

pi-Lit® Sequential Flare (Ice Cream Sandwich) – Quick Start Guide

- **Battery Status**
 - When Flare is OFF, simply TAP (do not hold) the square π (*pi*) button.
 - A yellow/green LED will begin to flash
 - 5 yellow = full batteries, 4 yellow = good batteries, 3 yellow, 2 red = low batteries, 1 red = batteries depleted (time to change batteries)
- **Turning on Flares**
 - Briefly tap the round power button.
 - Yellow/Green LED will illuminate indicating that the flare is turning on.
 - First flare takes approximately 3 seconds to turn on
 - The remaining flares will take approximately 1 sec to turn on
 - Once the flare begins flashing, then turn on the next flare.
 - ***Remember to wait until the flare begins to flash before turning on the next flare in line.***
- **Tilt Sensor – Choice of LEDs – Locking Orientation of LEDs**
 - There are a total of 12 LEDs on the SIDE of the flare and 4 LEDs on the TOP.
 - The flare has a tilt sensor: When placed flat on a surface the side LEDs flash. When magnetically attached to a vertical panel, or when on its edge, the “top” LEDs will flash.
 - To disable the tilt sensor, simply TAP the square π (*pi*) button while the flare is operating. This will send the command to all the flares to “lock” on the 4 TOP LEDs even if it is in the HORIZONTAL position. TAP the square π (*pi*) button again and the 12 side LEDs will be locked on (irrespective of orientation). The 3rd TAP of the square π (*pi*) button will bring the flare back to its default state where the tilt sensor controls the choice of LEDs.
- **Changing Patterns**
 - To change patterns, simply TAP the round power button on any flare that is flashing.
- **Turning OFF the Flares**
 - There are two ways of turning OFF the flares:
 - To turn off all the flares: Press and hold the power button for 3 seconds. All the flares will turn off and a red LED will flash for a few seconds to indicate flare is turning off.
 - To turn off a single flare: Press and hold the square *pi* button for 3 seconds.

Changing Frequency - Additional Info. for Rocket Scientists

Not part of Quick Start – To save the environment we added this to the back of Quick Start rather than print an additional piece of paper. For those techies out there that might be interested.

Groups, Frequency and Channels:

The Ice Cream Sandwich Flare uses radio communication to establish a “network” connecting individual flares. This is how they establish their proper sequence number. There are 14 channels (frequencies) within this 2.4 GHz. We use 5 of these channels to allow for multiple sets of ICS flares to operate in close proximity without interfering with each other.

For example, if one fire unit deployed a set of 10 ICS flares on the east-bound side of a roadway and a law enforcement unit deployed a set of 10 ICS flares on the west-bound lane, or upstream on the same side, the radios might “hear” each other. If fire turned on number 1 flare and police turned on number 1 on their side around the same time, one of these flares might think it should be number 2. You can envision other scenarios where flares operating in close proximity might lead to asynchrony. Close proximity is 200 feet.

To avoid this cross-talk interference we supply sets of ICS flares with different frequencies (Groups or Channels). When you order multiple sets we will ask whether you want all the same frequency or different frequencies. Currently we designate frequencies with a color “dot” on the flare. Green, Yellow, Beige, Black, Blue are the available frequency choices.

So what are the advantages of using a single frequency? If all your 100 flares are of the same frequency (yellow, for example) then you could create a sequential string with 100 flares. There is no limit to the number of flares that can be “strung” in a sequence of the same frequency. Or you could place numbers 1 through 10 on the right side of a lane and numbers 11 through 20 on the left side of a lane to create a “funnel” effect. The funnel requires that all of the flares be on the same channel (frequency). *Watch our videos on the Home page at www.pi-lit.com.*

BUT WAIT – the good news. You can change the channel yourself. To change the channel of a flare, first turn it off. Then simultaneously press and hold the **power** and **pi** buttons for 2 seconds. The green-yellow indicator LED will flash to indicate the current channel number. To change the number, tap the square **pi** button 1 (yellow), 2 (blue), 3 (green), 4 (beige), or 5 (black) times. The green-yellow LED will echo back the new setting. If you inadvertently enter the wrong number you can tap the **pi** button again to enter the desired channel. The flare will wait a few seconds before flashing the red indicator LED to indicate that it has saved your new choice. If you got it wrong you can start the process over or remove a battery to return to the default channel. You will have to do this on all of the flares that you want to work together.

HOWEVER, when you change the batteries the flare will revert to the factory default channel.

Lithium Rechargeable Ice Cream Sandwich Flare – The cat’s meow!

Pi Variables, Inc. has introduced the rechargeable ICS product. A few things to understand and note:

- 1) Must use the Pi Variables, Inc. cigarette cord and wall adapter – these are 12-volt designs. DO NOT USE USB SOURCE. Must be 12-volts at 2.5 amperes; DC regulated.
- 2) Charging time for completely depleted battery is approximately 5-6 hours.
- 3) Battery will automatically disconnect when voltage drops below a pre-determined (6.0 volt) level. This protects the lithium battery from “under-voltage” which compromises battery life (fewer recharge cycles). The flare will turn off when this voltage is reached.
- 4) We have incorporated an extremely conservative charging-system/battery-protection design. The batteries are charged at 0.2C – that is, it will take 5 hours to fully charge a depleted battery. For example, most cell phones charge at 1C or 0.8C which leads to a 1 to 2-hour charge time. Charging batteries in a shorter period requires more current, which leads to more heat. Lithium batteries do not like heat.
- 5) Our design incorporates two heat protection switches. Either switch will protect the battery from charging or discharging when the temperature is above a predetermined critical level. One of the switches also protects from operation when exposed to very high temperatures. The cutoff is +60C (140 degrees Fahrenheit).
- 6) With regard to high-temperature protection, we have tested the ICS rechargeable system in the heat of a car during summer operation in Southern California on a 100° Fahrenheit day. The car was in the sun with windows closed. When the flare was left exposed to direct sun rays on the dash or rear-window shelf, it became inoperable in approximately 2 hours of exposure. The temperature in the car was approximately 130°F. When several similar sets of flares were left in the same car during the same test period but placed on the floor in the passenger area without direct sun, the flares continued to operate. Furthermore, flares left in the trunk of the car continued to operate. The temperature in the trunk of the car did not achieve the same high temperature as the passenger area. Opening the windows a bit cooled the passenger area significantly. However, flares left in the sun would cease operation after several hours.
- 7) Summary: Do not place the flares in direct sunlight with windows closed on a hot summer day. The flare becomes inoperable at 140°F, and returns to function at 104°F. It will take approximately 20 minutes for the flare to cool to operating temperature. The flare will not charge or operate at these temperatures. This is by design to both protect the battery and to prevent bad things from happening.