



OTP Programmer Software User's Guide

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Object of Declaration:

OTP Programmer

EU Declaration of Conformity

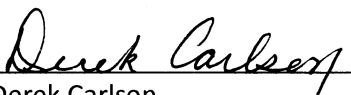
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Signed for and on behalf of Microchip Technology Inc. at Chandler, Arizona, USA


Derek Carlson

VP Development Tools

16-July-2013
Date

NOTES:

Table of Contents

Preface	7
Introduction.....	7
Document Layout	7
Conventions Used in this Guide	8
The Microchip Web Site	9
Development Systems Customer Change Notification Service	9
Customer Support	10
Document Revision History	10
Chapter 1. Introduction	
1.1 Introduction	11
Chapter 2. OTP Programming	
2.1 How To Program The OTP	13
2.2 How To Enable code Execution from OTP	15
Chapter 3. Appendix	
3.1 What to do in case of a programming error	17
Worldwide Sales and Service	19

NOTES:

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 using the OTP Programmer. Items discussed in this chapter include:

- [Document Layout](#)
- [Conventions Used in this Guide](#)
- [The Microchip Web Site](#)
- [Development Systems Customer Change Notification Service](#)
- [Customer Support](#)
- [The Microchip Web Site](#)

DOCUMENT LAYOUT

This document describes how to program the OTP using the OTP programmer utility.

The manual layout is as follows:

- [Chapter 1. “Introduction”](#)
- [Chapter 2. “OTP Programming”](#)
- [Chapter 3. “Appendix”](#)

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	<code>#define START</code>
	Filenames	<code>autoexec.bat</code>
	File paths	<code>c:\mcc18\h</code>
	Keywords	<code>_asm, _endasm, static</code>
	Command-line options	<code>-Opa+, -Opa-</code>
	Bit values	<code>0, 1</code>
	Constants	<code>0xFF, 'A'</code>
Italic Courier New	A variable argument	<i>file.o</i> , where <i>file</i> can be any valid filename
Square brackets []	Optional arguments	<code>mcc18 [options] file [options]</code>
Curly brackets and pipe character: { }	Choice of mutually exclusive arguments; an OR selection	<code>errorlevel {0 1}</code>
Ellipses...	Replaces repeated text	<code>var_name [, var_name...]</code>
	Represents code supplied by user	<code>void main (void) { ... }</code>

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- **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
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The Development Systems product group categories are:

- **Compilers** – The latest information on Microchip C compilers, assemblers, linkers and other language tools. These include all MPLAB C compilers; all MPLAB assemblers (including MPASM assembler); all MPLAB linkers (including MPLINK object linker); and all MPLAB librarians (including MPLIB object librarian).
- **Emulators** – The latest information on Microchip in-circuit emulators. This includes the MPLAB REAL ICE and MPLAB ICE 2000 in-circuit emulators.
- **In-Circuit Debuggers** – The latest information on the Microchip in-circuit debuggers. This includes MPLAB ICD 3 in-circuit debuggers and PICKit 3 debug express.
- **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.
- **Programmers** – The latest information on Microchip programmers. These include production programmers such as MPLAB REAL ICE in-circuit emulator, MPLAB ICD 3 in-circuit debugger and MPLAB PM3 device programmers. Also included are nonproduction development programmers such as PICSTART Plus and PIC-kit 2 and 3.

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://www.microchip.com/support>

DOCUMENT REVISION HISTORY

Revision A (November 2013)

- Initial release of this document.

Chapter 1. Introduction

1.1 INTRODUCTION

This document is a guide to program the OTP available in SEC1110 and SEC1210 ASIC's. The programming of the OTP is achieved using OTP Programmer.exe application via USB interface.

This application is supported under Windows 7 and Windows XP SP3.

NOTES:

Chapter 2. OTP Programming

2.1 HOW TO PROGRAM THE OTP

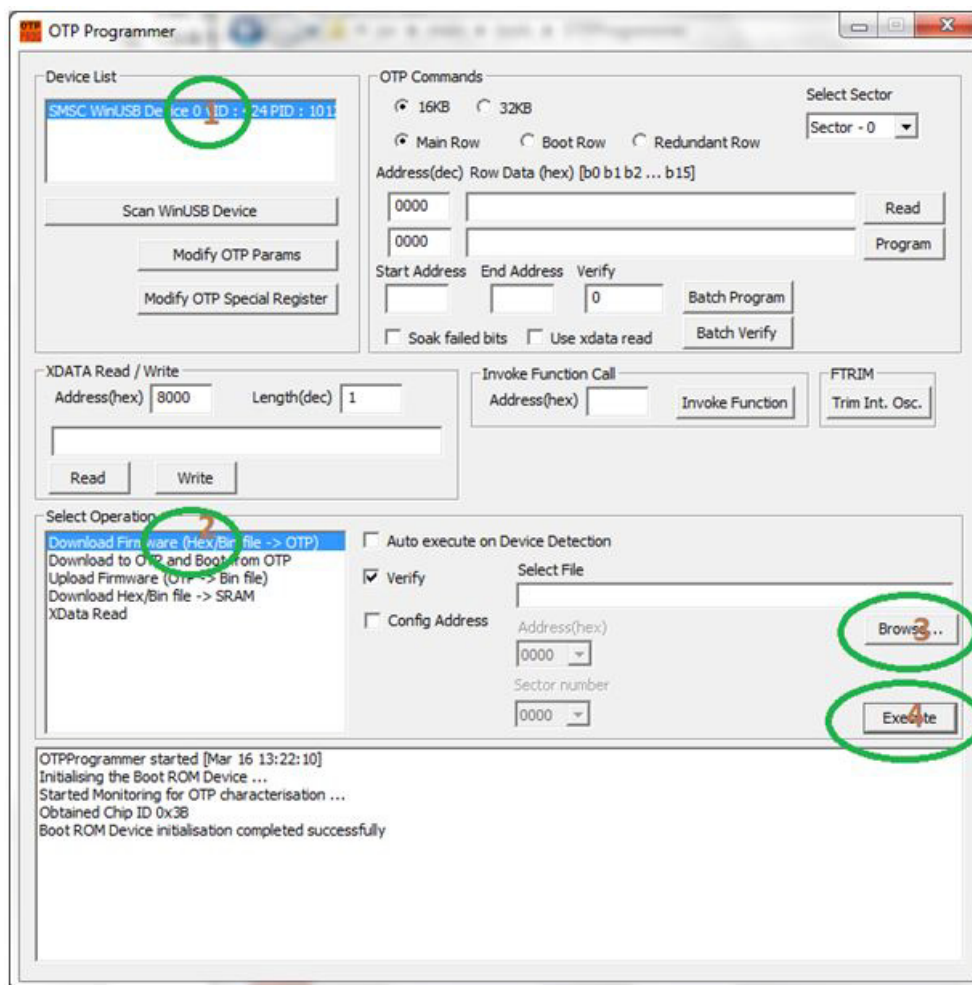
Enumerate the evaluation board in Boot ROM mode. For more information, please refer to application note, AN002-EVB SECxxxx.

- a) Launch the *OTP Programmer.exe* application
- b) The device list (box at the left top) should list a device (1)
- c) Select the operation "Download Firmware (Hex/Bin file>OTP)" in the operations List. (box below the device list) (2)

Note: Selecting "Download to OTP and Boot from OTP" in the operations list sets OTP_ROM_EN bit (in OTP) and triggers auto boot from the OTP immediately after programming.

- d) Click on Browse, located at the right side and select the bin file to be downloaded (not a hex file) (3)
- e) Click on Execute (4)
- f) A notification will be shown when the firmware is downloaded

FIGURE 2-1: STEPS TO PROGRAM OTP

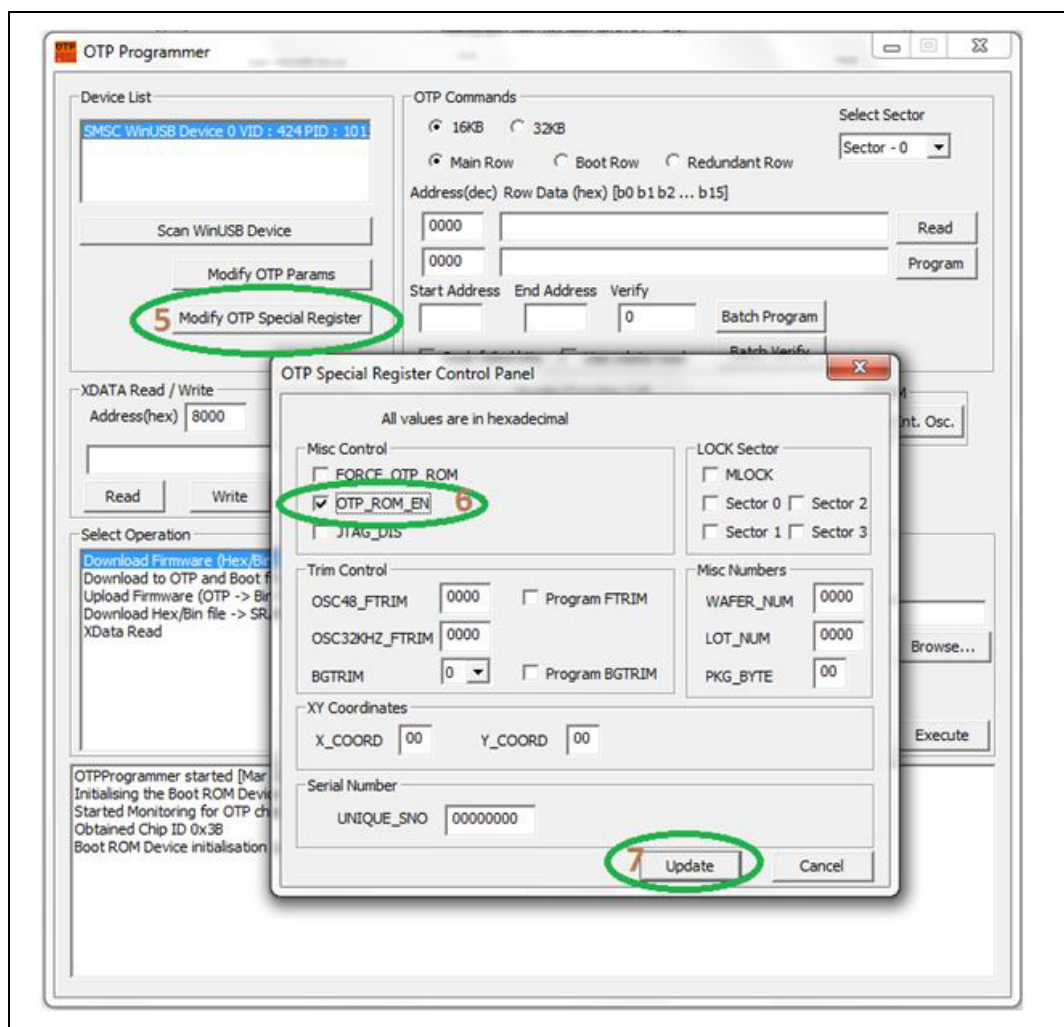


2.2 HOW TO ENABLE CODE EXECUTION FROM OTP

Note: Before enabling execution from OTP, make sure that all the programming operations are completed. A Boot ROM device will not enumerate after power cycling the device and enabling the OTP execution. Note that programming is only possible if Boot ROM device is available.

- a) In the main dialog click on the button “Modify OTP Special Register” (5)

FIGURE 2-2: ENABLING OTP AFTER PROGRAMMING



- b) In the newly launched "OTP Special Register Control Panel", tick the check box "OTP_ROM_EN" under "Misc Control" group (6)
- c) Click on Update (7).
- d) Turn off the board
- e) Power on the board, code execution is from OTP

Note 1: Values in "OTP Special Register Control Panel" dialog are read from/written to OTP boot rows 0 & 2 of sector 0.

Note: Hence the values could only be modified such a way that a bit '0' becomes bit '1'. The reverse is not possible.

- 2: Once the "OTP_ROM_EN" is set in OTP, the Boot ROM is no longer given control. As a result, the OTPProgrammer.exe cannot be used to read/write to OTP.

Chapter 3. Appendix

3.1 WHAT TO DO IN CASE OF A PROGRAMMING ERROR

All user operations and errors encountered by OTP Programmer application is logged into "OTP Programmer.log" file.

For analysis and debug of issues with OTP Programmer and its operation this log file is required. It will be created in the same folder as that of the "OTP Programmer.exe"

NOTES:

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