Arm® Cortex®-M0

32-bit Microcontroller

NUC121/NUC125 Series CMSIS BSP Revision History

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

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Revision 3.01.012 (Released 2025-11-06)

- Standard driver
  - SPI: SPI_DISABLE_3WIRE_MODE and SPI_ENABLE_3WIRE_MODE added.
- Sample code
  - BPWM_DoubleBuffer_PeriodLoadingMode, PWM_DeadZone, PWM_DoubleBuffer_PeriodLoadingMode: IRQ handler cleared interrupt flag at first.
  - ISP_I2C and ISP_SPI: Fixed potential command failure.
  - VS Code projects upgraded to use GCC 14.3.1.

Revision 3.01.011 (Released 2025-02-21)

- Standard driver
  - I2C: Added STOP bit check for I2C transmission completely.
- Sample code
  - Added VS Code projects with AC6/GCC toolchain.
    - VS Code requires NuLink2 Pro ICE.
  - USBD_HID_Mouse2: Fixed host not sleep issue.

Revision 3.01.010 (Released 2024-10-09)

- CMSIS: Upgraded to v6.1.0.
- Keil startup_NUC121.c: Instead of ASM code.
- Sample code
  - IAR projects: Upgraded for IAR v8.
  - Keil projects: Upgraded for CMSIS v6.1.0 and Arm Compiler v6.
    - Reference: Arm Keil Application Note 298
  - USCI_I2C_Wakeup_Master: Removed.

Revision 3.01.009 (Released 2024-03-21)

- Library
  - retarget.c: Fixed __ARM_use_no_argv multiple definition issue in newer KEIL versions.
  - BPWM: BPWM_ConfigOutputChannel fixed duty issue.
  - CLK
    - CLK_PowerDown cleared CPU deep sleep mode select after wakeup.
    - CLK_SysTickDelay Improved robustness.
  - LDROM.icf and LDROM.sct: Fixed LDROM address.
  - PWM: PWM_ConfigOutputChannel fixed duty issue.

- Sample code
  - BPWM_SwitchDuty, PWM_SwitchDuty: Fixed 100% duty issue.
  - ISP samples: Fixed LDROM download failure in IAR and KEIL.
  - ISP_DFU: Updated Windows driver with Nuvoton vendor name.
  - SYS_PowerDown_MinCurrent: Removed LVR disable setting.
  - USBD samples
    - Removed EP1 stall while setup error occurred.
    - Removed LPM support.
  - USBD HID samples: Supported LED status.

Revision 3.01.008 (Released 2023-02-13)

- Standard driver
  - retarget.c: Fixed print issue with IAR EWARM V8 and above
- Sample code
  - I2C samples: Improved error handling.
  - ISP_DFU, ISP_HID, and ISP_MSC: Enabled USB trim function.
  - ISP_SPI: Added GCC project.
  - ISP samples
    - Added IAR projects.
    - Added scatter file to check image size.
    - Enabled function section linking and image size optimization in KEIL projects.
  - SYS_PowerDown_MinCurrent: Added.
  - USBD_HID_Mouse2: Avoided wakeup failure.

Revision 3.01.007 (Released 2022-01-26)

- Standard driver
  - Improved infinite loop prevention with timeout counter and error code.
  - TIMER: TIMER_Delay added return value.
- Sample code
  - I2C samples: Removed reduntant code.
  - I2C and USCI_I2C samples: Enabled schmitt trigger of I^{2}C pins.
  - ISP_I2C, ISP_RS485, and ISP_UART: Added GCC project.
  - ISP_MSC: Added.
  - USBD samples: Added software boundary of USB trim.
  - USBD HID samples: Unified INT_IN interval.
  - USBD_MassStorage_CDROM: Fixed Linux and Mac compatibility issue.

Revision 3.01.006 (Released 2020-05-21)

- IAR startup_NUC121.s: Fixed build issue with IAR EWARM V7.5.
- Standard driver
  - UART: UART_DisableInt and UART_EnableInt removed NVIC IRQ control.
- Sample code
  - I2C_PDMA_TRX: Removed unused __ALIGNED.
  - PDMA, PDMA_Scatter_Gather: Added word alignment.
  - UART samples: Added NVIC IRQ control.
  - USBD_MassStorage_CDROM: Removed 2KB file size limit.
  - USBD VCOM samples: Fixed potential UART Tx FIFO overflow issue.
  - USBD_VCOM_DaulPort: Fixed wrong baudrate issue.
  - USCI_SPI_SlaveModeINT: Added.

Revision 3.01.005 (Released 2020-09-14)

- Added Apache-2.0 license declaration.
- Standard driver
  - retarget.c
    - _write and SendChar_ToUART fixed '\r' issue.
    - SendChar fixed uninitialized pointer.
  - SPI: SPI_DISABLE_TX_RX_PDMA and SPI_TRIGGER_TX_RX_PDMA added.
  - TIMER: TIMER_SET_OPMODE added.
  - UART: UART_PDMA_DISABLE and UART_PDMA_ENABLE added.
- Sample code
  - I2C_Wakeup_Slave: Improved wakeup robustness.
  - UART samples and USCI_UART_TxRx_Function: Fixed '\r' issue.
  - USBD_VCOM_DualPort: Fixed only one VCOM port in Linux.

Revision 3.01.004 (Released 2019-10-02)

- Standard driver
  - TIMER: TIMER_Open fixed return value.
  - USCI_SPI: USPI_SET_SS_HIGH fixed implementation.
- Sample code
  - I2C_PDMA_TRX, ISP_DFU, ISP_I2C, ISP_RS485, and ISP_SPI: Added.
  - FMC_ExeInSRAM: Added IAR and GCC projects.
  - UART_TxRx_Function: Fixed data lost.

Revision 3.01.003 (Released 2019-06-19)

- Standard driver
    - I2C: Added error handling for new transfer.
    - TIMER: TIMER_GetModuleClock used correct PCLK.
    - USBD: Fixed potential issue.
- Sample code
    - ISP samples: Added.
    - TIMER_Delay: Used correct PCLK.
    - USBD samples: Fixed potential issue.
    - USBD_Audio_NAU8822 and USBD_Audio_HID_NAU8822: Cleared FIFO before play / record.

Revision 3.01.002 (Released 2018-12-28)

- CMSIS: Upgraded to v5.1.1.
- Standard driver
    - CLK: CLK_PowerDown required HIRC / MIRC auto trim disabled.
    - PDMA: PDMA_Open supported multiple open.
- Sample code
    - Keil projects used “NULink Debugger” instead of “Nuvoton Nu-Link Debugger”.
    - Semihost fixed build failure with GCC toolchain 7-2018-q2.
    - I2S_PDMA_PlayRecord: Fixed race condition.
    - TIMER_CaptureCounter: Fixed array access overflow.
    - USBD VCOM samples: Fixed UART baud rate calculation.
    - USBD_VCOM_And_HID_Transfer: Fixed buffer overflow.

Revision 3.01.001 (Released 2018-06-27)

- NuMicro.h: Added.
- NUC121.h: Separated register declarations of each IP into distinct header files.
- Standard driver
    - USBD: Fixed USB Control-In packet with the same size as endpoint limit.
- Sample code
    - Added Eclipse projects with GCC toolchain.
    - ADC samples, CLK_ClockDetector, HIRC_Trim, and UART_Wakeup_LXT: Set analog pins as input mode and disabled digital input function.
    - PDMA_ScatterGather_PingPongBuffer: Added PDMA error handling.
    - UART_PDMA: Added UART error handling.

  - USCI_I2C_Monitor: Added.

Revision 3.00.003 (Released 2017-12-13)

- NUC121.h: TIMER_CTL_TRGDAC_Pos and TIMER_CTL_TRGDAC_Msk removed.
- Standard driver
  - I2C: I2C_ReadByteTwoRegs, I2C_ReadMultiBytesTwoRegs, I2C_WriteByteTwoRegs, and I2C_WriteMultiBytesTwoRegs fixed high byte lost.
  - SPI: I2S_Open improved I2S sample rate accuracy.
  - TIMER: TIMER_TRG_TO_EADC replaced by TIMER_TRG_TO_ADC.
  - USBD
    - USBD_L1RESUME replaced by USBD_STATE_L1RESUME.
    - USBD_L1SUSPEND replaced by USBD_STATE_L1SUSPEND.
  - USCI-I2C: UI2C_ReadByteTwoRegs, UI2C_ReadMultiBytesTwoRegs, UI2C_WriteByteTwoRegs, and UI2C_WriteMultiBytesTwoRegs fixed high byte lost.
  - USCI-UART: UUART_Open and UUART_SetLine_Config fixed wrong baud rate.

Revision 3.00.002 (Released 2017-03-09)

- NUC121.h: BPWM0_IRQn and BPWM1_IRQn added.
- Standard driver
  - BPWM: BPWM_ConfigOutputChannel fixed 100% duty issue.
  - CLK
    - CLK_CLKSEL1_ADCSEL_HIRC_DIV2 replaced by CLK_CLKSEL1_ADCSEL_HIRC.
    - GPIOA_MODULE, GPIOB_MODULE, GPIOC_MODULE, GPIOD_MODULE, GPIOE_MODULE, and GPIOF_MODULE fixed.
  - I2C: I2C_CLEAR_WAKEUP_WR_STATUS removed.
  - PWM: PWM_ConfigOutputChannel fixed 100% duty issue.
  - SYS
    - SYS_GPF_MFPL_PF0MFP_XT1_OUT, SYS_GPF_MFPL_PF0MFP_X32_OUT, SYS_GPF_MFPL_PF1MFP_XT1_IN, and SYS_GPF_MFPL_PF1MFP_X32_IN added.
    - SYS_GPD_MFPL_PD3MFP_UART0_CTS replaced by SYS_GPD_MFPL_PD3MFP_UART0_nCTS.
    - SYS_GPD_MFPL_PD3MFP_UART0_RTS replaced by SYS_GPD_MFPL_PD3MFP_UART0_nRTS.

- Sample code
  - BPWM_DutySwitch: Fixed 100% duty issue.
  - FMC_IAP: Fixed Wrong project setting.
  - LED_Toggle, UART_Wakeup_LXT: Added.
  - PWM_DutySwitch: Fixed100% duty issue.
  - USBD samples: Replied USB 2.1 version only if SUPPORT_LPM defined.
  - USBD_Audio_HID_NAU8822: Fixed PD11 issue.
  - USCI_UART_TxRx_Function: Fixed compilation error.

Revision 3.00.001 (Released 2016-10-07)

- Initial release.