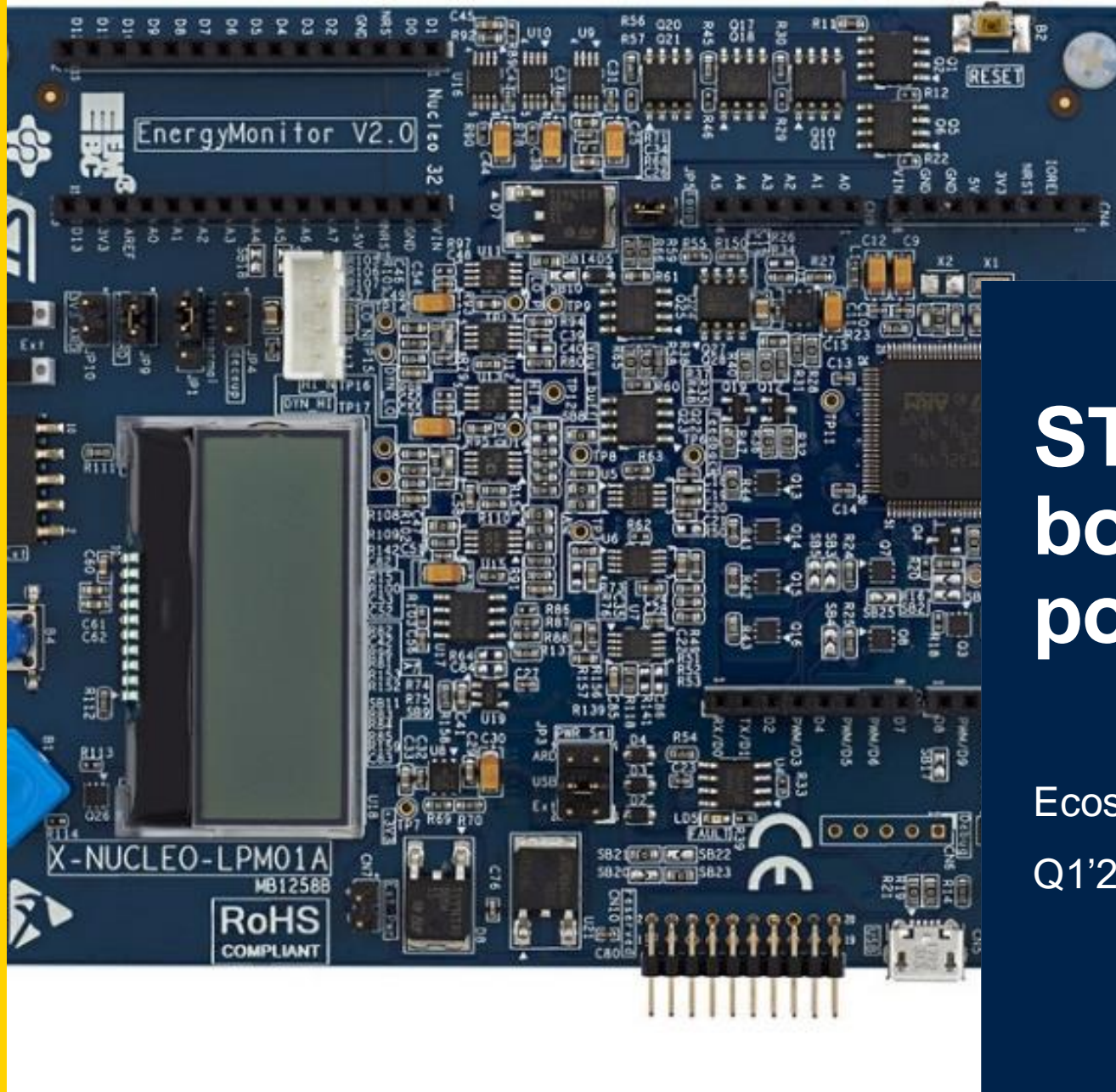




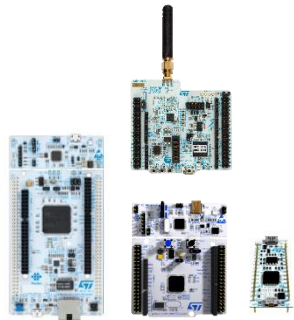
life.augmented



# STM32 development boards portfolio

Ecosystem Marketing  
Q1'2022

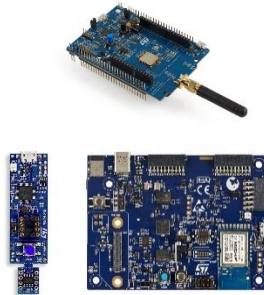
# Development tools overview



STM32 Nucleo

Flexible prototyping

[www.st.com/stm32nucleo](http://www.st.com/stm32nucleo)



Discovery kits

Key feature prototyping

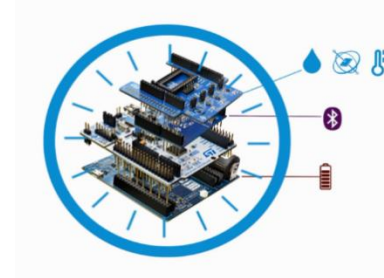
[www.st.com/stm32discovery](http://www.st.com/stm32discovery)



Evaluation boards

Full feature evaluation

[www.st.com/stm32evaltools](http://www.st.com/stm32evaltools)



STM32 Nucleo expansion

Functionality add-on

[www.st.com/x-nucleo](http://www.st.com/x-nucleo)



Third-party boards

From full evaluation to open hardware



Move Actuate



Connect



Power Drive



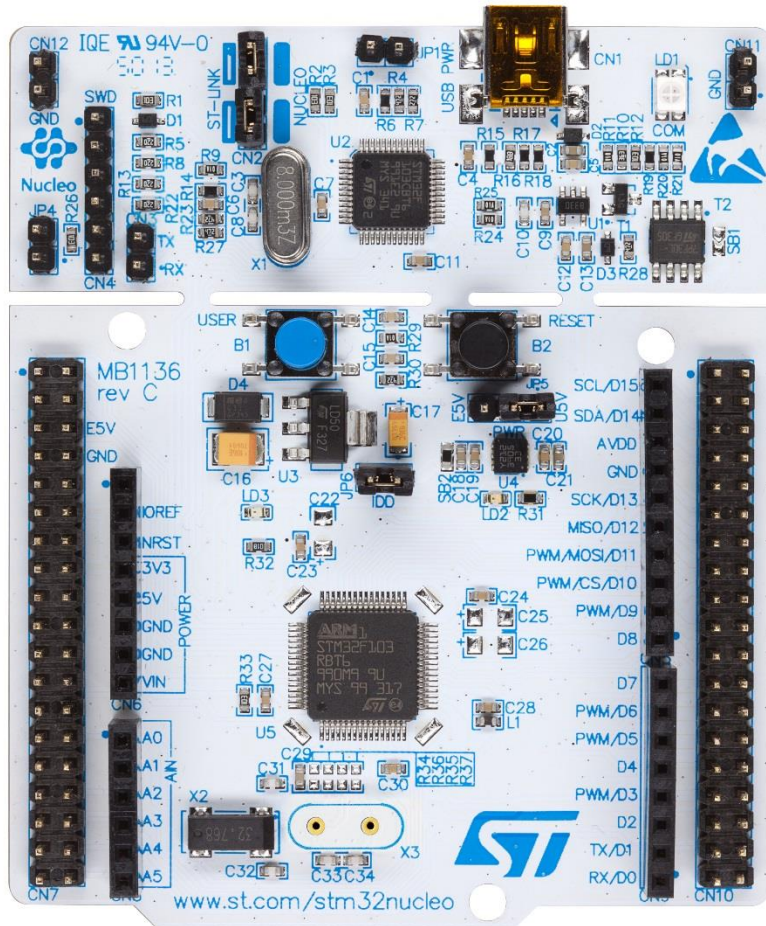
Sense



Translate



# STM32 Nucleo key assets



Flexible prototyping

Unlimited expansion capabilities


Simply show the whole STM32 portfolio to the communities

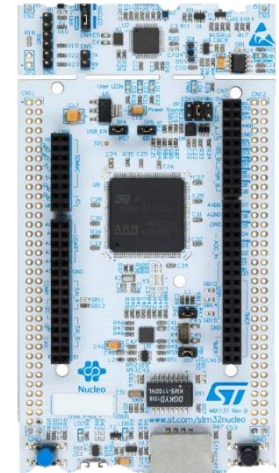






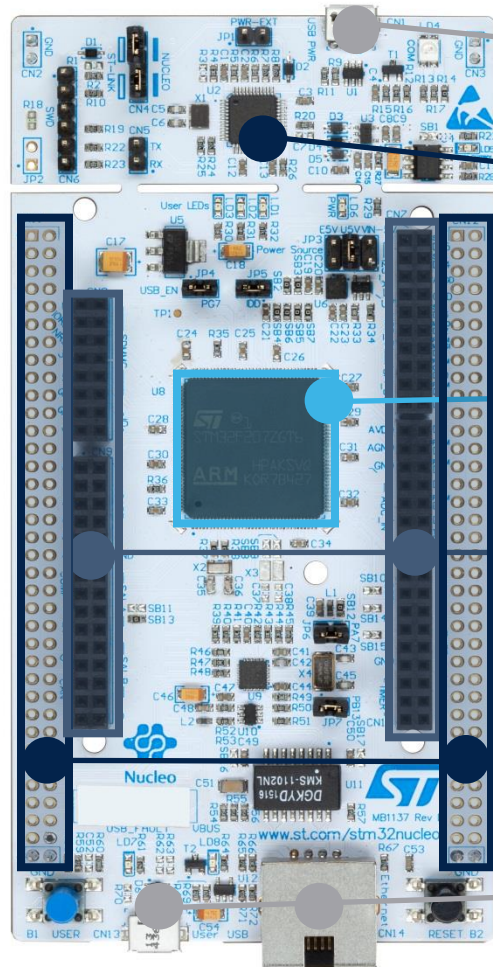
# STM32 Nucleo form-factor choices

Ethernet				***
USB				***
ST Zio (Uno extended)				***
Arduino Uno ST morpho			**	**
Arduino Nano	*			
	Nucleo-32 32-pin MCU		Nucleo-64 64-pin MCU	Nucleo-144 144-pin MCU





# STM32 Nucleo-144 structure



Flexible board power supply:  
through USB or external source

Integrated STLink:  
drag & drop device Flash programming

One STM32 MCU flavor with 144 pins

Arduino Uno & ST Zio connectors:  
easy access to add-ons

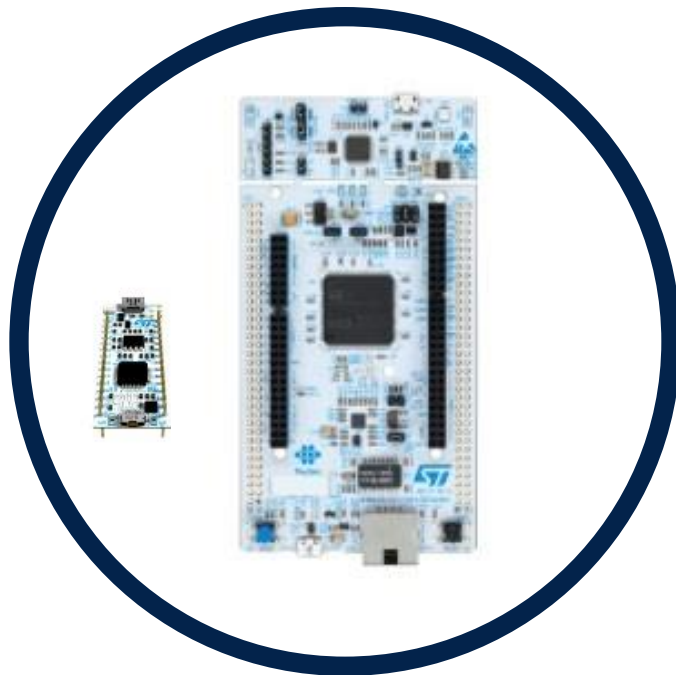
ST morpho extension pins:  
direct access to all MCU I/Os

Ethernet & USB OTG (optional)



# Amazing STM32 Nucleo boards

## Stretching boundaries



STM32H7 Nucleo-144  
STM32L4 Nucleo-32

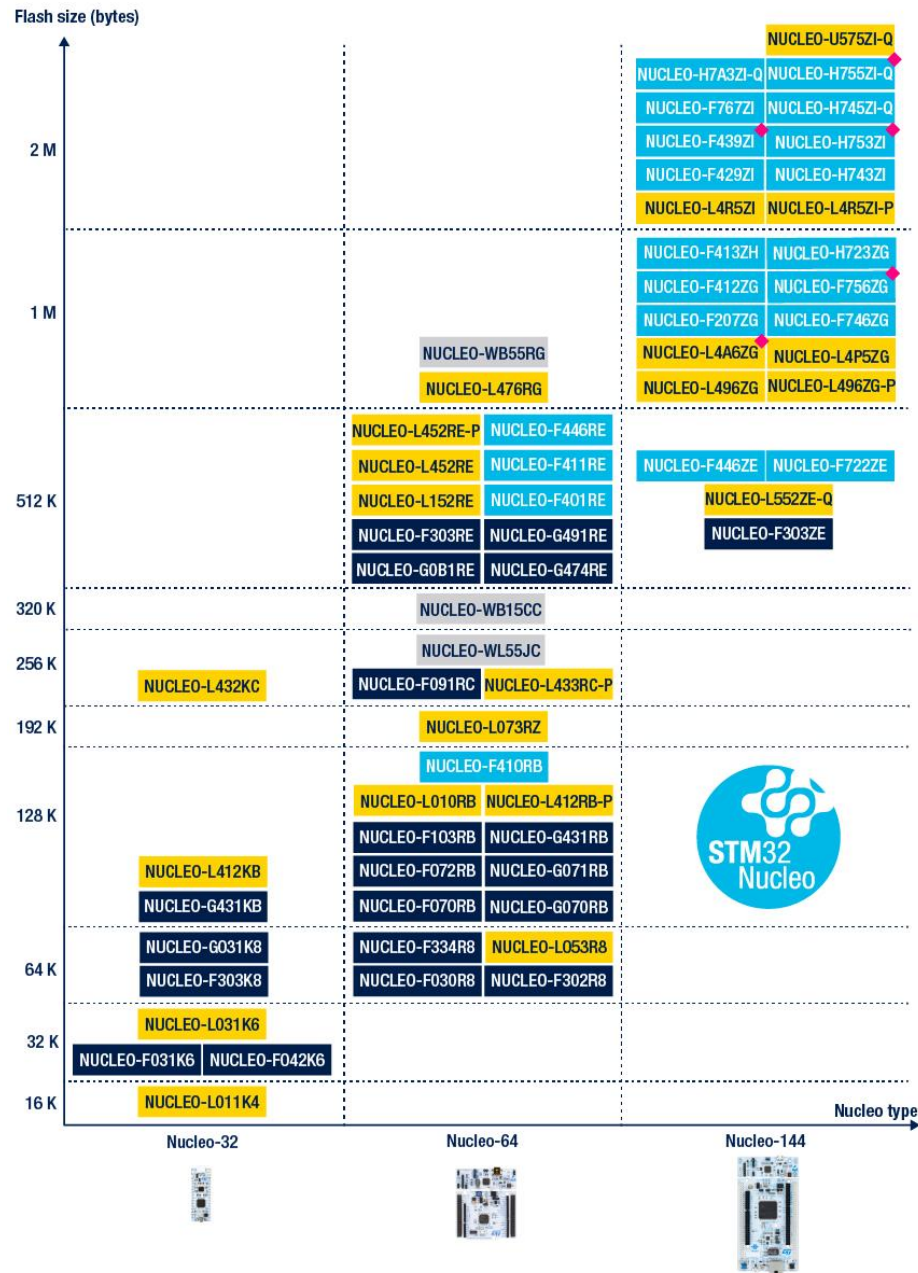
NUCLEO-H745ZI-Q

**High performance**  
STM32H745 dual-core  
CoreMark 3223

NUCLEO-L412KB

**Lower power**  
STM32L412  
ULPMark-CP 447  
ULPMark-PP 167

# STM32 Nucleo portfolio



A broad range of

Performance

Peripherals

Power

Price



[www.st.com/stm32nucleo](http://www.st.com/stm32nucleo)



# Association with shields



Sense



Power



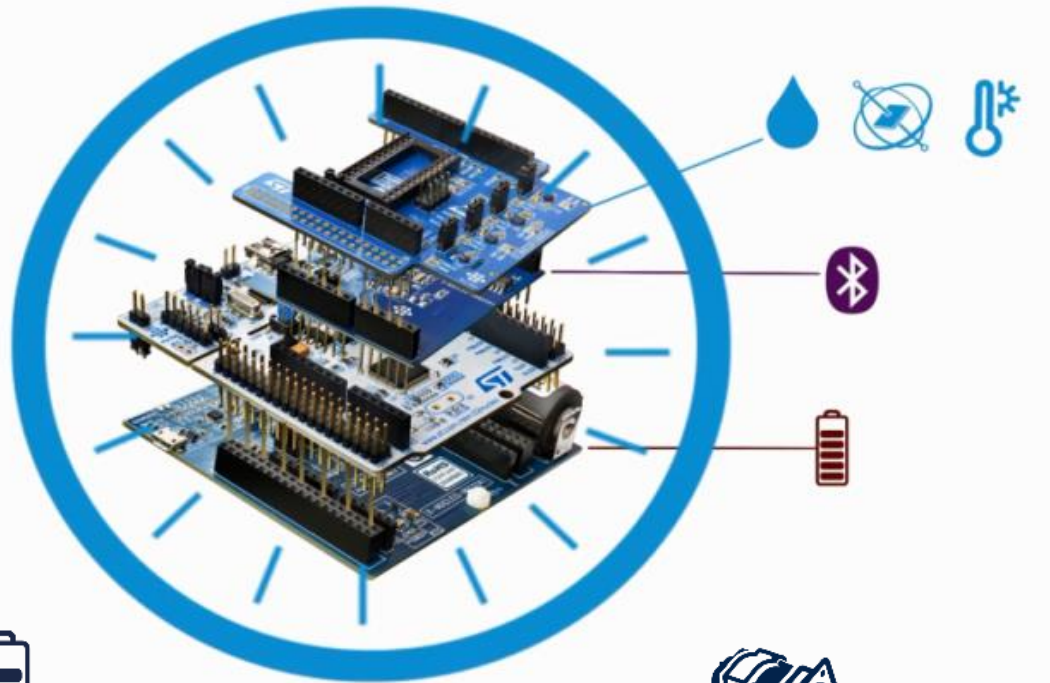
Interact



Connect



Move



Specialized functionality add-on

Smooth integration with STM32Cube software library

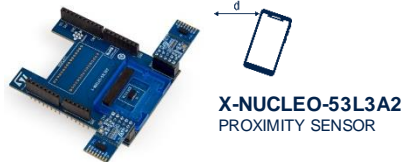
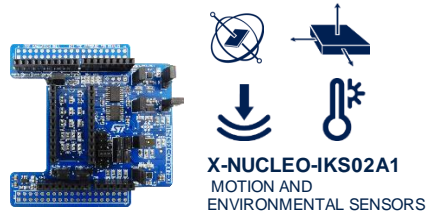
Multiple IDEs  
(STM32CubeIDE, IAR, Arm®...)



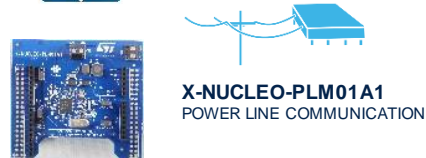


# Nucleo expansion boards from ST

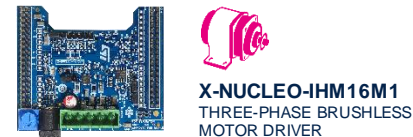
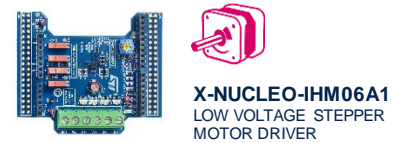
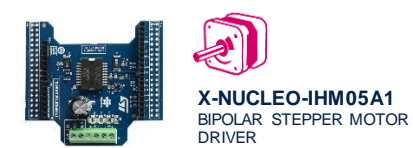
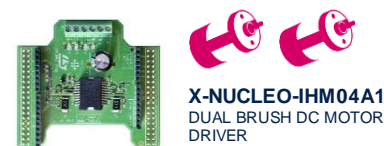
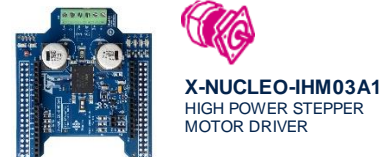
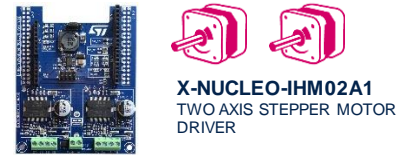
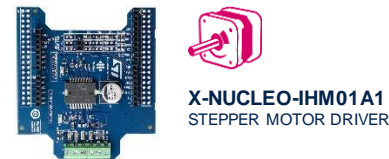
## Sensors and analog



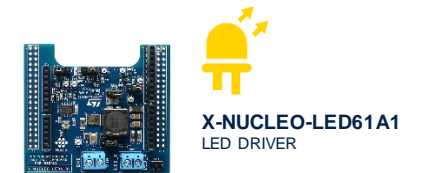
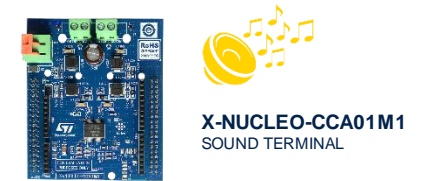
## Communication



## Motor drive



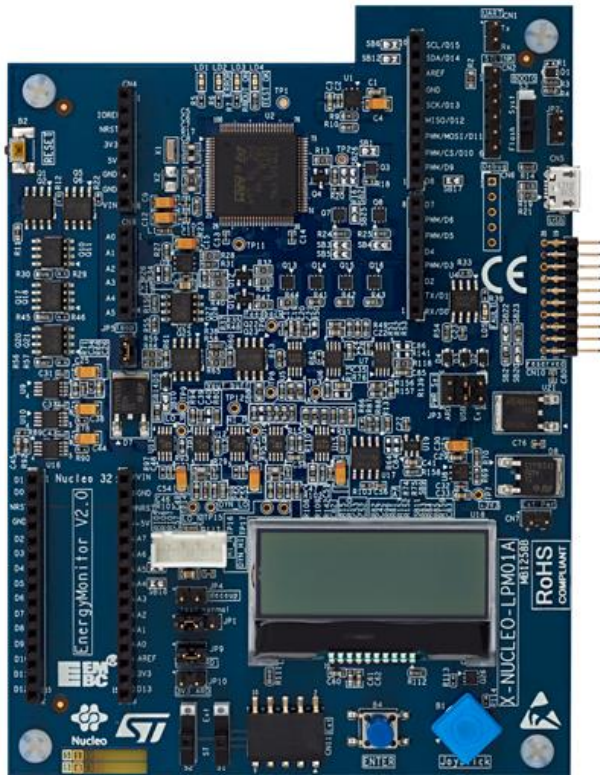
## Translate





# STM32 power shield key assets

## Accurate power profiling



Ultra-low power consumption measurements

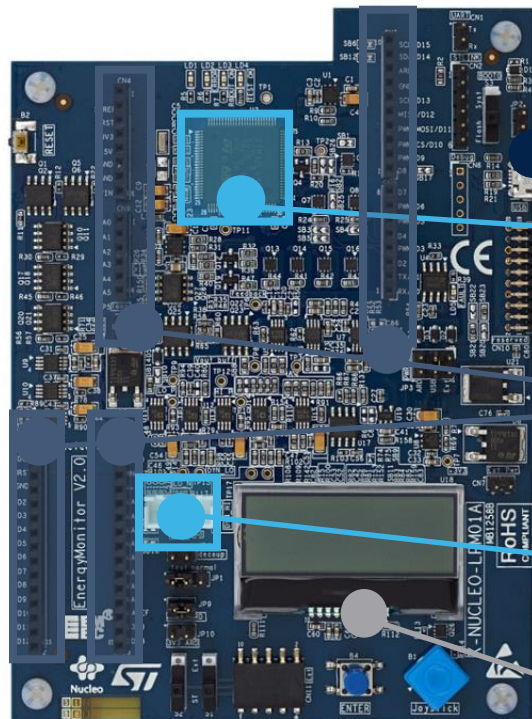
Compatible with all Nucleo form factors (32 / 64 / 144)

Graphical analysis with STM32CubeMonitor-Power tool

Custom test sessions with scripting

Reference tool for EEMBC ULPMark benchmark

## STM32 Power Shield anatomy



Power supply through USB

STM32L496VGT6 MCU @ 80 MHz  
3 x 12-bit ADC @ 3.2 Msamples/s

Arduino connectors compatible with  
Nucleo-32, 64 & 144 boards

4-wire connector  
for any type of target board

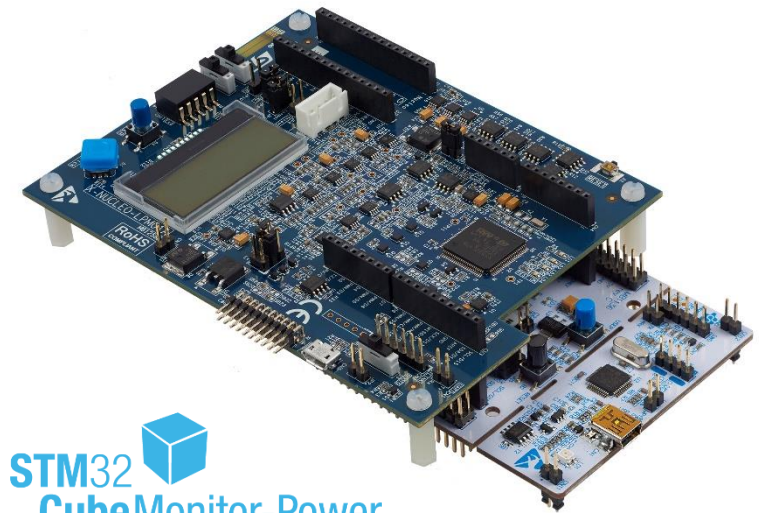
Local display:  
EEMBC ULPBench score



# STM32 power profiling

## X-NUCLEO-LPM01A

- Ultra-low-power consumption measurements:
  - Supply target board from 1.8 to 3.3V
  - Dynamic current from 100 nA to 50 mA
  - Static current from 1 nA to 200 mA
  - Accuracy approximately 2%
- Intuitive user experience:
  - Two operating modes (stand-alone or PC-controlled)
  - Graphical PC application (multi-OS)
- Resale price (RRP) \$70
- Official EEMBC Energy Monitor v2.0:
  - Direct computation of ULPMark scores



STM32  
CubeMonitor-Power





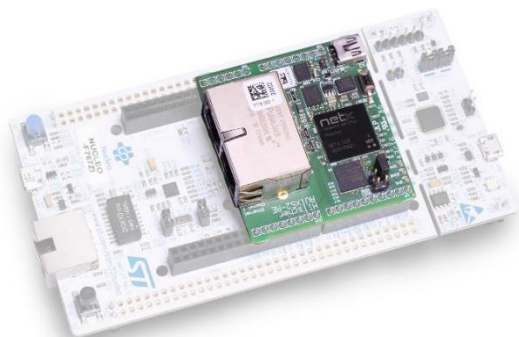
# Nucleo expansion boards from 3rd parties

LoRa™



**I-NUCLEO-LRWAN1**  
By USI®

**LoRaWAN communication**  
Frequency range from 868 to 930 MHz  
LoRaWAN-compliant protocol stack



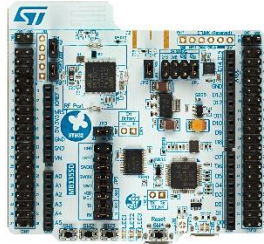
**I-NUCLEO-NETX**  
By Hilscher

**Industrial Ethernet protocols**  
PROFINET®, Ethernet/IP™, EtherCAT,  
POWERLINK, Sercos®, and Modbus®



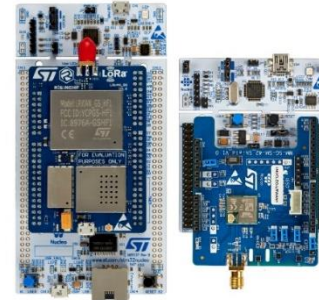
# Nucleo boards for wireless communication

**NUCLEO-WB55RG**  
By ST



**Multiprotocol RF transceiver**  
Bluetooth™ 5.2 and IEEE 802.15.4-2011 compliant

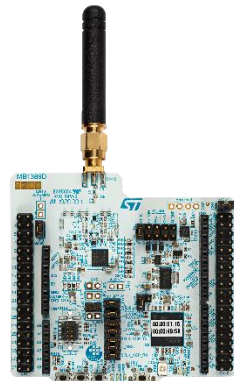
**LoRaWAN node & gateway**  
LRWAN2 frequency > 800 MHz,  
LRWAN3 frequency < 500 MHz,  
LoRaWAN-compliant protocol stack



**P-NUCLEO-LRWAN2**  
By ST and USI



**P-NUCLEO-LRWAN3**  
By ST and RisingHF



**NUCLEO-WL55JC**  
By ST

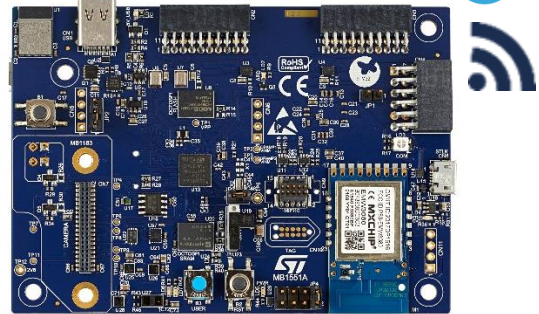


**Long Range wireless node**  
Frequency range 150-960 MHz  
LoRa, (G)FSK, (G)MSK, BPSK modulations  
LoRaWAN, Sigfox-compliant protocol stack

# Latest discovery kits



[STM32WB5MM-DK](#)



[B-U585I-IOT02A](#)



[B-L462E-CELL1](#)



[B-L072Z-LRWAN1](#)



[STM32G0316-DISCO](#)



[B-G474E-DPOW1](#)



[STM32H735G-DK](#)



[STM32MP157F-DK2](#)

# Discovery kit portfolio 1/5

	Part number	MCU	USB	Audio	Display	Connectivity	Expansion	STLink
STM32F0	<a href="#">STM32F0DISCOVERY</a>	STM32F051					Proprietary	V2
	<a href="#">32F072BDISCOVERY</a>	STM32F072	x				Proprietary	V2
STM32F1	<a href="#">STM32VLDISCOVERY</a>	STM32F100					Proprietary	V2
STM32F3	<a href="#">STM32F3DISCOVERY</a>	STM32F303	x				Proprietary	V2
	<a href="#">32F3348DISCOVERY</a>	STM32F334					Proprietary	V2-1
STM32G0	<a href="#">STM32G0316-DISCO</a>	STM32G031						V2-1
	<a href="#">STM32G071B-DISCO</a>	STM32G071	Type-C		OLED 128x64		Proprietary	V2-1
STM32G4	<a href="#">B-G431B-ESC1</a>	STM32G431						V2-1
	<a href="#">B-G474E-DPOW1</a>	STM32G474	Type-C	x			Proprietary	V2-1





# Discovery kit portfolio 2/5

	Part number	MCU	USB	Audio	Display	Connectivity	Expansion	STLink
STM32L0	<a href="#">32L0538DISCOVERY</a>	STM32L053	x		E-paper 172x72		Proprietary	V2-1
STM32L1	<a href="#">32L152CDISCOVERY</a>	STM32L152			LCD		Proprietary	V2
	<a href="#">B-L475E-IOT01A</a>	STM32L475	OTG	Digital mics		BLE, SubGHz, NFC, WiFi	Arduino Uno, Pmod	V2-1
STM32L4	<a href="#">32L496GDISCOVERY</a>	STM32L496	OTG	x	Color LCD 240x240	Add-on (optional)	Arduino Uno, Pmod, STmod+, MikroBus, Grove	V2-1
	<a href="#">B-L462E-CELL1</a>	STM32L462	x	x	OLED 128x64	LTE Cat M, NB-IoT	Proprietary, Micro-SIM, SMA antenna, STMod+, MikroBus, Grove	V2-1
	<a href="#">STM32L4P5G-DK</a>	STM32L4P5	OTG	x	Color LCD 240x240	Add-on (optional)	Arduino Uno, STmod+, MikroBus, Grove	V3
STM32L4+	<a href="#">32L4R9IDISCOVERY</a>	STM32L4R9	OTG	x	Color AMOLED 390x390	Add-on (optional)	Arduino Uno, Pmod, STmod+, MikroBus, Grove	V2-1
	<a href="#">B-L4S5I-IOT01A</a>	STM32L4S5	OTG	Digital mics		BLE, NFC, WiFi	Arduino Uno, Pmod	V2-1
STM32L5	<a href="#">STM32L562E-DK</a>	STM32L562	Type-C	x	Color LCD 240x240	BLE	Arduino Uno, Pmod, STmod+, MikroBus, Grove	V3
STM32U5	<a href="#">B-U585-IOT02A</a>	STM32U585	Type-C	x		BLE, WiFi	Arduino Uno, Pmod, STmod+, MikroBus, Grove	V3

# Discovery kit portfolio 3/5

STM32F4

STM32F7

Part number	MCU	USB	Audio	Display	Connectivity	Expansion	STLink
<a href="#"><u>STM32F4DISCOVERY</u></a>	STM32F407	OTG	x			Proprietary	V2
<a href="#"><u>32F411EDISCOVERY</u></a>	STM32F411	OTG	x			Proprietary	V2
<a href="#"><u>32F412GDISCOVERY</u></a>	STM32F412	OTG	x	Color LCD 240x240	Add-on (optional)	Arduino Uno	V2-1
<a href="#"><u>32F413HDISCOVERY</u></a>	STM32F413	OTG	x	Color LCD 240x240	Wi-Fi	Arduino Uno	V2-1
<a href="#"><u>32F429IDISCOVERY</u></a>	STM32F429	OTG		Color LCD QVGA	Add-on (optional)	Arduino Uno	V2
<a href="#"><u>32F469IDISCOVERY</u></a>	STM32F469	OTG	x	Color LCD 800x480	Add-on (optional)	Arduino Uno	V2-1
<a href="#"><u>32F723EDISCOVERY</u></a>	STM32F723	OTG HS	x	Color LCD 240x240	Add-on (optional)	Arduino Uno, Pmod, STMod+, MikroBus, Grove	V2-1
<a href="#"><u>32F746GDISCOVERY</u></a>	STM32F746	OTG HS	x	Color LCD 480x272	Ethernet	Arduino Uno	V2-1
<a href="#"><u>STM32F7508-DK</u></a>	STM32F750	OTG HS	x	Color LCD 480x272	Ethernet	Arduino Uno	V2-1
<a href="#"><u>32F769IDISCOVERY</u></a>	STM32F769	OTG HS	x	Color LCD 800x480	Ethernet	Arduino Uno	V2-1

# Discovery kit portfolio 4/5

Part number	MCU	USB	Audio	Display	Connectivity	Expansion	STLink
<a href="#">STM32H7B3I-DK</a>	STM32H7B3	OTG	x	Color LCD 480x272	Add-on (optional)	Arduino Uno, STMod+, Mikrobus, Grove	V3
<a href="#">STM32H735G-DK</a>	STM32H735	OTG	x	Color LCD 480x272	Ethernet	Arduino Uno, Pmod, STMod+, Mikrobus, Grove	V3
<a href="#">STM32H745I-DISCO</a>	STM32H745	OTG	x	Color LCD 480x272	Ethernet	Arduino Uno, STMod+, Mikrobus, Grove	V3
<a href="#">STM32H747I-DISCO</a>	STM32H747	OTG HS	x	Color LCD 800x480	Ethernet	Arduino Uno, Pmod, STMod+, Mikrobus, Grove	V3
<a href="#">STM32H750B-DK</a>	STM32H750	OTG	x	Color LCD 480x272	Ethernet	Arduino Uno, STMod+, Mikrobus, Grove	V3
<a href="#">STM32WB5MM-DK</a>	STM32WB5MM	OTG	x	OLED 128x64	BLE v5.2, Zigbee, Thread	Arduino Uno, STMod+, Mikrobus, Grove	V2-1

STM32H7

STM32Wx

# Discovery kit portfolio 5/5



Part number	MCU	Description	Key features	Expansion	STLink
<u>B-L072Z-LRWAN1</u>	STM32L072	All-in-one low-power wireless node	LoRa, Sigfox, WMBus AAA-battery operation	Arduino Uno, ST morpho	V2-1
<u>B-L4S5-IOT01A</u>	STM32L4S5	All-in-one IoT node with low-power connectivity & multiway sensing	BLE, NFC, Wi-Fi, Sensors (digital microphone, 9-axis navigation, pressure, humidity, temperature, proximity / gesture detection)	Arduino Uno, Pmod	V2-1
<u>B-U585-IOT02A</u>	STM32U585	All-in-one IoT node with low-power connectivity & multiway sensing	BLE, Wi-Fi, Sensors (digital microphone, 9-axis navigation, pressure, humidity, temperature, proximity/gesture detection)	Arduino Uno, Pmod, STmod+, MikroBus, Grove	V3
<u>B-L462E-CELL1</u>	STM32L462	Worldwide Cellular IoT node LTE catM / NB-IoT	eSIM and MicroSIM, 3-month dataplan included	STmod+, MikroBus, Grove	V2-1



I-CUBE-LRWAN LoRaWAN-compliant software expansion for STM32Cube



X-CUBE-CLOUD Cloud connectors as expansion for STM32Cube (Amazon Web Services, Microsoft Azure, IBM Watson)



X-CUBE-SFOX Sigfox-compliant software expansion for STM32Cube

X-CUBE-CELLULAR Cellular software framework as expansion for STM32Cube.

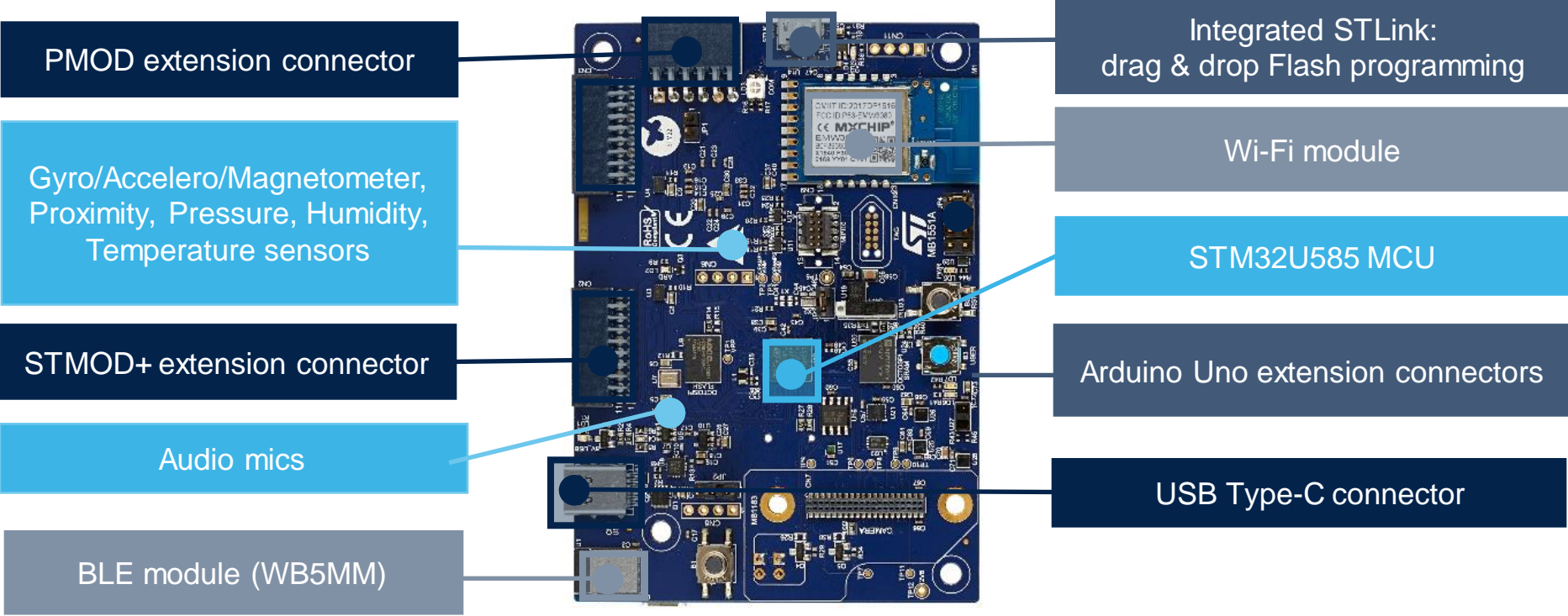


More information at:  
[www.st.com/stm32app-discovery](http://www.st.com/stm32app-discovery)



# STM32U5 discovery IoT node...

## Multi-link communication, multiway sensing



**B-U585I-IOT02A**

# ...Delivers user-friendly cloud access

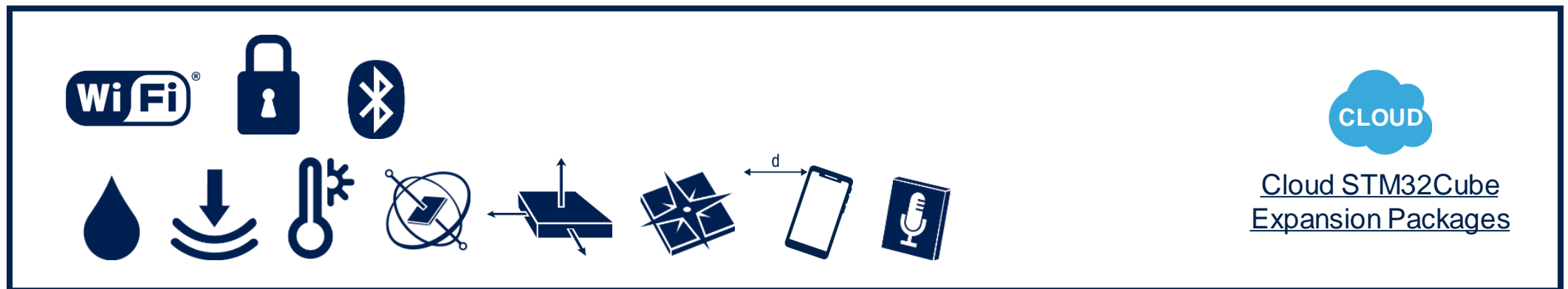
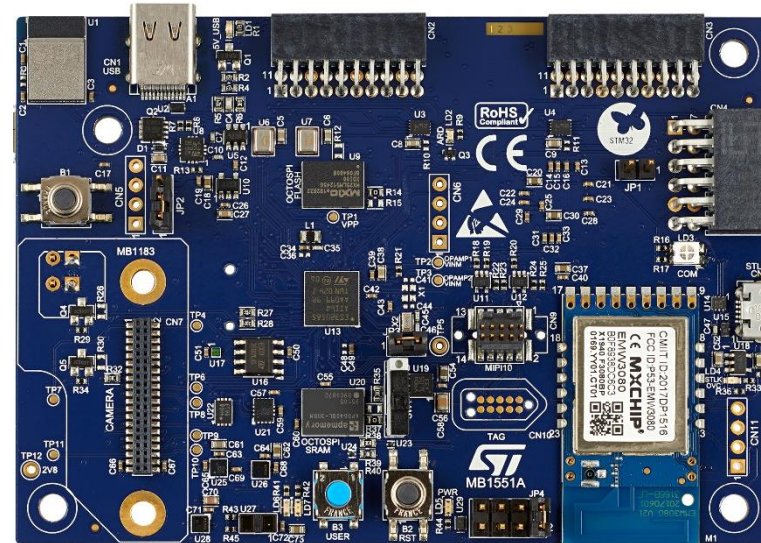
Direct connection to cloud services

Low-power communication

Environmental awareness: humidity, pressure, temp

Detection hub: motion, proximity, audio

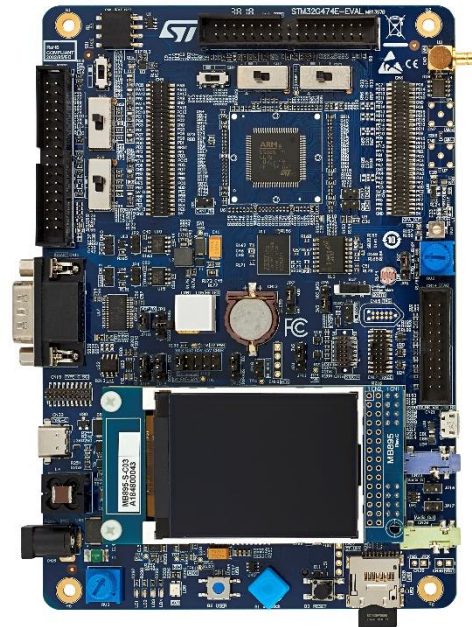
Direct support of communities



# Latest evaluation boards



**STM32G081B-EVAL**



**STM32G474E-EVAL**



**STM32H757I-EVAL**



**STM32U575I-EV**



# Evaluation board portfolio

Mainstream

Ultra-low-power

High-performance

Part number	MCU	Part number	MCU	Part number	MCU
<a href="#"><u>STM32072B-EVAL</u></a>	STM32F072	<a href="#"><u>STM32L073Z-EVAL</u></a>	STM32L073	<a href="#"><u>STM3220G-EVAL</u></a>	STM32F207
<a href="#"><u>STM3210E-EVAL</u></a>	STM32F103	<a href="#"><u>STM32L476G-EVAL</u></a>	STM32L476	<a href="#"><u>STM32429I-EVAL</u></a>	STM32F429
<a href="#"><u>STM32303E-EVAL</u></a>	STM32F303	<a href="#"><u>STM32L4R9I-EVAL</u></a>	STM32L4R9	<a href="#"><u>STM32F769I-EVAL</u></a>	STM32F769
<a href="#"><u>STM32373C-EVAL</u></a>	STM32F373	<a href="#"><u>STM32L552E-EV</u></a>	STM32L552	<a href="#"><u>STM32H7B3I-EVAL</u></a>	STM32H7B3
<a href="#"><u>STM32G081B-EVAL</u></a>	STM32G081	<a href="#"><u>STM32U575I-EV</u></a>	STM32U575	<a href="#"><u>STM32H743I-EVAL</u></a>	STM32H743
<a href="#"><u>STM32G0C1E-EV</u></a>	STM32G0C1			<a href="#"><u>STM32H757I-EVAL</u></a>	STM32H757
<a href="#"><u>STM32G474E-EVAL</u></a>	STM32G474				





# STM32 boards contribute to communities

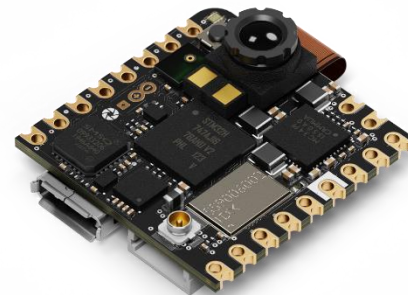


**59**  
Boards  
([full list here](#))  
([libraries](#))

**30**  
Expansion  
Boards  
([libraries](#))



Portenta H7



Nicla Vision

# Our technology starts with You



Find out more at [www.st.com/stm32](http://www.st.com/stm32)

© STMicroelectronics - All rights reserved.

ST logo is a trademark or a registered trademark of STMicroelectronics International NV or its affiliates in the EU and/or other countries.

For additional information about ST trademarks, please refer to [www.st.com/trademarks](http://www.st.com/trademarks).

All other product or service names are the property of their respective owners.



life.augmented