ModusToolbox™ tools package release notes

ModusToolbox™ tools package version 3.3.0

A newer version of this document may be available on the web here.

About this document

Scope and purpose

This document describes the features and known limitations for the ModusToolbox™ software provided as part of the ModusToolbox™ tools package included with the installer.

Note: *This document has been updated to include information about the PSOC™ Control C3 device.*

ModusToolbox™ software is a set of tools that enable you to integrate our devices into your existing development methodology. ModusToolbox™ software consists of various libraries and middleware on GitHub, as well as an IDE and tools package installed on your computer. For more details about what is included with ModusToolbox™ software, refer to the ModusToolbox™ tools package user guide. See also What's included in this document.

This ModusToolbox™ tools package is a complete release. It includes the latest features from all previous releases, including patches. This release does not replace any existing installed releases; it installs alongside them. If you have more than one release installed, refer to the ModusToolbox™ tools package user guide, "Product versioning" section.

Reference documents

Refer to the following documents for more information as needed:

- ModusToolbox™ tools package user guide
- ModusToolbox™ tools package installation guide
- Training material on GitHub

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1 Primary changes

The overall tools package version 3.3.0 release includes the following updates and features:

1.1 Build, program, and debug support for multi-project applications

Multi-project support in ModusToolbox™ provides the ability for applications to have multiple projects targeting a single core. In these situations, you can choose when to work on specific projects and when to work on the application as a whole.

Multi-project support allows you to build, program, and debug individual projects; combine multiple projects to create a programmable hex file that supports more than one core; set up security keys and sign hex files; and to do multi-core debugging with secure- and non-secure projects.

1.2 Memory allocation and configuration

Allocation of code and data into memory is becoming more complex as Infineon devices add internal memory types and rely on off-chip memory for both code and data. The simple linker file approaches that work fine for single-core, on-chip memory designs do not scale well to new, more sophisticated applications with multiple projects targeting the same memory spaces.

You need to be able to see the physical memory in a chip and on the board, as well as have the ability to discern the power and performance characteristics of the memory. The QSPI Configurator provides that information for off-chip memory.

1.3 ModusToolbox™ Edge Protect Security Suite (new package)

The Edge Protect Security Suite is a new software package that enables the security functions in devices such as PSOC™ 64 and newer devices coming out soon. This package is distributed within Infineon Developer Center and supported by the ModusToolbox™ Setup program.

1.4 LLVM embedded toolchain support for Arm®

LLVM embedded toolchain has better support for future devices than the shipping GNU compiler (GCC_ARM) and it has been requested by several customers. Arm® Ltd. maintains both toolchains but have stated that support for LLVM has priority. To ensure competitive performance, LLVM has been added as a new TOOLCHAIN ("LLVM_ARM").

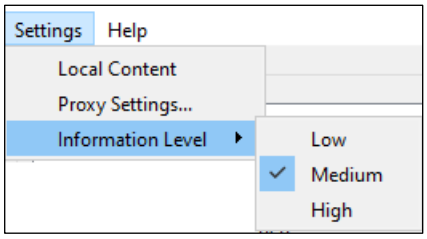
1.5 Graphical assistance for peripheral configuration

Some peripheral configuration can be difficult. Some users struggle to translate the expected inputs and desired outputs into the setup choices for a block. This release provides support for graphical assistance when configuring peripherals.

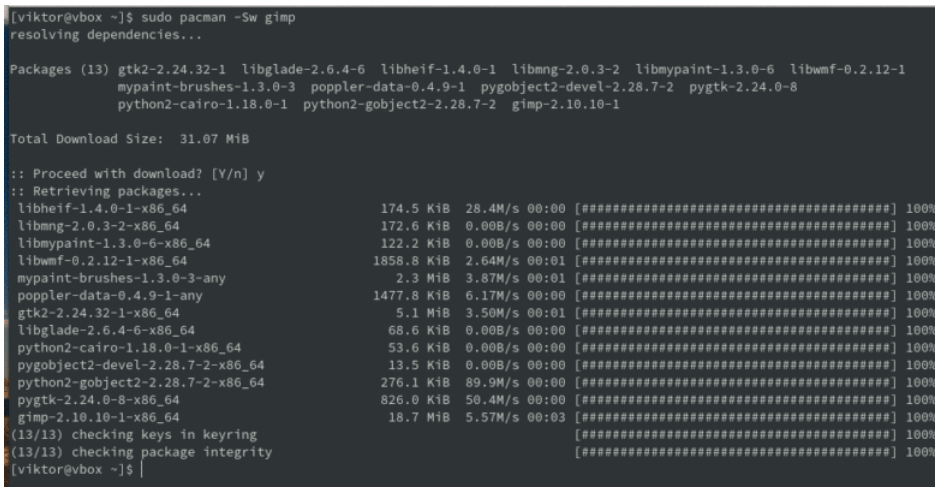
Primary changes

1.6 Improved messaging

We have enabled improved messaging in several tools running Git commands, including Library Manager and Project Creator, to allow you to see more or fewer messages in the Output area depending on your selection:



- **Low**: When downloading Git repos, the tools display an animated spinner while it performs background operations. The **Close** button changes to **Cancel** when background operations are running.
- **Medium**: The tools also display various subcommands they are running. When possible, tools display the total progress (for example, 15/23 operations completed).
- **High**: Tools also display parallel subcommands that are currently running and show a visual representation of their progress. For example:



1.7 Preliminary support for "Ninja" build system

As described on the https://ninja-build.org/ website, Ninja is a small build system that focuses on speed. In various tests we have performed, Ninja was considerably faster than the regular ModusToolbox™ build system. In this release of the tools package, we have included a preliminary version of Ninja that is disabled by default.

1.7.1 Enable Ninja in new applications

You can enable Ninja in your new 3.3 applications using the variable:

```
NINJA=1
```

This variable can be added on the command line; for example:

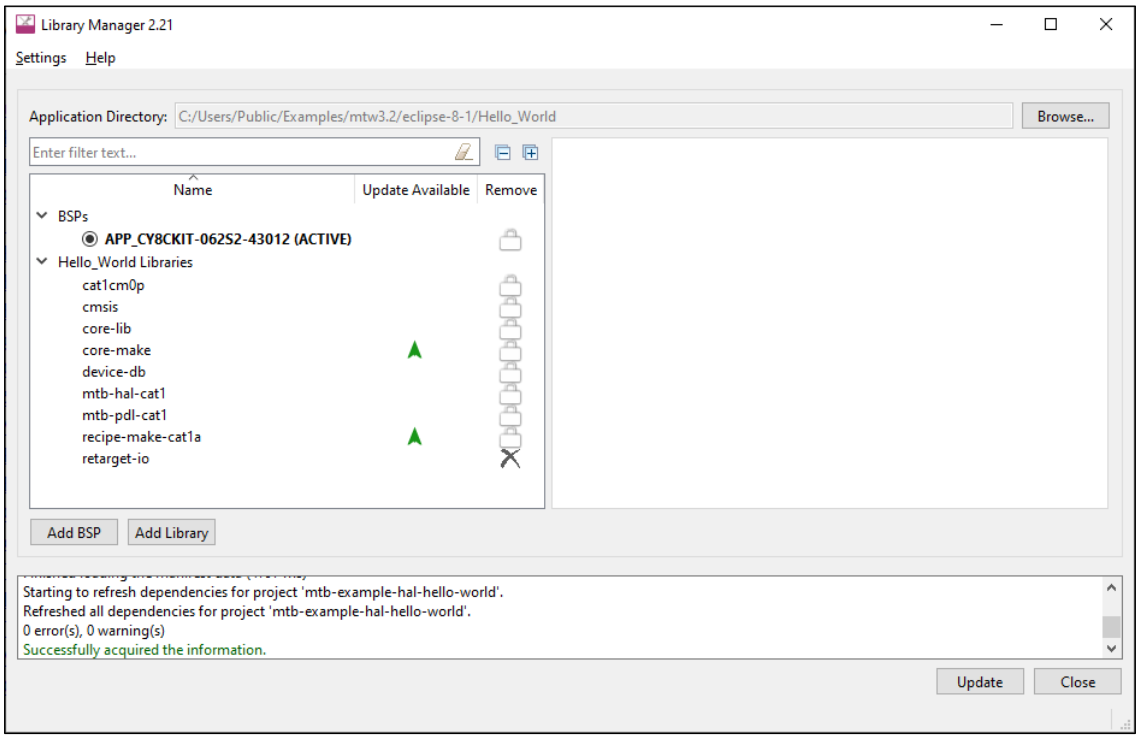
```
make build NINJA=1
```

You can also add the variable to your application's *Makefile*, or set it as an environment variable to be used for all your applications.

Primary changes

1.7.2 Enabling Ninja for older applications

When opening older applications with 3.3 tools, you will need to update libraries to newer releases first, and then you can enable Ninja. Open the Library Manager, and notice that core-make and recipe-make have indicators that newer releases are available:



Update each library to the newest release, and click **Update**. Then use the variable described in Enable Ninja in new applications.

1.7.3 Not for production designs

When enabled, you will see the following in the Ninja build output:

```
NOTE: Ninja support is _EXPERIMENTAL_.
```

Because support is preliminary, the Ninja build system is not to be used for production designs. We plan to provide a production release of Ninja in a future release of the ModusToolbox™ tools package.

2 What's included

This release includes the following tools and versions:

Tool Name	Current Release	Current Release
AIROC™ tools	5.0.1 (no change)	5.0.1
Bluetooth® Configurator	3.0.0	2.90
BSP Assistant	1.21.0	1.20
CAPSENSE™ Configurator & Tuner	6.30.0	6.20
CyBridge	3.7.1	3.6.0
ChipLoad	1.6.5	1.6.2
cymcuelftool	1.0 (no change)	1.0
Dashboard	3.3.0	3.2.0
DetectAndID	5.0.1 (no change)	5.0.1
Device Configurator	5.10.0	4.20
Device Firmware Update (DFU) Host Tool	2.50.0	2.20
Eclipse IDE for ModusToolbox™	3.3.0	3.2.0
EZ-PD™ Configurator	2.0.0	1.30
Firmware Loader (fw-loader)	3.7.1	3.6.0
GCC	11.3 (no change)	11.3
GNU make Build System (tools-make)	2.3.0	2.2
JRE (OpenJDK)	17.0.7 (no change)	17.0.7
KitProg3	2.60.0	2.50.1
LCS Manager	1.11.0	1.10.0
Library Manager	2.21.0	2.20
LIN Configurator	1.40.0	1.30
MbtP	5.0.1 (no change)	5.0.1
modus-shell	1.5.0 (no change)	1.5.0
Core build infrastructure: • mtbgetlibs • mtbideexport • mtblaunch • mtbninja (new) • mtbquery • mtbsearch	1.3.0	1.2.0
ninja	1.12.1	N/A
OpenOCD (ModusToolbox™-specific)	5.2.1	5.0.1
Project Creator	2.21.0	2.20
Proxy Helper	1.51.0	1.50
QSPI Configurator	4.31.0	4.30
Segment LCD Configurator	1.61.0	1.60
SignCombineMkGen	1.0.0	N/A
Smart I/O Configurator	4.21.0	4.20
SRecord	1.64 (no change)	1.64
USB Configurator	2.70.0	2.60

2.1 Supported tool chains

The GCC Arm Embedded toolchain GCC 11.3 is installed with the ModusToolbox™ tools package. This toolchain has no use restrictions and does not require license activation (it is distributed under the terms of the GNU Public License).

Although not installed with ModusToolbox™ software, the build system also supports these tool chains for most applications and devices (see the application *README.md* file for applicable support):

- Arm compiler v6 or newer (Windows and Linux hosts)
- IAR Embedded Workbench v9 or newer (Windows only)
- LLVM 18.1.3 or newer

2.2 Supported boards

The boards available for use varies with different releases of BSPs and libraries on GitHub. You can see the current list of BSPs in the Project Creator tool using the default manifest URL:

Kit Name	MCU/SOC/SIP	Connectivity
AIROC™ Bluetooth® BSPs		
AIROC™ Connectivity BSPs		
CYW943907AEVAL1F	CYW43907KWBG	<none>
CYW954907AEVAL1F	CYW54907KWBG	<none>
PMG1 BSPs		
PMG1-CY7110	CYPM1011-24LQXI	<none>
PMG1-CY7111	CYPM1111-40LQXIT	<none>
PMG1-CY7112	CYPM1211-40LQXIT	<none>
PMG1-CY7113	CYPM1311-48LQXI	<none>
PSoC™ 4 BSPs		
CY8CKIT-041-41XX	CY8C4146AZI-S433	<none>
CY8CKIT-041S-MAX	CY8C4149AZI-S598	<none>
CY8CKIT-045S	CY8C4548AZI-S485	<none>
CY8CKIT-145-40XX	CY8C4045AZI-S413	<none>
CY8CKIT-149	CY8C4147AZI-S475	<none>
PSOC4-GENERIC	CY8C4548AZI-S485	<none>
PSoC™ 6 BSPs		
CY8CEVAL-062S2	CY8C624ABZI-S2D44	<none>
CY8CEVAL-062S2-LAI-4373M2	CY8C624ABZI-S2D44	CYW4373EUBGT
CY8CEVAL-062S2-MUR-43439M2	CY8C624ABZI-S2D44	CYW43439KUBG
CY8CKIT-062-BLE	CY8C6347BZI-BLD53	<none>
CY8CKIT-062S2-43012	CY8C624ABZI-S2D44	CYW43012C0WKWBG
CY8CKIT-062S4	CY8C6244LQI-S4D92	<none>
CY8CKIT-062-WIFI-BT	CY8C6247BZI-D54	CYW4343WKUBG
CY8CKIT-064B0S2-4343W	CYB0644ABZI-S2D44	CYW4343WKUBG
CY8CKIT-064S0S2-4343W	CYS0644ABZI-S2D44	CYW4343WKUBG
CY8CPROTO-062-4343W	CY8C624ABZI-S2D44	CYW4343WKUBG
CY8CPROTO-062S3-4343W	CY8C6245LQI-S3D72	CYW4343WKUBG
CY8CPROTO-063-BLE	CYBLE-416045-02	<none>
CY8CPROTO-064B0S1-BLE	CYB06447BZI-BLD53	<none>
CY8CPROTO-064B0S3	CYB06445LQI-S3D42	<none>
CY8CPROTO-064S1-SB	CYB06447BZI-D54	<none>
CYBLE-416045-EVAL	CYBLE-416045-02	<none>
CYSBSYSKIT-01	CY8C624AFNI-S2D43	CYW43012TC0KFFBH
CYSBSYSKIT-DEV-01	CY8C624AFNI-S2D43	CYW43012TC0KFFBH
CYW9P62S1-43012EVB-01	CY8C6247FDI-D52	CYW43012TC0EKUBG
CYW9P62S1-43438EVB-01	CY8C6247BZI-D54	CYW43438KUBG
PSOC6-GENERIC	CY8C6347BZI-BLD53	<none>
XMC™ BSPs		
KIT_XMC14_BOOT_001	XMC1404-Q064x0200	<none>
KIT_XMC47_RELAX_V1	XMC4700-F144x2048	<none>
XMC-GENERIC	XMC1404-Q064x0200	<none>

Note: Additional boards will be made available on an ongoing basis.

2.3 Open source

Portions of this software package are licensed under free and/or open source licenses such as the GNU General Public License. Such free and/or open source software is subject to the applicable license agreement and not our license agreement covering this software package. The applicable license agreements are available online:

https://www.infineon.com/cms/en/design-support/software/free-and-open-source-software-foss/modustoolbox-foss-packages/

3 Design impact

This section includes issues and solutions for changes that may impact various designs.

3.1 Deprecating/removing default toolchain location

In this release, we have deprecated the feature of setting the default location of the IAR and ARM toolchains. This feature will be removed in a future release of the make-recipe library. When setting the toolchain to IAR or ARM, you need to set the `CY_COMPILER_IAR_DIR` or `CY_COMPILER_ARM_DIR` variable to the location of the toolchain directory. When this feature is removed, you will get an error message when trying to build.

3.2 Migrating PSOC™ Control C3 designs from early access pack

If your PSOC™ Control C3 early access pack (EAP) design is using a personality that appears on the **Solution** tab, porting your design to the ModusToolbox™ 3.3.0 tools package environment will involve a manual process, as follows:

1. Open the Device Configurator for your EAP design and set it aside.
2. Remove the EAP environment variable.
3. Create a new PSOC™ Control C3 design using ModusToolbox™ 3.3.0 tools.
4. Open the Device Configurator for the new design and manually enter the various parameters and variables that were set in the old EAP design.

4 Known issues, limitations, and workarounds

This section describes the known issues and limitations of this release, and provides workarounds for them:

4.1 ModusToolbox™ issues from previous releases

This document contains only recent issues pertinent to ModusToolbox™ version 3.x. All issues noted in previous ModusToolbox™ version 2.x releases have been made available online here: KBA236147.

4.2 Proxy

Problem	Workaround
When trying to use any of the ModusToolbox™ tools, you may see an error message similar to the following about not able to connect to the Internet: *Unable to open file at [URL]*	This can happen if you are behind a firewall and do not have your proxy settings configured. You must set your HTTP_PROXY and HTTPS_PROXY environment variables, as appropriate for your site. In previous versions of the ModusToolbox™ tools package, these types of errors only affected the Library Manager and Project Creator. In version 3.x, these errors apply to all tools.

4.3 Device database error

Problem	Workaround

Various tools report an error with the device-db similar to this:
`fatal:'C:/test/ModusToolbox/packs/ModusToolbox-Early-Access-Pack/libs/device-db' does not appear to be a git repository`
`fatal: Could not read from remote repository.`
	Remove the .modustoolbox/global directory from user home and remove the mtb-shared directory from your application. Then, retry the failing operation.

4.4 BSP Code generation error

Problem	Workaround

When generating code after adding one or more BSPs to a ModusToolbox™ 3.x application, the system displays error messages similar to the following:
`ERROR:Generating code failed. Code generation errors:`
`ERROR:- Errors exist in the project's configuration:`
`ERROR:There may be an inconsistency between the *.modus file and the makefile target configuration device sets.`
`ERROR:Current Devices: CY8C624ABZI-S2D44, Sterling-LWB+/CYW43439KUBG`
`ERROR:Expected Devices: CY8C624ABZI-S2D44`
`make: *** [../mtb_shared/core-make/release-v3.2.0/make/core/search.mk:45: C:/c/Switching_Power_Modes/build/APP_CY8CEVAL-062S2-LAI-43439M2/Debug/cyforcebuild.mk] Error 1`
`ERROR:"make eclipse" failed`
	This occurs when you have two or more BSPs with different MCUs and/or companion devices, and they have BSP names that begin with the exact same characters, such as:
	• MyBSP (CY8C6247BZI-D54 + LBEE5KL1DX)
	• MyBSP2 (CY8C6347BZI-BLD53 + None)
	
	To resolve this problem, open the Library Manager and either rename or remove the non-active BSP(s) with the same beginnings of names.
	
	This issue will be addressed in a future release.

4.5 Project Creator

Problem	Workaround
Project Creator may fail to create a project with an error like: `"ERROR: <PATH>: Failed to open Git repository: config value 'safe.directory' was not found"` where <PATH> corresponds to the project to be created. This can happen if you choose to create your project on a non-NTFS USB drive or a shared folder whose owner differs from the current user running the Project Creator tool.	This error is an intentional behavior of Git that is being used by the Project Creator under the hood. This behavior is due to the known security problem CVE-2022-24765. If the USB drive is non-NTFS, such as exFAT/FAT, or if a shared folder owned by someone else, add the directory to the safe.directory setting in Git.

4.6 LCS Manager CLI

Problem	Workaround
The LCS Manager CLI tool does not use the ModusToolbox™ proxy settings that other tools use. Depending on your system environment, the LCS Manager CLI tool might not be able to access and download data from external repositories (such as GitHub).	Ensure that your system can access the desired external repositories by setting up proxy information before using the LCS Manager CLI tool. If you need assistance, contact your IT department.

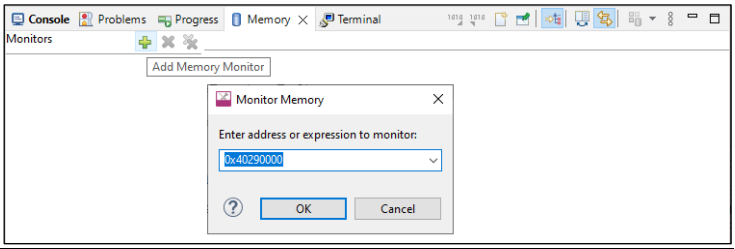
4.7 Crashes on Mac M1/M2

Problem	Workaround
On Mac computers with ARM cores using Rosetta (M1/M2 processors), various ModusToolbox™ tools (library-manager, project-creator, device-configurator, Eclipse, etc.) consistently crash.	Reboot the computer. This issue seems to occur for a variety of software, not just ModusToolbox™ tools. Many users have reported that simply rebooting the computer resolves the issue.

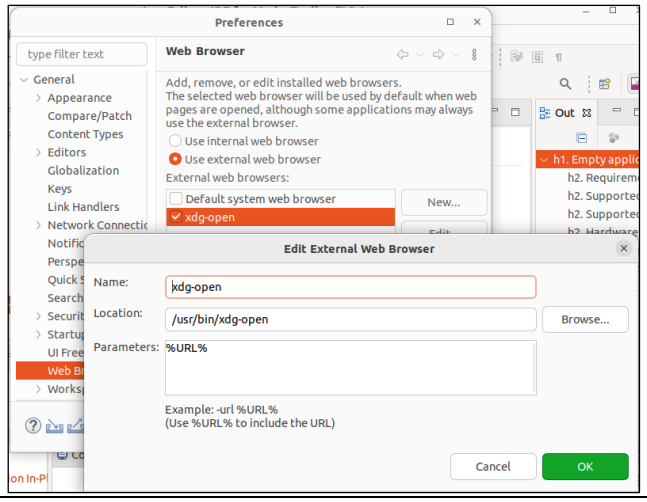
4.8 HTML/documentation on Ubuntu 22.04

Problem	Workaround
On Ubuntu 22.04, sometimes HTML documentation links do not work anywhere. This issue can occur as documentation not opening at all or opening in the wrong program (e.g., Notepad, Office Writer, etc.)	Reset the default browser from the Ubuntu 22 Settings UI (**Settings > Default Applications > Web**). Changing this setting via the BROWSER environment variable, or the xdg-settings/xdg-mime commands does not work.
On Ubuntu, cannot open documentation in a web browser with file not found error. This applies to using the Dashboard or Eclipse "Help" menu, even though the documentation files are present and accessible.	This issue is related to the security settings for snap packages installed on the system. We recommend replacing the snap-based browser with a deb package version.

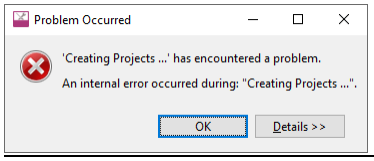
4.9 Eclipse IDE

Problem	Workaround
Launching Project Creator from Eclipse intermittently generates the following error: Unable to detect Project Creator startup after 10000 ms. If this problem continues, try starting Project Creator stand-alone, then import the project using ModusToolbox import. And then Project Creator eventually loads.	Close Project Creator and launch it again. The error should not be generated again.
In the Eclipse IDE for ModusToolbox™ when setting TOOLCHAIN=ARM, the call stack does not show while debugging some multithreaded applications (e.g., applications that use FreeRTOS).	Add the `CFLAGS+=-fno-omit-frame-pointer` compiler flag to the application. You can do this in the application Makefile or in Eclipse under **Properties > C/C++ Build > Behavior> Build arguments**.
When you upgrade a workspace that was created using ModusToolbox™3.1 or prior, you'll see a warning that your projects do not have explicit encoding set.	To fix this, right click on each warning message and select **Quick Fix** in the context menu. Select the **Set project encoding to 'UTF-8' fix** and click **Finish**.
When you upgrade a workspace that was created using ModusToolbox™3.1 or prior, your projects build using one build job.	1. Select a project/application. 2. Open project's/application's properties selecting **Project > Properties** from the main menu. 3. Select **C/C++ Build** tab in the left pane. 4. Select **Behavior** tab in the right pane. 5. Add either `-jN`, where N is a number of desired parallel build jobs, or `${cy_build_jobs}` dynamic variable in the **Build Arguments** field.
After you rename a project, if you quickly try to rename it again you may get an error.	Wait until renaming finishes before initiating another renaming. The project itself is not broken. Only its representation in Eclipse may break. To fix this, remove the project, import and rename it again.
When you run Eclipse IDE for ModusToolbox™ from a terminal window on Ubuntu you get notifications about SLF4J, GLib and SWT GDBus failures.	Ignore these messages. These are Eclipse issues that do not impact Eclipse IDE for ModusToolbox™ functionality.
When you left-click on a project that is not currently selected and then quickly right-click on it and select the **ModusToolbox™** item,the context menu is empty.	Left-click to select the project and wait until the Quick Panel refreshes before right-clicking it to open the context menu. This issue will be addressed in a future release.
While debugging, if you try to export memory values to a file by selecting an item in the **Peripherals** tab, the values in the file will be all zeroes.	This is an Eclipse Embedded CDT issue. To get a correct export file, add the Address of the Peripheral directly to Memory window, and then use the export feature. 

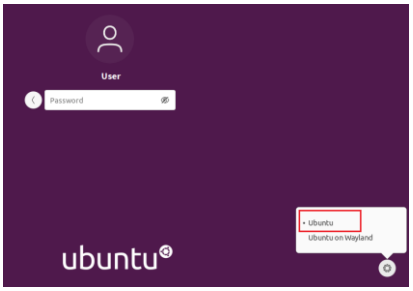
Known issues, limitations, and workarounds

Problem	Workaround
On Ubuntu 22.04, when opening documentation from the Project Explorer (right-click **Open with > Web Browser**), the file does not open.	Update the Web Browser settings under **Window > Preferences > General > Web Browser** to add your chosen browser or xdg-open as appropriate: 
For certain applications (typically a factor of size), Eclipse may present a "Discover Compilation Database Settings" dialog displays, which can block the UI for several seconds/minutes. This is seen to happen often after a build of the project.	Right-click the project and select **Properties > C/C++ General > Preprocessor Include Paths > Providers**, and deselect the **Compilation Database Parser** check box. Note that this will cause IntelliSense to be disabled for that application.
On Ubuntu 22.04, when running the Eclipse IDE for ModusToolbox™, the launcher window may be truncated. This happens because Eclipse v4.28 has not been updated to address the problem.	Log out of Ubuntu, and then log in again using the Xorg option. 
When renaming a multi-core application in the Eclipse IDE, the core-processor subprojects become regular folders instead of project folders.	Right-click on each of the core process folders and select **Import as Project**. Each folder will become a project folder with the appropriate name. **Note**: After changing the folders to project folders, they retain the original application prefix name. You can rename them individually if you prefer. **Note**: The Eclipse IDE may display Indexer errors during the rename process. These errors usually go away when the rename process is complete.
After completing a build/clean for a multi-core application, the Eclipse IDE reports a C/C++ Indexer error message.	The error message doesn't impact functionality. Try restarting the Eclipse IDE to clear the message.
When using the Eclipse IDE on macOS, if you delete a multi-core application with several README.md files open in the editor/viewer, you may see the following error message: "Failed to create the part's controls."	None. This error message just means the markdown viewer is trying to read a file that has been deleted. This message doesn't impact functionality. Simply close the tab and proceed.

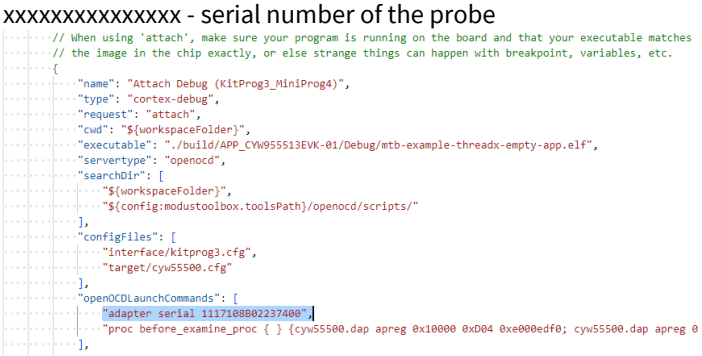
Known issues, limitations, and workarounds

Problem	Workaround
For BTSDK applications, various tools such as BTSpy and ClientControl are not available from the Eclipse IDE Quick Panel. This is due to the restructuring of the ModusToolbox™ version 3.0 build system and flow.	To open various tools, navigate to where they are located in the workspace and launch them manually. By default, all the tools are located under the *../mtb_shared* directory (relative to the code example directory). For example, BTSpy is located in the following path: *../mtb_shared/wiced_btsdk/tools/btsdk-utils* ClientControl is located in the following path: *../mtb_shared/wiced_btsdk/tools/btsdk-host-apps-bt-ble* Other tools are located in different subdirectories under *mtb_shared*. The BTSDK will be updated in a future release to move these tools into a pack so that they will be available in the Quick Panel again.
Exporting and importing a multi-core application with the Eclipse IDE doesn't work.	1. When Exporting a multi-core application using the Eclipse IDE, include only the main application folder, and exclude the core project folders and the *mtb_shared* folder. 2. If you exported the application as an archive, extract it, and then run Library Manager or `make getlibs`. 3. In Eclipse, use the **Import Existing Application In-Place** option. The Eclipse IDE for ModusToolbox™ user guide has been updated to include multi-core application instructions.
When importing an application in the Eclipse IDE using the **Import Existing Application In-Place** option, there may be an error: "An internal error occurred..." 	If possible, you should start with the Eclipse IDE to launch Project Creator and create an application. Using this flow, the process just works. In some cases, this error may occur because you're attempting to manually import an application in the same workspace/folder that already exists in Eclipse. To resolve this problem, use **Import > General > Existing Projects into Workspace**.
When using the Eclipse IDE, the context menu may show tools for the previously-selected project rather than the project that was right-clicked.	Left-click to select the project and wait until the Quick Panel refreshes before right-clicking it to launch the context menu. This issue will be addressed in a future release.
If you make changes to the BSP using the BSP Assistant, such as the connectivity module, and then launch the Device Configurator from the Eclipse IDE Quick Panel, the Device Configurator may not recognize that the changes were made.	To fix this, close the Device Configurator, click **Refresh Quick Panel** in the Eclipse IDE, and then launch the Device Configurator again.

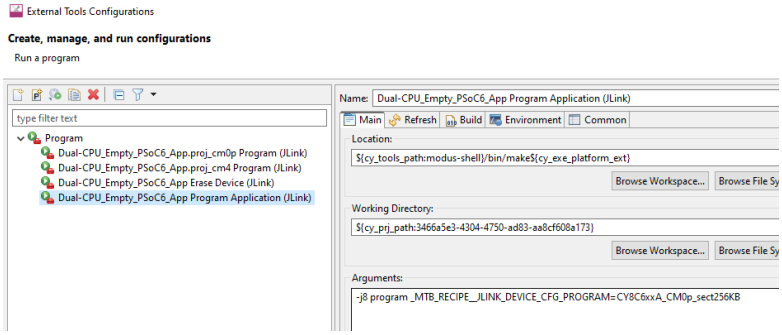
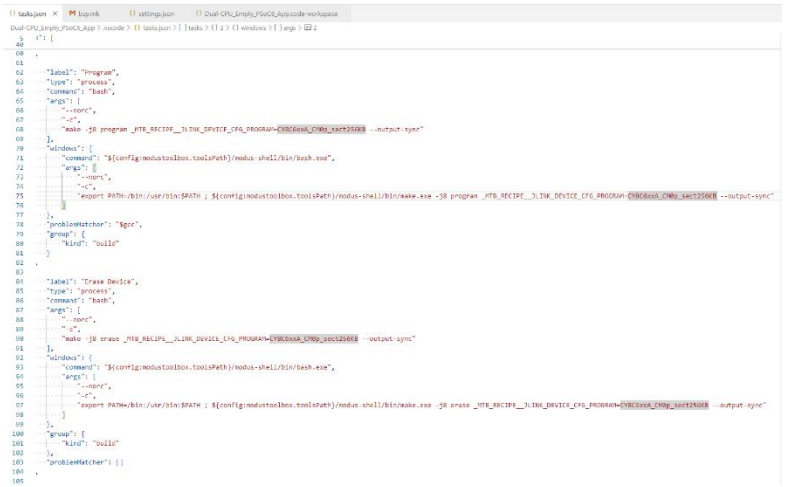
4.10 Visual Studio Code

Problem	Workaround
Various ModusToolbox™ GUI tools (Device Configurator, Library Manager, etc.) fail to start on Ubuntu when executed from the Terminal window in VS Code, with the following error: Failed to load client buffer integration: "wayland-egl" Available client buffer integrations: () No shell integration named "xdg-shell" found No shell integration named "xdg-shell-v6" found No shell integration named "wl-shell" found No shell integration named "ivi-shell" found Loading shell integration failed. Attempted to load the following shells ("xdg-shell", "xdg-shell-v6", "wl-shell", "ivi-shell")	**Solution 1**: Open an Ubuntu Terminal, navigate to the application directory, and use the applicable "make" command to open the GUI (e.g., `make library-manager`). **Solution 2**: Log out from the current Ubuntu session, and then log back in and make sure Ubuntu on Wayland is **not** selected on the login screen.  On newer versions of Ubuntu, the login screen will show "Ubuntu on Xorg".

4.11 Building/programming/debugging

Problem	Workaround
The MTB_PROBE_SERIAL variable is ignored for AIROC™ CYW55913 devices.	Eclipse 1. For KitProg3 - follow section **5.1.11.2 Selecting by serial number** 2. For J-Link - follow section **5.1.12 Select Specific J-Link Device** VS Code 1. For KitProg3 add "*adapter serial xxxxxxxxxxxxxx*" command to the *openOCDLaunchCommands* property of Attach configuration, where xxxxxxxxxxxxxx - serial number of the probe  2. For JLink add new property "serialNumber": "50129901", to Attach configuration, where 50129901- serial number of the JLink probe 

Known issues, limitations, and workarounds

Problem	Workaround
You must manually reset after programming PSOC™ 6 kits when using GDB SEGGER + Jlink + JTAG interface.	Eclipse: Update Erase/Program launch configs to redefine internal make variable '*MTB_RECIPE*__JLINK_DEVICE_CFG_PROGRAM' with the target JLink alias without _tm suffix (e.g., CY8C6xxA_CM0p_sect256KB):  VS Code: Update Program/Erase tasks with the same information. 
Restarting a XMC7000 debug session using MiniProg4 in JTAG mode sometimes might lead to the situation when VS Code assumes target is running and not halting at `main()`. When you pause, the IDE refreshes its state and shows the target stopped at the beginning of the `Reset_Handler()`. Subsequent resuming should pause at `main()`. Very rarely, the debug session might be unresponsive when trying to pause the running target.	To work around this issue, retry restarting again. We recommend using SWD instead of JTAG, which will reduce the number of issues you encounter.

When debugging in Eclipse IDE or VS Code reaches a code with empty loops, the Step operation might cause the debugger to wait indefinitely.
This problem happens because GDB executes single steps and waits until the execution reaches an instruction related to another line in the source code. Since empty loops have no terminating condition, GDB will wait forever, leading to the hang of the debugging process.
	To avoid this problem, consider the following recommendations:
	• Avoid using Step operations in empty loop debugging. Instead of using the Step operation, use the Continue operation to bypass the empty loop.
	• Alternatively, you can place an operation that produces a CPU instruction within the loop body. For instance, adding a `__NOP()` instruction as shown below can resolve the issue.
	`for ( ; ; )`
	`{`
	`  __NOP();`
	`}`

Known issues, limitations, and workarounds

Problem	Workaround
In VS Code, "Failed to update peripheral TCPWM0: Error: peripheral-viewer: readMemory failed" error might appear if you open the "XPERIPHERALS" window when the MCU is in run state and the plugin cannot read peripheral registers on runtime.	To avoid this error, open the "XPERIPHERALS' window when you on a on breakpoint or some instruction.
Exception has occurred" error might appear when you execute Attach/Debug launch configuration. Such errors started to be visible in VS Code - 1.53.2.	You can safely ignore this error.
Existing application opened in ModusToolbox™ version 3.1 or later reports "error: unknown type name 'uint8_t'" or similar compiler errors. This error is caused by the update to GCC 11.	Add '#include <stdint.h>' in all affected source files. This issue only applies to applications migrated to 3.1 or later. It will not occur for new applications created with 3.1 or later tools.
When calling `make program` with `-j` flag on the command line in multi-core applications, the programming processes get out of sync. This results in the qprogram starting before the build finishes. There is no error message reported. This issue does not exist when programming from Eclipse IDE or VSCode.	Since this issue only exists in a scenario in which the user calls `make program` with `-j` flag at the application level in multi-core applications, the current workaround is to run `make build -j` and then run `make qprogram`. This defect is being addressed in the next release.
In the Eclipse IDE, programming a device is skipped when the device was previously programmed.	This is expected behavior and there is no workaround. This was a change made to the launch configurations in Eclipse to support multi-core debugging.
If you change the MCU/SOC/SIP for the BSP using the BSP Assistant, the Register View may not available while debugging using the Eclipse IDE or VS Code.	This is because the svd file path is not present in the launch configurations. To fix this, navigate to the application folder and run make getlibs. The, run make eclipse or make vscode, as applicable.
The **Attach** launch config does not work for the secure lifecycle of AIROC™ CYW20829 devices.	Do not use the **Attach** launch config for secure lifecycle.
The CySecuretool does not work with PyOCD as the debugger on macOS M1 CPUs.	No workaround; we do not plan to support PyOCD.
When exporting ModusToolbox™ applications created for the TRAVEO™ T2G Body High MC devices to be used with the µVision and IAR IDEs, there are some limitations using the J-Link probe (including ETM traces, program, and debug via the CM7 core).	Use native Arm and IAR probes to work with TRAVEO™ T2G Body High MC devices.
There is an issue with reset for TRAVEO™ T2G Body High MC and T2G Instrument Cluster devices in the SEGGER tool. The **Debug** launch config does not work properly for CM7_0 and CM7_1 cores via the J-Link probe in Eclipse and VS Code IDEs.	To debug the code, use the **Attach** launch config.

Known issues, limitations, and workarounds

Problem	Workaround
While using the Eclipse IDE on Windows for various program/debug operations, there's a plugin issue that prevents the debug port from shutting down. This could result in abnormal power consumption, the watchdog timer being blocked, or the inability to connect in JTAG mode after a successful connection in SWD mode.	Reset the device. For example, on the CY8CKIT-062S2-40312 kit, press the **SW1/XRES** button.

4.12 Library Manager/make getlibs

Problem	Workaround
The Library Manager does not list the retarget-io library for the CY8CKIT-040T.	The retarget-io library is not available currently for this device. The retarget-io library depends on mtb-hal-cat2, which is not supported by the CY8CKIT-040T.
A .mtb file added as a direct dependency to the *deps* directory is overridden and removed during the `make getlibs` operation.	This problem occurs when you add a direct dependency using the 'latest-x.y' tag instead of a specific 'release-x.y.z' tag when the BSP or another library requires the same library as an indirect dependency. To ensure your direct dependency is kept, use the 'release-x.y.z' tag in your .mtb file.

4.13 BSP Assistant

Problem	Workaround
When creating a BSP by selecting MPNs, you may see the message "Errors exist in the project's configuration" above the message that states the BSP was created successfully.	If this happens, run the Device Configurator from inside the BSP Assistant and fix all issues in the Notice List before using the BSP.
The bsp-assistant-cli tool crashes when trying to create a BSP within an existing application.	You can use the Library Manager (GUI or CLI) to create a BSP based on an existing Kit template, and add it as the Active BSP for your application. Another option is to use the BSP Assistant GUI instead of the CLI to create a BSP directly inside the application. You can also use the bsp-assistant-cli to create a BSP outside an application, and then use bsp-assistant-cli to import it into the application.
If you edit an older BSP and change the UDB SDIO port using the updated BSP Assistant 1.10, you need to manually edit the config/cyreservedresources.list file. The older BSP Assistant tool warned of this change. The updated BSP Assistant tool makes this change for you, but only for BSPs created with the newer version of the tool. Not editing the config/cyreservedresources.list file will lead to indeterminant results.	Manually edit the config/cyreservedresources.list file as described, or use only the BSP Assistant version 1.0 tool to make changes to older BSPs.
On Windows, the BSP Assistant does not receive error messages from any configurator that outputs text (such as device-configurator-cli). This means that the BSP Assistant may indicate a failure, but not report any error messages from that configurator.	As an example, if the device-configurator-cli fails when changing devices, but no message explains why, go to c:/Users/<username>/AppData/Local/Temp/device-configurator-cli and find the most recently-created log file.

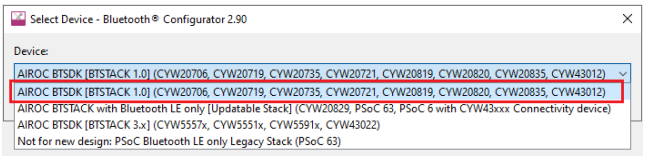
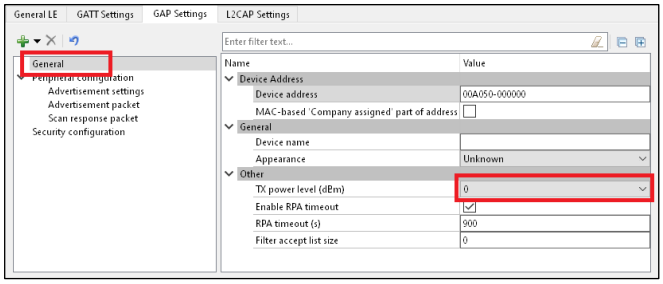
4.14 Device Configurator

Problem	Workaround
The freeRTOS and abstraction-rtos libraries do not support tickless sleep for the PSOC™ Control C3 device. Therefore, deep-sleep cannot be used.	None. This feature will be supported in the next release. Regular sleep is supported and set as the default.
The Copy/Paste feature does not work for for solution personalities.	None. This issue will be addressed in the ModusToolbox™ 3.4 release.
In the Device Configurator, the analog routing line to the SAR is not highlighted when a connection is made in the editor for XMC7xxx devices.	None. This is a display-only issue. There is nothing wrong with the data. The issue will be addressed in a future release.
For ModusToolbox™ 2.x applications using PSOC™ 4 devices, if you open the application using ModusToolbox™ version 3.x, the Device Configurator (version 4.0) may show various errors with various types of connections, such as SAR ADC SOC Input, TCPWM Start/Stop/Capture/Count/Reload Signal, DMA Channel Trigger Input or connections between pins over Digital Input and Digital Output.	Select new signals for the invalid connections to resolve the issues.
For ModusToolbox™ 2.x applications using PSOC™ 4 or PSOC™ 6 devices, if you open the application using ModusToolbox™ version 3.x, the Device Configurator (version 4.0) may show "Resource overused" errors in some cases where the pin's Digital Input, Digital Output, and Analog parameters are set at the same time.	Select new signals for the invalid connections to resolve the issues.
If you have a project and design.modus file with different manufacturing part numbers (MPNs), and one of the MPNs is a module, the Device Configurator displays a message stating that the MPNs differ. However, included in that message is a statement that the MPNs are not supported by the device-db. This statement is incorrect.	You can safely ignore the incorrect statement in the message. There is no impact to the application.
If one of the WICED Radio Interface personalities is instantiated in the Universal Digital Block (UDB), it will not allow picking connections for the DMA signals.	The WICED Radio Interface personalities should not be used in practice. Instead, to enable communication with an external radio device from a PSOC™ 6S1 device, the BSP/Application should use the udb-sdio-whd library and set the appropriate component for the desired port. See the README.md file contained in the udb-sdio-whd library for more details. Additionally, to reserve the appropriate resources so they do not get overused by the configurator, the board should include a cyreservedresources.list file next to the design.modus file. Refer to one of the existing PSOC™ 6S1 boards (eg: CY8CKIT-062-WIFI-BT, CYW9P62S1-43012EVB-01, CYW9P62S1-43438EVB-01, …) for what this file should contain.

4.15 SegLCD Configurator

Problem	Workaround
The SegLCD Configurator may get out of sync with the Device Configurator *design.modus* file, which can result in changes not being saved.	To ensure proper synchronization for these two configurators, follow these steps: 1. Before launching the SegLCD Configurator, make sure to save any changes made in the Device Configurator. 2. Launch the SegLCD Configurator only from the Device Configurator or from the Quick Panel in the Eclipse IDE for ModusToolbox™. 3. After making changes in the SegLCD Configurator, make sure to save those changes and close the SegLCD Configurator. This issue will be addressed in the next release.

4.16 Bluetooth® Configurator

Problem	Workaround
The Bluetooth® Configurator does not automatically detect the correct device for the application when creating a new configuration. This issue is applicable to AIROC™ BTSDK [BTSTACK 1.0] devices; for example, CYW20706.	Manually select the first option "AIROC BTSDK [BTSTACK 1.0] (devices)" in the Bluetooth® Configurator Select Device dialog. 
When using the Bluetooth® Configurator with AIROC™ CYW20829 devices, the **TX power level (dBm)** parameter under the **GAP Settings** tab has no effect. 	Leave the default value (0dBm) in this field when using an AIROC™ CYW20829 device. This issue will be addressed in a future release.

4.17 DFU Host tool

Problem	Workaround
CAN-FD communication doesn't work on macOSwith Arm® processors.	None. The tool uses PCBUSB library version 0.8.1, which is compatible with Qt versions 5.14 to 6.4, and doesn't support Mac Arm® processors.

4.18 Documentation

Problem	Workaround
Various documents included with the release may contain incomplete information, or may not contain up-to-date screen captures or information.	New versions of documents, including this release notes document, may be available online at: ModusToolbox™ Software website

Revision history

Revision	Date	Description of Change
**	2017-12-29	Initial Release.
*A	2018-11-21	Updates for Production.
*B	2019-09-19	Updates for version 1.1.
*C	2019-10-18	Updates for version 2.0.
*D	2019-10-21	Copyright text for FreeType.
*E	2019-11-04	Added known issues.
*F	2020-03-26	Updates for version 2.1.
*G	2020-04-07	Adding Known Issues for version 2.1; fixed Rev. in footer.
*H	2020-04-21	Adding known Issue for QSPI Configurator.
*I	2020-05-20	Removed fixed known issue.
*J	2020-06-29	Added known issues for Programming/Debugging.
*K	2020-09-01	Updates for version 2.2.
*L	2020-09-25	Added several known issues.
*M	2020-10-19	Added issue about programming in DeepSleep mode.
*N	2020-12-04	Added issue about Eclipse IDE and macOS Big Sur.
*O	2020-12-10	Added issued for no access to GitHub.
*P	2021-03-25	Updates for version 2.3. Updated text for M1 workaround. Added issue about importing into Eclipse.
*Q	2021-04-22	Updated text for known issue about build failing in Eclipse for imported projects.
*R	2021-07-07	Added issue for PSOC™ 4 error message that can be ignored.
*S	2021-09-23	Updates for version 2.4.
*T	2021-10-08	Updated the version of modus-shell for Windows to 1.3.0. Added build issues for legacy BTSDK projects, as well as XMC™ projects using Linux and IAR.
*U	2022-01-26	Added issue for font size on Project Creator and Library Manager when using multiple screens.
*V	2022-09-28	Updates for version 3.0 release.
*W	2023-03-21	Added issue of program starting before build finishes when working with multi-core projects.
*X	2023-06-02	Updates for version 3.1 release.
*Y	2024-02-27	Updates for version 3.2 release.
*Z	2024-03-26	Added known issue for CAPSENSE™ Configurator, and updated versions of a couple current assets.
AA	2024-06-18	Added known issues for the Building/programing/debugging section regarding issues using Eclipse and VS Code.
AB	2024-08-02	Updated known issue with Segger tool to include TAVEO™ T2G Instrument Cluster devices.
AC	2024-10-04	Updated for version 3.3 release.
AD	2024-11-26	Updated for PSOC™ Control C3 support.

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Email: erratum@infineon.com

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