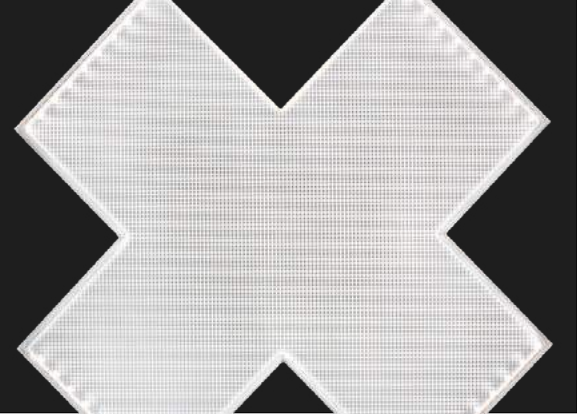




evo-life[®]
ADVANCED LUMINOUS SOLUTIONS

BACKLIGHTING SOLUTIONS

LED EDGELIT LIGHT PANELS // LUMISHEET



LumiSheet™ is ideally suited for flat surfaces of nearly any scale and shape where space is limited and a low profile solution is needed. Such applications include displays, ceilings, feature walls, counter and bar tops, elevators, floors among many others. LumiSheet integrates high brightness LEDs and heat sinks into its exclusive 3D V-cut surface, making it possible to produce “frameless” panels per your specifications.

Any of the following could indicate LumiSheet as a solution:

- Flat surfaces of virtually any size and shape up to 59”x 118” (multiple panels are used when needed)
- Dry location use
- Final dimensions are known and not subject to change
- Either single-sided or double-sided illumination needed
- A zero or near zero clearance solution is needed

As with any evolving technology, education is critical. Our staff is here to assist you in understanding LumiSheet capabilities as well as guiding you through the many facets involved with this highly customizable light source.

With the support of our integration specialists, you can dream with lucidity and design with certainty.

Contact Evo-Lite to find the optimal solution for your illumination project needs.

TABLE OF CONTENTS

03	PRODUCT OVERVIEW INTRODUCTION	08	WIRE LOCATION REFERENCE MAP
04	LUMISHEET™ SPECIFICATIONS	09	INSTALLATION TIPS & MOUNTING EXAMPLES
05	TYPICAL SURFACE BRIGHTNESS	10	PACKING & CRATING INFORMATION
06	ILLUMINATION OPTIONS	12	PRODUCT HANDLING, INSTALLATION &
07	TYPICAL POWER EXITS		INTEGRATION ADVISORY

LumiSheet[™]

LED Light Panel

CUSTOMIZABLE

- // Any size or shape up to 59" x 118" (1.5m x 3m)
- // Can be used in "frameless" designs
- // Multiple color temperatures, Tunable White, RGB, & RGBW options available

BRIGHT & EVEN ILLUMINATION

- // 3D V-Cutting technology
- // High brightness (2,000 - 10,000 LUX)
- // Superior consistent light quality

LONG LIFESPAN

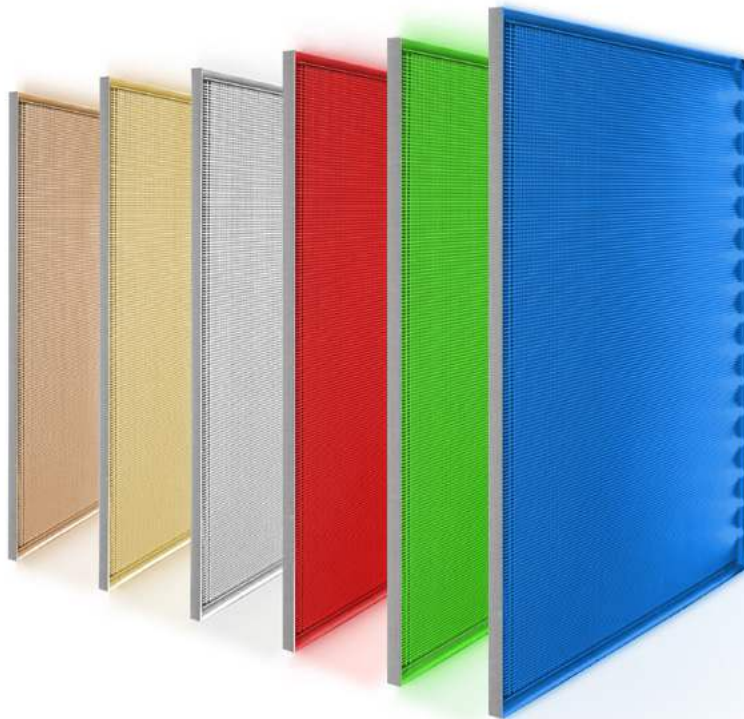
- // Patented heat sink technology to maximize LED lifespan (70,000 hours)

ENERGY EFFICIENT

- // Low power consumption (70% less than fluorescent)
- // Energy saving and maintenance free

WARRANTY

- // Advanced 3-year warranty



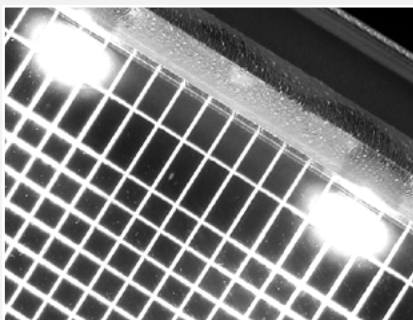
PERFECT BACKLIGHTING SOLUTION

LumiSheet[™] is designed to emit a bright, even output of light across the entire surface of the panel. Unlike traditional light panels, which have the light source mounted on the exterior of the Light Guide Plate (LGP), LumiSheet[™] integrates high brightness LEDs and the heat sink into our exclusive 3D V-cut LGP which makes it possible to produce "frameless", rectangular or special shaped LED light panels for various application needs.

Choose between multiple color temperatures, Tunable White, RGB, and RGBW LEDs to fit the needs of your application.

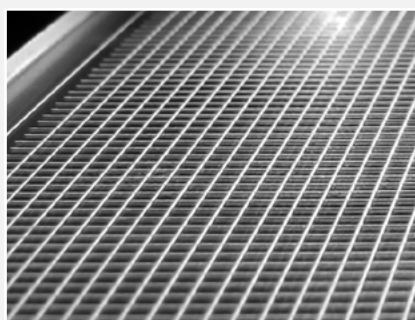
Integrated High Quality LEDs

LumiSheet[™] integrates high quality 12VDC or 24VDC, constant voltage LEDs into the perimeter of the LumiSheet[™] panel without the use of rigid frame materials. This process allows the LEDs to conform to almost any shape.



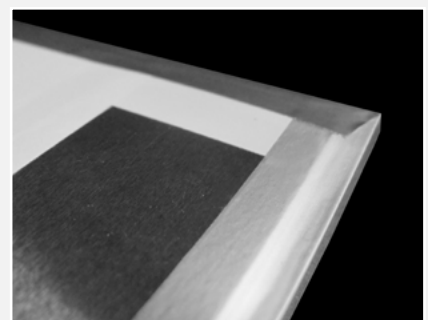
3D V-Groove Light Guide Plate (LGP)

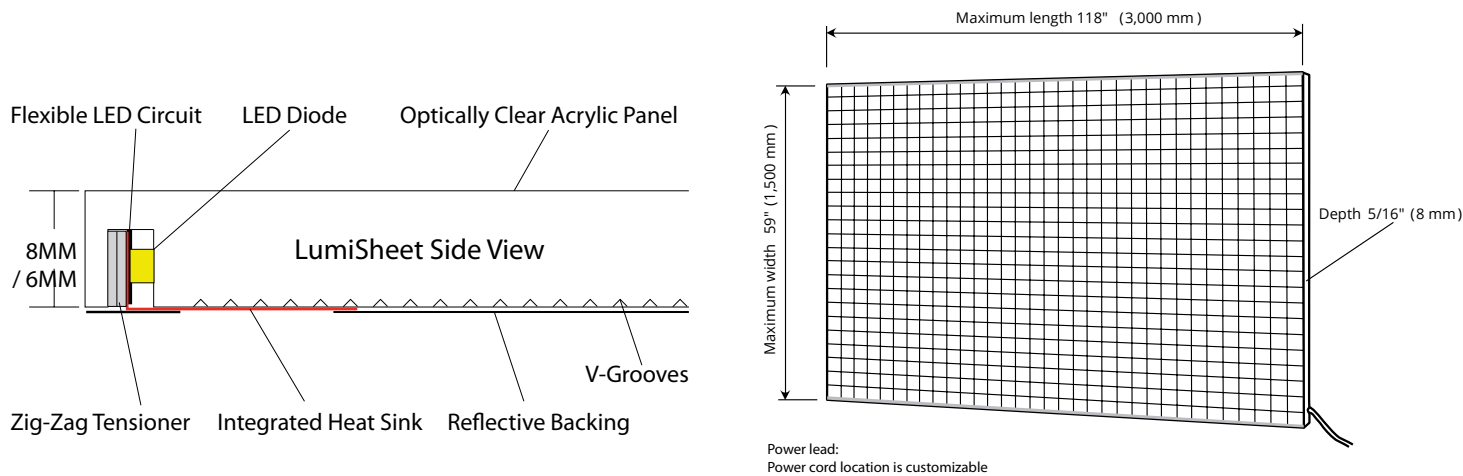
LumiSheet[™] utilizes crystal clear acrylic combined with a patented 3D V-groove etched grid pattern that provides even illumination to almost any shape imaginable.



Integrated Thermal Management

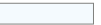
All LEDs create heat which is detrimental to their life span. LumiSheet[™] implements a patented technology which integrates the heat sink into the LGP that is easily conformable, allowing for customizable shapes.





SPECIFICATIONS

ATTENTION! PLEASE REVIEW THE PRODUCT HANDLING, INSTALLATION & INTEGRATION ADVISORY ON PAGE 8

ELECTRICAL								
Input Voltage	12 VDC • 24VDC (Constant Voltage)							
Power Consumption	2.4 W/ft(Low-Wattage) • 4.4 W/ft (Standard) • 8.0 W/ft Max. (Tunable) 5.5 W/ft (Using Omnify Smart Tunable Control) (Tunable) • 4.4 W/ft Max. (RGB) • 4. /ft Max. (RGBW)							
Wire Size	20 AWG 2 wire (Standard LEDs)		20 AWG 3 wire (Tunable White LEDs)		22 AWG 4 wire (RGB LEDs)		22 AWG 5 wire (RGBW LEDs)	
Wiring	Each panel must have direct connection to power supply. Do not wire panels in series.							
Wire Length	Standard 5' (1500mm) & 10' (3000mm). Custom options available up to 20' (6000mm)							
Connector	2.1/5.5mm barrel plug [White Stripe / Center Pin +] (Standard White LEDs)		Bare Wire (Tunable, RGB, RGBW)					
Certifications	UL Listed & UL Recognized, MRI Compliant – no ferrous metals							
PHYSICAL								
**Color Temperature	~2700K 	~3000K 	~3500K 	~4100K 	~5300K 	~6500K 	*Tunable White (TW) 2700K-6500K 	(RGB) (RGBW) 3000 / 4100K 
CRI	≥ 90(4mm) • 95+ (6mm/8mm)							
Mounting Examples	Wall mounted with screws, Z-clips, U-channel, mirror clips or standoffs							
Operating Temperature	-30° C (-22° F) ~ +40° C (+104° F)							
Environment	Dry / Damp location (Indoor)							
Thickness	4mm, 6mm, or 8mm							
Minimum Size	2" W x 2" L x 5/16" D (50mm x 50mm x 8mm)							
Maximum Size	59" W x 118" L x 5/16" D (1499mm x 2997mm x 8mm)							
Weight	1.95 lbs/sq. ft. (8mm LGP)					9.54 kg/sq. M (8mm LGP)		
POWER & CONTROLS								
Compatible with full range (100 - 0%), flicker-free power and control components. Please contact Evo-Lite for optimal solutions to fit your requirements.								

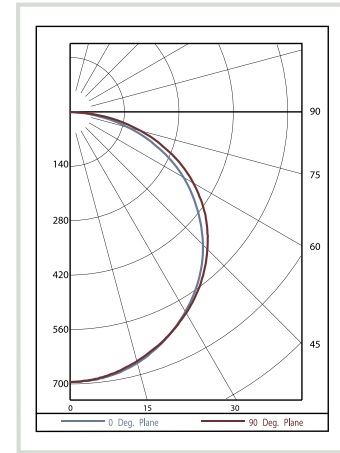
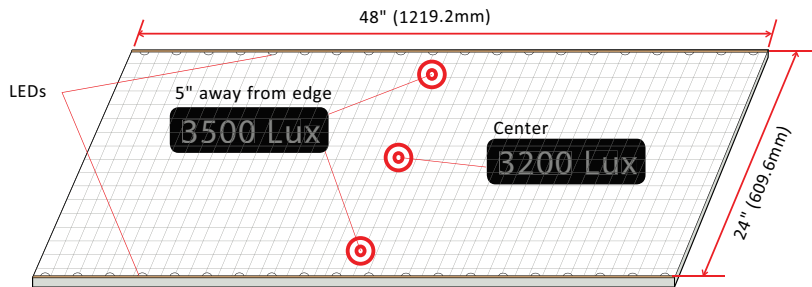
* Tunable White CCT LED Control: Our Tunable White LEDs utilize separate warm and cool white channels for color mixing. 3rd party controls must account for proportional balancing/mixing of the two channels. Example: 2700K (Warm White) = 2700K 100% ON & 6500K (Ultra White) OFF, Balancing/Mixing of both = 2700K 50% ON & 6500K 50% ON, 6500K = 2700K OFF & 6500K 100% ON. Both channels cannot be allowed to operate at 100% simultaneously as the LED are not engineered to handle such high current.

** LED Kelvin temperatures listed in this literature have been derived from raw LED data. Actual Kelvin ratings can vary +/- 200K based upon environmental conditions including but not limited to inclusion into LGPs and the use of diffusion materials. A precise ANSI bin control system is utilized to help maintain LED conformity and to minimize variances.

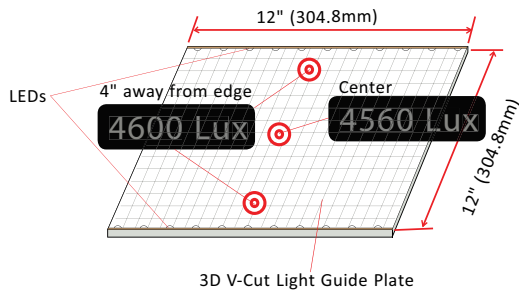
† RGB + W is available upon request. Static red, green, and blue color options also available.

TYPICAL SURFACE BRIGHTNESS

24" x 48" LumiSheet with 5300K LEDs lit along 2 long edges (30W)

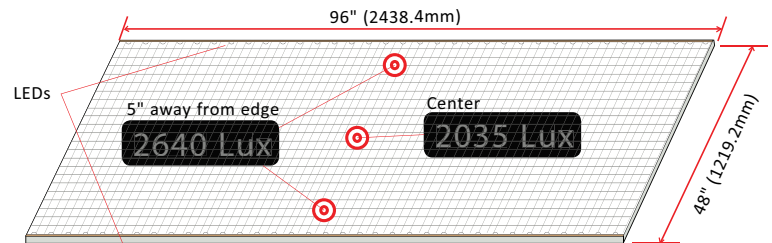


12" x 12" panel with 5300K LED lit along 2 edges (8W)



3D V-Cut Light Guide Plate

48" x 96" LumiSheet with 5300K LEDs lit along 2 long edges (60W)



*Brightness readings are for reference only. Actual reading may differ for different LEDs, LGPs or even different meters.

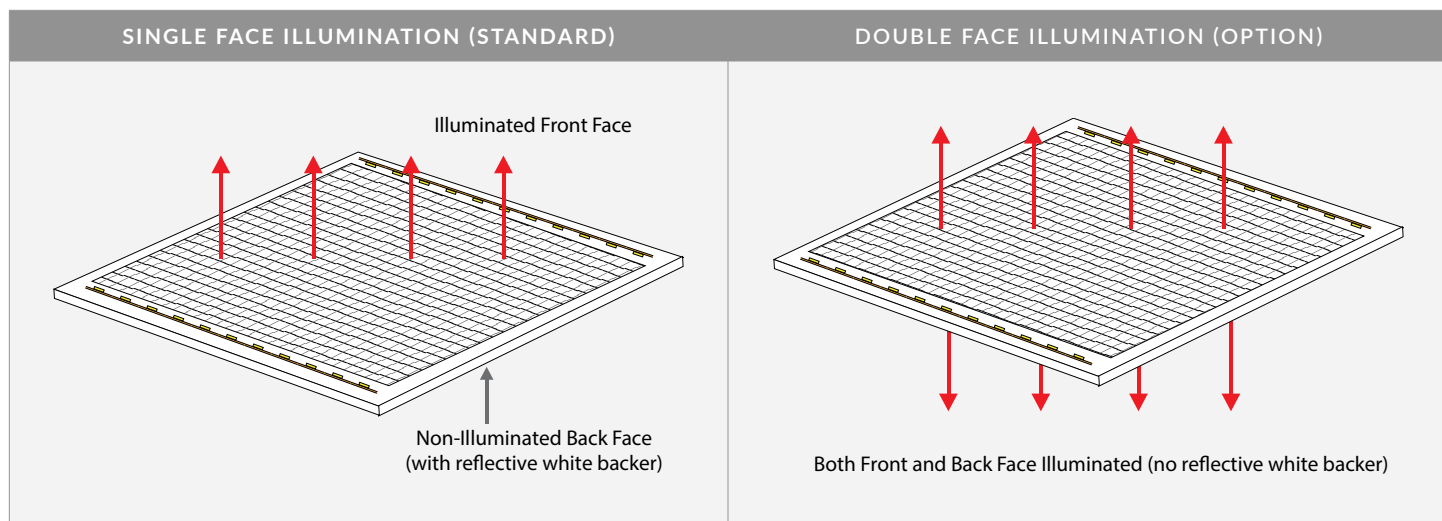
BRIGHTNESS & POWER CONSUMPTION REFERENCE - BASED ON 5300K LEDs

SIZE (INCH)	SIZE (MM)	LED STRIP	*AVERAGE SURFACE BRIGHTNESS (LUX)	POWER CONSUMPTION (W)
6 x 6	150 x 150	1 side	6,000	2.0
12 x 12	300 x 300	1 side	3,000	4.0
24 x 24	600 x 600	2 sides	3,200	15.0
36 x 36	900 x 900	2 sides	2,600	23.0
48 x 48	1200 x 1200	2 sides	2,200	30.0
48 x 96	1200 x 2400	2 sides	2,200	60.0
Ø 6	Ø 150	all around	19,000	5.8
Ø 12	Ø 300	all around	13,000	11.2
Ø 24	Ø 600	all around	5,400	24.0
Ø 36	Ø 900	all around	4,500	36.0
Ø 48	Ø 1200	all around	3,500	48.0

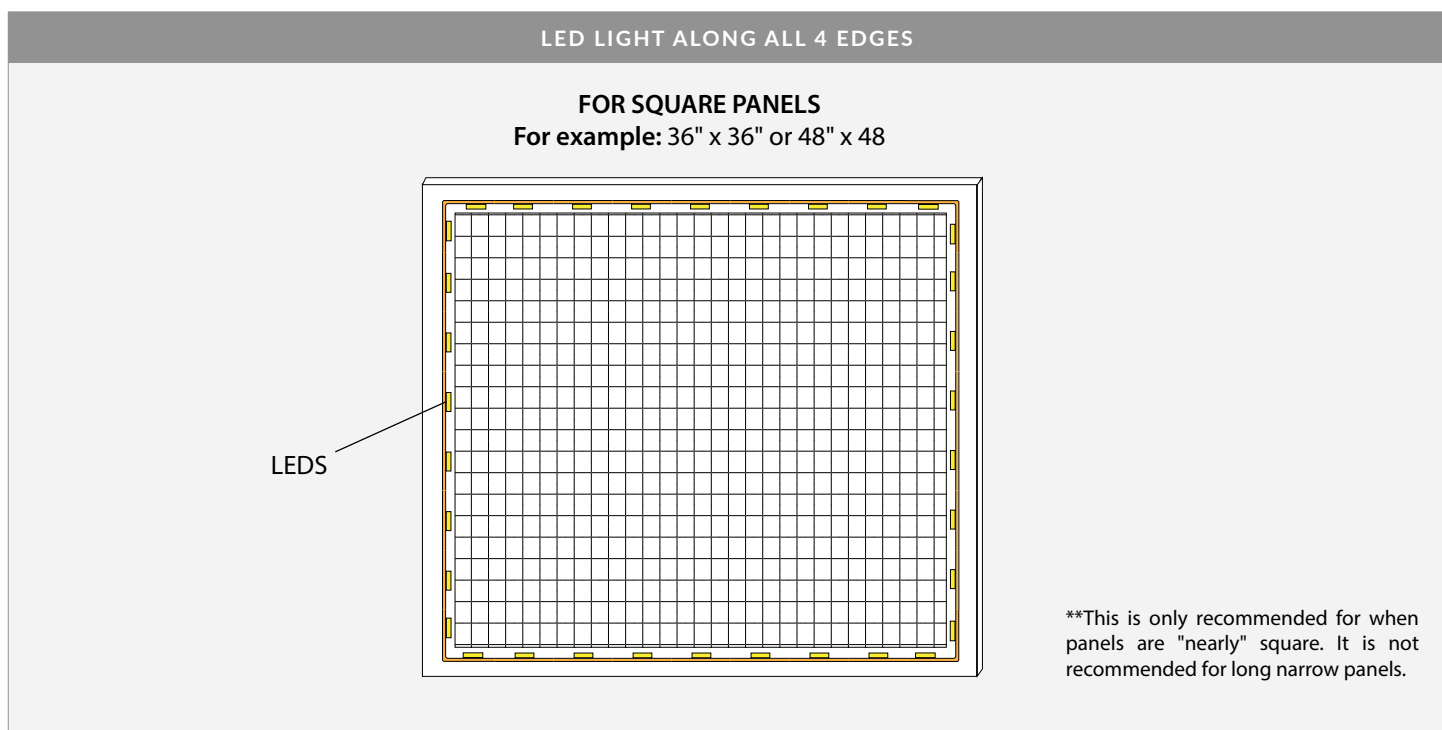
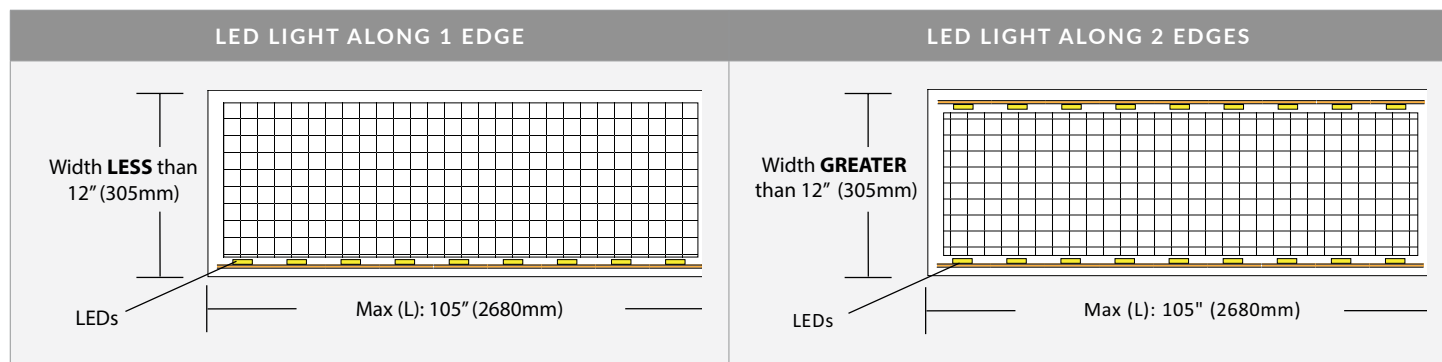
*Brightness data was measured January 2015.

Evo-Lite, LLC strives to maintain tight control over specification factors. However, specifications are subject to change on rare occasion. These changes may not be reflected here.

ILLUMINATED FACE OPTIONS



LED LIGHT LOCATIONS



TYPICAL POWER EXITS

NOTE: RGB and CCT LED types require power wires to exit the ends of the LED strips ONLY as shown in STANDARD 1 & OPTION 2 diagrams. Double edge illuminated light panels over 72" in length require power wires to exit opposing ends.

POWER WIRE EXIT OPTION AVAILABILITY

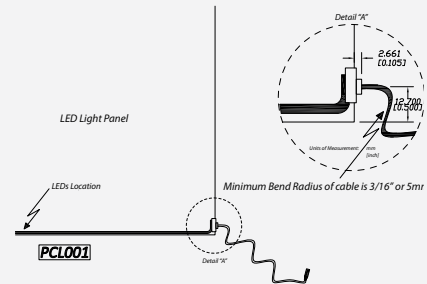
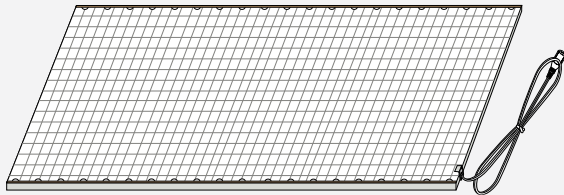
* AVAILABLE WITH SINGLE COLOR WHITES

** RGB, RGBW, & CCT

*** POWER WIRES MUST EXIT OUT THE CORNERS OF THE LIGHT PANEL OR END OF LED STRIPS FOR RGB, RGBW, & CCT

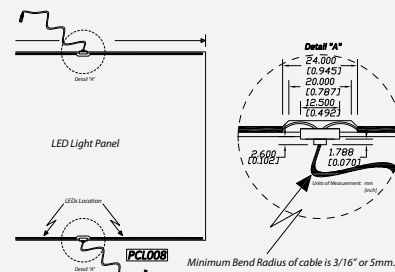
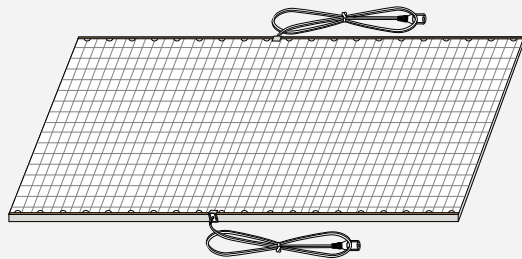
** STANDARD 1

Power cord exits from the edge (default option for LumiSheet shorter than 6ft) [Available with single color whites, RGB, RGBW, & CCT]



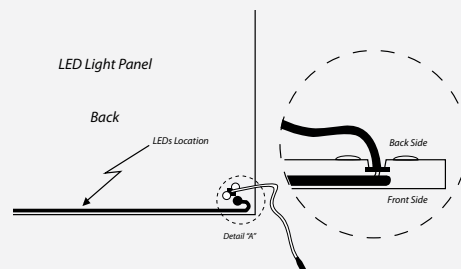
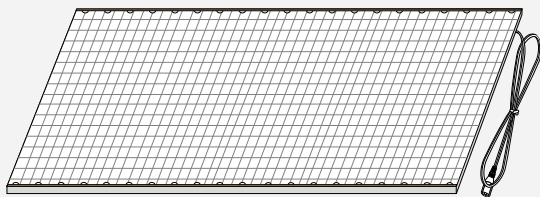
* STANDARD 2

Power cord exits from the middle of LED strip (default option for LumiSheet longer than 6ft) [Available with single color whites]

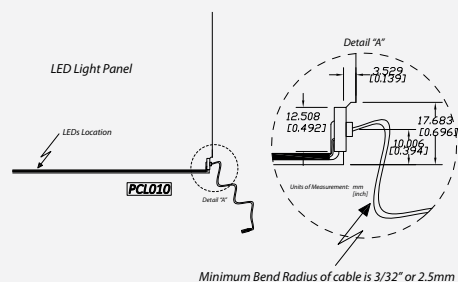
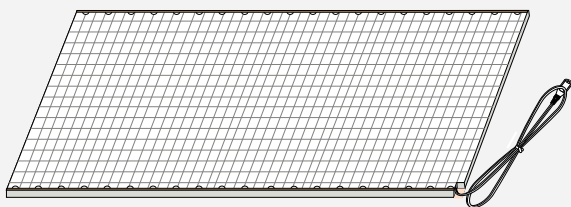


** OPTION 1

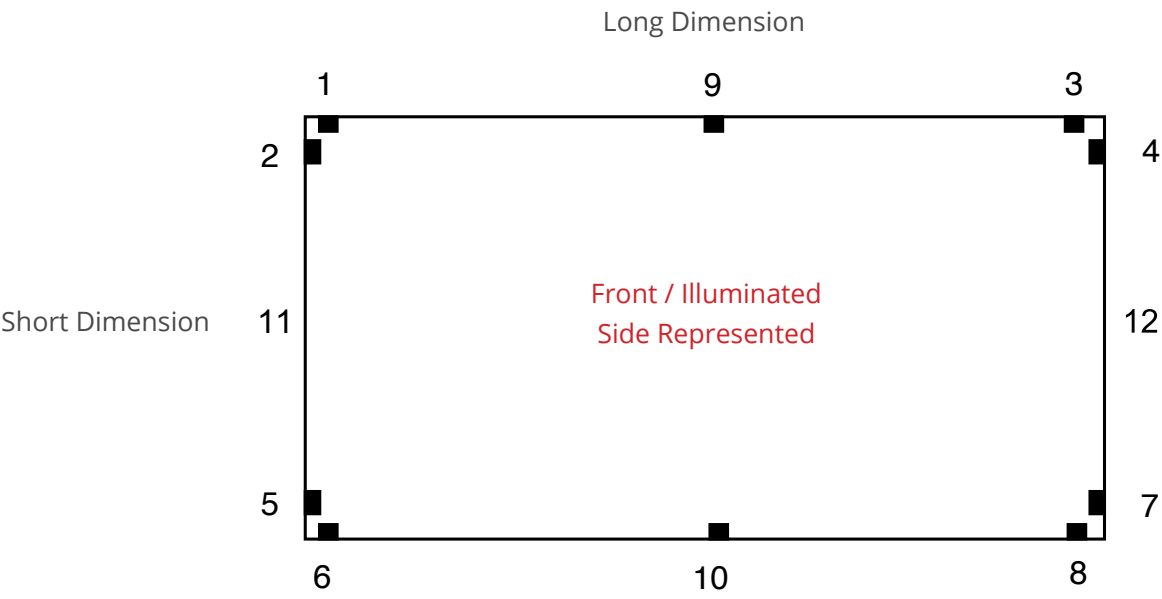
Power cord exits from the back side of LumiSheet [Available with single color whites, RGB, RGBW, & CCT]



*** OPTION 2
Recessed (notched) power cord exits
[Available with single color whites, RGB, RGBW, & CCT.]



WIRE LOCATION REFERENCE MAP



[Click this link](#) to access editable wire location map PDF to provide to your systems integration specialist

NOTES:

INSTALLATION TIPS

SINGLE PANEL	MULTI-PANEL
0.25" (6mm) 0.75" (19mm) LEDs	We advise that the overlay material be tested in conjunction with LumiSheet to determine if space or added diffusers are needed to achieve the desired look. Side View Diffuser or Graphic Space between Panels and Graphic / Diffuser 3D View LED Panels LED Panels Diffuser or Graphic

SURFACE MOUNTING EXAMPLES (HARDWARE PROVIDED BY OTHERS)

EXAMPLE 1 (DETAILED DIMENSIONS FROM CUSTOMER REQUIRED) Screw mounting with pre-drilled holes	EXAMPLE 2 Mounting with standoffs
*Holes can be drilled at factory according to drawings supplied.	
EXAMPLE 3 Mounting with Z-clips	

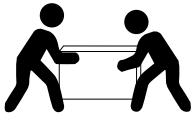


WARNING
DO NOT USE
ADHESIVES

The use of adhesives of any type including double stick (VHB) tape for the bonding of materials to the light panel or bonding light panels to another surface is strongly discouraged. Direct bonding to the illuminated surface of the light panel can result in visual anomalies and bonding to the rear reflective layer for mounting purposes can cause failure of the light panel which is not covered under warranty. Due to multiple application and installation variances associated with the integration of light panels, standard mounting hardware is not provided. Be sure to discuss your project with your account manager who can help you determine an optimal mounting solution for your application and in some cases provide mounting components when required.

PACKING & CRATING INFORMATION

Due to the fact that LumiSheet Light Panels must be protected during shipping, there are distinct packing and crating protocols used. The appropriate packing method is selected based on the size of the order and the size of the Light Panels. Below is the LumiSheet Packing Guideline for how shipments are typically packed/crated. Since all shipments are different, use this as a reference (guideline) only. **Shipping charges are in addition to crating charges.**



UNPACKING CRATES

DO NOT TRY TO UNPACK CRATED LIGHT PANELS BY YOURSELF. Unpacking medium to large sized shipping crates is a two person job! Get someone to assist so that Light Panels are not damaged. Do not allow Light Panels to bend or damage may occur.



LIFTGATE CHARGES

RESIDENTIAL DELIVERY ADDRESSES WILL INCUR LIFTGATE CHARGES. Note: The liftgate charge is in addition to crating and shipping charges.

LUMISHEET PACKING GUIDELINE										
Type of Packing	Wooden Crate				Plywood “Sandwich” Wrap			Custom Cardboard Packaging	Cardboard Tube	
Size of Panel(s)	24” x 24” or larger or other L+W sizes ≥ 48” (i.e. 20” x 30” or 18” x 32”)				Single panel only 23” x 23” or smaller or other 12” < L+W sizes < 48” (i.e. 20” x 26” or 16” x 30”)			6” x 6” or smaller	Narrow panels 5” wide x 96” long or smaller (up to 3)	
Quantity	1-5 large panels or large quantities of small-sized items (small panels, diffusers, accessories, etc.)				Single panel only			Medium to small quantities	Medium to small quantities	
Size of Shipped Panel (Example Only)	Oversize panel (larger than 4ft x 8ft)	Large panel (4ft x 8ft or slightly smaller)	Medium panel (3ft x 6ft or slightly smaller)	Small panel (2ft x 2ft to 4ft x 4ft)	Small panel (2ft x 2ft)			Varies	Varies	
CRATING CHARGE TIERS*										
Quantity \ Size	20” x 20” (50 x 50cm)	24” x 24” (60 x 60cm)	36” x 36” (90 x 90cm)	24” x 48” (60 x 120cm)	48” x 48” (120 x 120cm)	48” x 54” (120 x 145cm)	36” x 72” (90 x 180cm)	48” x 72” (120 x 180cm)	48 x 96” (120 x 240cm)	Oversize**
1	0	A (25 lbs/ 11.3kg)	A (115 lbs/ 52.2kg)	A (100 lbs/ 45kg)	B (180 lbs/ 82kg)	B (195 lbs/ 88kg)	B (200 lbs/ 91kg)	B (250 lbs/ 113kg)	B (320 lbs/ 145kg)	B (320+ lbs/ 145+kg)
2-4	A (25-60 lbs/ 11.3-27kg)	A (25-60 lbs/ 11.3-27kg)	B (115-185 lbs/ 52.2-84kg)	B (100-150 lbs/ 13.5-68kg)	B (180-300 lbs/ 81.6-136kg)	B (195-340 lbs/ 88.5-154kg)	B (200-340 lbs/ 90.7-154kg)	B (250-450 lbs/ 113-204kg)	B (320-550 lbs/ 145-250kg)	C (320+ lbs/ 145+kg)
5-9	A (60-100 lbs/ 27-45kg)	A (60-150 lbs/ 27-68kg)	B (185-300 lbs/ 84-136kg)	B (150-250 lbs/ 68-113kg)	B (300-500 lbs/ 136-227kg)	B (340-550 lbs/ 154-250kg)	B (380-530 lbs/ 172-240kg)	C (450-750 lbs/ 204-340kg)	C (550-1000 lbs/ 250-454kg)	C (650+ lbs / 294+kg)
10-14	A (100-150 lbs/ 45-68kg)	A (150-200 lbs/ 45-91kg)	B (300-425 lbs/ 136-193kg)	B (250-380 lbs/ 113-172kg)	B (500-550 lbs/ 159-213kg)	B (580-620 lbs/ 177-240kg)	C (550-800 lbs/ 159-363kg)	C (750-1000 lbs/ 340-454kg)	C (1000-1400 lbs/ 454-635kg)	D (1000+ lbs/ 454+kg)
15-19	A (150-200 lbs/ 45-91 kg)	B (200-270 lbs/ 91-122kg)	B (425-550 lbs/ 193-213kg)	B (380-500 lbs/ 172-227kg)	C (700-1000 lbs/ 272-454kg)	C (800-1000 lbs/ 363-454kg)	C (820-1000 lbs/ 304-454kg)	D (1000-1500 lbs/ 454-680kg)	D (1400-1800 lbs/ 635-816kg)	D (1200+ lbs/ 544+kg)
20+	B	B	B	B	C	C	C	D	D	D

* Shipping charges are in addition to crating charges. Since all shipments are different, use the chart above as a reference (guideline) only).

Contact Evo-Lite for shipping and crating charge estimates.

** Crates longer than 96" will incur an oversize surcharge.

QUALITY CONTROL & SHIPMENT DOCUMENTATION

All LumiSheet Light Panels are tested during assembly and tested again before packing/crating. Each order is inspected following our standard Quality Control process. Quality Control results can be provided upon request. Photos are taken to document each shipment's order number, contents and date of shipment. This is done to assure that the Light Panels and all accessories have been included in the shipment.



PRODUCT HANDLING, INSTALLATION & INTEGRATION ADVISORY

Evo-Lite's experience in providing LumiSheet Light Guide Plates to its customers has provided us with a unique perspective on the characteristics and underlying intuitive knowledge necessary to complete a successful installation of LumiSheet. Evo-Lite is committed to educating and supporting all our customers so that every installation proceeds as smoothly as possible. Most installations offer their own unique challenges; we hope by making you aware of the following handling and installation guidelines that the basics of the installation do not become issues that further complicate this process. As always, your Evo-Lite Account Manager or any of our staff are ready to assist you and answer any questions you have or address any issues that arise during your installation.



FRAGILE

Take as many precautions as possible when handling. The light panels are made from acrylic which can be easily damaged if not handled properly. Caution should be taken when setting the light panel on edge as the force of the light panel contacting a solid surface can result in cracking or chipping of the acrylic light guide plate. Also be aware of all light panel wiring. The awareness of the weight of the light panel in most cases exceeds the awareness of the wiring which can be easily damaged and or destroyed if not properly managed. Avoid stepping on or snagging hanging wires when unpacking or transporting panels.



DO NOT BEND

Handle the light panel as you would a piece of glass. Always transport the light panel on edge or in a vertical position. **Allowing the light panel to flex or bow may result in damage to the internal LED components and cause the reflective backer to stretch and ripple when relaxed into a flat state.** These ripples can show as anomalies in the homogeneous light output and could be undesirable depending on the forward-facing diffusion material. Any damage to the product due to improper handling is not covered under warranty.



TEST BEFORE INSTALLING

Our production, packaging and shipping process is accompanied by a rigorous quality control procedure. All light panels are subjected to a burn in period and are tested during the packaging process to ensure operation of the highest quality. Due to possible unforeseen issues with shipping and handling, we advise that all light panels be inspected at time of delivery and tested for proper illumination prior to installation and again before the forward facing material is permanently installed. **BE SURE TO REMOVE THE PROTECTIVE FILM BEFORE INSTALLING.**



DO NOT CONNECT TO AC POWER

Be sure to use a low voltage power supply that conforms to the voltage requirements of the light panel. This information can be found on the label on the backside of the light panel as well as the power supply labeling. **ANY DIRECT CONNECTION OF THE LIGHT PANEL TO AC CURRENT WILL DAMAGE THE LEDS.**



POWER, CONTROL & WIRING

For optimal power distribution and to minimize voltage drop, it is recommended that multi-strand, high strand count wiring be used for all low voltage DC connections. Wire gauge should be appropriate based upon system voltage and wire lengths to further minimize voltage drop. Power supplies, drivers and controls should be installed in well ventilated enclosures and or per manufacturers recommendations. It is the customer's responsibility to ensure all components and installation practices meet or exceed local codes and requirements.



STORAGE

Store Light Panels in a clean, dry area and keep covered to protect from moisture and dust. Store on a flat, horizontal surface as vertical storage can cause flexing of the light panel which can result in damaged LED components as well as introducing a memory of the curve in which it was stored. Ideal storage conditions: Temperature of 68° – 77°F, Humidity of 50%.



DO NOT GET WET

DRY LOCATION ONLY. Our light panels are rated IP65 which is total protection against dust ingress as well as water projected by a nozzle against the enclosure from any direction for a limited time. The light panels are not waterproof. Higher IP ratings can be achieved by the inclusion and integration of framing and other materials. Be sure to speak with your account manager when moisture relevant applications are desired.



DO NOT DRILL

Although field drilling of the light panel can be accomplished in extreme cases, it is not recommended and is highly discouraged as any damage at this stage can result in denial of any warranty claims. Our light panels can be produced to your specifications. Be sure to provide all details of size, shape, hole size and placement before ordering. In the event drilling needs to occur, please request documentation and assistance from your account manager.



DO NOT CUT

Although field cutting of the light panel can be accomplished in extreme cases, it is not recommended and is highly discouraged as any damage at this stage can result in denial of any warranty claims. Our light panels can be produced to your specifications. Be sure to provide all details of size and shape before ordering. In the event cutting needs to occur, please request documentation and assistance from your account manager.



DO NOT USE ADHESIVES

The use of adhesives of any type including double stick (VHB) tape for the bonding of materials to the light panel or bonding light panels to another surface is strongly discouraged. Direct bonding to the illuminated surface of the light panel can result in visual anomalies and bonding to the rear reflective layer for mounting purposes can cause failure of the light panel which is not covered under warranty. Due to multiple application and installation variances associated with the integration of light panels, standard mounting hardware is not provided. Be sure to discuss your project with your account manager who can help you determine an optimal mounting solution for your application and in some cases provide mounting components when required.



INSTALLATION ENVIRONMENT

Due to the characteristics of the acrylic that is used for our light panels, installation environments and locations should be taken into consideration. Wide temperature shifts can cause the acrylic used as the light guide plate to expand and contract and at a different rate than the associated components. In some cases, this expansion and contraction can cause mounting, edge tape and lamination failure. It is the responsibility of the buyer to make sure these characteristics have been accounted for throughout the design and integration of the light panels.



CLEANING

Keep the protective film intact and in place to help protect the surface of the light panel during transport and installation. For removal of finger prints and other extraneous substances, start by lightly blowing or wiping off dust and other particles with a soft, non-abrasive cloth. Mild soapy water can be used for the removal of fingerprints being sure not to exert too much pressure as this could cause scratching/marring of the surface. **NEVER USE CLEANING SOLUTIONS THAT CONTAIN AMMONIA, ALCOHOL OR OTHER SOLVENTS.** Products such as Windex will do more harm than good.



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URL: www.Evo-Lite.com

TERMS & CONDITIONS

Be sure to familiarize yourself with Evo-Lite's [Terms & Conditions](#).

By ordering from Evo-Lite, the purchaser agrees to all [Terms & Conditions](#).

PATENTS

LumiSheet™ PATENTS

USA: 7473022
CANADA: 2,626,448
JAPAN: 4427528
CHINA: ZL 200610085027.0
TAIWAN: 312899
SINGAPORE: 141901
SOUTH AFRICA: 2008/03676
EUROPEAN UNION:
1,780,584
(Germany, UK, France, Italy,
Spain, The Netherlands,
Belgium, Sweden, Austria,
Poland, Denmark, Greece,
Ireland, Finland, Portugal, Czech
Republic, Hungary, Romania,
Slovakia, Bulgaria, Switzerland,
Luxembourg, Slovenia, Turkey,
Latvia)

V-CUTTER FOR AN LCD LIGHT GUIDE PANEL

USA: 6619175
JAPAN: 3500466
TAIWAN: 155175

A LIGHT GUIDE PANEL WITH SALANT LIGHT GUIDING PARTS

USA: US 7,018,087 B2

PIN KIT FOR V-CUTTER

KOREA: 10-0552589, 10-
0557738, 10-0557741,
0540055, 0540053, 10-
0772921, 10-0716543,
10-0565890, 10-0753963,
10-0643604,
10-0736656, 10-0748074,
10-0748073, 10-0762741,
USA: 6792842
JAPAN: 3463060
EU: 1335817
CHINA: ZL 01818623.8
TAIWAN: 163820