MPLAB® REAL ICE™ In-Circuit Emulator

All-in-One In-Circuit Emulator/Programmer Solution for Microchip Flash Products

MPLAB REAL ICE In-Circuit Emulator System is Microchip's next generation high-speed emulator 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 Integrated Development Environment (IDE).

The MPLAB REAL ICE In-Circuit Emulator probe is connected to the design engineer's PC using a high-speed USB 2.0 interface and is connected to the target with either a connector compatible with the MPLAB ICD 2 system (RJ-11) or with the new high-speed, noise tolerant, Low-Voltage Differential Signal (LVDS) interconnection (CAT5).

The MPLAB REAL ICE In-Circuit Emulator System offers the following advantages:

- **Full-Speed Real-time Emulation**
  MPLAB REAL ICE In-Circuit Emulator is designed to support high-speed processors running at maximum speeds, allowing embedded engineers to debug applications on their own hardware in real time.
- **Ruggedized Probe Interface**
  Protection circuitries are added to the probe drivers to guard the probe kit from power surges from the target.
- **Legacy and High-speed Connectivity**
  MPLAB REAL ICE In-Circuit Emulator comes standard with a MPLAB ICD 2 type connector (RJ-11). An optional Performance Pak offers high-speed, noise-tolerant, LVDS, extended length CAT5 standard (up to 3 meters) connectivity.
- **Logic Probe For External Triggers**
  A logic probe is included and can be connected to the 14-pin header on the unit. It supports 8 user-selectable input/outputs that automatically adjust to the targeting voltage level. The outputs can also trigger an external logic analyzer or oscilloscope.
- **Trace Execution and Analysis**
  Through its high-speed communication bus, connection schemes and trace-aware compilers, MPLAB REAL ICE In-Circuit Emulator offers multiple ways to trace execution and log information about running applications: real-time watch, data capture, streaming parallel trace using device I/O port or streaming serial trace using SPI/UART.
- **Portable, USB-powered and RoHS-Compliant**
  Housed in a small (4.7″ w x 3.4″ d x 0.84″ h) and attractive enclosure, the MPLAB REAL ICE In-Circuit Emulator is powered by the USB port, so an external power adapter is not required. MPLAB REAL ICE In-Circuit Emulator is CE and RoHS-compliant.

- **Ease of Maintenance and Feature Upgrade**
  Adding new device support and advanced features to MPLAB REAL ICE In-Circuit Emulator is just as simple as installing later versions of the MPLAB IDE, downloadable free from the Microchip web site http://www.microchip.com/mplab. MPLAB REAL ICE In-Circuit Emulator is field upgradeable through a firmware download from MPLAB IDE.
- **Low Cost**
  At less than $500, the MPLAB REAL ICE In-Circuit Emulator breaks the price barrier for a complete and advanced in-circuit emulator, offering new ways to interact with and debug applications at a fraction of the cost of traditional emulator systems.

Features

- Real-time execution
- Fast programming
- USB 2.0 high-speed interface to PC (480 Mb/s)
- MPLAB IDE integration (included free)
- Overvoltage/short-circuit monitor protection
- Low voltage: to 2.0 volts (2.0 to 6.0 range)
- Read/Write program and data memory of microcontroller
- Erase of program memory space with verification
- Stopwatch
- Hardware and software breakpoints*
- Real-time watch
- Capture trace to log instruction execution and variable contents (~10 KB/s at 4 MHz 16-bit core)
- Port trace for high-speed upload of trace data
- High-speed option allows full-speed emulation, high-speed trace upload and long (validated to 3 meters) cables
- Processor Paks* provide debug interface with no reserved pins

*Future feature.

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Products Supported

The MPLAB® REAL ICE™ In-Circuit Emulator supports most Flash PIC MCUs and dsPIC DSCs. For the most current list of supported parts, review the README file located in MPLAB IDE. The firmware is continually being updated to add support for new devices. As new device firmware is released, it can be downloaded free of charge at: www.microchip.com.

Host System Requirements

- PC-compatible system with an Intel Pentium® class or higher processor, or equivalent
- 512 MB RAM recommended
- 150 MB hard drive space
- CD-ROM drive
- Available USB port
- Microsoft® Windows® 2000 or Windows XP®

Standard Probe Driver
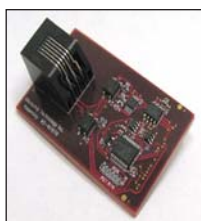
The Standard Probe Driver uses a MPLAB ICD 2 type connector (RJ-11) to connect to the target application. Designs that are compatible with MPLAB ICD 2 debugging/programming are quickly converted to use MPLAB REAL ICE. This driver board is included in the MPLAB REAL ICE In-Circuit Emulator Probe Kit (DV244005).

Performance Pak

The optional Performance Pak consists of two circuit boards (driver and receiver) that employ two CAT5 cables. Debug pins are driven using LVDS communications, and additional trace connections allow high-speed serial trace uploads to the PC.

Part Numbers and Ordering Information – MPLAB® REAL ICE™ Products and Accessories		
Part Number	**Description**	**Availability**
DV244005	MPLAB® REAL ICE™ In-Circuit Emulator Probe Kit, includes MPLAB REAL ICE In-Circuit Emulator and Standard Driver Board (compatible with MPLAB® ICD 2 RJ-11). This kit contains: 1 MPLAB REAL ICE In-Circuit Emulator probe, 1 standard probe driver, 1 14-pin logic probe, 1 USB cable, 1 6″ RJ-11 modular cable, 1 CD ROM containing MPLAB IDE software and product documentation.	Now
AC244002	MPLAB® REAL ICE™ In-Circuit Emulator Performance Pak, includes the high-speed driver to replace standard driver board for high-speed LVDS communications, and a high-speed receiver board. The high-speed driver boards use a second connector for high-speed trace upload. The Performance Pak contains: 1 high-speed driver board, 1 high-speed receiver board, 2 3 ft. CAT5 cables and 1 MPLAB ICD 2 RJ-11 to In-Circuit Serial Programming™ (ICSP™) adapter.	Now
TBD	MPLAB® REAL ICE™ In-Circuit Emulator Processor Extension Pak, plugs into socket of the processor on the target application, in most cases allowing debug without reserving pins on the MCU, and providing easy high-speed trace connection. This board utilizes LVDS communication on CAT5 cables.	Spring 2007

www.microchip.com

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

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