

**ARM® Cortex®-M**  
**32-bit Microcontroller**

**NANO102/112 CMSIS Series BSP**  
**Revision History**

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**Revision 3.03.002** (Released 2020-10-8)
 

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1. Added Apache-2.0 license declaration into driver source code.
2. Minor bug fix.

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**Revision 3.03.001** (Released 2019-11-7)
 

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1. Added ISP related samples.
2. Minor bug fix.

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**Revision 3.03.000** (Released 2018-09-17)
 

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1. Added Eclipse project support.
2. Minor bug fix.

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**Revision 3.02.001** (Released 2016-07-28)
 

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1. Updated CMSIS to v4.5.0.
2. Added sample code ADC\_PWMTrigger.
3. Fixed the TEMPCTL register offset definition error.
4. Minor bug fixes.

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**Revision 3.02.000** (Released 2015-07-08)
 

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1. Removed CLK\_APBCLK\_TK\_EN macro in clk.h.
2. Removed ACMP\_ENABLE\_OUTPUT\_INVERSE and ACMP\_DISABLE\_OUTPUT\_INVERSE macros in acmp.h.
3. Removed  
FMC\_EnableAPUpdate(), FMC\_DisableAPUpdate(), FMC\_EnableLDUpdate(),  
FMC\_DisableAPUpdate(), FMC\_EnableConfigUpdate(), and  
FMC\_DisableConfigUpdate() in fmc.h and fmc.c.
4. Removed all IAR projects' [Debug] configuration.
5. Modified all IAR projects' reset entry as Reset\_Handler.
6. Modified all Keil projects' device type as NANO112VC2AN.
7. Renamed SYS\_IRCTRIMINT\_32KERR\_ENNT as SYS\_IRCTRIMINT\_32KERR\_INT  
in sys.h.
8. Renamed CHER as CHEN in adc.h.
9. Renamed SYS\_IPRSTCTL2\_LCD to SYS\_IPRST\_CTL2\_LCD\_RST\_Msk in lcd.h.
10. Renamed StdDriver sample GPIO to GPIO\_IOTest.
11. Renamed StdDriver sample CRC to CRC\_CCITT.
12. Renamed StdDriver sample PDMA to PDMA\_Memory.
13. Renamed StdDriver sample SYS to SYS\_Control.
14. Fixed SYS\_PA\_L\_MFP\_PA0\_MFP\_GPA0 and SYS\_PA\_L\_MFP\_PA0\_MFP\_GPA0  
implementation errors in sys.h.
15. Fixed DMA\_CRC\_CTL\_CRC\_RST\_Msk implementation error in crc.h.
16. Fixed PDMA\_IS\_CH\_BUSY implementation error in pdma.h.
17. Fixed ADC\_SET\_INPUT\_CHANNEL() implementation error in adc.h.
18. Fixed SC\_SET\_STOP\_BIT\_LEN implementation error in sc.h.
19. Fixed UART\_IS\_TX\_EMPTY implementation error in uart.h.
20. Fixed LCD\_CPUMP\_DIV128 implementation error in lcd.h.
21. Fixed PWM\_ENABLE\_OUTPUT\_INVERTER() error in pwm.h.
22. Fixed ADC\_IS\_DATA\_OVERRUN() and ADC\_IS\_DATA\_VALID() errors in adc.h.
23. Fixed I<sup>2</sup>C register CON2 and STATUS2 offset bug in Nano1X2Series.h.
24. Fixed the bug that timer\_delay() set prescale to wrong register in timer.c.

25. Fixed ACMP\_SetSigmaDeltaConv() parameter u32PosPin implementation bug in acmp.c.
26. Fixed RTC\_CLEAR\_TAMPER\_FLAG() implementation bug rtc.h.
27. Fixed Frame counter calculate error of LCD\_EnableFrameCounter() in lcd.c.
28. Fixed SYS\_IsRegLocked() return value bug in sys.c.
29. Fixed SCUART\_Open() and SCUART\_SetLineConfig() baudrate calculation prescale setting error in scuart.c.
30. Fixed bug of SPI\_EnableAutoSS () and SPI\_SetBusClock () in spi.c. Cleared bit mask of register field before writing input parameter to it.
31. Modified UART\_SelectIrDAMode() to reload UART clock before calculating baudrate in uart.c.
32. Modified SYS\_LockReg() and SYS\_UnlockReg() as inline function in sys.h.
33. Modified RTC\_WRITE\_KEY program flow to avoid be overwritten by ISR, in rtc.c.
34. Modified GP\_DBNCECON\_PUEN\_\* as GP\_DBNCECON\_DBCLKSEL\_\* in Nano1X2Series.h.
35. Modified Timer\_Open() to not start timer in it, in timer.c.
36. Disabled Rx before raising RST high during cold reset in SmartCardLib library.
37. Check SC\_RST and SC\_DAT\_O pin status during deactivation in SmartCardLib library.
38. Added I2C\_ClearIntFlag() function in i2c.c.
39. Added macros CLK\_PLLCTL\_\*MHz\_HXT and CLK\_PLLCTL\_\*MHz\_HIRC for setting PLLCTL vaule in clk.h.
40. Added ACMP\_SELECT\_P in acmp.h.
41. Added SYS\_GET\_IRCTRIM\_INT\_FLAG() and SYS\_CLEAR\_IRCTRIM\_INT\_FLAG() in sys.h.
42. Added UART\_FUNC\_SEL\_LIN macro in uart.h.
43. Added CLK\_EnableSysTick() and CLK\_DisableSysTick() in clk.c.
44. Added SYS\_EnableIRCTrim() and SYS\_DisableIRCTrim() in sys.c.
45. Added UART\_SelectLINMode() in uart.c.
46. Added Nano112 learning board samples in Nu-LB-NANO112 folder.
47. Added sample SYS\_TrimIRC to StdDriver.
48. Added sample Timer\_Wakeup to StdDriver.
49. Added sample UART\_PDMA to StdDriver.

### Revision 3.01.000 (Released 2014-11-28)

1. Fixed GPIO\_DISABLE\_DIGITAL\_PATH(), GPIO\_ENABLE\_DIGITAL\_PATH(), GPIO\_DISABLE\_DOUT\_MASK(), GPIO\_ENABLE\_DOUT\_MASK(), GPIO\_DISABLE\_PULL\_UP(), and GPIO\_ENABLE\_PULL\_UP() implementation error.
2. Fixed SYS\_PC\_L\_MFP\_PC0\_MFP\_LCD\_S11, SYS\_PC\_L\_MFP\_PC0\_MFP\_LCD\_S18, SYS\_PC\_L\_MFP\_PC0\_MFP\_LCD\_S22, SYS\_PC\_H\_MFP\_PC10\_MFP\_I2C1\_SCL, SYS\_PC\_H\_MFP\_PC11\_MFP\_I2C1\_SDA, SYS\_PD\_H\_MFP\_PD13\_MFP\_EINT1, SYS\_PD\_H\_MFP\_PD10\_MFP\_LCD\_COM0, SYS\_PD\_H\_MFP\_PD10\_MFP\_LCD\_COM0, SYS\_PD\_H\_MFP\_PD9\_MFP\_LCD\_COM1, SYS\_PD\_H\_MFP\_PD8\_MFP\_LCD\_COM2, SYS\_PF\_L\_MFP\_PF5\_MFP\_ICE\_DAT, and SYS\_PF\_L\_MFP\_PF4\_MFP\_ICE\_CLK definition errors.
3. Fixed SYS\_DISABLE\_BOD\*(), and SYS\_ENABLE\_BOD\*() implementation error.
4. Fixed PDMA\_WIDTH\_\* definition error.

5. Fixed PWM\_ConfigOutputChannel() and PWM\_ConfigCaptureChannel() PWM channel 2 and 3 clock setting error.
6. Fixed SPI\_SET\_SSx\_LOW(), SPI\_SET\_SSx\_HIGH(), SPI\_CLR\_3WIRE\_START\_INT\_FLAG(), and SPI\_CLR\_UNIT\_TRANS\_INT\_FLAG() implementation error.
7. Fixed SPI\_Open(), SPI\_SetBusClock() and SPI\_GetBusClock() clock frequency calculation.
8. Fixed I2C\_Open(), I2C\_GetBusClockFreq(), and I2C\_SetBusClockFreq() clock frequency calculation error.
9. Replaced the \*\_MFP\_TIMERx\_EXT setting with \*\_MFP\_TIMERx\_CNT and \*\_TIMERx\_OUT.
10. Renamed \*\_MFP\_CKOHZ to \*\_MFP\_CLK\_Hz.
11. Renamed SYS\_PA\_L\_MFP\_PA5\_MFP\_SC2\_RST to SYS\_PA\_L\_MFP\_PA5\_MFP\_SC0\_PWR.
12. Renamed SYS\_PA\_H\_MFP\_PA10\_MFP\_SC0\_DAT to SYS\_PA\_H\_MFP\_PA10\_MFP\_SC0\_CLK.
13. Renamed SYS\_PA\_H\_MFP\_PA12\_MFP\_I2C1\_SCL to SYS\_PA\_H\_MFP\_PA12\_MFP\_I2C0\_SCL.
14. Renamed SYS\_PA\_H\_MFP\_PA15\_MFP\_I2C\_DAT to SYS\_PA\_H\_MFP\_PA15\_MFP\_I2C1\_SDA.
15. Renamed SYS\_PB\_L\_MFP\_PB3\_MFP\_I2C\_DAT to SYS\_PB\_L\_MFP\_PB3\_MFP\_I2C0\_DAT.
16. Renamed SYS\_PB\_L\_MFP\_PB5\_MFP\_SPI2\_MOSI1 to SYS\_PB\_L\_MFP\_PB5\_MFP\_SPI1\_MOSI1.
17. Renamed SYS\_PB\_L\_MFP\_PB7\_MFP\_CD to SYS\_PB\_L\_MFP\_PB7\_MFP\_SC0\_CD.
18. Renamed SYS\_PB\_H\_MFP\_PB10\_MFP\_SPI1\_MOSI1 to SYS\_PB\_H\_MFP\_PB10\_MFP\_SPI0\_MOSI1.
19. Renamed SYS\_PD\_L\_MFP\_PD7\_MFP\_LCD\_S3 to SYS\_PD\_L\_MFP\_PD7\_MFP\_LCD\_COM3.
20. Renamed SYS\_PD\_H\_MFP\_PD11\_MFP\_LCD\_DH1 to SYS\_PD\_H\_MFP\_PD11\_MFP\_LCD\_DH2.
21. Renamed SYS\_PD\_H\_MFP\_PD12\_MFP\_LCD\_DH2 to SYS\_PD\_H\_MFP\_PD12\_MFP\_LCD\_DH1.
22. Renamed SYS\_PF\_L\_MFP\_PF2\_MFP\_HXT\_OUT to SYS\_PF\_L\_MFP\_PF2\_MFP\_XT1\_IN.
23. Renamed SYS\_PF\_L\_MFP\_PF3\_MFP\_HXT\_IN to SYS\_PF\_L\_MFP\_PF3\_MFP\_XT1\_OUT.
24. Renamed SYS\_PF\_L\_MFP\_PF1\_MFP\_ICE\_CLK to SYS\_PF\_L\_MFP\_PF4\_MFP\_ICE\_CLK.
25. Renamed SYS\_PF\_L\_MFP\_PF0\_MFP\_ICE\_DAT to SYS\_PF\_L\_MFP\_PF5\_MFP\_ICE\_DAT.
26. Updated CLK\_EnableCKO() to set clock source before output enable.
27. Updated I2C\_WAIT\_READY() to clear I2C\_INTSTS\_INTSTS\_Msk before exiting macro.
28. Updated FMC\_Erase() to avoid modifying FMC->ISPCON register setting.
29. Added SYS\_PD\_H\_MFP\_PD11\_MFP\_PWM0\_CH1 definition.
30. Added ADC\_PDMA, ADC\_TimerTrigger, GPIO\_PowerDown, Hard\_Fault\_Sample, PWM\_CapturePDMA, SPI\_TxRxLoopback\_PDMA, SYS\_PLLClockOutput, UART\_FlowCtrl, and UART\_Rx\_Wakeup samples.

**Revision 3.00.001** (Released 2014-03-31)

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1. Improved PWM capture function performance.
2. Added ADC\_SET\_REF\_VOLTAGE macro to configure ADC reference voltage.
3. Minor bug fix.

**Revision 3.00.000** (Released 2014-03-03)

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1. Renamed I2C\_SetClockBusFreq() to I2C\_SetBusClockFreq().
2. Renamed I2C\_SetSlaveMask() to I2C\_SetSlaveAddrMask().
3. Renamed RTC\_GetDatAndTime() to RTC\_GetDateAndTime().
4. Added Learning Board sample.
5. Moved Smartcard libraries one directory level up to Library\SmartcardLib\.
6. Minor bug fix.

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