

Model-Based Design Toolbox MPC57xx Series

Release Notes

**An Embedded Target for the MPC57xx Family of Processors
Version 3.2.0**

Summary

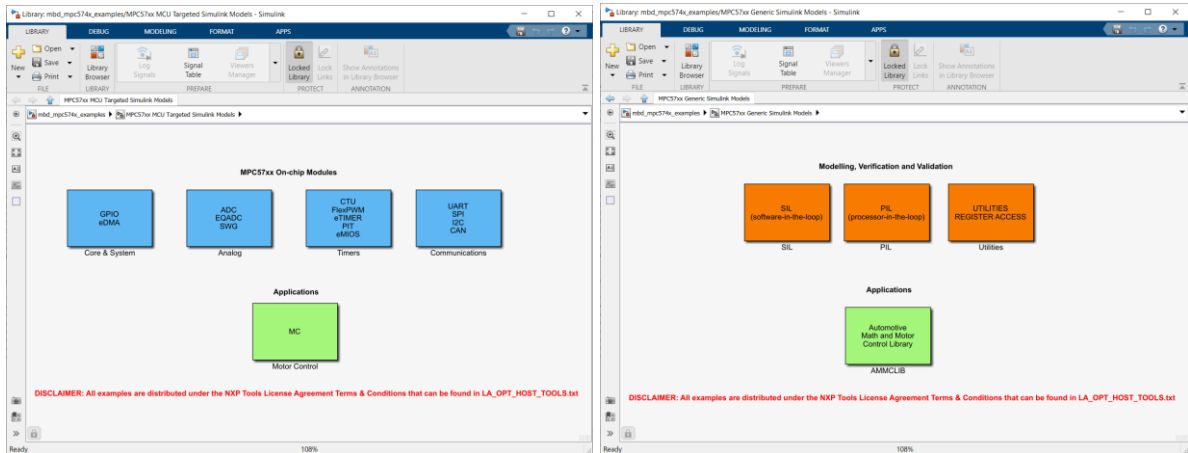
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1 What is New in Version 3.2.0

The latest [NXP's Model-Based Design Toolbox for MPC57xx version 3.2.0](#) is designed to support multiple MPC57xx microcontrollers and brings the following important enhancements compared with the previous version of this toolbox ([v.3.1.0](#))

- v.3.2.0 supports **6 new processors** part of two different families:
 - o MPC577x for Automotive and Industrial Engine Management
 - MPC5777C (updated)
 - MPC5775B (new)
 - MPC5775E (new)
 - o MPC574xR for industrial and automotive engine/transmission control applications
 - MPC5743R (new)
 - MPC5745R (new)
 - MPC5746R (new)
- v.3.2.0 supports the following new **MPC57xx Motherboards and DEVKITS**:
 - o DEVKIT-MPC5777C-DEVB (updated)
 - o Daughter Card MPC5775B-416DS (new)
 - o Daughter Card MPC5775E-416DS (new)
 - o Daughter Card MPC5746R-144DS (new)
 - o Daughter Card MPC5746R-176DS (new)
 - o Daughter Card MPC5746R-252DS (new)
- v.3.2.0 integrates the latest **PA SDK version 3.0.2 RTM** (November 2019) for NXP MPC574x-B-C-G, MPC574x-P, MPC574xR and MPC577xB/C/E MCUs. NXP's Model-Based Design Toolbox generates codes based on standard SDK API, covering most of the functionalities exposed by SDK;
- Compatible with **S32 Design Studio 1.2 for Power Architecture** and **GCC 4.9**.
- Add support for **AUTOSAR Blockset** for all parts to allow Processor-in-the-Loop simulation for Classic AUTOSAR Application Layer SW-C;
- Add support for **Three Phase Field Effect Transistor Pre-driver**, MC33GD3000, MC34GD3000, MC33937, and MC34937 configuration and control;
- Enable support for all MATLAB versions starting with 2016a – 2020a;
- Various bug fixes reported via [NXP MBDT Community](#)

The Simulink Models are saved in the NXP Toolbox root directory under the MPC_Examples folder and can be accessed easily from `mbd_mpc57xx_examples.mdl` library file.



For more details about each of the topics highlighted above please refer to the following chapters.

2 MPC57xx MCU Support

This release is currently supporting 21 derivatives of the MPC57xx MCU series.

2.1 Packages & Derivatives

[NXP's Model-Based Design Toolbox for MPC57xx version 3.2.0](#) supports the following MCU series and packages:

- MPC574xP MCU Packages with 128/198/256/384KB SRAM:
 - o 144 LQFP;
 - o 256 BGA;
- MPC574xB MCU Packages with 192/256/384/512KB SRAM:
 - o 176 LQFP;
 - o 100 BGA;
 - o 256 BGA;
 - o 324 BGA;
- MPC574xC MCU Packages with 256/384/512/768KB SRAM:
 - o 176 LQFP;
 - o 100 BGA;
 - o 256 BGA;
 - o 324 BGA;
 - o 512 BGA;
- MPC574xG MCU Packages with 768KB SRAM:
 - o 176 LQFP;
 - o 256 BGA;
 - o 324 BGA;
- MPC574xR MCU Packages with 128/192/256KB SRAM:
 - o 144 LQFP;
 - o 176 LQFP;
 - o 252 MAPBGA;
- MPC577xB/C/E MCU Packages with 512KB SRAM:
 - o 416 BGA;
 - o 516 BGA;

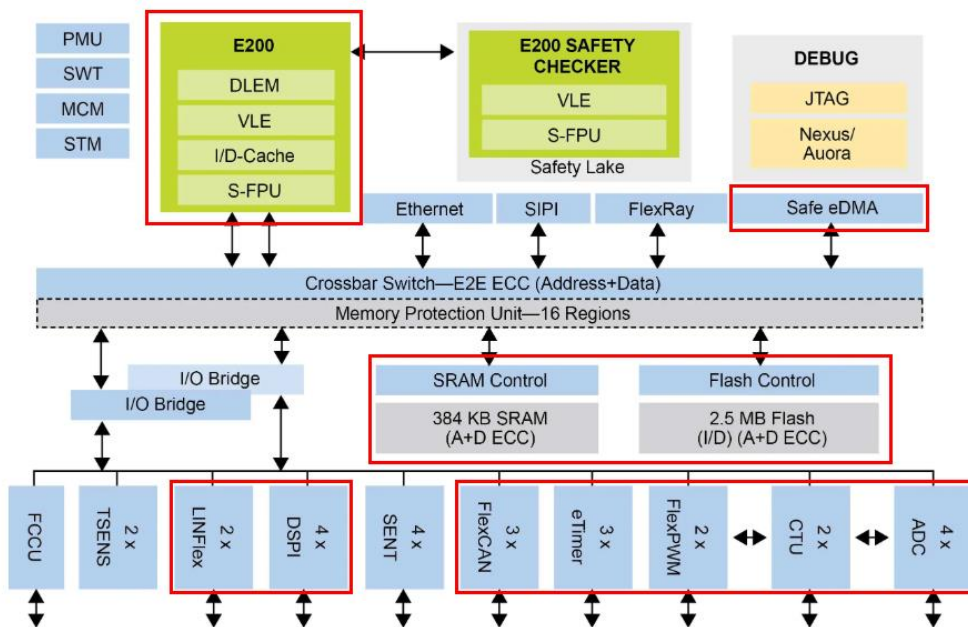
The toolbox supports operation with 40MHz external XTAL and MCU system clock configuration frequencies of 160/200/220/264MHz.

Note: *Make sure the correct XTAL Frequency is selected based on the controller type. If other frequencies are needed, the toolbox provided an easy method to address such cases. In the ..\src\tools\ClockConfig\ you can find S32Design Studio project that can help to regenerate the clock configuration file for the toolbox*

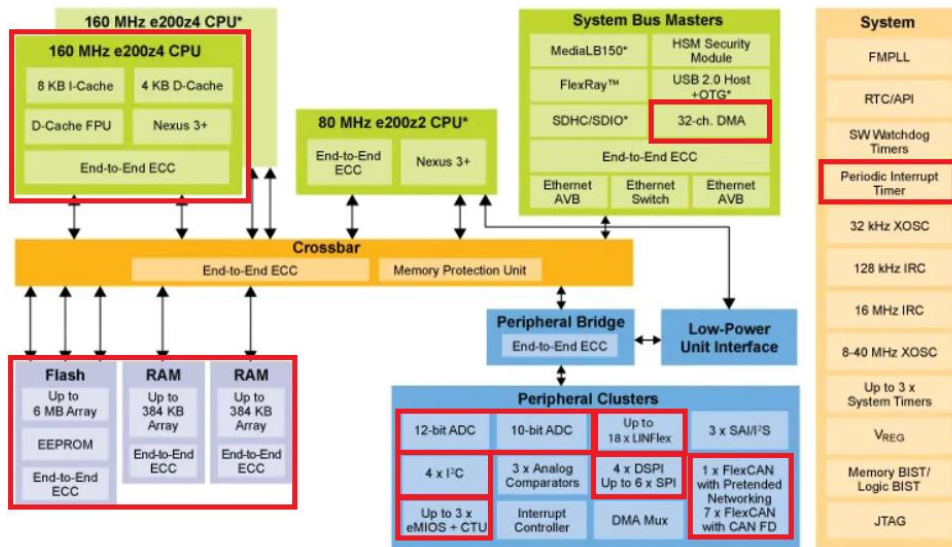
2.2 Peripherals & Devices

NXP's Model-Based Design Toolbox for MPC57xx version 3.2.0 supports the following peripherals and devices that are highlighted in RED:

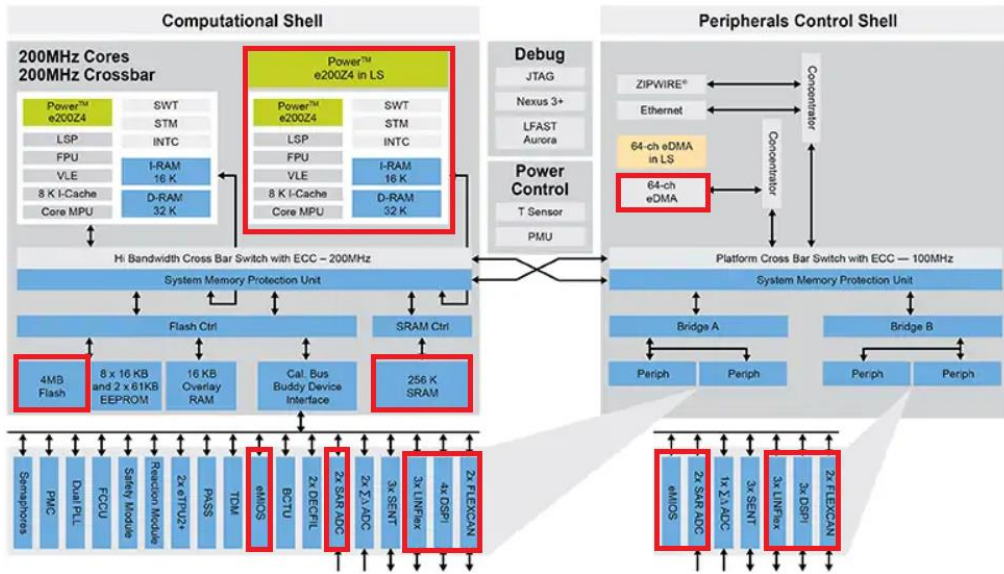
- MPC574xP Ultra-Reliable MCU for Automotive & Industrial Safety Applications



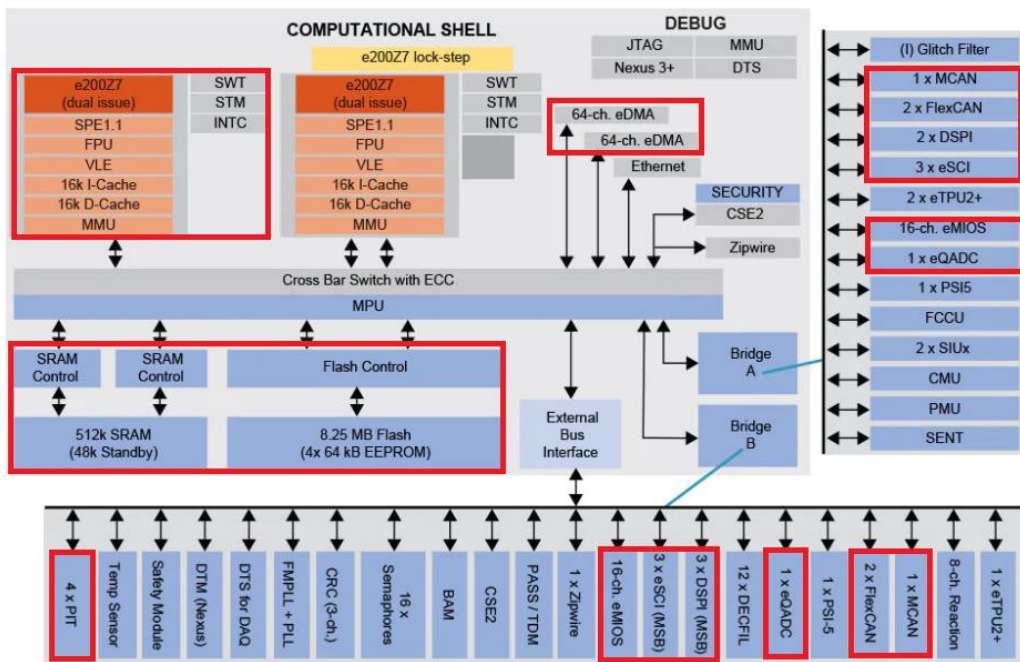
- MPC574xB/C/G Ultra-Reliable MCUs for Automotive & Industrial Control and Gateway



- MPC574xR Ultra-Reliable MCUs for industrial and automotive engine/transmission control



- MPC577xB/C/E Ultra-Reliable MCUs for Automotive and Industrial Engine Management



3 Prerequisites

3.1 MATLAB Releases and OSES Supported

This toolbox is developed and tested to supports the following MATLAB releases:

- R2016A/B;
- R2017A/B;
- R2018A/B;
- R2019A/B;
- R2020A

In general, the older version of MATLAB may be supported with small updates that can be done after installation. As a rule, if you are planning to use an older version you need to update the Simulink version in every MDL file delivered with the toolbox

```
mbd_mpc574x_ec_toolbox.mdl x +
1  Library {
2    Name           "mbd_mpc574x_ec_toolbox"
3    Version        8.9
4    SavedCharacterEncoding "windows-1252"
5    LogicAnalyzerGraphicalSettings ""
6    LogicAnalyzerPlugin  "on"
7    LogicAnalyzerSignalOrdering ""
8    DiagnosticSuppressor "on"
9    SuppressorTable    "22 serialization::archive 11 0 6 0 0 0 8 0"
10   SLCCPlugin         "on"
11   LibraryType        "BlockLibrary"
12   ScopeRefreshTime   0.035000
13   OverrideScopeRefreshTime off
14   DisableAllScopes   off
```

For a flowless development experience the minimum recommended PC platform is:

- *Windows® OS*: any x64 processor
- At least 4 GB of RAM
- At least 6 GB of free disk space.
- Internet connectivity for web downloads.

Operating System Supported

	SP Level	64-bit
Windows 7	SP1	X
Windows 10		X

3.2 Compiler Support

The following compilers are the NXP official build tools versions supported by the SDK and AMMCLIB Software Libraries & Driver which are a pre-requisite of the NXP Model-Based Design Toolbox:

Compiler Supported	Release Version
GCC E200 VLE GNU Compiler	V4.9.4
GreenHills MULTI 7.1.4 Compiler	2017.1.4
WindRiver DIAB Compiler	5.9.6.2

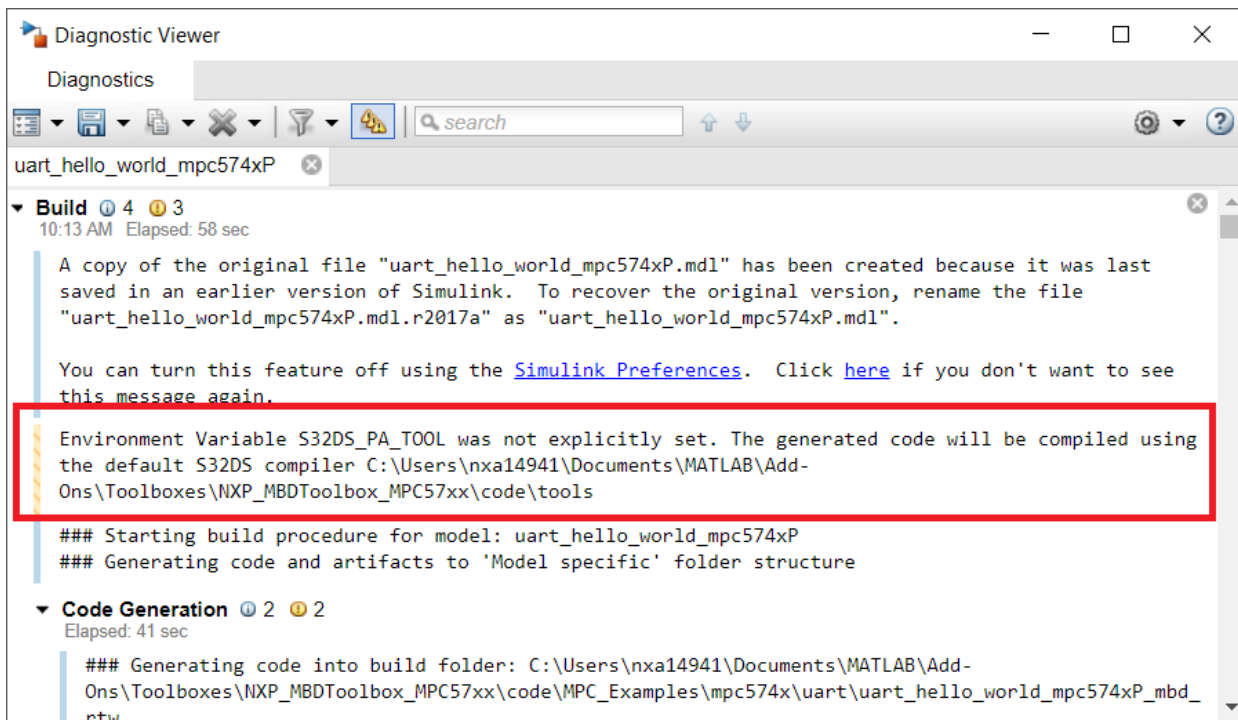
Any other version might produce wrong results or might fails to compile due to missing dependencies.

The target compiler for the Model-Based Design Toolbox needs to be configured. Use the notation below to set up these compiler environmental variables. Ensure a system environment variable called <COMPILER_STRING>_TOOL, corresponding to the compiler(s) you have installed, is defined to compiler path value as shown below:

```
S32DS_PA_TOOL = {Toolbox installation path}/tools or  
                {S32 Design Studio installation path}/  
GHS_TOOL = {GHS installation path}/comp_201714/  
DIAB_TOOL = {DIAB installation path}/diab/5.9.6.2/
```

Note: Paths shown are for illustration, your installation path may be different. Once environmental variables are setup you will need to restart MATLAB for the IDE environment to see these system variables.

In case there is no compiler installed, the NXP's Model-Based Design Toolbox is going to default to the internal GCC 4.9.4 compiler.



4 Known Limitations

[NXP's Model-Based Design Toolbox for MPC57xx version 3.2.0](#) has the following limitations:

- Version 3.2.0 cannot coexist with a previously installed version of the NXP Model-Based Design Toolbox for MPC57xx due to MATLAB global paths limitations. When the toolbox is installed as Add-Ons the MATLAB will uninstall the previous version automatically. In case you have files, custom files saved with previous versions will not be deleted.

To avoid any complications, it is recommended to uninstall the previous toolboxes for MPC57xx manually before install the 3.2.0 release.

- The Simulink Function-Call Split block cannot be mixed with Model-Based Design Toolbox blocks.
- Download to target for Simulink is supported only via the UART interface. For CAN download, you can use the RAppID Bootloader as a separate tool to load the generated application into target RAM/Flash Memories.
- The bootloader does not work for the RAM target in the case of DIAB and GHS compiler. Bootloader works only first time for GHS in case of FLASH target. After each download, the user must flash the bootloader again.

5 Support Information

For technical support please sign on to the following NXP's Model-Based Design Toolbox Community: <https://community.nxp.com/community/mbdt>

How to Reach Us:

Home Page:
www.nxp.com

Web Support:
www.nxp.com/support

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