

Data brief

Sub-1 GHz 868 MHz RF expansion board based on S2-LP radio for STM32 Nucleo







Product summary		
Sub-1 GHz RF expansion board based on S2-LP radio for STM32 Nucleo	X-NUCLEO-S2868A1	
Ultra-low power, high performance, sub-1 GHz transceiver	S2-LP	
50 Ω nominal input/conjugate match balun to S2-LP, 868-930 MHz with integrated harmonics filter	BALF-SPI2-01D3	

Features

- Based on S2-LP radio
- S2-LP narrow band ultra-low power sub-1 GHz transceiver tuned for 860 940 MHz frequency band
- Programmable RF output power up to +16 dBm
- Modulation schemes: 2-FSK, 2-GFSK, 4-FSK, 4-GFSK, OOK and ASK
- Air data rate from 0.1 to 500 kbps
- Ultra-low power consumption: 7 mA RX and 10 mA TX at +10 dBm
- IEEE 802.15.4g hardware packet support with whitening, FEC, CRC and dual SYNC word detection
- RX and TX 128 byte FIFO buffers
- · Support to wireless M-Bus
- Excellent performance of receiver sensitivity (up to -130 dBm)
- · Automatic acknowledgement, retransmission and timeout protocol engine
- Compatible with STM32 Nucleo boards
- · Compatible with Arduino UNO R3 connectors
- · Support to SMD and SMA antennas
- BALF-SPI2-01D3 IPD balun for matching network and harmonics filter
- Sigfox compatible
- Sample firmware for P2P communication
- 6LoWPAN compatible thanks to STM32Cube
- · RoHS compliant

Description

The X-NUCLEO-S2868A1 expansion board is based on the S2-LP radio and operates in the 868 MHz ISM frequency band.

The expansion board is compatible with ST morpho and Arduino UNO R3 connectors.

The X-NUCLEO-S2868A1 interfaces with the STM32 Nucleo microcontroller via SPI connections and GPIO pins. You can change some of the GPIOs by mounting or removing the resistors.



X-NUCLEO-S2868A1 schematic diagram

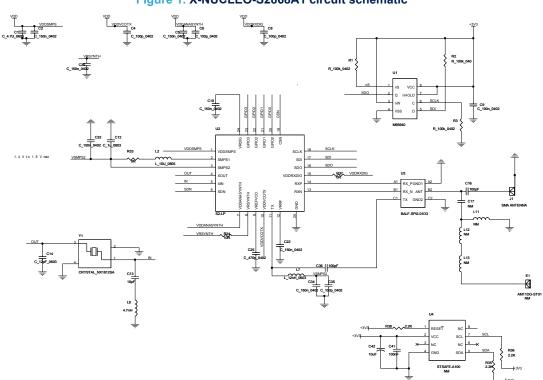
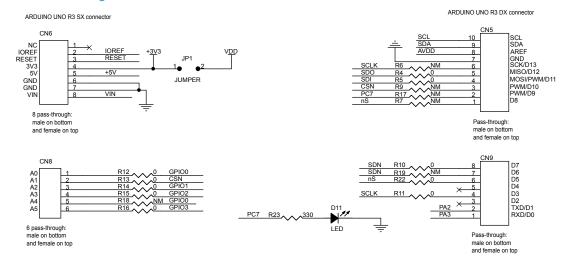


Figure 1. X-NUCLEO-S2868A1 circuit schematic

Figure 2. X-NUCLEO-S2868A1 circuit schematic - Arduino connectors



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and male on top



ST morpho SX connector ST morpho DX connector CN7 CN10 PC8 PC6 PC5 U5V PD8 PC11 PD2 PC9 PB8 PC10 PC12 3 4 6 8 10 VDD BOOT0 PB9 E5V 8 AVDD NC/PF6 NC/PF7 9 10 12 14 ×<u>IOREF</u> PA5 11 PA12 12 PA11 PB12 PA13 13 PA14 15 PA15 17 PA6 PA7 14 16 18 RESET 13 15 17 +3V3 +5V 16 18 20 22 24 26 28 30 PA15 PB6 PB11/NC PC7 VDD PB2 19 19 21 23 25 27 20 22 24 26 28 PB7 PA9 PB1 PC13 VIN PA8 PC14 25 PC15 27 PH0/PF0/PD0 29 PH1/PF1/PD1 31 VLCD/VBAT 33 PB10 PB15 PB4 PB5 PA0 PB14 PB13 PA1 PA4 PB0 29 31 33 30 AGND PC4 NC/PF5 NC/PF4 PB3 32 34 36 32 34 PA10 PA2 35 37 PC1 PC0 36 38 37 PA3 PC3 Pass-through: Pass-through: female on bottom

Figure 3. X-NUCLEO-S2868A1 circuit schematic - morpho connectors

female on bottom

and male on top

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Revision history

Table 1. Document revision history

Date	Version	Changes
11-May-2018	1	Initial release.

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