eternaLight ™

The most technologically advanced
personal lighting instruments available!

- *700 hours or more of <u>CONTINUOUS</u> light from regular AA batteries!*
- *Visible over 3 miles against city lights!*
- *The world's first microprocessor- controlled Flashlight features:*
  - *-Timer&Power Status*
  - *-12 Dimmable power settings*
  - *-Flasher*
  - *-Strobe*
  - *-Effects*
  - *-Distress (SOS)*
  - *-Pulse*
- *Really BRIGHT! Never turns yellow!*
- *Water resistant design up to 100'*
- *When equipped with Lithium batteries, it FLOATS in water!*
- *Highly durable and Impact resistant!*
- *Lifetime limited warranty!*

IMPORTANT!
READ FIRST!

Model 3 & 3M

Made in Reno, Nevada U.S.A.
Patent Pending

Operations and Maintenance manual

(betcha never heard of a flashlight
coming with one of these before...)

DOC version 3.1 for Code version 2.0

eternaLight Operations:

Your eternaLight has seven basic modes of operation. They are: Timer, On / Dimmable, Flasher, Strobe, Dazzle, S.O.S. and Momentary. There are three subsurface buttons under the membrane on the front which are the On/Off button, Mode button and Rate button as indicated below in Figure 1. However, newer models may display the word "Adjust" instead of "Rate". To activate a button, simply press (don't use fingernail) on the membrane in the vicinity indicated by the button name.

Figure 1

A .-	M --	Y -.--	, --..-- comma
B -...	N -.	Z --..	. .-.-.- period
C -.-.	O ---	1 .----	? ..--.. question mark
D -..	P .--.	2 ..---	; -.-.- semicolon
E .	Q --.-	3 ...--	: ---... colon
F ..-.	R .-.	4 ....-	/ -..-. slash
G --.	S ...	5	- -....- dash
H	T -	6 -....	' .----. apostrophe
I ..	U ..-	7 --...	() -.--.- parenthesis
J .---	V ...-	8 ---..	**Morse Code Chart**
K -.-	W .--	9 ----.	- means a long pulse
L .-..	X -..-	0 -----	. means a short pulse

Figure 2

When you first press the On button, the flashlight turns on with full power in "Timer" mode. From here, you can press the Mode button to cycle through the modes. Each time you press the Mode button, you will see the lights sequence indicating that the unit will change modes when the button is released.

Timer mode:
When first powered on, eternaLight will light up with full power but will shut itself down gradually. Each of the four lights will extinguish approximately every 2.5 minutes in succession. When all lights are finally extinguished, the unit is Off. While in this mode, pressing the:

On/Off button will turn the unit Off.

Mode button will place the unit in the On / Dimmable mode.

Rate button (and holding it) will activate the Power Status feature.

To use this feature, turn the unit on. Then press and hold the rate button. When the lamps flash, continue to hold the rate button and ACCURATELY (preferably with a watch) count off ten seconds. ON the tenth second (RIGHT when you would say "ten"), release the rate button. This must be done as precisely as possible to obtain an accurate reading. If you don't get it right, try several times. When you release the rate button, the unit will flash a reading four times:

Four lamps indicates the batteries are in good condition.

Three lamps indicates the batteries are beginning to weaken.

Two lamps indicates the batteries should be replaced.

One lamp indicates the batteries nearly gone.

No lamps indicate the batteries are so low the unit may not operate properly.

These are approximations and if you do not perform the timing exactly as described above, any reading given is meaningless.

On / Dimmable mode (long life mode, see eternaLight Secret revealed on back):
Upon entering this mode, the unit will light up with full power (maximum light output). While in this mode, the unit will stay on until turned off (unlike the timer mode). Pressing the:

On/Off button will turn the unit Off.

Mode button will place the unit in the Flasher mode.

Rate button will dim the light output (power conservation).

There are 12 lower power settings. The final setting then allows the selection of the three remaining lamps. Pressing and releasing the rate button each time will step the power down to the next level. At setting 10, only three lamps will light. At 11 only two and at the lowest setting, 12, only one lamp will light. The next three times the rate button is pressed will select a different single lamp to light. The approximate power consumption and life for each setting is given in the table below:

Rate button clicks	%of maximum power	*Hours of life expectancy
0	100	50
1	66	75
2	33	150
3	28	180
4	24	210
5	19	270
6	15	330
7	12	410
8	9	530
9	6	785

10	5	950
11	4	1200
12	2	2800

*Calculated with fresh alkaline batteries of 2850mah capacity. Assumes running continuously with light not falling below 40% of fresh battery output.

NOTE! In daylight, the "strobing effect" of the lower power settings may appear too obvious and not usable. This is NOT true! This timing is set for the way your eyes function in the darkness. Judging your eternaLight's effectiveness in light conditions will not give you a proper idea of how well it functions in the dark.

Flasher mode:
Upon entering this mode, the unit will simultaneously flash all four lamps. While in this mode, pressing the:
> **On/Off** button will turn the unit Off.
> **Mode** button will place the unit in the Strobe mode.
> **Rate** button will change the flashing rate.

Strobe mode:
Upon entering this mode, the light will appear to glimmer. It's actually flashing very fast. This mode is similar to the Flasher mode above but much faster and with many more rate settings than the Flasher mode. You may point the light at a repetitive moving object like a fan and adjust the rate by holding the Rate button down until the fan appears to be standing still. While in this mode, pressing the:
> **On/Off** button will turn the unit Off.
> **Mode** button will place the unit in the Dazzle mode.
> **Rate** button will change the flashing rate.

Dazzle mode:
Upon entering this mode, the unit will flash each bulb in an attention-getting pattern. While in this mode, pressing the:
> **On/Off** button will turn the unit Off.
> **Mode** button will place the unit in the S.O.S. mode.
> **Rate** button has no effect.

S.O.S. mode:
Upon entering this mode, the unit will flash the Morse Code sequence S - O - S (Save Our Ship), an old maritime distress message for requesting emergency help. While in this mode, pressing the:
> **On/Off** button will turn the unit off.
> **Mode** button will place the unit in the Momentary mode.
> **Rate** button has no effect.

Momentary mode:
Upon entering this mode, the unit will extinguish all of its lamps. Note the complete coding for the alphabet in Morse code is printed on the inside cover (figure 2).   Pressing the Rate button while in this mode will illuminate all four lamps at maximum power until the rate button is released, allowing you to send signals. However, the unit will turn itself off again if you have not sent any messages in the last 12 minutes. While in this mode, pressing the:
> **On/Off** button will turn the unit off.
> **Mode** button will cycle back to the timer mode.
> **Rate** button will illuminate all four lamps at maximum power until the button is released.

Replacing batteries & maintenance:
When eternaLight does FINALLY need new batteries, it may not operate properly or the brightness from lamp to lamp may vary greatly. To replace the batteries:
> **1. On the side opposite the switches, remove the four screws with a small point (#00) phillips screwdriver.**

WARNING!   Installing the batteries incorrectly can permanently damage your light.

CAUTION!   Lamps are powerful enough to cause damage to the human eye. DO NOT STARE directly into lights.

NOTE!   It is normal for the tint of color and brightness to vary slightly from lamp to lamp. This is NO indication of failure or malfunction.

2. **Remove the back cover be careful to not loose any screws. EternaLight will not remain water resistant if fewer than four screws are used when reassembling it.**
3. **Note the polarity (+ and - orientation) of the batteries and carefully remove them.**
4. **Place the new batteries in with the same polarity. The unit will turn on when the batteries are placed in it. Don't worry, you can turn it off after you reassemble the unit. Be sure the gasket is properly placed around the perimeter of the case and that the screw holes are lined up.**
5. **Holding the unit with its keypad against your palm in one hand, place the cover with the screws back on with the other hand. BE CAREFUL to make sure the screws pass through the gasket, otherwise you may tear it! Squeezing the top together (side with lights) tighten the top two screws. Then tighten the bottom two screws. Make one more pass over all the screws to assure maximal tightness without stripping the screws. Turn off the unit.**

If eternaLight ever becomes DAMP on the inside for whatever reason, remove the batteries and allow the unit to air dry for 24 hours.

eternaLight Features

Congratulations! You're holding the first ever flashlight of this type. eternaLight uses a solid state light source (white LED) which has much more durability and a much longer life than a standard flashlight bulb. Each of the four white LEDs is rated at 50,000 hours or more of continuous use compared with 40 hours or less from a typical flashlight bulb.

The solid state bulbs will always produce the "fresh-battery" moonlight-white light, even when your batteries are nearly dead, unlike a typical bulb which will gradually yellow.

Depending on your power (*Dimmer* setting) use, a standard set of three AA alkaline batteries will continuously produce light from 48 hours to well over 700 hours (actual testing beyond this limit has not occurred, but projections indicate continuous operating time could hit 1400 hours!). If you purchase lithium AA batteries to use in your eternaLight, this performance will be even better and the shelf life could be over 10 years!

The eternaLight Secret revealed - bolt on your brain caps!

eternaLight's secret to its long battery life is in the white LEDs it uses AND the microprocessor's ability to control power to them. The LEDS are fairly efficient by themselves and capable of delivering over 48 hours of continuous usage at full power before their output drops below 40% of the fresh battery output. However, in the On/Dimmable mode, the microprocessor really takes over and energy savings become obvious. The first conservation setting is barely dimmer than the maximum power setting yet only consumes 65% as much power! The next setting consumes roughly only 33% as much and so on. Finally, the lowest setting only consumes 1.7% of the power used in the maximum setting yet still produces a very usable amount of light - enough to walk or read with! The microprocessor accomplishes this by pulsing the energy to the light sources within average optic nerve response time. Since the spectral output of the LEDs remains fairly constant, these pulse timings can vary greatly yet still produce usable light.

But wait, there's more...!

Because eternaLight uses a microprocessor, it can provide different modes of operation which may have different applications. The Timer mode will save your batteries if you accidentally turn on the light. The Flasher mode is useful for signaling, emergency, safety or attention-getting purposes. The Strobe mode is useful for "freezing" an object which is in a regular cyclic motion such as a fan blade or an engine pulley. The Dazzle mode is useful for sales attractions, presentations, costumes or just to look cool! The S.O.S. mode can signal for help and the Momentary mode allows you to send your own code. For more eternaLight information, be sure to see our website at **www.TECHASS.com.**