STM32 Development Boards Portfolio

Ecosystem Marketing

Q1’2018
Development tools overview

- STM32 Nucleo
- Discovery kits
- Evaluation boards
- STM32 Nucleo expansion
- Third-party boards

Flexible prototyping
Key feature prototyping
Full feature evaluation
Functionality add-on

From full evaluation to open hardware

STM32 Nucleo
Discovery kits
Evaluation boards
STM32 Nucleo expansion
Third-party boards
STM32 Nucleo key assets

Flexible prototyping

Unlimited expansion capabilities

Simply show the whole STM32 portfolio to the communities
# STM32 Nucleo form choices

<table>
<thead>
<tr>
<th>Ethernet</th>
<th>*****</th>
</tr>
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<tbody>
<tr>
<td>USB</td>
<td>** ***</td>
</tr>
<tr>
<td>ST Zio (Uno extended)</td>
<td>** ***</td>
</tr>
<tr>
<td>Arduino Uno ST morpho</td>
<td>** **</td>
</tr>
<tr>
<td>Arduino Nano</td>
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</table>

**STM32 Nucleo form choices**

- **Nucleo-32**: 32-pin MCU
- **Nucleo-64**: 64-pin MCU
- **Nucleo-144**: 144-pin MCU

(on selected MCU configurations)
STM32 Nucleo-144 structure

- 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
- Flexible board power supply: through USB or external source
- Integrated STLink v2-1: drag & drop device Flash programming
- Ethernet & USB OTG (optional)
Amazing STM32 Nucleo boards

Stretching boundaries

**STM32H7 Nucleo without SMPS**

- **High-performance**
  - STM32H743 MCU
  - CoreMark 2020
  - Price $23

**STM32L4 Nucleo with SMPS**

- **Ultra-lower-power**
  - STM32L496 MCU
  - with external SMPS
  - ULPMark-CP 217
  - Price $20

**NUCLEO-H743ZI**

**NUCLEO-L496ZG-P**
STM32 Nucleo portfolio
Association with shields

- Specialized functionality add-on
- Smooth integration with STM32Cube software library
- Multiple IDEs (Mbed™, IAR, Arm®…)

Sense  Connect  Power  Move
Interact
Nucleo expansion boards from ST

Sensors and analog

- X-NUCLEO-IKS01A2: Motion and environmental sensors
- X-NUCLEO-6180XA1: Proximity and ambient light sensor
- X-NUCLEO-53L0A1: Proximity sensor
- X-NUCLEO-CCA02M1: Digital microphones

Communication

- X-NUCLEO-IDB05A1: Bluetooth low energy
- X-NUCLEO-NFC04A1: Dynamic NFC tag
- X-NUCLEO-NFC05A1: NFC card reader
- X-NUCLEO-PLM01A1: Power line communication
- X-NUCLEO-GNSS1A1: Assisted GNSS

Motor drive

- X-NUCLEO-IHM01A1: Stepper motor driver
- X-NUCLEO-IHM02A1: Two axes stepper motor driver
- X-NUCLEO-IHM03A1: High power stepper motor driver
- X-NUCLEO-IHM04A1: Dual brush DC motor driver
- X-NUCLEO-IHM05A1: Bipolar stepper motor driver
- X-NUCLEO-IHM06A1: Low voltage stepper motor driver
- X-NUCLEO-IHM12A1: Low voltage dual brush DC motor driver
- X-NUCLEO-IHM07M1: Stepper motor driver
- X-NUCLEO-CCA01M1: Sound terminal
- X-NUCLEO-LED61A1: LED driver
- X-NUCLEO-IPS02A1: Intelligent power switch
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 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 (reference: STM32CubeMonPwr)

- Resale price (RRP) $70

- Official EEMBC Energy Monitor v2.0:
  - Direct computation of ULPMark scores
Nucleo expansion boards from 3rd parties

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

Industrial Ethernet protocols
PROFINET®, Ethernet/IP™, EtherCAT, POWERLINK, Sercos®, and Modbus®
Latest Discovery kits

STM32L4R9I-DISCO
STM32F413H-DISCO
STM32F769I-DISCO

P-L496G-CELL01 & P-L496G-CELL02
B-L475E-IOT01A
B-L072Z-LRWAN1
## Discovery kit portfolio 1/3

<table>
<thead>
<tr>
<th>Part number</th>
<th>MCU</th>
<th>USB</th>
<th>Audio</th>
<th>Display</th>
<th>Connectivity</th>
<th>Expansion</th>
<th>arm Mbed</th>
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[www.st.com/stm32discovery](http://www.st.com/stm32discovery)
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<tr>
<th>Part number</th>
<th>MCU</th>
<th>USB</th>
<th>Audio</th>
<th>Display</th>
<th>Connectivity</th>
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<td>Add-on (optional)</td>
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<td>Arduino Uno</td>
<td>Mbed OS</td>
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www.st.com/stm32discovery
## Discovery kit portfolio 3/3

<table>
<thead>
<tr>
<th>Part number</th>
<th>MCU</th>
<th>Description</th>
<th>Key features</th>
<th>Expansion</th>
<th>arm MBED</th>
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<tbody>
<tr>
<td>B-L072Z-LRWAN1</td>
<td>STM32L072</td>
<td>All-in-one low-power wireless node</td>
<td>LoRa, Sigfox, WMbus AAA-battery operation</td>
<td>Arduino Uno, ST morpho</td>
<td>Mbed OS</td>
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<tr>
<td>B-L475E-IOT01A</td>
<td>STM32L475</td>
<td>All-in-one IoT node with low-power connectivity &amp; multiway sensing</td>
<td>BLE, SubGHz, NFC, Wi-Fi, Sensors (digital microphone, 9-axis navigation, pressure, humidity, temperature, proximity/gesture detection)</td>
<td>Arduino Uno, Pmod</td>
<td>Mbed OS</td>
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<tr>
<td>P-L496G-CELL01</td>
<td>STM32L496</td>
<td>Worldwide Cellular IoT node 2G/3G pentaband</td>
<td>7.2 Mbps downlink, 5.76 Mbps uplink, eSIM and MicroSIM, 3-month dataplan included</td>
<td>Arduino Uno, Pmod, STmod+, MikroBus, Grove</td>
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<tr>
<td>P-L496G-CELL02</td>
<td>STM32L496</td>
<td>Worldwide Cellular IoT node LTE cat M1 / cat NB1 / EGPRS pentaband</td>
<td>300 Kbps downlink, 375 Kbps uplink, eSIM and MicroSIM, 3-month dataplan included</td>
<td>Arduino Uno, Pmod, STmod+, MikroBus, Grove</td>
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</table>

**LoRa**
- **I-CUBE-LRWAN**: LoRaWAN-compliant software expansion for STM32Cube

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

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

[www.st.com/stm32app-discovery](http://www.st.com/stm32app-discovery)
STM32L4 Discovery IoT node...

Multi-link communication, multiway sensing

- BLE module (BlueNRG)
- Audio mics
- Power supply through USB
- Gyro/Accelero/Magnetometer, Proximity, Pressure, Humidity, Temperature sensors
- Wi-Fi module
- SubGHz module
- Integrated ST-Link/V2-1: drag & drop Flash programming
- Arduino Uno extension connectors
- STM32L475 MCU
- PMOD extension connector
- Simplified NFC configuration

B-L475E-IOT01A
…delivers user-friendly cloud access

Direct connection to cloud services
Low-power long-range communication
Environmental awareness: humidity, pressure, temp
Detection hub: motion, proximity, audio
Direct support of communities

Cloud STM32Cube Expansion Packages
Latest Evaluation boards

STM32 L4+ STM32 F7 STM32 H7
STM32L4R9I-EVAL STM32F769I-EVAL STM32H743I-EVAL
# Evaluation board portfolio

## Mainstream

<table>
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<tr>
<th>Part number</th>
<th>MCU</th>
<th>Part number</th>
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<td>STM32072B-EVAL</td>
<td>STM32F072</td>
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<td>STM3220G-EVAL</td>
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<td>STM32746G-EVAL</td>
<td>STM32F746</td>
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<td>STM32091C-EVAL</td>
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<td>STM3221G-EVAL</td>
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<td>STM32F373-EVAL</td>
<td>STM32F373</td>
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## Ultra-low-power

## High-performance

[www.st.com/stm32evaltools](www.st.com/stm32evaltools)
STM32 Boards contribute to Communities

- **41** Boards
  - [full list here](#)

- **25** Expansion Boards
  - [full list here](#)

- **21** Boards
  - [full list here](#)

- **10** Expansion Boards
  - [full list here](#)