LL158

Oblique Line Lights | Product Datasheet

ADVANCED ILLUMINATION by Exaktera

Embedded Controller Option
Embedded controller for easy powering and control - no external or inline controller needed

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

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

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

LL158 Series Description

The LL158 is designed to be applied to oblique lighting applications. The unique 30 degree light angle of incidence, within the plane of the line light housing, creates contrast from surfaces running parallel to the line direction, such as scratches in sheet steel on continuous-feed conveyences, unlike standard linescan lights.

The LL158 is available from 6" to 90" lengths in 6" increments, and is offered in the same housing as the LL137 and LL167 standard high intensity line lights.

It differs from the LL137 and LL167 line lights in that 4 visible wavelengths are offered, including 470nm blue, 530nm green, 625nm red and WHI.

- **Oblique**
- **High Intensity**
- **Scalable Linear Design**
- **Embedded Driver**
- **1-2 Week BTO Lead Times Typical**

General Information

General Specifications

Category	Specification			Detail	
Optical	Available Wavelengths			White, 470nm, 530nm, 625nm	
	Available Lensing			Narrow (12°)	
	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	8.24"209.3mm) to 92.24"(2342.9mm)	See Page 7 for More Details
			Width	1.98"(50.2mm)	
			Height	3.61"(91.7mm)	
	Weight Info (Standard)			~ 1.98 lbs (~898 g) per 8" Unit Length	
	Mounting Info			M6 Mounting Nut Channel	
	Material Info			Anodized Aluminum Housing, Acrylic Window, Nylon Strain Relief, PVC Cable Jacket, Steel Black Oxide and 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	Emitting Length (in)	-	Peak Wavelength	Connector/Control
LL158	XX	-	XXX	XX
LL158	06 to 90		470 (blue)	C1
	(06" increments from 06" to 90")		530 (green)	24
			625 (red)	
			WHI (white)	
more info on page	7		3	8

Example Part Numbers:
LL15812-455C1
LL15824-WHI24

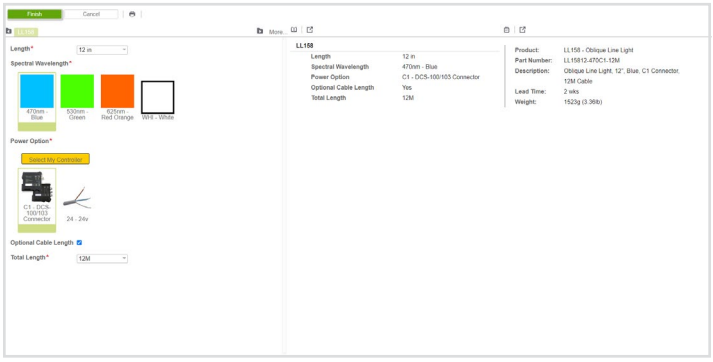
In Stock

N/A

Lead Times

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

Configurator

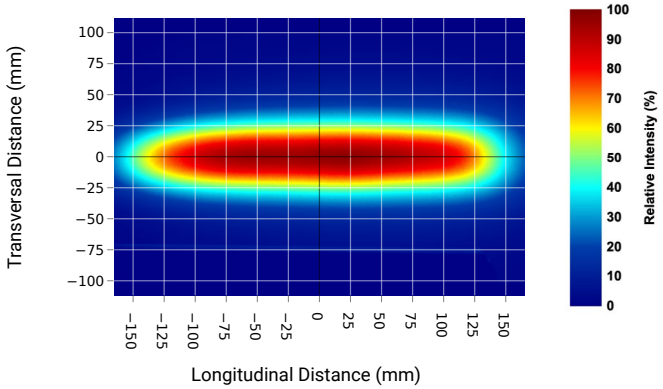


Need a build-to-order custom lighting solution in 2 weeks or less? Advanced Illumination's online configurator helps you tailor our LL158 Obique Line Lights to your specific needs. For a guided configuration, visit our online configurator.

Optical Information

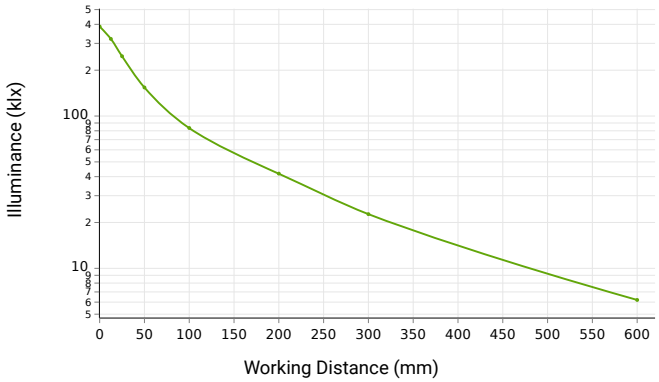
Intensity Characteristics

Intensity Distribution Image at 50 mm Working Distance



Intensity distribution sample image was taken with a 12-inch white LL158 unit.

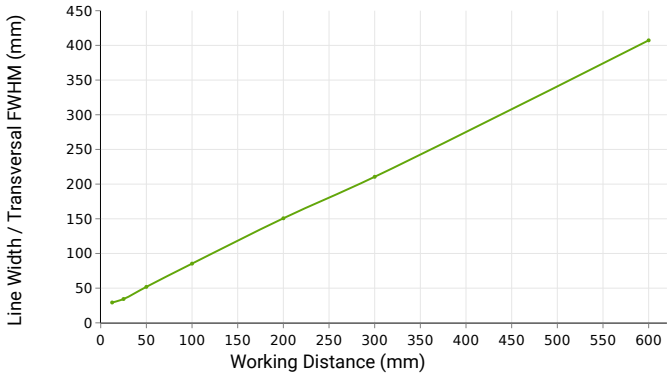
Illuminance vs Working Distance



Illuminance data was collected using a 12-inch white LL158 unit.

Line Width

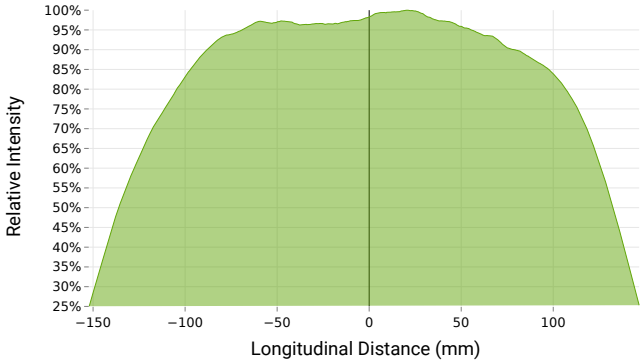
Line Width vs Working Distance



Line width data was collected using a 12-inch white LL158 unit.

Uniformity

Longitudinal Intensity Distribution Profile at 50 mm Working Distance



Longitudinal intensity distribution data was collected using a 12-inch white LL158 unit.

Oblique Application

This illustration shows the Advanced Illumination LL158 projecting its line at a 30° oblique angle. This grazing angle illumination technique dramatically enhances the contrast of subtle surface topography for line scan applications.

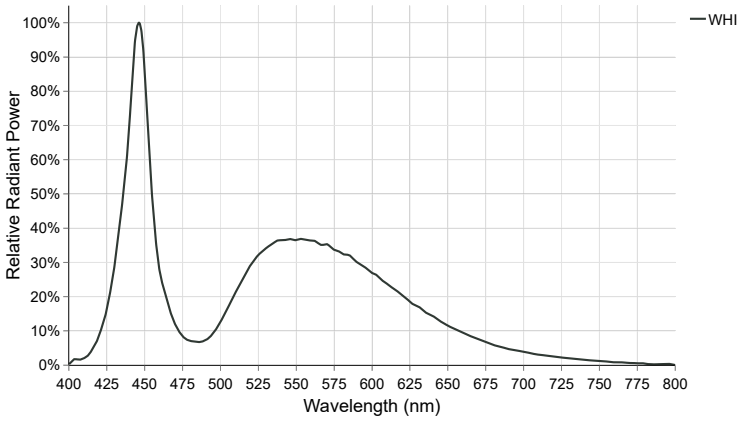
By striking the surface at an angle, the light creates distinct shadows behind raised elements and sharp highlights within indentations, such as engravings, scratches, or embossments. This makes features with height or depth variations significantly more visible.

This method is particularly effective for detecting features running parallel to the material's direction of travel, details often missed by standard perpendicular lighting. The LL158's oblique projection ensures these otherwise hidden surface characteristics are clearly revealed for reliable inspection.

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

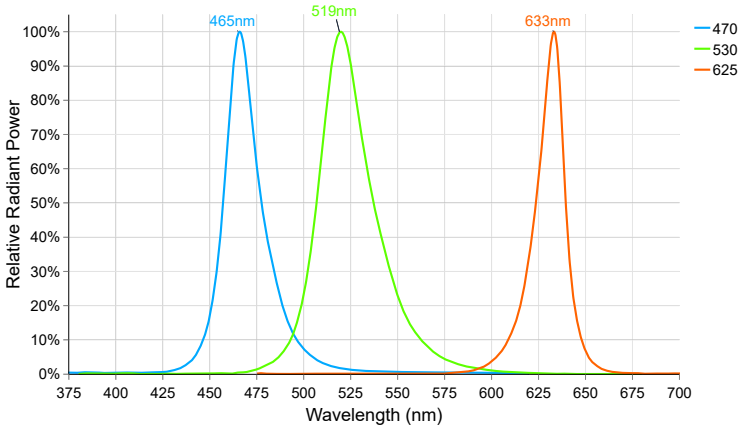


White LED illumination is the most commonly used machine vision lighting configuration. It is often the default choice when specific features of interest do not require color-based highlighting. However, white LEDs can vary in color temperature between different lighting families, which can impact machine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

The LL158 Series white LEDs have a relatively neutral color correlated temperature (CCT) of **5700 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 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 LL158 Series is available in **470 nm, 530 nm, and 625 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.

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	N/A
Group 1	No Photobiological hazard under normal behavioral limitations	470, 530, 625, 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.

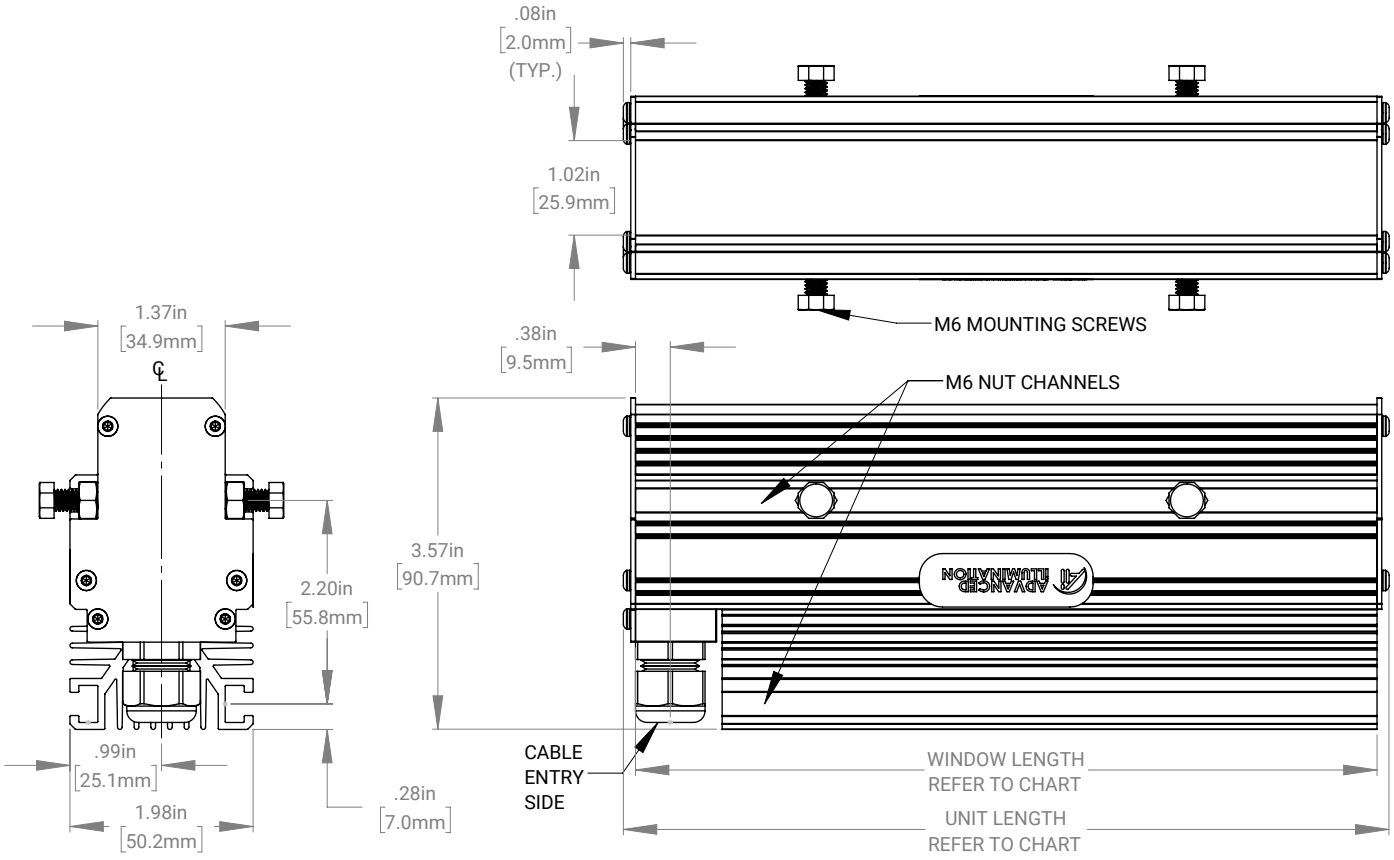
Polarizers, beam splitters and collimated films should never be wiped with any type of cloth or solvent, only use the air dusting method to clean these types of optics.

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.

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	Window	Unit	Window	
LL15806	8.24	8.00	209.30	203.20	C1 / 24
LL15812	14.24	14.00	361.70	355.60	C1 / 24
LL15818	20.24	20.00	514.10	508.00	C1 / 24
LL15824	26.24	26.00	666.50	660.40	C1 / 24
LL15830	32.24	32.00	818.90	812.80	C1 / 24
LL15836	38.24	38.00	971.30	965.20	C1 / 24
LL15842	44.24	44.00	1123.70	1117.60	C1 / 24
LL15848	50.24	50.00	1276.10	1270.00	C1 / 24
LL15854	56.24	56.00	1428.50	1422.40	24
LL15860	62.24	62.00	1580.90	1574.80	24
LL15866	68.24	68.00	1733.30	1727.20	24
LL15872	74.24	74.00	1885.70	1879.60	24
LL15878	80.24	80.00	2038.10	2032.00	24
LL15884	86.24	86.00	2190.50	2184.40	24
LL15890	92.24	92.00	2342.90	2336.80	24

Electrical Information

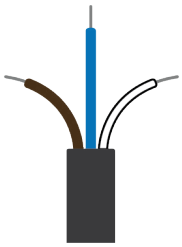
Power Requirements

Current Required for Power Supply Sizing

Wavelengths	Configured w/ Voltage Drive (24)	Configured w/ Standard Controller (C1, C5, IC, I3, I3S)
WHI, 470, 530, 625	0.760A per 6 inch increment	0.700A 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.	
	**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

24V Option Wiring Information

Flying Lead Functions

Wire Color	24V Functions
BROWN	24V DC
WHITE	0 - 10V Analog Control
BLUE	DC GND
BLACK	N/A
GRAY	N/A

The functions above are only applicable when ordering a 24V power configuration.

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.
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.
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