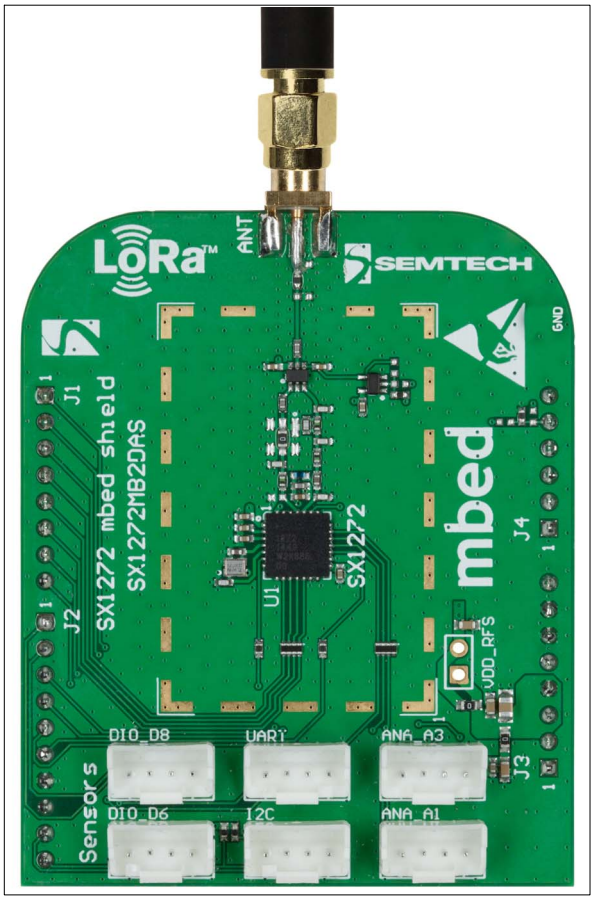
I-NUCLEO-SX1272D

SX1272 LoRa™ technology and high-performance FSK/OOK RF transceiver modem

Data brief

Features

- 157 dB maximum link budget
- +20 dBm, 100 mW constant RF output versus Vsupply
- +14 dBm high efficiency PA
- Programmable bit rate up to 300 kbps
- High sensitivity: down to -137 dBm
- Bullet-proof front end: IIP3 = -12.5 dBm
- 89 dB blocking immunity
- Low RX current of 10 mA, 200 nA register retention
- Fully integrated synthesizer with a resolution of 61 Hz
- FSK, GFSK, MSK, GMSK, LoRa™ and OOK modulations
- Built-in bit synchronizer for clock recovery
- Sync word recognition
- Preamble detection
- 127 dB+ dynamic range RSSI
- Automatic RF sense with ultra-fast AFC
- Packet engine up to 64 bytes with CRC
- Built-in temperature sensor and low battery indicator 1.65 V to 3.6 V power supply



1. Picture not contractual.

1 Description

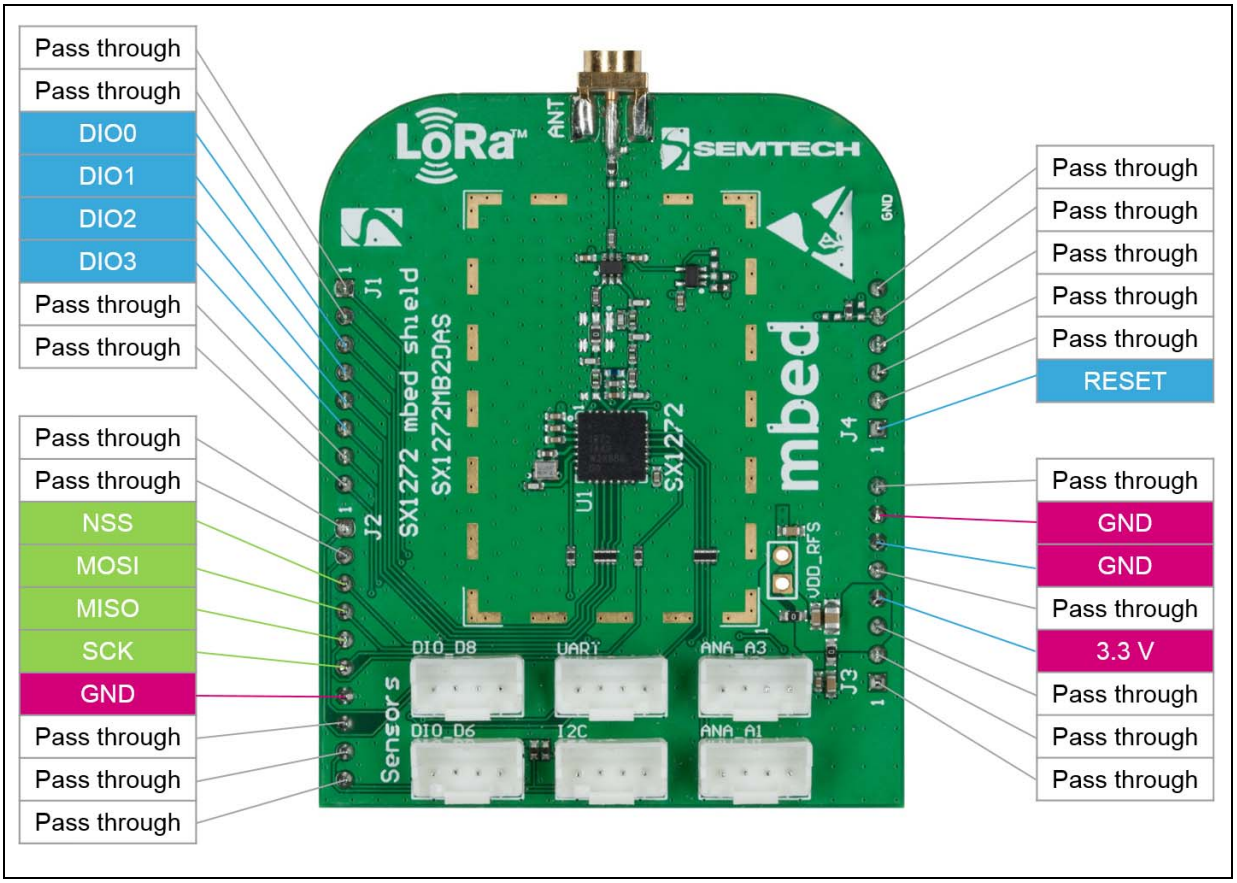
The SX1272 LoRa™ technology and high-performance FSK/OOK RF transceiver modem (I-NUCLEO-SX1272D) is a development tool to learn and develop solutions based on LoRa™ and/or FSK/OOK technologies.

The Semtech's proprietary LoRa™ modulation is a spread-spectrum technique that uses wideband linear frequency modulated pulses to encode information, whose frequency increases or decreases over a certain amount of time. Like with other spread-spectrum modulation techniques, the LoRa™ modulation uses the entire channel bandwidth to broadcast a signal, making it robust to the channel noise. In addition, because the LoRa™ modulation uses a broad band of the spectrum, the signal is resistant to long term relative frequency error, multi-path, fading and doppler effects.

The SX1272MB2xAS board is controlled through the SPI bus at a maximum speed of 10 Mbps. All the "Pass through" pins not used in the operations of the SX1272MB2xAS board can be used for the connection of other boards. The I2C and UART have especially been let free so that a wide range of sensors can be connected to the board.

2 I-NUCLEO-SX1272D system architecture

Figure 1. I-NUCLEO-SX1272D system architecture



The SX1272MB2xAS expansion board includes:

- The SX1272 transceiver:

  The SX1272 transceiver features the LoRa™ long range modem that provides an ultra-long range spread spectrum communication and a high interference immunity whilst minimizing the current consumption.

  Using the Semtech's patented LoRa™ modulation technique, the SX1272/73 transceivers can achieve a sensitivity of over -137 dBm using a low cost crystal and bill of materials. The high sensitivity combined with the integrated +20 dBm power amplifier makes the link budget optimal for any application requiring range or robustness. The LoRa™ modulation also provides significant advantages in both blocking and selectivity, over the conventional modulation techniques, solving the traditional design compromise between the range, the interference immunity and the energy consumption. These transceivers also support the high performance (G)FSK modes for systems including WMBus, IEEE802.15.4g. The SX1272/73 transceivers deliver an exceptional phase noise, a selectivity, a receiver linearity and IIP3 for significantly lower current consumption than the competing devices.

- The LoRa™ Modulation:

The Semtech's proprietary LoRa™ modulation is a spread-spectrum technique that uses wideband linear frequency modulated pulses to encode information, whose frequency increases or decreases over a certain amount of time. Like with other spread-spectrum modulation techniques, the LoRa™ modulation uses the entire channel bandwidth to broadcast a signal, making it robust to the channel noise. In addition, because the LoRa™ modulation uses a broad band of the spectrum, the signal is resistant to long term relative frequency error, multi-path, fading and doppler effects.

The SX1272 transceiver has the following features:

- 157 dB maximum link budget
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3 Revision history

Table 1. Document revision history

Date	Revision	Changes
18-Aug-2016	1	Initial version.