

# LUPINE®

LIGHTING SYSTEMS



## PCS V 7.1

**Technical Information**  
(Read before use!)



# PCS V 7.1

## General:

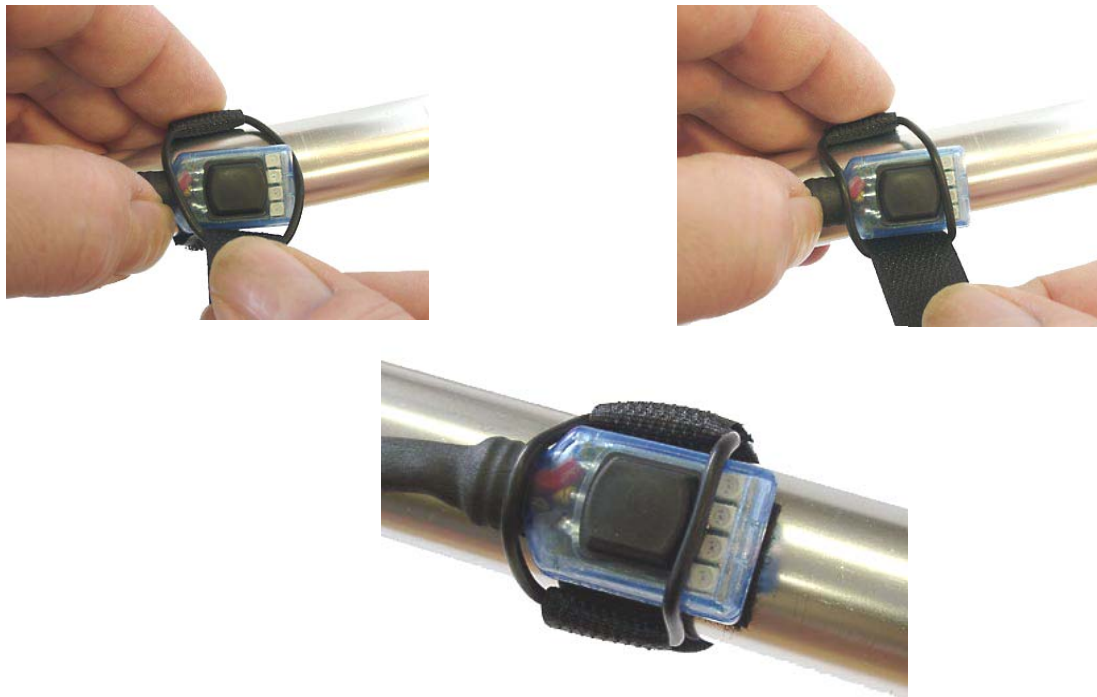
The PCS V7.1 is only compatible with Lupine Power-LED lighting systems. It is fitted as standard to the following Lupine lighting systems:

Betty 14                      Wilma CL  
Betty 7  
Betty X Pro

Out of the box the PCS V7.1 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 V7.1 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 handle bar and secure it in place with the supplied velcro-strap with rubber ring as shown below:



## Using the PCS V7.1:

After connecting the beam to the rechargeable battery, all LEDs will blink once or twice. The PCS V7.1 then starts initialising its software and the voltage of the rechargeable battery will be indicated. The backlight LED then starts to light.  
The four LEDs and the Power-LED's will blink 1 x  
Afterwards the voltage 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 Power-LED's are faulty, 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 serious damage.

**Switching on:** Pressing the button on the switch unit turns the lamp on. It will operate on high beam. (signaled by the blue LED on the switch).

**Dimming:** Pressing the button once, after the light has stabilised, will switch to low beam mode (the blue LED is off). By pressing the button again the the light will return to high beam mode.

**Switching off:** Press and hold the button for 2 seconds until the light switches off. Backlight LED will turn off after some seconds.

### **Controlling the remaining burn time:**

The electronics of the PCS V7.1 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 shown by the yellow and the red LED.

When the yellow LED lights:	Significant amount of capacity is gone!
Red <b>and</b> yellow LEDs blinks:	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.

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

**When the yellow LED lights up the light itselfs will flash up once, same procedure when the red LED lights up.**

**Note:** As soon as both the red and yellow LEDs light up, the light will automatically dimmed to 7 Watts or less

### 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 time of emergency light on low beam. 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!

**Attention ! Reserve tank is not available if 0.25 W level is used for a longer time.**

### Explanation of the LEDs:

Blue LED lights:	High beam (Maximum Power)
Green LED lights:	Low beam (Econo mode)
Yellow LED lights:	Significant amount of burn time consumed
Yellow + Red LED blinks:	Rechargeable battery almost empty <b>Caution!</b> Light will switch off very soon without further notice – Stop!
Red LED flashes:	Reserve tank activated

## PROGRAMMING THE PCS V7.1

The Power Control System V7.1 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:

- Flashing SOS, Alpin emergency signal or Superflash( RVLR )
- Setting the low beam or other step programm
- Setting the capacity control (remaining burn time)
- Setting the max. Power
- Setting the Flash , SOS, Alpin or Superflash

### 1.) SOS Function

Press and hold the button on the PCS V7.1 for 5 seconds until the green LED starts flashing. Release the button and the lamp will flash continuously the SOS signal ( "...---..." ) until the button is pressed again. You also could use Alpin emergency signal or Superflash, this settings are programmable.

**Warning!!:** The SOS signal is an international emergency signal! It should only be used in case of real emergency! Due to the high power of the lighting system the signal can be seen from a considerable distance. It will flash continuously until the capacity of the battery runs out!

**Only use this signal if emergency help is required. Misuse could result in a fine or prosecution.**

## 2.) Low Beam

Factory default is two step dimming: maximum power (blue LED lit) and 5%( 1 W ) of maximum power (low beam). However it is possible to change these defaults to your individual needs. **Attention! The very low 1%( Betty ) and 2% ( Wilma ) level will cause flickering in some variations, this is normal. Please be aware that this level will produce very less light and should be not bright enough for faster activities, please clear up before a dangerous situation will be caused from using this level !**

### Three step with RVLR Superflash :

It might be useful in some circumstances to use 2 dim levels with RVLR Superflash. In this mode you can choose between 40 % dim level, high beam and RVLR.

### Two step dimming:

The standard high/ low beam mode.

High beam is always 100 % power. However it is possible to choose between 1%, 5%, 40% or 60% of the maximum brightness for the low beam.

The equivalent wattage of the dimmed beams is shown below:

<u>Betty</u>		<u>Wilma</u>	
1% dim level	0.25 W	2% dim level	0.5 W
5% dim level	1 W	5% dim level	1 W
40% dim level	9 W	40% dim level	6 W
60% dim level	13 W	60% dim level	9 W

### Three step dimming:

If one low beam is not sufficient, it is possible to program a third beam between the high and low setting. In this mode the power of the beams is also programmable:

In mid dim level and in low dim level are the following steps:

1% Betty / 2% Wilma, 5 %, 40% or 60%

### Continuous Dimming:

This mode makes it possible to set the light's power to any value between 100% and 1%.

Starting with maximum power, each press of the button reduces the brightness until it reaches 1%. After the 1% setting, the brightness increases to 100% again.

**Note!** You can also dim the light by pressing and holding down the button until the brightness reaches the desired level. However, pressing the button for too long **will switch the light off!**

## 3.) Capacity control

The PCS V7.1 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"

The yellow and red LEDs will light up with a large amount of burn time remaining due to the behaviour of the 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 Li-Ion rechargeable batteries. It is also suitable for Ni-MH 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 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

## 4.) Max. Power

**Power mode**                      **Betty 23 W**                      **Wilma 15 W**

Factory default setting is Power mode. This setting maximises the performance.

**Normal mode**                      **Betty 17 W**                      **Wilma 12 W**

This setting saves energy and the light output is unnoticeable lower. Burntimes will be increased.

**Econo Mode**                      **Betty 13 W**                      **Wilma 10 W**

If you prefer to reduce the maximum power to 13 or 10 W. This will increase run time , but will reduce the brightness of the beam.

## 5.) SOS, Alpine emergency signal or Superflash

SOS Signal is factory default setting. If preferred, this setting is permanent programmable. Be aware that Superflash Mode is extremely dangerous to other persons, use it with care !

## 6.) The Programming Chart:

Programming the PCS V7.1 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** in highlighted in left column. By pressing and holding down the button you can set:

- SOS-Function
- Dimming
- Capacity control
- Max power
- SOS,Alpin or Flash

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

When the LED signals that you reached the desired setting (SOS, dimming, capacity control etc.), 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:

- 3-step with RVLR Superflash
- 2-step
- 3-step
- Continuous

Capacity control:

- High
- Middle
- Low

Max Power:

- Power mode
- Normal mode
- Econo mode

Signal Setting:

- SOS
- Alpin emergency signal
- Superflash ( RVLR )

The PCS V7.1 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...

Unless you have chosen 2-step or 3-step dimming and wish to set the brightness level of the low or mid beam. This is controlled by a **third level!** This level can only be reached if 2-step or 3-step dimming has been selected at level 2. From here you can choose the brightness level of the low beam:

The PCS V7.1 will pass through the dimming level options (1% -- 5% -- 40% -- 60%). When the LEDs signal the desired setting, press and release the button to set the brightness level.

The third level is highlighted on the programming chart by a vertical arrow pointing down. This level is **only** activated when the 2-step and 3-step dimming has been chosen at level 2.

**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!

**Note s:**

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