LMK-501 Lighting engine
User manual

	Features: • Complete star kit for floor projects with light engine, RF remote control, fibre optic bundle • Twinkling effect • LED CREE chip

Light engine model	LMK-501
Programmes	7 twinkling wheel speed settings, brightness adjustment, on/off
Remote controller	Yes, RF
Light source type	LED CREE chip
CRI (Ra>):	80
IP rating	IP20
Light colour mode	White (twinkling colour effect can be achieved with the 6-colour twinkling wheels)
Working voltage	DC 12 V
Rated power	7 W (5W LED)
Material of housing	Aluminium
Light engine dimensions	125 mm (L) x 126 mm (W) x 88 mm (H)
Net weight (light engine)	0.45 kg
Remote control dimensions	53 mm x 33 mm x 13 mm
Fibre optic port diameter	18 mm
Lifetime	50,000 hours
Warranty	2 years
Package dimensions (incl. fibre optic bundle)	192 mm (L) x 160 mm (W) x 95 mm (H)
Weight with packaging	0.75 kg

Safety notices

Electrical work safety advice and tips

- Make sure the input voltage is correct.

- Avoid placing the light engine in the rain or in moist areas. Please ensure that the light engine has sufficient ventilation and is not placed in a completely sealed area.

- Do not open the LED light engine for inspection or re-wire the electronic circuits if you are not a professional. Opening the light engine might void your warranty.

- Avoid any debris on top or around the light engine as it can cause poor heat dissipation.

- Avoid using the device above 4O C temperature.

DIY tips and safety advice

- This task will involve working at height. A safe system of work should be established and maintained, in order to prevent injury.

- Consider your safety! Think about the potential risks and dangers of the work and the steps you should take to avoid them.

- Personal protective equipment. Make sure that you are equipped with suitable and sufficient personal protective equipment. This could include eye protection, face mask, protective overalls, safety footwear and gloves.

- Ensure that the work area is sufficiently illuminated.

- Check that the tools you will be working with are in a good operating condition. For the installation, you will need a cordless drill, epoxy glue, side cutters or scissors and drill bits.
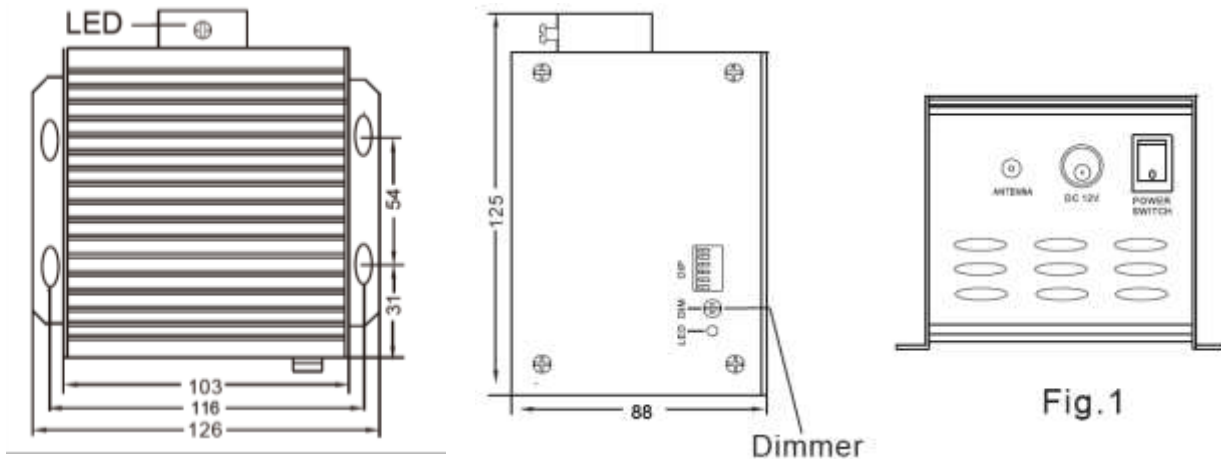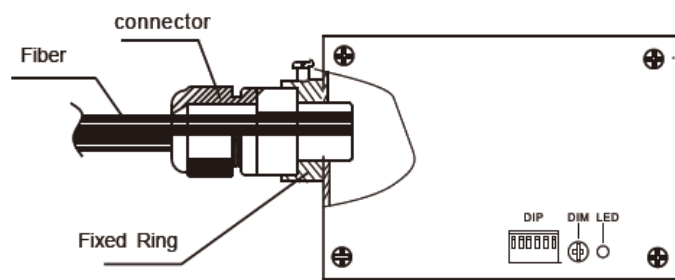
Installation

The installation dimension for the light engine (Fig. 1)


Connection method between the optical fibres and the light engine

Your fibre optic bundle will come with the connector fittings ready to connect to the light engine.

If you need to adjust your bundle or you're making your own, follow the steps below. Please not that these steps are not necessary for the ready-made bundles.

1. Cut the fibres into the desired lengths. For multi-string fibres, peel off 5-10cm of the PVC sleeve carefully to avoid damaging the inner fibre.

2. Align all the optical fibre ends and fasten with tapes which can resist temperature over 13O°C

3. Pass the fibres through the connector and fasten the rotary tensioner until the fibres are tightened.
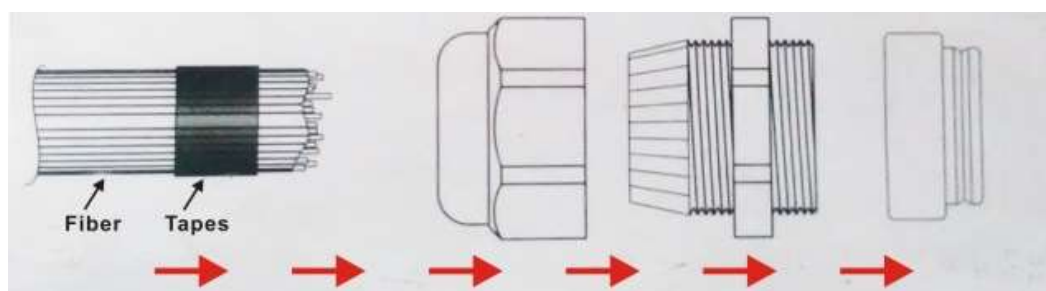
4. Cut the fibre bundle to a flat surface with a heat-knife or blade.

5. Make sure that the optical fibre bundle head is smooth and clean to ensure even light distribution.

6. Place the fibre optic bundle's connector into the light engine's port connector. Fasten the bundle with the screw on the top of the light engine's port connector.

Twinkling and colour wheel options

The kit is supplied with three options for various effects.

Standard 6 colour wheel
CW01

Twinkle white colour wheel
CW02

Twinkle 6 colour wheel
CW03

- Only one wheel can be installed on the light engine at a time.
- The motor rotates the wheel
- CWO1: Colour change/single colour with no twinkling feature
- CWO2: Twinkling option with no colour change feature (white only)
- CWO3: Colour change + twinkling feature (motor set to ON) or Single colour selection with no twinkling feature (motor set to OFF).
- See program settings in the next section

Programming the light engine

The light engine can be programmed with the combination of the DIP switches on the side of the unit and the remote controller. The two control methods complement each other. Some functions can be set by the DIP switches only, while others, by the remote controller.

The Dimmer side of the light engine allows you to set the brightness of the light engine. The factory default is 100% and there are 6 levels of brightness settings.

DIP switches
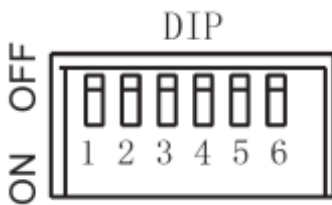
- DIP Switch values: 1 = ON, 0= OFF
- DIP Switch 1-3: program selection (see table below)
- DIP Switch 4-5: not in use, should be set to 0 (OFF)
- DIP Switch 6: remote controller ON/OFF

DIP switch programs

Program	DIP switch setting						Function
	1	2	3	4	5	6	
00	0	0	0	0	0	0	Motor Stopped
01	1	0	0	0	0	1	Colour fade: White, Cyan Blue, Green, Yellow, Blue, Purple (motor at 6 RPM)
02	0	1	0	0	0	1	Colour fade: White, Cyan Blue, Green, Yellow, Blue, Purple (motor at 4 RPM)
03	1	1	0	0	0	1	Colour fade: White, Cyan Blue, Green, Yellow, Blue, Purple (motor at 3 RPM)
04	0	0	1	0	0	1	Colour fade: White, Cyan Blue, Green, Yellow, Blue, Purple (motor at 2 RPM)
05	1	0	1	0	0	1	Colour fade: White, Cyan Blue, Green, Yellow, Blue, Purple (motor at 1.5 RPM)
06	0	1	1	0	0	1	Colour fade: White, Cyan Blue, Green, Yellow, Blue, Purple (motor at 1 RPM)
07	1	1	1	0	0	1	Colour fade: White, Cyan Blue, Green, Yellow, Blue, Purple (motor at 0.5 RPM)

To set the colour without the remote controller:
- When a single colour is selected, the motor needs to be turned off and the twinkling mode is disabled
- Use colour wheel CW01 or CW03
- Set DIP switch 2 and 3 to ON for slow rotation. When the colour wheel rotates to the desired colour, turn all DIP switches to OFF. This will disable the motor rotation.

Remote control programs

The remote controller requires 1 x A27 battery. The battery is not included in the package.

The range of the remote controller is approximately 100 m.

Brightness Adjusting
Fixing Color
Power ON/OFF
Wireless Remote Controller

- To use the remote controller, set DIP switch 6 to ON
- For colour selection, start the motor and stop it when it reaches the desired colour. When the motor is stopped, the twinkling mode is disabled.
- For brightness adjustment, use the two brightness control buttons to increase or decrease brightness
- The motor speed cannot be changed with the remote controller, only with the DIP switches at the back of the light engine.

Troubleshooting for remote controller connection issues:

- Make sure that the remote controller is switched on by pressing the "On" button

- Check if the battery is operational in the remote controller: Press a button on the remote and the indicator light should flash up. If the light doesn't flash up, it means that there is either no battery in the remote or the battery needs replacing.

- If the remote's control light flashes up, check whether the green indicator light on the back of the light engine flashes up, when a button is pressed on the remote. If the indicator light is not flashing up, restart the device and test again. If the indicator light still doesn't flash up, the device is faulty and please contact your supplier.

Deck and patio installation

This fibre optic lighting kit is ideal for creating magical twinkling lighting effect when placed under floors, decking areas, garden pathways or children's rooms. The fibres are protected with a PVC coating to withstand the force and pressure of various covering materials. The tails can be installed in cement, ground, between paving slabs, stones, or even in the grout between tiles. It can be used both indoor and outdoor.
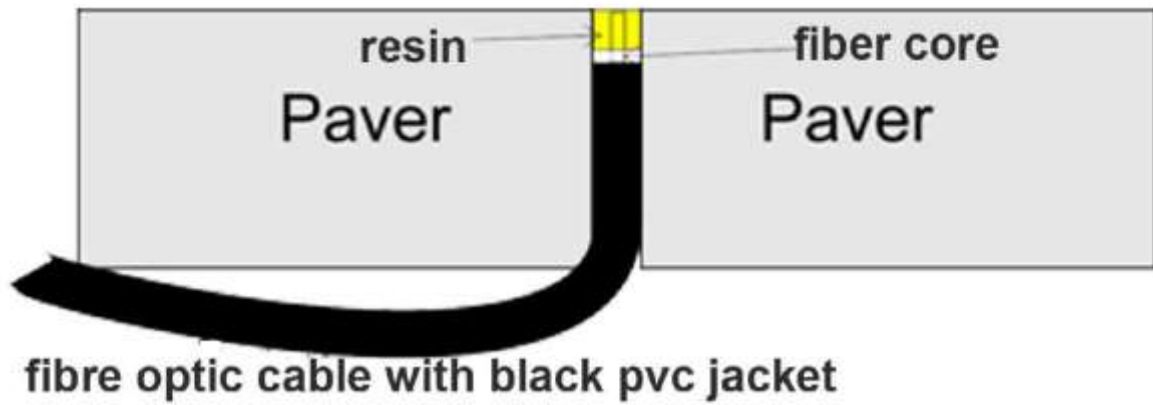
As the light source itself is not waterproof, it should always be placed in a dry location, considering the nearest power outlet, the length of the optical fibres and the area of application. The light engine can be placed in conservatories, garages, garden sheds or a custom-made, dry enclosures made from plant pots or other waterproof options that blend in with the environment.

Once the fibres are placed in their final location and trimmed to their desired height, we recommend sealing them off with epoxy resin to ensure water doesn't leak between the PVC coating and the optical fibre.

Application examples