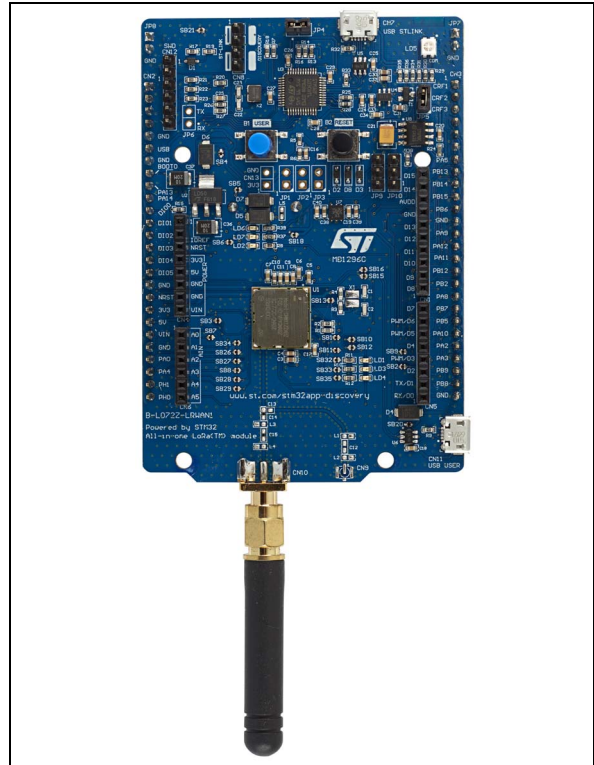


## Discovery kit for LoRaWAN™ and LPWAN protocols with STM32L0

Data brief

### Features

- CMWX1ZZABZ-091 LoRa® module (Murata)
  - Embedded ultra-low-power STM32L072CZ Series MCUs, based on ARM®Cortex® -M0+ core, with 192 Kbytes of Flash memory, 20 Kbytes of RAM, 20 Kbytes of EEPROM
  - USB 2.0 FS
  - 4-channel, 12-bit ADC, 2xDAC
  - 6-bit timers, LP-UART, I<sup>2</sup>C and SPI
  - Embedded SX1276 transceiver
  - LoRa®, FSK, GFSK, MSK, GMSK and OOK modulations
  - +14 dBm or +20 dBm selectable output power
  - 157 dB maximum link budget
  - Programmable bit rate up to 300 Kbit/s
  - 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
  - Built-in bit synchronizer for clock recovery
  - Sync word recognition
  - Preamble detection
  - 127 dB+ dynamic range RSSI
- SMA and U.FL RF interface connectors
- Including 50 Ohm SMA RF antenna
- On-board ST-LINK/V2-1 supporting USB re-enumeration capability
- USB ST-LINK functions:
  - Virtual COM port
  - Mass storage
  - Debug port



1. Picture is not contractual.

- Board power supply:
  - Through USB bus or external  $V_{IN}/3.3 V$  supply voltage or batteries
- 3xAAA-type-battery holder for standalone operation
- 7 LEDs:
  - 4 general-purpose LEDs
  - A 5 V-power LED
  - An ST-LINK-communication LED
  - A fault-power LED
- 2 push-buttons (user and reset)
- Arduino™ Uno V3 connectors
- ARM® mbed™ (see <http://mbed.org>)



## Description

The B-L072Z-LRWAN1 LoRa® Discovery kit is a development tool to learn and develop solutions based on LoRa® and FSK/OOK technologies. This Discovery kit features an all-in-one open module CMWX1ZZABZ-091 (by Murata). The module is powered by an STM32L072CZ and an SX1276 transceiver. The transceiver features the LoRa® long-range modem, providing ultra-long-range spread spectrum communication and high interference immunity, minimizing current consumption. Since CMWX1ZZABZ-091 is an open module, user has access to all STM32L072 peripherals such as ADC, 16-bit timer, LP-UART, I<sup>2</sup>C, SPI and USB 2.0 FS (supporting BCD and LPM).

The B-L072Z-LRWAN1 Discovery kit includes an ST-LINK/V2-1 embedded debug tool interface, LEDs, push-buttons, antenna, Arduino™ Uno V3 connectors and USB OTG connector in Micro-B format.

The LoRaWAN™ stack is certified class A and C compliant. It is available inside the I-CUBE-LRWAN firmware package. Several examples, as an AT-command stack, are available to help users setting up a complete LoRaWAN™ node.

## System requirements

- Windows® OS (XP, 7, 8, 10), Linux or macOS™
- USB Type-A to Micro-B cable

## Development toolchains

- Keil® MDK-ARM<sup>(a)</sup>
- IAR™ EWARM<sup>(a)</sup>
- GCC-based IDEs including free SW4STM32 from AC6
- ARM® mbed™ online

## Demonstration software

The demonstration software is preloaded in the STM32 Flash memory. The latest versions of the demonstration source code and associated documentation can be downloaded from the [www.st.com/i-cube-lrwan](http://www.st.com/i-cube-lrwan) webpage.

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a. On Windows® only.

## Ordering information

To order the B-L072Z-LRWAN1 Discovery kit refer to [Table 1](#).

**Table 1. Ordering information**

RPN	Target STM32
B-L072Z-LRWAN1	STM32L072CZ

## Revision history

**Table 2. Document revision history**

Date	Revision	Changes
30-Jan-2017	1	Initial release.

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