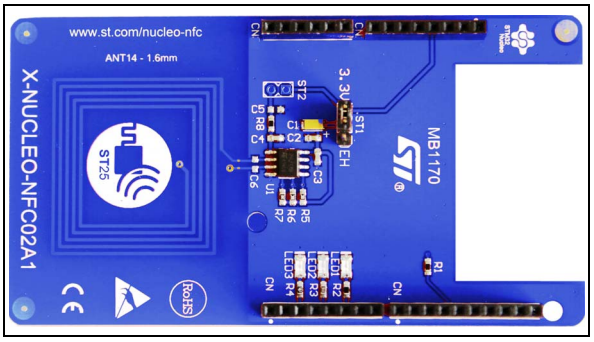
X-NUCLEO-NFC02A1

Dynamic NFC tag IC expansion board based on M24LR04E for STM32 Nucleo

Data brief



Features

- STM32 expansion board based on the M24LR04E-RMN6T/2 Dynamic NFC/RFID tag
- Up to 4 Kbit memory with NDEF support
- 30 mm x 30 mm 13.56 MHz double layer inductive antenna etched on the PCB
- Compatible with STM32 Nucleo boards
- Equipped with Arduino™ UNO R3 connector
- Self powered or powered through the Arduino™ UNO R3 connectors
- 3 general purpose LEDs
- Scalable solution, capable of cascading multiple boards for larger systems
- Free comprehensive development firmware library and example for M24LR04E-R, compatible with STM32Cube firmware
- FCC verified
- RoHS compliant

Description

The X-NUCLEO-NFC02A1 is a dynamic NFC/RFID tag board based on M24LR04E-R, for expansion of STM32 Nucleo boards.

The M24LR04E-R is an NFC Type V/RFID tag IC with a dual-interface 4 Kbit Electrically Erasable Programmable Read-Only Memory (EEPROM) that also features an I2C interface.

The EEPROM is organized as 512 x 8 bit in the I^2C mode and as 128 x 32 bit in RF mode. It can be operated either from an external power supply or directly powered by the received carrier electromagnetic field.

The tag provides an user configurable digital output pin toggling during either RF Write in Progress or RF Busy mode.

The M24LR04E-R provides an Energy Harvesting mode. When activated, the M24LR04E-R delivers the excess energy coming from the RF field on the Vout analog pin. In case the RF field strength is insufficient or when Energy Harvesting mode is disabled, the analog output pin Vout goes into high-Z state and Energy Harvesting mode is automatically stopped.

The X-NUCLEO-NFC02A1 is compatible with the Arduino™ UNO R3 connector pin assignment and interfaces with the STM32 MCU via the I^2C pins.

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Figure 1. Functional block diagram

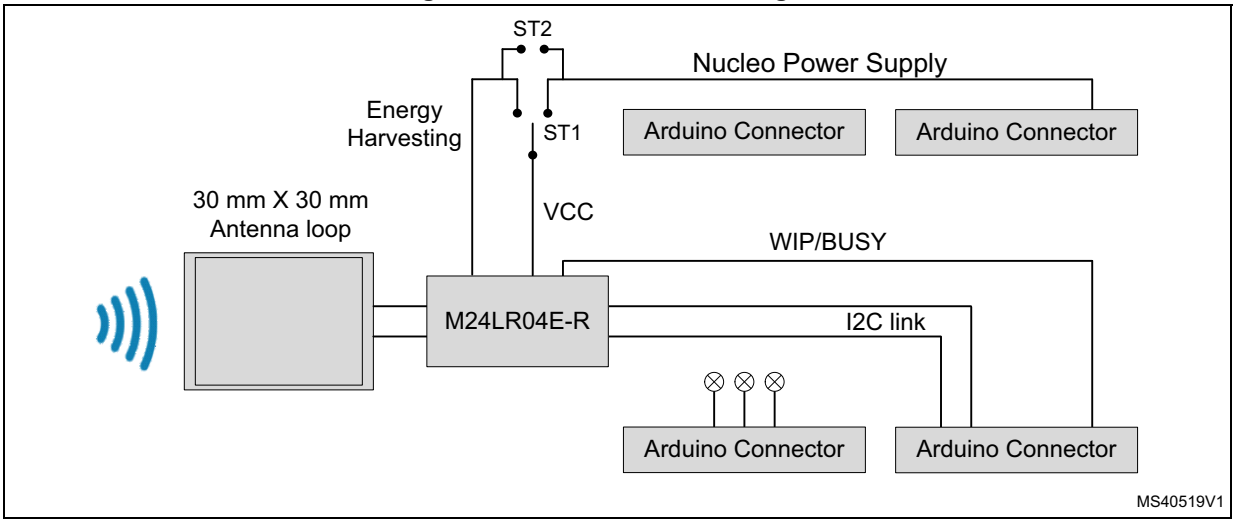


Figure 2. STM32 Nucleo connectors

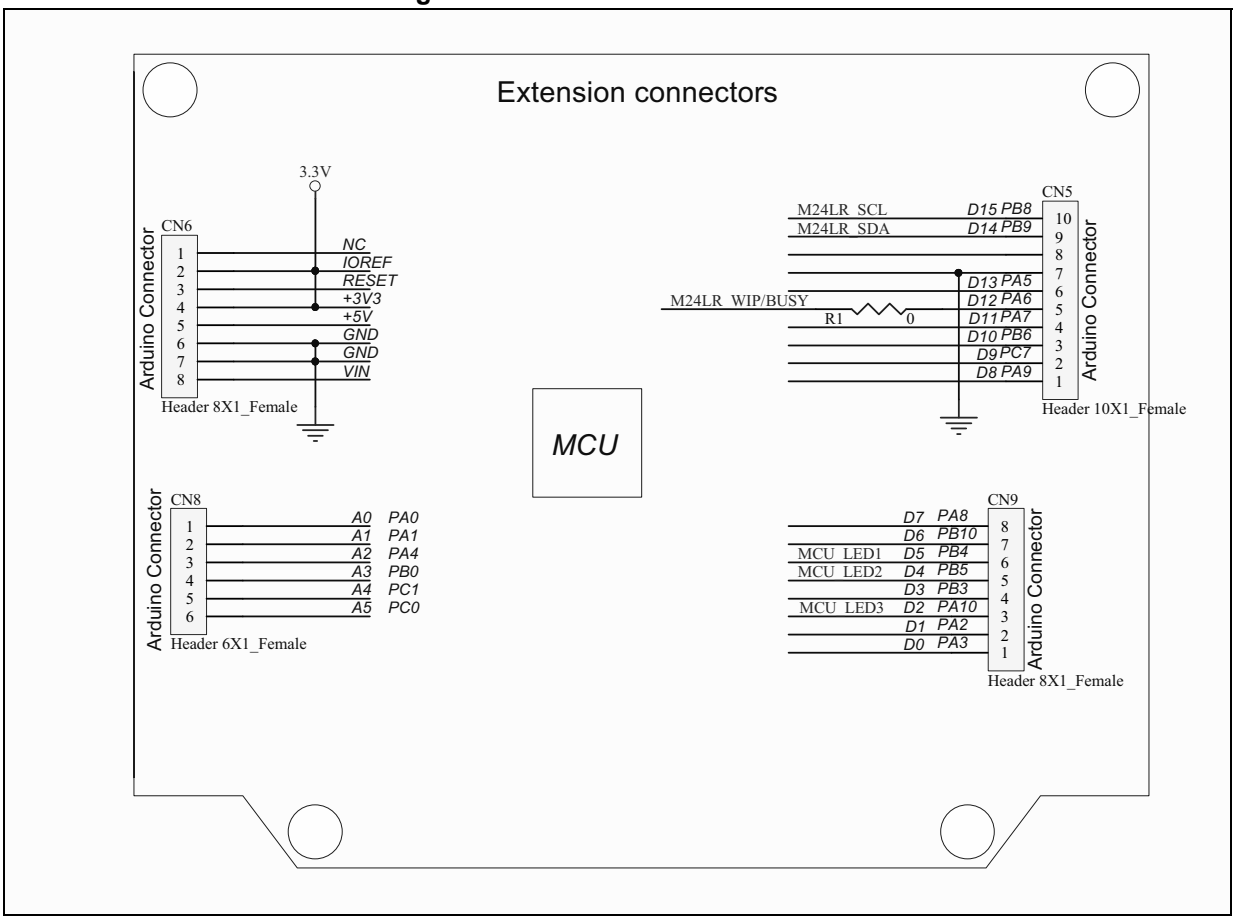


Figure 3. M24LR04E-R section

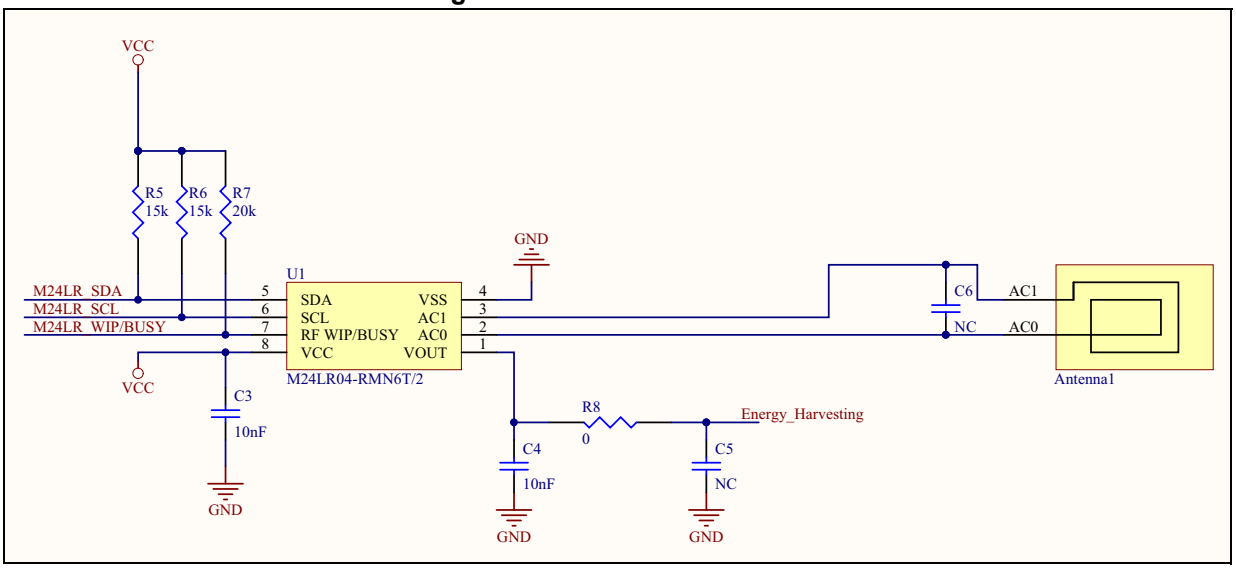
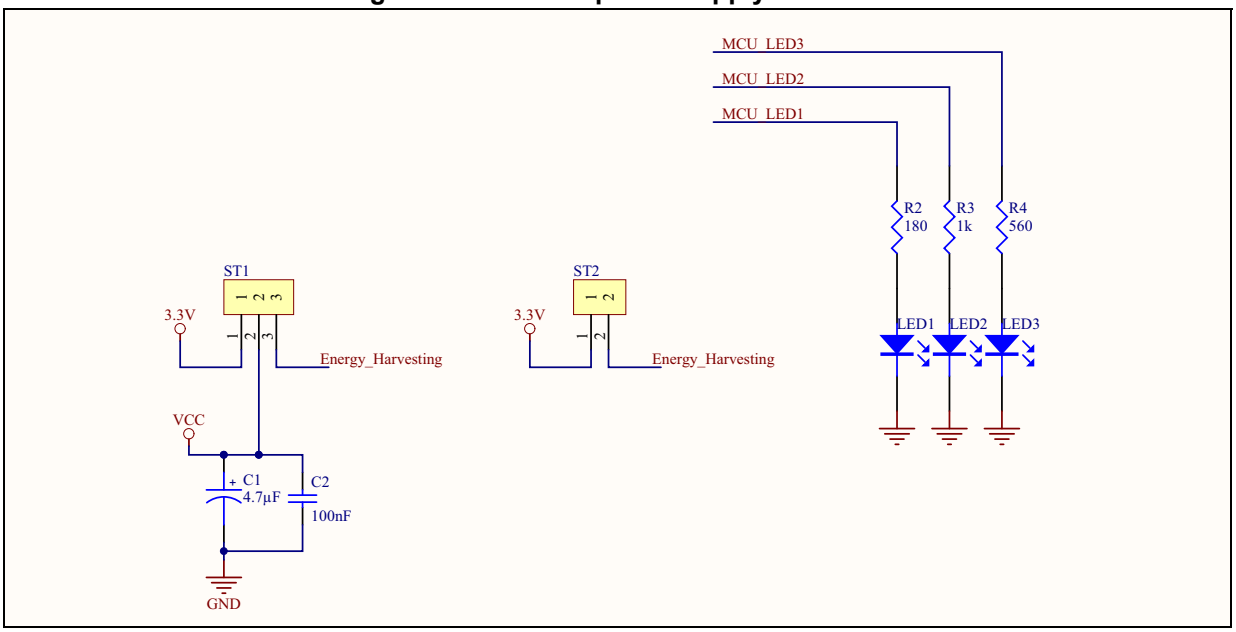


Figure 4. LEDs and power supply selection



2 Federal Communications Commission (FCC) and Industry Canada (IC) Compliance Statements

2.1 FCC Compliance Statement

2.1.1 Part 15.19

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 interference that may cause undesired operation.

2.1.2 Part 15.105

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference's by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2.1.3 Part 15.21

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

2.2 Formal notices required by the Industry Canada

2.2.1 Compliance Statement

This device complies with Industry Canada licence-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.

2.2.2 Déclaration de conformité

Le présent appareil est conforme aux CNR d’Industrie Canada applicables aux appareils radio exempts de licence. L’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.

3 Revision history

Table 1. Document revision history

Date	Revision	Changes
24-Jul-2014	1	Initial release.
07-Dec-2015	2	Updated board picture and *Figure 1*. Updated *Features* and *Description*.
18-Jan-2016	3	Updated document title, *Features* and *Description*. Added *Section 1: Block diagram and hardware schematics*, and *Section 2: Federal Communications Commission (FCC) and Industry Canada (IC) Compliance Statements* with its subsections. Updated *Figure 1: Functional block diagram*. Added *Figure 2: STM32 Nucleo connectors*, *Figure 3: M24LR04E-R section* and *Figure 4: LEDs and power supply selection*.
07-Jun-2016	4	Updated board picture on cover page. Updated *Figure 2: STM32 Nucleo connectors*.

Стандарт Электрон Связь

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