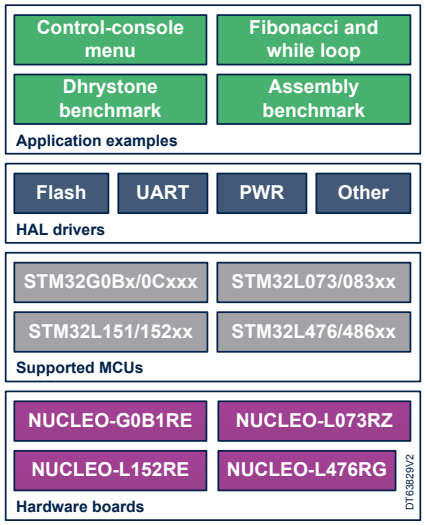
X-CUBE-REF-PM

Data brief

STM32 power consumption optimization software expansion for STM32Cube



Product status link
X-CUBE-REF-PM

Features

- Power consumption and power balance computing for microcontrollers in various STM32 series
- Reference examples reproducing the power consumption measurements described in AN4777 and MCU datasheets
- Easy configuration of runtime parameters
- Console control through Virtual COM port
- Code accessible for tweaking and customization

Description

The low-power STM32 microcontrollers are intended for applications with demanding requirements on power efficiency. The X-CUBE-REF-PM Expansion Package consists of reference examples to assess easily the performance and power consumption of such MCUs. X-CUBE-REF-PM covers various settings and test conditions, hence providing guidelines to optimize the application configuration.

For the selected MCUs in the STM32G0 series, X-CUBE-REF-PM also addresses the impact of the limitation in the use of the instruction prefetch.

For more details, refer to the *How to optimize power consumption on STM32 MCUs* application note (AN4777), available from the *www.st.com* website.

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 improve designer productivity significantly 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 conception to 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
  - STM32CubeCLT, an all-in-one command-line development toolset with code compilation, board programming, 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 and MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeG0 for the STM32G0 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 hardware
  - A consistent set of middleware components such as RTOS, USB, UCPD library, graphics, and FAT file system
  - 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 and 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 SLA0048 software license agreement and its Additional License Terms.

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
29-Aug-2019	1	Initial release.
24-Jul-2023	2	Extended the document scope to selected microcontrollers in the STM32G0 series: • Updated the document title and the cover image • Updated Features and Description Updated License and What is STM32Cube?