

## **RF516 General Description.**

NOTE: This will also be valid for the RF513 with the exception of the analogue input, but this will not have any impact on the way the radio performs.

*RF Board:*

SEE RF MODULE GENERAL DESCRIPTION.DOC

PSU

The Battery is a single non-rechargeable 1.5V alkaline or 3.6V Lithium Thionyl Chloride C-size cell.

R1 & TR1 form a switchable dummy load for battery condition monitoring via R3,R4,C8 and microprocessor ADC.

Boost regulator IC4 generates 3.3V albeit a noisy 3.3V with a 3.6V battery input. IC5 is a 3.0V LDO regulator which powers the whole circuit via Vcc.

### **MICROPROCESSOR**

IC1 Atmel mega329 has internal RC oscillator at nominally 8MHz. The CPU & IO however run at a divided frequency (2MHz as of 20060501)

Watch crystal CR1 32KHz is for timekeeping.

This micro has an on-board voltage generator for supplying an LCD (LCD1). This voltage is stored on C17.

Programming is via CON1. CON2 is a JTAG interface only used during development for debugging.

There is an SPI bus connecting CON1, IC3, and flash memory IC2

### **INFRA-RED**

LED1 and phototransistor PD1 form a simple infra-red interface with a matching cradle.

### **DIGITAL INPUTS**

We have 2 digital inputs marked J, D & C:

1. Door.      Typically connected to a magnetic reed switch operated (s/c) by closing of a door.
2. Jack.      A special Jack plug (with shorted pins) inserted by the user to enable Infra-Red communications and when removed causes a session of RF Communications to occur.

### **RF516 ANALOG INPUTS** (This is the only section that does not relate to the RF513).

There are 2 sets of measurement for Internal & External channels.

The internal temperature uses the ADC built into microprocessor IC1. R9 & R10 and a 10K Thermistor form this channel.

The external temperature uses an ADS1242 delta-sigma ADC IC3. It requires a stable reference IC6 (1.25V) and an external clock crystal (2.45MHz)  
L31-L34, R31-R34, TVS31-TVS32 & ceramic filter capacitors form the input conditioning for the external RTD channels.

#### DATA STORAGE

Measurements are stored in a 8MB serial flash memory from Atmel AT45DB081 IC2. The SPI bus is used for data transfer.

#### RADIO MODULE INTERFACE

SK1 provides power and serial coms to the Comark Radio Module. The RST line allows for some supervisory functions.