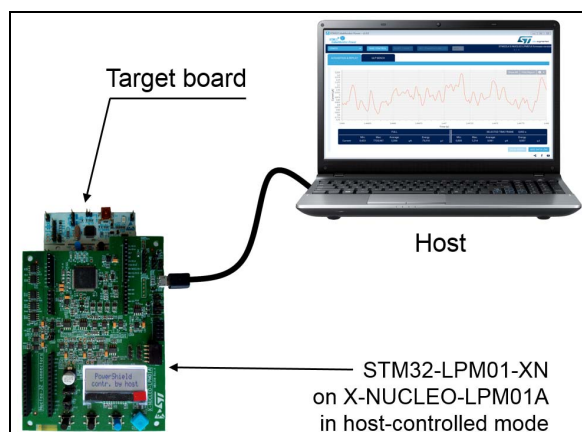# STM32-LPM01-XN

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

STM32-LPM01-XN on X-NUCLEO-LPM01A in host-controlled mode

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.

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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*.

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. For more information on STM32CubeMonitor-Power, refer to user manual UM2202.

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Ordering information

STM32-LPM01-XN is available for free download from the *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