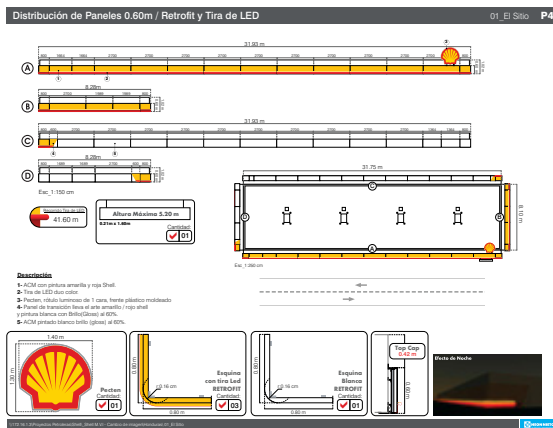


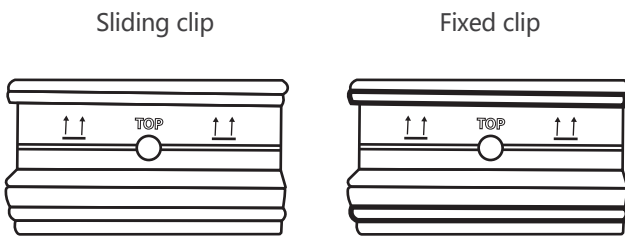
LUCOLINE INSTALLATION SHELL

1. Layout:



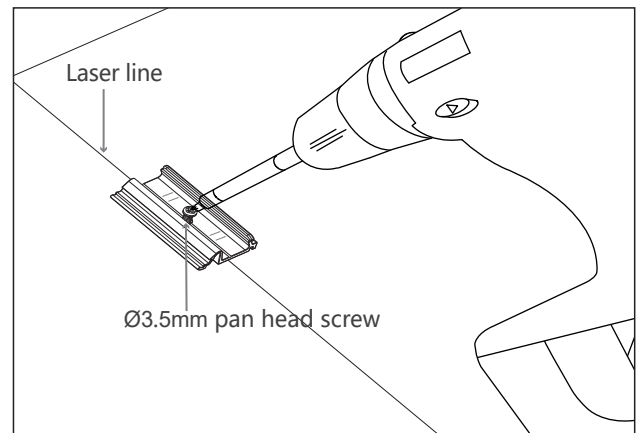
Use a building layout drawing with all lengths of the sides where Lucoline® should be installed to calculate the number of standard lengths, corners, cables and power supplies needed.

3. Types of mounting clips:



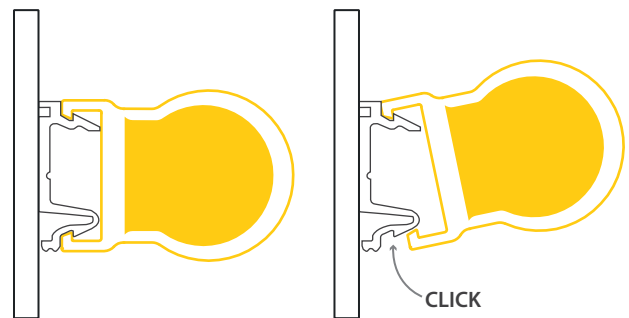
The Fixed Clip (L-CLIP-F) has rubber bands to prevent the tube from sliding. Only one should be used per section on a horizontal installation. In the case of a vertical installation use a Fixed Clip for every other clip to prevent the tube from sliding down under its own weight.

2. Prepare installation:



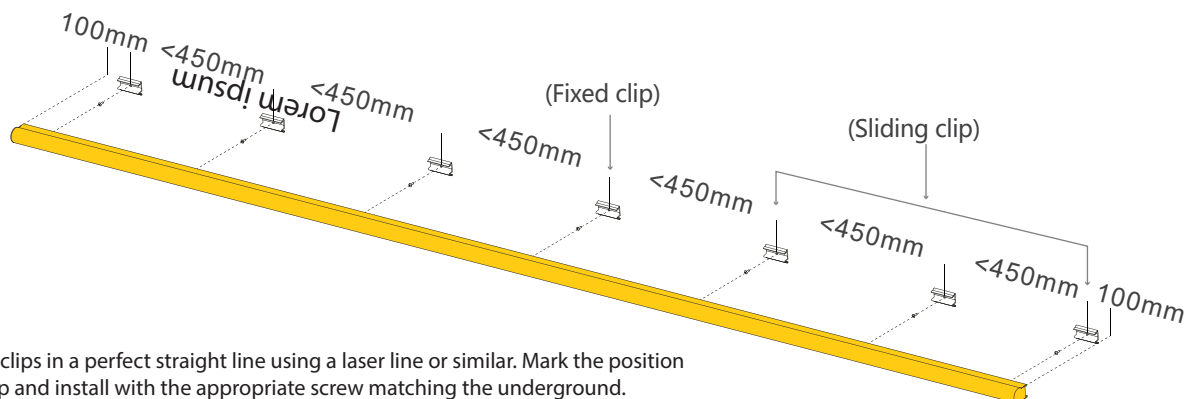
Use a laser line to mark the horizontal line on the building where the mounting clips should be installed. Per section install one Fixed Clip (L-CLIP-F) in the middle of the section to prevent it from moving on the building under temperature influences. Use Sliding Clips (L-CLIP-S) at a maximum repeat distance of 400 mm apart.

4. Install Lucoline® on clips:



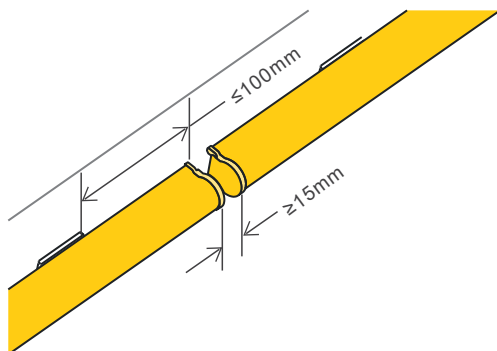
Hang the tube in the top side of all clips. Push the tube downward to snap it into the spring part of each clip. Check that the tube is secured in all clips, especially the Fixed Clip.

5. Installation tube on clips:



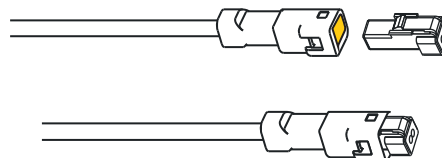
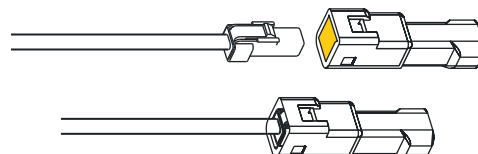
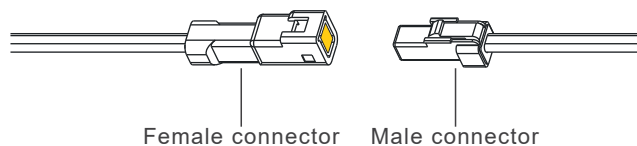
Install the clips in a perfect straight line using a laser line or similar. Mark the position of each clip and install with the appropriate screw matching the underground. Install one Fixed Clip in the middle of each section and all other at a maximum repeat distance of 400 mm. Install the last clips 100 mm from the end of the section. Install the clips with the arrows pointing up and the word TOP readable.

6. Distance between sections:



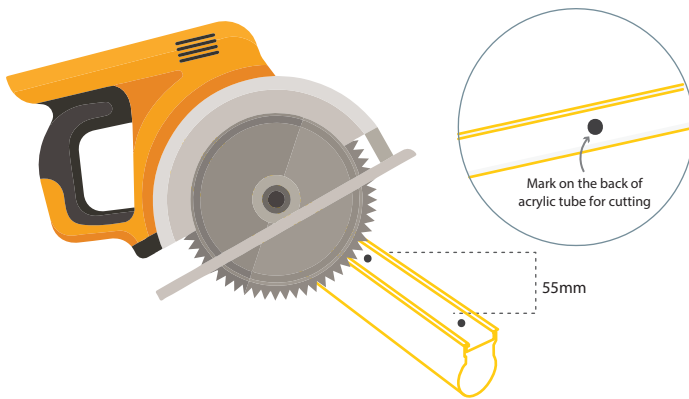
To allow for thermal expansion and contraction and to prevent damage the individual sections need to have a gap between them. Later covered with a joint cover.
When installing at an ambient temperature above 10 °C leave a minimum gap of 10 mm between sections. Below 10 °C this can be 15 mm.

7. JST Connectors:

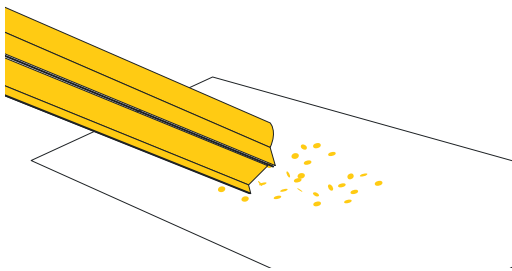


The JST connectors have a locking clip. Make sure these are fully engaged, making the connection IP67 water proof. Hide the connectors behind the tubes once connected. Do not pull or bend the cables too tight. This may damage the seal and compromise the IP rating.
To close off all open connectors in an installation and make them waterproof male or female blanking connectors must be used. Otherwise water can get into the open connectors which will lead to failures.

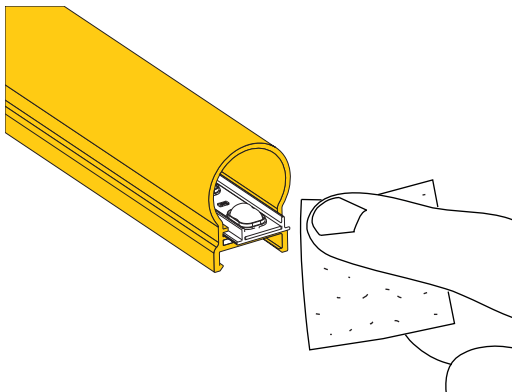
CUTTING



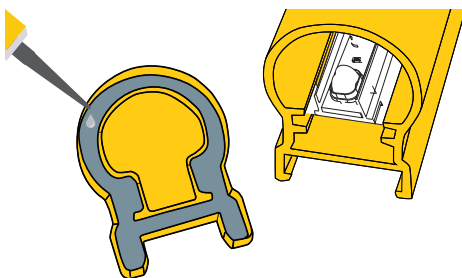
1. Cutting of the tubes: Locate the cutting positions (black dots) at the back of the tubes placed at every 55mm apart. Align the cutting position with the middle of the saw blade, place the tube flat on the platform, and cut the tube perpendicular to the saw blade. Please make sure that the saw blade is sharp to ensure that the cutting end face is smooth.



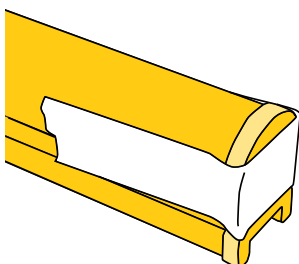
2. Clean inside tube from plastic and aluminium residue.



3. Sand the edge: Sand the edge of the tube & the PCB with the fine sand paper to ensure the edge is smoothened & uniform. Push back the PCB inside the tube.



4. Fix end cap: Fill the edge of the cap with PMMA glue (Weldon 16, Acryfix or similar). Push it on the tube and hold for 30 seconds.

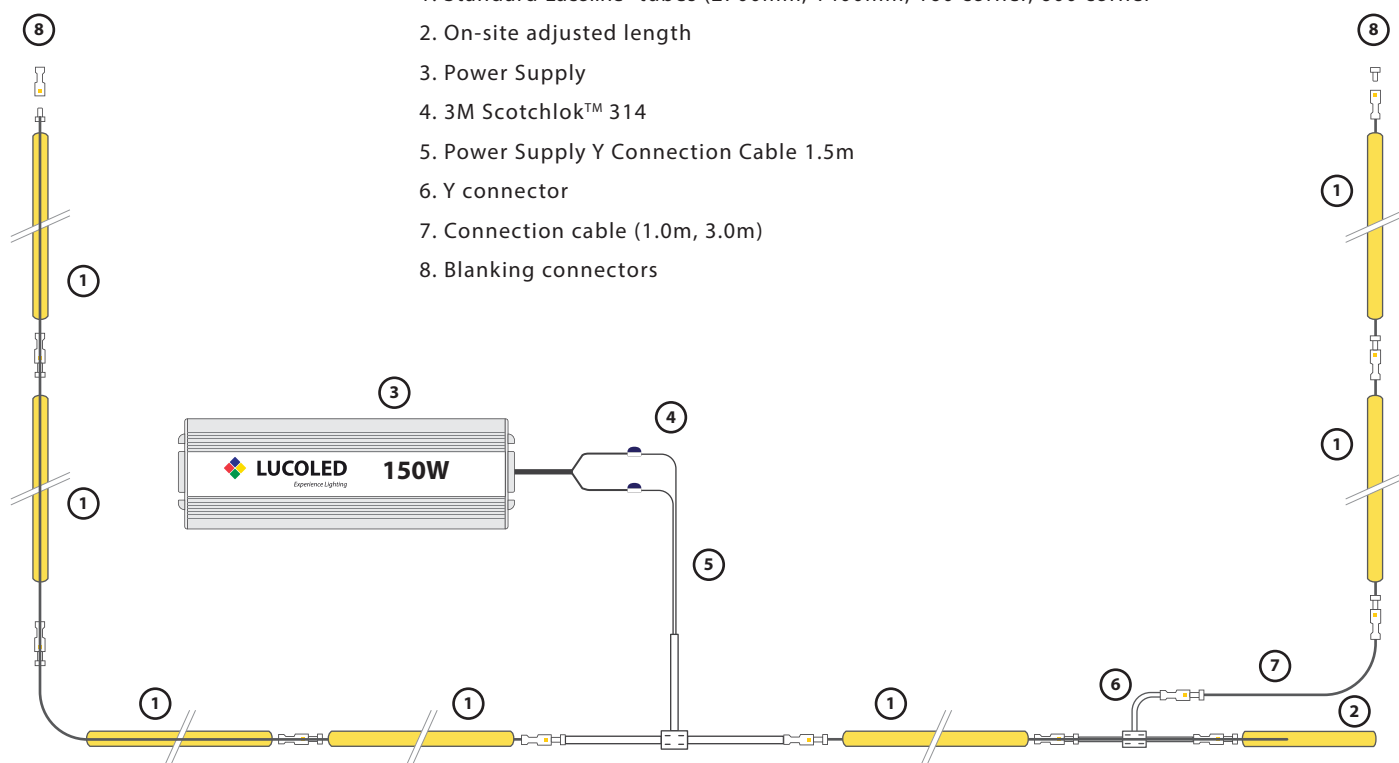


5. Fix a tape to cure: Put a piece of masking tape over the end cap and tube and let it cure for at least 20 minutes before handling it.

ELECTRIC LAYOUT EXAMPLE

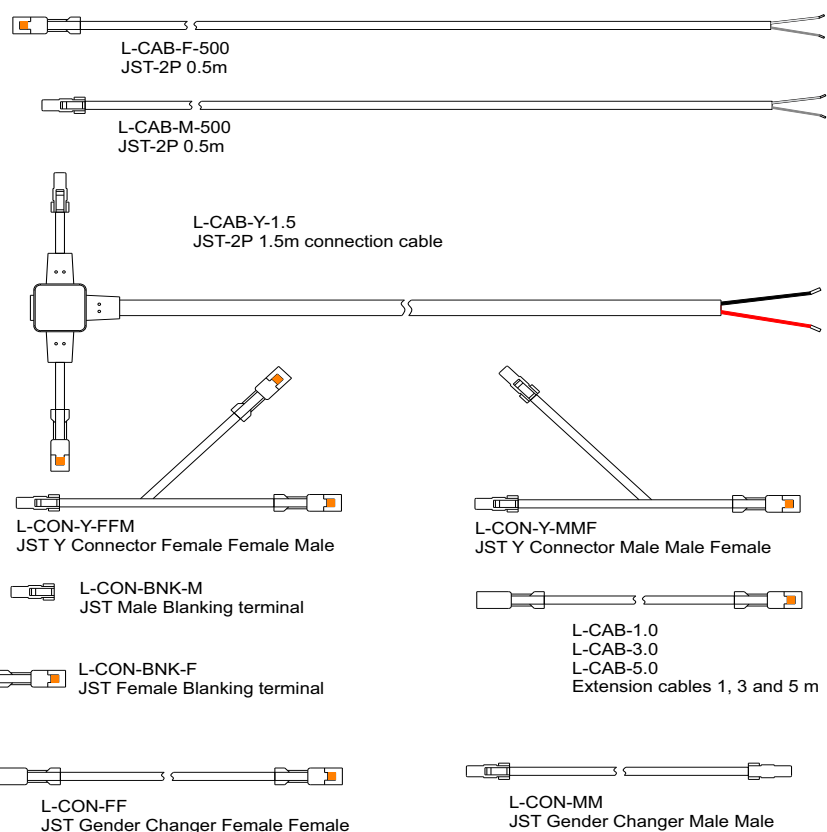
Installation Index

1. Standard Lucoline® tubes (2700mm, 1400mm, 160 corner, 600 corner)
2. On-site adjusted length
3. Power Supply
4. 3M Scotchlok™ 314
5. Power Supply Y Connection Cable 1.5m
6. Y connector
7. Connection cable (1.0m, 3.0m)
8. Blanking connectors



Maximum 5 sections of 2700mm or 13.5 m length in series per leg of power supply cable.

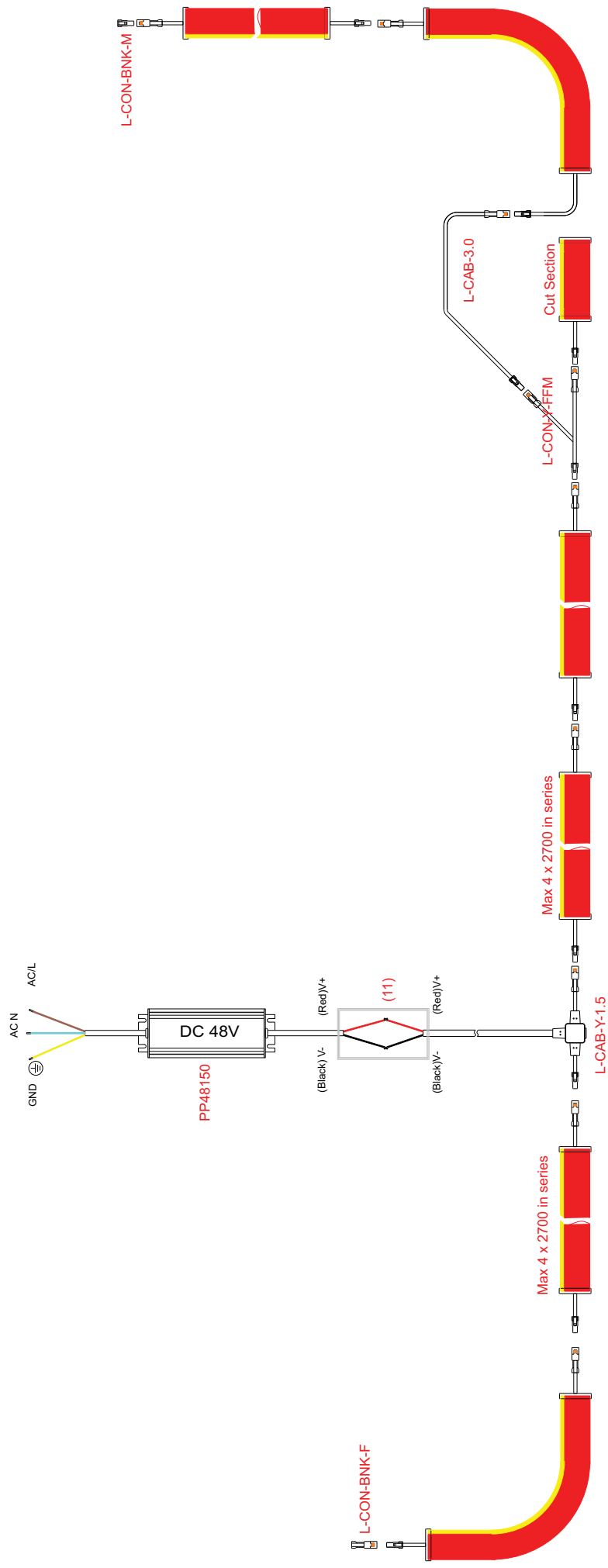
CABLES AND CONNECTORS







Shell MVI typical installation fascia





LUCOLED

