Migrating between STM32WB30/35/50/55 microcontrollers

Introduction

For designers of STM32 microcontroller applications, being able to smoothly replace one microcontroller with another from the same product family is an important asset. Migrating an application to a different microcontroller is often necessary when product requirements grow, putting extra demand on memory size, or increasing the number of I/Os. Cost reduction is another motivation to switch to smaller components and shrink the PCB area.

This document analyzes the key steps required for migrating between STM32WB30/35/50/55 microcontrollers, namely hardware, peripheral availability, firmware, security and tools. To better understand the information in this application note the end-user should be familiar with the STM32WB30/35/50/55 microcontrollers (see documents R1 and R2).

Table 1. Applicable products

Type	Part numbers
Microcontrollers	STM32WB30CE, STM32WB35CC, STM32BW35CE, STM32WB50CG,STM32WB55CC, STM32WB55CE, STM32WB55CG, STM32WB55RC, STM32W55RE, STM32WB55RG, STM32WB55VC, STM32WB55VE, STM32WB55VG, STM32WB55VY

1 General information

This document applies to STM32WB30/35/50/55 microcontrollers, based on Arm® Cortex® cores.

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

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Table 2. Reference documents and tools

Reference	Document ID	Title
R1	RM0434	Multiprotocol wireless 32-bit MCU Arm®-based Cortex®-M4 with FPU, Bluetooth®Low Energy and 802.15.4 radio solution(1)
R2	DS11929	Multiprotocol wireless 32-bit MCU Arm®-based Cortex®-M4 with FPU, Bluetooth® 5 and 802.15.4 radio solution(1)
R3	-	STM32CubeMX: video(1)
R4	AN5185	ST firmware upgrade services for STM32WB Series(1)
R5	AN5105	Getting started with touch sensing control on STM32 microcontrollers(1)

1. *Available at www.st.com.*

2 Hardware migration

This section presents a summary of the main hardware differences.

2.1 Package overview

The table below details the available packages for STM32WB30/35/50/55 microcontrollers.

Table 3. Package information

Package[1]	Number of pins	STM32WB55	STM32WB35	STM32WB50	STM32WB30	Part numbers
UFQFPN48	48	X	X	X	X	STM32WB55CxU STM32WB35CxU STM32WB50CGU STM32WB30CEU
VFQFPN68	68	X	-	-	-	STM32WB55RxV
WLCSP100	100	X	-	-	-	STM32WB55VxY
UFBGA129	129	X	-	-	-	STM32WB55VxQ

1. *"x" = available, "-" = device is not produced with this package.*

2.2 RF performance

The STM32WB30/35/50/55 microcontrollers embed a powerful and ultra-low power radio compliant with Bluetooth® Low Energy stack and with IEEE 802.15.4- 2011.

Table 4. Bluetooth Low Energy on-air data rate versus device

Bluetooth Low Energy on-air data rate	STM32WB55	STM32WB35	STM32WB50	STM32WB30
2 Mbit/s	X	X	-	-
1 Mbit/s	X	X	X	X

Note: For more details regarding RF electrical characteristics refer to R2.

2.3 Pinout differences

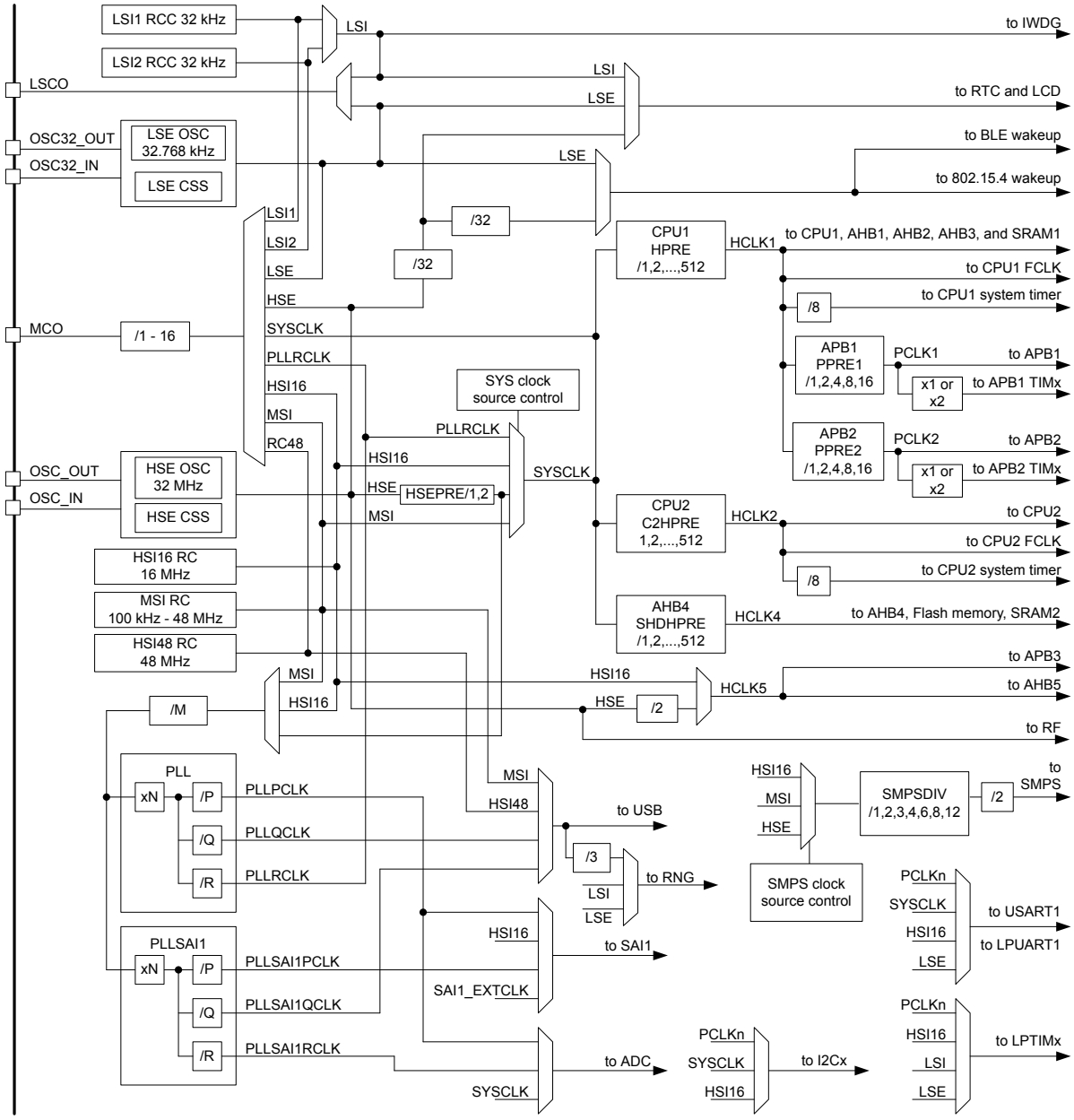
The STM32WB30/35/50/55 microcontrollers have different packages, therefore migration requires a particular attention regarding GPIOs and their associated alternate functions. The pin-to-pin compatible devices are listed below (for other packages refer to R2).

- STM32WB55 in UFQFPN48 package is pin-to-pin compatible with STM32WB35 in UFQFPN48 package.
- STM32WB50 in UFQFPN48 package is pin-to-pin compatible with STM32WB30 in UFQFPN48 package.

2.4 Clock tree

The clock tree for STM32WB35 and STM32WB55 is the same. For more details refer to Figure 1.

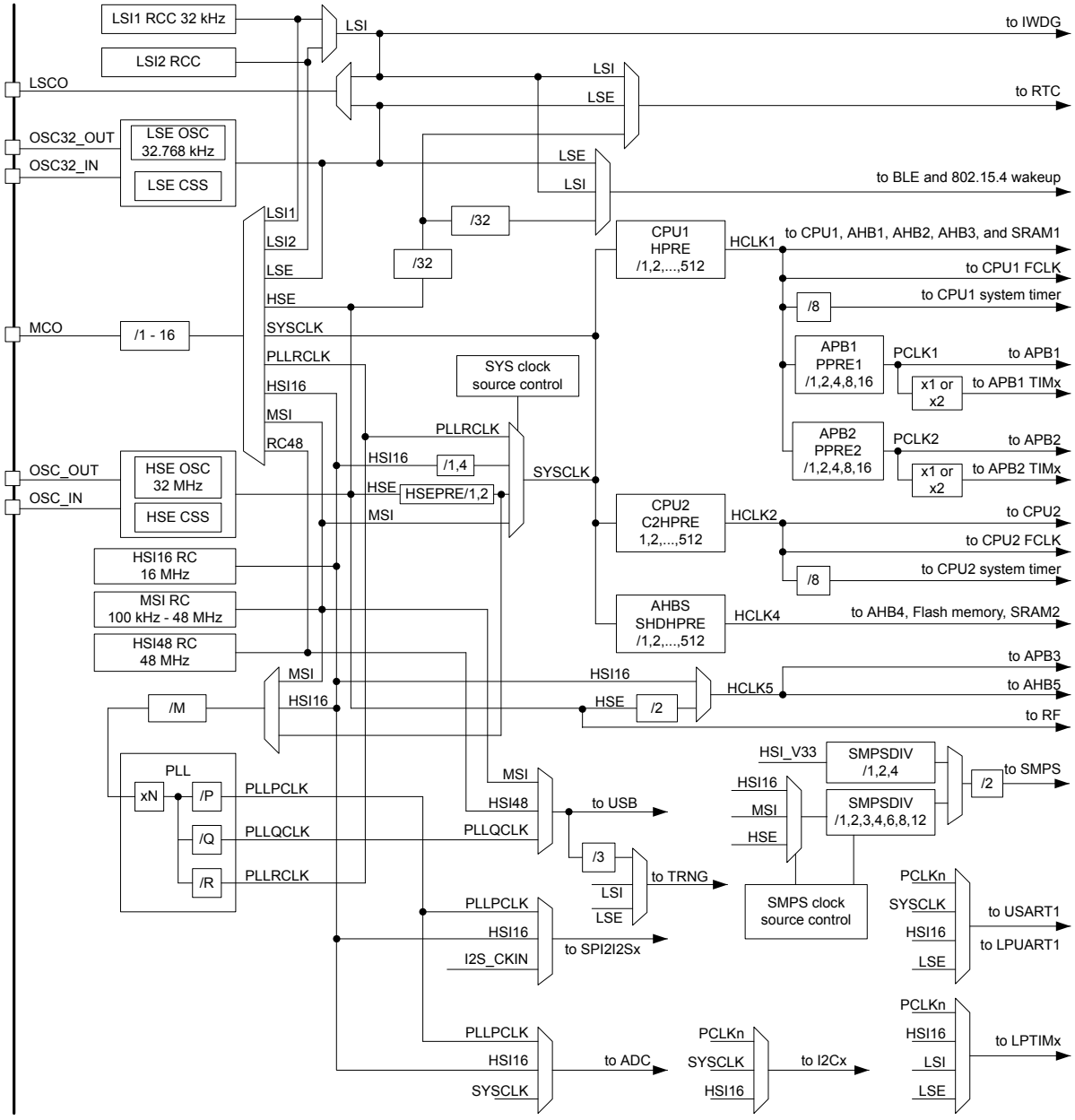
Figure 1. STM32WB55 and STM32WB35 clock tree



Note: The LCD is not available on STM32WB35xx devices.

The clock tree for STM32WB30 and STM32WB50 is the same. For more details refer to the figure below.

Figure 2. STM32WB50 and STM32WB30 clock tree



3 Peripheral migration

The table below summarizes the peripheral compatibility and features changes when migrating between STM32WB30/35/50/55 microcontrollers.

Table 5. Peripheral compatibility and features on STM32WB30/35/50/55

Peripheral / Features	STM32WB55				STM32WB35	STM32WB50	STM32WB30
	UFQFPN48	VFQFPN68	WLCSP100	UFBGA129	UFQFPN48	UFQFPN48	UFQFPN48
Bluetooth 5	Yes				Yes	Yes	Yes
IEEE 802.15.4	Yes				Yes	Yes	Yes
Concurrent mode	Yes				No	No	No
Dual core CPU (Arm Cortex-M4 + Cortex-M0+)	Yes				Yes	Yes	Yes
Flash memory	Up to 1 Mbyte				Up to 512 Kbytes	1 Mbyte	512 Kbytes
SRAM	Up to 256 Kbytes				96 Kbytes	128 Kbytes	96 Kbytes
QUADSPI	1				1	0	0
DMA	2 (14 channels)	2 (14 channels)	2 (14 channels)	2 (14 channels)	2 (14 channels)	1 (7 channels)	1 (7 channels)
16-bit advanced timer TIM1	1				1	1	1
32-bit general purpose timers TIM2	1				1	1	1
16-bit general purpose timers TIM16/TIM17	2				2	2	2
16-bit low-power timer LPTIM1/ LPTIM2	2				2	2	2
Watchdog timer	2				2	2	2
SysTick timer	1				1	1	1
SPI	1	2	2	2	1	1	1
I^2C (inter-integrated circuit)	2				2	1	2
USART (can be used as SPI)	1				1	1	1
LPUART	1				1	No	No
SAI (serial audio interface)	1 (dual channel)				1 (dual channel)	No	No
USB FS	1				1	No	No
RTC	1				1	1	1
Tamper pins	1	3	3	3	1	1	1
Wakeup pins	2	5	5	5	2	2	2
LCD (COMxSEG)	Yes (4 × 13)	Yes (4 × 28)	Yes (8 × 40 or 4 × 44)	Yes (8 × 40 or 4 × 44)	No	No	No
GPIOs	30	49	72	72	30	30	30
TSC (capacitive touch sensing)	No	6	18	18	No	No	No
12-bit ADC	13 channels	19 channels	19 channels	19 channels	13 channels	10 channels	13 channels
Internal Vref	Yes				Yes	Yes	Yes

Peripheral / Features	STM32WB55				STM32WB35	STM32WB50	STM32WB30
	UFQFPN48	VFQFPN68	WLCSP100	UFBGA129	UFQFPN48	UFQFPN48	UFQFPN48
Analog comparator (COMP)	2				2	No	No
Max CPU frequency	64 MHz				64 MHz	64 MHz	64 MHz
JTAG/SW-DP	1 / 1				1 / 1	0 / 1	0 / 1
ETM	Yes				No	No	No
PLL	2				1	1	1
Operating temperature range 1	-40 to +85 °C				-40 to +85 °C	-10 to +85 °C	-10 to +85 °C
Operating temperature range 2	-40 to +105 °C				-40 to +105 °C	No	No
Operating voltage	1.71 to 3.6 V				1.71 to 3.6 V	2.0 to 3.6 V	2.0 to 3.6 V
SMPS	Yes				Yes	No	No

3.1 Hardware changes description

This section provides further details regarding the modified or suppressed features during the migration process between STM32WB30/35/50/55 microcontrollers.

3.1.1 Flash memory mapping

Different Flash memory sizes are available according to the package selected, for more information refer to the table below.

Table 6. Flash memory sizes and their mapping

Device	Flash memory size (Kbytes)	Mapping addresses	Description
STM32WB55	256, 512, 1024	0x0800 0000 – 0x080F FFFF	The Flash memory start addresses are the same for all STM32WB30/35/50/55 microcontrollers.
STM32WB50	1024	0x0800 0000 – 0x080F FFFF	
STM32WB35	256, 512	0x0800 0000 – 0x0807 FFFF	
STM32WB30	512	0x0800 0000 – 0x0807 FFFF	

3.1.2 SRAM mapping

As shown in the table below the SRAM1 density of STM32WB35 and STM32WB30 is reduced compared with, respectively, STM32WB55 and STM32WB50.

Table 7. SRAM sizes and their mapping

Device	SRAM(1)	Size (Kbytes)	Mapping addresses	STM32WB5x versus STM32WB3x
STM32WB55	SRAM1 SRAM2a SRAM2b	64/192(2) 32 32 Total: 128/256	0x2000 0000 - 0x2002 FFFF 0x2003 0000 - 0x2003 7FFF 0x2003 8000 - 0x2003 FFFF	• SRAM1 size can be reduced from 192 to 32 Kbytes. SRAM1 starts at the same address on STM32WB55 and STM32WB35. • SRAM2a and SRAM2b have the same size and start at the same address on STM32WB55 and STM32WB35.
STM32WB35	SRAM1 SRAM2a SRAM2b	32 32 32 Total: 96	0x2000 0000 - 0x2000 7FFF 0x2003 0000 - 0x2003 7FFF 0x2003 8000 - 0x2003 FFFF	
STM32WB50	SRAM1 SRAM2a SRAM2b	64 32 32 Total: 128	0x2000 0000 - 0x2000 FFFF 0x2003 0000 - 0x2003 7FFF 0x2003 8000 - 0x2003 FFFF	• SRAM1 size is reduced from 64 to 32 Kbytes. SRAM1 starts at the same address on STM32WB50 and STM32WB30. • SRAM2a and SRAM2b have the same size and start at the same address on STM32WB50 and STM32WB30.
STM32WB30	SRAM1 SRAM2a SRAM2b	32 32 32 Total: 96	0x2000 0000 - 0x2000 7FFF 0x2003 0000 - 0x2003 7FFF 0x2003 8000 - 0x2003 FFFF	

1. *SRAM2a is retained in standby mode for all products.*
2. *There are two possible configurations, according to the device part number.*

3.1.3 Peripheral migration compatibility

This section presents a complete view of the number of peripherals available when migrating between STM32WB30/35/50/55 microcontrollers. For more details regarding electrical characteristics refer to R2.

Table 8. Peripheral compatibility analysis

Peripheral	STM32WB55				STM32WB35	STM32WB50	STM32WB30
	UFQFPN48	VFQFPN68	WLCSP100	UFBGA129	UFQFPN48	UFQFPN48	UFQFPN48
QUADSPI	1	1	1	1	1	0	0
DMA (7 channels)	2	2	2	2	2	1	1
SPI	1	2	2	2	1	1	1
I^2C (inter-integrated circuit)	2	2	2	2	2	1	1
SAI (serial audio interface)	1	1	1	1	1	0	0
LPUART(1)	1	1	1	1	1	0	0
USB(2)	1	1	1	1	1	0	0
ADC(3)	1 × 13 channels	1 × 19 channels	1 × 19 channels	1 × 19 channels	1 × 13 channels	1 × 13 channels	1 × 13 channels
COMP	2	2	2	2	2	0	0
GPIOs(4)	30	49	72	72	30	30	30
TSC(5)	0	6	18	18	0	0	0
LCD(6)	4 × 13	4 × 28	8 × 40 or 4 × 44	8 × 40 or 4 × 44	0	0	0
Tamper pins	1	3	3	3	1	1	1
JTAG/SWD(7)	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	0 / 1	0 / 1
ETM (embedded trace macrocell)	No	No	Yes	Yes	No	No	No
PLL (phase-locked loop)	2	2	2	2	2	1	1

1. *No LPUART on STM32WB50 and STM32WB30 microcontrollers.*
2. *No USB on STM32WB50 and STM32WB30 microcontrollers.*
3. *For the ADC sampling rate refer to Table 9.*
4. *STM32WB30/35/50/55 microcontrollers in UFQFPN48 package are pin-to-pin compatible.*
5. *Number of keys including the shield that can be driven with the TSC peripheral. For more information about TSC and connection of sensors refer to R5.*
6. *LCD is not available on STM32WB35, STM32WB50 and STM32WB30 microcontrollers.*
7. *For all devices JTAG, if present, is performed using five GPIOs (PA13, PA14, PA15, PB3, PB4). SWD interface is performed using only two GPIOs (PA13 and PA14).*

Table 9. **ADC sampling rate**

AD sampling rate (Mbit/s)						
Sampling rate resolution	STM32WB55		STM32WB35		STM32WB50	STM32WB30
	Fast channels	Slow channels	Fast channels	Slow channels		
12 bits	4.26	3.36	4.26	3.36	2.13	2.13
10 bits	4.92	4.00	4.92	4.00	2.46	2.46
8 bits	5.81	4.57	5.81	4.57	2.91	2.91
6 bits	7.11	7.11	7.11	7.11	3.55	3.55

4 Software migration

This section gives an overview of the possible use-cases, and information on the available free memory space for Flash memory and SRAM when implementing the different scenarios.

The wireless stack and the application firmware can be upgraded over-the-air (OTA feature).

4.1 Memory density

Table 10. Flash memory and SRAM density

Footprint (Kbytes)	STM32WB55				STM32WB35		STM32WB50	STM32WB30
	Density 1	Density 2	Density 3	Density 4	Density 1	Density 2		
Flash memory	256	512	640	1024	256	512	1024	512
SRAM1	64	192	192	192	32	32	128	32
SRAM2a	32	32	32	32	32	32	32	32
SRAM2b	32	32	32	32	32	32	32	32

4.2 Memory space availability

The following tables give the free memory space available after implementing each scenario (a dash indicates "Not supported"). The values (expressed in KBytes) are estimated and can change according to the scenario and the code used by Cortex-M0+.

Table 11. STM32WB55 free memory space by density, without OTA

STM32WB_Copro_Wireless_Binaries	Density 1				Density 2				Density 3				Density 4			
	Flash(1)	SRAM1	SRAM2a	SRAM2b	Flash(1)	SRAM1	SRAM2a	SRAM2b	Flash(1)	SRAM1	SRAM2a	SRAM2b	Flash	SRAM1	SRAM2a	SRAM2b
stm32wb5x_BLE_Stack_full_fw	92	64	10	15	348	192	10	15	476	192	10	15	812	192	10	15
stm32wb5x_BLE_Stack_light_fw	132	64	18	13	388	192	18	13	516	192	18	13	852	192	18	13
stm32wb5x_BLE_HCILayer_fw	176	64	19	25 (2)	432	192	19	25 (2)	560	192	19	25 (2)	896	192	19	25 (2)
stm32wb5x_BLE_HCI_AdvScan_fw	216	64	19	25 (2)	472	192	23	25 (2)	600	192	23	25 (2)	936	192	23	25 (2)
stm32wb5x_BLE_LLD_fw	220	64	31	16	476	192	31	16	604	192	31	16	940	192	31	16
stm32wb5x_Thread_FTD_fw	-	-	-	-	156	192	12	0	284	192	12	0	620	192	12	0
stm32wb5x_Thread_MTD_fw	-	-	-	-	244	192	12	0	372	192	12	0	708	192	12	0
stm32wb5x_Zigbee_FFD_fw	-	-	-	-	204	192	4	0	332	192	4	0	668	192	4	0
stm32wb5x_Zigbee_RFD_fw	8	64	4	0	264	192	4	0	392	192	4	0	728	192	4	0
stm32wb5x_BLE_Thread_static_fw	-	-	-	-	12	192	12	0	140	192	12	0	476	192	12	0
stm32wb5x_BLE_Thread_dynamic_fw	-	-	-	-	4	192	12	0	132	192	12	0	468	192	12	0
stm32wb5x_BLE_Zigbee_FFD_static_fw	-	-	-	-	28	192	12	0	156	192	12	0	492	192	12	0
stm32wb5x_BLE_Zigbee_RFD_static_fw	-	-	-	-	84	192	12	0	212	192	12	0	548	192	12	0
stm32wb5x_BLE_Zigbee_FFD_dynamic_fw	-	-	-	-	20	192	8	0	148	192	8	0	484	192	8	0

STM32WB_Copro_Wireless_Binaries	Density 1				Density 2				Density 3				Density 4			
	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash	SRAM1	SRAM2a	SRAM2b
stm32wb5x_BLE_Zigbee_RFD_dynamic_fw	-	-	-	-	76	192	8	0	204	192	8	0	540	192	8	0
stm32wb5x_Mac_802_15_4_fw	188	64	4	0	444	192	4	0	572	192	4	0	908	192	4	0
stm32wb5x_802_15_4_valid_cli	168	64	0	12	424	192	0	12	552	192	0	12	888	192	0	12

1. *When smaller than 1024 KB the FUS is an internally secured memory.*
2. *When FUS (48 KB Flash and 16 KB SRAM2b) is executed available SRAM2b is reduced by 16 KB.*

Table 12. STM32WB35/30/50 free memory space by density, without OTA

STM32WB_Copro_Wireless_Binaries	STM32WB35								STM32WB30				STM32WB50			
	Density 1				Density 2											
	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash	SRAM1	SRAM2a	SRAM2b	Flash	SRAM1	SRAM2a	SRAM2b
stm32wb5x_BLE_Stack_full_fw	92	32	10	15	348	32	10	15	348	32	10	15	812	128	10	15
stm32wb5x_BLE_Stack_light_fw	132	32	18	13	388	32	18	13	388	32	18	13	852	128	18	13
stm32wb5x_BLE_HCILayer_fw	176	32	19	25 (2)	432	32	19	25 (2)	432	32	19	25 (2)	896	128	19	25 (2)
stm32wb5x_BLE_HCI_AdvScan_fw	216	32	23	25 (2)	472	32	23	25 (2)	472	32	23	25 (2)	936	128	23	25 (2)
stm32wb5x_BLE_LLD_fw	220	32	31	16	476	32	31	16	476	32	31	16	940	128	31	16
stm32wb5x_Thread_FTD_fw	-	-	-	-	156	32	12	0	156	32	12	0	620	128	12	0
stm32wb5x_Thread_MTD_fw	-	-	-	-	244	32	12	0	244	32	12	0	708	128	12	0
stm32wb5x_Zigbee_FFD_fw	-	-	-	-	204	32	4	0	204	32	4	0	668	128	4	0
stm32wb5x_Zigbee_RFD_fw	8	32	4	0	264	32	4	0	264	32	4	0	728	128	4	0
stm32wb5x_BLE_Thread_static_fw	-	-	-	-	12	0	12	0	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Thread_dynamic_fw	-	-	-	-	4	0	12	0	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_FFD_static_fw	-	-	-	-	28	32	12	0	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_RFD_static_fw	-	-	-	-	84	32	12	0	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_FFD_dynamic_fw	-	-	-	-	20	32	8	0	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_RFD_dynamic_fw	-	-	-	-	76	32	8	0	-	-	-	-	-	-	-	-
stm32wb5x_Mac_802_15_4_fw	188	32	4	0	444	32	4	0	444	32	4	0	908	128	4	0
stm32wb5x_802_15_4_valid_cli	168	32	0	12	424	32	0	12	424	32	0	12	888	128	0	12

1. *FUS is an internally secured memory.*
2. *When FUS (48 KB Flash and 16 KB SRAM2b) is executed available SRAM2b is reduced by 16 KB.*

Table 13. Cortex M0+ code size

STM32Cube_FW_WB_V1.10	STM32WB55				STM32WB35				STM32WB50				STM32WB30			
	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash[1]	SRAM1	SRAM2a	SRAM2b	Flash[1]	SRAM1	SRAM2a	SRAM2b
stm32wb5x_BLE_Stack_full_fw	164	0	22	17	164	0	22	17	164	0	22	17	164	0	22	17
stm32wb5x_BLE_Stack_light_fw	124	0	14	19	124	0	14	19	124	0	14	19	124	0	14	19
stm32wb5x_BLE_HCILayer_fw	80	0	13	7	80	0	13	7	80	0	13	7	80	0	13	7
stm32wb5x_BLE_HCI_AdvScan_fw	40	0	9	7	40	0	9	7	40	0	9	7	40	0	9	7
stm32wb5x_BLE_LLD_fw	36	0	1	16	36	0	1	16	36	0	1	16	36	0	1	16
stm32wb5x_Thread_FTD_fw	356	0	20	32	356	0	20	32	356	0	20	32	356	0	20	32
stm32wb5x_Thread_MTD_fw	268	0	20	32	268	0	20	32	268	0	20	32	268	0	20	32
stm32wb5x_Zigbee_FFD_fw	308	0	28	32	308	0	28	32	308	0	28	32	308	0	28	32
stm32wb5x_Zigbee_RFD_fw	248	0	28	32	248	0	28	32	248	0	28	32	248	0	28	32
stm32wb5x_BLE_Thread_static_fw	500	32	20	32	500	32	20	32	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Thread_dynamic_fw	508	32	20	32	508	32	20	32	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_FFD_static_fw	484	0	20	32	484	0	20	32	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_RFD_static_fw	428	0	20	32	428	0	20	32	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_FFD_dynamic_fw	492	0	24	32	492	0	24	32	-	-	-	-	-	-	-	-
stm32wb5x_BLE_Zigbee_RFD_dynamic_fw	436	0	24	32	436	0	24	32	-	-	-	-	-	-	-	-
stm32wb5x_Mac_802_15_4_fw	68	0	28	32	68	0	28	32	68	0	28	32	68	0	28	32
stm32wb5x_802_15_4_valid_cli	88	0	32	20	88	0	32	20	88	0	32	20	88	0	32	20

1. *Need to account for the size needed to download the updated stack, refer to AN5185 for the computation.*

4.3 Application examples

The following table gives examples of footprints, depending upon the application. The values of memory size (expressed in Kbytes) are estimated and can change according to the scenario.

Table 14. Used memory (Kbytes)

Example	Cortex M0+[1]				FUS		Cortex M4 (application)[2]				Total memory used (without OTA)			
	Flash	SRAM1	SRAM2a	SRAM2b	Flash	SRAM2b	Flash	SRAM1	SRAM2a	SRAM2b	Flash	SRAM1	SRAM2a	SRAM2b
Heart rate	164	0	22	17	48	16	16	5	2.6	0	228	5	25	17
Zigbee_OnOff_Client_Distrib (OnOff Cluster)	308	0	28	32	48	16	56	114	2.0	0	412	114	30	32
BLE_Zigbee_Dyn (Zigbee FFD /BLE)	484	0	24	32	48	16	56	114	4.0	0	588	114	28	32

1. *Code from STM32Cube_FW_WB_V1.10 delivery*
2. *Code compiled with EWARM version IAR™ 8.20.2*

4.4 HAL (hardware abstraction layer)

The STM32 hardware abstraction layer is available, the prototype of the HAL is for all devices, only its implementation differs. The update of the HAL implementation of the HAL is facilitated through STM32CubeMX, refer to R3 for more information.

4.5 Wireless stack

The wireless stack is available for each device and the setup uses the same process for all devices. For more information refer to R3.

4.6 FUS (firmware upgrade service)

The firmware upgrade service is available for each device and the setup uses the same process for all devices. For more information refer to R4.

5 Security and identifier migration

The table below summarizes security and identifier compatibility and features changes when migrating between STM32WB30/35/50/55 microcontrollers.

Table 15. Security and identifier compatibility

Features	STM32WBx5	STM32WBx0
Secure firmware installation (SFI) for Bluetooth Low Energy and 802.15.4 SW stack	Yes	Yes
Hardware encryption AES maximum 256-bit for the application, the Bluetooth Low Energy and IEEE802.15.4	3	2
Customer key storage/key manager services	Yes	Yes
HW public key authority (PKA)	Yes	Yes
Cryptographic algorithms: RSA, Diffie-Helman, ECC over GF(p)	Yes	Yes
True random number generator (RNG)	Yes	Yes
Sector protection against R/W operation (PCROP)	Yes	Yes
CRC calculation unit	Yes	Yes
Die information: 96-bit unique identifier	Yes	Yes
IEEE 64-bit unique identifier. Possibility to derive 802.15.4 64-bit and Bluetooth Low Energy 48-bit.	Yes	Yes

6 Tools

The tools listed below are for all STM32WB30/35/50/55 devices and are backward compatible.

- STM32CubeMX
- STM32CubeProgrammer
- STM32CubeMonitor-RF

STM32CubeMX is recommended for the migration between STM32WB30/35/50/55 microcontrollers.

Revision history

Table 16. **Document revision history**

Date	Revision	Changes
03-Sept-2020	1	Initial release.
26-Jan-2021	2	Updated Section 1 General information. Updated Table 2. Reference documents and tools and Table 10. Flash memory and SRAM density. Updated tables in Section 4.2 Memory space availability. Added Section 4.3 Application examples. Minor text edits across the whole document.

Contents

List of tables

List of figures