

## **Tacktick Limited T120 Wind Operational Description**

### **Introduction**

This document is to be read in conjunction with the 'Tacktick Limited T120 Wind Block Diagram'. The functionality of each block shown on the diagram is expanded in this document.

### **Microprocessor**

This device stores the operating software in its on board flash and system data in its on board RAM. The software controls the operation of the T120 Wind Transmitter. The software can be upgraded in circuit by connecting the programming port to a PC running the appropriate development environment.

The microprocessor uses a precision voltage reference against which to measure inputs through its built in 8 channel ADC.

An external supervisor chip is used to ensure that the microprocessor is reset if it fails to produce a periodic strobe signal.

### **Batteries and Recharging Circuit**

The unit runs from two internal, rechargeable lithium coin cells. These cells can be recharged using the integral solar cells.

### **Magnetic Wind Direction Measurement Circuit**

The microprocessor provides an output signal that excites the wind direction measurement circuit. This circuit interacts with a permanent magnet in the rotating vane on top of the unit. The direction measurement circuit produces signals that are read through ADC inputs on the microprocessor. This data is used to determine the current angle of the wind vane.

### **Optical Wind Speed Measurement Circuit**

The microprocessor drives an optical sensor that counts the rotations of a printed disk that is connected to the rotor cups on the wind transducer. The return signals from the sensor are counted by the microprocessor and the data is used to determine the current rotation speed of the cups.

### **Radio Transceiver Circuit and PCB Antenna**

The unit communicates with other units in the network across a wireless data link. The microprocessor sends configuration sentences to the radio transceiver chip. The data link between the microprocessor and the radio chip is half duplex. The RF signals are transmitted / received using a simple monopole wire antenna.