

**ARM® Cortex®-M4**  
**32-bit Microcontroller**

**M480 Series CMSIS BSP**  
**Revision History**

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### 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(), UART\_PDMA\_ENABLE(), UART\_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)

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1. Initial release.

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