

MCUXCTIMXRN

MCUXpresso Configuration Tools for i.MX Application Processors v.12 Release Notes

Rev. 1 — 15 July 2022

Release Notes

1 Overview

Release notes include information about new features, last-minute changes, bug fixes, incompatible elements, or other sections that may not be included in other documents for Config Tools for i.MX Application Processors.

Config Tools for i.MX is a set of configuration tools that provide an efficient method for evaluation and configuration of pins routing and DDR memory settings when designing with NXP's application processors based on Arm® Cortex®-A cores, including i.MX MPUs.

Read release notes before using MCUXpresso Configuration Tools for i.MX Application Processors.

2 Available tools

The following tools are currently available:

- DDR tool

DDR Configuration and Validation tool allows you to create a configuration for the DDR component and to validate the DDR configuration using various validation scenarios.

Features:

- Support for iMX8M, iMX8MM, iMX8MN, iMX8MP, LX2160A, and LX2162A
- DDR configuration UI using the tokenized RPA tool
- PHY initialization using dynamic library
- Import the output of the RPA tool will bypass UI configuration
- Support for multiple PHY firmware versions including fw2020.06
- Diagnostic fw2020.06
- DDR PHY support for DDR3, DDR4, and LPDDR4
- Cell color code
- Basic/Advanced user mode
- DDR controller Registers View support
- Auto-detect of available COM ports
- USB target connection
- Basic validation tests support (Write-Read-Compare, Walking Ones, Walking Zeros, Quick ECC)
- Inline ECC support for iMX 8MP
- DQ ODT and driver strength test
- Vref for 1D optimization for LPDDR4 and DDR4
- vTSA (Virtual Timing Signal Analysis) support - RX data eye, TX data eye, CA bus signals margin

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- Stress tests support
- Export vTSA results in JPEG format
- Export test and PHY logs to files
- High level root cause advisor
- Static Code generation in Uboot style
- Command line possibility

- PBL tool

PBL tool helps you create and modify pre-boot initialization data used for configuring LX2 devices.

Features:

- Support for LX2160A and LX2162A
- Configure reset configuration word (RCW), which is 1024 bits of information
- Optional configure pre-boot initialization (PBI) command sequence
- Allow user to have full access to configuration by using Skip error checking and Display all fields
- Option to directly modify the configuration from RCW registers
- Import different formats of input
- Generate different types of output, including a binary file

- SerDes tool

The SerDes tool allows you to configure the SerDes block and provides you with a GUI application to validate the configuration

Features:

- Support for LX2160A, LX2162A, and LA12xx.
- UI for SerDes blocks configuration
- Per lane tests
- Bist, Power Transmitter/Receiver, Reset Transmitter/Receiver tests
- Jitter scope, Pattern Independent Jitter scope, Start/Stop Tx Patter generation tests
- Read a configuration from the target
- Read MDIO registers for LX2160A and LX2162A
- Apply the SerDes protocol to the PBL tool

- Trusted Execution Environment Configuration tool

The Trusted Execution Environment (TEE) tool facilitates the protection and isolation of the sensitive parts of the code.

Features:

- Graphical display of memory layout and resulting access to memory regions
- Configuration of access policies for memory areas, bus masters, and peripherals
- Configuration of pin and interrupt masking and security, as well as general features related to the ARMv8 core security
- Configuration of MPU
- Validation of settings
- Generation of configuration files (C code or ROM preset data)

- Pins tool

The Pins tool is used for pin routing configuration, validation, and code generation, including pin

functional/electrical properties, power rails, runtime configurations.

Features:

- Desktop application
- Muxing and pin configuration with consistency checking
- Multicore support
- Localized for English and Simplified Chinese
- Mostly Connected: On-Demand device data download
- Integrates with any compiler and IDE
- Supports English and Chinese (simplified) languages, based on locale settings. Refer to the User Guide for details.
- ANSI-C initialization code
- Graphical processor package view
- Multiple configuration blocks/functions
- Easy-to-use device configuration
 - Selection of Pins and Peripherals
 - Package with IP blocks
 - Routed pins with electrical characteristics
 - Registers with configured and reset values
 - Power Groups with assigned voltage levels
 - Source code for C/C++ applications
- Documented and easy to understand source code
- CSV Report and Device Tree File

3 System requirements

- One of the following Host Operating systems:
 - Microsoft(R) Windows(R) 10 (64-bit version)
 - Ubuntu 22.04 LTS
 - Mac OS X operating system (12)
- 4 GB RAM or more
- Display with resolution 1024 x 768 or more
- Internet connection for dynamic download of processor database

4 Known issues and limitations

- General
 - Cut, Paste, and Delete commands may not work properly when selected from the Edit menu.
 - [Safari] The web version of the tool might freeze when using the Safari browser. Recommended workaround: Use another browser or the desktop version.
 - [MacOS] Some of the main tool menu items are shown in English even if the locale is set to Chinese.
 - [MacOS, Windows] The 'Always Overwrite Files Without Asking' option does not work, a dialogue asking for overwriting files appears even if the option is on.

- After switching to the Dark theme, the view is not using Dark colors. In most cases, one or more restarts of the application fix the issue permanently.
 - Html documentation - Search and Contents menus do not work in Firefox version 68 and later. The workaround is to use a different browser or to set `privacy.file_unique_origin=false` in Firefox about:config page, then restart the browser
 - Pins tool
 - Tooltips in the Target processor view and drop-down menus are not supported in the web version.
 - The package view blinks in the web version.
 - [Ubuntu] Horizontal scrollbars in the Peripheral and Pins view and the Routed pins table are missing on some Linux systems.
 - Pins tool for i.MX
 - Import pins configuration from the Processor Expert Project (.pe) does not correctly import all values of SPEED and DSE bit fields for i.MX legacy devices - 6DQ, 6SDL, and 6SL. There is an invalid value reported after the import operation is finished.
 - Import operation of large pins configuration from existing source files over existing opened configuration (>10 functions) might remarkably affect the tool performance and cause display of potentially incorrect pins configuration content within the tool UI views. Workaround: Recommended performing import from sources into a clean (empty) configuration to avoid performance penalty and potential UI content issues.
 - [Ubuntu] Checkbox of the selected row is not visible in the Pins view. It still can be clicked and the routing dialog pops-up.
 - TEE tool
 - i.MX8ULP: Missing SAU configuration for M33 domain
 - DDR tool for i.MX
 - The DDR tool is not supported on LinuxOS and MacOS
 - DDR3 is supported only for iMX8MN
 - Optimization scenario (odt and drv) does not sweep the configuration when a user imports the RPA script
 - SerDes tool
 - The DDR tool is not supported on LinuxOS and MacOS
- Installer:
- The tool does not work when the installation path contains the following characters: "!@#\$\$%^&". It is a Java limitation and mentioned characters are invalid for [Java](#)
 - [Ubuntu/Debian] For reinstalling the tool using dpkg, first uninstall the tool and then install again.

5 New features

Version 12.0

- The product is based on Eclipse 2021-12
- Enabled EcmaScript 6 script engine
- Supported Override outpath of files generated by tools
- Introduced TEE tool
- TEE tool
 - i.MX 8ULP applications processor family is now supported:
 - Implemented basic XRDC configuration (MRC, MSC, and PAC)
 - Additionally implemented Process Identifier, TSM, and SP4SM configuration

- Hybrid templates updated for XRDCs MRC that can be edited by user and selected by code region
- Fixes for the KW45 family:
 - Fixed the bug where LK1 bit in TRDC_CR is not set when all the GVLD bits are set
 - Fixed the bug where setting a lock in Access Templates does not work
 - Fixed the bug where setting ID bypass of a master does not set the bit in its MDA register in the Registers view
- Fixes for LPC55S and RT5xxS/6xxS families:
 - Fixed the bug where NSC region is not shown correctly
- Other minor improvements and fixes
- Pins tool
 - Support for LX2162A
 - Added the command to create a function with default routing of pins and signals
 - Created the External User Signals view
- DDR tool
 - Support for LX2162A
 - Inline ECC for iMX 8MP
 - Quick ECC test for iMX 8MP
 - VrefDQ for 1D optimization for DDR4 and LPDDR4
 - CA bus signals margin for LPDDR4
 - High-level root cause advisor
- PBL tool
 - Support for LX2162A
- SerDes tool
 - Support for LX2162A and LA12xx
 - Apply the SerDes protocol to the PBL tool
 - Read MDIO registers for LX2160A and LX2162A

Version 11.0

- The product is based on Eclipse 2021-06
- Updated Open JDK 11
- Remove Nashorn engine warning from logs
- Pins tool
 - Support for LX2160A
 - Added the Full pins initialization option in the Functional group properties
 - Added the De-initialization function option in the Functional group properties
 - The pins view and routing dialogs are now using labels in the format "Peripheral: signal, channel"
- DDR tool
 - Support for iMX8M-nano UL support with DDR3
 - Support for LX2160A
 - Cell color code

- Report to summarize the DDR configuration (mex file plus ds file)
- PBL tool
 - The pre-boot loader (PBL) tool is added in Config tools for i.MX
 - Support for LX2160A
- SerDes tool
 - The SerDes tool is added in Config tools for i.MX
 - Support for LX2160A

Version 10.0

- The product is based on Eclipse 2020-12
- Moved from Open JDK 8 to Open JDK 11
- Pins tool
 - Added support of expansion board adapters - expansion boards that contain additional expansion headers
 - A numbered suffix is added to function names and prefixes by default for expansion board functions
 - The processor reset dialog offers 2 choices where available
- DDR tool
 - The proper disclaimer was added when the DDR tool is used for the first time
 - Simplifying DDR configuration UI by using the tokenized RPA tool
 - Import the output of the RPA tool bypasses UI configuration
 - Switch between Configuration options
 - Board data bus configuration for LPDDR4
 - UART selection
 - IOMUX config (under Advanced mode)
 - PMIC config (under Advanced mode)
 - Custom configuration (under Advanced mode)
 - Dynamic DDR controller and DDR PHY code generation on host
 - Multiple frequency setpoints support
 - DQ ODT and DS configuration (under Advanced mode)
 - New validation categories (Inspection, Optimization, vTSA, Stressing)
 - DQ ODT and driver strength test
 - Apply the ODT configuration from the ODT map

Version 9.0

- The product is based on Eclipse 2020-06
- Moved from Oracle Java 8 to Open JDK 8
- Pins tool
 - Added Expansion boards support
 - Improved presentation and usage of internal signals
 - Renamed the "Routed Pins" view to "Routing Details"
 - Renamed the column "Route to" to "Routed pin/signal" in the Routing Details view

- Added the column "Arrow" to the Routing Details view (includes generated pins reports)
- Added pin coordinates to the "Routed pin/signal" column in the Routing Details view (includes generated pins reports)
- Added filter for Pins or Signal in the Routing Details view
- Ability to locate/highlight pin(s) in the Pins View table from other views (Routing Details, Package,...)
- DDR tool
 - Support for iMX8M, iMX8MM, iMX8MN, and iMX8MP
 - PHY initialization using dynamic library
 - Support for multiple PHY firmware versions including fw2020.06
 - Diagnostic fw2020.06
 - DDR PHY support for DDR3 (untested), DDR4, and LPDDR4
 - Allow users to import the DDR controller and PHY configuration from the RPA tool
 - Full PHY configuration from GUI
 - Basic/Advanced user mode
 - DDR controller Registers View support
 - Auto-detect of available COM ports
 - USB target connection
 - Basic validation tests support (Write-Read-Compare, Walking Ones, Walking Zeros)
 - Stress tests support
 - vTSA (Virtual Timing Signal Analysis) support- RX data eye, TX data eye
 - Export tests results in JPEG format
 - Code generation in Uboot style
 - Command line possibility

Version 8.0

- Pins tool: Added muxing alt function details in the HTML report.
- DDR tool
 - Blind support for DDR3
 - Added support for iMX8M and iMX8MN
 - Support for multiple PHY firmware versions
 - Improved import from the RPA tool
 - Add Basic/Advanced user mode
 - Code generation in Uboot style

Version 7.0.1

- Mac OS X 10.15 operating system support added.

Version 7.0

- Product renamed to Config Tools for i.MX
- The Memory tool is added, it supports DDR configuration and validation
- Added the "Help | Kit/Board Information" option that displays information about currently used kit or board.

- Clickable Part number, Board, and Kit name are supported. It displays information about the currently used processor, board, and kit.
- Data Manager supports clearing locally cached processors, boards, kit, and components content.
- Configuration Preferences supports custom copyright in generated sources.
- Preferences - Added Dark theme support.
- Pins tool: Added automatic routing feature that can be used for conflict resolution in the current functional group.

Version 6.0

- Only 64bit operating systems are supported.
- 'Update Code' is now possible without an assigned toolchain project.
- Added the "Help | Processor Information" menu option that displays information about the currently used processor.
- Highlight changes implemented in generated code in the Code preview view.

Version 5.0

- The New Configuration Wizard allows specifying the default core for multicore processors.
- Data Manager allows an overview of downloaded data, their versions, tool support information, update outdated, or manually download new data.
- Copy/Paste of pin(s) supported in the Routed Pins view.
- Added in-tool tutorials - eclipse Cheat Sheets integration.

Version 4.1

- Undo/Redo supported.
- The product is based on Eclipse Oxygen release 3.
- Unified import wizard. A single import source is implemented. It allows importing all supported types of C files.

Version 4.0

- Added an ability to import a configuration from the existing MEX file (for selected tools).
- Added a common Functions group toolbar across all tools.
- Added an option to not generate YAML.
- Pins tool: Multiselect in the Routed pins view is now supported.
- Syntax coloring is supported in the Sources view.
- Export sources wizard is simplified.
- Several bugs are fixed and general performance is improved.
- Quick start guide is added.

Version 3.0

- Newly views are dock-able, the Views menu is added.
- The sources view now displays which core a generated file belongs to (for multicore processors).
- The Problems view is improved.
- Pins view package now supports PoP (package on package) and a generic package.
- Export sources improved, multicore support added: Generated C code now split into individual folders by core, using a common "pin_mux.c/.h" name.
- Several bugs are fixed

Version 2.0

- Labels and Identifiers are now supported in the Pins tool.
- Boards and Kits are now supported.
- Import of legacy PE projects is supported.
- Several bugs are fixed.

Version 1.0

- Initial version.

6 Revision history

Table 1. Revision history

Revision	Date	Description
0	22 December 2022	Initial release
1	15 July 2022	Updated for v12

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For sales office addresses, please send an email to: salesaddresses@nxp.com

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