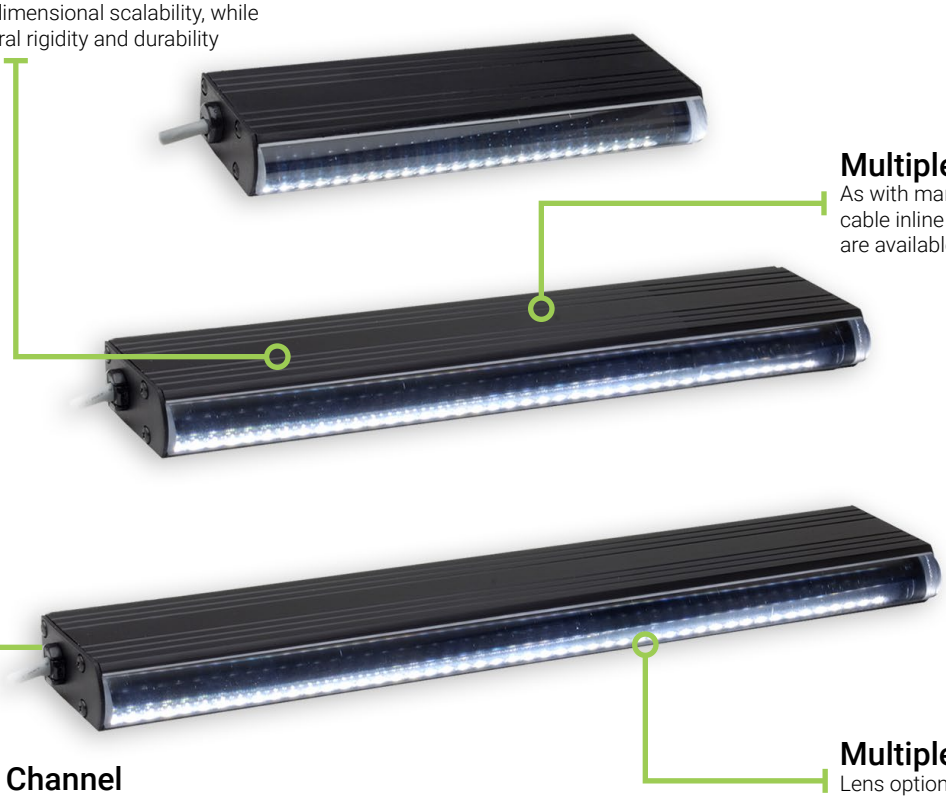
LL163

Classic Line Lights| Product Datasheet

ADVANCED ILLUMINATION by Exaktera

Scalable Extrusion-Based Housing

Built with extrusion-based aluminum construction allowing for linear, one-dimensional scalability, while maintaining structural rigidity and durability



Multiple Control Options

As with many Ai lighting products, cable inline and extrernal controllers are available

M6 Mounting Channel

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

Multiple Lens Options

Lens options available for a variety of line lengths and working distances

LL163 Series Description

The LL163 is a legacy linescan light that is best suited for use in low-speed linescan applications, such as unwrapping can label inspections.

The LL163 is available from 1.5" to 80" in length, in 1.5" increments, and legacy derivative lengths include: LL2912 (3"), LL3024 (6") and LL3148 (12").

As with most other Advanced illumination line lights, the LL163 is available with 4 different lens focus options and multiple wavelengths, including UV, visible and one NIR option.

The LL163 differs from the LL137/167/LL330 line lights in that its lower intensity output is suitable only for low-speed, unwrapping linescan applications and only cable inline or external controllers are available.

- **Legacy Product**
- **Scalable Linear Design**
- **Multiple Control Options**
- **Multiple Focal Lengths**
- **1-2 Week BTO Lead Times Typical**

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 395 nm, 470 nm, 530 nm, 625 nm, 880 nm	
	Available Lensing			4 Focal Lengths	
	Available Light Conditioning			None	
Electrical	Power Consumption Info			See Power Requirements on Page 8	
	Cable Info			80" -0/+6" Long (2 m -0/+150 mm), 105 °C Rated, Foil Shield w/ Drain	
Mechanical	Sizing Info	Standard	Length	2.19" (55.6mm) to 83.00" (2108.2mm)	See Page 7 for More Details
			Width	0.94"(23.8mm)	
			Height	2.39"(60.6mm) to 3.14"(79.6mm) A/B/D/E Lens	
	Weight Info (Standard)			~ 0.47 lbs (~213 g) per 2.2" 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	
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	Model Extension	Lens Focus	Number of LEDs	-	Peak Wavelength	Connector/ Control	-	Alternative Connector
LL163	XXXX	X	XXX	-	XXX	XX	-	XXX
LL163	163	A (Converging)	Refer to Sizing Chart		395 (UV)	C1		M8[1]
	2912	B (Converging)			470 (blue)	C5		M12[1]
	3024	D (Collimating)			520 (green)	IC		
	3148	E (Collimating)			625 (red orange)	I3		
					660 (red)	I3S		
					880 (IR)	24		
					WHI (white)			
more info on page			7		4	8		10

Example Part Numbers:
LL163A030-WHIIC
LL163B102-625IC-M12

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

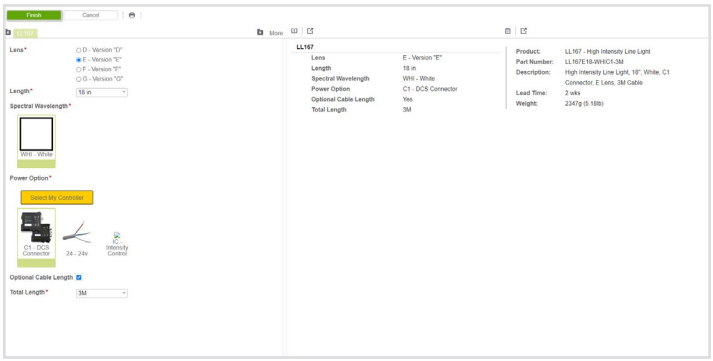
In Stock

Unavailable

Lead Times

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

Configurator

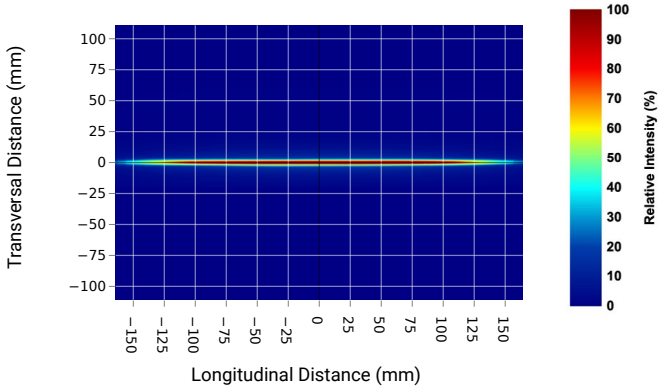


Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our LL163 Classic Line Lights to your specific needs. For a guided configuration, visit our online configurator.

Optical Information

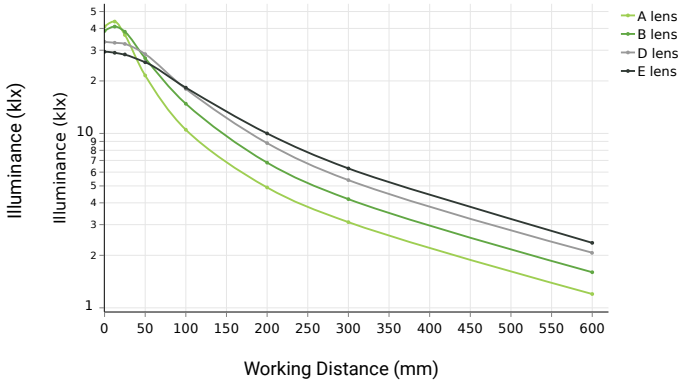
Intensity Characteristics

Intensity Distribution Image at 50 mm Working Distance



Intensity distribution sample image was taken with a 12-inch white LL163 unit with an E lens.

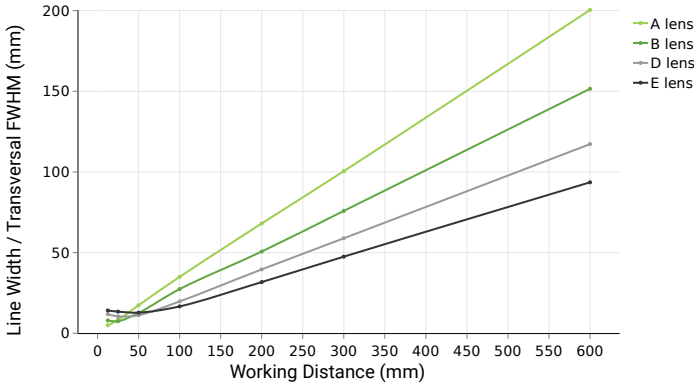
Illuminance vs Working Distance



Illuminance data was collected using a 12-inch white LL163 unit.

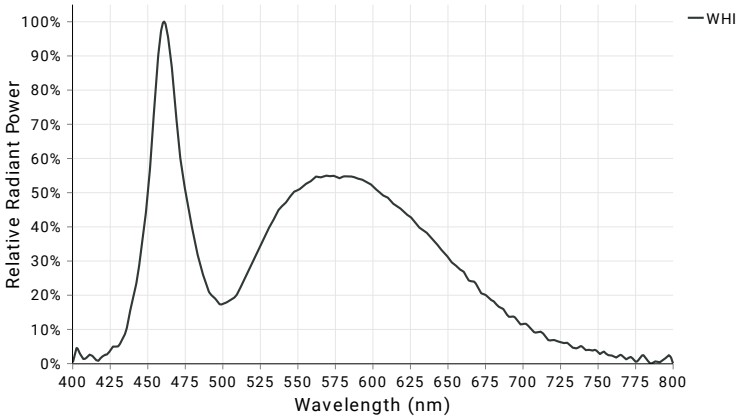
Line Width

Line Width vs Working Distance



Line width data was collected using a 12-inch white LL163 unit.

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 between different lighting families, which can impact machine vision systems, specifically when matching white light sources.

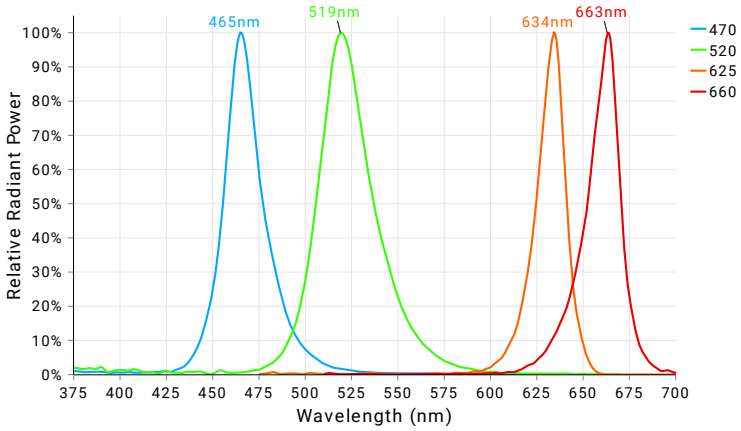
The LL163 Series white LEDs have a relatively neutral color correlated temperature (CCT) of **5500 K.**

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.

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

Visible Spectral Profiles

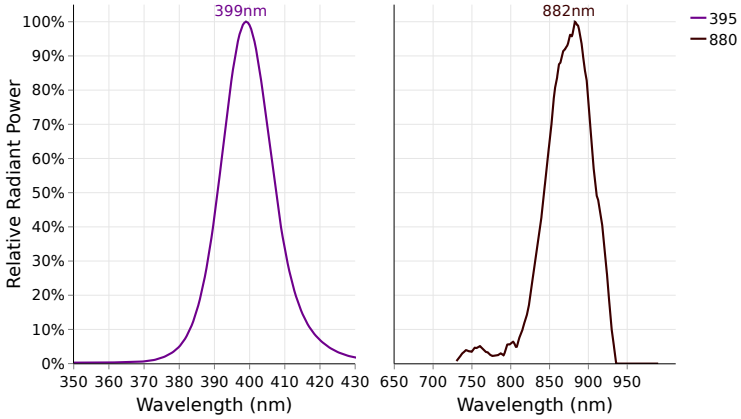


Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a materials color hue. When referring to a color wheel, simply remember the following: like colors reflect and brighten surfaces; conversely,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

The LL163 Series is available in **470 nm, 520 nm, 625 nm, and 660 nm** 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 technique using longer wavelengths of 700-1000 nm to penetrate specific materials that are otherwise opaque to under the visible spectrum.

The LL163 Series is available in **395nm, and 880 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 (nm)
Exempt	No Photobiological Hazard	880
Group 1	No Photobiological hazard under normal behavioral limitations	470, 520, 625, 660, WHI
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	395

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.

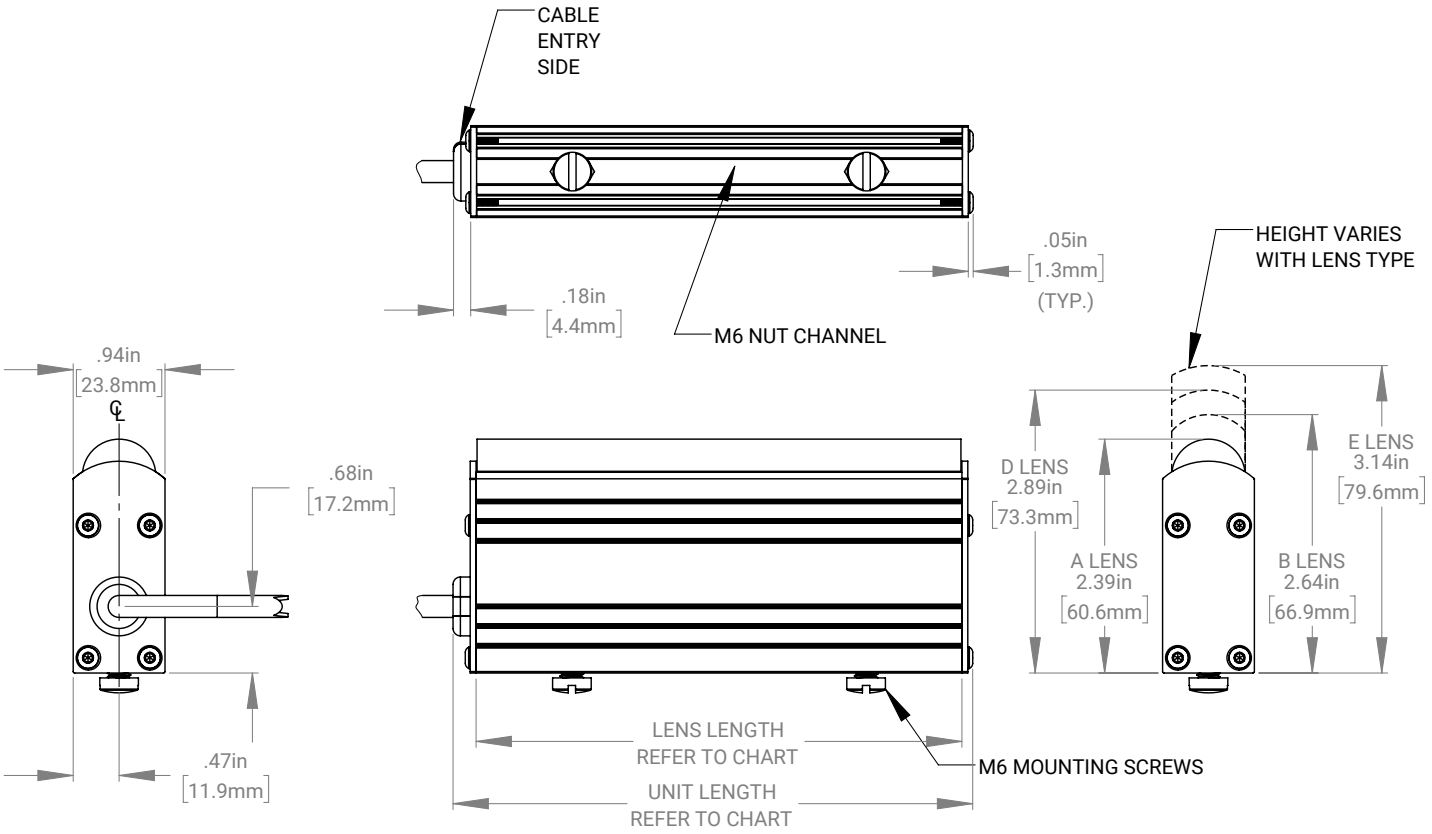
Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

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.

Mechanical Information

Installation Drawings



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

Sizing Chart

Part Number	Length (Inches)		Length (Millimeters)		Power Options
	Unit	Lens	Unit	Lens	
LL163X006	2.48	1.826	62.992	46.380	C1 / C5/ 24 / IC / I3 / I3S
LL2912X	3.98	3.380	101.092	85.852	C1 /C5/ 24 / IC / I3 / I3S
LL163X018	5.48	4.934	139.192	125.324	C1 /C5/ 24 / IC / I3 / I3S
LL3024X	6.98	6.488	177.292	164.795	C1 /C5/ 24 / IC / I3 / I3S
LL163X030	8.48	8.042	215.392	204.267	C1 /C5/ 24 / IC / I3 / I3S
LL163X036	9.98	9.596	253.492	243.738	C1 /C5/ 24 / IC / I3 / I3S
LL163X042	11.48	11.150	291.592	283.210	C1 /C5/ 24 / IC / I3 / I3S
LL3148X	12.98	12.704	329.692	322.682	C1 /C5/ 24 / IC / I3 / I3S
LL163X054	14.48	14.258	367.792	362.153	C1 /C5/ 24 / IC / I3 / I3S
LL163X060	15.98	15.812	405.892	401.625	C1 /C5/ 24 / IC / I3 / I3S
LL163X066	17.48	17.366	443.992	441.096	C1 /C5/ 24 / IC / I3 / I3S
LL163X072	18.98	18.920	482.092	480.568	C1 /C5/ 24 / IC / I3 / I3S
LL163X078	20.48	20.474	520.192	520.040	C1 /C5/ 24 / IC / I3 / I3S
LL163X084	21.98	22.028	558.292	559.511	C1 /C5/ 24 / IC / I3 / I3S

Sizing Chart Continued

Part Number	Length (Inches)		Length (Millimeters)		Power Options
	Unit	Lens	Unit	Lens	
LL163X090	23.48	23.582	596.392	598.983	C1 /C5/ 24 / IC / I3 / I3S
LL163X096	24.98	25.136	634.492	638.454	C1 /C5/ 24 / IC / I3 / I3S
LL163X102	26.48	26.690	672.592	677.926	C1 /C5/ 24 / IC / I3 / I3S
LL163X108	27.98	28.244	710.692	717.398	C1 /C5/ 24 / IC / I3 / I3S
LL163X114	29.48	29.798	748.792	756.869	C1 /C5/ 24 / IC / I3 / I3S
LL163X120	30.98	31.352	786.892	796.341	C1 /C5/ 24 / IC / I3 / I3S
LL163X126	32.48	32.906	824.992	835.812	C1 /C5/ 24 / IC / I3 / I3S
LL163X132	33.98	34.460	863.092	875.284	C1 /C5/ 24 / IC / I3 / I3S
LL163X138	35.48	36.014	901.192	914.756	C1 /C5/ 24 / IC / I3 / I3S
LL163X144	36.98	37.568	939.292	954.227	C1 /C5/ 24 / IC / I3 / I3S
LL163X150	38.48	39.122	977.392	993.699	C1 /C5/ 24 / IC / I3 / I3S
LL163X156	39.98	40.676	1015.492	1033.170	C1 /C5/ 24 / IC / I3 / I3S
LL163X162	41.48	42.230	1053.592	1072.642	C1 /C5/ 24 / IC / I3 / I3S
LL163X168	42.98	43.784	1091.692	1112.114	C1 /C5/ 24 / IC / I3 / I3S
LL163X174	44.48	45.338	1129.792	1151.585	C1 /C5/ 24 / IC / I3 / I3S
LL163X180	45.98	46.892	1167.892	1191.057	C1 /C5/ 24 / IC / I3 / I3S
LL163X186	47.48	48.446	1205.992	1230.528	C1 /C5/ 24 / IC / I3 / I3S
LL163X192	48.98	50.000	1244.092	1270.000	C1 /C5/ 24 / IC / I3 / I3S
LL163X198	50.48	51.554	1282.192	1309.472	C1 /C5/ 24 / IC / I3 / I3S
LL163X204	51.98	53.108	1320.292	1348.943	C1 /C5/ 24 / IC / I3 / I3S
LL163X210	53.48	54.662	1358.392	1388.415	C1 /C5/ 24 / IC / I3 / I3S
LL163X216	54.98	56.216	1396.492	1427.886	C1 /C5/ 24 / IC / I3 / I3S
LL163X222	56.48	57.770	1434.592	1467.358	C1 /C5/ 24 / IC / I3 / I3S
LL163X228	57.98	59.324	1472.692	1506.830	C1 /C5/ 24 / IC / I3 / I3S
LL163X234	59.48	60.878	1510.792	1546.301	C1 /C5/ 24 / IC / I3 / I3S
LL163X240	60.98	62.432	1548.892	1585.773	C1 /C5/ 24 / IC / I3 / I3S
LL163X246	62.48	63.986	1586.992	1625.244	C1 /C5/ 24 / IC / I3 / I3S
LL163X252	63.98	65.540	1625.092	1664.716	C1 /C5/ 24 / IC / I3 / I3S
LL163X258	65.48	67.094	1663.192	1704.188	C1 /C5/ 24 / IC / I3 / I3S
LL163X264	66.98	68.648	1701.292	1743.659	C1 /C5/ 24 / IC / I3 / I3S
LL163X270	68.48	70.202	1739.392	1783.131	C1 /C5/ 24 / IC / I3 / I3S
LL163X276	69.98	71.756	1777.492	1822.602	C1 /C5/ 24 / IC / I3 / I3S
LL163X282	71.48	73.310	1815.592	1862.074	C1 /C5/ 24 / IC / I3 / I3S
LL163X288	72.98	74.864	1853.692	1901.546	C1 /C5/ 24 / IC / I3 / I3S
LL163X294	74.48	76.418	1891.792	1941.017	C1 /C5/ 24 / IC / I3 / I3S
LL163X300	75.98	77.972	1929.892	1980.489	C1 /C5/ 24 / IC / I3 / I3S
LL163X306	77.48	79.526	1967.992	2019.960	C1 /C5/ 24 / IC / I3 / I3S
LL163X312	78.98	81.080	2006.092	2059.432	C1 /C5/ 24 / IC / I3 / I3S
LL163X318	80.48	82.634	2044.192	2098.904	C1 /C5/ 24 / IC / I3 / I3S

X refers to Lens Type: A, B, D, E

Electrical Information

Power Requirements

Current Required for Power Supply Sizing

Wavelengths (nm)	Configured w/ Voltage Drive (24)	Configured w/ Standard Controller (C1, C5, IC, I3, I3S)
WHI, 395, 470, 520	0.020A per 6 inch increment	0.010A per 6 inch increment
625, 660, 880	0.030A per 6 inch increment	0.015A per 6 inch increment

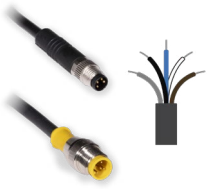
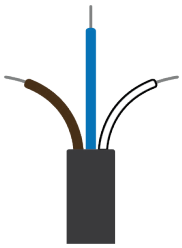
Note: All Advanced Illumination lights and controllers are nominally powered by 24V DC unless otherwise noted. Strobe overdriving with controller based models may require more current and voltage overhead. The values above do not include background current draw from the controller (~100 mA total).

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

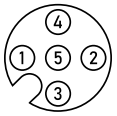
Control Options - Continued

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.	
	**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

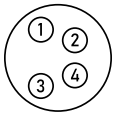
Standard Flying Lead and Optional M12 Connector Pinout Functions

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

5-Position Male Connector

The functions above are only applicable when ordering a 24V, IC, I3, or I3s 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 (8)	Wire Color	24V Functions	IC Functions	I3/I3S Functions	M8 Pinout
1	BROWN	24V DC	24V DC	24V DC	
2	WHITE	N/A	0-10V Analog Control	Reserved	
3	BLUE	DC GND	DC GND	DC GND	
4	BLACK	N/A	Gate Low	Active High Trigger	

4-Position Male Connector

The functions above are only applicable when ordering a 24V, IC, I3, or I3s 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

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 and I3s** *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 or I3/I3S Inline Controllers. For more information about our Manual Dimming Accessory please visit this webpage.
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.

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.

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.

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