WARNING

This product uses High Brightness LEDs. Direct viewing of the SMD LEDs at close range should be avoided.

Keep product away from children.

Clean the LED Tape with damp a tissue only.

Litewave LTD. Will not accept responsibility for any other issues arising from improper use or fitting of this product where such matters are beyond our control.

Having highlighted a number of safety issues and warnings in this installation guide Litewave LTD. will accept NO responsibility for issues arising from any failure to comply with these instructions and recommendations.

Installation

Although the product is tested after manufacturing, it is advisable to test the Flexible LED Tape before cutting or fixing in place to make sure it has not been physically damaged in transit, and that it is the correct colour.

To test: Connect the black (-) wire of the LED Tape to the negative wire of a 12 Volt DC Switchmode Power Supply* (a 9v pp3 will also work for testing), then connect the remaining (+) wire of the LED Tape to the positive (+) wire of the power supply (or pp3 battery). Ensure that all of the LEDs are fully lit, but **AVOID VIEWING THE LEDS DIRECTLY.**

The wire polarity can be identified by looking at the markings where the wires are soldered to on the end of the LED Tape, the Black wire is usually negative (-), the remaining wire is usually the colour of the LEDs, for example if the LEDs are blue the + wire will be Blue, if the LEDs are red the + Wire will be red, for White LEDs the + wire will be white and so.

The wires can be connected to the output of the power supply with the DC Adaptor supplied free with selected Power Supplies (5A is the maximum load that should be put on this connector), alternatively you could use a terminal block, or bullet connectors. Whatever the connection method the wires should be located in the dry. The LED Tape will only light if connected the right way around with the + output of the power supply to the + input of the LED Tape.

Next identify the location where the Tape is to be fixed. Do not fix the Tape where it will be permanently wet. With suitable insulation covering any exposed wired connections unless cut the tape will not be damaged by moderate amounts of atmospheric moisture or the occasional water spray. If the tape is powered-up while submerged in water there is a risk of short-circuit and possibly even fire in the long term. Equally, do not affix the tape directly to a metal surface where there is a risk of creating a short-circuit on the back of the tape if accidentally perforated.

Once the location for the Tape has been decided upon simply remove the 3M Adhesive backing strip and carefully lay the Tape in place working from one end to the other ensuring there are no raised sections. Using a lint-free cloth gently press between the LEDs on the tape to remove any air bubbles and activate the adhesive, however, make sure you do not press directly on the LEDs themselves as this could damage them.

Wiring

The 2 wires from the LED Tape can be extended if necessary by using any low-voltage 2-Core cable with a current rating of 3 Amps or greater. With long cable runs the use of a cable with a higher current rating will ensure minimal voltage-drop in the wiring which could otherwise affect the brightness. **2M of LED Tape is the maximum recommended length** for a continuous run (spur**) or joined lengths** otherwise brightness may not appear uniform along the entire length and the Tape may be overloaded. If longer runs are required, and the power supply has adequate capacity, additional lengths should be wired back directly to the supply forming separate spurs. The tape itself is unsuited to carrying more than 3 Amps so do not extend it with excess lengths or other types of LED Tape or current load.

If a power supply having a significantly greater current capacity than the current requirement of the LED product(s) is to be used then a safety fuse will be required along the positive input wire to the product. This is to prevent excess current flowing through the supply wiring and LED product(s) under fault conditions such as accidental damage. Such a fuse must be located as near to the supply or driver to protect the installation wiring and shall have a current rating just higher than the total load anticipated under normal operating conditions anticipated in the spur. Each additional Spur will require its own separate fuse.

PLEASE NOTE: If using in a vehicle or on a vehicle battery **it is essential** to use an in-line (Fast Blow) fuse along the + input to the LED Tape, if unsure consult a qualified vehicle electrician.
You fit to a vehicle at your own risk, appropriate fitting, connections, fuses etc. are beyond our control. Vehicle voltages can go up to 14.4v when the engine is running, this will reduce the lifetime of the LED Tape.

Follow the cable ratings on next page for the appropriate amperage fuse.

Note that a fuse may only be omitted from the low voltage side if the power supply provides its own overload protection and is unable to significantly exceed the maximum rating of the wiring and LED product before it trips.

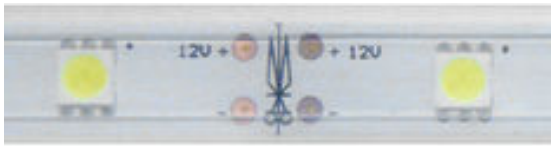
If hard-wiring the input of the Power Supply to the AC mains it is essential to use a fused wall switch or outlet. The fuse on the mains side should be 3A or less. Only a qualified electrician should hard-wire the Mains PSU.

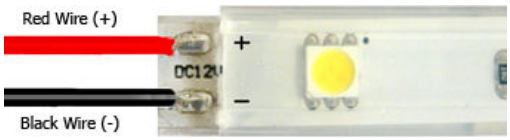
Power Supplies should be installed in a dry location.

Cutting and connecting the Tape

Once cut the LED Tape will no longer be Splash-proof. If cut or trimmed it should not be installed near to sources of water or areas where it is likely to come into contact with water.

Although we advise against cutting the LED Tape because this will affect your warranty, we have provided a brief guide of how to cut and join the tape below. **NOTE: When soldering always do so in a well ventilated area and wear a mask.**





Whether trimming to length or cutting the LED Tape into shorter lengths for reconnecting you need to cut the tape along the line with the 2 solder pads on either side of the cut. Carefully remove 4-5mm of the silicone and resin taking care not to cut into the tracks of the pcb, this can be done with a sharp stanley knife (always use sharp tools carefully), be careful not to damage the tracks underneath if cutting through the silicone and resin. Make sure you have removed all of the silicone and resin on and around the solder pads before soldering. Securing the LED Tape before soldering will make the task easier.

Be careful when soldering that you do not overheat the pads as this heat can damage the pad and the LEDs, a small dab of flux paste helps with a fast solder connection. **Make sure the wire you use is rated for load.**

Apply a small blob of solder to each copper solder pad. Before soldering the wire to the pads it is best to apply a small amount of solder to each of the wires to tin the wires this will prevent the wires from becoming frayed and causing a short-circuit. Then solder the positive (+) wire (red is shown for clarity) to the positive (+) solder pad, and solder the black wire to the negative (-) pads as shown.

The soldered joints **must** be insulated to prevent accidental short-circuits. End caps are supplied for terminating trimmed lengths, these can be filled with Hot Glue prior to fitting the end cap over the end of the LED Tape, alternatively adhesive lined heat shrink can be used (12mm Heat Shrink with 3:1 Shrink Ratio). If using heat shrink cut a length around 35-40mm, place about 14mm of heat shrink over the end of the LED Tape then heat gently with a heat gun until the shrink forms tightly around the LED Tape, then crimp the end with a pair of pliers forming a closed end. Adhesive lined heat shrink can also be used for sealing wired connections.

To get around corners, cut the LED Tape to the nearest 100mm then use connecting wire (rated for the load) to take the voltage around the corner to another length of LED Tape. 2 Meters is the maximum total length that should be connected together. Again any connections that are made should be insulated with adhesive lined heat shrink.

Warranty. This product is warranted from manufacturing defect only. This warranty is valid for 1 year from the date of purchase. This warranty does not apply to damage caused by user installation or normal wear and tear. Cutting the tape will automatically void your warranty, so do so carefully. If a segment becomes faulty only that part can be replaced under warranty once cut. Litewave LTD. gives no warranty against damage to any surface due to applying or removing this product. Please follow instructions and heed all warnings carefully.

Specifications

Voltage:	12 Volts DC
Viewing Angle:	120 Degrees
Maximum current drain:	Approx. 0.350 Amps (350ma)
LED Type:	SMD (30 LEDs per meter)
Durability:	Lightly Splash-proof unless cut (If Tape is cut connections need to be properly

Cable and FAST BLOW Fuse ratings:

300mm LED Tape with 18 LEDs = 500ma Fuse Use 3A Wire or greater

Important: Installation by qualified electrician recommended.

IMPORTANT Safety Information:

- DO NOT place or fit the LED Tape near sources of heat or naked flames. Do not install on flammable material.
- Not recommended for use in extreme temperatures or in direct sunlight.
- Maximum length of Tape is 2 Meters do not exceed or extend.
- The Tape should not be installed around tight or angled bends as it may cause the resin to crack. It must be installed in a straight line. DO NOT curl or twist the LED Tape whilst power is on. The LED Tape can be bent on it's flat side but should not be flexed sideways.
- The LED Tape should be removed from the reel before powering.
- Soldered connections should not cause a short across the tracks. Connections should be insulated with adhesive lined heat shrink. Once factory lengths are cut the LED Tape is no longer Splashproof.
- Assembly or connections must not damage or destroy conducting paths on the circuit board. The LED Tape itself and all its components should not be mechanically stressed.
- Installation of LED Tape (with power supplies) needs to be made with regard to all applicable electrical and safety standards.
- We advise a qualified electrician perform entire installation.
- Correct electrical polarity needs to be observed. Wrong polarity may destroy the LED Tape.
- Parallel connection is highly recommended as safe electrical operation mode.
- Serial connection is not recommended. Unbalanced voltage drop can cause hazardous overload and damage the LED Tape.
- Please ensure that the power supply is of sufficient power to operate the total load.
- * Only power the LED Tape with a 12vdc Switchmode Power Supply (constant voltage). Do not use a constant current Power Supply. Do not exceed the load of the Power Supply. The Power Supply should conform to Class 2 and SELV standards.
- Fixing to conductive or metal surfaces is not recommended. If fixing on metallic or otherwise conductive surfaces, there should be an electrical insulator between LED Tape and the mounting surface to prevent possible short-circuit.
- All LEDs are static sensitive.
- Damaged by corrosion will not be honored as a materials defect claim. It is the user's responsibility to provide suitable protection against corrosive agents such as moisture and condensation and other harmful elements.
-Identify Positive (+) and negative (-) outputs of the Power Supply by using a multimeter.
-Electrical Connections and joints should be in a dry area unless adequately sealed.

Environmental Information

At the end of this product's usable life it should be disposed of according to WEEE regulations, which means it should be taken to your local municipal site for safe disposal/recycling.