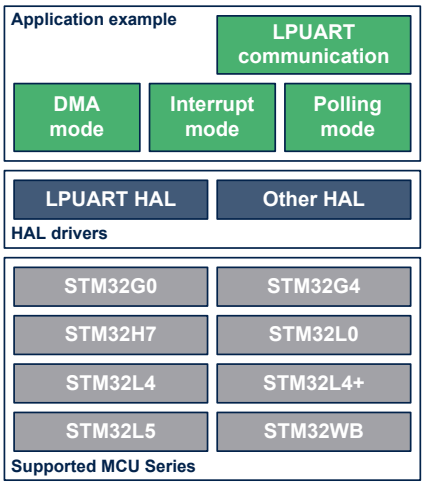
X-CUBE-LPUART

Data brief

Reduction of power consumption with LPUART software expansion for STM32Cube



Features

- Communication speeds of 9600 and 57600 bauds; communication using DMA, interrupt, or polling method
- Showcase of Stop and Sleep modes in communication
- Power regulator settings influence explained

Description

The microcontrollers in the STM32G0, STM32G4, STM32H7, STM32L0, STM32L4, STM32L4+, STM32L5, and STM32WB Series feature an alternative UART interface, designed to allow the STM32 to operate with minimum power requirements.

The application in the X-CUBE-LPUART Expansion Package aims to demonstrate how to exploit fully the LPUART advantages, thus extending product battery life.

For more details, refer to the *Minimization of power consumption using LPUART for STM32 microcontrollers* application note (AN4635), available on *www.st.com*.

Product status link
X-CUBE-LPUART

1 General information

The X-CUBE-LPUART Expansion Package runs on STM32 microcontrollers based on Arm® cores.

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

1.1 Ordering information

X-CUBE-LPUART is available for free download from the *www.st.com* website.

1.2 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to significantly improve designer's productivity by reducing development effort, time and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes:

- A set of user-friendly software development tools to cover project development from the conception to the realization, among which are:
  - STM32CubeMX, a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
  - STM32CubeIDE, an all-in-one development tool with peripheral configuration, code generation, code compilation, and debug features
  - STM32CubeProgrammer (STM32CubeProg), a programming tool available in graphical and command-line versions
  - STM32CubeMonitor (STM32CubeMonitor, STM32CubeMonPwr, STM32CubeMonRF, STM32CubeMonUCPD) powerful monitoring tools to fine-tune the behavior and performance of STM32 applications in real-time
- STM32Cube MCU & MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeG4 for the STM32G4 Series), which include:
  - STM32Cube hardware abstraction layer (HAL), ensuring maximized portability across the STM32 portfolio
  - STM32Cube low-layer APIs, ensuring the best performance and footprints with a high degree of user control over the HW
  - A consistent set of middleware components such as FAT file system, RTOS, USB Device, and USB Power Delivery
  - All embedded software utilities with full sets of peripheral and applicative examples
- STM32Cube Expansion Packages, which contain embedded software components that complement the functionalities of the STM32Cube MCU & MPU Packages with:
  - Middleware extensions and applicative layers
  - Examples running on some specific STMicroelectronics development boards

2 License

X-CUBE-LPUART is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1* software license agreement (SLA0048).

The software components provided in this package come with different license schemes as shown in Table 1.

Table 1. Software component license agreements

Software component	Owner	License
Board support package (BSP)	STMicroelectronics	BSD-3-Clause
Cortex®-M CMSIS	Arm Limited	BSD-3-Clause or Apache License 2.0(1)
HAL STM32G0, STM32G4, STM32H7, STM32L0, STM32L4, STM32L4+, STM32L5, STM32WB	STMicroelectronics	BSD-3-Clause
Project examples	STMicroelectronics	Ultimate Liberty (source release)

1. *Depends on the CMSIS version.*

Revision history

Table 2. Document revision history

Date	Version	Changes
05-May-2015	1	Initial release.
16-Dec-2015	2	New revision to introduce the STM32L4 Series.
13-Jun-2019	3	Extended document scope to the STM32G4 Series, STM32H7 Series, and STM32WB Series. Updated the entire document: • Updated title and cover page • Updated *Description* • Added *Ordering information*, *What is STM32Cube?* and *License*
24-Aug-2020	4	Extended document scope to the STM32G0 Series, STM32L4+ Series, and STM32L5 Series. Updated Description, What is STM32Cube? and License.

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