

**MPLAB[®] Starter Kit for
Serial Memory Products
User's Guide**

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Preface

NOTICE TO CUSTOMERS

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our web site (www.microchip.com) to obtain the latest documentation available.

Documents are identified with a "DS" number. This number is located on the bottom of each page, in front of the page number. The numbering convention for the DS number is "DSXXXXA", where "XXXX" is the document number and "A" is the revision level of the document.

For the most up-to-date information on development tools, see the MPLAB® IDE online help. Select the Help menu, and then Topics to open a list of available online help files.

INTRODUCTION

This chapter contains general information that will be useful to know before you use the MPLAB Starter Kit for Serial Memory Products. Items discussed in this chapter include:

- Document Layout
- Conventions Used in this Guide
- Warranty Registration
- Recommended Reading
- The Microchip Web Site
- Development Systems Customer Change Notification Service
- Customer Support
- Document Revision History

DOCUMENT LAYOUT

This document describes how to use the starter kit as a programmer and debug tool for serial memory products and their capabilities. The manual layout is as follows:

- **Chapter 1. Introduction** – This chapter introduces the starter kit and provides an overview of its features.
- **Chapter 2. Using the Memory Starter Kit** – This chapter describes the Memory Starter Kit functionality.

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CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

DOCUMENTATION CONVENTIONS

Description	Represents	Examples
Arial font:		
Italic characters	Referenced books	<i>MPLAB[®] IDE User's Guide</i>
	Emphasized text	...is the <i>only</i> compiler...
Initial caps	A window	the Output window
	A dialog	the Settings dialog
	A menu selection	select Enable Programmer
Quotes	A field name in a window or dialog	"Save project before build"
Underlined, italic text with right angle bracket	A menu path	<u><i>File>Save</i></u>
Bold characters	A dialog button	Click OK
	A tab	Click the Power tab
N'Rnnnn	A number in verilog format, where N is the total number of digits, R is the radix and n is a digit.	4'b0010, 2'hF1
Text in angle brackets < >	A key on the keyboard	Press <Enter>, <F1>
Courier New font:		
Plain Courier New	Sample source code	#define START
	Filenames	autoexec.bat
	File paths	c:\mcc18\h
	Keywords	_asm, _endasm, static
	Command-line options	-Opa+, -Opa-
	Bit values	0, 1
	Constants	0xFF, 'A'
Italic Courier New	A variable argument	<i>file.o</i> , where <i>file</i> can be any valid filename
Square brackets []	Optional arguments	mcc18 [options] <i>file</i> [options]
Curly brackets and pipe character: { }	Choice of mutually exclusive arguments; an OR selection	errorlevel {0 1}
Ellipses...	Replaces repeated text	var_name [, var_name...]
	Represents code supplied by user	void main (void) { ... }

WARRANTY REGISTRATION

Please complete the enclosed Warranty Registration Card and mail it promptly. Sending in the Warranty Registration Card entitles you to receive new product updates. Interim software releases are available at the Microchip web site.

RECOMMENDED READING

This user's guide describes how to use the MPLAB Starter Kit for Serial Memory Products. Other useful documents are listed below. The following Microchip documents are available and recommended as supplemental reference resources.

Readme Files

For the latest information on using other tools, read the tool-specific Readme files in the Readmes subdirectory of the MPLAB IDE installation directory. The Readme files contain update information and known issues that may not be included in this user's guide.

- **I²C™ Serial EEPROM Family Data Sheet (DS21930)**
- **SPI Serial EEPROM Family Data Sheet (DS22040)**
- **Microwire Serial EEPROM Family Data Sheet (DS21929)**
- **UNI/O™ Serial EEPROM Family Data Sheet (DS22067)**
- **MPLAB® IDE User's Guide (DS51519)**
- **Recommended Usage of Microchip I²C™ Serial EEPROM Devices (DS01028)**
- **Recommended Usage of Microchip SPI Serial EEPROM Devices (DS01040)**
- **Recommended Usage of Microchip Microwire Serial EEPROM Devices (DS01029)**

THE MICROCHIP WEB SITE

Microchip provides online support via our web site at www.microchip.com. This web site is used as a means to make files and information easily available to customers. Accessible by using your favorite Internet browser, the web site contains the following information:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

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To register, access the Microchip web site at www.microchip.com, click on Customer Change Notification and follow the registration instructions.

The Development Systems product group categories are:

- **Compilers** – The latest information on Microchip C compilers and other language tools. These include the MPASM™, MPLINK™ object linkers, and MPLIB™ object librarians.
- **In-Circuit Emulators** – The latest information on Microchip in-circuit emulators. These include the MPLAB REAL ICE and MPLAB ICE 2000 in-circuit emulators.

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- **In-Circuit Debuggers** – The latest information on Microchip in-circuit debuggers. These include MPLAB ICD 2 and PICKit™ 2.
- **MPLAB IDE** – The latest information on Microchip MPLAB IDE, the Windows® Integrated Development Environment for development systems tools. This list is focused on the MPLAB IDE, MPLAB IDE Project Manager, MPLAB Editor and MPLAB SIM simulator, as well as general editing and debugging features.
- **Programmiers** – The latest information on Microchip programmers. These include the MPLAB PM3 device programmer and the PICSTART® Plus and 2 development programmers.

CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at: <http://support.microchip.com>

DOCUMENT REVISION HISTORY

Revision A (April 2008)

- Initial Release of this Document

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MPLAB STARTER KIT FOR SERIAL MEMORY PRODUCTS USER'S GUIDE

Chapter 1. Introduction

Thank you for purchasing Microchip Technology's MPLAB® Starter Kit for Serial Memory Products. This kit allows the user to read, write and verify any Microchip serial memory product including I²C™, SPI, Microwire, and UNI/O™ bus protocols. It also includes a built-in utility that tests EEPROM endurance.

This chapter introduces the Memory Starter Kit and provides an overview of its features. Topics covered include:

- Overview
- Operational Requirements
- Board Setup

1.1 OVERVIEW

The MPLAB Starter Kit for Serial Memory Products connects directly to the USB port on a computer. The PC USB connection supplies communications and power to the board.

The Memory Starter Kit includes programmer circuitry that allows data to be programmed onto the serial memory device and to verify its contents, all using MPLAB IDE.

The MPLAB Starter Kit for Serial Memory Products was designed to be a simple to use, yet powerful tool for people designing or troubleshooting serial memory applications. Apart from programming and reading the contents of all Microchip serial memory devices, it can help understand the communications between the memory device and a microcontroller, and to troubleshoot application problems.

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1.2 OPERATIONAL REQUIREMENTS

To communicate with and program the MPLAB Starter Kit for Serial Memory Products, the following hardware and software requirements must be met:

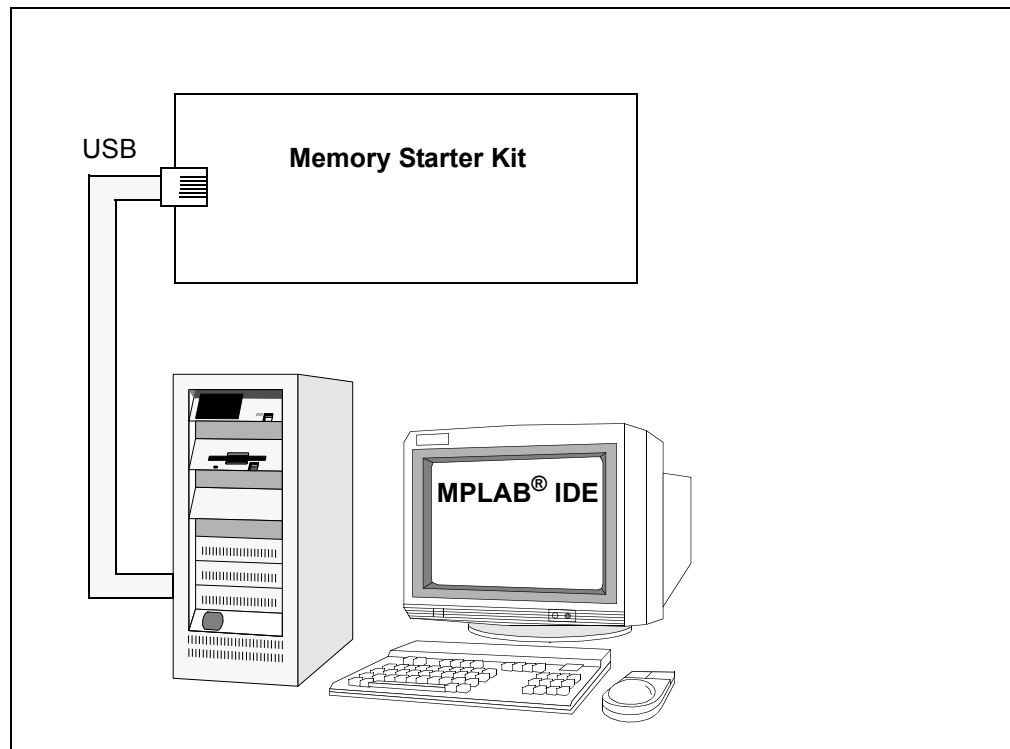
- PC compatible system
- An available USB port on PC or powered USB hub
- CD-ROM drive
- Windows® 2000 SP4, Windows XP SP2, and Windows Vista™ (32-Bit)*
Operating Systems

* Only initial testing has been performed on 32-bit Vista for this release. 64-bit Vista is not supported at this time.

1.3 BOARD SETUP

Figure 1-1 is a drawing of a set up MPLAB Starter Kit for Serial Memory Products. The USB connection provides communication and power to the board.

FIGURE 1-1: MPLAB STARTER KIT FOR SERIAL MEMORY PRODUCTS SETUP



Chapter 2. Using the Memory Starter Kit

This chapter describes the Memory Starter Kit functionality and how to:

- Connect the board to the PC
- Select a Device, Write and Read
- Use the Endurance Utility
- Change the Voltage and SPI Mode

2.1 CONNECT THE BOARD TO THE PC

To run the Memory Starter Kit take these basic steps:

1. Power up the starter kit by connecting the board to the USB port of a computer.
You should briefly see a pop-up balloon in the system tray (lower right of desktop) that states (1) new hardware has been found, (2) drivers are being installed, and (3) new hardware is ready for use. If you do not see these messages and then the Memory Starter Kit does not work, try reconnecting the USB.
2. Start the MPLAB program and select the Memory Starter Kit from the “Tools” pull-down menu. You should then see “Memory Starter Kit connected” in the output window.

2.2 SELECT A DEVICE, WRITE AND READ

Once you have the board connected, select a device:

- Go to the Configure tool bar and the Select Device window will open. Select “SEExxx” from the Device Family pull-down menu if it is not already selected.
- Next, Select the memory device from the Devices menu.
- Now you are ready to use the Memory Starter Kit.
- Install the device into the 16-pin socket on the board. Be sure to place all Microwire devices in the upper half of the socket, all other devices including SPI, I²C, and UNI/O bus parts will go into the bottom half of the socket.
- Read or write to the device by using the Read and Write icons on the top of the GUI. These buttons work in conjunction with the “Read/Write options” pull-downs on the upper left. You can write a pattern or the buffer contents to the array. Select Entire Device or Selected Range for either writing or reading. Check the pull-down menus before reading or writing to get the desired operation.

2.3 USE THE ENDURANCE UTILITY

The Memory Starter Kit includes a utility that will allow you to test the endurance of any of the serial memory products that Microchip offers. By clicking on the Endurance button, you may select a user defined pattern or select from one of the patterns provided. When writing you have the ability to continuously write, read in between cycles, or even alternate data patterns. The endurance utility will automatically stop whenever a failure occurs.

2.4 CHANGE THE VOLTAGE AND SPI MODE

The Memory Starter Kit also gives you the ability to change voltage or change SPI modes by clicking on the Settings button. If you are using SPI you can select Mode 1,1 or Mode 0,0. If your device has the ability to work at multiple voltages you can select from two on-board voltages, either 3.3V or 5.0V. In addition, the Memory Starter Kit can be used with external voltages by changing the jumper to External VDD and using the provided power and ground connections. It is up to the user to make sure that his/her device can support voltages lower than 3.3V.

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