

TECHNICAL DESCRIPTION FOR NOMAD

NRT102-2 TERMINAL

The NOMAD system comprises a PC, a controller, multiple link units and terminals. The controller connects to the PC via a RS232 link. A RS485 bus connects the controller to the link units. Each link unit has a low powered UHF transceiver which communicates with the terminals. The number of link units depends on the size of the site. The aim of the whole system is to get data from the terminals onto the PC.

The NRT102-2 terminal is a battery powered device consisting of a numeric keypad, a 2 line by 16 character reflective LC display and a wireless link to the NOMAD system. Data entry is guided by menus which are downloaded from the NOMAD system. The terminal is optimized for job logging of personnel and is essentially an electronic time sheet.

A small embedded processor with a 1MHz clock provides all the peripheral and control features. An on-chip UART interfaces to the RF section. Data and menus are stored a 64k bit serial EEPROM with an I²C interface to the processor. The 4x4 matrix keypad is connected to the processors peripheral pins with the strobe lines sharing the same pins as the data bus for the display. A piezo sounder provides audible response to keypad presses and other abbreviations.

Power is supplied from a 8.4 volt NiMH rechargeable battery which is recharged under the control of the processor. The battery is followed by a linear regulator which steps the voltage down to 5 volts. An op-amp and a few discrete components form the charging circuit which charges at 3mA or 22mA.

The wireless section is centered around a TR1000 hybrid transceiver from Radio Monolithics. This device contains all the necessary RF circuitry with just a few passive components, a 3.3V regulator, and a couple of transistors to perform level shifting of the logic signals. The antenna is a loop type integral to the PCB. Operating frequency is 916.5 MHz and the modulation type is OOK.