Tacktick Limited T122 NMEA Operational Description

Introduction

This document is to be read in conjunction with the 'Tacktick Limited T122 NMEA 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 T122 NMEA interface. The microprocessor translates information between the NMEA protocol and the proprietary radio protocol used for the MicroNet network, i.e. information received on NMEA is transmitted on the radio network and information received over the radio network is transmitted onto NMEA.

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 by applying an external voltage to connectors on the front of the unit. Recharging from an external supply is performed under software control.

NMEA Out Voltage Rail Generator

A closed loop controller run by the microprocessor regulates the NMEA out voltage rail.

NMEA I/O Circuits

This circuit block sends and receives data to / from external devices using the NMEA 0183 protocol. Data received on the two NMEA input ports is sent to the processor. Data sent from the processor is output to the NMEA out port.

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 PCB track antenna.