STM32H730, STM32H750 & STM32H7B0
High-performance value lines

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 STM32H7 microcontrollers with products keeping just the essential Flash memory.

With execution performance up to 2778 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.

STM32H730, STM32H750 & STM32H7B0 devices embed 128-Kbyte Flash memory to accommodate the most critical and secure code, while supporting external memory extension using NOR, NAND, SDRAM, dual-mode Quad SPI or Octal-SPI Flash memory.

Notes:
1. Tightly Coupled Memories
2. Digital Filters for Sigma Delta Modulator

CORE, MEMORIES
- Arm® Cortex®-M7 core up to 550 MHz
- Up to 32-Kbyte data and 32-Kbyte instruction cache
- Up to 4 DMA controllers
- 128-Kbyte Flash memory and up to 1.4-Mbyte RAM
- ITCM/DTCM1: 64-Kbyte ITCM RAM + 128-Kbyte DTCM RAM for time-critical routines

CONNECTIVITY
- Up to 2 x USB 2.0 OTG FS/HS with embedded FS PHY
- USART, UART, SPI, and I²C
- Up to 3 x CAN FD
- Ethernet MAC
- FMC supporting SDRAM in 32-bit mode, PSRAM, NOR and NAND
- Dual-mode Quad-SPI or dual Octal-SPI supporting Octal Flash and HyperRAM™
- 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
- Up to 4 x SAI
- 2 x 12-bit DAC
- SPDIF-RX

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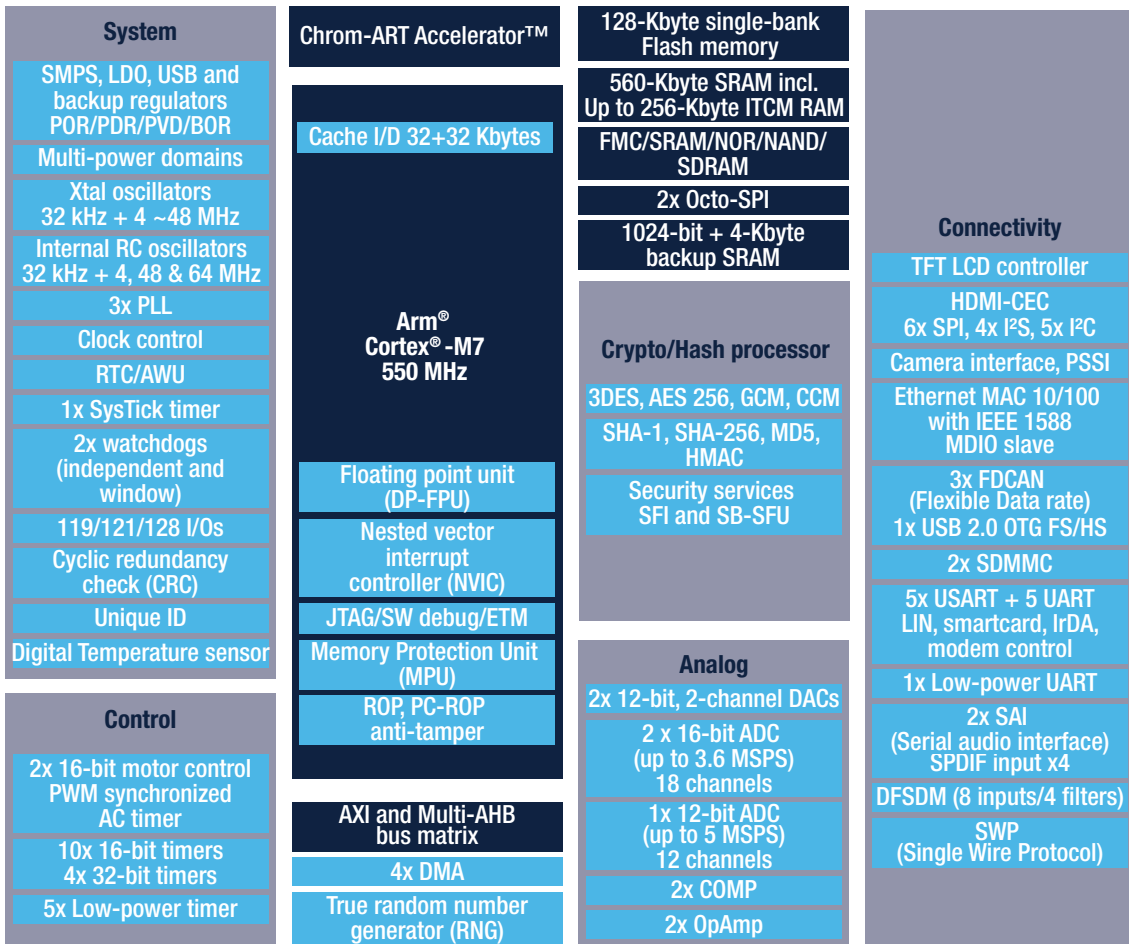- Chrom-ART Accelerator™
- Chrom-GRC™

OTHER
- 8- to 14-bit Camera interface
- Crypto and Hash hardware acceleration
- DFSDM interface to connect microphone MEMs or sigma delta ADC front ends
- 16- and 32-bit timers
- Up to 3 x ADCs with up to 16-bit resolution (up to 3.6 MSPS)
- 1 x 12 bit ADC (up to 5 MSPS)
- Analog (comparators and Op amps)
- Power supply down to 1.62 V
- Security services option
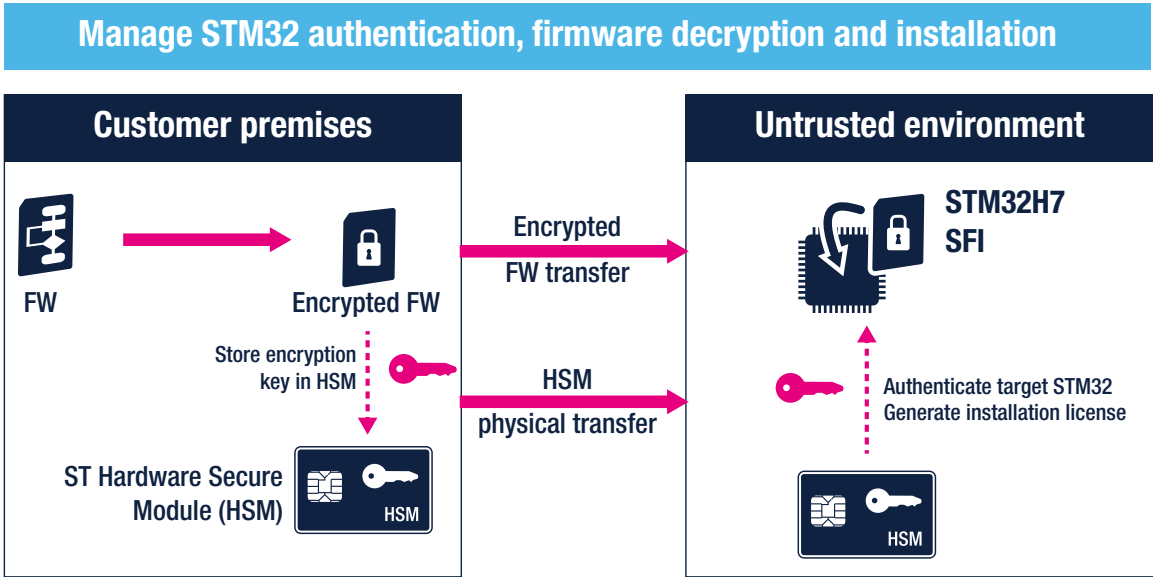
STM32 HIGH-PERFORMANCE VALUE LINES

Product lines	Core	f$_{CPU}$ (MHz)	ID cache (KB)	ITCM/ DTCM (KB)	Flash memory (KB)	Total RAM (KB)	Graphic	Advanced analog	USB OTG	Ethernet	Camera I/F	CAN	Security & Crypto/Hash acceleration	Packages
STM32H730	CM7	550	32 + 32	64/ 128	128	564	TFT-LCD Chrom-ART Accelerator™	1x 12-bit ADCs (up to 5 MSPS), 2x 16-bit ADCs (up to 3.6 MSPS) 2x Opamps, 2x Comparators, 2x 12-bit DACs	1	1	1	1 TTFD CAN, 2 FDCAN	Hardware crypto accelerators, PCROP[1], SFI[2], Secure Access Mode	LQFP100, TFBGA100[4], LQFP144, UFBGA144[5], UFBGA169[5], LQFP176, UFBGA176[3]
STM32H750		480	16+16			1060	Chrom-ART Accelerator™ TFT-LCD JPEG Codec	3x 16-bit ADCs (3.6 MSPS), 2x Opamps, 2x Comparators, 2x 12-bit DACs	2	1	1	1 TTFD CAN, 1 FDCAN		LQFP100, LQFP144, LQFP176, UFBGA176[3], TFBGA240[4]
STM32H7B0		280				1 376	Chrom-GRC™ TFT-LCD JPEG codec		1	-				LQFP64, LQFP100, LQFP144, UFBGA169[5], LQFP176, UFBGA176[3]

1. PCROP: Proprietary Code Read Out Protection (protects part of the Flash memory to execution access only)
2. SFI: Secure Firmware Install. Security service and keys available on standard parts to securely install a Root of Trust (RoT)
3. (0.65 mm pitch)
4. (0.8 mm pitch)
5. (0.5 mm pitch)

STM32H730 VALUE LINE BLOCK DIAGRAM

System

SMPS, LDO, USB and backup regulators POR/PDR/PVD/BOR

Multi-power domains

Xtal oscillators 32 kHz + 4 ~48 MHz

Internal RC oscillators 32 kHz + 4, 48 & 64 MHz

3x PLL

Clock control

RTC/AWU

1x SysTick timer

2x watchdogs (independent and window)

119/121/128 I/Os

Cyclic redundancy check (CRC)

Unique ID

Digital Temperature sensor

Control

2x 16-bit motor control PWM synchronized AC timer

10x 16-bit timers 4x 32-bit timers

5x Low-power timer

Chrom-ART Accelerator™

Cache I/D 32+32 Kbytes

Arm® Cortex®-M7 550 MHz

Floating point unit (DP-FPU)

Nested vector interrupt controller (NVIC)

JTAG/SW debug/ETM

Memory Protection Unit (MPU)

ROP, PC-ROP anti-tamper

AXI and Multi-AHB bus matrix

4x DMA

True random number generator (RNG)

128-Kbyte single-bank Flash memory

560-Kbyte SRAM incl. Up to 256-Kbyte ITCM RAM

FMC/SRAM/NOR/NAND/ SDRAM

2x Octo-SPI

1024-bit + 4-Kbyte backup SRAM

Crypto/Hash processor

3DES, AES 256, GCM, CCM

SHA-1, SHA-256, MD5, HMAC

Security services SFI and SB-SFU

Analog

2x 12-bit, 2-channel DACs

2 x 16-bit ADC (up to 3.6 MSPS) 18 channels

1x 12-bit ADC (up to 5 MSPS) 12 channels

2x COMP

2x OpAmp

Connectivity

TFT LCD controller

HDMI-CEC 6x SPI, 4x I²S, 5x I²C

Camera interface, PSSI

Ethernet MAC 10/100 with IEEE 1588 MDIO slave

3x FDCAN (Flexible Data rate) 1x USB 2.0 OTG FS/HS

2x SDMMC

5x USART + 5 UART LIN, smartcard, IrDA, modem control

1x Low-power UART

2x SAI (Serial audio interface) SPDIF input x4

DFSDM (8 inputs/4 filters)

SWP (Single Wire Protocol)

SECURE YOUR PRODUCTION FLOW WITH SECURE FIRWARE INSTALL (SFI)

Manage STM32 authentication, firmware decryption and installation

Customer premises

FW

Encrypted FW

Store encryption key in HSM

ST Hardware Secure Module (HSM)

HSM

Untrusted environment

Encrypted FW transfer

HSM physical transfer

STM32H7 SFI

Authenticate target STM32 Generate installation license

HSM

STM32 Trust

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

HARDWARE TOOLS

All existing STM32H7 hardware development tools are fully compatible with the new Value lines.
Dedicated tools are also available for the Value lines.
http://www.st.com/stm32evaltools

Evaluation boards
Full feature STM32H7 evaluation

Discovery kits
Flexible prototyping & demo

Order code: **BRSTM32H7VL1020**

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