

Control-Line Motor-Run Timer

Stevens Aeromodel · Version 1 board · Firmware v0.4 · Made in Colorado, USA

▲ READ FIRST

5 VOLT BEC MAXIMUM. NO EXCEPTIONS.

- **Whenever a battery is connected, assume the motor can start at any instant.** Stay clear of the propeller and keep the model properly restrained.
- **Keep the battery disconnected from the ESC** while transporting the model to and from the field, while attaching control lines, and during all other pre-flight checks.
- **Remove the propeller** for any throttle adjustment, and for the first run with any new ESC or motor.
- **Never fly near power lines.**

DISCLAIMER. Control-line model flying is potentially dangerous and can cause serious injury, death or property damage. Stevens Aeromodel has no control over the installation, programming, maintenance or operation of this product and accepts no liability of any kind arising from its use. By using this timer you accept full and sole responsibility for the safe operation of your model and for the safety of yourself, your assistant, bystanders and property. If you are unwilling to accept that responsibility, do not use this product.

THEORY OF OPERATION

The timer replaces a radio receiver. It plugs into your ESC's servo lead and commands the motor through a timed program set on the ground: a ramp up, a run of the length you chose, a warning, and a gradual wind-down to a dead-stick landing. Two controls — the **button** sets the time and acts as an emergency stop, the **trimmer** sets how hard the motor runs. On power-up it commands **motor off**, so your ESC arms normally.

TWO-PERSON OPERATION — REQUIRED

Never start a programmed flight and then walk out to the handle. Leaving a live, armed model behind you is how people get hurt.

Pilot	At the handle with the lines in hand <i>before</i> anything is programmed. Perform your normal control check, then have your assistant set the run time. First time back in the circle? Start at 1 minute and work your way up to 3+ minute flights.
Assistant	At the model. Sets the trimmer, programs the time, releases the button, then clears the propeller and steps well clear during the 5 second delay.

What a flight looks like

Phase	Length	LED	What's happening
Start delay	5 s	fast flash	Motor off. Assistant clears the prop and steps clear.
Ramp up	5 s	slow flash	Throttle rises smoothly to your trimmer setting.
Programmed run	your time	SOLID	Full power at the trimmer setting. Flight time.
↳ Warning	2 s	flickers	Engine "stumble". 40 seconds of power left.
Wind-down	25 s	slow flash	Power fades gradually. Set up your landing.
Stopped	—	double-blink	Motor off. Time is erased. Ready to reprogram.

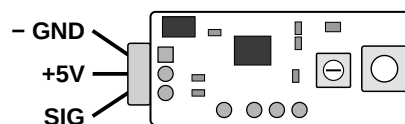
Total motor time = your programmed time + 30 seconds (5 s ramp up, 25 s wind-down).

EMERGENCY STOP

A single press of the button at any time after arming stops the motor immediately and erases the programmed time — during the delay, ramp, run, warning or wind-down.

CONNECTING

The timer plugs into your ESC's servo lead. **Board shown life size** (15 × 35 mm), viewed from the component side. Pin 1 (ground) is the square pad.



SETTING THE TIME

The pilot is at the handle before this begins. The assistant does all of the following at the model:

1. Power up. Wait for the **double-blink** (idle).
2. **Press and hold** the button.
3. **Count the blips.** One LED blink with a brief motor blip is one minute.
4. **Release when you have counted the number you want.** Fast flash = the 5 second delay has started.
5. **Clear the propeller and step well clear.**

Example programs

You want	Count this many blips	Motor runs	Stumble at
1 min	1	1:30	0:50
3 min	3	3:30	2:50
10 min (max)	10	10:30	9:50

Final motor run includes the 30 s of ramp — stumble always indicates **40 seconds until end of run.**

SETTING THE THROTTLE

Remove the propeller from the model before making any throttle adjustment.

Use a small flat screwdriver on the **trimmer**. Clockwise delivers more throttle.

- **Do not force the trimmer past its physical stops.** It is a single-turn part and turning against the stop will damage it.
- **The full sweep covers 50% to 100% power.** It cannot be set lower than half throttle.
- Set it on the ground, before you program the time. Treat it as a pre-flight setting.

If the top of the trimmer's travel does nothing, your ESC's range is narrower than the timer's. Calibration may help, but results vary by ESC manufacturer and programming.

ESC CALIBRATION

Perform only if the motor won't arm, or to fine-tune trimmer travel. Propeller off and model restrained.

1. With the timer **disconnected** from the ESC, first connect the battery to the ESC.
2. Then, **while holding the button on the timer**, connect the timer to the ESC. Continue holding the timer button. The timer LED will indicate **solid** = full throttle commanded.
3. Once the ESC recognizes the high throttle point, **release the button**. The timer throttle drops to stop; allow the ESC to recognize the low point and arm. LED returns to the idle double-blink. The setting lives in the ESC, not the timer.

Released too early, or nothing confirmed? Disconnect the battery and start again.

TROUBLESHOOTING

Symptom	Cause and fix
ESC beeps continuously, won't arm	Run the ESC calibration above. If it still won't arm, check your BEC is 5 V.
Nothing at all — no LED	Check servo lead orientation and that the BEC is live. Reverse polarity blocks power harmlessly.
LED idles but motor never runs	Released before the first blip, so no time was set. Hold longer and count the blips.

