MCC 8-bit Bootloader Library Release Notes

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1. What is the 8-bit Bootloader MCC Library

The 8-bit Bootloader Library enables creation of bootloaders for 8-bit MCUs. The solution offers a basic command protocol as described in the User's Guide documentation. This library supports 8-bit PIC, ATmega, ATtiny, and AVR-D family of devices per additional instructions presented through MCC Notifications. The detailed list of supported devices is available in the 10. Supported Devices and Families section.

2. System Requirements

This Library has been tested with the following versions.

Support in earlier, or later versions of described requirments below is not guaranteed:

- MPLAB® v5.50 or later
- MPLAB® Code Configurator v4.0.2
- Librarires:
  - 8-bit AVR v2.7.0
  - PIC10/PIC12/PIC16/PIC8 v1.81.7
- Compilers:
  - For AVR and PIC 8-bit devices, XC8 compiler v2.32

3. Related Hardware and Documentation Support

The 8-bit Bootloader Library is a software library written for the collection of Microchip's 8-bit MCU catalog.

The generated code can support all Enhanced Mid-Range PIC16, PIC18 devices (excluding PIC18F Q10 family), ATtiny 0/1, ATmega 0, & AVR-D family of devices.

Library minimal requires are access to UART and Memory Peripheral Libraries. (2) GPIOs used for Entry/Indiction status.

4. Installing the Library

To install the MPLAB® Code Configurator Plugin:

1. In MPLAB X IDE, select Plugins from the Tools menu.
2. Select the Available Plugins tab.
3. Check the box for the MPLAB® Code Configurator, and click on Install.

To install the ‘8-bit Bootloader’ Library:

1. Open the MPLAB Code Configurator page: https://www.microchip.com/mcc
2. Scroll to the bottom of the page and select the Current Downloads tabs.
3. Download the ‘8-bit Bootloader’ Library (bootloader8bit-2.4.1.mc3lib).
4. In the MPLAB® X IDE click on Tools → Options.

4.1. This may also be found under: In the MPLAB® X IDE click on MPLAB® X IDE → Preferences

5. Click on Plugins tab.
6. Click on Install Library.
7. Browse to the location where you saved bootloader8bit-2.4.1.mc3lib, select and click Open.

5. Running the Example

1. Refer to the User's Guide for more detailed instructions; or search 'bootloader' under:
   - Microchip PIC & AVR Examples
2. Create a new project → Select device → Select Tools → Select Save Directory.
3. Launch MCC by either clicking the icon

3.1. Or through: Tools → Embedded → MPLAB Code Configurator

4. From Device Resources → Libraries → Bootloader Generator.
5. Select the desired 'Transport Type' UART instance supported by the selected device.
6. Add the UART through Device Resources → Peripherals → EUSART/UART
   - For PIC Devices: Select 'Enable Auto-Baud Detection'
   - For AVR Devices: Select desired Baud Rate
7. Add the MEMORY through Device Resources → Peripherals → Memory
   - Ensure 'Add DataEE Routines' remains selected on PIC devices if access to EEPROM is desired through Bootloader Command control.
8. Return to the Bootloader Generator now under Device Resources.
   - Configure with the desired support features.
9. If either I/O Entry or Indicator is 'Enabled' as a feature do the below; else skip to next step.
   - For PIC: From the Pin **Manager**: Grid View. Select desired I/O pins
   - For AVR: From the Pin **Manager:** Grid View. Select desired I/O pins.
     - Go to: Device Resources → Pin **Module**
     - Assign the Custom Names as assigned:
       - BL_ENTRY
       - BL_INDICATOR
   - Go to Devices Resources → Pin **Module**. Uncheck the 'Analog' checkbox for all the pins
10. For **AVR** devices: Prepare Memory Reservations. Go To Device Resources → System → Register **Tab**
    - Configure BOOTEND/BOOTSIZE **Fuse** value.
    - Configure APPEND/APPSIZE **Fuse** value if desired.
    - **FUSE** value settings are based upon required program size requirements. Setting requirement may only be known after initial compilation.
11. Press the Generate Button. Code will be produced
12. Build and Clean; Program Device.
13. Observe Size requirement for Bootloader. Update **FUSE** values on AVR devices as required. For PIC devices navigate to Properties → Compiler → Linker → Memory Module. Configure the **ROM RESERVATION** space as required for the bootloader to occupy.
14. Prepare an application project. Apply Offset value to move past bootloader **RESERVED** space. Use Bootloader Commands to update application.
15. It is recommended to refer to the User's Guide for more detailed information regarding Memory Manipulation configurations.

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6. What's New?

v2.4.0: Added support for select PIC18F Q device families (Q40, Q41, Q43, Q83, Q84)

v2.3.3: Migrate support for MCC v4.0.0 (v5.0.0 Core), Added Release notes to version ‘Help’, Packaged as .mc3Lib

v2.3.2: Returned K42 Support, Internal Build

v2.3.1: Suppressed K42 devices

v2.3.0: C99 Support, Extended Memory (PIC18, K42) Support, ATmega 0, ATtiny 0/1, AVR128D

7. Repairs and Enhancements

Table 7-1.

#	ID	Description	Device(s)
1	CFW-561	clear BSR before switching to application	All
2	M8TS-1554	AVR Device Support	ATmega, ATtiny, AVR128D(x)
3	None	Correct C99 Syntax Errors	All
4	M8TS-2609	Core Migration	All
5	M8BTL-411	Fixed the issue of some code specific to PIC18FxxQxx device families getting generated in some non-PIC18FxxQxx devices.	All PIC18F device families supported by the bootloader library except the PIC18FxxQxx device families

8. Known Issues

Table 8-1.

#	ID	Description	Device(s)
1	MCCV3XX-3583	Peripheral Memory Module is not used	ALL
2	MCCV3XX-3584	I2C Issues	ALL
3	-	AVRs require Manual PIN Additions.	AVR
4	M8BTL-410	The warning 'Memory is required to be added from the MCC Peripheral Options' might be shown inspite of adding the Memory module in the Project Resources. Please disregard this warning is Memory module has been added already.	ALL
5	M8BTL-451	UART instance selected in the 8-bit Bootloader Generator library is not retained in the UI after saving and reloading MCC. However, the library remembers the UART instance in the back-end and there are no issues in code generation.	ALL
6	M8BTL-452	The generated bootloader does not compile out-of-the-box for some PIC18F devices, generally because the SFR or bit name on that specific device is different from what the template expects.Workaround: • In MPLAB X IDE, compile the generated code • Navigate to Source Files → MCC Generated Files → pic18f_bootload.c file in which compilation errors are present • Replace all the usages of EEADRL with EEADR • Replace all the usages of EECON1bits.GO with EECON1bits.WR • Recompile the the project	PIC18F devices (except PIC18FxxQxx device families) in which SFR or bit name does not match the one specificed in the bootloader library template
7	M8BTL-453	The warning “Select an output from Pin Manager for Indicator Pin. Custom Name for this pin must be set to “BL_INDICATOR” might be present even though it has been set. Please disregard this warning if the Indicator Pin has been set already.	AVR
8	M8BTL-454	The warning “FUSE Settings SHOULD Be configured by user through MCC. MCC:System Module → Registers ELSE post generation in Source: mcc_generated_files → device_config.c” might prevail even if the Fuses have been configured. Please disregard the warning if the Fuses have been configured already.	AVR

9. FAQ

For frequently asked questions, please refer to the FAQ post on the MCC Forum

10. Supported Devices and Families

The MCC 8-bit Bootloader Library 2.4.1 supports the following families.

This list is true only as supported by devices released in MPLAB X v5.50, and versions where listed Peripheral Library versions are supported.

8-bit Families

- PIC10 / PIC12 / PIC16 / PIC18 MCUs Library (v1.81.7)
  - All PIC10/12/16 Enhanced Midrange
  - All PIC18F, excluding PIC18FxxQ10 family devices
- AVR® MCUs (v2.3.1)
  - ATtiny 0 & 1 Family of devices
  - ATmega 0 Family of devices
  - AVR128D(x) Family of devices

16-bit Families: Refer to 16-bit Bootloader MCC Library

32-bit Families:

Refer to Harmony H2/H3 Solutions

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