

Flexible LED Light Sheet

Flexible LED light sheet is ideally suited for counter and bar tops, curved surfaces, low clearance applications and situations where exact measurements are not known or likely to change. These flexible, field-customizable Light Sheets provide extremely uniform illumination with as little as 3/8" (9.5mm) or more of space behind the translucent material.

BRIGHT & EVEN ILLUMINATION

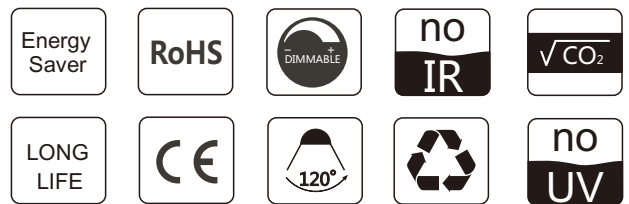
- Multiple color temperatures and custom single color options available
- Superior consistent light quality via single bin LED selection

CUSTOMIZABLE

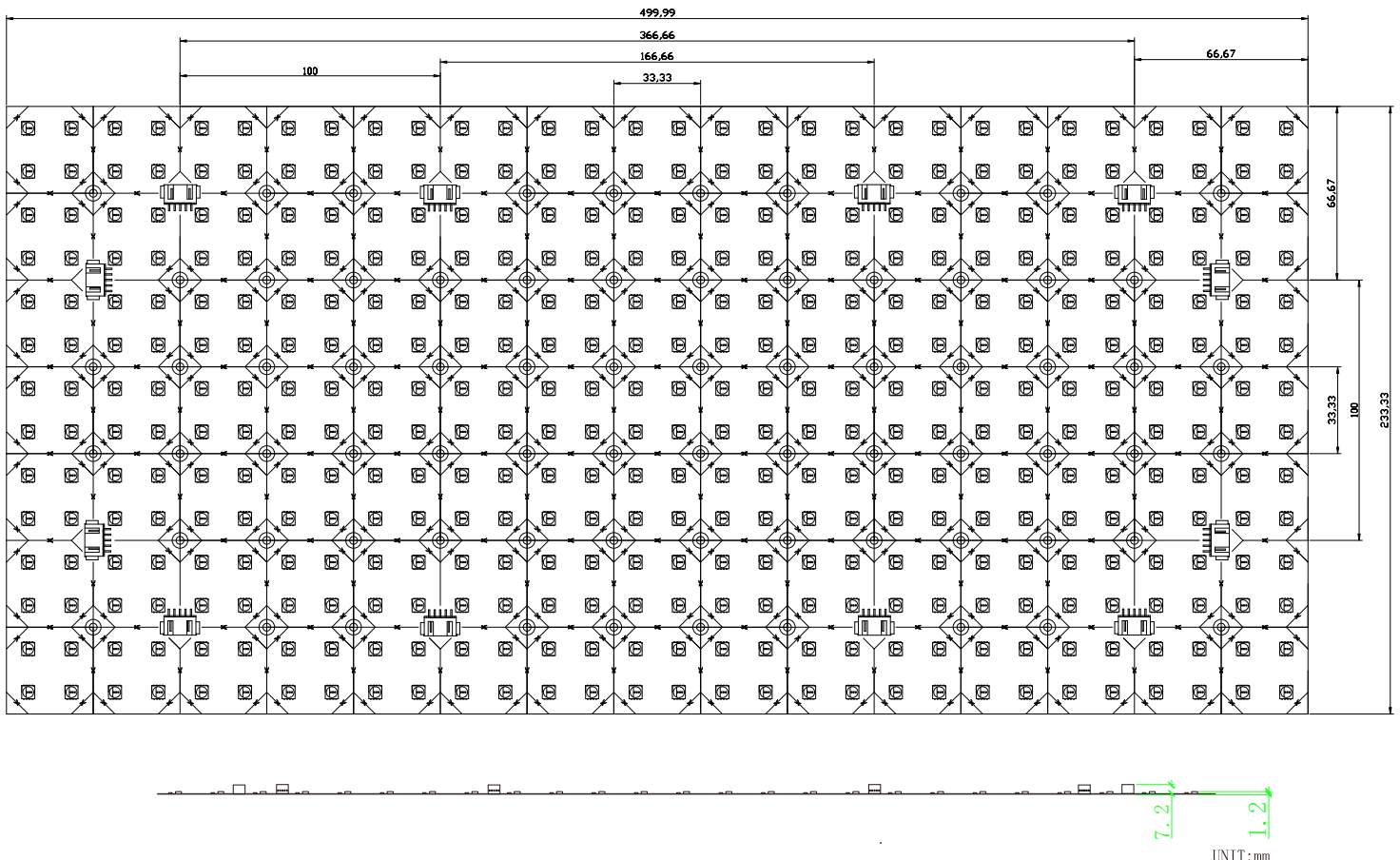
- Can be folded and shaped to suit project needs
- Its unique power distribution grid allows groups or single LEDs to be cut from the flexible sheet while maintaining a resilient circuit to all remaining LEDs

APPLICATIONS

- Final dimensions are not known or likely to change
- Dry location use
- Folding and/or cutting would save time during installation
- Multiple planes need to be backlit
- Mixed sizes and shapes are involved
- A low clearance solution is needed



DIMENSION: (420D/PCS)



SPECIFICATION

Model	LED QTY	Color	Rated Power	CRI	Efficacy Typ	Continuous connection QTY	Storage temperature	Dimension Net weight
SL-5050RGBW-420F	420PCS	Red:620-630nm	Red:12W(Max)	/	/	6PCS 288W	-30~70°C	499.99*233.33mm 120g
		Green:520-530nm	Green:12W(Max)					
		Blue:460-470nm	Blue:12W(Max)					
		White:2700-6500K	White:12W(Max)	Ra>80	85-90Lm/W			

The above data testing at room temperature is 25 °C, Cooling by free air convection. Lifetime: 50,000 hrs (Note: T_{cp} < 60 °C)

Operation Temperature: -20 °C ~ 60°C At the T_c point

Tolerance range for optical and electrical data: ±10 %.



LEDs ARE FRAGILE!

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



TEST BEFORE INSTALLING!

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.

INSTALLATION

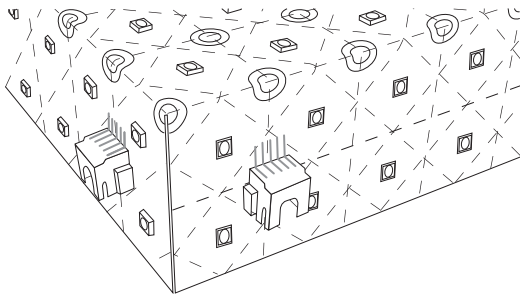
DRY FITTING, CUTTING & FOLDING

Dry fit the sheets and their connection wires before mounting the Light Sheets to the substrate. Always test function before installing the translucent (forward facing) material.

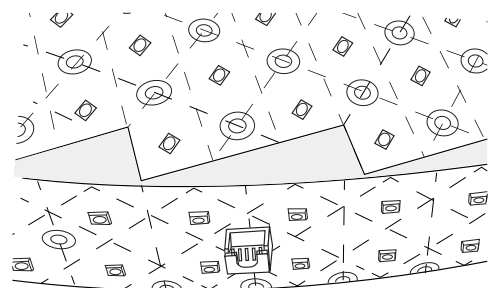
To make a fold in an Light Sheet, bend the sheet along one of the dotted lines marked on the sheet, then crease along this line, then relax the crease into a 90° (or other desired) angle. Be careful about folding where an LED is attached to the sheet since LEDs can break if forced over an edge. Do not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

To make a cut in an Light Sheet, use shears, scissors, utility knife and/or a precision/craft knife. Cut on horizontal, vertical and/or diagonal lines. Deviating from the lines could cut off power to one or more LEDs.

To fold or cut on a line where a 5-pin connection block exists, see Removing 5-Pin Connection Blocks below. If a cut edge has the possibility of making contact with a conductive surface such as a metal sink and/or another cut edge, cover the cut edge with RTV silicone sealant or conformal coating.



To form square corners, cut squares out of each corner of a dry fit arrangement, similar to the Figure 10 on page 6, finding the nearest cut line that fits the design. Fold the Light Sheets over the base material so that the cut edges meet vertically as shown above. This will provide a uniform spacing for the translucent material.



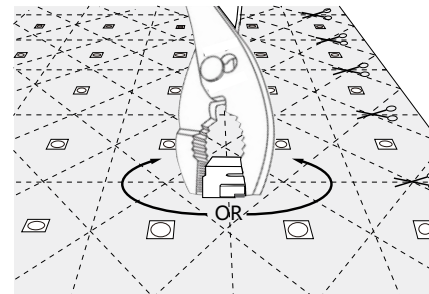
For curved shapes that meet a vertical surface, make a template of the horizontal plane, then place it over a dry fit arrangement and mark the shape onto the face of the Light Sheets, using a felt tip, roller ball pen or grease pencil. Note that the markings can easily be removed if desired.

Then cut this shape out to the nearest cut lines. For the vertical surface, cut strips from other Light Sheets to follow the curve.

The strip can be powered from any integrated 5-pin connection block, however if the distance around the curve exceeds 6.5 feet (2 meters), use multiple connection blocks or power inputs, or splice on 14AWG lead wire to avoid voltage drop.

REMOVING 5-PIN CONNECTION BLOCKS

If one or more 5-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 slip-joint 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 LIGHT WHILE POWERED.**

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.

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

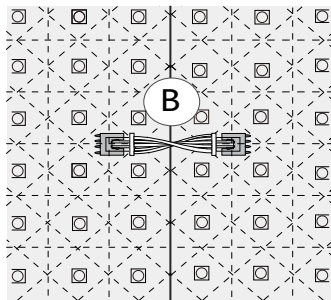


Figure 1

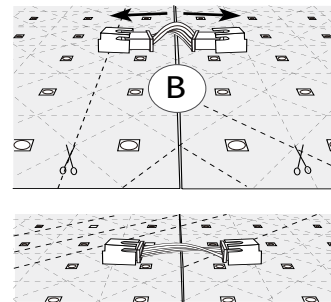


Figure 2

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, then secure the wires in this position using the cable management clips with silicone adhesive backing (D) as shown in Figure 3.

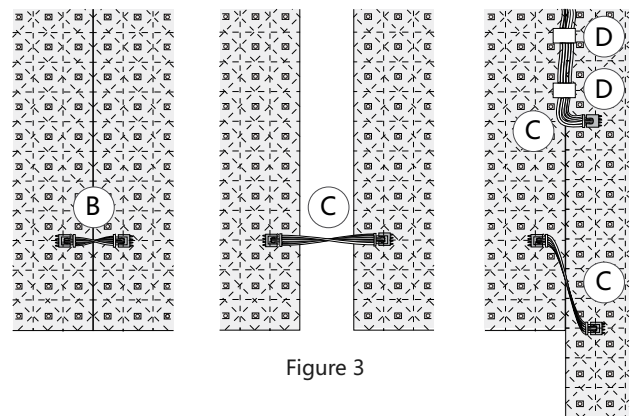


Figure 3

Domed spacing bumpers (E): The domed spacing bumpers (E) included with each Light Sheet have been engineered to bear the weight of translucent materials in horizontal applications and act as a safeguard in vertical applications so that the forward facing material does not harm the 5-pin connection blocks nor the LEDs. recommends using eight bumpers per Light Sheet (approximately six per square foot), spacing them evenly to distribute the weight of the forward facing material (see Figure 4) and to add a level of protection in vertical applications when the forward facing material will be positioned near the Light Sheet (see Figure 5).

The size of the bumper is not intended to provide the appropriate spacing between the Light Sheet and the forward facing material to achieve even illumination. Depending on the transmissive characteristics of the forward facing material, additional diffusion might be required.

Many variables of translucent materials affect transmissive characteristics and dictate the space required between the Light Sheet and the translucent material. Due to these variables, we encourage testing and mock-ups to ensure even illumination and that your vision is achieved.

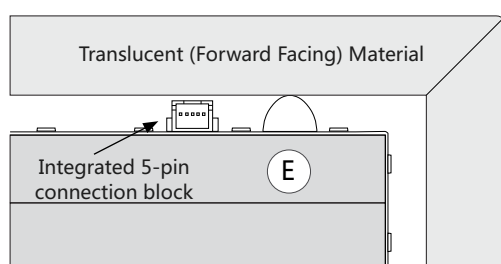


Figure 4

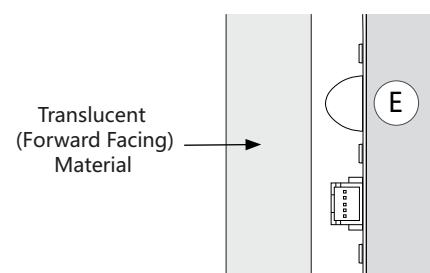
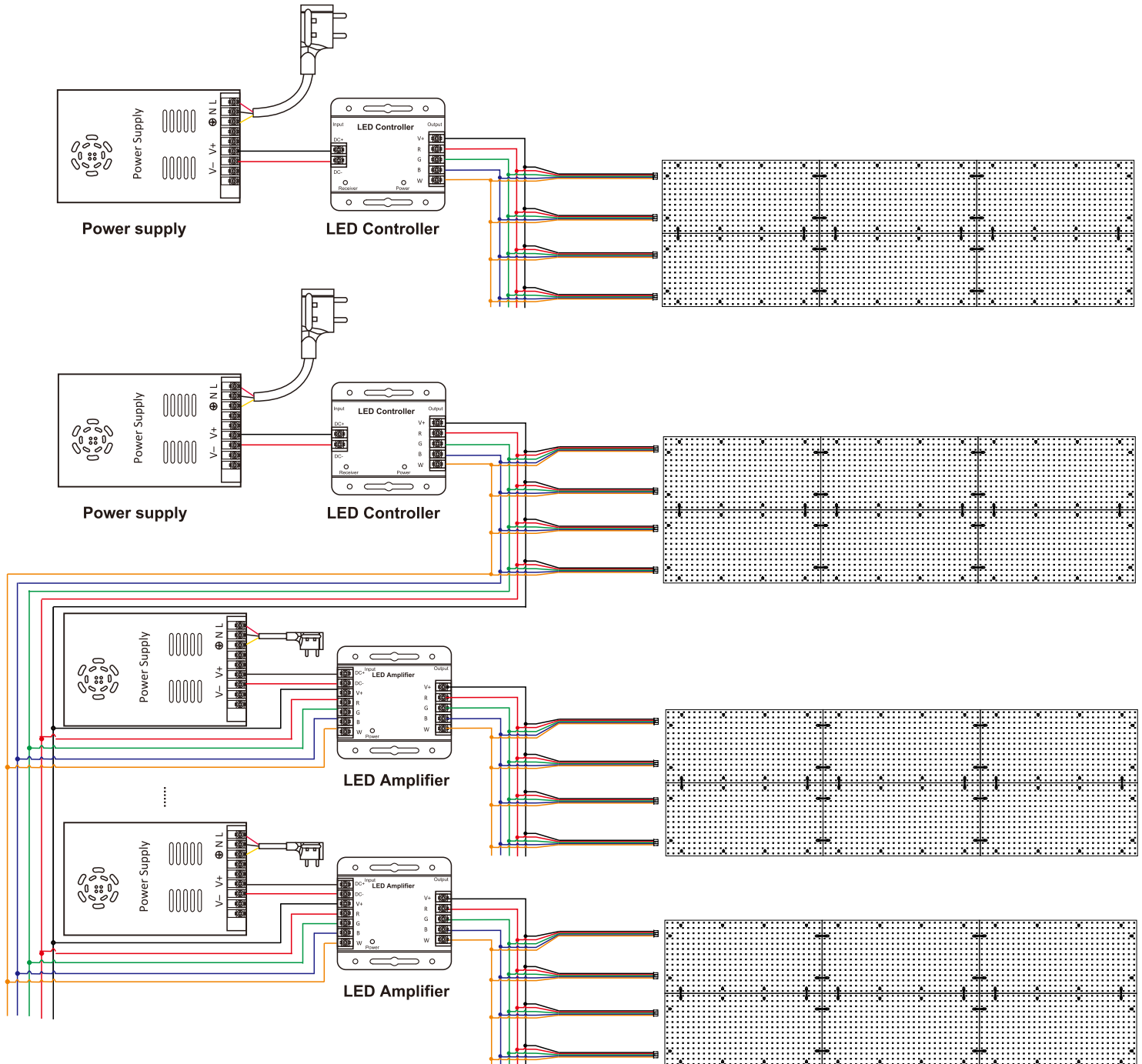


Figure 5

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 Light Sheet to the farthest end of any interconnected sheet. If the distance exceeds 6.5 feet, splice additional lead wire to the power input wire based on attached load and run distance per voltage drop calculations, using multi-strand high strand count wiring.



Soldering as Alternative Power Input Method

Soldering directly to the copper pads on the sheet provides another method of power input. Figure 9 shows the use of a longer sheet-to-sheet connection wire (C) with one connector cut off as a means to connect power from a connection block on one Light Sheet to another Light Sheet that has none available. Carefully solder the grey striped wire to a positive (+) copper pad and the solid white wire to a negative (-) copper pad.

Note that the positive and negative copper pads used need not be adjacent to each other.

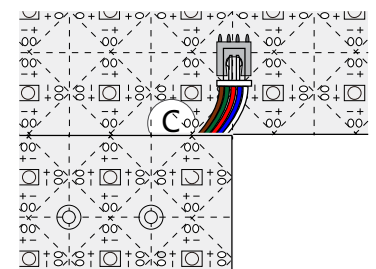


Figure 9

POWER DISTRIBUTION EXAMPLE

For larger scale applications, groups of up to 6 sheets can be arranged next to each other, Note: The power consumption per Light Sheet is 48 watts, which includes 20% headroom for the power supply.

LEDs may be cut from the Light Sheets in groups or singly. Figure 10 below illustrates an island with square corners, a sink cut-out and faucet drop. Note: The 3 sets of Light Sheets shown in light and dark grey below are mounted adjacent to each other, however they are electrically isolated from each other.

The electrical load will decrease when LEDs are cut from a sheet or set of sheets.

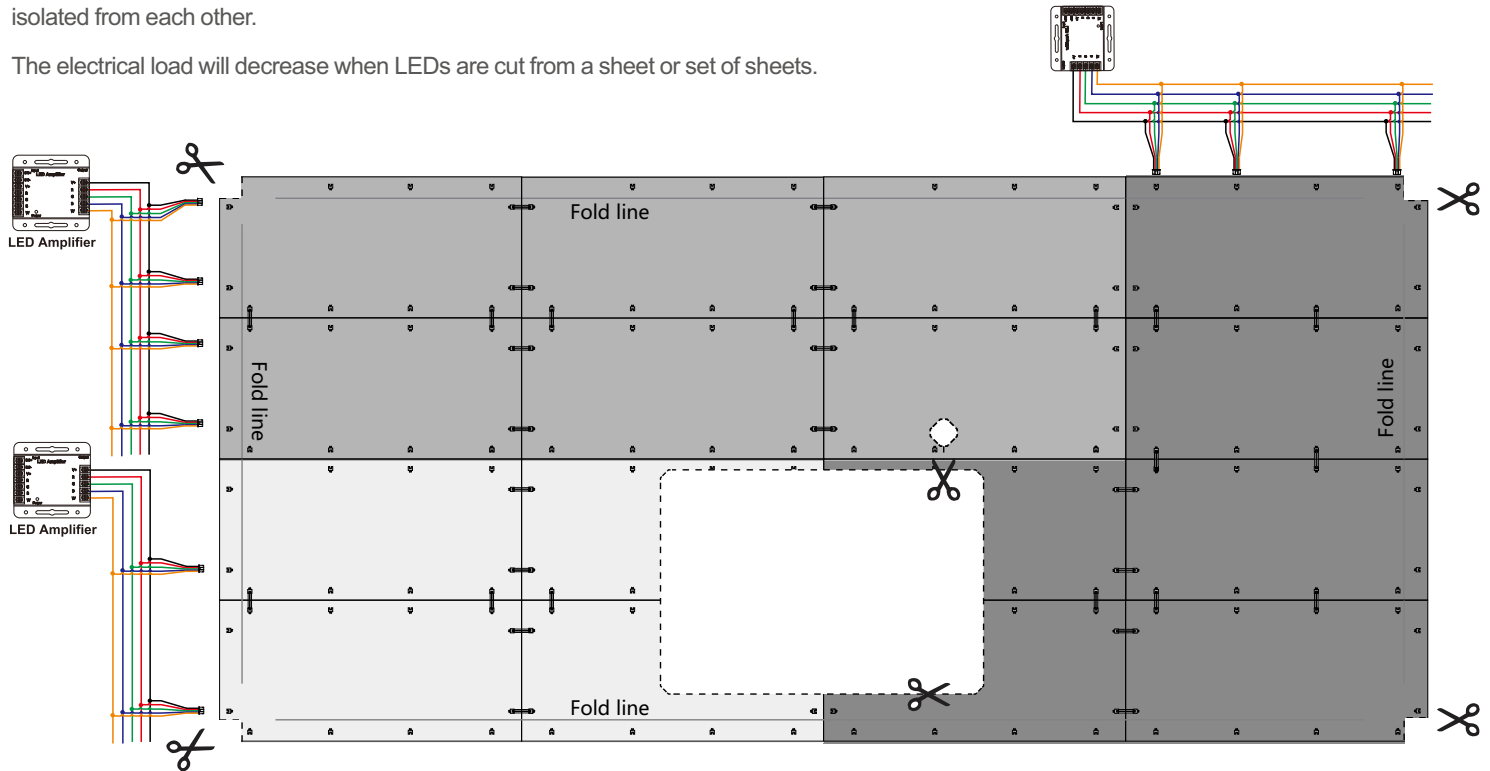


Figure 10

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 without causing damage. See Figure 11. 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) nor self-tapping screws – and never screw the fastener so much that it deforms the Light Sheet. See Figure 12.

Re-test function before installing the translucent material.

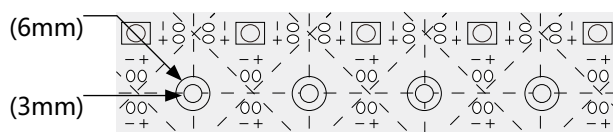


Figure 11

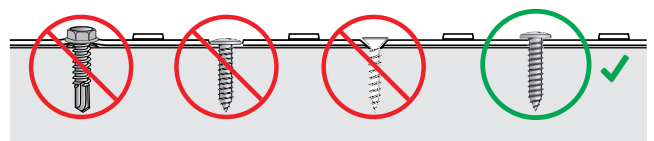


Figure 12

ACCESSORIES

PART	ACCESSORY PACKACKAGE CONTENT	QTY
A	Sheet-to-sheet connection wires for aligned 5-pin connection blocks, 20AWG, 60mm length	4
B	Sheet-to-sheet connection wires for staggered 5-pin connection blocks, 20AWG, 200mm length	4
C	Cable management clips with silicone adhesive backing	4
D	Domed spacing bumpers with silicone adhesive backing	8
E	Connect connector, series - used to connect wires of the same polarity	1
F	Power lead with connector on one end and stripped on the other end, 20 AWG, 500mm length	1

