X-NUCLEO-IDS01A4

Sub-1 GHz RF expansion board based on the SPSGRF-868 module for STM32 Nucleo

Features
- STM32 Nucleo expansion board based on the SPSGRF-868
- SPSGRF-868 characteristics:
  - 868 MHz ETSI-certified module based on low power, low data-rate sub-1 GHz SPIRIT1 transceiver
  - Integrated Balun (BALF-SPI-01D3)
  - Chip antenna
- Compatible with STM32 Nucleo boards
- Equipped with Arduino UNO R3 connectors
- Scalable solution; capable of cascading multiple boards for larger systems
- Example firmware for point-to-point communication, compatible with STM32Cube firmware
- RoHS compliant

Description
The X-NUCLEO-IDS01A4 is an evaluation board based on the SPIRIT1 RF module SPSGRF-868 expansion of STM32 Nucleo boards. The SPSGRF-868 module operates in the 868 MHz ISM band and is ETSI certified. Identification of the operating frequency of the X-NUCLEO-IDS01Ax (x=4 or 5) is performed through two resistors (R14 and R15). It is compatible with the MORPHO and Arduino UNO R3 connector layout. The X-NUCLEO-IDS01A4 interfaces with the STM32 microcontroller via SPI connections and GPIO pins. The user can change some of the GPIOs by mounting or removing the resistors.
<table>
<thead>
<tr>
<th>Evaluation board</th>
<th>Identification resistors</th>
<th>RF communication frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-NUCLEO-IDS01A4</td>
<td>R14 mounted, R15 not mounted</td>
<td>868 MHz</td>
<td>868 MHz RF expansion board based on ETSI certified module SPSGRF-868 for STM32 Nucleo</td>
</tr>
<tr>
<td>X-NUCLEO-IDS01A5</td>
<td>R14 mounted, R15 not mounted</td>
<td>915 MHz</td>
<td>915 MHz RF expansion board based on FCC certified module SPSGRF-915 for STM32 Nucleo</td>
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</table>
Schematic diagrams

Figure 1: X-NUCLEO-IDS01A4 circuit schematic (1 of 3)

1. **Schematic diagrams**

### ARDUINO SX Connector

**C10**

- 1: VCC
- 2: GND
- 3: RXD
- 4: TXD

### ARDUINO DX Connector

**C110**

- 1: VCC
- 2: GND
- 3: RXD
- 4: TXD

### MORPHO SX Connector

**C10**

- 1: VCC
- 2: GND
- 3: RXD
- 4: TXD

### MORPHO DX Connector

**C110**

- 1: VCC
- 2: GND
- 3: RXD
- 4: TXD

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Pass-Through: Male on Bottom and Female on Top

Pass-Through: Female on Bottom and Male on Top
Figure 2: X-NUCLEO-IDS01A4 circuit schematic (2 of 3)

+3V3  2  1  VCC_RF
    HEADER 1x2

PC1  R10  0  SMD 0805  SPI1_GPIO0
PB6  R2  0  SMD 0805  CSN
PB10  R3  0  SMD 0805  nS
PB3  R4  0  SMD 0805  CLK
PA6  MOSI
PA7  MODE
PA10  SDn
PA1  R5  0  SMD 0805  CSN
PA6  R6  0  SMD 0805  SPI1_GPIO3
PA5  R7  0  SMD 0805  CLK
PA4  R8  0  SMD 0805  SPI1_GPIO2
PB0  R8  0  SMD 0805  SPI1_GPIO1
PC1  R10  0  SMD 0805  SPI1_GPIO0

GSPG11030215D0055
2 Revision history

Table 2: Document revision history

<table>
<thead>
<tr>
<th>Date</th>
<th>Rev</th>
<th>Changes</th>
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<tbody>
<tr>
<td>28-Apr-2015</td>
<td>1</td>
<td>First release.</td>
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<tr>
<td>28-May-2015</td>
<td>2</td>
<td>Updated board photo on the cover page.</td>
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