

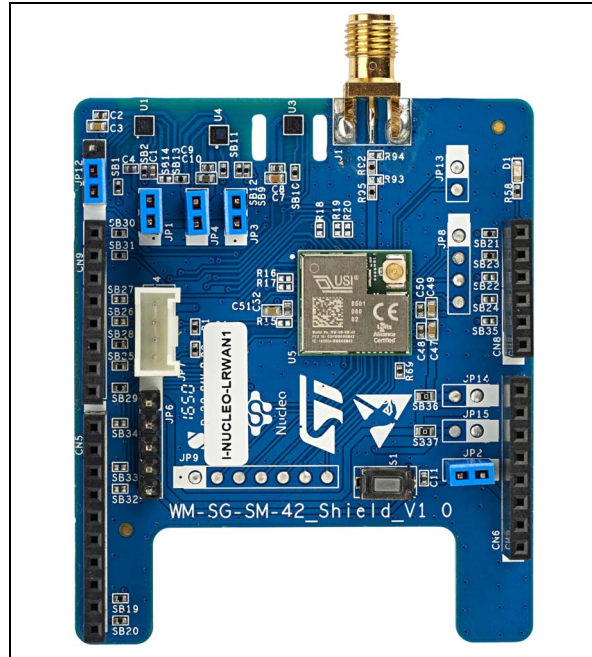
Features

- USI[®] low-cost, LPWAN module supporting LoRa[®] technology:
 - ST ultra-low-power STM32L052T8Y6 MCU, Cortex[®]-M0+ based with 64 Kbytes of Flash memory, 8 Kbytes of RAM, 2 Kbytes of EEPROM, T-RNG
 - Semtech SX1272 radio transceiver supporting LoRa[®], FSK, GFSK, MSK, GMSK and OOK modulation
 - High sensitivity down to -137 dBm
 - 860 MHz to 1020 MHz frequency range
 - 14 dBm to 20 dBm output power
 - 2.0 V to 3.6 V voltage range
 - -40°C to +85°C temperature range
 - Embedded 32 kHz and 32 MHz crystals
 - USART communication interface
- ST accelerometer and magnetometer sensor (LSM303AGR)
- ST relative humidity and temperature sensor (HTS221)
- ST pressure sensor (LPS22HB)
- Arduino[™] connectors
- SMA connector (antenna included in the kit)

Description

USI[®] in partnership with STMicroelectronics developed the LoRa[®] expansion board for STM32 Nucleo (I-NUCLEO-LRWAN1). This board is an integrated solution allowing anyone to learn and develop solutions using LoRa[®] and/or FSK/OOK technologies.

The I-NUCLEO-LRWAN1 features the USI[®] LoRaWAN[™] technology module, addressing low-cost and low-power wide area network (LPWAN), which comes with the embedded AT-command stack pre-loaded.



1. Picture is not contractual.

The I-NUCLEO-LRWAN1 can be controlled from an external host such as NUCLEO-L053 boards, running the I-CUBE-LRWAN embedded software. This software provides the means to set up a complete LoRaWAN[™] node.

The I-NUCLEO-LRWAN1 is LoRaWAN[™] class A certified and sustains the class C.

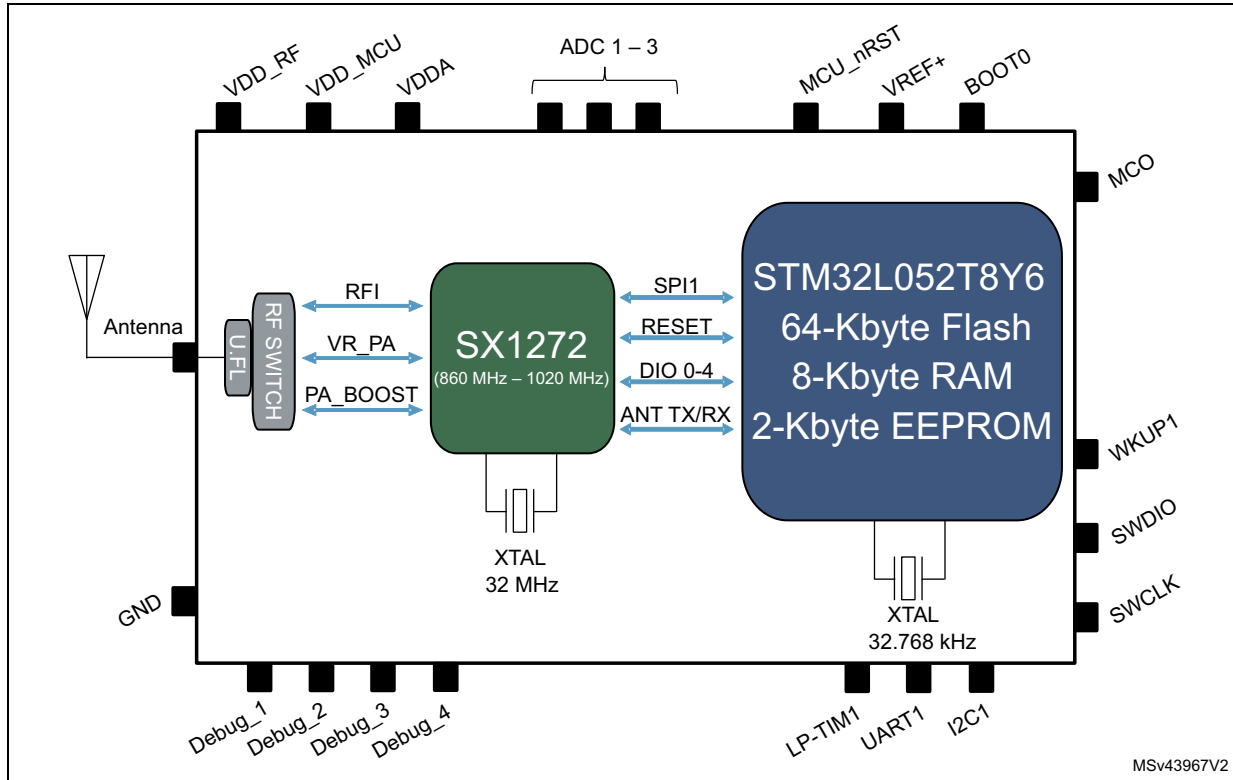
The I-NUCLEO-LRWAN1 includes the USI[®] LoRaWAN[™] module, Arduino[™] connectors, a SMA connector, a 50 Ω antenna and three ST environmental sensors.

For more details about all the components of the LoRa[®]-Middleware library, refer to the *STM32 LoRa[®] software expansion for STM32Cube* user manual (UM2073).

The I-NUCLEO-LRWAN1 is supplied by a third party not affiliated to ST. For complete and latest information, refer to the third party GitHub page https://github.com/USIWP1Module/USI_I-NUCLEO-LRWAN1.

System architecture

Figure 1. I-NUCLEO-LRWAN1 architecture



General information

The I-NUCLEO-LRWAN1 expansion board features an STMicroelectronics ultra-low-power Arm^{®(a)} Cortex[®]-M0+ based microcontroller.



a. Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



Revision history

Table 1. Document revision history

Date	Revision	Changes
6-Feb-2017	1	Initial release.
14-Feb-2017	2	Updated title and description. Ordering information removed.
9-Aug-2017	3	Updated <i>Description</i> .
20-Mar-2018	4	Updated USI [®] GitHub link in <i>Description</i> . Updated <i>Figure 1</i> . Added the <i>General information</i> section.

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2018 STMicroelectronics – All rights reserved