Introduction to PIC®

(Peripheral Interface Controller)

By BiPOM Electronics, Inc.
2010

PIC® History

- Originally designed in the 80's based on General Instruments design

- It started as a peripheral device for the 16-bit CP1600

- Microchip introduced PIC16C84 in 1993 as the first Microchip CPU with on-board EEPROM.

- Microchip announced on February 2008 the shipment of its six billionth PIC processor

PIC® Features

- Some 8-bit, some 32-bit

- PIC10, PIC12, PIC16, PIC17,PIC18, PIC24, dsPIC, PIC32

- Harvard Architecture for 8-bit devices: Separate code and data space

- Small number of fixed length instructions

- Typically internal memory

- Speed-to-cost ratio maximized

- Limitations: Single accumulator, small instruction set, register bank switching required

Why PIC® ?

- Competitors: 8051, AVR, MSP430, ARM
- Pros:
  - Low-cost
  - High-speed
  - Small size
  - Wealth of peripherals minimizes external circuitry
    (High current I/O, watchdog, brownout, internal oscillator)
  - Wealth of development tools
  - Variety of application notes and example codes
  - Large user base
  - Advanced debugging

- Cons:
  - 8-bit performance compared to ARM
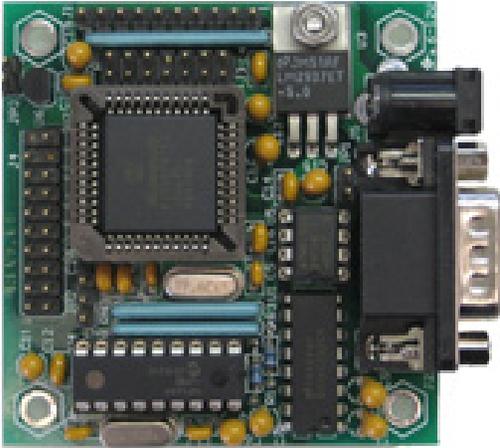 - Lack of operating system options
  - Limited memory

Frequently Asked Questions

- Can PIC® run an operating system ?
  - Insufficient memory to run an OS.

- Why trademark logo after every PIC® word ?
  - Microchip is pic® ky about its trademarks.

- Does BiPOM offer PIC® design services ?
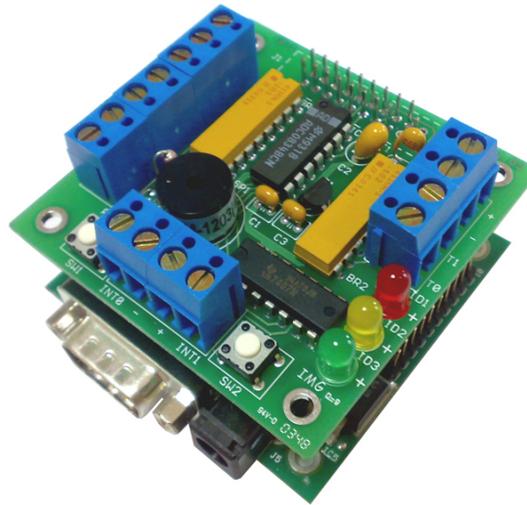 - Yes, we are a Microchip Authorized Design Partner.

BiPOM PIC® Support

MINI-MAX/P18
Low power,
PIC18F458

MINI-MAX/P18
Set I & Set II

MicroTRAK/P18 Starter
&
MicroTRAK/P18 Complete
Development & Training Kits

PIC® Software Development Options

Integrated Development Environment (IDE)
Assemblers
C Compilers
BASIC Compilers
Flowcode
Simulators
In-Circuit Debuggers
In-Circuit Emulators
Programmers
Application Notes & Examples

Micro-IDE by BiPOM
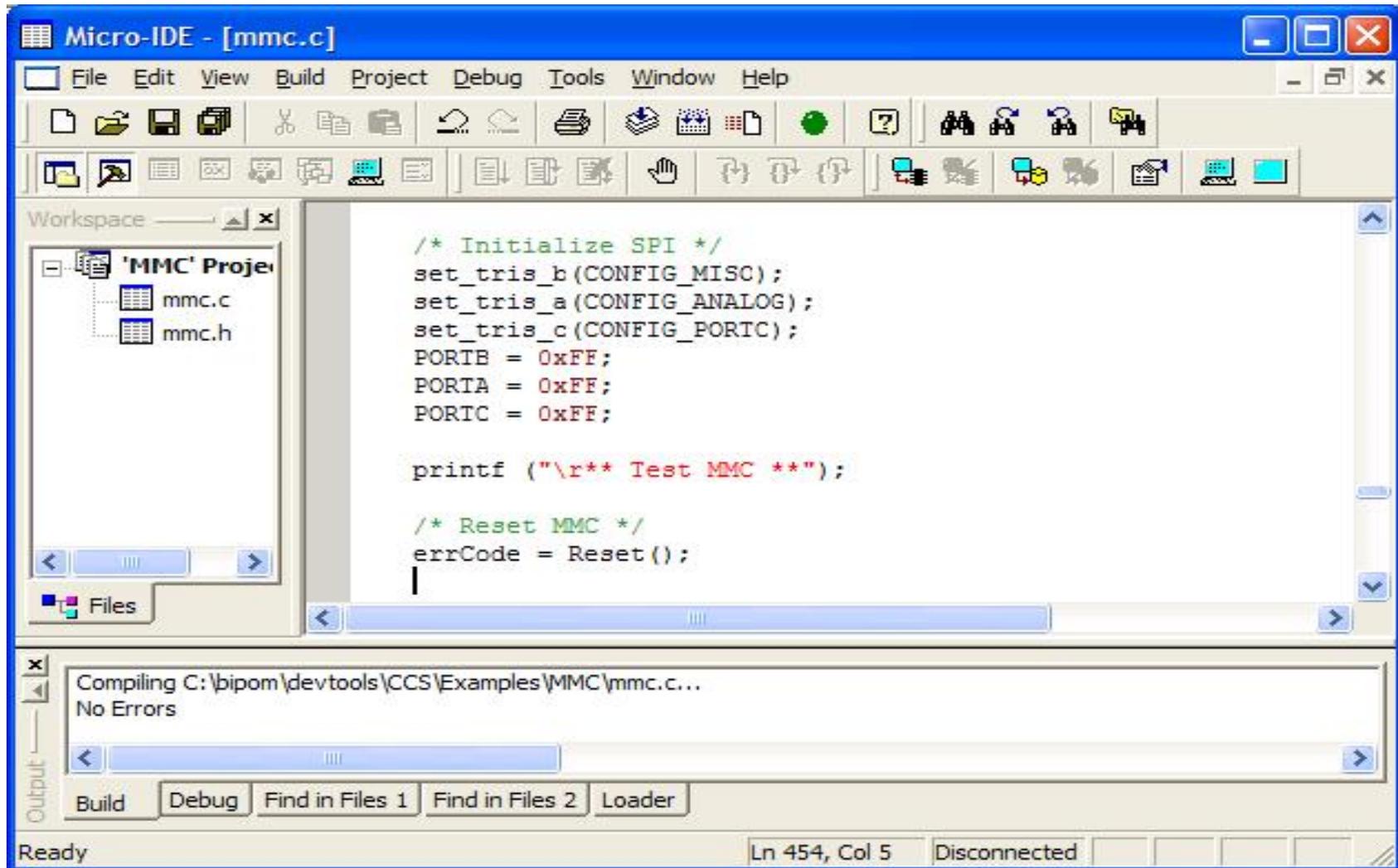
Micro-IDE by BiPOM

- Free
- Windows-based Integrated Development Environment
- Editor, Project Manager, Downloader, Terminal
- Syntax Coloring
- Many PIC® Examples
- Allows user defined toolkits and downloaders
- Configured for MPASM, CCS C, Microchip C18 C Compilers
- ucLoader: command-line programmer

MPLAB by Microchip

MPLAB by Microchip

- Free
- Windows-based Integrated Development Environment
- Editor, Project Manager, Programmer
- Simulator and Debugger
- Syntax Coloring
- Configured for many language toolkits
- Version Control Support
- Supports ICD2, ICD3, PICKit™ 3

Language Toolkits

- MPASM: Assembler by Microchip
- PASM-MC: BiPOM/Phyton
- MPLAB C Compiler: Microchip
- Flowcode: BiPOM/Matrix Multimedia
- CCS C Compiler: CCS
- Hi-Tech C Compiler: Hi-Tech
- IAR C Compiler: IAR

Debugging Support
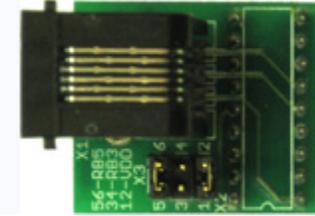
- ## Simulation:
  - MPLAB Simulator: Microchip
  - PDS-MC Simulator: BiPOM/Phyton

- ## In-Circuit Debugging:
  - ICD2 & ICD3: Microchip
  - PICKit™ 2 & 3: Microchip

- ## In-Circuit Emulation:
  - PICE-MC: BiPOM/Phyton
  - REAL ICE: Microchip

Programming/Downloading Support

- MINI-MAX/P18 supports direct download
- QuickWriter: BiPOM/Techtools
- PCARD: BiPOM
- ICD2 & ICD3: Microchip
- PICKit™ 2 & 3: Microchip
- PICSTART Plus: Microchip