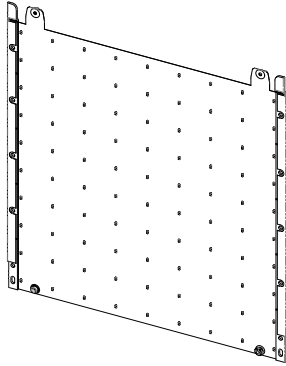




SQUARE Light Sheet Installation Instructions



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Important Installation Notes

PLEASE READ INSTRUCTIONS PRIOR TO INSTALLATION

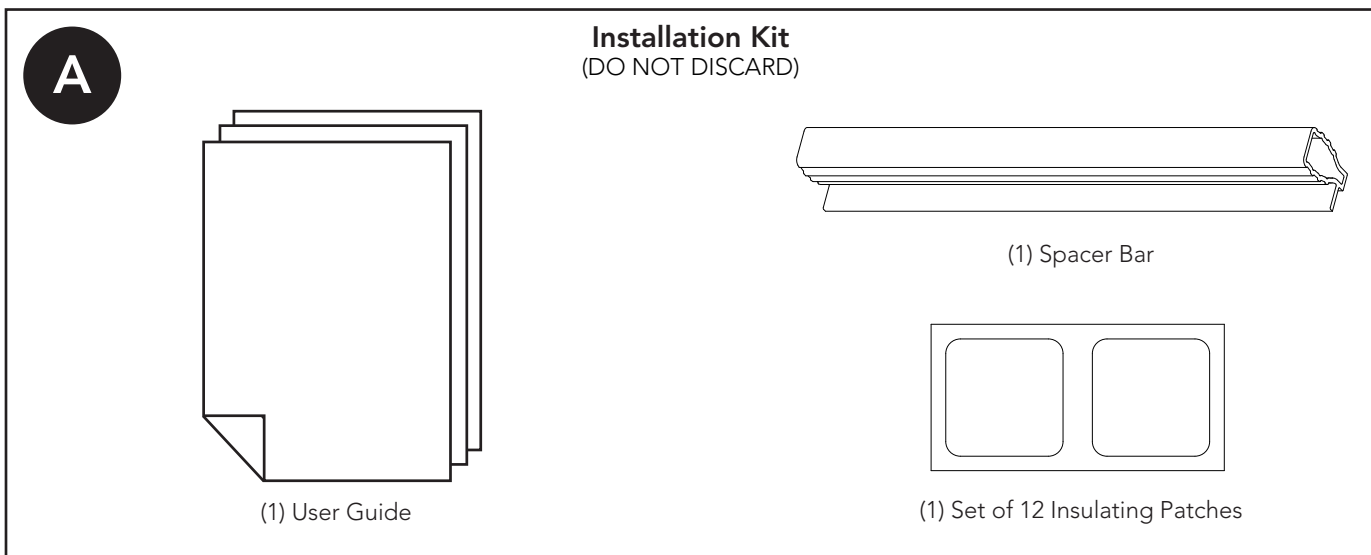
- Installation must be completed by a qualified electrician in accordance with all national and local electrical and construction codes.
- Ensure power is off prior to installation.
- SQUARE light sheets are dry location rated only.
- SQUARE light sheets must be powered by a Cooledge approved constant voltage Class 2 or LPS LED Driver. Using a non-approved power source could damage the system and will void the warranty.

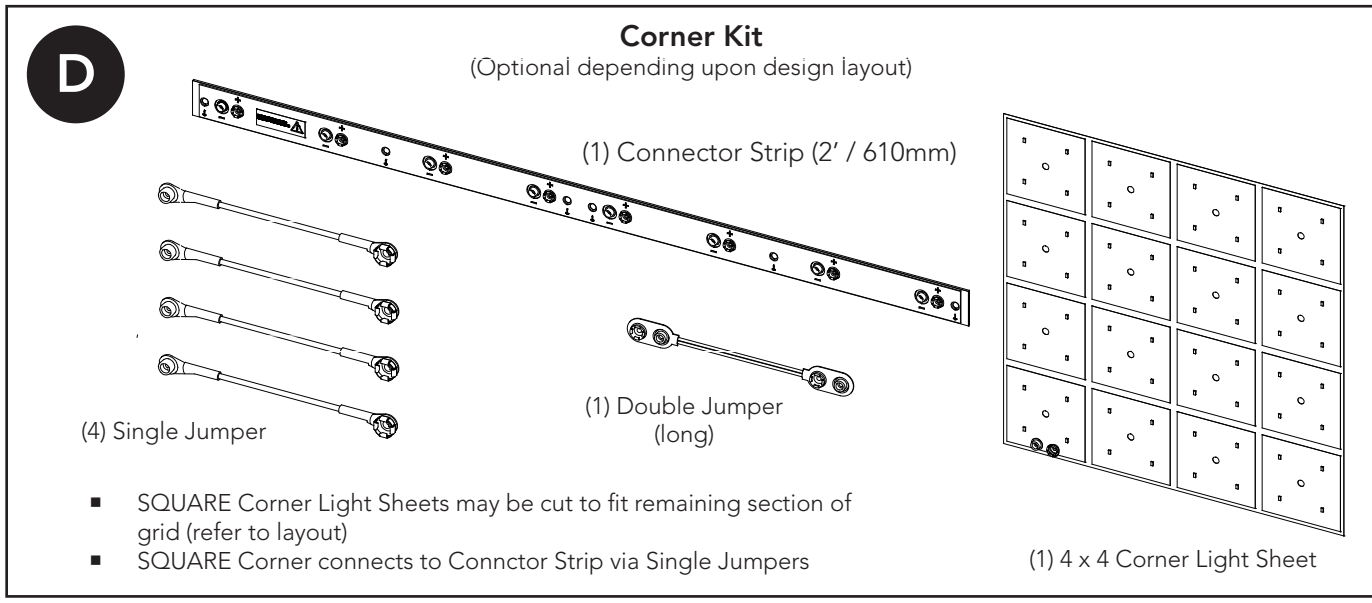
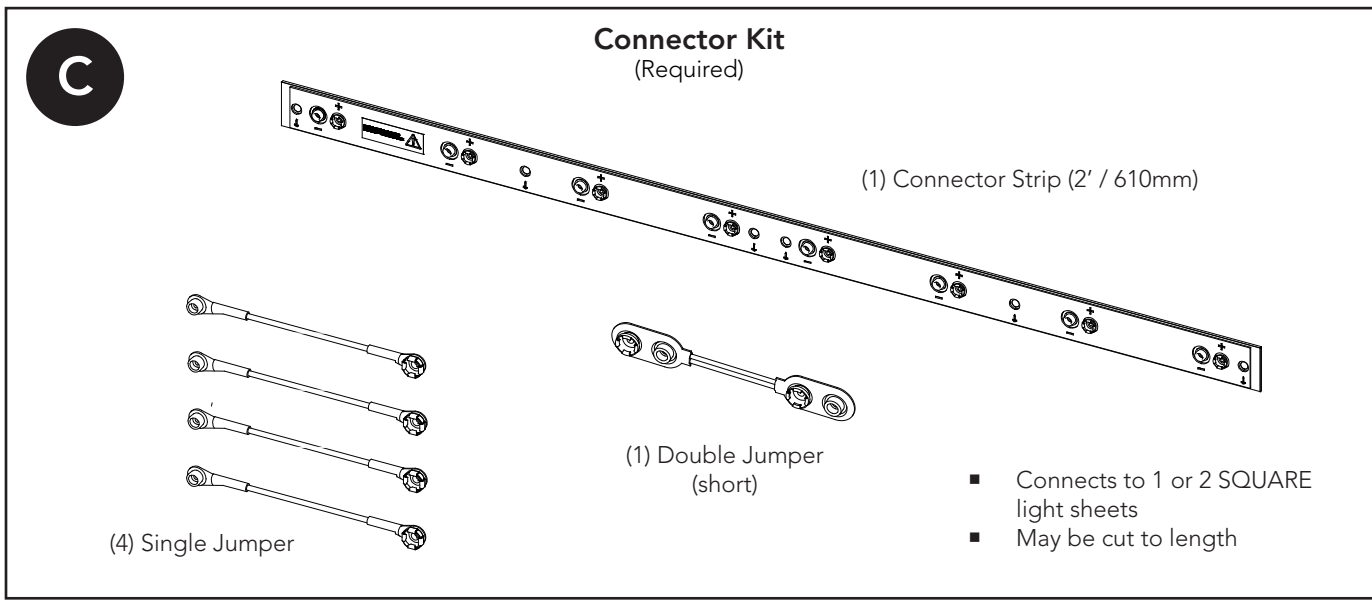
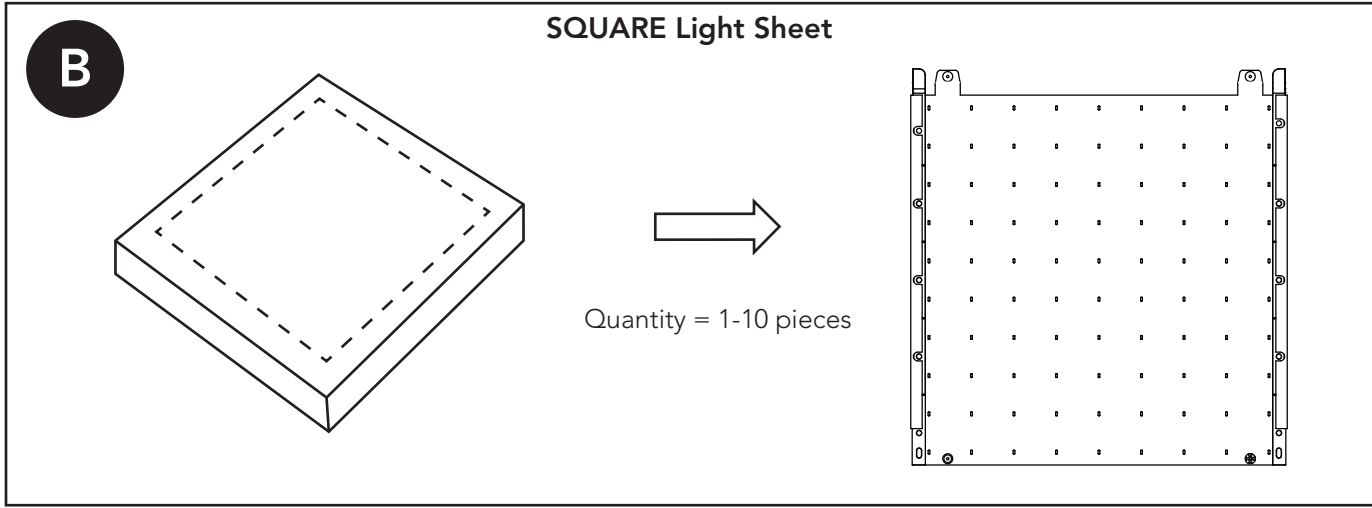


DO NOT DISCARD the contents of the Installation Kit. All components will be needed to perform the installation.

System Contents

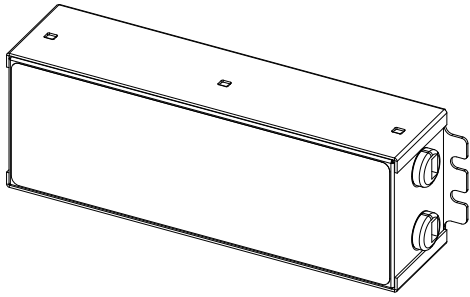
- Installation Kit:** a bag that contains this document, a spacer bar, and a set of clear insulating patches that are required when cutting SQUARE light sheets.
- SQUARE Light Sheets:** packaged in “pizza boxes” containing 1-10 pieces.
- Connector Kits:** packaged in bags each containing one strip and enough wire jumpers to connect the strips to two SQUARE light sheets and one adjacent Connector Strip.
- Corner Kit (optional):** a bag that contains a smaller SQUARE light sheet with adhesive backing, and an additional Connector kit with a longer “double jumper” connector.
- Enclosed LED Drivers:** boxes that contain electrical enclosures housing LED drivers with knockouts for incoming AC power and outgoing low voltage DC power.
- Starter Cables:** 10' / 3m length shielded 16AWG / 1.5mm² cables with two snap connectors (positive/negative) at one termination for connection to the Connector Strip and stripped conductors at the other termination for connection directly to the LED driver or to an Extension Cable.
- Extension Cables (optional):** shielded 16AWG / 1.5mm² cables cut to the length ordered with a set of two (2) crimp connectors for making a connection between a Starter Cable and LED Driver when the remote mounting distance of the driver exceeds 10' / 3m. **Note:** installer to supply appropriate two-conductor wire that meets local electrical code requirements when wire size required is other than 16AWG / 1.5mm² noted. For example when the remote mounting distance exceeds the capacity of 16AWG / 1.5mm² conductors.





E

LED Driver*
(Maximum 90W)



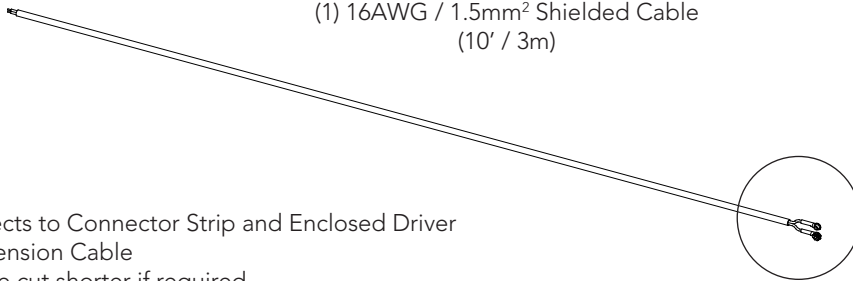
(1) LED Driver (enclosed version shown)

- Connects to Starter Cable or Extension Cable on low voltage side (inside enclosure in N. America)

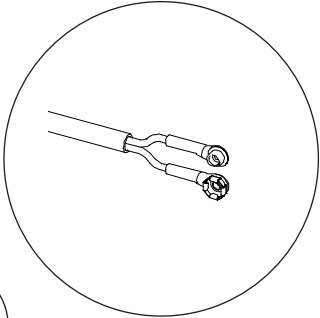
*includes UL approved enclosure in N. America

F

Starter Cable (10' / 3m)
(Maximum 90W)



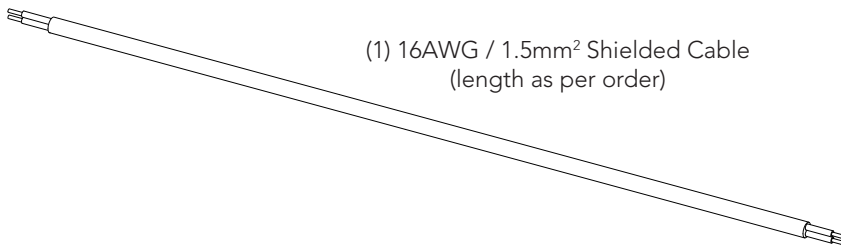
(1) 16AWG / 1.5mm² Shielded Cable
(10' / 3m)



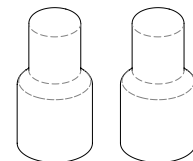
- Connects to Connector Strip and Enclosed Driver or Extension Cable
- May be cut shorter if required

G

Extension Cable
(Optional)



(1) 16AWG / 1.5mm² Shielded Cable
(length as per order)

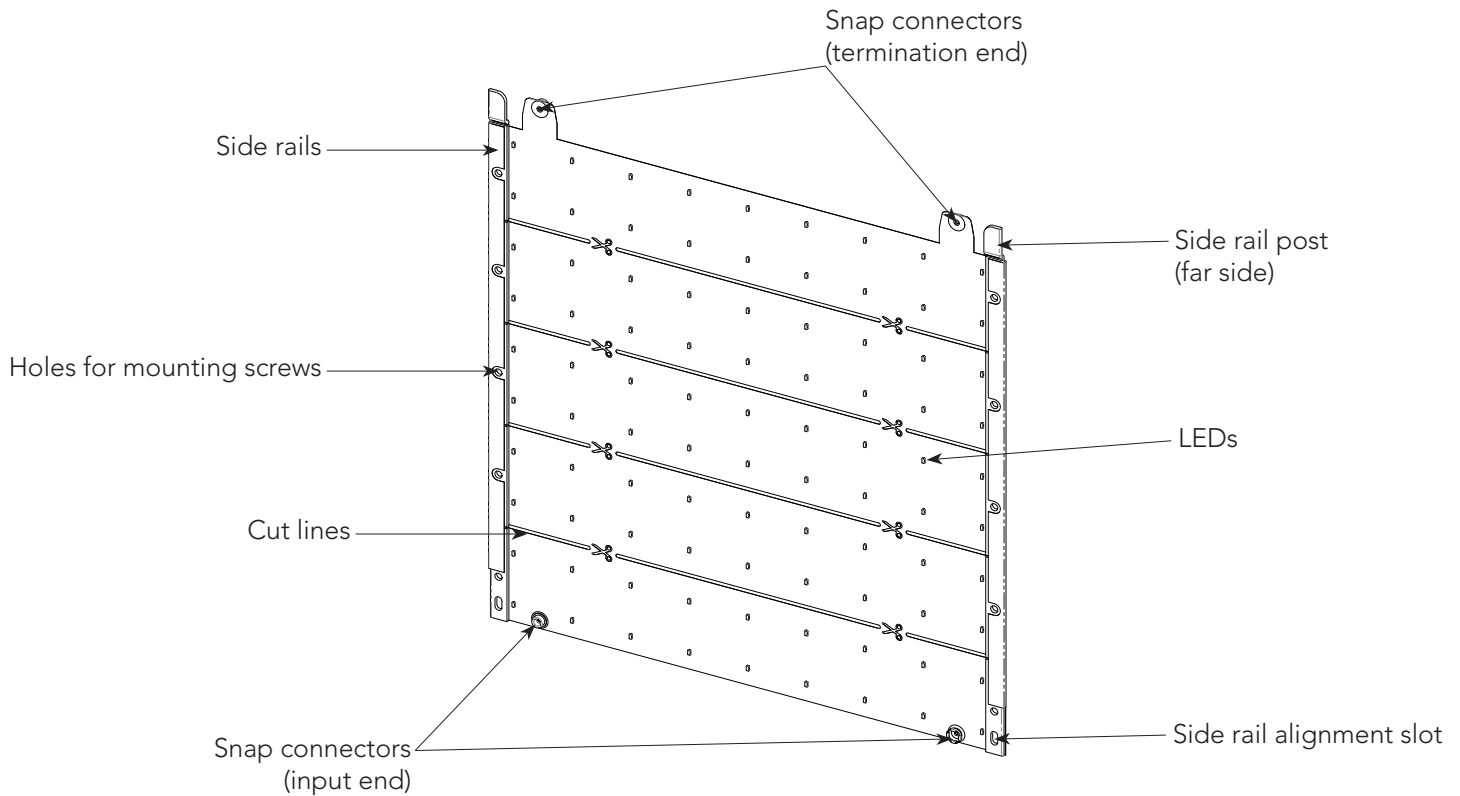


(2) Crimp Connectors

- Connects to a Starter Cable and Enclosed Driver

Introduction to SQUARE Light Sheets

SQUARE light sheets provide a flexible means of illuminating large areas. Sheets can be connected in series using snap connectors and can be installed on both flat and curved surfaces.



Care and Handling Guidelines

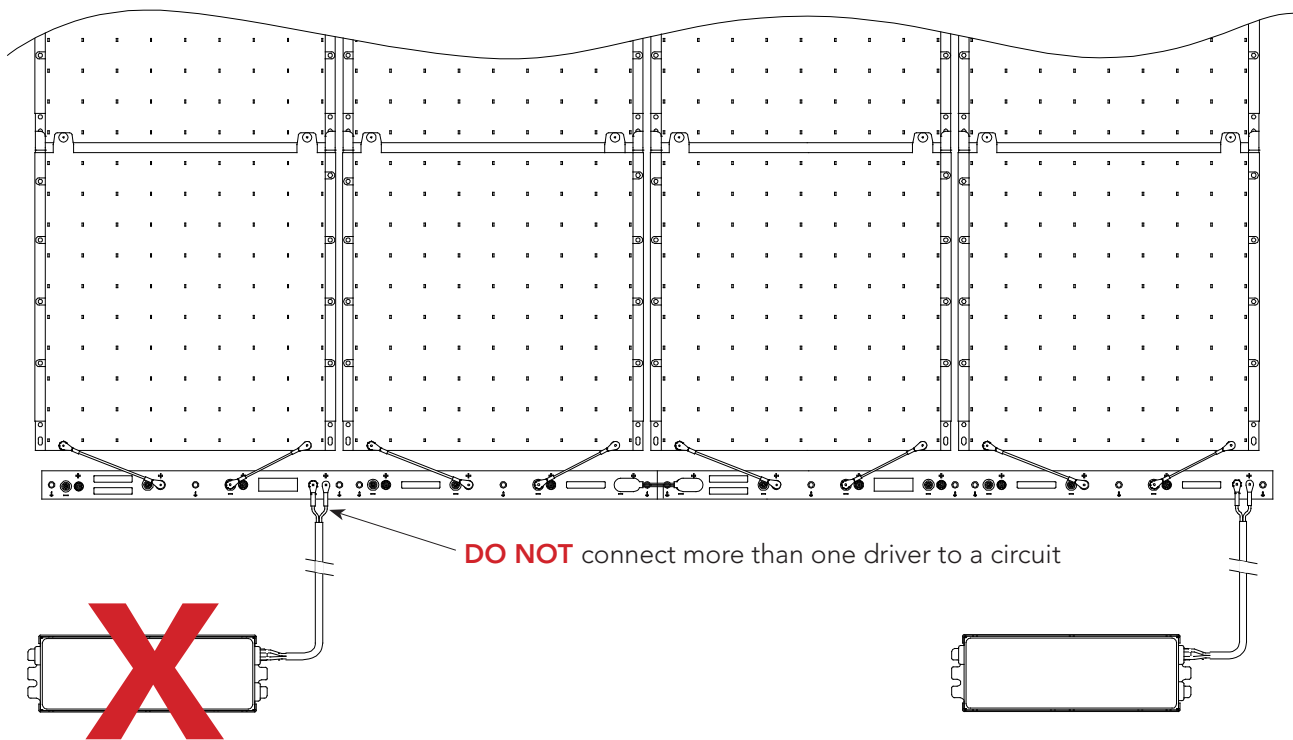
- Always handle SQUARE light sheets by the plastic rails running the length of the sheet on both sides.
- Avoid handling, scraping, rubbing or wiping the front surface of the sheet. Although the LEDs and drive components are bonded strongly to the plastic base material, it is possible to remove them or damage the electrical connection if not handled with care.
- Avoid penetrating the active area of the sheet for any reason.
- As with all electronics, light sheets are susceptible to damage from Electrostatic Discharge (ESD). Where possible avoid situations that are conducive to creating static.
- Avoid creasing or repeated flexing of SQUARE sheets as this may cause separation in the traces of the electrical circuits located on the surface of the sheets.

System Layout

! **BEFORE STARTING** installation carefully consider your system layout (refer to the project shop drawings if available):

- A maximum of eighteen (18) 600lm or thirty-six (36) 300lm SQUARE light sheets may be powered from a 90 watt driver.
- No more than nine (9) 600lm rated or thirteen (13) 300lm rated light sheets may be connected in series (eg. in a single "run")
- Each SQUARE illuminates a 12"x12" / 30cm x 30cm area.
- The side rails of SQUARE sheets hook together for alignment. SQUARE sheets are joined electrically by attaching the two sets of snap connectors.

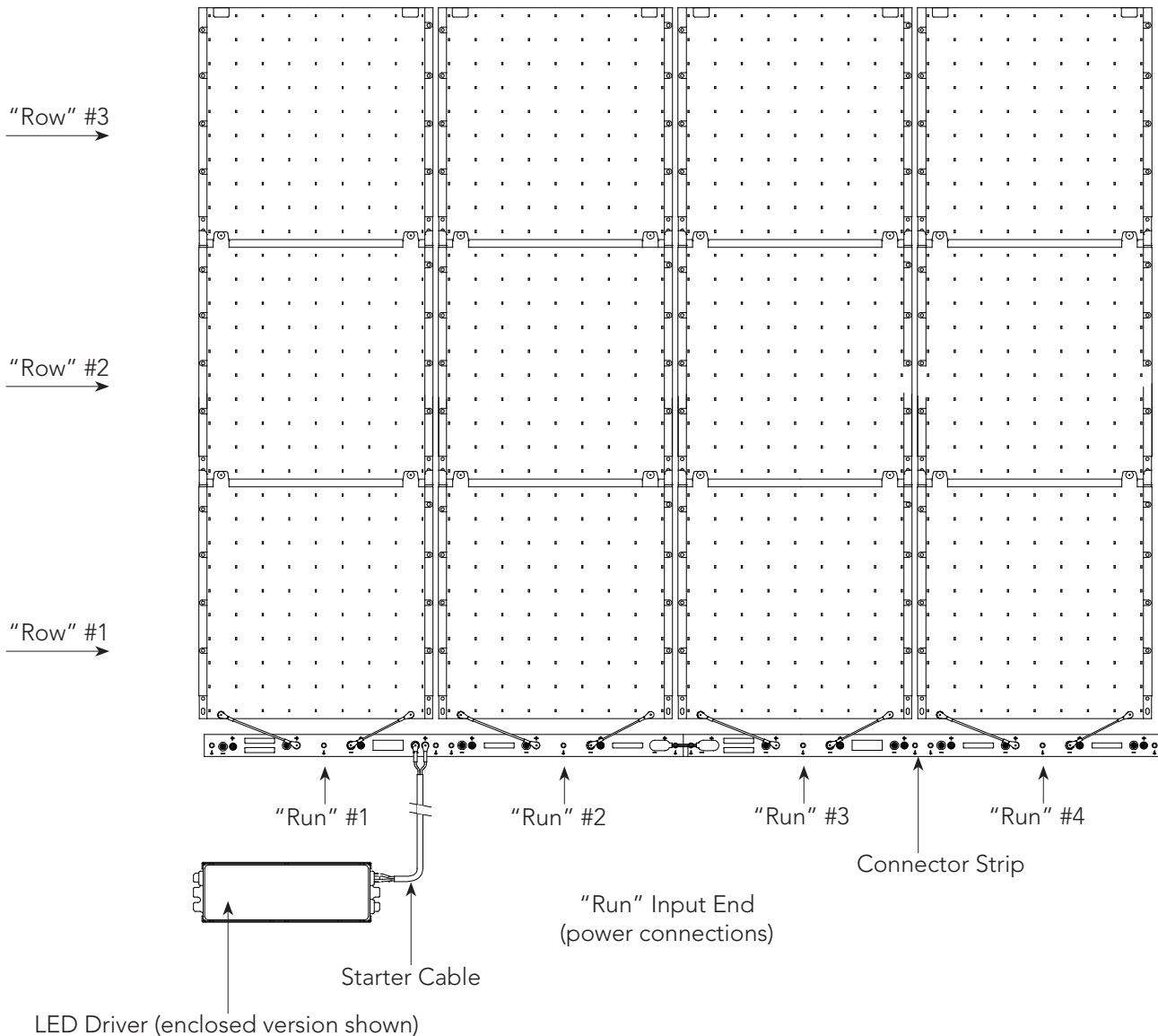
! **DO NOT CONNECT** more than one LED Driver to one electrical circuit. An electrical circuit includes any Connector Strips that are in electrical contact with each other. Circuits must be 90W maximum.



Example Installation

The installation below shows four runs of SQUARE light sheets. Each run consists of three SQUARE sheets connected in series. The Driver is connected to the system via Connector Strips that utilize Single Jumpers to contact the input end of the runs of SQUARE light sheets.

"Run" Termination End
(no electrical connections)

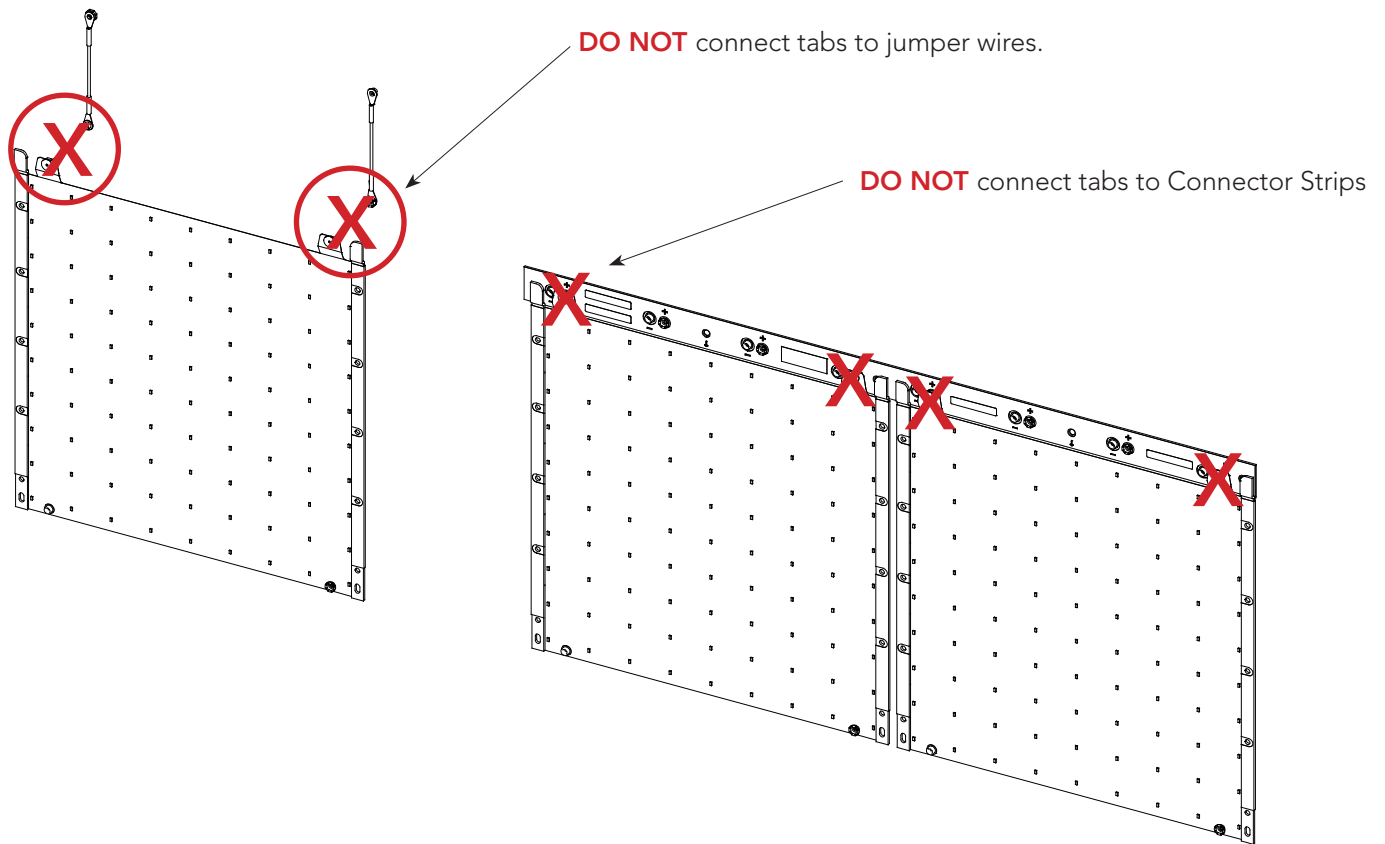


NOTE: Some layouts will require SQUARE light sheets to be cut at the termination end of the run to fit into the area provided for mounting. Additionally, if runs are required that are less than the width of a SQUARE sheet, the layout will require that the sheets be cut and rotated to fill the space. Please refer to Section 3: "Cutting SQUARE Light Sheets" for detailed instructions on how to do this.

Installation



DO NOT CONNECT SQUARE light sheet tabs to Connector Strips with the snap connectors. Do not connect tabs to jumper wires. Single Jumpers **MUST ALWAYS** be used to connect SQUARE light sheets to Connector Strips.

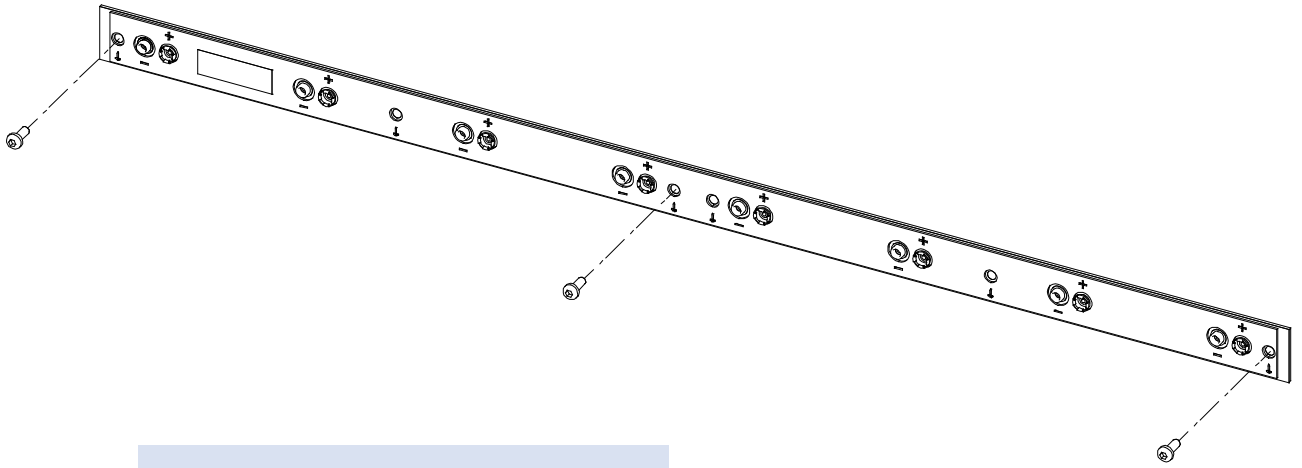


1. Install the Connector Strips

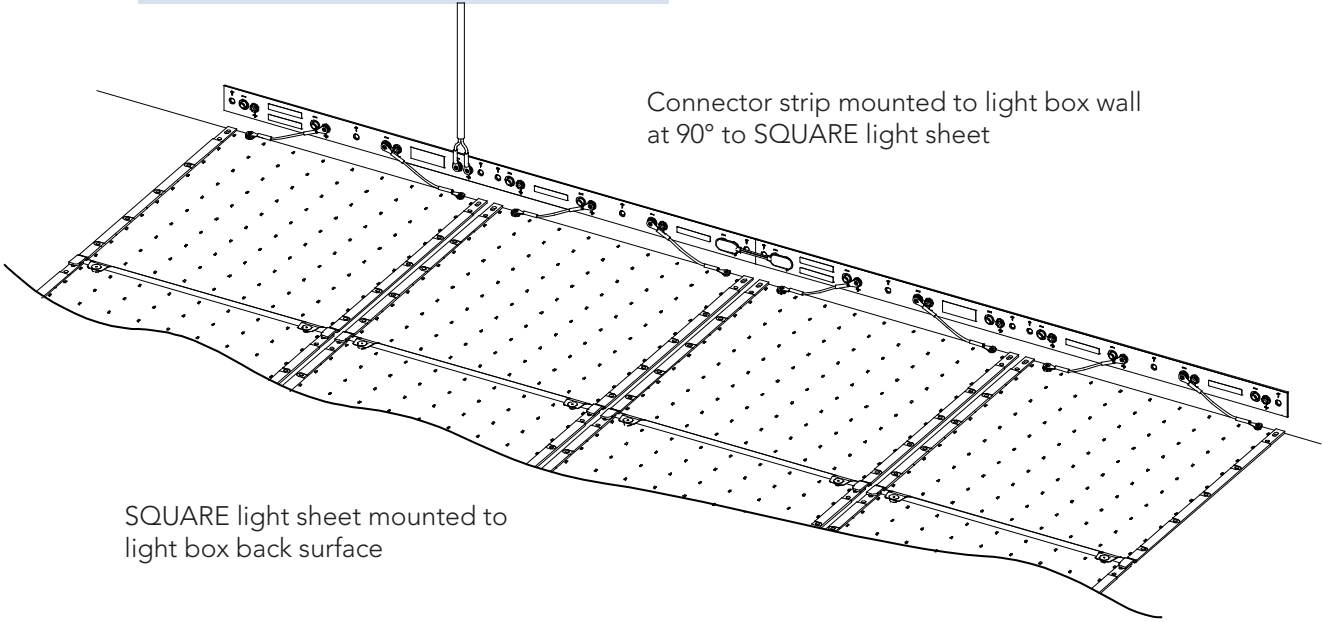
1. If available, refer to the project shop drawings to locate the input end of the SQUARE light sheet runs. Connector Strips are to be mounted adjacent to the input end of the sheets.
2. Connector Strips are shipped with an adhesive backing. To attach the strips to the mounting surface, remove the adhesive liner from the back of the strip, position the strip in correct location and stick the strip onto the surface avoiding folds and wrinkles. **The strips MUST be oriented in the same direction – eg. all the labels face the same way – so that the jumper connections can be made correctly.**

Connector Strips have been designed so that they can be installed very close to the light sheets and in some cases, it may be required that the input end of the light sheets overlaps the strips.

3. Once attached in the correct location, the Connector Strip should be secured with fasteners appropriate for the mounting surface.



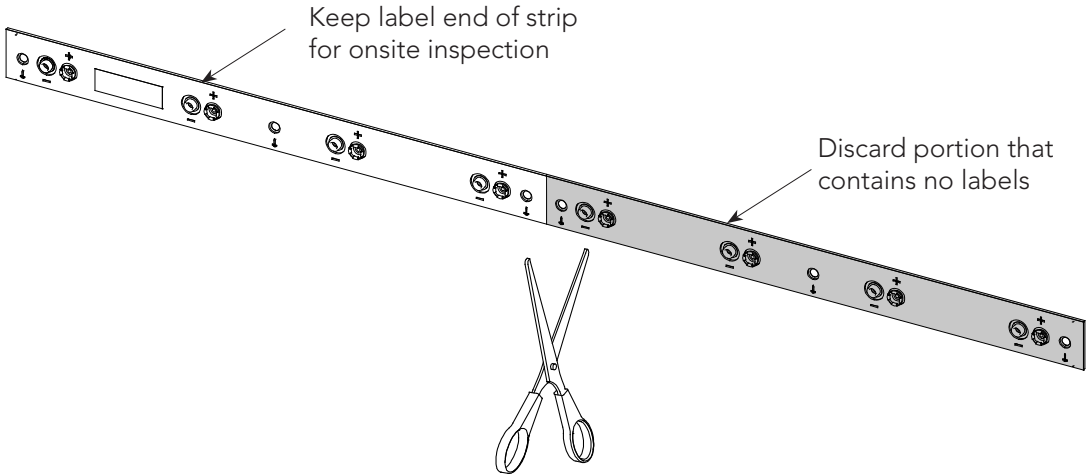
TIP: Connector Strips may be mounted to the inside walls of an enclosure if preferred - as shown



Connector strip mounted to light box wall at 90° to SQUARE light sheet

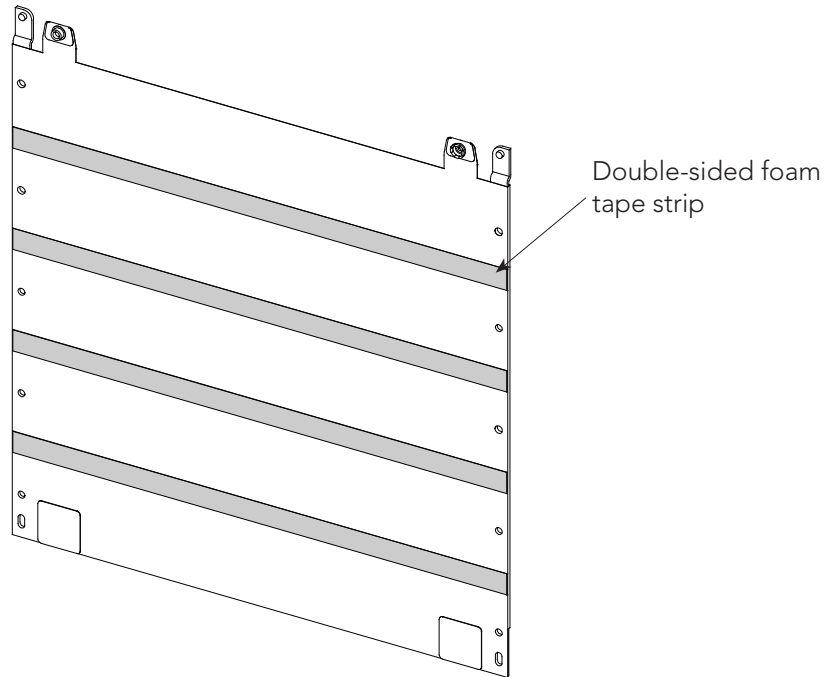
SQUARE light sheet mounted to light box back surface

- Connector Strips may be cut at the end of a series of runs where <math>< 2' / 610\text{mm}</math> of space remains. Cutting can be done anywhere on the strips except at the snap connectors.

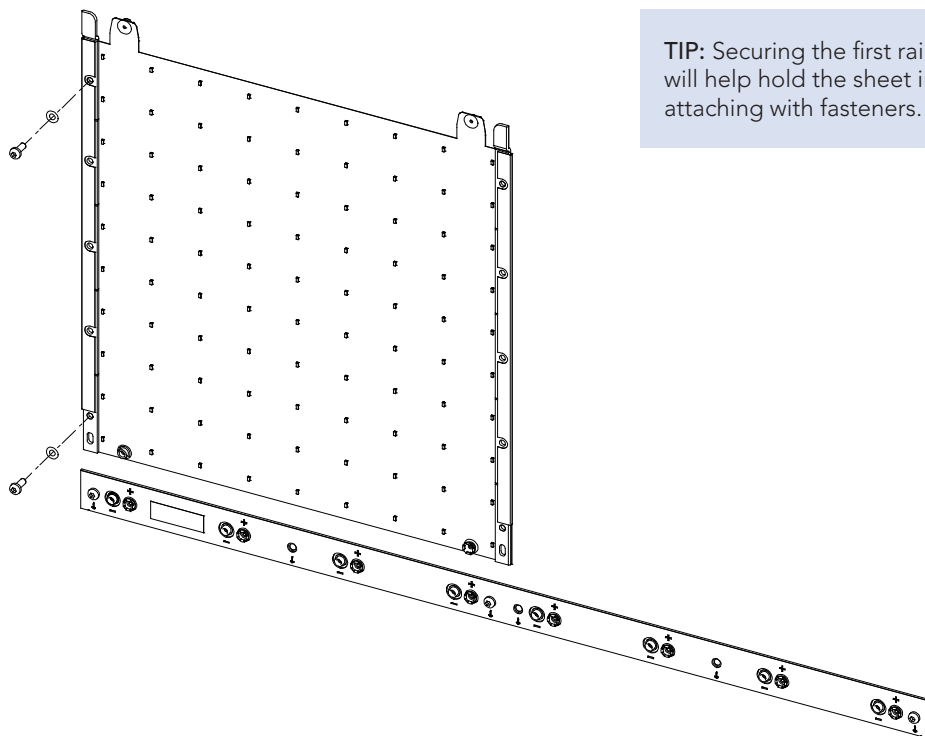


2. Mount the 1st Run of SQUARE Light Sheets

For ceiling mounted applications or where flatness is critical it is recommended to use tape applied to the back of the sheets in addition to mechanical fasteners.

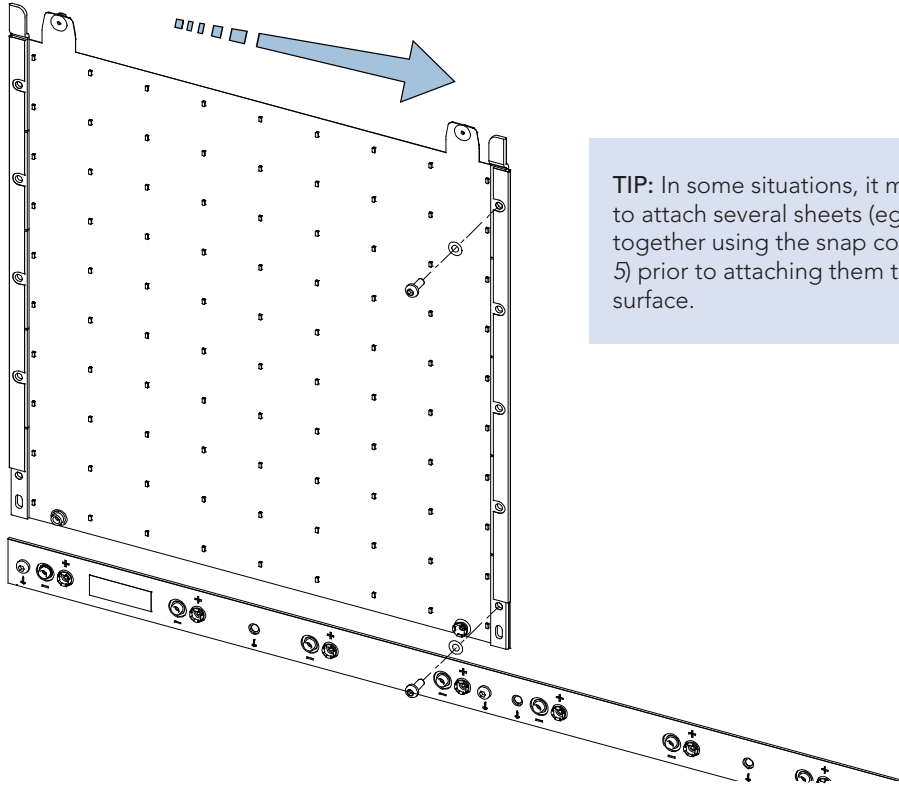


1. Beginning at the input end of a run, position the first SQUARE where required, with the posts in the rails pointing to where the second SQUARE will be located. Fasten the sheet to the mounting surface along one rail using two #6 (or M4) fasteners appropriate for the mounting surface. It is recommended to use nylon washers to allow for expansion/contraction of the rails and prevent damage to the SQUARE sheets.



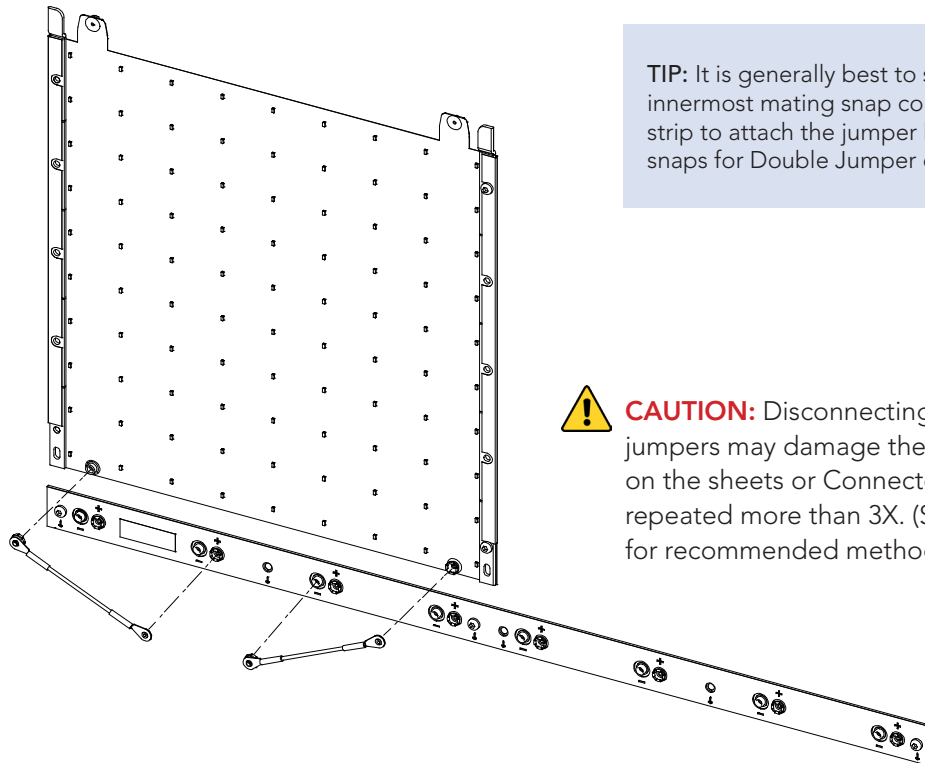
TIP: Securing the first rail with tape will help hold the sheet in place while attaching with fasteners.

2. Stretch the sheet until it lies flat against the mounting surface. Fasten the second rail to the mounting surface.



TIP: In some situations, it may be easier to attach several sheets (eg. 3-5) in a run together using the snap connectors (see Step 5) prior to attaching them to the mounting surface.

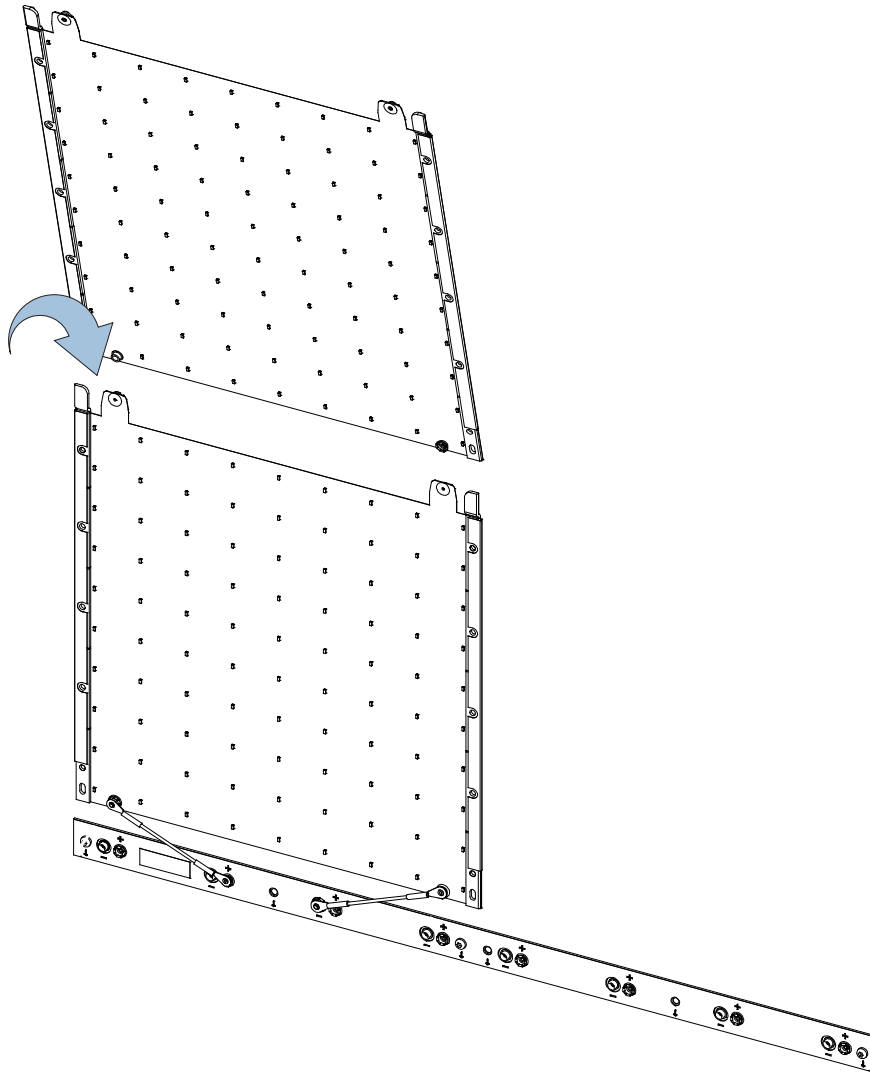
3. Use two Single Jumpers to connect the snap connectors on the input sheet to the Connector Strip. The jumpers have been designed to ensure that correct polarity is maintained. The jumper can be secured to any mating snap connector on the strip that is within its reach.



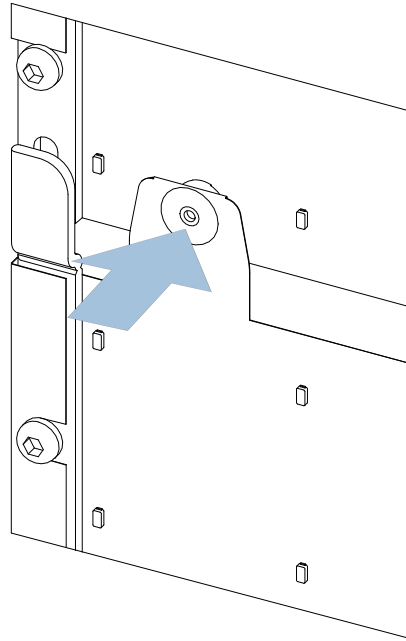
TIP: It is generally best to select the innermost mating snap connector on the strip to attach the jumper leaving the end snaps for Double Jumper connections.

CAUTION: Disconnecting/reconnecting jumpers may damage the connectors on the sheets or Connector Strips if repeated more than 3X. (See Section 8 for recommended method)

- Slide the next SQUARE under the rails of the first until the posts of the first SQUARE engage the slots in the rails of the second SQUARE. Ensure that the flexible tabs on the first SQUARE sit on top of the second. The correct spacing is set with the two SQUARE sheets as far apart as the slots allow. The slots allow a small degree of rotation to correct for misalignment.



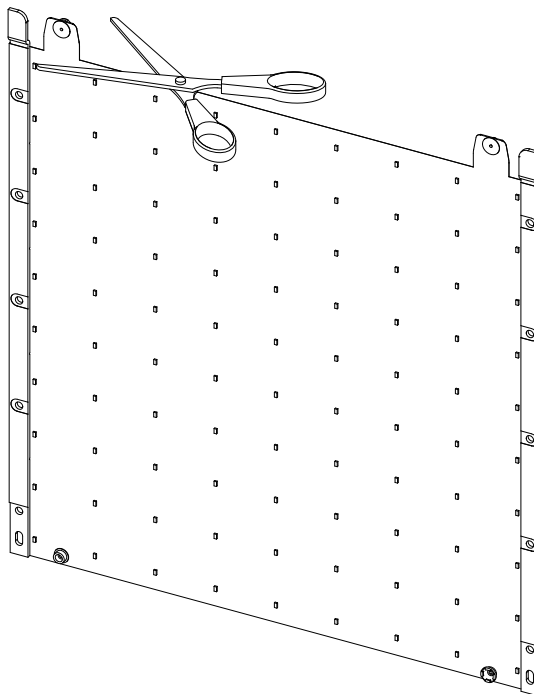
5. Make the electrical connection between the two SQUARE sheets by gently pressing the snap connectors on the overhanging tabs down until they click together.



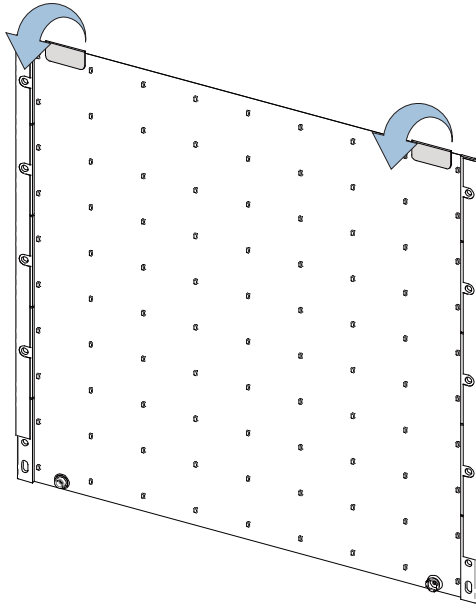
6. Once the second SQUARE is aligned correctly, attach it in place as in Steps 1 & 2.
7. Repeat steps 4, 5 and 6 until the run is complete.

For runs that terminate in a full length SQUARE light sheet, please refer to Steps 8 & 9. For runs where the SQUARE light sheet at the termination end must be cut to fit into the allowable space, please refer to Section 3: Cutting SQUARE Light Sheets.

8. At the termination end of the run, cut the tabs and the unused rail hooks off of the top row of squares as shown below.



9. Place insulating patches over region of exposed Square sheet where tabs were cut, as shown below



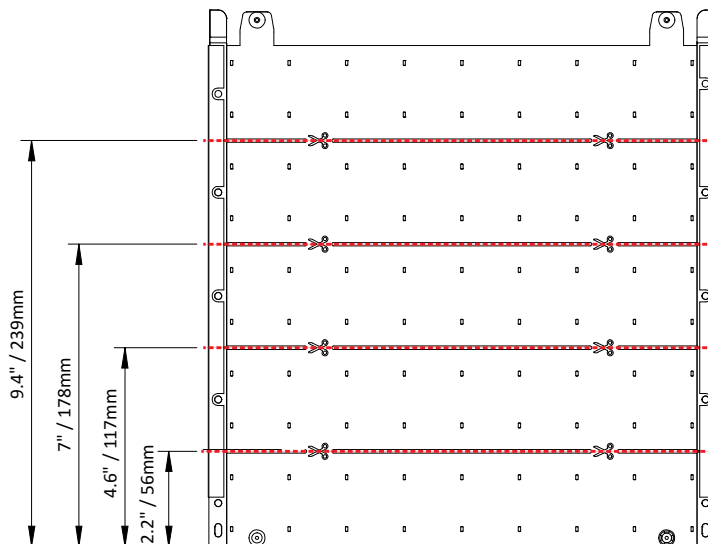
3. Cutting SQUARE Light Sheets

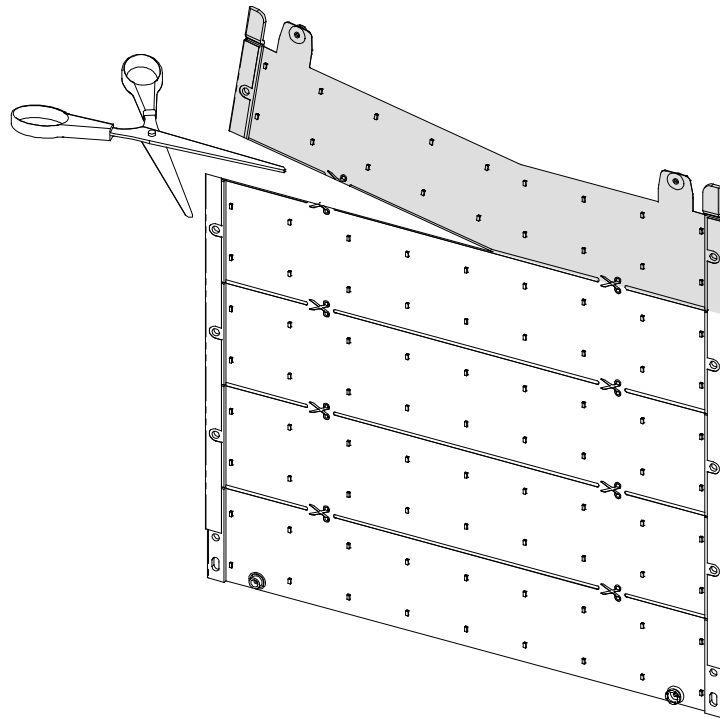
! CUT ONLY ON ALONG THE LINES SHOWN ON THE SQUARE LIGHT SHEETS


SQUARE LIGHT sheets may be cut to shorter lengths if required. The cut SQUARE sheets must always be placed at the termination end of a run as they can no longer be connected to additional SQUARE sheets. Cut sheets before mounting.

To cut the SQUARE, use sharp scissors or snips to carefully cut along the white line indicated by the scissor symbol. The plastic rails are notched at these points to aid cutting.

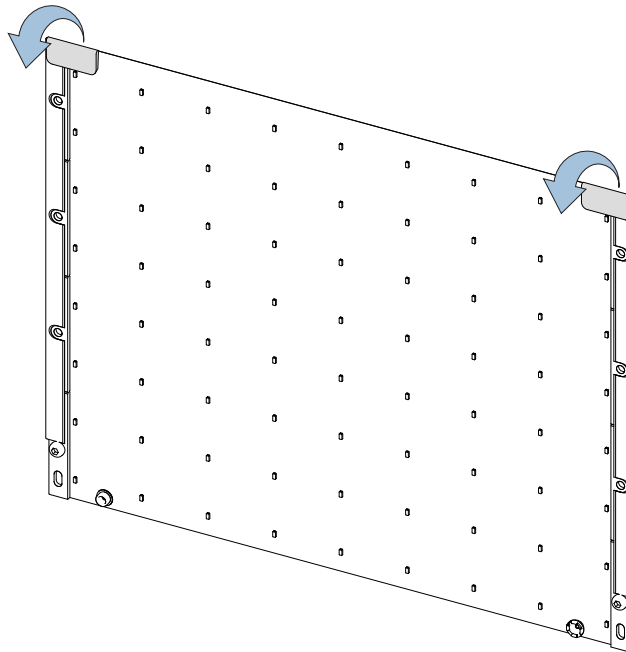
A SQUARE can be cut to give 12" / 30cm wide x lengths of approx. 2.2" / 56mm, 4.6" / 117mm, 7" / 178mm or 9.4" / 239mm as shown.





 **DISCARD** the trimmed piece of sheet (with tabs as shown in grey above) as it can no longer be used.

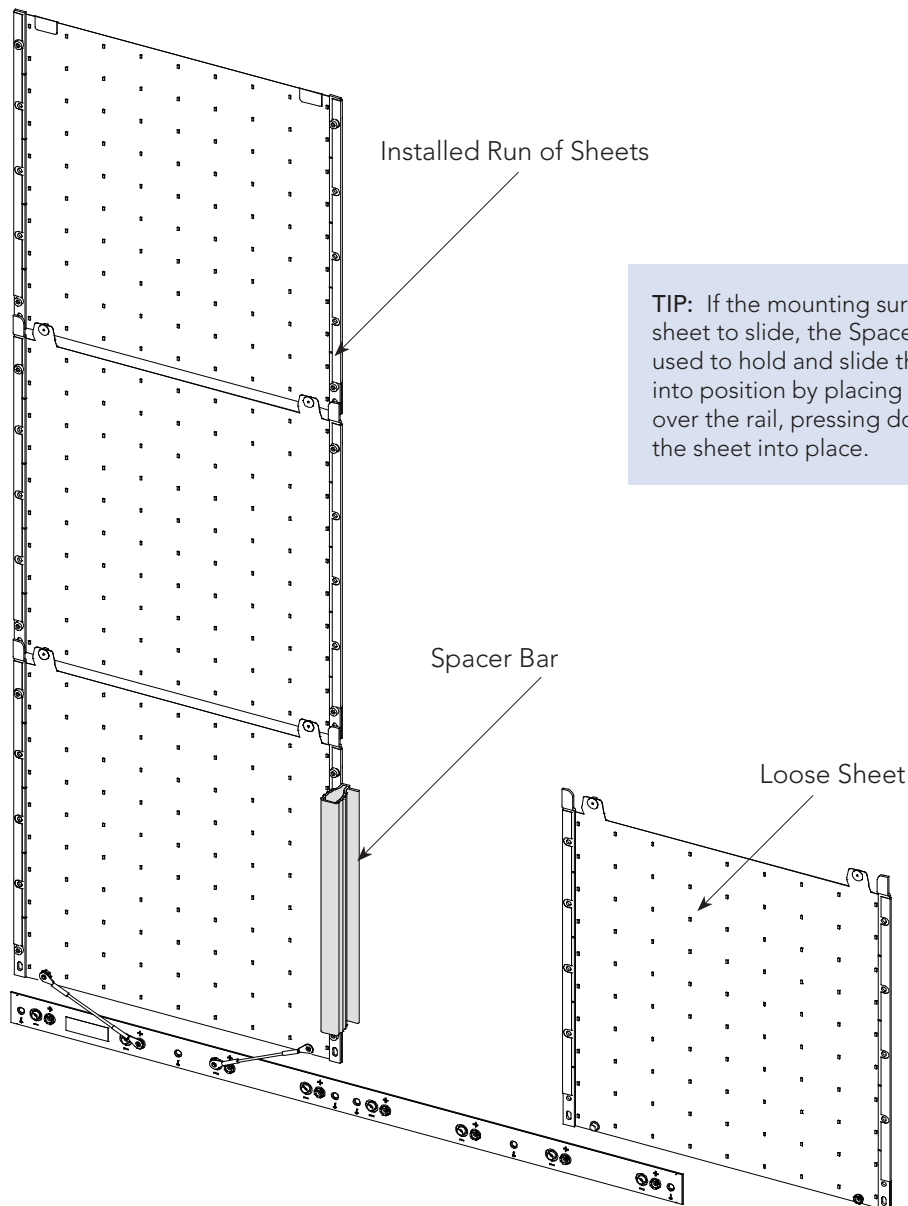
After cutting, the exposed edges of the electrical conductors must be insulated with the supplied insulating patches. These must be wrapped around both cut edges of the SQUARE as shown below:



4. Mount the Additional Runs of SQUARE Light Sheets

NOTE: The following procedure assumes that runs of SQUARE light sheets are to be mounted on 12" / 305mm center-to-center spacing to ensure optimal uniformity of illumination. If the design requires different spacing, other methods of alignment may be required.

1. You will require the Spacer Bar located in the Installation Kit. Place the Spacer Bar over top of the rail on the SQUARE light sheet that is already attached to the mounting surface with the rubber edge facing toward the "loose" sheet that will be installed. Slide the rail of the loose sheet under the Spacer Bar until it rests firmly against the bar.

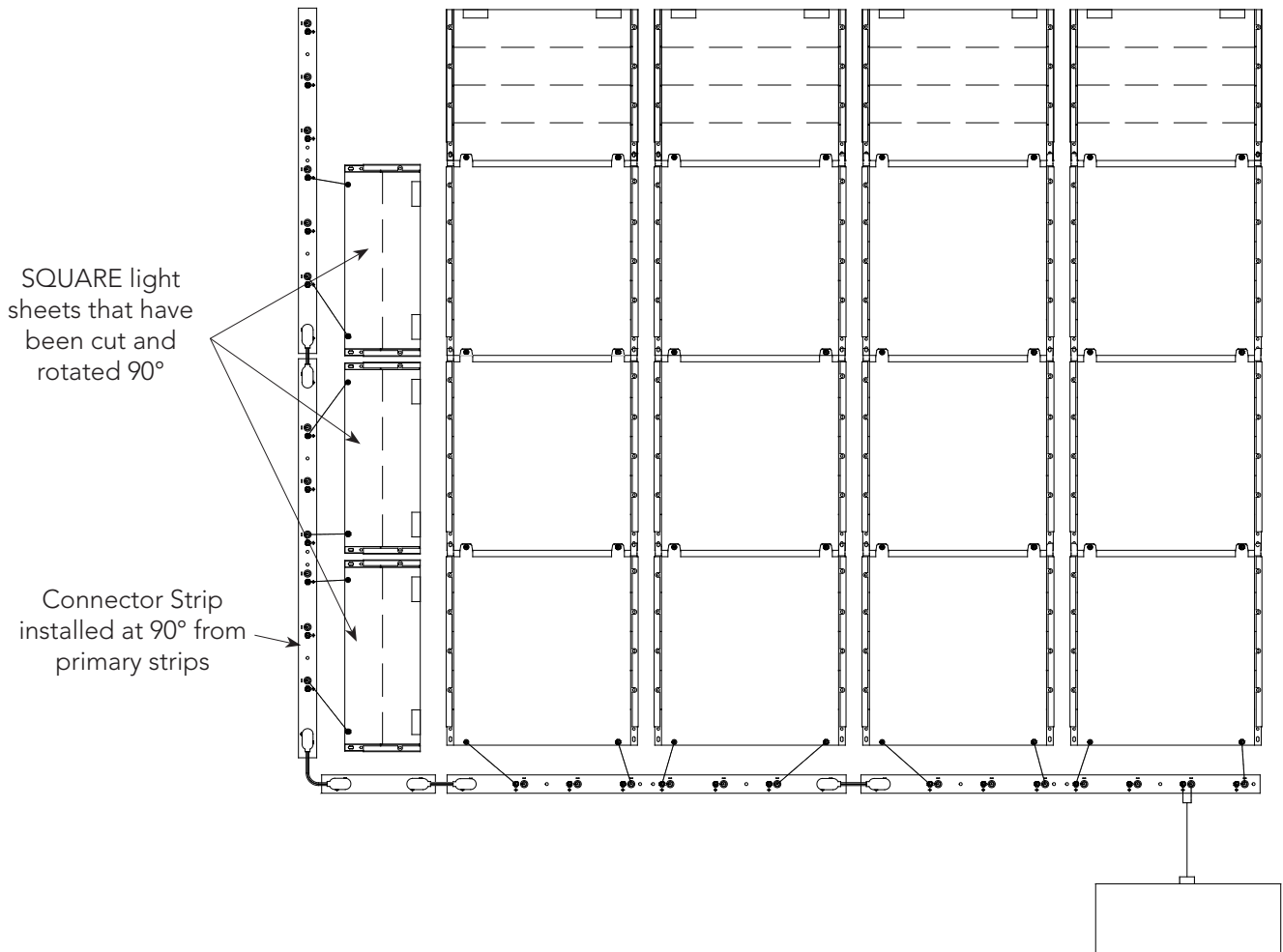


2. By pressing down on the Spacer Bar, the rubber edge will grip the loose sheet and hold it in the correct position while you attach the rail to the mounting surface with the appropriate #6 (or M4) fasteners.
3. Once first rail is attached, stretch the sheet until it is flat and attach the second rail with fasteners as done for the sheets in the first run.
4. Repeat Steps 1-3 until the run has been completed.
5. Repeat until all of the runs have been installed

Some designs will require a run with a width that is less than 12" / 305mm (eg. smaller than the width of a full sheet). For these layouts, follow the procedure described in Sections 5 & 6.

5. Install the Last Run (if less than 12" / 305mm width)

SQUARE light sheets may not be cut in both directions without breaking the electrical circuits that provide power to the LEDs. For this reason, when installing a run that is <12" / 305mm in width, it is necessary to cut the sheets to the required width along the cut line identified in Section 3 that corresponds with the required run width, and then rotate the sheets 90° so that the input end facing the outer edge of the run.



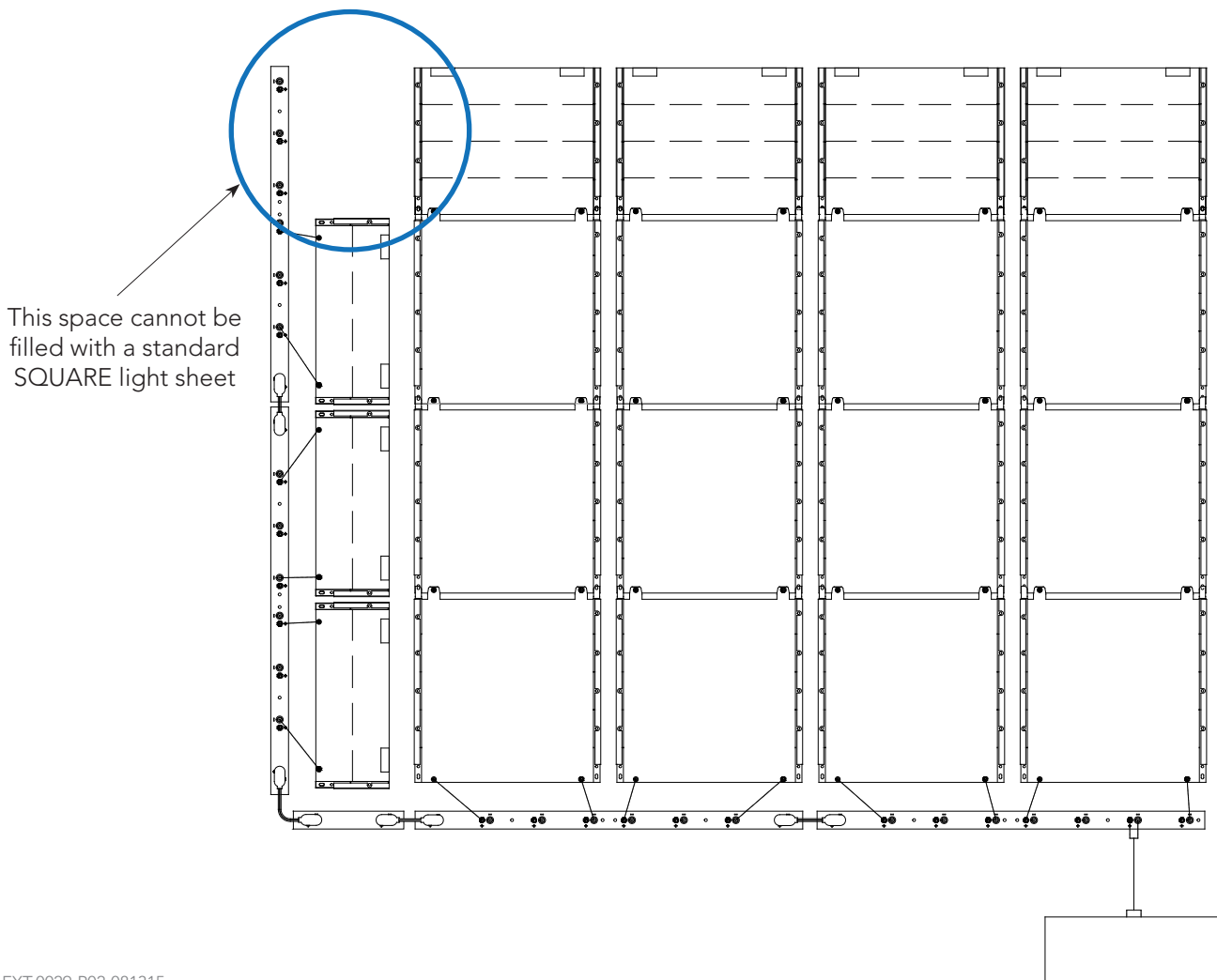
1. Install the Connector Strip as in Section 1 along the outer edge of the mounting surface parallel to the previously installed runs (ie. At 90° to the Connector Strip already installed).

2. The number of SQUARE sheets that will need to be cut is equal to the number of rows of full-sized sheets already installed. Eg. if there are six rows of uncut light sheets in the runs already installed, six sheets will need to be cut and rotated to make up the last run.
3. Determine the required cut increment (Section 3) that will fit into the width remaining.
4. Cut the SQUARE light sheets so that each sheet is equal to or slightly smaller than the required width and retains the snap connectors.
5. Starting at the input end of the previously installed runs, rotate one of the cut sheets 90° ensuring that the snap connectors are adjacent to the Connector Strip, and fasten using appropriate #6 (M4) fasteners as in Section 2
6. Repeat Steps 4 & 5 until the run has been completed or there is one remaining space that is <12" / 305mm in both dimensions.

If a space remains upon completion of Section 5, a SQUARE Corner sheet that can be cut in two directions is required: proceed to Section 6.

6. Install the Corner Kit

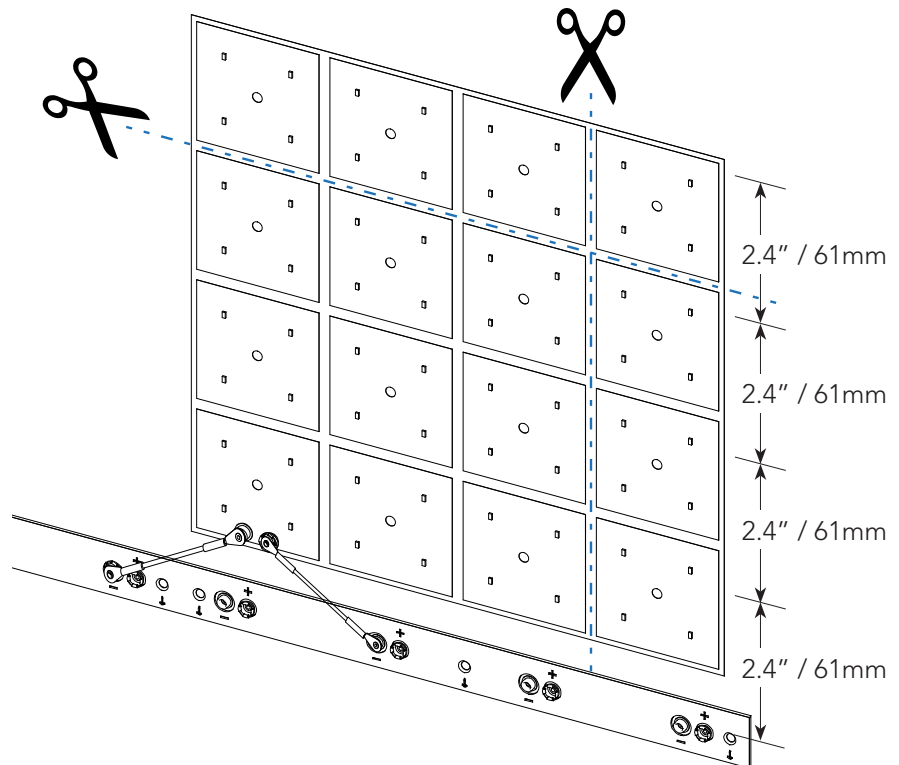
For design layouts requiring runs that include end sheets that are cut short and where the last run is less than 12" / 305mm in width, there will be a space remaining - the "last corner" - that cannot be filled by cutting a standard SQUARE light sheet.



A special "SQUARE Corner" light sheet is used to fill in this last corner in any square or rectangular layout. This sheet has been designed to be cut in both directions.

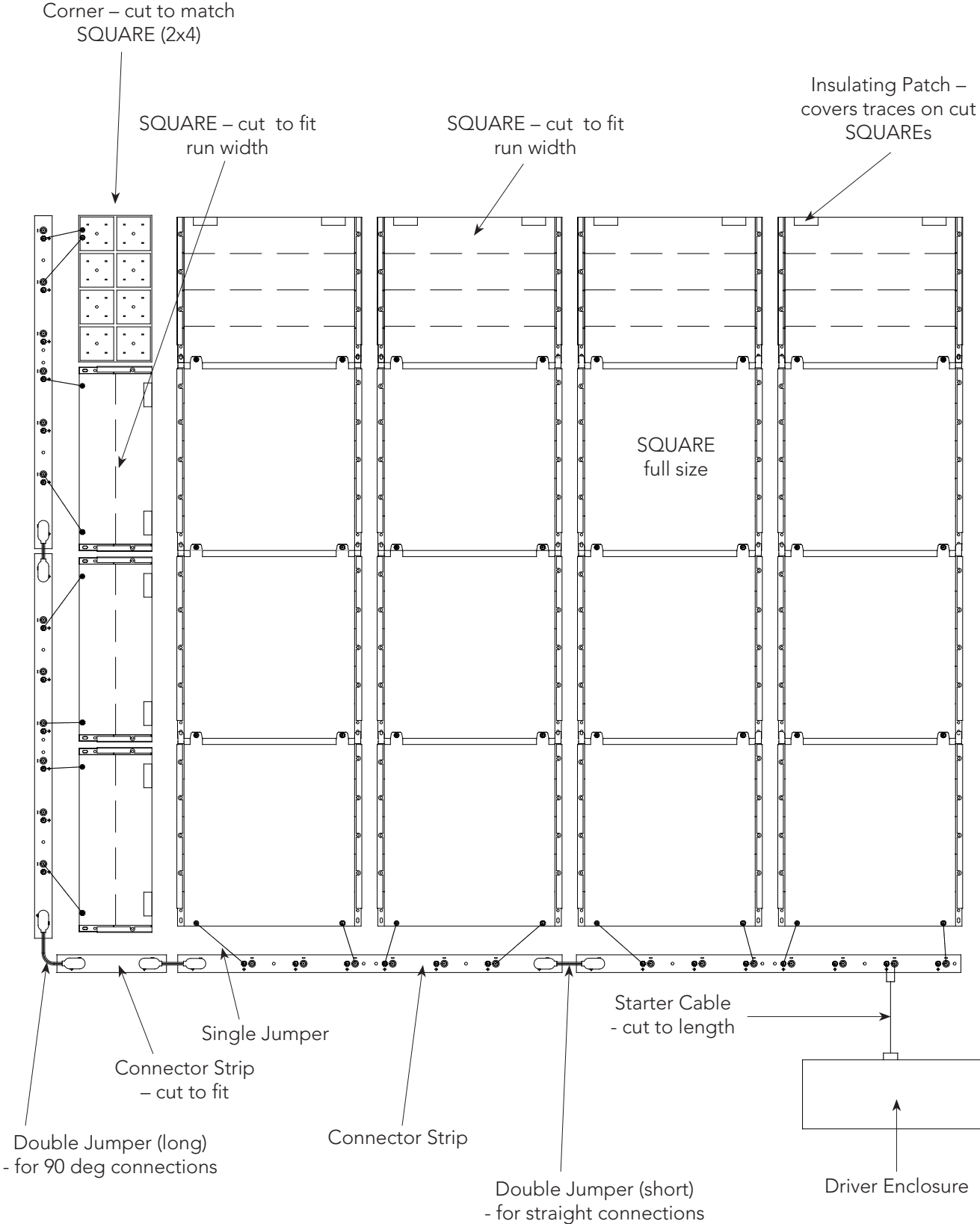
1. Determine the size of SQUARE Corner sheet required. The sheets are sized to correspond to the allowable cut sizes of the standard sheet (each Corner is 4 x 4 cut increments).
2. Cut the SQUARE Corner sheet to the required size by cutting only along the clear areas between the smaller white square sections. The square section with the snap connectors must always remain as it is the point of electrical connection.

TIP: The smaller square sections are numbered from 1-4. Cut and discard rows with higher numbers first when choosing the correct cut lines.



3. Peel the adhesive backing from the Corner sheet and stick it to the mounting surface with the snap connectors adjacent to the Connector Strip. Appropriate #6 (M4) fasteners may be added using the holes located in the center of each small square section.

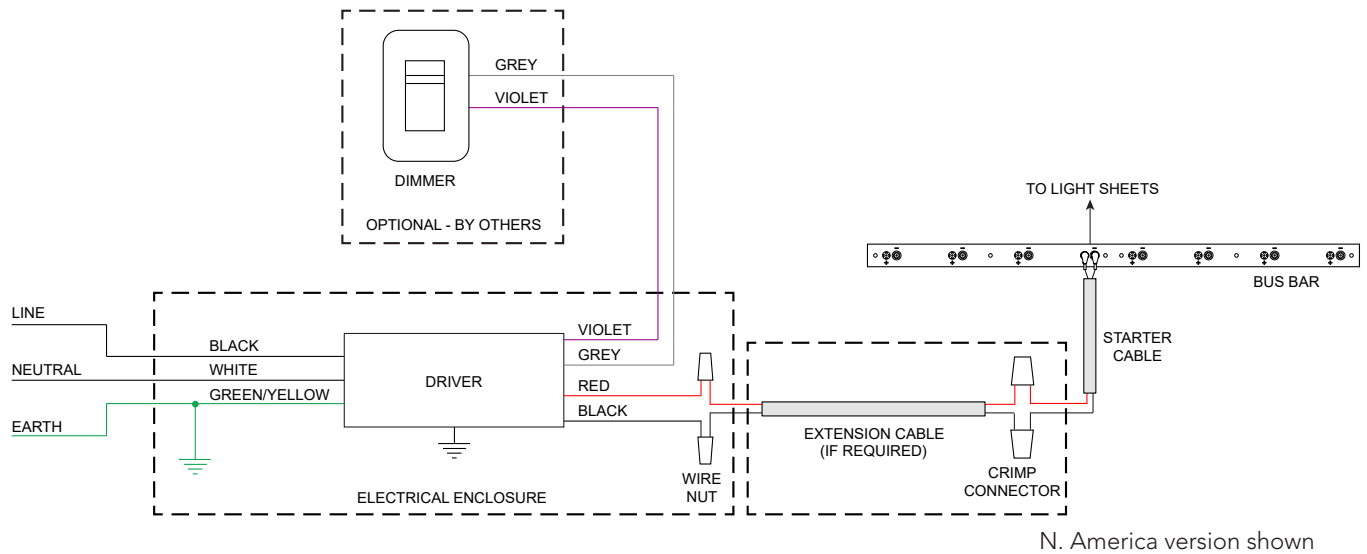
4. Connect the Corner sheet to the Connector Strip using two Single Jumpers.



7. Wiring to the LED Driver

! **WARNING – DO NOT CONNECT** the AC power directly to the SQUARE or Connector Strip. All AC connections are to be made within the LED driver enclosure.

! **WARNING – DO NOT CONNECT** positive (white) wires to negative (black) wires when wiring Starter Cables to the LED Driver. Permanent damage will occur.



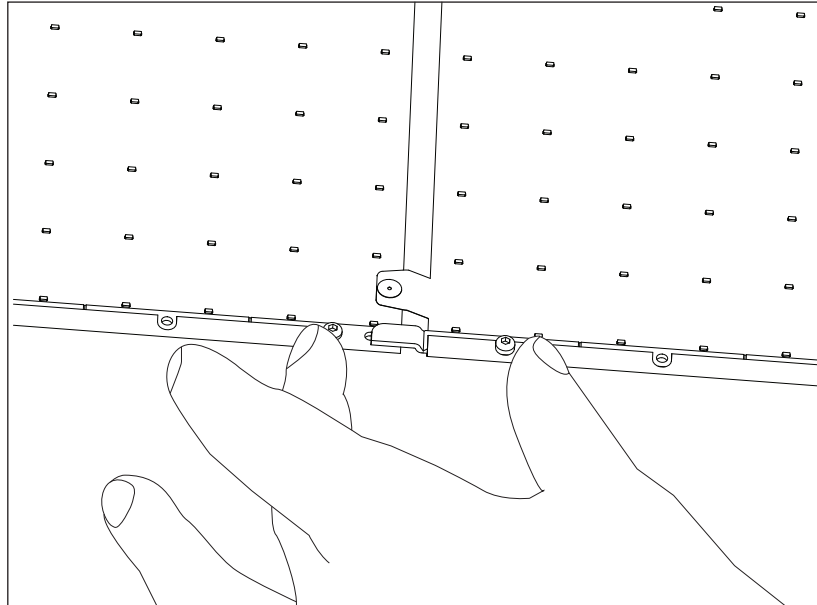
! **DISCONNECT POWER TO THE SYSTEM** before starting the following steps.

1. Mount the Enclosed Driver at the required location using appropriate fasteners. If enclosure is to be recessed in a wall or ceiling, ensure proper access is available during installation to enable correct installation.
2. Connect the Starter Cable to the Connector Strip using the snap connectors. Guide the Starter Cable until end reaches the driver housing. If the drivers are located >10' / 3m from the Connector Strip, the Starter Cable should be connected to an Extension Cable using the crimps provided, or to an appropriate cable (supplied by others) that is sized to ensure voltage drop limits are not exceeded - please reference the project shop drawings.
3. Cut the Starter Cable to length and strip the termination, or if the correct length, connect the bare conductors of the Starter Cable to the red/black conductors on the LED Driver inside the enclosure using wire nuts (or other method approved by local electrical codes).
4. Make the AC connection to the LED Driver within the enclosure using a method approved by local electrical codes.
5. If connecting a 0-10V/1-10V dimmer, ensure that the grey & violet wires from the dimmer are connected to the corresponding wires on the driver.

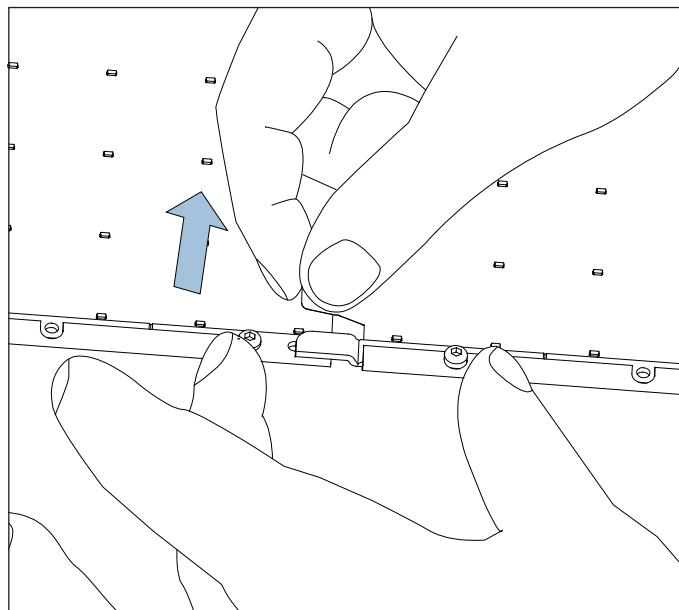
8. Disassembling SQUARE Light Sheets (if required)



Caution – the snap connectors are not intended for repeated connections. If it is necessary to separate the sheets after the snap connectors have been mated together, it can be done as follows:



- Grip the tab between the thumb and index finger. Gently separate the sheets while keeping the side rails restrained.



- Similarly, when disconnecting jumper wires from the sheets or Connector Strips, the plastic material should be restrained while gently separating the connectors.

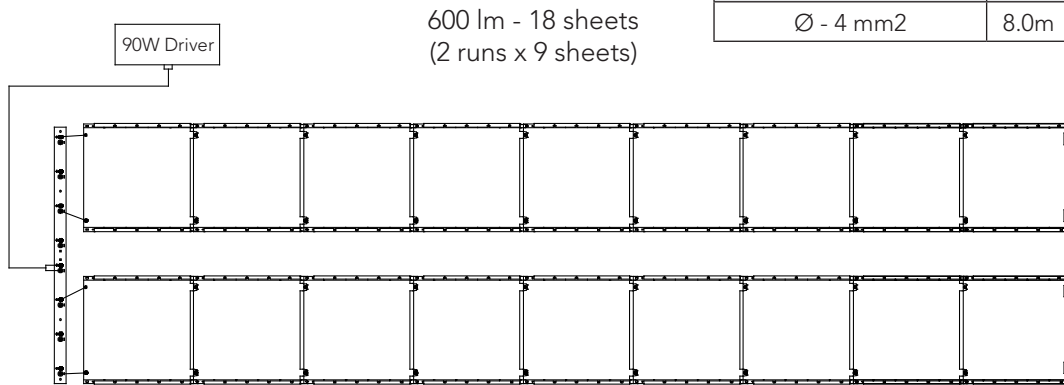
Additional Layout Information

600lm SQUARE - Maximum Curcuit Capacity and Wire Lengths

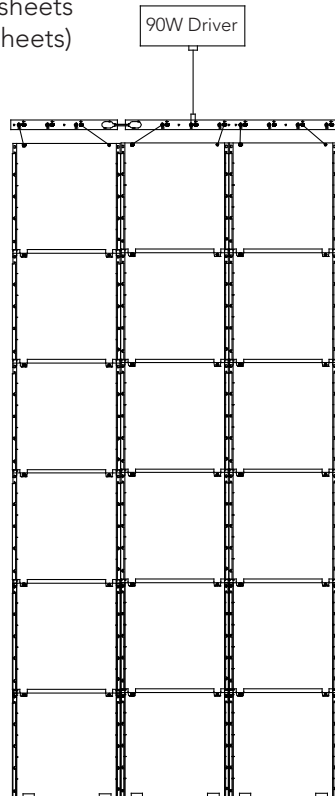
Maximum 18 sheets total.

Maximum Number of Sheets per Run Length						
Product	1 run	2 runs	3 runs	4 runs	5 runs	6 runs
600 lm	9	9	6	4	3	3

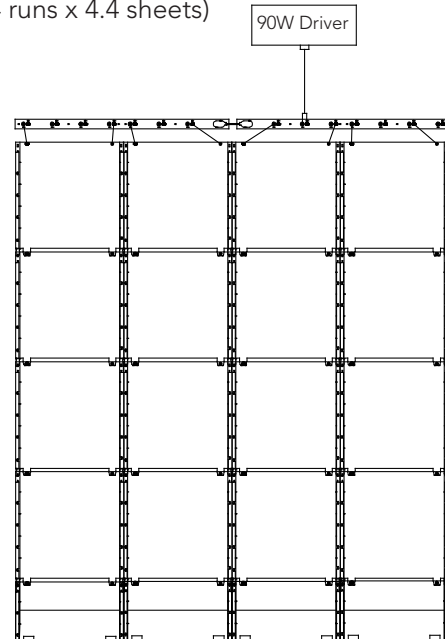
Remote Driver Distance			
	600 lm		
2-conductor Cable Size	2x9	3x6	4x4.4
16AWG	9'	19'	22'
14AWG	14'	31'	35'
12AWG	22'	49'	56'
Ø - 1.5 mm ²	3.0m	6.8m	7.7m
Ø - 2.5 mm ²	5.0m	11.3m	12.8m
Ø - 4 mm ²	8.0m	18.0m	20.4m



600 lm - 18 sheets
(3 runs x 6 sheets)



600 lm - 17.6 sheets
(4 runs x 4.4 sheets)



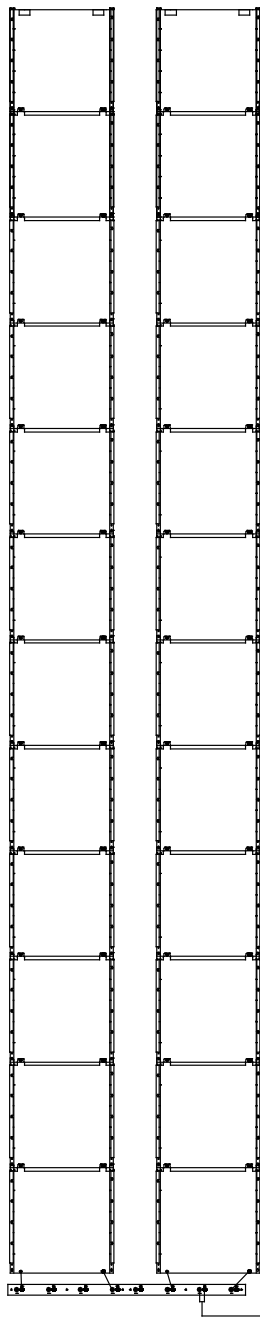
300lm SQUARE - Maximum Curcuit Capacity and Wire Lengths

Maximum 36 sheets total (6x6 configuration only).

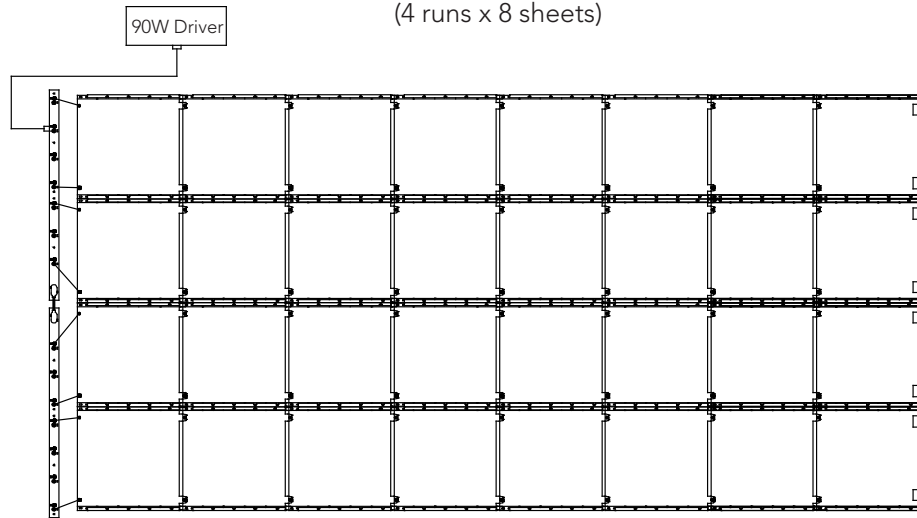
Maximum Number of Sheets per Run Length						
Product	1 run	2 runs	3 runs	4 runs	5 runs	6 runs
300 lm	13	12	10	8	7	6

Remote Driver Distance			
	300 lm		
2-conductor Cable Size	2x12	4x8	6x6
16AWG	15'	15'	8'
14AWG	24'	24'	13'
12AWG	38'	38'	20'
Ø - 1.5 mm ²	5.2m	5.4m	2.7m
Ø - 2.5 mm ²	8.7m	8.9m	4.6m
Ø - 4 mm ²	13.9m	14.3m	7.3m

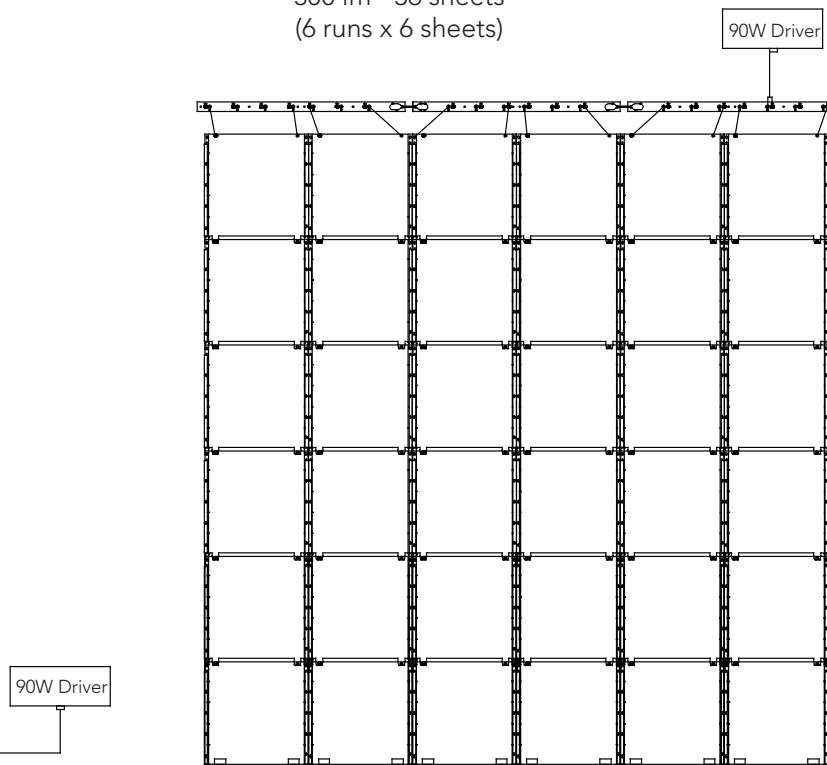
300 lm - 24 sheets
(2 runs x 12 sheets)



300 lm - 32 sheets
(4 runs x 8 sheets)



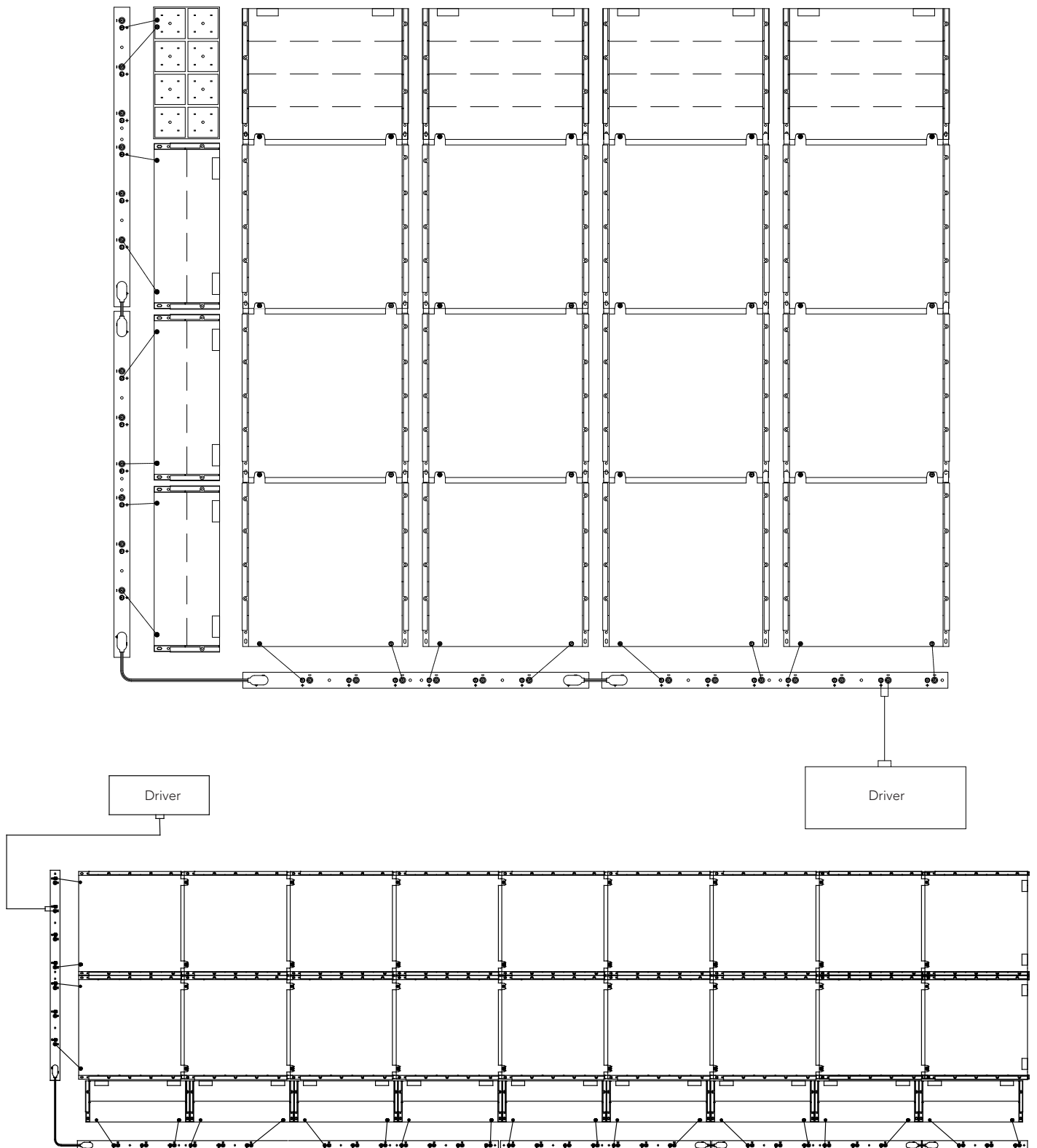
300 lm - 36 sheets
(6 runs x 6 sheets)



Additional SQUARE Layout Information

SQUARE - Partial Sheet Sizes

Some applications may require that the SQUARE light sheets be trimmed and rotated 90° to fill spaces smaller than a full sheet. In this case the wiring layout may require the connections be made on 2 sides of the grid.



Troubleshooting

If the SQUARE light sheets do not illuminate when power is applied:

- Check to ensure all electrical connections have been made.

If a single LED or one section of LEDs on a SQUARE does not illuminate:

- The circuit for those LEDs has likely been damaged and the SQUARE should be replaced

Product Support

Contact Cooledge Technical Support at:

- T: 1.844.455.4448 (toll free - North America); +1.604.273.2665
- E: apps.engineering@cooledgelighting.com

Warranty

COOLEEDGE warrants that the PRODUCTS manufactured, distributed or sold by it will (i) be free of any claim of ownership by third parties, (ii) be conforming to the Specifications and free from defects in materials and workmanship under normal use, handling, warehousing and service. The warranty period specified in the COOLEEDGE Warranty Terms and Conditions for the PRODUCTS will be for a period of 5 years from the shipment date of any PRODUCTS sold by COOLEEDGE.