

DU-LITE MK-V LED LIGHT SOURCE (Package contents and instructions) (Page 1 of 2)

PACKAGE CONTENTS:

QTY	DESCRIPTION
1	MK-V BASIC LED Endoscopic light sources
1	DURACELL ULTRA DL123A 3-volt Lithium DISPOSABLE Battery
1	Pocket Clip and 2 screws
1	EDC-BASIC/ULTIMATE operating instructions, Quick-start sheet and POCKET REFERENCE card.
(1)	Optional Charger unit (charges 1 or 2 RECHARGEABLE cells at a time)
(1)	Optional 100-240VAC Worldwide power supply (local mains adapter-plug not included) <u>OR</u>
(1)	Optional 110-120VAC US power supply (two-prong adapter included)
(1)	Optional 12VDC negative-ground (2-Amp-fused) Vehicle cigarette-lighter adapter
(2)	Optional RCR123 Rechargeable cells (may be either blue or yellow) - marked rechargeable.

INTRODUCTION:

The MK-V BASIC works on a standard 3-volt battery (DL123A 1 ea. included), but the rechargeable cells work better and last longer. A 100-240VAC switching mains adapter for use with UK or Euro mains is optional and may be included, but you will need to buy a simple plug-adapter to use it with your type of mains outlet. When the Recharger Kit is ordered, it also includes an adapter and cord so you can charge the batteries from a 12VDC negative-ground vehicle cigarette lighter socket. The RC KIT and blue 750mAh cells used with the older DU-LITE X-1 will also work fine with the MK-V.

You should get about 20-30 minutes of use on level-1 (brightest setting) with a fresh, high-quality 3-volt disposable Lithium battery (DURACELL ULTRA DL123A is highly recommended). **DO NOT** attempt to recharge a disposable battery, as fire or explosion may result in personal injury and/or property damage.

CHARGING:

The rechargeable 3.6V Lithium-ion cells are marked "rechargeable" and have built-in protection circuits that prevent overcharging, as well as overdischarging. To further protect rechargeable cells, the MK-V also has a protection circuit that shuts the light off when the battery voltage drops below 2.7 volts to prevent overdischarge of the cell. When you first plug in the power supply and connect the charger (with no cells in it), the GREEN LED will light. To reset cell(s) whose protection circuit has been activated, put one cell in the charger at a time, remove it, and then put it back in the charger to recharge for 1-2 hours and/or the charge indicator LED turns from RED to GREEN. Normally, new cells require 2-3 charge cycles to be able to charge to full capacity (measured at 4.15-4.22V on a volt-meter and 950mAh as stored energy). The LED indicator may not show a full charge until these initial "conditioning cycles" are completed. If the charger or cells become excessively hot, remove the cells from the charger and unplug it from the power supply, then unplug the power supply from the wall outlet. Allow the cells to cool before using them in the light. Examine cells initially and routinely for signs of heat damage, leakage or case expansion. Do not use cells that are obviously damaged or show signs of any of the above conditions. Replace them.

The charger will recharge either one or two rechargeable cells at a time. Try to recharge multiple cells that have a similar charge state, i.e. don't charge a totally depleted cell at the same time with one that only needs topping off. This may cause the over-charge protection to trip or may cause damage to the cell and/or charger unit. Either charge one cell at a time or use both cells to the point where the charge state is similar if you want to charge two at a time. Pay attention when putting cells in the charger so that cells are inserted with the correct polarity. The flat (bottom) of the cell is negative (-) and the tabbed (top) of the cell is positive (+). The charger wells are similarly marked.

Charging with incorrect polarity will damage cells requiring cell replacement. Charge time with a totally depleted cell is approximately 90-110 minutes. Two totally depleted cells will require as much as 2 hours 40 minutes for a full charge (measuring 4.2V fresh from the charger) depending on several factors. The color of the indicator is GREEN when no cells are in the charger. It will change from GREEN to RED when the cell(s) are charging and back to GREEN when the cell(s) are approaching a full charge cycle.

You will get slightly brighter output using the rechargeable cells. You will get increased run times if you use the light at lower brightness levels. You should always use the lowest brightness setting that will allow you to complete the task at hand. Level-2 is usually more than enough for most jobs. Level-2 brightness is equivalent to the output of the original DU-LITE (7,000-10,000 LUX). Level 1 brightness is approximately three times that of level 2 (27-30,000+ LUX). If your cells will not charge (LED does not change from RED to GREEN again), either the cells are defective, or more likely, they have been inserted in the charger with the reverse polarity.

SIMPLIFIED OPERATION INSTRUCTIONS:

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The MK-V BASIC was made in two versions and has 4 separate brightness switch positions. Both versions use a one-watt, premium Luxeon LED. The difference is in the software. If "BASIC 60" is printed on the case, the brightness level of these 4 switch cannot be adjusted individually, but you can select between these 4 switch positions. If "ULTIMATE 60" is printed on the case, you can select between these 4 setting, as with the BASIC 60 version, but you can also set a different brightness level for each of the 4 switch positions by going into the brightness setting menu. See the detailed instructions that were included with your light to learn how to do this.

1. To turn the light on, click the switch once. If it is a BASIC 60, it will always come on to the "primary setting". If it is a ULTIMATE 60 model it will come to whatever level was last used. I have been selecting level-2, i.e. "primary" for all ULTIMATE 60 lights before shipment. Graphically, the single click procedure looks like this: _
2. Double-clicking the switch while the light is on toggles between level-2 and level-3. Double-clicking again toggles it back again. Graphically the double-click procedure looks like this: __
3. To select the brightest setting (level-1) turn on the light by clicking the switch once. When it's on, triple-click and hold the switch down on the 3rd click for at least one second. Double-clicking toggles it back to whatever setting you were on before going to level-1. Graphically, the triple-click and hold procedure looks like this: ___ _
4. To select the dimmest setting (Level-4) Turn the light on with a single-click, then triple-click (you don't have to hold the switch down to go to level-4). Double-clicking while in level-4 toggles it back to whatever level you were in before going to level-4. Graphically, the triple-click procedure looks like this: ___ _

Experiment with it for a couple of minutes and you'll get the hang of it.

When the battery becomes depleted to the point that it can't support a particular brightness level, it will blink once and drop down to the next supportable brightness level.

If you use the light constantly for a while and it starts to get warm (this is normal) the light may automatically switch to a lower level so it will not get too hot! This doesn't happen until the internal heat sensor detects "excessive heat".

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