

STM32 LoRa[®] software expansion for STM32Cube

Data brief

Features

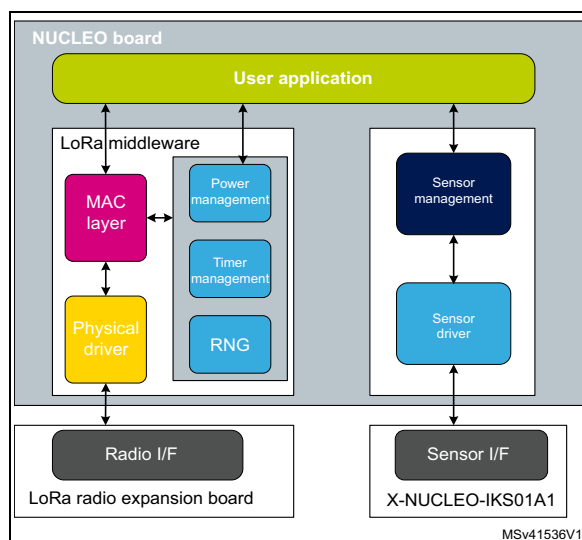
- Compliant with the LoRa Alliance[™] specification protocol, named LoRaWAN[™] version V1.0.2 July 2016
- Bidirectional end-devices with class A and class C protocol support
- EU 868 MHz ISM band ETSI (European telecommunications standards institute) compliant
- EU 433 MHz ISM band ETSI compliant
- US 915 MHz ISM band FCC (federal communications commission) compliant
- End-device activation either through OTAA (over-the-air activation) or ABP (activation-by-personalization)
- Adaptive data rate support
- LoRaWAN[™] test application for certification tests included
- Low-power optimized
- Full STM32 portfolio compatibility
- Compliant with the CMWX1ZZABZ-091 LoRa[®] module from Murata
- Compliant with the WM-SG-SM-42 LoRa[®] module from USI

Description

LoRa[®] is a long range wireless area network allowing low-power sensors to report over ranges of up to a dozen kilometers.

The I-CUBE-LRWAN software expansion package consists of a set of libraries and application examples for STM32L0, STM32L1 and STM32L4 Series microcontrollers acting as end-devices.

This package supports the SX1276MB1MAS, SX1276MB1LAS and SX1272MB2DAS LoRa[®] radio expansion boards provided by SEMTECH.



This package includes an application running on NUCLEO-L053R8, NUCLEO-L152RE, NUCLEO-L476RG and B-L072Z-LRWAN1 Discovery kits embedding the CMWX1ZZABZ-091 LoRa[®] module from Murata. It also supports a USI[®] LoRaWAN[™] technology module through the I-NUCLEO-LRWAN1 expansion board. The application reads sensor data from the X-NUCLEO-IKS01A1 expansion board and sends the sensor data to the LoRa[®] network in class A. For further details about the components of the LoRa middleware library, refer to the “STM32 LoRa[®] software expansion for STM32Cube” User manual (UM2073).

Package naming convention

[Table 1](#) shows the I-CUBE-LRWAN package naming convention.

Table 1. I-CUBE-LRWAN package naming convention

| Package | 1 st digit | 2 nd digit | 3 rd digit |
|-------------------------------|---|--|--|
| I-CUBE-LRWAN package x.y.z | Major feature support: x = 1: LoRa application only | Supported version of the LoRa stack: – y=0:LoRa stack v1.0.1 – y=1:LoRa stack v1.0.2 – y=2:LoRa stack v1.1 | z: FW/SW changes based on a defined package (z = 0,.....,9). |

Ordering information

I-CUBE-LRWAN is available for free download from the www.st.com website.

License

The software components provided in this package come with different license schemes as shown in [Table 2](#).

For further details about licenses, refer to the license agreement of each component.

Table 2. Software component license agreements

| Software component | Owner | License |
|------------------------------|------------------|-----------------------------------|
| Cortex [®] -M CMSIS | ARM [®] | Open source BSD |
| HAL STM32 L0/L1/L4 | ST | Open source BSD |
| LoRaWAN [™] stack | SEMTECH | Open source BSD |
| Project examples | ST | Ultimate Liberty (source release) |

Revision history

Table 3. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| 28-Jun-2016 | 1 | Initial release. |
| 29-Aug-2016 | 2 | Updated <i>Features</i> : <ul style="list-style-type: none">– Updated compliance of LoRaWAN version from V1.0 January 2015 to V1.0.1 February 2016– Specified “V1.0” for class A certification. |
| 10-Nov-2016 | 3 | Updated <i>Features</i> . |
| 22-Dec-2016 | 4 | Updated <i>Features</i> and reference to the CMWX1ZZABZ-xxx LoRa module from Murata |
| 7-Feb-2017 | 5 | Updated <i>Features</i> and reference to the CMWX1ZZABZ-091 LoRa module from Murata |
| 16-Mar-2017 | 6 | Updated <i>Features</i> and <i>Description</i> to introduce support of the USI LoRaWAN technology module. |

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