

Circuit Functions and Operation of G2 Datasondes

1. Applicability

This document applies to the following products:-

Datasonde type 10/ND2415-P FCC ID K68ND2415B

2. Circuit functions

A block diagram of the electronic hardware is shown in figure 1. The circuit functions are shown in Figure 2. The product is powered by two 1.5V internal batteries. A switched mode power supply converts the battery voltage to a +5V supply for the electronic parts. Various sensors, namely a battery voltage sensor, roll sensor, tilt sensor, and temperature sensor feed the outputs into a microprocessor. A 4.194304 MHz oscillator is used to drive the roll sensor. The transmitted frequency is also derived from this oscillator, after being divided down by a divider and the antenna driver. The microprocessor is driven from a 4.608 MHz crystal oscillator. This data is then Manchester encoded at 150 Hz bit.

The antenna driver feeds the transmitted signal to the antenna. The transmitted signal is a fundamental frequency of 8192 Hz or 32768 Hz depending on operating mode, 100% amplitude modulated by the encoded data.

The datasonde is able to transmit at either 8192 Hz or 32768 Hz. The actual frequency transmitted can be toggled between the two frequencies by rotating the product through a particular sequence of orientations.

The external metal battery housing is connected to the battery –ve terminal that is also connected to the ground planes of all the PCBs. The ground simply acts as a reference point and as an earth return. The antenna used is a ferrite cored coil antenna with a driven primary and a tuned secondary. The secondary is self-tuned to approximately 33 kHz. The antenna arrangement is shown in figure 3.

Figures 1, 2, and 3 are contained in the electronic files as follows:

Figure 1	Hardware Diagram.doc
Figure 2	Y-P Functional Diagram.doc
Figure 3	antenna schematic.doc.