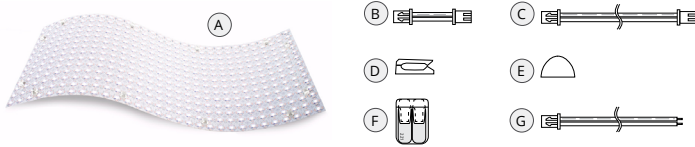


INSTRUCTION MANUAL Flexible LED Light Sheet



CONTENTS

Each Light Sheet includes twelve integrated 2-pin connection blocks and an Accessory Pack. Review the contents of the Light Sheet's Accessory Pack before beginning and become familiar with the use and intent of each item.



Do not set anything on top of Light Sheets (ie. tools, mugs, etc.). Do not set Light Sheets on the floor where they could be stepped upon or where anything can be dragged or set upon them. Light Sheets can be damaged unless properly handled.



Due to possible unforeseen issues with shipping and handling, we advise that all Light Sheets be inspected at time of delivery and dry-fit tested for proper illumination prior to mounting and again before the forward facing material is installed.

PART	DESCRIPTION	QTY
A	Light Sheet with 3M adhesive backing and twelve integrated 2-pin connection blocks	1
PART	ACCESSORY PACK CONTENTS	QTY
B	Sheet-to-sheet connection wires for aligned 2-pin connection blocks, 20AWG, 0.71" (1.8cm) length	4
C	Sheet-to-sheet connection wires for staggered 2-pin connection blocks, 20AWG, 3.75" (9.5cm) length	4
D	Cable management clips with adhesive backing	4
E	Domed spacing bumpers with adhesive backing	8
F	Wago® splicing connectors, shunted - use for wires with same polarity	2
G	Power lead with connector on one end and stripped on the other end, 20 AWG, 24" (61cm) length	1
H	Instruction Manual	1

SAFETY INFORMATION

Read all installation instructions before beginning. If not qualified, do not attempt installation. Contact a qualified electrician.

- // To reduce the risk of fire, electric shock, or injury to persons, pay close attention to this manual and stay within its guidelines when using this product. Save these instructions for future use. **READ AND FOLLOW THE PRODUCT HANDLING, INSTALLATION & INTEGRATION ADVISORY ON PAGE 4. DISCONNECT POWER AT THE SOURCE BEFORE CUTTING OR ALTERING THE LIGHT SHEET(S) IN ANY WAY. DO NOT CONNECT LIGHT SHEETS TO AC CURRENT. USE ONLY WITH 24VDC INPUT POWER.**
- // These products may represent a possible shock or fire hazard if improperly installed or attached in any way. Products should be installed in accordance with these instructions, current local/regional electrical codes and/or the current National Electric Code (NEC).
- // Use only with UL Listed or UL Recognized Class 2, Limited Power Source (LPS) or LVLE (Low Voltage Limited Energy) power supplies. Provide the appropriate number of 24V Class 2 circuits for your layout. Do not exceed the maximum load limit of any power supplies used per power supply manufacturer's recommendations.
- // To retain Class 2 compliance per UL regulations, do not interconnect more than eight full Light Sheets (96 watts total) in any configuration. Each Light Sheet consumes 12 watts of power (0.5A at 24V DC).
- // This product can be used in wet locations, but not where water can accumulate.
- // The Light Sheet's 2-pin connection blocks have a 4A capacity. Do not exceed the capacity of these connection blocks in any configuration.
- // When using any type of mechanical fastener, make sure the fastener head does not penetrate the Light Sheet. Any penetrations of the Light Sheet must be made inside the concentric circles marked on the sheet.

BEST PRACTICES

- // To avoid visible brightness variances due to voltage drop, the total distance should not exceed 6.5 feet (2 meters) from the power input to the sheet to the farthest end of any interconnected sheet.
- // Dry fit the Light Sheets and their connection wires before installing them permanently to a substrate. Always test function before installing the translucent (forward facing) material.
- // Horizontal applications require a completely flat mounting surface. Any deviations could result in the forward facing material(s) being damaged.
- // Once placed, lift the forward facing material instead of dragging it if it ever needs to be moved. Never slide a heavy material over the bumpers since this can cause damage to the Light Sheet.
- // Do not fold Light Sheets back-to-back.
- // Do not install on gates or doors, or where subject to flexing.

Application Specific Installation Guides are available upon request.

SPECIFICATIONS

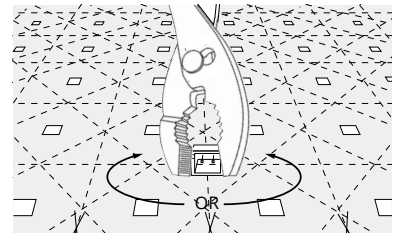
ELECTRICAL	
Input Voltage	24 Volt DC - Constant Voltage
Input Power	12 Watts / sheet - includes 10% headroom for power supply
Wire Size	20 AWG 2 wire (Grey Stripe +, Solid White -)
Wiring	Up to eight sheets can be powered by one Class 2 power supply
Wire Length	One 24" (61cm) 20AWG power lead is included with each sheet
Connector	Twelve integrated 2-pin connection blocks
Certification	UL Listed Class 2
PHYSICAL	
Mounting	Screws can be used within the concentric circles marked on the Light Sheet. Use mechanical fasteners when mounted vertically or suspended. 3M® adhesive backing on the Light Sheet is provided as a supplementary installation aid. Use the appropriate method or combination of methods depending on the type of mounting surface and its orientation.
Operating Temp.	-30 °C (-22 °F) ~ +50 °C (+122 °F)
Environment	Wet location (IP65 rated)

DRY FITTING, CUTTING* AND FOLDING

Dry fit the sheets and connection wires before mounting the Light Sheets to the substrate. *Always test function before installing the translucent material.*

To make a fold in a Light Sheet, bend the sheet along one of the dotted lines marked on the sheet, then crease along this line, then relax the crease into a 90° (or other desired) angle. *Be careful about folding where an LED is attached to the sheet since LEDs can break if forced over an edge. Do not repeatedly fold and unfold along the same line as this will weaken the flexible PCB. Do not fold a Light Sheet back onto itself, however two separate Light Sheets can be attached back-to-back.*

To make a cut in a Light Sheet, use shears, scissors, utility knife and/or a precision/craftknife. Cut on horizontal, vertical and/or diagonal lines. Deviating from the lines could cut off power to one of more LEDs. If one or more 2-pin connection blocks exist on a cut/fold line, it is best to remove the connection block* to make a clean fold or cut. Using a pair of slipjoint pliers (see image at right), grasp the connection block firmly and rotate it either clockwise or counterclockwise while holding the Light Sheet in place. The connection block will unseat from the solder. Repeat for other connection blocks as needed and discard the removed block(s).



***NEVER CUT OR ALTER LIGHT SHEET(S) WHILE POWERED.**

USING ACCESSORIES

Short sheet-to-sheet connectors (B): When adjacent Light Sheets are mounted side-by-side with connection blocks aligned, the shorter sheet-to-sheet connection wires (B) should be used to interconnect multiple sheets. Their lengths are optimized so sheets align snugly. See Figure 1. When connecting Light Sheets that are already mounted to a fixed surface, the short connection wires (B) will need to be shaped as shown in Figure 2 prior to pushing into connection blocks. Best practices include using two sheet-to-sheet connection wires for all adjacent Light Sheets in each Class 2 circuit to minimize voltage drop. Dry-fit test for proper illumination prior to mounting Light Sheets to the mounting surface and again before the forward facing material is installed.

Long sheet-to-sheet connectors (C): Use the longer sheet-to-sheet connection wires (C) to bridge gaps and/or connect offset sheets as shown in Figure 3.

Cable management clips (D): Route the connection wires so that the light from the LEDs is not blocked and hold the wires in this position using cable management clips with 3M adhesive backing (D) as shown in Figure 3.

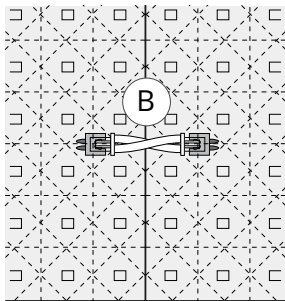


Figure 1

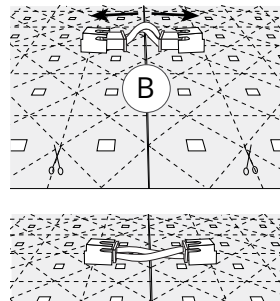


Figure 2

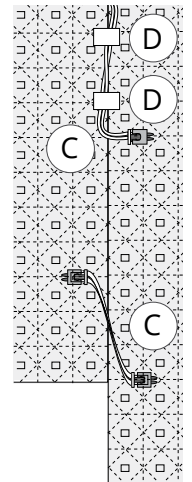
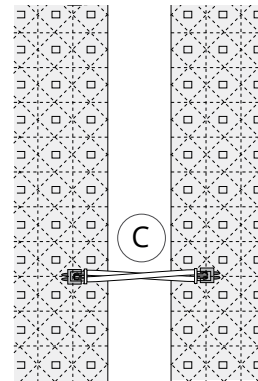
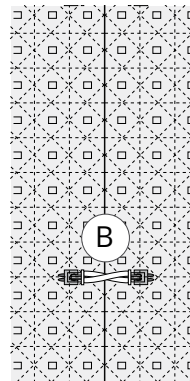


Figure 3

When connected, sheet-to-sheet connection wires have a twist (as shown in the illustrations) in order to maintain proper polarity.

POWER INPUT

To avoid visible brightness variances due to voltage drop, the total distance should not exceed 6.5 feet (2 meters) from the power input to the sheet to the farthest end of any interconnected sheet. Use only with Class 2 power unit(s). Use a centrally located power supply to power interconnected sheets (see Figure 4) or split the length in two and power each with its own power supply, making sure the two sections are not connected electrically.

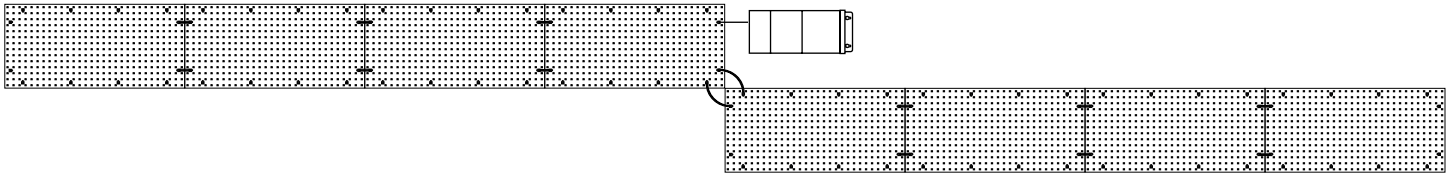


Figure 4

Power lead (G): Use the power lead (G) to route power from the power supply to a single Light Sheet or a set of up to eight Light Sheets. See Figure 5.

Wago splicing connectors (F): The Wago® connectors (F) are provided for convenient power connection to the supply wires. They can be used in place of wire nuts, securing wires of the same polarity together. *The grey striped wire of the power lead (G) is positive (+) and the solid white wire is negative (-).* See Figure 5. If one or some Light Sheets fail to light, check that the sheet-to-sheet connection wires are fully connected into the 2-pin connection blocks. If the whole layout fails to light, check polarity at the power supply, proper connection at the splicing connectors and supply power at the source.

The Light Sheet's 2-pin connection blocks each have a 4A capacity. Each Light Sheet consumes 12 watts (0.5 amps). Do not exceed the 4A maximum load capacity of a 2-pin connection block in any configuration nor interconnect more than eight sheets (96W total).

Barrel connectivity options/accessories are sold separately for use with barrel connected plug-in power supplies.

Light Sheets are dimmable via 120V standard dimmers, 0-10V dimmers and various Radio Frequency and Wireless controls. Contact Lumicor for optimal power and control solutions to fit the project needs.

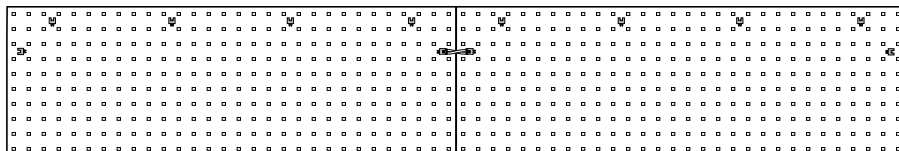
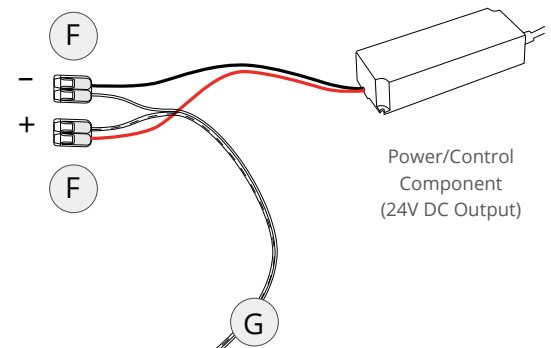


Figure 5

MOUNTING LIGHT SHEETS

Various mounting methods may be used to secure the Light Sheets to the mounting surface after the dry-fit and operation tests are complete. Use the appropriate method or combination of methods depending on the type of mounting surface and its orientation.

Mechanical Fasteners: Any penetrations through the Light Sheet must be made inside the concentric circles marked on the sheet. The smaller diameter circle on the Light Sheet indicates the maximum diameter of screw or other fastener that can be used without causing damage to the Light Sheet's power distribution grid. The larger diameter circle is the maximum diameter of the screw head that can be used to without causing damage. See Figure 6. For suspended applications, use mechanical fasteners with an appropriate spacing to avoid sagging. Use pan head, domed, or round head screws, not tapered screws (like wood or drywall screws) and never screw the fastener so much that it deforms the Light Sheet. See Figure 7.

Re-test function before installing the translucent material.

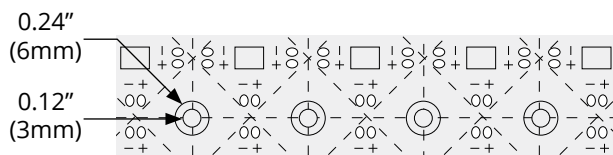


Figure 6

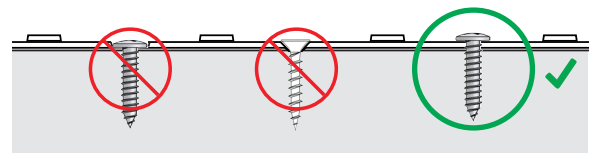


Figure7

PRODUCT HANDLING, INSTALLATION & INTEGRATION ADVISORY

Lumicor's experience in providing backlighting solutions to its customers has provided us with a unique perspective on the characteristics and underlying intuitive knowledge necessary to complete a successful installation of Light Sheets. Lumicor 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 complicate this process. As always, your Lumicor Systems Integration Specialist 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.



TEST BEFORE INSTALLING

Our production, packaging and shipping process is accompanied by a rigorous quality control procedure. All Light Sheets are subjected to a burn in period and are tested before packaging to ensure operation of the highest quality. Due to possible unforeseen issues with shipping and handling, we advise that all Light Sheets be inspected at time of delivery and dry-fit tested for proper illumination prior to mounting and again before the forward facing material is installed.



DO NOT CONNECT TO AC POWER

ANY DIRECT CONNECTION OF LIGHT SHEETS TO AC CURRENT WILL DAMAGE THE LEDs.

Be sure to use a UL Listed or UL Recognized Class 2, LPS or LVLE low voltage power supply that conforms to the voltage requirements of the Light Sheet. This information can be found on the Light Sheet and its packaging, as well as the power supply labeling.



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.



FRAGILE 2-PIN CONNECTION BLOCKS

DISCONNECT POWER AT THE SOURCE BEFORE REMOVING ANY 2-PIN CONNECTION BLOCKS. The integrated 2-pin connection blocks are made of plastic which can be damaged if made to bear weight. Use domed spacing bumpers (included) to bear the weight of any forward facing material in horizontal applications and to act as a safeguard to protect the Light Sheet in vertical applications. Lumicor recommends using eight bumpers per Light Sheet (approximately six per square foot) in horizontal applications to evenly distribute the weight of the forward facing material.



CUTTING ADVISORY

DISCONNECT POWER AT THE SOURCE BEFORE ALTERING THE SHEET IN ANY WAY. NEVER CUT LIGHT SHEET WHILE POWERED. Field cutting of the Light Sheet does not void UL Listing. LEDs can lose input power if cut lines are not followed.



DRILLING ADVISORY

DISCONNECT POWER AT THE SOURCE BEFORE ALTERING THE SHEET IN ANY WAY. Light Sheets have specific areas where holes can be made in the sheet. The smaller diameter circles on the Light Sheet (0.12" / 3mm) indicate the maximum diameter of screw or other fastener's shaft that can be used without causing damage to the Light Sheet's power distribution grid. The larger diameter circle (0.24" / 6mm) is the maximum diameter of the screw head that can be used to without causing damage.



FASTENER ADVISORY

USE PAN HEAD, DOMED, OR ROUND HEAD FASTENERS, NOT TAPERED SCREWS. Never screw the fastener so much that it deforms the Light Sheet. Only penetrate the Light Sheet at the concentric circles marked on the sheet. For suspended applications, use mechanical fasteners with an appropriate spacing to avoid sagging.



WET LOCATION USE

Light Sheets are rated IP65. This rating is total protection against dust ingress as well as water projected by a nozzle against the enclosure from any direction for a limited time and may be used in wet locations, but not where standing water can accumulate. Cut edges of IP65 can optionally be sealed from moisture with an RTV Silicone Sealant or conformal coating.



INSTALLATION TEMPERATURE

Due to the characteristics of the 3M adhesive that is used for our Light Sheets, installation environments and locations should be taken into consideration. Low temperatures can cause longer cure times for permanent adhesion.



DO NOT FOLD BACK-TO-BACK

There is no minimum bending radius for Light Sheets, however a single sheet may not be folded on itself because this could disrupt the flow of electricity throughout the folded sheet. Two separate sheets may be attached back-to-back with a non-conductive barrier placed between them to minimize the possibility of creating a short if the back protective coating is scratched off in any way.



STORAGE ADVISORY

Store Light Sheets in a clean, dry area on a flat, horizontal surface. Do not open the anti-static envelope until ready to install. Ideal storage conditions: Temperature of 68° - 77°F, 50% humidity.



SOLDERING ADVISORY

DISCONNECT POWER AT THE SOURCE BEFORE ALTERING THE SHEET IN ANY WAY. Solder sheets or strips of Light Sheets together or solder power input(s) to Light Sheets. The Light Sheet's copper pads are engineered to handle 4A of load and polarity is noted by the + and - next to each copper pad. Use 20AWG stranded copper wire for up to 4A of load. For any distance that exceeds 6.5 feet (2 meters), attach additional leads to avoid voltage drop.