

# C/L TIMER Active Timer Control Line v.6.X

The active timer controls the ESC to regulate the motor RPM in flight based on data received from the accelerometer. The system can minimize flight speed variation, or allow for increase or decrease of rpm based on accelerometer input. In addition nose up climb may simulate 4-2-4 type motor speed changes. Flight start delay and flight time may be set. All parameters are set using the Jeti Box.

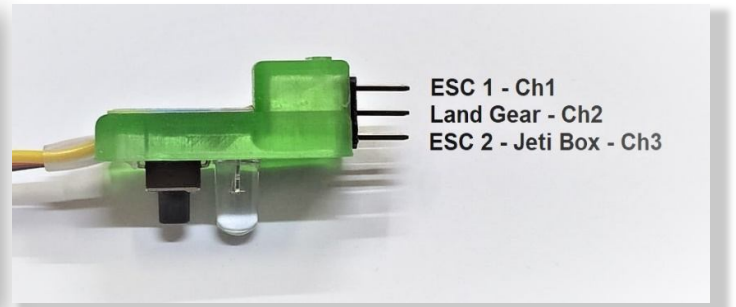
An LED is used, and signals the start and end of the flight. A stopwatch is not needed. The plane can be positioned for landing based on the 10 second warning from the LED.

A new feature of the timer is RPM tuning of a second ESC/motor, useful for twin engine or counter-rotating systems. Retracting landing gear control has also been added. Features are summarized below

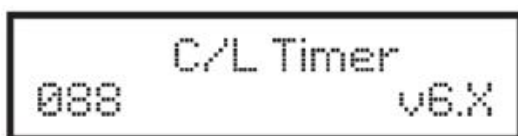
- Signalling: Blue LED >15000MCD visible at Day light;
- Pre-flight time: 30 to 90 seconds;
- Flight time: 60 to 420 seconds;
- Active motor RPM control (accelerometer);
- Independent RPM fine tuning between ESC's;
- Retractable landing gear option;
- Warning before motor stop: 10 seconds;
- Power supply 5Vcc (máx. 5,5Vcc);
- ESC control pulse PWM: 1.200ms to 2.000ms;
- Finish Plate for fuselage installation;
- Weight: 0.27oz

## Programming:

Your Timer comes with a pre-set program for initial flights. In order to change the parameters, **Make sure the timer is turned off**, and plug in the JETI BOX as shown.



To navigate through the screens press the horizontal arrows ◀ ▶ and to change parameters use vertical ▲ ▼



### **First screen:**

On the left you have the total of flights done. To change it hold **START** pressed and use the arrows to set value ▲ ▼. Right number is the firmware version.

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```
Delay Time
35 sec.
```

## (Delay Time) Pre-flight:

You can adjust engine start time to begin after a 30 to 90 second delay.

We recommend to begin with 45 secs. at least.

```
Flight Time
05:20 [mm:ss]
```

## Flight Time:

The flight time can be set to a minimum of 1:00 min. and maximum 7:00 min.

For first flights we recommend to limiting to 1:00 min until you find the optimum flight speed. After flight speed or lap time is determined, you can slowly raise the flight time and check the battery level, never allowing to go below 20% or 3.7V per cell.

```
RPM ESC1 PWM Ch1
110          1.420 ms
```

## (RPM ESC1) Engine RPM:

Adjust the RPM steps to set the lap time, or the to set RPM. For Castle ESC 110 is suggested for starting, and for Jeti Spin ESC, 230.

The value on the left is a reference of steps, and works within 0 to 400. On the right, the PWM signal as sent to the ESC in milliseconds between 1.200 and 2.000ms.

```
RPM Increase PWM
Nose_Up        20us
```

## (Nose\_Up) Climb RPM Increase:

You can adjust the RPM to increase when the plane is in a climb or cross overhead.

Setting of 0 to 50µs, initially set at 20µs can be changed

as needed for each plane.

```
Sensitivity Acc
12
```

## (Sensitivity Acc) Accelerometer Sensitivity:

Start with a value of 10 or less. Sensitivity will affect variations in acceleration and deceleration from the accelerometer. Sensitivity does not alter Climb RPM above.

A higher adjusted value allows more RPM variation.

```
RPM Max PWM
150      1.500ms
```

## (RPM Max) Maximum RPM:

The Max setting acts to limit the RPM increase allowed by the sensitivity setting. The actual number should be between RPM ESC1 value to 2.000ms.

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```
RPM Min      PWM
020          1.240ms
```

## (RPM Min) Minimum RPM:

The MIN RPM acts to limit RPM decrease from the sensitivity setting while the model speeds-up. Adjust 1.200ms to RPM ESC1 value.

```
Landing Gear  Ch2
Dir Normal    10s
```

## (Landing Gear) Landing Gear:

There is 2 parameters you can control for the landing gear:

Actuation time or blocking (Off) using arrows ▲▼.

Working direction Normal or Reverse pressing **START**.

Landing gear will close within the set time after flight starts and will open 10 secs before end of flight.

```
RPM ESC2 PWM Ch3
          0.025ms
```

## (RPM ESC2) 2nd Engine RPM:

You can fine tune 2nd engine RPM based on ESC1 settings up to PWM +/- 0.100ms. This feature is usefull for twin engines to achieve proper flight trimming.

```
Acc Status   C=405
X=421        Y=402
```

## (Accel Status) Accelerometer Status:

Here you can check to verify that the sensor is working properly and leveled. The "C" value is referential and was set to a leveled Surface.

Sensor installation:

- Level the plane on your bench, preferably using an incidence meter.

- Provisionally fix the sensor closer to CG so the value "Y" is closer to "C";

- Put the plane upside-down and levels until "Y" value is the same of level up position;

Make sure "Y" value is the same with the plane levelled on both flight conditions. If they are not the same shim the sensor until you achieve it.

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Sensor Position Normal
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## **Sensor Position:**

You have 2 options to install the sensor:

Normal – Sensor flat side pointing down.

Reverse – Sensor flat side pointing up.

To change option press **START**.

**Obs:** On both options the wiring must run to the model nose and sensor aligned paralel to the fuselage.

## **ESC Castle Adjustment:**

### **THROTTLE**

Vehicle Type: **Control Line**

Throttle Type: **Governor Mode  
8Khz**

Governor Mode: **Governor High**

Initial Spool\_Up Rate: **20**

Head Speed Change Rate: **18**

### **BRAKE**

Brake Strength: **100%(Hard)**

Brake Delay: **No Delay**

Brake Ramp: **Medium**

### **MOTOR**

Motor Start Power: **High (100)**

PWM Rate:

## **Hints:**

Use high quality material on installation;

The sensor detects minimal angle variation of the model and vibration from engine, propeller and spinner. We strongly recommend the use of 3 blade propellers to achieve best performance and to carefully balance them.

Do not invert connections as this will damage the system.

## **Safety:**

Keep away from the propeller, most speed controllers ESC`s have a safety feature to cut engine when overload happens, but this won´t prevent injuries from misuse.

Request help to hold your model until you have the safety strap in your wrist and ready to start flight

## **Warranty:**

12 months.

**Tight Lines!!**