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# **MCUXpresso SDK Release Notes Supporting Ipcxpresso55s16**

**Change Logs**

**NXP Semiconductors**



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# 1 Driver Change Log

## CLOCK

The current CLOCK driver version is 2.3.7.

- 2.3.7
  - Bug Fixes
    - \* Correct the fail status condition in CLOCK\_SetupExtClocking().
- 2.3.6
  - Improvements
    - \* Added lost comments for some enumerations.
- 2.3.5
  - Bug Fixes
    - \* Correct the clock name kCLOCK\_Cwt to kCLOCK\_Cdog.
- 2.3.4
  - Bug Fixes
    - \* Fix CLOCK\_SetClkDiv function to set kCLOCK\_DivFlexFrgx correctly.
- 2.3.3
  - Bug Fixes
    - \* Fix the pllRate in CLOCK\_SetPLL1Freq().
- 2.3.2
  - Improvement
    - \* Update the CLOCK\_SetFLASHAccessCyclesForFreq().
- 2.3.1
  - Bug Fixes
    - \* Fixed violation of MISRA C-2012 rule 10.1, rule 10.4, rule 18.1 and so on.
- 2.3.0
  - New Features
    - \* Moved SDK\_DelayAtLeastUs function from clock driver to common driver.
- 2.2.2
  - Bug Fixes
    - \* Corrected the PLL.SELI setting to align with new UM.
    - \* Changed the PLL lock reliable condition.
- 2.2.1
  - Improvements
    - \* Removed redundant macro definitions.
- 2.2.0
  - New Features
    - \* Added the CLOCK\_SetupPLUClkInClocking() to store the PLU CLKIN frequency.
- 2.1.1
  - Improvements
    - \* Updated the CLOCK\_SetFLASHAccessCyclesForFreq() to support up to 150MHz frequency.

- 2.1.0
  - New features
    - \* Added new API CLOCK\_DelayAtLeastUs() implemented by DWT to allow users to set delay in unit of microsecond.
- 2.0.4
  - Bug Fixes
    - \* Fixed C++ build errors in CLOCK\_GetClockAttachId() and CLOCK\_AttachClk().
- 2.0.3
  - Bug Fixes
    - \* Fixed attach incorrect attach\_id.
- 2.0.2
  - New Features
    - \* Added get actual clock attach id api to allow users to obtain the actual clock source in target register.
  - Bug Fixes
    - \* The attach clock and get actual clock attach id APIs should check combination of two clock sources.
  - Optimizations
    - \* Made the judgement statements more clear.
    - \* Strengthened the compatibility of clock attach id.
    - \* Removed some unmeaningful definitions and add some useful ones to enhance readability.
- 2.0.1
  - Some minor fixes.
- 2.0.0
  - Initial version.

## RESET

The current RESET driver version is 2.0.1.

- 2.0.1
  - Improvements
    - \* Updated component full\_name to "Reset Driver".
- 2.0.0
  - Initial version.

## COMMON

The current COMMON driver version is 2.3.1.

- 2.3.1
  - Bug Fixes
    - \* Fixed MAKE\_VERSION overflow on 16-bit platforms.
- 2.3.0

- Improvements
  - \* Split the driver to common part and CPU architecture related part.
- 2.2.10
  - Bug Fixes
    - \* Fixed the ATOMIC macros build error in cpp files.
- 2.2.9
  - Bug Fixes
    - \* Fixed MISRA C-2012 issue, 5.6, 5.8, 8.4, 8.5, 8.6, 10.1, 10.4, 17.7, 21.3.
    - \* Fixed SDK\_Malloc issue that not allocate memory with required size.
- 2.2.8
  - Improvements
    - \* Included stddef.h header file for MDK tool chain.
  - New Features:
    - \* Added atomic modification macros.
- 2.2.7
  - Other Change
    - \* Added MECC status group definition.
- 2.2.6
  - Other Change
    - \* Added more status group definition.
  - Bug Fixes
    - \* Undef \_\_VECTOR\_TABLE to avoid duplicate definition in cmsis\_clang.h
- 2.2.5
  - Bug Fixes
    - \* Fixed MISRA C-2012 rule-15.5.
- 2.2.4
  - Bug Fixes
    - \* Fixed MISRA C-2012 rule-10.4.
- 2.2.3
  - New Features
    - \* Provided better accuracy of SDK\_DelayAtLeastUs with DWT, use macro SDK\_DELAY\_USE\_DWT to enable this feature.
    - \* Modified the Cortex-M7 delay count divisor based on latest tests on RT series boards, this setting lets result be closer to actual delay time.
- 2.2.2
  - New Features
    - \* Added include RTE\_Components.h for CMSIS pack RTE.
- 2.2.1
  - Bug Fixes
    - \* Fixed violation of MISRA C-2012 Rule 3.1, 10.1, 10.3, 10.4, 11.6, 11.9.
- 2.2.0
  - New Features
    - \* Moved SDK\_DelayAtLeastUs function from clock driver to common driver.
- 2.1.4
  - New Features

- \* Added OTFAD into status group.
- 2.1.3
  - Bug Fixes
    - \* MISRA C-2012 issue fixed.
      - Fixed the rule: rule-10.3.
- 2.1.2
  - Improvements
    - \* Add SUPPRESS\_FALL\_THROUGH\_WARNING() macro for the usage of suppressing fallthrough warning.
- 2.1.1
  - Bug Fixes
    - \* Deleted and optimized repeated macro.
- 2.1.0
  - New Features
    - \* Added IRQ operation for XCC toolchain.
    - \* Added group IDs for newly supported drivers.
- 2.0.2
  - Bug Fixes
    - \* MISRA C-2012 issue fixed.
      - Fixed the rule: rule-10.4.
- 2.0.1
  - Improvements
    - \* Removed the implementation of LPC8XX Enable/DisableDeepSleepIRQ() function.
    - \* Added new feature macro switch "FSL\_FEATURE\_HAS\_NO\_NONCACHEABLE\_SECTION" for specific SoCs which have no noncacheable sections, that helps avoid an unnecessary complex in link file and the startup file.
    - \* Updated the align(x) to **attribute**(aligned(x)) to support MDK v6 armclang compiler.
- 2.0.0
  - Initial version.

## LPADC

The current LPADC driver version is 2.5.1.

- 2.5.1
  - Bug Fixes
    - \* Fixed some typos in Lpadc driver comments.
- 2.5.0
  - Improvements
    - \* Added missing items to enable trigger interrupts.
- 2.4.0
  - New features
    - \* Added APIs to get/clear trigger status flags.
- 2.3.0

- Improvements
  - \* Removed LPADC\_MeasureTemperature() function for the LPADC supports different temperature sensor calculation equations.
- 2.2.1
  - Improvements
    - \* Optimized LPADC\_MeasureTemperature() function to support the specific series with flash solidified calibration value.
    - \* Clean doxygen warnings.
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 10.3, rule 10.8 and rule 17.7.
- 2.2.0
  - New Feature
    - \* Added API LPADC\_MeasureTemperature() to get correct temperature from the internal sensor.
  - Improvements
    - \* Separated lpadc\_conversion\_resolution\_mode\_t with related feature macro.
  - Bug Fixes
    - \* Fixed the violations of MISRA C-2012 rules:
      - Rule 10.3, 10.4, 10.6, 10.7 and 17.7.
- 2.1.1
  - Improvements
    - \* Updated the gain calibration formula.
    - \* Used feature to segregate the new item kLPADC\_TriggerPriorityPreemptSubsequently.
- 2.1.0
  - New Features
    - \* Added the API LPADC\_SetOffsetValue() to support configure offset trim value manually.
    - \* Added the API LPADC\_DoOffsetCalibration() to do offset calibration independently.
  - Improvements
    - \* Improved the usage of macros and removed invalid macros.
- 2.0.2
  - Improvements
    - \* Added support for platforms with 2 FIFOs and different calibration measures.
- 2.0.1
  - Bug Fixes
    - \* Ensured the API LPADC\_SetConvCommandConfig configure related registers correctly.
- 2.0.0
  - Initial version.

## PRINCE

The current PRINCE driver version is 2.3.2.

- Version 2.3.2
  - Fix documentation of enumeration.



- Extend PRINCE example.
- Version 2.3.1
  - Fix MISRA-2012 issues.
  - Add support for LPC55S0x series
- Version 2.3.0
  - Add support for LPC55S1x and LPC55S2x series
- Version 2.2.0
  - Add runtime checking of the A0 and A1 rev. of LPC55Sxx serie to support both silicone revisions.
- Version 2.1.0
  - Update for the A1 rev. of LPC55Sxx serie.
- 2.0.0
  - Initial version.

## RNG

The current RNG driver version is 2.0.3.

- 2.0.3
  - Modified RNG\_Init and RNG\_GetRandomData functions, added rng\_accumulateEntropy and rng\_readEntropy functions. These changes are reflecting recommended usage of RNG according to device UM
- 2.0.2
  - Add RESET\_PeripheralReset function inside RNG\_Init and RNG\_Deinit functions.
- 2.0.1
  - Fix MISRA C-2012 issue.
- 2.0.0
  - Initial version.

## 2 Middleware Change Log

### emWin library

The currently supported version is 6.16c

- v6.16c
  - upgraded to v6.16c
  - updated temperature\_control demo generated by AppWizard
- v6.14d
  - upgraded to v6.14d
- v6.10f
  - upgraded to v6.10f

### FatFs for MCUXpresso SDK

Current version is FatFs R0.14b\_rev0.

- R0.14b\_rev0
  - Upgraded to version 0.14b
- R0.14a\_rev0
  - Upgraded to version 0.14a
  - Applied patch ff14a\_p1.diff and ff14a\_p2.diff
- R0.14\_rev0
  - Upgraded to version 0.14
  - Applied patch ff14\_p1.diff and ff14\_p2.diff
- R0.13c\_rev0
  - Upgraded to version 0.13c
  - Applied patches ff\_13c\_p1.diff,ff\_13c\_p2.diff, ff\_13c\_p3.diff and ff\_13c\_p4.diff.
- R0.13b\_rev0
  - Upgraded to version 0.13b
- R0.13a\_rev0
  - Upgraded to version 0.13a. Added patch ff\_13a\_p1.diff.
- R0.12c\_rev1
  - Add NAND disk support.
- R0.12c\_rev0
  - Upgraded to version 0.12c and applied patches ff\_12c\_p1.diff and ff\_12c\_p2.diff.
- R0.12b\_rev0
  - Upgraded to version 0.12b.
- R0.11a
  - Added glue functions for low-level drivers (SDHC, SDSPI, RAM, MMC). Modified diskio.c.
  - Added RTOS wrappers to make FatFs thread safe. Modified syscall.c.
  - Renamed ffconf.h to ffconf\_template.h. Each application should contain its own ffconf.h.
  - Included ffconf.h into diskio.c to enable the selection of physical disk from ffconf.h by macro

definition.

- Conditional compilation of physical disk interfaces in diskio.c.

## FreeMASTER Communication Driver

Current version is 3.0.4. Visit <https://www.nxp.com/freemaster> for more information. Reach out for a support at <https://community.nxp.com/community/freemaster>.

- 3.0.0
  - Initial version of FreeMASTER driver reworked from a standalone package to MCUXpresso SDK middleware.
  - This driver version supports new version V4 of FreeMASTER serial communication protocol.
  - Supports UART, LPUART, USART, MINIUSART, FlexCAN, USB-CDC and JTAG/BDM communication.
  - Initial version was tested with the following boards: evkmimxrt1060, frdmk64f, frdmke15z, frdmk128z, lpcxpresso54628 lpcxpresso55s69, lpcxpresso845max and twrk64f120m.
  - Use with FreeMASTER PC Host tool version 2.5 or later.
- 3.0.1
  - FreeMASTER driver extended to support wide range of Kinetis, LPC and i.MX-RT platforms.
  - Low-level communication drivers also available for few non-SDK NXP platforms like S12Z, S32x and more.
  - Use with FreeMASTER PC Host tool version 3.0 or later.
- 3.0.2
  - FreeMASTER driver support of DSC56F800EX and S12 platforms extended.
  - Removed dependency on C99 compiler features.
  - Use with FreeMASTER PC Host tool version 3.0.2 or later.
- 3.0.3
  - General update for SDK 2.9.0
  - fmstr\_any demo added to selected platforms - use with MCUXpresso SDK and FreeMASTER peripheral configuration tool.
  - New example.pmp project file embedded into application flash storage.
  - USB-CDC implementation fixed, new JTAG EOnCE communication interface added to DSC 56F800E family.
  - Use with FreeMASTER PC Host tool version 3.0.3 or later. Version 3.1.x is recommended.
- 3.0.4
  - Fixed component dependency logic of FreeMASTER driver.
  - Use with FreeMASTER PC Host tool version 3.1.x
- 3.0.5
  - General update for SDK 2.11 and 2.12
  - New TCP and UDP support with lwIP stack
  - New communication over Segger RTT interface
  - Add fmstr\_net and fmstr\_wifi examples for selected i.MX-RT platforms
  - Add fmstr\_rtt example for selected platforms
  - Fixed negative recorder threshold trigger processing

## mbedTLS for MCUXpresso SDK

The current version of mbedTLS is based on mbed TLS 2.27.0 branch released 2021-07-07

- 2.27.0
  - New features:
    - \* Ported mbedTLS 2.27.0 to SDK.
- 2.26.0
  - New features:
    - \* Ported mbedTLS 2.26.0 to SDK.

### 2.16.6\_rev7

- Bug fixes:
  - Corrected definition of global variable `g_isCryptoHWInitialized` to be only internal static variable in `sssapi_mbedtls.c` file.

### 2.16.6\_rev6

- Bug fixes:
  - Adding `#ifdef` in `ecdsa.c` to remove warning: "function "derive\_mpi" was declared but never referenced", when alternative implementation of ECDSA sign and verify is used and not used Deterministic ECDSA, then was `derive_mpi` function never used.

## NTAG I2C plus library

The current version is 1.0.0.

- 1.0.0
  - initial release.

## Trusted Firmware M (TF-M) for MCUXpresso SDK

The current version is based on TF-M v1.4.0, released 2021-08-30 (00c1106624d733aade448659258bfd1088575b76) on <https://git.trustedfirmware.org/TF-M/trusted-firmware-m.git>

- 1.4.0
  - Ported TF-M v1.4.0 to MCUXpresso SDK. Based on the 2021-08-30 snapshot(00c1106624d733aade448659258bfd1088575b76)
- 1.3.0
  - Ported TF-M v1.3.0 to MCUXpresso SDK. Based on the 2021-04-13 snapshot(cad01ab98c34bb3a13ab49c)
  - Added `evkmimxrt685` platform.
  - Added `evkmimxrt595` platform.
- 1.1
  - Ported TF-M v1.1 to MCUXpresso SDK. Based on the 2020-08-19 snapshot(54507b1645087e92b5a11591)
- 1.0 Rev3
  - Ported TF-M v1.0 to MCUXpresso SDK. Based on the 2020-04-20 snapshot(1e089705899ff68c617cc0c01)
  - Added HUK derivation function.

- 1.0 Rev2
  - Ported TF-M v1.0 to MCUXpresso SDK. Based on the 2020-04-06 snapshot(d4ac5d14e74d1aa2a78526aa)
  - Added the LPC55S Flash module support for ITS and PS.
  - Added lpcxpresso55s16 platform.
- 1.0 Rev1
  - Ported TF-M v1.0-RC1 to MCUXpresso SDK. Based on the 2019-09-23 snapshot(011c0ad0e76d62bd6f2d)
  - Added MCUx and GCC demo applications.
  - Added PSA test suite application.
  - Used mbedCrypto instead of mbedTLS
- 1.0
  - Ported TF-M v1.0-beta to MCUXpresso SDK. Based on the 2019-03-13 snapshot(a5a2a5bc32bc50f4def8d)
  - Added lpcxpresso55s69 platform.
  - Added MDK demo applications.
  - Bug Fixes:
    - \* Fixed compilation warnings and errors.
    - \* Changes in the TF-M original source code are marked by the "NXP" comment.

## USB stack for MCUXpresso SDK

The current version of USB stack is 2.8.1.

- 2.8.1
  - Improvement:
    - \* update USB audio demos to use audio component (components).
    - \* Add the checking of function call return value.
    - \* Add audio multiple channels demo (usb\_device\_composite\_audio\_multi\_ch\_unified) on RT600 audio board.
    - \* Fix audio noise on sync mode and improve overflow/underflow checking method.
    - \* Support UAC 3.1 and 7.1 on audio speaker demo.
    - \* Set USB device CDC demo not to depend on DTR setting from host.
    - \* Support MCUX toolchain on some RTxxx platforms.
- 2.8.0
  - Improvement:
    - \* Fix the USB device stack vulnerability issues.
    - \* Update the audio PLL and FRO adjustment codes for audio examples in RTxxx, LP-C54xxx and LPC55xxx.
    - \* Improve the USB PD AMS collision avoidance.
    - \* Improve IP3511 controller driver's dedicated ram allocation.
    - \* Change the USB\_DATA\_ALIGN\_SIZE to 4 because the controller driver uses the dedicated RAM to do memcpy.
  - New features:
    - \* Enable USB host audio recorder demo for mutiple boards.
- 2.7.0
  - Improvement:

- \* Use new feedback solution and low latency playback for usb device speaker demo and unified demos. Add underflow and overflow protection.
- \* Optimize hard code for usb audio demos.
- \* Update Unconstrained Power field in the Sink Capabilities Message according to the external power state.
- \* Fix CVE-2021-38258 and CVE-2021-38260
- New features:
  - \* Enable USB host video demo for mutilple boards.
  - \* Enable USB device MTP demo for mutilple boards.
  - \* Add PPS message to usb pd stack.
- 2.6.1
  - Improvement:
    - \* rename sdcard as disk for all of sdcard demos. For ramdisk demos, they are not changed.
    - \* add wrapper for all of disk demos to support emmc.
- 2.6.0
  - Improvement:
    - \* Added more ufi event to support dynamic sdcard capacity.
    - \* Passed MISRA-2012 mandatory and required rules.
      - Except rule 17.2 in host hub and otg stack.
      - Except rule 5.1, rule 5.4, rule 21.1 and rule 21.2.
    - \* Re-implemented USB components and supported NPW.
    - \* Improved IP3511 controller driver's cancelling transfer function.
    - \* Enabled the audio2.0 defaultly for device audio demos.
    - \* Enabled the host audio2.0 function in host audio class driver and host audio speaker demo.
  - New features:
    - \* enable two USB controllers in one USB host mouse demo which named as host\_hid\_mouse\_dual.
    - \* enable UAC 5.1 for usb device audio speaker demo.
- 2.5.0
  - Improvement:
    - \* Integrated sdk components (OSA, Timer, GPIO and serial\_manager) to USB stack and demos.
    - \* Improved the ip3511 driver throughput.
    - \* Improved audio initialization codes after SDK audio drivers update.
    - \* Improved auido to support the audio2.0 in win10.
    - \* Add one "enumeration fail" callback event to host stack.
- 2.4.2
  - Improvement:
    - \* Put the USB controller data and transfer buffer to noncache section, removed the setting that sets the whole ocram and sdram as noncached.
    - \* Separated composite audio examples' channel,sample rate,format parameters from commom macro to in dedicated macro and out dedicated macro.
    - \* replaced USB\_PrepareData with USB\_AudioRecorderGetBuffer.
- 2.4.1
  - New features:

- \* Added enumeration fail callback to host stack when the attached device's enumeration failed.
- 2.4.0
  - Improvement:
    - \* Device Charger Detection (DCD) software architecture was refactored.
  - New features:
    - \* Enabled Device Charger Detection (DCD) on RT1060.
    - \* Enabled Device Charger Detection on RT600.
    - \* Enabled host battery charger function on RT600.
- 2.3.0
  - New features:
    - \* Added host video camera support. example: usb\_host\_video\_camera
    - \* Added a new device example. example: usb\_device\_composite\_cdc\_hid\_audio\_unified
- 2.2.0
  - New features:
    - \* Added device DFU support.
    - \* Supported OM13790DOCK on LPCXpresso54018.
    - \* Added multiple logical unit support in msc class driver, updated usb\_device\_lba\_information\_struct\_t to support this.
    - \* Supported multiple transfers for host ISO on IP3516HS.
  - Bug fixes:
    - \* Fixed device ip3511 prime data length than maxpacket size issue.
    - \* Initialized interval attribute in usb\_device\_endpoint\_struct\_t/usb\_device\_endpoint\_init\_struct\_t.
    - \* Removed unnecessary header file in device CDC class driver, removed unnecessary usb\_echo, and added DEBUG macro for necessary usb\_echo in device CDC class driver.
    - \* Fixed device IP3511HS unfinished interrupt transfer missing issue.
- 2.1.0
  - New features:
    - \* Added host RNDIS support. example: lwip\_dhcp\_usb
    - \* Enabled USB 3.0 support on device stack.
    - \* Power Delivery feature: Added OM13790HOST support; Added auto policy feature; Printed e-marked cable information;
- 2.0.1
  - Bug fixes:
    - \* Fixed some USB issues: Fixed MSC CV test failed in MSC examples.
    - \* Changed audio codec interfaces.
- 2.0.0
  - New features:
    - \* PTN5110N support.
  - Bug fix:
    - \* Added some comments, fixed some minor USB issues.
- 1.9.0
  - New features:
    - \* Examples:

- usb\_pd\_alt\_mode\_dp\_host
- 1.8.2
  - Updated license.
- 1.8.1
  - Bug fix:
    - \* Verified some hardware issues, support aruba\_flashless.
- 1.8.0
  - New features:
    - \* Examples:
      - usb\_device\_composite\_cdc\_vcom\_cdc\_vcom
      - usb\_device\_composite\_hid\_audio\_unified
      - usb\_pd\_sink\_battery
      - Changed usb\_pd\_battery to usb\_pd\_charger\_battery.
  - Bug fix:
    - \* Code clean up, removed some irrelevant code.
- 1.7.0
  - New features:
    - \* USB PD stack support.
  - Examples:
    - \* usb\_pd
    - \* usb\_pd\_battery
    - \* usb\_pd\_source\_charger
- 1.6.3
  - Bug fix: -IP3511\_HS driver control transfer sequence issue, enabled 3511 ip cv test.
- 1.6.2
  - New features:
    - \* Multi instance support.
- 1.6.1
  - New features:
    - Changed the struct variable address method for device\_video\_virtual\_camera and host\_phdc\_manager.
- 1.6.0
  - New features:
    - \* Supported Device Charger Detect feature on usb\_device\_hid\_mouse.
- 1.5.0
  - New features:
    - \* Supported controllers
      - OHCI (Full Speed, Host mode)
      - IP3516 (High Speed, Host mode)
      - IP3511 (High Speed, Device mode)
    - \* Examples:
      - usb\_lpm\_device\_hid\_mouse
      - usb\_lpm\_device\_hid\_mouse\_lite
      - usb\_lpm\_host\_hid\_mouse
- 1.4.0



- New features:
  - \* Examples:
    - usb\_device\_hid\_mouse/freertos\_static
    - usb\_suspend\_resume\_device\_hid\_mouse\_lite
- 1.3.0
  - New features:
    - \* Supported roles
      - OTG
    - \* Supported classes
      - CDC RNDIS
    - \* Examples
      - usb\_otg\_hid\_mouse
      - usb\_device\_cdc\_vnic
      - usb\_suspend\_resume\_device\_hid\_mouse
      - usb\_suspend\_resume\_host\_hid\_mouse
- 1.2.0
  - New features:
    - \* Supported controllers
      - LPC IP3511 (Full Speed, Device mode)
- 1.1.0
  - Bug fix:
    - \* Fixed some issues in USB certification.
    - \* Changed VID and Manufacturer string to NXP.
  - New features:
    - \* Supported classes
      - Pinter
    - \* Examples:
      - usb\_device\_composite\_cdc\_msc\_sdcard
      - usb\_device\_printer\_virtual\_plain\_text
      - usb\_host\_printer\_plain\_text
- 1.0.1
  - Bug fix:
    - \* Improved the efficiency of device audio speaker by changing the transfer mode from interrupt to DMA, thus providing the ability to eliminate the periodic noise.
- 1.0.0
  - New features:
    - \* Supported roles
      - Device
      - Host
    - \* Supported controllers:
      - KHCI (Full Speed)
      - EHCI (High Speed)
    - \* Supported classes:
      - AUDIO
      - CCID

- CDC
- HID
- MSC
- PHDC
- VIDEO

\* Examples:

- usb\_device\_audio\_generator
- usb\_device\_audio\_speaker
- usb\_device\_ccid\_smart\_card
- usb\_device\_cdc\_vcom
- usb\_device\_cdc\_vnic
- usb\_device\_composite\_cdc\_msc
- usb\_device\_composite\_hid\_audio
- usb\_device\_composite\_hid\_mouse\_hid\_keyboard
- usb\_device\_hid\_generic
- usb\_device\_hid\_mouse
- usb\_device\_msc\_ramdisk
- usb\_device\_msc\_sdcard
- usb\_device\_phdc\_weighscale
- usb\_device\_video\_flexio\_ov7670
- usb\_device\_video\_virtual\_camera
- usb\_host\_audio\_speaker
- usb\_host\_cdc
- usb\_host\_hid\_generic
- usb\_host\_hid\_mouse
- usb\_host\_hid\_mouse\_keyboard
- usb\_host\_msdc\_command
- usb\_host\_msdc\_fatfs
- usb\_host\_phdc\_manager
- usb\_keyboard2mouse
- usb\_pin\_detect\_hid\_mouse

## 3 Component Change Log

### CODEC

The current codec common driver version is 2.3.0.

- 2.3.0
  - Improvements
    - \* Added enum `_codec_volume_capability` for `CODEC_SetVolume/CODEC_SetMute` to cover more volume configurations.
- 2.2.2
  - Bug Fixes
    - \* Fixed the typo in codec common driver.
- 2.2.1
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 10.3, 8.3, 10.7, 17.7.
- 2.2.0
  - Improvements
    - \* Used `HAL_CODEC_HANDLER_SIZE` which is determined by low level driver instead of use `CODEC_HANDLE_SIZE` for the codec device handle definition.
- 2.1.1
  - Improvements
    - \* Supported all of the codec in the codec adapter.
    - \* Modified the codec handle definition to improve user experience.
    - \* Modified the capability member type from entity to pointer in codec handle.
  - Bug Fixes
    - \* Fixed the Coverity issue regrading array compared against 0.
- 2.1.0
  - Deprecated APIs
    - \* `CODEC_GetMappedFormatBits`
    - \* `CODEC_I2C_WriteReg`
    - \* `CODEC_I2C_ReadReg`
    - \* `CODEC_I2C_ModifyReg`
    - \* `CODEC_SetEncoding`
  - new APIs
    - \* `CODEC_SetPower`
    - \* `CODEC_SetVolume`
    - \* `CODEC_SetMute`
    - \* `CODEC_SetPlay`
    - \* `CODEC_SetRecord`
    - \* `CODEC_SetRecordChannel`
    - \* `CODEC_ModuleControl`
  - new features
    - \* Removed duplicate members in `codec_handle_t` and `codec_config_t`.

- \* Added codec\_config\_t pointer in codec\_handle\_t.
- \* Added codec capability flag in codec\_handle\_t.
- \* Used codec adapter instead of function opinter in codec common driver.
- 2.0.1
  - Added delayMs function pointer in codec handle.
- 2.0.0
  - Initial version.

## WM8904

The current wm8904 driver version is 2.5.0.

- 2.5.0
  - Improvements
    - \* Added master clock configuration support in function WM8904\_SetAudioFormat.
    - \* Align the sysclk paramter definition for the WM8904\_SetAudioFormat/WM8904\_SetMasterClock.
    - \* Added api WM8904\_SetDACVolume to support adjust DAC volume.
    - \* Fixed the MISRA-2012 violation of 12.2, 10.3.
- 2.4.4
  - Bug Fixes
    - \* Added the 11.025kHz/22.05kHz/44.1kHz samplerate support on codec WM8904.
    - \* Fixed the MISRA-2012 violation of 4.7.
- 2.4.3
  - Bug Fixes
    - \* Fixed the MISRA-2012 violations.
      - Fixed rule 8.6, 9.3, 10.1, 10.3, 10.4, 10.7, 10.8, 11.8, 11.9, 14.4, 16.1, 16.3, 16.4, 17.7, 20.9.
- 2.4.2
  - Bug Fixes
    - \* Corrected the volume setting function behavior in wm8904 driver, support range align with its specification range.
    - \* Corrected the volume setting function behavior in wm8904 adapter, support range 0 - 100, 0 for mute, 100 for maximum volume.
- 2.4.1
  - Bug Fixes
    - \* Fixed the bit width reigster field overwritten issue.
- 2.4.0
  - New features
    - \* Added flt support in wm8904 driver.
- 2.3.0
  - Improvements
    - \* Added new API WM8904\_SetMasterClock to support BCLK/LRCLK output mode.
- 2.1.0

- new APIs
  - \* WM8904\_ReadRegister
  - \* WM8904\_WriteRegister
  - \* WM8904\_ModifyRegister
  - \* WM8904\_SetRecord
  - \* WM8904\_SetPlay
  - \* WM8904\_SetRecordChannel
  - \* WM8904\_SetModulePower
  - \* WM8904\_SetChannelVolume
  - \* WM8904\_SetChannelMute

#### New features

- Removed dependency on codec common driver.
- Added dependency on codec i2c.

#### Bug Fixes

- Fixed unchecked return value in WM8904\_Deinit.
- Fixed the alignment fault issue by adding \_\_NOP between continuous memory access.

#### 2.0.3

- Bug Fixes
  - Fixed issue that wm8904 register access function truncated return value.

#### 2.0.2

- Bug Fixes
  - Fixed using uninitialized value format.fsRatio when calling WM8904\_UpdateFormat.

#### 2.0.1

- Added WM8904\_CheckAudioFormat API.
- Changed the second parameter's name of WM8904\_SetAudioFormat to sysclk.

#### 2.0.0

- Initial version.

## .1 WM8960

The current wm8960 driver version is 2.2.0.

- 2.2.0
  - Improvements
    - \* Added masterClock member in wm8960\_config\_t to support wm8960 master mode.
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 4.7, 5.8, 10.3, 10.4, 12.2, 14.4.
    - \* Added the bit clock divider configuration when wm8960 act as master.
- 2.1.3

- Bug Fixes
  - \* Fixed the issue that WM8960 had no ack when performing write register by updating the byte count to be written.
- Bug Fixes
  - \* Fixed violations of MISRA C-2012 rule 10.3, 8.3, 10.7, 17.7.
- 2.1.2
  - Improvements
    - \* Enabled the class D output in WM8960\_Init.
  - Bug Fixes
    - \* Corrected the volume setting function behavior in wm8960 driver, support range aligned with its specification range.
    - \* Corrected the volume setting function behavior in wm8960 adapter, support range 0 - 100, 0 for mute, 100 for maximum volume.
- 2.1.1
  - Improvements
    - \* Removed useless bit clock divider configuration in function WM8960\_ConfigDataFormat.
- 2.1.0
  - Improvements
    - \* Added new API WM8960\_SetPlay.
    - \* Fixed error status overwrite issue in WM8960\_ConfigDataFormat function.
    - \* Removed dependency on codec common driver.
    - \* Added dependency on codec i2c.
  - Bug Fixes
    - \* Fixed the alignment fault issue by adding \_\_NOP between continuous memory access.
- 2.0.2
  - Removed bit width hard code setting in function WM8960\_SetProtocol.
- 2.0.1
  - Corrected the bclk divider calculation.
- 2.0.0
  - Initial version.

## SGTL5000

The current sgtl5000 driver version is 2.1.1.

- 2.1.1
  - Improvements
    - \* Corrected the volume setting function behavior in SGTL5000 driver, support range align with its specification range.
    - \* Corrected the volume setting function behavior in SGTL5000 adapter, support range 0 - 100, 0 for mute, 100 for maximum volume.
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 10.3, 8.3, 10.7, 17.7.
- 2.1.0

- Improvements
  - \* Added API SGTL\_SetPlay/SGTL\_SetRecord.
  - \* Removed dependency on codec common driver.
  - \* Added dependency on codec i2c.
  - \* Fixed division or modulo by zero issue in SGTL\_ConfigDataFormat function.
- Bug Fixes
  - \* Fixed the alignment fault issue by adding \_\_NOP between continuous memory access.
- 2.0.0
  - Initial version.

## DA7212

The current da7212 driver version is 2.2.2.

- 2.2.2
  - Bug Fixes
    - \* Fixed the MISRA-2012 violations.
      - Fixed rule 8.6, 9.3, 10.1, 10.3, 10.4, 10.7, 10.9, 11.1, 11.8, 14.4, 16.1, 16.3, 17.7, 17.3, 17.7, 20.9.
- 2.2.1
  - Improvements
    - \* Corrected the volume setting function behavior in DA7212 driver, support range align with its specification range.
    - \* Corrected the volume setting function behavior in DA7212 adapter, support range 0 - 100, 0 for mute, 100 for maximum volume.
- 2.2.0
  - Improvements
    - \* Added bclk invert parameter in the format structure.
    - \* Added API DA7212\_SetMasterModeBits/DA7212\_SetPLLConfig.
    - \* Added pll/sysClkSource parameters in the da7212 configuration structure.
    - \* Disabled PLL by default.
- 2.1.0
  - Improvements
    - \* Removed dependency on codec common driver.
    - \* Added dependency on codec i2c.
  - Bug Fixes
    - \* Fixed the alignment fault issue by adding \_\_NOP between continuous memory access.
- 2.0.0
  - Initial version.

## CS42888

The current cs42888 driver version is 2.1.3

- 2.1.3
  - Improvements
    - \* Removed the assertion for codec reset function pointer.
- 2.1.2
  - Improvements
    - \* Corrected the volume setting function behavior in CS42888 adapter, support range 0 - 100, 0 for mute, 100 for maximum volume.
  - Bug Fixes
    - \* Fixed violations of MISRA C-2012 rule 4.7, 10.3, 8.3, 10.7, 17.7.
    - \* Corrected the channel index during setting AIN volume in CS42888\_Init.
- 2.1.1
  - Improvements
    - \* Used software delay with delayMs pointer not provided by application.
    - \* Fixed error status overwrite issue in CS42888\_Init function.
    - \* Removed dependency on codec common driver.
    - \* Added API CS42888\_SelectFunctionalMode/CS42888\_SetChannelMute.
    - \* Added dependency on codec i2c.
- 2.1.0
  - Improvements
    - \* Unified CS42888 codec driver interface.
  - \* Bug Fixes
    - Corrected the ADC/DAC functional mode macro definition.
    - Added TDM and OLM mode support in the function CS42888\_SetProtocol.
- 2.0.0
  - Initial version.

## SERIAL\_MANAGER

The current Serial\_Manager component version is 1.0.2.

- 1.0.2
  - Add SerialManager\_WriteTimeDelay()/SerialManager\_ReadTimeDelay() for serial manager's read/write non-blocking mode.
- 1.0.1
  - Add prefixing fsl\_component\_XXX/fsl\_adapter\_XXX.
- 1.0.0
  - Initial version



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