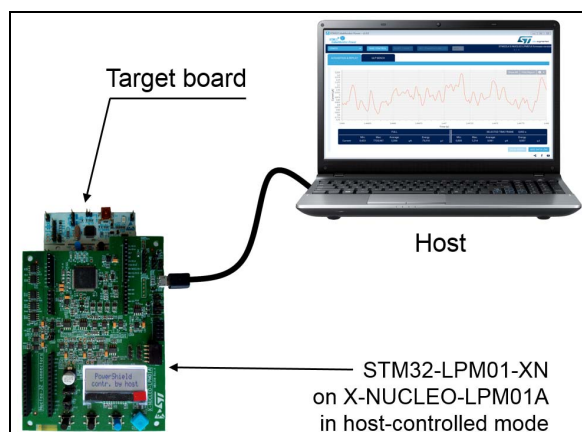


## Firmware of the STM32 Nucleo expansion board for power consumption measurement

Data brief

### Features

- Dedicated to the X-NUCLEO-LPM01A expansion board for power consumption measurement of target boards
- Preloaded on X-NUCLEO-LPM01A
- Regulates voltage sourcing from 1.8 V to 3.3 V
- Supervises both static and dynamic current measurements
  - Static measurements from 1 nA to 200 mA
  - Dynamic measurements from 100 nA to 50 mA at up to 100 kHz bandwidth, and 3.2 Msps sampling rate
- Compatible with the execution of EEMBC ULPMark™ tests
- Manages supply and consumption measurements for:
  - STM32 Nucleo-32, Nucleo-64, and Nucleo-144 boards
  - Any target board connected to the X-NUCLEO-LPM01A via the basic connector
- Works in both standalone and controlled modes
- Standalone mode
  - Selects the target board power supply from USB cable or external +5 V source
  - Displays on the monochrome LCD
  - Processes user inputs from the joystick, and from the Enter and Reset push-buttons
- Host-controlled mode
  - Interfaces with the STM32CubeMonitor-Power (STM32CubeMonPwr) PC tool



### Description

The STM32-LPM01-XN is STMicroelectronics firmware dedicated to the X-NUCLEO-LPM01A expansion board for the power consumption measurement of target boards.

It performs consumption averaging (static measurement up to 200 mA) as well as real-time analysis (dynamic measurement up to 50 mA with 100 kHz bandwidth).

STM32-LPM01-XN operates the X-NUCLEO-LPM01A either in standalone mode (using its LCD, joystick and button to display static measurements), or in controlled mode connected to host PC via USB (using the STM32CubeMonitor-Power software tool with its comprehensive graphical user interface).

STM32-LPM01-XN enables to supply and measure the consumption of STM32 Nucleo-32, Nucleo-64 or Nucleo-144 boards, using Arduino™ connectors. Alternatively, it can be used to supply and measure the consumption of any target connected by wires via the basic connector of the X-NUCLEO-LPM01A.

## System requirements

- Windows® OS (7, 8 and 10), Linux® 64-bit, or macOS®
- USB Type-A to Micro-B cable

## PC software tool

STM32-LPM01-XN allows the computer control of the Arm® Cortex®-M4 core-based X-NUCLEO-LPM01A expansion board through USB.

A computer driver for the USB virtual COM port (VCP) is required. The STM32 Virtual COM Port Driver (reference code: STSW-STM32102) can be downloaded from [www.st.com](http://www.st.com).

The STM32-LPM01-XN interfaces with the host computer in one of the two modes:

- Via a COM port terminal with commands. Type command 'help' for the list of available commands. For more information on commands, refer to user manual UM2269.
- Via a graphical user interface using the STM32CubeMonitor-Power software tool (reference code: STM32CubeMonPwr) available at [www.st.com/stm32softwaretools](http://www.st.com/stm32softwaretools). For more information on STM32CubeMonitor-Power, refer to user manual UM2202.



## Ordering information

STM32-LPM01-XN is available for free download from the [www.st.com](http://www.st.com) website.

## Revision history

Table 1. Document revision history

Date	Revision	Changes
4-Oct-2017	1	Initial release.
14-Feb-2018	2	Root part number of the STM32CubeMonitor-Power PC tool changed to STM32CubeMonPwr.

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2018 STMicroelectronics – All rights reserved