

SL223

MicroBrite™ Spot/Coaxial Light Product Datasheet



Ultra Compact, Space-Saving Design

Ideally suited for very space-restricted and/or relatively close working distances

Multiple Control Options

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

High Power LEDs

Built with industrial grade LEDs capable of high output strobe and continuous operation, all while maintaining a long lifespan

Multiple Nose Piece Diameters

Standard 8mm nose diameter and optional 10mm are available at time of order

SL223 Series Description

The SL223 is a very compact light source designed to replace fiber-optic light sources best suited for internal coaxial and some external, off-axis applications.

16 wavelength choices from 365nm UV to 940nm NIR, make this light a versatile, yet cost-effective choice.

The SL223 differs from the SL162 and SL112 in its very compact size and the addition of an internal secondary focusing lens that allows for use in external, close working distance applications owing to the tighter fan angle.

Optional couplers available for use with Dolan-Jenner, Fostec, and Moritex fiber bundles.



High Intensity



CE and RoHS Compliant



16 Available Wavelengths



Multiple Control Options



1-2 Week BTO Lead Times Typical

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 365 nm, 375 nm, 385 nm, 395nm, 405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625 nm, 660 nm, 730 nm, 850 nm, 940 nm	
	Available Lensing			No Lenses	
	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	Diameter	.37"(9.4mm)	See Page 7 for More Details
			Length	2.90"(73.7mm)	
	Weight Info (Standard)			~ 0.03 lbs (~13 g) per Unit	
	Mounting Info			None	
	Material Info			Anodized Aluminum Housing, Acrylic Window, Brass Strain Relief, PVC Cable Jacket, Silicone Sealant, Polyolefin Heatshrink	
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			IP65	
	Lumen Maintenance - White Only			L70 (50,000 Hours)	

[See Page 7 for More Details](#)

General Information - Continued

Part Number Key

Model	Mounting Options	-	Peak Wavelength	Connector/Control	-	Alternative Connector
SL223	X	-	XXX	XX	-	XXX
SL223	S (Standard)		365 (UV)	C1		M12 ¹
	B (Barrel)		375 (UV)	C5		M8 ¹
			385 (UV)	IC		
			395 (UV)	I3		
			405 (violet)	I3S		
			455 (royal blue)			
			470 (blue)			
			505 (cyan)			
			530 (green)			
			590 (amber)			
			625 (red orange)			
			660 (red)			
			730 (IR)			
			850 (IR)			
			940 (IR)			
			WHI (white)			
more info on page	7		5	8		10

Example Part Numbers:
SL223B-530C1
SL223-WHII3-M12

¹ Available with IC, I3, and I3S options only

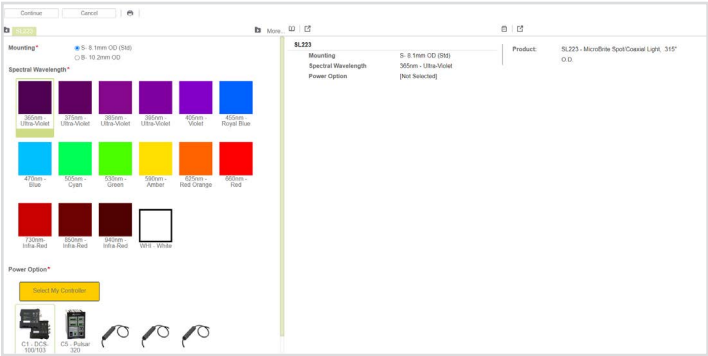
In Stock

Lead Times

SL223-625IC
SL223-WHIIIC

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

Configurator

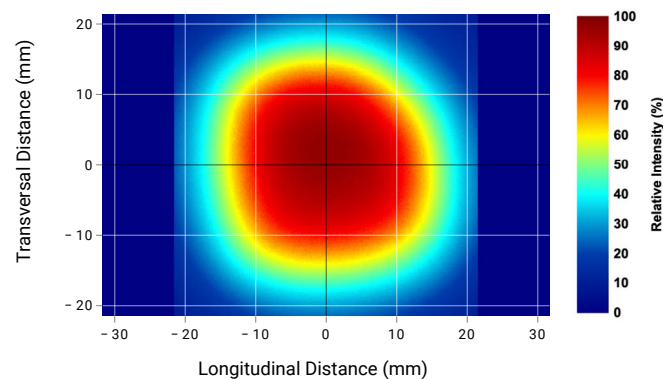


Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our SL223 MicroBrite™ Spot/Coaxial Light to your specific needs. For a guided configuration, [visit our online configurator](#).

Optical Information

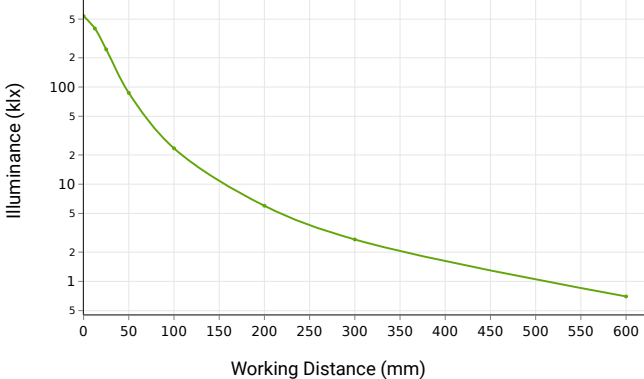
Intensity Characteristics

Intensity Distribution Image at 100 mm Working Distance



Intensity distribution sample image was taken with a white SL223 unit.

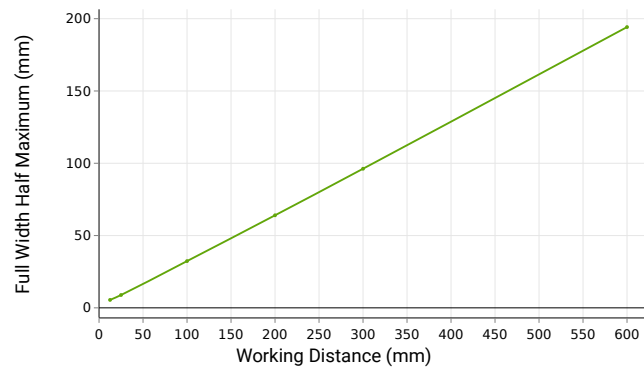
Illuminance vs Working Distance



Illuminance data was collected using a white SL223 unit.

FWHM vs Working Distance

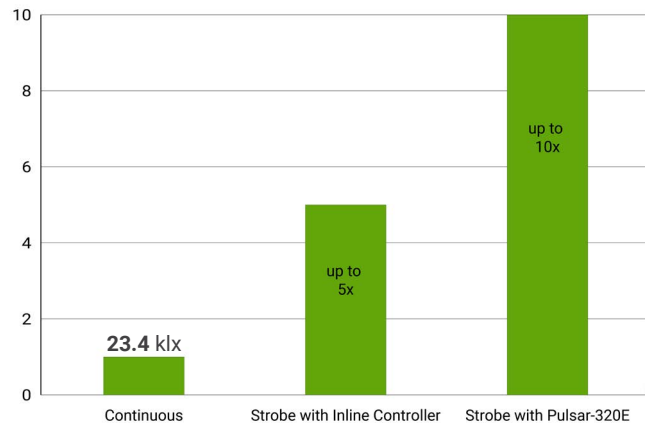
Full Width Half Maximum vs Working Distance



Full width half maximum data was collected using a white SL223 unit.

Volorehent. Rem natur? Sed ulla dolupta speriberchit maxime sit, volut inverias aliquet et et fugit maximodion peritat velic te quis di torrovit, optat enessunt. Vit reperor ehenemp oratus es nam quibusa ndellab is dio. Optis dolora nus ides doluptat re la et doloribus ipsunt volo magnis est, ipiti sedipsamus, omnis int fuga. Tionet laut et volorum volori do-luptaqui netur molupturem verum faccus necabor eritatum a disciatem eium que rem veliam, odia cus. Nequam et fuga. Ehene simusanitem. Ut ide porum voluptas dis ne aborio doluptio tecatiae aut vid quis dignimi ligenih illuptatem aut ut et aliquudent id et in cor anis rectet volecab ipiendi dem eatem isque rem.

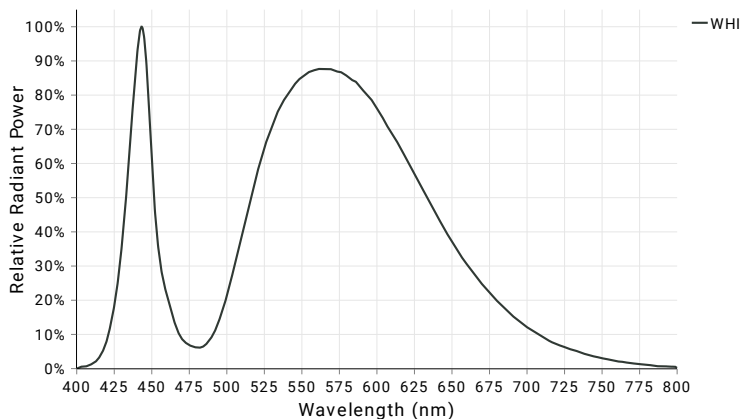
Continuous vs Strobe Intensity



Under continuous operation, a white SL223 unit will output an **illuminance of 23.4 klx** and an **irradiance of 83 W/m²** at a 100mm working distance. For applications that require higher output, the SL223 Series has been engineered to be overdrive strobe capable. When configured with AI's strobe enabled Inline Controller (I3, and I3s), the SL223 is capable of outputting up-to 5X continuous levels. When configured with a C5 connector, compatible with AI's Pulsar 320E, an **SL223 can be strobed up-to 10X continuous intensity levels.**

Optical Information - Continued

White Spectral Profile

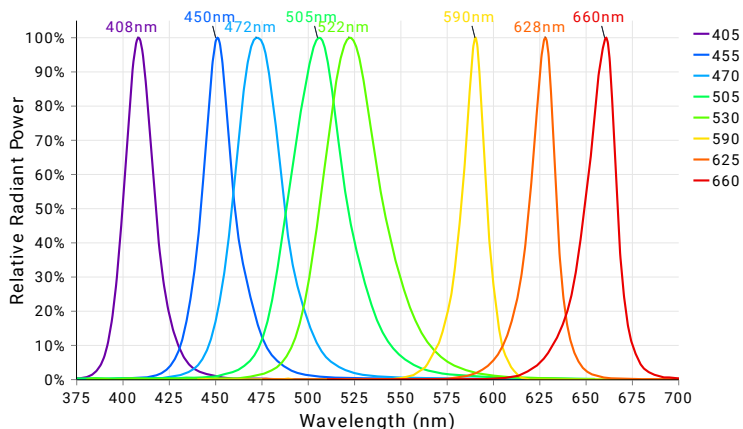


White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, [white LEDs can vary in color temperature, which can impact machine vision systems](#), specifically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

The SL223 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](#).

Visible Spectral Profiles

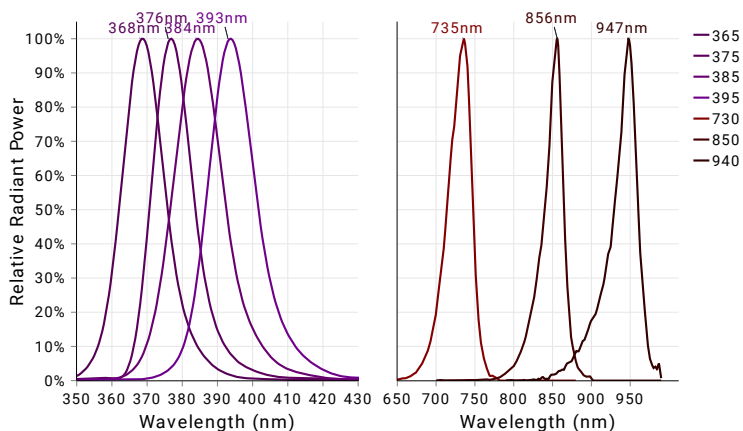


Visible color illumination consists of using wavelengths between 400-700 nm to either create or eliminate contrast on an inspection subject based on differences in a features color hue. When referring to a color wheel, simply remember the following: like colors reflect and brighten surfaces; conversely,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

The SL223 Series is available in **405 nm, 455 nm, 470 nm, 505 nm, 530 nm, 590 nm, 625nm, 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. When paired with a NIR camera, a NIR light can be ideal for applications such as fill level inspection, circuit board inspection, food safety inspection, and medical imaging.

The SL223 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 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	730, 850, 940
Group 1	No Photobiological hazard under normal behavioral limitations	455, 470, 505, 530, 590, 625, 660
Group 2	Does not pose a hazard due to aversion response to bright light or thermal discomfort	365, 375, 385, 395, 405, White

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.

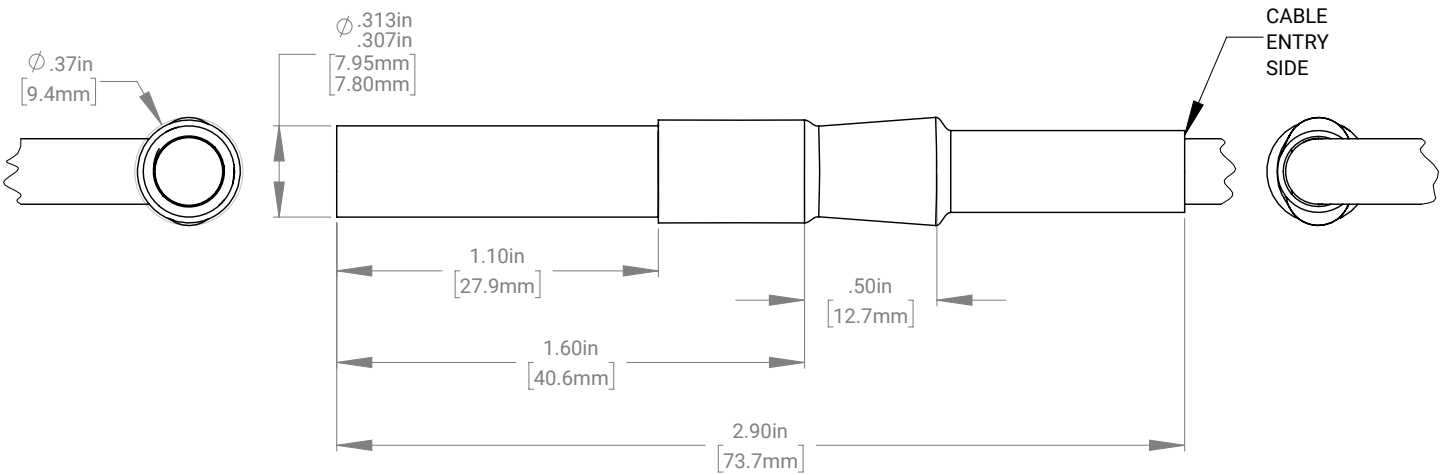
Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

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

Mechanical Information

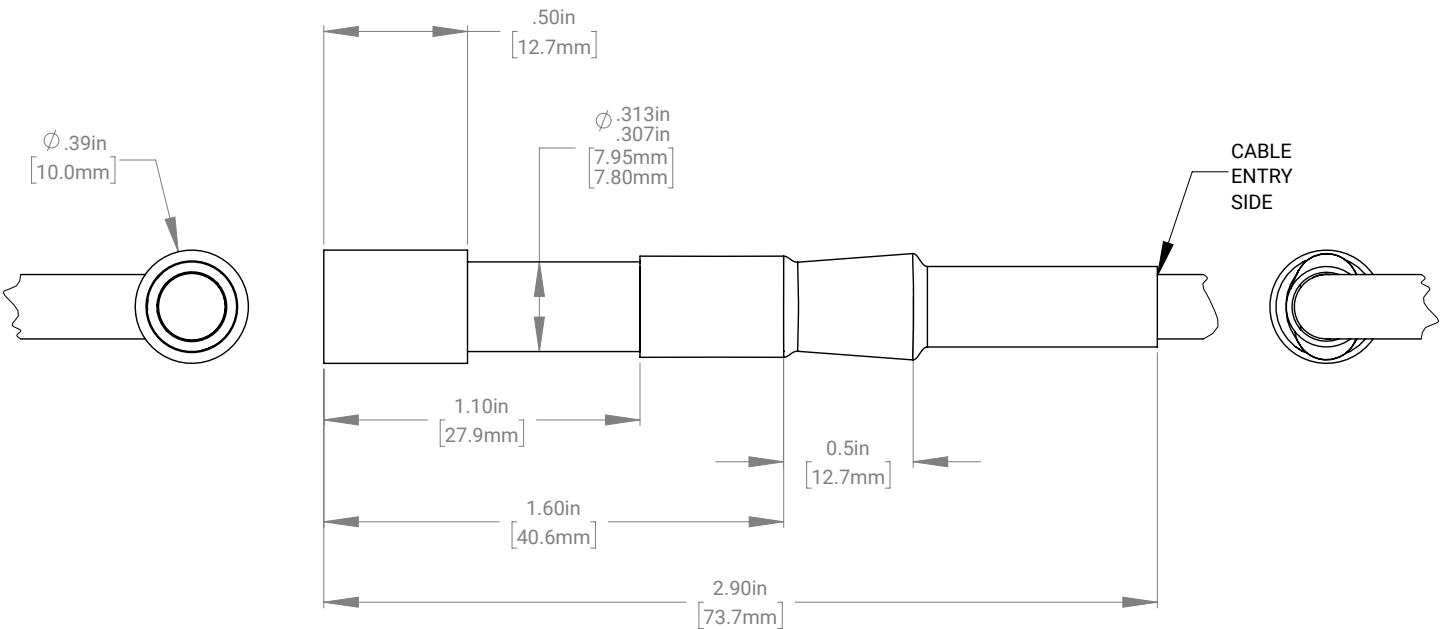
Installation Drawings

Standard Configuration



For full installation drawings and complete CAD models of this standard configuration, please visit the [downloads section of the product webpage](#).

Barrel Configuration



For full installation drawings and complete CAD models of this barrel configuration, please visit the [downloads section of the product webpage](#).

Electrical Information

Power Requirements

Current Required for Power Supply Sizing

Wavelengths (nm)	Configured w/ Standard Controller (C1, C5, IC, I3, I3S)
365, 375, 385, 395, 405, 455, 470, 505, 530, 590, WHI	0.050A per sq. inch
625, 660, 730	0.080A per sq. inch
850, 940	0.100A per sq. inch

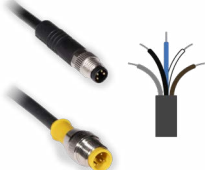
Advanced Illumination's lighting products have been tested and classified to IEC standards by accredited testing services. For more information on photobiological risk factors, please view the following PDF: <https://www.advancedillumination.com/wp-content/uploads/2019/04/IEC-040119.pdf>

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

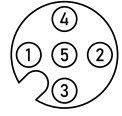
Control Options - Continued

Controller Image	Controller Details	Connector Image
	Inline Controller - Continuous Only - IC Configurations <i>PN: N/A</i> 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 <i>PN: N/A</i> 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 .	

Electrical Information - Continued

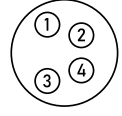
Inline Control Option Wiring Information

Standard Flying Lead and Optional M12 Connector Pinout Functions

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

The functions above are only applicable when ordering an IC, I3, or I3s power configuration with or 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	IC Functions	I3/I3S Functions	M8 Pinout
1	BROWN	24V DC	24V DC	 4-Position Male Connector
2	WHITE	0-10V Analog Control	Reserved	
3	BLUE	DC GND	DC GND	
4	BLACK	Gate Low	Active High Trigger	

The functions above are only applicable when ordering an IC, I3, or I3s power configuration with or 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.
		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.

Compliance

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 compliance 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