NUCLEO-XXXXZX

STM32 Nucleo-144 boards

Data brief

## Features

- STM32 microcontroller in LQFP144 package

- USB OTG or full-speed device (depending on STM32 support)

- Ethernet compliant with IEEE-802.3-2002 (depending on STM32 support)

- LSE crystal:
  - 32.768KHz crystal oscillator

- 3 user LEDs

- 2 push-buttons: USER and RESET

- Board connectors:
  - USB with Micro-AB
  - Ethernet RJ45 (depending on STM32 support)

- Board expansion connectors:
  - ST Zio 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

- Supported by wide choice of Integrated Development Environments (IDEs) including IAR™, Keil®, GCC-based IDEs, Arm® Mbed

- Arm® Mbed Enabled™ compliant (only for some Nucleo-board part numbers)
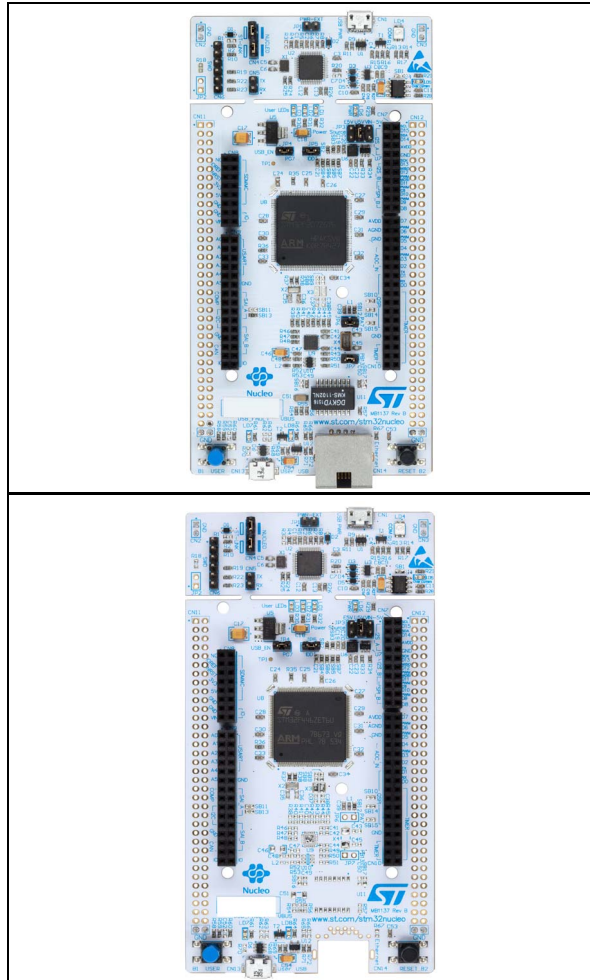
1. From top to bottom: top views of the Nucleo-144 boards with and without Ethernet peripheral. Pictures are not contractual.

Table 1. Device summary

Reference	Part numbers
NUCLEO-XXXXZX	NUCLEO-F207ZG, NUCLEO-F303ZE, NUCLEO-F412ZG, NUCLEO-F413ZH, NUCLEO-F429ZI, NUCLEO-F446ZE, NUCLEO-F722ZE, NUCLEO-F746ZG, NUCLEO-F767ZI, NUCLEO-H743ZI

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 with the STM32 microcontroller, by choosing from the various combinations of performance, power consumption, and features. The ST Zio connector, which is an extension of Arduino™ Uno V3, provides access to more peripherals while 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 boards do not require any separate probe as they integrate the ST-LINK/V2-1 debugger / programmer. The STM32 Nucleo-144 boards come with the STM32 comprehensive free software libraries and examples available with the STM32Cube package. For some configurations a direct access to the Arm® Mbed online resources is also available at http://mbed.org.

System requirements

- Windows® OS (7, 8, 10), Linux® 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] (see http://mbed.org)

Demonstration software

Demonstration software is preloaded in the STM32 Flash memory for easy demonstration of the device peripherals in standalone mode. For more information and to download the latest version, refer to the demonstration software for the STM32 Nucleo board at the www.st.com/stm32nucleo website.

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a. On Windows® only.

b. Refer to the http://mbed.com website and to *Table 2: Ordering information*, to determine which order codes are supported.

Ordering information

Table 2 lists the order codes and the respective targeted STM32.

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

1. Arm Mbed Enabled compliant.
2. Ethernet and USB OTG supported.
3. Only USB device supported.
4. USB OTG supported.

The meaning of the NUCLEO-TXXXZY codification is explained in *Table 3* with an example.

Table 3. Codification explanation

NUCLEO-TXXXZY	Description	Example: NUCLEO-F446ZE
TXXX	STM32 product line (F, H or L)	STM32F446
Z	STM32 package pin count	144 pins
Y	STM32 Flash memory size (8 for 64 Kbytes, B for 128 Kbytes, C for 256 Kbytes, E for 512 Kbytes, G for 1 Mbytes, Z for 192 Kbytes, H for 1.5 Mbytes, I for 2 Mbytes)	512 Kbytes

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
21-Dec-2015	1	Initial version.
27-Apr-2016	2	Updated: *Features*, *Table 1: Device summary*, *System requirements* to add NUCLEO-F767ZI.
29-Jun-2016	3	Updated *Table 1: Device summary*, *System requirements* to add NUCLEO-F412ZG.
25-Nov-2016	4	Extended the applicability to NUCLEO-F413ZH. Updated *Table 1: Device summary* and *Table 2: Ordering information*. Added *Table 3: Codification explanation*.
04-Jan-2017	5	Updated *Table 1: Device summary* and *Table 2: Ordering information* to add NUCLEO-F722ZE.
27-Mar-2017	6	Updated *Table 1: Device summary* and *Table 2: Ordering information* to add NUCLEO-H743ZI. Updated *Section : System requirements* and *Section : Development toolchains*. Reordered *Section : Features*.
08-Sept-2017	7	– Added figure in cover page to show the board without Ethernet peripheral – Updated *Table 2: Ordering information* to show the board configurations – Updated Arm Mbed words and logo

IMPORTANT NOTICE – PLEASE READ CAREFULLY