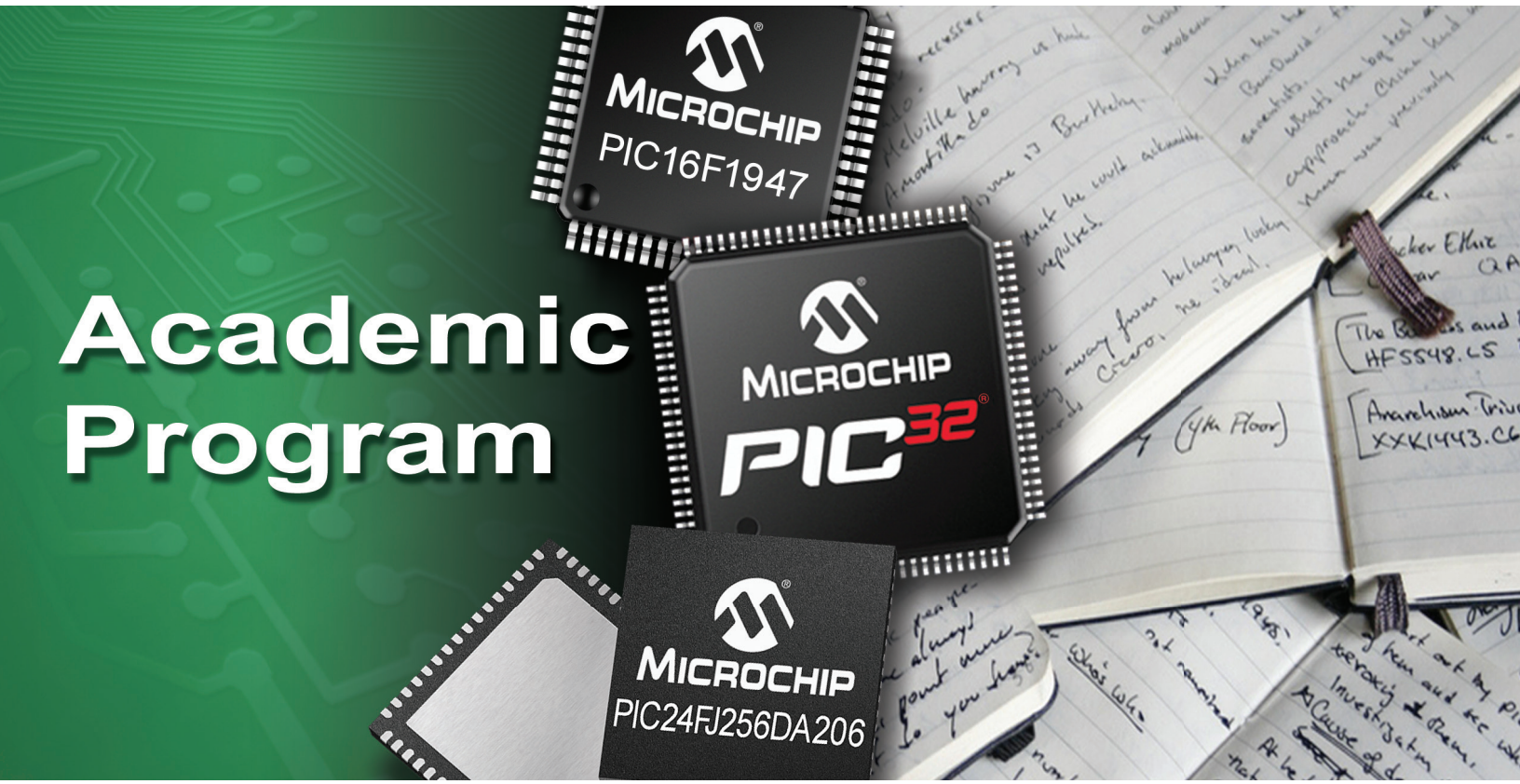
MICROCHIP

Academic Program

Resources for educators, researchers and students



www.microchip.com/academic
academic@microchip.com

Overview

Microchip's Academic Program demonstrates our ongoing commitment to support the education of the next generation of engineers. We offer unique benefits and resources for educators, researchers and students worldwide. Our partnership with academia is intended to increase the awareness and knowledge of embedded applications and inspire students to become the innovators of the future.

Academic Support

- Access to labs, curriculum and course material
- Silicon donations to help seed labs
- Assistance finding low-cost development tools
- Free versions of all Microchip software development tools
- 25% Academic Discount when ordering many of the development tools available on Microchip's online e-commerce site: www.microchipdirect.com

Online Academic Resources

- Academic web site: www.microchip.com/academic
- Free product samples: www.microchip.com/samples
- 24-hour technical support: www.microchip.com/support
- Online forums on all Microchip products and technologies: www.microchip.com/forums
- Browse Microchip application notes: www.microchip.com/applicationnotes
- Free software libraries: www.microchip.com/libraries
- Application segment-specific design centers: www.microchip.com/designcenters

Partner with an Industry Leader

Join the Academic Partner Program: www.microchip.com/academicpartner

- Free training at our Regional Training Centers: www.microchip.com/rtc
- Discounts to Microchip's annual MASTERs Technical Conference: www.microchip.com/masters
- Leverage the Microchip brand

Recommended Textbooks

Microchip Technology's Academic Team works with authors, publishers and academics to ensure the availability of up-to-date textbooks based on our products and technologies. To view a current list of textbooks please visit www.microchip.com/academic.

Join the Microchip Community

Find us on Facebook www.facebook.com/microchiptechnology

YouTube www.youtube.com/microchiptechnology

LinkedIn www.linkedin.com/company/microchip-technology

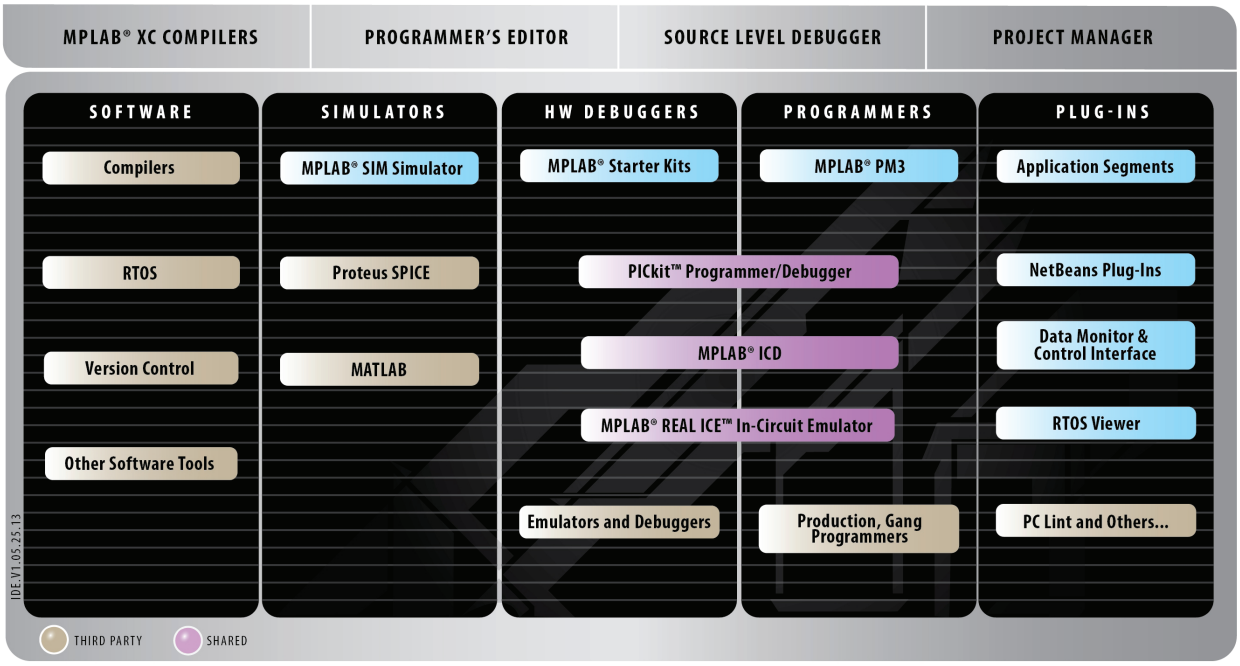
www.twitter.com/microchiptech

Recommended Software Tools

Microchip and its third parties provide software tools to help easily integrate our products and technologies into the classroom. Regardless of the programming language you want to use, Microchip has the solution.

FREE MPLAB® X Integrated Development Environment (IDE)

MPLAB® X INTEGRATED DEVELOPMENT ENVIRONMENT



Programming in Assembly? This is all you need.

MPLAB X IDE is Microchip's award-winning, next-generation open-source IDE that enables cross-platform embedded development within the **Linux® , Mac OS® and Windows®** operating systems. This easy-to-use environment includes a host of free software components for fast application development and supercharged debugging supporting our entire portfolio of 8-, 16- and 32-bit microcontrollers. MPLAB X IDE also serves as a single, unified graphical user interface for additional Microchip and third-party software/hardware development tools.

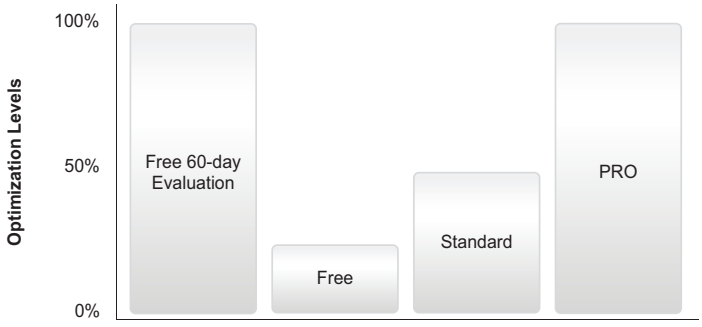
A host of high-performance features have been added, including the ability to manage multiple projects and tools with simultaneous debugging, an advanced editor, visual call graphs and code completion. MPLAB X is based on the Oracle sponsored open-source NetBeans platform, supports many third-party tools, and is compatible with many NetBeans plug-ins.

Download MPLAB X IDE now at: www.microchip.com/mplab.

MPLAB XC Compilers

MPLAB XC is Microchip's simple and comprehensive line of compilers. These compilers:

- Support all 8-, 16- and 32- bit PIC® MCUs and dsPIC® DSCs
- Integrate with MPLAB X IDE and all Microchip development tools
- Run on Windows, Linux and Mac OS X
- Offer different optimization levels to suit your needs with FREE downloads available



The free editions support all the devices and commands of the full edition. They have no time or memory restrictions; however code optimizations are limited. These editions also offer unrestricted use, so they are ideal as a low-cost tool for academic or commercial use.

Download and find additional information on MPLAB XC Compilers at: www.microchip.com/mplabxc.

Recommended Software Tools

Visual Programming Environments

Program Microchip devices without learning a programming language.

Third Party Manufacturers

Flowcode by Matrix Multimedia

FLOWCODE 6
Electronic system design software

Flowcode v6 for PIC MCUs is one of the world's most advanced graphical programming languages for microcontrollers. The great advantage of Flowcode is that it allows those with little experience to create complex electronic and robotic systems. Flowcode is a powerful language that uses macros to facilitate the control of complex devices like 7-segment displays, motor controllers and LCD displays. In addition, Flowcode can generate code in both Assembly and C that's compatible with Microchip's MPLAB X IDE.

For more information visit: www.matrixmultimedia.com.

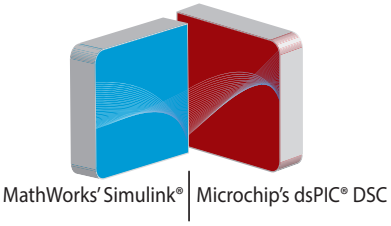
Flowcode 6 Chip Pack for PIC Devices - Student/Home Edition (SW500086)

Supports code creation for PIC12, PIC16 and PIC18 series of microcontrollers and is compatible with MPLAB XC Compilers. New features include improved simulation for faster system design, personalized component creation for more realisitc system design/simulation, new features to verify/record a system under test and a 3D graphics engine to include electromechanical components/systems.

Flowcode 6 Chip Pack for dsPIC DSCs and PIC24 Devices - Student/Home Edition (SW500087)

Supports code creation for the PIC24 series of microcontrollers and the dsPIC series of digital signal controllers and is compatible with the MPLAB XC Compilers.

MPLAB Device Blocks for Simulink® (SW007023)



MPLAB Device Blocks for Simulink makes it easy to develop complex designs using Microchip's dsPIC30 and dsPIC33 Digital Signal Controllers (DSCs). This software provides a set of user interfaces to MathWorks' Simulink graphical environment for simulation and model-based design, where code for the application is generated, compiled and loaded onto a target dsPIC DSC in a single, one-click step. Updates to this version include multi-rate and interrupt-capable device blocks, as well as a Free edition for up to seven I/O ports that eliminates the compile wait time found on prior free editions. Existing users can upgrade to the new PRO edition for free.

Recommended Hardware Tools

Ordering Development Tools

microchip DIRECT
www.microchipdirect.com

Ordering development tools is easy with Microchip Technology's online store, microchipDirect.

- The easy way to source parts 24 hours a day, 7 days a week
- Buy online, pay online
- Fast, flexible turnaround
- Items in stock ship within 24 hours of ordering

***25% Academic Discount for students and professors on many tools**.

*To receive your Academic discount, simply login to: www.microchipdirect.com with a recognized email domain and the discount will be applied automatically at checkout. Email domain not recognized? No problem. Just send the details of your school and how the tools will be used to academic@microchip.com to receive a 25% discount coupon.

Recommended Hardware Tools

chipKIT™
Embedded Development Platforms

A 32-bit Solution for the Arduino™ Community

chipKIT™ is a perfect solution for users who know nothing about microcontrollers but would like to add their processing capabilities to an application.

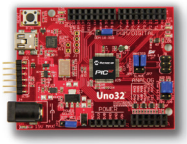
Visit www.chipkit.net for software downloads, product information, tutorials, project ideas, curriculum and more.

chipKIT Base Boards

These boards have a microcontroller on them and can be programmed directly from within the MPIDE software. Some of these boards follow the Arduino form factor while others do not.

For more information visit: www.chipkit.net.

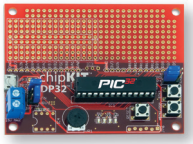
chipKIT Uno32 (TDGL002)



chipKIT is an easy-to-use platform for developing microcontroller-based applications. chipKIT uses a modified version of the original Arduino IDE for compatibility with existing code examples, tutorials and resources. This board is pin-compatible with many Arduino shields that can operate at 3.3V. Features include:

- PIC32MX320F128H processor
- 128K Flash, 16K RAM
- Up to 80 MHz operating speed
- 42 available I/O lines
- USB or externally powered
- USB cable required for programming (not included)
- Compatible footprint with Arduino Uno

chipKIT DP32 Development Board (TDGL019)



The chipKIT DP32 is the first chipKIT rapid prototype project board from Digilent. The board adds the power of the Microchip PIC32MX250F128B with a prototyping area in a single board. Features include:

- Microchip PIC32MX250F128B microcontroller (40/50 MHz 32-bit MIPS, 128K Flash, 32K SRAM)
- 15V maximum input voltage
- 19 available I/O pins
- Nine analog inputs
- One potentiometer connected to an analog input
- Four user LEDs
- Two user push buttons
- Prototyping area

chipKIT Max32 (TDGL003)

chipKIT Max32 is an easy-to-use platform for developing advanced applications. chipKIT uses a modified version of the original Arduino IDE for compatibility with existing code examples, tutorials and resources. This board is pin-compatible with many Arduino shields that can operate at 3.3V. Features include:

- PIC32MX795F512L processor
- 512K Flash, 128K RAM
- Up to 80 MHz operating speed
- USB 2.0 OTG controller
- 10/100 Ethernet MAC
- Dual CAN controllers
- 83 available I/O lines
- USB or externally powered
- USB cable required for programming (not included)
- Compatible footprint with Arduino Mega2560
- Additional memory and advanced communications peripherals

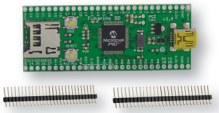
chipKIT WF32 Wi-Fi® Development Board (TDGL021)

chipKIT WF32 by Digilent is an easy-to-use platform for developing Wi-Fi applications. As with other chipKIT boards, it uses a modified version of the original Arduino IDE for compatibility with existing code examples, tutorials and resources. It is also compatible with MPLAB X IDE.

The WF32 includes several peripherals on board, including Wi-Fi radio module, USB OTG (host or device) interface, microSD™ card slot, buttons, LEDs, potentiometer and lots of extra I/O. A full-featured HTML server application is available by download. The board can be powered by USB or an external power supply.

- PIC32MX695F512L processor with 512K Flash, 32K RAM
- Up to 80 MHz operating speed
- MRF24WG0MA Wi-Fi module
- Micro SD card connector
- USB 2.0 OTG interface
- Four user LEDs, Two buttons
- 42 available I/O lines

chipKIT Fubarino® SD (TCHIP010)



The Fubarino SD board brings affordable, breadboard-compatible high-speed computing power to the Arduino-compatible chipKIT/MPIDE platform. It is able to run almost all Arduino sketches right out of the box, and includes more memory, speed, and I/O pins than a typical Arduino or clone. It also includes a microSD card slot for easy sketch access to huge file storage.

Recommended Hardware Tools

chipKIT Fubarino Mini (TCHIP011)

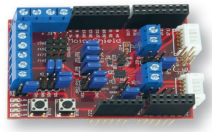
The chipKIT Fubarino Mini is a prototyping-friendly platform for developing Arduino-compatible 32-bit applications. The user has the flexibility to either solder wires directly to the board or solder the included male expansion headers to the dual-row in-line break out connectors to allow the platform to be inserted into a solderless prototyping area or directly into the application.

chipKIT Shields (Daughter Cards)

Often called expansion or daughter boards, shields are used to add features to your chipKIT base board.

For more information visit: www.chipkit.net.

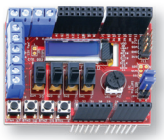
chipKIT Motor Shield (TDGL020)



The chipKIT Motor Shield is an expansion board for use with the chipKIT Uno32 (TDGL002) and chipKIT uC32 (TDGL017). It provides additional circuitry and connectors to drive DC motors, servo motors, and stepper motors. It also provides additional I/O via an I²C™ I/O extender. Features include:

- Two DC motor driver channels, accessible with either a JST 6-pin connector or a terminal block
- Two DC motor encoder input signals for each DC motor channel
- Four servo motor channels
- I²C general purpose I/O expander with four LEDs, two push buttons and two user-settable jumpers
- One 4-wire unipolar stepper motor channel
- Standard chipKIT Shield connectors

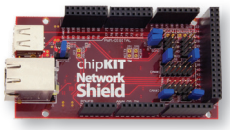
chipKIT Basic I/O Shield (TDGL005)



The chipKIT Basic I/O Shield is an input/output expansion board designed for use with chipKIT microcontroller boards such as the Uno32 and the Max32. Features include:

- 128 × 32 pixel OLED graphic display
- I²C temperature sensor
- 256 Kbit I²C EEPROM
- I²C daisy chain connector
- Four push buttons
- Four slide switches
- Eight discrete LEDs
- Four open drain FET drivers
- Analog potentiometer

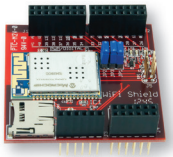
chipKIT Network Shield (TDGL006)



The chipKIT Network Shield is an expansion board designed for use with the chipKIT Max32 microcontroller board. It expands the I/O capabilities of the Max32 to take advantage of all of the advanced communications features of the PIC32MX795F512L microcontroller. Features include:

- 10/100 Ethernet PHY and RJ45 connector
- Dual CAN transceivers and connectors
- USB host and device support
- Two I²C bus connectors
- 256 Kbit I²C EEPROM
- 32.768 kHz oscillator for RTCC

chipKIT Wi-Fi Shield (TDGL016)

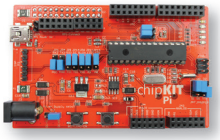


chipKIT Wi-Fi Shield by Digilent adds Wi-Fi capability to the chipKIT Uno32, Max32, or uC32. Based on the Microchip MRF24WB0MA Wi-Fi radio transceiver module, the Wi-Fi Shield also includes a microSD card connector and four LEDs.

- IEEE 802.11b-compliant RF transceiver
- Serialized unique MAC address
- 1 and 2 Mbps data rates
- Integrated PCB antenna
- Range: up to 400m/1300 ft
- Digilent network library available for download

Raspberry Pi™ Compatible

chipKIT Pi Development Board by element 14 (TCHIP020)



chipKIT Pi (designed for Raspberry Pi) is the latest Arduino-compatible chipKIT platform from Microchip and element14. It features a 32-bit PIC32 microcontroller in a prototyping-friendly, low-pin count SPDIP package. The PIC32 MCU's performance, memory and integrated peripherals allow users to create applications including touch sensing, audio processing and advanced control. The board is supported by the free chipKIT multi-platform IDE MPIDE that can be hosted on the Raspberry Pi.

- Designed exclusively for the Raspberry Pi and Arduino ecosystems
- Includes a PIC32MX250F128B MCU (in socket) with 128K Flash, 32K RAM
- USB, ICSP and JTAG connectors for maximum compatibility
- Create, compile and program Arduino sketch-based chipKIT applications within the Raspberry Pi operating system
- Develop 3.3V Arduino compatible applications for the Raspberry Pi

For more information visit: www.element14.com/chipkit_pi.

Recommended Hardware Tools

Programmer/Debuggers

PICkit™ 3 In-Circuit Debugger (PG164130)

The MPLAB PICkit 3 allows debugging and programming of PIC Flash microcontrollers and dsPIC digital signal controllers at a most affordable price point using the powerful graphical user interface of the MPLAB X Integrated Development Environment (IDE). The MPLAB PICkit 3 is connected to the design engineer's PC using a full-speed USB interface and can be connected to the target via a Microchip debug (RJ-11) connector (compatible with MPLAB ICD 2/3 and MPLAB REAL ICE™ In-Circuit Emulator). The connector uses two device I/O pins and the reset line to implement in-circuit debugging and In-Circuit Serial Programming™ programming capability.

For more information visit: www.microchip.com/pickit3.

MPLAB ICD 3 In-Circuit Debugger (DV164035)

MPLAB ICD 3 In-Circuit Debugger System is Microchip's most cost-effective high-speed hardware debugger/programmer for Microchip Flash Digital Signal Controller (DSC) and microcontroller (MCU) devices. It debugs and programs PIC Flash microcontrollers and dsPIC DSCs with the powerful, yet easy-to-use graphical user interface of MPLAB X Integrated Development Environment (IDE).

The MPLAB ICD 3 In-Circuit Debugger probe is connected to the design engineer's PC using a high-speed USB 2.0 interface and is connected to the target with a connector compatible with the MPLAB ICD 2 or MPLAB REAL ICE systems (RJ-11). MPLAB ICD 3 supports all MPLAB ICD 2 headers.

For more information visit: www.microchip.com/icd3.

8-bit PIC16 Solutions

The Mid-Range Family includes members of the PIC12 and PIC16 families. These products feature a single interrupt with numerous analog, motor control and basic communication peripherals.

PICDEM™ Lab Development Kit (DM163045)

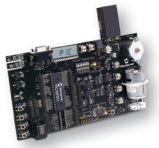
This kit is designed to provide a comprehensive development and learning platform for Microchip's 6-, 8-, 14-, 18- and 20-pin PIC microcontrollers. A kit of common discreet components along with connection wires of varying lengths enable the user to develop circuits on the solderless prototyping area that can then be interfaced with the included PIC MCUs. Lab manuals are provided as a free download featuring an introduction to four of our most common peripherals. These manuals are provided in both a C version and a version using Matrix Multimedia's Flowcode V3 Visual Programming Environment (VPE). A free lite version of Flowcode V3 is also provided.

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC8 Compiler
- Ships with PICkit 2 Programmer/Debugger (PG164120)
- PICkit 3 Programmer/Debugger (PG164130)
- PICkit Serial Analyzer (DV164122)

For more information visit: www.microchip.com/picdemlab.

PICDEM Mechatronics Demo Board (DM163029)



The PICDEM Mechatronics demonstration board is an easy-to-use development and demonstration platform that takes a hands-on approach to learning about mechatronics. Jumper wires are provided in the kit to allow the developer 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.

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC8 Compiler
- PICkit 3 Programmer/Debugger (PG164130)
- MPLAB ICD 3 Programmer/Debugger (DV164035)

For more information visit: www.microchip.com/mechatronics.

F1 Evaluation Kit (DV164132)

The F1 Evaluation Kit is a demonstration/development tool for Enhanced Mid-Range PIC microcontrollers (PIC12F1XXX/PIC16F1XXX) and includes the PICkit 3 for quick programming and development. Populated with a PIC16LF1937 featuring eXtreme Low Power (XLP) technology, this platform consists of a 44-pin development board with prototyping space, 3V LCD glass, support for the Motor Control add-on and support for PICkit 3 and PICkit Serial Analyzer. This kit provides a platform for general purpose development, and includes demonstrations focusing on low power, LCD and motor control.

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC8 Compiler
- Ships with PICkit 3 Programmer/Debugger (PG164130)
- PICkit Serial Analyzer (DV164122)

Recommended Hardware Tools

PICDEM 2 Plus Development Board (DM163022-1)

The PICDEM 2 Plus board demonstrates the capabilities of Microchip's 8-bit microcontrollers, specifically 18-, 28- and 40-pin PIC16FXXX, PIC16F1XXX and PIC18 devices. It can be used as a stand-alone demonstration board with a programmed part. Alternatively, it can be used with an in-circuit emulator (for example, MPLAB REAL ICE In-Circuit Emulator) or with an in-circuit programmer/debugger (such as MPLAB ICD 3 or PICkit 3). Sample programs are provided to demonstrate the unique features of the supported devices.

8-bit PIC18 Solutions

The PIC18 Family of microcontrollers includes the Traditional PIC18, the PIC18 J-series and the PIC18 K-series. These products feature an additional interrupt over our Mid-Range products with more memory along with advanced communication peripherals such as USB.

PIC18 Development Kit (DV164136)

This kit includes a PIC18 Explorer board, PICkit 3 debugger/programmer, USB cable and a 9V universal power supply. The PIC18 Explorer board includes both the PIC18F8722 and PIC18F87J11 and supports dozens of general purpose PIC18 families using various processor Plug-in Modules (PIMs). PICtail™ daughter boards enable many different accessory boards to connect to the PIC18 Explorer.

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC Compilers
- Ships with PICkit 3 Programmer/Debugger (PG164130)
- MPLAB ICD 3 Programmer/Debugger (DV164035)

PICkit 3 Debug Express (DV164131)

The PICkit 3 Debug Express combines a 44-pin demo board with a PIC18F45K20 microcontroller and a PICkit 3 debugger/programmer.

Recommended tools include:

- MPLAB X IDE
- MPLAB XC Compilers
- Ships with PICkit 3 Programmer/Debugger (PG164130)

MPLAB Starter Kit for PIC18F MCU (DM180021)

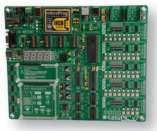
This starter kit includes on-board debugger/programming capability as well as USB communication, a capacitive touch pad, potentiometer, acceleration sensor, microSD memory card and an OLED display. The board can function as a USB mouse, joystick or mass storage device (thumb drive), all using the on-board capacitive touch sense pads.

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC8 Compiler

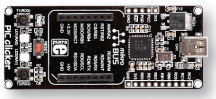
Third Party Manufacturers

MikroElektronika EasyPIC™ 7 Development System (TMIK013)



EasyPIC 7 is the latest version of this popular development tool from MikroElektronika. Now with dual power supplies (3.3V and 5V) it supports over 250 different PIC MCUs. EasyPIC 7 accepts DIP packages from 8 to 40 pins and comes with a PIC18F45K22 installed. It features amazing connectivity, with four different connectors for each port, along with pull up/down resistors, buttons and LEDs on every I/O line. A fast programmer and in-circuit debugger are included, and it also accepts an optional 2 × 16 character LCD (TMIK005) as well as a 128 × 64 Graphic LCD with Touch Panel (TMIK004). You can prototype many applications quickly with this versatile tool.

MikroElektronika PIC Clicker (TMIK023)



PIC Clicker is an amazingly compact starter development kit bringing the innovative mikroBUS™ host socket to your favorite microcontroller. Enhance it further by connecting the Click board of your choice. It comes preprogrammed with a fast USB HID bootloader. Just upload your firmware, and Clicker becomes a working device. This little board features all you need to get started: a PIC18F47J53 microcontroller, a USB connector, two LEDs and push buttons, a reset button, a programmer connector, and headers for interfacing with external electronics.

For more information visit: www.mikroe.com.

Recommended Hardware Tools

16-bit PIC24 MCU/dsPIC DSC Solutions

The 16-bit Family includes the PIC24F and PIC24H microcontrollers, along with the dsPIC30F and dsPIC33F line of Digital Signal Controllers (DSC). PIC24 and dsPIC DSCs maintain similar architectures with the dsPIC DSCs adding DSP functionality with associated hardware and instruction set.

Explorer 16 Starter Kit (DV164037)

Get a complete set of tools for application development using Microchip's 16-bit PIC24F and PIC24H microcontrollers and dsPIC33 Digital Signal Controllers in one kit. This kit includes a MPLAB ICD 3 In-Circuit Debugger, an Explorer 16 Development Board, a 9V universal power supply for use with either the Explorer 16 board or the MPLAB ICD, a serial cable and PIC24FJ128GA010 and dsPIC33F256GP710 devices (mounted on plug-in modules for quick replacement).

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC16 Compiler

For more information visit: www.microchip.com/explorer16.

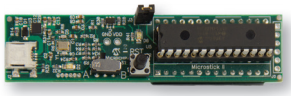
16-bit 28-pin Starter Board (DM300027)

This low-cost, 16-bit, 28-pin starter development board supports 28-pin PIC24 microcontrollers or dsPIC Digital Signal Controller (DSC) devices. This board is an ideal prototyping tool to help validate key design requirements using these microcontrollers and DSCs.

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC16 Compiler
- PICkit 3 Programmer/Debugger (PG164130)

Microstick II Development Kit (DM330013-2)



Microstick II delivers a complete development hardware platform for Microchip's 16-bit and 32-bit microcontrollers and digital signal controllers. Its the perfect solution to those looking for a low-cost, easy-to-use development platform. The USB-powered kit includes an on-board debugger/programmer, a DUT socket for easy device swapping, a use LED and reset button. Microstick II supports all 3.3V PIC24FJ, PIC24H, dsPIC33, and PIC32 SPDIP packaged devices.

Kit Contents:

- Microstick II board
- USB cable
- Two 1 × 14 header pins for proto board use
- One PIC24FJ64GB002
- One PIC24HJ64GP502
- One dsPIC33FJ64MC802
- One PIC32MX250F128
- Info sheet with installation instructions and board schematic

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC16 Compiler

Microstick for the 3V PIC24F K-series (DM240013-1)

Microstick for 3V PIC24F K-series is a flexible USB powered development platform. It is the perfect solution for those looking to get started with Microchip's lowest cost 16-bit microcontroller families, PIC24F KL and KA, for extremely cost-sensitive consumer, medical and industrial applications. Key features include:

- Low Cost
- Compatible with Microchip's popular 16-bit XLP Development Board (DM240311)
- Integrated programmer/debugger; no external debugger required
- USB powered: ease of use, no external power supply required
- MPLAB X IDE Support
- DUT Socket: flexible, easy device swapping
- Works stand-alone or plugged into a prototyping board
- Easy access to all device signals for probing
- Smaller than a stick of gum at 20 mm × 69 mm, easily portable
- On-board user and power LEDs
- Reset button
- Demo code

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC16 Compiler

Recommended Hardware Tools

Third Party Manufacturers

MikroElektronika EasyPIC Fusion v7 with PIC24FJ128GA310 Bundle (TMIK022)

EasyPIC Fusion™ v7 combines support for three different architectures—dsPIC33, PIC24 and PIC32—in a single development board. It contains many on-board modules including multimedia, Ethernet, USB, CAN, and more. The on-board mikroProg™ programmer and debugger supports 65 microcontrollers via MCU cards. This bundle comes with the PIC24FJ128GA310 MCU card.

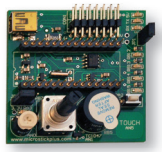
MikroElektronika EasyPICk Fusion v7 with dsPIC33EP512MU810 Bundle (TMIK017)

EasyPIC Fusion v7 is a general purpose development board that supports 16-bit and 32-bit MCUs in high pin-count packages. This bundle includes the dsPIC33EP512MU810 MCU with 512K Flash and 52K RAM. Features include:

- 320 × 240 TFT display with touchpanel
- Four USB ports (host, device, and 2 USB-UART ports)
- Ethernet, stereo codec, headphone and microphone jacks
- Serial Flash (SPI), serial EEPROM (I^2C) and microSD card slot
- LEDs and buttons with pull-up or pull-down resistors on 68 I/O lines
- Two mikroBUS sockets for Click™ expansion boards
- On-board mikroProg programmer/debugger

For more information visit: www.mikroe.com.

Microstick Plus Development Board (TCAD001)



The Microstick Plus by ChipCAD is an expansion board for the popular Microstick (DM330013) and Microstick II (DM330013-2) development boards. It provides 11 different peripherals and is suitable for beginners as well as advanced users. This is a cost-effective and versatile platform for education and development. Features include:

- Four user LEDs (two red and two blue)
- Standard push button and capacitive touch button
- Potentiometer and rotary encoder
- MCP2551 CAN transceiver
- MCP2200 USB-UART converter
- MCP1525 2.5V reference voltage
- TC1047A analog temp sensor
- 32.768 kHz clock crystal
- Piezo buzzer (up to 4 kHz).

For more information visit: www.microstickplus.com.

32-bit PIC32 Solutions

The PIC32 MCU is a family of 32-bit Microcontrollers designed for best-in-class 32-bit performance and accompanied by a vast offering of software. Since its introduction in 2007, the PIC32 family has established itself as a performance leader stemming from the highest DMIPs/MHz rated MIPS® M4K® core, highly efficient internal bus architecture and advanced instruction caching. The five families of PIC32 MCUs offer a range of general purpose and integrated connectivity peripherals including Ethernet, CAN and USB host/device/On-The-Go. Integrated Flash memory ranges from 32K to 512K and on-board RAM ranges from 8k to 128k.

PIC32 Starter Kit (DM320001)

The PIC32 Starter Kit contains everything needed to experience the high performance PIC32 microcontroller family. With over 35 source code examples, on-board programmer/debugger, free development tools and numerous design documents, your first program for a PIC32 MCU is just minutes away. The PIC32 Starter Kit includes an expansion header for adding Microchip's Starter Kit expansion boards or for prototyping your own. Host PC requires Windows operating system. Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC32 Compiler
- PIC32 I/O Expansion Board (DM320002)

PIC32 USB Starter Kit II (DM320003-2)

The PIC32 USB Starter Kit II provides the easiest and lowest cost method to experience the USB and CAN functionality of the PIC32 microcontrollers. Users can develop CAN applications using PIC32 expansion board. The board contains everything need to develop USB embedded host/device/On-the-Go applications by combining this board with Microchip's free USB software. Recommended programming/debugging tools include:

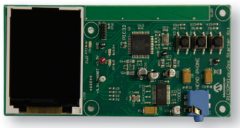
- MPLAB X IDE
- MPLAB XC32 Compiler
- PIC32 I/O Expansion Board (DM320002)

PIC32 Ethernet Starter Kit II (DM320004-2)

The PIC32 Ethernet Starter Kit II provides the easiest and lowest-cost method to experience 10/100 Ethernet development with PIC32 microcontrollers. Combined with Microchip's free TCP/IP software, this kit gets your project running quickly. The PIC32 microcontroller has an available CAN 2 0b peripheral and USB host/device/On-the-Go. This starter kit features a socket that can accommodate various 10/100 Ethernet transceiver (RJ-45) PHY daughter boards for prototyping and development.

Recommended Hardware Tools

PIC32 MX2 Starter Kit (DM320013)



The PIC32 MX2 Starter kit is a complete hardware and software tool suite for exploring applications based upon Microchip's new low-cost, high-performance PIC32MX1/MX2 devices. Features include 24-bit audio playback, integrated programmer debugger, USB-powered, 2-inch color TFT display 220 × 176 pixel, mTouch™ sensing solutions slider and buttons, PIC32MX250F128D with 128 KB of Flash, 32 KB RAM and microSDHC™ Flash card.

Recommended programming/debugging tools include:

- MPLAB X IDE
- MPLAB XC32 Compiler

Third Party Manufacturers

MikroElektronika EasyPIC Fusion v7 with PIC32MX795F512L and C Compiler Bundle (TMIK016-CC)

EasyPIC Fusion v7 is a general purpose development board for 16-bit and 32-bit MCUs in high pin-count packages. This bundle includes the MikroC PRO compiler and PIC32MX795F512L MCU with 512K Flash and 128K RAM. Features include:

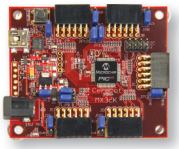
- 320 × 240 TFT display with touchpanel
- Four USB ports: host, device and two USB-UART ports
- Ethernet, stereo codec, headphone and microphone jacks
- Serial Flash (SPI), serial EEPROM (I²C) and microSD card slot
- LEDs and buttons with pull-up or pull-down resistors on 68 I/O lines
- Two mikroBUS sockets for Click expansion boards
- On-board mikroProg programmer/debugger

For more information visit: www.mikroe.com.

Digilent Inc. Arduino Inspired Cerebot™ cK Boards

Digilent Inc.'s new Cerebot MX3/4/7cK line is ideal for embedded control and robotics projects for both students and hobbyists. Based on Microchip's PIC32 microcontrollers, these boards have many I/O connectors providing flexible pin access and connectivity to Digilent's line of Pmod™ peripheral modules. The populated PIC32 devices come preprogrammed with the chipKIT bootloader for application development using chipKIT MPIDE development environment right out of the box. Additionally, versions are available with integrated programmer/debugger compatible with Microchip's MPLAB X IDE and MPLAB XC32 Compilers.

Digilent Cerebot MX3cK Development Board (TDGL008)

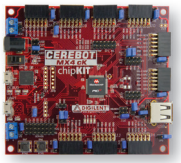


The Cerebot MX3cK by Digilent is a microcontroller development board based on the PIC32MX320F128H MCU. Key features include:

- PIC32MX320F128H MCU
- 128K Flash, 16K RAM
- 80 MHz maximum operating frequency
- 42 I/O pins, 12 analog inputs
- chipKIT bootloader installed

This low-priced item is not eligible for academic discount.

Digilent Cerebot MX4cK Development Board (TDGL009)



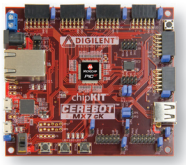
The Cerebot MX4cK development board is based on the PIC32MX460F512L MCU. Includes integrated programmer/debugger so no additional hardware is required for use with Microchip's MPLAB X IDE and MPLABXC32 Compiler.

Key features include:

- PIC32MX460F512L MCU
- 512K Flash, 32K RAM
- USB 2.0 full speed On-The-Go [OTG]
- 74 I/O pins, 15 analog inputs
- chipKIT bootloader installed

This low-priced item is not eligible for academic discount.

Digilent Cerebot MX7cK Development Board (TDGL010)



The Cerebot MX7cK development board is based on the PIC32MX795F512L MCU. Includes integrated programmer/debugger so no additional hardware is required for use with Microchip's MPLABX IDE and MPLABXC32 Compiler.

Key features include:

- PIC32MX795F512L MCU
- 512K Flash, 128K RAM
- USB 2.0 Full Speed On-The-Go [OTG]
- 10/100 Ethernet
- Two CAN controllers
- 52 I/O pins, 16 analog inputs
- chipKIT bootloader installed

For more information visit: www.digilentinc.com/cerebot.

Support

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

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