eternaLight™ EliteMAX™

Model Number 4Z

The most technologically advanced personal lighting instruments available!

IMPORTANT! READ FIRST!

- ***Over 1000 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:***
  - ***Overdrive mode • Battery Test • Timer***
  - ***11 light power settings • Flasher • Strobe • Effects***
  - ***Distress (SOS) • Pulse • Configuration Mode***
  - ***Exclusive NightBeacon(tm) feature makes finding in dark easy!***
- ***Really BRIGHT! Never turns yellow!***
- ***Regulated for constant light output regardless of battery condition!***
- ***Water resistant design down to 200 feet!***
- ***Corrosion resistant!***
- ***FLOATS as equipped with Lithium (L91) AA batteries!***
- ***Built-in magnet attaches light to metal!***
- ***Concrete drop/shock resistant up to 15 feet (polycarbonate construction)!***
- ***Lifetime limited warranty!***

Assembled in Nevada U.S.A.
Patent Pending

Operations and Maintenance manual

Version 1.0

eternaLight Operation:

Your eternaLight has seven basic modes of operation. They are: MomentaryOD, Timer, On / Dimmable, Flasher, Strobe, Dazzle, S.O.S. and Pulse. There are three subsurface buttons under the membrane on the front which are the Adjust , Mode and Power button as indicated below in Figure 1. 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.

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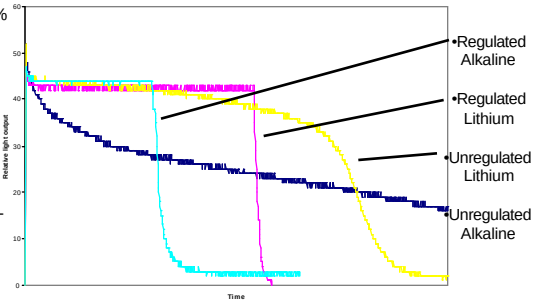
Timer mode
When first powered on, eternaLight will light up with full power but will shut itself down gradually. Each of the four lights will extinguish approximately every 2 minutes in succession. During this period, you will see the internal NightBeacon lamp blinking every second. When all lights are finally extinguished, the internal NightBeacon lamp lights full on for 1 minute then the unit shuts off. While in this mode, pressing the:
•**(Power)** button will turn the unit Off.
•**(Mode)** button will advance to the On/Dim mode.
•**(Adjust)** button will select a lower power level. Once a lower power level has been selected, the lights will not go off in succession, rather, once the time has expired, all lights will go off and the internal NightBeacon will light for 60 seconds then the unit will turn off.

On/Dim mode
This mode is capable of delivering incredible battery longevity (see Eternalight Secret Revealed on the last page). 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 it is manually turned off (unlike the timer mode). While in this mode,
pressing the:
•**(Power)** button will turn the unit Off.
•**(Mode)** button will advance to the Flasher mode.
•**(Adjust)** button will select a different power level. Every time this button is clicked, the unit will produce less light until, it has reached the lowest level. If clicked again on the lowest level, it cycles around to the highest again. There are a total of 11 power levels and 12 **(Adjust)** clicks to access them. Also, note that while most of each of the levels consume less power sequentially, the last level consumes more. Pressing and releasing the **(Adjust)** button each time will step the power down to the next level. The chart below shows the battery performance expectations from the various power levels.

Lamps	**(Adjust) clicks**	**% of max power**	***Hours(**Regulated**)**	***Hours(**Unregulated**)**
oooo(x)	0	100	6	50**
oooo(x)	1	73	8	70**
oooo(x)	2	36	16	140**
oooo(x)	3	36 (Forced Unreg)	NA	140
oooo(x)	4	7 (Forced Unreg)	NA	300
oooo(x)	5	4 (Forced Unreg)	NA	550
ooox(x)	6	3 (Forced Unreg)	NA	750
xoox(x)	7	2 (Forced Unreg)	NA	900
xxxo(x)	8	1 (Forced Unreg)	NA	1000
xxox(x)	9	1 (Forced Unreg)	NA	1000
xoxx(x)	10	.7 (Forced Unreg)	NA	1200
oxxx(x)	11	.7 (Forced Unreg)	NA	1200
xxxx(o)	12	8 (Forced Unreg)	NA	200

*Calculated with fresh alkaline batteries of 2850mah capacity. Assumes running continuously with light not falling below 20% of fresh battery output. Lithium battery performance will be even better at the higher output levels.
**Regulation must be disabled in the configuration (see "off" features later).

Regulated versus Unregulated performance:
Regulation maintains constant light output regardless of battery condition until the batteries are almost completely exhausted. The graph to the right demonstrates the effects.



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:
•**(Power)** button will turn the unit Off.
•**(Mode)** button will advance to the Strobe mode.
•**(Adjust)** button will select a different flashing time. There 16 different strobe rates from about 4 flashes per second to about 1 flash every 3 seconds. "Clicking" the **(Adjust)** button selects the next rate. Clicking at the slowest will start back at the fastest rate again.

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 flashing rate by holding the **(Adjust)** button down until the object appears to be standing still. While in this mode, pressing the:
•**(Power)** button will turn the unit Off.
•**(Mode)** button will advance to the Dazzle mode.
•**(Adjust)** button and holding will increase the strobe rate from about 30Hz to about 1.5Khz. The timing is not precise and is only meant to visually inspect a repetitive moving object, not to determine it's speed.

Dazzle mode
Upon entering this mode, the unit will flash each bulb in an attention-getting pattern. While in this mode, pressing the:
•**(Power)** button will turn the unit Off.
•**(Mode)** button will advance to the S.O.S. mode.
•**(Adjust)** 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. See Figure 2 above for other Morse codes. You may send Morse code yourself by using the Momentary function discussed later. While in this mode, pressing the:
•**(Power)** button will turn the unit Off.
•**(Mode)** button will advance to the On/Dim mode.
•**(Adjust)** button has no effect.

Pulse mode
Upon entering this mode, the unit will fire all 4 bulbs at OVERDRIVE level then fade out, blip the night beacon and repeat. This is a high energy signalling mode. Thus, it will consume batteries rapidly. About 24 hours of continuous use can be expected in this mode with fresh Energizer or Duracell alkaline batteries. Pressing the:
•**(Power)** button will turn the unit Off.
•**(Mode)** button will return to the Timer mode.
•**(Adjust)** button has no effect.

"Off" Features
Off features are features or functions which you can access while the eternalight is turned OFF.
•**Momentary Overdrive:** This feature may be activated simply by depressing the **(Adjust)** button while the unit is off. The brightest light possible will be emitted while the button is held down. This may be used for signalling or for quick spotting. It is not recommended to leave this on for more than a minute at a time due to heat buildup.

•**NightBeacon(tm) Feature On/Off:** Unlike the previous modes, NightBeacon is a feature that once activated, remains activated regardless of the mode you are in. NightBeacon(tm) is intended to allow you to find the unit in dark conditions after you have turned it off. Inside the unit is an internal LED that will either Blip once every 2 seconds or Glow, depending on how NightBeacon is configured (see configuration mode below). This feature will operate every time you turn the light Off. To activate the Night Beacon Feature, while off, simply press and hold the **(Adjust)** button while pressing and releasing the **(Power)** button. The unit will turn off but you will notice that once every 2 seconds the internal LED will briefly flash. This mode should be able to operate continuously on the same batteries for 1.5 to 2.5 years. Therefore, it is not recommended that you leave this mode enabled if you intend on storing the light indefinitely. The Glow mode will run steady for between 1 and 2 years. To deactivate the NightBeacon(tm) feature, while the unit is powered off, perform the same operation.

•**Battery Test:**
To test the batteries, press and hold the **(Adjust)** button. While the adjust button is held, press and release the **(Mode)** button, then release the adjust button. All lights will come on for about 5 seconds. After that, the battery status will flash four times then turn off. 4 LEDs good, 1 LED bad. Below is a more precise meaning of the status:

#of LEDs	Meaning	Voltage
4	Good	3.8 or more
3	Usable	3.5-3.8
2	Weak	3.3-3.5
1	Replace	3.3 or less

•**Configuration Mode:** To enter the configuration mode, while off, hold the **(Mode)** button down for three seconds. When the configuration mode is activated, the all lights will glimmer except one. The steady light is the configuration feature. The sticker on the back of the EliteMax denotes which feature is selected by the lamp position. Pressing the **(Adjust)** button will enable or disable the feature. Pressing the **(Mode)** button will advance to the next feature. Note: there are 5 features, the 5th is indicated by the NightBeacon lamp internally. Note: The **(Power)** button has no effect in this feature. The only way to end it is to keep pressing the mode button and cycle through all settings. See the chart below:

Feature	Default setting	Meaning
Regulate Light	Enabled	Insures constant light output regardless of battery condition.
Simple Mode	Disabled	Removes all but a few functions. Timer, On/Dim-0, On/Dim-3, On/Dim-10.
Bright Memory	Disabled	Remembers the last brightness setting and powers on to that setting.
Disable Timer	Disabled	Removes the Timer function (goes straight to On/Dim).
NightBeacon Steady	Disabled	Causes the NightBeacon to glow steady instead of blip (when NightBeacon is turned on.

•**Reset:** resets the unit to default configuration. The reset the unit, while off, press and hold the **(Adjust)** button, then press and hold the **(Mode)** button then press and release **(Power)**. Alternatively, remove the batteries, then press and hold the **(Power)** button for 10 seconds.

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. The functions well on a variety of batteries. Nickel Cadmium, Nickel Metal Hydride, Alkaline and Lithium L91 type batteries, and all other chemistries that are between 1 and 1.7 volts per cell in AA size are usable.
To replace the batteries:
1. On the side opposite the switches, remove the four screws with a standard phillips screwdriver.
2. Remove the back cover be careful to not lose 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.

CAUTION! Lamps are powerful enough to cause damage to the human eye. DO NOT STARE directly into lights.
WARNING! Installing the batteries incorrectly can permanently damage your light.
WARNING! Magnet on back of light may cause erasure to magnetic media if media's proximity is less than 2 inches.
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.
NOTE! Unit is NOT intended to be used as a dive light. Water pressure on buttons may prevent user from controlling functions at depths below 8 feet.
NOTE! Use of Alkaline batteries will not damage unit but are too heavy for unit to float.

4. Place the new batteries in with the same polarity. YOUR REPLACEMENT BATTERIES MUST BE LITHIUM L91 TYPE FOR THE UNIT TO FLOAT! Other battery types will work but the unit will not float. The unit may 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! CAUTION! ONLY TIGHTEN SCREWS UNTIL CASE BEGINS TO COMPRESS THE GASKET! OVERTIGHTENING MAY CAUSE DAMAGE TO THE UNIT LATER! 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 even tightness without overtightening the screws. Turn off the unit.

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

eternaLight Light & Life

eternaLight uses a solid state light source (white LED) which is much more durable and has a much longer life than a standard flashlight bulb. Each of the four white LEDs is rated at 100,000 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 levels, configuration and use, a standard set of three AA alkaline batteries will continuously produce light from 6 hours to well over 1000 hours (actual testing beyond this limit has not occurred, but projections indicate continuous operating time could hit 1200 hours!). If you purchase lithium AA batteries to use in your eternaLight, this performance will be even better in the higher power modes and the shelf life could be over 10 years!

The eternaLight Secret revealed!

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 still make useful light from batteries that would otherwise be considered dead in a normal flashlight. 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 73% as much power! The next setting consumes only 36% as much and so on. Finally, the lowest setting only consumes 0.7% 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.

Some other uses

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.**

Lifetime Limited Warranty:
Technology Associates, Inc. warrants this product to be free from defective material and workmanship for as long as you originally own the product. Technology Associates, Inc. agrees to repair, replace or otherwise exchange for comparable value, at its sole discretion, a defective unit if returned to Technology Associates, Inc. with proof of purchase. Technology Associates, Inc. is not responsible for shipping damage or loss. Units to be returned should be packed carefully.

This warranty does not extend to any units which have been subject to misuse, neglect, accident, incorrect maintenance, alteration or repair by anyone other Technology Associates, Inc. This warranty does not cover any incidental or consequential damages and is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of this product.