



WARNING

THIS PRODUCT HAS BEEN DELIBERATELY DESIGNED TO CREATE A HIGHLY NOTICEABLE LIGHTING EFFECT THAT WILL TURN HEADS AT CAR SHOWS AND EXHIBITIONS. BECAUSE OF THIS IT IS EXTREMELY IMPORTANT THAT IT IS **NOT USED ON THE PUBLIC HIGHWAY** TO PREVENT THE DISTRACTION OF OTHER ROAD USERS.

HAVING ISSUED THIS WARNING ICELED WILL NOT ACCEPT ANY RESPONSIBILITY FOR ISSUES ARISING FROM ANY FAILURE TO COMPLY WITH THIS CLEAR INSTRUCTION.

ICELED WILL NOT ACCEPT RESPONSIBILITY FOR ANY OTHER ISSUES ARISING FROM IMPROPER USE OR FITTING OF THIS PRODUCT AS THESE MATTERS ARE BEYOND OUR CONTROL.

THIS PRODUCT USES CLASS 2 LED DEVICES (WITH RESPECT TO IEC825-1 & CENELEC EN 60825-1) WHILE NOT CONSIDERED TO BE HAZARDOUS, DIRECT VIEWING OF THE LED'S SHOULD BE AVOIDED.

THIS PRODUCT IS CAPABLE OF PRODUCING STROBOSCOPIC LIGHTING EFFECTS.

Features

ICELED UFO employs advanced digital imaging techniques to create stunning ground lighting effects – with over 2 million different colours available from anywhere around the light tubes. This versatility results in the projection of an endless display of multicoloured patterns with an organic appearance that can be adjusted to look as subtle or as shocking as required.

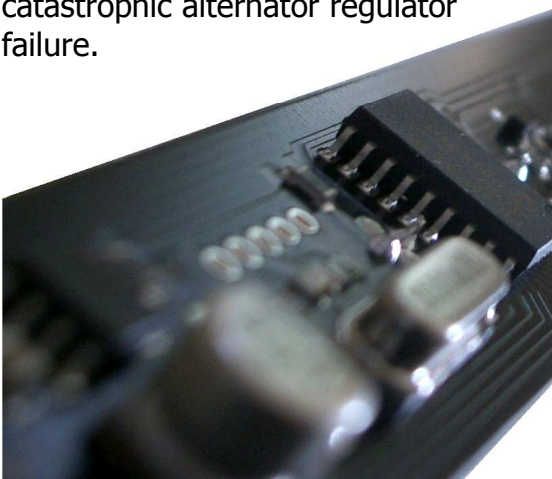
Patterns can be made to react to music via a built-in microphone or line-level input or can be left to run without audio input. The colours used in each pattern can be restricted to those held in user-defined palettes to create specific effects or may be chosen at random for unlimited effects.

All interaction with the electronic control unit (ECU) takes place by infrared remote control so the ECU and wiring can be hidden away. This may also allow the effects to be controlled and enjoyed from outside the vehicle if the remote display is located at or near to window level. The remote display shows the status of the ECU and conveniently doubles as the infrared receiver.

UFO has been designed to complement and integrate with other devices in the ICELED range of networked lighting products. As well as driving four external tubes, the ECU can be linked to interior ICELED so that colours may be synchronised inside and out. A connection is also provided so that the ground light automatically switches on whenever a door is opened.

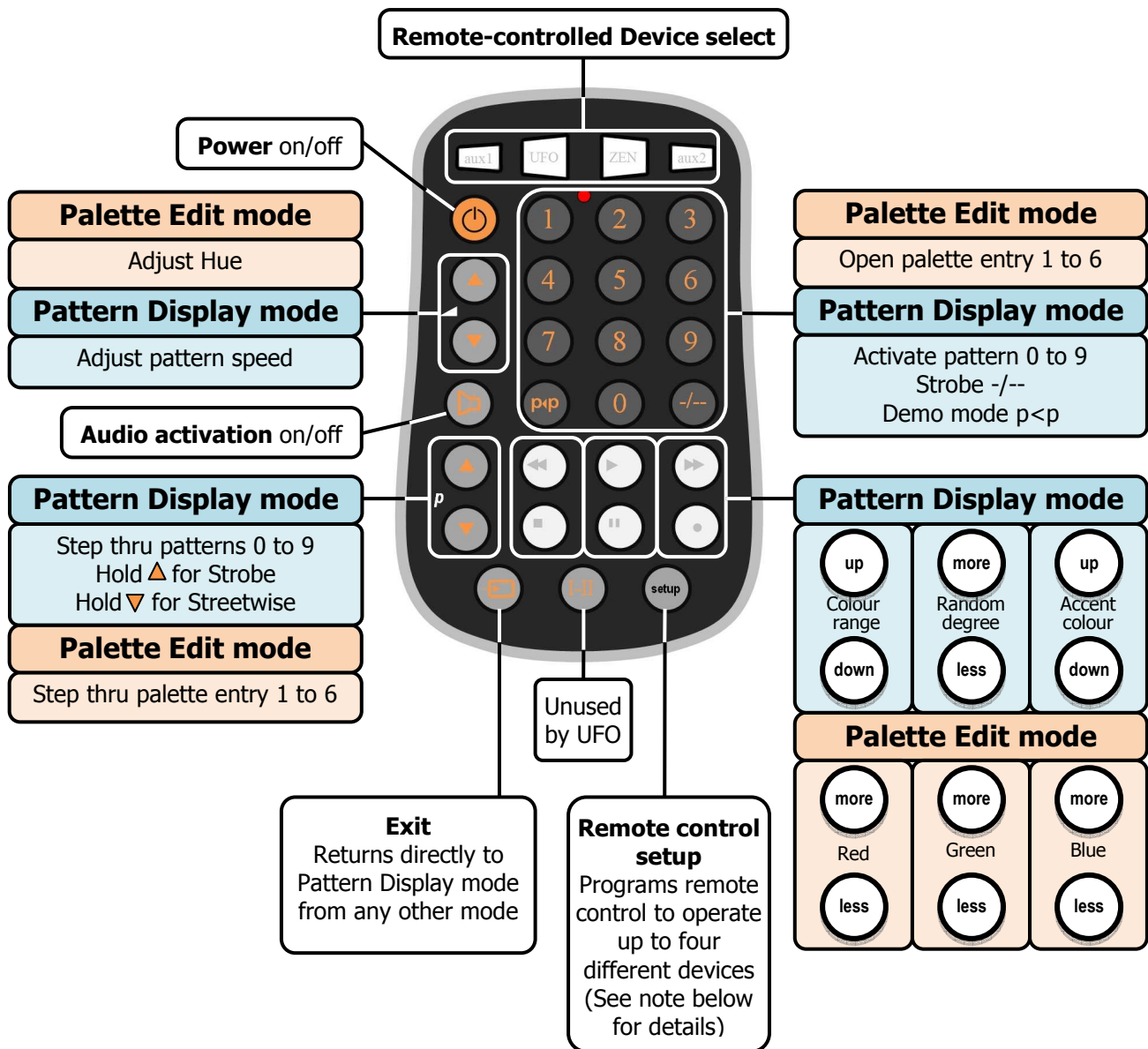
Tough polycarbonate tubes provide complete protection for the outboard electronics and are fully sealed against water penetration. The use of solid-state LED light sources results in highly reliable and energy efficient operation that should be capable of withstanding decades of constant use.

The ECU constantly monitors battery voltage and will interrupt the supply to the tubes under fault conditions. This measure protects the electronics even in the event of catastrophic alternator/regulator failure.

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- **Digital image projection**
 - **2 Million+ colours**
 - **Sound reactive**
 - **User defined palettes**
 - **Remote control**
 - **Expandable**
 - **Rugged and reliable**

Remote Control quick-reference

For your convenience the remote control supplied with UFO is a “universal” type that can be programmed to operate up to four different devices. In addition to being used to operate ICELED controllers it may therefore also be used to operate common Audio/Visual equipment. As supplied the remote is set to operate UFO on both of the leftmost device buttons.



Note – The remote control device code for UFO is 0101

To assign a particular code to a **device select button** first press the target device button then press and hold the setup button until the indicator lights. Finally enter the four-digit code for your device. The indicator should go straight out. If it flashes twice then the code is not allowed.

Basic operation

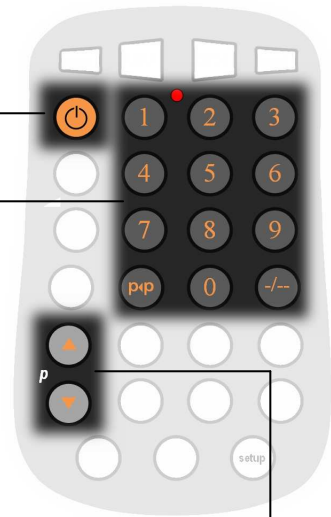
Press the orange power button to turn the LED tubes on and off. At switch-on the *most recently selected pattern* will be restored. Alternatively, press any numbered button to activate the corresponding pattern directly.

Remote display

The remote display normally shows the active pattern number but also provides other useful information depending on the mode of operation. When switched-off using the remote control a small glowing dot remains on the display to show that the ECU is in low-power standby mode.

Selecting patterns

There are ten generic patterns to choose from including a 'Lightning' strobe effect. Use either the numbered buttons or the ▲ and ▼ buttons (labelled **p**) to step up and down through the patterns listed below:



P 9	Pulsar	(Short contrasting pulses firing across a phasing background)
P 8	Quasar	(Pulses of light appearing at random - diffusing into darkness)
P 7	Vortex	(Random segments flowing at different rates in random directions)
P 6	Fusion	(Random injections of light fusing into each other)
P 5	Warp	(Contrasting colours expanding and contracting in both directions)
P 4	Flux	(Random segments circulating front to back)
P 3	Scanner	(Circulating highlight on a phasing background)
P 2	Phaser	(Gradual colour changes starting from random origins)
P 1	Static	(Preset colours stretched from end to end)
P 0	Streetwise	(Steady red at rear, amber at sides, white at front)

When changing patterns the remote display briefly shows **P** followed by the pattern number selected. The strobe pattern is activated by pressing the special key labelled **-/--**

P L 'Lightning' strobe

Note – *Streetwise differs from all other patterns in that it may not be customised or affected by any of the normal pattern options. It does not therefore count as a pattern in the following descriptions.*

'Demo' mode



Patterns can also be selected in an automatic random sequence. A new random selection is initiated on each press of the p<p button shown left. If an audio trigger is present a new random pattern will be selected in time with the music. Any other button-press immediately cancels 'demo' mode and restores manual pattern selection.

'Driving' the patterns

Patterns will change with time, and their velocity can be altered using the two ramp buttons. Individual speed settings are remembered for each pattern.

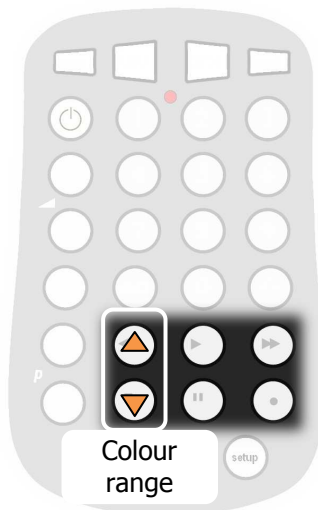
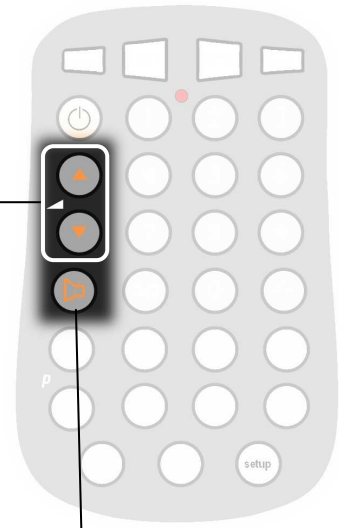
Note – The LED tubes will flash to warn whenever high or low adjustment limits have been reached.

Sound activation



Patterns can also be driven by an audio input.

Sound activation is toggled on and off with each alternate press of the loudspeaker button. The small dot on the remote display lights brightly when sound activation is enabled and will blink in time with the detected beat. Sound activation is combined with the speed settings to create more interesting effects.



Customising the patterns

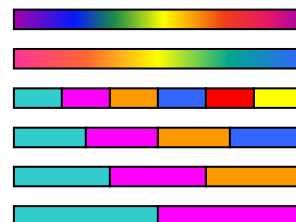
The appearance of each generic pattern may be altered considerably by choosing different settings for various elements of the pattern.

Selecting a colour range

The pattern generator picks its main colours from one of six possible ranges. This includes four restricted ranges of *preferred* colours (from a customisable palette of up to six different colours) or from an *unlimited* range of pure colours sequenced from the visible spectrum (rainbow) or from colours selected entirely at *random*.

To select a new colour range for the current pattern, use the leftmost pair of white multi-function buttons to step up and down through the following ranges (with colours for illustration only):

- C r** Random colours
- C u** Unlimited colours from the rainbow
- C 6** Palette entries 1 to 6
- C 4** Palette entries 1 to 4
- C 3** Palette entries 1 to 3
- C 2** Palette entries 1 & 2

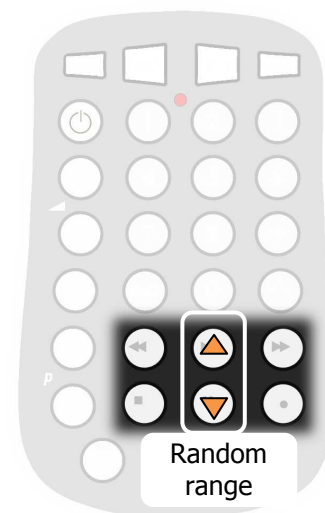


The selected range will be previewed on the side tubes alone – in a similar fashion to the examples above. After a few seconds without any button presses the pattern will resume using the newly selected colour range.

Adjusting the degree of randomness

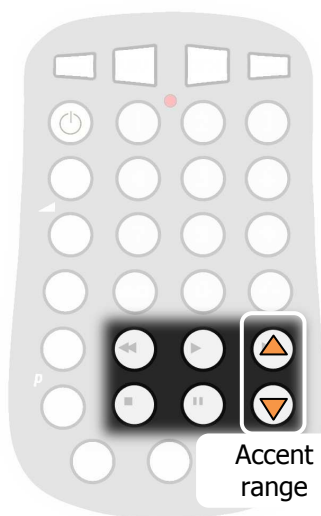
The pattern generator applies a variable degree of randomness to the colour selections dictated by the current colour range.

For the *random* colour range (**C r**) randomness determines the distance between subsequent colours appearing in the pattern. Colour selection will move randomly back and forth within the spectrum at a rate determined entirely by this setting. The effects can be seen clearly in the colour range preview (i.e. when selecting **C r** with the adjacent button pair).



For the *unlimited* range (**C u**) the degree of randomness modifies the distance between successive colours picked from the spectrum in one direction only. The minimum setting for randomness therefore causes evenly spaced colours to be picked in turn from the rainbow.

In the case of the *preferred* colours (colour ranges **C 2** to **C 6**) the degree of randomness only applies to the order in which the palette entries are picked by the pattern generator and is not shown in the colour range preview.



Selecting an Accent colour

The pattern generator also makes use of a specified accent colour selected from the following range:

A L	Latest colour pick from the main range
A I	Inverse (negative) of latest colour pick
A w	white
A c	cyan
A m	magenta
A b	blue
A y	yellow
A g	green
A r	red
A d	darkness

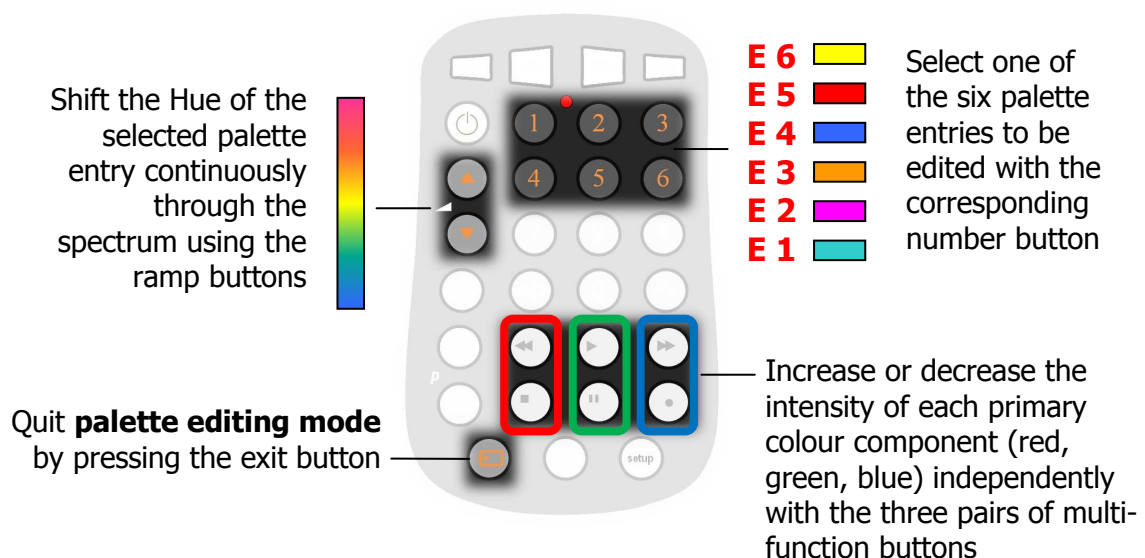
A good example of a pattern Accent is the scanning 'dot' that appears in pattern three.

For most other patterns selecting **A L** suppresses the appearance of the accent altogether while **A I** guarantees that the Accent will stand out regardless of the main colours picked by the pattern generator.

Editing the palette colours

Every pattern including the strobe has its own private palette of six colours. To change the colours in the palette *for a particular pattern*, press and hold down the chosen pattern number button until **E 1** appears on the remote display. This puts the controller into **palette editing mode** and all four tubes will show the first of six colours held in the palette belonging to the selected pattern.

From now on the number buttons 1 to 6 are used to select the palette entry to be edited and the remote display briefly flashes **E** followed by the palette number as a reminder of which palette entry is open for editing.



The remote display confirms which colour component is being adjusted by flashing **H** (for Hue) or **r g b** respectively while the values are changing.

In the extreme case, by raising all three (rgb) components to their maximum intensities, white light will be produced. Conversely, darker shades (including total blackout) may be created by reducing the intensity levels to some degree.

Note – in order to maintain optimum brightness it is important that at least one primary component be set to its maximum level. This is automatically taken care of when adjusting **Hue** by shifting through the spectrum with the separate ramp buttons.

Exiting palette editing mode



To quit from palette editing mode press the exit button shown to the left. The current pattern will be restored and will be ready to make use of its new palette colours.

Streetwise and 'Door open' palette

The palette for pattern 0 is special in that it defines up to three different colours shown when the door-switch circuit is activated. It also contains the three fixed 'streetwise' colours.

E 6		}	'Streetwise' colours (cannot be edited)
E 5			
E 4			
E 3		}	Front Side Rear 'Door open' colours
E 2			
E 1			

The first three palette entries **E 1**, **E 2** and **E 3** correspond to the colours shown on the rear, side and front tubes when the doors are open and are factory set to red amber and white. These three colours can be edited in the usual way to suit your own requirements. This would allow just the side tubes to be lit by setting the front and rear colours to black or to have the same colour all round by making all three colours the same for example.

Note – To temporarily disable the 'door open' feature: switch-off using the power-button on the remote *when an opening door has activated pattern 0*. To re-enable the feature switch-on when a door is open.

The remaining three entries **E 4**, **E 5** and **E 6** have been programmed with the 'street-wise' colours red, amber and white. To remain 'street-wise' these colours cannot not be altered. Attempts to do so will result in warning flashes.

Installation

The complete kit consists of:

2 x Long tubes	10 x Tie-wrap bases
2 x Short tubes	10 x Large tie-wraps for above
1 x ECU	10 x Self-tapping screws for above
1 x Remote display	20 x Small tie-wraps for securing cables
1 x Remote control handset	4 x Grommets for cables
1 x Fused supply wire	3 x Self-tapping screws for mounting ECU
1 x Chassis return wire	1 x Self-tapping screw for chassis return wire

Note – Installation should be carried out in the following sequence **after** reading through every step (this will assist in locating everything in the best position).

Step 1: Install the ECU

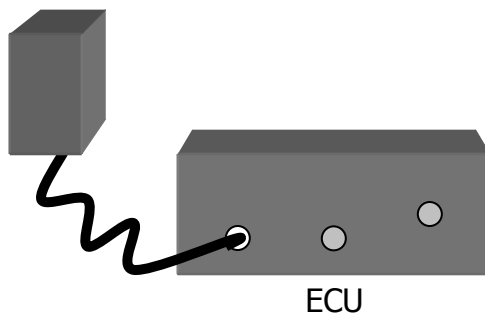
The ECU must not be exposed to moisture or excessive heat so should therefore be located inside the car or luggage bay – not outside or within the engine bay. The ideal location would be somewhere under the dashboard, with a short route to the car battery. The box should be secured to a flat surface using the three short self-tapping screws provided. Ensure that the drilling of these holes will not damage wiring or other equipment on the other side. Care should also be taken not to over-tighten these fixings.

A fourth hole will be required nearby to attach the chassis return wire. It is not sufficient to use any of the case screws for this connection, as it needs to be fully tightened in order to make a good connection to the metalwork. Do not connect either of the power wires yet.

Step 2: Locate the remote display

The remote display unit plugs into a socket on the rear of the ECU.

Remote display



The display should be positioned where the driver can see it and, as it also receives infrared commands from the remote handset, it should be located at window level to allow the handset to be operated from outside the vehicle.

An ideal place for the remote display might be in the corner of the dashboard where it meets the windscreen.

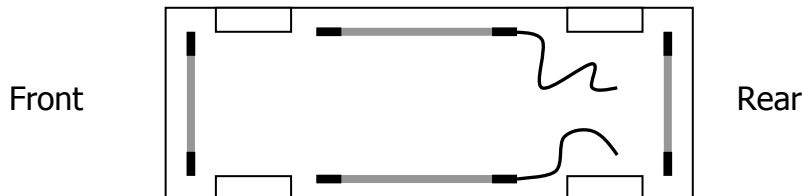
Step 3: Fit the tubes

Note – Great care must be taken to observe the points emphasised in the following instructions to ensure a successful installation. Unlike most other types of lighting, UFO produces spatial effects that demand the correct orientation of the LED tubes.

The four tubes should be mounted in unexposed positions to prevent damage from contact with any objects on the road. **They should be no lower than the lowest part of any other bodywork or suspension component.**

IMPORTANT:

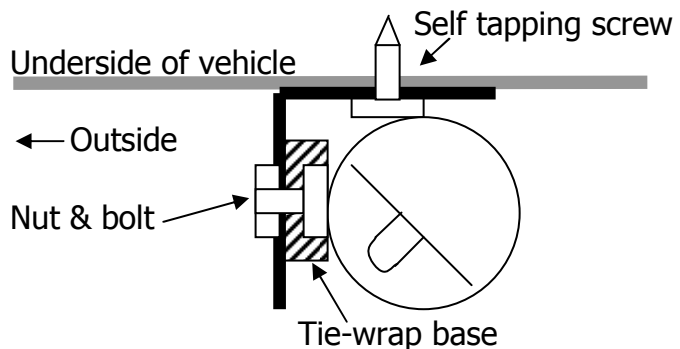
It is absolutely crucial that each of the long side tubes is mounted with its cable exiting towards the rear of the vehicle. This is so that effects can run around in a continuous fashion from end to end.



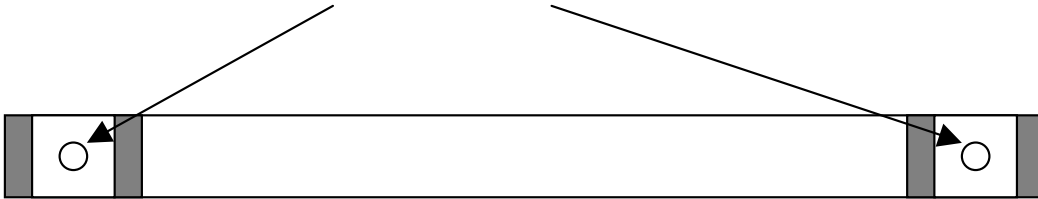
This is not an issue for the shorter front and rear tubes, which may be mounted with their cables exiting at either end. This is because their patterns are always generated symmetrically about their centres. Tubes of the same length are functionally identical so may be used at either side or either end of the vehicle.

While finding suitable locations for the tubes, bear in mind that once fitted **none of the LED's should be directly visible** as this will seriously detract from the overall effect. Proper colour mixing relies on the diffusion obtained when the light is reflected back from the surface of the ground.

If there are no suitable ledges to hide the tubes behind, consider obtaining suitably sized lengths of 90-degree aluminium 'angle section' and attach these to the underside of the vehicle first.

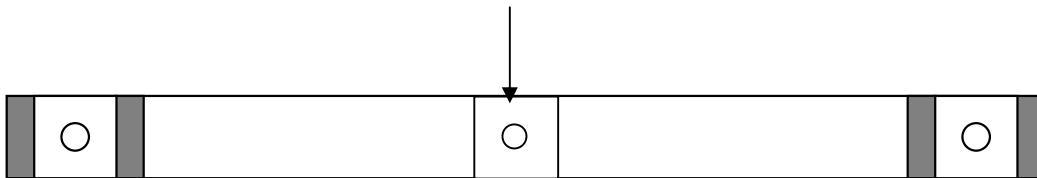


Once suitable locations have been identified for each tube, the tie-wrap bases should be attached to coincide with the middle of the rubber end-caps for maximum grip.



If this is not possible, the tie-wrap bases may be fixed further in, but care must be taken not to obscure any of the LED's when fitting the tie-wraps later on. If the tubes are examined carefully it can be seen that there is a slightly wider gap between the LED's on adjacent sections. These breaks occur every one foot (305mm) and are the ideal location for alternative fixing points.

The longer side tubes will also require one additional fixing in the middle to prevent excessive flexing. Once again, be careful to position this fixing so as not to cover any of the LED's when the tie-wrap is attached.



Once the bases are in place, the tubes should be loosely attached using the tie-wraps provided, but not pulled tight yet. This will allow the optimum angle for the tubes to be obtained by rotating them once they are lit.

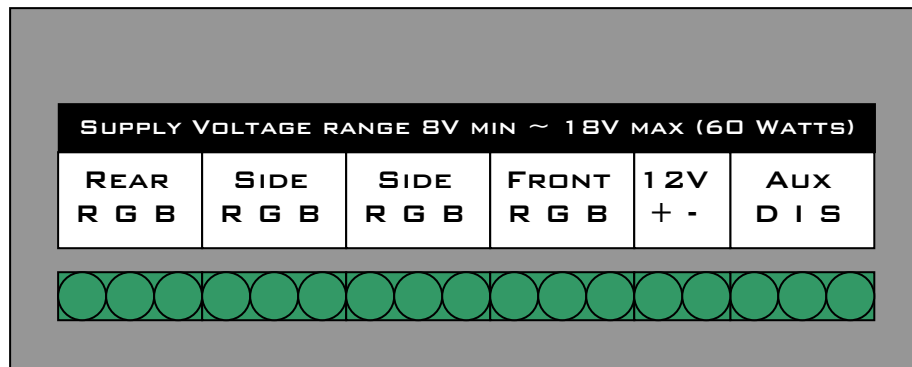
All cabling must be secured with the smaller tie-wraps supplied to prevent snagging with any objects on the ground. For this reason, it is particularly important that no cable loops should hang down.

Cables should enter the passenger compartment through holes drilled large enough to accept the grommets supplied. Ensure that the drilling of these holes will not inflict damage to wiring or other equipment. The green connector blocks can be removed from the cables to assist with threading the wiring towards the ECU.

Note – In the unlikely event of the cable being too short to reach the ECU, it may be extended with a similar, stranded, three-core cable. Most common three-way electrical terminal blocks will be adequate for joining the wires.

Step 4: Wiring the ECU

The 3-way connectors terminating the red green and blue wires from each of the four tubes can be reassembled and plugged in at this stage. If they are inserted in the wrong positions they can easily be swapped around later on.



R	Red	
G	Green	
B	Blue	
+	8-18VDC @ 5A max. (<25mA standby)	
-	Chassis return	
D	Door switch	(optional connection)
I	Interior ICELED	(optional connection)
S	Serial input	(factory use only)

Connections to the 12V supply should be made with the fuse temporarily removed from its holder in the red lead:

The red + wire should be run directly to the vehicle battery if possible, in order to maintain a permanent supply for standby mode. Other power 'pick-up' points may be suitable so long as they provide a constant supply. In either case the fuse holder must be located nearest the supply end so that the fuse can be effective in protecting the wire all the way back to the ECU. To maintain protection, if this wire is to be shortened at all, it must be cut off at the end furthest from the fuse.

The ring terminal on the end of the short black wire needs to be firmly attached to the vehicles metalwork using the self-tapping screw and serrated washer supplied. **A good contact is essential here.**

If door switch activation is to be used it should be connected now. A switch connecting this circuit to chassis when the door is open is the only requirement. Any small-gauge wire will be suitable for this connection.

Step 5: Powering-up and testing

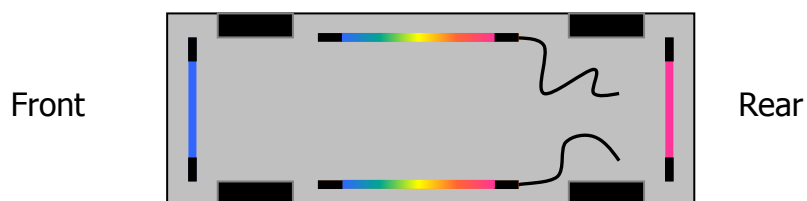
Once the fuse and 12V plug are inserted the standby dot should light on the remote display showing that the controller is ready. Press the power button on the remote handset to switch on the tubes.

Pattern 0 should now show. This will be useful for checking that the four tubes are connected to the correct outputs. The rear tube should light red, the front white and the two sides amber. The four plugs may now be swapped around to correct any mistakes. It is important to perform this check and correct any errors now - as the generated patterns rely on the correct assignment of each tube.



Correct appearance for Pattern 0

A further check should be performed to ensure that the side tubes have been correctly oriented front-to-back. To do this, select pattern 1. The front and rear tubes should now light in the same colours as the adjacent ends of the side tubes. This is why it is vital for the cables from the side tubes to exit towards the rear of the vehicle. Simply swapping the front/rear connections would not be a sufficient remedy for improper orientation, as it would also reverse the colours shown for pattern 0.



Correct appearance for Pattern 1

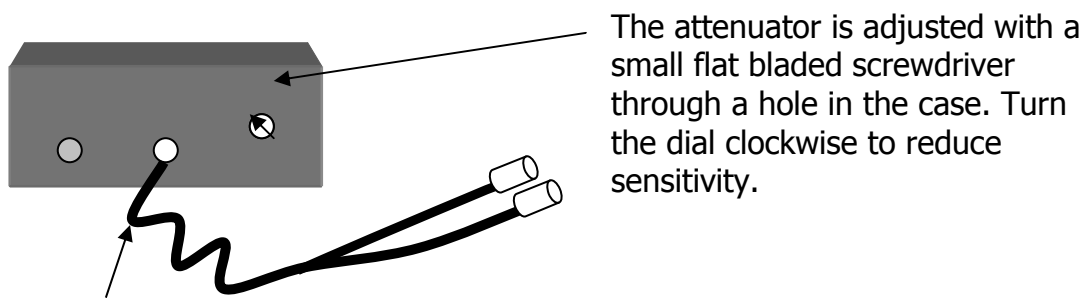
Step 6: Final adjustments

Once all tubes are lit they can be rotated to spread the light as near or far as is required. Once the optimum position is found, the tie-wraps should be pulled tight and the excess cut off.

When adjusting the tubes it should be remembered that the best effect will always be achieved when the source of the light is well hidden. Stand at a distance from the vehicle and check to see if the LED's can be seen directly. If so, try rotating the tubes to a position where they can't be seen. It may be better on some vehicles to rotate the tubes so they face towards the opposite side if they are impossible to hide. This method might also be used to produce more complete illumination of the ground in some installations.

Adjusting the audio level

The ECU will automatically adapt to different sound levels over a wide range so no adjustment should be necessary. However a variable attenuator is provided at the rear of the unit if the sound levels are unusually high. This might be required if the patterns do not respond well to the music.



The attenuator is adjusted with a small flat bladed screwdriver through a hole in the case. Turn the dial clockwise to reduce sensitivity.

A direct line-level connection can be made to In Car Entertainment systems using the optional link cable. This automatically disables the internal microphone so ensuring that music alone activates the light show – to the exclusion of all external sounds. The attenuator is still effective when a direct connection is used.

Specifications

Nominal supply voltage:	12 Volts DC ⁽¹⁾
Standby current drain:	0.02 Amps
Maximum load current:	5 Amps
Audio sensitivity:	54dB to 102dB
Data input:	Any ICELED controller output

⁽¹⁾ Voltage range of between 8 and 18 Volts. Reverse polarity and over-voltage protection are built in.

Resources

To see the full ICELED product range visit <http://www.iceled.co.uk> the official ICELED website.

For more suggestions and advice visit <http://iceled.co.uk/area51/> the official ICELED user forums.

ICELED UFO Conforms to:
EMC Directive (2004/108/EEC)
