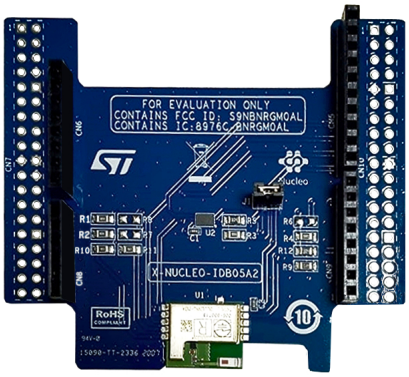
# X-NUCLEO-IDB05A2

Data brief

## Bluetooth low energy expansion board based on the BLUENRG-M0 module for STM32 Nucleo




## Features

- STM32 Nucleo expansion board based on the BlueNRG-M0 Bluetooth v4.2 compliant, FCC and IC certified module (FCC ID: S9NBNRGM0AL; IC: 8976C-BNRGM0AL)
- BlueNRG-M0 main features:
  - Embedded Bluetooth low energy protocol stack (GAP, GATT, SM, L2CAP, LL, RFPHY)
  - Embedded BlueNRG-MS network processor
  - On-board chip antenna
- Small form factor: 11.5 mmx13.5 mm
- Equipped with Arduino UNO R3 connector
- Scalable solution capable of cascading multiple boards for larger systems
- Free comprehensive development firmware library and samples for BlueNRG-MS, compatible with STM32Cube firmware
- RoHS compliant

## Description

The X-NUCLEO-IDB05A2 Bluetooth low energy expansion board is based on the BlueNRG-M0 BLE network processor module.

The BlueNRG-M0 is Bluetooth v4.2 compliant, FCC and IC certified (FCC ID: S9NBNRGM0AL; IC: 8976C-BNRGM0AL). It supports simultaneous master/slave roles and can behave as a Bluetooth low energy sensor and hub device at the same time.

The BlueNRG-M0 provides a complete RF platform in a tiny form factor, with integrated radio, antenna, high frequency and LPO oscillators.

The X-NUCLEO-IDB05A2 is compatible with the ST morpho (not mounted) and Arduino UNO R3 connector layout.

The X-NUCLEO-IDB05A2 interfaces with the STM32 microcontroller via the SPI pin and allows changing the default SPI clock, SPI chip select and SPI IRQ by replacing a resistor on the expansion board.

| Product summary | |
|---|---|
| Bluetooth low energy expansion board based on the BLUENRG-M0A module for STM32 Nucleo | X-NUCLEO-IDB05A2 |
| Very low power network processor module for Bluetooth low energy v4.2 | BlueNRG-M0 |
| Bluetooth Low Energy Network Processor supporting Bluetooth 4.2 core specification | BlueNRG-MS |
| Applications | Cloud Connectivity<br>Factory Automation<br>Smart Farming<br>Wireless Connectivity |

# 1 Formal notices required by the U.S. Federal Communications Commission ("FCC")

Any changes or modifications to this equipment not expressly approved by STMicroelectronics may cause harmful interference and void the user's authorization to operate this equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including any interference that may cause undesired operation.

This device uses, generates and radiates radio frequency energy. The radio frequency energy produced by this device is well below the maximum exposure allowed by the Federal Communications Commission (FCC).

The X-NUCLEO-IDB05A2 expansion board embeds the BlueNRG-M0 certifed module (FCC ID: S9NBNRGM0AL).

# 2 Formal notices required by the Industry Canada ("IC")

English:

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

French:

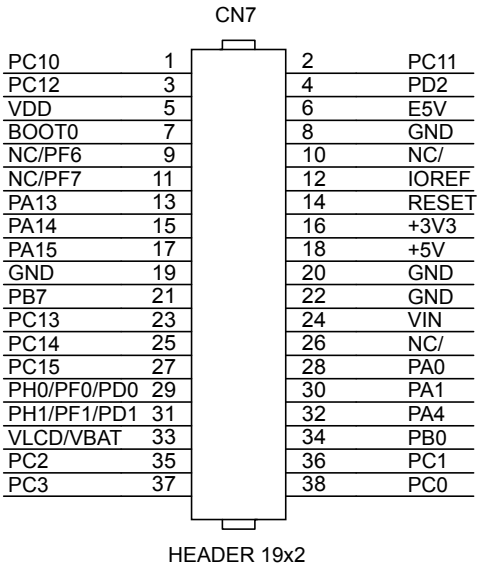
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. Exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The X-NUCLEO-IDB05A2 expansion board embeds the BlueNRG-M0 certifed module (IC: 8976C-BNRGM0AL).

# 3 Schematic diagrams

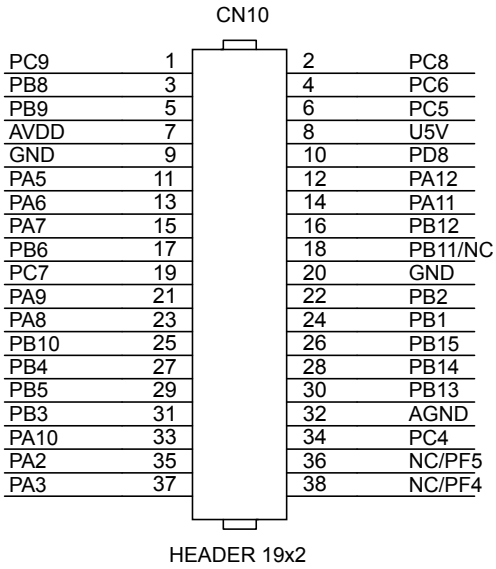
**Figure 1. X-NUCLEO-IDB05A2 circuit schematic - ST morpho and Arduino UNO R3 connectors**

Left morpho connector



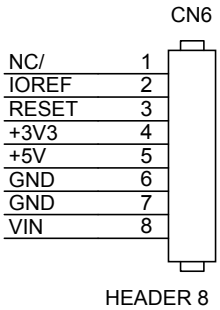

Pass-Through: Female on Bottom and Male on Top

Right morpho connector

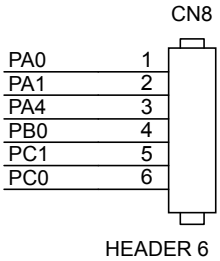



Pass-Through: Female on Bottom and Male on Top

Left Arduino connector

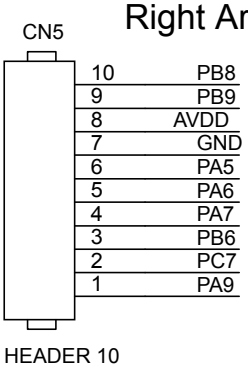



Pass-Through: Male on Bottom and Female on Top

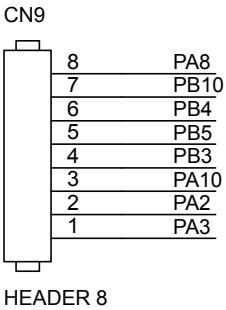



Pass-Through: Male on Bottom and Female on Top

Right Arduino connector




Pass-Through: Male on Bottom and Female on Top




Pass-Through: Male on Bottom and Female on Top

Figure 2. **X-NUCLEO-IDB05A2 circuit schematic - STM32 Nucleo connections**

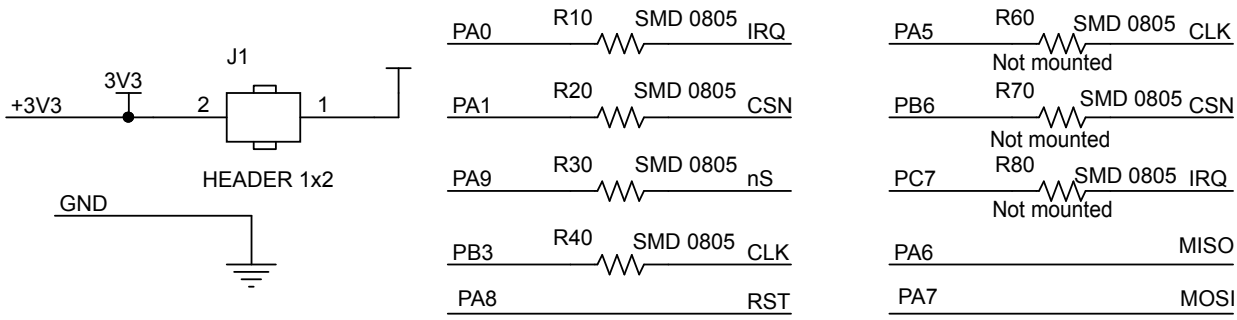



Figure 3. **X-NUCLEO-IDB05A2 circuit schematic - BlueNRG-M0A module**

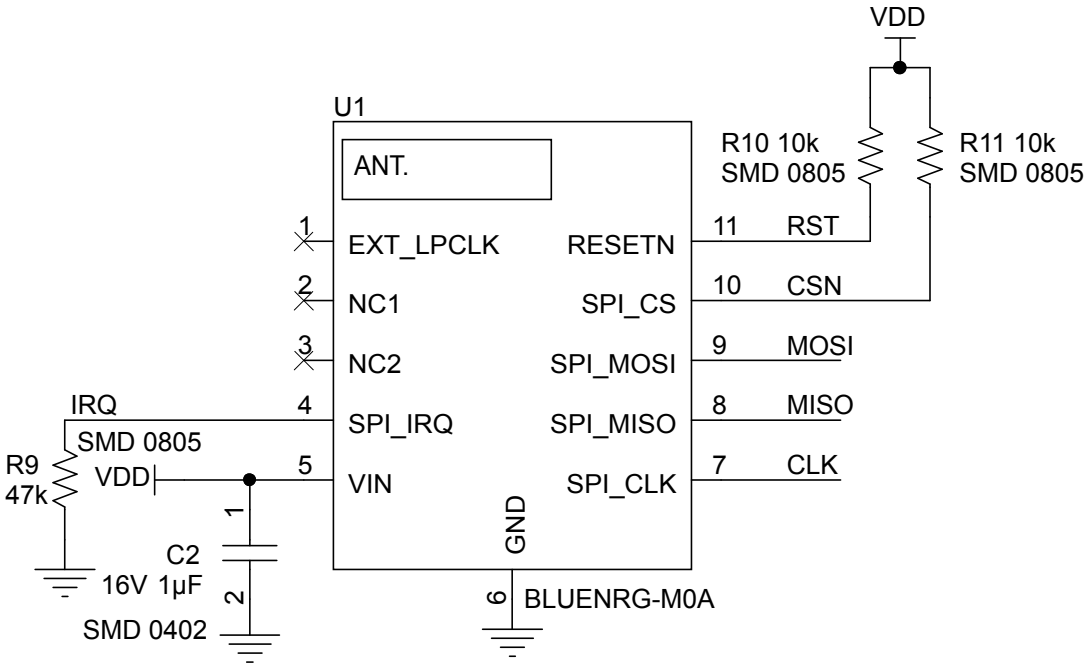
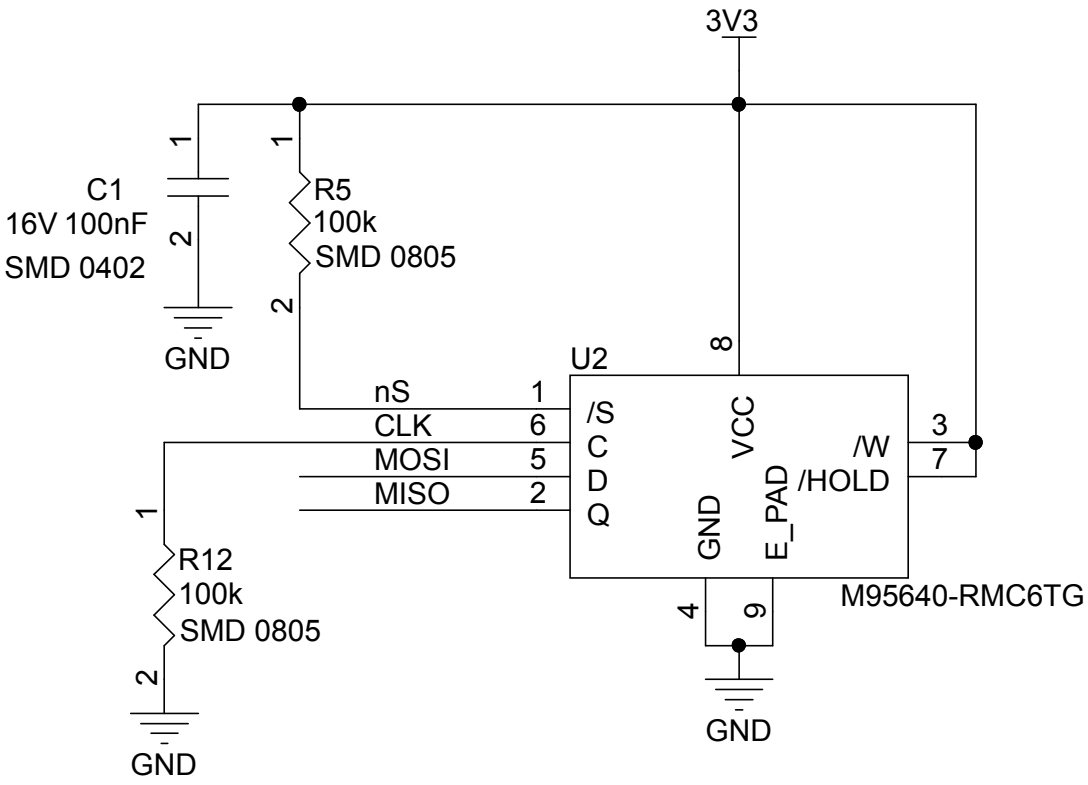


Figure 4. **X-NUCLEO-IDB05A2 circuit schematic - EEPROM**



# Revision history

**Table 1. Document revision history**

| Date | Version | Changes |
|---|---|---|
| 07-Apr-2020 | 1 | Initial release. |

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