LUMUL

LEDneon·flex

DOT-FREE ILLUMINATION
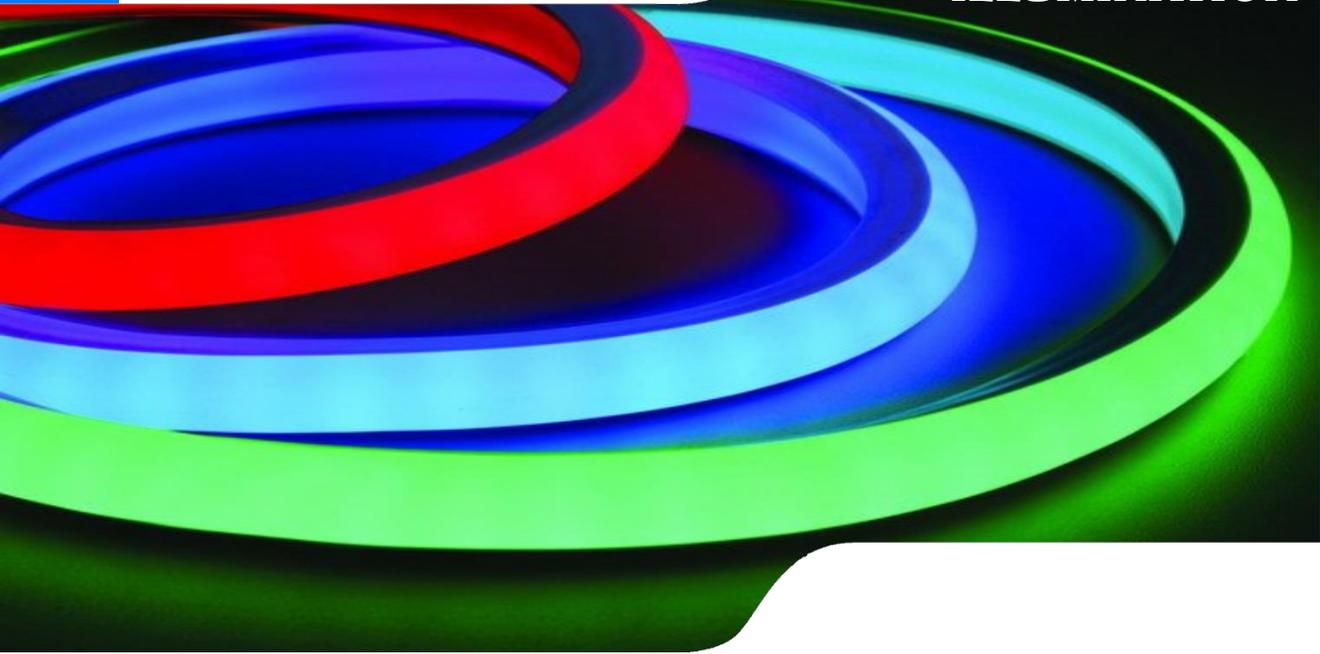
Features

- Seamless, dot-free illumination
- Safe 12V DC input voltage
- Up to 10m maximum length without voltage drop
- Small 3.6cm cutting interval
- Quality Epistar 2835 LEDs
- Low 9W per meter power consumption
- 2cm bending diameter for intricate signs
- Quick and easy installation
- IP65 protection with proper sealing
- Impact resistant & impervious to hail & bird damage
- Contains no toxic lead or mercury
- Ultra bright
- PWM dimmable
- 1 year warranty

Ideal uses

- Signage
- Architectural outlines
- Border, accent & recessed lighting

RoHS COMPLIANT

CE

Hg 0% MERCURY FREE

Pb 0% LEAD FREE

IP65

1 YEAR WARRANTY

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Specifications

Input Voltage	12V DC Constant Voltage	**LED Chipset**	Epistar 2835 SMD
Power Consumption	9W per meter	**LED Count**	84 LEDs per meter
Physical Dimensions	8 x 18 mm	**Lumen Maintenance**	L70 > 50,000 Hours
Jacket Profile	10mm Hollow Dome	**Colour**	Single Colour
Min Bend Diameter	2cm	**CRI**	80Ra
Viewing Angle	270°	**Cutting Interval**	3.6cm
Jacket Material	PVC with UV inhibitors	**FPC**	Vertical, Double Layer 2oz Copper
Bending Direction	Left and right	**Maximum Running Length**	5m powered from one end & 10m powered from both ends
Water Resistance	IP65 if correctly sealed	**Hours of Operation**	12 hours per day
Heat Management	Cool to the Touch	**Dimmable**	Yes via PWM
Warranty	1 year	**Operating Temp °C**	-20° to 35° Celsius
Jacket Profile		**Bending Diameter**	
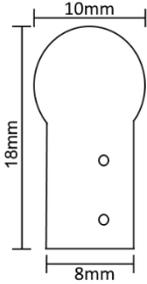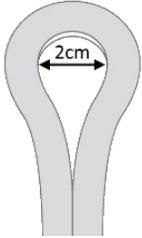
Jacket Colours	Red	Blue	Green	Pink	Lemon Yellow	Amber Yellow	Orange	White		
LED Colours	Red	Green	Blue	Ice Blue	Orange	Amber Yellow	Lemon Yellow	Pink	Light Pink	Pink Purple

(LED Colours also includes: 6000K, 4000K, 3000K)

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Accessories

LEFT POWER CONNECTOR	RIGHT POWER CONNECTOR	BUTTED CABLE CONNECTOR	I CONNECTOR	L CONNECTOR	HEAT SHRINK TUBE

END CAP	COLOURED MINI END CAP	CONNECTOR PIN	SPLICING PIN	MINI CONNECTOR PIN	WIRED MINI CONNECTOR PIN

5CM CHANNEL	1M ALUMINIUM CHANNEL	2M ALUMINIUM CHANNEL

MEAN WELL LRS POWER SUPPLY	MEAN WELL ELG POWER SUPPLY	DIMMING REMOTE CONTROL	DIMMING CONTROLLER	0-10V ROTARY DIMMER	DMX DECODER

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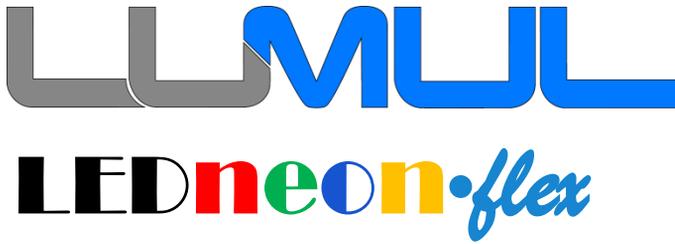
Glass neon comparison

	Glass Neon	LED Neon Flex
Power Source	15,000V AC Transformer	12V /24V DC + external driver
Power Consumption	287 Watts	90 Watts
12 Hour Daily Use	3,444 Watts	1,080 Watts
Yearly Use	1,257 Kilowatts	394 Kilowatts
Cost per KWH	R1.60	R1.60
Yearly cost	R2,011	R630
5-year cost	R10,055	R3,150
Safety	Contains mercury, lead	Free from mercury, lead
Durability	Fragile, shatters	Impact resistant
Lifespan	Up to 10,000 Hours	> 50,000 Hours
Electromagnetic Interference	High	Low
Installation	Difficult / Requires master craftsman skill level	Easy / Entry level skill level
Flexibility	Rigid	Flexible
Dimmable	No	Yes

NOTES
- Figures calculated based on a 10 meter length of glass neon and LED neon flex
- Figures calculated based on Neon Flex power of 9W per meter
- Costs per kilowatt hour vary between R1.30 and R1.90
- Business case financial models should include the cost of maintenance and repairs as well as initial manufacturing and installation costs
- Glass Neon transformers are becoming increasingly difficult to source
- Glass Neon artisans and skills are becoming scarce
- Outdoor Glass Neon installations in South Africa are prone to damage by hail and birds
- Glass Neon 15000V transformers are expensive costing over R3000

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Installation

YOU MAY NEED:

|				
Neutral Cure silicone glue	**Utility knife**	**Pliers**	**Heat gun**	**Syringe**

IMPORTANT NOTES:

1. Never exceed the maximum recommended running lengths.
2. Ensure the product is installed by a qualified electrician.
3. Ensure all wiring is in accordance with national and local electrical regulations.
4. Ensure you cut exactly on the cutting mark to avoid damaging the Neon Flex and voiding your warranty.
5. Ensure you seal the Neon Flex ends appropriately for outdoor or wet installations using a neutral cure silicone glue.
6. Ensure you connect positive and negative wires and terminals appropriately to avoid damaging the Neon Flex.
7. Do not twist your Neon Flex as this will damage the internal circuitry. If supplied on a reel, place the reel on an axle and unwind. If supplied coiled, uncoil carefully to avoid twisting.
8. Placing the Neon Flex onto rough surfaces may cause the PVC jacket to scratch.
9. Bending the Neon Flex beyond the stipulated minimum bending diameter will damage the internals.
10. Never bend the Neon Flex vertically (up ad down), only horizontally (left to right).
11. Never operate the Neon Flex in temperatures exceeding 35°C.
12. Never operate the Neon Flex in direct sunlight as this will cause the internals to overheat.
13. Never power the Neon Flex whilst tightly coiled.
14. Never puncture, pierce, strike or twist the Neon Flex.
15. Never subject the Neon Flex to continuous flexing.

UNROLLING	**VERTICAL BENDING**	**HORIZONTAL BENDING**	**TWISTING**
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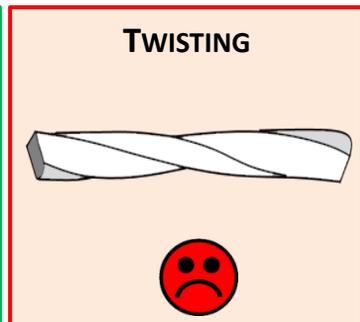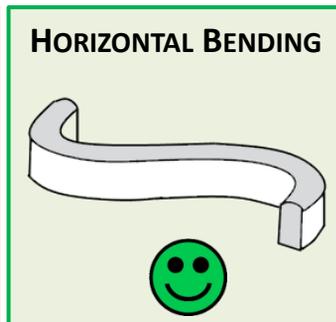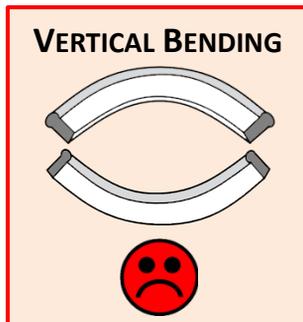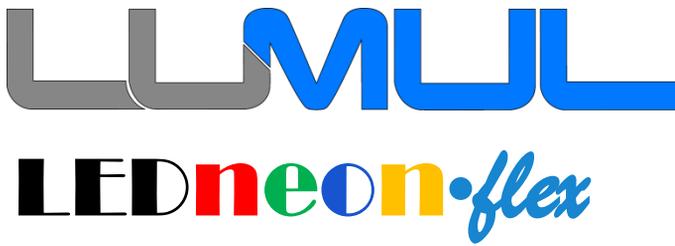
Installation

CUTTING THE NEON FLEX

1. LUMUL Generation 2 12VNeon Flex can be safely cut on each cutting mark, marked every 3.6cm on the bottom side of the Neon Flex.
2. Measure the desired length of Neon Flex you require and make a mark on the Neon Flex.
3. Place and hold the Neon Flex firmly on a stable cutting surface before attempting to cut the Neon Flex.
4. We recommend cutting the Neon Flex from the top to the bottom.
5. **Ensure you cut exactly on the cutting line or you will damage the product and void your warranty.**
6. Carefully cut the Neon Flex on your cutting mark, using a sharp utility knife. Cut straight and square. If possible, cut slightly before the desired cutting mark since you can always cut increasingly closer to the cutting mark.
7. Clean up any exposed copper wires and PCB so that the edge of the cut is square and neat to avoid short circuiting the pins later.

NOTE: In these installation instructions, silicone glue is only needed for outdoor / wet installations.

CONNECTING A POWER CONNECTOR

1. The internal wires in the Neon Flex are offset from centre, requiring either a left- or right-hand power connector. Plan for this when ordering your accessories and before commencing with your installation.
2. Using a pair of pliers, insert the connector pin fully into the two wires on the Neon Flex end. Press the pin in straight otherwise you risk short-circuiting your installation.
3. Pull a heat shrink sleeve over the Neon Flex, moving it away from your work area.
4. Using the heat gun, warm the cap of the power cable until it is malleable.
5. Apply liberal silicone glue to all areas inside of the power cable cap. Slide the power cable cap over the end of the Neon Flex ensuring the connector pins are aligned, and that the pins insert fully into both the power cable and the Neon Flex. Squeeze the cap tightly - silicone glue oozes out all areas is good and means you will get a good waterproof seal. If necessary, use a small syringe to inject silicone glue into the connector and between the connector and the Neon Flex. The connector must be completely full of silicone.
6. Slide the heat shrink sleeve over the power cable cap and using the heat gun, heat the heat shrink evenly until it has shrunk evenly around the power cable cap. **Do not over-heat the sleeve as it will shrink too much and break apart.**

CONNECTING A WIRED MINI PIN

1. Using a pair of pliers, firmly push each wired mini pin into the Neon Flex in the centre of each of the internal copper wires. Ensure you push the pins in straight otherwise you can short circuit your installation.
2. With both mini pins inserted, power your Neon Flex using an appropriate power supply to ensure your pins are making good contact with the internal wires.
3. Connect an end cap over the wired mini pins (see below).

CONNECTING A MINI END CAP

1. Mini end caps are only intended for internal use and cannot provide a waterproof seal.
2. Ensure the Neon Flex is cut cleanly and square.
3. Apply glue to the mini end cap and press and hold onto the end of the Neon Flex until the glue holds the end cap securely in place.
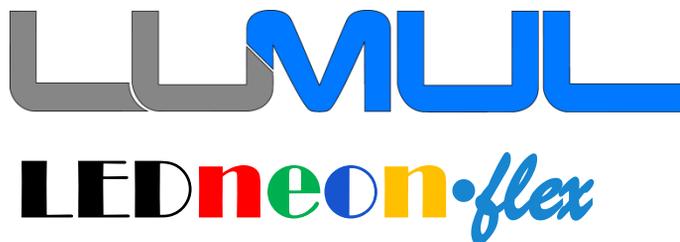
CONNECTING AN END CAP

1. Pull a heat shrink sleeve over the Neon Flex, moving it away from your work area.
2. Apply silicone glue around the end of the Neon Flex ensuring no areas are overlooked.
3. Using the heat gun, warm the end cap until it is malleable.
4. Apply silicone glue liberally to all areas inside the end cap. Slide the end cap over the end of the Neon Flex ensuring it is pushed as far as possible. Press the sides of the end cap to the Neon Flex and ensure silicone glue oozes out all parts as this ensures a good waterproof seal. If necessary, use a small syringe to inject silicone glue into the end cap and between the end cap and Neon Flex. Ensure the end cap is completely filled with silicone. Wipe off residual silicone with a Wet Wipe.
5. Slide the heat shrink sleeve over the end cap.
6. Using the heat gun, heat the heat shrink evenly until it has shrunk evenly around the end cap. **Do not over-heat the sleeve.**

**JOINING LUMUL NEON FLEX WITH I OR L CONNECTORS**
The visible light will be slightly dimmer inside the connector.

1. Pull a heat shrink sleeve over the Neon Flex and move it away from the work area.
2. Insert the connector pin fully into the two holes on the Neon Flex end, using flat-nosed pliers if needed.
3. Apply silicone glue evenly to the inside of the I, T or L connector and ensure coverage on all walls.
4. Insert the Neon Flex into the connector, ensuring the connector pin inserts fully into the holes in the connector.
5. Pull the heat shrink sleeve over the join.
6. Using the heat gun, heat the heat shrink evenly until it has shrunk evenly around the power cable cap. **Be careful to not over-heat the sleeve.**
7. Repeat this process for the other side of the connection.

MOUNTING LUMUL NEON FLEX

1. LUMUL Neon Flex is ideally mounted using LUMUL, 5cm, 1m or 2m aluminium channels.
2. 5cm aluminium channels are ideal for holding the Neon Flex in place through bends whereas the longer 1m and 2m channels are suitable for ensuring a perfectly straight installation along longer lengths of Neon.
3. If installing your Neon Flex in the 1m or 2m aluminium channels, ensure you plan correctly in advance. Removing Neon Flex from channels risks damaging the Neon Flex internal circuitry due to bending the Neon Flex on the vertical axis. Should you need to remove Neon Flex from a 1m or 2m aluminium channel be aware of the risk of damage involved which will not be covered by your warranty. To remove Neon Flex from the longer channels, hold the Neon Flex as close to the channel as possible and pull slowly vertically, keeping the Neon Flex as taught as possible.
4. If installing long lengths of Neon Flex be cautious not to twist the Neon Flex.
5. You must unroll the Neon Flex by turning the reel to avoid twisting it, preferably unrolling the Neon Flex from the reel as you insert it into the channels. Unrolling an entire reel before installing it is not advised unless the surface you place it on is smooth and won't damage the Neon Flex PVC jacket.
6. Place the Neon Flex into the mounting brackets and test the layout, making adjustments as required, then remove the Neon Flex.
7. If necessary, drill holes for the mounting bracket, using plastic wall plugs where necessary.
8. Screw the mounting bracket to the mounting surface ensuring it is securely mounted.
9. If mounting the Neon Flex vertically use a 1m or 2m aluminium channel it is essential that you additionally secure the Neon Flex into the channel using a strong industrial adhesive such as Sika Build Maximum Torque or metal cable ties to prevent the Neon Flex slipping down or falling out of the channel due to gravity. This is especially important if the vertical length of Neon Flex is longer than 5m due to the weight. Please note that once you've mounted the Neon Flex into a channel using an adhesive, you cannot remove the Neon Flex without damaging the internals.
10. Place the Neon Flex into the mounting brackets and press down firmly to ensure the Neon Flex is properly secured.
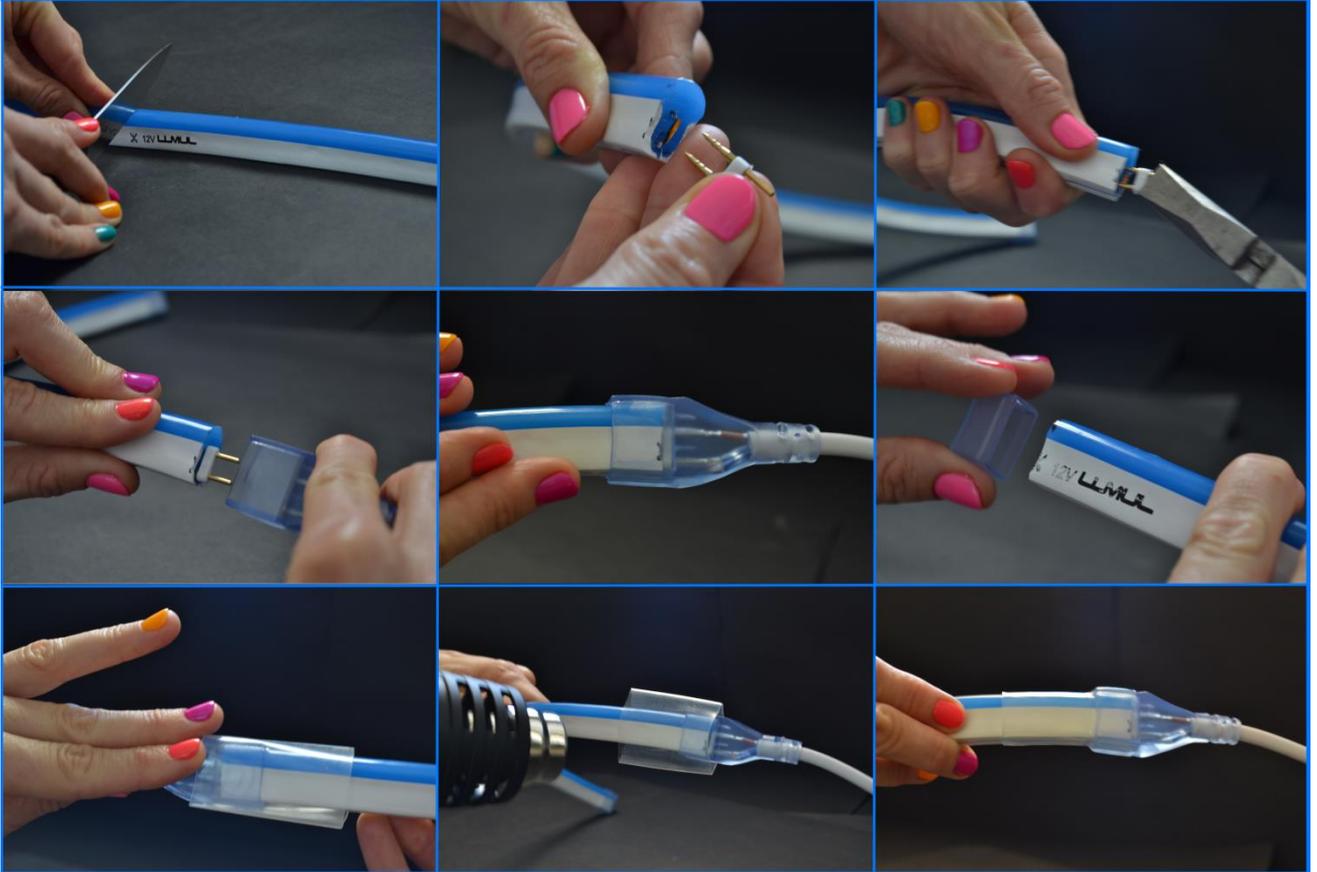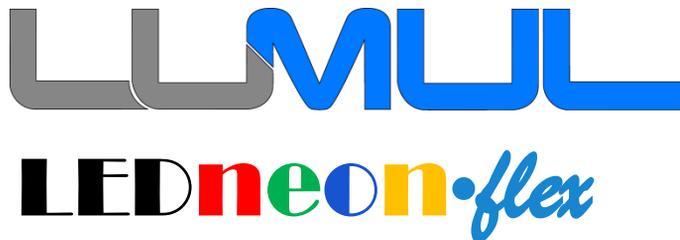
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Power supply sizing

- LUMUL Generation 2 12V Neon Flex requires a constant voltage power supply and consumes a max of 9W per meter.
- If the power supply is far from your LUMUL Neon Flex, you may experience voltage drop on the cable. Consider the Mean Well ELG model A power supply which allows the output voltage to be increased slightly to compensate for voltage drop along the wire.
- Always size the power supply 20% larger than required so as never to overload or overwork the power supply.
- Your Neon Flex can be powered from one or both ends. If powered from one end never exceed 5m of Neon Flex – either a single section of Neon Flex or multiple sections joined in series. If powered from both ends never exceed 10m of Neon Flex – either a single section or multiple sections joined in series.
- Never exceed the maximum running length of LUMUL Neon Flex as you risk causing your Neon Flex to burn due to the excessive current, damaging the internals and voltage drop and uneven lighting.
- When powering from both ends ensure identical power supplies are used at each.
- Power supplies must never be installed in parallel to double the available power.
- Power supply rated power can differ to the driver naming convention. Consult the tables below.
- We recommend the Mean Well range of high-quality power supplies and stock Mean Well LRS IP20 and ELG IP67 drivers. Mean Well LRS power supplies have no active PFC whilst the ELG power supplies do, with PF > .98. Mean Well ELG power supplies are potted with silicone, which increases the lifespan.

Mean Well LRS and ELG drivers

DRIVER	IP	EFFICIENCY %	RATED
LRS-35-12	IP20	82	36W
LRS-50-12	IP20	86	50W
LRS-75-12	IP20	89	72W
LRS-100-12	IP20	88	102W
LRS-150-12	IP20	87	150W
LRS-200-12	IP20	87	204W
LRS-350-12	IP20	85	348W
ELG-75-12	IP67	85	60W
ELG-150-12	IP67	88	120W
ELG-200-12	IP67	90	192W

LENGTH	POWER FEEDS	MINIMUM DRIVER
1M	1	12W
2M	1	24W
3M	1	36W
4M	1	48W
5M	1	60W
6M	2	72W
7M	2	84W
8M	2	96W
9M	2	108W
10M	2	120W