ARM® Cortex®-M4

32-bit Microcontroller

M480 Series CMSIS BSP
Revision History

For additional information or questions, please contact: Nuvoton Technology Corporation.

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Revision 3.07.000 (Released 2025-09-16)

1. Fixed the code size issue in ISP_CAN and ISP_UART_SPIFLASH_M487KM.
2. Updated the configuration order for PDMA scatter-gather mode.
3. Added QSPI_PDMA_Master and QSPI_PDMA_Slave sample codes.
4. USBD_HID_RemoteWakeup: Fixed an issue where sending data 0 prevented the host from entering sleep mode; now sends NAK instead.
5. Added VS Code project files for all sample codes.
6. Added an interrupt mask to protect ISP firmware ParseCmd() for interrupt safety.
7. Added missing bit-field macro definitions for UART registers in the header files.
8. Updated UsbHostLib to protect memory allocation and freeing for interrupt safety.
9. Updated UsbHostLib: Added an EHCI workaround to recover the host controller from a hang state.
10. Removed all legacy Keil project directories from the sample codes, and renamed Keil_AC6 to Keil, indicating that only Keil compiler version 6 is supported.

Revision 3.06.000 (Released 2024-10-14)

1. Update UsbHostLib to resolve MSC disconnect issue.
2. Add timeout to HSUSBD_CtrlOut() function.
3. Add HSUSBD_Mass_Storage_CDROM sample.
4. Fix I2S_Codec_PDMA DMA descriptor initialization issue.
5. Fix I2S_WAVPLAYER playback last packet missing and repeated playback noise issue.
6. Fix ISP_UART SysTick counting shortage issue.
7. Add a DMA monitor to detect EMAC RX descriptors overflow.
8. Extend the SPIM write timeout from 1 ms to 100 ms.
9. Add Keil_AC6 for all samples to support ARM compiler version 6.
10. Update USBD_Mass_Storage_SRAM to reserve space instead of directly defining the location.
11. Fix the bug in SDH_Set_clock().
12. Fix libjpeg memory leak issue.
13. Update SPIM driver and QSPI_QuadMode_Flash sample code to reduce writing to QE bit.

Revision 3.05.006 (Released 2024-01-12)

1. Updated the windows driver for ISP_DFU and ISP_DFU_20.
2. Fixed USB Host mass storage driver get_max_lun() bug.
3. Updated HSUSBD/USBD HID keyboard sample code to support LED status.
4. Fixed HSUSBD UAC1.0 issue, use HSUSBD_CLR_SE0() instead of HSUSBD_Start().
5. Fixed CAN driver message number calculate incorrect problem.
6. Fixed kbhit() return value in UART disabled case.
7. Added FREF constraint to set NR in CLK_EnablePLL().
8. Fixed VCOM sample: the RX buffer size should be the same as USB maximum packet size.
9. Updated USB Host library to add a new API usbh_core_init_ex() to support configuring over-current active level setting.
10. Updated SYS_PowerDown_MinCurrent to support LVR enable function.
11. Added I2C error handling to I2C Master/Slave examples.
12. Modify setting of Keil project to speed up compilation.
13. Add CardDetect_From_GPIO/CardDetect_From_DAT1 for SDH_FATFS demo.

14. Update CAN driver to select larger SJW value to compensate for larger signal delays.
15. Minor bug fix.

Revision 3.05.005 (Released 2023-03-16)

1. Added SampleCode\PowerManagement folder for power down modes
2. Added ID3v1 & ID3v2 parser to I2S_MP3PLAYER sample code
3. Added sample code SYS_PowerDown_MinCurrent.
4. Updated retarget.c to fix compile errors on IAR version 8.0 or later.

Revision 3.05.004 (Released 2022-12-20)

1. Fixed an AES driver bug in MbedTLS porting.
2. Updated smart card library to support cards not compatible with ISO-7816.
3. Fixed SPIM sample code 4-bytes address mode issue.
4. Fixed code size issue of the SecureBoot firmware update samples.
5. Added UART6/UART7 setting to UART driver for M480LD series.
6. Minor bug fix.

Revision 3.05.003 (Released 2022-03-03)

1. Remove emWin samples and library.
2. Adjust flash and SRAM size of USBD samples to fit M483.
3. Add RTC GPIO pin control in DPD mode to fix current leakage issue.
4. Fix USBH EHCI driver isochronous interval bug.

Revision 3.05.002 (Released 2021-12-28)

1. Add time-out check to inifinite loop in drivers and samples.
2. Enable I2C and USCI_I2C pin schmitt trigger.
3. Modify HSUSBD HID samples to pass USBIF.
4. Add remote wakeup to HID mouse sample.
5. Minor bug fix.

Revision 3.05.001 (Released 2020-10-8)

1. Added Apache-2.0 license declaration into driver source code.
2. Added APROM_Loader, CCAP_Packet_JpegEncode, I2C_SMBus, and ISP_UART_SPIFLASH_M487MK sample codes.
3. Added EPWM_EnableADCTriggerPrescale(), EPWM_DisableADCTriggerPrescale(), EPWM_EnableFaultDetect(), EPWM_DisableFaultDetect(), EPWM_EnableFaultDetectOutput(), EPWM_DisableFaultDetectOutput(), EPWM_EnableFaultDetectDeglitch(), EPWM_DisableFaultDetectDeglitch(), EPWM_EnableFaultDetectMask(), EPWM_DisableFaultDetectMask(), EPWM_EnableFaultDetectInt(), EPWM_DisableFaultDetectInt(), EPWM_ClearFaultDetectInt(), and EPWM_GetFaultDetectInt() APIs.
4. Added USPI_DISLABE_TX_RX_PDMA() and USPI_ENABLE_TX_RX_PDMA(), QSPI_TRIGGER_TX_RX_PDMA, QSPI_DISABLE_TX_RX_PDMA(), SPI_TRIGGER_TX_RX_PDMA, SPI_DISABLE_TX_RX_PDMA(), UUART_TRIGGER_RX_PDMA(), UUART_TRIGGER_TX_PDMA(), UUART_DISABLE_RX_PDMA(), and UUART_DISABLE_TX_PDMA() macro definitions.
5. Minor bug fix.

Revision 3.05.000 (Released 2020-3-6)

1. Added M487KMCAN support.
2. Added QSPI_Slave3Wire, SPI_HalfDuplex, USBD_Mass_Storage_SD, HSUSBD_Mass_Storage_SD, HSUSBH_USBH_HID_Mouse_Keyboard, HSUSBD_Audio10_Headset, HSUSBD_Audio20_Headset, ISP_SPI, ISP_DFU, and ISP_DFU_20 sample codes.
3. Added SPIM_WinbondUnlock(),EMAC_FillCamEntry(), EMAC_SendPktWoCopy(), EMAC_ClaimFreeTXBuf(), EMAC_GetAvailRXBufSize(), and EMAC_RecvPktDoneWoRxTrigger() APIs.
4. Added TIMER_SET_OPMODE(), UART_PDMA_ENABLE(), UART_PDMA_DISABLE(), UUART_PDMA_ENABLE(), UUART_PDMA_DISABLE(), EMAC_ENABLE_INT(), EMAC_DISABLE_INT(), EMAC_GET_INT_FLAG(), and EMAC_CLEAR_INT_FLAG() macro definitions.
5. Removed static qualifier of EMAC_PhyInit() which must now be called after EMAC_Open().
6. Updated UsbHostLib to improve USB 2.0 interrupt transfer performance.
7. Minor bug fix.

Revision 3.04.000 (Released 2019-7-5)

1. Added M48xGC/M48xG8 support.
2. Reorganized sample directory for NuMaker-ETM-M487, NuMaker-PFM-M487, and NuMaker-PFM-M487D boards.
3. Minor bug fix.

Revision 3.03.001 (Released 2018-10-5)

1. Added emWin quick start guide.
2. Fixed GCC compilation errors in the Linux environment.

Revision 3.03.000 (Released 2018-05-30)

1. Added emWin sample codes and library.
2. Updated Eclipse project directory structure.
3. Updated audio sample MFP setting to match current NuMaker board design.
4. Minor bug fix.

Revision 3.02.000 (Released 2018-03-20)

1. Updated sample codes to use PB12(RX) and PB13(TX) instead of PD2(RX) and PD3(TX) as console pins for NuMaker-PFM-M487 v3.0 board.
2. Updated FatFs to r0.13a.
3. Updated FreeRTOS to v10.0.0.
4. Updated lwIP to v2.0.3.
5. Added a USBH CDC class driver and a CDC class VCOM sample.
6. Added mbed TLS and test suites using crypto accelerator.
7. Minor bug fix.

Revision 3.01.000 (Released 2017-09-29)

1. Reorganized register definition header files.
2. Added new standard driver reference samples.
3. Added Eclipse project support.

4. Renamed SPI0 to QSPI0, SPI1 to SPI0, SPI2 to SPI1, SPI3 to SPI2, SPI4 to SPI3, ACMP to ACMP01.
5. Rewrote USBH library to optimize memory usage.
6. Minor bug fix.

Revision 3.00.000 (Released 2017-06-15)

1. Initial release.

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