

Digital Board Hardware description

A) Overview

The Alpha One Pager is a POCSAG alpha-numeric pager. It has two key and 16 character (14-segment type) LCD display. It is controlled by Samsung KS57C21116 4-bit MCU. The POCSAG data is received by the decoder SM8212B and will store to the memory (RAM) of the MCU. The user can use the key to read the received message. The message will display the LCD glass and will scroll if more than 16 character. When the new user message is arrived, the pager can set the alert signal to user such as buzzing sound or vibration from vibrator.

B) POCSAG decoder

The POCSAG decoder SM8212M is used to connect the RF board to MCU of the digital board. The decoder will control the RF board ON & OFF and receive the FSK data. The decoder will decode the FSK signal and acknowledge the MCU if CAP code is correct. When the new message arrive, the decoder will generate the interrupt to the MCU. The decoder will also generate the low battery signal to the MCU if voltage is below 1.1V. The 76.8K Hz crystal is used to drive the POCSAG decoder.

C) MCU

The core MCU is Sumsung KS57C21116 which will handle all the work of pager. The MCU will has an initial procedure that will read setting from EEPROM and setup the I/O device. The MCU will receive the RF signal through RF board and POCSAG decoder. After MCU receive the signal with respect address, it will turn the buzzer on or motor on to acknowledge the user. The user can access the pager by the key input to read the message from the LCD. The 1M Hz and 32.768K Hz crystal is used to drive the MCU. The DC/DC converter steps up the 1.5V to 2.7V from battery to supply the MCU, decoder and EEPROM. A 2.1V voltage detector is used as reset circuit to the MCU.

D) I/O DEVICE

LCD -	The fully ON LCD display profile is shown on the block diagram. It contains 16 14-segment character and five icons on the top. It can check in the test mode.
EEPROM -	93C46, 1K bit serial EEPROM, is used to save the configuration information.
Buzzer & Motor -	is used to acknowledge the user.
Lamp -	is used to see the LCD in darkness place.