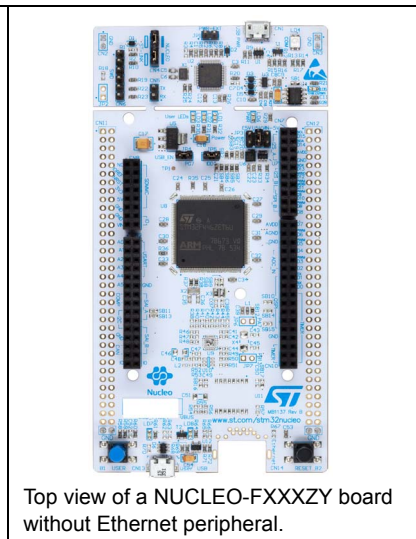
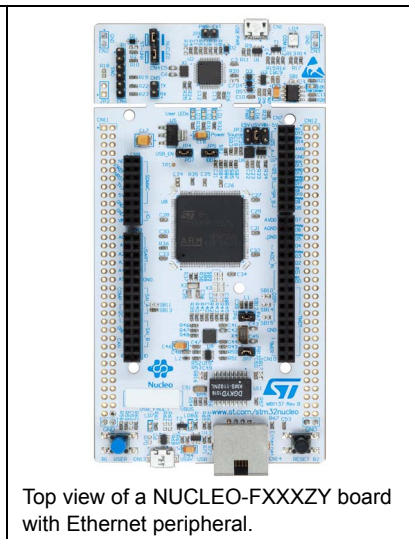
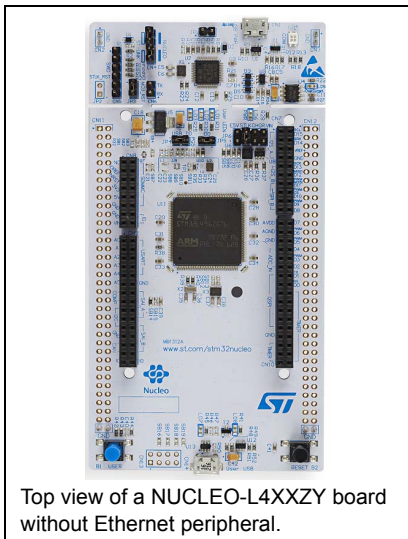


### Features

- STM32 microcontroller in LQFP144 package
- External SMPS to generate Vcore logic supply (only available on '-P' suffixed boards)
- Ethernet compliant with IEEE-802.3-2002 (depending on STM32 support)
- USB OTG or full-speed device (depending on STM32 support)
- 3 user LEDs
- 2 user and reset push-buttons
- 32.768 kHz crystal oscillator
- Board connectors:
  - USB with Micro-AB
  - SWD
  - Ethernet RJ45 (depending on STM32 support)
- Board expansion connectors:
  - ST Zio connector including Arduino™ Uno V3
  - ST morpho
- Flexible power-supply options: ST-LINK USB V<sub>BUS</sub> or external sources
- On-board ST-LINK/V2-1 debugger/programmer with USB re-enumeration capability: mass storage, virtual COM port and debug port
- Comprehensive free software libraries and examples available with the STM32Cube package
- Support of a wide choice of Integrated Development Environments (IDEs) including IAR™, Keil®, GCC-based IDEs, Arm® Mbed™
- Arm® Mbed Enabled™ compliant (only for some Nucleo part numbers)

Table 1. Device summary

Reference	Part number
NUCLEO-XXXXZX (-P)	NUCLEO-F207ZG, NUCLEO-F303ZE, NUCLEO-F412ZG, NUCLEO-F413ZH, NUCLEO-F429ZI, NUCLEO-F439ZI, NUCLEO-F446ZE, NUCLEO-F722ZE, NUCLEO-F746ZG, NUCLEO-F756ZG, NUCLEO-F767ZI, NUCLEO-H743ZI, NUCLEO-L496ZG, NUCLEO-L496ZG-P, NUCLEO-L4A6ZG, NUCLEO-L4R5ZI.



Pictures are not contractual.



## Description

The STM32 Nucleo-144 boards provide an affordable and flexible way for users to try out new concepts and build prototypes by choosing from the various combinations of performance and power consumption features, provided by the STM32 microcontroller. For the compatible boards, the SMPS significantly reduces power consumption in Run mode.

The ST Zio connector, which extends the Arduino™ Uno V3 connectivity, and the ST morpho headers provide an easy means of expanding the functionality of the Nucleo open development platform with a wide choice of specialized shields.

The STM32 Nucleo-144 board does not require any separate probe as it integrates the ST-LINK/V2-1 debugger/programmer.

The STM32 Nucleo-144 board comes with the STM32 comprehensive free software libraries and examples available with the STM32Cube MCU Package.

## System requirements

- Windows® OS (7, 8 and 10), Linux® 64-bit or macOS®
- USB Type-A to Micro-B cable

## Development toolchains

- Keil® MDK-ARM<sup>(a)</sup>
- IAR™ EWARM<sup>(a)</sup>
- GCC-based IDEs including free SW4STM32 from AC6
- Arm® Mbed™ online<sup>(b)</sup>

## Demonstration software

The demonstration software, included in the STM32Cube MCU Package, is preloaded in the STM32 Flash memory for easy demonstration of the device peripherals in standalone mode. The latest versions of the demonstration source code and associated documentation can be downloaded from the [www.st.com/stm32nucleo](http://www.st.com/stm32nucleo) webpage.

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a. On Windows® only.

b. Refer to the <https://www.mbed.com> website and to [Table 2: Ordering information](#), to determine which Nucleo-board order codes are supported.

## Ordering information

To order a STM32 Nucleo-144 board, refer to [Table 2](#).

**Table 2. Ordering information**

Order code	Target STM32
NUCLEO-F207ZG <sup>(1) (2)</sup>	STM32F207ZGT6
NUCLEO-F303ZE <sup>(1) (3)</sup>	STM32F303ZET6
NUCLEO-F412ZG <sup>(1) (4)</sup>	STM32F412ZGT6
NUCLEO-F413ZH <sup>(4)</sup>	STM32F413ZHT6
NUCLEO-F429ZI <sup>(1) (2)</sup>	STM32F429ZIT6
NUCLEO-F439ZI <sup>(1) (2)</sup>	STM32F439ZIT6
NUCLEO-F446ZE <sup>(1) (4)</sup>	STM32F446ZET6
NUCLEO-F722ZE <sup>(4)</sup>	STM32F722ZET6
NUCLEO-F746ZG <sup>(1) (2)</sup>	STM32F746ZGT6
NUCLEO-F756ZG <sup>(1) (2)</sup>	STM32F756ZGT6
NUCLEO-F767ZI <sup>(1) (2)</sup>	STM32F767ZIT6
NUCLEO-H743ZI <sup>(2)</sup>	STM32H743ZIT6
NUCLEO-L496ZG <sup>(4)</sup>	STM32L496ZGT6
NUCLEO-L496ZG-P <sup>(4)</sup>	STM32L496ZGT6P
NUCLEO-L4A6ZG <sup>(4)</sup>	STM32L4A6ZGT6
NUCLEO-L4R5ZI <sup>(4)</sup>	STM32L4R5ZIT6

1. Arm® Mbed Enabled™.
2. With on-board Ethernet and USB OTG.
3. With on-board USB (Device only).
4. With on-board USB OTG.

The meaning of the NUCLEO-TXXXZY codification is explained in [Table 3](#).

**Table 3. Codification explanation**

NUCLEO-TXXXZY(-P)	Description	Example: NUCLEO-L496ZG-P
TXXX	STM32 product line	STM32L496
Z	STM32 package pin count	144 pins
Y	STM32 Flash memory size: – G for 1 Mbyte – I for 2 Mbytes	1 Mbyte
P	STM32 has SMPS function	SMPS

This order code is mentioned on a sticker placed on the top side of the board.

## Revision history

**Table 4. Document revision history**

Date	Revision	Changes
15-Feb-2017	1	Initial version.
16-Mar-2017	2	Document now scopes NUCLEO-L496ZG and NUCLEO-L496ZG-P products. Updated: – cover page features (to cover LL APIs) – cover page description – <a href="#">Table 2: Ordering information</a> – <a href="#">Table 3: Codification explanation</a> .
08-Aug-2017	3	Document now also scopes NUCLEO-L4R5ZI product. Added <a href="#">Table 1: Device summary</a> Updated: – <a href="#">Support of a wide choice of Integrated Development Environments (IDEs) including IAR™, Keil®, GCC-based IDEs</a> – <a href="#">Table 2: Ordering information</a> – <a href="#">Table 3: Codification explanation</a>
30-Aug-2017	4	Updated <a href="#">Table 2: Ordering information</a> .
3-Nov-2017	5	Document scope extended to the NUCLEO-F207ZG, NUCLEO-F303ZE, NUCLEO-F412ZG, NUCLEO-F413ZH, NUCLEO-F429ZI, NUCLEO-F446ZE, NUCLEO-F722ZE, NUCLEO-F746ZG, NUCLEO-F767ZI, and NUCLEO-H743ZI products. Updated: – <a href="#">Features</a> – <a href="#">Development toolchains</a> – <a href="#">Table 1: Device summary</a> – <a href="#">Table 2: Ordering information</a>
15-Dec-2017	6	Document scope extended to the NUCLEO-L4A6ZG, NUCLEO-F439ZI and NUCLEO-F756ZG products. Updated: – <a href="#">Features</a> – <a href="#">System requirements</a> – <a href="#">Table 1: Device summary</a> – <a href="#">Table 2: Ordering information</a>

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