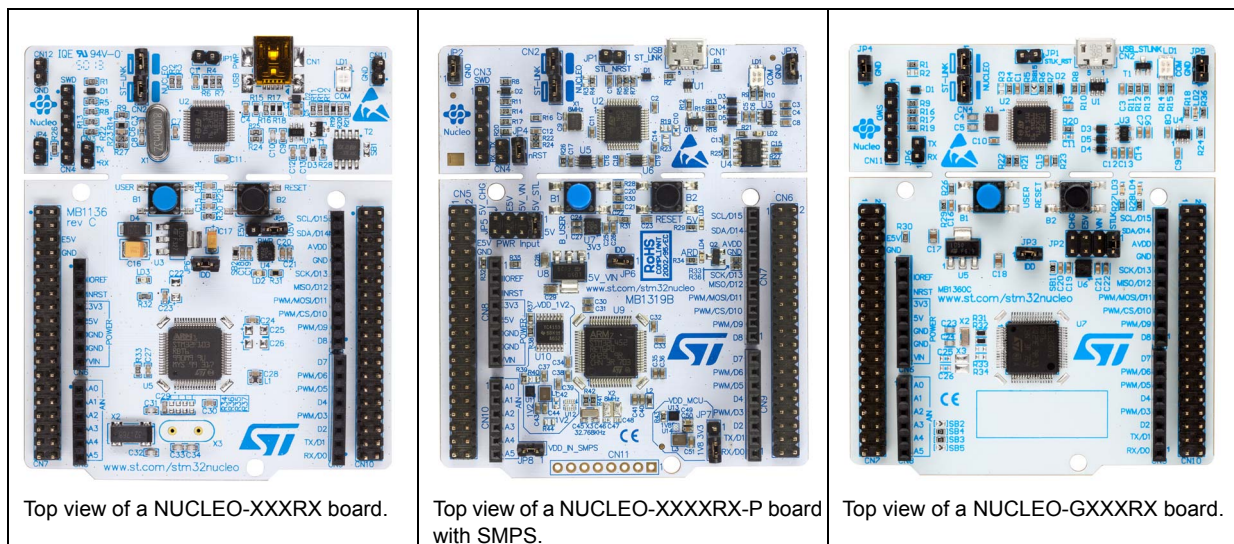


### Features

- STM32 microcontroller in LQFP64 package
- External SMPS to generate Vcore logic supply (only available on '-P' suffixed boards)
- 1 user LED shared with Arduino™
- 1 user and 1 reset push-buttons
- 32.768 kHz LSE crystal oscillator
- Board expansion connectors:
  - Arduino™ Uno V3
  - ST morpho extension pin headers for full access to all STM32 I/Os
  - External SMPS experimentation dedicated connector (only available on '-P' suffixed boards)
- 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. Three different interfaces supported on USB: 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®, GCC-based IDEs, Arm® Mbed™
- Arm® Mbed Enabled™ compliant (only for some Nucleo part numbers)

Table 1. Device summary

| Reference          | Part number  |
|--------------------|--|
| NUCLEO-XXXXRX (-P) | NUCLEO-F030R8, NUCLEO-F070RB, NUCLEO-F072RB, NUCLEO-F091RC, NUCLEO-F103RB, NUCLEO-F302R8, NUCLEO-F303RE, NUCLEO-F334R8, NUCLEO-F401RE, NUCLEO-F410RB, NUCLEO-F411RE, NUCLEO-F446RE, NUCLEO-G070RB, NUCLEO-G071RB, NUCLEO-L010RB, NUCLEO-L053R8, NUCLEO-L073RZ, NUCLEO-L152RE, NUCLEO-L412RB-P, NUCLEO-L433RC-P, NUCLEO-L452RE, NUCLEO-L452RE-P, NUCLEO-L476RG. |



Pictures are not contractual.



## Description

The STM32 Nucleo-64 boards provide an affordable and flexible way for users to try out new concepts and build prototypes with the STM32 microcontrollers, choosing from various combinations of performance, power consumption and features. For the compatible boards, the SMPS significantly reduces power consumption in Run mode.

The Arduino™ Uno V3 connectivity support and the ST morpho headers allow the easy expansion of the functionality of the STM32 Nucleo open development platform with a wide choice of specialized shields.

The STM32 Nucleo-64 board does not require any separate probe as it integrates the ST-LINK/V2-1 debugger and programmer.

The STM32 Nucleo-64 board comes with the STM32 comprehensive software HAL library together with various packaged software examples, as well as direct access to the Arm® Mbed™ online resources at <http://mbed.org>.

## System requirement

- Windows® OS (7, 8 and 10), Linux® 64-bit or macOS®<sup>(a)</sup>
- USB Type-A to Mini-B cable or USB Type-A to Micro-B cable

## Development toolchains

- Keil®: MDK-ARM<sup>(b)</sup>
- IAR™: EWARM<sup>(b)</sup>
- GCC-based IDEs
- Arm® Mbed™<sup>(c)</sup> online<sup>(d)</sup> (see <http://mbed.org>)

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a. macOS® is a trademark of Apple Inc.\nregistered in the U.S. and other countries.

b. On Windows® only.

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

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

## 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) website.

## Ordering information

To order the STM32 Nucleo-64 board, refer to [Table 2](#).

**Table 2. Ordering information**

| Order code                     | Targeted STM32 |
|--------------------------------|----------------|
| NUCLEO-F030R8 <sup>(1)</sup>   | STM32F030R8T6  |
| NUCLEO-F070RB <sup>(1)</sup>   | STM32F070RBT6  |
| NUCLEO-F072RB <sup>(1)</sup>   | STM32F072RBT6  |
| NUCLEO-F091RC <sup>(1)</sup>   | STM32F091RCT6  |
| NUCLEO-F103RB <sup>(1)</sup>   | STM32F103RBT6  |
| NUCLEO-F302R8 <sup>(1)</sup>   | STM32F302R8T6  |
| NUCLEO-F303RE <sup>(1)</sup>   | STM32F303RET6  |
| NUCLEO-F334R8 <sup>(1)</sup>   | STM32F334R8T6  |
| NUCLEO-F401RE <sup>(1)</sup>   | STM32F401RET6  |
| NUCLEO-F410RB <sup>(1)</sup>   | STM32F410RBT6  |
| NUCLEO-F411RE <sup>(1)</sup>   | STM32F411RET6  |
| NUCLEO-F446RE <sup>(1)</sup>   | STM32F446RET6  |
| NUCLEO-G070RB                  | STM32G070RBT6  |
| NUCLEO-G071RB                  | STM32G071RBT6  |
| NUCLEO-L010RB                  | STM32L010RBT6  |
| NUCLEO-L053R8 <sup>(1)</sup>   | STM32L053R8T6  |
| NUCLEO-L073RZ <sup>(1)</sup>   | STM32L073RZT6  |
| NUCLEO-L152RE <sup>(1)</sup>   | STM32L152RET6  |
| NUCLEO-L412RB-P                | STM32L412RBT6P |
| NUCLEO-L433RC-P <sup>(1)</sup> | STM32L433RCT6P |
| NUCLEO-L452RE                  | STM32L452RET6  |
| NUCLEO-L452RE-P                | STM32L452RET6P |
| NUCLEO-L476RG <sup>(1)</sup>   | STM32L476RGT6  |

1. Arm® Mbed Enabled™.

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

**Table 3. Codification explanation**

| NUCLEO-TXXXRY-P | Description  | Example: NUCLEO-L452RE |
|-----------------|--|------------------------|
| TXXX            | STM32 product line   | STM32L452              |
| R               | STM32 package pin count  | 64 pins                |
| Y               | STM32 Flash memory size:<br>– 8 for 64 Kbytes<br>– B for 128 Kbytes<br>– C for 256 Kbytes<br>– E for 512 Kbytes<br>– G for 1 Mbyte<br>– Z for 192 Kbytes | 512 Kbytes             |
| P = SMPS        | MCU has SMPS function  | -                      |

The order code is printed on a sticker placed at the top or bottom side of the board.

## Revision history

**Table 4. Document revision history**

| Date        | Revision | Changes   |
|-------------|----------|---|
| 10-Feb-2014 | 1        | Initial release.  |
| 13-Feb-2014 | 2        | Added <a href="#">Table 1: Device summary</a> and updated <a href="#">Table 2: Ordering information</a> .   |
| 11-Apr-2014 | 3        | Extended the applicability to NUCLEO-F302R8. Updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a> .  |
| 26-May-2014 | 4        | Extended the applicability to NUCLEO-L053R8, NUCLEO-F072RB, NUCLEO-F334R8 and NUCLEO-F411RE<br>Updated <a href="#">Table 1</a> and <a href="#">Table 2</a> .  |
| 09-Sep-2014 | 5        | Extended the applicability to NUCLEO-F091RC and NUCLEO-F303RE.<br>Updated <a href="#">Features</a> .<br>Updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a> .   |
| 16-Dec-2014 | 6        | Extended the applicability to NUCLEO-F070RB, NUCLEO-L073RZ and NUCLEO-L476RG.<br>Updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a> .  |
| 08-Jul-2015 | 7        | Extended the applicability to NUCLEO-F410RB, NUCLEO-F446RE.<br>Updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a> .  |
| 29-Nov-2016 | 8        | Extended the applicability to NUCLEO-L452RE.<br>Updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a> .<br>Added <a href="#">Table 3: Codification explanation</a> .  |
| 16-Nov-2017 | 9        | Extended document scope to the NUCLEO-L452RE-P and NUCLEO-L433RC-P boards:<br>– Updated <a href="#">Features</a><br>– Updated <a href="#">Table 1: Device summary</a> , <a href="#">Table 2: Ordering information</a> and <a href="#">Table 3: Codification explanation</a><br>– Updated <a href="#">System requirement</a> , <a href="#">Development toolchains</a> and <a href="#">Demonstration software</a> |
| 15-Dec-2017 | 10       | Updated <a href="#">Features</a> , <a href="#">Description</a> and <a href="#">System requirement</a> .<br>Extended document scope to the NUCLEO-L010RB board: updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a> .  |

Table 4. Document revision history (continued)

| Date        | Revision | Changes  |
|-------------|----------|--|
| 24-Aug-2018 | 11       | Extended document scope to the NUCLEO-L412RB-P board: updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a> .  |
| 22-Oct-2018 | 12       | Extended document scope to the NUCLEO-G070RB and NUCLEO-G071RB boards:<br>– updated <a href="#">Table 1: Device summary</a> and <a href="#">Table 2: Ordering information</a><br>– added NUCLEO-GXXXXRX top view on the cover page |

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