RF512 General Description.

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 occurr.

RF512 ANALOG INPUTS
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 a 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 comms to the Comark Radio Module. The RST line allows for some supervisory functions.