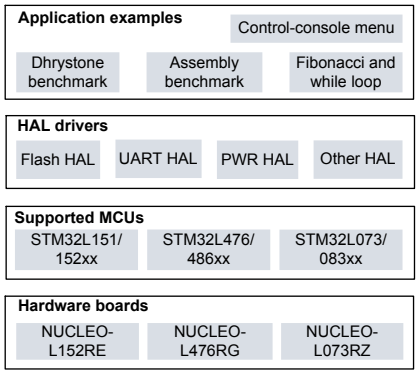
X-CUBE-REF-PM

Data brief

STM32L power consumption optimization software expansion for STM32Cube



Features

- STM32L Series power consumption and power balance computing
- Reference examples reproducing the power consumption measurements described in AN4777 and product datasheets
- Easy configuration of runtime parameters
- Console control through Virtual COM port
- Code accessible for tweaking and customization

Description

Ultra Low Power STM32L microcontrollers are intended for applications with demanding requirements on power efficiency. The X-CUBE-REF-PM Expansion Package consists of reference examples to easily assess STM32L performance and power consumption for various settings and test conditions, hence providing guidelines to optimize the application configuration.

For more details, refer to the *Implications of memory interface configurations on low-power STM32 microcontrollers* application note (AN4777), available from the *www.st.com* website.

Product status link
X-CUBE-REF-PM

1 General information

The X-CUBE-REF-PM 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-REF-PM 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:
  - 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-Power (STM32CubeMonPwr), a monitoring tool to measure and help in the optimization of the power consumption of the MCU
- STM32Cube MCU & MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeL4 for the STM32L4 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 Host and Device, TCP/IP, Touch library, and Graphics
  - 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-REF-PM is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1* software license agreement (SLA0048).

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

For more details, refer to the license agreement of each component.

Table 1. Software component license agreements

Software component	Owner	License
Board Support Package (BSP)	STMicroelectronics	BSD 3-Clause
Cortex®-M CMSIS	Arm®	BSD 3-Clause
STM32L0, STM32L4 and STM32L1 HAL APIs	STMicroelectronics	BSD 3-Clause
Example projects	STMicroelectronics	SLA0044 (source release)
Dhrystone benchmark	Reinhold P. Weicker	Open source (the source predates the modern licenses)

Revision history

Table 2. **Document revision history**

Date	Version	Changes
29-Aug-2019	1	Initial release.