



## Watt Meter

Very simple to operate piece of invaluable equipment  
Takes all the guessing out of motor setup  
Get the maximum efficiency or potential from motors and batteries.

Most motors come with recommendations as to how they should be setup, for efficiency or maximum power. Electronic speed controllers have constant current values, burst of power values (not to be exceeded) Nicad & Nimh batteries have capacities (mAh) and current capability (Amps). Lithium packs have maximum "C" ratings (capacity in mAh x "C" rating) not to be exceeded.

So how do we know if we have the right setup?

We read articles in magazines of existing setups.  
We contact companies like Overlander and also listen to recommended setups.  
We listen to friends in the hobby who have experience in electric flight.  
Sometime we can "feel" more power from different propellers, batteries or motors.

### **THE TORNADO WATT METER TAKES ALL THE GUESS WORK FROM ALL OF THE ABOVE.**

How easy to calculate & operate?

Lets get a few basics correct here, when you see MAX efficiency, MAX discharge rates on any type of product, these mean what they say, as an analogy most motor cars are given a MAX speed, if the law allowed and you could drive at the MAX speed all the time, your car engine would have a very limited life, with lots of stress on other components. It is just the same with electric motors, controllers & batteries. Run them at their MAX & You will soon be getting 'heat generated on the weakest part of' your guessed setup. -

**Watt meters take all the guesswork out of motor setting up it shows you the VOLTAGE, AMPS, & WATTS being used by your setup, allowing you to experiment with different voltages, propeller sizes to get your setup to the correct levels. It will also save you controllers or battery packs which are being overstressed**

Electric motors normally recommend the maximum number of cells (Volts) and max current/efficiency ratings (Amps). Multiply the max volts (V) by the max Amps (A), and you have the watt rating of the motor,  $V \times A = \text{Watts}$ . The Tornado Watt Meter does all these calculations for you, as you are running your motor.

Its also worth remembering you're your setting up will be done whilst static, this means that in the air an aircraft propeller will unload..lowering current rates by 10 % 20% helicopters. do not have this benefit.



## Multi -Function DC Watt Meter

The Multi function watt meter with Speed Controller will show the value of the input voltage, the output current and the pulse width of the PCM controller on a LCD Screen.

The value of the power mAh will be shown flashing on the screen. The RPM can be adjusted by turning the knob on the unit. The PCM signal controlled by a potentiometer is a high electrical level(time) with cycle T =20ms. The range of output value of high electrical level (time) when adjusting knob is on the high side 0.9ms - 2.1ms. When the adjusting knob is on the 'Low' side the range is 1ms - 2ms.

SLze	107 x 52 x 20 mm
Range of input voltage	3.3v - 50v
Output Range	0 - 70 A
Cycle of pulse width 20ms	0.9 - 2.1ms (High) 1ms-2ms ( Low)

### Operating Instructions

- 1 Connect power to Input, ( ensure correct polarity)
- 2 Connect equipment to be tested to the output end.
- 3 Connect the servo to the throttle on the ESC
- 4 PWR-SET is the selection switch of interior BEC. Turn the switch upward - with BEC output, just turn the switch upward to supply BEC for the ESC.
- 5 PCM-SET is the selection switch of pulse width: Turn upward 0.9ms - 2.1ms Turn downward 1ms - 2ms
- 6 PCM is the adjusting knob for pulse width ..