



life.augmented

# STM32H7 series Powered by Arm<sup>®</sup> Cortex<sup>®</sup>-M7 & -M4 releasing your creativity



# STM32H7

## high performance

### High-performance MCUs with Arm® Cortex®-M7 core and Arm® Cortex®-M4

The STM32H7 series offer the performance of the Arm® Cortex®-M7 core running up to 550 MHz and add a 240 MHz Arm® Cortex®-M4 core in dual-core lines. Combined with a smart architecture based on a multi-power domain, developers can always use the best configuration to optimize data transfers and CPU load while minding the power budget. With its embedded hardware accelerators and its extensive digital and analog peripherals, the feature-rich STM32H7 is ideal for industrial environments where fast reaction time is essential. The HMI components (graphic and audio support) allow the device to provide an outstanding user-experience.

#### CORE, MEMORIES AND ACCELERATION

- Arm® Cortex®-M7 core up to 480 MHz and Arm® Cortex®-M4\* core up to 240 MHz in dual core variants
- Arm® Cortex®-M7 core up to 550 MHz in single core variants
- Up to 32 KB + 32 KB I/D L1 Cache
- Double-precision FPU
- 4 x DMA controllers
- 128 KB up to 2 MB dual bank Flash and up to 1.4 MB RAM

Note: \* only in STM32H745, STM32H755, STM32H747 and STM32H757

#### CONNECTIVITY

- Up to 2 x USB 2.0 OTG FS/HS
- USART, UART, SPI, and I<sup>2</sup>C
- 2 x CAN (1 x FD and 1 x TT/FD)
- Ethernet MAC
- FMC, Quad-SPI and Dual Octal-SPI
- 2 x SDMMC

#### AUDIO

- 3 x I<sup>2</sup>S + audio PLL
- 4 x SAI
- 2 x 12-bit DAC
- SPDIF-RX

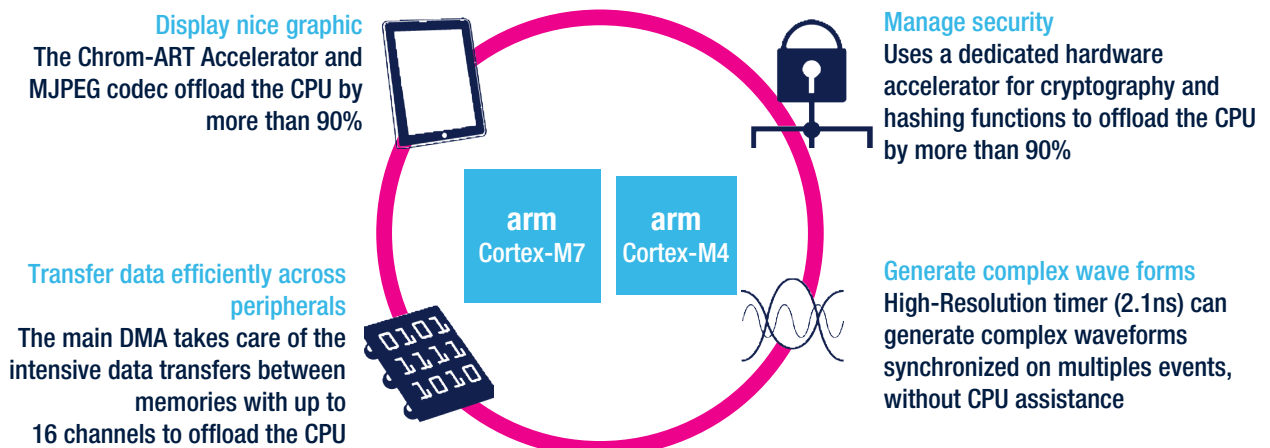
#### GRAPHICS

- LCD TFT controller
- JPEG Codec
- Chrom-ART Accelerator™
- Chrom-GRC™

#### OTHER

- Optional crypto
- DFSDM
- 16- and 32-bit timers
- Up to 3x ADCs with 16-bit max. resolution (up to 3.6 MSPS)
- 1 x ADC with 12-bit max. resolution (up to 5 MSPS)
- Analog (comp, AOP)
- Power supply 1.7V to 3.6V down to 1.62V in regulator bypass mode
- Up to 140 °C supported as maximum junction temperature

### Two powerful cores supported by a robust architecture



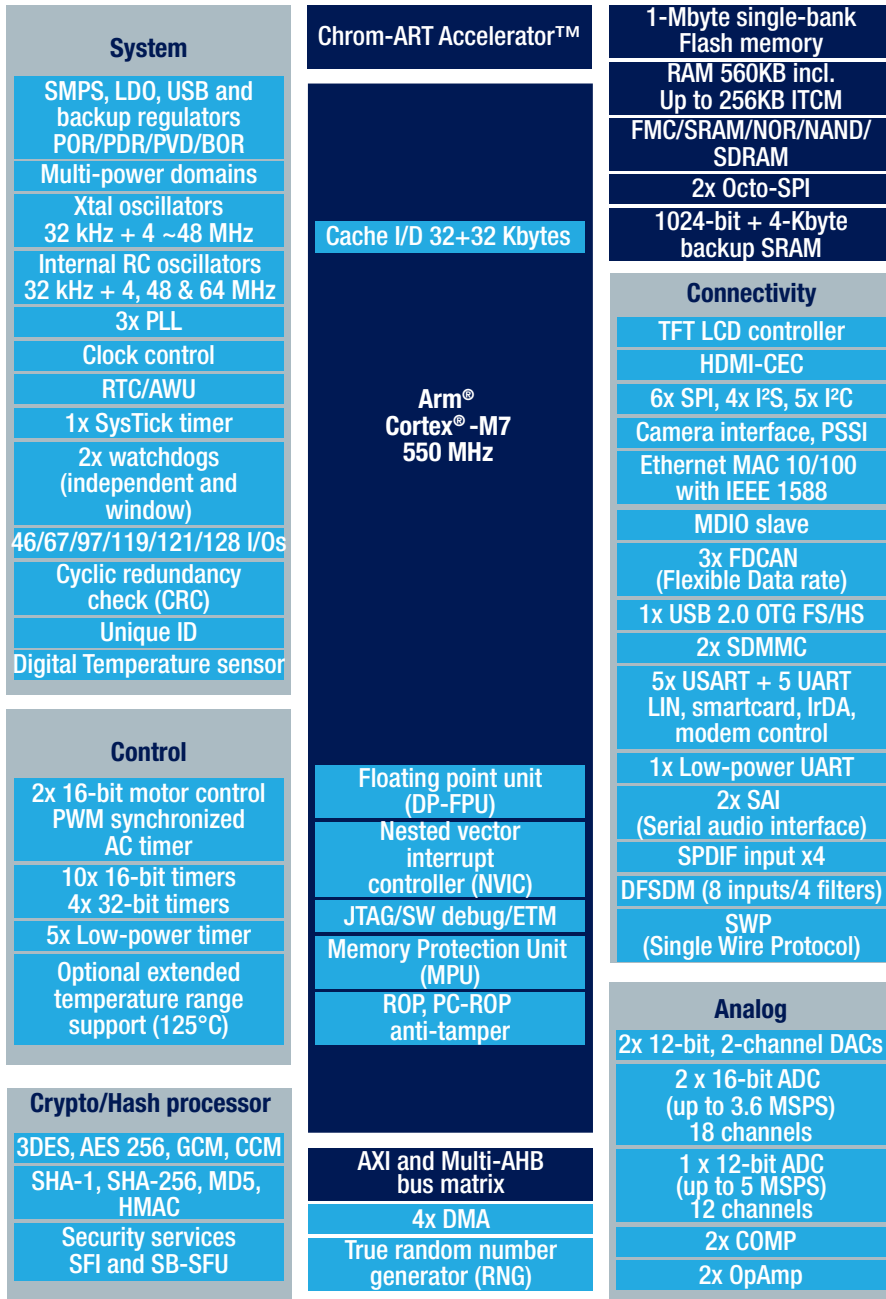
## UP TO SEVEN LINES FOR MORE VERSATILITY

<b>CORE, MEMORIES AND ACCELERATION</b> <ul style="list-style-type: none"> <li>Single-core Cortex-M7 up to 550 MHz</li> <li>Dual-core Cortex-M7 480 MHz and Cortex-M4 240 MHz</li> <li>Flash and RAM acceleration</li> <li>SP-FPU and DP-FPU</li> <li>4 x DMA</li> <li>Mathematics (only H723/733/725/735/730)</li> </ul>	Product line	f <sub>CPU</sub> (MHz)	Dual-Bank Flash memory (bytes)	RAM (bytes)	OctoSPI & OTFDEC <sup>3</sup>	Ethernet	Graphic	Power supply	Stop mode (typical) / RAM retention	
	<b>Dual-core lines</b>									
	<b>STM32H747/757<sup>1</sup></b>	480 + 240	Up to 2 Mbytes	1 Mbyte (incl.128 Kbytes DTCM + 64 Kbytes ITCM + 64 Kbytes backup <sup>1</sup> ) + 4 Kbytes backup <sup>2</sup>				TFT-LCD JPEG codec MIPI-DSI	SMPS + LDO	360 µA / 1MB 250 µA / 768KB
	<b>STM32H745/755<sup>1</sup></b>	480 + 240	Up to 2 Mbytes	1 Mbyte (incl.128 Kbytes DTCM + 64 Kbytes ITCM + 64 Kbytes backup <sup>1</sup> ) + 4 Kbytes backup <sup>2</sup>				TFT-LCD JPEG codec	SMPS + LDO	360 µA / 1MB 250 µA / 768KB
	<b>Single-core lines</b>									
	<b>STM32H7A3/7B3<sup>1</sup></b>	280	Up to 2 Mbytes	1,4MB (incl.128K DTCM, 64K ITCM, 1184K+SRAM, 4K backup)				TFT-LCD JPEG codec Chrom-GRC	SMPS + LDO	32 µA / 1.4MB 28 µA / 32KB
	<b>STM32H743/753<sup>1</sup></b>	480	Up to 2 Mbytes	1 Mbyte (incl.128 Kbytes DTCM + 64 Kbytes ITCM + 64 Kbytes backup <sup>1</sup> ) + 4 Kbytes backup <sup>2</sup>				TFT-LCD JPEG codec	LDO	1270 µA / 1MB 910 µA / 768KB
	<b>STM32H742</b>	480	Up to 2 Mbytes	692 Kbytes (incl.128 Kbytes DTCM + 64 Kbytes ITCM + 16 Kbytes backup <sup>1</sup> ) + 4 Kbytes backup <sup>2</sup>					LDO	1270 µA / 692KB 910 µA / 704KB
	<b>STM32H725/735<sup>3</sup></b>	550	Up to 1 Mbyte	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)				TFT-LCD	SMPS <sup>5</sup> + LDO	200 µA / 564KB
	<b>STM32H723/733<sup>3</sup></b>	550	Up to 1 Mbyte	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)				TFT-LCD	LDO	520 µA / 564KB
<b>Value line</b>										
<b>STM32H7B0</b>	280	128 Kbytes	1,4MB (incl.128K DTCM, 64K ITCM, 1184K+SRAM, 4K backup)				TFT-LCD JPEG codec Chrom-GRC	SMPS + LDO	32 µA / 1.4MB 28 µA / 32KB	
<b>STM32H750</b>	480	128 Kbytes	1 Mbyte (incl.128 Kbytes DTCM + 64 Kbytes ITCM + 64 Kbytes backup <sup>1</sup> ) + 4 Kbytes backup <sup>2</sup>				TFT-LCD JPEG codec	LDO	1270 µA / 1MB 910 µA / 768KB	
<b>STM32H730</b>	550	128 Kbytes	564KB (incl.128K DTCM, 432KB Syst + 4K bckup)				TFT-LCD	SMPS <sup>4</sup> + LDO	200 µA / 564KB 520 µA / 564KB	

### Notes :

- Optional - dedicated CPN, STM32H733, STM32H735, STM32H753, STM32H755, STM32H757, STM32H7B3 for the Crypto Variants
- 125 °C ambient / 140 °C junction. Dedicated part numbers on STM32H725/H735, STM32H745/H755
- Crypto and Security services on CPN : STM32H733, STM32H735 and STM32H730
- SMPS available only on STM32H730Q CPN
- SMPS only on the QFN68 variant (no LDO)

# STM32H735 BLOCK DIAGRAM



**STM32H7 ONLINE TRAINING**  
[www.st.com/stm32h7-online-training](http://www.st.com/stm32h7-online-training)

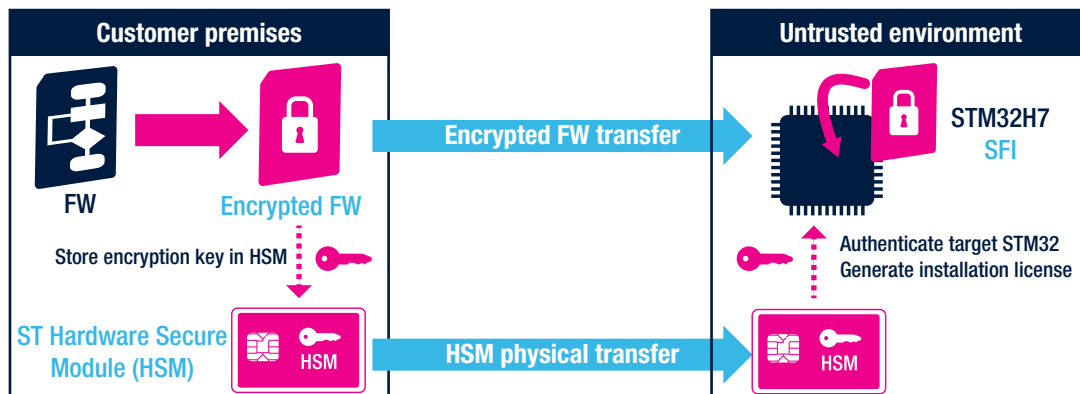


The STM32Trust ecosystem combines knowledge, design tools, and ready-to-use original ST software to build strong cyber-protection into new IoT devices, leveraging industry best-practices.  
[www.st.com/stm32trust](http://www.st.com/stm32trust)



## Secure your production flow with Secure Firmware Install (SFI\*)

Manage STM32 authentication, firmware decryption and installation



Note: \*optional – SFI service available on specific part numbers



# STM32H7

## ecosystem

### HARDWARE TOOLS

[www.st.com/stm32hardwaretools](http://www.st.com/stm32hardwaretools)

Part numbers	Product Line	Core	SMPS	Crypto-HASH	Display	Ethernet	NOR Serial Flash (Mbits)	SDRAM (Mbits)	HyperRAM™	SRAM (Mbits)	NOR (Mbits)	eMMC (Gbytes)	SDCard (Bbytes)	
<b>Nucleo-144 boards</b>														
	NUCLEO-H723ZG	General-purpose	1	-	No	No	Yes	No	-	-	-	-	-	
	NUCLEO-H743ZI2	General-purpose	1	-	No	No	Yes	No	-	-	-	-	-	
	NUCLEO-H745ZI-Q	Industrial	2	Internal	No	No	Yes	No	-	-	-	-	-	
	NUCLEO-H753ZI	General-purpose	1	-	Yes	No	Yes	No	-	-	-	-	-	
	NUCLEO-H755ZI-Q	Industrial	2	Internal	Yes	No	Yes	No	-	-	-	-	-	
	NUCLEO-H7A3ZI-Q	General-purpose	1	Internal	Yes	No	No	No	-	-	-	-	-	
<b>Discovery kits</b>														
	STM32H735G-DK	Industrial	1	Internal	Yes	4.3" RGB	Yes	1 x 512 Mb Octo-SPI	-	128 Mb	-	-	-	
	STM32H745I-DISCO	Industrial	2	Internal	No	4.3" RGB	Yes	2 x 512 Mb Quad-SPI	128 Mb	-	-	4 GB	-	
	STM32H747I-DISCO	Graphic	2	Internal	No	4" DSI	Yes	2 x 512 Mb Quad-SPI	256 Mb	-	-	-	-	
	STM32H747I-DISCO1	Graphic	2	Internal	No	No	Yes	2 x 512 Mb Quad-SPI	256 Mb	-	-	-	-	
	STM32H750B-DK	Value	1	-	Yes	4.3" RGB	Yes	2 x 512 Mb Quad-SPI	128 Mb	-	-	4 GB	-	
	STM32H7B3I-DK	Graphic	1	Internal	Yes	4.3" RGB	No	1 x 512 Mb Octo-SPI	128 Mb	-	-	-	-	
<b>Evaluation boards</b>														
	STM32H743I-EVAL2	General-purpose	1	-	No	5.7" RGB	Yes	2 x 512 Mb Quad-SPI	256 Mb	-	16 Mb	128 Mb	-	8 GB
	STM32H753I-EVAL2	General-purpose	1	-	Yes	5.7" RGB	Yes	2 x 512 Mb Quad-SPI	256 Mb	-	16 Mb	128 Mb	-	8 GB
	STM32H747I-EVAL	Graphic	2	Internal	No	4" DSI	Yes	2 x 512 Mb Quad-SPI	256 Mb	-	16 Mb	128 Mb	-	8 GB
	STM32H757I-EVAL	Graphic	2	Internal	Yes	4" DSI	Yes	2 x 512 Mb Quad-SPI	256 Mb	-	16 Mb	128 Mb	-	8 GB
	STM32H7B3I-EVAL	Graphic	1	Internal	Yes	7" RGB	No	1 x 512 Mb Octo-SPI	256 Mb	-	16 Mb	128 Mb	-	-

# SOFTWARE TOOLS

[www.st.com/stm32softwaretools](http://www.st.com/stm32softwaretools)

## STM32CubeMX



Windows  
macOS®

## IDEs



Free IDE

## STM32CubeProgrammer STM32CubeMonitor



STM32  
CubeProgrammer

STM32  
CubeMonitor

**Note:**

- Arm Keil, IAR-EWARM, STM32CubeIDE and ac6 support multi-core debugging



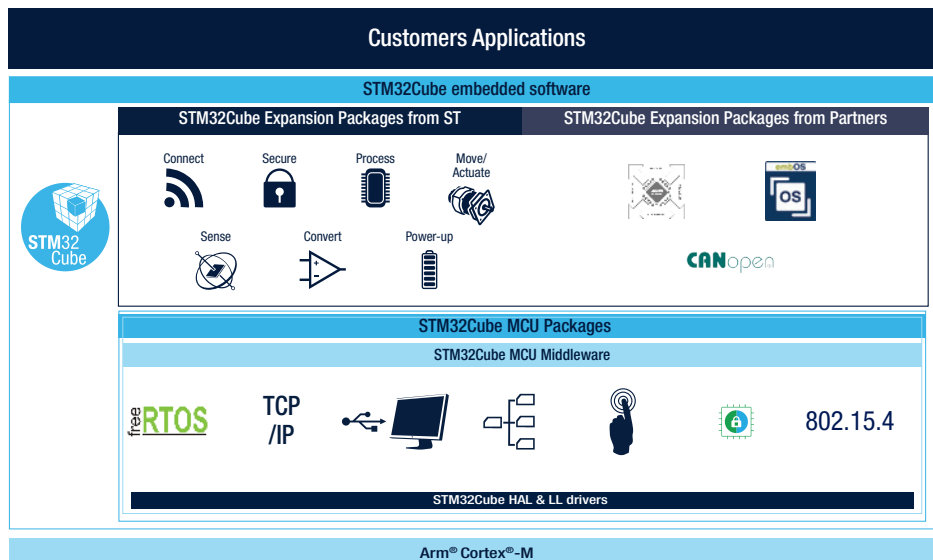
Configure and generate code

Compile and debug

Monitor & program

# EMBEDDED SOFTWARE

[www.st.com/stm32embeddedsoftware](http://www.st.com/stm32embeddedsoftware)



### ST COMMUNITY

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### STM32 EDUCATION

Bring your STM32 project to life with the free educational and training resources available on [st.com/stm32education](http://st.com/stm32education)

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Order code: BRSTM32H70920

