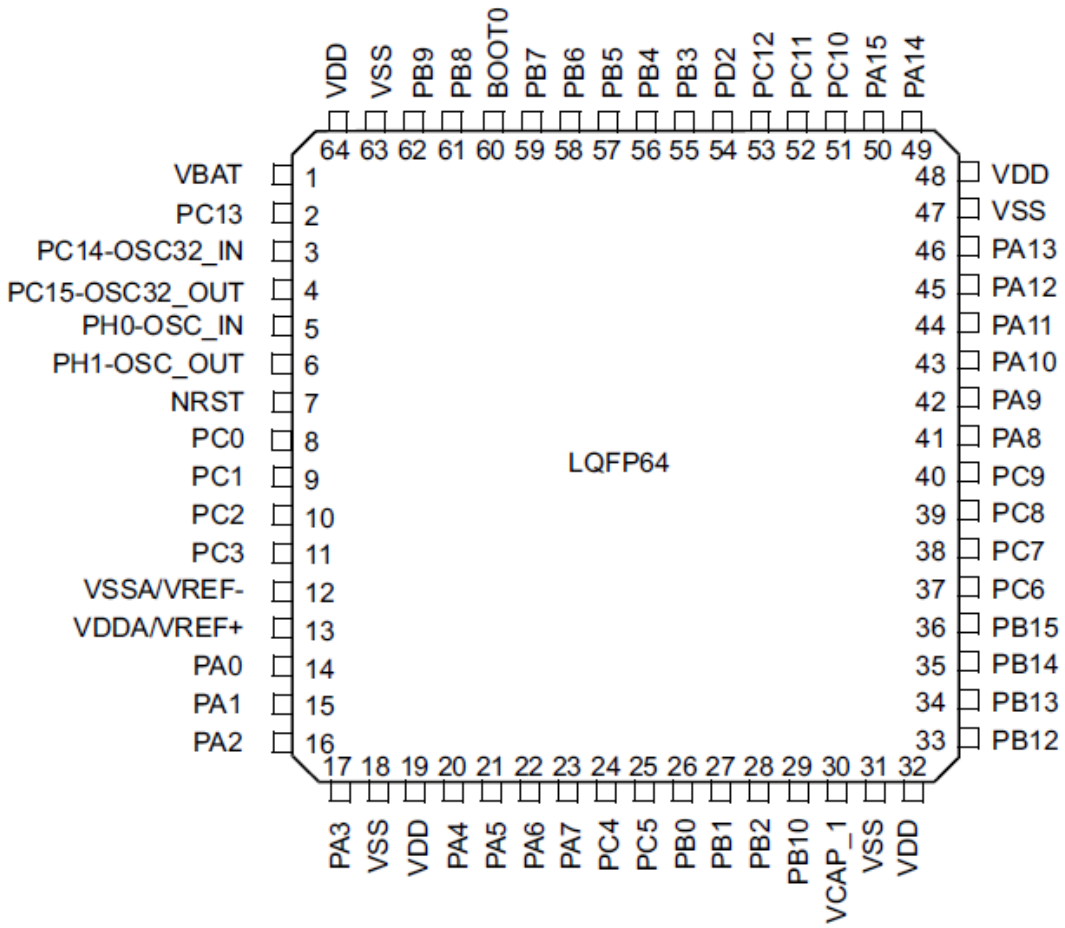
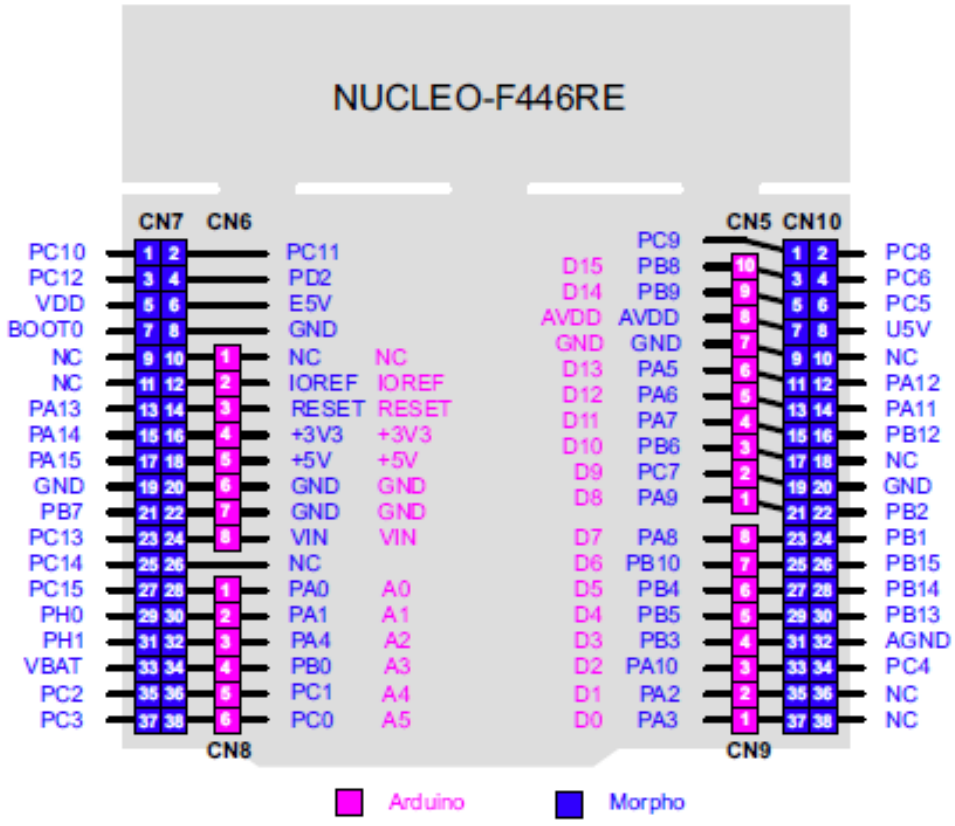

LQFP64
1 VBAT
2 PC13
3 PC14-OSC32_IN
4 PC15-OSC32_OUT
5 PH0-OSC_IN
6 PH1-OSC_OUT
7 NRST
8 PC0
9 PC1
10 PC2
11 PC3
12 VSSA/VREF-
13 VDDA/VREF+
14 PA0
15 PA1
16 PA2
17 PA3
18 VSS
19 VDD
20 PA4
21 PA5
22 PA6
23 PA7
24 PC4
25 PC5
26 PB0
27 PB1
28 PB2
29 PB10
30 VCAP_1
31 VSS
32 VDD
33 PB12
34 PB13
35 PB14
36 PB15
37 PC6
38 PC7
39 PC8
40 PC9
41 PA8
42 PA9
43 PA10
44 PA11
45 PA12
46 PA13
47 VSS
48 VDD
49 PA14
50 PA15
51 PC10
52 PC11
53 PC12
54 PD2
55 PB3
56 PB4
57 PB5
58 PB6
59 PB7
60 BOOT0
61 PB8
62 PB9
63 VSS
64 VDD


NUCLEO-F446RE
CN7
CN6
CN8
CN5
CN10
CN9
PC10 PC11
PC12 PD2
VDD E5V
BOOT0 GND
NC NC NC
NC IOREF IOREF
PA13 RESET RESET
PA14 +3V3 +3V3
PA15 +5V +5V
GND GND GND
PB7 GND GND
PC13 VIN VIN
PC14 NC
PC15 PA0 A0
PH0 PA1 A1
PH1 PA4 A2
VBAT PB0 A3
PC2 PC1 A4
PC3 PC0 A5
PC9 PC8
D15 PB8 PC6
D14 PB9 PC5
AVDD AVDD U5V
GND GND NC
D13 PA5 PA12
D12 PA6 PA11
D11 PA7 PB12
D10 PB6 NC
D9 PC7 GND
D8 PA9 PB2
D7 PA8 PB1
D6 PB10 PB15
D5 PB4 PB14
D4 PB5 PB13
D3 PB3 AGND
D2 PA10 PC4
D1 PA2 NC
D0 PA3 NC
Arduino
Morpho

NUCLEO-F446RE

Affordable and flexible platform to ease prototyping using a STM32F446RET6 microcontroller.

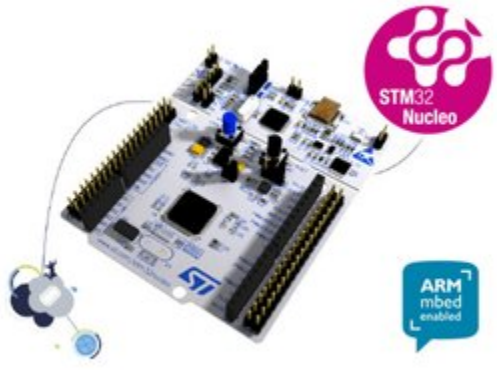


Table of Contents

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

- STM32F446RET6 in LQFP64 package
- ARM®32-bit Cortex®-M4 CPU with FPU
- Adaptive real-time accelerator (ART Accelerator™) allowing 0-wait state execution from Flash memory
- 180 MHz max CPU frequency
- VDD from 1.7 V to 3.6 V
- 512 KB Flash
- 128 KB SRAM System
- 4 KB SRAM Backup
- Timers General Purpose (10)
- Timers Advanced-Control (2)
- Timers Basic (2)
- SPI (4)
- I2S (2)
- USART (4)
- UART (2)
- USB OTG Full Speed and High Speed
- CAN (2)
- SAI (2)
- SPDIF-Rx (1)
- HDMI-CEC (1)
- Quad SPI (1)
- Camera Interface
- GPIO (50) with external interrupt capability
- 12-bit ADC (3) with 16 channels
- 12-bit DAC with 2 channels

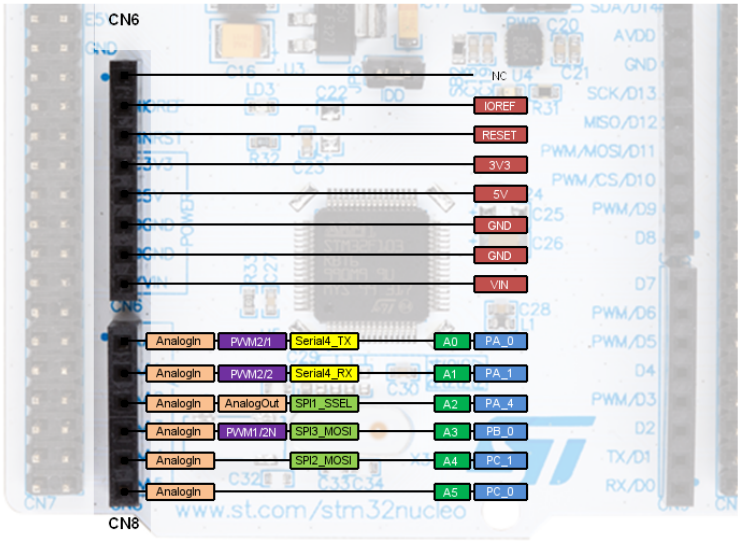
Nucleo features

- 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

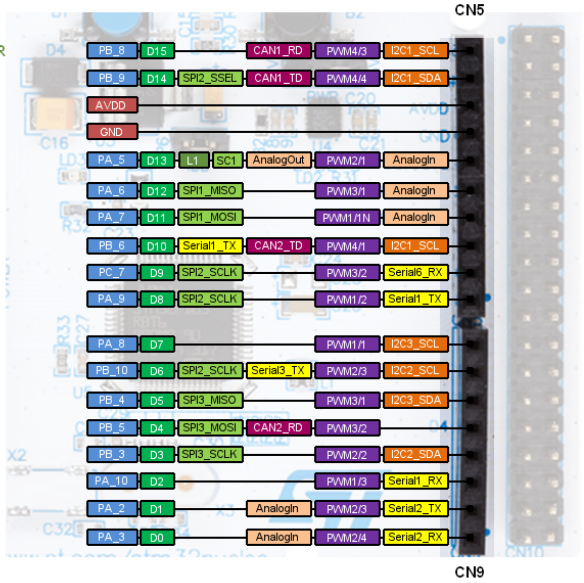
Nucleo pinout

Arduino-compatible headers

life.augmented
NUCLEO-F446RE
ARDUINO HEADER
(top left side)

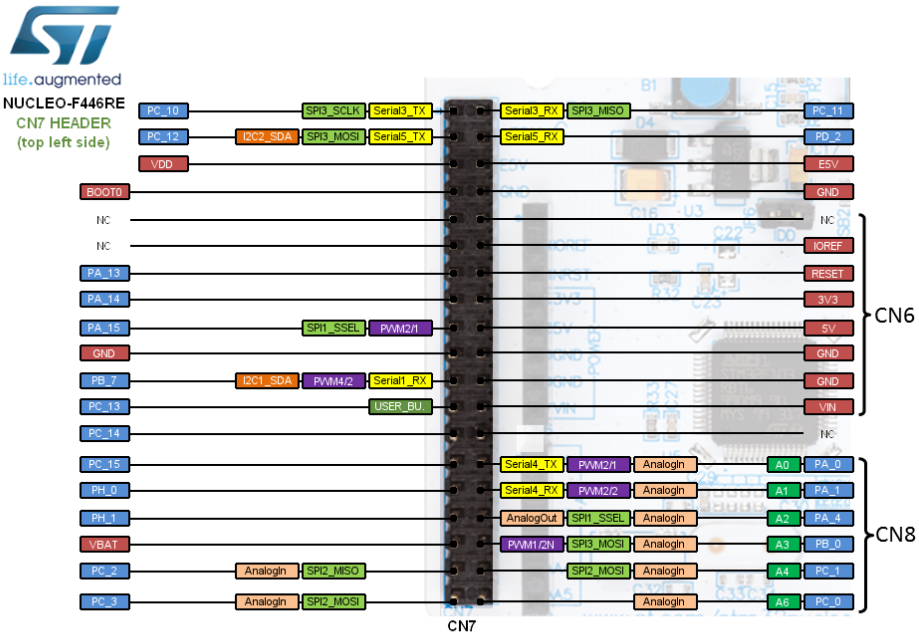


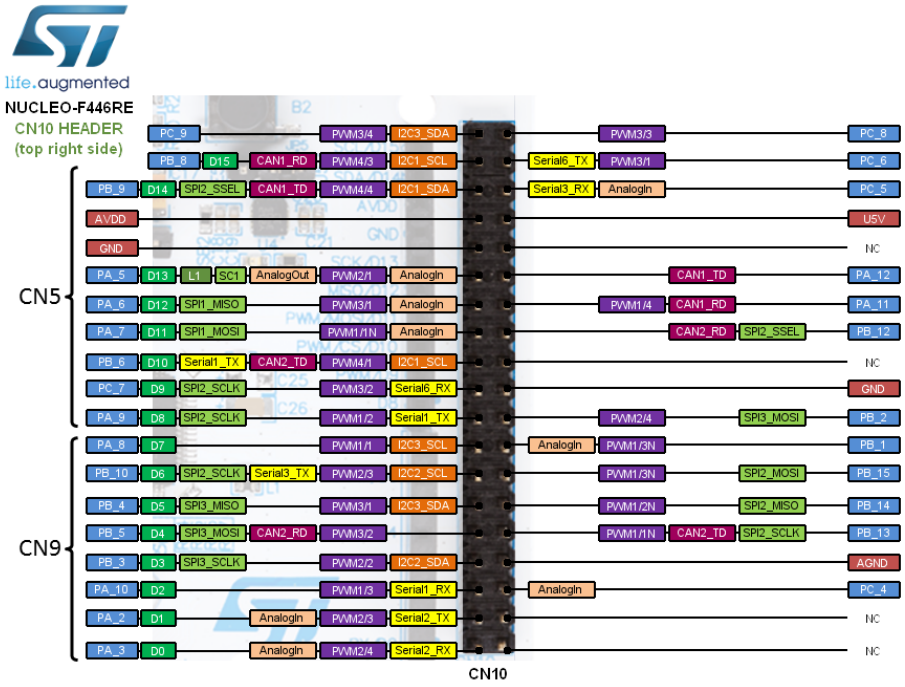
life.augmented
NUCLEO-F446RE
ARDUINO HEADER
(top right side)



Morpho headers

These headers give access to all STM32 pins.





Information