STM32F7x0 & STM32H750
High-performance Value lines

STM32 **F7**

STM32 **H7**

Extra flexibility to create affordable performance-oriented systems

Focusing on real-time performance and scalability, ST's new Value lines lower the barrier to access STM32F7 and H7 microcontrollers with products keeping just the essential Flash memory.

With execution performance up to 2424 CoreMark at the heart of a secure, power-efficient architecture, the new Value line microcontrolles are the entry point to IoT innovation in medical, industrial and consumer applications.

STM32F730, STM32F750 and STM32H750 devices embed 64- or 128-Kbyte Flash memory to accommodate the most critical and secure code, while supporting external memory extension using NOR, NAND, SDRAM and dual-mode Quad SPI Flash memory.

CORE, MEMORIES

- Arm® Cortex®-M7 core up to 480 MHz
- Up to 16-Kbyte data and 16-Kbyte instruction cache[1]
- Up to 4 DMA controllers
- Up to 128-Kbyte Flash memory[1] and 1-Mbyte RAM[1]
- ITCM/DTCM [2] : up to 64-Kbyte ITCM RAM + 128-Kbyte DTCM RAM for time-critical routines

CONNECTIVITY

- Up to 2 x USB 2.0 OTG FS/HS with optional embedded HS PHY)
- USART, UART, SPI, and I²C
- Up to 2 x CAN (CAN FD on STM32H750)
- Ethernet MAC
- FMC (supporting SDRAM in 32-bit mode up to 133 MHz) and dual-mode Quad SPI Flash memory
- 2 x SDMMC

EMBEDDED FLASH

- Secure Boot for customer Root of Trust
- Fast boot time
- High-execution speed from ultra fast embedded memory

ENERGY EFFICIENT

- Flexible power mode
- Gated power domains
- On-chip power management

AUDIO

- 3 x I²S + audio PLL
- 4 x SAI
- 2 x 12-bit DAC
- SPDIF-RX

GRAPHICS

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

OTHER

- 8- to 14-bit Camera interface
- Crypto and Hash hardware acceleration
- DFSDM[3] interface to connect microphone MEMs or sigma delta ADC front ends
- 16- and 32-bit timers
- 3x ADCs with up to 16-bit resolution (up to 3.6 MSPS)
- Analog (comparators and Op amps)
- Power supply down to 1.62 V

STM32F7X0 & STM32H750 VALUE LINE BLOCK DIAGRAM

STM32F730	STM32F750	STM32H750
Arm® Cortex®-M7, MPU, ETM		
216 MHz, SFPU		480 MHz, DFPU
2 x 8-Kbyte cache	2 x 4-Kbyte cache	2 x 16-Kbyte cache with ECC

Embedded memories

256-Kbyte RAM including 64-Kbyte DTCM	320-Kbyte RAM including 64-Kbyte DTCM	1-Mbyte RAM including 128-Kbyte DTCM
16-Kbyte ITCM		64-Kbyte ITCM with ECC
64-Kbyte Flash memory		128-Kbyte Flash memory with ECC
4-Kbyte backup RAM		
DMAs		DMAs+ Main DMA

Memory Interfaces

FMC (SDRAM, NOR, NAND)

Dual-mode Quad SPI Flash memory

2 x SD/SDIO/MMC

Accelerators

ART Accelerator™		-
-	Chrom-ART Accelerator™	
-	-	JPEG codec
Crypto/Hash accelerator and tamper detection		

Peripherals

Advanced analog

Advanced connectivity

HARDWARE TOOLS

All existing STM32F7 and STM32H7 hardware development tools are fully compatible with the new Value lines.

Evaluation boards

STM32756G-EVAL2, STM32F779I-EVAL, STM32H753I-EVAL

Discovery kits

STM32F746G-DISCO, STM32F723E-DISCO, STM32F7508-DK, STM32H750B-DK

Nucleo-144 development boards

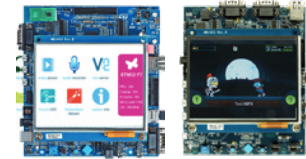NUCLEO-F722ZE, NUCLEO-F756ZG, NUCLEO-H753ZI

X-CUBE-SBSFU: An efficient software library solution for Secure Boot and Secure Firmware Update operations for embedded applications, built on top of STM32Cube software technology.

STM32 HIGH-PERFORMANCE VALUE LINES

Product lines	Core	f_{CPU} (MHz)	ID cache (KB)	ITCM/DTCM (KB)	Flash memory (KB)	RAM (KB)	Graphic	Advanced analog	USB OTG	Ethernet	Camera I/F	CAN	Security & Crypto/Hash acceleration	Packages
STM32H750	CM7	480	16+16 with ECC	64/128 with ECC	128 with ECC	864	Chrom-ART Accelerator™ TFT controller JPEG Codec	3x 16-bit ADCs (3.6 MSPS, up to 36 channels), 2x Opamps, 2x Comparators, 2x 12-bit DACs	2	1	1	1 TTFD CAN, 1 FDCAN	Yes, PCROP, SFI[6], SBSFU[7]	LQFP 100, UFBGA 176[8], TFBGA 240[9]
STM32F750	CM7	216	4+4	16/64	64	256	Chrom-ART Accelerator™ TFT controller	3x 12-bit ADCs (2.4 MSPS, up to 24 channels), 2x 12-bit DACs	2	1	1	2	Yes	LQFP 100, LQFP 144, TFBGA 216[8]
STM32F730	CM7	216	8+8	16/64	64	192	-	3x 12-bit ADCs (2.4 MSPS, up to 24 channels), 2x 12-bit DACs	1 with HS PHY[4]			2	Yes, PCROP[5],	LQFP 64, LQFP 100, LQFP 144, UFBGA 176[8]

Notes:
1. Error Code Correction available on STM32H750
2. Tightly Coupled Memories
3. Digital Filters for Sigma Delta Modulator
4. The USB HS embedded PHY is not available on the STM32F730 in 64- and 100-pin LQFP packages
5. PCROP: Proprietary Code Read Out Protection (protects part of the Flash memory to execution access only)
6. SFI: Secure Firmware Install. Security service and keys available on standard parts to securely install a Root of Trust (RoT)
7. SBSFU: Secure Boot and Secure FIrmware Update dedicated hardware memory protection mechanism.
8. (0.65 mm pitch)
9. (0.8 mm pitch)