ICELED
Electro Styling

UFO
User Guide
Installation Guide

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 Ltd. Will not accept any responsibility for issues arising from any failure to comply with this clear instruction.

ICELED Ltd. 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 organic-looking multicoloured patterns that can be adjusted to look as subtle or as shocking as is required.

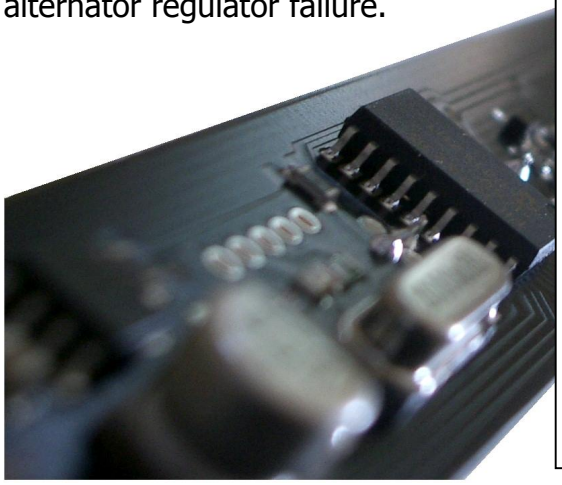
The patterns can be made to react to music via a built-in microphone or line-level input or can be left to run by themselves. The colours used in each pattern may be restricted to those held in user-defined palettes to create specific effects or may be chosen at random for unlimited effects.

The electronic control unit (ECU) that generates the patterns can be hidden away – as all interaction takes place by infrared remote control. This also allows the effects to be controlled and enjoyed from outside the vehicle. A small remote display is supplied to show 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.



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

Basic operation

To switch on press **and hold** the red power button until the tubes light. Another press turns them off. *The last pattern selected will always be recalled at switch-on*.

Remote display

The remote display normally shows the pattern number but will also provide other useful information when appropriate. When the tubes are off the control unit is in standby mode as indicated by a small glowing dot.

Selecting patterns

There are 10 patterns to choose from plus a 'Lightning' strobe effect. Use the + and – buttons 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	(Red at rear, amber at sides, white at front)

The lowest pattern is named 'streetwise' and can also be selected directly by pressing and holding down the – button for a few seconds. Higher patterns can be selected by pressing the + button repeatedly. The + and – buttons must be released between each step. Once the highest or lowest pattern has been reached, the buttons will not step any further in that direction.

Pattern 1 is similar to pattern 0 in that it always produces a static display – but in this case up to six different colours can be chosen to appear around the car. With this pattern the front and rear tubes take on the colours shown at the ends of the side tubes.

'Driving' the patterns

Patterns 2 to 9 will change with time, and the effects can be speeded-up or slowed-down using the ramp buttons. *The tubes will flash when the high and low speed limits are reached*. Individual speed settings are remembered for each pattern.

slower faster

Sound activation

Patterns 2 to 9 can also be sound activated by pressing the speaker button in the middle of the keypad. This toggles sound activation on and off with each alternate press. Sound activation works together with the speed setting to create more interesting effects.

The small dot on the remote display lights brightly when sound activation is enabled and will blink on each detected beat.

Strobing

To activate the 'Lightning' strobe effect, press and hold down the + button for a few seconds until it kicks-in. Use the – button to return to the patterns. The strobe only responds to sound activation so this must be enabled using the speaker button.

P L 'Lightning' strobes

UFO MAGIC

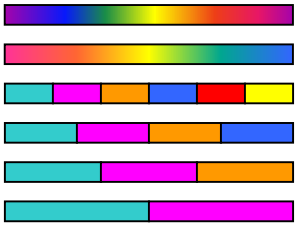
The four main keys can be shifted to perform different functions by pressing the button marked MAGIC. The keys will remain like this for as long as they are used. They will automatically return to their original function after a few seconds of inactivity. For example, while viewing a pattern the range of colours used in the pattern may be changed:

Choosing different colour ranges

Each pattern (and the strobe) can be set to use different ranges of colours. A selection can be made from a restricted range of preferred colours (from a customisable palette of up to six different colours) or from an unlimited range of pure colours sequenced from the rainbow or selected entirely at random.

To select a new colour range for the current pattern, first press the button marked MAGIC, then press the + or – buttons to step through the available ranges:

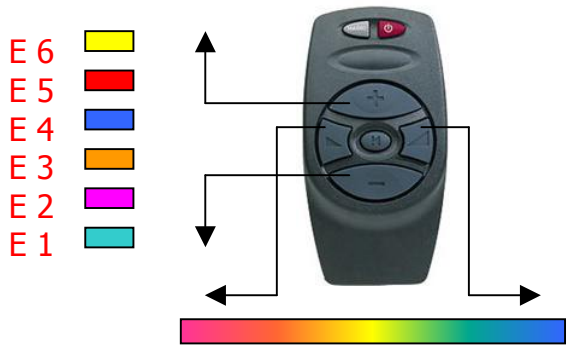
C r Random colours
C u Unlimited colours from the rainbow
C 6 Palette entries 1 to 6
C 4 Palette entries 1 to 4
C 3 Palette entries 1 to 3
C 2 Palette entries 1 & 2



The selected range will be displayed (on the side tubes only) in a similar fashion to the diagram above. After a few seconds without any button presses the pattern will resume using the new range of colours.

Editing the colours in the palette

Every pattern has its own palette as does the strobe. To change the colours in the palette for a particular pattern, first select the pattern, then press and hold down the power button for several seconds. First the tubes will switch off – but keep the button held down until the tubes light up again. This puts the controller into ***Editing mode*** and all four tubes will show the first of the six colours held in the palette belonging to the selected pattern.

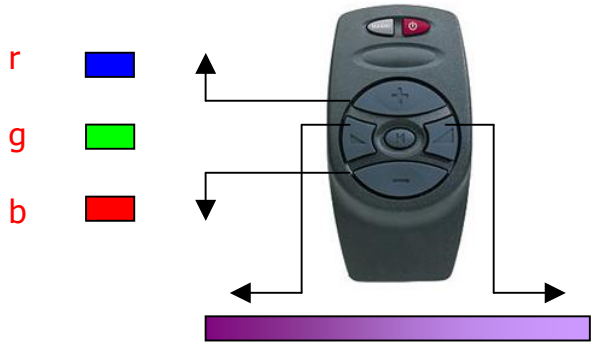


The + and – buttons step up and down through each of the six colours in the palette. The display shows E 1 to E 6.

To change the ***hue*** of the selected colour press either of the ramp buttons. These will slowly shift the hue through all the colours of the rainbow.

Obtaining paler shades

Shifting the hue using the ramp buttons always results in the generation of pure colours by mixing quantities of just one or two components of red, green or blue light. If all three components are present in some ratio, then this will result in paler or whiter shades of any given hue.



To access different ***shades*** of any given colour, press the MAGIC button and then press the + and – buttons to select the individual red, green or blue component of the colour being worked on.

The tubes will briefly light in red, green or blue to indicate the selected component and the display shows r, g or b.

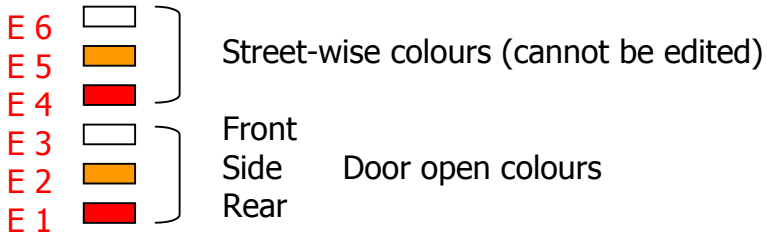
Now the ramp buttons increase or decrease the intensity of the selected component. For example, if the hue started out as magenta (minimum green, maximum red and blue) then by selecting the green component and increasing its intensity, the magenta will slowly become whiter. The tubes flash to warn when the intensity limits have been reached.

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

In order to maintain optimum brightness however, it is important that at least one component be set to its maximum level. This is automatically taken care of when adjusting hue by shifting through the rainbow.

Exiting palette editing mode
After a short pause following button inactivity, the keys will return to their palette-entry selection and hue shift functions. To exit palette editing mode altogether press the power button to switch off then once again to switch back on. The current pattern will be restored and will be ready to make use of its new palette.

'Door open' palette
The palette for pattern 0 is special in that it defines the three different colours that are shown when the door switch circuit is activated. It also contains the three 'streetwise' colours.



The first three entries E1, E2 and E3 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 colours can be edited in the usual way to suit your own requirements. This would allow for example only the side tubes to be lit by setting the front and rear colours to black.

The remaining three entries E4, E5 and E6 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
2 x Short tubes
1 x ECU
1 x Remote display
1 x Remote control handset
1 x Fused supply wire
1 x Chassis return wire

10 x Tie-wrap bases
10 x Large tie-wraps for above
10 x Self-tapping screws for above
20 x Small tie-wraps for securing cables
4 x Grommets for cables
3 x Self-tapping screws for mounting ECU
1 x Self-tapping screw for chassis return wire

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

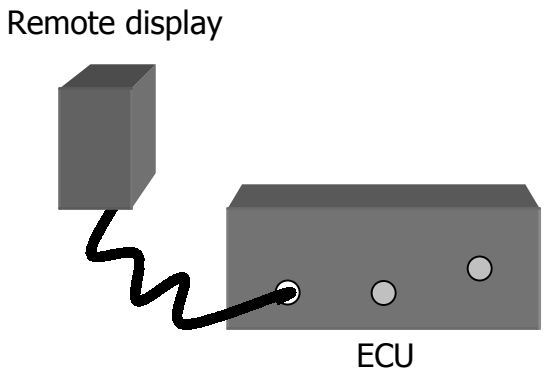
Step 1: Install the ECU

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.



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.

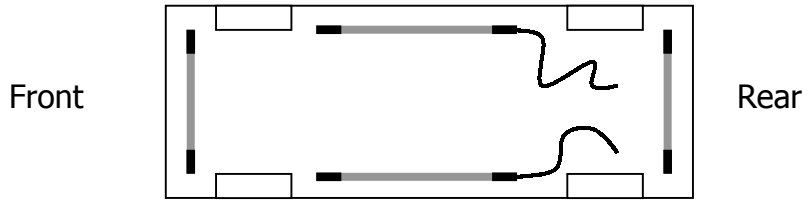
An ideal place for the remote display might be in the corner of the dashboard where it meets the windscreen.

Step 3: Fit the tubes

Please note that 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 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**.

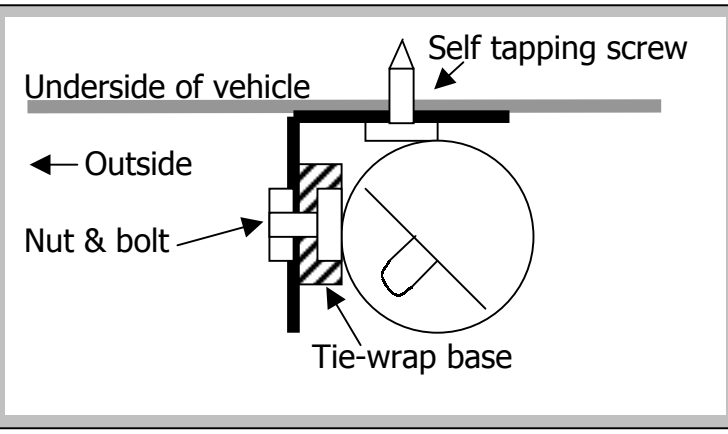
IMPORTANT:
It is absolutely crucial that each of the long side tubes is mounted with its cable exiting towards the rear of the vehicle. This is so that effects can run around in a continuous fashion from end to end.



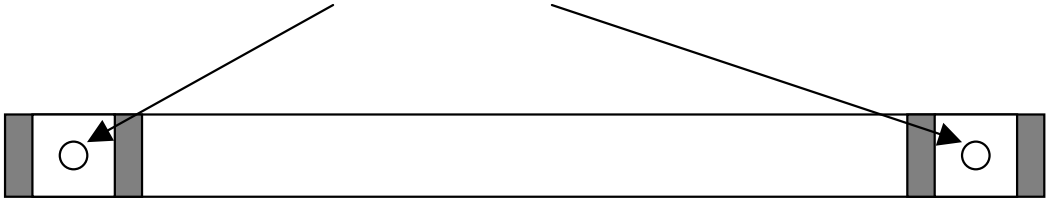
This is not an issue for the shorter front and rear tubes, which may be mounted with their cables exiting at either end. This is because their patterns are always generated symmetrically about their centres. Tubes of the same length are functionally identical so may be used at either side or either end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

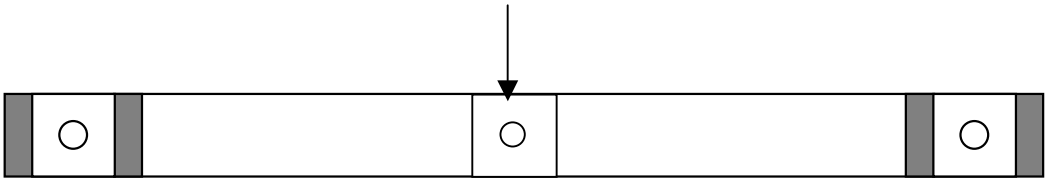


Once suitable locations have been identified for each tube, the tie-wrap bases should be attached to coincide with the middle of the rubber end caps for maximum grip.



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.

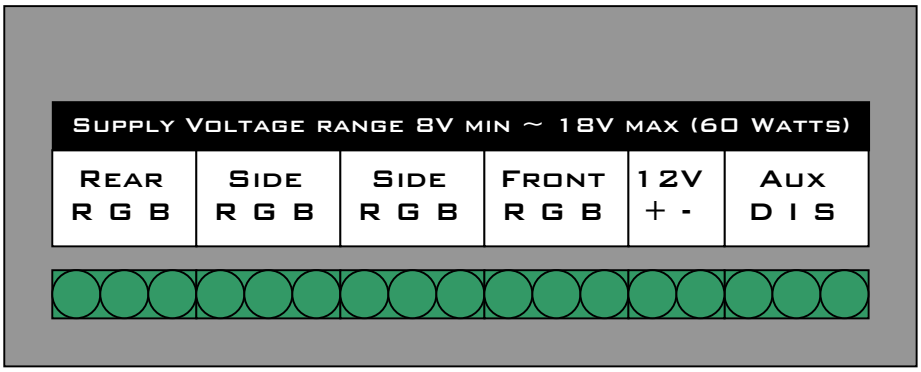
All cabling must be secured with the smaller tie-wraps supplied to prevent snagging with any objects on the ground. For this reason, it is particularly important that no cable loops should hang down.

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 connectors can be removed to assist with threading the wiring towards the ECU.

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 that terminate 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.

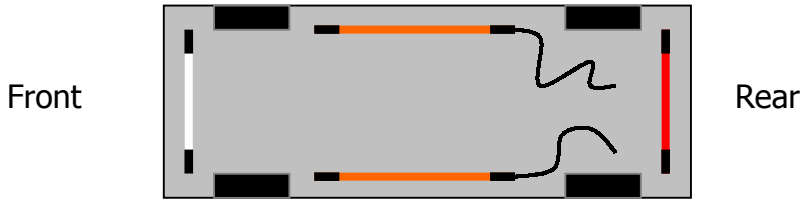
The ring terminal on the end of the short black wire needs to be firmly attached to the vehicles metalwork using the self-tapping screw and serrated washer supplied. **A good contact is essential here**.

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

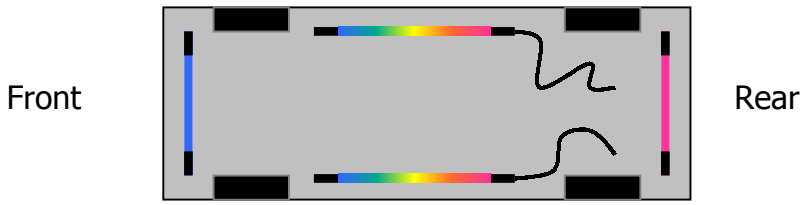
Once the fuse and 12V plug are inserted the standby dot should light on the remote display showing that the controller is ready. Press and briefly hold the power button on the remote handset to switch on the tubes.

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.

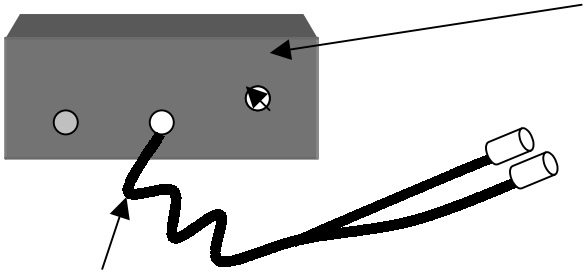


Correct appearance for Pattern 1

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.