

LUPINE[®]

LIGHTING SYSTEMS



PCS v4.1

Technical Information
(Read before use!)



PCS V4.1

(Suitable for Lupine Edison 5/10)

General:

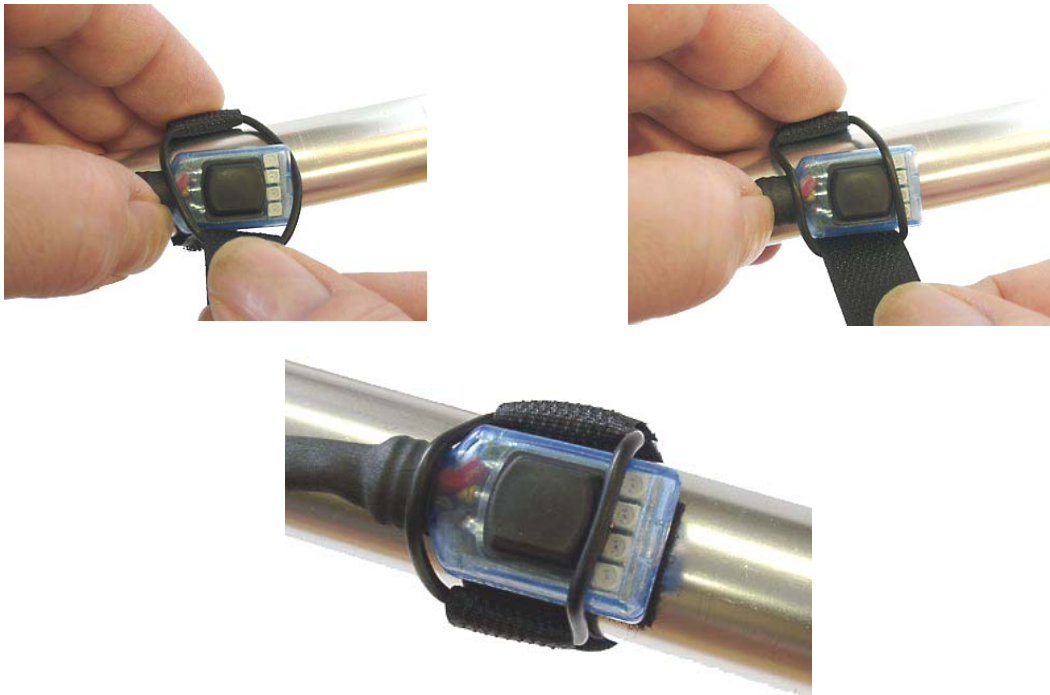
The PCS v4.1 is only compatible with Lupine HID lighting systems. It is fitted as standard to the following Lupine lighting systems:

Edison 5
Edison 10

Out of the box the PCS v4.1 is set to the standard factory settings. **There is no need to program the switch as the factory settings allow full use of the lighting system;** however some individuals have their own requirements which can easily be programmed by reading this manual. Please do not attempt to program the PCS until you are used to operating the lighting system and you have read and understood this Technical Information.

Mounting:

The PCS v4.1 is designed to be mounted directly next to the lamp on the handlebars. Before attaching the velcro strip to the handlebar, ensure that the surface is free of dirt and oil. The velcro strip should be applied at room temperature, colder temperatures will cause the adhesive not to work. Attach the counterpart velcro to the bottom of the PCS housing. Attach the PCS to the velcro strip on the handlebar and secure it in place with the supplied velcro-strap with rubber ring as shown below:



Using the PCS v4.1:

After connecting the rechargeable battery to the lamp, three LEDs will flash once and the PCS V4.1 will start initialisation of its built-in software.

After connecting the beam to the rechargeable battery, all LEDs will blink once or twice. The additional backlight turns on. The PCS V4.1 then starts initialising its software and the voltage of the rechargeable battery will be indicated.

Voltage:

After initialising the software, the voltage will be indicated as follows:

First, the blue LED will blink 1 time per volt, then the green LED will blink 1 time per 1/10 volt. Example: The blue LED blinks 7 times and the green LED 5 times = the voltage measured is 7.5 V. This information will help you to judge the actual condition of your rechargeable battery before use:

Between 7.5 and 8 V : fully charged. Between 7 and 7.5 V : Re-charge battery if it is not an older battery. Between 6.5 und 7 V : Not ready for use.

Hint: You don't have to wait for the whole voltage information to be shown in order to use your lamp. You can stop the voltage information at any time by switching on the beam.

Note: Even if the bulb has blown, the LEDs will flash as above. If the light does not illuminate despite a successful initialisation, the failure is not caused by the PCS but from a blown bulb.

Switching on: Pressing the button on the switch unit turns the lamp on. It will operate on high beam. (signalled by the blue LED on the switch).The backlight will turn off after some seconds.

Dimming:

Pressing the button once, after the light has stabilised, will switch the light to econo mode (the blue LED is off). By pressing the button again the light will return to high beam mode. After switching between beam settings and in econo mode itself, some flickering of the light might occur if lamp is used without airflow. This is normal and barely visible.

Caution ! If used without airflow temperature control will reduce light power as much as necessar to prevent serious damages. The light may become unstable and can turn off without any warning !

Switching off:

Press and hold the button for 2 seconds until the light switches off. The green LED on the switch unit will fade until it is almost invisible.

The light cannot be switched on while the green LED still fading and the blue backlight LED lit on!

Switching on again:

Metal Halide lighting systems need some time to reach suitable conditions before restarting. This takes approximately 8 seconds for the Edison 5. This is signalled by the fading green LED and the blue backlight . **It is absolutely necessary to wait until the green LED is almost invisible and the blue backlight LED turned off before switching the light on.** If this is not done, and the button is pressed too quickly, the lamp will try to start again and might cause an break up start. A new start will be necessary.

Controlling the remaining light time:

The electronics of the PCS v4.1 not only control the high and low beam but also protect the rechargeable battery against over discharge and includes a low battery indicator.

Low battery is signalled by the yellow and the red LED.

| | |
|---|---|
| When the yellow LED lights: | Significant amount of capacity is gone! |
| Red and yellow LEDs light: minutes! | Light will automatically switch off in a few minutes! |

It is a matter of experience to interpret exactly how much time is left after the LEDs light up. Remaining burn time depends on the battery's age and capacity, the operating temperature and the capacity gauge program (Low, Middle, High; see "*Technical Information PCS v4*").

When the yellow **and** red LEDs light up, the light automatically switches to low beam (10W). There is only a few minutes burn time left.

Reserve tank:

When the battery is almost empty (yellow **and** red LEDs have been lit for several minutes already) the lamp switches off automatically. By "double clicking" the switch it activates the reserve tank which provides some additional minutes of emergency light on low beam (10 Watts). A flashing red LED signals the reserve tank has been activated. Its duration also depends on the battery condition.

When the reserve tank is empty the light will switch off and should not be restarted.

Caution! Switching on is not possible at this point. If you unplug the battery and then re-attach it, you will damage the battery by over discharging it! Also, storing a discharged battery will cause over discharging. **Recharge the battery as soon as possible!**

Explanation of the LEDs:

| | |
|-------------------------------|---|
| Blue LED lights: | High beam (Maximum Power) |
| Green LED lights: | Low beam (Econo mode) |
| Green LED glows weakly: | Ready to switch on again |
| Yellow LED lights: | Significant amount of burn time consumed |
| Yellow + Red LED light flash: | Rechargeable battery almost empty – Attention ! |
| Red LED flashes: | Reserve tank activated |
| Blue backlight LED : | Time reminder for restart |

PROGRAMMING THE PCS V4.1

The Power Control System v4.1 offers several settings to fine tune the lighting system to individual needs. Out of the box, the factory settings are based on Lupine's years of experience in producing lighting systems and are designed to provide optimum performance. These factory default settings are marked with a grey background in the "Programming chart". It is possible to set the following features and functions:

- setting the low beam
- setting the capacity control (remaining burn time)
- reset to factory defaults

1.) Low Beam

Factory default is two step dimming (high and low beam).

On/Off:

It might be useful in some circumstances to fore go the low beam mode. In the on/off mode you can only switch between high beam and switched off.

2.) Capacity control

The PCS v4.1 monitors the capacity of the rechargeable battery by measuring the voltage. Unfortunately voltage and capacity are not exactly proportional which is why Lupine does not quote an exact remaining capacity when the yellow and red LEDs light up. It takes some experience of using the lighting system to tell exactly how much burn time is left when the yellow LED lights up. Accordingly, it also varies how much burn time is left when the red LED lights up. The factory default capacity control will be suitable for a long time. It is not recommended to change the capacity control until you have experienced a remarkable loss of burn time.

"High"

This is the default for Li-Ion rechargeable batteries. The yellow and red LEDs will light up with a large amount of burn time remaining due to the behaviour of this battery type. If used with an extension cord or used in very cold temperatures, it should be more accurate to set the capacity control to "middle".

"Middle"

This is the default for Ni-MH rechargeable batteries. It is also suitable for Li-Ion batteries. The yellow and red LEDs light up with less capacity left compared to "high". The reserve tank is also activated later than "high".

"Low"

This capacity control should be used for older Ni-MH rechargeable batteries. The yellow and red LEDs and the reserve tank are activated with very little capacity left. This benefits old batteries with sufficient capacity but with weaker voltage.

Threshold voltage:

| LED | Low | Middle | High |
|------------|------------|---------------|-------------|
| Yellow | 6.3V | 6.7V | 7.2V |
| Red | 5.8V | 6.1V | 6.5V |
| Reserve | 5.5V | 5.7V | 6.0V |
| Off | 5.4V | 5.4V | 5.4V |

3.) Standard setting

Keep the button pressed for 25 seconds until the red, yellow and blue LEDs light up simultaneously. Release the button. No changes are done to the PCS settings.

4.) The Programming Chart:

Programming the PCS v4.1 is easy and is performed with the battery connected to the lamp. Please read the chart fully before programming as it may take a few attempts to fully understand the chart.

The programming is performed on 2 levels, each requiring a press of the button to activate.

The **first level** is highlighted in the left column. By pressing and holding down the button you can set:

Dimming
Capacity control
Factory default
(shown in the second column)

This first level is passed through by **keeping the button pressed**. Every 5 seconds a different LED (or combination of LEDs) lights up to signal which setting has been selected.

When the LED signals that you have reached the desired setting (dimming, capacity control or factory default), release the button and this will activate the **second level** of the programming. From this point it is possible to choose **how** the desired setting will function (selected mode):

Dimming:
On/Off or
2-step

Capacity control:
High
Middle or
Low

The PCS v4.1 passes through the options of the second level **automatically**, signalling each option with a different LED (or combination of LEDs). Do not press the button until the PCS has reached the exact setting you desire. When the LEDs signal the desired mode, press the button and the set up is complete.

Note for beginners:

- 1) Be cool! Take your time to fully understand each mode and how the programming chart works.
- 2) Carefully read this manual and the programming chart.
- 3) Make up your mind about **what** you want to set, **how** to get there, **which** LEDs signal the desired mode, **when to press** the button and **when to release** it.
- 4) If you make an error and select the incorrect mode, try again until you have correctly set up the desired mode. Practice makes perfect.

IMPORTANT NOTES:

Use of this lighting system might be limited differently from country to country depending on the purpose you use it for. Please do inform yourself about possible restrictions in your country.

The mounting device and the design of all Edison versions as well as of the PCS are protected by worldwide patents.

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