NUCLEO-L476RG

Affordable and flexible platform to ease prototyping using a STM32L476RGT6 microcontroller.

To compile a program for this board using Mbed CLI, use **nucleo_l476rg** as the target name.

Board Partner

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A world leader in providing the semiconductor solutions that make a positive contribution to people's lives, both today and in the future.

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Mbed Enabled

- Advanced
- Baseline

Mbed OS support

- Mbed OS 2
- Mbed OS 5.10
- Mbed OS 5.11
- Mbed OS 5.12
- Mbed OS 5.13
- Mbed OS 5.14
- Mbed OS 5.15
- Mbed OS 5.4
- Mbed OS 5.5
- Mbed OS 5.6
- Mbed OS 5.7
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- Mbed OS 5.9
- Mbed OS 6.0
- Mbed OS 6.1
- Mbed OS 6.10
- Mbed OS 6.11

Table of Contents

Overview

The STM32 Nucleo board provides an affordable and flexible way for users to try out new ideas and build prototypes with any STM32 microcontroller line, choosing from the various combinations of performance, power consumption and features.

The Arduino™ connectivity support and ST Morpho headers make it easy to expand the functionality of the STM32 Nucleo open development platform with a wide choice of specialized shields.

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

Microcontroller features

- STM32L476RGT6 in LQFP64 package
- ARM®32-bit Cortex®-M4 CPU
- Adaptive real-time accelerator (ART Accelerator™) allowing 0-wait state execution from Flash memory
- 80 MHz max CPU frequency
- VDD from 1.71 V to 3.6 V
- 1 MB Flash
- 128 KB SRAM
- random generator (TRNG for HW entropy)
- Quad SPI (1)
- Timers General Purpose (7)
- Timers Advanced-Control (2)
- Timers Basic (2)
- Timers LowPower (2)
- Systick
- Watchdog (2)
- SPI (3)
- I2C (3)
- USART (3)
- UART (2)
- LPUART (1)
- USB OTG Full Speed
- CAN (1)
- SAI (2)
- SDMMC
- SWPMI

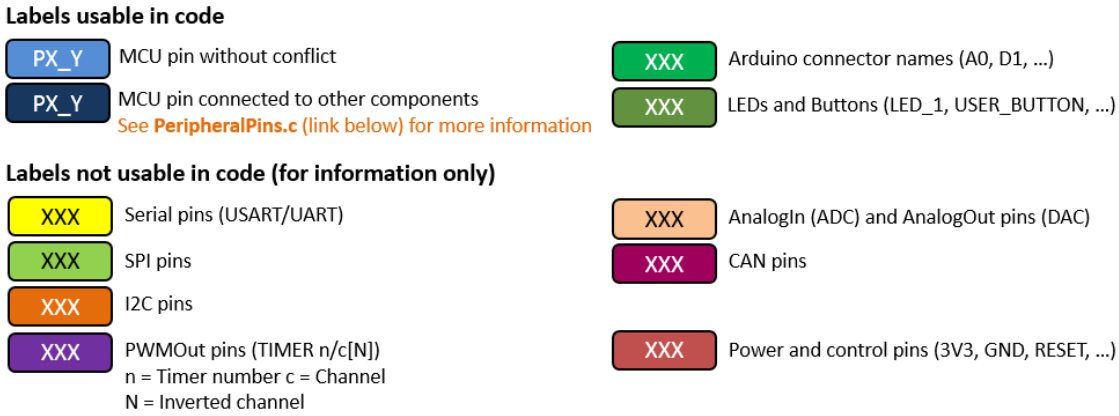
- LCD 8x28 or 4x32
- GPIO (51) with external interrupt capability
- Capacitive sensing with 12 channels
- 12-bit ADC (3) with 16 channels
- 12-bit DAC with 2 channels
- Analog comparator (2)
- Opamp (2)

Nucleo features

- Two types of extension resources
  - Arduino Uno Revision 3 connectivity
  - STMicroelectronics Morpho extension pin headers for full access to all STM32 I/Os
- On-board ST-LINK/V2-1 debugger/programmer with SWD connector
  - Selection-mode switch to use the kit as a standalone ST-LINK/V2-1
- Flexible board power supply
  - USB VBUS or external source (3.3 V, 5 V, 7 - 12 V)
  - Power management access point
- User LED (LD2)
- Two push buttons: USER and RESET
- USB re-enumeration capability: three different interfaces supported on USB
  - Virtual Com port
  - Mass storage (USB Disk drive) for drag'n'drop programming
  - Debug port

Nucleo pinout

Pins Legend



You can find more details on the available pins and labels in the **PeripheralPins.c** and **PinNames.h** files.

These files can be found in:

- ARMmbed/mbed-os repository on GitHub (**up-to-date** version, used with **mbed CLI commands**)

https://github.com/ARMmbed/mbed-os/blob/master/targets/TARGET_STM/TARGET_STM32L4/TARGET_STM32L476xG/TARGET_NUCLEO_L476RG/ (https://github.com/ARMmbed/mbed-os/blob/master/targets/TARGET_STM/TARGET_STM32L4/TARGET_STM32L476xG/TARGET_NUCLEO_L476RG/)

- mbed-dev library in developer.mbed.org (source files of the mbed library used on **mbed compiler IDE**)

https://developer.mbed.org/users/mbed_official/code/mbed-dev/file/default/targets/TARGET_STM/TARGET_STM32L4/TARGET_STM32L476xG/TARGET_NUCLEO_L476RG/ (https://developer.mbed.org/users/mbed_official/code/mbed-dev/file/default/targets/TARGET_STM/TARGET_STM32L4/TARGET_STM32L476xG/TARGET_NUCLEO_L476RG/)

- Mbed OS 6.12
- Mbed OS 6.13
- Mbed OS 6.14
- Mbed OS 6.15
- Mbed OS 6.2
- Mbed OS 6.3
- Mbed OS 6.4
- Mbed OS 6.5
- Mbed OS 6.6
- Mbed OS 6.7
- Mbed OS 6.8
- Mbed OS 6.9

Example programs

Mbed OS mbed-os-example-mbed5-blinky (/teams/mbed-os-examples/code/mbed-os-example-mbed5-blinky/)

Featured 107 (/teams/mbed-os-examples/code/mbed-os-example-mbed5-blinky/)shortlog) 195500 (/teams/mbed-os-examples/code/mbed-os-example-mbed5-blinky/)

This is a very simple guide, reviewing the steps required to get Blinky working on an Mbed OS platform.

Last updated: 22 Nov 2019 (22 Nov 2019)

Mbed 2 deprecated IDW01M1_Cloud_IBM (/teams/ST/code/IDW01M...

25 (/teams/ST/code/IDW01M1_Cloud_IBM/)s 11753 (/teams/ST/code/IDW01M1_Cloud_IBM/)

Connect through Wifi to IBM MQTT cloud https://quickstart.internetofthing

Last updated: 24 Nov 2016 (24 Nov 2016)

Mbed 2 deprecated HelloWorld_IDW01M1v2 (/teams/ST/code/HelloWor...

13 (/teams/ST/code/HelloWorld_IDW01M1v2 9733 (/teams/ST/code/HelloWorld_IDW

Simple test application for the STMicroelectronics X-NUCLEO-IDW01M1 Wi-Fi expansion board.

Nucleo (/search/?q=Nucleo), stm32 (/search/?q=stm32), Wi-Fi (/search/?q=Wi-Fi), X-NUCLEO-IDW01M1 (/search/?q=X-NUCLEO-IDW01M1)

Last updated: 16 Jan 2017 (16 Jan 2017)

Arduino-compatible headers

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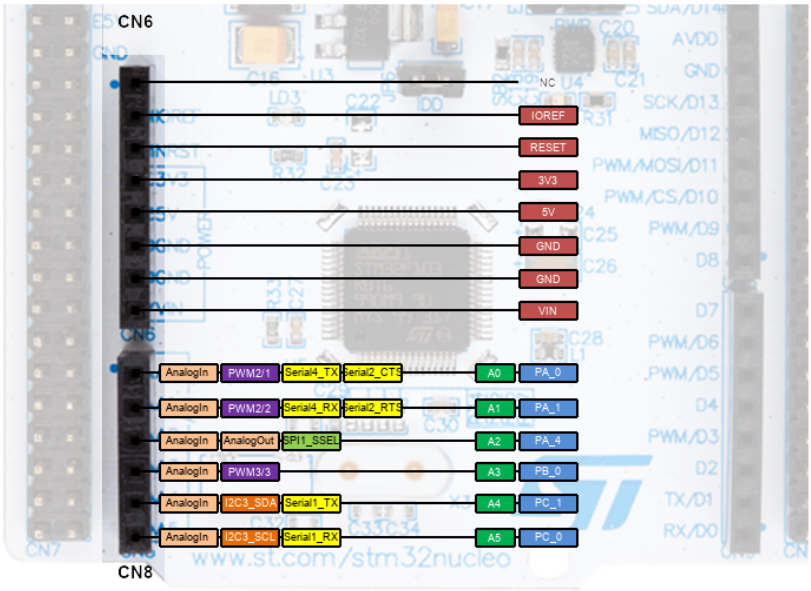
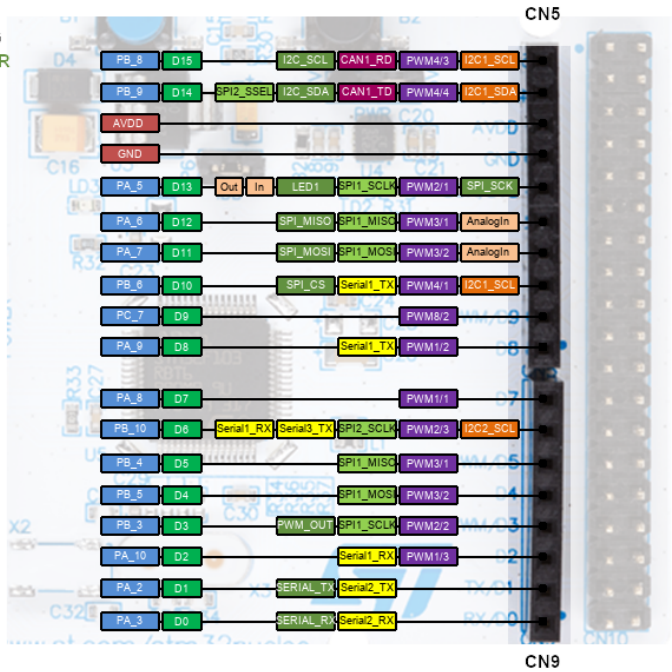
NUCLEO-L476RG
ARDUINO HEADER
(top left side)



life.augmented
NUCLEO-L476RG
ARDUINO HEADER
(top right side)



Morpho headers

These headers give access to all STM32 pins.

Mbed 2 deprecated
STM32_ADC_InternalChan... (/teams/ST/code/STM32_A...)
9 (/teams/ST/code/STM32_ADC_InternalCha
49840 (/teams/ST/code/STM32_ADC_InternalCha

ADC internal channels read example.

Internal Channels (/search/?q=Internal Channels), stm32 (/search/?q=stm32), temperature sensor (/search/?q=temperature sensor), VBAT (/search/?q=VBAT)

Last updated: 17 Aug 2017 (17 Aug 2017)

Mbed OS **mbed-os-example-wifi (/teams/ST/code/mbed-os-example-wifi/)**
59 (/teams/ST/code/mbed-os-example-wifi/}shortlog)
1634 (/teams/ST/code/mbed-os-example-wifi/)

WiFi example for mbed OS, fork from https://github.com/ARMmbed/mbed-os-example-wifi

Last updated: 27 Feb 2018 (27 Feb 2018)

Mbed 2 deprecated
HelloWorld_IHM01A1 (/teams/ST/code/HelloWor...)
38 (/teams/ST/code/HelloWorld_IHM01A1/}s
1830 (/teams/ST/code/HelloWorld_IHM

Simple test application for the STMicroelectronics X-NUCLEO-IHM01A1 Stepper Motor Control Expansion Board.

Last updated: 13 Mar 2017 (13 Mar 2017)

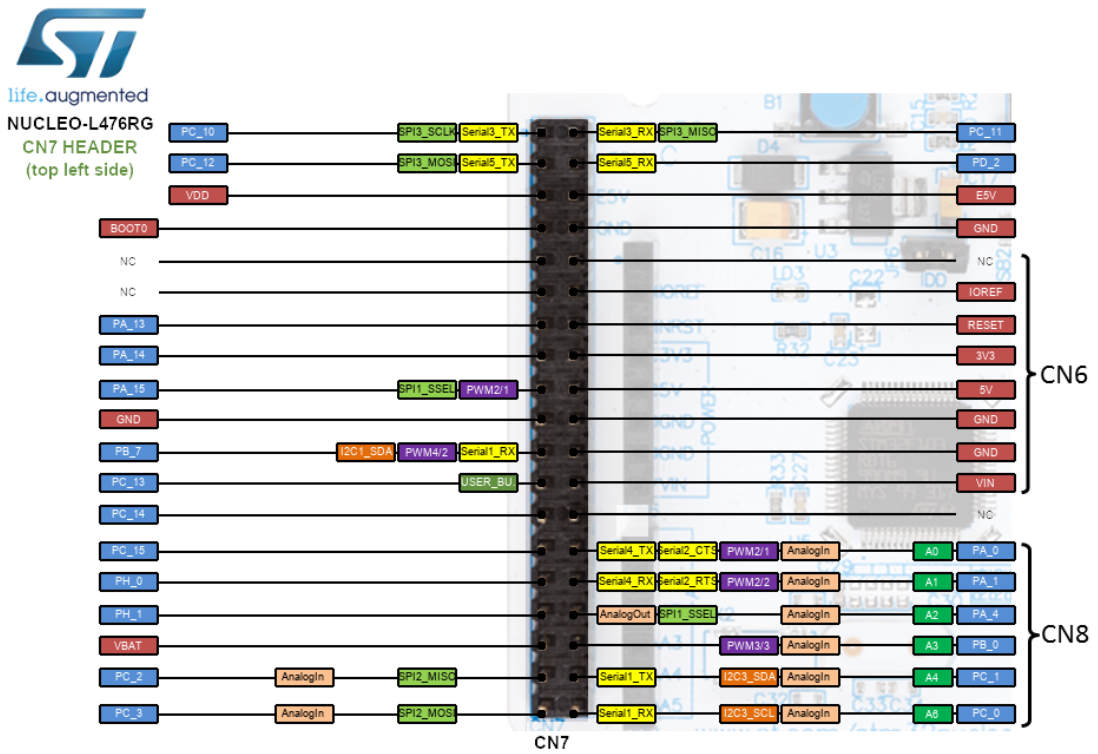
Mbed 2 deprecated
HelloWorld_IHM02A1 (/teams/ST/code/HelloWor...)
27 (/teams/ST/code/HelloWorld_IHM02A1/}s
3280 (/teams/ST/code/HelloWorld_IHM

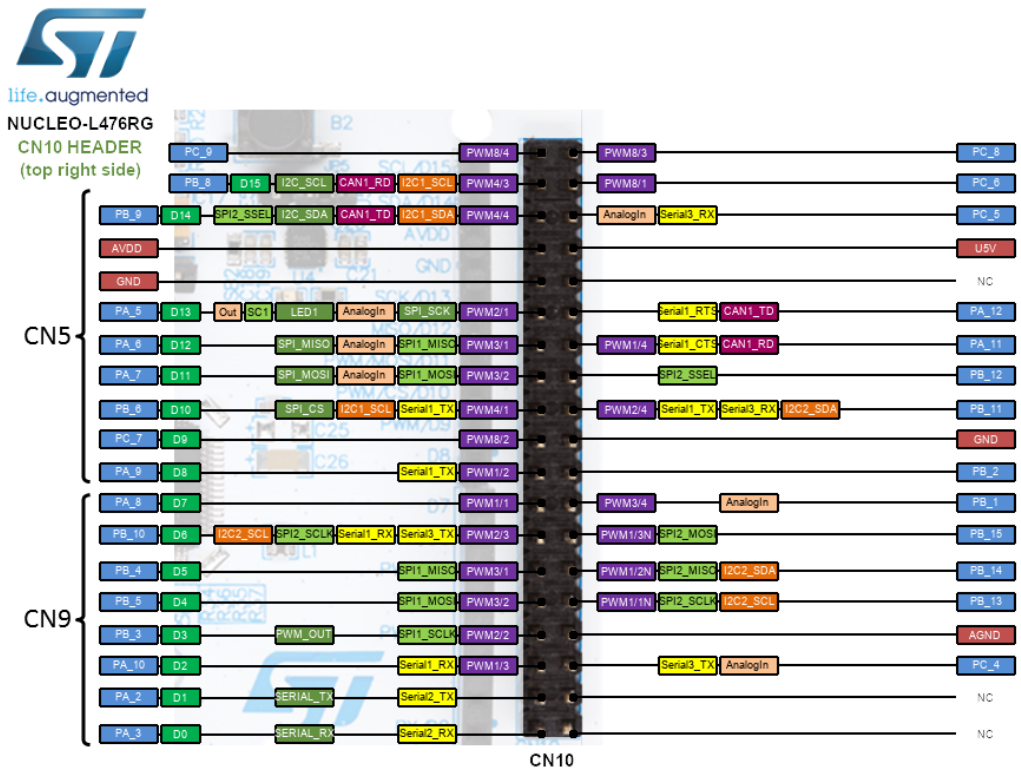
Simple test application for the STMicroelectronics X-NUCLEO-IHM02A1 Stepper Motor Control Expansion Board.

Last updated: 13 Mar 2017 (13 Mar 2017)

Mbed OS **pelion-example-common (/teams/ST/code/pelion-example-common/)**
26 (/teams/ST/code/pelion-example-common/}shortlog)
4698 (/teams/ST/code/pelion-example-common/)

Mbed OS Device Management example for various ST boards.





device management (/search/?q=device management), Pelion (/search/?q=Pelion), ST (/search/?q=ST), ST Discovery (/search/?q=ST Discovery), ST Nucleo (/search/?q=ST Nucleo)

Last updated: 27 Mar 2019 (27 Mar 2019)

CMSIS support

Find documentation, software examples and the CMSIS Board Support Pack.

NUCLEO-L476RG on keil.arm.com (https://www.keil.arm.com/boards/stm nucleo-l476rg-revc-1e04915/)

Supported shields

ST X-NUCLEO boards

See Matrix of tested boards (https://developer.mbed.org/teams/ST/wiki/Matrix-of-tested-boards).

Other Non-ST boards

See here (https://developer.mbed.org/teams/ST/wiki/Supported-shields).

Getting started

Nucleo ST-LINK/V2 driver installation and firmware upgrade

- Install the ST-LINK/V2 driver before connecting the Nucleo board to your PC the first time. Follow this **LINK (/teams/ST/wiki/ST-Link-Driver)** for all details.
- For optimum performances, ensure that the Nucleo ST-LINK/V2 firmware is upgraded to the latest version. Follow this **LINK (/teams/ST/wiki/Nucleo-Firmware)** for all details.

Technical references

For more information, please refer to:

- STM32L476RG microcontroller (http://www.st.com/web/catalog/mmc/FM141/SC1169/SS1580/LN1840/PF260095?s_searchtype=partnumber)
- Nucleo board (http://www.st.com/stm32nucleo)
- SDK changes log (/teams/ST/wiki/SDK-changes-log)

Known limitations

The following section describes known limitations of the platform. Note that general issues are tracked into the mbed repository (https://github.com/mbedmicro/mbed) available on GitHub.

- On Nucleo 64-pins boards, the D0 and D1 pins are not available per default as they are used by the STLink Virtual Comm Port. More information HERE (https://os.mbed.com/teams/ST/wiki/Use-of-D0D1-Arduino-pins)

Tips and Tricks

Find more information in ST WIKI pages (https://os.mbed.com/teams/ST/wiki/Special:Allpages).

Buy Now (https://www.st.com/content/st_com/en/products/evaluation-tools/product-evaluation-tools/mcu-eval-tools/stm32-mcu-eval-tools/stm32-mcu-nucleo/nucleo-l476rg.html#samplebuy-scroll)

You need to log in (/account/login/?next=/platforms/ST-Nucleo-L476RG/) to post a discussion

Discussion topics

Topic	Replies	Last post
nucleo-l476rg development board (/forum/platform-99-ST-Nucleo-Reserved-community/topic/35672/)	0	26 Apr 2019 (26 Apr 2019) (/forum/platform-99-ST-Nucleo-Reserved-community/post/62408/) by Huseyin Akgul (/users/amcasi/)

nucleo l476rg (/forum/platform-99-ST-Nucleo-Reserved-community/topic/32573/) L476RG (/search/?q=L476RG&type=Forum)	0	19 Jul 2018 (19 Jul 2018) (/forum/platform-99-ST-Nucleo-Reserved-community/post/58666/) by marc Goemans (/users/marcgoemans/)
Does the USBDEVICE.lib work on the NUCLEO-L476RG? (/forum/platform-99-ST-Nucleo-Reserved-community/topic/30728/) NUCLEO-L476RG (/search/?q=NUCLEO-L476RG&type=Forum), USB (/search/?q=USB&type=Forum)	2	10 Apr 2018 (10 Apr 2018) (/forum/platform-99-ST-Nucleo-Reserved-community/post/56523/) by Ryo Kodama (/users/dfv707/)
AnalogIn Read giving incorrect voltages L476RG (/forum/platform-99-ST-Nucleo-Reserved-community/topic/26093/) AnalogIn (/search/?q=AnalogIn&type=Forum), L476RG (/search/?q=L476RG&type=Forum), read (/search/?q=read&type=Forum)	1	22 Mar 2016 (22 Mar 2016) (/forum/platform-99-ST-Nucleo-Reserved-community/post/49810/) by DAP Phillips (/users/MateyBoy/)

Questions

1 answer
(/questions/86786/ST_Link-Driver-Install/) ST_Link Driver Install (/questions/86786/ST_Link-Driver-Install/) (/users/JerryBonner/) Jerry Bonner (/users/JerryBonner/)
3 years, 9 months ago (Thu 22 Aug 2019 14:24)

ST-LINK (/questions/tag/ST-LINK) , V2-1 (/questions/tag/V2-1)

0 answers
(/questions/83473/NUCLEO-L476RG-as-USB-FS-serial-device/) NUCLEO-L476RG as USB FS serial device (/questions/83473/NUCLEO-L476RG-as-USB-FS-serial-device/) (/users/Suhel/) mohammed suhel (/users/Suhel/)
4 years, 5 months ago (Mon 03 Dec 2018 15:39)

NUCLEO-L476RG (/questions/tag/NUCLEO-L476RG)

2 answers
(/questions/82239/How-to-add-new-wifi-driver-to-L476RGMbed/) How to add new wifi driver to L476RG/MbedOS (/questions/82239/How-to-add-new-wifi-driver-to-L476RGMbed/) (/users/shimizus3106/) Shigenori Shimizu (/users/shimizus3106/)
4 years, 5 months ago (Fri 30 Nov 2018 03:27)

NUCLEO-L476RG (/questions/tag/NUCLEO-L476RG)

3 answers
(/questions/82162/Cannot-get-SD-card-working-with-NUCLEO-L/) Cannot get SD card working with NUCLEO-L476RG pinmap not found for peripheral / Fatal Run-time error (/questions/82162/Cannot-get-SD-card-working-with-NUCLEO-L/) (/users/lo/) BIDAULT Hoel (/users/lo/)
4 years, 8 months ago (Mon 03 Sep 2018 22:13)

NUCLEO-L476RG (/questions/tag/NUCLEO-L476RG) , pinmap (/questions/tag/pinmap) , SD Card (/questions/tag/SD Card)

1 answer
(/questions/81066/Does-this-Nucleo-board-provide-CAN-Suppo/) ✔ Does this Nucleo board provide CAN Support? (/questions/81066/Does-this-Nucleo-board-provide-CAN-Suppo/) (/users/ajayk/) Ajay Kashyap (/users/ajayk/)
5 years ago (Mon 30 Apr 2018 09:49)

NUCLEO-L476RG (/questions/tag/NUCLEO-L476RG)

See more related questions (/questions/related/72/99/ST-Nucleo-L476RG/)