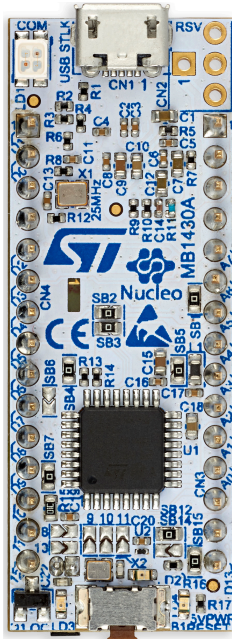# STM32 Nucleo-32 boards

NUCLEO-G431KB example. Boards with different references show different layouts. Picture is not contractual.

Product status link
NUCLEO-XXXXKX
NUCLEO-F031K6, NUCLEO-F042K6, NUCLEO-F301K8, NUCLEO-F303K8, NUCLEO-G031K8, NUCLEO-G431KB, NUCLEO-L011K4, NUCLEO-L031K6, NUCLEO-L412KB, NUCLEO-L432KC.

Features

- Common features
  - STM32 microcontroller in 32-pin package
  - 1 user LED
  - 1 reset push-button
  - Board connectors:
    - Arduino™ Nano V3 expansion connector
    - Micro-AB USB connector for the ST-LINK
  - Flexible power-supply options: ST-LINK, USB V_{BUS} or external sources
  - On-board ST-LINK 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 MCU Package
  - Support of a wide choice of Integrated Development Environments (IDEs) including IAR™, Keil® and GCC-based IDEs
- Board-specific features
  - 24 MHz crystal oscillator
  - Arm® Mbed Enabled™ compliant

Description

The STM32 Nucleo-32 board provides 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 Arduino™ Nano V3 connectivity support allows the easy expansion of the functionality of the STM32 Nucleo open development platform with a wide choice of specialized shields.

The STM32 Nucleo-32 board does not require any separate probe as it integrates the ST-LINK debugger/programmer.

The STM32 Nucleo-32 board comes with the STM32 comprehensive free software libraries and examples available with the STM32Cube MCU Package.

DB2638 - Rev 8 - June 2019
For further information contact your local STMicroelectronics sales office.

www.st.com

1 Ordering information

To order an STM32 Nucleo-32 board, refer to Table 1. For a detailed description of each board, refer to its user manual on the product web page. Additional information is available from the datasheet and reference manual of the target STM32.

Table 1. List of available products

Order code	Board reference	User manual	Target STM32	Differentiating features
NUCLEO-F031K6	MB1180	UM1956	STM32F031K6T6	• Arm® Mbed Enabled™ • ST-LINK/V2-1
NUCLEO-F042K6			STM32F042K6T6	• Arm® Mbed Enabled™ • ST-LINK/V2-1
NUCLEO-F301K8			STM32F301K8T6	• ST-LINK/V2-1
NUCLEO-F303K8			STM32F303K8T6	• Arm® Mbed Enabled™ • ST-LINK/V2-1
NUCLEO-G031K8	MB1455	UM2591	STM32G031K8T6U	• ST-LINK/V2-1
NUCLEO-G431KB	MB1430	UM2397	STM32G431KBT6U	• STLINK-V3E • 24 MHz crystal oscillator
NUCLEO-L011K4	MB1180	UM1956	STM32L011K4T6	• Arm® Mbed Enabled™ • ST-LINK/V2-1
NUCLEO-L031K6			STM32L031K6T6	• Arm® Mbed Enabled™ • ST-LINK/V2-1
NUCLEO-L412KB			STM32L412KBU6U	• ST-LINK/V2-1
NUCLEO-L432KC			STM32L432KCU6U	• Arm® Mbed Enabled™ • ST-LINK/V2-1

1.1 Product marking

Evaluation tools marked as "ES" or "E" are not yet qualified and therefore not ready to be used as reference design or in production. Any consequences deriving from such usage will not be at ST charge. In no event, ST will be liable for any customer usage of these engineering sample tools as reference design or in production.

"E" or "ES" marking examples of location:

- On the targeted STM32 that is soldered on the board (for illustration of STM32 marking, refer to the STM32 datasheet "Package information" paragraph at the *www.st.com* website).
- Next to the evaluation tool ordering part number that is stuck or silk-screen printed on the board.

Some boards feature a specific STM32 device version, which allows the operation of any bundled commercial stack/library available. This STM32 device shows a "U" marking option at the end of the standard part number and is not available for sales.

In order to use the same commercial stack in his application, a developer may need to purchase a part number specific to this stack/library. The price of those part numbers includes the stack/library royalties.

1.2 Codification

The meaning of the codification is explained in Table 2.

Table 2. Codification explanation

NUCLEO-XXYYKT	Description	Example: NUCLEO-G431KB
XX	MCU series in STM32 Arm Cortex MCUs	STM32G4 Series
YY	MCU product line in the series	STM32G431
K	STM32 package pin count	32 pins
T	STM32 Flash memory size: • 4 for 16 Kbytes • 6 for 32 Kbytes • 8 for 64 Kbytes • B for 128 Kbytes • C for 256 Kbytes	128 Kbytes

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

2 Development environment

2.1 System requirements

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

Note: *macOS® is a trademark of Apple Inc. registered in the U.S. and other countries.*

2.2 Development toolchains

- Keil® MDK-ARM[1]
- IAR™ EWARM[1]
- GCC-based IDEs
- Arm® Mbed™[2] online[3] (see mbed.org)

Note: 1. *On Windows® only.*

2. *Arm and Mbed are registered trademarks or trademarks of Arm Limited (or its subsidiaries) in the US and or elsewhere.*

3. *Refer to the www.mbed.com website and to the "Ordering information" section to determine which order codes are supported.*

2.3 Demonstration software

The demonstration software, included in the STM32Cube MCU Package corresponding to the on-board microcontroller, 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 *www.st.com*.

Revision history

Table 3. Document revision history

Date	Version	Changes
08-Sep-2015	1	Initial release.
15-Jan-2016	2	Added *Table 1: Device summary* and updated *Table 2: Ordering information*.
09-Jun-2016	3	Updated S*ection : Description* and *Section : System requirements* to add NUCLEO-L432KC.
07-Jul-2017	4	Updated *Features*.
23-Aug-2018	5	Extended document scope to NUCLEO-L412KB. Updated *Table 1: Device summary*, *System requirements*, *Development toolchains*, and *Ordering information*. Added *Demonstration software*.
13-Nov-2018	6	Extended document scope to NUCLEO-F301K8: updated *Features*, *Table 1: Device summary*, and *Table 2: Ordering information*.
10-May-2019	7	Revised the entire document to accommodate multiple feature combinations: • Reorganized *Features* • Updated *Description* • Updated *Ordering information* • Added *Development environment* • Updated *Table 1. List of available products* and *Table 2. Codification explanation* Extended document scope to the NUCLEO-G431KB board.
5-Jun-2019	8	Extended document scope to the NUCLEO-G031K8 board. Global product description: updated Features, Ordering information, and System requirements.

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