

NovaTac 85P/120P Flashlight User's Guide

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Introduction

The **EDC Flashlight** is your best-of-class everyday carry pocket flashlight that provides 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.

You can maximize battery life by using the minimum brightness level compatible with the task you are performing. The lowest brightness levels will help preserve your night vision adaptation without using a red filter while still allowing you to distinguish colors.

Your eyes respond to light in a logarithmic way. That means that a significant visible 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. The maximum brightness level pulls significantly more power than the rough approximation indicates and has a much shorter battery life as a result.

The following is a summary of the available commands and will assist you in quickly learning to use your flashlight. However, please read the rest of the User's Guide so you will understand how each feature works.

To Operate:

• Click	Click <1/3 second	Press >1/3 second
• 2 clicks	Turn on	
• 3 clicks	Toggle between Primary and Secondary or return to Primary or Secondary from other settings	
• Click-press	Minimum setting	
• Press	Maximum setting	
• 2-clicks-press	Momentary Maximum setting	
• 3-clicks-press	Ramp brightness – turn off to remember setting	
• Click	Enter Option menu	
	Turn off	

Other commands from off:

• Press	Turn on*
• Click-press	Maximum setting*
• 3 clicks	Lock/Unlock if Automatic Button Lock is on
	*Momentary if Simple Momentary is on

Within Options Menu:

• Click	Move to next item
• 2 clicks	Reverse direction and move to previous item
• Press and hold	Set item - hold until light turns off

<6 flashes> Error - nothing changed - exits menu

Options Menu:

<flash>	Emergency strobe
<SOS>	Emergency SOS signal
<dim flash>	Locator flash
<long flash>	Force setting
<three rapid flashes>	Automatic button lock
<bright-to-dim>	Automatic turn off
<short-long flash>	Simple momentary
<short-short-long flash>	Tactical momentary
<dim-to-bright>	Ramping and Option menu

Using the Single Push Button

Your light has a single push button that is used to turn your light on and off and to access its other functions. The click and press operations are very similar to using a computer mouse. 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 one third of a second.

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

Click sequence: a sequence of 2 or 3 clicks. The time between clicks must be less than one third of a second.

Click-press sequence: a sequence of 2, 3 or 4 pushes of the button where the beginning pushes are clicks and the last push is a press. The time between clicks and between the final click and press must be less than one third of a second.

Note: you must pause for more than one third of a second between commands to prevent commands from running together and becoming a single command.

Note: if you provide an invalid input sequence within the Option menu or during a reset, your light will flash the error sequence of 6 rapid flashes and exit the menu or reset without changing any settings. Under all other conditions, your light will ignore any extra clicks.

Basic Operations

Turn on. Click or press the button once to turn your light on. Your light stays on until you turn it off. Use the Simple Momentary option in the Option menu to modify this behavior. When you turn your light on, it turns on to the Primary setting. Use the Force Setting option in the Option menu to modify this behavior.

Turn off. When your light is on, click the button to turn it off.

Primary and Secondary setting toggle. 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 will return to the last Primary or Secondary setting used. Your light will momentarily turn off between the clicks but this is normal.

Minimum setting. 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.

Momentary Maximum setting. 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.

Maximum setting. When your light is on, you can set your light to the Maximum setting by click-pressing the button. Your light will momentarily turn off between the clicks but this is normal.

Brightness ramp. When your light is on, you can ramp the current brightness setting to another brightness level by click-click-pressing the button. See below for a more detailed explanation.

Option menu. When your light is on, you can enter the Option menu by click-click-click-pressing the button. See below for a more detailed explanation.

Turn on to Maximum. When your light is off, you can turn your light on to the Maximum setting by click-pressing the button. Your light stays on until you turn it off. Use the Simple Momentary option in the Option menu to modify this behavior.

Ramping Brightness Levels

Your flashlight has four (4) preset brightness settings. These settings are called Maximum, Primary, Secondary and Minimum for historic reasons. Any brightness level may be assigned to any setting. The dimmest brightness level is referred to as brightness level 1 and the highest brightness level depends on the model.

Level	1	2	3	4	5	6	7	8	9	10	11
Lumens	.08	.12	.17	.23	.33	.47	.66	.94	1.3	1.9	2.7

Level	12	13	14	15	16	17	18	19	20	21	22
Lumens	3.8	5.3	7.5	11	15	21	30	42	60	85	120

In addition to the normal brightness levels, there are three signal levels: disorienting strobe, emergency strobe and SOS, respectively. These signal levels work like regular brightness levels and may be assigned to any of the brightness settings.

Caution: the disorienting strobe can induce seizures in some individuals so it should be used with caution.

To change the brightness level of the current setting, turn your light on and then click-click-press (2 clicks and a press) the button to ramp to a new brightness level. Repeat the click-click-press to reverse the ramp direction. Release the button when the desired brightness level is reached. When the ramp gets to the brightest or dimmest level, it will double-blink at that level and pause for two (2) seconds before moving to the signal levels. Each signal level will be displayed for 4 seconds before moving to the next level. The brightness ramp is circular – i.e., the highest brightness setting is followed by the disorienting strobe while SOS is followed by the lowest brightness level and vice versa.

When you have selected the desired brightness level, release the button. To remember the new brightness level, turn off the light. If you select a different brightness setting before you turn your light off, the change to the previous brightness setting is forgotten.

If there is insufficient power to run your light at full power there is also insufficient power to safely remember the selected brightness level. When there is insufficient power to remember the selected brightness level, you will see two seconds of very rapid flashing before your light turns off. The setting will be as you set it but the change will be forgotten the next time you change the batteries or do a soft reset.

Option Menu

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

To enter the Option menu, turn your light on and then click-click-click-press (3 clicks and a press) the button. Now release the button. You will see the identification flash for the first menu item.

Each option has a unique identification flash and a known position in the menu. When you enter the Option menu, you always enter at the first menu item. Click the button once to move to the next menu item. Double-click to reverse direction 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 menu item, press and hold the button for two (2) seconds until your light turns off. If you are enabling the option, your light will display an increasing brightness sequence. If you are disabling the option, your light will display a decreasing brightness sequence.

If you do not touch the button for 10 seconds, if you enter an unknown menu command or if you do not hold the button down until the light turns off, your light exits the Option menu without changing the option setting and displays the error flash sequence consisting of 6 rapid flashes.

If there is insufficient power to run your light at full power there is also insufficient power to safely remember the selected menu item. When there is insufficient power to remember the selected menu item, you will see two seconds of very rapid flashing. The menu item will be as you set it but the change will be forgotten the next time you change the batteries or do a soft reset.

Option 1: Emergency Strobe

The Emergency Strobe option flashes your light once a second. The emergency strobe is intended as an emergency beacon.

To stop the emergency strobe signal, turn your light off. Note that this behavior is modified by enabling the Automatic Turn Off option.

The emergency strobe signal option is the first item in the Option menu and is identified by the emergency strobe signal.

Option 2: Emergency 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. Note that this behavior is modified by enabling the Automatic Turn Off option.

The SOS signal option is the second item in the Option menu and is identified by the SOS signal (dot, dot, dot, dash, dash, dash, dot, dot, dot, pause).

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 enables it while setting it twice disables it. The default setting is disabled.

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

Option 4: Force Setting

The Force Setting option forces your light to turn on to the selected 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 on.

To select a setting to be forced, first ensure the Force Setting option is disabled. Then select the Maximum, Primary, Secondary or Minimum setting you want to force. Enter

the Option menu and enable the Force Setting option. Your light will now turn on to the selected setting.

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

The Force Setting option is a toggle setting. Setting it once enables it while setting it twice disables it. The default setting is enabled with the Primary setting selected.

The Force Setting option is the fourth item in the Option menu and is identified 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 off for 5 minutes. If the button is pressed while your light has the button locked, your light flashes three times and then turns off. Note that this behavior is modified by enabling the Tactical Momentary option.

To release the Button Lock, triple-click the button. Releasing the Button Lock turns your light on. Note that this behavior is modified by enabling the Tactical Momentary option.

When Automatic Button Lock is enabled, you can manually lock the button by triple-clicking from Off. Note that this behavior is modified by enabling the Tactical Momentary option.

The Automatic Button Lock option is a toggle setting. Setting it once enables it while setting it twice disables it. The default setting is disabled.

The Automatic Button Lock option is the fifth item in the Option menu and is identified by three short flashes.

Option 6: Automatic Turn Off

The Automatic Turn Off option turns your light off after 5 minutes of button inactivity. Your light provides a warning prior to turning off by slowly sequencing down to the lowest brightness level and then slowly blinking 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 enables it while setting it twice disables it. The default setting is disabled.

The Automatic Turn Off option is the sixth item in the Option menu and is identified 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. When the Simple Momentary option is enabled, your light turns off when the button is released following a press. When the Simple Momentary option is disabled, your light will stay on after the button is released following a press.

The Simple Momentary option is a toggle setting. Setting it once enables it while setting it twice disables it. The default setting is disabled.

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

Option 8: Tactical Momentary

The Tactical Momentary option provides a pure momentary mode of operation – i.e., when the button is pushed the light is on and when the button is released the light is off. Therefore, you must make any desired configuration changes before enabling the Tactical Momentary option. If the Automatic Button Lock option is enabled, the button locks upon enabling the Tactical Momentary option and your light remains dark when the button is pressed. Further, upon releasing the button lock, your light remains off until the button is pressed again.

Note: performing a soft-reset will force the button to lock when both the Tactical Momentary option and the Automatic Button Lock option are enabled.

You disable the Tactical Momentary option by performing a factory-reset. The default setting is disabled.

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

Option 9: Ramping and Option Menu

The Ramping and Option Menu option turns on the brightness level ramping and the Option menu. Disabling this feature prevents further configuration changes.

You re-enable the brightness level ramping and the Option menu by performing a factory-reset. The default setting is enabled.

The Ramping and Option Menu option is the ninth item in the Option menu and is identified in the Option menu by a brightening sequence.

Resetting Your Light

You must perform a reset to disable Tactical Momentary after it is enabled, to enable brightness level ramping and the Option menu after they are disabled, to restore factory settings or when you change the type of batteries you are using. A reset can also be used to regain control if your light ever gets into an unresponsive state.

Soft-Reset – fix an unresponsive state or part of a higher level reset. If your light is working normally, turn your light on and unscrew the battery case until the light goes out, count to three and then screw the battery case back together. If your light is in an unresponsive state, remove the batteries for 2 minutes and then reinstall them. Identified by 1 second of dim light. Does not change your settings.

Battery-Detect-Reset – required to detect battery configuration changes. Perform a soft-reset but while the dim light is on, press and hold the button for 5 seconds until your light dims. Release the button when your light dims. Identified by 5 seconds of bright light followed by dim light. Does not change your settings.

If you release the button during the brighter period, your light displays the error flash sequence consisting of 6 rapid flashes and your light will not detect the battery configuration.

If there is insufficient power to run your light at full power there is also insufficient power to safely remember the detected battery configuration. When there is insufficient power to remember the detected battery configuration, you will see two seconds of very rapid flashing. This also indicates that the battery configuration has not been properly detected and damage may occur to rechargeable batteries. Only fully charged rechargeable battery configurations can be properly detected.

Factory-Reset - restores your light to factory settings, including disabling Tactical Momentary, enabling brightness level ramping, enabling the Option menu and detecting the type of batteries installed. Perform a soft-reset but while the dim light is on, press and hold the button for 10 seconds until your light turns off. Identified by 5 seconds of bright light, 3 seconds of dim light and 2 more seconds of bright light. The settings are now restored to the factory defaults.

If you release the button during either of the brighter periods, your light displays the error flash sequence consisting of 6 rapid flashes and your light will not modify the settings.

If there is insufficient power to run your light at full power there is also insufficient power to safely remember the factory settings. When there is insufficient power to remember the factory settings, you will see two seconds of very rapid flashing. Your light's features will be returned to their default state but the change will be forgotten the next time you change the batteries or do a soft reset.

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, repeating as needed as the batteries are used up. That is, your light will momentarily turn off and then back on to a brightness level that is half of the previous brightness level. 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 back on resets the restricted brightness level and allows you access to all brightness levels if your batteries are capable of supplying the power.

Low battery behavior can also occur if the battery contacts become dirty. Gently wiping the battery contacts in a counter-clockwise direction, or the springs in a clockwise direction 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: the length of time your batteries will last depends on how you use your light, the type and quality of batteries 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.

Installing the Battery

Unscrew the battery compartment from the head or the button cap and remove the old battery from the battery compartment. Insert the new battery into the battery compartment so the positive terminal is toward the head and the negative terminal is toward the button cap and reassemble. Please make sure both the head and button cap are screwed on snugly.

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 at half the previous brightness, repeating as needed until your light finds a brightness level that the dying battery can handle.

Note: always perform a Battery Detect Reset when changing battery configurations – i.e., for different battery chemistries or different battery cases. Rechargeable batteries must be fully charged before installation. Your light will protect rechargeable batteries from over-discharge.

Note: if you insert the batteries backwards in the battery compartment, your light will not light. Remove the batteries and insert them correctly. Your light is protected against reverse battery polarity.

High Temperature Indication

Your light can produce an excess amount of heat on the higher brightness level(s). 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. Before your light becomes dangerously hot, a thermal sensor detects the increasing temperature and reduces the output one brightness level at a time until the temperature stabilizes at a safe temperature. 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 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 non-conductive silicon or petroleum 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. Recessed contacts should be cleaned in a counter-clockwise direction while springs should be cleaned in a clockwise direction to prevent snagging the swab. 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: 1.5mm x 21.5mm, 70 durometer Nitrile (Buna-N).

Warnings

Warning: 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.

Warning: Never mix battery types or brands and never mix fresh batteries with used batteries. Doing so may cause a battery to overheat, outgas, catch fire or explode.

Warning: 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 lighting requirements 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.

Warning: 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 when used according to these directions.

Specifications

Input voltage: 1.8V to 4.5V

Light Source: high efficiency white LED

Maximum light Output: 85 or 120 lumens

Regulation: constant power regulation with Tint Control™

Battery pack: 1xCR123A lithium-manganese dioxide

Runtimes: See Factory Settings

Housing: aerospace aluminum, military type III hard anodize

Lens: polycarbonate with anti-reflective coatings

Dimensions: 25mm (1 inch) diameter by 80mm (3.3 inches) long, excluding accessories

Weight: 86g (3 ounces) including batteries, excluding accessories

Waterproof: 20 meters (66 feet) – not dive rated

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

Settable Options: four (4) configurable brightness settings, disorienting strobe, emergency strobe signal, emergency SOS signal, locator flash, force setting, automatic button lock, automatic turn off, simple momentary, tactical momentary, disable brightness level ramping and Option menu.

Factory Settings

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

- Maximum setting: maximum brightness level (30 minutes runtime*)
- Primary setting: 10 lumens (10 hours runtime*)
- Secondary setting: 30 lumens (2.0 hours runtime*)
- Minimum setting: 0.3 lumens (40 hours runtimes*)
- Force Setting: Primary setting
- Locator Flash: disabled
- Automatic Button Lock: disabled
- Automatic Turn Off: disabled
- Simple Momentary: disabled
- Tactical Momentary: disabled
- Ramping and Option Menu: enabled

* Runtimes using Duracell CR123A at 35°C for the 60 lumen model. Runtimes for the three lower power setting will typically be better on higher power models.

Battery configurations supported by the LED module:

Primary cells - non-rechargeable:

- Alkaline: 2 cells (3.3V) – reduced high power performance
- Li-FeS₂: 2 cells (3.3)
- Li-MnO₂: 1 cell (3.2V)
- Li-SOCl₂: 1 cell (3.6V)

Secondary cells - rechargeable:

- Li-ion: 1 cell (4.2V)
- NiCad: 2 cells (2.5V)
- NiMH: 2 cells (2.6V)

Specifications are subject to change without notice.