Graphics Release Notes

MPLAB Harmony Integrated Software Framework

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Release Information for Graphics

Release Notes

This topic provides the release notes for this version of MPLAB Harmony Graphics.

Description

MPLAB Harmony Version: v3.10 **Release Date:** December 2018

Software Requirements

Before using MPLAB Harmony, ensure that the following are installed:

- MPLAB X IDE v5.10
- MPLAB XC32 C/C++ Compiler v2.15
- MPLAB Harmony Configurator v3.1.0.x
- Harmony bsp repository, v3.10
- Harmony core repository,v3.10
- Harmony csp repository,v3.10
- Harmony dev_packs repository, v3.10
- Harmony mhc repository,v3.10
- Harmony mplabx_plugin repository, v3.10

Updating to This Release of MPLAB Harmony

Updating to this release of MPLAB Harmony is relatively simple. For detailed instructions, please refer to Volume IV: MPLAB Harmony Development > Porting from MLA to MPLAB Harmony > Updating From a Previous Release.

What is New and Known Issues

The following tables list the features that have been changed or added and any known issues that have been identified. Any known issues that have yet to be resolved were retained from the previous release.

MPLAB Harmony:

Feature	Additions and Updates	Known Issues
General	Nothing to Report.	MPLAB Harmony has not been tested with C++; therefore this programming language is not supported. The `"-O1"` optimization level (or greater) is recommended when building any projects that include the MPLAB Harmony prebuilt binary (.a file) peripheral library. This is necessary so that the linker will remove code from unused sections (for peripheral library features that are not used). Alternately, you may select "Remove Unused Sections" in the General options for the `xc32-ld` (linker) properties dialog box.

Middleware and Libraries:

Feature	Additions and Updates	Known Issues
Graphics Library	**Additions:** 1. Aria Graphics Library and Hardware Abstraction Layer (HAL) support for SAM E70 2. Low Cost Controller-less (LCC) display driver support for SAM E70 3. ILI9488 display controller driver support for SAM E70 with SPI and Parallel interfaces 4. maXTouch touch controller support for SAM E70 5. Graphics templates support for SAM E70 XPlained Ultra board with maXTouch Xplained Pro or PDA TM4301B display 6. Aria Quickstart demo application for SAM E70 8. MPLAB Harmony Graphics Composer for Harmony 3 9. Display Manager for Harmony 3 **Updates/Bug Fixes:** 1. Fixed clipping issue on circular widgets 2. Optimized drawing for graphing and circular widgets 3. Fixed bleeding issue with some JPG images 4. Added enable/disable API for list widget items 5. Added focus gained/lost event support for textfield widget 6. Added support for variable line spacing of multi-line text 7. Added thickness and fill property to Circle widget 8. Fixed heap estimation for keypad widget 9. String utility updates • Bug fixes (prepend, function parameter checks) • Improved support for empty strings • La_strcmp optimization	The Heap Estimator can be inaccurate with estimating PNG images that have high pixel fidelity.

Graphics Application Templates:

Template	Additions and Updates	Known Issues
aria_gfx_pda_tm4301b	"Aria Graphics w/ PDA TM4301B Display" - New to Harmony 3	None
aria_gfx_xplained_pro	"Aria Graphics w/ Xplained Pro Display" - New to Harmony 3	Does not support touch.

Board Support Packages (BSP):

Target Board	Additions and Updates	Known Issues
SAM E70 Xplained Ultra	New to Harmony 3	None

Applications:

Feature	Additions and Updates	Known Issues
Graphics Demonstrations	**Added the following demonstrations:** Graphics demonstrations for SAM E70: • aria_quickstart • aria_benchmark • aria_showcase • aria_showcase_reloaded • aria weather forecast (redesigned)	The target configuration aria_quickstart_e70_xult_xpro_spi does not support touch.

Development User Interface:

Feature	Additions and Updates	Known Issues
MPLAB Harmony 3 Framework Downloader	**New to Harmony 3**, in support of installing individual Harmony 3 components	
MPLAB Harmony 3 Configurator	**New:** 1. Project Graph added to user interface 2. Available Project Components and Active Project Components panels 3. Configuration Options Panel replaces MPLAB Harmony and Application Configuration Menu and provides options for the selected component	
MPLAB Harmony 3 Interactive Help		Interactive help using the Show User Manual Entry" in the Right-click menu for configuration options provided by this module is not yet available from within the MPLAB Harmony Configurator (MHC). Please see the the "Configuring the Library" section in the help documentation in the doc folder for this module instead. Help is available in both CHM and PDF formats.

Release Contents

This topic lists the contents of this release and identifies each module.

Description

This table lists the contents of this release, including a brief description, and the release type (Alpha, Beta, Production, or Vendor).

<install-dir>/SubDirectory	Description	Release Type
.\gfx\apps\aria_quickstart	Aria Quickstart Demonstration Project	Beta
.\gfx_apps\apps\aria_benchmark	Aria Benchmark Demonstration Project	Beta
.\gfx_apps\apps\aria_showcase	Aria Showcase Demonstration Project	Beta
.\gfx_apps\apps\aria_showcase_reloaded	Aria Showcase Reloaded Demonstration Project	Beta
.\gfx_apps\apps\aria_weather_forecast	Aria Weather Forecast Demonstration Project	Beta
.\gfx\display\ATMXT-XPRO-480x320	MHC component for Xplained Pro Display (480x320 pixels)	Beta
.\gfx\display\PDA TM4301B 480x272	MHC component for PDA TM4301B Display (480x272 pixels)	Beta
.\gfx\driver\controller\generic	Generic display driver	Beta

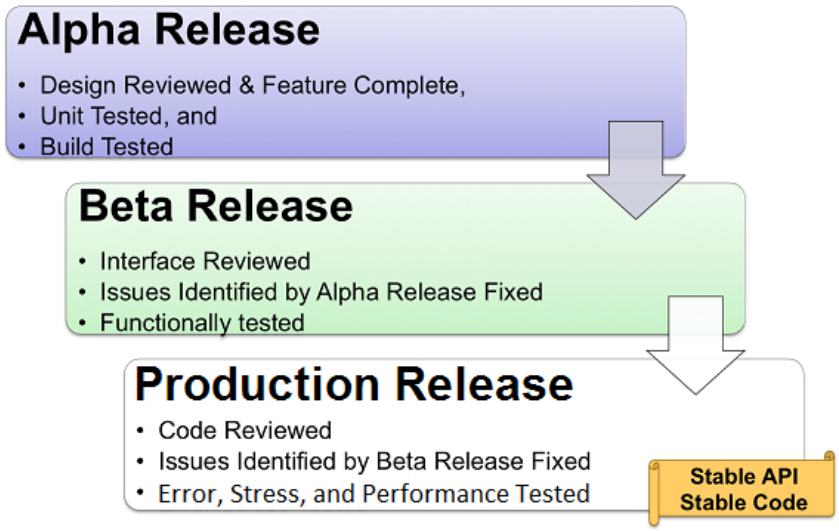
.\gfx\driver\controller\ili9488	ILI9488 display driver	Beta
.\gfx\driver\controller\interface	MCU Peripheral to Display Interface	Beta
.\gfx\driver\controller\lcc	Low-Cost Controllerless Display Driver	Beta
.\gfx\driver\processor\generic	Generic Graphics Processor Driver	Beta
.\gfx\hal	Hardware Abstraction Layer (HAL)	Beta
.\gfx\input\driver\generic	Generic touch input driver	Beta
.\gfx\input\driver\touch\maxtouch	MaxTouch input driver	Beta
.\gfx\middleware\aria	Aria Graphics Library	Beta
.\gfx\middleware\aria\third_party\jidctint	Independent JPEG Group's free JPEG decoder	Production
.\gfx\middleware\aria\third_party\lodepng	Lode Vandevenne's free PNG decoder	Production
.\gfx\middleware\aria\utils	Graphics Utilities Library	Production
.\gfx\templates\aria_gfx_pda_tm4301b	Graphics application template for PDA TM4301B WQVGA Display	Beta
.\gfx\templates\aria_gfx_xplained_pro	Graphics application template for Xplained Pro Display	Beta

Release Types

This section describes the release types and their meaning.

Description

MPLAB Harmony module releases can be one of three different types, as shown in the following illustration.



Alpha Release

An alpha release version of a module is usually an initial release. Alpha releases will have complete implementations of their basic feature set, they are functionally unit tested and will build correctly. An alpha release is a great "preview" of what a new development Microchip is working on and it can be very helpful for exploring new features. However, it has not gone through the complete formal test process and it is almost certain that some of its interface will change before the production version is released, and therefore, is not recommended for production use.

Beta Release

A beta release version of a module has gone through the internal interface review process and has had formal testing of its functionality. Also, issues reported from the alpha release will have been fixed or documented. When a module is in a beta version, you can expect it to function correctly in normal circumstances and you can expect that its interface is very close to the final form (although changes can still be made if required). However, it has not had stress or performance testing and it may not fail gracefully if used incorrectly.

Production Release

By the time a module is released in a production form, it is feature complete, fully tested, and its interface is "frozen". All known issues from previous releases will have been fixed or documented. The existing interface will not change in future releases. It may

be expanded with additional features and additional interface functions, but existing interface functions will not change. This is stable code with a stable Application Program Interface (API) that you can rely on for production purposes.

Version Numbers

This section describes the meaning of MPLAB Harmony version numbers.

Description

MPLAB Harmony Version Numbering Scheme

MPLAB Harmony uses the following version numbering scheme:

`<major>.<minor>[.<dot>][<release type>]`

Where:

`<major>` = Major revision (significant change that affects many or all modules)

`<minor>` = Minor revision (new features, regular releases)

`[.<dot>]` = Dot release (error corrections, unscheduled releases)

`[<release type>]` = Release Type (a for alpha and b for beta, if applicable). Production release versions do not include a release type letter.

Version String

The SYS_VersionStrGet function will return a string in the format:

"`<major>.<minor>[.<patch>][<type>]`"

Where:

`<major>` is the module's major version number

`<minor>` is the module's minor version number

`<patch>` is an optional "patch" or "dot" release number (which is not included in the string if it equals "00")

`<type>` is an optional release type of "a" for alpha and "b" for beta. This type is not included if the release is a production version (i.e., not an alpha or a beta)

Note: The version string will not contain any spaces.

Example:

```
"0.03a"
"1.00"
```

Version Number

The version number returned from the SYS_VersionGet function is an unsigned integer in the following decimal format (not in a BCD format).

`<major> * 10000 + <minor> * 100 + <patch>`

Where the numbers are represented in decimal and the meaning is the same as described in Version String.

Note: There is no numerical representation of the release type.

Example:

For version "0.03a", the value returned is equal to: 0 * 10000 + 3 * 100 + 0.

For version "1.00", the value returned is equal to: 1 * 100000 + 0 * 100 + 0.

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