STM32H5 MCU series

Most powerful Arm®
Cortex®-M33 MCU yet

Welcome to STM32H5 MCU series introduction

Introducing the **STM32H5** MCU series for high performance designs

Most powerful Arm® Cortex®-M33 MCU
Industry-first 32-bit MCU with Arm® Cortex®-M33 core running as high as 250 MHz

Scalable security to address every need
From the most essential security building blocks to fully certified services maintained by ST

Optimized cost/performance trade-off
Based on ST's optimized 40 nm process technology
Large choice of memory, peripherals, and package options

The STM32H5 series based on Arm®, Cortex®-M33 core extends the STM32 high performance portfolio. It is a unique combination of high performance, strong security, energy efficiency and affordability, to best address the mid-range class of MCU based applications.

•**High performance:** industry-first 32-bit MCU with Arm Cortex-M33 core running as high as 250 MHz

•**Scalable security:**

- •From the most essential security services to fully certified building blocks, which are maintained by ST
- •First STM32 MCU with a trusted execution environment (TEE), called the Secure Manager. This contributes to simplifying the customers' journey and provides seamless cloud to server support.

•**Affordable:** the MCUs are based on ST's optimized 40 nm process technology and large choice of memory, peripherals, and package options.

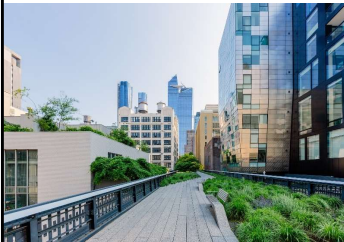STM32H5 simplifies the design of secure industrial applications

Smart homes

Air conditioning systems
Fridges
Alarm systems

Factory automation

PLC
Motor control
Industrial pumps

Smart cities

Communication gateways
Light control
Energy conversion

Consumer

Keyboards, tracking devices
Medical accessories

Typical applications for the STM32H5 series include air conditioning systems, appliances, and alarm systems, industrial programmable logic controllers (PLCs), motor controls, industrial pumps, communication gateways, lighting controls, and energy conversion. They are also used in consumer products such as PC peripherals, smartphones, and accessories

Boosting application performance

STM32**H5**

- Arm® Cortex®-M33 at **250 MHz 375 DMIPS & 1023 CoreMark**

- **Instruction and data cache** for internal and external memory (ART Accelerator™)

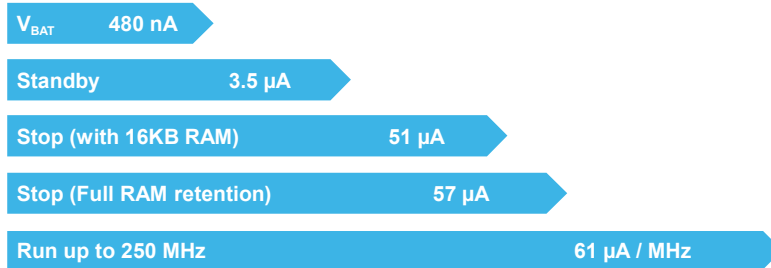- Mathematics accelerators: **FMAC** and **Cordic**

CoreMark

	298	608	1023
	STM32**F2**	STM32**F4**	STM32**H5**
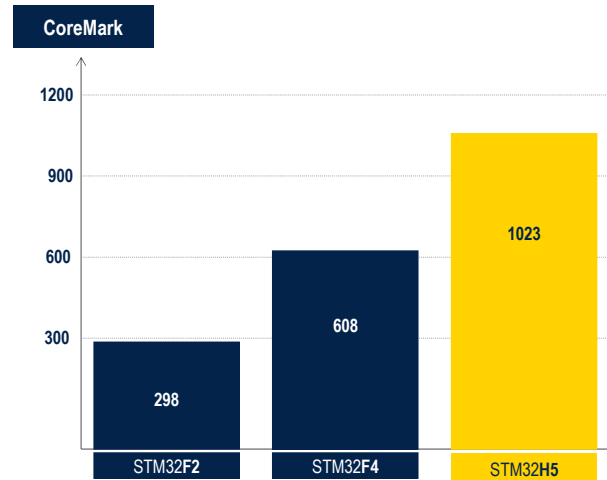
At 250 MHz, the STM32H5 series MCUs deliver 375 DMIPS and a 1023 CoreMark performance score, executing from the flash memory, with 0-wait states using ST's ART Accelerator. It also integrates mathematics accelerator FMAC and Cordic which boosts application performance.

The STM32H5 MCUs raise energy efficiency thanks to the flexible power modes and the switched mode power supply option, It reaches;

- 61 µA/MHz typical at V_{DD} = 3.3 V (drain power voltage) and 25°C in run mode (peripherals off) with SMPS option
- 51 µA typically in stop mode with full RAM retention (low-power mode)
- 3.5 µA typically in standby mode (low-power mode)
- 480 nA typically in V_{BAT} (battery voltage mode) with RTC ON

Scalable security to boost your time to market

STM32H5 &
Secure Manager

A **Trusted Execution Environment** (TEE) integrating core security services

A simplified customer journey

Seamless cloud/server support

Supporting remote provisioning

Multi-tenant IP protection

The first MCU supplier to offer a certified and maintained TEE solution to customers

STM32H5 is the first MCU to offer a certified and maintained Trusted Execution Environment " Secure Manager " to customers with system-on-chip (SoC) security services owned and maintained by ST
With in-ST-factory pre-provisioned digital identities it will allow seamless cloud or server provisioning. Furthermore, remote provision is now made possible thanks to these identities and native Root of Trust. The Secure Manager linked to our tools and Ecosystem will allow us to provide multi-tenant IP protection.

The STM32H5 portfolio offers up to 2 Mbytes of flash memory in dual-bank memory , up to 640 Kbytes of SRAM , advanced accelerators and high peripheral integration.
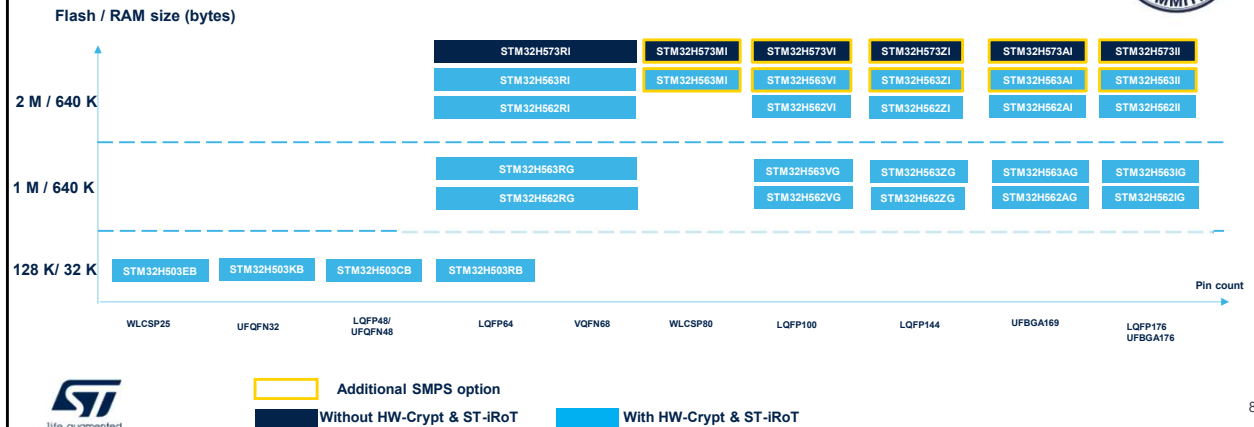
- Up to 34 communication peripherals including:I^3C interface
- FDCAN
- USB 2.0 full-speed host and device
- USB Type-C®/USB Power Delivery
- Ethernet MAC
- Camera interface

This slide presents the STM32H5 portfolio.

Development tools for STM32H5 series

Jump-start your evaluation, prototyping, and design
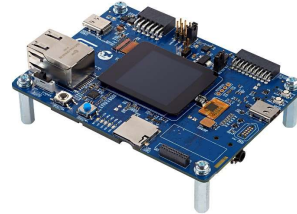
NUCLEO-H503RB	NUCLEO-H563ZI	STM32H573I-DK
Affordable prototyping	**Affordable prototyping**	**Multi-connectivity kit**
USB, Arduino uno IF, 64-pin MCU	USB, Ethernet, Arduino uno IF, 144-pin MCU	USB, Ethernet, MicroSD, Display, 512-Mbit Octo-SPI flash, Audio, Multi-extension IFs, 176-pin MCU
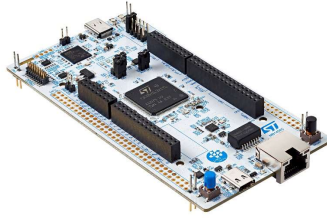
Three development boards are available to evaluate the STM32H5 series:

- An STM32H563ZI Nucleo-144 for flexible prototyping expansion capabilities,
- An STM32H506RB Nucleo-64 for flexible prototyping expansion capabilities,
- A Discovery kit, with a multi connectivity and extension interfaces: Ethernet, USB, Audio, display, OctoSPI Flash

Thank you for attending this presentation.