Microchip Development Systems Ordering Guide

June 2005

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ISO/TS 16949:2002

Microchip received ISO/TS-16949:2002 quality system certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona and Mountain View, California in October 2003. The Company's quality system processes and procedures are for its PICmicro® 8-bit MCUs, KEELOQ® code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.

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INTRODUCTION

This section contains the following major topics:

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About Microchip Development Tools

With more than 300,000 development tools installed worldwide, Microchip is well known for the seamless integration of their tools with the intuitive MPLAB® Integrated Development Environment (IDE), for the breadth of products that cover all stages of the product development cycle, and for the highest level of support and service. Microchip's development tools provide faster time to market and lower total system cost for engineers, clearly offering a competitive advantage to using Microchip silicon solutions.

This ordering guide covers several new development tools, including the PICkit™ 2 Flash Starter Kit, the PICDEM™ Z 2.4GHz Demonstration Kit, the PICDEM Full-Speed USB Demonstration Board and the PICDEM HPC Explorer Board. For more detailed and current information, please visit Microchip's web site at www.microchip.com.

Microchip Technology Service and Support

Quality

Microchip Development Systems is continuously improving design and manufacturing processes to ensure high quality products.

Warranty

Development system products are warranted against defects for one (1) year (90 days for products that we normally sell for $500 or less (USD), excluding promotional pricing).

Upgrades

Software upgrades are available free-of-charge from the Microchip web site (www.microchip.com). Hardware enhancements are also available free-of-charge or at a nominal fee. Contact your local distributor for more information.

Service

Prompt system service is essential as customers depend on our systems to design and program PICmicro® Microcontrollers and dsPIC® Digital Signal Controllers (DSC). Defective components are typically replaced within 48 hours. Microchip's Service Center in Tempe, Arizona serves customers in the US and Canada. Our European Service Center in Dublin provides service to customers in Europe, the Middle East and Africa. The Far East sales offices provide these services directly.

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Microchip Internet Connections

On-Line Support

Microchip provides many avenues of on-line support on the Microchip web site at:

www.microchip.com

Users may download files for the latest development tools, data sheets, application notes, user's manuals, articles and sample programs. Microchip-specific business information is also available, including contact information for all Microchip sales offices and distributors.

The MPLAB® Integrated Development Environment (IDE) software can be downloaded free-of-charge. MPLAB IDE includes a project manager, assembler/linker and simulator debugger for embedded system development. Additional tools are available for purchase for device programming, in-circuit debugging, and C compiling. MPLAB IDE is the development environment for most of the Microchip development tools listed in this guide.

Development tools, Microchip PICmicro® MCU devices, dsPIC® DSC devices, Analog/Interface and Memory devices are available on the web site for purchase with a credit card and delivery in the U.S., Canada or Europe.

The following are some of the many services available on the web site:

- Latest data sheets, application notes and user manuals
- Device errata
- Technical support section with FAQs
- Device programming specifications
- Latest file updates for demonstration and evaluation kits
- Design tips
- Subscription to Microchip Change Notification service for silicon and development tools
- Microchip consultant program member listing
- Third party tools contacts
- Web seminars
- Listing of field seminars and upcoming events
- Conferences for products, development systems, technical information and more
- University Corner
- Latest Microchip press releases
- Job postings
- Links to other useful web sites related to Microchip products

NOTES:

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SOFTWARE

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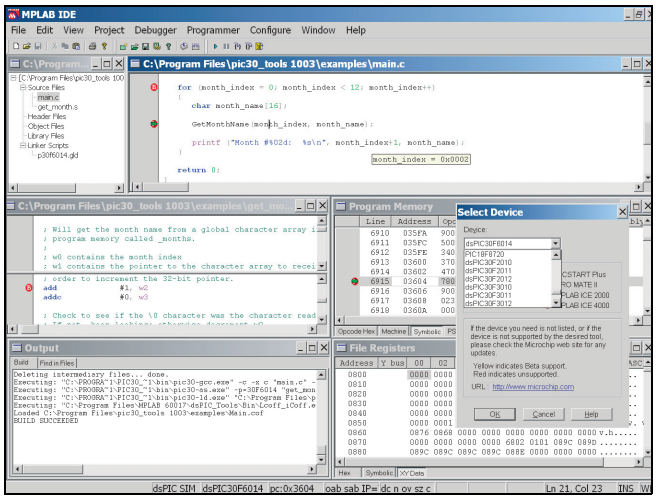
FREE

MPLAB® Integrated Development Environment (IDE)



MPLAB IDE gives PICmicro® MCU and dsPIC® DSC users the flexibility to edit, compile and debug from a single user interface.

MPLAB IDE gives PICmicro® MCU and dsPIC® DSC users the flexibility to edit, compile and debug from a single user interface. MPLAB Integrated Development Environment (IDE) is a development platform for the Microchip Technology PICmicro microcontroller (MCU) and dsPIC Digital Signal Controller (DSC) families. Designed for use with the Microsoft Windows® operating environment, MPLAB IDE offers an easy-to-use common user interface for the Microchip development tools suite.

MPLAB IDE includes the following components:

- MPASM™ Assembler
- MPLAB ASM30 Assembler for dsPIC30F
- MPSIM™ Software Simulator
- MPLINK™ Linker
- MPLAB LINK30 Linker for dsPIC30F
- Source-Level Debugger
- On-line Help
- Project and Set-up Wizards
- Project Manager
- Visual Device Initializer (see page 7)
- Programmer's Editor
- Drivers for hardware tools (as listed in the Tools Supported section)
- Integration with Source Code Control

The MPLAB IDE desktop provides the development environment and tools for developing and debugging applications as a project, providing a common user interface for different development and debugging modes.

Features

- Full featured, color-coded text editor
- Easy-to-use project manager with visual display
- Source-level debugging
- Enhanced source level debugging for 'C' structures, automatic variables, etc.
- Customizable toolbar and key mapping
- Dynamic status bar displays processor condition at a glance
- Context sensitive, interactive on-line help
- Integrated MPLAB SIM instruction simulator
- Stand-alone user interface for MPLAB PM3 and PRO MATE® II device programmers
- User interface for MPLAB ICE 2000 or MPLAB ICE 4000 In-Circuit Emulator
- User interface for MPLAB ICD 2 In-Circuit Debugger

Ordering Information:

SW007002	MPLAB® IDE (Free download: www.microchip.com)
DS51046	"*MPLAB® IDE Integrated Development Environment Product Overview*" (Available at: www.microchip.com)

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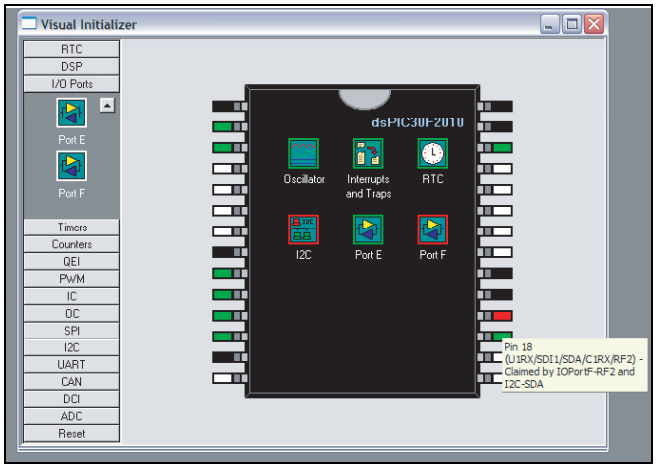
FREE

MPLAB® IDE Visual Device Initializer Software



Microchip's MPLAB IDE Visual Device Initializer allows users to configure Microchip microcontrollers graphically, and when configuration is complete, a mouse click generates code usable in Assembly or 'C' programs.

MPLAB IDE Visual Device Initializer does extensive error checking on assignments and conflicts on pins, memories and interrupts, as well as a selection of operating conditions. The generated code files are seamlessly integrated with the rest of the application code through the MPLAB IDE project manager.

The detailed reports on resource assignment and configuration simplify project documentation.

Features

- Drag-and-drop feature selection
- One-click configuration
- Extensive error checking
- Generates initialization code
- Integrates seamlessly in the MPLAB IDE project manager
- Printed reports ease project documentation requirements

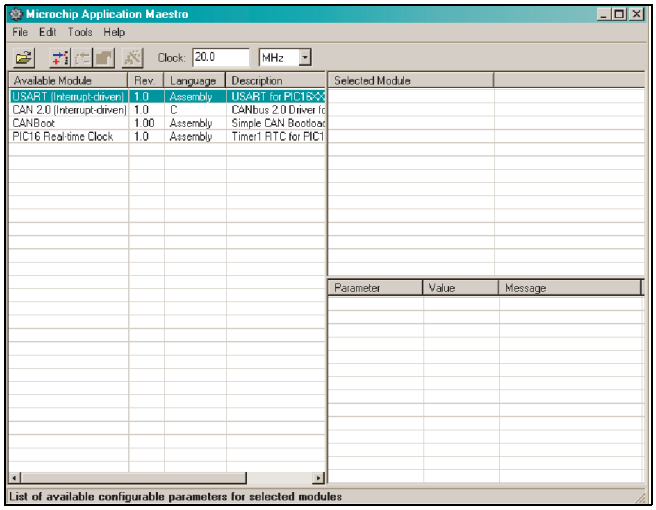
Ordering Information:

Free download: www.microchip.com (included with MPLAB IDE download)

DS51443 *"MPLAB IDE Visual Device Initializer Product Overview"* (Available at: www.microchip.com)

FREE

Application Maestro™ Software



The Microchip Application Maestro Software is a stand-alone software tool that allows users to configure and incorporate a range of pre-written firmware modules into their applications. Its heart is a collection of modules developed by Microchip Technology for use with its PICmicro® microcontrollers. Starting from a graphic interface, the user selects one or more available modules, then configures the parameters for each. When this is complete, the Application Maestro Software then generates code, that can be incorporated into the user's application project, using MPLAB® IDE or any compatible development environment.

It is important to note that the Application Maestro Software is not a plug-in or add-on to the MPLAB IDE line of development tools; it is a separate item in its own right. Application Maestro Software also differs from other librarian systems, such as MPLIB™ Library, because it does more than archive and manage related files for a single software project. Instead, it manages a library of ready-to-configure modules that the user customizes to their needs, and creates the necessary files for inclusion in the user's projects on demand.

Ordering Information:

Free download: www.microchip.com (now included with MPLAB IDE download)

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MPLAB® C18 C Compiler

The MPLAB C18 is a full-featured ANSI-compliant C compiler for the Microchip Technology PIC18CXXX family of PICmicro® MCUs. MPLAB C18 is fully compatible with Microchip's MPLAB IDE, allowing source level debugging with both the MPLAB ICE and the MPLAB SIM Simulator. MPLAB C18 provides a convenient, project-oriented development environment that reduces development time.

MPLAB C18 allows code for the PIC18CXXX family to be written in the high-level 'C' language, using powerful PICmicro MCU libraries, enabling the developer to devote more time to the application and less time to the details of the processor.

MPLAB C18 was designed explicitly for the PIC18CXXX family and allows the use of a software stack for maximum RAM reusability.

MPLAB C18 provides user-configurable interrupt support for saving and restoring context during interrupt handling. Libraries are provided for multiple memory models. Libraries, precompiled objects and linker scripts can be included in MPLAB C18 projects, along with 'C' and Assembly source files, for use with MPLAB C18 make and build functions.

The MPLAB C18 ANSI-compliant C compiler comes complete with the MPLAB IDE. The IDE allows you to move quickly between different development and debugging modes. For example, you can quickly advance from software debugging with the MPLAB SIM Simulator to hardware debugging with MPLAB ICE.

MPLAB C18 has implemented extensions to the 'C' language to provide specific support for Microchip's PICmicro MCU environment.

MPLAB C18 will run on any 486 or better PC, as a native 32-bit Windows® 95 or Windows NT® executable.

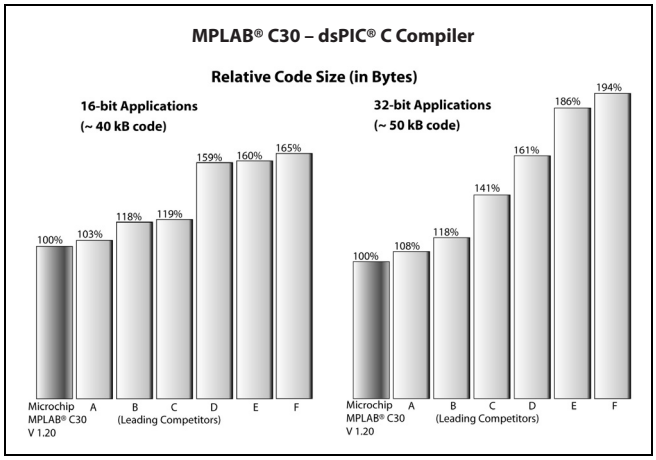
MPLAB C18 C Compiler Contents
• MPLAB® C18 C Compiler Software • MPLAB® IDE Software and Documentation CD • *"MPLAB® C18 C Compiler User's Guide"* and *"MPLAB® C18 C Compiler Libraries"* and *"MPLAB® C18 C Compiler Getting Started"* Manuals

Ordering Information:

SW006011 MPLAB® C18 C Compiler

A 60-day full-featured demo/student edition is available from the Microchip web site at www.microchip.com.

MPLAB® C30 C Compiler



The MPLAB C30 C Compiler is a fully ANSI-compliant product with standard libraries for the dsPIC® DSC architecture. It is highly optimizing and takes advantage of many dsPIC DSC architecture-specific features to provide efficient software code generation. MPLAB C30 also provides extensions that allow for excellent support of the hardware, such as interrupts and peripherals. It is fully integrated with the MPLAB IDE for high-level source debugging.

MPLAB C30 comes complete with its own assembler, linker and librarian. These allow the user to write Mixed mode C and Assembly programs and link the resulting object files into a single executable file.

MPLAB C30 is distributed with a complete ANSI 'C' standard library. The library includes functions for string manipulation, dynamic memory allocation, data conversion, timekeeping and math functions (trigonometric, exponential and hyperbolic). The standard I/O functions for file handling are also included, and, as distributed, they support full access to the host file system using the command-line simulator.

The compiler supports both large and small code and data models. The small code model takes advantage of a more efficient form of `CALL` instructions, while the small data model supports the use of compact instructions for accessing data in SFR space.

MPLAB C30 includes a powerful command-line driver program. Using the driver program, application programs can be compiled, assembled and linked in a single step.

MPLAB C30 comes complete with its own assembler, linker and librarian. These tools allow the user to write Mixed mode C and Assembly programs and link the resulting object files into a single executable file.

MPLAB C30 C Compiler Contents
• MPLAB® C30 C Compiler Software • MPLAB® IDE Software and Documentation CD • *"MPLAB® C30 C Compiler User's Guide"* (on CD) and Complete Documentation • *"MPLAB® ASM30, MPLAB® LINK30 and Utilities User's Guide"* • *"dsPIC® DSC Language Tools Getting Started" and "dsPIC® DSC Language Tool Library"* Manuals

Ordering Information:

SW006012 MPLAB® C30 C Compiler

A 60-day full-featured demo is available from the Microchip web site at www.microchip.com.

DS51432 *"MPLAB® C30 C Compiler Product Overview"* (Available at: www.microchip.com)

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dsPIC30F DSP Library

The dsPIC30F DSP Library provides a set of speed-optimized functions for the most common digital signal processing applications. The DSP Library provides significant performance savings over equivalent functions coded in 'C' and allows developers to dramatically shorten their development time.

The DSP Library is written predominantly in Assembly language and makes extensive use of the dsPIC30F DSC instruction set and hardware resources, including X and Y memory addressing, modulo addressing, bit-reversed addressing, 9.31 saturation and REPEAT and DO loops. It provides functions for vector, matrix, filtering, transform and window operations.

Features

- 49 total functions
- Full compliance with the Microchip dsPIC30F C30 Compiler, Assembler and Linker
- Simple user interface – just one library file and one header file
- Functions are both 'C' and Assembly callable
- FIR filtering functions include support for Lattice, Decimating, Interpolating and LMS filters
- IIR filtering functions include support for Canonic, Transposed Canonic and Lattice filters
- FIR and IIR functions may be used with the filter files generated by the dsPIC® DSC Digital Filter Design Tool
- Transform functions include support for in-place and out-of-place DCT, FFT and IFFT transforms
- Window functions include support for Bartlett, Blackman, Hamming, Hanning and Kaiser windows
- Support for Program Space Visibility
- Complete function profile information, including register usage, cycle count and function size information

Function Execution Times Table

Function	Cycle Count Equation	Conditions	Number of Cycles*	Execution Time @ 30 MIPS
Complex FFT**	—	N = 64	3739	124.6 µs
Complex FFT**	—	N =1 28	8485	282.8 µs
Complex FFT**	—	N = 256	19055	635.2 µs
Block FIR	53 + N(4 + M)	N = 32, M = 32	1205	40.2 µs
Block FIR Lattice	41 + N(4 + 7M)	N = 32, M = 32	7337	244.6 µs
Block IIR Canonic	36 + N(8 + 7S)	N = 32, S = 4	1188	39.6 µs
Block IIR Lattice	46 + N(16 + 7M)	N = 32, M = 8	2350	78.3 µs
Matrix Add	20 + 3(C * R)	C = 8, R = 8	212	7.1 µs
Matrix Transpose	16 + C(6 + 3(R – 1))	C = 8, R = 8	232	7.7 µs
Vector Dot Product	17 + 3N	N = 32	113	3.8 µs
Vector Max	19 + 7(N – 2)	N = 32	229	7.6 µs
Vector Multiply	17 + 4N	N = 32	145	4.8 µs
Vector Power	16 + 2N	N = 32	80	2.7 µs

Legend: C = # columns, N = # samples, M = # taps, S = # sections, R = # rows

* 1 Cycle = 33 nanoseconds @ 30 MIPS.

** Complex FFT routine inherently prevents overflow.

Ordering Information:

SW300022 dsPIC30F DSP Library (Free download: www.microchip.com)

DS51443 *"dsPIC30F DSP Library Product Overview"* (Available at: www.microchip.com)

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dsPIC30F Math Library

The dsPIC30F Math Library is the compiled version of the math library that is distributed with the highly optimized, ANSI-compliant dsPIC30F MPLAB® C30 C Compiler (SW006012). It contains advanced single and double-precision, floating-point arithmetic and trigonometric functions from the standard 'C' header file `<math.h>`. The library delivers small program code size and data size, reduced cycles and high accuracy.

Features

- The math library is callable from either MPLAB C30 or dsPIC30F Assembly language.
- The functions are IEEE-754 compliant, with signed zero, signed infinity, NaN (Not a Number) and denormal support and operate in the "Round-to-Nearest" mode.
- Compatible with MPLAB ASM30 and MPLAB LINK30, which are available at no charge from Microchip's web site.
- Total library memory usage(1,2):
  - Code size: 5250 bytes
  - Data size: 4 bytes

dsPIC® DSC Math Library Function and Performance

Function Group	Function	Performance (Cycles)(1,2,3,4)
Basic Floating Point	Addition	122
	Subtraction	124
	Multiplication	109
	Division	361
	Remainder	385
Trigonometric and Hyperbolic	acos	478
	asic	363
	atan	696
	atan2	3206
	cos	3249
	sin	2238
	tan	2460
	cosh	1049
	sinh	525
	tanh	338
Logarithmic and Exponential	exp	530
	frexp	39
	ldexp	44
	log	2889
	log10	3007
Power Functions	pow	2134
	sqrt	493
Rounding Functions	ceil	94
	floor	51
Absolute Value Function	fabs	6
Modular Arithmetic Functions	modf	151
	fmod	129

Note 1: Results are based on using the dsPIC30F MPLAB® C30 Compiler (SW006012) version 1.20.
2: Maximum "Memory Usage" when all functions in the library are loaded. Most applications will use less.
3: All performance statistics represented here are for 32-bit IEEE754 floating-point input and output data types.
4: Performance (in instruction cycles) listed here represent an average number of instruction cycles required to perform the floating-point operation.

Ordering Information:

SW300020 dsPIC30F Math Library (Free download: www.microchip.com)

DS51443 *"dsPIC30F Math Library Product Overview"* (Available at: www.microchip.com)

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dsPIC30F Peripheral Library

The dsPIC30F Peripheral Library provides a set of functions for setting up and controlling the operation of all the peripheral modules available in the dsPIC30F devices, as well as functions for interfacing with an external LCD. The Peripheral Library serves as a convenient layer of abstraction over the specific details of the peripherals and their associated control and status registers.

The dsPIC30F Peripheral Library supports the following hardware peripheral modules:

- Timers
- Input Capture
- Output Compare
- Quadrature Encoder Interface (QEI)
- Motor Control PWM
- I/O Ports and External Interrupts
- Reset
- UART
- SPI™
- I^2C™
- Data Converter Interface (DCI)
- 10-Bit A/D Converter
- 12-Bit A/D Converter
- CAN

Functions for controlling an external LCD through configurable I/O port pins are also provided

Features

- For each individual device from the dsPIC30F family, there is a file that includes functions corresponding to peripherals present in that particular device.
- 'C' include files enable the user to take advantage of predefined constants for passing parameters to various library functions. There is an include file for each peripheral module.
- Since the functions are in the form of precompiled libraries, they may be called from a user application program written in either MPLAB® C30 or dsPIC30F Assembly language.
- 'C' source code is also included so users can customize the functions to suit specific application requirements.
- Predefined constants in 'C' include files eliminate the need to refer to details and structure of Special Function Registers, while initializing peripherals or checking status bits.

Resource Requirements

Program Memory

The Peripheral Library functions have been optimized for reduced program memory usage. Since the functions are in the form of libraries, the actual program memory requirements depend on the functions being called by the application, as well as on the specific dsPIC30F device being used.

Data Memory

The vast majority of the functions do not use RAM at all. Each of the remaining functions uses less than 10 bytes of RAM.

Ordering Information:

SW300021	dsPIC30F Peripheral Library (Free download: www.microchip.com)
DS51443	*"dsPIC30F Peripheral Library Product Overview"* (Available at: www.microchip.com)

dsPIC30F Soft Modem Library

The Microchip Soft Modem Library is composed of ITU-T compliant algorithms for V.21, V.22, V.22bis, V.23, V.32 and V.32bis modem recommendations. Bell standard 103 is also included in this library.

V.21, V.23 and Bell 103 are Frequency Shift Keying (FSK) modems. V.32, V.32bis and V.22bis are Quadrature Amplitude Modulated (QAM) modems. V.22 is a Quadrature Phase Shift Keyed (QPSK) modem. V.21, V.22, V.22bis, V.32 and V.32bis are all 2-wire, full-duplex modems. V.23 is a full-duplex modem when it operates with a 75 bps backwards channel.

V.22bis includes fallback to V.22, V.23 and V.21 standards. V.32bis optionally falls back to V.22bis, V.22, V.23 and V.21 standards.

Features

The data modem library is provided in two basic software packages:

- V.22bis/V.22, which is offered free with full source code
- V.32bis/V.32, which is offered in a tiered pricing structure with full source code

The library currently supports single-channel data pump implementations.

Both libraries are supported with fallback data pump modulations down to V.21. Each data modem library is provided with a respective library archive containing all the data pump object code modules required to link to the user's application. Hardware component drivers, such as UART and Data Converter Interface for DAA/AFE I/O, are provided in Assembly source code for linking with the user's application.

ITU-T Recommendation V.42 is provided with each library. V.42 contains a High-Level Data Link Control (HDLC) protocol, referred to as Link Access Procedure for Modems (LAPM) and defines error correcting protocols for modems.

All data pump modulations are developed in ASM30 Assembly code, yielding optimal code size and execution time. The AT, V.42 and Data Pump APIs are based on C30 C language.

Electronic documentation accompanies the modem library to help you become familiar with and implement the library functions. A comprehensive *"Soft Modem User's Guide"* describes the required APIs for the AT, V.42 and data pump layers.

Ordering Information:

SW300003-EVAL	dsPIC30F V.32bis Soft Modem Library Software License (Evaluation Copy)
SW300002	dsPIC30F V.22bis Soft Modem Library (Free download: www.microchip.com)
SW300003	dsPIC30F V.32bis Soft Modem Library Software License (Up to 5K units)
SW300004	dsPIC30F V.32bis Soft Modem Library Software License (5K to 25K units)
SW300005	dsPIC30F V.32bis Soft Modem Library Software License (25K to 100K units)
DS70126	*"dsPIC30F Soft Modem Library Product Overview"* (Available at: www.microchip.com)

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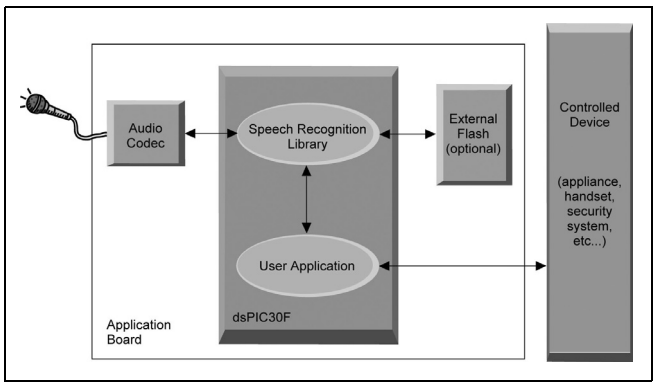
dsPIC30F Speech Recognition Library

The dsPIC30F Speech Recognition Library provides voice control of embedded applications that require an alternative user interface. With a vocabulary of up to 100 words, the Speech Recognition Library allows users to control their applications vocally. The Speech Recognition Library is an ideal front-end for hands-free products, such as modern appliances, security panels and cell phones. The Speech Recognition Library has very modest memory and processing requirements.

Features

- Speaker-independent recognition of isolated words
- Hidden Markov Model-based recognition system
- Recognition time < 500 msec
- Master library of 100 common words
- Windows® operating system-based utility allows you to create a custom library from the master library
- Additional words can be added to the master library (fee-based)
- No speaker training is required
- US English language support
- Data tables can be stored in external memory
- Optional keyword activation and silence detection
- Optional system self-test using a predefined keyword
- Flexible API
- Full compliance with Microchip MPLAB® C30 language tools
- *"dsPIC30F Speech Recognition Library User's Guide"*



The Speech Recognition Library provides isolated, speaker-independent word recognition of US English. It allows the user to control an application through a set of fixed, voice commands.

The library has already been pretrained by a demographic cross-section of male and female US English speakers. Conveniently, no training is required for end users of the product.

The library samples speech data from a voice codec connected to the dsPIC30F device's Data Converter Interface. The data is processed a frame at a time, and when a word ending is detected, the received word is identified using Hidden Markov Model processing. After the library identifies the word, your application may then take some predefined action.

The Speech Recognition algorithm is written in Assembly language to optimize performance and minimize RAM usage. A well-defined API makes it easy to integrate the Speech Recognition Library with your application. Library functions let your application easily disable and enable speech recognition. The library lets your other system processing operations take place without disrupting speech recognition.

Ordering Information:

SW300010-EVAL	dsPIC30F Speech Recognition Library Software License (Evaluation Copy)
SW300010	dsPIC30F Speech Recognition Library Software License (Up to 5K units)
SW300011	dsPIC30F Speech Recognition Library Software License (5K to 25K units)
SW300012	dsPIC30F Speech Recognition Library Software License (25K to 100K units)
AC300031	Accessory Kit (includes: microphone, headset and 6.144 MHz clock oscillator)
DS51465	*"dsPIC30F Speech Recognition Library Product Overview"* (Available at: www.microchip.com)

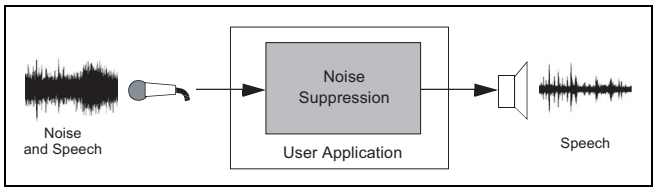
dsPIC30F Noise Suppression Library

The dsPIC30F Noise Suppression Library provides a function to suppress the effect of noise interference with a speech signal. This function is useful for microphone-based applications, which have a potential for incoming speech corruption by ambient noise captured by the microphone. It is especially suitable for systems in which an acoustically isolated noise reference is not available, such as:

- Hands-free Cell Phone Kits
- Speakerphones
- Intercoms
- Teleconferencing Systems
- Headsets
- As a front-end to a Speech Recognition system (e.g., SW300010)
- Any microphone-based application that needs to eliminate undesired noise

Features

- Only 2 user functions ("`NoiseSuppressionInit`" and "`NoiseSuppression`"), both of which can be called from either a 'C' or Assembly application program
- Full compliance with the Microchip dsPIC30F C30 Compiler, Assembler and Linker
- Simple user interface – just one library file and one header file



- Highly optimized Assembly code, utilizing DSC instructions and advanced addressing modes
- Audio Bandwidth: 0-4 kHz at 8 kHz sampling rate
- 10-20 dB noise reduction, depending on the type of noise:
  - Several speech recordings corrupted by Babble, Car Cabin, White and Narrowband Noise included for library evaluation
- Source code is provided with the library
- *"dsPIC30F Noise Suppression Library User's Guide"* is provided to help the user understand and use the library
- Demo application source code is provided with the library
- Accessory Kit available for purchase includes: an audio cable, headset, oscillators, microphone, speaker, DB9 M/F RS-232 cable, DB9M-DB9M null modem adapter and can be used for library evaluation

Contact Microchip sales for FREE evaluation samples.

Ordering Information:

SW300040-EVAL	dsPIC30F Noise Suppression Library Software License (Evaluation Copy)
SW300040-5K	dsPIC30F Noise Suppression Library Software License (Up to 5K units)
SW300040-25K	dsPIC30F Noise Suppression Library Software License (5K to 25K units)
SW300040-100K	dsPIC30F Noise Suppression Library Software License (25K to 100K units)
AC300030	Accessory Kit (includes: audio cable, headset, oscillators, microphone, speaker, M/F RS-232 cable, DB9M-DB9M Null Modem Adapter)
DS70124	*"dsPIC30F Noise Suppression Library Product Overview"* (Available at: www.microchip.com)

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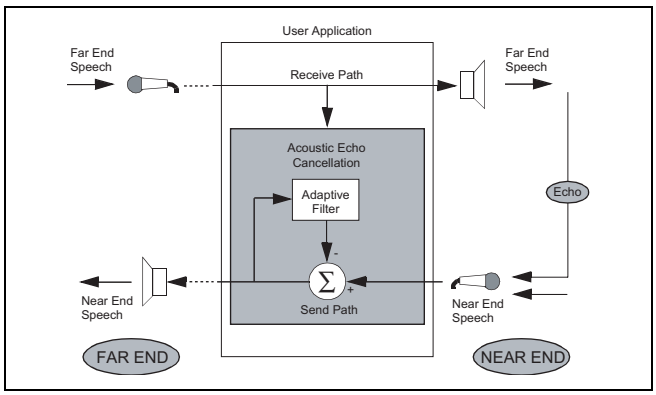
dsPIC30F Acoustic Echo Cancellation Library

The dsPIC30F Acoustic Echo Cancellation (AEC) Library provides a function to eliminate echoes generated in the acoustic path between a speaker and a microphone. This function is useful for speech and telephony applications in which a speaker and a microphone are located in close proximity to each other and therefore, susceptible to signals propagating from the speaker to the microphone resulting in a perceptible and distracting echo effect at the far end. It is especially suitable for these applications:

- Hands-free Cell Phone Kits
- Speakerphones
- Intercoms
- Teleconferencing Systems

For hands-free phones intended to be used in compact environments, such as a car, this library is fully compliant with the G.167 standard for acoustic echo cancellation.



Features

- Only 2 user functions ("`AcousticEchoCancellerInit`" and "`AcousticEchoCanceller`"), both of which can be called from either a 'C' or Assembly application program
- Full compliance with the Microchip dsPIC30F C30 C Compiler, Assembler and Linker simple user interface – just one library file and one header file
- Highly optimized Assembly code, utilizing DSC instructions and advanced addressing modes
- Echo cancellation for 16, 32 or 64 ms echo delays or 'tail lengths' (configurable)
- Fully tested for compliance with G.167 specifications for in-car applications
- Audio Bandwidth: 0-4 kHz at 8 kHz sampling rate
- Convergence Rate: Up to 43 dB/sec., typically > 30 dB/sec.
- Echo Cancellation: Up to 50 dB, typically > 40 dB
- Can be used together with the Noise Suppression (NS) Library, since the same processing block size (10 ms) is used
- *"dsPIC30F Acoustic Echo Cancellation Library User's Guide"* is provided to help the user understand and use the library
- Demo application source code is provided with the library. Accessory kit available for purchase includes: an audio cable, headset, oscillators, microphone, speaker, DB9 M/F RS-232 cable and DB9M-DB9M Null Modem Adapter and can be used for library evaluation
- Contact Microchip sales for FREE evaluation samples

Ordering Information:

SW300060-EVAL	dsPIC30F Acoustic Echo Cancellation Library Software License (Evaluation Copy)
SW300060-5K	dsPIC30F Acoustic Echo Cancellation Library Software License (Up to 5K units)
SW300060-25K	dsPIC30F Acoustic Echo Cancellation Library Software License (5K to 25K units)
SW300060-100K	dsPIC30F Acoustic Echo Cancellation Library Software License (25K to 100K units)
AC300030	Accessory Kit (includes: audio cable, headset, oscillators, microphone, speaker, M/F RS-232 cable, DB9M-DB9M Null Modem Adapter)
DS70123	*"dsPIC30F Acoustic Echo Cancellation Library Product Overview"* (Available at: www.microchip.com)

dsPIC® DSC Symmetric Key Embedded Encryption Library

Microchip offers a reliable security solution for embedded applications built on the dsPIC30F platform. This solution is provided by means of two libraries – Symmetric Key and Asymmetric Key Embedded Encryption Libraries. The Symmetric Key Library features the following:

- Hash Functions:
  - SHA-1 Secure Hash Standard
  - MD5 Message Digest
- Symmetric Key Encryption/Decryption Functions:
  - Advanced Encryption Standard (AES)
  - Triple Data Encryption Algorithm (Triple-DES)
- Random Number Generator Functions:
  - Deterministic Random Bit Generator ANSI X9.82

Features

- C-callable library functions developed in MPLAB® ASM30
- Assembly language
- Optimized for speed, code size and RAM usage:
  - RAM usage below 60 bytes
- Library functions extensively tested for adherence to applicable standards
- Symmetric Key Encryption/Decryption functions support multiple modes of operation:
  - Electronic Code Book (ECB) mode
  - Cipher Block Chaining with Message Authentication (CBC-MAC) mode
  - Counter (CTR) mode
  - Combined CBC-MAC and Counter (CCM) mode
- A comprehensive *"dsPIC30F Embedded Encryption Libraries User's Guide"* describing the required APIs for the library functions
- Several examples of use are provided for each library function

Ordering Information:

SW300050-EVAL	dsPIC® DSC Symmetric Key Embedded Encryption Library Software License (Evaluation Copy)
SW300050-5K	dsPIC® DSC Symmetric Key Embedded Encryption Library Software License (Up to 5K units)
SW300050-25K	dsPIC® DSC Symmetric Key Embedded Encryption Library Software License (5K to 25K units)
SW300050-100K	dsPIC® DSC Symmetric Key Embedded Encryption Library Software License (25K to 100K units)
DS70128	*"dsPIC® DSC Symmetric Key Embedded Encryption Library Product Overview"* (Available at: www.microchip.com)

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dsPIC® DSC Asymmetric Key Embedded Encryption Library

Microchip offers a reliable security solution for embedded applications built on the dsPIC30F platform. This solution is provided by means of two libraries – Symmetric Key and Asymmetric Key Embedded Encryption Libraries. The Asymmetric Key Library implements the following:

- Public Key Encryption/Decryption Functions:
  - RSA (1024 and 2048-bit)
- Key Agreement Protocol:
  - Diffie-Hellman (1024 and 2048-bit)
- Signing and Verification:
  - DSA (1024-bit)
  - RSA (1024 and 2048-bit)
- Hash and Message Digest Functions:
  - SHA-1, MD5
- Random Number Generator (RNG):
  - ANSI X9.82

Features

- C-callable library functions developed in MPLAB ASM30 Assembly language
- Optimized for speed, code size and RAM usage:
  - RAM usage below 100 bytes
- Library functions extensively tested for adherence to applicable standards
- A comprehensive *"dsPIC30F Embedded Encryption Libraries User's Guide"* describing the required APIs for the library functions
- Several examples of use provided for each library function

Typical Applications

The algorithms supported by this library have emerged as the defacto standard for many large scale, secured applications, like web access, e-mail, secure XML transactions and Virtual Private Networks (VPN). These algorithms are also recommended by most Internet Engineering Task Force (IETF) Standards, Federal Information Processing Standards (FIPS) and IPSec Standards. Some typical applications for this library include:

- Mobile and wireless devices, PDAs
- Secure banking
- Secure web transactions:
  - Secure Socket Layer (SSL)
  - Transport Layer Security (TLS)
  - Secure Multi-purpose Internet Mail Extensions (S/MIME)
  - ZigBee™ technology and other monitoring and control applications
- Smart card readers
- Friend/foe identification
- Peripherals interoperating with TCG and NGSCB personal computers

The Trusted Computing Group (TCG) and related Microsoft® Next Generation Secure Computing Base (NGSCB) both specify RSA and Triple-DES. AES, Triple DES and other symmetric solutions are featured in the dsPIC30F Symmetric Key Embedded Encryption Library (SW300050).

Ordering Information:

SW300055-EVAL	dsPIC® DSC Asymmetric Key Embedded Encryption Library Software License (Evaluation Copy)
SW300055-5K	dsPIC® DSC Asymmetric Key Embedded Encryption Library Software License (Up to 5K units)
SW300055-25K	dsPIC® DSC Asymmetric Key Embedded Encryption Library Software License (5K to 25K units)
SW300055-100K	dsPIC® DSC Asymmetric Key Embedded Encryption Library Software License (25K to 100K units)
DS70127	*"dsPIC® DSC Asymmetric Key Embedded Encryption Library Product Overview"* (Available at: www.microchip.com)

NEW

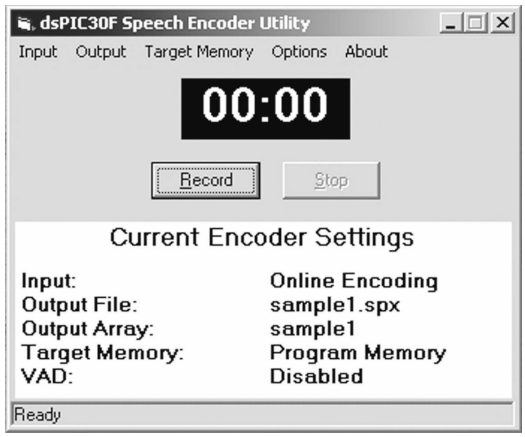
dsPIC30F Speech Encoding/Decoding Library

The dsPIC30F Speech Encoding/Decoding Library performs toll-quality voice compression and voice decompression. The library is based on a modified version of Speex source code and features a 16:1 compression ratio. It samples speech at 8 kHz and compresses it to a rate of 8 kbps. Storing compressed speech for playback requires approximately 1 Kbyte of memory for each second of speech.

Features

Key features of the library include:

- Fixed 8 kHz sample rate
- Fixed 8 kbps output rate
- PESQ-based Mean Opinion Score: 3.7-4.2 (out of 5.0)
- Code Excited Linear Prediction (CELP)-based coding
- Two analog input interfaces – codec or on-chip 12-bit ADC
- Two analog output interfaces – codec or on-chip PWM
- Optional Voice Activity Detection
- Playback-only applications will benefit from the Speech Encoder Utility. It allows you to make encoded speech files from your desktop using a PC microphone or WAV file
- Storing compressed speech requires 1 KB of memory per second of speech
- Off-chip support for playback of long speech samples
- Royalty free (only one-time license fee)
- Full compliance with Microchip MPLAB® C30 C Compiler Tools
- *"dsPIC30F Speech Encoding/Decoding Library User's Guide"* (DS70154) is provided to help the user understand and use the library
- Designed to run on dsPICDEM™ 1.1 Demonstration Board (DM300014)



Resource Requirements

Decoder:
Playback Interface: Si-3000 Audio codec or PWM
Computational Power: 3 MIPS
Program Flash Memory: 15 KB
RAM*: 3.2 KB

Encoder:
Sampling Interface: Si-3000 Audio codec or 12-bit ADC
Computational Power: 19 MIPS (worst case)
Program Flash Memory: 33 KB
RAM*: 5.4 KB (1.2 KB is scratch)

* Full-duplex support is presently not possible due to RAM requirements, but support will be provided with future devices. Half-duplex support is now possible and requires 6.8 KB of RAM.

Ordering Information:

SW300070-EVAL	dsPIC30F Speech Encoder/Decoder Library Software License (Evaluation Only)
SW300070-5K	dsPIC30F Speech Encoder/Decoder Library Software License (Up to 5K units)
SW300070-25K	dsPIC30F Speech Encoder/Decoder Library Software License (Up to 25K units)
SW300070-100K	dsPIC30F Speech Encoder/Decoder Library Software License (Up to 100K units)
DS70146	*"dsPIC30F Speech Encoding/Decoding Library Product Overview"*

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FREE

dsPICworks™ Data Analysis and DSP Software

dsPICworks software is an easy-to-use data analysis and signal processing package for designs using dsPIC30F digital signal controllers. It provides an extensive number of functions encompassing:

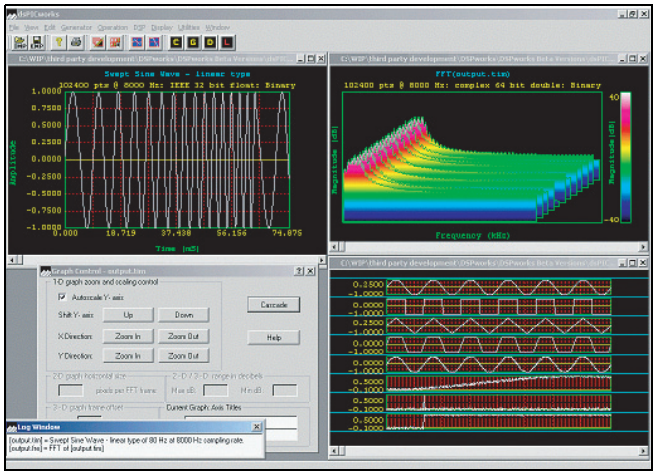
- Signal generation
- Arithmetic operations and digital signal processing
- One, two and three-dimensional display and measurement capabilities
- Data import/export compatible with MPLAB® IDE and MPLAB ASM30 Assembler

Features

- Wide variety of signal generators – sine, square, triangular, window functions, noise
- Extensive DSP functions – FFT, DCT, filtering, convolution, interpolation
- Extensive arithmetic functions – algebraic expressions, data scaling, clipping, etc.
- 1-D, 2-D and 3-D displays
- Multiple data quantization and saturation options
- Multi-channel data support
- Automatic “script file”-based execution options available for any user-defined sequence of dsPICworks software functions
- File import/export interoperable with MPLAB IDE
- Digital filtering options support filters generated by dsPIC Digital Filter Design
- ASM30 Assembler file option to export data tables into dsPIC30F RAM

Signal Generation

dsPICworks software supports an extensive set of signal generators, including basic sine, square and triangle wave generators, as well as advanced generators for window functions, unit step, unit sample, sinc, exponential and noise functions.



Arithmetic and Digital Signal Processing (DSP) Operations

dsPICworks software has a wide range of DSP and arithmetic functions which can be applied to signals. Standard DSP functions include transform operations – FFT and DCT, convolution and correlation, signal decimation, signal interpolation sample rate conversion and digital filtering.

Display and Measurement

dsPICworks software has a wide variety of display and measurement options. Frequency domain data may be plotted in the form of 2-dimensional “spectrogram” and 3-dimensional “waterfall” options. The log window shows current cursor coordinates, as well as derived values, such as the difference from last position and signal frequency.

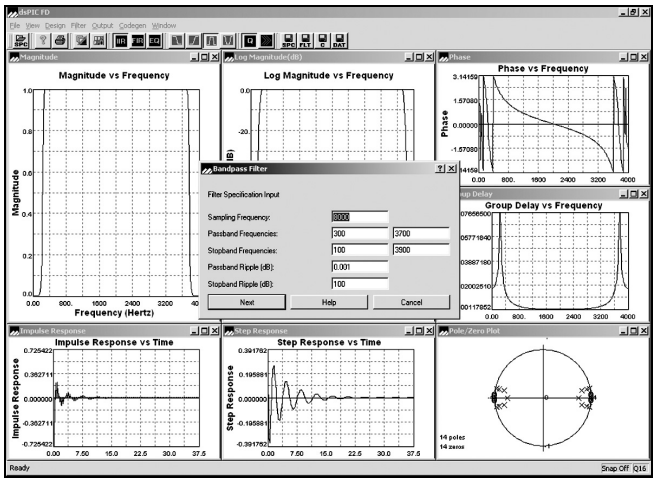
Ordering Information:

SW300023 dsPICworks™ Data Analysis and DSP Software (Free download: www.microchip.com)

DS51442 *“dsPICworks™ Data Analysis and DSP Software Product Overview”* (Available at: www.microchip.com)

Digital Filter Design/Digital Filter Design Lite

The Digital Filter Design tool for the dsPIC® 16-bit Digital Signal Controllers makes designing, analyzing and implementing Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) digital filters easy through a menu-driven and intuitive user interface. The filter design tool performs complex mathematical computations for filter design, provides superior graphical displays and generates comprehensive design reports. Desired filter frequency specifications are entered and the tool automatically generates the filter code and coefficient files ready to use in the MPLAB® IDE. System analysis of the filter transfer function is supported with multiple generated graphs, such as: magnitude, phase, group delay, log magnitude, impulse response and pole/zero locations.



Finite Impulse Response Filter Design

- Design method selection:
  - FIR Windows design
  - FIR Equiripple design (Parks-McClellan)
- Low-pass, high-pass, band-pass and band-stop filters
- FIR filters can have up to 513 taps
- Following window functions are supported:
  - Rectangular: 4 Term Cosine
  - Hanning (Hann): 4 Term Cosine with continuous 5th derivative
  - Hamming: Minimum 4 Term Cosine
  - Triangular: Good 4 Term Blackman Harris
  - Blackman: Harris Flat Top
  - Exact Blackman: Kaiser
  - 3 Term Cosine: Dolph-Tschebyscheff
  - 3 Term Cosine with continuous 3rd derivative: Taylor
  - Minimum 3 Term Cosine: Gaussian
- Reports show design details, such as window coefficients and Impulse Response, prior to multiplying by the window function
- Filters are designed for a maximum gain of 1

Comparison – Filter Design vs. Filter Design Lite

	Filter Design	Filter Design Lite
Low-pass	✓	✓
High-pass	✓	✓
Band-pass	✓	✓
Band-stop	✓	
FIR Taps	Up to 513	Up to 64
IIR Taps for LP, HP	Up to 10	Up to 4
IIR Taps for BP, BS	Up to 20	Up to 8
Generate ASM Code	✓	—
Export to MPLAB® IDE	✓	✓
Export to MPLAB® C30 C Compiler	✓	✓
MATLAB® Support	✓	✓

Infinite Impulse Response Filter Design

- Low-pass, high-pass, band-pass and band-stop filters
- Filter orders up to 10 for low-pass and high-pass filters
- Filter orders up to 20 for band-pass and band-stop filters
- Five analog prototype filters are available:
  - Butterworth
  - Tschebyscheff
  - Inverse Tschebyscheff
  - Elliptic
  - Bessel
- Digital Transformations are performed by bilinear transformation method
- Reports show design details, such as all transformations from normalized low-pass filter to desired filter

Code Generation Features

- Generated files are compliant with the Microchip dsPIC30F C30 C Compiler, Assembler and Linker
- Choice of placement of coefficients in program space or data space
- ‘C’ wrapper/header code generation

Graphs

- Magnitude Response vs. Frequency
- Log Magnitude vs. Frequency
- Phase Response vs. Frequency
- Group Delay vs. Frequency
- Impulse Response vs. Time (per sample)
- Step Response vs. Time (per sample)
- Pole and Zero Locations (IIR only)

Ordering Information:

SW300001 Digital Filter Design
SW300001-LT Digital Filter Design Lite
DS51442 *“Digital Filter Design/Digital Filter Design Lite”* (Available at: www.microchip.com)

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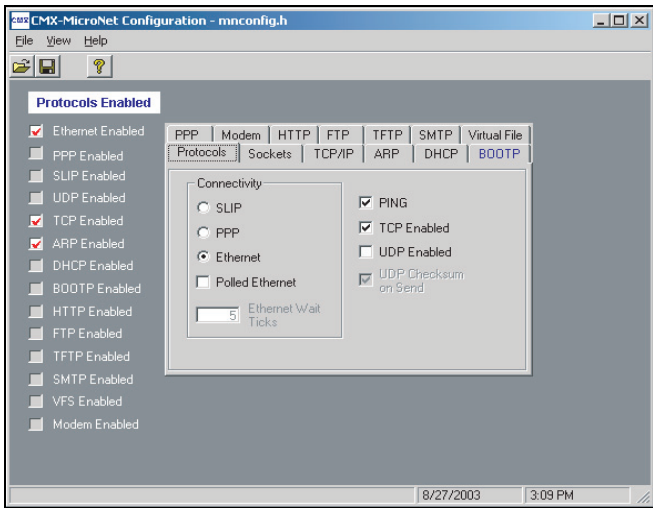
CMX-MicroNet™ for dsPIC30F Devices

CMX-MicroNet is an embedded TCP/IP stack that is specifically designed for optimized use of Flash and RAM resources on Microchip's 16-bit Digital Signal Controller. The software runs directly on the processor with no gateways or PCs required. The stack can be run in Stand-alone mode or work in conjunction with an RTOS. Using only industry standard protocols, CMX-MicroNet offers true TCP/IP networking via Direct, Dial-up or Ethernet connectivity and wireless Ethernet (802.11b) as well.

Up to 127 sockets can be open at a time. They can be Ethernet sockets and/or either PPP or SLIP sockets. PPP and SLIP cannot be used at the same time. An HTTP Web server, FTP server, SMTP client and DHCP client are also available. The RS-232 link, if used, can either be a direct cable link or through a modem.



Description

CMX-MicroNet is available for a low, one-time fee with no royalties on deployed products. In addition, CMX-MicroNet offers only industry standard protocols running directly on the target processor and full source code is provided with every sale.

Supported Protocols

TCP	PPP
UDP	SLIP
IP	HTTP Web Server
DHCP	FTP
TFTP	SMTP

CMX-MicroNet Specifications for dsPIC® DSC Products

Flash

- UDP/IP + core: 4470 bytes
- TCP/IP + core: 7827 bytes
- UDP/TCP/IP + core: 8685 bytes
- PPP: 6681 bytes
- Modem: 447 bytes
- HTTP server: 3888 bytes
- Virtual file: 885 bytes
- Ethernet: 2652 bytes
- DHCP Client: 2202 bytes
- FTP Server: 3657 bytes
- TFTP Client: 723 bytes
- BOOTP: 684 bytes
- SMTP: 1918 bytes
- Utility: 1314 bytes

Ordering Information:

CMX-MicroNet™ for dsPIC30F Devices is available from CMX.

DS51447 *"CMX-MicroNet™ for dsPIC30F Product Overview"* (Available at: www.microchip.com)

CMX-RTX™ for dsPIC30F Devices

In some cases, well-structured linear programming is sufficient for a product. In most cases, however, programmers appreciate not having to worry about structuring their code to perform all necessary tasks in a timely manner. This is where CMX-RTX can help. CMX-RTX allows tasks (pieces of code that do specific duties) to run quasi-concurrently. This means that tasks will seem to run all at the same time – doing many specific jobs simultaneously.

CMX-RTX takes the worry and headaches out of real-time programming. The software lets embedded programmers concentrate on the overall application as it takes care of the little details. Finish projects faster and more efficiently with CMX-RTX.

Some RTOS software offers only cooperative scheduling, which means that the running task has to call the scheduler to perform a task switch. Others offer time slicing, where each task runs for a certain period of time, at which point, a task switch takes place no matter what. Others claim to be fully preemptive, but do not allow any interrupt to cause a preemption. All of these models will fail at one point or another.

CMX-RTX allows a task of higher priority that is able to run (whether starting or resuming) to preempt the lower priority running task. This will cause the scheduler to save the context of the running (lower priority) task and restore the context of the higher priority task so that it is now running. A truly preemptive RTOS allows interrupts to cause an immediate task switch. This means that the interrupts now have the added ability of using the RTOS's functions.

Features

- The smallest footprint
- The fastest context switch times
- The lowest interrupt latency times
- True preemption
- Scheduler and interrupt handler written in Assembly for speed and optimization
- Optional cooperative and time-slicing scheduling
- Nested interrupts
- All functions contained in a library
- Interrupt callable functions
- Scalability
- Free source code provided
- Integrated with CMX-MicroNet™ for optional networking connectivity

CMX-RTX Specifications for dsPIC® DSC Products

Flash

- All CMX Functions: 3696 bytes
- CMX Initialize Module: 936 bytes
- CMX Assembly Module (scheduler): 645 bytes
- RAM, Each Task Control Block: 28 bytes
- Min. Context Switch:
  - 92 cycles (starting a task)
  - 137 cycles (resuming a task)
- CMX functions are contained in a library, thus reducing code size, if not referenced

Ordering Information:

SW300031	CMX-RTX™ for dsPIC30F Devices
DS51435	*"CMX-RTX™ for dsPIC30F Product Overview"* (Available at: www.microchip.com)

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CMX-Scheduler™ for dsPIC® DSC Devices

CMX-Scheduler is the result of a special collaboration between CMX and Microchip. Available in object code only, CMX-Scheduler is available for FREE to embedded systems designers using the dsPIC® digital signal controllers. CMX-Scheduler is specially designed for developers whose designs do not require a full blown RTOS and/or who are wondering if a kernel might help their application. The perfect entry-level kernel, CMX-Scheduler is intuitive to use and easy to implement.

CMX-Scheduler offers many growth paths for future designs. User applications developed with the CMX-Scheduler kernel are upwardly compatible with the popular CMX-Tiny+™ or CMX-RTX™ RTOSes. CMX-Scheduler also is tightly integrated with the unique CMX-MicroNet™ TCP/IP stack for those applications that require networking connectivity.

CMX-Scheduler software and documentation is delivered in electronic format and is freely licensed for unlimited product usage on the dsPIC DSC devices.

Features

- FREE for use on any dsPIC DSC device
- Easy to learn and use
- Truly preemptive kernel
- Supports up to five tasks
- Fast performance
- Free bug fixes and updates
- No royalties on shipped products
- Compatible with CMX-Tiny+ and CMX-RTX
- Complete electronic documentation
- Integrated with CMX-MicroNet for optional networking connectivity

CMX-Scheduler Specifications for dsPIC® DSC Products

- All CMX Functions: 972 bytes
- CMX Initialize Module: 153 bytes
- CMX Assembly Module: 567 bytes
- RAM, Each Task Control Block: 11 bytes
- Flash, Each Task Control Block: 5 bytes:
  - Min. Context Switch: 81 cycles (starting a task)
  - 102 cycles (resuming a task)
- CMX functions are contained in a library, thus reducing code size, if not referenced

Functionality

- `K_Task_Create` – creates a task
- `K_Task_Start` – starts a task
- `K_Task_Wake` – wakes a task
- `K_Task_Wait` – has a task wait with/without a time-out
- `K_Task_Kill` – Deletes a task
- `K_Task_Coop_Sched` – performs a cooperative task switch
- `K_Event_Wait` – waits on an event
- `K_Event_Signal` – signals an event from a task
- `K_Event_Signal` – signals an event from an interrupt

Ordering Information:

SW300030	CMX-Scheduler™ for dsPIC® DSC Devices (Free download: www.cmx.com/microchip)
DS51439	*"CMX-Scheduler™ for dsPIC® DSC Devices Product Overview"* (Available at: www.microchip.com)

CMX-Tiny+™ for dsPIC30F Devices

In some cases, well-structured linear programming is sufficient for a product. In most cases, however, programmers appreciate not having to worry about structuring their code to perform all necessary tasks in a timely manner. This is where CMX-Tiny+ can help. CMX-Tiny+ allows tasks (pieces of code that do specific duties) to run quasi-concurrently. This means that tasks will seem to run all at the same time – doing many specific jobs simultaneously.

CMX-Tiny+ takes the worry and headaches out of real-time programming. The software lets the embedded programmer concentrate on the overall application while taking care of the little details. Finish projects faster and more efficiently with CMX-Tiny+.

Some RTOS software offers only cooperative scheduling, which means that the running task has to call the scheduler to perform a task switch. Others offer time slicing in which each task runs for a certain period of time, at which point, a task switch takes place no matter what. Others claim to be fully preemptive, yet do not allow any interrupt to cause a preemption. All of these models will fail at one point or another.

CMX-Tiny+ allows a task of higher priority that is able to run (whether starting or resuming) to preempt the lower priority running task. This will cause the scheduler to save the context of the running (lower priority) task and restore the context of the higher priority task so that it is now running.

A truly preemptive RTOS allows interrupts to cause an immediate task switch. This means that the interrupts now have the added ability of using the RTOS's functions.

In addition, CMX-Tiny+ has been especially designed to offer such a small Flash/RAM footprint that it can be used with only the on-board Flash/RAM of the dsPIC DSC as a single chip solution. Based upon a scaled down version of the popular CMX-RTX™, CMX-Tiny+ retains most of the power of CMX-RTX, as well as the more frequently used functions.

Features

- Extremely small Flash/RAM footprint
- Truly preemptive RTOS
- Low-power mode supported
- Full source code with every purchase
- Free technical support and updates
- Low, economical pricing
- No royalties on shipped products
- Backward compatible with CMX-Scheduler™
- Integrated with CMX-MicroNet™ for optional networking connectivity

CMX-Tiny+ Specifications for dsPIC® DSC Products

Flash

- All CMX Functions: 2304 bytes
- CMX Initialize Module: 249 bytes
- CMX Assembly Module (scheduler): 570 bytes
- RAM, Each Task Control Block: 13 bytes
- Flash, Each Task Control Block: 6 bytes
- Min. Context Switch:
  - 71 cycles (starting a task)
  - 121 cycles (resuming a task)
- CMX functions are contained in a library, thus reducing code size, if not referenced

Ordering Information:

SW300032	CMX-Tiny+™ for dsPIC30F Devices
DS51436	*"CMX-Tiny+™ for dsPIC30F Product Overview"* (Available at: www.microchip.com)

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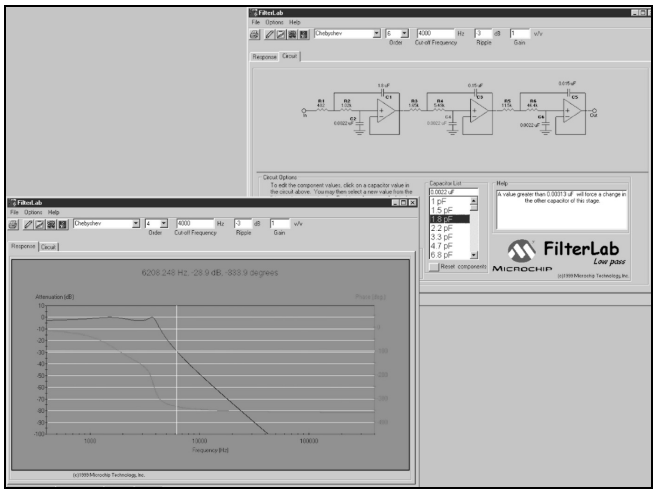
FREE

FilterLab® Active Filter Software Design Tool



FilterLab Active Filter Software Design Tool is an innovative software tool that simplifies active filter design. The FilterLab Active Filter Software Design Tool provides full schematic diagrams of the filter circuit with component values and displays the frequency response.

Features

- Multiple filter order and responses with gain option:
  - Ability to select Bessel, Butterworth or Chebyshev filter response
  - Up to 8th-order filters can be simulated
  - Circuit diagram and component values given
- Bode plot with phase margin:
  - Resultant Bode plot generated
- Circuit implementation:
  - Standard 1-percent resistors
  - Standard capacitor values can generate and are user adjustable
  - Circuit configuration: Sallen-Key (noninverting) or multiple feedback (inverting)
- Spice model generated:
  - Spice model of entire filter generated
  - Allows for streamline of simulations
- Anti-aliasing wizard
  - Filter optimization for Analog-to-Digital Converter based on bit resolution and sample rate

Ordering Information:

Free download: www.microchip.com

FREE

Total Endurance™ Software Model

Microchip's revolutionary Total Endurance Software Model provides electronic system designers with unprecedented visibility into serial EEPROM-based applications. This advanced software model (with a very friendly user interface) eliminates time and guesswork from serial EEPROM-based designs by accurately predicting the device's performance and reliability within a user-defined application environment. Design trade-off analysis, which formerly consumed days or weeks, can now be performed in minutes – with a level of accuracy that delivers a truly robust design.

With Microchip's Total Endurance Software Model, users may input the following application parameters:

- Serial EEPROM device type
- Bytes to be written per cycle
- Cycling mode – byte or page
- Data pattern type – random or worst-case
- Temperature in °C
- Erase/Write cycles per day
- Application lifetime or target PPM level

The model will respond with FIT rate, PPM level, application life and plot of the PPM level versus number of cycles. The model is available in both MS-DOS® and Windows® versions.

Features

- Automatic or manual recalculation
- Real-time update of data
- Full screen or windowed graphical view
- Hypertext on-screen help
- Key or slide bar entry of parameters
- On-screen editing of parameters
- Single click copy of plot to clipboard
- Numeric export to delimited text file
- On-disk Total Endurance tutorial

Ordering Information:

Free download: www.microchip.com

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KEELOQ® Security ICs License CD

The KEELOQ Security ICs License CD contains application notes, decoder software and the KEELOQ Security ICs Software Toolkit. Also included are data sheets, development tools documentation and MPLAB® IDE software.

The KEELOQ Security ICs Software Toolkit is a tool that is designed to be used by a system developer to debug code. The toolkit allows the user to receive transmissions from the KEELOQ Security ICs Evaluation Kit II (DM303006).

The KEELOQ Security ICs decoder software is typically used as the starting point of a decoder design. The software is fully described in the application notes accompanying the software.

Ordering Information:

DS40038 KEELOQ® Security ICs License CD
Available from Microchip at: lit_inquiry@microchip.com (Americas and Canada), euro.inquiry@microchip.com (Europe) or asia.inquiry@microchip.com (Far East.

NOTES:

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HARDWARE

This section contains the following major topics:

MPLAB® ICD 2 In-Circuit Debugger....32
MPLAB® ICD 2 Accessories....33
PICSTART® Plus Development Programmer....34
PICkit™ 1 Flash Starter Kit....35
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PIC10F2XX Programmers/Adapters....37
Signal Analysis PICtail™ Daughter Board....38
Ethernet PICtail™ Daughter Board....39
PICkit™ 2 Starter Kit....40

MPLAB® ICD 2 In-Circuit Debugger

The MPLAB ICD 2 module is a low-cost development tool that connects between the PC and the designer's target board, allowing direct in-circuit debugging of a target PICmicro® MCU or dsPIC® DSC. Programs can be executed in real time or single step, watch variables established, break points set, memory read/writes accomplished and more. It can also be used as a development programmer for the microcontrollers.

The MPLAB ICD 2 allows debugging of selected Flash-based Microchip microcontrollers using MPLAB Integrated Development Environment (IDE). This powerful graphical user interface is included with each unit as a free tool. It is the ideal tool for embedded control designers who do not have the budget for a high-cost, in-circuit emulator.

Shared overhead includes: one stack level, some general purpose file registers, a small bank of program memory when in the Debug mode and two hardware pins (RB6 and RB7).

The MPLAB ICD 2 is firmware-based, which allows it to be enhanced to support future microcontroller products and new features, extending the tool life and making it a valued buy. Firmware downloads are available from the Microchip web site at: www.microchip.com.

Features

- USB (full speed, 2 Mbits/s) and RS-232 interface to host PC
- Real-time background debugging
- Built-in overvoltage/short-circuit monitor
- Supports low-voltage operation to 2.0 volts
- Diagnostic LEDs (power, busy, error)
- Reading/writing memory space and stack of target microcontroller
- Erase of program memory space with verification
- Freeze on Halt
- Programs many Flash devices

Ordering Information:

DV164005	MPLAB® ICD 2 Module (Includes MPLAB ICD 2 Module, RJ-11 Cable and USB Cable)
DV164006	MPLAB® ICD 2 Evaluation Kit (Includes MPLAB ICD 2 Module, RJ-11 Cable, USB Cable, RS-232 Cable, Power Supply and PICDEM™ 2 Plus Demonstration Board – DM163022)
DV164007	MPLAB® ICD 2 Module ws (Includes MPLAB ICD 2 Module, RJ-11 Cable, USB Cable, RS-232 Cable and Power Supply)
DV164030	MPLAB® ICD 2 with dsPICDEM™ Starter Demonstration Board
DV164032	MPLAB® ICD 2 with dsPICDEM 1.1 General Purpose Demonstration Board
DS51264	*"MPLAB® ICD 2 In-Circuit Debugger/Programmer Product Overview"* (Available at: www.microchip.com)

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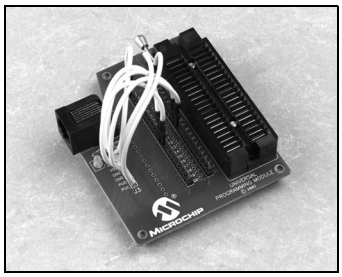
MPLAB® ICD 2 Accessories

RS-232 and Power Supply Kit

Universal Power Supply and Serial Cable to support using the ICD 2 for serial communications or with the Universal Programmer Module. These items are included with the MPLAB® ICD 2 Evaluation Kit (DV164006) and MPLAB® ICD 2 Module ws (DV164007) products.

Universal Programming Module



The Universal Programming Module is a handy, low-cost tool to support programming of DIP packaged products from Microchip.

It can be used in conjunction with the In-Circuit Debugger (MPLAB ICD 2) to provide an easy means for programming microcontrollers.

Seven flying leads break out the primary programming lines needed for any microcontroller. These are connected to the 40 breakout pins of the ZIF socket, allowing any part to be configured to the necessary programming lines.

Features

- ZIF Socket
- Supports up to 40-pin devices from 300 to 600 mil width
- MPLAB ICD 2 Connector

MPLAB ICD 2 Header Interfaces

The header interface provides in-circuit debugging capability to the 8-pin, 14-pin or 18-pin devices. The header interface is connected in place of the target device and houses a standard MPLAB ICD 2 connector. In-circuit debugging is done via an MPLAB ICD 2. Once the code is debugged, the debugged software can then be programmed into the device and installed in the board, replacing the header.

Ordering Information:

AC162048	RS-232 and Power Supply Kit
AC162049	Universal Programming Module
AC162050	PIC12F629/675 MPLAB ICD 2 Header Interface Module
AC162051	MPLAB® ICD 2 Header Interface Module
AC162052	PIC16F630/676 MPLAB ICD 2 Header Interface Module (14-pin DIP)
AC162053	PIC16F648A/627A/628A MPLAB ICD 2 Header Interface Module (18-pin DIP)
AC162054	MPLAB® ICD 2 18-pin Header (PIC16F716)
AC162055	MPLAB® ICD 2 14-pin Header (PIC16F684)
AC162056	MPLAB® ICD 2 14-pin Header (PIC16F688)
AC162057	MPLAB® ICD 2 14-pin Header (PIC16F638/636)
AC162058	MPLAB® ICD 2 8-pin Header (PIC12F683)
AC162059	MPLAB® ICD 2 8/14-pin Header (PIC16F505) *Estimated availability CQ305*
AC162060	MPLAB® ICD 2 20-pin Header (PIC16C785) *Estimated availability CQ305*

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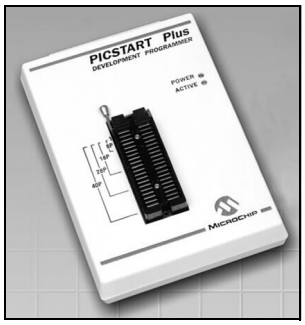
PICSTART® Plus Development Programmer



The PICSTART Plus Programmer gives the product developer the ability to program user software into any of the supported microcontrollers. The PICSTART Plus Programmer software, running under MPLAB® IDE, provides for full interactive control over the programmer.

The PICSTART Plus Programmer provides the product development engineer with a highly flexible, low-cost design tool set for all PICmicro® MCUs (DIP packages, up to 40 pins). PLCC and QFN adapters are available.

The CE-compliant PICSTART Plus Programmer features a molded plastic enclosure and special circuit design techniques to enhance ESD protection. The PICSTART Plus Development Programmer is not recommended for use in a production environment.

Sample software programs are provided to help the developer quickly become familiar with the PICSTART Plus Development Programmer system and with Microchip's PICmicro MCU families. Included is a limited C compiler (PICC LITE™ C Compiler) for the PIC16F84 family.

The MPASM™ Macro Assembler provides programmable memory data files, listing files and special files required for symbolic debug. The MPLAB SIM Software Simulator allows the user to isolate code problems and debug firmware designs on PICmicro MCUs. It simulates the core functions, as well as most of the peripherals of the PICmicro MCU families. It is particularly suitable for optimizing algorithms where real-time emulation is not required.

The PICSTART Plus Programmer system runs on any PC-compatible machine under Windows® 98 SE or later operating system. The easy-to-use PICSTART Plus Programmer software provides for full interactive control over the programmer and features Microchip's highly acclaimed MPLAB IDE, with its built-in editor, assembler and Windows operating system-based MPLAB SIM Simulator.

PICSTART® Plus Development Programmer Contents
• PICSTART Plus Development Programmer • Product Sample • MPLAB IDE Software • PICC LITE C Compiler • RS-232 Interface Cable • Power Supply • Complete Documentation

PICSTART Plus Development Programmer Flash Reprogrammable Firmware Upgrade

This PICSTART Plus Programmer upgrade is a PCB containing a PIC18F6720 part and replaces the PIC17C44 inside a PICSTART Plus Programmer. The firmware is upgradable using MPLAB IDE. It is no longer necessary to program a PIC17C44 and open the product enclosure to replace the PICSTART Plus Programmer firmware.

Ordering Information:

DV003001	PICSTART® Plus Development Programmer
UK003010	PICSTART® Plus Development Programmer Flash Reprogrammable Firmware Upgrade
AC164024	68-pin PLCC Adapter Kit for PIC16C92X and PIC17C75X
AC164027	84-pin PLCC Adapter Kit for PIC17C76X
AC164031	28-pin DIP to 28-pin QFN Adapter
AC164032	8-pin DFN to 8-pin DIP Adapter
AC164033	18-pin DIP to 28-pin QFN Adapter
AC164034	40-pin DIP to 44-pin QFN Adapter
DS51034	*"PICSTART® Plus Development Programmer Product Overview"* (Available at: www.microchip.com)

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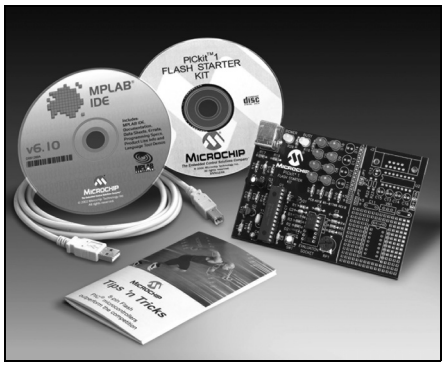
PICkit™ 1 Flash Starter Kit



The PICkit 1 Flash Starter Kit is a low-cost development kit with an easy-to-use interface for programming Microchip's 8/14-pin Flash family of microcontrollers. This starter kit is designed to help the user get up to speed quickly using PICmicro® microcontrollers.

The kit provides everything needed to program, evaluate and develop applications using Microchip's powerful 8/14-pin Flash family of microcontrollers. Instructions are provided in a series of seven tutorials that cover I/O, interrupts, A/D Converters, comparators, data tables and timers. All source code files for the tutorials are furnished.

Code development and debugging is performed using Microchip's powerful MPLAB® Integrated Development Environment (IDE). The MPLAB IDE is a seamless, integrated software development environment that includes an MPASM™ Macro Assembler, MPLAB SIM Software Simulator with symbolic debugger, color-coded source editor, project manager with high-level language debugging and concurrent support for development tools, including low-cost, in-circuit debuggers, full-featured, real-time emulators and programmers. The consistent and easy-to-use graphic user interface of the MPLAB IDE desktop allows for rapid switching between development, debugging and programming modes within a project.

Features

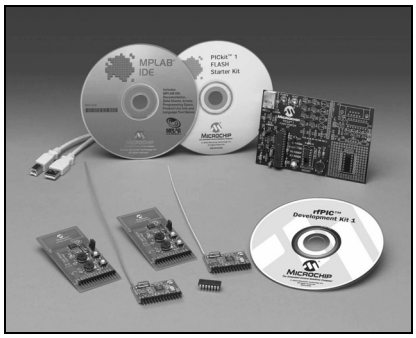
- Small 3" x 4.5" circuit board with snap-off prototyping board
- Easy-to-use Windows® programming interface for programming Microchip's 8/14-pin Flash family of microcontrollers
- Seven sequential tutorials, written in both Assembly and HI-TECH C, demonstrate how to use Microchip's 8/14-pin Flash family of microcontrollers
- Microchip's Tips 'n Tricks booklet provides efficient, low-cost design techniques using Microchip Flash microcontrollers
- *"PICkit 1 Flash Starter Kit User's Guide"* (included on CD)
- Microchip's MPLAB IDE software for a complete code development environment
- HI-TECH PICC LITE™ C Compiler (contained on the MPLAB IDE CD)

PICkit™ 1 Flash Starter Kit Contents
• PICkit 1 Flash Starter Circuit Board with 8-pin PIC12F675 • PICkit 1 Flash Starter Kit CD • MPLAB® IDE (Integrated Development Environment) CD • *"8-Pin Flash PIC® Microcontrollers Outperform the Competition Tips 'n Tricks"* Booklet • USB Interface Cable • PIC16F684 Sample

Ordering Information:

DV164101	PICkit™ 1 Flash Starter Kit
UK164101	PICkit 1 Flash Starter Firmware Upgrade Kit – includes v2.0 + firmware for use with the Signal Analysis PICtail™ Daughter Board (AC164120) and the PIC10F2XX Universal Programmer Adapter (AC163020)
AC163020	PIC10F2XX Universal Programmer Adapter (see page 37)
AC163021	PIC10F2XX SOT-23 to DIP-8 Programmer Adapter Kit (see page 37)
DS40244	*"PICkit™ 1 Flash Starter Kit Product Overview"* (Available at www.microchip.com)

rfPIC® Development Kit 1



The rfPIC Development Kit 1 provides design engineers with an easy way to evaluate unidirectional, remote sense and control wireless links based on the rfPIC12F675 and rfRXD0420/0920 devices. The kit is based on the popular PICkit™ 1 Flash Starter Kit and consists of modular building blocks for different transmitters and receivers that can be utilized for prototype systems or to evaluate different options using Microchip products.

The receiver modules are based on the rfRXD0420 and rfRXD0920 devices and are available in two options supporting 315 MHz ASK and 433 MHz ASK. These modules plug directly into the PICkit 1 Flash Starter development board, offering an easy way to evaluate the different receiver modules with Microchip's 8 and 14-pin Flash PIC® microcontrollers, as well as a USB interface to a PC. The modules are also available for sale separately to allow a number of prototypes based on the same module without having to do an actual RF design. The design files for these modules are available to allow easy integration of the designs into a system.

The transmitter modules are based on the rfPIC12F675 devices and support the same frequency and modulation formats as the receivers. The transmitter modules feature button inputs for remote control functions, as well as analog input to allow evaluation of the A/D and comparator peripherals on the rfPIC12F675. Code development is achieved with Microchip's MPLAB® Integrated Development Environment (IDE). The microcontroller is easily programmed using the PICkit 1 Flash Starter Kit, with modules plugging into the PICkit 1 Flash Starter development board in a similar manner as the receiver modules.

rfPIC® Development Kit 1 Contents
• PICkit™ 1 Flash Starter Kit • 433.92 MHz Transmitter • 315 MHz Transmitter • 433.92 MHz Receiver • 315 MHz Receiver • rfPIC Software and Complete Documentation (on CD)

Ordering Information:

DV164102	rfPIC® Development Kit 1
AC164101	rfPIC® Transmitter Module (433.92 MHz)
AC164102	rfPIC® Transmitter Module (315 MHz)
AC164103	rfPIC® Receiver Module (433.92 MHz)
AC164104	rfPIC® Receiver Module (315 MHz)
AC164105	rfPIC® Receiver Module – 5 Pack (433.92 MHz)
AC164106	rfPIC® Receiver Module – 5 Pack (315 MHz)
DS51409	*"rfPIC® Development Kit 1 Product Overview"* (Available at: www.microchip.com)

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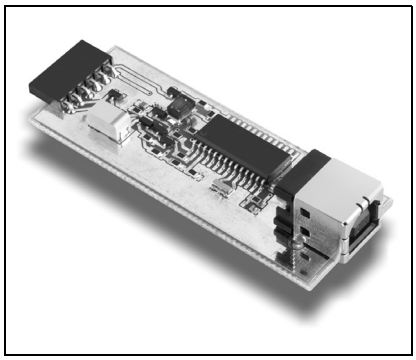
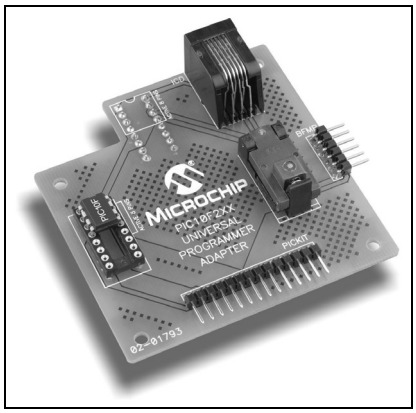
PIC10F2XX Programmers/Adapters

Baseline Flash Microcontroller Programmer



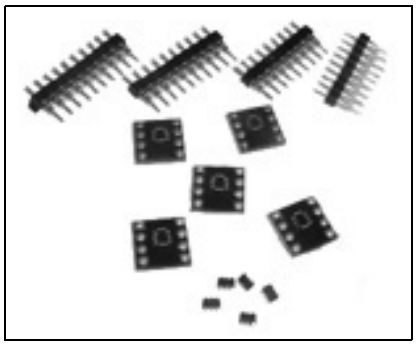
The Baseline Flash Microcontroller Programmer (BFMP) is a simple and easy to use ICSP™ programmer intended to be used with any of Microchip's new baseline Flash PIC® microcontrollers. The BFMP provides a 6-pin linear ICSP header for standard ICSP support, as well as stand-alone programming support for the PIC10F family when paired with the PIC10F2XX Universal Programmer Adapter, providing the least expensive method of programming. The BFMP utilizes USB and does not require an external power supply. The included Graphical User Interface (GUI) allows users to read, write and verify the microcontroller to be programmed.

PIC10F2XX Universal Programmer Adapter



The PIC10F2XX Universal Programmer Adapter provides PIC10F socket support for both the SOT-23 and DIP-8 packages. It allows interfacing to Microchip's low-cost family of programmers, inclusive of: PICkit™ 1 Flash Starter Kit, MPLAB® ICD 2, PICSTART® Plus Programmer and the BFMP.

PIC10F2XX SOT-23 to DIP-8 Programmer Adapter Kit

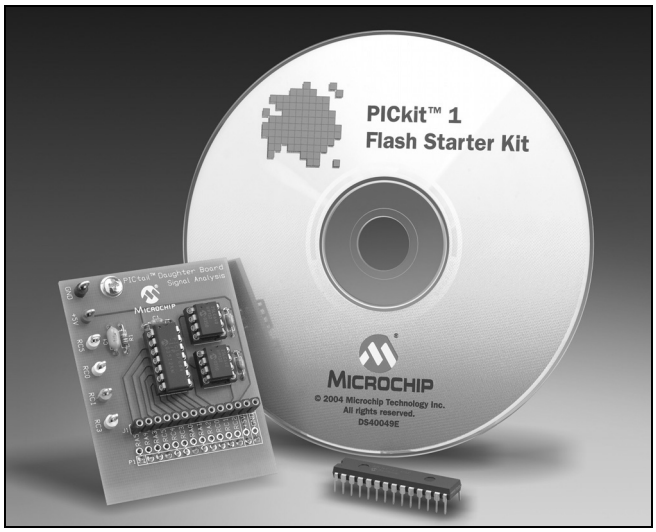


This is a kit consisting of (5) PIC10F206 SOT-23, (5) pin scramble boards and DIP pins. Once assembled, this will make the SOT-23 look like a standard 8P DIP and can be used directly in standard development tool sockets. Note that the PIC10F 8P DIP pinout is family-specific and differs from the standard 8P DIP pinout. This kit is NOT intended for production applications and should be used only as a method of early evaluation.

Ordering Information:

PG164101	Baseline Flash Microcontroller Programmer
AC163020	PIC10F2XX Universal Programmer Adapter
AC163021	PIC10F2XX SOT-23 to DIP-8 Programmer Adapter Kit

Signal Analysis PICtail™ Daughter Board



The Signal Analysis PICtail™ Daughter Board works as an extension to the PICkit™ 1 Flash Starter Kit. When combined with the PICkit 1 Flash Starter Kit, version 2.0.0 or later firmware and signal analysis PC program, the Signal Analysis PICtail Daughter Board can perform signal analysis capabilities such as:

- Real-Time Strip Chart
- Oscilloscope
- Fast Fourier Transformation (FFT)
- Histogram
- Programming

The Signal Analysis PICtail Daughter Board comes populated with a PIC16F684 MCU and two 25LC640 SPI™ compatible serial EEPROM memory devices.

Signal Analysis PICtail™ Daughter Board Contents
• Signal Analysis PICtail Daughter Board Printed Circuit Board (PCB) • PICkit 1 Flash Starter Kit CD-ROM Version 2.0 (or later) (DS40049) Includes complete information on the Signal Analysis PICtail Daughter Board including: - *"Signal Analysis PICtail™ Daughter Board User's Guide"* - Signal Analysis PC Program - Lesson Project Source and Object Code • Preprogrammed PIC16C745 PICmicro® device with USB Version 2.0.0 (or later)

Ordering Information:

AC164120	Signal Analysis PICtail™ Daughter Board
UK164101	PICkit™ 1 Flash Starter Firmware Upgrade Kit (includes firmware V.2.0 or greater required for Signal Analysis PICtail Daughter Board)

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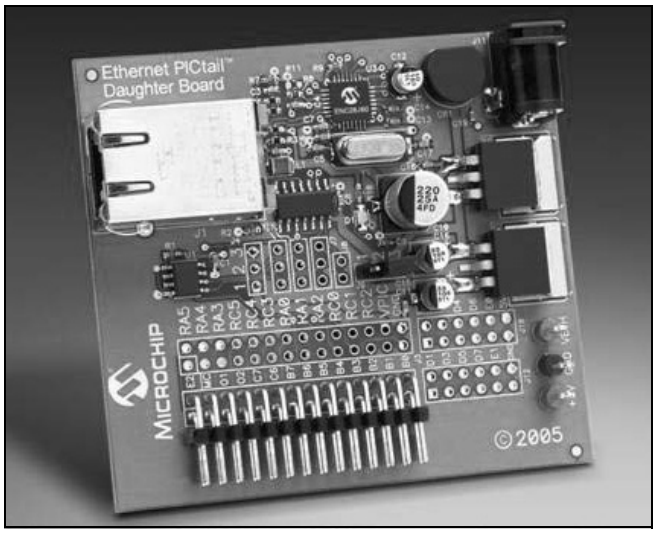
NEW

Ethernet PICtail™ Daughter Board



The Ethernet PICtail Daughter Board provides a cost-effective method of evaluating and developing Ethernet control applications. The board is designed for flexibility and can be plugged into any selection of Microchip's standard PICDEM™ demonstration boards through a 28-pin PICtail pinout. The board is populated with the 28-pin ENC28J60 Ethernet controller which interfaces to the RJ-45 female connector.

Features

- IEEE 802.3 Compliant
- 10Base-T Ethernet
- RJ-45 Female Ethernet Connector
- Plug in compatible with:
  - PICDEM HPC Explorer (DM183022)
  - PICDEM Z 2.4 GHz Demonstration Board (DM163027-2)*
  - PICDEM FS USB Demonstration Board (DM163025)*

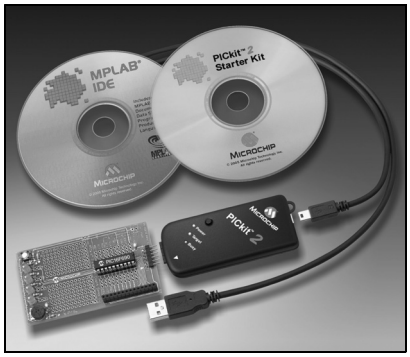
* Future Support

Ordering Information:

AC164121 Ethernet PICtail™ Daughter Board

NEW

PICkit™ 2 Starter Kit



The Microchip PICkit™ 2 Starter Kit provides a quick, easy and low-cost way to start development, from concept to prototype, using selected Flash-based PIC® microcontrollers. The PICkit 2 Starter Kit is a complete "development system in a box", providing programming, evaluation and development in one simple design.

The kit provides everything needed to program, evaluate and develop applications using Microchip's powerful Flash family of microcontrollers. Lessons are provided that cover input/output, interrupts, A/D Converters and timers. All source code files for the lessons are provided.

Code development and debugging is performed using Microchip's powerful MPLAB® Integrated Development Environment (IDE). The MPLAB IDE is a seamless, integrated software development environment that includes the MPASM™ Assembler, MPLAB SIM Software Simulator with symbolic debugger, color-coded source editor, project manager with high-level language debugging and concurrent support for development tools, including low-cost in-circuit debuggers, full-featured real-time emulators and programmers. The consistent and easy-to-use graphic user interface of the MPLAB IDE desktop allows for rapid switching between development, debugging and programming modes within a project.

Features

Key features of the PICkit 2 Starter Kit include:

- Easy to use Windows® programming interface for programming Microchip's Flash family of microcontrollers
- Lessons to demonstrate how to use Microchip's Flash family of microcontrollers
- Five Microchip Tips 'n Tricks Booklets provide efficient, low-cost design techniques using Microchip Flash microcontrollers (contained on the CD-ROM)
- *"PICkit™ 2 Microcontroller Programmer User's Guide"* (included on CD-ROM)
- FREE! Microchip's MPLAB IDE software for a complete code development environment
- FREE! HI-TECH PICC Lite™ C Compiler (contained on the MPLAB IDE CD-ROM)

PICkit™ 2 Starter Kit Contents
• PICkit™ 2 Microcontroller Programmer • Low Pin Count Demo Board (only with DV164120) • PICkit™ 2 Starter Kit Software and Documentation CD • MPLAB® IDE Software and Documentation CD • USB Interface Cable

Ordering Information:

DV164120	PICkit™ 2 Starter Kit (includes Low Pin Count Demo Board featuring the new PIC16F690 for a programming out-of-the-box experience)
PG164120	PICkit™ 2 Microcontroller Programmer

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EMULATION

This section contains the following major topics:

MPLAB® ICE 2000 Modular In-Circuit Emulator 42
MPLAB® ICE 4000 Modular In-Circuit Emulator 43
MPLAB® ICE 2000/4000 Replacement Accessories 44
Ordering Information 45

MPLAB® ICE 2000 Modular In-Circuit Emulator

Microchip's universal MPLAB ICE 2000 for PICmicro® MCUs has been designed with user requirements in mind. The system is small, portable, lightweight and offers improved performance and value. For quick hook-up to portable or desktop PCs, MPLAB ICE 2000 easily connects to the parallel (printer) port.

Interchangeable processor modules allow the system to be easily configured to emulate different processors. This modular system consists of an emulator pod, a processor module, a device adapter and a transition socket (optional). Also included is Microchip's MPLAB Integrated Development Environment (IDE) featuring MPASM™ Macro Assembler, MPLAB IDE Programmer's Editor, Symbolic Debugger and Project Manager with built-in support for high-level languages that support the Common Object Description format (i.e., MPASM Assembler, MPLAB C17 and MPLAB C18 C Compilers).

MPLAB ICE 2000 is a premium quality emulator system providing full-speed emulation, low-voltage operation, 32K x 128-bit trace and unlimited breakpoints. Complex triggering of the MPLAB ICE 2000 provides sophisticated trace analysis and precision breakpoints. The trace analyzer captures real-time execution addresses, opcodes and read/writes of external data. It also traces all file register RAM usage showing internal addresses and data values, as well as all accesses to Special Function Registers, including I/O, timers and peripherals.

Triggers and breakpoints can be set on single events, multiple events and sequences of events. The MPLAB ICE 2000 analyzer is fully transparent and does not require halting the processor to view the trace. In addition, MPLAB ICE 2000 supports code coverage profiling.

Features

- Full-speed, real-time emulation
- Low-voltage emulation: 2.0V to 5.5V
- Trace memory: 32K x 128-bit
- Break/trigger on internal registers
- Program address software breakpoints
- Complex break/trigger on logic: program address and data; internal register address and data; access type; and eight external inputs
- One external input and output logic analyzer trigger
- Multi-level trigger (4 levels)
- Pass and delay counters
- Time-stamp
- Programmable clock: 32 kHz to 40 MHz
- Logic probes
- Parallel (printer) port communications
- Code coverage profiling

MPLAB® ICE 2000 In-Circuit Emulator Contents
• MPLAB ICE 2000 with Tripod • MPLAB IDE Software and Documentation CD • Logic Probes • Parallel Cable • Power Supply

Ordering Information:

ICE2000	MPLAB® ICE 2000 Modular In-Circuit Emulator Pod (See ordering instructions on page 45)
DS51153	*"MPLAB® ICE 2000 In-Circuit Emulator Product Overview"* (Available at: www.microchip.com)

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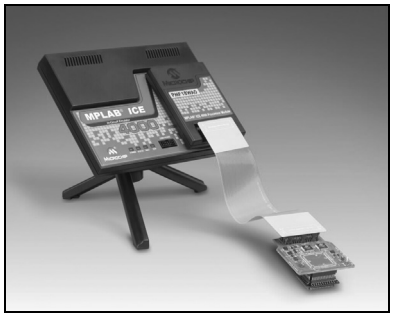
MPLAB® ICE 4000 Modular In-Circuit Emulator



The MPLAB ICE 4000 in-circuit emulator is intended to provide the product development engineer with a complete microcontroller design tool set for high-end PICmicro® microcontrollers. Software control of the emulator is provided by the MPLAB Integrated Development Environment, which allows editing, building, downloading and source debugging from a single environment.

The MPLAB ICE 4000 is a premium emulator system providing the features of MPLAB ICE 2000, but with increased emulation memory and high-speed performance for dsPIC30F and PIC18XXXX devices. Its advanced emulator features include complex triggering and timing, up to 2 MB of emulation memory, and the ability to view variables in real time.

The MPLAB ICE 4000 in-circuit emulator system has been designed as a real-time emulation system with advanced features that are typically found on more expensive development tools. The PC platform and Microsoft® Windows® 32-bit operating system were chosen to best make these features available in a simple, unified application.

Features

- Full-speed emulation
- Low-voltage emulation down to 1.8 volts (or device limit)
- 64K deep x 216-bit wide trace memory
- Up to 2 MB of addressable memory
- Unlimited breakpoints
- Complex break, trace and trigger logic
- Multi-level trigger up to 4 levels
- 48-bit time-stamp
- Stopwatch
- External inputs
- External output to sync with other instrumentation
- USB port connection to PC

MPLAB® ICE 4000 In-Circuit Emulator Contents
• MPLAB ICE 4000 • MPLAB IDE Software and Documentation CD • Flex Cable • Logic Probes • USB Cable • Power Supply

Ordering Information:

ICE4000	MPLAB® ICE 4000 Modular In-Circuit Emulator Pod (See ordering instructions on page 45)
DS51321	*"MPLAB® ICE 4000 High-Performance In-Circuit Emulator Product Overview"* (Available at: www.microchip.com)

MPLAB® ICE 2000/4000 Replacement Accessories

Device Adapter Plugs

Device adapter plugs are available as replacement accessories. The table below lists the replacement part number.

Model Part Number	Description
ACICE0201	MPLAB ICE 8P 300 mil Adapter Plug
ACICE0202	MPLAB ICE 18P 300 mil Adapter Plug
ACICE0203	MPLAB ICE 20P 300 mil Adapter Plug
ACICE0204	MPLAB ICE 28P 300 mil Adapter Plug
ACICE0205	MPLAB ICE 28P 600 mil Adapter Plug
ACICE0206	MPLAB ICE 40P 600 mil Adapter Plug
ACICE0207	MPLAB ICE 14P 300 mil Adapter Plug

Transition Headers

Transition socket headers can be purchased separately in the event that a customer needs additional headers. The table below lists the headers available.

Model Part Number	Description
ACICE0301	8P SOIC Header
ACICE0302	14P SOIC Header
ACICE0303	18P SOIC Header
ACICE0304	20P SSOP Header
ACICE0305	20P SOIC Header
ACICE0306	28P SOIC Header
ACICE0307	28P SSOP Header

MPLAB ICE 2000 Replacement Accessories

Model Part Number	Description
ACICE0103	MPLAB ICE 2000 Power Supply
ACICE0104	MPLAB ICE 2000 Logic Probes
ACICE0105	MPLAB ICE 2000 Parallel Cable
ACICE0106	MPLAB ICE Tripod
ACICE0107	MPLAB ICE 2000 Flex Cable
ACICE0108	MPLAB ICE 2000 USB/Parallel Adapter

MPLAB ICE 4000 Replacement Accessories

Model Part Number	Description
ACICE0401	MPLAB ICE 4000 Power Supply
ACICE0402	MPLAB ICE 4000 Logic Probes
ACICE0403	MPLAB ICE 4000 Slim Parallel Cable
ACICE0106	MPLAB ICE Tripod
ACICE0407	MPLAB ICE 4000 Flex Cable

Extra logic probe hooks can be purchased from:

E-Z-Hook: (800) 995-HOOK
Part Number: XM25
Description: Micro Hook Adapter with 0.025 square pin

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Ordering Information

MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems

How to Order MPLAB ICE

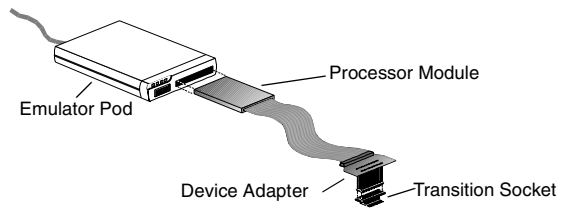
MPLAB ICE is easy to order, using these three steps.

1. Determine the PICmicro® MCU device needed.
2. Identify the PICmicro MCU package needed.
3. Locate the correct MPLAB ICE component part numbers from the ***"Cross Reference"*** section on pages 103 through 136.

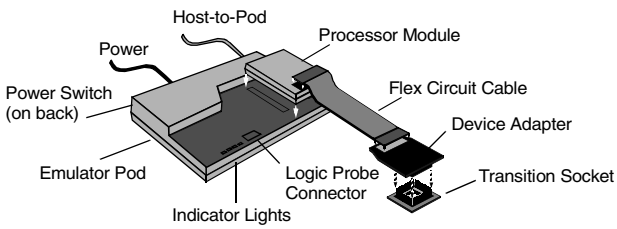
A Complete MPLAB ICE System

MPLAB ICE is a modular emulator system with interchangeable components that allow easy configuration of the system before emulation of different PICmicro MCUs. Since each emulator supports package-specific emulation, customers need to know which devices and packages they intend to emulate. Customers can then use the parts list in the ***"Cross Reference"*** section starting on page 103 to identify the part numbers required to complete an MPLAB ICE system. A complete system consists of:

1. An emulator pod (including, among other things, the host-to-pod parallel cable and power supply)
2. A processor module
3. A device adapter
4. A transition socket



MPLAB® ICE 2000 Emulator



MPLAB® ICE 4000 Emulator

An MPLAB ICE emulator system is ordered as separate components. Knowing the terms will make it easy to order and use the MPLAB ICE emulator system. Read more about each component.

Emulator Pod

The MPLAB ICE 2000 and MPLAB ICE 4000 are full-featured emulator pods, containing a main board, with an additional board for expanded trace memory and complex control logic. The MPLAB ICE 2000 pod comes with a standard parallel interface cable that connects the pod to the parallel port of the PC. MPLAB ICE 4000 includes a USB interface cable that connects the pod to the USB port.

Processor Module

The processor module is a PICmicro MCU, device-specific module that is inserted into the emulator pod. The processor module contains the emulator chip, logic and low-voltage circuitry. A flex cable extends from the processor module and is connected to the device adapter at the target application.

Device Adapter

The device adapter provides a common interface for the PICmicro MCU being emulated. This adapter contains a special device that provides an oscillator clock, allowing the user to accurately emulate the RC characteristics of the PICmicro MCU. The device adapter provides emulation support for standard DIP and PLCC styles. For emulation support of other packages, customers will need a transition socket in addition to the device adapter.

Transition Socket

The transition sockets are available in various styles to allow the common device adapter to be translated to support surface-mount packages, such as SOIC, SSOP, PQFP, TQFP and QFN.

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NOTES:

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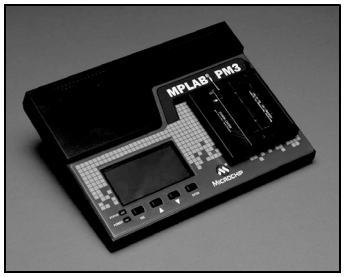
PROGRAMMING

This section contains the following major topics:

MPLAB® PM3 Universal Device Programmer 48
In-Circuit Serial Programming™ (ICSP™) Socket for PRO MATE® II Device Programmer 49
Programmer Adapter Kits and Accessories 50

MPLAB® PM3 Universal Device Programmer



The MPLAB PM3 Universal Device Programmer is easy-to-use and operates with a PC or as a stand-alone unit, and programs Microchip's entire line of PICmicro® devices, as well as the latest dsPIC30F DSC devices. The MPLAB PM3 features a large and bright LCD unit (128 x 64 pixels) to display easy menus, programming statistics and status information.

The MPLAB PM3 Programmer has exceptional programming speed to allow high production throughput, especially important for large memory devices, and includes a Secure Digital/Multimedia Card slot for easy and secure data storage and transfer.

The MPLAB PM3 Programmer is designed with 40 programmable socket pins, allowing each socket module to be configured to support many different devices, requiring fewer socket modules to support the entire line of Microchip parts. The socket modules use multi-pin connectors for high reliability and quick interchange. An adapter allows current PRO MATE® II Device Programmer socket modules to be used on the MPLAB PM3 Programmer.

When connected to a PC-host system, either via a serial or USB port, the MPLAB PM3 Programmer is seamlessly integrated with the MPLAB Integrated Development Environment (IDE) providing an exceptionally user-friendly interface for the ultimate control during programming. The MPLAB IDE includes a full-featured macro assembler, powerful software simulator with symbolic debugger, color-coded programmer's editor, project manager, high-level language debugging and support for Microchip and selected third party development tools, including compilers, low-cost in-circuit debuggers and full-featured in-circuit emulators.

Features

- RS-232 or USB interface
- Integrated In Circuit Serial Programming™ (ICSP™) interface
- Fast programming time
- Three operating modes:
  - PC Host mode for full control
  - Safe mode for secure data
  - Stand-Alone mode for programming without a PC
- Complete line of interchangeable socket modules to support all Microchip devices and package options (sold separately)
- SQTP℠ serialization for programming unique serial numbers while in PC Host mode
- An alternate DOS command-line interface is available for batch control
- Supports PRO MATE II Device Programmer socket modules via adapter (sold separately)
- Large easy-to-read display
- Field upgradeable firmware allows quick new device support
- Secure Digital (SD) and Multimedia Card (MMC) external memory support
- Buzzer notification for noisy environments

MPLAB® PM3 Universal Device Programmer Contents
• MPLAB PM3 Programming Unit • Serial Cable for RS-232 PC Connection • USB Cable for USB PC Connection • ICSP Cable • Power Supply And Power Cables • MPLAB Integrated Development Environment CD • User's Guide and Technical Documentation on CD

Ordering Information:

DV007004	MPLAB® PM3 Universal Device Programmer
AC164350	PRO MATE® II Device Programmer to MPLAB® PM3 Socket Module Adapter
DS51444	*"MPLAB® PM3 Universal Device Programmer Product Overview"* (Available at: www.microchip.com)

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In-Circuit Serial Programming™ (ICSP™) Socket for PRO MATE® II Device Programmer

Microchip offers an ICSP kit that can be used with Microchip's PRO MATE II Device Programmer. Together, these two tools allow you to implement ICSP with minimal effort and use the ICSP capability of Microchip's PICmicro® MCUs.

In-System Programming is a technique where a programmable device is programmed after the device is placed in a circuit board. ICSP is an enhanced ISP technique implemented in Microchip's PICmicro OTP and Flash MCUs. Using only two I/O pins to serially input and output data makes ICSP easy-to-use and less intrusive on the normal operation of the MCU.

The In-Circuit Serial Programming Socket module is a complete kit, including connectors, cables and required interface boards to allow a development engineer to implement ICSP with the PRO MATE II Device Programmer.

ICSP™ Socket for PRO MATE® II Device Programmer Contents
• ICSP Socket • Cable • Power Supply • Complete Documentation

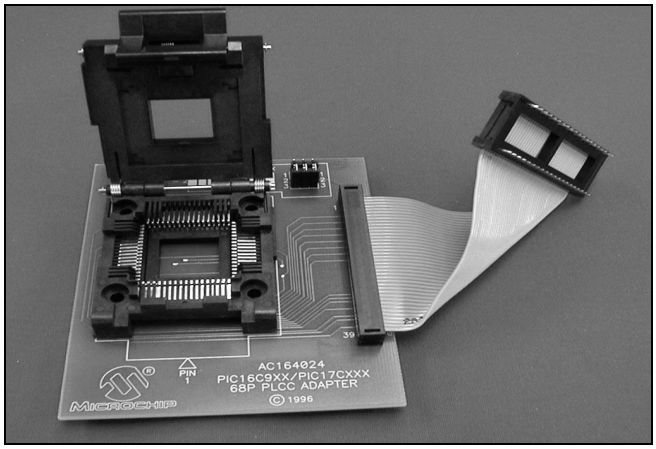
Ordering Information:

AC004004 ICSP Socket Module

Programmer Adapter Kits and Accessories

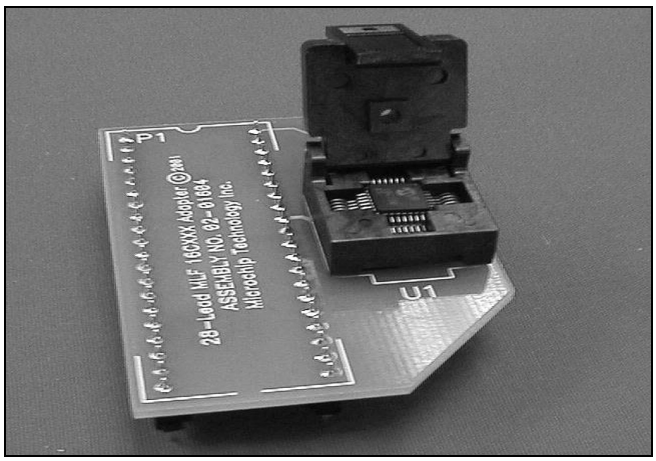
68-Pin PLCC Adapter Kit

PIC16C92X/PIC17C75X 68-pin PLCC Adapter for PICSTART® Plus Development Programmer. Currently, this header supports PIC16C92X and PIC17C75X.



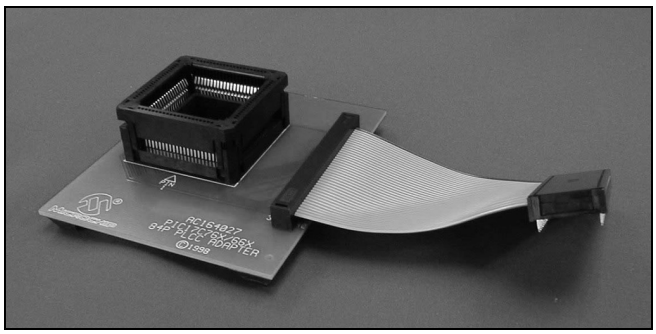
28-Pin QFN Adapter Kit

PIC16CXX 28-pin QFN Adapter for PICSTART® Plus and PRO MATE® II Programmers (with AC164012).



84-Pin PLCC Adapter Kit

PIC17C6X 84-pin PLCC Adapter for PICSTART® Plus Development Programmer.



Ordering Information:

AC002021	MPLAB® PM3 ICSP™ Cable
AC004005	PRO MATE® II Device Programmer Elastomeric Connectors
AC164024	68-Pin PLCC Adapter Kit
AC164027	84-Pin PLCC Adapter Kit
AC164031	28-Pin QFN Adapter Kit for 40-Pin ZIF Socket
AC164032	8-Pin DFN Adapter Kit
AC164033	28-Pin QFN Adapter Kit for 18-Pin ZIF Socket
AC164034	44-Pin QFN Adapter Kit
AC163020	6-Pin SOT-23/8P DIP Programmer Adapter

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PICmicro® MCU DEMO BOARDS

This section contains the following major topics:

PICDEM™ Demonstration Boards 52
PICDEM™ 2 Plus Demonstration Board 53
PICDEM™ 4 Demonstration Board 54
PICDEM™ 18R Demonstration Kit 55
PICDEM™ Mechatronics Demonstration Kit 56
PICDEM™ MC Development Board 57
PICDEM™ MC LV Development Board 58
PICDEM™ HPC Explorer Board 59
PICDEM™ USB Demonstration Kit 60
PICDEM™ FS USB Demonstration Board 61
PICDEM™ LCD Demonstration Board 62
PICDEM™ Z 2.4 GHz Demonstration Kit 63
PICDEM™ CAN-LIN Demonstration Boards 64
PICDEM™ LIN Demonstration Kit 65
PICDEM.net™ Demonstration/Evaluation Board 66
Low-Power Solutions Demonstration Board 67

PICDEM™ Demonstration Boards

The PICDEM Demonstration Boards, PICDEM 1, PICDEM 3 and PICDEM 17 are simple boards which demonstrate the capabilities of Microchip PICmicro® MCU families. See the **"Cross Reference"** section for specific device support for each board.

All necessary hardware is included to run basic demonstration programs, which are supplied on a CD. The users can program the samples provided with the PICDEM Demonstration Board on a PRO MATE® II or PICSTART® Plus Programmer and easily debug/test the sample code, or the user can connect the PICDEM Demonstration Board to the MPLAB® ICE and download the sample code to the emulator and debug/test the code. Additionally, a generous prototype area is available for user hardware.

PICDEM™ Demonstration Boards Contents
• PICDEM Demonstration Board (1, 3 or 17 as applicable) • Product Samples • Demo/Tutorial Software (PICDEM 3 Demonstration Board is written in 'C' using the MPLAB C Compiler demonstration version) • Complete Documentation

Ordering Information:

DM163001	PICDEM™ 1 Demonstration Board
DM163003	PICDEM™ 3 Demonstration Board
DM173001	PICDEM™ 17 Demonstration Board

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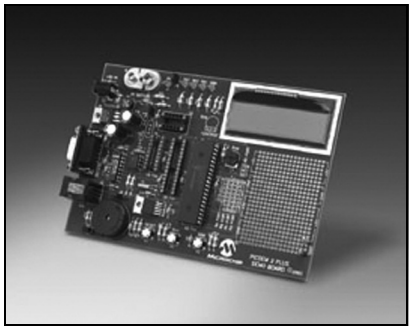
PICDEM™ 2 Plus Demonstration Board



The PICDEM 2 Plus Demonstration Board is a powerful, low-cost learning and demonstration board. The board comes with an active program loaded on the installed PIC18F452 microcontroller that provides real-time clock and local temperature display. The code to accomplish all of these program features is provided unassembled, so the user can understand and dissect the programming algorithm, helping them to quickly learn. The user can then take advantage of the Flash-based microcontroller and its in-circuit debugger capability by cutting, pasting, rewriting or adding to the program to make their own modification (an MPLAB® ICD is required to do this). All of the microcontroller port pins are terminated at a connector header and space is provided in the generous prototyping area for project development work.

Features

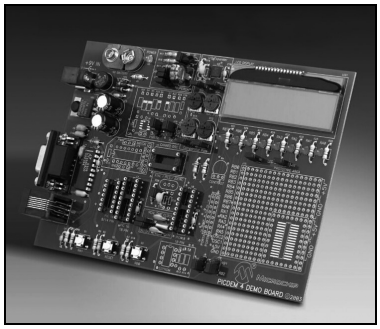
- 2 x 16 LCD display
- Piezo sounder driven by PWM signal
- Active RS-232 port
- On-board temperature sensor
- Sample PIC16F877 and PIC18F452 Flash microcontrollers
- MPLAB ICD connector
- Generous prototyping area

PICDEM™ 2 Plus Demonstration Board Contents
• PICDEM 2 Plus Demonstration Board • PIC16F877 and PIC18F452 Product Samples • Documentation

Ordering Information:

DM163022 PICDEM™ 2 Plus Demonstration Board

PICDEM™ 4 Demonstration Board



The PICDEM 4 Demonstration Board supports Microchip's low pin count PICmicro® Flash microcontrollers, including the PIC16F and PIC18F families featuring nanoWatt Technology. nanoWatt Technology refers to Microchip's advanced PMOS Electrically Erasable Cell (PEEC) process technology, circuit design, manufacturing and application techniques.

The PICDEM 4 Demonstration Board can be used to evaluate and demonstrate the capabilities of Microchip's 8, 14 and 18-pin PIC12F, PIC16F and PIC18F microcontrollers. The demonstration board showcases many features of low pin count parts, including Local Interconnect Network (LIN) and motor control features using the Enhanced Capture/ Compare/PWM module (ECCP). Low-power operation is achieved with a super capacitor circuit and jumpers allowing the on-board hardware to be disabled to eliminate current draw in this mode.

Tutorial firmware and samples of a PIC16F and PIC18F Flash microcontroller are included to assist the user in becoming familiar with the PICDEM 4 Demonstration Board and to demonstrate the unique features of the supported devices.

By connecting the PICDEM 4 Demonstration Board to the MPLAB® ICD 2, a designer can develop, simulate, debug and download code to the microcontroller using Microchip's powerful graphical MPLAB Integrated Development Environment (IDE). MPLAB IDE is a seamless, integrated software development environment that includes an MPASM™ Macro Assembler, MPLAB SIM Software Simulator with symbolic debugger, color-coded source editor, project manager with high-level language debugging and concurrent support for development tools, including low-cost in-circuit debuggers, full-featured real-time emulators and programmers. The consistent and easy-to-use graphic user interface of the MPLAB IDE desktop allows for rapid switching between development, debugging and programming modes within a project. The MPLAB ICD 2 (DV164007) is available separately. Microchip's MPLAB IDE software can be downloaded free-of-charge from the Microchip web site.

Features

- RS-232 interface
- 2 x 16 liquid crystal display
- In-Circuit Debugger (ICD) connector for programming via In-Circuit Serial Programming™ (ICSP™) technology or developing with the MPLAB ICD 2
- Eight (8) LEDs, four (4) potentiometers, three (3) push buttons
- PCB footprints for an EEPROM, H-Bridge motor driver and LIN transceiver
- Support for Crystal, RC or Canned Oscillator modes
- Support for either 9-volt power adapter or battery, or hooks for a 5-volt, 100 mA regulated DC supply
- Generous prototyping area and header for expansion

PICDEM™ 4 Demonstration Board Contents
• PICDEM 4 Demonstration Board • Serial Cable • PICmicro® Flash Microcontroller Samples • Sample Programs, Application Notes and User's Guide on CD

Ordering Information:

DM163014 PICDEM™ 4 Demonstration Board

DS51339 *"PICDEM 4 Demonstration Board Product Overview"* (Available at: www.microchip.com)

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PICDEM™ 18R Demonstration Kit

This kit demonstrates the power and flexibility of Microchip's new ROMless PIC18C601/801 microcontrollers and will significantly speed up development time for integrating these parts into an end product. The ROMless demonstration board will allow several alternative types of memory to be evaluated with PICmicro® MCUs. It includes an MPLAB® ICD connector interface for the MPLAB ICD 2 In-Circuit Debugger module, which allows low-cost debugging.

PICDEM™ 18R Demonstration Kit Contents
• PICDEM 18R Demonstration Board • Product Samples • CD • Serial Cable • Power Supply • Documentation

Features

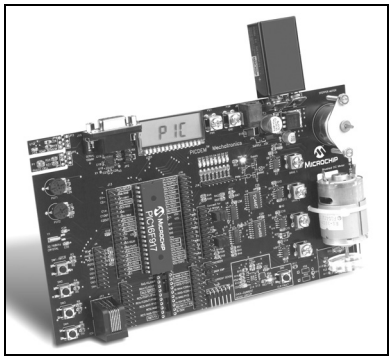
- Support for 68-pin PLCC PIC18C601 and 84-pin PLCC PIC18C801 devices
- 8-bit multiplexed (PIC18C601) and demultiplexed (PIC18C801) memory interfaces
- 16-bit Word Select mode and Byte Select mode memory interfaces
- 2 MB x 8, 1 MB x 16 JEDEC compliant Flash memory
- 128 KB x 8 SRAM, 64 KB x 16 JEDEC compliant SRAM memory support for PC downloadable executable code into SRAM
- Start execution on-the-fly, general purpose, user-configurable, PC downloadable external memory programmer host software
- Eight memory mapped LED outputs
- Two push button switches
- One analog potentiometer input; 64 KB I^2C™ EEPROM and a 4-bit LCD connector

Ordering Information:

DM163006	PICDEM™ 18R Demonstration Kit
DS39579	*"PICDEM™ 18R PIC18C601/801 Demonstration Board Product Overview"* (Available at: www.microchip.com)

NEW

PICDEM™ Mechatronics Demonstration Kit



The PICDEM Mechatronics Demonstration Kit is an easy-to-use mechatronics development and demonstration platform. Mechatronics refers to implementing intelligent control in a mechanical system. Learn how to use PIC® microcontrollers to enhance or replace a mechanical design.

The demonstration kit takes a hands-on approach to learning about mechatronics. Jumper wires are provided in the kit and allow the user to experiment with connecting the PIC® microcontroller to various components on the board. These components include sensors, LEDs, human input devices and motor drivers. The board comes with nine example projects which include firmware, connection diagrams (for the wire jumpers) and schematics.

Features

Key features of the PICDEM Mechatronics Demonstration Kit are:

- PIC16F917 MCU with 8 MHz internal oscillator and on-board LCD module (in addition to other standard PIC MCU peripherals)
- Displays 8 LEDs and LCD (preconnected to the LCD module)
- Stepper Motor and Brushed DC Motors
- Analog out temperature sensor (Microchip TC1047A) and light sensor
- Light sensor
- 32.768 kHz crystal for time generation
- Human inputs: 4 tactile switches, 2 potentiometers
- Overcurrent protection circuit
- ICSP™ and MPLAB® ICD 2 interface connector
- RS-232 interface
- 5V regulator
- Optical speed sensor for Brushed DC Motor
- 20-pin socket (compatible with all 8,14 and 20-pin Flash devices)

Projects

The projects included in the kit cover:

- Switch debouncing and lighting an LED
- How to use comparators
- How to read an analog sensor (temperature and light)
- Brushed DC Motor speed control
- Speed feedback: Back-EMF and optical
- Stepper Motor control: single-stepping, half-stepping and micro-stepping
- How to use the USART for RS-232 communication
- How to use the Capture, Compare, PWM module

PICDEM™ Mechatronics Demonstration Kit Contents
• PICDEM Mechatronics Board populated with the PIC16F917 • Sample kit including the PIC16F690 and PIC12F509 • Microchip screwdriver • 10 wire jumpers • PICDEM Mechatronics CD-ROM: User's Guide, project source code, PIC® MCU Communicator GUI (serial interface example), MPLAB IDE

Required Hardware

- One of the following:
  - MPLAB ICD 2 *
  - PICkit™ 2 Microcontroller Programmer
- 9-12 VDC power supply**
- Serial Cable

* Microchip part # DV164007 includes the MPLAB ICD 2, 9V power supply and serial cable

** Microchip part # AC162039 recommended

Ordering Information:

DM163029 PICDEM™ Mechatronics Demonstration Kit

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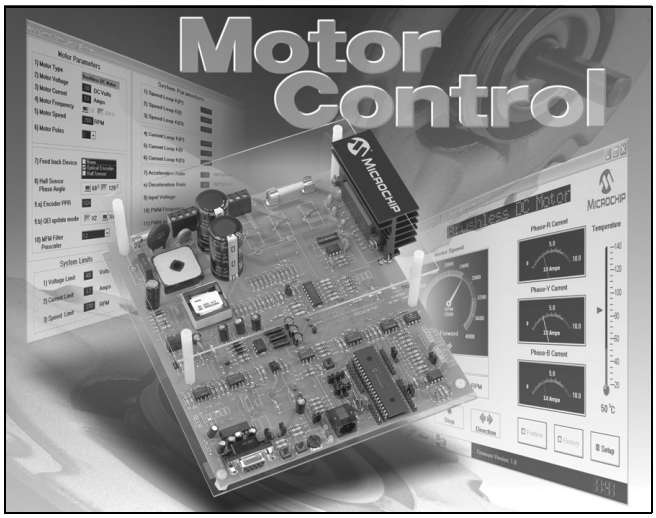
PICDEM™ MC Development Board



The PICDEM MC Development Board provides designers with a quick method to evaluate and develop both AC and DC motor control applications utilizing Microchip's family of 28 and 40-pin enhanced microcontrollers. The development board is ideal for beginning motor control designers, as well as those new to the PIC18F2331/2431/4331/4431 family of motor control devices.

The development board provides a complete solution for prototyping motor control applications. Both Brushless DC motors (BLDCs) and AC Induction Motors (ACIMs) can be driven by the board and directly controlled through a simple hardware interface provided on the board itself. The board can also be configured in numerous ways, using jumpers and component selection to control a range of motor control designs, and can accommodate both AC and DC power inputs. With complete isolation between the control circuitry and power circuitry, users can safely plug-in the MPLAB® In-Circuit Emulator (ICE) or MPLAB In-Circuit Debugger (ICD) while high power is connected.

Finally, users can develop their application with a simple graphical interface, known as the Motor Control Graphical User Interface (MC-GUI). The MC-GUI provides a quick and easy way for designers to configure and monitor their motor system parameters, such as motor type, motor speed, rotational direction, current, voltage, heat sink temperature and Fault status.

Features

- Two sockets supporting 28 and 40-pin DIP devices
- Motor terminal strip
- 3-phase inverter power module
- Motion sensor inputs
- Speed control potentiometer
- Active RS-232 port
- Full automatic protection of power circuits
- Electrical isolation from power circuits
- MPLAB ICD connector
- FREE Motor Control GUI software

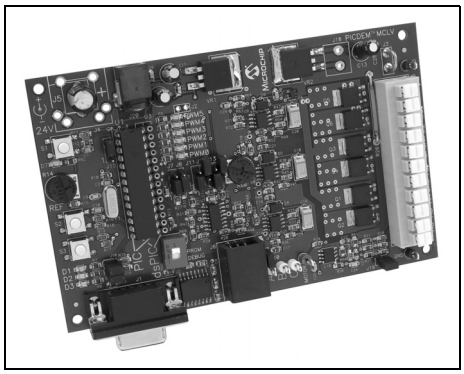
PICDEM™ MC Development Board Contents
• PICDEM MC Development Board with a preprogrammed (BLDC firmware) PIC18F4431 Device • A 28-pin PIC18F2431 Microcontroller • RS-232 Cable • Software and Documentation CD containing the MC-GUI, User's Guide and other supporting documents

Ordering Information:

DM183011	PICDEM™ MC Development Board for PIC18F2331/2431/4331/4431
DS51463	*"PICDEM™ MC Development Board Product Overview"* (Available at: www.microchip.com)

NEW

PICDEM™ MC LV Development Board



The PICDEM MC LV Development Board provides a cost-effective method of evaluating and developing Sensored or Sensorless Brushless DC (BLDC) motor control applications. The board supports Microchip's 28-pin, PIC18F microcontrollers and dsPIC30F Digital Signal Controllers. The board is capable of controlling motors rated up to 48V and 2.2 Amps.

The development board also comes with two preprogrammed, Flash-based devices for easy development: the PIC18F2431 device will populate the 28-pin socket and the dsPIC30F3010 will ship in a separate sample box. Additionally, the board comes with a free Motor Control Graphical User Interface (MC-GUI) which can set and modify all motor parameters. Custom programming and in-circuit debugging are facilitated with the ICD connector for Microchip's MPLAB® ICD 2 In-Circuit Debugger, DV164004.

Features

- Motor Control Graphical User Interface (MC-GUI)
- Motor terminal strip
- 3-phase voltage source inverter bridge
- Motion sensor inputs
- Overcurrent protection, level programmable using potentiometer
- Temperature sensor with I^2C™ interface
- Push button switches and master Reset
- 9 LEDs, 3 for generic status indication and 6 for PWM indication
- Test points for motor current and back EMF sensing
- Speed control potentiometer
- Active RS-232 port
- 24V external power supply (optional)
- 3-phase, 24V BLDC low-voltage motor (optional)
- MPLAB® ICD 2 connector
- MPLAB ICE connector
- Example software and documentation CD-ROM

Ordering Information:

DM183021 PICDEM™ MC LV Development Board

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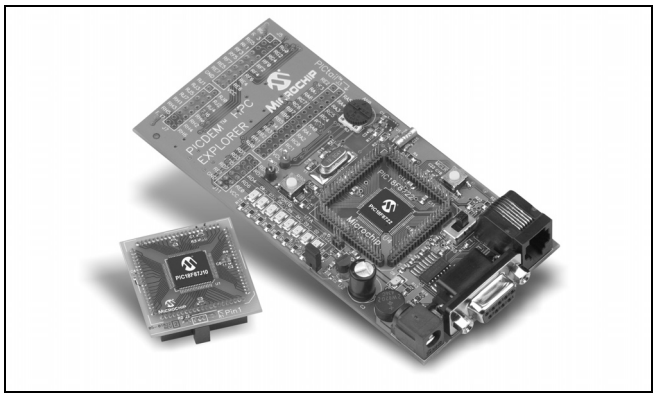
NEW

PICDEM™ HPC Explorer Board



The PICDEM HPC Explorer Board is the latest 64/80 TQFP demonstration board for evaluating Microchip Technology's PIC18F and PIC18FXXJXX families of devices. It comes populated with a PIC18F8722 MCU. Direct connection support is available for the MPLAB® ICE 2000 and MPLAB ICE 4000 processor modules, plug-in modules and MPLAB ICD 2 In-Circuit Programmer.

Software

The PIC18F8722 MCU is preprogrammed with demonstration software which displays information on the Windows® HyperTerminal program via the serial port.

Use the following settings:

- 57600 Baud
- 8 Data Bits
- No Parity
- 1 Stop Bit
- No Flow Control
- Auto-detect Terminal Emulation

On power-up, PIC18F8722 will continuously display the LED states, potentiometer voltage, RB0 button state, temperature and relative time in minutes and seconds.

Note:	Pressing the RB0 button during power-up enables the bootloader. The LEDs can be toggled by pressing the 1 through 8 keys.

Additional Features

- PIC18F8722, 128K Flash, 80-pin TQFP microcontroller
- Full pin breakout for easy wire wrap/prototyping
- Daughter board and MPLAB ICE 2000/4000 connector (with switch to disable on-board processor)
- 10 MHz crystal oscillator (to be used with internal PLL to provide 40 MHz operation)
- Convenient connection for MPLAB ICD 2 (In-Circuit Debugger) for in-circuit programming and debugging
- Power supply connector and programmable voltage regulator, operation capability from 2.0-5.5V (requires any standard 9-15V power supply (available separately)
- Potentiometer (connected to 10-bit A/D, analog input channel)
- Temperature sensor demo included (illustrates Microchip's award winning TC74 device)
- 8 LEDs (connected to PORTD with jumper disable)
- RS-232 port (9-pin D type connector, UART1)
- Reset button
- Bootloader button
- Extended PICtail™ Daughter Board connector to allow connection to standard and extended expansion boards
- Serial bootloader ready (see AN851)
- 32 kHz crystal for Real-Time Clock demonstration

To obtain the most recent and complete documentation for this demonstration board, including:

- User's Guide
- Board Description
- Board Schematics
- Source Code
- Application Examples
- Links to Web Seminars

Please refer to the following web site:
http://www.microchip.com/HPCExplorer

PICDEM™ HPC Explorer Board Contents
• PICDEM HPC Explorer Board • Plug-in Module PCB Breakoff (attached to board) • PICDEM HPC Explorer Board Information Sheet

Ordering Information:

DM183022	PICDEM™ HPC Explorer Board
DS51540	*"PICDEM™ HPC Explorer Board Information Sheet"* (Available at: www.microchip.com)

PICDEM™ USB Demonstration Kit

The PICDEM USB Demonstration Kit from Microchip demonstrates a PICmicro® microcontroller (PIC16C765) communicating to a PC using the USB port.

A traditional mouse, keyboard or joystick can be connected to the USB port on a computer using the preprogrammed board supplied in the kit.

PICDEM™ USB Demonstration Kit Contents
• PICDEM USB Demonstration Board with Large Prototype Area • USB, Serial, PS-2 and Gameport Connectors • USB Support Firmware and Example Code • Documentation

Features

- Status LEDs
- Out-of-the-box working demo
- Generous prototyping area
- PS-Port
- Gameport

Ordering Information:

DM163010 PICDEM™ USB Demonstration Kit

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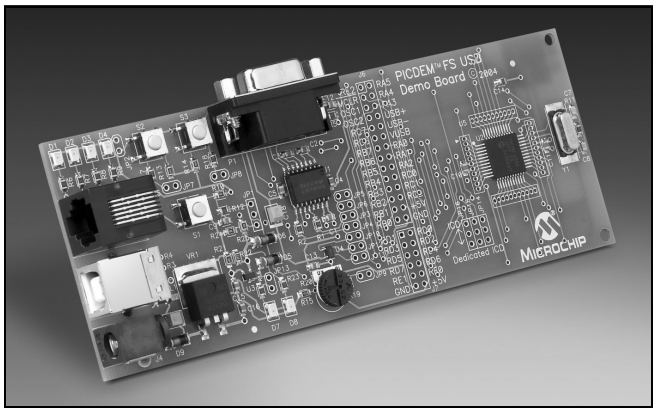
NEW

PICDEM™ FS USB Demonstration Board



The PICDEM™ FS USB is a demonstration and evaluation board for the PIC18F4550 family of Flash microcontrollers with Full-Speed USB 2.0 interface. The board contains a PIC18F4550 microcontroller in a 44-pin TQFP package, representing the superset of the entire family of devices offering the following features:

- 48 MHz maximum operating speed (12 MIPS)
- 32 Kbytes of Enhanced Flash memory
- 2 Kbytes of RAM (of which 1 Kbyte is dual port)
- 256 bytes of data EEPROM
- Full-Speed USB 2.0 interface (capable of 12 Mbit/s data transfers) including FS-USB transceiver and voltage regulator

Features

The demonstration board provides the following functions:

- Temperature sensor TC77 (connected to the I^2C™ bus)
- Potentiometer (connected to RA0 input) for A/D conversion demonstrations
- 2 LEDs for status display
- 2 input switches
- Reset button
- 20 MHz crystal
- Serial port connector/interface (for demonstrations of migration from legacy applications)
- Connection to the MPLAB® ICD 2 In-Circuit Debugger
- Voltage regulation, with the ability to switch from external power supply to USB bus supply
- Expansion connector, compatible with the PICtail™ Daughter Board standard

The board comes preloaded with a USB bootloader that demonstrates the Enhanced Flash memory capabilities of the device in addition to allowing the user to reprogram the PIC18F4550 in-circuit without requiring use of an external programmer. A CD-ROM is also included in the kit, offering access to a wealth of documentation and information about the board, as well as application notes and software libraries for immediate support of the HID, CDC and Custom classes.

For more information on the applications, tools and software libraries offered you, please refer to the Connectivity Design Center on the Microchip web site or simply link to: http://www.microchip.com/USB.

PICDEM™ FS USB Demonstration Board Contents
• PICDEM FS USB Demonstration Board • Software and Documentation CD • USB Interface Cable

Ordering Information:

DM163025 PICDEM™ FS USB Demonstration Board

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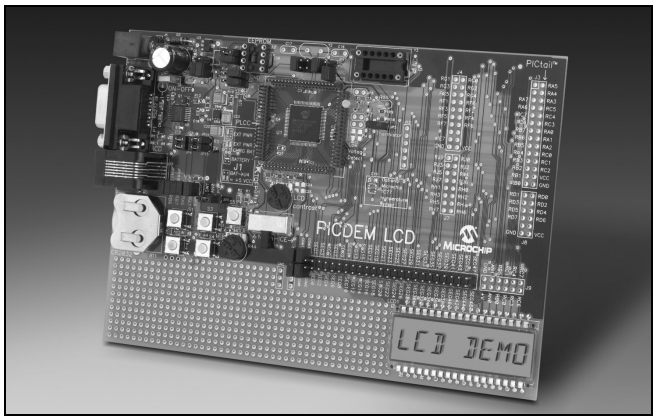
NEW

PICDEM™ LCD Demonstration Board



The PICDEM LCD Demonstration Board will demonstrate the main features of the new LCD Flash 28, 40, 64 and 80-pin PICmicro® devices with power management features. The board will be populated with the PIC18F8490 and the other devices will be supported via a transition socket. A sample LCD glass display will be included for customer prototyping. The PICDEM LCD Demonstration Board will provide tutorial firmware, which will be on the included preprogrammed devices. The board will be shipped for “Plug & Play” operation.

Features

- Default device: PIC18F8490
- Daughter board to support PIC16F91X and PIC18F6X90
- Battery-based operation: 2-AAA, 3V Li
- Standard LCD glass
- EEPROM
- Thermistor
- MPLAB® ICD and MPLAB® ICE interface
- RS-232
- Real-Time Clock
- PIC® microcontroller powered peripherals
- POT and switches

PICDEM™ LCD Demonstration Board Contents
• PICDEM LCD Demonstration Board • Software and Documentation CD • Microchip’s Recommended Glass Suppliers Sheet

Ordering Information:

DM163028 PICDEM™ LCD Demonstration Board

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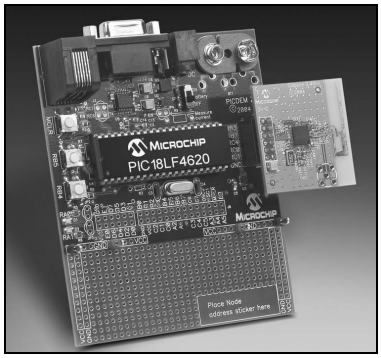
NEW

PICDEM™ Z 2.4 GHz Demonstration Kit



The PICDEM™ Z Demonstration Kit is an easy-to-use ZigBee™ technology wireless communication protocol development and demonstration platform. The demonstration kit includes the ZigBee protocol stack and two PICDEM Z boards, each with an RF daughter card.

The demonstration kit is also equipped with a 6-pin modular connector to interface directly with Microchip's MPLAB® ICD 2 In-Circuit Debugger (DV164005). With MPLAB ICD 2, the developer can reprogram or modify the PIC18 MCU Flash memory and develop and debug application code, all on the same platform. Microchip MPLAB IDE software is available for download on the Microchip web site at no charge.

Features

Key features of the PICDEM Z Demonstration Kit include:

- ZigBee software stack supporting RFD (Reduced Function Device), FFD (Full Function Device) and Coordinator
- PIC18LF4620 MCU featuring nanoWatt Technology, 64 KB Flash memory and robust integrated peripherals
- RF transceiver and antenna interface via daughter card for flexibility
- Supports 2.4 GHz frequency band via Chipcon CC2420 RF transceiver
- ICSP™ and MPLAB ICD 2 interface connector
- RS-232 interface
- 9V DC to 3.3V DC regulator
- Temperature sensor (Microchip TC77), LEDs and button switches to support demonstration

ZigBee Protocol Stack Availability

The ZigBee software stack is available from Microchip under a no-cost license agreement. The source code and license are available for download from the Microchip web site at www.microchip.com.

PICDEM™ Z 2.4 GHz Demonstration Kit Contents
• 2 PICDEM Z Motherboards • 2 PICDEM Z 2.4 GHz RF Cards • Two 9V Alkaline Batteries • Software and Documentation CD

Ordering Information:

DM163027-2	PICDEM™ Z 2.4 GHz Demonstration Kit
AC163027-1	PICDEM™ Z Motherboard
AC163027-2	PICDEM™ Z 2.4 GHz RF Card
DS5154	*"PICDEM™ Zigbee™ Technology Demonstration Kit Product Overview"* (Available at: www.microchip.com)

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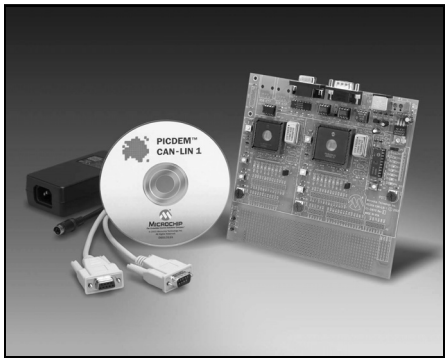
PICDEM™ CAN-LIN Demonstration Boards



Microchip offers three similar PICDEM CAN-LIN Demonstration Boards to support different PICmicro® devices. All demonstrate the main features of the devices, especially those features of the integrated CAN module. In addition to the CAN network, the board also employs a LIN subnetwork using Microchip's PIC16C43X and PIC18F1320 device families.

Each PICDEM CAN-LIN Demonstration Board includes both firmware and PC software for simulating a CAN network. The firmware comes preprogrammed on the sample device. The PC software and documentation are furnished on a CD-ROM.

Features

PICDEM CAN-LIN 1 supports:

- 68-pin PLCC PIC18C658 and 84-pin PLCC PIC18C858 devices
- 20-pin PDIP PIC16C432 with integrated LIN bus transceiver

PICDEM CAN-LIN 2 supports:

- 28-pin SPDIP PIC18F258 and 40-pin PDIP PIC18F458 devices
- 20-pin PDIP PIC16C432 with integrated LIN bus transceiver

PICDEM CAN-LIN 3 supports:

- 64-pin TQFP PIC18F6680 and 80-pin TQFP PIC18F8680 devices
- 20-pin SSOP PIC18F1320 and MCP201 LIN bus transceiver

The boards all share the following common features:

- On-board digital and analog +5V regulator for direct input from 12V AC/DC wall adapter
- Two on-board CAN nodes and optional external CAN bus connectors
- On-board LIN bus master and slave node
- Optional external LIN bus connector
- DB-9 RS-232 interface to IBM® compatible PC
- Two optional ICSP™ MPLAB® ICD 2 connectors
- Optional header for LCD panel
- CAN bus monitoring software for PC
- Devices preprogrammed with CAN bus monitoring firmware
- Generous prototyping area

PICDEM™ CAN-LIN 1, 2 and 3 Demonstration Boards Contents
• PICDEM CAN-LIN PCB • Serial Cable • Sample Programs, Application Notes and User's Guide on CD

Ordering Information:

DM163007	PICDEM™ CAN-LIN 1 Demonstration Board
DM163011	PICDEM™ CAN-LIN 2 Demonstration Board
DM163015	PICDEM™ CAN-LIN 3 Demonstration Board
DS51418	*"PICDEM™ CAN-LIN 1, 2 and 3 Demonstration Boards Product Overview"* (Available at www.microchip.com)

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PICDEM™ LIN Demonstration Kit

The PICDEM LIN Demonstration Kit demonstrates the capabilities of several Microchip microcontrollers using the LIN bus protocol. It supports slave node applications with PIC16C432, PIC16C433, PIC16C7XX and master node applications with PIC16X8X and PIC18FXX8. PIC16C432 and PIC16C433 have on-board LIN transceivers according to LIN bus specification V1.2.

This kit can be used to develop LIN hardware and software modules; demonstrate the LIN protocol in simple distribution network; evaluate the PIC16C432 LIN transceiver device; and quickly learn the LIN bus interface. Integrate/interface LIN bus into product for proof-of-concept demonstration.

PICDEM™ LIN Demonstration Kit Contents
• PICDEM LIN Demonstration Boards (2) • PIC16F874 – used as master in the LIN communication • PIC16C432, PIC16C433 – used as slaves in LIN communication; both have on-board LIN transceiver • Serial Cable • *“PICDEM™ LIN User’s Guide”*

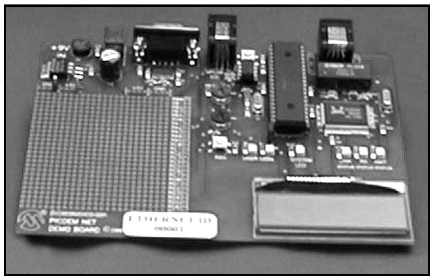
Features

- 18, 28 and 40-pin DIP sockets (Although three sockets are provided, only one device may be used at a time.)
- On-board +12V regulator for direct input from 12V
- RS-232C socket and associated hardware for direct connection to RS-232C interface
- CAN bus interface
- Control panel interface for LIN bus master
- RF stage for keyless entry function
- Seat memory unit
- Motor control slave unit

Ordering Information:

DM163005 PICDEM™ LIN Demonstration Kit

PICDEM.net™ Demonstration/Evaluation Board



The PICDEM.net Demonstration Board is an Internet/Ethernet demonstration board using the PIC18F452 microcontroller and TCP/IP firmware. It connects the PICmicro® MCU to the Local Area Network (LAN). It is a complete kit that is easy-to-use (a PC is required for setup). Interconnection to a network can be accomplished in less than one hour.

The board conforms to the standard 40-pin pinout used by the PIC16F877 or PIC18F452. The firmware used for the network interface was developed by Jeremy Bentham of Iosoft Ltd. based on his book *"TCP/IP Lean: Web Servers for Embedded Systems"* (ISBN: 157820108X).

The PICDEM.net Demonstration Board is also equipped with a 6-pin modular connector to interface directly with the Microchip MPLAB® ICD 2 In-Circuit Debugger. With the addition of the MPLAB ICD 2 (sold separately), the developer can modify the on-board PICmicro microcontroller to meet the specific needs.

A generous breadboarding area is also available for experimental circuits or to add an embedded modem for dial-up capability, if desired. It includes several status indicators, including a 16 x 2 LCD indicator.

PICDEM.net™ Demonstration/Evaluation Board Contents
• PICDEM.net Demonstration Board with Firmware and PIC18F452 Microcontroller • CAT 5 Ethernet Cable • DB9 Serial Cable • Universal Power Supply • Software Demo and *"PICDEM.net™ Embedded Internet/Ethernet Demonstration Board User's Guide"* on CD

Ordering Information:

DM163004-LT	PICDEM.net™ Demonstration/Evaluation Board (Textbook not included) Related Text: *"TCP/IP Lean: Web Servers for Embedded Systems"* (ISBN: 157820108X)
DS51240	*"PICDEM.net™ Internet/Ethernet Demonstration Board Product Overview"* (Available at www.microchip.com)

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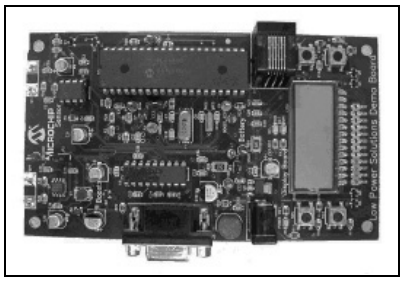
NEW

Low-Power Solutions Demonstration Board



The Low-Power Solutions Demonstration Board provides designers a convenient and fun way to explore PICmicro® MCU nanoWatt features within a functional ultrasonic range finder application. It features the PIC18F4620, Microchip Technology's latest power-managed device.

The development tool is ideal for learning nanoWatt features and implementing system power reduction techniques. The Low-Power Solutions Demonstration Board is part of the Workshop-in-a-Box 2, a complete nanoWatt training kit designed for self-paced and instructor led training.

The Low-Power Solutions Demonstration Board CD includes three self-paced, step-by-step lab exercises, using the PIC18F4620, which illustrate the following concepts: nanoWatt features to reduce power consumption, improving system power consumption and improving board performance.

Features

- Fully functional ultrasonic range finder with LCD display (PCB also supports four 7-segment LEDs)
- DC boost circuit
- USART
- Connector for MPLAB® ICD 2 In-Circuit Debugger
- Two power supply options: 9V power supply or 9V battery
- Test points to measure system and PICmicro device power consumption via current meter
- Three switches for input and a Reset switch and 2 LEDs
- Microchip TC1047A Temperature Sensor
- In-Circuit Debugger (ICD) connector for programming via In-Circuit Serial Programming™ (ICSP™) technology or developing with the MPLAB® ICD 2

Low-Power Solutions Demonstration Board Contents
• Low-Power Solutions Demonstration Board • Software and Documentation CD

Ordering Information:

DM163026	Low-Power Solutions Demonstration Board
DS51521	*"Low-Power Solutions Demonstration Board Product Overview"*

NOTES:

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dsPIC® DSC DEVELOPMENT BOARDS, KITS

This section contains the following major topics:

dsPICDEM™ Starter Development Board....70
dsPICDEM™ 28-Pin Starter Development Board....71
dsPICDEM™ 1.1 General Purpose Development Board....72
dsPICDEM™ 2 Development Board....73
dsPICDEM™ MC1 Motor Control Development Board....74
dsPICDEM.net™ 1 and dsPICDEM.net™ 2 Connectivity Development Boards....75

dsPICDEM™ Starter Development Board

The low-cost dsPICDEM™ Starter Development Board allows the user to easily validate a development tool setup using the dsPIC30F. It has a power supply regulator, crystal oscillator, MPLAB® ICD header, serial port, LEDs, push buttons, potentiometer and a prototyping area. In addition, all pins on the dsPIC® DSC device are brought out to a terminal block for access.

Features

- 5V power supply split at the regulator to provide a separate, decoupled analog supply voltage, useful in designs taking advantage of the 12-bit A/D Converter.
- Analog peripherals including an MCP41010 digital potentiometer used as a DAC to generate signals, and a MCP6022 to provide output filtering for the DAC and an input filter for the 12-bit A/D. The filter cutoff frequencies are set to 4 kHz to allow telephone quality signals.

The dsPICDEM Starter Development Board is delivered with a demo application that uses the digital potentiometer to generate audio tones. This output can be connected into the 12-bit ADC for measurement.

dsPICDEM™ Starter Development Board Contents
• dsPICDEM Starter Development Board • Documentation

Ordering Information:

DM300016	dsPICDEM™ Starter Development Board
DV164030	MPLAB® ICD 2 with dsPICDEM™ Starter Development Board
DS51430	*"dsPICDEM™ Starter Development Board Product Overview"* (Available at www.microchip.com)

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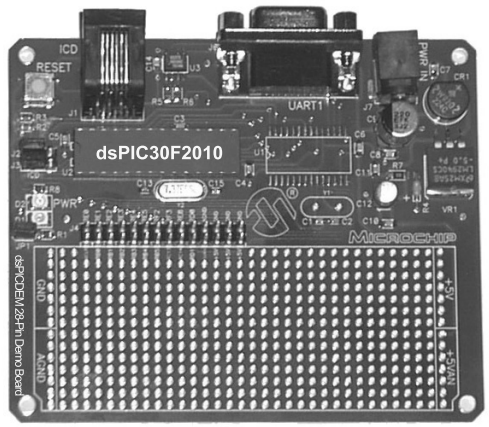
dsPICDEM™ 28-Pin Starter Development Board



The low-cost dsPICDEM 28-Pin Starter Development Board allows the user to easily validate a development tool setup using a 28-pin SDIP or SOIC dsPIC30F device. The development board has a socketed dsPIC30F2010 digital signal controller, power supply regulator, crystal oscillator, MPLAB® ICD header, serial port, power-on indicator, Reset push button, 28L SOIC layout pad and a prototyping area.

Features

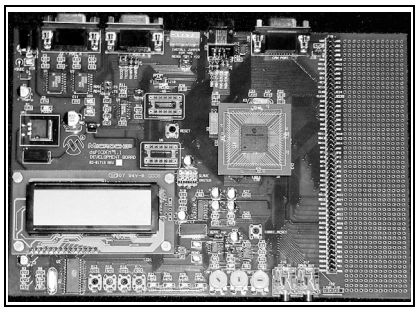
- dsPIC30F2010 28-pin SDIP sample device and socket
- Power input from 9V supply
- Connector for MPLAB ICD 2 In-Circuit Debugger
- RS-232 interface
- Header for access to all device I/O pins
- Layout pad for 28-pin SOIC device
- Prototyping area
- Power-on demo program demonstrating interrupts, device I/O and UART communication
- A tutorial program in Assembly code showing the user how to set up a project in MPLAB IDE

dsPICDEM™ 28-PIn Starter Development Board Contents
• dsPICDEM 28-pin Starter Development Board • Documentation on CD

Ordering Information:

DM300017	dsPICDEM™ 28-Pin Starter Development Board
DS51458	*“dsPICDEM™ 28-Pin Starter Development Board Product Overview”* (Available at www.microchip.com)

dsPICDEM™ 1.1 General Purpose Development Board



The dsPICDEM 1.1 General Purpose Development Board provides the application designer with a low-cost development tool to become familiar with the dsPIC30F 16-bit architecture, high-performance peripherals and powerful instruction set.

The board features an active demonstration program loaded on the installed dsPIC30F6014 device. Several program functions are selectable via a menu system displayed on the LCD. These include: temperature and voltage measurements, frequency domain characteristics of a sine-wave signal generated on-board from a digital potentiometer, FIR and IIR digital filter selections and DTMF tone generation using the codec interface peripheral (external speaker required).

Also included is a simple tutorial written in Assembly language. Users can create a project, assemble and link the code, program and/or debug the code using Microchip's MPLAB® IDE (Integrated Development Environment) – included free, and an MPLAB ICD 2 In-Circuit Debugger – available separately.

The development board serves as an ideal prototyping tool to quickly develop and validate key design requirements.

Features

- dsPIC30F6014 MCU plug-in sample
- Serial communication channels interface (two UARTs, SPI™, CAN, RS-485)
- Si3000 codec with line in/out jacks
- General purpose prototyping area with expansion header
- 122 x 32 dot addressable LCD
- MPLAB ICD 2 and MPLAB ICE 4000 emulator support
- LEDs, switches and potentiometers
- Temperature sensor
- Separate digital and analog voltage regulators
- Digital potentiometer for DAC capability

dsPICDEM™ 1.1 General Purpose Development Board Contents
• dsPICDEM 1.1 General Purpose Development Board with Preprogrammed dsPIC30F Device • RS-232 Cable • Power Supply • Example Software and Documentation on CD

Ordering Information:

DM300014	dsPICDEM™ 1.1 General Purpose Development Board
DV164032	MPLAB® ICD 2 with dsPICDEM 1.1 General Purpose Development Board
DS51433	*"dsPICDEM™ 1.1 General Purpose Development Board Product Overview"* (Available at www.microchip.com)

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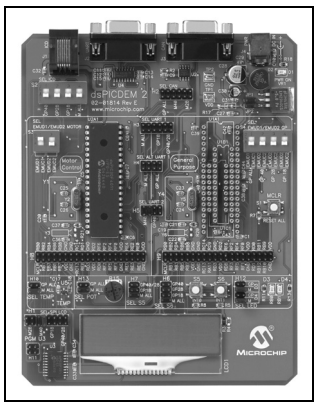
NEW

dsPICDEM™ 2 Development Board



The dsPICDEM™ 2 Development Board is a development and evaluation tool that helps you create embedded applications using dsPIC30F Digital Signal Controllers. Sockets are provided for 28 and 40-pin devices in the motor control family and 18, 28 and 40-pin devices in the general purpose and sensor family. The supported devices are shown in the table below.

The board includes a sample dsPIC30F4011 Digital Signal Controller in the 40-pin motor control socket, a power supply regulator, crystal oscillators for each set of sockets, an ICD connector for the MPLAB® ICD 2 In-Circuit Debugger and both RS-232 and CAN ports for external communication. In addition, the board is populated with prototyping hardware, including LED indicators, push button switches, a potentiometer, a temperature sensor and a 2x16 LCD screen. All pins on all the device sockets are accessible through headers.

dsPIC30F Device	Supported Packages
Motor Control	
dsPIC30F2010	28-pin SPDIP
dsPIC30F3010	28-pin SPDIP
dsPIC30F4012	28-pin SPDIP
dsPIC30F3011	40-pin PDIP
dsPIC30F4011	40-pin PDIP
Sensor Family	
dsPIC30F2011	18-pin PDIP
dsPIC30F3012	18-pin SPDI
dsPIC30F2011	28-pin SPDIP
dsPIC30F3013	28-pin SPDIP
General Purpose Family	
dsPIC30F3014	40-pin PDIP
dsPIC30F4013	40-pin PDIP

Features

Key features of the dsPICDEM 2 Development Board include:

- Multiple sockets for 18, 28 and 40-pin PDIP and SPDIP devices
- Sample application programs complete with MPLAB® IDE workspace and project files provided for supported dsPIC30F devices
- dsPIC30F4011 40-pin PDIP sample device installed on the board
- 5V regulator provides V_{DD} and AV_{DD} from a 9V DC power supply
- MPLAB ICD 2 In-Circuit Debugger ready:
  - Options for selecting alternate debugging channels
- MPLAB ICE 4000 ready
- RS-232 interface
- Controller Area Network (CAN) interface
- Temperature sensor and analog potentiometer to simulate A/D inputs
- 2 push button switches and 2 LED indicators to simulate digital input and output
- 2 x 16 ASCII Character LCD with SPI™ interface
- Access to all pins on the dsPIC30F device sockets via 2 x 40-pin prototyping header (header shown in picture is not provided with the board)

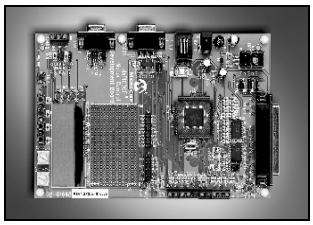
dsPICDEM™ 2 Development Board Contents
• dsPICDEM 2 Development Board with dsPIC30F4011 device • dsPICDEM 2 Sample Kit (including dsPIC30F3012 and dsPIC30F3014 • Software and Documentation CD

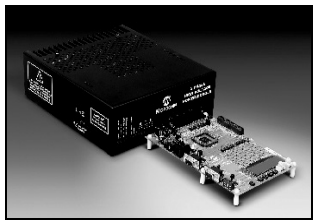
Ordering Information:

DM300018 dsPICDEM™ 2 Development Board

DS70147 *"dsPICDEM™ 2 Development Board Product Overview"* (Available at www.microchip.com)

dsPICDEM™ MC1 Motor Control Development Board





The MC1 Motor Control Development Board provides the application developer with three main components for quick prototyping and validation of BLDC, PMAC and ACIM applications. The three main components are: dsPIC30F motor control main board, 3-phase, low-voltage power module and 3-phase, high-voltage power module

The main control board contains the dsPIC30F6010 (but also supports all dsPIC® DSC motor control variances), various peripheral interfaces and a custom interface header system, which allows different motor power modules to be connected to the PCB. The control board also has connectors for mechanical position sensors, such as incremental rotary encoders and hall effect sensors, and a breadboard area for custom circuits. The main control board receives its power from a standard plug-in transformer.

The low-voltage power module is optimized for 3-phase motor applications that require a DC bus voltage less than 50 volts and can deliver up to 400W power output. The 3-phase, low-voltage power module is intended to power BLDC and PMAC motors.

The high-voltage power module is optimized for 3-phase motor applications that require DC bus voltages up to 400 volts and can deliver up to 1 kW power output. The high-voltage module has an active power factor correction circuit that is controlled by the dsPIC30F device. This power module is intended for AC induction motor and power inverter applications that operate directly from the AC line voltage.

Features

- dsPIC30F6010 motor control MCU-based board
- 3-phase, low-voltage power module (optional)
- 3-phase, high-voltage power module (optional)
- Heat sink for ambient cooling of power sections
- Full automatic protection of power circuits
- Electrical isolation from power circuits
- Many options for motor feedback signals

dsPICDEM™ MC1 Motor Control Development Board Contents
• dsPICDEM MC1 Motor Control Development Board with Preprogrammed dsPIC30F Device • RS-232 Cable • Power Supply • Example Software and Documentation on CD

Ordering Information:

DM300020	dsPICDEM™ MC1 Motor Control Development Board
DM300021	dsPICDEM™ MC1H 3-Phase High-Voltage Power Module
DM300022	dsPICDEM™ MC1L 3-Phase Low-Voltage Power Module
AC300020	24V BLDC Motor
AC300021	3-Phase ACIM
MA18F4431	PIC18F4431 Plug-in Module
DS51429	*"dsPICDEM™ MC1 Motor Control Development System Product Overview"* (Available at www.microchip.com)

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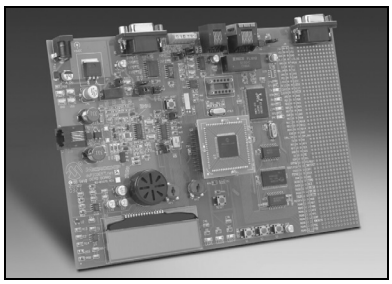
dsPICDEM.net™ 1 and dsPICDEM.net™ 2 Connectivity Development Boards



The dsPICDEM.net 1 and dsPICDEM.net 2 Connectivity Development Boards provide the application developer a basic platform for developing and evaluating both connectivity and non-connectivity-based requirements. The dsPICDEM.net Development Boards provide the hardware circuitry for supporting both the Public Switched Telephone Network (PSTN) and 10baseT MAC/PHY interfaces. The PSTN interface hardware on the dsPICDEM.net 1 Development Board is suited for FCC/JATE compliancy. CTR-21 compliancy is supported on the dsPICDEM.net 2 Development Board.

The board comes with an ITU-T compliant V.22bis/V.22 modem demonstration module preprogrammed on the installed dsPIC30F6014 device. This demo, provided with full source code, enables the user to connect and transfer data between the dsPIC® DSC Soft Modem and an ITU-T compliant reference modem. The modem can be configured for either the Originate or Answer mode of operation. Configuration and control of the dsPIC DSC Soft Modem demo is supported with an optimized AT command set which is entered into a suitable communication program running on the PC, such as HyperTerminal, and communicated to the dsPIC® DSC device over a RS-232 serial channel.

Also included are the CMX-MicroNet WEB and FTP Server programs, which demonstrate two TCP/IP protocol-based applications over the 10baseT Ethernet Datalink layer.

Features

- dsPIC30F6014 plug-in sample
- 10baseT ethernet MAC and PHY interface
- PSTN interface with DAA/AFE chipset
- Serial communication channels interface (UART and CAN)
- External I^2C™ EEPROM memory for storing constants
- External 64K x 16 SRAM memory
- General purpose prototyping area with expansion header
- Dual channel digital potentiometer
- 2 x 16 LCD display
- MPLAB® ICD 2 and MPLAB ICE 4000 emulator support
- LEDs, switches and potentiometers
- Temperature sensor

dsPICDEM.net™ 1 and dsPICDEM.net 2 Connectivity Development Boards Contents
• dsPICDEM.net Connectivity Development Board with Preprogrammed dsPIC30F6014 Device • RS-232 Cable • CAT 5 Crossover Cable • Power Supply • Example Software and Documentation on CD

Ordering Information:

DM300004-1	dsPICDEM.net™ 1 Connectivity Development Board (supporting FCC/JATE PSTN, Ethernet NIC)
DM300004-2	dsPICDEM.net™ 2 Connectivity Development Board (supporting CTR-21 PSTN, Ethernet NIC)
DS51431	*"dsPICDEM.net™ 1 and dsPICDEM.net™ 2 Connectivity Development Boards Product Overview"* (Available at www.microchip.com)

NOTES:

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ANALOG AND MIXED-SIGNAL DEMO BOARDS AND KITS

This section contains the following major topics:

PICDEM™ MSC1 Demonstration Kit 78
PICDEM™ MSC1 Daughter Boards 79
MCP41XXX/42XXX Digital Potentiometer Evaluation Board 80
MXDEV® 1 Analog Evaluation System Driver Board 81
MXDEV® 1 MCP3XXX Single/Dual ADC Evaluation System Daughter Board Kit 82
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MCP250XX CAN I/O Expander Developer's Kit 86
MCP2120/2150 Infrared Developer's Kit 87
SEEVAL® 32 Serial EEPROM Evaluation System Designer's Kit 88
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Power Management Products 93
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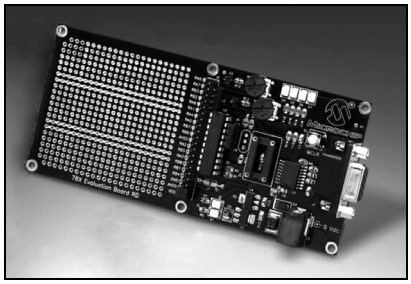
PICDEM™ MSC1 Demonstration Kit



The PICDEM MSC1 Demonstration Kit with its PC-based Graphical User Interface (GUI) software serves as a demonstration board for the PIC16C781/782 microcontrollers. The user can configure the PIC16C781/782 from the easy-to-use PC software and download it to the microcontroller to evaluate the various peripherals and interconnect configurations. The GUI gives instant access to the PIC16C781/782 peripherals, allowing on-the-fly configuration changes by means of an RS-232 link between the PC and the evaluation board.

Initialization assembly code, corresponding to the selected configuration, can be built using the supplied code generator. Developers can use the code generation to perform an entire configuration using the evaluation tool and save it as a disk file.

Features

- Demonstrates all the PIC16C781/782 peripherals
- Large breadboard area
- Easy-to-use PC-based GUI for:
  - Configuration of peripheral blocks
  - Download configuration to hardware
  - Save configuration setup and import into MPLAB® IDE

PICDEM™ MSC1 Demonstration Kit Contents
• PICDEM MSC1 Demonstration Board • Jumper Wires • Serial Cable • CD with GUI Interface Program

Ordering Information:

DM163012 PICDEM™ MSC1 Demonstration Kit

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PICDEM™ MSC1 Daughter Boards

The following daughter boards, available separately, demonstrate additional capabilities of the PIC16C781/782 microcontrollers.

PICDEM™ MSC1 Switch Mode Power Supply (SMPS) Daughter Board

The PICDEM™ MSC1 Switch Mode Power Supply (SMPS) Daughter Board, in combination with the PICDEM MSC1 Demonstration Board, is a complete demonstration and evaluation kit for designing Switch mode power supplies using the PIC16C781/782. The daughter board can be configured for the following Switch mode power supply topologies:

- Boost: Output voltage greater than the supply voltage
- Buck: Output voltage less than the supply voltage
- Buck-Boost: Output voltage less than or greater than the supply voltage
- Invert: Negative output voltages

PICDEM™ MSC1 Infrared (IR) Driver Daughter Board

The PICDEM™ MSC1 Infrared (IR) Driver Daughter Board, in combination with the PICDEM MSC1 Demonstration Board, serves as a demonstration and evaluation kit for designing a high-power, IR remote control transmitter using the PIC16C782. The daughter board, in combination with the included IR receiver, implements both receive and transmit sections of a Pulse-Width Modulation (PWM) IR remote control system.

PICDEM™ MSC1 Delta-Sigma ADC Daughter Board

The PICDEM™ MSC1 Delta-Sigma ADC Daughter Board, in combination with the PICDEM MSC1 Demonstration Board, serves as a demonstration and evaluation kit for designing high-resolution, Delta-Sigma Analog-to-Digital Converters using the PIC16C781/782. The daughter board has the following features:

- All the components required to implement an 8 to 16-bit Delta-Sigma ADC
- An RCA connector for connecting an external sensor
- A generous prototyping area for building signal conditioning circuitry
- An on-board temperature sensor for a demonstration input to the ADC

PICDEM™ MSC1 Flow Rate Sensor Daughter Board

The PICDEM™ MSC1 Flow Rate Sensor Daughter Board, in combination with the PICDEM MSC1 Demonstration Board, is a complete demonstration kit for a high sensitivity, hot-wire anemometer styled flow rate sensor using the PIC16C782.

PICDEM™ MSC1 Daughter Boards Contents
• PICDEM MSC1 Daughter Board • Complete Documentation

Ordering Information:

AC163001	PICDEM MSC1 Switch Mode Power Supply (SMPS) Daughter Board
AC163002	PICDEM MSC1 Infrared (IR) Driver Daughter Board
AC163003	PICDEM MSC1 Delta-Sigma ADC Daughter Board
AC163004	PICDEM MSC1 Flow Rate Sensor Daughter Board

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MCP41XXX/42XXX Digital Potentiometer Evaluation Board

The MCP41XXX/42XXX Evaluation Board is a demonstration and evaluation tool for Microchip Technology's MCP41XXX/42XXX digital potentiometers. The MCP41XXX/42XXX Evaluation Board is designed to be used in conjunction with the MXDEV® Evaluation System. When connected to the driver board with the included microcontroller installed, this evaluation board allows for the programming and evaluation of the MCP41XXX/42XXX digital potentiometer in a variety of applications.

Some of the applications that can be used for evaluation of the MCP41XXX/42XXX digital potentiometers include an offset circuit, low-pass filter and gain circuits. A removable prototype area is available for quick-turn circuit evaluation. Evaluation of other operations, such as daisy chain, shutdown and Reset, are also available. Software tools for the digital potentiometer and ADC are also provided for evaluation.

MCP41XXX/42XXX Digital Potentiometer Evaluation Board Contents
• MCP41XXX/42XXX Evaluation Board • Removable Prototype Board • MCP41XXX/42XXX Samples and Reprogrammable Microchip Flash PICmicro® MCU • MXLAB® IDE ADC Software • RS-232 Cable • 9V DC Power Supply • Documentation, including the *"MCP42XXX Evaluation Board User's Guide"*

Ordering Information:

DV42XXX MCP41XXX/42XXX Digital Potentiometer Evaluation Board

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MXDEV® 1 Analog Evaluation System Driver Board

The MXDEV 1 Analog Evaluation System gives system designers the ability to control Microchip stand-alone analog devices, acquire data and then analyze the data using strip-charts, histograms and Fast Fourier Transforms (FFTs). User-friendly data analysis software is included with the device-specific daughter boards.

The evaluation system consists of two parts: a driver board, which performs the data analysis and connects to a PC for subsequent analysis and display and a daughter board, which plugs into the driver board and contains the device to be evaluated. Device-specific software is included.

In addition to the ability of the driver board to work with device-specific daughter boards, users can create their own daughter boards based on their own design requirements. In addition, a prototype area on the driver board is available for user-designed circuits that could be used in place of the daughter boards.

The MXDEV 1 Analog Evaluation System Driver Board contains three different PICmicro® microcontroller sockets (28-pin, 18-pin and 8-pin), so that users can choose the PICmicro MCU most suited to their application. It also includes an LCD display, an LED display socket, SRAM for data storage and an RS-232 interface. The LCD display can display information, such as configuration data and acquisition data from the daughter board.

The daughter board kits contain the device to be evaluated and a PIC16F876 Flash microcontroller containing device-specific code. The microcontroller then plugs into one of the sockets on the DVMCPA. Code is also provided that shows how to interface the PIC16C54 and the PIC12C509 with the ADC.

MXDEV® 1 Analog Evaluation System Driver Board Contents
• Driver Board • Microcontroller Samples • RS-232 Cable • MXLAB® IDE ADC Software • Two Power Supplies • Documentation, including the *"Analog Evaluation System Driver Board User's Guide"*

Ordering Information:

DVMCPA MXDEV® 1 Analog Evaluation System Driver Board

MXDEV® 1 MCP3XXX Single/Dual ADC Evaluation System Daughter Board Kit

The MXDEV 1 MCP3XXX Single/Dual ADC Evaluation System Daughter Board Kit supports the following devices: MCP3001, MCP3002, MCP3201, MCP3202 and MCP3301.

This kit includes jumper-selectable options for maximum flexibility. Choices include:

- Selection of the signal source between the on-board potentiometer and an external source.
- Selection of the ADC reference voltage between the on-board VREF and an external source.
- Selection between single-ended and pseudo-differential inputs (depending on the device being evaluated).

There is a prototype area on the board for additional circuitry as needed.

MXDEV® 1 MCP3XXX Single/Dual ADC Evaluation System Daughter Board Kit Contents
• MXDEV 1 MCP3XXX Single/Dual ADC Daughter Board • Filter Boards • Samples for all Supported A/D Converts and Preprogrammed PICmicro® MCU for use in the Driver Board • Adapter Plugs • MXLAB® IDE ADC Software • Documentation, including the *"MCP3XXX A/D Converter Evaluation Kit User's Guide"*

Ordering Information:

DV3201A MXDEV® 1 MCP3XXX Single/Dual ADC Evaluation System Daughter Board Kit

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MXDEV® 1 MCP3XXX Quad/Octal ADC Evaluation System Daughter Board Kit

The MXDEV 1 MCP3XXX Quad/Octal ADC Evaluation System Daughter Board Kit supports the following devices: MCP3004, MCP3008, MCP3204, MCP3208, MCP3302 and MCP3304.

This kit includes jumper-selectable options for maximum flexibility. Choices include:

- Selection of the signal source between the on-board potentiometer and an external source.
- Selection of the ADC reference voltage between the on-board VREF and an external source.
- Selection between single-ended and pseudo-differential inputs (depending on the device being evaluated).

There is a prototype area on the board for additional circuitry as needed.

MXDEV® 1 MCP3XXX Quad/Octal Evaluation System Daughter Board Kit Contents
• MCP3XXX Quad/Octal Daughter Board • Filter Boards • Samples for all Supported A/D Converts and Preprogrammed PICmicro® MCU for use in the Driver Board • Adapter Plugs • MXLAB® IDE ADC Software • Documentation, including the *"MCP3XXX A/D Converter Evaluation Kit User's Guide"*

Ordering Information:

DV3204A MXDEV® 1 MCP3XXX Quad/Octal ADC Evaluation System Daughter Board Kit

Fan Controllers and Serial Temperature Sensor Demo Boards

TC642EV – Evaluation Kit for Brushless DC Fan Controllers

The TC642EV is a complete evaluation kit for evaluating and prototyping brushless DC fan control circuits using Microchip's TC642, TC646, TC647, TC648 and TC649 BDC fan controllers. The fan speed control signal can be provided by an external sensor or voltage signal, or from the on-board potentiometer. Minimum speed setting and auto-shutdown threshold are conveniently set by a potentiometer. Jumper blocks allow the user to quickly configure the output stage and input signal source and scaling. Test points provide easy access for instrument readings at critical nodes. A user prototyping area is provided for dedicated circuitry or other user specific circuits.

TC642DEMO – Fan Controller Demo Board for TC642/646/647/648/649

This Fan Controller Demo Board allows the user to quickly prototype fan control circuits based on Microchip's PWM fan control ICs (TC642, TC646, TC647, TC648 or TC649). This 1.5" by 2.0" board's versatile sensor input and output driver circuitry allows the Fan Controller Demo Board to be used with virtually any brushless DC fan and standard thermistor. An optional LED status indicator gives a visual indication of a fan Fault condition (open stator, blocked rotor or overtemperature Fault detection). It uses through-hole components for easy user modification.

TC650DEMO – Fan Controller Demo Board for TC650/651

This 1.0" x 1.0" Fan Controller Demo Board allows the user to quickly prototype fan control circuits based on Microchip's TC650 or TC651 PWM Fan Control ICs. The board can interface with virtually any brushless DC fan. A red LED status indicator gives visual indication of a fan Fault condition (open stator or blocked rotor) and a green LED status indicator gives a visual indication of an overtemperature alert (temperature is 10°C higher than the high temperature limit).

TC652DEMO – Fan Controller Demo Board for TC652/653

This 1.0" x 1.2" Fan Controller Demo Board allows the user to quickly prototype fan control circuits based on Microchip's TC652 or TC653 PWM fan control ICs. The board can interface with virtually any brushless DC fan. A red LED status indicator gives visual indication of a fan Fault condition (open stator or blocked rotor) and a green LED status indicator gives a visual indication of an overtemperature alert (temperature is 10°C higher than the high temperature limit).

TC74DEMO – Serial Digital Temperature Sensor Demo Board

The TC74DEMO Board allows the user to evaluate the functionality of the tiny TC74 thermal sensor and perform comparative evaluation against other thermal management solutions. This 0.75" by 2.5" PC board is an ideal solution for identifying the temperature profile of applications like datacom, telecom and PC equipment. The easy-to-use software provides a visual representation of temperature profile and can interface with any PC.

Ordering Information:

TC642EV	TC642EV Evaluation Kit for Brushless DC Fan Controllers
DS51252	*"TC642EV Evaluation Kit for Brushless DC Fan Controllers TC64X Product Overview"*
TC642DEMO	TC642DEMO Fan Controller Demo Board for TC642/646/647/648/649
DS51251	*"TC642DEMO Fan Control Module for TC64X Family Product Overview"*
TC650DEMO	TC650DEMO Fan Controller Demo Board for TC650/651
TC652DEMO	TC652DEMO Fan Controller Demo Board for TC652/653
DS51254	*"TC650DEMO and TC652DEMO Fan Controller Demo Boards for TC650/1/2/3 Product Overview"*
TC74DEMO	TC74DEMO Serial Digital Temperature Sensor Demo Board
DS51253	*"TC74DEMO Serial Thermal Sensor Demo Board for TC74 Product Overview"*

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MCP2510 CAN Developer's Kit

The MCP2510 CAN Developer's Kit is a multi-function tool that speeds implementation of the MCP2510 stand-alone CAN controller by offering functions for controlling its feature set.

In addition, this tool can be used to demonstrate basic CAN input/output functionality and monitor bus activity on the user's CAN bus. It is ideal for new CAN users that want to understand how CAN may be used for network communication.

MCP2510 CAN Developer's Kit Contents
• MCP2510 Target Board • User Interface Software (runs under Windows® 95/98) • PC Parallel Port Interface Cable • Power Supply • Documentation, including *"MCP2510 Development Kit User's Guide"*

Ordering Information:

DV251001 MCP2510 CAN Developer's Kit

MCP250XX CAN I/O Expander Developer's Kit

The MCP250XX CAN I/O Expander Developer's Kit includes everything needed to create a CAN-based system using Microchip's CAN I/O expander family. It can be used to evaluate, demonstrate and develop CAN nodes using these CAN I/O expanders. The Demonstration mode has an MCP25050 that is configured prior to shipping and is programmed to manipulate analog inputs via potentiometers, PWM outputs via a piezoelectric buzzer and an incandescent lamp, and digital inputs via push button switches. CAN messages can be sent and received between the master node and the demonstration node via the PC-user interface or via the input/output functionality discussed above. Users can also set up a watch window to display the message traffic as they manipulate the inputs and outputs. In this manner, the users can see a working network being demonstrated with one of the nodes being an MCP25050 CAN I/O expander device.

Another function of the developer's kit is that the PC, with included software, can be used to emulate an MCP250XX device. This mode is used to manipulate the registers of the MCP250XX devices in order to evaluate all of the different functionality and configurations of the device family. After users are comfortable with a configuration, they can then prototype their own CAN node. An unconfigured MCP250XX device is supplied with prototyping area, also included on the target board. A header is provided to enable oscilloscope access to the I/O pins for development and troubleshooting. Once prototyping is complete, the kit can be used to program up the device configuration in much the same manner that Microchip PICmicro® MCUs are programmed.

Features

- Speeds understanding of CAN I/O expander family
- Provides ability to prototype user-defined CAN node
- Enables programming of device default configuration directly from developer's kit
- Allows connection of external CAN networks
- Software watch window can be used as a basic CAN bus monitor

MCP250XX CAN I/O Expander Developer's Kit Contents
• Target Board with Three CAN Nodes Connected via a CAN Bus • MCP250XX Product Samples • PC Software to Interface to the Target Board • PC Parallel Port Interface Cable • Power Supply • Complete Documentation

Ordering Information:

DV250501	MCP250XX CAN I/O Expander Developer's Kit
DS51260	*"MCP25020/25025/25050/25055 CAN I/O Expanders Developer's Kit Product Overview"* (Available at www.microchip.com)

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MCP2120/2150 Infrared Developer's Kit

The MCP2120/2150 Infrared Developer's Kit includes everything needed to create a system that communicates using infrared wireless communication. It educates the designer on the IR communications technology and IrDA® protocol and can then be used to integrate these technologies into the designer's product allowing proof of concept.

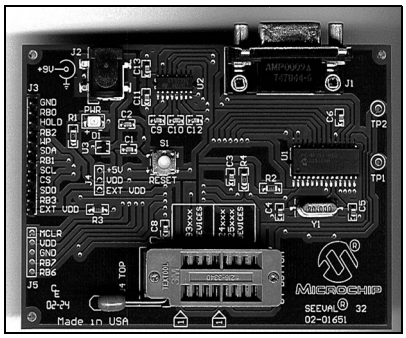
The kit includes Microchip's revolutionary MCP2150 Infrared Communications Controller supporting the IrDA Standard. It can be set up to communicate with other IrDA devices, like PDAs and mobile phones, as well. Host interface can be selected as a UART (DB-9) to a PC using Hyperlink, or as a Master controller/ASIC to the header. The boards also offer two types of transceivers: the component version (which is a lower cost but complicated) or the integrated version (which is simple but higher cost). The kit demonstrates two PCs communicating with each other via IR.

MCP2120/2150 Infrared Developer's Kit Contents
• Two MCP2120 IR Nodes • One MCP2150 IR Node • Product Samples • Serial Cables • Universal Power Supply • Documentation

Ordering Information:

DM163008	MCP2120/2150 Infrared Developer's Kit
DS51257	*"MCP2120/2150 Infrared Products Developer's Kit Product Overview"* (Available at www.microchip.com)

SEEVAL® 32 Serial EEPROM Evaluation System Designer's Kit



Microchip's SEEVAL 32 Serial EEPROM Evaluation System Designer's Kit supports all Microchip serial EEPROMs, including future devices. Through the use of a ZIF socket, standard DIP packages are directly supported. The 8-lead SOIC, TSSOP, MSOP, DFN and 5-lead SOT-23 packages can also be supported by using separate third party adapters. The SEEVAL 32 Evaluation System gives the designer or system integrator the ability to read, write, or erase any byte, page, or the entire array, and to display, save, or load this data as a file. The SEEVAL 32 Evaluation System and its host software and firmware capabilities provide support for all the current Windows operating systems, including: Windows XP, Windows ME, Windows 2000, Windows NT® 4.0 and also Windows 95/98.

The SEEVAL 32 Evaluation System provides advanced features to aid in system integration and debug. Through the use of test pins on the system, an oscilloscope or other test equipment can be easily connected to evaluate timing and voltage levels. Through the SEEVAL 32 Evaluation System host software, serial EEPROMs can be tested by reading and writing data in the EEPROM under test and by evaluating checksum data. Erase/write endurance can also be measured by selecting a Continuous Loop mode to repeatedly read/write/erase the EEPROM.

The SEEVAL 32 Serial EEPROM Evaluation System Designer's Kit also includes the Total Endurance™ Software Model, a powerful tool which can predict the erase/write endurance of any given serial EEPROM based upon its application parameters: temperature, voltage, cycles per day and bytes per cycle.

SEEVAL® 32 Serial EEPROM Evaluation System Designer's Kit Contents
• Total Endurance Software Model • SEEVAL 32 Evaluation System • Serial EEPROM Sample Pack • SEEVAL 32 Evaluation System Software • RS-232 Interface Cable • Power Supply

Ordering Information:

DV243002 SEEVAL® 32 Serial EEPROM Evaluation System Designer's Kit

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13.56 MHz Anticollision microID® Developer's Kit for MCRF355 and MCRF360

The 13.56 MHz microID Developer's Kit is an easy-to-use tool for design engineers at all skill levels. This kit includes all the hardware, software, reference designs and samples required to get started in 13.56 MHz RFID designs.

This kit is intended to demonstrate basic operation of the high-performance MCRF355 tagging chip and basic design of a simple RFID reader.

microID® MCRF355 and MCRF360 Developer's Kit Contents
• 13.56 MHz Anticollision Reader • Contact Programmer • Two Power Supplies • Two RS-232 Cables • rfLAB™ 13.56 Software Interface (runs under Windows® 95/98, Windows 2000, Windows XP) • Socketed Tags • Flexible, Preprogrammed Performa™ tags by Checkpoint Systems Inc. • Samples in DIP Form • Documentation, including a complete *"microID RFID Products 13.56 MHz RFID System Design Guide"* (Application Notes, Reference Designs and Tutorials)

Ordering Information:

DV103003	13.56 MHz Anticollision microID® Developer's Kit for MCRF355 and MCRF360
PG103003	microID® Contact Programmer Kit for MCRF355 and MCRF360 (This programmer is also included in the DV103006)

13.56 MHz Anticollision microID® Developer's Kit for MCRF355, MCRF360 and MCRF45X

The 13.56 MHz microID Developer's Kit is a high-speed, long range, easy-to-use tool for design engineers at all skill levels. This kit includes all the hardware, software, reference designs and samples required to get started in high-performance 13.56 MHz RFID designs.

This kit is designed to demonstrate all 13.56 MHz RFID devices, including MCRF355/360 and MCRF450/451/452/455 and to provide a basic platform for high-performance RFID reader design.

microID® MCRF355, MCRF360 and MCRF45X Developer's Kit Contents
• 13.56 MHz Read/Write Interrogator • Contact Programmer for MCRF355/360 • Two Power Supplies • Two RS-232 Cables • rfLAB™ 13.56 Software Interface (runs under Windows® 95/98, Windows 2000, Windows XP) • Socketed Tags • Flexible, Preprogrammed Performa™ tags by Checkpoint Systems Inc. • Samples in DIP Form • Documentation including a complete *"microID RFID Products 13.56 MHz RFID System Design Guide"* (Application Notes, Reference Designs and Tutorials)

Ordering Information:

DV103006 13.56 MHz Anticollision microID® Developer's Kit for MCRF355, MCRF360, MCRF45X

PG103003 microID® Contact Programmer Kit for MCRF355 and MCRF360
(This programmer is also included in the DV103006)

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Interface Products

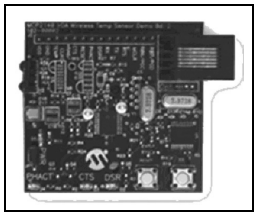
MCP2510/2515 CAN Developer's Kit

Ordering Information: V251001

Speeds up software development and introduces CAN to those unfamiliar with the protocol. Combines a software development tool with a CAN message/communication tool.

MCP2140 IrDA® Wireless Temp Demo Board

Ordering Information: MCP2140DM-TMPSNS



Demonstrates the MCP2140 device in a real-world application. Shows how to integrate an IrDA® standard port.

MCP250XX CAN I/O Expander Developer's Kit

Ordering Information: DV250501

Supports CAN V2.0B active with bus rates up to 1 Mb/s. Includes a CAN node using the MCP250XX CAN I/O Expander.

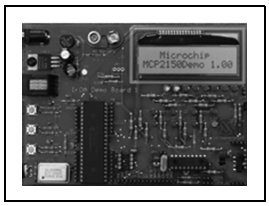
MCP215X Data Logger Demo Board

Ordering Information: MCP215XDM

Demonstrates the MCP2150 (or MCP2155) IrDA Standard Protocol Stack Controller device in a real-world application. Shows how to integrate an IrDA standard port into an embedded system.

MCP2120/2150 Developer's Kit

Ordering Information: DM163008

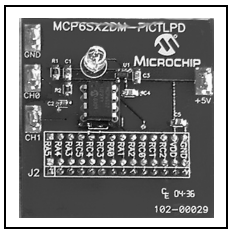


Includes everything needed to create a system that uses infrared to communicate. Kit contains two MCP2120 developer's boards and one MCP2150 developer's board.

Linear Products

MCP6SX2 PGA Photodiode PICtail™ Daughter Board

Ordering Information: MCP6SX2DM-PCTLPD



Opens possibilities to process other sensor signals. Increases the number of PIC® microcontroller I/O pins available for other purposes. Features a PNZ334 photodiode, MCP6001U op amp and MCP6S22 and MCP6S92 Programmable Gain Amplifiers (PGA).

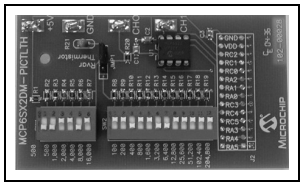
MCP6S22 PGA PICtail™ Daughter Board

Ordering Information: MCP6S22DM-PCTL

Helps evaluate and demonstrate Microchip's MCP6S21/2/6/8 PGA family. Interfaces with Microchip's PICkit™ 1 Flash Starter Kit. Demonstrates firmware integration between PIC microcontrollers and PGA devices, to modify and develop firmware for your specific requirements. Board can be used in Stand-Alone mode.

MCP6SX2 PGA Thermistor PICtail™ Daughter Board

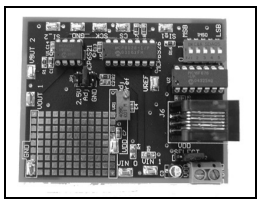
Ordering Information: MCP6SX2DM-PCTLTH



Features MCP6S22 and MCP6S92 PGAs. Helps overcome nonlinear response of the on-board NTC thermistor. Opens possibilities of temperature correcting another sensor and increasing the number of PIC microcontroller I/O pins available for other purposes.

MCP6S2X PGA Evaluation Board

Ordering Information: MCP6S2XEV



Provides a versatile selection of input channels and gains to evaluate device performance. Board supports multiple input signal sources. Two devices can be cascaded to produce gain to 1024 V/V.

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Linear Products (Cont.)

MCP3221 12-Bit A/D PICtail™ Daughter Board

Ordering Information: MCP3221DM-PCTL

The MCP3221 PICtail Daughter Board is designed to demonstrate Microchip's MCP3221 device. The daughter board uses DataView™ Windows® software for a graphical real-time data analysis from the board through USB. This daughter board can also be used for firmware development to the MCP3221 device using the PICkit 1 Flash Starter Kit.

MCP402X Digital Potentiometer Evaluation Board Kit

Ordering Information: MCP402XEV

Exercises all of the features of the MCP402X Nonvolatile Digital Potentiometer. Kit includes 2 PCBs, one populated and one unpopulated. The PCB supports the 8-pin SOIC, SOT-23-6 and SOT-23-5 MCP402X package variations and the standard ICSP™ programming header used by the Microchip BFMP low-cost programming tool.

Mixed-Signal Products

TC340X Delta-Sigma A/D Converter Evaluation Kit

Ordering Information: TC3400EV

Supports all members of Microchip's TC340X Sigma-Delta A/D Converter family. Communicates with any TC340X parts via a parallel printer port or from an external power supply.

Mixed-Signal PICtail™ Daughter Board

Ordering Information: MXSIGDM

Quickly and accurately evaluates performance of Microchip DACs, A/D Converters, LDOs, VREFs and Operational Amplifiers. Interfaces to the PICkit 1 Flash Starter Kit. Can use with a PIC16F767 for stand-alone operation. Supports many Microchip mixed-signal devices (surface mount footprint).

MXDEV® Analog Evaluation System

Ordering Information: DVMCPA

Versatile, easy-to-use system helps evaluate mixed-signal products. Includes the DVMCPA MCP Driver Board, which provides data acquisition and analysis/display in a Windows® environment.

MCP42XXX Digital Pot MXDEV® Evaluation System Daughter Board

Ordering Information: DV42XXX

Includes an evaluation board, prototype board, RS-232 cable, 9V DC power supply, MXLAB® IDE software, digital potentiometers and a PIC microcontroller. Used with the MXDEV® 1 Analog Evaluation System Driver Board (available separately).

MCP3201/02 Single/Dual A/D Converter MXDEV® Evaluation System Daughter Board

Ordering Information: DV3201A

Supports MCP3001, MCP3002, MCP3201 and MCP3202 stand-alone A/D Converters. Used with the MXDEV 1 MCP3XXX Single/Dual ADC Evaluation System Driver Board (available separately).

MCP3204/08 MXDEV® Evaluation System Daughter Board

Ordering Information: DV32XXX

Supports MCP3004, MCP3008, MCP3204 and MCP3208 stand-alone A/D Converters. Used with the MXDEV 1 MCP3XXX Single/Dual ADC Evaluation System Driver Board (available separately).

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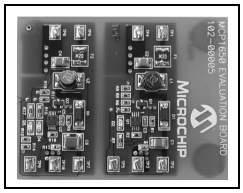
Power Management Products

MCP1650 Boost Controller Evaluation Board

Ordering Information: MCP1650EV



Demonstrates the MCP165X Boost Controller product family in two high-power, boost converter applications.

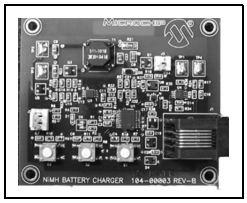
SOT-23-3 Voltage Supervisor Evaluation Board

Ordering Information: VSUPEV

Quickly evaluates operation of Voltage Supervisors and Voltage Detectors in the Microchip SOT-23-3 package. Generic board evaluates SOT-23-3 devices (such as LDOs and Voltage References). Four blank PCBs are included for testing multiple devices.

MCP1630 NiMH Battery Charger Demo Board

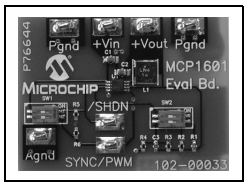
Ordering Information: MCP1630DM-NMC1



High-speed PWM interfaces to PIC16LF818, providing a complete NiMH battery charger with fuel gauge capability. Minimizes external inductor/capacitor cost. Performs complex NiMH battery charger timing functions. Protects battery circuit if a Fault occurs.

MCP1601 Buck Regulator Evaluation Board

Ordering Information: MVCP1601EV



For both battery-powered and distributed-power applications. Operates over a 2.7V to 5.5V input range while delivering 500 mA of output current.

MCP7382X Li Ion Battery Charger Evaluation Board

Ordering Information: MCP382XEV

Features three circuits utilizing the MCP73826, MCP73827 and MCP73828 devices to demonstrate simple, stand-alone, linear charging of single cell Lithium Ion/Lithium Polymer battery packs (battery packs are not included).

Power Management Products (Cont.)

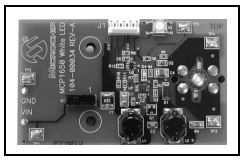
MCP7384X Li Ion Battery Charger Evaluation Board

Ordering Information: MCP7384XEV

Three circuits use MCP73841, MCP73842 and MCP73843 devices to demonstrate simple, stand-alone, linear charging of single or dual cell Lithium Ion/Lithium Polymer battery packs (battery packs are not included).

MCP165X 3W White LED Demo Board

Ordering Information: MCP1650DM-LED1



Demonstrates the MCP165X Boost Controller product family in a battery-powered white LED application with an input voltage range of 2.0V to 4.5V.

MCP1726 LDO Evaluation Board

Ordering Information: MCP1726EV

Features Microchip's 1A, Low Quiescent Current LDO Regulator in two circuits. The first circuit has the adjustable version of the MCP1726 in the 8-pin 3x3 DFN package. The second circuit has the adjustable version of the MCP1726 in the 8-pin SOIC package. Both circuits have potentiometers that can be used to adjust the output voltage of the LDO. Fixed voltage versions of the device can also be evaluated with this board.

MCP1252 Charge Pump Backlight Demo Board

Ordering Information: MCP1252DM-BKLT

The MCP1252 Charge Pump Backlight LED Demo Board demonstrates the use of a charge pump device in an LED application. The board also serves as a platform to evaluate the MCP1252 device in general.

SOIC 8-Lead Evaluation Board

Ordering Information: SOIC8EV

A blank PCB to easily evaluate Microchip Technology's 8-pin devices. Each device pin is connected to a pull-up resistor, a pull-down resistor, an in-line resistor and a loading capacitor. The PCB pads allow through hole or surface mount connectors to be installed to ease connection to the board. Additional passive component footprints are on the board to allow simple circuits to be implemented.

Thermal Management Products

TC64X/64XB Fan Speed Controller Evaluation Board

Ordering Information: TC642EV

This is a complete evaluation board for evaluation and prototyping brushless DC fan control circuits using the TC642, TC646, TC647, TC648 and TC649 BDC fan controllers.

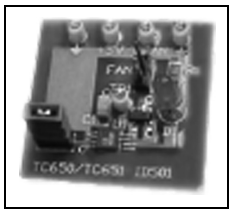
TC64/64XB Fan Speed Controller Demo Board

Ordering Information: TC642DEMO

Fan control module allows users to quickly prototype fan control circuits based on the TC642 or TC646 PWM fan control ICs. It uses through hole components for easy user assembly and evaluation.

TC650 Fan Speed Controller Demo Board

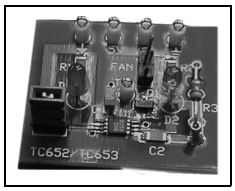
Ordering Information: TC650DEMO



Allows users to quickly prototype fan control circuits based on the TC650 or TC651 PWM fan control ICs.

TC652 Fan Speed Controller Demo Board

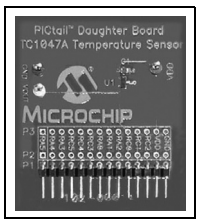
Ordering Information: TC652DEMO



Allows users to quickly prototype fan control circuits on TC652 or TC653 PWM fan control ICs. The board can interface with virtually any brushless DC fan.

TC1047A Temperature-to-Voltage Converter PICtail™ Daughter Board

Ordering Information: 1047ADM-PCTL

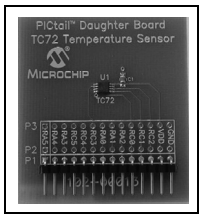


Demonstrates how to interface the TC1047A device to a microcontroller. Connects directly to the PICkit 1 Flash Starter Kit, providing a platform for code development and evaluation. Provides a good example of how to integrate an analog temperature sensor into a system.

Thermal Management Products (Cont.)

TC72 Digital Temperature Sensor PICtail™ Daughter Board

Ordering Information: TC72DM-PICTL



Connects directly to the PICkit 1 Flash Starter Kit. Highly accurate board features a 10-bit digital sensor with 3-wire SPI™ interface.

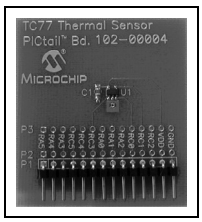
TC74 Serial Digital Thermal Sensor Demo Board

Ordering Information: TC74DEMO

Particularly suited for low-cost, small form factor applications. Connects directly to the PICkit 1 Flash Starter Kit.

TC77 Thermal Sensor PICtail™ Daughter Board

Ordering Information: TC77-DM-PICTL



System designers can use this design as an example of how to integrate a digital temperature sensor into their systems. Connects directly to the PICkit 1 Flash Starter Kit.

MCP9700 Thermal Sensor PICtail™ Daughter Board

Ordering Information: MCP9700DM-PCTL

The MCP9700 Thermal Sensor PICtail™ Daughter Board demonstrates how to interface the MCP9700 to a microcontroller. This can be used by the system designer as an example of how to integrate an analog temperature sensor into systems.

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Analog Software Tools

FilterLab® Active Filter Design Software

The FilterLab® Active Filter Design Software tool simplifies active filter design. Available at no cost, the FilterLab Active Filter Design Software tool provides full schematic diagrams of the filter circuit with component values and displays the frequency response.

SPICE Software Models

Modeling is the heart of any SPICE simulation system and Microchip provides a variety of model libraries. This library and service is another example of how Microchip leads the way in analog simulation and modeling.

For more information, visit the Microchip web site at:
www.microchip.com/analogtools

NOTES:

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KEELOQ® SECURITY ICs EVALUATION KIT

This section contains the following major topics:

KEELOQ® Security ICs Evaluation Kit II 98

KEELOQ® Security ICs Evaluation Kit II

The KEELOQ Security ICs Evaluation Kit II provides the opportunity to evaluate KEELOQ Security ICs code hopping technology quickly and easily without having to make a large capital investment. The evaluation kit contains all the hardware and software necessary to implement a fully functional remote control system and demonstrate all operating modes of the following devices: HCS101, HCS200, HCS201, HCS300, HCS301, HCS320, HCS360, HCS361, HCS362, HCS365 and HCS370 encoders.

The kit can also be used to program and demonstrate the encoder functionality of the HCS410, HCS412 and HCS473 transponders (transcoders).

KEELOQ® Security ICs Evaluation Kit II Contents
• Programmer and Decoder Demonstration Board • Two KEELOQ Security ICs Transmitter Demo Boards • Sample Kit Containing Various KEELOQ Security ICs Encoder and Decoder Samples • KEELOQ Security ICs Data Product CD

Ordering Information:

DM303006 KEELOQ® Security ICs Evaluation Kit II

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BATTERY MANAGEMENT

This section contains the following major topics:

PowerSmart® Battery Management Evaluation Kits for 2, 3 and 4 Series Cell Lithium Ion/ Polymer Chemistries 100
PowerSmart® Battery Management Monitor Evaluation Kit for 1 and 2 Series Cell Lithium Ion/ Polymer Chemistries 101

PowerSmart® Battery Management Evaluation Kits for 2, 3 and 4 Series Cell Lithium Ion/Polymer Chemistries

The PowerSmart Battery Management Evaluation Kits for Lithium Ion/Polymer chemistries provide the opportunity to evaluate a Microchip battery management solution for Lithium-based battery packs. The evaluation kits contain all of the hardware and software necessary to implement a functional SmartBattery pack with a primary and secondary safety circuit and a LED State-of-Charge display. The kit can be used to configure and demonstrate functionality of the PS501 Battery Manager IC.

PowerSmart® Battery Management Evaluation Kits for Lithium Ion/Polymer Chemistries Contents
• Battery Manager Module for Lithium Ion/ Polymer Battery Packs • PowerInfo™ 2 Configuration Interface • USB Cable • RS-232 Cable • Power Supply • Battery Management PC Software CD

Ordering Information:

PS5162EV	PowerSmart® Battery Management Evaluation Kit for Lithium Ion/Polymer Chemistries (2-cell)
PS5163EV	PowerSmart® Battery Management Evaluation Kit for Lithium Ion/Polymer Chemistries (3-cell)
PS5164EV	PowerSmart® Battery Management Evaluation Kit for Lithium Ion/Polymer Chemistries (4-cell)

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PowerSmart® Battery Management Monitor Evaluation Kit for 1 and 2 Series Cell Lithium Ion/Polymer Chemistries

The PowerSmart Battery Management Evaluation Kit for Lithium Ion/Polymer chemistries provides the opportunity to evaluate a Microchip battery monitor solution for one or two series cell Lithium-based battery packs. The evaluation kit contains all of the hardware and software necessary to incorporate a functional fuel gauge and safety module into a battery pack. The kit can be used to configure and demonstrate functionality of the PS700 Battery Monitor IC.

PowerSmart® Battery Management Evaluation Kit for 1 and 2 Series Cell Lithium Ion/Polymer Chemistries Contents
• Battery Monitor Evaluation Board (PS7070) for 1 and 2 Series Cell Lithium Ion/Polymer Battery Packs • PowerInfo™ 2 Configuration Interface (PS051) • USB Cable • Battery Management PC Software CD

Ordering Information:

PS7070EV	PowerSmart® Battery Management Evaluation Kit for 1 and 2 Series Cell Lithium Ion/Polymer Chemistries

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NOTES:

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CROSS REFERENCE

This section contains the following major topics:

Development Systems Cross Reference Table 104

MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
Analog Interface Development Tools													
MCP2120	14P												DM163008
MCP2150	18P												DM163008
MCP250XX	14P								AC164301*				DV250501
MCP250XX	14SO								AC164302*				
MCP2510	18P												DV251001
MCP2515	18P												DV251001
PICmicro® Microcontroller Development Tools													
PIC10F200	6OT							AC164037	AC164321	AC163020	AC162059* +XLT06SOT		DV164101 or DV164120* +AC163020
PIC10F200	8P							AC164037	AC164301	✓	AC162059*		DV164101, DV164120*
PIC10F202	6OT							AC164037	AC164321	AC163020	AC162059* +XLT06SOT		DV164101 or DV164120* +AC163020
PIC10F202	8P							AC164037	AC164301	✓	AC162059*		DV164101, DV164120*
PIC10F204	6OT							AC164037	AC164321	AC163020	AC162059* +XLT06SOT		DV164101 or DV164120* +AC163020
PIC10F204	8P							AC164037	AC164301	✓	AC162059*		DV164101, DV164120*
PIC10F206	6OT							AC164037	AC164321	AC163020	AC162059* +XLT06SOT		DV164101 or DV164120* +AC163020
PIC10F206	8P							AC164037	AC164301	✓	AC162059*		DV164101 DV164120*
PIC10F220	6OT							AC164037	AC164321*		AC162059* +XLT06SOT		DV164101 or DV164120* +AC163020
PIC10F220	8P							AC164037*	AC164301*		AC162059*		DV164101, DV164120*
PIC10F222	6OT							AC164037*	AC164321*		AC162059* +XLT06SOT		DV164101 or DV164120* +AC163020
PIC10F222	8P							AC164037*	AC164301*		AC162059*		DV164101, DV164120*
PIC12C508	8P, 8JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓			DM163001, DVMCPA
PIC12C508	8SM	PCM16XA0	DVA12XP080	XLT08SO				AC124001	AC164312				

NOTE: **See complete list of notes following this table.**

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC12C508A	8P, 8JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓			DM163001, DVMCPA
PIC12C508A	8SM	PCM16XA0	DVA12XP080	XLT08SO				AC124001	AC164312				
PIC12C508A	8SN	PCM16XA0	DVA12XP080	XLT08SO				AC164026	AC164302				
PIC12C508A	8MF	PCM16XA0	DVA12XP080	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032			
PIC12C509	8P, 8JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓			DM163001, DVMCPA
PIC12C509	8SM	PCM16XA0	DVA12XP080	XLT08SO				AC124001	AC164312				
PIC12C509A	8P, 8JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓			DM163001, DVMCPA
PIC12C509A	8SM	PCM16XA0	DVA12XP080	XLT08SO				AC124001	AC164312				
PIC12C509A	8SN	PCM16XA0	DVA12XP080	XLT08SO				AC164026	AC164302				
PIC12C509A	8MF	PCM16XA0	DVA12XP080	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032			
PIC12C671	8P, 8JW	PCM12XA0	DVA12XP081					AC124001	AC164301	✓			
PIC12C671	8SM	PCM12XA0	DVA12XP081	XLT08SO				AC124001	AC164312				
PIC12C671	8MF	PCM12XA0	DVA12XP081	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032			
PIC12C672	8P, 8JW	PCM12XA0	DVA12XP081					AC124001	AC164301	✓			
PIC12C672	8SM	PCM12XA0	DVA12XP081	XLT08SO				AC124001	AC164312				
PIC12C672	8MF	PCM12XA0	DVA12XP081	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032			
PIC12CE518	8P, 8JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓			
PIC12CE518	8SM	PCM16XA0	DVA12XP080	XLT08SO				AC124001	AC164312				
PIC12CE518	8SN	PCM16XA0	DVA12XP080	XLT08SO				AC164026	AC164302				
PIC12CE519	8P, 8JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓			
PIC12CE519	8SM	PCM16XA0	DVA12XP080	XLT08SO				AC124001	AC164312				
PIC12CE519	8SN	PCM16XA0	DVA12XP080	XLT08SO				AC164026	AC164302				
PIC12CE673	8P, 8JW	PCM12XA0	DVA12XP081					AC124001	AC164301	✓			
PIC12CE674	8P, 8JW	PCM12XA0	DVA12XP081					AC124001	AC164301	✓			
PIC12F508	8P	PCM16XA0	DVA12XP080					AC124001	AC164301	✓	AC162059*		DM163014, DV164101, DV164120*
PIC12F508	8SN	PCM16XA0	DVA12XP080	XLT08SO				AC164026	AC164302		AC162059* +XLT08SO		
PIC12F508	8ST	PCM16XA0	DVA12XP080						AC164306				
PIC12F508	8MS	PCM16XA0	DVA12XP080										

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC12F509	8P	PCM16XA0	DVA12XP080					AC124001	AC164301	✓	AC162059*		DM163014, DV164101, DV164120*
PIC12F509	8SN	PCM16XA0	DVA12XP080	XLT08SO				AC164026	AC164302		AC162059* +XLT08SO		
PIC12F509	8ST	PCM16XA0	DVA12XP080						AC164306				
PIC12F509	8MS	PCM16XA0	DVA12XP080										
PIC12F510	8P							AC124001*	AC164301*		AC162070*		DV164101, DV164120*
PIC12F510	8SN							AC164026*	AC164302*				
PIC12F510	8MS												
PIC12F510	8MF								AC164301* +AC164032				
PIC12F629	8P	PCM12XB0	DVA12XP081					AC124001	AC164301	✓	AC162050		DM163014, DV164101, DV164120*
PIC12F629	8SN	PCM12XB0	DVA12XP081	XLT08SO				AC164026	AC164302		AC162050 +XLT08SO		
PIC12F629	8MF	PCM12XB0	DVA12XP081	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032	AC162050 +XLT08DFN or XLT08DFN2		
PIC12F635	8P	PCM16YM0	DVA1002	ACICE0201				AC124001	AC164301	✓	AC162057		DM163014, DV164101, DV164120*
PIC12F635	8SN	PCM16YM0	DVA1002	XLT08SO				AC164026	AC164302		AC162057 +XLT08SO		
PIC12F635	8MF	PCM16YM0	DVA1002	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032	AC162050 +XLT08DFN or XLT08DFN2		
PIC12F675	8P	PCM12XB0	DVA12XP081					AC124001	AC164301	✓	AC162050		DM163014, DV164101, DV164120*
PIC12F675	8SN	PCM12XB0	DVA12XP081	XLT08SO				AC164026	AC164302		AC162050 +XLT08SO		
PIC12F675	8MF	PCM12XB0	DVA12XP081	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032	AC162050 +XLT08DFN or XLT08DFN2		

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC12F683	8P	PCM12XC0	DVA1002	ACICE0201				AC124001	AC164301	✓	AC162058		DM163014, DV164101, DV164120*
PIC12F683	8SN	PCM12XC0	DVA1002	XLT08SO				AC164026	AC164302		AC162058 +XLT08SO		
PIC12F683	8MF	PCM12XC0	DVA1002	XLT08DFN or XLT08DFN2				AC124001 +AC164032	AC164301 +AC164032	AC164032	AC162058 +XLT08DFN or XLT08DFN2		
PIC14000	28SP, 28JW	PCM14XA0	DVA14XP280					AC144001		✓			
PIC14000	28SO	PCM14XA0	DVA14XP280	XLT28SO				AC144002					
PIC14000	28SS	PCM14XA0	DVA14XP280	XLT28SS				AC144002					
PIC16C52	18P	PCM16XA0	DVA16XP180					AC164001	AC164301	✓			DM163001
PIC16C52	18SO	PCM16XA0	DVA16XP180	XLT18SO				AC164002	AC164302				
PIC16C54/54A/ 54C	18P, 18JW	PCM16XA0	DVA16XP180					AC164001	AC164301	✓			DM163001
PIC16C54/54A/ 54C	18SO	PCM16XA0	DVA16XP180	XLT18SO				AC164002	AC164302				
PIC16C54/54A/ 54C	20SS	PCM16XA0	DVA16XP180	XLT20SS				AC164015	AC164307				
PIC16C55/55A	28P, 28JW	PCM16XA0	DVA16XP280	XLT28XP				AC164001	AC164301	✓			DM163001
PIC16C55/55A	28SP	PCM16XA0	DVA16XP280					AC164001	AC164301	✓			DM163001
PIC16C55/55A	28SO	PCM16XA0	DVA16XP280	XLT28SO				AC164002	AC164302				
PIC16C55/55A	28SS	PCM16XA0	DVA16XP280	XLT28SS2				AC164015	AC164307				
PIC16C56/56A	18P, 18JW	PCM16XA0	DVA16XP180					AC164001	AC164301	✓			DM163001
PIC16C56/56A	18SO	PCM16XA0	DVA16XP180	XLT18SO				AC164002	AC164302				
PIC16C56/56A	20SS	PCM16XA0	DVA16XP180	XLT20SS				AC164015	AC164307				
PIC16C57/57C	28P, 28JW	PCM16XA0	DVA16XP280	XLT28XP				AC164001	AC164301	✓			DM163001
PIC16C57/57C	28SP	PCM16XA0	DVA16XP280					AC164001	AC164301	✓			DM163001
PIC16C57/57C	28SO	PCM16XA0	DVA16XP280	XLT28SO				AC164002	AC164302				
PIC16C57/57C	28SS	PCM16XA0	DVA16XP280	XLT28SS2				AC164015	AC164307				
PIC16C58A/58B	18P, 18JW	PCM16XA0	DVA16XP180					AC164001	AC164301	✓			DM163001
PIC16C58A/58B	18SO	PCM16XA0	DVA16XP180	XLT18SO				AC164002	AC164302				
PIC16C58A/58B	20SS	PCM16XA0	DVA16XP180	XLT20SS				AC164015	AC164307				

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16C62A	28P, 28JW	PCM16XB1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C62A	28SO	PCM16XB1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C62A	28SS	PCM16XB1	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16C62B	28SP, 28JW	PCM16XE1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C62B	28ML	PCM16XE1	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031			
PIC16C62B	28SO	PCM16XE1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C62B	28SS	PCM16XE1	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16C63	28SP, 28JW	PCM16XB1	DVA16XP282					AC164012	AC164301	✓			DM163022, DVMCPA
PIC16C63	28SO	PCM16XB1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C63A	28SP, 28JW	PCM16XE1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C63A	28ML	PCM16XE1	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031			
PIC16C63A	28SO	PCM16XE1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C63A	28SS	PCM16XE1	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16C64A	40P, 40JW	PCM16XB1	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C64A	44L	PCM16XB1	DVA16XL441					AC164013	AC164309				
PIC16C64A	44PQ	PCM16XB1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C64A	44PT	PCM16XB1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C65A	40P, 40JW	PCM16XB1	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C65A	44L	PCM16XB1	DVA16XL441					AC164013	AC164309				
PIC16C65A	44PQ	PCM16XB1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C65A	44PT	PCM16XB1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C65B	40P, 40JW	PCM16XE1	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C65B	44L	PCM16XE1	DVA16XL441					AC164013	AC164309				
PIC16C65B	44PQ	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C65B	44PT	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				

NOTE: **See complete list of notes following this table.**

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16C66	28SP, 28JW	PCM16XE1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C66	28SO	PCM16XE1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C67	40P, 40JW	PCM16XE1	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C67	44L	PCM16XE1	DVA16XL441					AC164013	AC164309				
PIC16C67	44PQ	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C67	44PT	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C71	18P, 18JW	PCM16XF0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C71	18SO	PCM16XF0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C72	28SP, 28JW	PCM16XB1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C72	28SO	PCM16XB1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C72	28SS	PCM16XB1	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16C72A	28SP, 28JW	PCM16XE1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C72A	28ML	PCM16XE1	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031			
PIC16C72A	28SO	PCM16XE1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C72A	28SS	PCM16XE1	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16C73A	28SP, 28JW	PCM16XB1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C73A	28SO	PCM16XB1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C73B	28SP, 28JW	PCM16XE1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C73B	28ML	PCM16XE1	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031			
PIC16C73B	28SO	PCM16XE1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C73B	28SS	PCM16XE1	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16C74A	40P, 40JW	PCM16XB1	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C74A	44L	PCM16XB1	DVA16XL441					AC164013	AC164309				
PIC16C74A	44PQ	PCM16XB1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C74A	44PT	PCM16XB1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16C74B	40P, 40JW	PCM16XE1	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C74B	44L	PCM16XE1	DVA16XL441					AC164013	AC164309				
PIC16C74B	44PQ	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C74B	44PT	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C76	28SP, 28JW	PCM16XE1	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C76	28SO	PCM16XE1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C77	40P, 40JW	PCM16XE1	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C77	44L	PCM16XE1	DVA16XL441					AC164013	AC164309				
PIC16C77	44PQ	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C77	44PT	PCM16XE1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C432	20P, 20JW	PCM16YB0	DVA16XP201					AC164029	AC164301				DM163005
PIC16C432	20SS	PCM16YB0	DVA16XP201	XLT20SS1				AC164029	AC164307				DM163007, DM163011
PIC16C433	18P, 18JW	PCM16YC0	DVA16XP185					AC164030	AC164301				DM163005
PIC16C433	18SO	PCM16YC0	DVA16XP185	XLT18SO				AC164030	AC164307				
PIC16C505	14P, 14JW	PCM16XA0	DVA16XP140					AC124001	AC164301	✓			
PIC16C505	14SL	PCM16XA0	DVA16XP140	XLT14SO				AC164026	AC164302				
PIC16C554	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C554	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C554	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16C557	28P							AC164001	AC164301				
PIC16C557	28SO							AC164002	AC164302				
PIC16C558	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C558	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C558	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16C620/ 620A	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C620/ 620A	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C620/ 620A	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				

NOTE: **See complete list of notes following this table.**

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MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16C621/ 621A	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C621/ 621A	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C621/ 621A	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16C622/ 622A	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C622/ 622A	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C622/ 622A	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16C642	28SP, 28JW	PCM16XD0	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C642	28SO	PCM16XD0	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C662	40P, 40JW	PCM16XD0	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C662	44L	PCM16XD0	DVA16XL441					AC164013	AC164309				
PIC16C662	44PQ	PCM16XD0	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C662	44PT	PCM16XD0	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C710	18P, 18JW	PCM16XF0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C710	18SO	PCM16XF0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C710	20SS	PCM16XF0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16C711	18P, 18JW	PCM16XF0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C711	18SO	PCM16XF0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C711	20SS	PCM16XF0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16C712	18P, 18JW	PCM16XE1	DVA16XP182					AC164010	AC164301	✓			DM163001
PIC16C712	18SO	PCM16XE1	DVA16XP182	XLT18SO				AC164010	AC164302				
PIC16C712	20SS	PCM16XE1	DVA16XP182	XLT20SS				AC164018	AC164307				
PIC16C715	18P, 18JW	PCM16XG0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16C715	18SO	PCM16XG0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16C715	20SS	PCM16XG0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16C716	18P, 18JW	PCM16XE1	DVA16XP182					AC164010	AC164301	✓			DM163001
PIC16C716	18SO	PCM16XE1	DVA16XP182	XLT18SO				AC164010	AC164302				
PIC16C716	20SS	PCM16XE1	DVA16XP182	XLT20SS				AC164018	AC164307				

NOTE: **See complete list of notes following this table.**

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16C717	18P, 18JW	PCM16XN1	DVA18XP180					AC164010	AC164301	✓			DM163001
PIC16C717	18SO	PCM16XN1	DVA18XP180	XLT18SO				AC164010	AC164302				
PIC16C717	20SS	PCM16XN1	DVA18XP180	XLT20SS				AC164018	AC164307				
PIC16C745	28SP, 28JW	PCM16XQ1	DVA16XP282					AC164012	AC164301	✓			DM163010
PIC16C745	28SO	PCM16XQ1	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C765	40P, 40JW	PCM16XQ1	DVA16XP401					AC164012	AC164301	✓			DM163010
PIC16C765	44L	PCM16XQ1	DVA16XL441					AC164013	AC164309				
PIC16C765	44PT	PCM16XQ1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C770	20P, 20JW	PCM16XN1	DVA16XP200					AC164028	AC164301	✓			DM163001
PIC16C770	20SO	PCM16XN1	DVA16XP200	XLT20SO1				AC164028	AC164302				
PIC16C770	20SS	PCM16XN1	DVA16XP200	XLT20SS1				AC164018	AC164307				
PIC16C771	20P, 20JW	PCM16XN1	DVA16XP200					AC164028	AC164301	✓			DM163001
PIC16C771	20SO	PCM16XN1	DVA16XP200	XLT20SO1				AC164028	AC164302				
PIC16C771	20SS	PCM16XN1	DVA16XP200	XLT20SS1				AC164018	AC164307				
PIC16C773	28SP, 28JW	PCM16XL0	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16C773	28SO	PCM16XL0	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16C773	28SS	PCM16XL0	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16C774	40P, 40JW	PCM16XL0	DVA16XP401					AC164012	AC164301	✓			DM163022
PIC16C774	44L	PCM16XL0	DVA16XL441					AC164013	AC164309				
PIC16C774	44PQ	PCM16XL0	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311				
PIC16C774	44PT	PCM16XL0	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305				
PIC16C781	20P, 20JW	PCM16XW0	DVA16XP202					AC164028	AC164301	✓			DM163012
PIC16C781	20SO	PCM16XW0	DVA16XP202	XLT20SO1				AC164028	AC164302				
PIC16C781	20SS	PCM16XW0	DVA16XP202	XLT20SS1				AC164018	AC164307				
PIC16C782	20P, 20JW	PCM16XW0	DVA16XP202					AC164028	AC164301	✓			DM163012
PIC16C782	20SO	PCM16XW0	DVA16XP202	XLT20SO1				AC164028	AC164302				
PIC16C782	20SS	PCM16XW0	DVA16XP202	XLT20SS1				AC164018	AC164307				
PIC16C923	64SP	PCM16XJ0	DVA16XP640					AC164025					
PIC16C923	64PT	PCM16XJ0	DVA16PQ640	XLT64PT1				AC164023	AC164319				
PIC16C923	68L, 68CL	PCM16XJ0	DVA16XL680					AC164022	AC164308	AC164024			DM163003

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16C924	64SP	PCM16XJ0	DVA16XP640					AC164025					
PIC16C924	64PT	PCM16XJ0	DVA16PQ640	XLT64PT1				AC164023	AC164319				
PIC16C924	68L, 68CL	PCM16XJ0	DVA16XL680					AC164022	AC164308	AC164024			DM163003
PIC16C925	64PT	PCM16XT0	DVA16PQ640	XLT64PT1				AC164023	AC164319				
PIC16C925	68L, 68CL	PCM16XT0	DVA16XL680					AC164022	AC164308	AC164024			DM163003
PIC16C926	64PT	PCM16XT0	DVA16PQ640	XLT64PT1				AC164023	AC164319				
PIC16C926	68L, 68CL	PCM16XT0	DVA16XL680					AC164022	AC164308	AC164024			DM163003
PIC16CE623	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16CE623	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16CE623	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16CE624	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16CE624	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16CE624	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16CE625	18P, 18JW	PCM16XC0	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16CE625	18SO	PCM16XC0	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16CE625	20SS	PCM16XC0	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16F54	18P	PCM16XA0	DVA16XP180					AC164001	AC164301	✓			DV164101, DM163001, DV164120*
PIC16F54	18SO	PCM16XA0	DVA16XP180	XLT18SO				AC164002	AC164302				
PIC16F54	20SS	PCM16XA0	DVA16XP180	XLT20SS				AC164015	AC164307				
PIC16F57	28P	PCM16XA0	DVA16XP280	XLT28XP				AC164001	AC164301				
PIC16F57	28SP	PCM16XA0	DVA16XP280					AC164001	AC164301	✓			DV164101, DM163001, DV164120*
PIC16F57	28SO	PCM16XA0	DVA16XP280	XLT28SO				AC164002	AC164302				
PIC16F57	28SS	PCM16XA0	DVA16XP280	XLT28SS2				AC164015	AC164307				
PIC16F59	40P							AC164038*	AC164301		✓*		DV164101, DV164120*
PIC16F59	44PT							AC164020*	AC164305		✓*		
PIC16F72	28SP, 28JW	PCM16XS2	DVA16XP282					AC164012	AC164301	✓			DM163022
PIC16F72	28SO	PCM16XS2	DVA16XP282	XLT28SO				AC164017	AC164302				
PIC16F72	28SS	PCM16XS2	DVA16XP282	XLT28SS				AC164021	AC164307				
PIC16F72	28ML	PCM16XS2	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031			

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16F73	28SP, 28JW	PCM16XS2	DVA16XP282					AC164012	AC164301	✓	✓*		DM163022
PIC16F73	28ML	PCM16XS2	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031	✓*		
PIC16F73	28SO	PCM16XS2	DVA16XP282	XLT28SO				AC164017	AC164302		✓*		
PIC16F73	28SS	PCM16XS2	DVA16XP282	XLT28SS				AC164021	AC164307		✓*		
PIC16F74	40P	PCM16XS2	DVA16XP401					AC164012	AC164301	✓	✓*		DM163022
PIC16F74	44L	PCM16XS2	DVA16XL441					AC164013	AC164309		✓*		
PIC16F74	44PT	PCM16XS2	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓*		
PIC16F74	44ML	PCM16XS2	DVA16XL441	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034	✓*		
PIC16F76	28SP, 28JW	PCM16XS2	DVA16XP282					AC164012	AC164301	✓	✓*		DM163022
PIC16F76	28ML	PCM16XS2	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031	✓*		
PIC16F76	28SO	PCM16XS2	DVA16XP282	XLT28SO				AC164017	AC164302		✓*		
PIC16F76	28SS	PCM16XS2	DVA16XP282	XLT28SS				AC164021	AC164307		✓*		
PIC16F77	40P, 40JW	PCM16XS2	DVA16XP401					AC164012	AC164301	✓	✓*		DM163022
PIC16F77	44L	PCM16XS2	DVA16XL441					AC164013	AC164309		✓*		
PIC16F77	44ML	PCM16XS2	DVA16XL441	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034	✓*		
PIC16F77	44PT	PCM16XS2	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓*		
PIC16F83	18P	PCM16XH1	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16F83	18SO	PCM16XH1	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16F84	18P	PCM16XH1	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16F84	18SO	PCM16XH1	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16F84A	18P	PCM16XH1	DVA16XP180					AC164010	AC164301	✓			DM163001
PIC16F84A	18SO	PCM16XH1	DVA16XP180	XLT18SO				AC164010	AC164302				
PIC16F84A	20SS	PCM16XH1	DVA16XP180	XLT20SS				AC164018	AC164307				
PIC16F87	18P	PCM16YG0	DVA16XP186					AC164010	AC164301	✓	✓		DM163014
PIC16F87	18SO	PCM16YG0	DVA16XP186	XLT18SO				AC164010	AC164302		✓		
PIC16F87	20SS	PCM16YG0	DVA16XP186	XLT20SS				AC164018	AC164307		✓		
PIC16F87	28ML	PCM16YG0	DVA16XP186	XLT28QFN3				AC164010 +AC164033	AC164301 +AC164031	AC164033	✓		

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16F88	18P	PCM16YG0	DVA16XP186					AC164010	AC164301	✓	✓		DM163014
PIC16F88	18SO	PCM16YG0	DVA16XP186	XLT18SO				AC164010	AC164302		✓		
PIC16F88	20SS	PCM16YG0	DVA16XP186	XLT20SS				AC164018	AC164307		✓		
PIC16F88	28ML	PCM16YG0	DVA16XP186	XLT28QFN3				AC164010 +AC164033	AC164301 +AC164031	AC164033	✓		
PIC16F505	14P, 14JW	PCM16XA0	DVA16XP140					AC124001	AC164301	✓	AC162059		DM163014, DV164101, DV164120*
PIC16F505	14SL	PCM16XA0	DVA16XP140	XLT14SO				AC164026	AC164302		AC162059 +XLT14SO		
PIC16F505	14ST	PCM16XA0	DVA16XP140						AC164306				
PIC16F506	14P							AC124001*	AC164301*		AC162070*		DV164101*, DV164120*
PIC16F506	14SO							AC164026*	AC164302*				
PIC16F506	14ST								AC164306*				
PIC16F506	16ML												
PIC16F627	18P, 18JW	PCM16XP0	DVA16XP183					AC164010	AC164301	✓			DM163001
PIC16F627	18SO	PCM16XP0	DVA16XP183	XLT18SO				AC164010	AC164302				
PIC16F627	20SS	PCM16XP0	DVA16XP183	XLT20SS				AC164018	AC164307				
PIC16F627A	18P	PCM16YF0	DVA16XP186					AC164010	AC164301	✓	AC162053		DM163014
PIC16F627A	18SO	PCM16YF0	DVA16XP186	XLT18SO				AC164010	AC164302		AC162053 +XLT18SO		
PIC16F627A	20SS	PCM16YF0	DVA16XP186	XLT20SS				AC164018	AC164307		AC162053 +XLT20SS		
PIC16F627A	28ML	PCM16YF0	DVA16XP186	XLT28QFN3				AC164010 +AC164033	AC164301 +AC164031	AC164033	AC162053 +XLT28QFN3		
PIC16F628	18P, 18JW	PCM16XP0	DVA16XP183					AC164010	AC164301	✓			DM163001
PIC16F628	18SO	PCM16XP0	DVA16XP183	XLT18SO				AC164010	AC164302				
PIC16F628	20SS	PCM16XP0	DVA16XP183	XLT20SS				AC164018	AC164307				
PIC16F628A	18P	PCM16YF0	DVA16XP186					AC164010	AC164301	✓	AC162053		DM163014
PIC16F628A	18SO	PCM16YF0	DVA16XP186	XLT18SO				AC164010	AC164302		AC162053 +XLT18SO		
PIC16F628A	20SS	PCM16YF0	DVA16XP186	XLT20SS				AC164018	AC164307		AC162053 +XLT20SS		
PIC16F628A	28ML	PCM16YF0	DVA16XP186	XLT28QFN3				AC164010 +AC164033	AC164301 +AC164031	AC164033	AC162053 +XLT28QFN3		

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16F630	14P	PCM16YD0	DVA16XP141					AC124001	AC164301	✓	AC162052		DM163014, DV164101, DV164120*
PIC16F630	14SL	PCM16YD0	DVA16XP141	XLT14SO				AC164026	AC164302		AC162052 +XLT14SO		
PIC16F630	14ST	PCM16YD0	DVA16XP141	XLT14SS				AC164026	AC164306		AC162052 +XLT14SS		
PIC16F636	14P	PCM16YM0	DVA1002	ACICE0207				AC124001	AC164301	✓	AC162057		DV164120*
PIC16F636	14SL	PCM16YM0	DVA1002	XLT14SO				AC164026	AC164302		AC162057 +XLT14SO		
PIC16F636	14ST	PCM16YM0	DVA1002	XLT14SS				AC164026	AC164306		AC162057 +XLT14SS		
PIC16F639	20P	PCM16YM0*	DVA1002	ACICE0203				AC164039*	AC164301	✓*	AC162066*		DV164101*, DM163014
PIC16F639	20SO	PCM16YM0*	DVA1002	XLT20SO1				AC164039*	AC164302		AC162066* +XLT20SO1		
PIC16F639	20SS	PCM16YM0*	DVA1002	XLT20SS1					AC164307		AC162066* +XLT20SS1		
PIC16F648A	18P	PCM16YF0	DVA16XP186					AC164010	AC164301	✓	AC162053		DM163014
PIC16F648A	18SO	PCM16YF0	DVA16XP186	XLT18SO				AC164010	AC164302		AC162053 +XLT18SO		
PIC16F648A	20SS	PCM16YF0	DVA16XP186	XLT20SS				AC164018	AC164307		AC162053 +XLT20SS		
PIC16F648A	28ML	PCM16YF0	DVA16XP186	XLT28QFN3				AC164010 +AC164033	AC164301 +AC164031	AC164033	AC162053 +XLT28QFN3		
PIC16F676	14P	PCM16YD0	DVA16XP141					AC124001	AC164301	✓	AC162052		DM163014, DV164101, DV164120*
PIC16F676	14SL	PCM16YD0	DVA16XP141	XLT14SO				AC164026	AC164302		AC162052 +XLT14SO		
PIC16F676	14ST	PCM16YD0	DVA16XP141	XLT14SS				AC164026	AC164306		AC162052 +XLT14SS		
PIC16F684	14P	PCM16YK0	DVA1002	ACICE0207				AC124001	AC164301	✓	AC162055		DV164101, DV164120*
PIC16F684	14SL	PCM16YK0	DVA1002	XLT14SO				AC164026	AC164302		AC162055 +XLT14SO		
PIC16F684	14ST	PCM16YK0	DVA1002	XLT14SS				AC164026	AC164306		AC162055 +XLT14SS		

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MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16F685	20P	PCM16YQ0*	DVA1004*	ACICE0203				AC164039*	AC164301*		AC162061*		DV164120*
PIC16F685	20SO	PCM16YQ0*	DVA1004*	XLT20SO1				AC164039*	AC164302*		AC162061* +XLT20SO1		
PIC16F685	20SS	PCM16YQ0*	DVA1004*	XLT20SS1					AC164307*		AC162061* +XLT20SS1		
PIC16F687	20P	PCM16YQ0*	DVA1004*	ACICE0203				AC164039*	AC164301*		AC162061*		DV164120*
PIC16F687	20SO	PCM16YQ0*	DVA1004*	XLT20SO1				AC164039*	AC164302*		AC162061* +XLT20SO1		
PIC16F687	20SS	PCM16YQ0*	DVA1004*	XLT20SS1					AC164307*		AC162061* +XLT20SS1		
PIC16F688	14P	PCM16YL0	DVA1002	ACICE0207				AC124001	AC164301	✓	AC162056		DV164101, DV164120*
PIC16F688	14SL	PCM16YL0	DVA1002	XLT14SO				AC164026	AC164302		AC162056 +XLT14SO		
PIC16F688	14ST	PCM16YL0	DVA1002	XLT14SS				AC164026	AC164306		AC162056 +XLT14SS		
PIC16F689	20P	PCM16YQ0*	DVA1004*	ACICE0203				AC164039*	AC164301*		AC162061*		DV164120*
PIC16F689	20SO	PCM16YQ0*	DVA1004*	XLT20SO1				AC164039*	AC164302*		AC162061* +XLT20SO1		
PIC16F689	20SS	PCM16YQ0*	DVA1004*	XLT20SS1					AC164307*		AC162061* +XLT20SS1		
PIC16F690	20P	PCM16YQ0*	DVA1004*	ACICE0203				AC164039*	AC164301*		AC162061*		DV164120*
PIC16F690	20SO	PCM16YQ0*	DVA1004*	XLT20SO1				AC164039*	AC164302*		AC162061* +XLT20SO1		
PIC16F690	20SS	PCM16YQ0*	DVA1004*	XLT20SS1					AC164307*		AC162061* +XLT20SS1		
PIC16F716	18P	PCM16YJ0	DVA16XP187					AC164010	AC164301	✓	AC162054		DM163001
PIC16F716	18SO	PCM16YJ0	DVA16XP187	XLT18SO				AC164010	AC164302		AC162054 +XLT18SO		
PIC16F716	20SS	PCM16YJ0	DVA16XP187	XLT20SS				AC164018	AC164307		AC162054 +XLT20SS		
PIC16F737	28SP	PCM16YH0	DVA18XP280					AC164012	AC164301	✓	✓		
PIC16F737	28SO	PCM16YH0	DVA18XP280	XLT28SO				AC164017	AC164302		✓		
PIC16F737	28SS	PCM16YH0	DVA18XP280	XLT28SS				AC164021	AC164307		✓		
PIC16F737	28ML	PCM16YH0	DVA18XP280	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031	✓		

NOTE: **See complete list of notes following this table.**

MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16F747	40P	PCM16YH0	DVA18XP400					AC164012	AC164301	✓	✓		
PIC16F747	44PT	PCM16YH0	DVA18PQ440	XLT44PT or XLT44PT3				AC164020	AC164305		✓		
PIC16F747	44ML	PCM16YH0	DVA18XP400	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034	✓		
PIC16F767	28P	PCM16YH0	DVA18XP280					AC164012	AC164301	✓	✓		
PIC16F767	28SO	PCM16YH0	DVA18XP280	XLT28SO				AC164017	AC164302		✓		
PIC16F767	28SS	PCM16YH0	DVA18XP280	XLT28SS				AC164021	AC164307		✓		
PIC16F767	28ML	PCM16YH0	DVA18XP280	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031	✓		
PIC16F777	40P	PCM16YH0	DVA18XP400					AC164012	AC164301	✓	✓		
PIC16F777	44PT	PCM16YH0	DVA18PQ440	XLT44PT or XLT44PT3				AC164020	AC164305		✓		
PIC16F777	44ML	PCM16YH0	DVA18XP400	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034	✓		
PIC16F785	20P	PCM16YN0*	DVA1004*	ACICE0203				AC164039*	AC164301	✓*	AC162060*		DV164120*
PIC16F785	20SO	PCM16YN0*	DVA1004*	XLT20SO1				AC164039*	AC164302		AC162060* +XLT20SO1		
PIC16F785	20SS	PCM16YN0*	DVA1004*	XLT20SS1					AC164307		AC162060* +XLT20SS1		
PIC16F818	18P	PCM16YE0	DVA16XP186					AC164010	AC164301	✓	✓		DM163014
PIC16F818	18SO	PCM16YE0	DVA16XP186	XLT18SO				AC164010	AC164302		✓		
PIC16F818	20SS	PCM16YE0	DVA16XP186	XLT20SS				AC164018	AC164307		✓		
PIC16F818	28ML	PCM16YE0	DVA16XP186	XLT28QFN3				AC164010 +AC164033	AC164301 +AC164031	AC164033	✓		
PIC16F819	18P	PCM16YE0	DVA16XP186					AC164010	AC164301	✓	✓		DM163014
PIC16F819	18SO	PCM16YE0	DVA16XP186	XLT18SO				AC164010	AC164302		✓		
PIC16F819	20SS	PCM16YE0	DVA16XP186	XLT20SS				AC164018	AC164307		✓		
PIC16F819	28ML	PCM16YE0	DVA16XP186	XLT28QFN3				AC164010 +AC164033	AC164301 +AC164031	AC164033	✓		
PIC16F870	28SP, 28JW	PCM16XR1	DVA16XP282					AC164012	AC164301	✓	✓		DM163022
PIC16F870	28SO	PCM16XR1	DVA16XP282	XLT28SO				AC164017	AC164302		✓		
PIC16F870	28SS	PCM16XR1	DVA16XP282	XLT28SS				AC164021	AC164307		✓		
PIC16F871	40P	PCM16XR1	DVA16XP401					AC164012	AC164301	✓	✓		DM163022
PIC16F871	44L	PCM16XR1	DVA16XL441					AC164013	AC164309		✓		
PIC16F871	44PT	PCM16XR1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓		

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16F872	28SP	PCM16XK1	DVA16XP282					AC164012	AC164301	✓	✓		DM163022
PIC16F872	28SO	PCM16XK1	DVA16XP282	XLT28SO				AC164017	AC164302		✓		
PIC16F872	28SS	PCM16XK1	DVA16XP282	XLT28SS				AC164021	AC164307		✓		
PIC16F873	28SP	PCM16XK1	DVA16XP282					AC164012	AC164301	✓	✓		DM163022
PIC16F873	28SO	PCM16XK1	DVA16XP282	XLT28SO				AC164017	AC164302		✓		
PIC16F873A	28SP	PCM16XV0	DVA16XP282					AC164012	AC164301	✓	✓		DM163022
PIC16F873A	28SO	PCM16XV0	DVA16XP282	XLT28SO				AC164017	AC164302		✓		
PIC16F873A	28SS	PCM16XV0	DVA16XP282	XLT28SS				AC164021	AC164307		✓		
PIC16F873A	28ML	PCM16XV0	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031	✓		
PIC16F874	40P	PCM16XK1	DVA16XP401					AC164012	AC164301	✓	✓		DM163022
PIC16F874	44L	PCM16XK1	DVA16XL441					AC164013	AC164309		✓		
PIC16F874	44PQ	PCM16XK1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311		✓		
PIC16F874	44PT	PCM16XK1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓		
PIC16F874A	40P	PCM16XV0	DVA16XP401					AC164012	AC164301	✓	✓		DM163022
PIC16F874A	44L	PCM16XV0	DVA16XL441					AC164013	AC164309		✓		
PIC16F874A	44PT	PCM16XV0	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓		
PIC16F874A	44ML	PCM16XV0	DVA16XP401	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034	✓		
PIC16F876	28SP	PCM16XK1	DVA16XP282					AC164012	AC164301	✓	✓		DM163022
PIC16F876	28SO	PCM16XK1	DVA16XP282	XLT28SO				AC164017	AC164302		✓		
PIC16F876A	28SP	PCM16XV0	DVA16XP282					AC164012	AC164301	✓	✓		DM163022
PIC16F876A	28SO	PCM16XV0	DVA16XP282	XLT28SO				AC164017	AC164302		✓		
PIC16F876A	28SS	PCM16XV0	DVA16XP282	XLT28SS				AC164021	AC164307		✓		
PIC16F876A	28ML	PCM16XV0	DVA16XP282	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031	✓		
PIC16F877	40P	PCM16XK1	DVA16XP401					AC164012	AC164301	✓	✓		DM163022
PIC16F877	44L	PCM16XK1	DVA16XL441					AC164013	AC164309		✓		
PIC16F877	44PQ	PCM16XK1	DVA16PQ441	XLT44PT or XLT44PT3				AC164014	AC164311		✓		
PIC16F877	44PT	PCM16XK1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓		

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC16F877A	40P	PCM16XV0	DVA16XP401					AC164012	AC164301	✓	✓		DM163022
PIC16F877A	44L	PCM16XV0	DVA16XL441					AC164013	AC164309		✓		
PIC16F877A	44PT	PCM16XV0	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓		
PIC16F877A	44ML	PCM16XV0	DVA16XP401	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034	✓		
PIC16F913	28P	PCM16YP0*	DVA18XP280					AC164012	AC164301	✓*	✓*		DV164120*
PIC16F913	28SO	PCM16YP0*	DVA18XP280	XLT28SO				AC164017	AC164302		✓*		
PIC16F913	28SS	PCM16YP0*	DVA18XP280	XLT28SS				AC164021	AC164307		✓*		
PIC16F913	28ML	PCM16YP0*	DVA18XP280	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031*	✓*		
PIC16F914	40P	PCM16YP0*	DVA18XP400					AC164012	AC164301	✓*	✓*		DV164120*
PIC16F914	44PT	PCM16YP0*	DVA18PQ440	XLT44PT or XLT44PT3				AC164020	AC164305		✓*		
PIC16F914	44ML	PCM16YP0*	DVA18XP400	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034*	✓*		
PIC16F916	28P	PCM16YP0*	DVA18XP280					AC164012	AC164301	✓*	✓		DV164120*
PIC16F916	28SO	PCM16YP0*	DVA18XP280	XLT28SO				AC164017	AC164302		✓		
PIC16F916	28SS	PCM16YP0*	DVA18XP280	XLT28SS				AC164021	AC164307		✓		
PIC16F916	28ML	PCM16YP0*	DVA18XP280	XLT28QFN4*				AC164012 +AC164031	AC164301 +AC164031	AC164031*	✓		
PIC16F917	40P	PCM16YP0*	DVA18XP400					AC164012	AC164301	✓*	✓		DV164120*
PIC16F917	44PT	PCM16YP0*	DVA18PQ440	XLT44PT or XLT44PT3				AC164020	AC164305		✓		
PIC16F917	44ML	PCM16YP0*	DVA18XP400	XLT44QFN2				AC164012 +AC164034	AC164322	AC164034*	✓		
PIC16HV540	18P, 18JW							AC164001	AC164301	✓			
PIC16HV540	18SO							AC164002	AC164302				
PIC16HV540	20SS							AC164015	AC164307				
PIC17C42A	40P, 40JW	PCM17XA0	DVA17XP401					AC174001	AC164301	✓			DM163001
PIC17C42A	44L	PCM17XA0	DVA17XL441					AC174002	AC164317				
PIC17C42A	44PQ	PCM17XA0	DVA17PQ441	XLT44PT or XLT44PT3				AC174004	AC164316				
PIC17C42A	44PT	PCM17XA0	DVA17PQ441	XLT44PT or XLT44PT3				AC174005	AC164315				

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC17C43	40P, 40JW	PCM17XA0	DVA17XP401					AC174001	AC164301	✓			DM163001
PIC17C43	44L	PCM17XA0	DVA17XL441					AC174002	AC164317				
PIC17C43	44PQ	PCM17XA0	DVA17PQ441	XLT44PT or XLT44PT3				AC174004	AC164316				
PIC17C43	44PT	PCM17XA0	DVA17PQ441	XLT44PT or XLT44PT3				AC174005	AC164315				
PIC17C44	40P, 40JW	PCM17XA0	DVA17XP401					AC174001	AC164301	✓			DM163001
PIC17C44	44L	PCM17XA0	DVA17XL441					AC174002	AC164317				
PIC17C44	44PQ	PCM17XA0	DVA17PQ441	XLT44PT or XLT44PT3				AC174004	AC164316				
PIC17C44	44PT	PCM17XA0	DVA17PQ441	XLT44PT or XLT44PT3				AC174005	AC164315				
PIC17C752	68L	PCM17XA0	DVA17XL681					AC174007	AC164308*	AC164024			DM173001
PIC17C752	64PT	PCM17XA0	DVA17PQ641	XLT64PT2 or XLT64PT5				AC174008	AC164319*				
PIC17C756/ 756A	68L, 68CL	PCM17XA0	DVA17XL681					AC174007	AC164308*	AC164024			DM173001
PIC17C756/ 756A	64PT	PCM17XA0	DVA17PQ641	XLT64PT2 or XLT64PT5				AC174008	AC164319*				
PIC17C762	84L	PCM17XA0	DVA17XL841					AC174012	AC164318	AC164027			DM173001
PIC17C762	80PT	PCM17XA0	DVA17PQ801	XLT80PT or XLT80PT3				AC174011	AC164320				
PIC17C766	84L, 84CL	PCM17XA0	DVA17XL841					AC174012	AC164318	AC164027			DM173001
PIC17C766	80PT	PCM17XA0	DVA17PQ801	XLT80PT or XLT80PT3				AC174011	AC164320				
PIC18C242	28SP, 28JW	PCM18XA0	DVA16XP282					AC164012	AC164301	✓		SW006011	DM163022
PIC18C242	28SO	PCM18XA0	DVA16XP282	XLT28SO				AC164017	AC164302			SW006011	
PIC18C252	28SP	PCM18XA0	DVA16XP282					AC164012	AC164301	✓		SW006011	DM163022
PIC18C252	28JW	PCM18XA0	DVA16XP282	XLT28XP				AC164012	AC164301			SW006011	DM163022
PIC18C252	28SO	PCM18XA0	DVA16XP282	XLT28SO				AC164017	AC164302			SW006011	
PIC18C442	40P, 40JW	PCM18XA0	DVA16XP401					AC164012	AC164301	✓		SW006011	DM163022
PIC18C442	44L	PCM18XA0	DVA16XL441					AC164013	AC164309			SW006011	
PIC18C442	44PT	PCM18XA0	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305			SW006011	

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18C452	40P, 40JW	PCM18XA0	DVA16XP401					AC164012	AC164301	✓		SW006011	DM163022
PIC18C452	44L	PCM18XA0	DVA16XL441					AC164013	AC164309			SW006011	
PIC18C452	44PT	PCM18XA0	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305			SW006011	
PIC18C601	68L				PMF18WB1	DAF18-1	XLT68L1	AC174007	AC164308		✓	SW006011	DM163006
PIC18C601	64PT				PMF18WB1	DAF18-1	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	
PIC18C658	68L	PCM18XB0	DVA18XL680					AC174007	AC164308	✓(7)		SW006011	DM163007
PIC18C658	64PT	PCM18XB0	DVA18PQ640	XLT64PT2 or XLT64PT5				AC174008	AC164303			SW006011	
PIC18C801	80PT				PMF18WB1	DAF18-1	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	
PIC18C801	84L				PMF18WB1	DAF18-1	XLT84L1	AC174012	AC164310		✓	SW006011	DM163006
PIC18C858	84L	PCM18XB0	DVA18XL840					AC174012	AC164310	✓(7)		SW006011	DM163007
PIC18C858	80PT	PCM18XB0	DVA18PQ800	XLT80PT or XLT80PT3				AC174011	AC164304			SW006011	
PIC18F242	28SP	PCM18XH2	DVA16XP282 or DVA18XP280		PMF18WC1	DAF18-2	ACICE0204	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F242	28SO	PCM18XH2	DVA16XP282 or DVA18XP280	XLT28SO	PMF18WC1	DAF18-2	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F248	28SP	PCM18XD1	DVA16XP282					AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F248	28SO	PCM18XD1	DVA16XP282	XLT28SO				AC164017	AC164302		✓	SW006011	
PIC18F252	28SP	PCM18XH2	DVA16XP282 or DVA18XP280		PMF18WC1	DAF18-2	ACICE0204	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F252	28SO	PCM18XH2	DVA16XP282 or DVA18XP280	XLT28SO	PMF18WC1	DAF18-2	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F258	28SP	PCM18XD1	DVA16XP282					AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F258	28SO	PCM18XD1	DVA16XP282	XLT28SO				AC164017	AC164302		✓	SW006011	
PIC18F442	40P	PCM18XH2	DVA16XP401 or DVA18XP400		PMF18WC1	DAF18-2	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F442	44L	PCM18XH2	DVA16XL441		PMF18WC1	DAF18-3	XLT44L2	AC164013	AC164309		✓	SW006011	
PIC18F442	44PT	PCM18XH2	DVA16PQ441 or DVA18PQ440	XLT44PT or XLT44PT3	PMF18WC1	DAF18-3	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	

NOTE: **See complete list of notes following this table.**

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MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F448	40P	PCM18XD1	DVA16XP401					AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F448	44L	PCM18XD1	DVA16XL441					AC164013	AC164309		✓	SW006011	
PIC18F448	44PT	PCM18XD1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓	SW006011	
PIC18F452	40P	PCM18XH2	DVA16XP401		PMF18WC1	DAF18-2	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F452	44L	PCM18XH2	DVA16XL441		PMF18WC1	DAF18-3	XLT44L2	AC164013	AC164309		✓	SW006011	
PIC18F452	44PT	PCM18XH2	DVA16PQ441	XLT44PT or XLT44PT3	PMF18WC1	DAF18-3	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F458	40P	PCM18XD1	DVA16XP401					AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F458	44L	PCM18XD1	DVA16XL441					AC164013	AC164309		✓	SW006011	
PIC18F458	44PT	PCM18XD1	DVA16PQ441	XLT44PT or XLT44PT3				AC164020	AC164305		✓	SW006011	
PIC18F1220	18P	PCM18XJ0	DVA18XP180		PMF18WD0	DAF18-2	ACICE0202	AC164010	AC164301	✓*	✓	SW006011	DM163014
PIC18F1220	18SO	PCM18XJ0	DVA18XP180	XLT18SO	PMF18WD0	DAF18-2	XLT18SO	AC164010	AC164302		✓	SW006011	
PIC18F1220	20SS	PCM18XJ0	DVA18XP180	XLT20SS	PMF18WD0	DAF18-2	XLT20SS	AC164018	AC164307		✓	SW006011	
PIC18F1220	28ML	PCM18XJ0	DVA18XP180	XLT28QFN3	PMF18WD0	DAF18-2	XLT28QFN3	AC164010 +AC164033	AC164301 +AC164031	AC164033*	✓	SW006011	
PIC18F1320	18P	PCM18XJ0	DVA18XP180		PMF18WD0	DAF18-2	ACICE0202	AC164010	AC164301	✓*	✓	SW006011	DM163014
PIC18F1320	18SO	PCM18XJ0	DVA18XP180	XLT18SO	PMF18WD0	DAF18-2	XLT18SO	AC164010	AC164302		✓	SW006011	
PIC18F1320	20SS	PCM18XJ0	DVA18XP180	XLT20SS	PMF18WD0	DAF18-2	XLT20SS	AC164018	AC164307		✓	SW006011	
PIC18F1320	28ML	PCM18XJ0	DVA18XP180	XLT28QFN3	PMF18WD0	DAF18-2	XLT28QFN3	AC164010 +AC164033	AC164301 +AC164031	AC164033*	✓	SW006011	
PIC18F2220	28SP	PCM18XH2	DVA18XP280		PMF18WC1	DAF18-2	ACICE0204	AC164012	AC164301	✓*	✓	SW006011	
PIC18F2220	28SO	PCM18XH2	DVA18XP280	XLT28SO	PMF18WC1	DAF18-2	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F2221	28SP	PCM18XN0*	DVA18XP280		PMF18WH0*	DAF18-4	ACICE0204	AC164012*	AC164301*		✓*	SW006011*	
PIC18F2221	28SO	PCM18XN0*	DVA18XP280	XLT28SO	PMF18WH0*	DAF18-4	XLT28SO	AC164017*	AC164302*		✓*	SW006011*	
PIC18F2221	28ML	PCM18XN0*	DVA18XP280	XLT28QFN4*	PMF18WH0*	DAF18-4	XLT28QFN4*		AC164322*		✓*	SW006011*	
PIC18F2320	28SP	PCM18XH2	DVA18XP280		PMF18WC1	DAF18-2	ACICE0204	AC164012	AC164301	✓*	✓	SW006011	
PIC18F2320	28SO	PCM18XH2	DVA18XP280	XLT28SO	PMF18WC1	DAF18-2	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F2321	28SP	PCM18XN0*	DVA18XP280		PMF18WH0*	DAF18-4	ACICE0204	AC164012*	AC164301*		✓*	SW006011*	
PIC18F2321	28SO	PCM18XN0*	DVA18XP280	XLT28SO	PMF18WH0*	DAF18-4	XLT28SO	AC164017*	AC164302*		✓*	SW006011*	
PIC18F2321	28ML	PCM18XN0*	DVA18XP280	XLT28QFN4*	PMF18WH0*	DAF18-4	XLT28QFN4*		AC164322*		✓*	SW006011*	

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F2331	28SP	PCM18XL0	DVA18XP280		PMF18WF0	DAF18-4	ACICE0204	AC164035	AC164301	✓*	✓	SW006011	DM183011, DM183021*
PIC18F2331	28SO	PCM18XL0	DVA18XP280	XLT28SO	PMF18WF0	DAF18-4	XLT28SO	AC164036	AC164302		✓	SW006011	
PIC18F2331	28MM	PCM18XL0	DVA18XP280	XLT28QFN4*	PMF18WF0	DAF18-4	XLT28QFN4*	AC164035 +AC164031	AC164322	AC164031*	✓	SW006011	
PIC18F2410	28SP	PCM18XN0	DVA18XP280		PCM18WH0	DAF18-4	ACICE0204	AC164035	AC164301	✓	✓	SW006011	
PIC18F2410	28SO	PCM18XN0	DVA18XP280	XLT28SO	PCM18WH0	DAF18-4	XLT28SO	AC164036	AC164302		✓	SW006011	
PIC18F2410	28ML	PCM18XN0	DVA18XP280	XLT28QFN4*	PCM18WH0	DAF18-4	XLT28QFN4*	AC164035 +AC164031	AC164322	AC164031	✓	SW006011	
PIC18F2420	28SP	PCM18XN0	DVA18XP280		PCM18WH0	DAF18-4	ACICE0204	AC164035	AC164301	✓	✓	SW006011	
PIC18F2420	28SO	PCM18XN0	DVA18XP280	XLT28SO	PCM18WH0	DAF18-4	XLT28SO	AC164036	AC164302		✓	SW006011	
PIC18F2420	28ML	PCM18XN0	DVA18XP280	XLT28QFN4*	PCM18WH0	DAF18-4	XLT28QFN4*	AC164035 +AC164031	AC164322	AC164031	✓	SW006011	
PIC18F2431	28SP	PCM18XL0	DVA18XP280		PMF18WF0*	DAF18-4	ACICE0204	AC164035	AC164301	✓*	✓	SW006011	DM183011, DM183021*
PIC18F2431	28SO	PCM18XL0	DVA18XP280	XLT28SO	PMF18WF0*	DAF18-4	XLT28SO	AC164036	AC164302		✓	SW006011	
PIC18F2431	28MM	PCM18XL0	DVA18XP280	XLT28QFN4*	PMF18WF0*	DAF18-4	XLT28QFN4*	AC164035 +AC164031	AC164322	AC164031*	✓	SW006011	
PIC18F2439	28P							AC164012			✓	SW006011	
PIC18F2439	28SO							AC164017			✓	SW006011	
PIC18F2455	28SP	PCM18XR0	DVA18XP280		PMF18WL0	DAF18-4	ACICE0204	AC164012	AC164301	✓	AC162063*	SW006011	DM163025
PIC18F2455	28SO	PCM18XR0	DVA18XP280	XLT28SO	PMF18WL0	DAF18-4	XLT28SO	AC164036	AC164302		AC162063* +XLT28SO	SW006011	DM163025
PIC18F2480	28SP	PCM18XP0	DVA18XP280		PMF18WJ0	DAF18-4	ACICE0204	AC164012	AC164301	✓*	✓*	SW006011	DM163011
PIC18F2480	28SO	PCM18XP0	DVA18XP280	XLT28SO	PMF18WJ0	DAF18-4	XLT28SO	AC164017	AC164302		✓*	SW006011	
PIC18F2480	28MM	PCM18XP0	DVA18XP280	XLT28QFN4*	PMF18WJ0	DAF18-4	XLT28QFN4*	AC164012 +AC164031	AC164322	AC164031*	✓*	SW006011	
PIC18F24J10	28SP								AC164301*		AC162067*	SW006011	
PIC18F24J10	28SO								AC164302*		AC162067* +XLT28SO	SW006011	
PIC18F24J10	28SS								AC164307*		AC162067* +XLT28SS	SW006011	
PIC18F2510	28SP	PCM18XN0	DVA18XP280		PMF18WH0	DAF18-4	ACICE0204	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F2510	28SO	PCM18XN0	DVA18XP280	XLT28SO	PMF18WH0	DAF18-4	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F2510	28ML	PCM18XN0	DVA18XP280	XLT28QFN4*	PMF18WH0	DAF18-4	XLT28QFN4*	AC164012 +AC164031	AC164322	AC164031	✓	SW006011	

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F2515	28SP	PCM18XN0	DVA18XP280		PMF18WH0	DAF18-4	ACICE0204	AC164012*	AC164301	✓	✓	SW006011	
PIC18F2515	28SO	PCM18XN0	DVA18CP280	XLT28SO	PMF18WH0	DAF18-4	XLT28SO	AC164017*	AC164302		✓	SW006011	
PIC18F2520	28SP	PCM18XN0	DVA18XP280		PMF18WH0	DAF18-4	ACICE0204	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F2520	28SO	PCM18XN0	DVA18XP280	XLT28SO	PMF18WH0	DAF18-4	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F2520	28ML	PCM18XN0	DVA18XP280	XLT28QFN4*	PMF18WH0	DAF18-4	XLT28QFN4*	AC164012 +AC164031	AC164322	AC164031	✓	SW006011	
PIC18F2525	28SP	PCM18XN0	DVA18XP280		PMF18WH0	DAF18-4	ACICE0204	AC164012*	AC164301	✓	✓	SW006011	
PIC18F2525	28SO	PCM18XN0	DVA18XP280	XLT28SO	PMF18WH0	DAF18-4	XLT28SO	AC164017*	AC164302		✓	SW006011	
PIC18F2539	28P							AC164012			✓	SW006011	
PIC18F2539	28SO							AC164017			✓	SW006011	
PIC18F2550	28SP	PCM18XR0	DVA18XP280		PMF18WL0	DAF18-4	ACICE0204	AC164012	AC164301	✓*	AC162063	SW006011	DM163025
PIC18F2550	28SO	PCM18XR0	DVA18XP280	XLT28SO	PMF18WL0	DAF18-4	XLT28SO	AC164036	AC164302		AC162063 +XLT28SO	SW006011	DM163025
PIC18F2580	28SP	PCM18XP0	DVA18XP280		PMF18WJ0	DAF18-4	ACICE0204	AC164012	AC164301	✓*	✓	SW006011	DM163011
PIC18F2580	28SO	PCM18XP0	DVA18XP280	XLT28SO	PMF18WJ0	DAF18-4	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F2580	28MM	PCM18XP0	DVA18XP280	XLT28QFN4*	PMF18WJ0	DAF18-4	XLT28QFN4*	AC164012 +AC164031	AC164322	AC164031*	✓	SW006011	
PIC18F2585	28SP	PCM18XP0	DVA18XP280		PMF18WJ0	DAF18-4	ACICE0204	AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F2585	28SO	PCM18XP0	DVA18XP280	XLT28SO	PMF18WJ0	DAF18-4	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F25J10	28SP								AC164301*		AC162067*	SW006011	
PIC18F25J10	28SO								AC164302*		AC162067* +XLT28SO	SW006011	
PIC18F25J10	28SS								AC164307*		AC162067* +XLT28SS	SW006011	
PIC18F2610	28SP	PCM18XN0	DVA18XP280		PMF18WH0	DAF18-4	ACICE0204	AC164012	AC164301	✓	✓	SW006011	
PIC18F2610	28SO	PCM18XN0	DVA18XP280	XLT28SO	PMF18WH0	DAF18-4	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F2620	28SP	PCM18XN0	DVA18XP280		PMF18WH0	DAF18-4	ACICE0204	AC164012	AC164301	✓	✓	SW006011	
PIC18F2620	28SO	PCM18XN0	DVA18XP280	XLT28SO	PMF18WH0	DAF18-4	XLT28SO	AC164017	AC164302		✓	SW006011	
PIC18F2680	28SP	PCM18XP0	DVA18XP280		PMF18WJ0	DAF18-4	ACICE0204	AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F2680	28SO	PCM18XP0	DVA18XP280	XLT28SO	PMF18WJ0	DAF18-4	XLT28SO	AC164017	AC164302		✓	SW006011	

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MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F4220	40P	PCM18XH2	DVA18XP400		PMF18WC1	DAF18-2	ACICE0206	AC164012	AC164301	✓	✓	SW006011	
PIC18F4220	44ML	PCM18XH2	DVA18XP400	XLT44QFN2	PMF18WC1	DAF18-2	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034*	✓	SW006011	
PIC18F4220	44PT	PCM18XH2	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WC1	DAF18-3	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4221	40P	PCM18XN0*	DVA18XP400		PMF18WH0*	DAF18-4	ACICE0206	AC164012*	AC164301*		✓*	SW006011*	
PIC18F4221	44PT	PCM18XN0*	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0*	DAF18-5	XLT44PT or XLT44PT3	AC164020*	AC164305*		✓*	SW006011*	
PIC18F4221	44ML	PCM18XN0*	DVA18XP400	XLT44QFN2	PMF18WH0*	DAF18-4	XLT44QFN2		AC164322*		✓*	SW006011*	
PIC18F4320	40P	PCM18XH2	DVA18XP400		PMF18WC1	DAF18-2	ACICE0206	AC164012	AC164301	✓	✓	SW006011	
PIC18F4320	44ML	PCM18XH2	DVA18XP400	XLT44QFN2	PMF18WC1	DAF18-2	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4320	44PT	PCM18XH2	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WC1	DAF18-3	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4321	40P	PCM18XN0*	DVA18XP400		PMF18WH0*	DAF18-4	ACICE0206	AC164012*	AC164301*		✓*	SW006011*	
PIC18F4321	44PT	PCM18XN0*	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0*	DAF18-5	XLT44PT or XLT44PT3	AC164020*	AC164305*		✓*	SW006011*	
PIC18F4321	44ML	PCM18XN0*	DVA18XP400	XLT44QFN2	PMF18WH0*	DAF18-4	XLT44QFN2		AC164322*		✓*	SW006011*	
PIC18F4331	40P	PCM18XL0	DVA18XP400		PMF18WF0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM183011
PIC18F4331	44PT	PCM18XL0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WF0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4331	44ML	PCM18XL0	DVA18XP400	XLT44QFN2	PMF18WF0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4410	40P	PCM18XN0	DVA18XP400		PCM18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	
PIC18F4410	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PCM18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4410	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PCM18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4420	40P	PCM18XN0	DVA18XP400		PCM18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	
PIC18F4420	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PCM18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4420	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PCM18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F4431	40P	PCM18XL0	DVA18XP400		PMF18WF0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM183011
PIC18F4431	44PT	PCM18XL0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WF0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4431	44ML	PCM18XL0	DVA18XP400	XLT44QFN2	PMF18WF0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4439	40P							AC164012			✓	SW006011	
PIC18F4439	44ML							AC164012 +AC164034			✓	SW006011	
PIC18F4439	44PT							AC164020			✓	SW006011	
PIC18F4455	40P	PCM18XR0	DVA18XP400		PMF18WL0	DAF18-4	ACICE0206	AC164012	AC164301	✓	AC162063	SW006011	DM163025
PIC18F4455	44ML	PCM18XR0	DVA18XP400	XLT44QFN2	PMF18WL0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	AC162063 +XLT44QFN2	SW006011	DM163025
PIC18F4455	44PT	PCM18XR0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WL0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		AC162063 +XLT44PT or XLT44PT3	SW006011	DM163025
PIC18F4480	40P	PCM18XP0	DVA18XP400		PMF18WJ0	DAF18-4	ACICE0206	AC164012	AC164301	✓*	✓*	SW006011	DM163011
PIC18F4480	44PT	PCM18XP0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WJ0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓*	SW006011	
PIC18F4480	44ML	PCM18XP0	DVA18XP400	XLT44QFN2	PMF18WJ0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034*	✓*	SW006011	
PIC18F44J10	40P								AC164301*		AC162067*	SW006011	
PIC18F44J10	44PT								AC164305*		AC162067* +XLT44PT or XLT44PT3	SW006011	
PIC18F44J10	44ML								AC164322*		AC162067* +XLT44QFN2	SW006011	
PIC18F4510	40P	PCM18XN0	DVA18XP400		PMF18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F4510	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4510	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PMF18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4515	40P	PCM18XN0	DVA18XP400		PMF18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	
PIC18F4515	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4515	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PMF18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	

NOTE: See complete list of notes following this table.

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MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F4520	40P	PCM18XN0	DVA18XP400		PMF18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM163022
PIC18F4520	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4520	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PMF18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4525	40P	PCM18XN0	DVA18XP400		PMF18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	
PIC18F4525	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4525	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PMF18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4539	40P							AC164012			✓	SW006011	
PIC18F4539	44ML							AC164012 +AC164034			✓	SW006011	
PIC18F4539	44PT							AC164020			✓	SW006011	
PIC18F4550	40P	PCM18XR0	DVA18XP400		PMF18WL0	DAF18-4	ACICE0206	AC164012	AC164301	✓*	AC162063	SW006011	DM163025
PIC18F4550	44ML	PCM18XR0	DVA18XP400	XLT44QFN2	PMF18WL0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034*	AC162063 +XLT44QFN2	SW006011	DM163025
PIC18F4550	44PT	PCM18XR0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WL0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		AC162063 +XLT44PT or XLT44PT3	SW006011	DM163025
PIC18F4580	40P	PCM18XP0	DVA18XP400		PMF18WJ0	DAF18-4	ACICE0206	AC164012	AC164301	✓*	✓	SW006011	DM163011
PIC18F4580	44PT	PCM18XP0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WJ0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4580	44ML	PCM18XP0	DVA18XP400	XLT44QFN2	PMF18WJ0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034*	✓	SW006011	
PIC18F4585	40P	PCM18XP0	DVA18XP400		PMF18WJ0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F4585	44PT	PCM18XP0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WJ0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4585	44ML	PCM18XP0	DVA18XP400	XLT44QFN2	PMF18WJ0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F45J10	40P								AC164301*		AC162067*	SW006011	
PIC18F45J10	44PT								AC164305*		AC162067* +XLT44PT or XLT44PT3	SW006011	
PIC18F45J10	44ML								AC164322*		AC162067* +XLT44QFN2	SW006011	

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F4610	40P	PCM18XN0	DVA18XP400		PMF18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	
PIC18F4610	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4610	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PMF18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4620	40P	PCM18XN0	DVA18XP400		PMF18WH0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM163026, DM163027-2
PIC18F4620	44PT	PCM18XN0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WH0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4620	44ML	PCM18XN0	DVA18XP400	XLT44QFN2	PMF18WH0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F4680	40P	PCM18XP0	DVA18XP400		PMF18WJ0	DAF18-4	ACICE0206	AC164012	AC164301	✓	✓	SW006011	DM163011
PIC18F4680	44PT	PCM18XP0	DVA18PQ440	XLT44PT or XLT44PT3	PMF18WJ0	DAF18-5	XLT44PT or XLT44PT3	AC164020	AC164305		✓	SW006011	
PIC18F4680	44ML	PCM18XP0	DVA18XP400	XLT44QFN2	PMF18WJ0	DAF18-4	XLT44QFN2	AC164012 +AC164034	AC164322	AC164034	✓	SW006011	
PIC18F6310	64PT	PCM18XQ0	DVA1003	XLT64PT2 or XLT64PT5	PMF18WK0	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	
PIC18F6390	64PT	PCM18XQ0	DVA1003	XLT64PT2 or XLT64PT5	PMF18WK0	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	DM163028
PIC18F6410	64PT	PCM18XQ0	DVA1003	XLT64PT2 or XLT64PT5	PMF18WK0	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	
PIC18F6490	64PT	PCM18XQ0	DVA1003	XLT64PT2 or XLT64PT5	PMF18WK0	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	DM163028
PIC18F6520	64PT	PCM18XE1	DVA18PQ640	XLT64PT2 or XLT64PT5	PMF18WA2	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	DM183020
PIC18F6525	64PT	PCM18XK0	DVA18PQ802	XLT64PT2 or XLT64PT5	PMF18WE0	DAF18-1	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	
PIC18F6527	64PT	PCM18XS0*	DVA1003	XLT64PT2 or XLT64PT5	PMF18WS0*	DAF18-6	XLT64PT2 or XLT64PT5	AC174008*	AC164303*		✓*	SW006011	
PIC18F6585	68L	PCM18XK0	DVA18PQ802	XLT68L1	PMF18WE0	DAF18-1	XLT68L1	AC174007	AC164308		✓	SW006011	
PIC18F6585	64PT	PCM18XK0	DVA18PQ802	XLT64PT2 or XLT64PT5	PMF18WE0	DAF18-1	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	DM163015
PIC18F6620	64PT	PCM18XE1	DVA18PQ640	XLT64PT2 or XLT64PT5	PMF18WA2	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303	✓ (7)*	✓	SW006011	DM183020
PIC18F6621	64PT	PCM18XK0	DVA18PQ802	XLT64PT2 or XLT64PT5	PMF18WE0	DAF18-1	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F6622	64PT	PCM18XS0*	DVA1003	XLT64PT2 or XLT64PT5	PMF18WS0*	DAF18-6	XLT64PT2 or XLT64PT5	AC174008*	AC164303*		✓*	SW006011	
PIC18F6627	64PT	PCM18XS0	DVA1003	XLT64PT2 or XLT64PT5	PMF18WS0	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	DM183022
PIC18F6680	68L	PCM18XK0	DVA18PQ802	XLT68L1	PMF18WE0	DAF18-1	XLT68L1	AC174007	AC164308		✓	SW006011	
PIC18F6680	64PT	PCM18XK0	DVA18PQ802	XLT64PT2 or XLT64PT5	PMF18WE0	DAF18-1	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	DM163015
PIC18F6720	64PT	PCM18XE1	DVA18PQ640	XLT64PT2 or XLT64PT5	PMF18WA2	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303	✓(7)*	✓	SW006011	DM183020
PIC18F6722	64PT	PCM18XS0	DVA1003	XLT64PT2 or XLT64PT5	PMF18WS0	DAF18-6	XLT64PT2 or XLT64PT5	AC174008	AC164303		✓	SW006011	DM183022
PIC18F67J10	64PT								AC164319*		AC162062*	SW006011	
PIC18F8310	80PT	PCM18XQ0	DVA1003	XLT80PT or XLT80PT3	PMF18WK0	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	
PIC18F8390	80PT	PCM18XQ0	DVA1003	XLT80PT or XLT80PT3	PMF18WK0	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	DM163028
PIC18F8410	80PT	PCM18XQ0	DVA1003	XLT80PT or XLT80PT3	PMF18WK0	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	
PIC18F8490	80PT	PCM18XQ0	DVA1003	XLT80PT or XLT80PT3	PMF18WK0	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	DM163028
PIC18F8520	80PT	PCM18XE1	DVA18PQ800	XLT80PT or XLT80PT3	PMF18WA2	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	DM183020
PIC18F8525	80PT	PCM18XK0	DVA18PQ802	XLT80PT or XLT80PT3	PMF18WE0	DAF18-1	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	
PIC18F8527	80PT	PCM18XS0*	DVA1003	XLT80PT or XLT80PT3	PMF18WS0*	DAF18-6	XLT80PT or XLT80PT3	AC174011*	AC164304*		✓*	SW006011	
PIC18F8585	80PT	PCM18XK0	DVA18PQ802	XLT80PT or XLT80PT3	PMF18WE0	DAF18-1	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	DM163015
PIC18F8620	80PT	PCM18XE1	DVA18PQ800	XLT80PT or XLT80PT3	PMF18WA2	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304	✓(7)	✓	SW006011	DM183020
PIC18F8621	80PT	PCM18XK0	DVA18PQ802	XLT80PT or XLT80PT3	PMF18WE0	DAF18-1	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	
PIC18F8622	80PT	PCM18XS0*	DVA1003	XLT80PT or XLT80PT3	PMF18WS0*	DAF18-6	XLT80PT or XLT80PT3	AC174011*	AC164304*		✓*	SW006011	
PIC18F8627	80PT	PCM18XS0	DVA1003	XLT80PT or XLT80PT3	PMF18WS0	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	DM183022

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
PICmicro® Microcontroller Development Tools (continued)													
PIC18F8680	80PT	PCM18XK0	DVA18PQ802	XLT80PT or XLT80PT3	PMF18WE0	DAF18-1	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	DM163015
PIC18F8720	80PT	PCM18XE1	DVA18PQ800	XLT80PT or XLT80PT3	PMF18WA2	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304	✓ (7)	✓	SW006011	DM183020
PIC18F8722	80PT	PCM18XS0	DVA1003	XLT80PT or XLT80PT3	PMF18WS0	DAF18-6	XLT80PT or XLT80PT3	AC174011	AC164304		✓	SW006011	DM183022
PIC18F87J10	80PT								TBD		AC162062*	SW006011	
rfPIC® Microcontroller Development Tools													
rfPIC12C509AF	20JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓			
rfPIC12C509AF	20SS	PCM16XA0	DVA12XP080	XLT20SS				AC124002	AC164307	✓			
rfPIC12C509AG	18JW	PCM16XA0	DVA12XP080					AC124001	AC164301	✓ (7)			
rfPIC12C509AG	18SO	PCM16XA0	DVA12XP080	XLT18SO				AC124002	AC164302	✓ (7)			
rfPIC12F675F	20SS	PCM12XB0	DVA12XP081	XLT20SS				AC124002	AC164307	✓ (7)*			DV164102 AC164101 AC164103
rfPIC12F675H	20SS	PCM12XB0	DVA12XP081	XLT20SS				AC124002	AC164307	✓ (7)*			
rfPIC12F675K	20SS	PCM12XB0	DVA12XP081	XLT20SS				AC124002	AC164307	✓ (7)*			DV164102 AC164102 AC164104
rfRXD0420	32LQ												DV164102
rfRXD0920	32LQ												
dsPIC® DSC Development Tools													
dsPIC30F2010	28SO				PMF30XA1	DAF30-4	XLT28SO	AC30F004	AC164302		✓	SW006012	DM300017
dsPIC30F2010	28SP				PMF30XA1	DAF30-4	ACICE0204	AC30F004	AC164301		✓	SW006012	DM300017 DM300018*
dsPIC30F2010	28MM				PMF30XA1	DAF30-4	XLT28QFN4*		AC164322		✓	SW006012	
dsPIC30F2011	18SO				PMF30XA1*	DAF30-4	XLT18SO	AC30F005*	AC164302*		✓*	SW006012	
dsPIC30F2011	18P				PMF30XA1*	DAF30-4	ACICE0202	AC30F005*	AC164301*		✓*	SW006012	DM300018*
dsPIC30F2011	28ML				PMF30XA1*	DAF30-4			AC164322*		✓*	SW006012	
dsPIC30F2012	28SO				PMF30XA1*	DAF30-4	XLT28SO	AC30F004*	AC164302*		✓*	SW006012	DM300017
dsPIC30F2012	28SP				PMF30XA1*	DAF30-4	ACICE0204	AC30F004*	AC164301*		✓*	SW006012	DM300017, DM300018*
dsPIC30F2012	28ML				PMF30XA1*	DAF30-4	XLT28QFN4*		AC164322*		✓*	SW006012	

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		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
dsPIC® DSC Development Tools (continued)													
dsPIC30F3010	28SO				PMF30XA1	DAF30-4	XLT28SO	AC30F004	AC164302		✓	SW006012	DM300017
dsPIC30F3010	28SP				PMF30XA1	DAF30-4	ACICE0204	AC30F004	AC164301		✓	SW006012	DM300017, DM300018*
dsPIC30F3010	44ML				PMF30XA1	DAF30-4	XLT44QFN4*		AC164322		✓	SW006012	
dsPIC30F3011	40P				PMF30XA1	DAF30-4	ACICE0206	AC30F003	AC164301		✓	SW006012	DM30018*
dsPIC30F3011	44PT				PMF30XA1	DAF30-3	XLT44PT or XLT44PT3	AC30F006	AC164305		✓	SW006012	
dsPIC30F3011	44ML				PMF30XA1	DAF30-4	XLT44QFN2		AC164322		✓	SW006012	
dsPIC30F3012	18SO				PMF30XA1	DAF30-4	XLT18SO	AC30F005*	AC164302		✓	SW006012	
dsPIC30F3012	18P				PMF30XA1	DAF30-4	ACICE0202	AC30F005*	AC164301		✓	SW006012	DM300018*
dsPIC30F3012	44ML				PMF30XA1	DAF30-4	XLT44QFN5*		AC164322		✓	SW006012	
dsPIC30F3013	28SO				PMF30XA1	DAF30-4	XLT28SO	AC30F004	AC164302		✓	SW006012	DM300017
dsPIC30F3013	28SP				PMF30XA1	DAF30-4	ACICE0204	AC30F004	AC164301		✓	SW006012	DM300017, DM300018*
dsPIC30F3013	44ML				PMF30XA1	DAF30-4	XLT44QFN3*		AC164322		✓	SW006012	
dsPIC30F3014	40P				PMF30XA1	DAF30-4	ACICE0206	AC30F003	AC164301		✓	SW006012	DM300018*
dsPIC30F3014	44PT				PMF30XA1	DAF30-3	XLT44PT or XLT44PT3	AC30F006	AC164305		✓	SW006012	
dsPIC30F3014	44ML				PMF30XA1	DAF30-4	XLT44QFN2		AC164322		✓	SW006012	
dsPIC30F4011	40P				PMF30XA1	DAF30-4	ACICE0206	AC30F003	AC164301		✓	SW006012	DM300018*
dsPIC30F4011	44PT				PMF30XA1	DAF30-3	XLT44PT or XLT44PT3	AC30F006	AC164305		✓	SW006012	
dsPIC30F4011	44ML				PMF30XA1	DAF30-4	XLT44QFN2		AC164322		✓	SW006012	
dsPIC30F4012	28SO				PMF30XA1	DAF30-4	XLT28SO	AC30F004	AC164302		✓	SW006012	DM300017
dsPIC30F4012	28SP				PMF30XA1	DAF30-4	ACICE0204	AC30F004	AC164301		✓	SW006012	DM300017, DM300018*
dsPIC30F4012	44ML				PMF30XA1	DAF30-4	XLT44QFN4*		AC164322		✓	SW006012	
dsPIC30F4013	40P				PMF30XA1	DAF30-4	ACICE0206	AC30F003	AC164301		✓	SW006012	DM300018*
dsPIC30F4013	44PT				PMF30XA1	DAF30-3	XLT44PT or XLT44PT3	AC30F006	AC164305		✓	SW006012	
dsPIC30F4013	44ML				PMF30XA1	DAF30-4	XLT44QFN2		AC164322		✓	SW006012	

NOTE: **See complete list of notes following this table.**

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MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

		MPLAB® ICE 2000 System (1)			MPLAB® ICE 4000 System (2)								
Part Number	**Lead Count/ Pkg Type**	**Processor Module**	**Device Adapters**	**Transition Socket**	**Processor Module**	**Device Adapters**	**Transition Socket**	**PRO MATE® II Socket Module (3,4)**	**MPLAB® PM3 Socket Module (8)**	**PICSTART® Plus (5)**	**MPLAB® ICD 2 (6)**	**MPLAB® CXX Compiler**	**Demonstration Boards or Evaluation Kits**
dsPIC® DSC Development Tools (continued)													
dsPIC30F5011	64PT				PMF30XA1	DAF30-2	XLT64PT2 or XLT64PT5	AC30F008	AC164319		✓	SW006012	DM300016
dsPIC30F5013	80PT				PMF30XA1	DAF30-2	XLT80PT or XLT80PT3	AC30F007	AC164320		✓	SW006012	DM300014, DM300004-1, DM300004-2
dsPIC30F5015	64PT				PMF30XA1*	DAF30-2	XLT64PT2 or XLT64PT5	AC30F008*	AC164319*		✓*	SW006012*	
dsPIC30F5016	80PT								AC164320*		✓*	SW006012*	
dsPIC30F6010	80PF				PMF30XA1	DAF30-2	XLT80PT2	AC30F001	AC164314		✓	SW006012	DM300020
dsPIC30F6010A	80PF				PMF30XA1*	DAF30-2	XLT80PT2		AC164314*		✓*	SW006012*	DM300020
dsPIC30F6010A	80PT				PMF30XA1*	DAF30-2	XLT80PT or XLT80PT3	AC30F007*	AC164320*		✓*	SW006012*	DM300020
dsPIC30F6011	64PF				PMF30XA1	DAF30-2	XLT64PT3 or XLT64PT4	AC30F002	AC164313		✓	SW006012	DM300016
dsPIC30F6011A	64PF				PMF30XA1*	DAF30-2	XLT64PT3 or XLT64PT4	AC30F008*	AC164313*		✓*	SW006012	
dsPIC30F6011A	64PT				PMF30XA1*	DAF30-2	XLT64PT2 or XLT64PT5	AC30F008*	AC164319*		✓*	SW006012	DM300016
dsPIC30F6012	64PF				PMF30XA1	DAF30-2	XLT64PT3 or XLT64PT4	AC30F002	AC164313		✓	SW006012	DM300016
dsPIC30F6012A	64PF				PMF30XA1*	DAF30-2	XLT64PT3 or XLT64PT4	AC30F002*	AC164313*		✓*	SW006012	
dsPIC30F6012A	64PT				PMF30XA1*	DAF30-2	XLT64PT2 or XLT64PT5	AC30F008*	AC164319*		✓*	SW006012	DM300016
dsPIC30F6013	80PF				PMF30XA1	DAF30-2	XLT80PT2	AC30F001	AC164314		✓	SW006012	DM300014
dsPIC30F6013A	80PF				PMF30XA1*	DAF30-2	XLT80PT2	AC30F001*	AC164314*		✓*	SW006012	
dsPIC30F6013A	80PT				PMF30XA1*	DAF30-2	XLT80PT or XLT80PT3	AC30F007*	AC164320*		✓*	SW006012	DM300014
dsPIC30F6014	80PF				PMF30XA1	DAF30-2	XLT80PT2	AC30F001	AC164314		✓	SW006012	DM300014, DM300004-1, DM300004-2
dsPIC30F6014A	80PF				PMF30XA1*	DAF30-2	XLT80PT2	AC30F001*	AC164314*		✓*	SW006012	
dsPIC30F6014A	80PT				PMF30XA1*	DAF30-2	XLT80PT or XLT80PT3	AC30F007*	AC164320*		✓*	SW006012	DM300014, DM300004-1, DM300004-2
dsPIC30F6015	64PT								AC164319*		✓*	SW006012*	

NOTE: **See complete list of notes following this table.**

MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards - NOTES

NOTES 1: MPLAB® ICE 2000 pod available separately. (ICE2000)
2: MPLAB® ICE 4000 pod available separately. (ICE4000)
3: PRO MATE® II Programmer unit (no longer available). (DV007003)
4: Optional In-Circuit Serial Programming™ (ICSP™) Socket for PRO MATE® II available separately. (AC004004)
5: PICSTART® Plus (DV003001)
6: MPLAB® ICD 2 In-Circuit Debugger. Configurations are:
(DV164005) ICD 2 module, USB cable and ICD cable.
(DV164006) ICD 2 module, USB cable, ICD cable, serial cable, PICDEM™ 2 Plus and power supply.
(DV164007) ICD 2 module, USB cable, ICD cable, serial cable and power supply;
(DV164030) ICD 2 module, USB cable, ICD cable, serial cable and dsPICDEM™ Starter Demo Board;
(AC162049) ICD 2 Universal Programming Module;
(AC162051) ICD or ICD 2 28/40 PDIP Header Interface Board.
7: Custom adapter required; not available from Microchip. See “Readme” for PICSTART® Plus.
8: MPLAB® PM3 Programmer Unit available separately. (DV007004). ICSP™ function is built-in with MPLAB® PM3 Programmer.
(AC164350) MPLAB® PM3 Adapter for PRO MATE® II Socket modules.

* New product or future support. Contact Microchip web site at www.microchip.com for availability.

✓ Supported with basic configuration. If a part number is listed in the column, that part is required and available separately.

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Demonstration Boards and Evaluation Kits	
Part Number	**Description**
PICmicro® Demonstration Kits	
DM163001	PICDEM™ 1 Demo Board for PIC16C5X, 55X, 62X, CE62X, 71, 710, 711, 715, 770, 771, 83, 84, and PIC17C42, 43, 44
DM163003	PICDEM™ 3 Demo Board for PIC16C923, 924 LCD
DM163006	PICDEM™ 18R Demo Board for PIC18C601/801
DM163014	PICDEM™ 4 Demo Board for PIC12F629, 675, PIC16F630, 676, 684, 627A, 628A, 648A, 818, 819, 87, 88, PIC18F1220, 1320
DM163022	PICDEM™ 2 Plus Demo Board for PIC16C62, 63, 64, 65, 66, 67, 72, 73, 74, 76, 77, 87X, 773, 774 and PIC18CXX2, 642, 662, and PIC18FXXX
DM163026	Low-Power Solutions Demo Board
DM163028	PICDEM™ LCD Demo Board (uses 64L/80L PIC18FXX90 and 28L/40L PIC16F91X family)
DV164101	PICkit™ 1 8/14P Flash Development Kit for PIC12F629, 675 and PIC16F630, 676
DV164102	rfPIC® Development Kit 1
DV164120*	PICkit 2 Starter Kit
AC164101	rfPIC® Transmitter Module (433.92 MHz)
AC164102	rfPIC® Transmitter Module (315 MHz)
AC164103	rfRXD Receiver Module (433.92 MHz)
AC164104	rfRXD Receiver Module (315 MHz)
AC164120	Signal Analysis PICtail™ Daughter Board
AC163020	PIC10F2XX Programmer Adapter
AC163021	6L SOT-23 to 8P DIP Adapter Kit
DM173001	PICDEM™ 17 Demo Board for PIC17CXX
DM183011	PICDEM™ MC Development Board (uses 28L/40L PIC18FXX31 family)
DM183021*	PICDEM™ MC LV Development Board (uses 28L PIC18F2331, 2431, dsPIC30F family)
DM183022	PICDEM™ HPC Explorer Board
Connectivity Demonstration Kits	
DM163004-LT	PICDEM.net™ TCP/IP Demo Board (with no text book)
DM163005	PICDEM™ LIN Demo Board for PIC16C432/433 LIN bus
DM163007	PICDEM™ CAN-LIN 1 Demo Board (uses 68L/84L PIC18CXX8 family)
DM163010	PICDEM™ USB Demo Board for PIC16C7X5
DM163011	PICDEM™ CAN-LIN 2 Demo Board (uses 28L/40L PIC18FXX8 and PIC18FXX8X family)
DM163015	PICDEM™ CAN-LIN 3 Demo Board (uses 64L/80L PIC18FXX8X family)
DM163025	PICDEM™ FS USB Demo Board
DM163027-2	PICDEM™ Z 2.4 GHz Demonstration Kit
AC163027-1	PICDEM™ Z Motherboard
AC163027-2	PICDEM™ Z 2.4 GHz RF Card

*** Contact Microchip web site at www.microchip.com for availability.**

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Demonstration Boards and Evaluation Kits

Part Number	Description
Mixed Signal Control Demonstration Kits	
AC163001	PICDEM™ MSC 1 Voltage Boost Demo Board; requires DM163012
AC163002	PICDEM™ MSC 1 High Power IR Demo Board; requires DM163012
AC163003	PICDEM™ MSC 1 Delta Sigma Demo Board; requires DM163012
AC163004	PICDEM™ MSC 1 Flow Rate Sensor Demo Board; requires DM163012
DM163012	PICDEM™ MSC 1 Mixed Signal Controller Demo Board for PIC16C781/782
dsPIC® Digital Signal Controller Demonstration Kits	
DM300004-1	dsPICDEM.net™ 1 FCC/JATE PSTN Support, Ethernet NIC Demo Board
DM300004-2	dsPICDEM.net™ 2 CTR-21 PSTN Support, Ethernet NIC Demo Board
DM300014	dsPICDEM™ 1.1 General Purpose Demo Board
DM300016	dsPICDEM™ 64-Pin Starter Demo Board
DM300017	dsPICDEM™ 28-Pin Starter Demo Board
DM300018*	dsPICDEM™ 2 Demo Board
DM300020	dsPICDEM™ MC1 Motor Control Development Board
DM300021	dsPICDEM™ MC1H 3-Phase High Voltage Power Module
DM300022	dsPICDEM™ MC1L 3-Phase Low Voltage Power Module
dsPIC® 16-bit DSC Software Tools	
SW300001	Digital Filter Design
SW300002	dsPIC® V.22/V.22bis Soft Modem Library (free download: www.microchip.com)
SW300003-EVAL	dsPIC® V.32 Soft Modem Library (Eval Copy)
SW300003, 04, 05	dsPIC® V.32 Soft Modem Library (5K, 25K, 100K licenses, respectively)
SW300006*	dsPIC® V.22/V.22bis Soft Modem Library by Vocal Technology
SW300010-EVAL	dsPIC® Speech Recognition (Eval Copy)
SW300010, 11, 12	dsPIC® Speech Recognition (5K, 25K, 100K licenses, respectively)
SW300020	dsPIC30 Math Library: Double-Precision Floating Point Routines
SW300021	dsPIC30 Peripheral Library: Peripheral Initialization and Control Routines
SW300022	dsPIC30 DSP Library: Data Signal Processing Library Suite (FFT, Filters)
SW300023	dsPICworks™ Visual Algorithm Analyzer: Data Analyzer and Converter Tool
SW300030	dsPIC® CMX Scheduler: Multi-tasking, Preemptive Scheduler for dsPIC30F

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Demonstration Boards and Evaluation Kits

Part Number	Description
dsPIC® 16-bit DSC Software Tools (continued)	
SW300031	CMX-RTX for dsPIC® DSC: Fully Preemptive RTOS
SW300032	CMX-Tiny+ for dsPIC® DSC: Preemptive RTOS
SW300040-EVAL, 5K, 25K, 100K	dsPIC® Noise Suppression Library (Eval, 5K, 25K, 100K licenses, respectively)
SW300050-EVAL, 5K, 25K, 100K	dsPIC® Symmetric Embedded Encryption Library (Eval, 5K, 25K, 100K licenses, respectively)
SW300055-EVAL, 5K, 25K, 100K	dsPIC® Asymmetric Embedded Encryption Library (Eval, 5K, 25K, 100K licenses, respectively)
SW300060-EVAL, 5K, 25K, 100K	dsPIC® Acoustic Echo Cancellation Library (Eval, 5K, 25K, 100K licenses, respectively)
SW300070-EVAL, 5, 25, 100K*	dsPIC® Speech Coding/Decoding Library (Eval, 5K, 25K, 100K licenses, respectively)

*** Contact Microchip web site at www.microchip.com for availability.**

PowerSmart® Systems

Model Name/ Part Number	Description
PS042	PS401 PowerCal™ Board
PS051	PowerInfo™ 2 Configuration Interface Board for use with PS70X and PS50X
PS052	PowerCal™ 2 Configuration Interface Board for use with PS70X and PS50X
PS070*	PowerMate™ Development Software for PS700 Applications
PS2070*	PS200 Configurable Battery Charger Evaluation Board
PS2070EV*	PS200 Configurable Battery Charger Evaluation Board with PS051 PowerInfo™ 2
PS5100	PS501 6-12 cell NiMH Module
PS5100EV	PS501 6-12 cell NiMH Module with PS051
PS5162	2-cell Li-Ion/Poly Fuel Gauge with safety
PS5162EV	2-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2
PS5163	3-cell Li-Ion/Poly Fuel Gauge with safety
PS5163EV	3-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2
PS5164	4-cell Li-Ion/Poly Fuel Gauge with safety
PS5164EV	4-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2
PS7051	Single Cell Li-Ion Battery Monitor with safety
PS7052	Two Cell Li-Ion Battery Monitor with safety
PS7070	PS700 Battery Monitor Evaluation Board
PS7070EV	PS700 Battery Monitor Evaluation Board with PS051 PowerInfo™ 2
PS8070*	PS8X0 Li-Ion/Poly Single Cell Fuel Gauge
PS8070EV*	PS8X0 Li-Ion/Poly Single Cell Fuel Gauge with PS051 PowerInfo™ 2

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Memory Evaluation/Developer's Kits

SEEVAL® 32 Serial EEPROM Developer's Kit	DV243002	All serial EEPROMS, 24XX, 93XX, 25XX series

KEELOQ® Evaluation Kits

	HCS101	HCS200/201	HCS300/301/320	HCS360/361	HCS362	HCS365/370	HCS410/412	HCS473	HCS500/515	HCS512
KEELOQ® Transponder Evaluation Kit*	–	–	–	–	–	–	DM303005	–	–	
KEELOQ® Evaluation Kit II*	DM303006	DM303006	DM303006	DM303006	DM303006	DM303006	DM303006	DM303006	DM303006	
PRO MATE® II Universal Programmer for SOIC*	AC004002	AC004002	AC004002	AC004002	AC004002	AC004003	AC004002	AC004003	–	AC164002
PRO MATE® II Universal Programmer for DIP*	AC004001	AC004001	AC004001	AC004001	AC004001	AC004007	AC004001	AC004007	–	AC164001
PRO MATE® II Universal Programmer for ICSP™*	AC004004	AC004004	AC004004	AC004004	AC004004	AC004004	AC004004	AC004004	AC004004	

*** Support is limited to PRO MATE® II using MPLAB® IDE release 5.70.**

RFID Evaluation/Developer's Kits

	MCRF355	MCRF450/452
13.56 MHz Anti-Collision microID® Developer's Kit	DV103003, DV103006	DV103006
microID® Programmer Kit only for MCRF355	PG103003	–

Analog/Interface Demo/Eval/Developer's Kits

Interface	**Part Number**	**Devices Supported**
MCP2140 IrDA® Wireless Temp. Demo	MCP2140DM-TMPSNS	MCP2140
MCP215X Data Logger Demo Board	MCP215XDM	MCP2150/55
MCP250XX CAN I/O Expanders Developer's Kit	DV250501	MCP25020, MCP25025, MCP25050, MCP25055
MCP2510/2515 CAN Developer's Kit	DV251001	MCP2510, MCP2515
MCP2120/2150 Developer's Kit	DM163008	MCP2120, MCP2150
MCP23X08 Evaluation Board	MCP23X08EV	MCP23008, MCP23S08
MCP23X17 Evaluation Board	MCP23X17EV	MCP23017, MCP23S17
Linear	**Part Number**	**Devices Supported**
MCP6S22 PGA PICtail™ Demo Board	MCP6S22DM-PICTL	MCP6S22/92
MCP6SX2 PGA Photodiode PICtail™ Demo Board	MCP6SX2DM-PCTLPD	MCP6S22/92
MCP6SX2 PGA Thermistor PICtail™ Demo Board	MCP6SX2DM-PCTLTH	MCP6S22/92
MCP6S2X PGA Evaluation Board	MCP6S2XEV	MCP6S2X
Mixed Signal	**Part Number**	**Devices Supported**
Mixed Signal PICtail™ Demo Board	MXSIGDM	TX132X, MCP330X, MCP320X, MCP494X, MCP3221, MCP3201, MCP1525, MCP1541
Evaluation Kit for Sigma-Delta A/D Converter Family	TX3400EV	TX3400X
Single-Dual A/D	DV3201A	MCP3001, MCP3002, MCP3201, MCP3202
MCP3201/02 Evaluation System Daughter Board	DV3201A	MCP3201/02

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Analog/Interface Demo/Eval/Developer's Kits

Mixed Signal (continued)	Part Number	Devices Supported
MXDEV Analog Evaluation System	DVMCPA	MCP3001/02, MCP3004,/08, MCP3201/02, MCP3204/08
MCP3204/08 Evluation System Daughter Board	DV3204A	MCP3204, MCP3208
MCP42XXX Digital Pot Evaluation Kit	DV42XXX	MCP42010, MCP42050, MCP42100
MCP402X Evaluation Board	MCP402XEV	MCP4021, MCP4022, MCP4023, MCP4024
Power Management	**Part Number**	**Devices Supported**
MCP1612 Synchronous Buck Regulator Evaluation Board	MCP1612EV	MCP1612
MCP1630 +12V Dual Output Buck Converter Ref. Design	MCP1630RD-DDBK1	MCP1630
MCP1630 Li-Ion Multi Bay Battery Charger Ref. Design	MCP1630RD-LIC1	MCP1630
MCP1630 NiMH Battery Charger Demo Board	MCP1630DM-NMC1	MCP1630
MCP1601 Buck Regulator Evaluation Board	MCP1601EV	MCP1601
Voltage Supervisor Evaluation Board	VSUPEV	SOT-23 packages
MCP7386X Li-Ion Battery Charger Evaluation Board	MCP7386XEV	MCP73861/62
MCP165X 3W White LED Demo Board	MCP1650DM-LED1	MCP1650/51
MCP1650 Boost Controller Evaluation Board	MCP1650EV	MCP1650
MCP7384X Li-Ion Battery Charger	MCP7384XEV	MCP7384X
MCP7382X Li-Ion Battery Charger	MCP7382XEV	MCP7382X
MCP73855 Evaluation Board	MCP73855EV	MCP73855
Voltage Supervisor SOT23-5/6 Evaluation Board	VSUPEV2	SOT23-5/6-lead packages
MCP1726 Evaluation Board	MCP1726EV	MCP1726
Thermal Management Tools	**Part Number**	**Devices Supported**
MCP9800 Thermal Sensor PICtail™ Demo Board	MCP9800DM-PCTL	MCP9800
Demo Board for Tiny Serial Digital Thermal Sensor	TC74DEMO	TC74
Fan Controller Demo Board for TC652	TC652DEMO	TC652
Fan Controller Demo Board for TC650	TC650DEMO	TC650
Evaluation Kit for the Fan Speed Controllers	TC642EV	TC642, TC646, TC647, TC648, TC649, TC642B, TC646B, TC647B, TC648B, TC649B
TC72 Digital Temperature Sensor	TC72DM-PICTL	TC72
TC77 Thermal Sensor PICtail™ Demo	TC77DM-PICTL	TC77
Demo Board for Fan Speed Controllers	TC642DEMO	TC642
TC1047A Temperature to Voltage	TC1047ADM-PICTL	TC1047A

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