Data brief

Features

- STM32 microcontroller in LQFP144 package
- SMPS: significantly reduces power consumption in Run mode, by generating Vcore logic supply from an external DC/DC converter. This function is only available on '-P' suffixed boards
- LSE crystal: 32.768 kHz crystal oscillator
- USB OTG or full-speed device (depending on STM32 support)
- Ethernet compliant with IEEE-802.3-2002 (depending on STM32 support)
- 3 user LEDs
- 2 user and reset push-buttons
- 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_{BUS} 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

Table 1. Device summary

Reference	Part number
NUCLEO-XXXXZX (-P)	NUCLEO-F207ZG, NUCLEO-F303ZE, NUCLEO-F412ZG, NUCLEO-F413ZH, NUCLEO-F429ZI, NUCLEO-F446ZE, NUCLEO-F722ZE, NUCLEO-F746ZG, NUCLEO-F767ZI, NUCLEO-H743ZI, NUCLEO-L496ZG, NUCLEO-L496ZG-P, NUCLEO-L4R5ZI
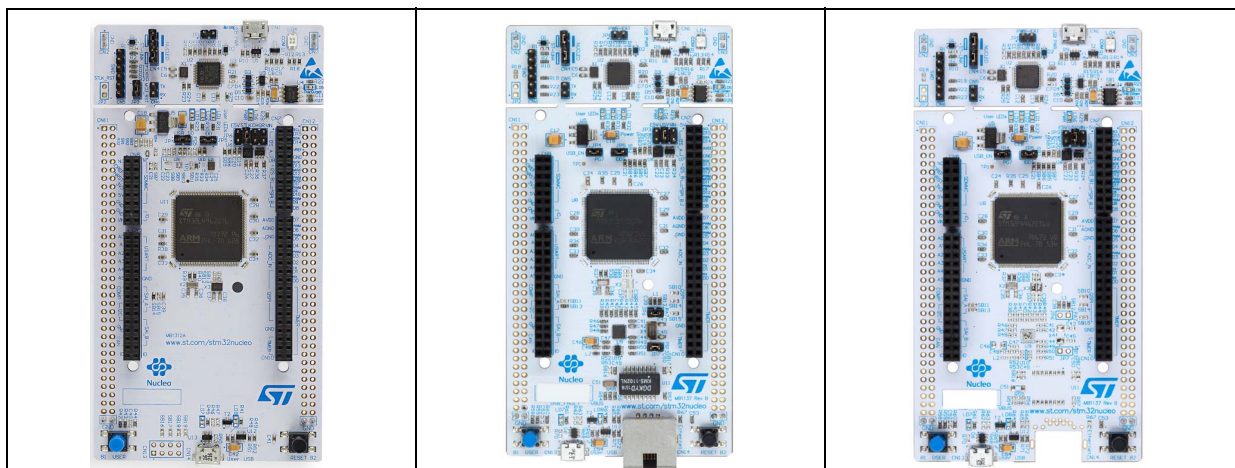
From left to right: top views of a NUCLEO-L4XXZY board without Ethernet peripheral, and of NUCLEO-FXXXZY boards with and without Ethernet peripheral. Pictures are not contractual.

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www.st.com

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.

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 package.

System requirements

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

Development toolchains

- Keil® MDK-ARM[a]
- IAR™ EWARM[a]
- GCC-based IDEs including free SW4STM32 from AC6
- Arm® Mbed™ online[b]

Demonstration software

The demonstration software, included in the STM32Cube package corresponding to the on-board MCU, 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 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 the Nucleo-144 board corresponding to the targeted STM32, use the order code given below in *Table 2*.

Table 2. Ordering information

Order code	Target STM32
NUCLEO-F207ZG[1] [2]	STM32F207ZGT6
NUCLEO-F303ZE[1] [3]	STM32F303ZET6
NUCLEO-F412ZG[1] [4]	STM32F412ZGT6
NUCLEO-F413ZH[4]	STM32F413ZHT6
NUCLEO-F429ZI[1] [2]	STM32F429ZIT6
NUCLEO-F446ZE[1] [4]	STM32F446ZET6
NUCLEO-F722ZE[4]	STM32F722ZET6
NUCLEO-F746ZG[1] [2]	STM32F746ZGT6
NUCLEO-F767ZI[1] [2]	STM32F767ZIT6
NUCLEO-H743ZI[2]	STM32H743ZIT6
NUCLEO-L496ZG[4]	STM32L496ZGT6
NUCLEO-L496ZG-P[4]	STM32L496ZGT6P
NUCLEO-L4R5ZI[4]	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* with an example.

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 – *Table 2: Ordering information* – *Table 3: Codification explanation*.
08-Aug-2017	3	Document now also scopes NUCLEO-L4R5ZI product. Added *Table 1: Device summary* Updated: – *Support of a wide choice of Integrated Development Environments (IDEs) including IAR™, Keil®, GCC-based IDEs* – *Table 2: Ordering information* – *Table 3: Codification explanation*
30-Aug-2017	4	Updated *Table 2: Ordering information*.
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: – *Features* – *Development toolchains* – *Table 1: Device summary* – *Table 2: Ordering information*

IMPORTANT NOTICE – PLEASE READ CAREFULLY