Arc4 Flashlight User's Guide
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Introduction

The Arc4 is a best-of-class every day carry flashlight that provides a regulated light output at a user-selected brightness. Matching the amount of light to the task can maximize battery life - yet still provide an intensely bright light when you need it. A single button activates the light and easily selects the desired brightness.

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.

Caution: rechargeable batteries must be fully charged before installation. Never install partially charged batteries as damage to the battery can result due to over-discharge - or sudden darkness can result in the case of batteries with over-discharge protection circuits.

Note: your light will automatically initialize and briefly sequence through several brightnesses when you change the battery - this is known as the Ready-for-Service option. This option is turned on by default and will reduce the battery shelf life. You can use the Options Menu to disable the Ready-for-Service option.

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

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

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

Using the Single Push Button

The Arc4 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 short push and release of the button. Your light automatically adapts to you by remembering the average time it takes you to perform a click. A click is any push of the button lasting less than twice the average click time.

Press: a long push of the button. A press is any push lasting more than twice the average click time.

N-click: a sequence of n clicks. Double-clicks (2 clicks) and triple-clicks (3 clicks) are common. The time between clicks must be less than twice the average click time.

N-click-press: a sequence of n+1 button pushes where the first n are clicks and the last is a press. The time between clicks and between the final click and press must be less than twice the average click time.

Remember: your light adapts to your normal usage. If you normally click fast, your light will adapt to the fast clicks and respond faster to your actions. You can slow the response by slowly lengthening the time you take to click over a period of 10 to 15 clicks.

Note: you should allow a short pause between commands to ensure the button pushes from two commands are not accidentally interpreted as a single command.

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.

Note: in the event of a switch failure the light will always remain on. This can happen after the light is dropped bezel-down from a fair height, which can also damage the battery. Replace the battery if necessary and the light will turn on by itself. Unscrew the battery compartment one quarter turn to turn the light off. Tighten the battery compartment to turn the light back on - it will take 5 seconds for the light to turn back on. See Warranty below for information on returning the light for repair.

Turning Your Light On and Off

There are two ways to turn your light on:

Click the button once to turn your light on. It stays on until you turn it off. This is known as latching the light on. Click the button again to turn your light off. While your light is latched on, you can press the button to bring your light to maximum brightness. Releasing the press returns your light to the original brightness.

Press the button to turn your light on for as long as you hold the button down. Release the button to turn your light off. This is known as momentary operation.

When you turn your light on, it turns on to the primary, secondary or the lowest brightness, whichever was used last. You can use the Brightness Menu to set the primary and secondary settings to any brightness level. You can use the Options Menu to enable the Force Primary option to force your light to always turn on to the primary setting.

When your light is latched on, you can toggle between the primary and secondary brightness settings 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 set the primary and secondary brightness settings to any brightness level.

When your light is latched on, you can set your light to the lowest brightness by triple-clicking the button. Your light will momentarily turn off between the clicks but this is normal. You can return to the previous brightness by double-clicking the button. Your light will momentarily turn off between the clicks but this is normal.

Brightness Menu

The Brightness Menu is used to set the brightness of either the primary or secondary setting. There are 16 brightness levels and they are referred to as brightness level 1 through brightness level 16, with brightness level 1 being the brightest.

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. The brightness levels on your light are spaced to provide small, visually even changes in brightness. Every two levels brighter will halve the battery life and every two levels dimmer will double the battery life.

The efficiency of the LED and power supply increases when the LED is run at lower brightness levels. The increase in efficiency can exceed 40% by 6 levels below the maximum brightness level. This means you can often go 1 or 2 brightness levels dimmer than you would otherwise expect for a given brightness. The battery experiences a similar increase in efficiency at lower brightness levels. You can maximize battery life by using the lowest brightness level compatible with the task you are performing.

To set the brightness level of the primary setting, turn your light on, toggle to the primary setting, turn your light off and then enter the Brightness menu. To set the brightness level of the secondary setting, turn your light on, toggle to the secondary setting, turn your light off and then enter the Brightness menu. If you have enabled the Force Primary option from the Options Menu, you must disable the option before you can set the secondary setting.

You enter the Brightness Menu by 10-click-pressing the button while your light is turned off. The light toggles on and off while you are clicking but this is normal. If you don't want to count, just keep clicking until the light stays on before 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. Note that the sequence automatically reverses when you get to the brightest and dimmest brightness level.

When you have selected the desired brightness, press and hold the button. Pressing the button starts the acceptance flash sequence (On, Off, On, Off, …) that lasts for 2 seconds. When the flash sequence stops and your light turns off, you may release the button.

If you have not pushed the button within 10 seconds or if you do not hold the button down until the acceptance flash sequence finishes, your light will exit the Brightness Menu without changing the brightness setting and displays the error flash sequence (dimmer, brighter, dimmer, brighter, …).

The primary and secondary settings are remembered across resets. The default primary setting is brightness level 1 and the default secondary setting is brightness level 7.

Note: we suggest you consider setting up your light as follows: set the primary setting to brightness level 7, set the secondary setting to brightness level 3 and set the Force

Primary option from the Options menu. Doing so will cause the light to always turn on to brightness level 7. Double-clicking will take you to the brightness level 3. Use the press-from-On to access brightness level 1.

Options Menu

The Options Menu is used to turn on and off Options 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. The light toggles on and off while you are clicking but this is normal. If you don't want to count, just keep clicking until the light stays on.

Each option has a unique flash sequence that identifies it and a well known position in the menu. When you enter the Options Menu, you always enter at the first menu item (SOS). Click the button to sequence through the options. Double-click to reverse the sequence. 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. Pressing the button starts the acceptance flash sequence (On, Off, On, Off, ...) that lasts for 2 seconds. When the flash sequence stops and your light turns off, you may release the button.

If you have not pushed the button within 10 seconds or if you do not hold the button down until the acceptance flash sequence finishes, your light will exit the Options Menu without changing the option setting and displays the error flash sequence (dimmer, brighter, dimmer, brighter, ...).

Option: 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. You can also stop the SOS signal by resetting your light. The default setting is Off.

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

Option: Button Lock

The Button Lock option locks your light in the off setting so it cannot come on accidentally. If the button is pressed while your light has the button locked, your light flashes twice and then turns off. Note that in semi-momentary tactical mode, your light does not flash but remains off.

To release the Button Lock, triple-click the button. Releasing the Button Lock leaves the light turned off. You can also release the Button Lock by resetting your light. The default setting is Off.

The button Lock option is the second menu item and is identified in the Options Menu by two short flashes.

Option: Force Primary

The Force Primary option forces your light to always turn on to the primary setting. To use the secondary setting while this option is enabled, you must latch your light on and toggle to the secondary setting. Note: this option must be disabled in order to change the secondary setting using the Brightness Menu.

The Force Primary option is a toggle setting. Setting it once turns it on while setting it twice turns it off. The setting is remembered across resets. The default setting is Off.

The Force Primary option is the third menu item and is identified in the Options Menu by a long flash.

Option: Locator Flash

The Locator Flash option 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. You can also turn off the Locator Flash option by resetting your light. The default setting is Off.

The Locator Flash option is the forth menu item and is identified in the Options Menu by a short flash.

Note: enabling this option consumes a small amount of power when the light is turned off. Disable this option for maximum battery shelf life.

Option: Ready-for-Service

The Ready-For-Service option sequences through the brighter brightness levels when the batteries are changed. The sequence goes from dimmer to brighter. If the sequence is smooth, the battery is correctly inserted and usable. If the sequence blinks one or more times, the battery is weak and should be replaced. If no light is produced, the battery is completely dead or improperly installed.

The Ready-For-Service option is a toggle setting. Setting it once turns it on while setting it twice turns it off. The setting is remembered across resets. The default setting is On.

The Ready-For-Service option is the fifth menu item and is identified in the Options Menu by the ready-for-service light sequence.

Note: enabling this option consumes a small amount of power when the light is turned off. Disable this option for maximum battery shelf life.

Option: Semi-momentary Tactical Mode

The Semi-Momentary Tactical Mode changes how your light operates when it is turned off. A single click acts like a press and only turns your light on while the button is pushed. A double-click is used to latch your light on. Also, there is no visible Button Lock indication - your light remains completely dark when the button is pressed.

The Semi-Momentary Tactical Mode is a toggle setting. Setting it once turns it on while setting it twice turns it off. The setting is remembered across resets. The default setting is Off.

The Semi-Momentary Tactical Mode is the sixth menu item and is identified in the Options Menu by a short flash followed by a long flash.

Option: Pure-momentary Tactical Mode

The Pure-Momentary Tactical Mode provides a pure momentary mode of operation. All button pushes (clicks and presses) are momentary. In Pure-Momentary Tactical Mode, it is not possible to latch your light on or access the menus.

To return to the previous mode (Normal Mode or Semi-Momentary Tactical Mode), you must reset your light. The default setting is Off.

The Pure-Momentary Tactical Mode is the seventh menu item and is identified in the Options Menu by two short flashes followed by a long flash.

Resetting Your Light

You will seldom find it necessary to reset your light. The only time the design requires you to reset your light is to turn off Pure-Momentary Tactical Mode. However, if your light ever gets into a non-responsive state, a reset can be used to regain control.

After a reset, you may still want/need to change the non-resettable options (brightness levels assigned to primary and secondary settings, Force Primary, Ready-For-Service, Semi-Momentary Tactical Mode) to different settings.

To reset your light, open the battery compartment, remove the battery, wait for 120 seconds, re-install the battery and close the battery compartment.

Low Battery Indication

As your battery is used up, the battery will not be able to supply enough power to run your light at the selected brightness. As a result, your light will blink down one brightness level - that is, momentarily turn off and then turn back on at the next lower brightness level, repeating as needed as the battery is used up. When the dimmest brightness level is reached, the light will continue to run until the battery can no longer power the light. Please replace your light's battery before the dimmest 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 off your light and turning it back on resets the restricted brightness level and allows you access to all brightness levels if the battery is 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 the battery.

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 to keep the light from becoming hotter. Your light's temperature is regulated so you can always pick it up safely and to prevent damage to the LED bulb.

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 off your light and turning it back on resets the restricted brightness level and allows you access to all brightness levels if the light is cool enough to allow them.

Cleaning and Maintenance

Periodically clean the threads and O-ring with a clean cloth and apply a thin coat of silicon or petroleum-based grease to threads and O-ring.

Periodically replace the thin plastic lens protector that covers and protects the lens from scratching. Peel off the old lens protector and discard, carefully clean and gently dry the lens surface with a lint-free soft cotton cloth, peel the new lens protector from the backing noting that the side touching the backing will be the side applied to the lens. Carefully apply the new lens protector from one edge gently pressing to provide a good contact and expel any air from between the lens protector and the lens.

Caution: never use paper-based towels or tissues to clean the unprotected lens as scratching will result.

Send a request along with a self address stamped envelope for free replacement O-rings, lens protectors or button boots.

Warnings

Caution: rechargeable batteries must be fully charged before installation. Never install partially charged batteries as damage to the battery can result due to over-discharge - or sudden darkness can result if the batteries contain an over-discharge protection circuit. Only use rechargeable batteries that are recommended for use with your light.

Caution: Whereas a sudden total failure is unlikely, it is still possible. Therefore, we recommend you always carry a second light with you. 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: LEDs on the higher brightness levels are very bright. Looking directly into the LEDs must be avoided. The light can be intense enough to injure your eyes.

Specifications

Voltage: 2.0V to 6.75V
Power: 24dB range in 16 levels with 1.5dB spacing
Battery Pack: 1x CR123A lithium-magnesium dioxide
Light Source: white LED, regulated for constant brightness
Light Output: Standard: 20 lumens, Plus: 30 lumens, X: 42 lumens
Beam: 12 degree @ -3dB, 65 degree to shadow
Housing: aircraft aluminum, military hard anodize
Dimensions: 1 inch diameter by 3.2 inches long, excluding pocket clip

Primary Features: simple single button user interface, rechargeable battery protection, reverse battery protection without diode penalty, graceful power reduction for weak batteries, thermal management, intrinsically safe design.

Settable Options: SOS emergency signal, button lock, force primary, locator flash, ready-for-service indicator, semi-momentary tactical mode, pure-momentary tactical mode.

Accessories:
- 2x CR123A lithium-magnesium dioxide battery pack
- 2x AA alkaline, Ni-Cad or Ni-MH battery pack
- Button protector battery 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)

- 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), 5 cells (6.25V)
- NiMH: 2 cells (2.6V), 3 cells (3.9V), 4 cells (5.2V), 5 cells (6.5V)
- Li-ion/polymer: 1 cell (4.2V)

Note: specifications are subject to change without notice.