

Motor Topper Quick Setup Guide

Power-up Self Tests: LED blink pattern

One Long Flash: MOSFET is shorted. Do not connect the igniter.

Two Long Flashes: The battery is less than 9 volts.

Three Long Flashes: Acceleration not zero, hold the unit horizontal.

Ready For Flight: LED blink pattern

One Short Flash: No continuity, connect the igniter.

Two Short Flashes: Ready, waiting for 1 gee (vertical)

Three Short Flashes: Armed, waiting for launch.

Any time the unit is tilted more than 20-30 degrees from vertical it will revert to 2 flashes.

Warning: Installing the battery backwards will fire the igniter.

Warning: 35 gees maximum. Do not use Motor Topper in rockets with >35:1 thrust to weight ratio. Exceeding this limit by a little will cause an early deployment, exceeding it by a lot will cause no deployment.

Pre-Flight Test: With no igniter attached, install the battery and hold the unit vertical, observe three long blinks. Hold the unit horizontal and you should see the data from the previous flight. Rotate back to vertical and one short blink per second will flash to indicate there is no igniter.

Preparing For Flight: Attach the igniter and battery. Hold the Motor Topper horizontal and look for two short blinks. Install the Motor Topper in your electronics bay so that the UP arrow will point up when the rocket is pointing up.

Notes:

Use battery A23 Alkaline Battery (12 volts).

Use only low current igniters. 50AWG NiCr fuse heads are best (400mA All Fire).

Any flight of less than 2 seconds to apogee will not cause deployment.

Lifting a rocket from the ground or a table may cause launch detect, but if it is not swung around for more than a second the flight time will be too short and the unit will return to looking for a constant 1 gee and re-arm.

Once the power on self tests have been completed the battery voltage is not tested again.

Decoding the output after a flight: 2 second pause, Time to apogee (medium flashes), 2 second pause, thousands of feet (long flashes), hundreds of feet (short flashes).

To recall the data from the previous flight hold the unit horizontal with no igniter installed.

To test the Motor Topper: Connect a small 12 volt light bulb. Start by holding it right side up at your side and wait for the 3 fast blink armed signal. Swing the unit at arms length 3 and a half times stopping with it held inverted at eye level. If a valid flight is detected you should see 3 to 5 flashes of the LED then the igniter circuit will fire.

To get a "feel" for just how hard it is to detect launch and a valid flight connect a small 12 volt light bulb and swing the unit about.

Approximate accuracy: Time to apogee is +/-2% altitude is +/-11%.

In general, on a vertical flight, the longer the time to apogee the more early the deployment will be. You should not use this for any rocket you expect to exceed about 24 seconds to apogee. It tends to be more accurate than motor ejection, but is not a substitute for a barometric altimeter.

Rocketry and pyrotechnics are dangerous, use caution, don't point a rocket with live charges at anyone including yourself.

There is no warranty, and nothing is guaranteed.

I hope you enjoy this simple little gadget.

Dave Flynn

DMF-Rockets.com

(626) 893-6654 Please call after 3pm pacific time.