



A. HE89R21 Introduction

HE8R21 is a member of 8-bit Micro-controller series used for telephone communication developed by King Billion Electronics Ltd. This IC build-in 128-dot LCD driver, and also have 16-bit I/O port. This IC built-in a DTMF generator can generate the PSTN dialing tone directly. It can be applicable as Small/Medium class telephone communication product etc.. It also built-in an Regulator for providing LCD display well.

The instruction set of HE89R21 are quite easy to learn and simple to use. Only about thirty instructions with four-type addressing mode are provided. Most of instructions take only 3 oscillator clocks (machine cycles). The processing power is enough to most of battery operation system.

B. HE89R21 Features

- Operation Voltage : 2.4V – 5.5V
- System Clock : DC ~ 8MHz @ 5.0V
DC ~ 4MHz @ 2.4V
- Internal ROM : 16K Bytes(16K Program ROM)
- Internal RAM : 512 Bytes.
- Dual Clock System : Normal (Fast) clock : 32.768K ~ 8MHz
Slow clock : 32.768KHz
- Operation Mode : DUAL、FAST、SLOW、IDLE、SLEEP Mode.
- With WDT (WATCH DOG TIMER) to prevent deadlock condition..
- 16 bit Bi-directional I/O port. Mask Option can select PUSH-PULL or OPEN DRAIN output mode for each I/O pin.
- 128 dots LCD driver (A, B TYPE selectable).
- Built-in Regulator for providing LCD a stable operation voltage.
- Built-in DTMF Generator.
- Two external interrupts and three internal timer interrupts.
- Two 16-bit timer and one Time Base timer.
- Instruction set : 32 instructions, 4 addressing mode. 9-bit DATA POINTER for RAM and 14-bit TABLE POINTER for ROM.