

# Spartanian II



**User's Manual**  
v0.9

# 1 Introduction

Thank you for buying Spartanian II - the revolutionary EDC ("Every Day Carry") light. We are confident it will serve you faithfully for years and years to come, regardless of the particular use you've planned for it. Here's some of its specs at a glance:

- powered by **one (1) RCR123A** cell
- uses a 3W **CREE 7090XR-E Q5** LED emitter
- made from **Type III Hard Anodized ALCOA 6061-T6**
- highly efficient, **ruler-flat regulation**
- fully **current-regulated output** at all levels, lowest 3 levels regulated via PWM
- LED current can be varied through 13 levels, **from 0.4 mA to 700 mA**
- full **reverse-polarity protection** without current drain
- **MCU** (Micro-Controller Unit) **controlled**
- two **programmable modes**
- **momentary / constant** on function
- unique control **ring-based UI**

# 2 Manual conventions

Spartanian II recognizes four different control ring actions - left twist, right twist, twisting it left and holding and twisting it right and holding. Unless otherwise noted, these actions will be abbreviated in the following way:

- ▶ **TL** - twist the ring left and release immediately
- ▶ **TR** - twist the ring right and release immediately
- ▶ **TL+H** - twist the ring left and hold for 1.5 seconds (or as noted in the text)
- ▶ **TR+H** - twist the ring right and hold for 1.5 seconds (or as noted in the text)

The term **mode** will be used throughout this manual to designate a predefined, easily accessible brightness setting.

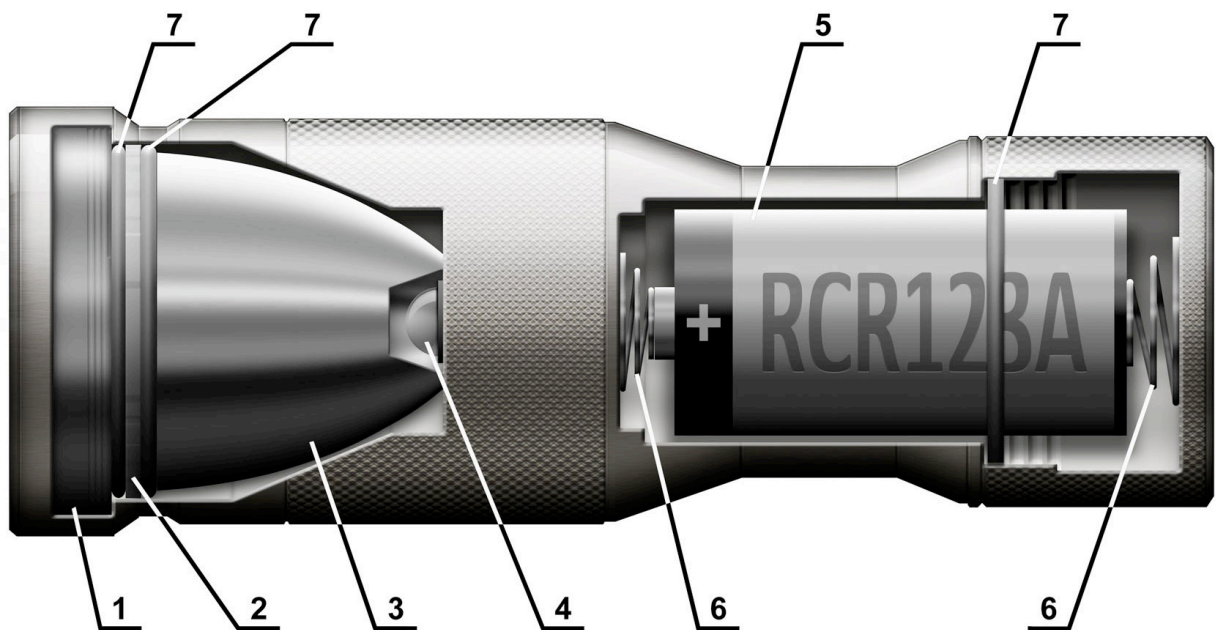
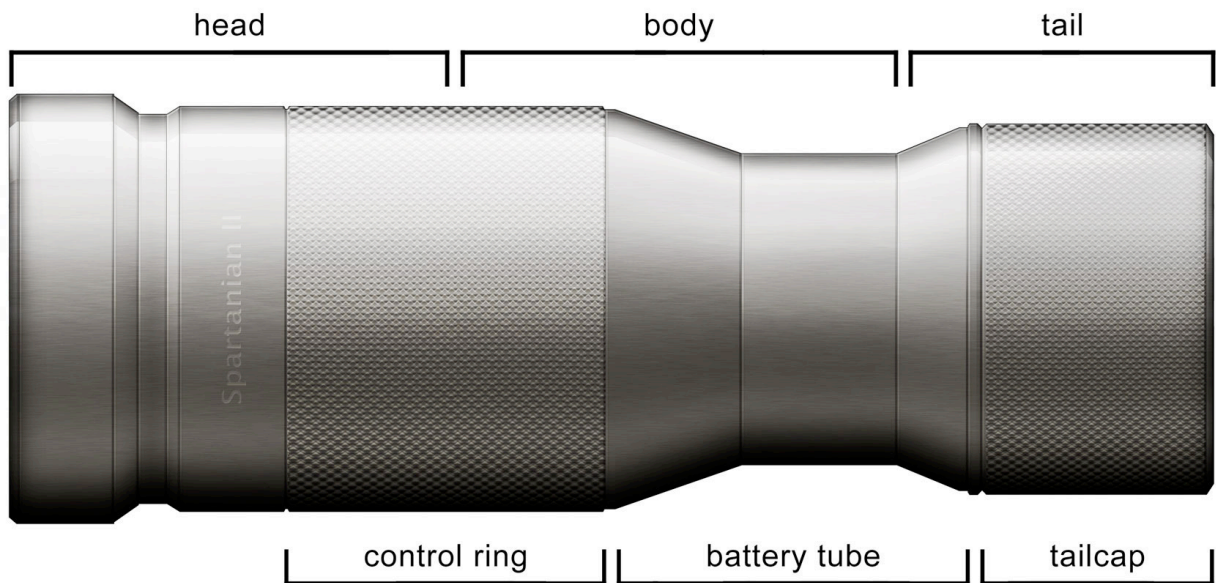
## Note!

Blue paragraphs marked with Note! contain non-obligatory, additional information and summaries that can help you get the most out of your flashlight.

## Warning!

Red paragraphs marked with Warning! contain obligatory information that should be heeded in the interest of personal safety and correct operation of the flashlight.

### 3 Basic parts



1. **Retention ring** - keeps the lens and reflector secure
2. **Lens** - protects the reflector and emitter
3. **Reflector** - focuses the light from the emitter
4. **Emitter** - the LED light source
5. **Battery** - positive pole oriented toward the head
6. **Battery springs** - conduct current and protect the battery
7. **O-rings** - maintain water-tight seal and provide shock protection

## 4 Operation

To get started with using your Spartanian II, un-screw the tailcap and insert a fully charged RCR123A lithium-ion cell in the battery compartment with the positive ("plus") pole facing toward the head, then re-screw the cap all the way. Your flashlight should now be ready for use.

### Warning! - Battery type

Use RCR123A (16340) Lithium-Ion batteries only! Unlike Lithium CR123 batteries, whose nominal voltage is 3.0V, rechargeable RCR123A batteries have a higher typical (3.6V) and maximum (up to 4.2V) voltage. Spartanian's circuitry has been designed with such voltages in mind and won't run correctly on non-rechargeables (primaries). Note, however, you *can* run your flashlight on a CR123 battery in an emergency, but only lower output levels will function properly.

### Warning! - Battery polarity

Take care to insert the battery in correct orientation - plus pole toward the head, minus pole toward the tailcap (see Chapter 3). Although this flashlight is equipped with a polarity protection circuit and will not be harmed by an incorrectly oriented battery, it will not operate until you re-insert it properly.

Except for programming (see **Chapter 5**), all of the Spartanian's functions are accessed by means of the control ring located at the bottom of the light's head. It can be twisted counter-clockwise (left in further text) or clockwise (right) and will spring back to center once released. The ring is knurled, to provide better traction, and its spring is finely tuned to make one-handed, one-fingered operation as easy and ergonomic as possible.

**To switch your Spartanian II on**, twist the ring left or right and hold it there for 6 seconds. Don't worry, the light will go on the moment you twist the ring - you just have to hold on a bit longer for it to "latch" and stay on.

**To switch the light off**, twist the ring to the right and hold it there for a few seconds or until the light turns off.

**To switch the light on momentarily**, twist the ring to the left and let go in under 6 seconds, or twist it right and let go in under 1.5 seconds. The light will switch off as soon as you let go of the ring. This mode of use can prove to be convenient for signalling (i.e. morse code, locating and orientation in the woods) or whenever you need a short burst of light (to find a keyhole in a door at night, for example).

By now, you might have noticed the light level varies when you switch Spartanian II on, depending on which side you've twisted the ring. This is because twisting the ring left from

off switches the light in Spartanian's mode 1 (**left mode**), while twisting the ring right switches it on in mode 2 (**right mode**). Unlike most multi-mode flashlights, Spartanian II can be switched on directly to the mode you want - no "mode cycling" required.

**To change the brightness level** when the light is on (in any mode), twist the ring left or right and release. The brightness will step one level down or up. The change in brightness made in this way is temporary - switching the light off will discard it and the light will switch on again at a preset level for the selected mode. To make the change permanent, refer to **Chapter 5**.

### Note! - Output levels

Spartanian II offers a total of 13 output levels to choose from, varying from barely noticeable, night-vision preserving glow to an eye-scorchingly bright maximum. Not all of them are made the same - while the higher ten levels are regulated via output current, the lowest three levels are achieved by pulsing (PWM). Don't worry, however, as there is absolutely no flicker visible, thanks to an extremely high frequency used.

**To check the battery level**, while the light is on, twist the ring left and hold. Light will flash a certain number of times, indicating the battery level - 2 for low, 3 for fair, 4 for good, 5 for high and 6 for full. The flashlight will return to previous operation immediately after.

### Note! - Battery level

Spartanian's microprocessor determines the battery level based on its voltage and a known discharge curve (stored in its memory) but takes the current output level (power consumption) into account as well. This arrangement makes it possible for the flashlight to always reliably indicate the battery level, regardless of your usage pattern.

### Note! - Cheat sheet

#### While the light is OFF:

- ▶ **TL** - momentary left mode
- ▶ **TR** - momentary right mode
- ▶ **TL+H** - turn on in left mode (hold for 6s)
- ▶ **TR+H** - turn on in right mode (hold for 1.5s)

#### While the light is ON:

- ▶ **TL** - decrease brightness
- ▶ **TR** - increase brightness
- ▶ **TL+H** - battery check
- ▶ **TR+H** - switch off

## 5 Programming

Both the left and the right mode can be programmed to a brightness of your choosing, providing an easy access to commonly used output levels. Unlike all the other functions, programming cannot be done using the ring only - you will have to twist the tailcap at one point, which requires the use of two hands or flipping the light while holding it single-handedly.

To program your Spartanian II, refer to the following steps:

- ▶ **switch on** in mode you wish to program (**left mode** or **right mode**)
- ▶ dial the output by **TL** and **TR** to desired level
- ▶ **un-screw** then **re-screw** the tailcap
- ▶ resume normal operation

### Note! - Latch delay

Although their output level can be reprogrammed, there's one aspect of Spartanian's modes that always remains the same - you have to hold the ring for 6 seconds to get the **left mode** to "latch" on and only 1.5 seconds to get the **right mode** to "latch" on. This distinction is purposeful and exists to make one mode better suited for momentary action and the other more practical for constant-on applications.



## 6 Care & Maintenance

**To clean the flashlight**, use a soft cloth and a mild soapy solution. Do not use abrasives, acids or any other aggressive cleaning method or you might damage the finish or even scrape off the protective anodization layer. Take special care when cleaning the lens.

**Regular cleaning and lubrication** of the battery compartment threads and o-ring is a normal part of flashlight maintenance that helps prolong its lifetime and correct operation. Cleaning and lubrication serves two purposes - it prevents damage to the threads (caused by foreign particles and dirt during unscrewing and screwing) and helps maintain the water-tightness of the battery compartment. Use synthetic lubricants only, that are known to be non-aggressive towards silicone. Remember - where lubrication is concerned, less is always more.

**Take care not to submerge the flashlight in water.** An occasional splash or getting caught outside in the rain with your Spartanian II is OK, but dunking the light completely in water or (accidentally) washing it in a washing machine isn't recommended. Although the electronics in the head and the battery compartment are well water-proofed, the control ring, by its very design, isn't and *could* get damaged if completely submersed in water.



Your flashlight might have come with a spare reflector of the same or different type than the one already installed (depending on order). There are two different Spartanian II reflectors: one designed for maximum throw (brightest hotspot and maximum range at the expense of spill light brightness) and another for maximum flood (bright spill, optimized for close-range use).

**To replace the reflector** you will need to use a convenient tool, such as a pin or a very thin screwdriver. Use it on one of the notches to unscrew the metal retaining ring holding the lens inside the bezel (you could also use small scissors to "grip" both notches at the same time, but being extra careful not to damage the bezel, ring or lens). Gently tip the flashlight to pop the lens and the reflector out of the head (onto a non abrasive surface, such as a soft cloth). Replace the reflector and reverse the procedure to reassemble the flashlight.

## 7 Tips & Tricks

### **Tip!** - Lock-out

To lock the flashlight completely out, i.e. to prevent accidental activation in luggage or long-term storage, twist the tailcap counter-clockwise about 1/8 of a turn.

### **Tip!** - Stand-by current drain

The microprocessor in this flashlight never completely shuts down, which causes a slight current drain (typically under 30  $\mu\text{A}$ ). While this *will* drain the battery eventually, even when the light is switched off, under normal conditions it will last for hundreds of days - long enough for it not to be an issue in normal use. If, however, you plan on storing the flashlight for a prolonged period of time, we recommend you either take the battery out or lock the flashlight out (see previous tip).

### **Tip!** - One-handed programming

You don't have to use two hands to program the light. You can also set the desired brightness level, then flip the flashlight around holding it with two fingers midbody (by its waist) and then use your thumb and index finger to un-screw and re-screw the tailcap.

### **Tip!** - Handling

Unlike most flashlights, which are meant to be gripped one-handedly in either the "overhand" position (i.e. "clickies") or the "underhand" position ("twisties", side-button lights), Spartanian II can be comfortably used in nearly any position, thanks to its unique control ring. In the "overhand" grip, you can use your pinky or ring finger to twist the ring, while in the "underhand" it's the thumb or thumb and index finger.



## 8 Notes

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