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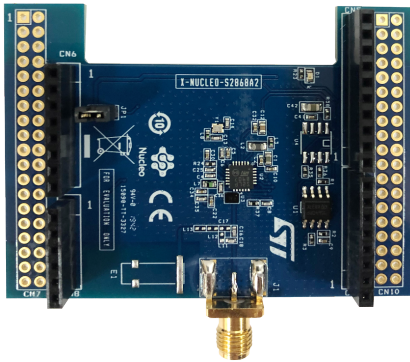

Features

- 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
- BALF-SPI2-01D3 IPD balun for matching network and harmonics filter
- Sigfox compatible
- Sample firmware for P2P communication
- 6LoWPAN compatible thanks to STM32Cube
- RoHS and WEEE compliant

Description

The X-NUCLEO-S2868A2 expansion board is based on the S2-LP ultra-low power RF transceiver and operates in the 868 MHz ISM frequency band.

The X-NUCLEO-S2868A2 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.

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

Product summary

Sub-1 GHz RF expansion board based on S2-LP radio for STM32 Nucleo	X-NUCLEO-S2868A2
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 harmonic filter	BALF-SPI2-01D3
Applications	ISM Radio SubGHz Sigfox

DB4048 - Rev 1 - December 2019
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1 Schematic diagrams
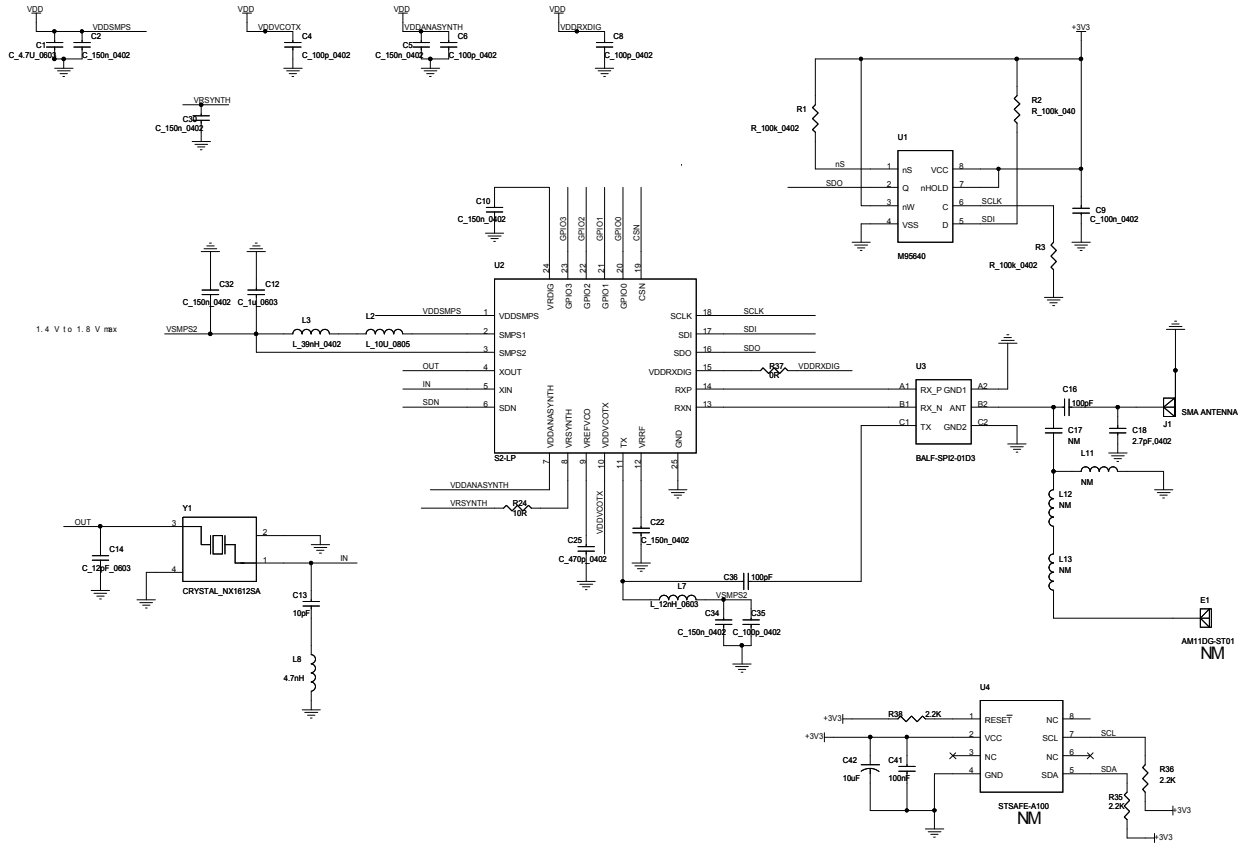
Figure 1. X-NUCLEO-S2868A2 circuit schematic

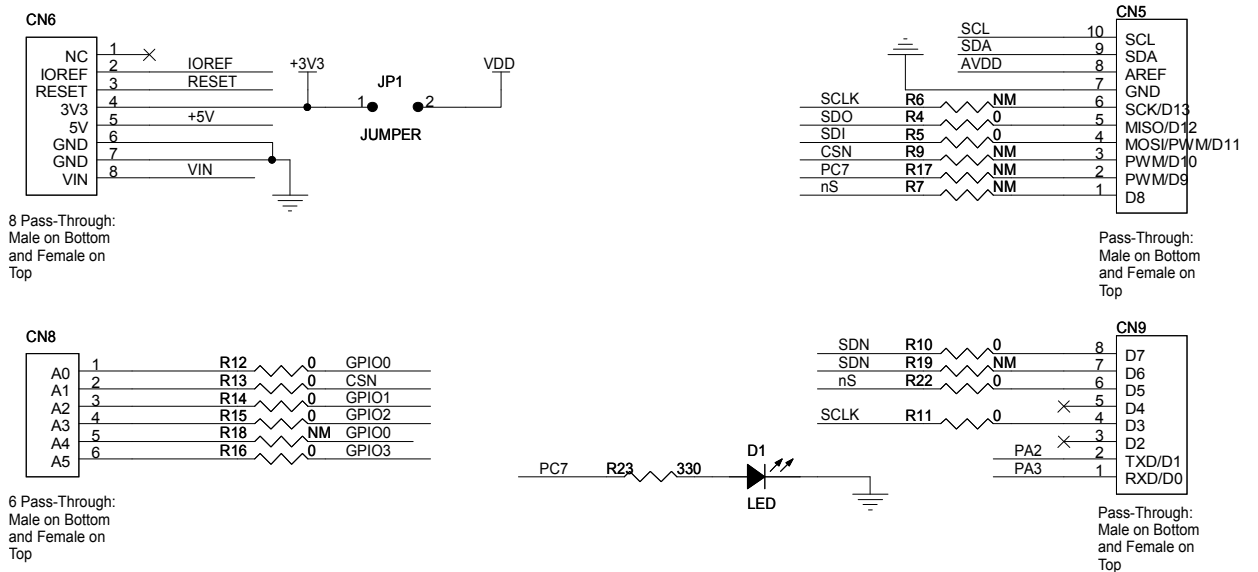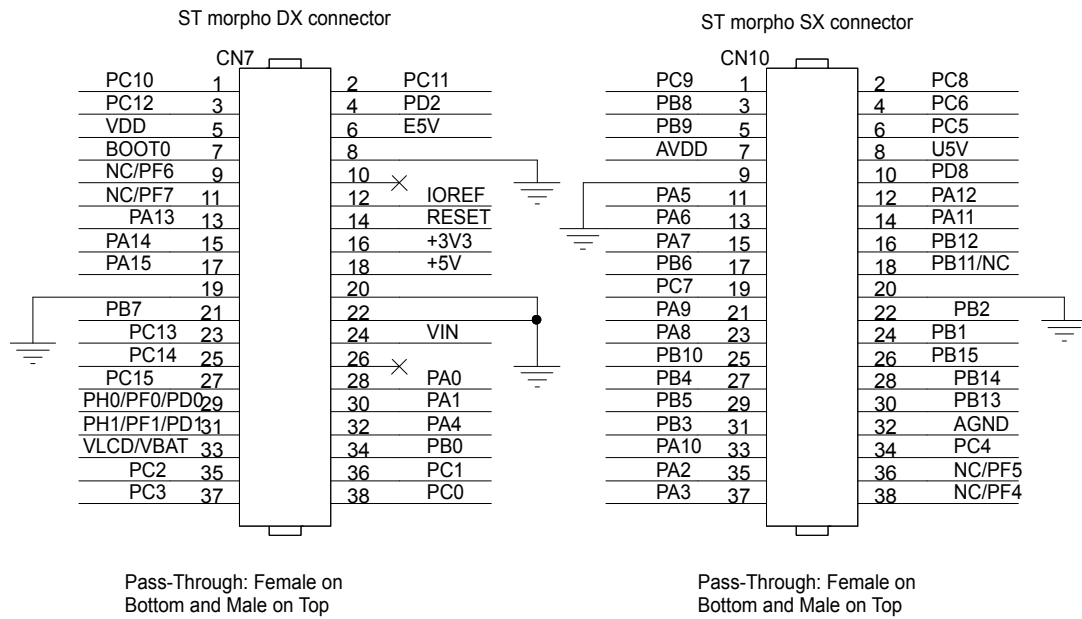**Figure 2. X-NUCLEO-S2868A2 circuit schematic - Arduino connectors**

Figure 3. X-NUCLEO-S2868A2 circuit schematic - ST morpho connectors

ST morpho DX connector

	CN7			
PC10	1	2	PC11	
PC12	3	4	PD2	
VDD	5	6	E5V	
BOOT0	7	8		
NC/PF6	9	10		IOREF
NC/PF7	11	12	IOREF	
PA13	13	14	RESET	
PA14	15	16	+3V3	
PA15	17	18	+5V	
	19	20		
PB7	21	22		
PC13	23	24	VIN	
PC14	25	26		
PC15	27	28	PA0	
PH0/PF0/PD0	29	30	PA1	
PH1/PF1/PD1	31	32	PA4	
VLCD/VBAT	33	34	PB0	
PC2	35	36	PC1	
PC3	37	38	PC0	

Pass-Through: Female on
Bottom and Male on Top

ST morpho SX connector

	CN10			
PC9	1	2	PC8	
PB8	3	4	PC6	
PB9	5	6	PC5	
AVDD	7	8	U5V	
	9	10	PD8	
PA5	11	12	PA12	
PA6	13	14	PA11	
PA7	15	16	PB12	
PB6	17	18	PB11/NC	
PC7	19	20		
PA9	21	22	PB2	
PA8	23	24	PB1	
PB10	25	26	PB15	
PB4	27	28	PB14	
PB5	29	30	PB13	
PB3	31	32	AGND	
PA10	33	34	PC4	
PA2	35	36	NC/PF5	
PA3	37	38	NC/PF4	

Pass-Through: Female on
Bottom and Male on Top

Revision history

Table 1. Document revision history

Date	Version	Changes
12-Dec-2019	1	Initial release.

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