EDC Ultimate™ Flashlight User's Guide
Copyright 2003-2004 by HDS Systems, Inc.
October 7, 2005

Introduction

The EDC Ultimate flashlight is your best-of-class everyday carry pocket flashlight that provides a regulated light output at a user-selected brightness. Matching the amount of light to the task will maximize battery life - yet can still provide an intensely bright light when you need it. A single button activates your light and easily selects the desired brightness.

The following illustration summarizes the available commands and will assist you in quickly learning to use your flashlight. However, please read the full User's Guide so you will fully understand how each feature works.

From Off:

⎍	Click <1/2s	Latch on
⎍_⎍	Press >1/2s	Latch on (Simple Momentary off)
⎍_⎍		Momentary on (Simple Momentary on)
⎍⎍⎍		Unlock, turn on (Automatic Lock on)
⎍⎍⎍		Lock, leave off (Automatic Lock on)
⎍⎍⎍⎍⎍⎍		Set Option
⎍⎍⎍⎍⎍_⎍		Set Brightness level

From On:

⎍	Turn off
⎍_⎍	Momentary Maximum setting
⎍⎍	Toggle/return to Pri/Sec setting
⎍⎍_⎍	Latch Maximum setting
⎍⎍⎍	Latch Minimum setting

Options Menu:

▪	Emergency Strobe
▪ ▪ ▪ ▬ ▬ ▬ ▪ ▪ ▪	SOS
▪	Locator Flash
▬	Force Setting Mode
▪▪	Automatic Button Lock Mode
▬▬	Automatic Turn Off Mode
▬▪	Simple Momentary Mode
▬▪▪	Tactical Momentary Mode

Within Menus:

⎍	Next
⎍⎍	Previous (reverses direction)
⎍_____⎍	Set option/setting (hold 2 seconds)
	Error - no save: rapid flashing

Installing the Battery

Unscrew the battery compartment from the head, remove the old battery from the battery compartment, insert the new battery into the battery compartment so the positive terminal is out and the negative terminal is toward the button, screw the head and battery compartment back together.

Note: you will know it is time to replace the battery when your light blinks down two brightness levels - that is, your light momentarily turns off and then turns back on two brightness levels lower, repeating as needed until your light finds a brightness level that the battery can handle.

Note: you should perform a soft reset when changing battery packs or battery chemistries. This will ensure the new battery configuration is properly detected.

Note: rechargeable batteries must be fully charged before installation. Never install partially charged rechargeable batteries in your light. Once you have installed fully charged batteries, do not open the battery compartment until a replacement set of batteries becomes available.

Note: if you insert the batteries backwards in the battery compartment, your light will not light. Remove the batteries and insert them into the battery compartment correctly - with the the positive terminal out and the negative terminal toward the button.

Note: do not disassemble the push button end of the battery compartment.

Using the Single Push Button

Your light has a single push button which is used to turn your light on and off and to access its other functions. The following concepts are important to understanding the operation of your light:

Click: a quick push and release of the button. A click is any push of the button lasting less than half a second.

Press: a long push of the button. A press is any push lasting more than half a second.

N-click: a sequence of 2, 3 or 10 clicks. The time between clicks - that is, when the button is up - must be less than half a second.

N-click-press: a sequence of 2 or 10 clicks followed immediately by a press. The time between clicks and between the final click and press - that is, when the button is up - must be less than half a second.

Note: you must pause between commands to ensure the button pushes from the second command are not interpreted as being part of the first command. The pause between commands must be greater than half a second.

Note: if you provide an invalid input sequence, your light tries to handle the error in the best manner possible. Depending on the context, the best (or safest) thing to do is to ignore excess or extraneous clicks or exit from a menu without changing any settings.

Turning Your Light On and Off

Click or press the button once to turn your light on. It stays on until you turn it off. Click the button again to turn your light off. You can use the Options Menu to enable the Simple Momentary option, which will allow a press to turn your light on in a momentary fashion - i.e., when you release the button your light will turn off. While this option is disabled, both a click and a press will turn your light on and it will stay on until you turn it off again.

When you turn your light on, it turns on to the forced setting. You can use the Options Menu to change the Force Setting option to a different setting. You can use the Options Menu to disable the Force Setting option, in which case your light will turn on to the setting you were using when you turned your light off. You can use the Brightness Menu to adjust each of the four (4) brightness settings to any brightness level.

When your light is on, you can toggle between the Primary and Secondary settings by double-clicking the button. If the brightness was on the Minimum or Maximum setting, the light is return to the last Primary or Secondary setting used. Your light will momentarily turn off between the clicks but this is normal. You can use the Brightness Menu to adjust the Primary and Secondary settings to any brightness level.

When your light is on, you can momentarily set your light to the Maximum setting by pressing the button. Releasing the button returns your light to the previous setting. You can make your light stay on the Maximum setting by double-click-pressing the button. Your light will momentarily turn off between the clicks but this is normal. You can return to the previous Primary or Secondary setting by double-clicking the button. Your light will momentarily turn off between the clicks but this is normal. You can use the Brightness Menu to adjust the Maximum setting to any brightness level.

When your light is on, you can set your light to the Minimum setting by triple-clicking the button. Your light will momentarily turn off between the clicks but this is normal. You can return to the previous Primary or Secondary setting by double-clicking the button. Your light will momentarily turn off between the clicks but this is normal. You can use the Brightness Menu to adjust the Minimum setting to any brightness level. A very low brightness level will help preserve night vision adaptation without using a red filter.

Note: when your light turns off, you may see a dim light momentarily before it goes completely off. This is normal.

Brightness Menu

The Brightness Menu is used to set the brightness level of the four (4) settings. These settings are called Minimum, Maximum, Primary and Secondary. Any brightness level may be assigned to any setting. Your light has either 19 or 20 brightness levels depending on the model and the brightness levels are referred to as brightness level 1 through 20, with brightness level 1 being the brightest and brightness level 20 being the dimmest.

Note: you may notice a slight flicker on the very low brightness levels. This is normal.

Your eyes respond to light in a logarithmic way. That means that a significant increase in brightness requires a doubling in the amount of light - and power. The brightness levels on your light are spaced to provide small, visually even changes in brightness. As a rough approximation, every two levels brighter will halve the battery life and every two levels dimmer will double the battery life. You can maximize battery life by using the minimum brightness level compatible with the task you are performing. The lowest brightness setting will help preserve your night vision adaptation without using a red filter.

The Brightness Menu adjusts the brightness level of the turn-on setting - that is, the setting used when the light is turned on. By default, the Force Setting option from the Options Menu is enabled and forces your light to turn on to the Primary setting. In order to change the other three settings, you must disable the Force Setting option.

To set the brightness level of a setting, start by setting your light to turn on to the setting you want to change. This is done by turning your light on, selecting the desired setting and turning your light off. You may need to turn off the Force Setting option from the Options Menu if it is enabled. As a double-check, turn your light on, verify your light comes on to the setting you want to change and then turn your light off. Now enter the Brightness Menu and select the desired brightness level. Once you have finished setting the brightness level, you may re-enable the Force Setting option if desired.

You enter the Brightness Menu by 10-click-pressing the button while your light is turned off. Your light toggles on and off while you are clicking but this is normal. If you don't want to count, just keep clicking until your light stays on prior to doing the final press.

Your light comes on to the currently selected brightness level when you enter the Brightness Menu. Click the button to sequence through the brightness levels. Double-click to reverse the sequence and move to the previous brightness. Note that the sequence automatically reverses when you come to the brightest and dimmest brightness levels.

When you have selected the desired brightness, press and hold the button for two seconds. Your light will come on steady while you hold the button and then turn off when it is time for you to release the button.
If you have not pushed the button within 10 seconds, if you enter an unknown menu command, if you do not hold the button down until the the light turns off or if there is insufficient power to save the settings, your light exits the Brightness Menu without changing the brightness setting and displays the error flash sequence consisting of rapid flashing.

Options Menu

The Options Menu is used to turn on and off optional features of your light. Each option will be covered separately, but the basics of turning on and off an option is common to all options.

You enter the Options Menu by 10-clicking the button while your light is turned off. Your light toggles on and off while you are clicking but this is normal. If you don't want to count, just keep clicking until your light stays on.

Each option has a unique flash identifier and a well known position in the menu. When you enter the Options Menu, you always enter at the first menu item. Click the button to sequence through the options. Double-click to reverse the sequence and move to the previous menu item. The menu wraps around from the last item to the first item and vice versa.

When you have selected the desired option, press and hold the button for two seconds. Your light will come on steady while you hold the button and then turn off when it is time for you to release the button.

If you have not pushed the button within 10 seconds, if you enter an unknown menu command, if you do not hold the button down until the the light turns off or if there is insufficient power to save the settings, your light exits the Options Menu without changing the option setting and displays the error flash sequence consisting of rapid flashing.

Option 1: Strobe

The Strobe option flashes the maximum brightness about every second. This can be used for an emergency beacon.

To stop the strobe signal, turn your light off.

The strobe signal option is the first item in the Options Menu and is identified in the Options Menu by the strobe signal.

Option 2: SOS

The SOS option flashes the international emergency SOS signal. The SOS signal complies with 46CFR161.013-7 for signal timing but your light is not a Coast Guard approved emergency signal.

To stop the SOS signal, turn your light off.

The SOS signal option is the second item in the Options Menu and is identified in the Options Menu by the SOS signal (dot, dot, dot, dash, dash, dash, dot, dot, dot).

Option 3: Locator Flash

The Locator Flash option dimly flashes your light every 3 seconds when it is turned off. This allows you to find your light in the dark.

The Locator Flash option is a toggle setting. Setting it once turns it on while setting it twice turns it off. The default setting is off.

The Locator Flash option is the third item in the Options Menu and is identified in the Options Menu by a dim flash.

Option 4: Force Setting

The Force Setting option forces your light to always turn on to the selected setting. To select a setting to be forced, ensure the Force Setting option is disabled. Then select the Minimum, Maximum, Primary or Secondary setting you want to force. Turn your light off. Enter the Option Menu and enable the Force Setting option. Your light will turn on to the selected setting.

Note: this option must be disabled in order to use the Brightness Menu to change the other settings.

Note: if the forced setting is Maximum or Minimum, the first toggle (double-click) will take you to the Primary setting.

When the Force Setting option is disabled, your light remembers which setting you were using when you turned your light off and returns to that setting when you turn your light back on.

The Force Setting option is a toggle setting. Setting it once turns it on while setting it twice turns it off. The default setting is on with the Primary setting selected.

The Force Setting option is the fourth item in the Options Menu and is identified in the Options Menu by a long flash.

Option 5: Automatic Button Lock

The Automatic Button Lock option locks your light in the off setting after your light has remained turned off for 5 minutes. If the button is pressed while your light has the button locked, your light flashes twice and then turns off. Note that when the Tactical Momentary option is enabled your light does not flash but remains off.

When Automatic Button Lock is enabled, you can manually lock the button by triple-clicking from Off. Note that when the Tactical Momentary option is enabled you cannot manually lock the button from Off.

To release the Button Lock, triple-click the button. Releasing the Button Lock turns your light on. Note that when the Tactical Momentary option is enabled the light remains off until the next push of the button.

The Automatic Button Lock option is a toggle setting. Setting it once turns it on while setting it twice turns it off. The default setting is off.

The Automatic Button Lock option is the fifth item in the Options Menu and is identified in the Options Menu by two short flashes.

Option 6: Automatic Turn Off

The Automatic Turn Off option turns your light off after a 5 minute period of inactivity. Your light provides a warning prior to turning off by sequencing down to the lowest brightness level and then flashing for 10 seconds. Click the button once during the warning period to restore the light to the original setting.

The Automatic Turn Off option is a toggle setting. Setting it once turns it on while setting it twice turns it off. The default setting is off.

The Automatic Turn Off option is the sixth item in the Options Menu and is identified in the Options Menu by a dimming sequence.

Option 7: Simple Momentary

The Simple Momentary option allows a press to be distinguished from a click when your light is turned off. That is, when the Simple Momentary option is enabled, a press turns your light on for the duration of the press and turns your light off again when the button is released. When Simple Momentary option is disabled, a press will turn your light on no matter how long you hold the button down until you turn your light off again.

The Simple Momentary option is a toggle setting. Setting it once turns it on while setting it twice turns it off. The default setting is off.

The Simple Momentary option is the seventh item in the Options Menu and is identified in the Options Menu by a long flash followed by a short flash.

Option 8: Tactical Momentary

The Tactical Momentary option provides a pure momentary mode of operation. All button pushes (clicks and presses) are momentary. When the Tactical Momentary option is enabled, it is not possible to keep your light on after the button is released, access the menus or manually lock the button. Therefore, you must configure any desired options before enabling the Tactical Momentary option. If the Automatic Button Lock option is enabled, the button locks upon enabling the Tactical Momentary option and there is no visible Button Lock indication - your light remains completely dark when the button is pressed until after the Button Lock is released.

You turn off the Tactical Momentary option by soft-resetting your light. The default setting is off.

The Tactical Momentary option is the eighth item in the Options Menu and is identified in the Options Menu by a long flash followed by two short flashes.

Resetting Your Light

The only time the design of your light requires you to reset your light is: 1) to turn off the Tactical Momentary option, 2) when changing battery packs or 3) when changing battery chemistries. However, if your light ever gets into a non-responsive state, a reset can be used to regain control.

There are two kinds of resets. A soft reset retains all of your settings. A hard reset returns your light to the factory settings.

To perform a soft reset, remove the batteries, wait for 1 minute and reinstall the batteries. A successful soft reset is indicated by your light turning on dimly for 1 second and then turning Off.

To perform a hard reset, start by performing a soft reset. Before your light turns off, press and hold the button down for 10 seconds. Your light will come on steady while you hold the button and then turn off when it is time for you to release the button.

If you do not hold the button down until the the light turns off or if there is insufficient power to save the settings, your light will not restore the factory settings and displays the error flash sequence consisting of rapid flashing.

Low Battery Indication

As your batteries are used up, the batteries will not be able to supply enough power to run your light at the selected brightness. As a result, your light will blink down to 50% of the previous brightness - that is, your light will momentarily turn off and then turn back on to a brightness level that is half of the previous brightness level, repeating as needed as the batteries are used up. When the lowest brightness level is reached, your light will blink continuously until the batteries can no longer power your light. You should replace your light's batteries before the lowest brightness level is reached.

Your light remembers the restricted brightness level and will not allow you to use a higher brightness level as long as your light remains on. Turning your light off and

then back on resets the restricted brightness level and allows you access to all brightness levels if your batteries are capable of supplying the power.

The same behavior can also occur if the battery contacts become dirty. Gently wiping the battery contacts with a clean dry cloth is normally sufficient to remove dirt. If in doubt, please replace your batteries.

Note: if you must extend dying batteries - for whatever reason - you should immediately select a lower brightness setting. The lower the setting selected the longer the batteries will last.

Note: if you continue to use your light after it has dropped to the lowest brightness level - where it blinks continuously - it is assumed you are in an emergency situation. In an emergency situation, your life is more important than your rechargeable batteries and your light will sacrifice the batteries to keep the light on.

Note: if your batteries have an excessively low voltage when you turn your light off, your light will delay turning completely off until the battery voltage has recovered sufficiently to enable it to turn back on. While waiting for your batteries to recover, the light will glow dimly.

Note: the length of time your batteries will last depends on how you use your light, the type and quality of battery you are using and how cold it is. Due to the LED tolerances, you will see flashlight to flashlight runtime variations when operated under the same conditions.

High Temperature Indication

Your light can get quite warm on the higher brightness levels. If you hold on to your light with a bare hand during operation, your body will conduct away any excess heat and prevent your light from getting too hot. However, if you place your light on a table or hold it with a gloved hand, the excess heat is not easily conducted away and your light can get hot. Before your light becomes dangerously hot, a thermal sensor detects the increasing temperature and reduces the power and brightness. Your light's temperature is regulated so you can always pick it up safely and to prevent damage to the LED.

Your light remembers the restricted brightness level and will not allow you to use a higher brightness level as long as your light remains on. Turning your light off and then back on resets the restricted brightness level and allows you access to all brightness levels if your light is cool enough to allow them.

Cleaning and Maintenance

Periodically clean the threads and O-ring with a clean lint-free cloth and apply a thin coat of silicon or petroleum-based grease to threads and O-ring. If the O-rings become worn or damaged, they should be replaced.

The exposed electrical contacts can be cleaned using a cotton swab moistened with isopropyl alcohol.   Be sure to remove any cotton fibers that may be left behind.

The exterior can be cleaned with a mild soap and water. Rinse well and dry with a lint-free cotton cloth. Paper towels or tissues should be avoided when cleaning plastic lenses as scratching will result.

The battery compartment O-ring is: 1mm x 22mm, 70 durometer Nitrile (Buna-N).

Warnings

Caution: LEDs on the higher brightness levels are very bright. Looking directly into the LEDs must be avoided. Your light can be intense enough to injure your eyes.

Caution: Whereas a sudden total failure is unlikely, it is still possible. Therefore, we recommend you always carry a second light during critical situations (e.g., caving). We also recommend you carry enough spare batteries to cover your stay plus a reasonable safety margin. It is not necessary to start each trip with new batteries in your light as long as you have spare batteries along.

Caution: Not all lithium-ion battery over-discharge circuits are compatible with your flashlight and can cause sudden darkness when the circuit activates. Only use approved batteries with your flashlight. Your flashlight includes over-discharge protection and will protect batteries that do not include over-discharge protection.

Factory Settings

Your light is configured at the factory with the following settings:

- Maximum setting: 1 (60 or 85 lumens)
- Primary setting: 5 or 6 (10 lumens)
- Secondary setting: 9 or 10 (2 lumens)
- Minimum setting: 15 or 16 (0.3 lumens)
- Force Setting: Primary setting
- Simple Momentary: off
- Tactical Momentary: off
- Automatic Button Lock: off
- Automatic Turn Off: off
- Locator Flash: off

Specifications

Voltage: 1.8V to 7.3V
Light Source: white LED
Light Output: 60 or 85 lumens maximum, 0.1 or 0.2 lumens minimum, visually even spacing
Regulation: constant power regulation with tint control, 20 levels
Battery Pack: 1x CR123A lithium-manganese dioxide
Runtime (normal): 20 minutes on Maximum, 8 hours on Primary
Runtime (extended runtime): 30 minutes on Maximum, 10 hours on Primary
Beam: narrow with good side spill
Housing: aerospace aluminum, military specification type III hard anodize
Lens: ultra-clear coated glass
Dimensions: 25mm (1 inch) diameter by 82mm (3.2 inches) long, excluding pocket clip
Weight: 86g (3 ounces) including batteries, excluding pocket clip
Waterproof: 2 atmospheres

Primary Features: simple single button user interface, four (4) directly accessible brightness settings, rechargeable battery protection, reverse battery protection without diode penalty, graceful power reduction for weak batteries, thermal regulation, intrinsically safe design.

Settable Options: four (4) settable brightness settings, strobe emergency signal, SOS emergency signal, locator flash, force setting, automatic button lock, automatic turn off, simple momentary, tactical momentary.

Accessories:
- 2x CR123A lithium-manganese dioxide battery pack
- 2x AA battery pack
- 1x 18650 Li-ion battery pack
- 18650 Li-ion battery and charger
- Ultra clear coated glass lens
- Polycarbonate lens
- Mild diffuser
- Lens nut tool
- Lanyards (wrist and neck)
- Battery pack cap

Battery configurations supported by the power supply:

Primary cells - non-rechargeable:
- Li-FeS2: 2 cells (3.3), 4 cells (6.6V)
- Li-SO2: 1 cell (3.0V), 2 cells (6.0V)
- Li-MnO2: 1 cell (3.2V), 2 cells (6.4V)
- Li-SOCl2: 1 cell (3.6V), 2 cells (7.2V)
- Alkaline: 2 cells (3.3V), 4 cells (6.6V)

Secondary cells - rechargeable:
- NiCad: 2 cells (2.5V), 3 cells (3.75V), 4 cells (5.0V)
- NiMH: 2 cells (2.6V), 3 cells (3.9V), 4 cells (5.2V)
- Li-ion/polymer: 1 cell (4.2V)

Specifications are subject to change without notice.