

# *Scurion*<sup>®</sup>





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# Scurion® Manual

Scurion®, intended to be used as a caving lamp, has three modes:

- 1) "Working mode"
- 2) "Program mode"
- 3) "Configuration mode"

Operation of the lamp is done using the knob at the left side of the lamp head. In working mode, the green small Led's indicate the charging state of the battery, in the other modes they work as display to show the settings.

Scurion® remembers its settings even when the battery is disconnected.

## Basic Function

A Scurion® lamp has two light sources:

- A **Wide Angle LED (WA-LED)** that provides ambient light covering all the perception range of the human eye and
- the **Spot LED (S-LED)**, the light is focused for illuminating distant objects.

Each LED can be run on four brightness stages subsequently referred to as

1 = low, 2 = semi strong, 3 = strong and 4 = maximal.

The WA-LED and the S-LED can be combined arbitrarily to any "light combination" - and with this your Scurion® is always adaptable to your individual needs!



## Working mode

When an battery is attached, the lamp enters the working mode directly on one of the max. 10 light combinations.

By turning the operating knob (to the right = forward and to the left = backwards) a desired light combination can be selected.

In the pre-setting the Scurion® has four typical light combinations programmed a) to d):

- a) WA-LED strong + low S-LED → suitable for „walking“ in galleries
- b) Maximal S-LED → good to look on „distance“
- c) WA-LED semi strong → for „camp“-life
- d) Both LED maximal → good to illuminate a chimney/shaft or big room
- e) Optional: UV-LED on
- f) All LED off


In the intermediate position between f) the lamp is switched off, the green led's will display the charging state of the battery for a few seconds.

### ***Protection from unintended switching***

When you hit the wall with the knob, a short "press" of the knob occurs. The microcontroller eliminates such glitches by filtering out very short knob presses.

### ***Transport lock (TL)***

In order to prevent the lamp being switched on accidently during transport (e.g. in your backpack), a transport lock can be activated.

The TL is activated in the intermediate position f) (lamp switched off, but still in the work mode), when the knob is held for 5 seconds to the left or right. To confirm the TL the green LED line flashes briefly showing pattern 

If the knob is operated while TL is active, the green charge indicator led's will flash briefly to confirm the TL.

To release the TL just tip the operating knob **back and forth** rapidly a couple of times.

## Program mode

Of course the light combinations can be modified and adapted to the individual needs. If one would like to adapt e.g. the light combination b) "bivouac", then do the following steps: Go to this setting and keep the knob for 5 seconds turned either to the left or right until the lamp flashes up briefly to confirm that program mode has been activated.


Now tip the knob to the left (counter-clockwise) to switch the WA-Led and to the right for the S-Led. Once the desired combination has been found simply let the lamp burn for some seconds - the lamp changes automatically back into the work mode (indicated by flashing once) and remembers the new light combination.

☞ Because of the high intensity of the light we recommend you to make these modifications while covering the lamp with a piece of paper.




A blinking light on the first two green LED's indicates that the lamp is in program mode.

## Configuration mode

In the factory setting 4 light combinations are programmed. Again depending upon need this can be modified from 3 to 10 light combinations. This can be done in the configuration mode.



In order to enter the configuration mode, tip the knob clockwise and hold it when connecting the battery to the lamp. The lamp flashes briefly with the pattern  , in order to confirm the configuration mode.


Then by tipping the knob again clockwise three functions can be selected. Each function is indicated in the LED line:

- function 1) Modify the number of light combinations 
- function 2) Blocking the programming mode 
- function 3) Voltage monitor for the battery 









Choose your desired function to modify and wait then 8 seconds before the lamp goes automatically to the next step.

## ***Function 1, Modify the number of light combinations***

If you would like to have - as an example - instead of four now six light combinations, you go to the configuration mode as described above. You choose the combination  and wait for eight seconds, until the lamp flashes once and indicates then the present setting: 



By tipping the knob counter-clockwise you can find now the pattern , which corresponds to six light combinations. If you wait some additional eight seconds without doing anything Scurion® stores the new setting and changes back in the work mode.

Light combinations in binary code:



 = 3	 = 7
 = 4	 = 8
 = 5	 = 9
 = 6	 = 10

## ***Function 2, Blocking the programming mode***

To protect your settings from being changed inadvertently or intentionally (e.g. when you borrow your Scurion® to somebody else); the programming mode can be deactivated.

 = off
 = on

## ***Function 3, Voltage monitor for the battery***

 = off
 = on

⚠ **Attention:** when the voltage monitor is switched off, the lamp does not dim automatically when the battery charge falls below a certain level. You will be able to work slightly longer with maximal light power but you will find yourself in the dark without caution later when the battery is completely down!

## Safety advices

Even if your Scurion® may be assumed as extremely reliable – this was tested extensively on longer caving trips! - it is and remains an electronic equipment. The **principle that a second, and independent source of light must always be taken along in caves applies still absolutely!**

### ***Caution light!***



Scurion® corresponds to laser class 2: Do not look directly in the light for too long!

Keep the lamp or the batteries away from children.

⚠ **Warning if you use a UV-Scurion® : Ultra-violet radiation can damage the eyes - therefore never look directly into a source of UV-light.**

### ***No impacts on batteries!***



Lithium-ion batteries may not be exposed to any strong impacts or being hurt - otherwise they can explode!

### ***No humidity on batteries!***



Our Lithium –ion batteries are provided with electronics that monitor each individual battery cell. Humidity would harm and destroy this protection circuit, so the batteries must be stored always in a dry place!

For that reasons the batteries must be accommodated in an impact resistant and waterproof battery case on the helmet. Spare batteries should be transported accordingly protected (e.g. in a waterproof caving container/box)!

### ***Do not store empty batteries!***

By simply using the lamp you cannot "deep" discharge the battery (down to a level where it would be damaged), the electronic protection circuit prevents that. You can use them without concern until they are completely flat.

As lithium ion batteries have a low rate of self discharge, in extreme e cases (several months of storing an empty battery), a deep discharge might occur. A security mechanism prevents the battery from recharging in this state. In the unlikely event that a battery can't be recharged, probably a deep discharge occurred and warranty is void. Depth discharge is not a malfunction but the result of wrong handling.

Please read the maintenance chapter of this manual carefully - recharge empty batteries before storage!

### ***Polarity***

Do **never short-circuit the batteries** or reverse their polarity - risk of damage! Shouldn't be a problem as our batteries are equipped with a polarized connector.

### ***Environment***



Do not dispose of used batteries in the household waste, you can hand them in for recycling at official collection points of your community or everywhere where batteries/accumulators are sold.

## Use / Maintenance

To keep your Scurion® always ready for full power, we recommend considering the points in the following chapter.

### **Batteries**

The Lithium-ion batteries provided is the best quality you can get and thus expensive. The battery packs are quite carefree – forget about any memory effects with this technology. There are nevertheless some hints that the batteries last even longer:

- a) Store batteries in a **cool** place (best is cellar or refrigerator)
- b) Store batteries in a **dry** place (see safety advices)
- c) Do **not store empty** batteries – best is to keep them 50% charged for a longer period.

### **Battery capacity and battery-indicator**

When the lamp is in the intermediate position f) (see chapter work mode) the approximately linear battery-indicator shows the capacity that remains. 5 lights says the battery is full. Only 1 light is left when the remaining capacity is at approx. 20%.

### **Automatic reduction of the light output**

When battery capacity reaches a level of a few percent, the Scurion® reduces the light output automatically, flashing twice (so you notice the change) and then reducing the power level stepwise while still providing enough light to progress in a cave.

☞ When your Scurion® runs in such a reduced mode you can force it to work on normal power for a few seconds by just switching between the light combinations.

⚠ **Warning:** When the lamp has already automatically reduced its power, you should change the battery – some time after reaching the lowest level, the lamp shuts down when the battery is totally empty!

### **Charging Lithium-ion batteries**

A complete charging process of an empty battery takes approx. 5h with our charger. Start of the process is indicated by an orange or red light on the charger itself.

☞ When trying to charge half-full batteries it might happen that the charger does not recognize the battery that has been attached to it. I.e. the charging process does not start automatically. In this case connect the battery to the charger first before plugging the charger into the socket.

## ***Lamp head***

The lamp is designed to be maintenance free and can be cleaned under flowing water easily. The lamp glass is particularly scratch proof, which it does not mean one cannot scratch it by force... Spare glasses are available.

## **Temperature control**

Scurion® has a built in sensor that protects the lamp from overheating. Even though the heat sink is very effective, the lamp can overheat in very warm environments. Should this happen, the controller reduces the light output to the minimum, the battery indicator will blink and the switch is blocked momentarily! This block remains until the temperature of the lamp has sunk to a normal level (i.e. by cooling the lamp with water) – it will then work as usual again.

## ***Battery case***

The battery case is manufactured from a high strength aluminium alloy (aircraft grade aluminium). The O ring seal in the frame cover is naturally sensitive for dirt and must be kept as clean as possible. A periodic, thorough cleaning and greasing of the O ring with Vaseline (as with diving lamps) is recommended. Do not disassemble the lid - this would break the waterproof sealing of the screws.

☞ In order to open the battery case just unscrew the two knurled nuts of the lid a bit and tilt it backwards to take it off. Closing the battery case is done most easily when you fasten the nuts first a little bit until you feel the first drag, then push the O-ring sealing neatly with your fingers between the two plates of the lid and only then press the lid back on the battery case. Tighten the two nuts and **check that the lid sits well**, i.e. the O ring goes in the groove of the case.

## ***Water Tightness***

Scurion® is designed as "lamp for wet caves" and reaches easily the IP 68 standard. I.e. it can be exposed to splash-water or even be immersed completely in water without problems. The head of the lamp was successfully tested by us down to a diving depth of 50m. The battery case, not at all conceived for diving, resisted close to scarcely 20m into our test. The maximum tightness is achieved by careful maintenance (cleaning) of all seals and the use of very viscous seal grease from a dive shop, e.g. Baysilone®.

⚠ **Warning: Scurion® is not designed as a "diving lamp" – please note that we cannot take any liability/warranty when you use it for this purpose!**

# Scurion® Commercial Warranty

If your Scurion® product or its accessories fail to operate to its specification during the warranty period we will arrange for your product to be repaired or replaced with a quality assured refurbished unit.

The Scurion® Commercial warranty period is 1 year and covers any faults in materials or manufacture. If you live in a member state of the European Union or in Switzerland, the warranty of the product during the second year of initial purchase is subject to the requirements and conditions set forth in Directive 1999/44/EC on certain aspects of the sale of consumer goods and associated guarantees and the national equivalent implementation thereof. In all other cases you may have other - additional rights - which vary from country to country and which are not affected in any way by this commercial warranty.

This warranty does not affect any legal rights you have against the person who supplied your Scurion® product - it is additional to those rights. The warranty period begins when the product is purchased by its first user.

## ***What is not covered by this warranty***

We will not provide warranty repair or replacement if in our opinion the problem resulted from:

- externally caused damage (especially normal wear and tear, oxidation, incorrect storage, poor maintenance, damage due to accidents, to negligence, or to improper or incorrect usage),
- usage outside of the products specification (i.e. diving),
- usage of not approved parts or accessories (i.e. other than Scurion® batteries),
- modifications or alterations that were not authorised by us.

## ***If your product fails within the warranty period***

Make sure you have the necessary information available including proof of purchase (receipt or invoice with serial number, location and date of purchase) and send us this information with a brief description of the problem by email: [service@scurion.ch](mailto:service@scurion.ch). In any case we will contact you immediately and give advice to help cure the fault or to determine the type of fault. If your product needs repair, you will be advised what arrangements will be made to repair or replace it.

## ***If your product fails after the warranty period***

Same procedure as within the warranty period but with the difference that we must charge you for any repairs or replacements and shipping. Those costs will be communicated up front of course.

## ***Legal disclaimer***

In no event M&S Ltd. will be liable for special, direct, indirect or consequential damages, including loss of profits or inability to use the product, even if M&S Ltd. Has been advised of the possibility of such damages. In no event shall our liability for any damages or loss to you or any other party exceed the price paid for the product.

## Miscellaneous terms

The Scurion® meets the requirements of the EMC (electromagnetic compatibility) Directive 2004/108 EEC.

The products: Scurion®-1500, Scurion®-1300, Scurion®-1200, Scurion®-1000, Scurion®-900, Scurion®-700 are intended to be used as personal headlamps.

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