$	$$	$$	$$	$$	$$	$$	$$	$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, **inquire** about our semi-custom and full-custom capabilities.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Continued

Not finding the optical specifications you are looking for with the AL325 Series? Refer to the continued bar light comparison matrix below to compare and contrast Advanced Illumination's comprehensive product offering:

Attributes	AL247			AL116	AL126	AL150
Lens Type	Narrow (N)	Medium (M)	Wide (W)	No Lenses	No Lenses	Aimed
Beam Angle	10°	25°	40°	70°	60°	N/A
Beam Direction		Normal		Normal	Normal	Oblique
Intensity at 100 mm WD	84 klx	67 klx	48 klx	32 klx	14 klx	2.2 klx
	277 W/m^2	218 W/m^2	155 W/m^2	110 W/m^2	48 W/m^2	8.5 W/m^2
Transversal FWHM at 600 mm WD	9.57 in (243 mm)	11.38 in (289 mm)	15.87 in (403 mm)	31.54 in (801 mm)	23.31 in (592 mm)	N/A
Longitudinal FWHM at 600 mm WD	13.58 in (345 mm)	14.65 in (372 mm)	18.03 in (458 mm)	46.34 in (1177 mm)	31.26 in (794 mm)	N/A
Minimum Working Distance	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)	0.47 in (12 mm)	0.47 in (12 mm)	0.47 in (12 mm)
Light Width		1.69 in (42.9 mm)		0.79 in (20 mm)	1.27 in (32 mm)	1.33 in (34 mm)
Light Height		0.95 in (24.0 mm)		0.79 in (20 mm)	0.79 in (20 mm)	1.12 in (28 mm)
Longest Emitting Window Length		24 in (610 mm)		20.27 in (515 mm)	41.42 in (1052 mm)	82.12 in (2086 mm)
Sizes Available	4	4	4	10	20	80
Visible Wavelengths Available	8	8	8	8	8	4
UV Wavelengths Available	0	0	0	4	4	1
IR Wavelengths Available	3	3	3	2	2	1
Polarization Available	No	No	No	Yes	Yes	Yes
Diffusion Available	No	No	No	Yes	Yes	Yes
IP Rating		IP69K		IP50	IP50	IP50
Price	$$$	$$$	$$$	$$	$	$$$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, **inquire** about our semi-custom and full-custom capabilities.

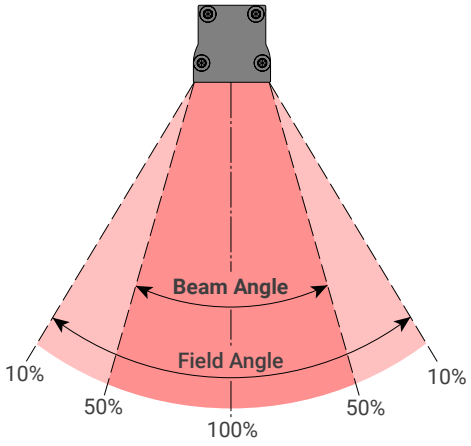
Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Definitions

For definitions on the terminology used on the previous page, please refer to the table below:

Definitions

Beam Angle

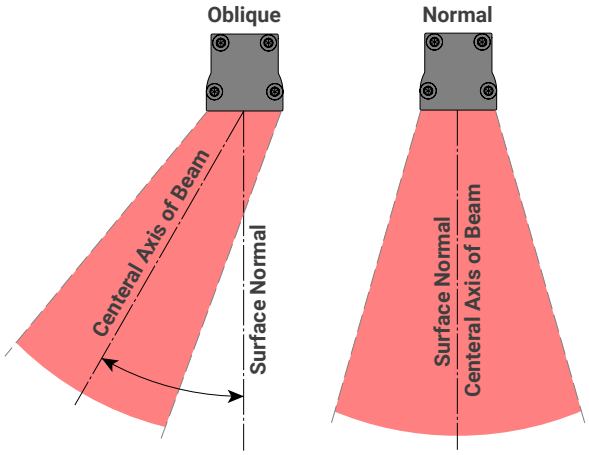


Beam Angle defines the spread of usable light from a projected machine vision light source. It's the angle where the intensity drops to 50% of its peak (FWHM). Beam angle dictates the concentrated, higher-intensity portion of the Field of View (FOV). Field angle is wider, encompassing the total spread of light down to 10% of peak intensity.

FWHM (Full Width Half Maximum)

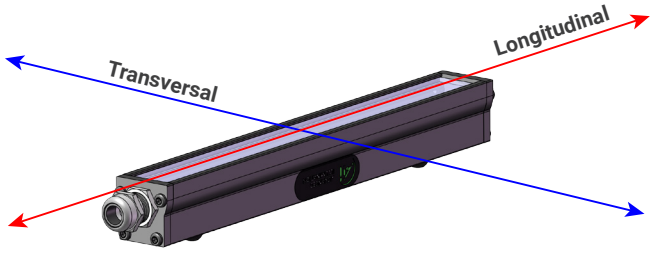
FWHM (Full Width Half Maximum) is a measure of the width of a light source's intensity distribution. Specifically, it defines the distance between the points on the intensity profile where the light intensity drops to 50% of its peak value. This FWHM distance is often used to determine the usable FOV (Field of View) when aiming a light at a surface for inspection.

Beam Direction



A normal beam direction refers to light emitted perpendicular to the light source's emitting surface, in which the central optical axis is co-linear to the surface normal of the emitting window. An oblique beam direction describes light emitted at an angle relative to the light source's surface normal. Oblique sources can be useful when imaging specular surfaces, depending on system geometry.

Longitudinal vs Transversal



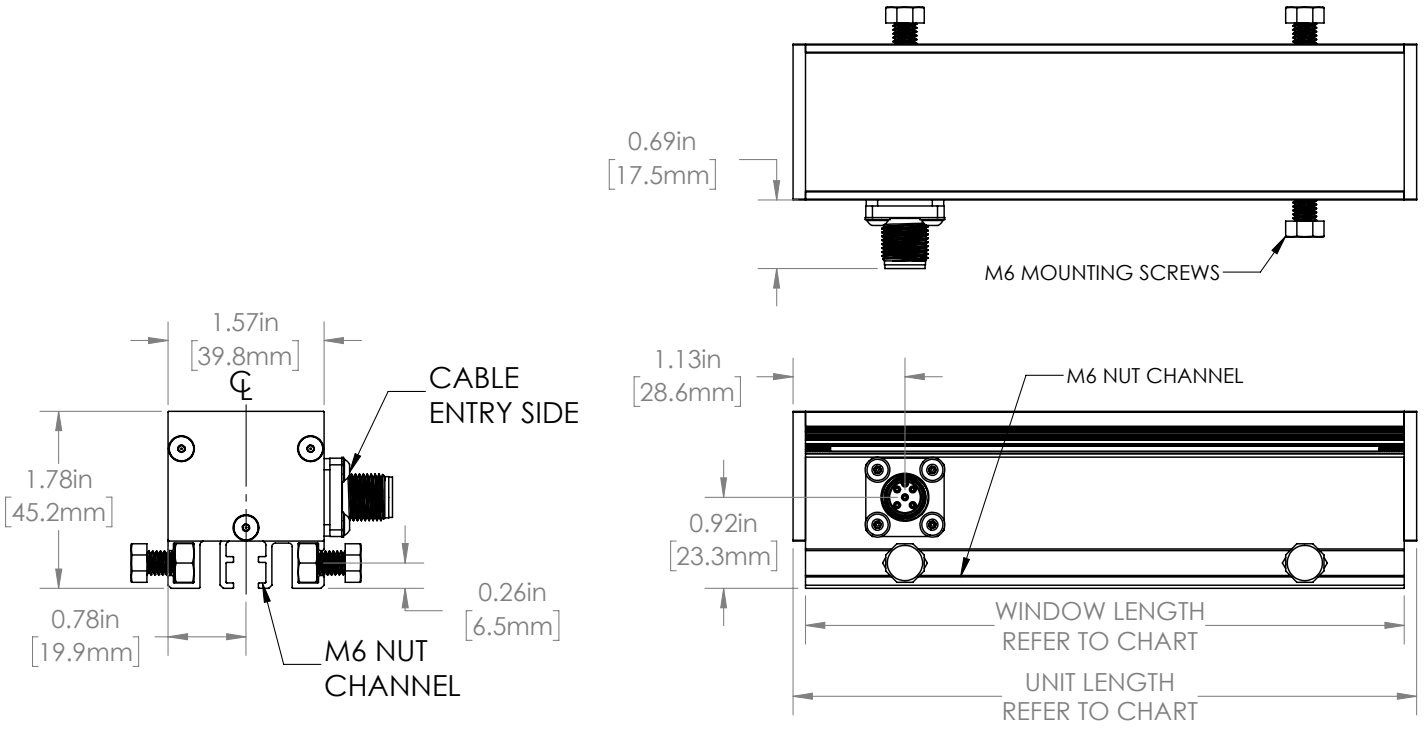
The longitudinal direction refers to the direction that runs parallel to the long axis of the light source. This is typically the longest dimension of the light source housing or emitting surface.

The transversal direction, in contrast, refers to any direction that is perpendicular to the longitudinal direction. It essentially describes any direction that "cuts across" the long axis of the light source.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Mechanical Information

Installation Drawing - Standard



For full installation drawings and complete CAD models of this configuration, please visit the downloads section of the product webpage.

Sizing Chart - Standard

Part Number	Length (Inches)		Length (Millimeters)	
	Unit	Window	Unit	Window
AL325X0150	6.27	6.02	159.3	152.9
AL325X0300	12.29	12.04	312.2	305.8
AL325X0450	18.31	18.06	465.1	458.7
AL325X0600	24.33	24.08	618.0	611.6
AL325X0750	30.35	30.10	770.9	764.5
AL325X0900	36.37	36.12	923.8	917.4
AL325X1050	42.39	42.14	1076.7	1070.4
AL325X1200	48.41	48.16	1229.6	1223.3
AL325X1350	54.43	54.18	1382.5	1376.2
AL325X1500	60.45	60.20	1535.4	1529.1
AL325X1650	66.47	66.22	1688.3	1682.0
AL325X1800	72.49	72.24	1841.2	1834.9
AL325X1950	78.51	78.26	1994.2	1987.8
AL325X2100	84.53	84.28	2147.1	2140.7

Electrical Information

Power Requirements

Current Required for Power Supply Sizing

Wavelengths	Configured w/ 24V Drive	Configured w/ Standard Controller (EC, ES, C1, C5)
365 nm, 375 nm, 385 nm, 395 nm, 405 nm, 455 nm, 475 nm, 505 nm, 530 nm, WHI	0.350A per 150 mm increment	0.450A per 150 mm increment
590 nm, 625 nm, 660 nm	0.250A per 150 mm increment	0.300A per 150 mm increment
730 nm, 850 nm, 940 nm	0.350A per 150 mm increment	0.450A per 150 mm increment

Note: All Advanced Illumination lights and controllers are nominally powered by 24V DC unless otherwise noted. Strobe overdriving with controller based models may require more current and voltage overhead. The values above do not include background current draw from the controller (~100 mA total).

Control Options

Controller Image	Controller Details	Connector Image
	**DCS Single Output Controller - Compatible with C1 Configurations** *PN: DCS-100E* The DCS-100E is a compact, din-rail mounted general-purpose external controller with one C1 output connector, wired with three channels. Capable of providing single channel control or multi-channel control for RGB compatible lights. **Output Power:** 90 W Max Continuous, 540 W Max Pulsed (Overdrive Strobe) **Output Current:** 4.5A Max Continuous, 15 A Max Pulsed **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-100E, please **visit the controller product page**.	
	**DCS Triple Output Controller - Compatible with C1 Configurations** *PN: DCS-103E* The DCS-103E is a din-rail mounted general-purpose multi-light controller with three C1 output connectors. Capable of driving three lights in sync or asynchronously. **Output Power:** 30 W Max Continuous / Output, 180 W Max Pulsed / Output **Output Current:** 1.5A Max Continuous / Output, 5 A Max Pulsed / Output **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-103E, please **visit the controller product page**.	
	**Embedded Controller - Continuous Only - EC Configurations** *PN: N/A* The EC is an embedded controller (within the light head) engineered for continuous or gated continuous operation. Allows for analog dimming functionality. **I/O:** 0 V - 10 V (10% to 100% intensity) Analog Dimming Input 2.5V Min - 30V Max, <=5mA Gating Signal Input for Gated Continous Operation **Modes:** Continuous and Gated Continuous **Interface:** Bulkhead Connector (M12 5-pin Male, A-Code)	

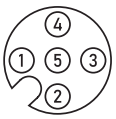
Electrical Information - Continued

Control Options - Continued

Controller Image	Controller Details	Connector Image
	**Embedded Controller - Continuous and Strobe - ES Configurations** *PN: N/A* The ES is an embedded controller (within the light head) engineered for overdrive strobe or continous operation. Allows for analog dimming functionality. **I/O:** 0 V - 10 V (10% to 100% intensity) Analog Dimming Input 2.5V Min - 30V Max, <=5mA Gating Signal Input for Gated Overdrive Strobe Operation **Modes:** Continuous and Gated Overdrive Strobe **Interface:** Bulkhead Connector (M12 5-pin Male, A-Code)	
	**24V Driver - Continuous Only - 24 Configurations** *PN: N/A* 24V option allows lights to operate continuous output with 24V connection and no additional controllers. **Modes:** Continuous, can be wired to some 3rd party controllers or external relays for gated operation **Interface:** Bulkhead Connector (M12 5-pin Male, A-Code)	

Embedded Control Option Wiring Information

M12 Bulkhead Connector Pinout Functions and Optional Cable Flying Lead Functions

Pin (M12)	Wire Color	24V Functions	EC/ES Functions	M12 Pinout
1	BROWN	24V DC	24 V DC	
2	WHITE	N/A	N/A	
3	BLUE	DC GND	DC GND	
4	BLACK	N/A	PNP / Active High Trigger	
5	GRAY	N/A	0 - 10 V Analog Dimming	

5-Position Male Connector, A-Code

The functions above are only applicable when ordering an EC, ES or 24 power configuration.

Accessories - Continued

Category	Accessory Image	Accessory Detail
Power Supply		**24 Volt DC Power Supply** *PN: PS24-TL, up to 600mm* *PN: PS24-4, up to 2100mm* This convenient power source is a universal AC input switching power supply with a regulated output DC current. The power supply comes with an LED Power Indicator, tinned leads marked Positive (+) and Negative (-) and 2 WAGO connectors for simplified assembly. For more information about our 24 Volt DC Power Supply, please **visit this webpage**.
Cable		**Embedded Controller Bulkhead Connector Cable - EC, ES and 24V Configurations** *PN: LC2-M12-5-MX* This cable connects directly to the bulkhead connector on any EC, ES or 24V configured AL325 with it's M12, 5-pos, A-Coded, female connector on one end and four flying leads on it's opposite end. The AL325 is compatible with three M12 flying lead cable options: LC2-M12-5-MX (2 meters), LC5-M12-5-MX (5 meters), and LC10-M12-5-MX (10 meters). Please note this is purchased separately. For wiring information on this cable, please see the function chart on **page 12**.
Extension Cable		**DCS-100E/103E Extension Cable, Single Light Power Cable - C1 Configuration** *PN: LC5-M12-5-MX* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female 7 pin locking connector (C1) and can be purchased in 3 - 15-meter lengths. For more information about our DCS-100E/103E Extension Cable, Single Output, please **visit this webpage**.
Extension Cable		**DCS-100E/103E Extension Cable, Dual Light Power Cable - C1 Configuration** *PN: LC10-M12-5-MX* This extension cable was designed for applications requiring two identical lights to be powered through a single controller. These Y cables feature a single male and dual female 7 pin locking connectors (C1) and can be purchased in 3 - 15-meter lengths. See attached spec sheet for compatible light configuration. For more information about our DCS-100E/103E Extension Cable, Split Output, please **visit this webpage**.
Filters		**Camera Lens Band Pass FIlters** *PN: BPXXX-YYY* Eliminating all but a narrow band of light (+/- 40nm) centered on the specified wavelength, band pass filters are used to enhance colors, or to stop unwanted ambient light from reaching the camera. Filtering can replace existing shrouds, simplifying the physical set up of an inspection site. Ai offers 635nm and 660nm band pass filters to fit several different lens sizes. For more information about our Camera Lens Band Pass FIlters, please **visit this webpage**.

Additional Information

Warranty

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty. No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Compliancy

Our lighting products are designed and tested to meet CE, RoHS, and IEC standards. As a global ISO 9001 certified company, we understand the importance of compliance and perform accelerated testing on every product before shipment. For more information on our compliance standards, please see our compliancy documentation here: **https://www.advancedillumination.com/services/compliance-statements/**

Electromagnetic Compatibility

Our lighting products are designed and tested to meet CE, RoHS, and IEC standards. As a global ISO 9001 certified company, we understand the importance of compliance and perform accelerated testing on every product before shipment. For more information on our compliance standards, please see our compliancy documentation here: **https://www.advancedillumination.com/services/compliance-statements/**

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: +1 (802) 767 3830
Fax: +1 (802) 767 2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2025 Advanced illumination Inc. All rights reserved

LL174 Series

High Intensity Bar Lights | Product Datasheet

ADVANCED ILLUMINATION by Exaktera

Scalable Extrusion-Based Housing

Engineered with extrusion-based aluminum construction allowing for scalability while maintaining structural rigidity and durability

High Power LEDs

Equipped with high performance LEDs capable of high output operation while maintaining a long lifespan

M6 Mounting Channel

Equipped with an M6 mounting channel on its base, allowing for highly adjustable positioning

LL174 Series Description

Leveraging a field-proven design known for its reliability, this general-purpose bar light offers dependable performance for a wide array of machine vision tasks.

Its strength lies in its versatility, available with 16 distinct wavelengths to match specific application requirements. Users can further tailor illumination using three lens options, providing narrow, medium, or wide beam angles.

- **High Intensity**
- **Scalable Design**
- **16 Wavelengths Available**
- **Polarization Available**
- **1-2 Week Lead Times Typical**

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 365 nm, 375 nm, 385 nm, 395 nm, 405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, 850 nm, 940 nm	
	Available Lensing			Narrow (10°), Medium (25°), Wide (40°)	
	Available Light Conditioning			Diffuser & or Polarizer	
Electrical	Power Consumption Info			See Power Requirements on Page 10	
	Cable Info			80" -0/+6" Long (2 m -0/+150 mm), 105 °C Rated, Foil Shield w/ Drain	
Mechanical	Sizing Info	Standard	Length	7.10"(180.34mm) to 97.10"(2466.3mm)	See Page 8 for More Details
			Width	1.33"(33.8mm)	
			Height	1.12"(28.4mm)	
		Sealed	Length	8.06"(204.7mm) to 50.06"(1271.5mm)	
			Width	1.33"(33.8mm)	
			Height	1.12"(28.4mm)	
		Heatsink	Length	7.10"(180.34mm) to 73.1"(1856.7mm)	
			Width	2.84"(72.1mm)	
			Height	1.36"(34.5mm)	
	Weight Info (Standard)			~ 3.76 lbs (~1705 g) per 6" Unit Length	
	Mounting Info			M6 Mounting Nut Channel, See Page 13 for More Details	
	Material Info			Anodized Aluminum Housing, Acrylic Window, Nylon Strain Relief, PVC Cable Jacket, Steel Black Oxide & Zinc Plated Steel Fasteners, Optional Silicone Sealant, Neoprene Gasket/ Nylon Washers	
Thermal	Operating Case Temperatures			25 °C to 60 °C	
	Operating Ambient Temperatures			0 °C to 35 °C	
Certification	Compliance			CE, RoHS, IEC 62471	
	IP Rating			IP50 (NONSEALED) IP65 (SEALED)	
	Lumen Maintenance - White Only			L70 (50,000 Hours)	

General Information - Continued

Part Number Key

Model	Lens Type	Emitting Length (in)	-	Peak Wavelength	Connector/ Control	Heat Sink Option	Washdown Option	Light Conditioning Option	-	Alternative Connector
LL174	X	XX	-	XXX	XX	X	X	X	-	XXX
LL174	N (Narrow)	06" increments up to 84"		365 (UV)[3]	C1	H[2]	W[4]	D (Diffuser)		M8[1]
	M (Medium)			375 (UV)[3]	C5			P (Polarizer)		M12[1]
	W (Wide)			385 (UV)[3]	IC					
				395 (UV)[3]	I3					
				405 (violet)[3]	I3S					
				455 (royal blue)[5]	I4					
				470 (blue)[5]	24					
				505 (cyan)						
				530 (green)						
				590 (amber)						
				625 (red orange)						
				660 (red)						
				730 (IR)						
				850 (IR)						
				940 (IR)						
				WHI (white)						
more info on page		8		5	10			6		12

Example Part Numbers::
LL174N06-470C1HWD
LL174W24-625IC-M12

Beam Angle (FWHM):
Narrow = 8°
Medium = 21°
Wide = 29°

[1] Available with IC, I3, I3S, I4, and 24 V options only
[2] Not available over 72" lighted length
[3] Only available with medium lensing and not available with polarizer or diffuser option
[4] Not available over 48" lighted length
[5] 455 nm & 470 nm will reduce the life of the polarizer

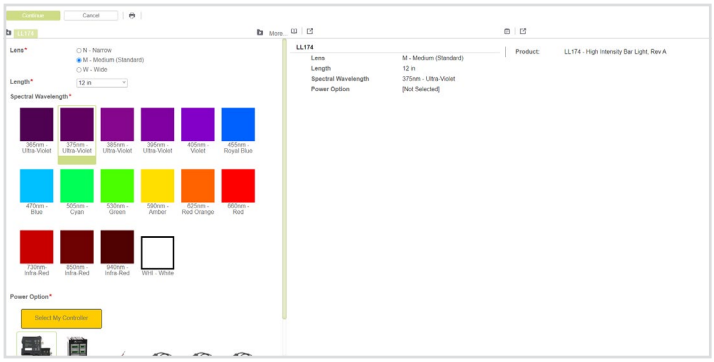
In Stock

Unavailable

Lead Times

Stock products ship within three days.
Build-to-Order custom products ship within one to two weeks (typical).

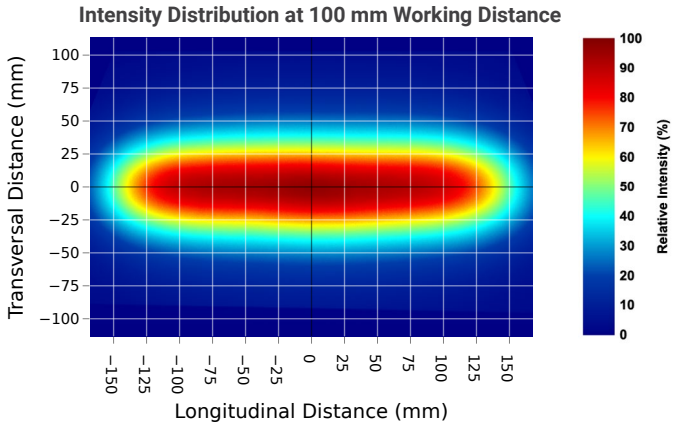
Configurator



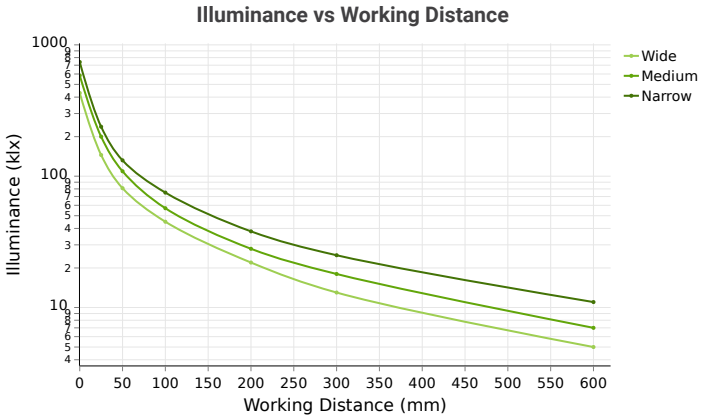
Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our LL174 High Intensity Bar Light Series to your specific needs. For a guided configuration, visit our online configurator.

Optical Information

Intensity Characteristics

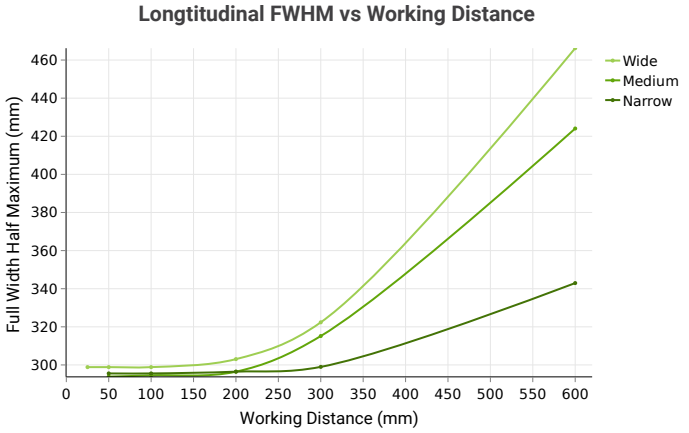


Intensity distribution sample image above taken with a 12-inch white medium lensed LL174 unit.



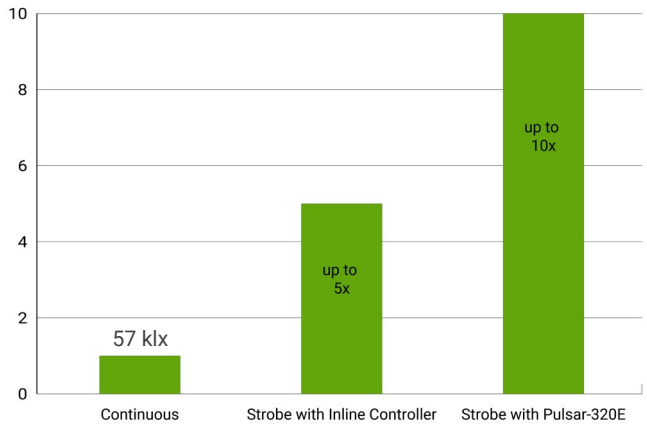
Data shown above have been collected using a 12-inch white LL174 unit.

FWHM vs Working Distance



Both Full Width Half Maximum (FWHM) vs Working Distance plots shown above have been measured using a 12-inch white LL174 unit.

Continuous vs Pulsed Intensity

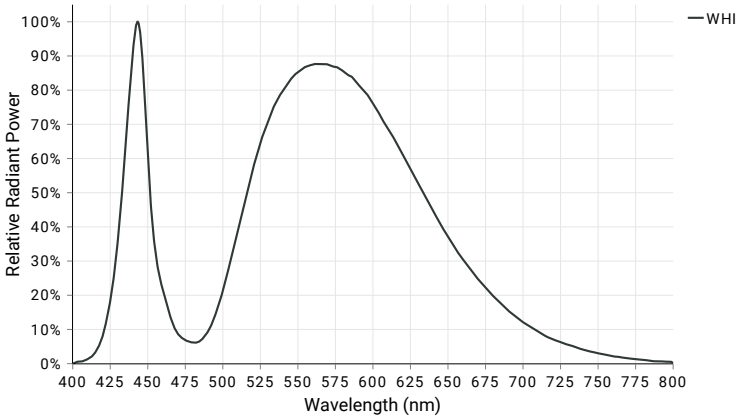


Under continuous operation, a 12-inch white medium lensed LL174 unit will output an **illuminance of 57 klx** and an **irradiance of 187 W/m²** at a 100 mm working distance. For applications that require higher output, the LL174 Series has been engineered to be overdrive strobe capable. When configured with AI's strobe enabled Inline Controller (I3, I3S, and I4), the LL174 is capable of outputting up-to 5X continuous levels. When configured with a C5 connector, compatible with AI's Pulsar 320E, an **LL174 can be strobed up-to 10X continuous intensity levels.**

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

White Spectral Profile

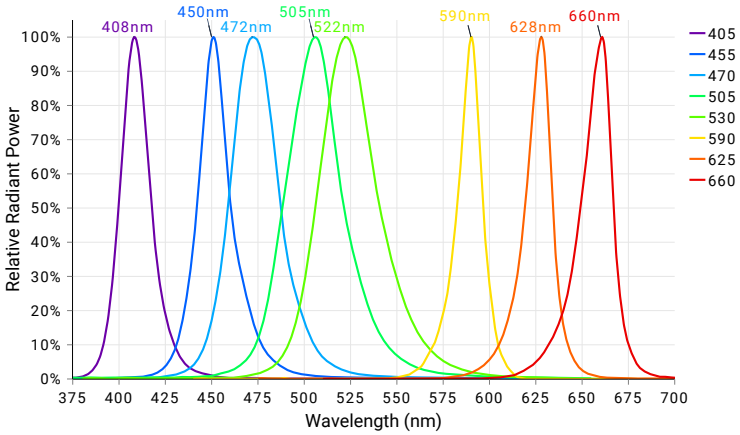


White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, white LEDs can vary in color temperature, which can impact machine vision systems, specifically when matching white light sources.

The LL174 Series white LEDs have a relatively neutral color correlated temperature (CCT) of **5500k.**

For a more detailed look at the white spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Visible Spectral Profiles

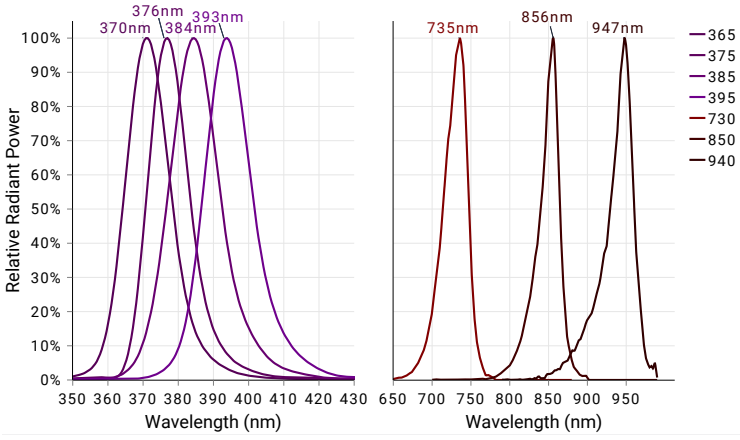


Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a features color hue. When referring to a color wheel, simply remember the following; like colors reflect and brighten surfaces; conversely, opposing colors absorb and darken surfaces.

The LL174 is available in **405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, and 660 nm** visible color configurations.

For a more detailed look at the visible color spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Non-Visible Spectral Profiles



Near-infrared (NIR) and ultraviolet A (UVA) imaging are machine vision techniques that utilize wavelengths outside the visible spectrum. NIR light, with wavelengths between 700-1000 nm, can penetrate certain materials opaque to visible light, making it ideal for circuit board analysis, food safety inspection, and medical imaging. In contrast, UVA light, typically ranging between 315-400 nm, interacts with specific materials to induce fluorescence or highlight surface features, useful in applications like counterfeit detection, leak detection, and contamination detection.

The LL174 Series is available in **365 nm, 375 nm, 385 nm, 395 nm, 730 nm, 850 nm, and 940 nm,** configurations.

For a more detailed look at the NIR or UVA spectral data, download the csv file of the raw spectral values and refer to our Product Spectra Distribution Charts PDF.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Optical Information - Continued

Polarization Option Detail

Non-polarized

Polarized

Polarization can be used in a variety of ways, such as to reduce glare on specular surfaces or to increase edge clarity of transparent injection-molded objects, as shown above. This is known as cross-polarization. When unpolarized light passes through two cross-polarized filters (oriented 90 degrees perpendicular to each other), it is completely blocked. However, if the light is already polarized, it will only be blocked if its polarization is perpendicular to the axis of the second polarizer, creating the cross-polarization effect shown above.

Photobiological Risk Factors

Group	Description	Affected Wavelengths
Exempt	No Photobiological Hazard	850 nm, 940 nm
Group 1	No Photobiological hazard under normal behavioral limitations	455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, WHI
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	365 nm, 375 nm, 385 nm, 395 nm, 405 nm

Advanced Illumination's lighting products have been tested and classified to IEC standards by accredited testing services. For more information on photobiological risk factors, please view the following PDF: https://www.advancedillumination.com/wp-content/uploads/2019/04/IEC-040119.pdf

Cleaning Guidelines

To clean our light's optics, it is best to only clean when necessary. Dusting is always the first step in cleaning your optics. Wiping a dusty optic is like cleaning it with sandpaper. So always dust with a canned air duster or compressed and filtered air before wiping any optic. If the dusted optic has no visible stains after you dust it, then remember: "If it's not dirty, don't clean it." Avoid wiping optics when possible.

If dusting did not clean the lens or the lens has stains, use only de-ionized water and mild dish soap with a low lint cloth designed for optics to avoid damage to the optic by any harsh chemicals.

Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

The aluminum housing can be wiped down when dusting is not a sufficient means to thoroughly clean.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix

Not finding the optical specifications you are looking for with the LL174 Series? Refer to the bar light comparison matrix below to compare and contrast Advanced Illumination's comprehensive product offering:

Attributes	AL325					AL295		LL174		
Lens Type	Narrow (N)	Medium (M)	Wide (W)	Extra Wide (Z)	Eliptical (E)	Medium (M)	Wide (W)	Narrow (N)	Medium (M)	Wide (W)
Beam Angle	14°	25°	36°	55°	45° + 15°	20°	32°	10°	25°	40°
Beam Direction	Normal or Oblique					Normal		Normal		
Intensity at 100 mm WD	163 klx	134 klx	110 klx	80 klx	TBD	88 klx	65 klx	75 klx	57 klx	45 klx
	456 W/m²	427 W/m²	352 W/m²	254 W/m²	TBD	288 W/m²	208 W/m²	250 W/m²	187 W/m²	146 W/m²
Transversal FWHM at 600 mm WD	8.54 in (217 mm)	11.73 in (298 mm)	14.25 in (362 mm)	17.12 in (450 mm)	TBD	12.79 in (325 mm)	15.12 in (384 mm)	9.06 in (230 mm)	13.90 in (353 mm)	16.06 in (408 mm)
Longitudinal FWHM at 600 mm WD	12.05 in (306 mm)	14.25 in (362 mm)	16.34 in (415 mm)	19.45 in (494 mm)	TBD	15.95 in (405 mm)	17.72 in (450 mm)	13.50 in (343 mm)	16.69 in (424 mm)	18.35 in (466 mm)
Minimum Working Distance	3.94 in (100 mm)	3.94 in (100 mm)	3.94 in (100 mm)	1.97 in (50 mm)	TBD	0.98 in (25 mm)	0.79 in (20 mm)	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)
Light Width	1.57 in (39.8 mm)					0.79 in (20.0 mm)		1.33 in (33.8 mm)		
Light Height	1.78 in (45.2 mm)					0.79 in (20.1 mm)		1.12 in (28.4 mm)		
Longest Emitting Window Length	84.28 in (2140 mm)					41.61 in (1057 mm)		96.72 in (2457 mm)		
Sizes Available	14	14	14	14	14	14	14	16	16	16
Visible Wavelengths Available	9	9	9	8	8	9	8	8	9	8
UV Wavelengths Available	4	4	4	0	0	4	0	0	4	0
IR Wavelengths Available	3	3	3	3	3	3	3	3	3	3
Polarization Available	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Diffusion Available	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Rating	IP50					IP50		IP50		
Price	$$	$$	$$	$$	$$	$$	$$	$$	$$	$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Continued

Refer to the continued bar light comparison matrix below to compare and contrast Advanced Illumination's product offering:

Attributes	AL247			AL116	AL126	AL150
Lens Type	Narrow (N)	Medium (M)	Wide (W)	No Lenses	No Lenses	Aimed
Beam Angle	10°	25°	40°	70°	60°	N/A
Beam Direction		Normal		Normal	Normal	Oblique
Intensity at 100 mm WD	84 klx	67 klx	48 klx	32 klx	14 klx	2.2 klx
	277 W/m^2	218 W/m^2	155 W/m^2	110 W/m^2	48 W/m^2	8.5 W/m^2
Transversal FWHM at 600 mm WD	9.57 in (243 mm)	11.38 in (289 mm)	15.87 in (403 mm)	31.54 in (801 mm)	23.31 in (592 mm)	N/A
Longitudinal FWHM at 600 mm WD	13.58 in (345 mm)	14.65 in (372 mm)	18.03 in (458 mm)	46.34 in (1177 mm)	31.26 in (794 mm)	N/A
Minimum Working Distance	3.94 in (100 mm)	1.97 in (50 mm)	1.46 in (37 mm)	0.47 in (12 mm)	0.47 in (12 mm)	0.47 in (12 mm)
Light Width		1.69 in (42.9 mm)		0.79 in (20 mm)	1.27 in (32 mm)	1.33 in (34 mm)
Light Height		0.95 in (24.0 mm)		0.79 in (20 mm)	0.79 in (20 mm)	1.12 in (28 mm)
Longest Emitting Window Length		24 in (610 mm)		20.27 in (515 mm)	41.42 in (1052 mm)	82.12 in (2086 mm)
Sizes Available	4	4	4	10	20	80
Visible Wavelengths Available	8	8	8	8	8	4
UV Wavelengths Available	0	0	0	4	4	1
IR Wavelengths Available	3	3	3	2	2	1
Polarization Available	No	No	No	Yes	Yes	Yes
Diffusion Available	No	No	No	Yes	Yes	Yes
IP Rating		IP69K		IP50	IP50	IP50
Price	$$$	$$$	$$$	$$	$	$$$$

To ensure consistent comparisons, all data presented above is based on 12-inch white LED models unless explicitly stated otherwise. Additionally, all measurements provided above are derived from "standard" configurations, excluding sealed models if available as optional.

If you are still not finding the optical specifications needed for your application, inquire about our semi-custom and full-custom capabilities.

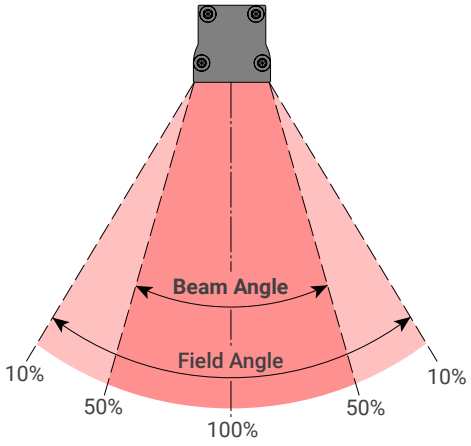
Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Bar Light Comparison Matrix - Definitions

For definitions on the terminology used on the previous page, please refer to the table below:

Definitions

Beam Angle

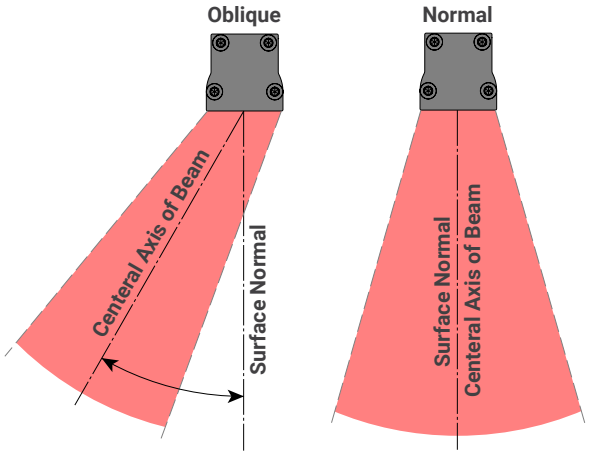


Beam Angle defines the spread of usable light from a projected machine vision light source. It's the angle where the intensity drops to 50% of its peak (FWHM). Beam angle dictates the concentrated, higher-intensity portion of the Field of View (FOV). Field angle is wider, encompassing the total spread of light down to 10% of peak intensity.

FWHM (Full Width Half Maximum)

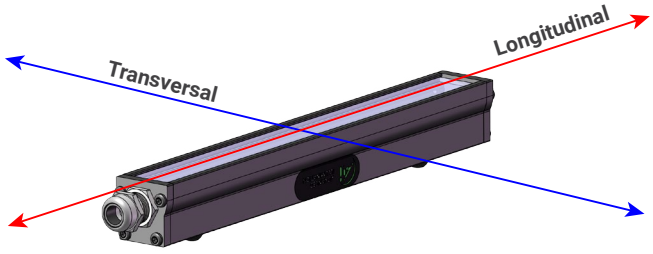
FWHM (Full Width Half Maximum) is a measure of the width of a light source's intensity distribution. Specifically, it defines the distance between the points on the intensity profile where the light intensity drops to 50% of its peak value. This FWHM distance is often used to determine the usable FOV (Field of View) when aiming a light at a surface for inspection.

Beam Direction



A normal beam direction refers to light emitted perpendicular to the light source's emitting surface, in which the central optical axis is co-linear to the surface normal of the emitting window. An oblique beam direction describes light emitted at an angle relative to the light source's surface normal. Oblique sources can be useful when imaging specular surfaces, depending on system geometry.

Longitudinal vs Transversal



The longitudinal direction refers to the direction that runs parallel to the long axis of the light source. This is typically the longest dimension of the light source housing or emitting surface.

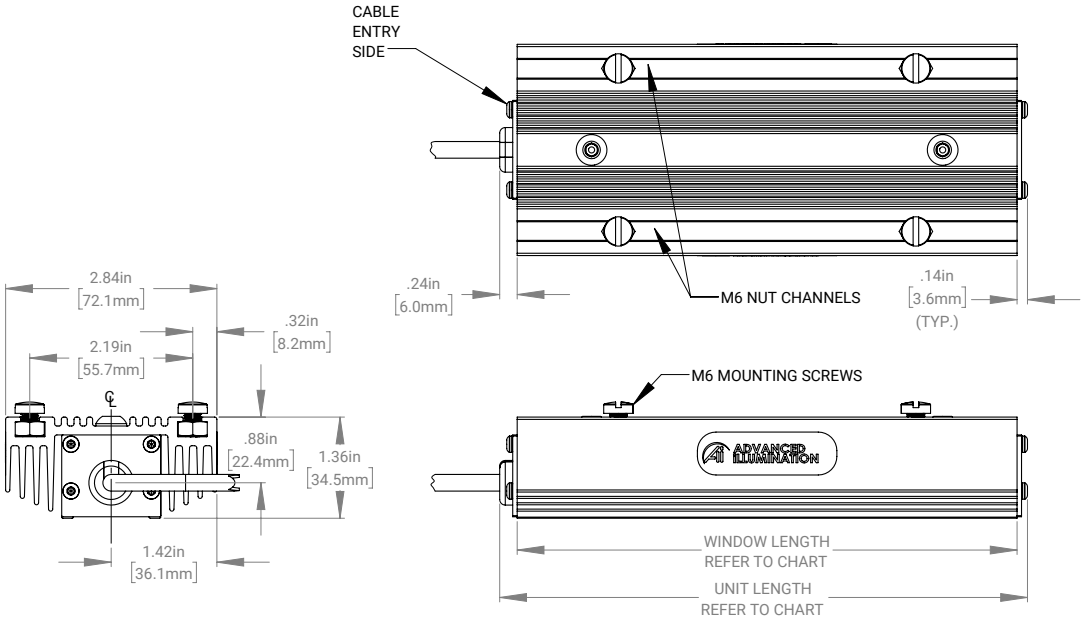
The transversal direction, in contrast, refers to any direction that is perpendicular to the longitudinal direction. It essentially describes any direction that "cuts across" the long axis of the light source.

Disclaimer: The measurements provided above are for approximations only and may vary depending on the method of measurement and the specific configuration being measured.

Mechanical Information

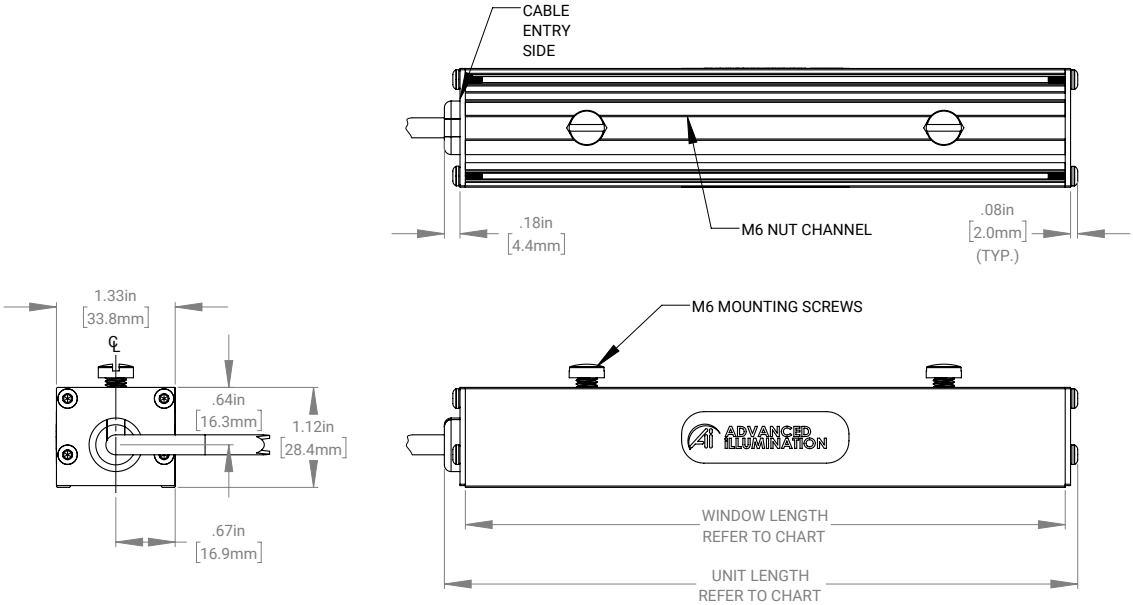
Installation Drawings

Heatsink Configuration



For full installation drawings and complete CAD models of this heatsink configuration, please visit the downloads section of the product webpage.

Non-Sealed Configuration

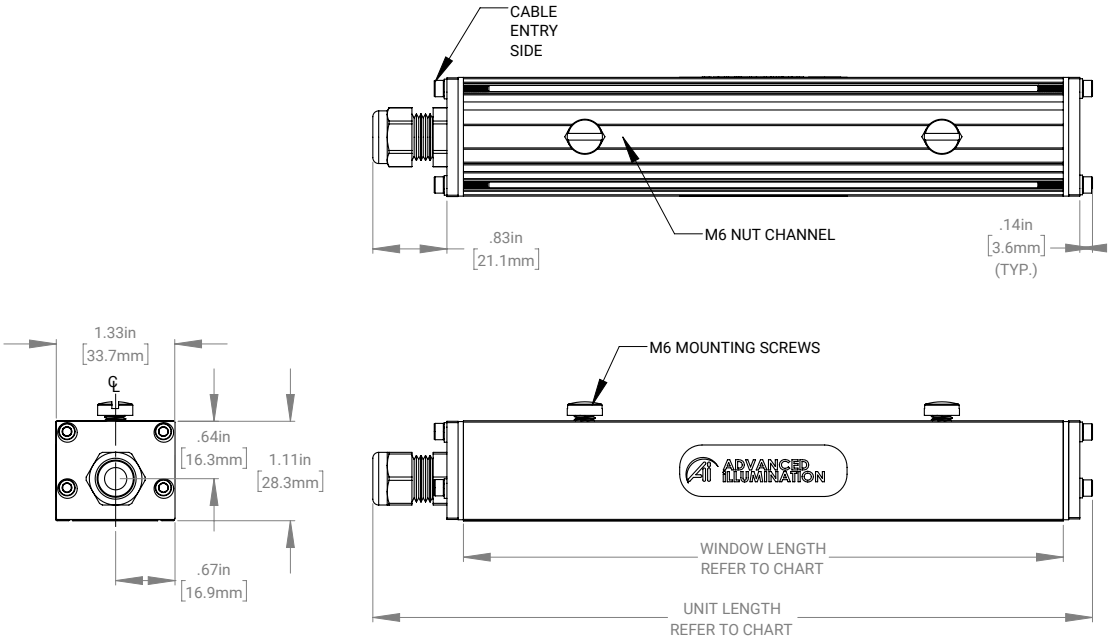


For full installation drawings and complete CAD models of this nonsealed configuration, please visit the downloads section of the product webpage.

Mechanical Information - Continued

Installation Drawings - Continued

Sealed Configuration



For full installation drawings and complete CAD models of this sealed configuration, please visit the downloads section of the product webpage.

Sizing Chart

Part Number	Length (Inches)						Length (Millimeters)					
	Non-Washdown		Washdown		Heatsink		Non-Washdown		Washdown		Heatsink	
	Unit	Window	Unit	Window	Unit	Window	Unit	Window	Unit	Window	Unit	Window
LL17406	7.1	6.72	8.06	6.72	7.1	6.72	180.34	170.688	204.724	170.688	180.34	170.688
LL17412	13.1	12.72	14.06	12.72	13.1	12.72	332.74	323.088	357.124	323.088	332.74	323.088
LL17418	19.1	18.72	20.06	18.72	19.1	18.72	485.14	475.488	509.524	475.488	485.14	475.488
LL17424	25.1	24.72	26.06	24.72	25.1	24.72	637.54	627.888	661.924	627.888	637.54	627.888
LL17430	31.1	30.72	32.06	30.72	31.1	30.72	789.94	780.288	814.324	780.288	789.94	780.288
LL17436	37.1	36.72	38.06	36.72	37.1	36.72	942.34	932.688	966.724	932.688	942.34	932.688
LL17442	43.1	42.72	44.06	42.72	43.1	42.72	1094.74	1085.088	1119.124	1085.088	1094.74	1085.088
LL17448	49.1	48.72	50.06	48.72	49.1	48.72	1247.14	1237.488	1271.524	1237.488	1247.14	1237.488
LL17454	55.1	54.72			55.1	54.72	1399.54	1389.888			1399.54	1389.888
LL17460	61.1	60.72			61.1	60.72	1551.94	1542.288			1551.94	1542.288
LL17466	67.1	66.72			67.1	66.72	1704.34	1694.688			1704.34	1694.688
LL17472	73.1	72.72			73.1	72.72	1856.74	1847.088			1856.74	1847.088
LL17478	79.1	78.72					2009.14	1999.488				
LL17484	85.1	84.72					2161.54	2151.888				
LL17490	91.1	90.72					2313.94	2304.288				
LL17496	97.1	96.72					2466.34	2456.688				

Electrical Information

Power Requirements

Current Required for Power Supply Sizing

Wavelengths	Configured w/ Voltage Drive (24)	Configured w/ Standard Controller (IC, I3, I3S, I4, C1, C5)
WHI	0.062A per linear inch	0.068A per linear inch
365 nm, 375 nm, 385 nm, 395 nm, 405 nm	0.059A per linear inch	0.050A per linear inch
455 nm, 470 nm, 505 nm, 530 nm, 625 nm, 660 nm, 730 nm, 850 nm, 940 nm	0.062A per linear inch	0.068A per linear inch

Note: All Advanced Illumination lights and controllers are nominally powered by 24V DC unless otherwise noted. Strobe overdriving with controller based models may require more current and voltage overhead. The values above do not include background current draw from the controller (~100 mA total).

Control Options

Controller Image	Controller Details	Connector Image
	**DCS Single Output Controller - Compatible with C1 Configurations** *PN: DCS-100E* The DCS-100E is a compact, din-rail mounted general-purpose external controller with one C1 output connector, wired with three channels. Capable of providing single channel control or multi-channel control for RGB compatible lights. **Output Power:** 90 W Max Continuous, 540 W Max Pulsed (Overdrive Strobe) **Output Current:** 4.5A Max Continuous, 15 A Max Pulsed **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-100E, please visit the controller product page.	
	**DCS Triple Output Controller - Compatible with C1 Configurations** *PN: DCS-103E* The DCS-103E is a din-rail mounted general-purpose multi-light controller with three C1 output connectors. Capable of driving three lights in sync or asynchronously. **Output Power:** 30 W Max Continuous / Output, 180 W Max Pulsed / Output **Output Current:** 1.5A Max Continuous / Output, 5 A Max Pulsed / Output **I/Os:** 3 External Trigger Inputs **Interface:** 10/100 Ethernet with Software and browser-based GUIs. SDKs are also available. For more information about our DCS-103E, please visit the controller product page.	
	**Pulsar 320E High Current Controller - Compatible with C5 Configuration** *PN: Pulsar 320E* The Pulsar 320E is a high-power, dual output, pulse-only controller geared for overdriving driving lights at very short flash durations with very high current. **Output Power:** 2500 W Max Pulsed / Output **Output Current:** 50 A Max Pulsed / Output I**/Os:** 2 External Trigger Inputs **Interface:** 10/100 Ethernet with Software GUI. SDKs are also available. For more information about our Pulsar 320E, please visit the controller product page.	

Electrical Information - Continued

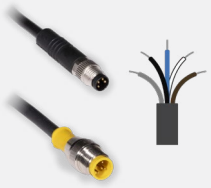
Control Options - Continued

Inline Controller - Continuous Only - IC Configurations
PN: N/A

The IC is an inline, cable-mounted continuous-only controller configured/wired directly for the ordered light head.

Output Power: 25 W Max Continuous
Output Current: 1.25 A Max Continuous
I/O: 1 0-10 V Analog Dimming Input
Interface: Direct Cable (flying leads or optional connector)

For more information about our IC Controller please visit the controller product page.



Inline Controller - Strobe and Continuous - I3 & I3S Configurations
PN: N/A

The I3 and I3S are inline, cable-mounted continuous and pulse (overdrive strobe) capable controllers configured/wired directly for the ordered light head. When operated in pulsed mode, the I3 is a default-on device on power up, whereas the I3S is default-off, requiring a trigger to illuminate.

Output Power: 25 W Max Continuous, 125 W Max Pulsed
Output Current: 1.25 A Max Continuous, 8 A Max Pulsed (Load Dependent)
I/Os: 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input
Interface: Direct Cable (flying leads or optional connector)

For more information about our I3/I3S Controller, please visit the controller product page.

Inline Controller - Strobe and Continuous - I4 Configurations
PN: N/A

The I4 is an inline, cable-mounted continuous and pulse (overdrive strobe) capable controller configured/wired directly for the ordered light head. The I4 can either be operated with a PNP or NPN trigger signal.

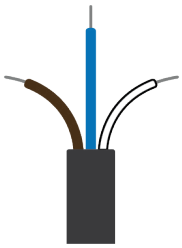
Output Power: 50 W Max Continuous, 150 W Max Pulsed
Output Current: 2.1 A Max Continuous, 8 A Max Pulsed (Load Dependent)
I/Os: 1 Gated Trigger Signal, 1 0-10 V Analog Dimming Input
Interface: Direct Cable (flying leads or optional connector)

For more information about our IC Controller please visit the controller product page.

24V Driver - Continuous Only - 24 Configurations
PN: N/A

24V option allows lights to operate continuous output with 24V connection and no additional controllers.

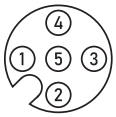
Modes: Continuous, can be wired to some 3rd party controllers or external relays for gated operation
Interface: Direct cable (flying leads or connector options)



Electrical Information - Continued

Inline Control Option Wiring Information

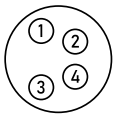
Standard Flying Lead and Optional M12 Connector Pinout Functions

Pin (M12)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M12 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	NPN/Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	PNP/Active High Trigger	PNP/Active High Trigger	
5	GRAY	N/A	N/A	0-10V Analog Control	0-10 V Analog Dimming	

5-Position Male Connector

The functions above are only applicable when ordering an EC power configuration.

Optional M8 Connector Pinout Functions

Pin (M8)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	I4 Functions	M8 Pinout
1	BROWN	24V DC	24V DC	24V DC	24 V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	Active Low Trigger	
3	BLUE	DC GND	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	Active High Trigger	Active High Trigger	

4-Position Male Connector

The functions above are only applicable when ordering an 24, IC, I3, I3s, or I4 power configuration with our without an M8 connector. For more wiring information pertaining to strobing and dimming functionality, please download the controller manuals and datasheets.

Accessories

Advanced Illumination offers a variety of accessories designed to pair with our lighting and control products. Below you will find a table of accessories which are compatible with many configurations of the BL2 series.

Category	Accessory Image	Accessory Detail
Power Supply		**24 Volt DC Power Supply** *PN: PS24-TL* This convenient power source is a universal AC input switching power supply with a regulated output DC current. The power supply comes with an LED Power Indicator, tinned leads marked Positive (+) and Negative (-) and 2 WAGO connectors for simplified assembly. For more information about our 24 Volt DC Power Supply, please visit this webpage.
Dimmer		**Manual Dimming Accessory for the IC, I3, I3s and I4** *PN: DCS-MP* The DCS-MP is a 30-position potentiometer, detented for precision level control and provides repeatable dimming with cable inline controllers. Features include DIN-rail mountable, a flip up cover to prevent accidental adjustments, spring clamp wiring terminal for flying leads or an M12 connector for use with the IC, I3/I3S or I4 Inline Controllers. For more information about our Manual Dimming Accessory please visit this webpage.

Accessories - Continued

Category	Accessory Image	Accessory Detail
Extension Cable		**DCS-100E/103E Extension Cable, Single Light Power Cable - C1 Configuration** *PN: LC-XX-S* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female 7 pin locking connector (C1) and can be purchased in 3 - 15-meter lengths. For more information about our DCS-100E/103E Extension Cable, Single Output, please visit this webpage.
Extension Cable		**DCS-100E/103E Extension Cable, Dual Light Power Cable - C1 Configuration** *PN: LC-XX-Y* This extension cable was designed for applications requiring two identical lights to be powered through a single controller. These Y cables feature a single male and dual female 7 pin locking connectors (C1) and can be purchased in 3 - 15-meter lengths. See attached spec sheet for compatible light configuration. For more information about our DCS-100E/103E Extension Cable, Split Output, please visit this webpage.
Extension Cable		**Pulsar 320E Extension Cable - C5 Configuration** *PN: LC-XX-S-C5* This extension cable was designed for applications requiring power cables longer than the standard 2 meters provided with Ai lights. This single light cable features a single male and single female Pulsar 320 connector (C5) and can be purchased in 3 - 15 meter lengths. For more information about our Pulsar 320E Extension Cable, please visit this webpage.
Adaptor Cable		**Cognex Gen2 Inline Controller Adaptor Cable** *PN: AD-I3-CGX2* This cable adaptor is for connecting I3/I3S configured lights with Cognex Gen2 Cameras, and comes with a male to female M12 connectors. For more information about our Cognex Gen2 Inline Controller Adaptor Cable, please visit this webpage.
Filters		**Camera Lens Band Pass FIlters** *PN: BPXXX-YYY* Eliminating all but a narrow band of light (+/- 40nm) centered on the specified wavelength, band pass filters are used to enhance colors, or to stop unwanted ambient light from reaching the camera. Filtering can replace existing shrouds, simplifying the physical set up of an inspection site. Ai offers 635nm and 660nm band pass filters to fit several different lens sizes. For more information about our Camera Lens Band Pass FIlters, please visit this webpage.
Mounting Brackets		**Mounting Brackets** *PN: LB* Fastens to the M6 mounting channel for simplified mounting. Included in product purchase. For more information about our Mounting Brackets, please visit this webpage.

Additional Information

Warranty

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty. No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Compliancy

Our lighting products are designed and tested to meet CE, RoHS, and IEC standards. As a global ISO 9001 certified company, we understand the importance of compliance and perform accelerated testing on every product before shipment. For more information on our compliance standards, please see our compliancy documentation here: https://www.advancedillumination.com/services/compliance-statements/

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: +1 (802) 767 3830
Fax: +1 (802) 767 2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2023 Advanced illumination Inc. All rights reserved

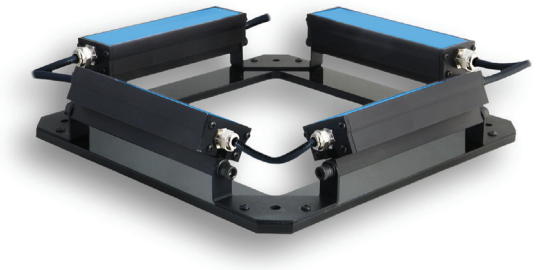
QM116

Quad Mounted Lights - AL116

Washdown

Product Highlights

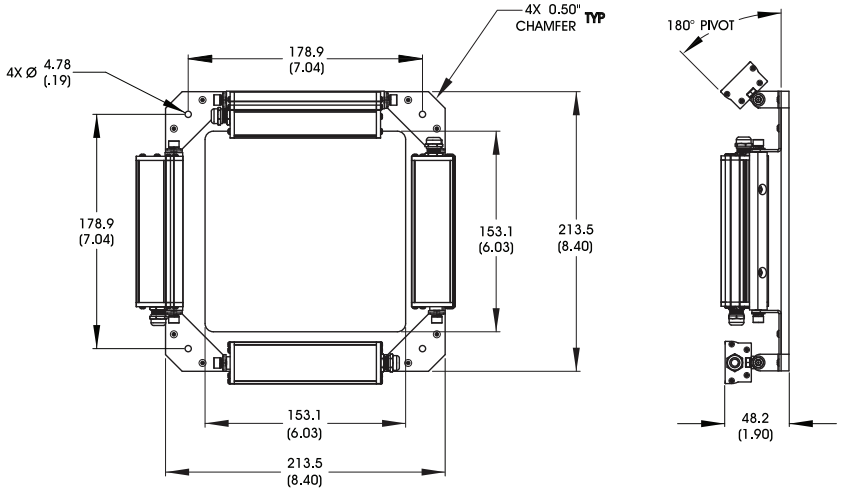
- Four individually mounted AL116 RevA units can be configured for specific lighting needs
- 180° pivoting mounts lock securely



General Specifications

Electrical Specifications	Color	24v Current	All Other Controls
	365, 375, 385, 395, 405	0.24A per 2 inch	0.15A Max per 2 inch
	455, 470, 530, WHI	0.24A per 2 inch	0.19A Max per 2 inch
	590, 625	0.24A per 2 inch	0.21A Max per 2 inch
	850, 940	0.24A per 2 inch	0.23A Max per 2 inch
Normal Operating Temperature	0 - 60°C		
Weight (g)	636.84g (22.46oz)		
Standard Cable Information	Up to 2 meters (80") long - 105°C rated PVC jacket, foil shield with drain.		
Photobiological Risk Factor IEC 62471	**Exempt Applicable Wavelengths:** 850, 940 **Group 1 (Low-Risk) Applicable Wavelengths:** 455, 470, 530, 590, 625, WHI **Group 2 (Moderate Risk) Applicable Wavelengths:** 365, 375, 385, 395, 405		
Compliance	CE RoHS IEC 62471		
IP Rating	IP65 Sealed, IP50 Unsealed		
Lumen Maintenance	L70 = 50,000 hours		

Mechanical Specifications



DIMENSIONS ARE IN MILLIMETERS (INCHES)

Part Number Key

Model	—	Spectral Wavelength	Connector/ Control	Wash Down Option	Optional Light Conditioning
QM116	—	XXX	XX	X	X
QM116		(UV) 365[2] (UV) 375[2] (UV) 385[2] (UV) 395[2] (UV) 405 (royal blue) 455 (blue) 470 (green) 530 (amber) 590 (red orange) 625 (infra-red) 850 (infra-red) 940 (white) WHI	C1 C5 IC I3 I3S 24	W	D (diffuser) P[1] (polarizer)

Ex: QM116-WHIIC
QM116-625C5W

[1] Not available with washdown option
(blue) 470 will reduce the life of the polarizer
[2] Not available with diffuser or polarizer option

Stock Product: *ships within 3 day*
None

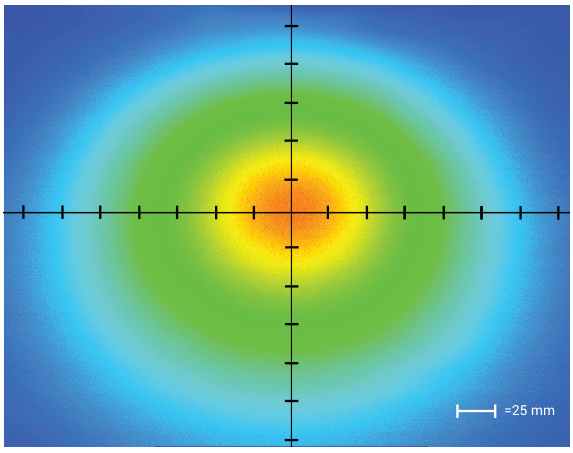
Build to Order: *shipped within two weeks*

Connector | Control Options

C1 Connector	C5 Connector	ICS 2 (IC)	ICS 3 (I3)	ICS 3S (I3S)	24
For use with: DCS Series Controllers	*For use with:* Pulsar 320 Strobe Controller.	Continous in-line controller *Powered with:* 24V power supply	Combination strobe/continous in-line controller *Powered with:* 24V power supply	Default-OFF strobe/continous in-line controller *Powered with:* 24V power supply	Flying/tinned leads *Powered with:* 24V power supply

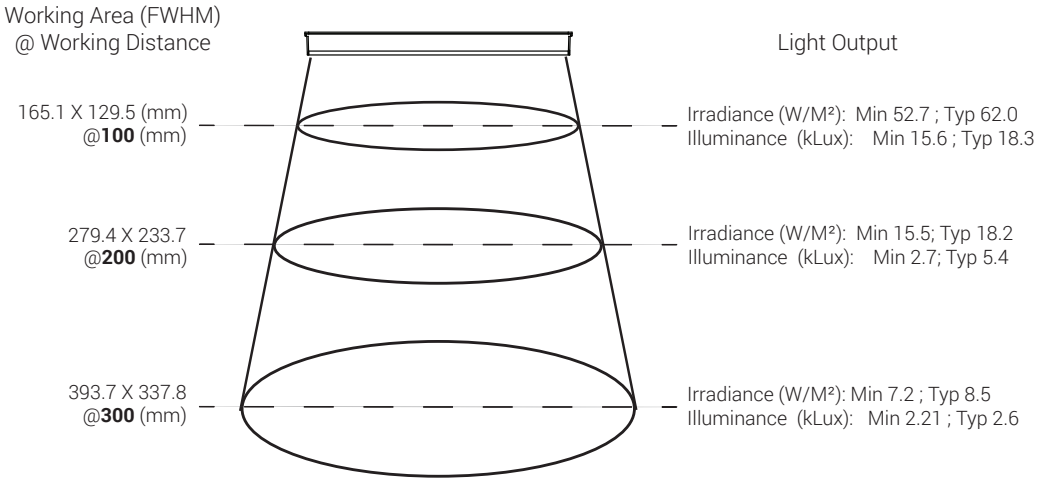
Optical Performance (per single AL116)

Intensity Distribution



Optical measurement taken using AL116-WHIIC @ 200 mm

Area of Illuminance & Intensity



Operation and Wiring

ICS 2 (IC)

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	0-10 VDC Analog Control	White
3	DCGND	Blue
4	GLO	Black

ICS 3 (I3 and I3S)

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	Reserved	White
3	GND	Blue
4	PNP/Active High Trigger	Black
5	0-10 VDC Analog Control	Gray

24 Volt

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	N/A	White
3	GND	Blue
4	N/A	Black

Warranty Information

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of two years from the original date of purchase. Should a defect develop during this period, please contact Ai Customer Service or your Ai distributor for a Return Merchandise Authorization (RMA), and return the complete product, freight prepaid, to Ai. If a defect is found, Ai will - at our discretion - repair or replace the product without charge. Ai claims no liability for any implied warranties, including “merchantability” and “fitness for a specific purpose.”

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm, EST or send an email to orders@advill.com.

Company Information

Advanced Illumination

440 State Garage Road, Rochester VT. 05767

Phone: 802.767.3830

Fax: 802.767.3831

Email: info@advancedillumination.com

Web: advancedillumination.com

© 2015 Advanced Illumination Inc. All rights reserved

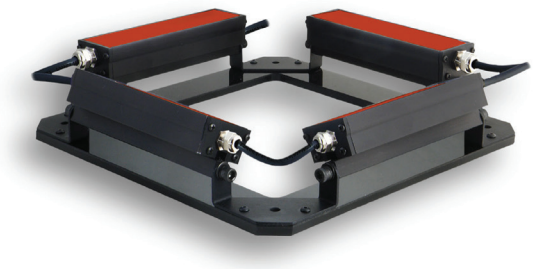
QM126

Quad Mounted Lights - AL126

Washdown

Product Highlights

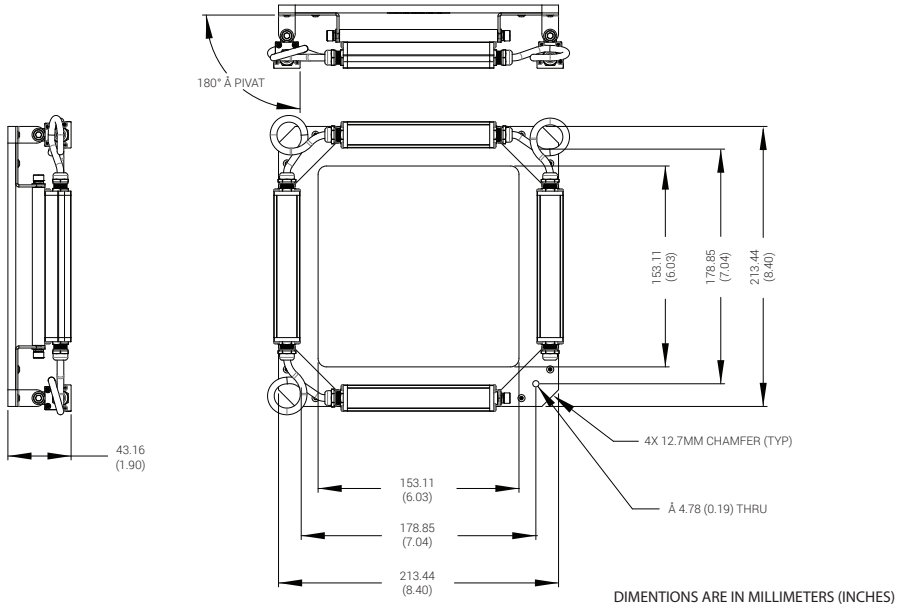
- Four individually mounted AL126 units can be configured for specific lighting needs
- 180° pivoting mounts lock securely



General Specifications

Electrical Specifications	Color	24v Current	All Other Controls
	365, 375, 385, 395, 405	0.12A per 2 inch	0.06A Max per 2 inch
	455, 470, 530, WHI	0.12A per 2 inch	0.08A Max per 2 inch
	590, 625	0.12A per 2 inch	0.10A Max per 2 inch
	850, 940	0.12A per 2 inch	0.12A Max per 2 inch
Normal Operating Temperature	0 - 60°C		
Weight (g)	598.74 g (21.12 oz)		
Standard Cable Information	Up to 2 meters (80") long - 105°C rated PVC jacket, foil shield with drain.		
Photobiological Risk Factor IEC 62471	**Exempt Applicable Wavelengths:** 850, 940 **Group 1 (Low-Risk) Applicable Wavelengths:** 455, 470, 530, 590, 625, WHI **Group 2 (Moderate Risk) Applicable Wavelengths:** 365, 375, 385, 395, 405		
Compliance	CE RoHS IEC 62471		
IP Rating	IP65 Sealed, IP50 Unsealed		
Lumen Maintenance	L70 = 50,000 hours		

Mechanical Specifications



Part Number Key

Model	—	Spectral Wavelength	Connector/ Control	Wash Down Option	Optional Lighting Condition
QM126	—	XXX	XX	X	X
QM126		(UV) 365 [2] (UV) 375 [2] (UV) 385 [2] (UV) 395 [2] (UV) 405 (royal blue) 455 (blue) 470 (green) 530 (amber) 590 (red orange) 625 (infra-red) 850 (infra-red) 940 (white) WHI	C1 C5 IC I3 I3S 24v	W	D (Diffuser) P [1] (Polarizer)

Ex: QM126-470C1WD
QM126-625ICP

[1] Available with IC, I3, I3S and 24v options only
(blue) 470 will reduce the life of the polarizer
[2] Not available with diffuser or polarizer option

Stock Product: *shipped within three days*
None

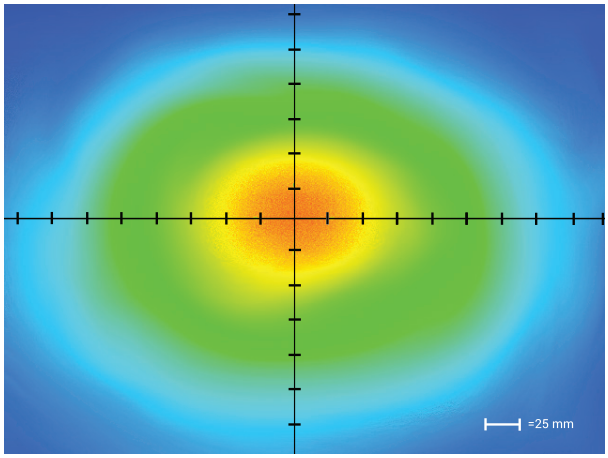
Build to Order: *shipped within two weeks*

Connector | Control Options

C1 Connector	C5 Connector	ICS 2 (IC)	ICS 3 (I3)	ICS 3S (I3S)	24
For use with: DCS Series Controllers	*For use with:* Pulsar 320 Strobe Controller.	Continous in-line controller *Powered with:* 24V power supply	Combination strobe/continous in-line controller *Powered with:* 24V power supply	Default-OFF strobe/continous in-line controller *Powered with:* 24V power supply	Flying/tinned leads *Powered with:* 24V power supply

Optical Performance (per single AL126)

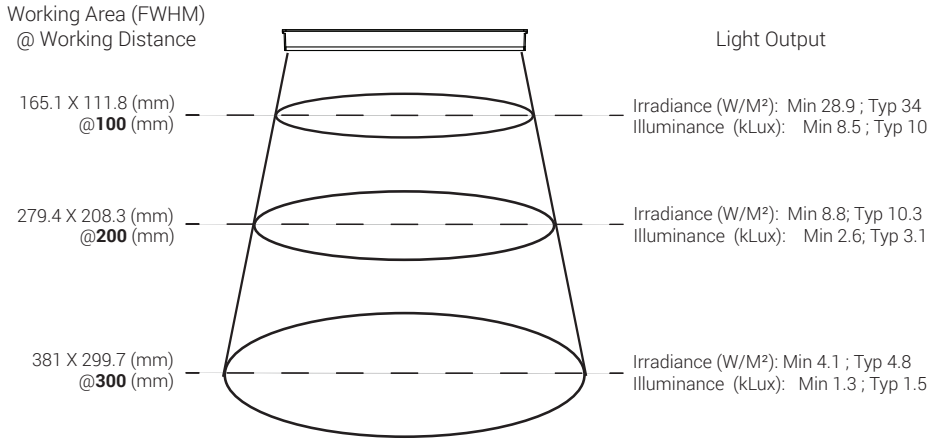
Intensity Distribution



80-100%
60-80%
40-60%
20-40%
10-20%
0-10%

Optical measurement taken using AL126-WHIIC @ 200 mm

Area of Illuminance & Intensity



Operation and Wiring

ICS 2 (IC)

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	0-10 VDC Analog Control	White
3	DCGND	Blue
4	GLO	Black

ICS 3 (I3 and I3S)

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	Reserved	White
3	GND	Blue
4	PNP/Active High Trigger	Black
5	0-10 VDC Analog Control	Gray

24 Volt

Pin (M12)	Function	Wire Color
1	+24 VDC	Brown
2	N/A	White
3	GND	Blue
4	N/A	Black

Warranty Information

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of two years from the original date of purchase. Should a defect develop during this period, please contact Ai Customer Service or your Ai distributor for a Return Merchandise Authorization (RMA), and return the complete product, freight prepaid, to Ai. If a defect is found, Ai will - at our discretion - repair or replace the product without charge. Ai claims no liability for any implied warranties, including “merchantability” and “fitness for a specific purpose.”

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm, EST or send an email to orders@advill.com.

Company Information

Advanced Illumination

440 State Garage Road, Rochester VT. 05767

Phone: 802.767.3830

Fax: 802.767.3831

Email: info@advancedillumination.com

Web: advancedillumination.com

© 2015 Advanced Illumination Inc. All rights reserved

AL-S025300

EuroBrite™ Bar Light

Product Highlights

- This EuroBrite™ bar light provides high-intensity illumination at a competitive price point.
- Refer to the full description for more detail.

General Specifications

Electrical Specifications	Color	Current	All Other Controls
	455, 470, 505, 530, 590, 625, 660, 730, 850, 940, WHI	~0.36A	N/A
Input Voltage Range	24V nom. (min 22/max 28)		
Maximum Input Current	0.42-0.49A		
Strobe/On-Off Control	Up to 5X overdrive, active high		
Analog Intensity Control	Analog 0.7-10V; 0.7V=10% 10V=100%		
Trigger-to-Pulse Latency	10µsec		
Normal Operating Temperature	0 - 60°C		
Weight	245g (10.37oz)		
Standard Cable Information	No cable included; see part number LC2-M12-5-FX and LC.5-M12-5-FM or use standard coded 5-pin M12.		
Photobiological Risk Factor	Exempt Applicable Wavelengths: 850, 940 Group 1 (Low-Risk) Applicable Wavelengths: 455, 470, 505, 530, 590, 625, 660, 730, WHI		

Compliance	CE, RoHS, IEC 62471
IP Rating	IP67
Lumen Maintenance	L70 = 50,000 Hours

Part Number Key

Model	–	Mode	Emitting Width (mm)	Emitting Length (Cable Side) (mm)	Lens Type	–	Peak Wavelength
AL	–	X	XXX	XXX	X	–	XXX
AL		S (Strobe)	025	300	M (Medium) W (Wide)		455 (royal blue) 470 (blue) 505 (cyan) 530 (green) 590 (amber) 625 (red orange) 660 (red) 730 (IR) 850 (IR) 940 (IR) WHI (white)

EX:
AL-S025300M-470
AL-S025300W-WHI

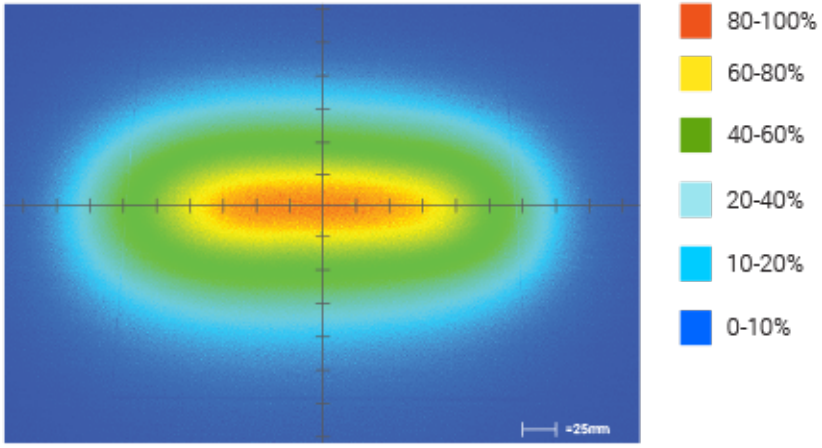
Beam Angle (FWHM):
Medium = 21°
Wide = 32°

See website product page for in-stock product numbers.

Shipping:
Stock Products: within three days
Build-to-Order Products: within one to three weeks

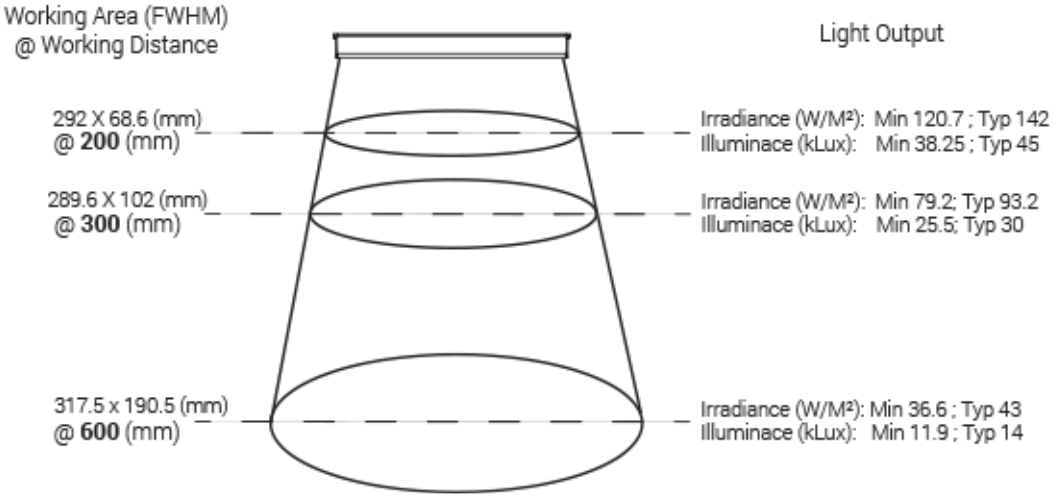
Optical Specs

Intensity Distribution

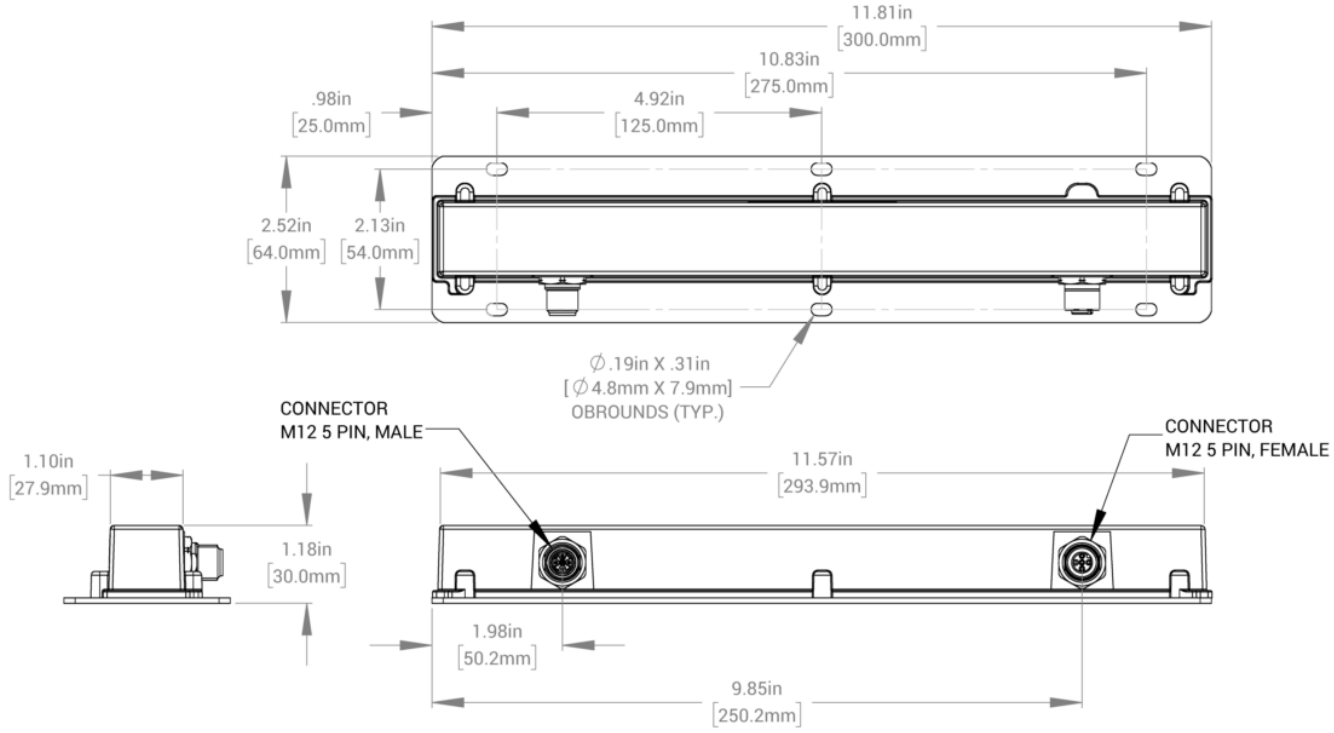


Optical measurement taken using AL-S025300M-WHI @ 300 mm

Area of Illuminance & Intensity



Mechanical Specs



Electrical Specs

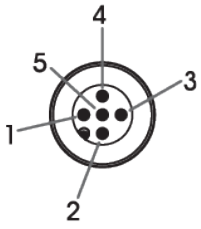
Modes of Operation

Continuous	Strobe	Thermal Foldback	Factory Reset
To enable output: Tie Trigger+ (black) HIGH to >0.5V. The light remains ON as long as Trigger+ is high Analog dimming is available during continuous mode operation: pin 5, gray	EuroBrite™ S-version uses Adaptive Overdrive™ to produce overdrive pulses while the Trigger+ is HIGH. Overdrive period occurs for all trigger pulses, but only during the first 5 mSec for those pulse widths longer than 5 mSec; light output can be increased by as much as 5x. Overdriving does not occur when pulses exceed 5 mSec. Analog dimming is available during strobe mode operation: pin 5, gray	To engage Thermal Foldback: Before turning the light on, tie pin 2 (white) to pin 3 (GND, blue). Onboard thermistor is sampled for 5 minutes. Light intensity will automaticaly adjust based on the case tempurature during the training period. The beginning of training is signified by a series of rapid flashes. While training, the light will blink every two seconds. A few slower blinks signal the end of the training period	To engage Factory Reset: Before turning the light on, tie pin2 (white) to pin 3 (blue). For factory reset to occur, the light must be trained for thermal foldback first. Light will appear dim for 3-5 seconds then brightness will be set to factory default. After factory reset is complete disconnect white wire from blue wire for normal operation (before turning light back on). Tying pin 2 (white) to pin 3 (blue) will alternate between factory reset and thermal foldback modes.

Standard Wiring Information

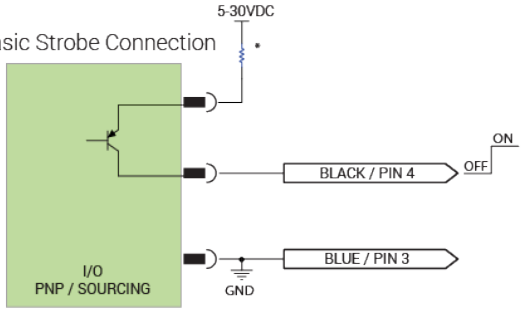
Pin	Function	Wire Color	Type
1	24VDC	Brown	Power
2	Thermal Foldback	White	Input
3	GND	Blue	Power
4	Trigger +	Black	Input
5	Analog	Gray	Input

Male 5-Position



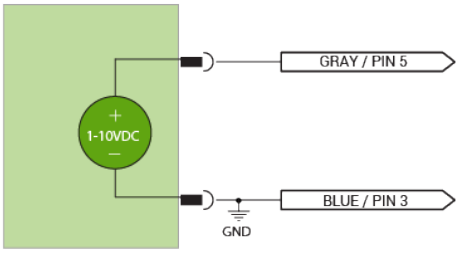
Wiring Diagrams

Basic Strobe Connection



*External resistors may not be needed
Check documentation on I/O for recommendations and voltage limits

Analog Dimming



Analog dimming works in both strobe and continuous

Warranty Information

Every Advanced illumination, Inc. (Ai) product is thoroughly inspected and tested before leaving the factory. Products are warranted to be free of defects in workmanship and materials for a period of FIVE YEARS from the original date of purchase. Should a defect develop during this period, customers may return the complete product, freight prepaid, to one of Ai's distributors or to the Ai factory. All product warranty returns require a Return Merchandise Authorization (RMA) number which is obtained from Customer Service. The RMA number must be clearly marked on the outside of the package. Ai will inspect the unit, and if a defect is found will, at our option, repair or replace the product without charge. Ai disclaims liability for any implied warranties, including implied warranties of "merchantability" and "fitness for a specific purpose." For products under warranty that have since been discontinued, Ai will make an effort to replace with equivalent parts; for circumstances that do not allow for equivalent replacement, Ai reserves the right to repair or replace these products with an updated version. Ai cannot be held responsible for the unauthorized or inappropriate use of its products. Any unauthorized repair or modifications will result in a voided warranty.
No Liability for Consequential Damages: In no event shall Ai be liable for any consequential, special, incidental, or indirect damages of any kind arising from the sale or use of the products.

Electromagnetic Compatibility

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference only when the product is operated in its intended industrial electromagnetic environment. To minimize the potential for electromagnetic interference or unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Customer Service

For information on existing orders, or to make an order adjustment, contact us Monday through Friday 8:00 am to 5:00 pm ET or send an email to orders@advancedillumination.com.

Company Information

Advanced Illumination
440 State Garage Road, Rochester, VT 05767
Phone: 802.767.3830
Fax: 802.767.2636
Email: info@advancedillumination.com
Web: advancedillumination.com
© 2021 Advanced illumination Inc. All rights reserved