MICROCHIP

Using the MPLAB Harmony Help

MPLAB Harmony Integrated Software Framework

Using the MPLAB Harmony Help

This topic contains general information that is useful to know before using the MPLAB Harmony help.

Description

Help Formats

MPLAB Harmony Help is provided in three formats:

- Stand-alone HyperText Markup Language (HTML)
- Microsoft Compiled HTML Help (CHM)
- Adobe® Portable Document Format (PDF)

Help File Locations

Each of these help files are included in your installation of MPLAB Harmony in the following locations:

- HTML - `<install-dir>/doc/html/index.html`
- CHM - `<install-dir>/doc/help_harmony.chm`
- PDF - `<install-dir>/doc/help_harmony.pdf`

Refer to Help Features for more information on using each output format.

Help Features

Describes the features available in the Help files provided in MPLAB Harmony.
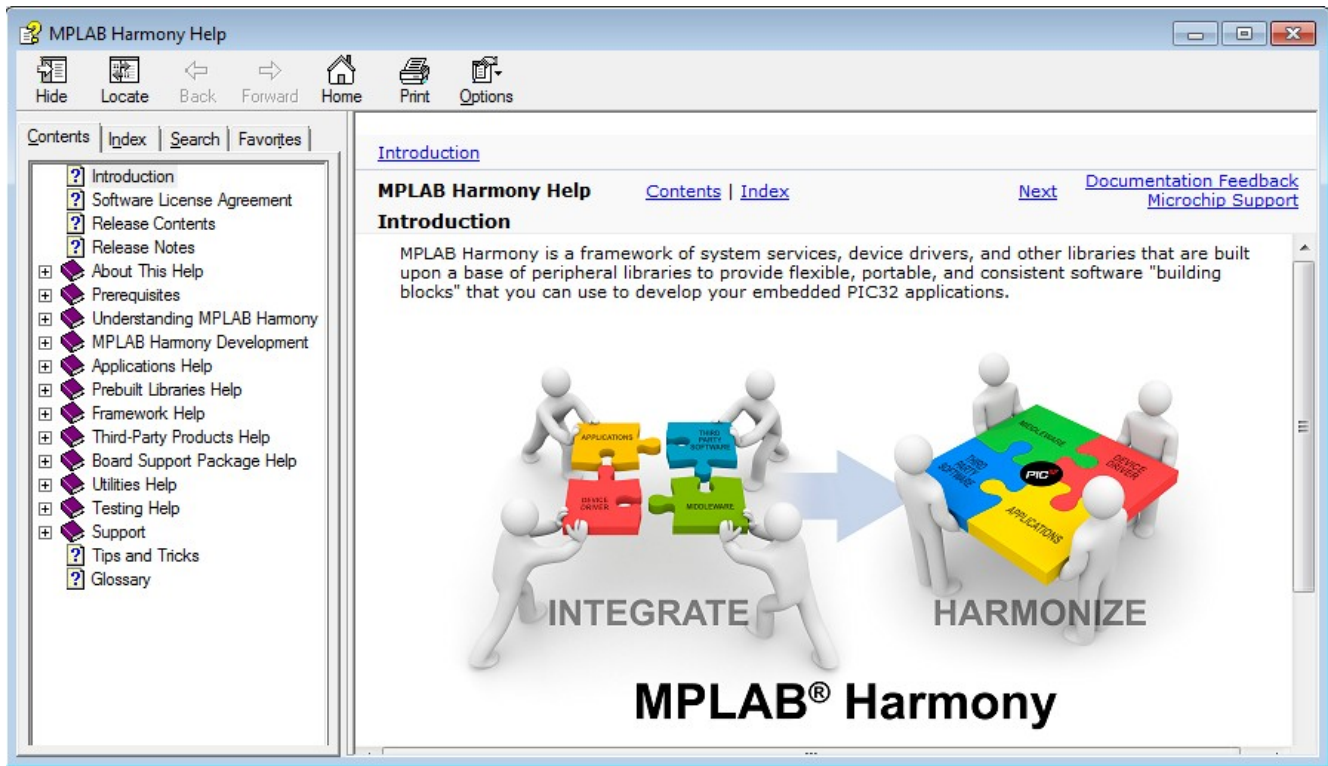
CHM Help Features

Provides detailed information on the features available in the CHM Help file.

Description

The MPLAB Harmony CHM file (`<install-dir>/doc/help_harmony.chm`) provides many useful features for accessing Help content. Figure 1 shows the initial Help window.
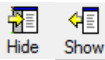
Figure 1: Initial CHM Help View

Help Icons

Several icons are provided in the interface of the Help, which aid in accessing the Help content.
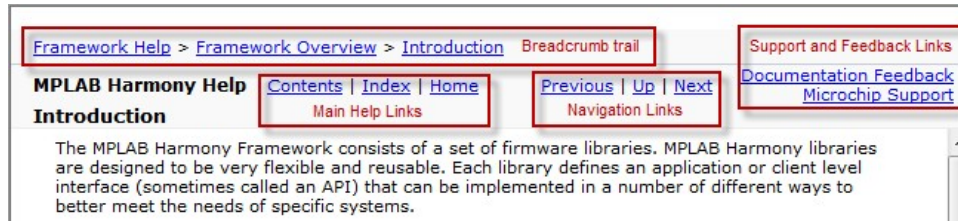
Table 1: Help Icon Features

Help Icon	Description
Hide Show	Use the Hide icon to turn off the left Help pane. Once the Hide icon is selected, it is replaced with the Show icon. Clicking the Show icon restores the left Help pane.
Locate	Use the Locate icon to visually locate the Help topic you are viewing in the Contents. Clicking the Locate icon causes the current topic to be highlighted in blue in the Contents pane.
Back	Use the Back icon to move back through the previously viewed topics in the order in which they were viewed.
Forward	Use the Forward icon to move forward through the previously viewed topics in the order in which they were viewed.
Home	Use the Home icon to return to the first topic in the Help.
Print	Use the Print icon to print the current topic or the selected heading and all subtopics.
Options	Use the Options icon to: • Hide tabs • Locate a topic • Go Back, Forward, and Home • Stop • Refresh • Set Internet Explorer options • Print topics • Turn Search Highlight Off and On

Topic Window

The Topic Window displays the current topic. In addition to the Help content, special links are provided in the upper portion of the window, as shown in Figure 2. Table 2 lists and describes the different links by their category

Figure 2: Help Links

Table 2: Help Links

Link Category	Description
Breadcrumb Trail	The path (i.e., trail) of the current topic is provided at the top and bottom of each topic, beginning with the top-level section name.
Support and Feedback Links: • Documentation Feedback • Microchip Support	Click this link to send feedback in the form of an email (see **Note 1**). Click this link to open the Microchip Support Web page.
Main Help Links: • Contents • Index • Home	Click this link to open the Contents in the left pane. Click this link to open the Index in the left pane (see **Note 2**). Click this link to go to the initial Help topic (see **Note 2**).
Navigation Links: • Previous • Up • Next	Click this link to go back to the previously viewed topic. Click this link to go to the parent section of the topic. Click this link to go to the next topic.

Notes:
1. To use the *Documentation Feedback* link, you must have an email system such as Outlook configured. Clicking the link automatically opens a new email window and populates the recipient and subject lines.
2. The *Home* and *Index* links do not appear initially. Once you begin traversing the topics, they dynamically appear.
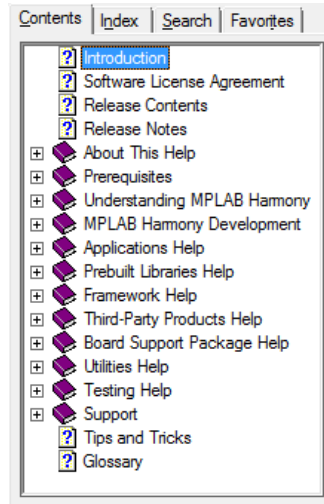
Tabs

The CHM Help provides four Tabbed windows: *Contents*, *Index*, *Search*, and *Favorites*.
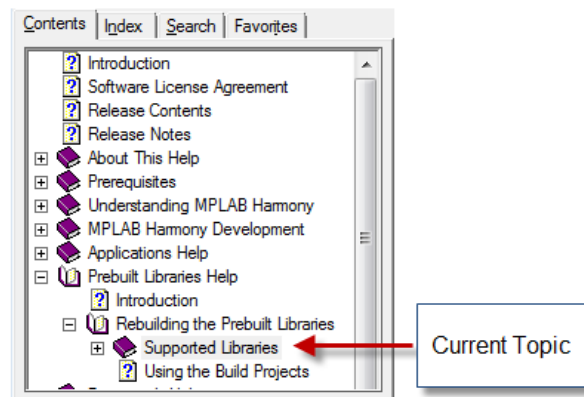
Contents

The Contents tab displays the top-level topics/sections. Figure 3 shows the initial view when the CHM Help is first opened.

Figure 3: Initial Contents Tab View

As topics are explored, the information in the Contents tab dynamically updates. For example, by clicking **Prebuilt Libraries Help** and using the Next link in the current topic to traverse through this section, the collapsed section automatically expands and the current topic is highlighted in light gray, as shown in Figure 4.
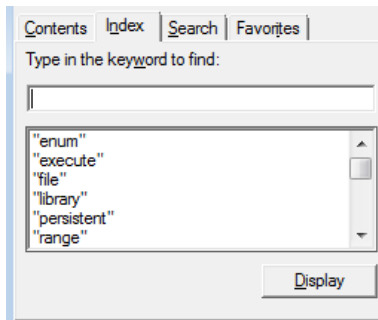
Figure 4: Current Topic Highlighting

Index

Clicking the Index tab results in an alphabetic list of all Help index entries. Figure 5 shows the default Index interface.

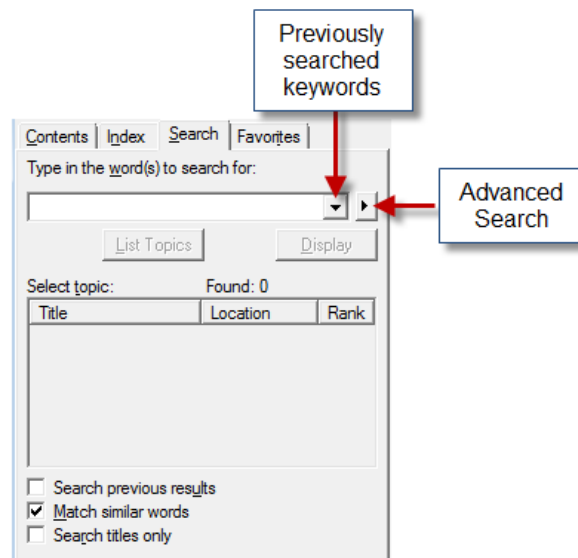**Figure 5: Default Index Interface**

- To locate a specific entry, enter the keyword in the *Type in the keyword to find:* box. As you type, the index list dynamically updates.
- To display the desired item in the list, select the item and click **Display**, or double-click the desired item. The related content appears in the Help window.
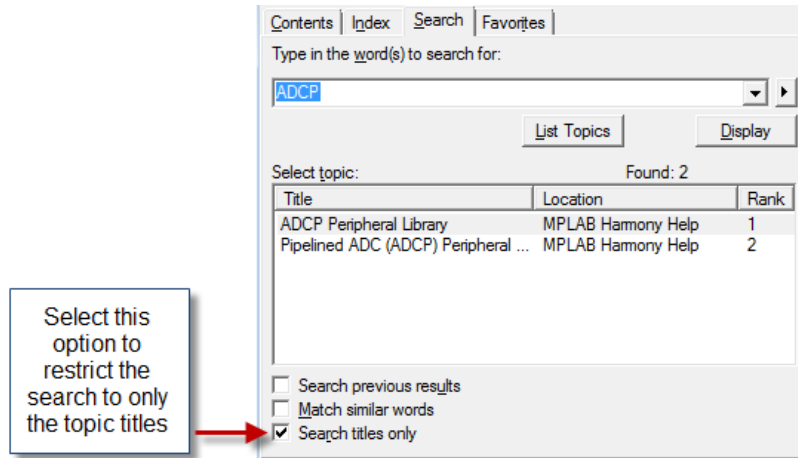
Search

Clicking the Search tab provides an efficient way to find specific information. Figure 6 shows the default Search interface.

Figure 6: Default Search Interface

- Enter the specific word or words in the *Type in the word(s) to search for:* box
- Clicking the drop-down arrow provides the list of previously searched words
- The right arrow provides Advanced Search options: AND, OR, NEAR, and NOT
- Located at the bottom left of the Search window, three options are provided to narrow-down your search. By default, *Match similar words is selected*. To reduce the number of returned words, clear this box and select *Search titles only*, which restricts the search to only the topic titles in the Help, as shown in Figure 7.

Figure 7: Search Titles Only

- The *Title* column provides the list of related topics
- The *Location* column lists in which Help system the topic was found (see **Note**)
- The *Rank* column determines to search result that most closely matches the specified word
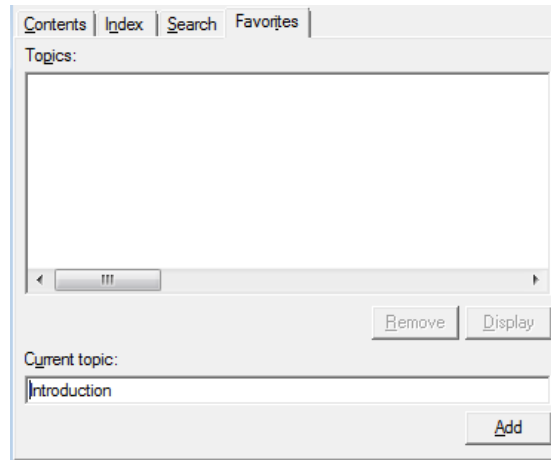
Note: The *Legend* column is automatically included in the CHM Help when the Advanced Search features are implemented and cannot be excluded. Its purpose is to provide the name of the Help system in which the topic is located for Help output that is generated from multiple sources. Since the MPLAB Harmony Help is contained within a single Help system, this information is the same for all searches. Do not confuse this column to mean the actual topic location.
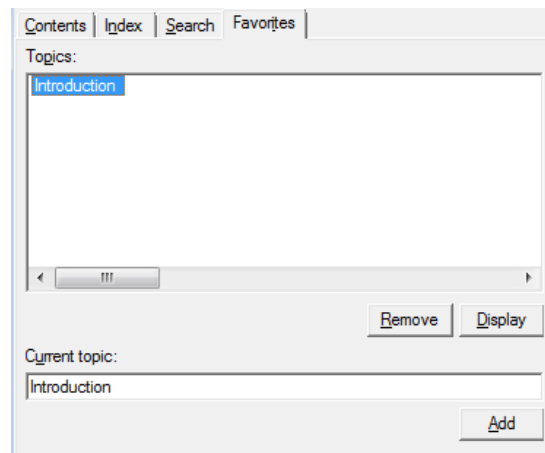
Favorites

Use the Favorites tab to create a custom list of topics that you may want to repeatedly access. Figure 8 shows the default Favorites interface.

Figure 8: Default Favorites Interface

- The title of the current topic is shown in the *Current topic:* box.
- Click **Add** to add the topic to the *Topics:* list, as shown in Figure 9.
- Click **Display** to view the selected topic.
- Click **Remove** to remove the selected topic from the list of favorites.

Figure 9: Adding a Favorite Topic

HTML Help Features

Provides detailed information on the features available in the stand-alone HTML Help.

Description

The HTML Help output for MPLAB Harmony has two purposes. First, it can be used as "stand-alone" Help. Second, the HTML files are used by the MPLAB Harmony Configurator (MHC) when using MHC in MPLAB X IDE.

Stand-alone HTML Help

To use the HTML Help in a "stand-alone" manner. Open the file, `<install-dir>/doc/index.html`, in your browser of choice.

The following figure shows the initial view after opening the HTML Help.

The following links are provided:

- *Topic Breadcrumb Trail* - At the top and bottom of each topic, the help path is listed
- *Contents* - The Contents topic is a static file, which lists the major sections available in the Help. Due to a restriction with the Help browser used by the MHC, a dynamic Contents topic cannot be used.
- *Index* - The Index provides the ability to dynamically search for and display related keywords (see **Note 1**)
- *Home* - This link returns to the Introduction topic (see **Note 1**)
- *Previous* and *Next* navigation links - Use these links to traverse through the Help topics
- *Documentation Feedback* - Use this link to provide feedback in the form of an email (see **Note 2**)
- *Microchip Support* - Use this link to open the Support page of the Microchip website

📝 **Notes:**
1. The *Home* and *Index* links do not appear initially. Once you begin traversing the topics, they dynamically appear.
2. To use the *Documentation Feedback* link, you must have an email system such as Outlook configured. Clicking the link automatically opens a new email window and populates the recipient and subject lines.

PDF Help Features

Provides detailed information on the features available in the PDF version of the Help.

Description

The MPLAB Harmony Help provided in Portable Document Format (PDF) provides many useful features. By default, PDF bookmarks should be visible when opening the file. If PDF bookmarks are not visible, click the PDF Bookmark icon, which is located near the top of the left navigation pane or by selecting *View > Show/Hide > Navigation Panes > Bookmarks.*

To make full use of the PDF features, it is recommended that Adobe products be used to view the documentation (see **Note**).

Help on how to use the PDF output is available through your copy of Acrobat (or Acrobat Reader) by clicking **Help** in the main menu.

Note: The MPLAB Harmony Help PDF file can be viewed using a PDF viewer or reader that is compatible with Adobe PDF Version 7.0 or later.

Typographic Conventions

This topic describes the typographic conventions used in the MPLAB Harmony Help.

Description

The MPLAB Harmony Help uses the following typographic conventions:

Description	Represents	Example
Italic Characters	Referenced documentation and emphasized text	• *MPLAB X IDE User's Guide* • ...is the *only* option.
Initial Capitalization	• A window • A dialog • A menu selection	• the Output window • the SaveAs dialog • the Enable Programmer menu
MHC	Indicates a process step that is automated by the MPLAB Harmony Configurator (MHC)	*Throughout the documentation, when you see this icon, it indicates that the MHC automates the associated task(s).*
TIP!	Provides helpful information to assist the user	Throughout this documentation, occurrences of `<install-dir>` refer to the default MPLAB Harmony installation path, which is: `C:/microchip/harmony/<version>`.
Note:	Provides useful information to the user	Refer to the individual Release Notes for the libraries and demonstrations for details on changes from the previous release of MPLAB Harmony.
Important!	Provides important information to the user	This tutorial is based on the PIC32MZ Embedded Connectivity (EC) Starter Kit. If you are using a different hardware platform, you may need to change some of the settings used in the tutorial (such as timer selection and clock rates) to appropriate values for your platform.
Warning	Warns the user of a potentially harmful issue	The cause of the interrupt must be removed before clearing the interrupt source or the interrupt may reoccur immediately after the source is cleared potentially causing an infinite loop. An infinite loop may also occur if the source is not cleared before the interrupt-handler returns.
Quotation Marks	A field name in a window or dialog	"Save project before build"
Italic text with right angle bracket	A menu path	*File > Save*
Bold Characters	• Topic headings • A dialog button	• **Prerequisites** • Click **OK**
Text enclosed in angle brackets	A key on the keyboard	Press <Ctrl><V>
Courier New text	• Sample source code • File names	• `#define START` • `system_config.h`
Square Brackets	Optional arguments	`command [options] file [options]`
Curly Braces and Pipe	Choice of mutually exclusive arguments; an OR	`errorlevel {0|1}`

Recommended Reading

The following Microchip documents are available and recommended as supplemental reference resources.

Description

Using the MPLAB Harmony Help Documentation

If you are new to MPLAB Harmony, read the Understanding MPLAB Harmony section and follow the Creating an Application tutorial to create your first MPLAB Harmony application.

For an overview of the libraries, demonstration projects, and other resources provided in the MPLAB Harmony installation, review the tables in the Release Contents section.

Refer to the Applications Help section for more information on the demonstration projects and the Framework Help section for more information on the libraries that make up the MPLAB Harmony framework. There are also help sections available for the third-party material, board support packages, and prebuilt libraries that you should review for more information on each of those items.

The help documentation for each MPLAB Harmony library is organized into common topics. The "Introduction" section provides a brief description of the library for those who are new to it. "Release Notes" and "Software License Agreement" provide the latest release information about the library and its license terms. Read the "Using the Library" section to understand the library's usage model and see examples of how to use the library's interface functions to create the solutions you need. The "Files", "Building the Library", and "Configuring the Library" sections describe how to add the library to your project and configure it for your desired usage. The "Library Interface" section provides a convenient programmer's reference dictionary of the library's interface functions, data types, and constants with a convenient hyper-linked summary table. Use it while you are developing your own applications.

PIC32 Family Reference Manual Sections

PIC32 Family Reference Manual sections are available, which explain the operation of the PIC32 microcontroller family architecture and peripheral modules. The specifics of each device family are discussed in the individual family's device data sheet.

To access this documentation, please visit, http://www.microchip.com/pic32/, and click **Documentation**. Then, expand **Reference Manual** to see the list of available sections.

PIC32 Device Data Sheets

Refer to the appropriate device data sheet for device-specific information and specifications.

Reference information found in these data sheets includes:

- Device memory maps
- Device pin out and packaging details
- Device electrical specifications
- List of peripherals included on the devices

To access this documentation, please visit, http://www.microchip.com/pic32/, and click **Documentation**. Then, expand **Data Sheets** to see the list of available documents.

MPLAB® XC32 C/C++ Compiler User's Guide (DS50001686)

This document details the use of Microchip's MPLAB XC32 Compiler for PIC32 microcontrollers to develop 32-bit applications. Please visit the Microchip website to access the latest version of this document.

MPLAB® X IDE User's Guide (DS50002027)

Consult this document for more information pertaining to the installation and implementation of the MPLAB X IDE software. Please visit the Microchip website to access the latest version of this document.

Documentation Feedback

This topic includes information on how to provide feedback on this documentation.

Description

Your valuable feedback can be provided to Microchip in several ways. Regardless of the method you use to provide feedback, please include the following information whenever possible:

- The Help platform you are viewing:
  - Adobe® PDF
  - Windows® Compiled Help (CHM)
  - HTML
- The title of the topic and the section in which it resides
- A clear description of the issue or improvement

How To Send Your Feedback

It is preferred that you use one of the following two methods to provide your feedback:

- Through the Documentation Feedback link, which is available in the header and footer of each topic when viewing compiled Help (CHM) or HTML Help
- By email at: docerrors@microchip.com

If either of the two previous methods are inconvenient, you may also provide your feedback by:

- Contacting your local Field Applications Engineer
- Contacting Customer Support at: http://support.microchip.com