

PIC® Microcontrollers with Enhanced Mid-Range Core

Building Upon a Foundation of Success

Recognizing the demand for increased performance and peripherals within the 8-bit microcontroller market, Microchip continues to invest significantly in 8-bit PIC microcontrollers to provide a broad product portfolio that meets the needs of our existing and future customers.

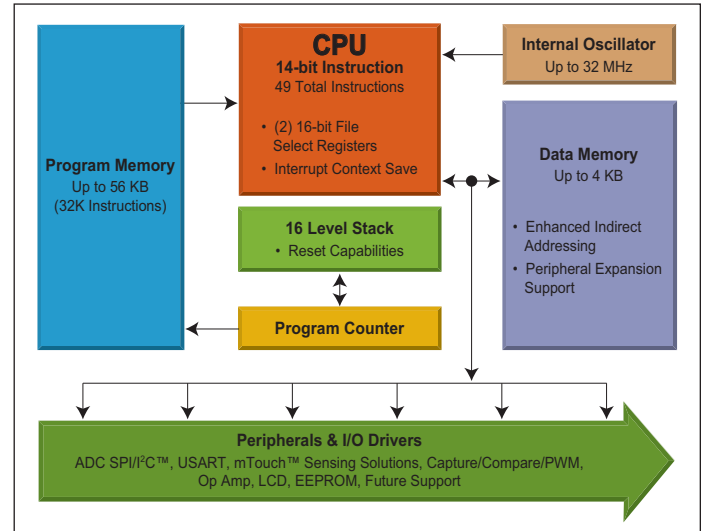
Building upon the success of Microchip's popular Mid-Range core, the enhanced Mid-Range core will become the new foundation for future 8-bit PIC12 and PIC16 product offerings. Providing numerous technical enhancements including; more memory, deeper hardware stack, additional reset methods, 14 additional instructions, 'C' programming language optimizations, increased clock frequencies up to 32 MHz, reduced interrupt latency and increased peripheral support.

Taking the best elements of the existing Mid-Range 8-bit PIC microcontroller core, the enhanced Mid-Range core provides additional performance and increased program Flash addressability up to 56 KB and Data RAM up to 4 KB. This enables the creation of more versatile code with increased functionality, for more complex applications – especially useful when developing code in 'C'. With a total of 49 instructions, the enhanced core optimizes program code and data handling. This ultimately reduces code space up to 40% and increases efficiency with fewer clock cycles providing a performance boost of up to 50% for various algorithms and functions.

Providing a long-term expansion path for new peripheral support, the enhanced Mid-Range core also provides the ability to migrate with minimal effort among existing Mid-Range PIC MCUs; as well as up or down with PIC12, PIC16 and PIC18 MCUs. All of these result in application longevity, scalability, ease of design and overall versatility.

8-bit PIC microcontrollers have always provided a general purpose approach to bringing a higher level of intelligence and reliability into cost sensitive applications. PIC microcontrollers with the new enhanced Mid-Range core will empower embedded designers to create applications that enrich the user experience.

8-bit PIC Microcontroller Enhanced Mid-Range Core Block Diagram



Enhanced Mid-Range Core Key Features

- Performance increase of up to 50%
- Code-size reductions of up to 40%
- Up to 56 KB of Flash Program Memory
- Up to 4 KB of Data Memory
- Up to 32 MHz internal oscillator
- 'C' Programming Language Optimizations
- Enhanced 16 Level Hardware Stack with Optional RESET Capabilities
- Automatic Interrupt Context Save of Core Registers
- Enhanced Indirect Linear Addressing
- Simplified Register Map
- Low Power 1.8V operation up to 5.5V
 - Full analog operation throughout
- Increased Peripheral Support Including:
 - Multiple Analog Digital Converters
 - Multiple Comparators
 - Multiple SPI/I²C™, USART
 - Multiple Capture/Compare/PWM
 - mTouch™ Sensing Solutions
 - Operational Amplifiers
 - LCD Drive Capability
 - Non-Volatile Memory
 - Support for Future Peripheral Expansion
- PIC microcontrollers with the Enhanced Mid-Range core are denoted as PIC12F1XXX and PIC16F1XXX

Learn more at www.microchip.com/enhanced



MICROCHIP

Microchip Technology Incorporated

Additional Information

Visit www.microchip.com/enhanced for additional information.

- Enhanced Mid-Range Overview
- Enhanced Mid-Range Technical Overview
- Enhanced Mid-Range Webinar
- Enhanced Mid-Range Migration Guide, DS41375

Support

Microchip is committed to supporting its customers in developing products faster and more efficiently. We maintain a worldwide network of field applications engineers and technical support ready to provide product and system assistance. In addition, the following service areas are available at www.microchip.com:

- **Support** link provides a way to get questions answered fast: <http://support.microchip.com>
- **Sample** link offers evaluation samples of any Microchip device: <http://sample.microchip.com>
- **Forum** link provides access to knowledge base and peer help: <http://forum.microchip.com>
- **Buy** link provides locations of Microchip Sales Channel Partners: www.microchip.com/sales

Development Tools from Microchip

Part Number	Development Tool	Description
DS51808A	FREE 'C' Compiler Download at www.microchip.com/FREE	Development Software
SW007002	MPLAB® IDE – includes: MPASM™ Assembler, MPLINK™ Linker/MPLIB™ Librarian and MPLAB SIM Software Simulator	Integrated Development Environment (download free of charge at www.microchip.com)
SW500005 SW500010	HI-TECH C PRO (Standard Mode) HI-TECH C PRO (PRO Mode)	C Compiler for PIC10/12/16 MCUs
DV164131	PICKit™ 3 Debug Express	In-Circuit Debugger/Programmer
DV164035	MPLAB ICD 3 In-Circuit Debugger Kit	In-Circuit Debugger/Programmer
DV007004	MPLAB PM3 Universal Device Programmer	Full-featured Modular Device Programmer
DV244005	MPLAB REAL ICET™ In-Circuit Emulator	High Speed Emulation System



MICROCHIP

www.microchip.com/enhanced

Visit our web site for additional product information and to locate your local sales office.

Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199

Microcontrollers • Digital Signal Controllers • Analog • Serial EEPROMs

Information is subject to change. The Microchip name and logo, the Microchip logo and PIC are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries. mTouch is a trademark of Microchip Technology Incorporated in the U.S.A. and other countries. All other trademarks mentioned herein are property of their respective companies. ©2009 Microchip Technology Inc. All Rights Reserved.

Printed in the USA. 4/09

DS41382A

