
Product Name	List of DAVE APPs
Release Version	Refer section 1
Type Of Release*	See Individual DAVE APPs
Name of the Supplier	Infineon Technologies AG
Mode of Release	Infineon Server(http://dave.infineon.com/)
Date of Release	2019-07
Previous Version	Refer DAVE APPs release notes 2019-06

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* All types of releases named as Alpha, Beta, Release Candidate and Patch are not intended to be used for production code.

1 Released Items

1.1 DAVE APPs

This update site contains different general purpose APPs and a variety of DAVE APPs that cover dedicated use cases like, Motor Control, Power Conversion, Communication etc., and the update site contains the following **99** DAVE APPs which supports XMC4000 and XMC1000 family microcontrollers.

1.1.1 Motor Control APPs

No	DAVE APPs	Version	XMC45	XMC44	XMC42	XMC41	XMC13	XMC12	XMC11	XMC14	XMC48	XMC43	XMC47
1	ACIM_FREQ_CTRL	4.0.8	✓	✓	✓	✓	✓	-	-	-	-	-	-
2	AUTOMATION	4.0.10	✓	✓	✓	✓	✓	-	-	-	-	-	-
3	GLOBAL_POSIF	4.0.14	✓	✓	✓	✓	✓	-	-	✓	-	-	-
4	MOTOR_LIB	4.0.8	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓
5	PMSM_FOC	4.2.10	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓
6	PWM_BC	4.0.16	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓
7	PWM_SVM	4.0.22	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓

1.1.2 Power Conversion APPs

No	DAVE APPs	Version	XMC45	XMC44	XMC42	XMC41	XMC13	XMC12	XMC11	XMC14	XMC48	XMC43	XMC47
1	BUCK_VC_FIX_FQ	4.1.2	-	✓	✓	✓	✓	-	-	✓	-	-	-
2	BUCK_PCC_FIX_FQ	4.1.2	-	✓	✓	✓	✓	-	-	-	-	-	-
3	COMP_REF	4.1.8	-	-	-	-	✓	✓	-	✓	-	-	-
4	COMP_SLOPE_GEN	4.0.8	-	✓	✓	✓	-	-	-	-	-	-	-
5	GLOBAL_HRPWM	4.0.12	-	✓	✓	✓	-	-	-	-	-	-	-
6	HRPWM	4.1.20	-	✓	✓	✓	-	-	-	-	-	-	-
7	CONTROL_LIB	4.0.10	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓

1.1.3 Lighting APPs

No	DAVE APPs	Version	XMC45	XMC44	XMC42	XMC41	XMC13	XMC12	XMC11	XMC14	XMC48	XMC43	XMC47
1	DIM_BCCU	4.1.6	-	-	-	-	✓	✓	-	✓	-	-	-
2	DMX512_RD	4.0.16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

3	GLOBAL_BCCU	4.1.6	-	-	-	-	✓	✓	-	✓	-	-	-
4	PDM_DIMMED_LED_LAMP	4.0.6	-	-	-	-	✓	✓	-	✓	-	-	-
5	PDM_BCCU	4.1.8	-	-	-	-	✓	✓	-	✓	-	-	-

1.1.4 Communication APPs

No	DAVE APPs	Version	XMC45	XMC44	XMC42	XMC41	XMC13	XMC12	XMC11	XMC14	XMC48	XMC43	XMC47
1	CAN_NODE	4.1.16	✓	✓	✓	✓	-	-	-	✓	✓	✓	✓
2	ECAT_SSC	4.0.24	-	-	-	-	-	-	-	-	✓	✓	-
3	ETH_LWIP	4.1.12	✓	✓	-	-	-	-	-	-	✓	✓	✓
4	FTP_SERVER	4.0.4	✓	✓	-	-	-	-	-	-	✓	✓	✓
5	GLOBAL_CAN	4.0.18	✓	✓	✓	✓	-	-	-	✓	✓	✓	✓
6	HTTP_SERVER	4.0.16	✓	✓	-	-	-	-	-	-	✓	✓	✓
7	I2C_MASTER	4.1.28	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	I2C_SLAVE	4.0.18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
9	MANCHESTER_SW	4.1.12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10	SDMMC_BLOCK	4.0.26	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	SPI_MASTER	4.3.24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12	SPI_SLAVE	4.0.8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
13	UART	4.1.12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
14	USB_D	4.0.14	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
15	USB_D_VCOM	4.0.10	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
16	USB_D_WINUSB	4.0.10	✓	✓	✓	✓	-	-	-	-	✓	✓	✓

1.1.5 Human Machine Interface APPs

No	DAVE APPs	Version	XMC45	XMC44	XMC42	XMC41	XMC13	XMC12	XMC11	XMC14	XMC48	XMC43	XMC47
1	DISPLAY_7SEG	4.0.18	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓
2	GLOBAL_LEDTS	4.0.12	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓
3	GUI_SEGGERLIBRARY	4.1.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	LED_MATRIX	4.0.12	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓
5	LEDTS_COL_CTRL	4.0.8	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓
6	LEDTS_COLA_CTRL	4.0.8	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓

1.1.6 General Purpose APPs

No	DAVE APPs	Version	XMC45	XMC44	XMC42	XMC41	XMC13	XMC12	XMC11	XMC14	XMC48	XMC43	XMC47
1	ADC_MEASUREMENT_ADV	4.0.18	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓
2	ADC_MEASUREMENT	4.1.22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	ADC_QUEUE	4.0.20	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓
4	ADC_SCAN	4.0.18	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓
5	ANALOG_IO	4.0.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	BUS_IO	4.0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	CAPTURE	4.0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	CLOCK_XMC1	4.0.20	-	-	-	-	✓	✓	✓	✓	-	-	-
9	CLOCK_XMC4	4.0.22	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
10	COUNTER	4.1.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	CPU_CTRL_XMC1	4.0.10	-	-	-	-	✓	✓	✓	✓	-	-	-
12	CPU_CTRL_XMC4	4.0.16	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
13	CRC_SW	4.0.8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
14	CRYPTO_AES	4.0.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15	CMSIS_DSP	4.0.16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16	CMSIS_RTOS	4.0.4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17	CMSIS_RTOS_RTX	4.0.22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
18	DAC	4.0.16	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
19	DAC_LUT	4.1.16	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
20	DAC_SWEEP	4.0.16	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
21	DIGITAL_IO	4.0.16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
22	DMA_CH	4.1.8	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
23	DS_ADC_DEMOD	4.0.4	✓	✓	-	-	-	-	-	-	✓	✓	✓
24	E_EEPROM_XMC1	4.1.12	-	-	-	-	✓	✓	✓	✓	-	-	-
25	E_EEPROM_XMC4	4.0.16	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
26	EVENT_DETECTOR	4.0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
27	EVENT_GENERATOR	4.1.14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
28	FATFS	4.0.24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
29	FREERTOS	4.1.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
30	GLOBAL_ACMP	4.0.6	-	-	-	-	✓	✓	-	✓	-	-	-
31	GLOBAL_ADC	4.0.18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

32	GLOBAL_CCU4	4.1.12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
33	GLOBAL_CCU8	4.1.12	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓
34	GLOBAL_DMA	4.0.8	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
35	GLOBAL_DSD	4.0.2	✓	✓	-	-	-	-	-	-	✓	✓	✓
36	GLOBAL_SCU_XMC1	4.1.10	-	-	-	-	✓	✓	✓	✓	-	-	-
37	GLOBAL_SCU_XMC4	4.1.12	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
38	INTERRUPT	4.0.8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
39	PIN_INTERRUPT	4.0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
40	PWM	4.1.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
41	PWM_CCU4	4.1.22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
42	PWM_CCU8	4.1.26	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓
43	RTC	4.1.14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
44	SYSTIMER	4.1.16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
45	TIMER	4.1.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
46	WATCHDOG	4.0.14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

1.1.7 Peripheral Configuration APPs

No	DAVE APPs	Version	XMC45	XMC44	XMC42	XMC41	XMC13	XMC12	XMC11	XMC14	XMC48	XMC43	XMC47
1	ACMP_CONFIG	4.1.2	-	-	-	-	✓	✓	-	✓	-	-	-
2	CCU4_SLICE_CONFIG	4.0.18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	CCU8_SLICE_CONFIG	4.0.22	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓
4	FCE_CONFIG	4.0.6	✓	✓	✓	✓	-	-	-	-	✓	✓	✓
5	I2C_CONFIG	4.0.6	✓	✓	✓	✓					✓	✓	✓
6	I2S_CONFIG	4.0.4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	MULTICAN_CONFIG	4.0.12	✓	✓	✓	✓					✓	✓	✓
8	PRNG_CONFIG	4.0.2	-	-	-	-	✓	✓	✓	✓	-	-	-
9	SPI_CONFIG	4.0.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10	VADC_GLOBAL_CONFIG	4.0.8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	VADC_GROUP_CONFIG	4.0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12	UART_CONFIG	4.0.10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Legend: ** indicates Beta version.

Note:

Beta means that these APPs may have not reached the full design status and should be used for evaluation and test purposes and for adaption in the development flow. A productive DAVE APP may not be fully compatible to the previous beta version and may require manual adaptations when upgrading from beta to productive release.

1.2 DAVE APPs Test conditions

- DAVE APPs for the XMC4800 series are verified on all supported derivatives, fully functional test is applied with XMC4800-F144x1024.
- DAVE APPs for the XMC4500 series are verified on all supported derivatives, fully functional test is applied with XMC4500-F144x1024.
- DAVE APPs for the XMC4400 series are verified on all supported derivatives, fully functional test is applied with XMC4400-F100x512.
- DAVE APPs for the XMC4200 series are verified on all supported derivatives; fully functional test is applied with XMC4200-Q48x256.
- DAVE APPs for the XMC1100 series are verified on all supported derivatives, fully functional test is applied with XMC1100-T038F0064.
- DAVE APPs for the XMC1200 series are verified on all supported derivatives, fully functional test is applied with XMC1200-T038F0200.
- DAVE APPs for the XMC1300 series are verified on all supported derivatives, fully functional test is applied with XMC1302-T038F0200.
- DAVE APPs for the XMC1400 series are verified on all supported derivatives, fully functional test is applied with XMC1404-Q064x0128.

- Compilers used :
 - KEIL: V5.10.0.2
 - IAR: V6.50.6.4958
 - GCC compiler version ARM-GCC-49

2 Support Packages

None

3 Tool Information

DAVE	We recommend to use DAVE v4.4.2 or higher version
JAVA	JRE8 v1.8.0 (JRE is bundled with DAVE)

4 Changes from Previous Version

4.1 Changes from previous version dated 2019-06 update site

- ❖ Only DEVICE_PACK has been upgraded to version v2.2.10 to include XMCLib v2.1.24 and CMSIS v5.6.0

4.2 Changes from previous version dated 2018-12 update site

- ❖ Only DEVICE_PACK has been upgraded to version v2.2.8 to include XMCLib v2.1.22

4.3 Changes from previous version dated 2018-10 update site

- ❖ 6 DAVE APPs are updated or enhanced

No	DAVE APPs	Update Description
1	CPU_CTRL_XMC4	<ul style="list-style-type: none"> Fixed PMU_FLASH_WS definition for XMC4300 devices
2	SDMMC_BLOCK	<ul style="list-style-type: none"> Fixed code generation for SPI mode and XMC1 family Fixed SDMMC_BLOCK_SD_GetSectorCount()
3	FATFS	<ul style="list-style-type: none"> Update to FatFS R0.13c Fixed compilation issues when C standard IO library stubs are enabled
4	ETH_LWIP	<ul style="list-style-type: none"> Updated lwIP code base to 2.1.2
5	ECAT_SSC	<ul style="list-style-type: none"> Fixed initialization of pin output levels in function HW_Init() to avoid random initialization
6	FREERTOS	<ul style="list-style-type: none"> Fixed vApplicationGetTimerTaskMemory() return value Updated mpu_wrappers.c to FreeRTOS 10.1.1

4.4 Changes from previous version dated 2018-02 update site

- ❖ 22 DAVE APPs are updated or enhanced (for UART_CONFIG APP a user action is required after migration of an existing project to this new DAVE APP version.

No	DAVE APPs	Update Description
1	CRYPTO_AES	<ul style="list-style-type: none"> Fixed selection of cipher mode
2	I2C_SLAVE	<ul style="list-style-type: none"> Fix prototype of I2C_SLAVE_FlushTxFifo() and I2C_SLAVE_FlushRxFifo() Fix issues with code generation
3	ADC_MEASUREMENT_ADV	<ul style="list-style-type: none"> Fixed adding scan channels issues when more than one group is used Avoid generating wrong setting for sync_conversion field in XMC_VADC_CHANNEL_CONFIG_t
4	MULTICAN_CONFIG	<ul style="list-style-type: none"> Fixed UI issues when using XMC4100 devices
5	PMSM_FOC	<ul style="list-style-type: none"> PMSM_FOC_BootstrapConfiguration() changed disabling asymmetric mode using XMC_CCU8_SLICE_EnableSymmetricCompareMode()

		instead of XMC_CCU8_SLICE_SetOutPath() <ul style="list-style-type: none"> • PMSM_FOC_Bootstrap() changed using output path macros to handle XMC1400 correctly
6	CCU8_SLICE_CONFIG	<ul style="list-style-type: none"> • Changes fixing initial value
7	CCU4_SLICE_CONFIG	<ul style="list-style-type: none"> • Changes fixing initial value
8	SPI_MASTER	<ul style="list-style-type: none"> • Fix issues when setting RX FIFO limit while using interrupts
9	CAN_NODE	<ul style="list-style-type: none"> • Fixed bit timing calculation for XMC47/48/43 below 100Kbit/s
10	GLOBAL_CAN	<ul style="list-style-type: none"> • Fixed bit timing calculation for XMC47/48/43 below 100Kbit/s
11	ECAT_SSC	<ul style="list-style-type: none"> • Fix EEPROM write/reload issue since update to SSC v5.12 • Include SSC patch file
12	FATFS	<ul style="list-style-type: none"> • Update to FatFS R0.13b_p3
13	FTP_SERVER	<ul style="list-style-type: none"> • Fixes according to latest FATFS APP v4.0.22
14	ETH_LWIP	<ul style="list-style-type: none"> • Changed CHECKSUM_CHECK_ICMP equal 0 in lwipopts.h • Changed low_level_output() to comply with the lwip indications about waiting as long as a TX descriptor is not available instead of returning error • Fixed XMC_ETH_PHY_Init() call when instance name of ETH_LWIP APP is changed from default ETH_LWIP_0 • Fixed XMC_ETH_PHY_Init() wait for PHY MDIO interface to be ready • Update to lwIP v2.1.0 • Fixed include path for autoip.h • ethernetif_link_status() is transformed into a lwIP timer for RTOS environment to ensure thread safety
15	CPU_CTRL_XMC1	<ul style="list-style-type: none"> • Enable prefetch unit for XMC1400 • Changed hard fault handler to avoid reading from the stack in case a stack overflow caused the fault.
16	UART	<ul style="list-style-type: none"> • Fix documentation adding UART_AbortReceive() and UART_AbortTransmit()
17	E_EEPROM_XMC1	<ul style="list-style-type: none"> • Fixed issue E_EEPROM_XMC1_IGetPrevData() function to avoid that it can search beyond the end of the flash causing an exception
18	SDMMC_BLOCK	<ul style="list-style-type: none"> • XMC43/XMC47/XMC48: Fix card write protection status when SDWP pin is used for other purposes
19	I2C_MASTER	<ul style="list-style-type: none"> • Fixed APP help documentation adding DMA related functions
20	FREERTOS	<ul style="list-style-type: none"> • Update to FreeRTOS v10.1.1
21	SEGGER_RTT	<ul style="list-style-type: none"> • Update to v6.34d
22	HTTP_SERVER	<ul style="list-style-type: none"> • Updates required by lwIP 2.1.0

4.5 Changes from previous version dated 2017-08-07 update site

- ❖ 27 DAVE APPs are updated or enhanced (for UART_CONFIG APP a user action is required after migration of an existing project to this new DAVE APP version).

No	DAVE APPs	Update Description
1	CCU4_SLICE_CONFIG	Fix: C++ compilation problems
2	CCU8_SLICE_CONFIG	1. Fix: C++ compilation problems 2. Fix: status output when channel two is selected
3	CLOCK_XMC1	Add: polling for XMC14xx on the DCO1 Sync ready when external calibration is used.
4	CMSIS_DSP	Update: CMSIS-DSP v1.5.2 (see changelog at http://www.keil.com/pack/doc/CMSIS/DSP/html/ChangeLog_pg.html)
5	CMSIS_RTOS_RTX	1. Fix: documentation link to CMSIS RTOS RTX tutorial. 2. Fix: warning after CMSIS update to v5.2.0. 3. Add: export the following macros CMSIS_RTOS_RTX_TASKCNT, CMSIS_RTOS_RTX_PRIVCNT, CMSIS_RTOS_RTX_PRIVSTKSIZE, CMSIS_RTOS_RTX_TICK.
6	CRC_SW	Fix: inversion operation
7	DAC_LUT	1. Change: DMA interrupt disabled if Repetition is : "Endless" 2. Fix: APP instance renaming bug fix in DAC_LUT_DMABlockTransferEvtHandler()
8	E_EEPROM_XMC4	Update: linker files
9	ECAT_SSC	1. Add: Make optional the pins LED_ERR, LED_RUN, LED_LINK_ACT_P0, LED_LINK_ACT_P1 2. Fix: race conditions when disabling interrupts 3. Change: Define EEPROM_READ_SIZE to be compatible with ECAT SSC v5.12 4. Change: Lower driver strength of TXDn, TX_ENA, PHY_CLK_25 to strong medium edge 5. Add: HW_ClearTimer() 6. Updated: Infineon_XMC_ECAT_SSC_Config.xml to support ECAT SSC v5.12
10	ETH_LWIP	1. Updated: lwIP code base to 2.0.3 2. Change: Lower driver strength of TXDn signals 3. Change: sequence of PHY initialization
11	FATFS	Update: to FatFS R0.13a
12	FREERTOS	Update: to FreeRTOS v10.0.1
13	GLOBAL_POSIF	Add: support for XMC1402, XMC1404, XMC4700 and XMC4800 device.
14	GLOBAL_SCU_XMC1	Fix: C++ compilation problems
15	GLOBAL_SCU_XMC4	Fix: C++ compilation problems
16	HTTP_SERVER	1. Fix: compilation problems when FATFS is enabled 2. Fix: C++ compilation issues

17	I2C_MASTER	<ol style="list-style-type: none"> 1. Fix: issues when two or more instances are used 2. Fix: TX DMA issues 3. Add: option to enable noise filters on inputs 4. Add: I2C_MASTER_FlushTxFifo(), I2C_MASTER_FlushRxFifo(), I2C_MASTER_DisableIO(), I2C_MASTER_EnableIO() 5. Fix: within dma_tx_handler(), tx_callback only called if transmitting
18	I2C_SLAVE	<ol style="list-style-type: none"> 1. Add: I2C_SLAVE_FlushTxFifo(), I2C_SLAVE_FlushRxFifo(), I2C_SLAVE_DisableOutputs(), I2C_SLAVE_EnableOutputs() 2. Add: I2C_SLAVE_AbortTransmit() and I2C_SLAVE_AbortReceive() for direct mode
19	PMSM_FOC	<ol style="list-style-type: none"> 1. Fix: code for XMC14 2. Add: support inverter without enable pin. 3. Update: S-curve Ramp enhanced. 4. Added: PI Antiwindup.
20	PWM_BC	Add: support for XMC1402, XMC1404, XMC4700 and XMC4800 device
21	PWM_SVM	Fix: code for XMC14
22	RTC	Fix: missing initialization of time_val.daysofweek in function RTC SetTime().
23	SPI_MASTER	Fix: issue not allowing baudrates higher than 25MHz for some USIC channels when using full duplex mode.
24	UART_CONFIG	<p>Change: Renamed UART_CONFIG_t to UART_CH_CONFIG_t to avoid clash when using simultaneously UART and UART_CONFIG APP.</p> <p>- REQUIRED ACTION: After upgrading the UART_CONFIG APP, in your application code change occurrences of UART_CONFIG_t to UART_CH_CONFIG_t</p>
25	VADC_GLOBAL_CONFIG	Fix: C++ compilation warnings
26	SEGGER_RTT	Update to RTT version 6.30
27	UCPROBE	<ol style="list-style-type: none"> 1. Add: more options to the UART baudrate selection 2. Add: a custom baudrate option

4.6 Changes from previous version dated 2017-04-18 update site

- ❖ 11 DAVE APPs are update or enhanced

No	DAVE APPs	Update Description
1	CMSIS_RTOS_RTX	1. Fix: Documentation link to CMSIS RTOS RTX tutorial fixed.

		2 Add: Export the following macros CMSIS_RTOS_RTX_TASKCNT, CMSIS_RTOS_RTX_PRIVCNT, CMSIS_RTOS_RTX_PRIVSTKSIZE, CMSIS_RTOS_RTX_TICK.
2	COMP_REF	Change: Comparator out is always visible independent of ERU being enabled or not.
3	ETH_LWIP	Change: Update lwip code base to v2.0.2 Update: stack size requirements Add: ETH_LWIP_UserIRQ() to extend default IRQ handler by user
4	FATFS	Change: Update to FatFS R0.13
5	GLOBAL_ADC	Add: Selection of the reference voltage for conversions for XMC1 family
6	HTTP_SERVER	Add: Check for RTOS minimum requirements
7	MOTOR_LIB	Add: Support for XMC47/48/43 and XMC14
8	PDM_DIMMED_LED_LAMP	1. Fix: one clock glitch when using the Fast DCDC Buck with PDM mode by setting the modulation mode in the required CCU8_PWM APP to Clear The CC8yST 2. Fix: COMP_REF APP Inverter setting when using the Fast DCDC Buck with PDM
9	SDMMC_BLOCK	Fix: SDMMC_BLOCK_SD_GetSectorCount() for Standard Capacity cards.
10	VADC_GLOBAL_CONFIG	Change: EMUX interface allow all groups to be selected
11	VADC_GROUP_CONFIG	Add: EMUX control

4.7 Changes from previous version dated 2017-03-17 update site

- ❖ 8 DAVE APPs are updated or enhanced

No	DAVE APPs	Update Description
1	CCU8_SLICE_CONFIG	1. Add: Initial timer value in General Settings tab 2. Add: Timer Load selector for External Timer Load Functionality 3. Fix: Generate initialization of input events independently of whether they are used for any timer function 4. Add: Signal GPY output (visible for relevant devices e.g. XMC1400)
2	CCU4_SLICE_CONFIG	1. Add: Initial timer value in General Settings tab 2. Fix: Generate initialization of input events independently of whether they are used for any timer function 3. Add: Signal GPY output (visible for relevant devices e.g. XMC1400)
3	CMSIS_DSP	Upgrade: To Version 1.5.1 (see changelog at http://www.keil.com/pack/doc/CMSIS/DSP/html/ChangeLog_pg.html)
4	GLOBAL_SCU_XMC1	Fix: Typo in category description
5	GLOBAL_SCU_XMC4	Fix: Typo in category description
6	ETH_LWIP	1. Fix: MEMCPY macro conflicts with ECAT_SSC 2. Change: Disable ETH interrupts while going through the descriptor list in ethernetif_input()

7	ECAT_SSC	Fix: TIMER APP not triggering ecat_ssc_timer_handler
8	FREERTOS	Fix: Missing MPU wrapper implemented Add: Settings tab included

4.8 Changes from previous version dated 2016-09-26 update site

- ❖ 22 DAVE APPs updated or enhanced

No	DAVE APPs	Update Description
1	CAN_NODE	Add: support for XMC1403_Q040
2	CCU8_SLICE_CONFIG	Fix: channel output inversion control.
3	CMSIS_DSP	Upgrade to Version 1.5.1
4	CMSIS_RTOS_RTX	Upgrade to v4.82 of CMSIS RTOS RTX: 1. Fix: Recursive Mutex 16-bit lock counter is now checked to not overflow. 2. Fix: Message Queue behavior when osMessagePut timed out due to full queue and osMessageGet was called from ISR.
5	CPU_CTRL_XMC1	Fix: compilation warnings.
6	CPU_CTRL_XMC4	Change: hard fault handler to avoid reading from the stack in case an stack overflow caused the fault.
7	COMP_REF	Fix: assignment of reference source when BCCU is not present.
8	ECAT_SSC	1. Fix: initialization of EEPROM data taking into account size of EEPROM specified in SSC tool. 2. Fix: MDIO input multiplexer setting.
9	ETH_LWIP	1. Add Enable LWIP_PLATFORM_BYTESWAP 2. Upgrade: lwIP 2.0.1
10	E_EEPROM_XMC4	Remove: casting from size macros
11	GLOBAL_CAN	Add: XMC1403_Q040 support
12	HTTP_SERVER	1. Add: option to not send the SSI tag 2. Change: Make post_buffer word aligned in HTTP_SERVER_POST_RESP_t
13	I2C_MASTER	Fix: unintended interrupts, while filling FIFO, by clearing pending interrupts
14	MULTICAN_CONFIG	1. Add: support for XMC1403_Q040 2. Fix: lower limit of message object identifier value
15	PWM_CCU4	1. Change: PWM_CCU4_Stop() to set the ST output to the passive value after stopping the timer. 2. Fix: Max frequency set to fCCU4/4
16	PWM_CCU8	1. Change: PWM_CCU8_Stop() to set the ST output to the passive value after stopping the timer. 2. Fix: Max frequency set to fCCU8/4
17	PMSM_FOC	Add: support for XMC14 and XMC43/47/48
18	PWM_SVM	1. Add: support for XMC47/48/43 2. Fix: include statement to use forward slashes

19	SDMMC_BLOCK	Fix: card detection issues when SDCCD pin is used for other purposes.
20	SPI_MASTER	Fix: Correction of issues when using FIFO and high baudrates by setting FIFO limit to half of the FIFO size
21	SYSTIMER	Added: SYSTIMER_CreateTimerFromISR(), SYSTIMER_StartTimerFromISR(), SYSTIMER_StopTimerFromISR(), SYSTIMER_RestartTimerFromISR(), SYSTIMER_DeleteTimerFromISR(), SYSTIMER_Start(), SYSTIMER_Stop()
22	UART	1. Add option to invert input/output data 2. Add option to select the LSB or MSB first output

Correction of typo in this release note: wrong version info of I2S_CONFIG correct to v4.0.4

4.9 Changes from previous version dated 2016-09-02 update site

- ❖ 2 APPs enhanced/updated:

No	DAVE APPs	Update Description
1	MULTICAN_CONFIG	1. Fixed code generation issue for multiple message objects in multican_config_conf.c file, with respect to XMC_CAN_MO_Config() API. 2. Help doc updated with a new example, which explains the usage of slave message objects using hardware FIFO.
2	E_EEPROM_XMC1	Fixed issue in APP device migration. UI and configuration header file will have the correct bank1 flash end address after migration to a different flash size device.

4.10 Changes from previous version dated 2016-04-28 update site

Added:

- ❖ 4 new APPs added:
CAPTURE, I2S_CONFIG, VADC_GROUP_CONFIG & VADC_GLOBAL_CONFIG

No	DAVE APPs	APPs Description
1	CAPTURE	Performs signal analysis to find out duty cycle & period of unknown input signal
2	I2S_CONFIG	Configures USIC peripheral to function as I2S master or slave device
3	VADC_GROUP_CONFIG	Versatile Analog to Digital Convertor peripheral configuration APP. Supports configuration of VADC group properties.
4	VADC_GLOBAL_CONFIG	Versatile Analog to Digital Convertor peripheral configuration APP. Supports configuration of VADC global properties.

Updated:

- ❖ 9 APPs upgraded from Beta to Productive:

ACIM_FREQ_CTRL, AUTOMATION, GLOBAL_POSIF, MOTOR_LIB, PMSM_FOC, PWM_BC, PWM_SVM, CCU4_SLICE_CONFIG, CCU8_SLICE_CONFIG

No	DAVE APPs	APPs Description
1	ACIM_FREQ_CTRL AUTOMATION GLOBAL_POSIF MOTOR_LIB PMSM_FOC PWM_BC PWM_SVM	All 7 APPS upgraded from Beta to productive without any functional changes. Fully compatible to existing beta versions.
2	CCU4_SLICE_CONFIG	APP upgraded to productive with major changes. Not compatible with existing beta versions. Changes: <ol style="list-style-type: none"> 1. User interface of the APP changed to new format. Added and deleted elements for functional improvements. 2. Concatenation signal connections are supported.
3	CCU8_SLICE_CONFIG	APP upgraded to productive with major changes. Not compatible with existing beta versions. Changes: <ol style="list-style-type: none"> 1. User interface of the APP changed to new format. Added and deleted elements for functional improvements. 2. Concatenation signal connections are supported.

- ❖ 46 APPs enhanced/updated:

DAVE APPs	Update Description
ADC_MEASUREMENT	Fixed: <ol style="list-style-type: none"> 1. Minimum sampling time for XMC1000 is restricted to be greater than 4 times SHS conversion time period, as per Errata ADC_AI.H007. Default sampling time changed from 100 to 125 nanoseconds in "Desired sampling time" UI element. 2. Total conversion time for XMC1000 devices is constrained to the frequency selection in GLOBAL_ADC APP. For lower CPU clock frequencies ((fmclk=fadc) < fsh), the convertor clock (fconv) is downsized using DIVS in GLOBAL_ADC APP to achieve lower SHS clock (fsh). This is done to qualify the hardware Errata ADC_AI.H006.
ADC_MEASUREMENT_ADV	Added: <ol style="list-style-type: none"> 1. Synchronous conversion of ADC channels supported. Fixed: <ol style="list-style-type: none"> 1. Minimum sampling time for XMC1000 is restricted to be greater than 4 times SHS conversion time period, as per Errata ADC_AI.H007. Default sampling time changed from 100 to 125

	<p>nanoseconds in "Desired sampling time" UI element.</p> <ol style="list-style-type: none"> Total conversion time for XMC1000 devices is constrained to the frequency selection in GLOBAL_ADC APP. For lower CPU clock frequencies ((fmclk=fadc) < fsh), the convertor clock (fconv) is downsized using DIVS in GLOBAL_ADC APP to achieve lower SHS clock (fsh). This is done to qualify the hardware Errata ADC_AI.H006.
ADC_QUEUE	<p>Fixed:</p> <ol style="list-style-type: none"> Minimum sampling time for XMC1000 is restricted to be greater than 4 times SHS conversion time period, as per Errata ADC_AI.H007. Default sampling time changed from 100 to 125 nanoseconds in "Desired sampling time" UI element. Total conversion time for XMC1000 devices is constrained to the frequency selection in GLOBAL_ADC APP. For lower CPU clock frequencies ((fmclk=fadc) < fsh), the convertor clock (fconv) is downsized using DIVS in GLOBAL_ADC APP to achieve lower SHS clock (fsh). This is done to qualify the hardware Errata ADC_AI.H006.
ADC_SCAN	<p>Fixed:</p> <ol style="list-style-type: none"> Minimum sampling time for XMC1000 is restricted to be greater than 4 times SHS conversion time period, as per Errata ADC_AI.H007. Default sampling time changed from 100 to 125 nanoseconds in "Desired sampling time" UI element. Total conversion time for XMC1000 devices is constrained to the frequency selection in GLOBAL_ADC APP. For lower CPU clock frequencies ((fmclk=fadc) < fsh), the convertor clock (fconv) is downsized using DIVS in GLOBAL_ADC APP to achieve lower SHS clock (fsh). This is done to qualify the hardware Errata ADC_AI.H006.
ANALOG_IO	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
CAN_NODE	Added: CAN_NODE_MO_UpdateID() API to update the message object identifier.
CLOCK_XMC1	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
CLOCK_XMC4	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
CMSIS_RTOS_RTX	<ol style="list-style-type: none"> Fixed: Rename ENABLE_CPU_CM_001_WORKAROUND to ENABLE_PMU_CM_001_WORKAROUND Updated Help documentation overview page to state the version used v4.80. Fixed incorrect case for "Dave_common.h" included header file.
CONTROL_LIB	<ol style="list-style-type: none"> Added: APIs for Square root, Moving Average filter and PI controller. Fixed: Scaling calculation for "output" variable in corrected in CONTROL_LIB_2P2ZFixedPointInit(), CONTROL_LIB_3P3ZFixedPointInit() APIs.
COUNTER	All event signal connections made mandatory when enabled. User need to connect them to targeted interrupt node.
DAC	Fixed incorrect case for "Dave_common.h" included header file in the

	Linux development environment.
DIGITAL_IO	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
DIM_BCCU	Added support for XMC1400 new device packages
DISPLAY_7SEG	Added support for XMC1400 new device packages
DMX512_RD	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
E_EEPROM_XMC1	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
E_EEPROM_XMC4	<ol style="list-style-type: none"> 1. Fixed code generation error for project folder paths with spaces in between. 2. Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
ECAT_SSC	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
ETH_LWIP	<ol style="list-style-type: none"> 1. Added: Feature to check PHY initialization error Added: Task configuration widgets in UI Added: Added UI option to use polling 2. Updated: Optimized by removing excess memory copy.
FATFS	Added: Display for SDMMC_BLOCK APP instance name for used card volumes in GUI.
FREERTOS	Updated: Upgraded to new FREERTOS version V9.0.0
GLOBAL_ADC	<p>Fixed:</p> <ol style="list-style-type: none"> 1. ADC convertor clock frequency (fconv) is maintained to be equal to Main CPU clock (fmclk=fadc) for lesser frequencies. DIVS divider configuration introduced to control convertor clock according to hardware errata ADC_AI.H006. This avoids conversion results overwriting issue at lower clock frequencies. 2. Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
GLOBAL_BCCU	Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.
GLOBAL_CAN	<ol style="list-style-type: none"> 1. Fixed: Baud rate clock source restricts selecting High Precision OSC, if not selected in the used CLOCK APP. 2. Updated: APP GUI Improved with relevant widget Names and its placement
GLOBAL_LEDTS	Added support for XMC1400 new device packages
HRPWM	Updated: All event signal connections made mandatory when enabled.
HTTP_SERVER	<ol style="list-style-type: none"> 1. Updated: Improvement in template my making RTOS and non RTOS based code common. 2. Fixed: Fixed errors for large file load.
I2C_CONFIG	<ol style="list-style-type: none"> 1. Updated: Now code for mapping events is always generated for the visible signals. 2. Fixed: Redundant code generation for external clock configuration corrected.
I2C_MASTER	1. Updated: Pad signals are exposed to user for external connection

	<p>with other APPs.</p> <p>2. Updated: Documentation of DMA and interrupt functions added in the help document.</p>
I2C_SLAVE	<p>1. Fixed: incorrect case for "Dave_common.h" included header file.</p> <p>2. Added: Clock stretch functionality support. Pad signals are exposed to user for external connection with other APPs.</p>
LED_MATRIX	<p>Added support for XMC1400 new device packages</p> <p>Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.</p>
LEDTS_COL_CTRL	Added support for XMC1400 new device packages
LEDTS_COLA_CTRL	Added support for XMC1400 new device packages
MANCHESTER_SW	<p>Enhanced:</p> <ul style="list-style-type: none"> Decoder functionality validates the received bit-stream against stop bits validation. Provides the user interface for number of stop bits selection in GUI.
MULTICAN_CONFIG	Updated: Code for mapping events is always generated for the visible signals.
PDM_BCCU	Added support for XMC1400 new device packages
PDM_DIMMED_LED_LAMP	<p>Added support for XMC1400 new device packages</p> <p>Fixed incorrect case for "Dave_common.h" included header file in the Linux development environment.</p>
PWM	Updated: All event signal connections made mandatory when enabled. User need to connect them to targeted interrupt node.
PWM_CCU4	Updated: All event signal connections made mandatory when enabled. User need to connect them to targeted interrupt node.
PWM_CCU8	Updated: All event signal connections made mandatory when enabled. User need to connect them to targeted interrupt node.
RTC	Added: New APIs to set and get time and alarm in standard time format (RTC_SetStdTime(), RTC_GetStdTime).
SDMMC_BLOCK	<ol style="list-style-type: none"> Fixed: Null pointer generation for SD host in the configuration is fixed for XMC4300 device. Interrupt signal in SD Mode is mapped. Fixed: Timeout mechanism added in SDMMC_BLOCK_SD_ICheckDataCommandLines API to support low speed SD cards.
SPI_CONFIG	Updated: GUI image updated for baud rate generator.
SPI_MASTER	Fixed: Transmit data buffer index not updated properly while transmitting data in direct mode.
SPI_SLAVE	Updated: Pad signals are exposed to user for external connection with other APPs.
SYSTIMER	Fixed: Reentrancy issue when using SYSTIMER_StopTimer
TIMER	Updated: Timer event signal connection made mandatory when enabled. User need to connect them to targeted interrupt node.
UART	Updated: Pad signals are exposed to user for external connection with other APPs.

4.11 Changes from previous version dated 2016-02-15 update site

Added:

- ❖ 4 new APPs added: HTTP_SERVER, FTP_SERVER, BUS_IO and PIN_INTERRUPT.
- ❖ 2 APPs are transferred from contributed APPs to official Infineon Developed APPs

No	DAVE APPs	APPs Description
1	HTTP_SERVER	HTTP server is used to store, process and deliver web pages to clients using Ethernet interface.
2	FTP_SERVER	File Transfer Protocol (FTP) is a network protocol used to exchange and manipulate files over a TCP/IP-based network.
3	BUS_IO	BUS_IO APP is used to configure/control several GPIO pins as one entity.
4	PIN_INTERRUPT	The PIN_INTERRUPT APP invokes user interrupt handler in a response into rising and/or falling edge event signal on a pin.
5	I2C_CONFIG	Configures a USIC channel as a master/slave to perform transmit & receive operations using the I2C protocol
6	MULTICAN_CONFIG	Configures MultiCAN peripheral

Updated:

- ❖ 3 APPs upgraded from Beta to Productive: ADC_MEASUREMENT_ADV, SDMMC_BLOCK and FATFS.
- ❖ 30 APPs enhanced/updated:

DAVE APPs	Update Description
ADC_MEASUREMENT	<ol style="list-style-type: none"> 1. Maximum number of channels for XMC41/42 increased to 9. 2. Added Post calibration time for XMC1x series in Total conversion Time. 3. Fixed the ADC_MEASUREMENT_Init () for ANALOG_IO initialization. 4. For XMC1100 series only: Deprecated the API ADC_MEASUREMENT_GetResult () and ADC_MEASUREMENT_GetDetailedResult (). 5. For XMC1100 series only: Added new API ADC_MEASUREMENT_GetGlobalResult () and ADC_MEASUREMENT_GetGlobalDetailedResult (). 6. Tooltip added for Enable Continuous Conversion checkbox
ADC_MEASUREMENT_ADV	<ol style="list-style-type: none"> 1. Added consumption of the GLOBAL ICLASS-1 for Sync. Conversions. 2. Added consumption of the result register-0 for subtraction mode. 3. Removed ADC_MEASUREMENT_ADV_SetUniformConversion (). 4. New API ADC_MEASUREMENT_ADV_SetIclass () added to configure the GLOBAL ICLASS for Slaves. 5. Queue use case issue with -03 optimization fixed. 6. Upgraded from Beta to Productive release
ADC_QUEUE	Total conversion time now includes post calibration time as well for XMC1x.
ADC_SCAN	Total conversion time now includes post calibration time as well for XMC1x.
CCU4_SLICE_CONFIG	Missing code generation for external event configuration is fixed.
CCU8_SLICE_CONFIG	Missing code generation for external event configuration is fixed.
CMSIS_DSP	Help doc updated for CMSIS version , License info is updated
CMSIS_RTOS_RTX	Help doc updated for CMSIS version, License info is updated

CMSIS_RTOS	Help doc updated.
DAC_SWEEP	Maximum value of desired start frequency in the GUI is limited to one count lesser than Maximum value of stop frequency.
DIGITAL_IO	Corrected wrong generation of structure object for pins with default hardware peripheral connection.
DS_ADC_DEMOD	Content pane is corrected in app help documentation.
ECAT_SSC	Updated APP help documentation: Added note in usage section for exporting ECAT APP to Keil using gpdsc.
EEPROM_XMC4	Linker files updated for missing ALIGN statements for BSS sections. Fix size of BSS and DATA sections to be multiple of 4.
ETH_LWIP	<ol style="list-style-type: none"> 1.Increased data transfer performance by using optimized assembly code for data copy 2.Semaphore creation wrapper to initialize the object corrected 3.Mac address in GUI display changed from decimal to hex format.
FATFS	Upgraded from Beta to Productive release
FREERTOS	Update to FreeRTOS v8.2.3 Fix initialization of configKERNEL_INTERRUPT_PRIORITY Fix initialization of configMAX_SYSCALL_INTERRUPT_PRIORITY, License info is updated
GLOBAL_ACOMP	Content pane is corrected in app help documentation.
GLOBAL_ADC	Modified the minimum configurable value for Desired analog clock in XMC1x to 1MHz.
GUI_SEGGERLIBRARY	License info is updated
HRPWM	Trap enable configuration is corrected in HRPWM_IConfigure_Events() API
I2C_MASTER	Added multiplexer settings for DX3, DX4 and DX5 for XMC1x family
I2C_SLAVE	Documentation updated
PWM_CCU4	UI frame width is increased. This avoids left, right arrows for tabs
PWM_CCU8	UI frame width is increased. This avoids left, right arrows for tabs Trap enable configuration is corrected in PWM_CCU8_IConfigure_Events() API
SDMMC_BLOCK	<ol style="list-style-type: none"> 1. Added RTOS functionality 2. Upgraded from Beta to Productive release
SPI_CONFIG	Data lost event signal removed and a checkbox added in Events tab
SPI_MASTER	<ol style="list-style-type: none"> 1. Improve the performance during the higher baud rates by removing the memcpy () and added new LLD API calls. 2. Quad mode support is enabled for XMC14 devices. 3. Help doc improved for handling of the last byte in the shift register. 4. For XMC4000 devices, pad class is constrained based on the bus speed selected.
UART	Added support for transmit port pad class change based on speed. Added APIs UART_IsTxBusy () and UART_IsRxBusy ().
UART_CONFIG	Changed data lost event from signal to a checkbox in Events tab

4.12 Changes from previous version dated 2015-11-27 Update site

Due to the enhancements in the CLOCK_XMC4 APP (See the details in “Enhanced” section), we recommend to use the new version of the CLOCK_XMC APP along with the new version of all other APPs requiring CLOCK APP (GLOBAL_CCU, GLOBAL_CCU8, GLOBAL_POSIF, GLOBAL_HRPWM, WATCHDOG, USB).

Category	Description of change
Device Support	54 APPs supported for XMC4300 devices
New	<p>8 New APPs added:</p> <p>FCE_CONFIG, PRNG_CONFIG, ETH_LWIP, SDMMC_BLOCK**, ECAT_SSC, E_EEPROM_XMC4, FATFS**, CONTROL_LIB</p> <p>4 APPs transferred from contributed APPs to Infineon developed APPs</p> <p>SPI_CONFIG (name was USIC_CONFIG_SPI) UART_CONFIG (name was USIC_CONFIG_UART) CCU4_SLICE_CONFIG** (name was CCU4_CONFIG) CCU8_SLICE_CONFIG** (name was CCU8_CONFIG)</p>
Enhanced	<p>1. ADC_MEASUREMENT_ADV:</p> <ul style="list-style-type: none"> • Internal consumption of the SCAN and QUEUE request sources supported (Expose APP feature). • Number of maximum sync masters reduced from 8 to 4 • Converted the SetBoundary() API from public API to private API. • Converted the SetBoundary() API from public API to private API. • Re-named the API ADC_MEASUREMENT_ADV_StartConversion() as ADC_MEASUREMENT_ADV_SoftwareTrigger(). • Created a new API ADC_MEASUREMENT_ADV_StartADC(). • UI “Insert channel at initialization” changed to “Start ADC at initialization” .This would control the ADC arbitration not insertion in the hardware. • Removed the API ADC_MEASUREMENT_ADV_InsertChannels() API. • This APP is not compatible to version 4.0.1, in case migration functionality is used to migrate v4.0.1 to this version manual interactions are required <p>2. ADC_QUEUE:</p> <ul style="list-style-type: none"> ○ Added new APIs ADC_QUEUE_DisableArbitration() and ADC_QUEUE_EnableArbitration(). ○ Optimized the internal data structure hence the following APIs have been optimized. <ul style="list-style-type: none"> ▪ ADC_QUEUE_ReqSrcEventHandler(). ▪ ADC_QUEUE_InsertQueueEntry(). ▪ ADC_QUEUE_ResetListContents(). <p>3. ADC_SCAN:</p> <ul style="list-style-type: none"> ○ Added new APIs ADC_SCAN_DisableArbitration() and ADC_SCAN_EnableArbitration(). ○ Optimized the internal data structure hence the following APIs have been optimized. <ul style="list-style-type: none"> ▪ ADC_SCAN_ReqSrcEventHandler(). ▪ ADC_SCAN_InsertQueueEntry(). ▪ ADC_SCAN_ResetListContents().

4. ADC_MEASUREMENT:
 - Added ANALOG_IO_Init function call inside ADC APP Init function to support new enhancements in ANALOG_IO APP (HW PULL controlled IO and Digital input option options).
5. ANALOG_IO:
 - Hardware Pull controlled feature support added for analog pins.
 - Digital input mode support for analog IO pins added.
6. WATCHDOG:
 - Pre-warning alarm event can be promoted as NMI for XMC4000 devices
7. RTC:
 - RTC events can be promoted as NMI for XMC4000 devices.
8. COMP_REF:
 - Supported internal filter option.
 - Changes in ANALOG_IO APP for Digital input support and HW pull control are supported.
 - SD file is updated to make the Inn, Inp, ERU_out and Comp_out signals visible.
 - Initializations in COMP_REF_Init() are moved to local functions.
 - GPIO pin configurations are corrected for XMC1400.
9. HRPWM:
 - "CCU8 Compare 2" register is made available for modification in all operating modes.
10. BUCK_PCC_FIX_FQ:
 - Supported for XMC1x devices.
 - APP uses CONTROL_LIB APP in place of POWER_CONV_LIB APP.
 - Dynamic scaling algorithm implemented for XMC1x device.
 - Control Settings tab UI is modified.
 - APP handle structure is modified.
 - PI compensator support is removed.
 - Vout reference voltage is now in steps of ADC voltage.
 - Check is added to detect invalid strings in UI.
11. BUCK_VC_FIX_FQ:
 - PI compensator support is removed.
 - Vout reference voltage is now in steps of ADC voltage.
 - APP uses CONTROL_LIB APP in place of POWER_CONV_LIB APP.
 - PWM_CCU4 APP support is removed.
 - Dynamic scaling algorithm implemented for XMC1x device.
 - Control Settings tab UI is modified.
 - APP handle structure is modified.
 - Check is added to detect invalid strings in UI.
12. COMP_SLOPE_GEN:
 - Added images for comparator output waveform when comparator inversion is selected.
13. DAC / DAC_LUT / DAC_SWEEP:

	<ul style="list-style-type: none"> • Added ANALOG_IO_Init function call inside DAC APPs Init function to support new enhancements in ANALOG_IO APP (HW PULL controlled IO and Digital input option options). <p>14. ACMP_CONFIG:</p> <ul style="list-style-type: none"> • Moved Initialization functionality to Instance specific Initialization functions for code size optimizations. Removed unwanted APP handle structure elements. <p>15. DIGITAL_IO:</p> <ul style="list-style-type: none"> • Added Hardware Port Control signal for changing the direction of the pin from other peripherals (Example: USIC peripheral controlling port direction control). <p>16. CLOCK_XMC4:</p> <ul style="list-style-type: none"> • Clock Enable/Disable feature is supported for CCU, WATCHDOG, USB, EtherCAT peripherals. <p>17. GLOBAL_CCU4:</p> <ul style="list-style-type: none"> • New condition is added to check if CCU clock is enabled in the CLOCK_XMC4 APP. <p>18. GLOBAL_CCU8:</p> <ul style="list-style-type: none"> • New condition is added to check if CCU clock is enabled in the CLOCK_XMC4 APP. <p>19. GLOBAL_POSIF:</p> <ul style="list-style-type: none"> • New condition is added to check if CCU clock is enabled in the CLOCK_XMC4 APP. <p>20. WATCHDOG:</p> <ul style="list-style-type: none"> • New condition is added to check if WATCHDOG clock is enabled in the CLOCK_XMC4 APP. <p>21. USB:</p> <ul style="list-style-type: none"> • New condition is added to check if USB clock is enabled in the CLOCK_XMC4 APP. <p>22. GLOBAL_HRPWM:</p> <ul style="list-style-type: none"> • New condition is added to check if CCU clock is enabled in the CLOCK_XMC4 APP.
Fix of Issues	<ol style="list-style-type: none"> 1. CRC_SW: <ul style="list-style-type: none"> • Acceptance of initial value is allowed only with 0x00 or 0xFF 2. CLOCK_XMC4: <ul style="list-style-type: none"> • Removed clear trap status settings at the end of the clock initialization which was redundant code. • Validation message issue is resolved when the CLOCK_XMC4 APP is dragged for XMC4504-F144 Device. • CLOCK_XMC4 APP upgradation failure issue is resolved. • TRAP disable and clear request code has removed from SystemCoreClockSetup() API and ensured first cleaning of pending traps before enabling TRAPS as per guideline of interrupts. • Code generation has blocked when fUSB/SDMMC not equal to 48 MHz and fECAT not equal to 100 MHz. 3. DISPLAY_7SEG: <ul style="list-style-type: none"> • Added template code checks for resource availability of column A instead of GUI field.
Upgraded	<p>6 APPs upgraded from Beta to PR quality: ACMP_CONFIG, BUCK_VC_FIX_FQ, BUCK_PCC_FIX_FQ, GLOBAL_DSD, DS_ADC_DEMOD</p>

Removed	LED_LAMP: Removed from the Update site. It has been deprecated in the 2015-10-30 Update site.
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4.13 Changes from previous version dated 2015-10-30 Update site

Category	Description of change
New	1 New APP added: PMSM_FOC**.

4.14 Changes from previous version dated 2015-07-23 Update site

Category	Description of change
New	6 New APPs are added: ADC_MEASUREMENT_ADV, BUCK_PCC_FIX_FQ, DS_ADC_DEMOD, GLOBAL_DSD, SPI_SLAVE, I2C_SLAVE
Renamed	2 APPs enhanced and renamed: LED_LAMP → PDM_DIMMED_LED_LAMP, BUCK_VOLT_CONTROL → BUCK_VC_FIX_FQ; older APPs are deprecated.
Upgraded	3 APPs upgraded from Beta to PR quality: COMP_REF, COMP_SLOP_GEN & DAC_SWEEP.
Enhanced	<ol style="list-style-type: none"> 1. USIC APPs (I2C_MASTER, SPI_MASTER, and UART) are supported with DMA and Direct mode of transfer. 2. GUI_SEGGERLIBRARY APP is enhanced for OS support. (No compatibility break) INTERRUPT APP (Added a warning message in UI if the node is not connected to any of the peripheral) (No compatibility break) 3. CPU_CTRL_XMC4 enhanced with debug settings and MPU settings. (No compatibility break) 4. PWM_CCU8 APP <ul style="list-style-type: none"> • Added support for sig-Is gp0/1/2 and ps. • Added support for selection of channel in exter-I load function • Added support for selection of shadow transfer mode 5. PWM_CCU4 APP <ul style="list-style-type: none"> • Added support for sig-Is gp0/1/2 and ps. • Added support for selection of shadow transfer mode 6. PDM_DIMMED_LED_LAMP: <ul style="list-style-type: none"> • Added support for peak current control feature • Added new modes drivers of DCDC buck: Fast, Simple, Slow 7. CLOCK_XMC1: <ul style="list-style-type: none"> • Added support for event settings in UI • Added support for run-time clock changes 8. CLOCK_XMC4: <ul style="list-style-type: none"> • Added support for event settings in UI • Added support for run-time clock changes 9. CMSIS_RTOS_RTX: <ul style="list-style-type: none"> • Ported to CMSIS-RTOS RTX (v4.79) library.

Fix of Issues	<ol style="list-style-type: none"> 1. ADC_MEASUREMENT APP UI and help documentation updated for "Total conversion time". APP help documentation Architecture section updated for A-LOG_IO sharing (alias feature) and result register explanation. 2. ADC_QUEUE, ADC_SCAN, GLOBAL_ADC APPs, desired sampling corrected for XMC4200/XMC4100 devices (By default 26 MHz). 3. SYSTIMER UI parameter "Systick time period" tooltip updated. SYSTIMER_CreateTimer API updated for wrong time period check. 4. PWM_CCU4 in "External Event Settings" tab corrected the code generated for "External Gating/ External Modulation" for "Active on High Level" and "Active On Low Level" selection. Corrected code generated for "External Override (Event 2)" for "Inversion" and "No Inversion" selection. 5. CLOCK_XMC4: Fix on exter-I direct input mode 6. SPI_MASTER: Fix on runt-time operation mode change.
XMC47/48 support	53 APPs are added support for XMC47/48 devices
XMC14 support	53 APPs are added support for XMC14 devices

4.15 Changes from previous version dated 2015-02-27 Update site

Sl.no	Description of change
1	8 New APPs are added – ACMP_CONFIG **, COMP_REF, COMP_SLOP_GEN, CMSIS_RTOS_RTX, CMSIS_DSP, DAC_SWEEP **, FREERTOS and GLOBAL_ACMP.
2	4 APPs removed – BLDC_SCALAR_CTRL, HALL_POSIF, PMSM_FOC, PMSM_SCALAR_CTRL
3	1 APP merged – GUI_LCD APP is merged to GUI_SEGGERLIBRARY
4	52 APPs release status changed from Beta to Productive.

5 Installation Requirements

- DAVE v4.1.4 or higher must be installed.
- We recommend using DAVE v4.3.2 or higher version.

Important Note:

This Update site of DAVE APPs, Device pack, Device Descriptions works with DAVE v4.1.4 or higher version. This update site must not be used with DAVE v4.1.2.

6 Known Limitations

DAVE APPs	Limitation / Deviation
SDMMC_BLOCK	MMC Cards are not supported.
CLOCK_XMC4	Functionality cannot be achieved for all the range values of external clock frequency (4- 25 MHz) which makes actual fSYS to cross upper threshold value.
ADC_MEASUREMENT	It might not be possible to achieve the MAX value for “Number of measurements” as shown in the UI of the APP. The available channels depend on the device that is selected.
ADC_MEASUREMENT_ADV	<ol style="list-style-type: none"> 1. It might not be possible to achieve the MAX value for “Number of measurements” as shown in the UI of the APP. The available channels depend on the device that is selected. 2. Channel events are only supported for boundary channels, hence is limited to maximum 4 3. Using this APP, a reduced performance of DAVE may be observed (reaction time of UI and Solver run).
DAC_LUT	On XMC4400, XMC4200/XMC4100 devices, Auto interrupt and Manual software refill with synchronize second DAC option is not supported.
PMSM_FOC	<ol style="list-style-type: none"> 1. Supports only GCC compiler, not validated with other compilers. 2. Only single instance of the APP can be used as this APP is wrapper of library code, which doesn't support hardware resource handling by itself. 3. PMSM_FOC APP and DAC APPs cannot be used together in DAVE due to solver limitation
PWM	<p>Since PWM_SetFreq API allows setting the PWM frequency to the full allowable range by automatically adjusting the pre-scaler, a one cycle deviation persists after the change gets into action.</p> <p>When a new frequency requires a change in pre-scaler value, there will be a single cycle (1 pulse), where the ON/OFF time is different from the expected values.</p>
PWM_CCU4	<ol style="list-style-type: none"> 1. Shadow transfer setting tab support is limited to XMC14xx devices 2. Shadow transfer setting tab, immediate write and automatic shadow transfer feature support is limited to XMC14xx devices 3. In XMC1400, Shadow transfer setting tab, immediate write and automatic shadow transfer feature requires the Fast Peripheral Clock(PCLK) to be set to MCLK in CLOCK APP.
PWM_CCU8	<ol style="list-style-type: none"> 1. Shadow transfer setting tab is not supported in XMC45xx devices 2. Shadow transfer setting tab, immediate write and automatic shadow transfer feature support is limited to XMC14xx devices 3. In XMC1400, Shadow transfer setting tab, immediate write and automatic shadow transfer feature requires the Fast Peripheral Clock(PCLK) to be set to MCLK in CLOCK APP.
COMP_REF	<ol style="list-style-type: none"> 1. Internal filter is not supported for XMC12x and XMC13x AA step.
BUCK_VC_FIX_FQ	<ol style="list-style-type: none"> 1. ADC conversion mode in ADC_SCAN/ADC_QUEUE APPs should be selected as 12 bit Conversion. 2. In case of XMC1x family, Digital supply voltage for microcontroller should be 3.3 volts.
BUCK_PCC_FIX_FQ	<ol style="list-style-type: none"> 1. ADC conversion mode in ADC_SCAN/ADC_QUEUE APPs should be selected as 12 bit Conversion. 2. In case of XMC1x family, Digital supply voltage for microcontroller should be 3.3 volts.
SPI_MASTER	<ol style="list-style-type: none"> 1. For XMC14 devices: Odd parity error interrupt is kept on occurring even though the data transaction is proper.
SPI_SLAVE, I2C_SLAVE	<ol style="list-style-type: none"> 1. For XMC14 devices: Dual and quad modes are disabled due to data corruption. 2. For XMC48 devices: During a bulk transfer of data in Quad mode has data corruption (observed only in reception end). 3. In direct mode, in case of master requested bytes less than the slave response bytes then there is no time-out mechanism handled.

I2C_SLAVE	In direct mode, if the master requested bytes are less than the slave response bytes then there is no time-out mechanism handled. If slave is not ready to transmit and if the master is trying to receive data, master will wait endlessly due to clock stretch.
PDM_DIMMED_LED_LAMP	Internal reference using BCCU/CCU will not work in Light DCDC Driver card, due to the parasitic pad inductance which makes the generated reference value unstable.
ALL	When using Tasking compiler – recommended to use version 5.1r1 and above

Important Note:

- ❖ There will be a validation error message shown during the code generation, when DAVE projects with ADC APPs upgraded to September2016 released APP versions. The minimum sampling time allowed for default configuration is increased from 62.5 nanoseconds to 125 nanoseconds. Configure the GUI widget “Desired sampling time” to the allowable range and continue code generation to solve the validation error.
- ❖ The Update site of DAVE APPs, Device pack, Device Descriptions works with DAVE v4.1.4 or higher version. This update site must not be used with DAVE v4.1.2. We recommend using DAVE v4.3.2 or higher versions.
- ❖ The following APPs released in September2016 does not support XMC4700/XMC4800/XMC4300 and XMC1400 devices: ACIM_FREQ_CTRL, AUTOMATION, GLOBAL_POSIF, MOTOR_LIB, PWM_BC, and PWM_SVM. These APPs should not be used in these devices.

7 DAVE APPs Revision History

The revision history of APPs is described in individual APPs help document.