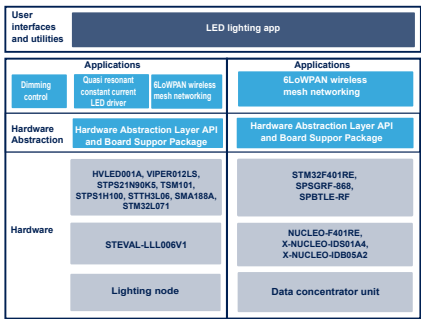
Firmware for the STEVAL-LLL006V1 evaluation board for street lighting applications using 6LoWPAN wireless mesh networks



Features

- Firmware designed to support Smart City street lighting applications
- 6LoWPAN wireless mesh networking functionality for remote control of multiple nodes
- 5% dimming resolution plus on/off control
- Firmware designed to run on STM32L071 series 32-bit microcontrollers
- Developed code freely available for download from www.st.com
- Developer friendly license terms
- Android application available to demonstrate the complete functionality of the STEVAL-LLL006V1 evaluation board

Description

This firmware demonstrates street lighting control in a Smart City scenario based on 6LoWPAN wireless mesh networking technology, which enables remote dimming and on/off control of entire street lighting networks from a single smart device.

A data concentrator unit (DCU) and a mobile Android application have been developed to help you explore the functionality of the STEVAL-LLL006V1 evaluation board. The DCU consists of a NUCLEO-F401RE development platform, plus the X-NUCLEO-IDS01A4 for sub 1-GHz communication with the LED driver board and an X-NUCLEO-IDB05A2 board for Bluetooth communication with the mobile device.

The ST 6LoWPAN Smart Streetlight mobile application (available on Google Play store), collects lighting nodes represented by the microcontroller and RF module on the evaluation board in a 6LoWPAN mesh network.

The firmware consists of two .bin files, one running on the DCU and one running on the STM32L071KZ microcontroller embedded on the STEVAL-LLL006V1 evaluation board, featuring the HVLED001A high brightness LED driver.

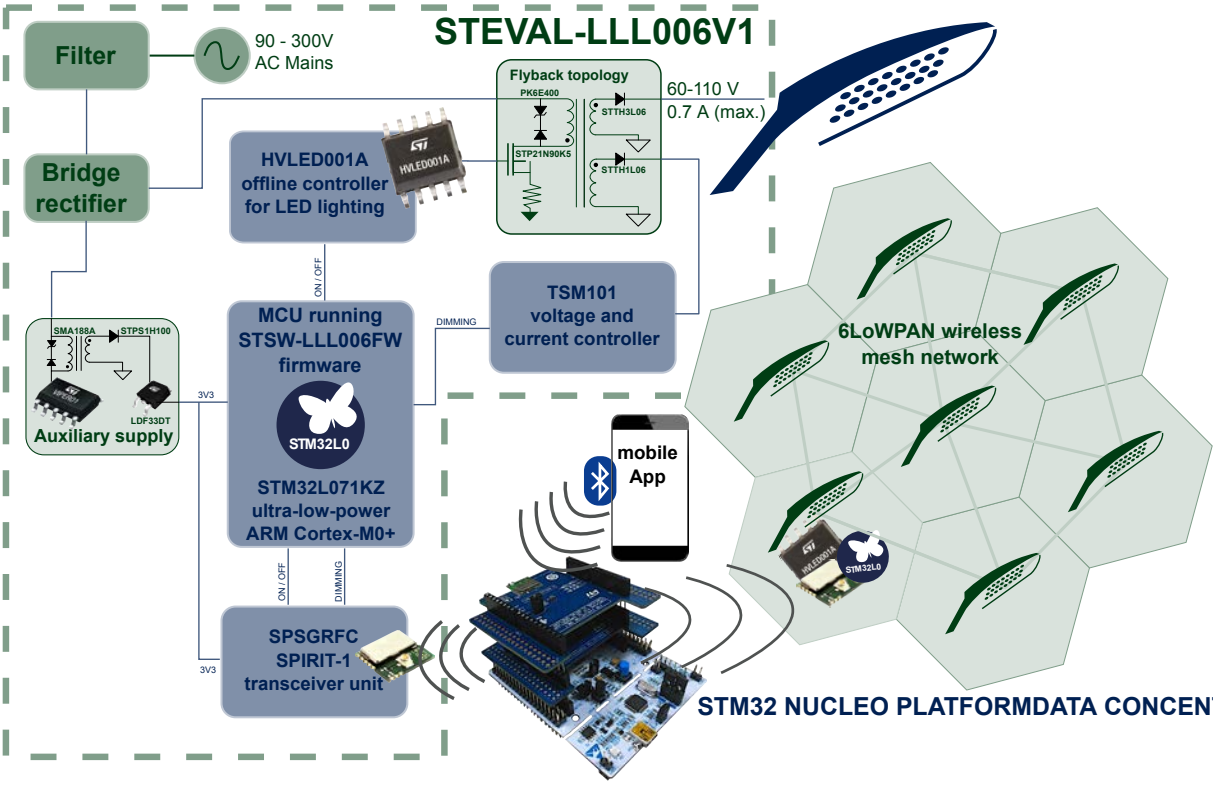
The firmware is freely available for download from the STSW-LLL006FW web page with developer friendly license terms, so you can use it to test the SPSGRFC sub-1 GHz connectivity and HVLED001A LED power control functionality of the evaluation board, as well as to develop your own custom solutions.

Product summary	
Smart LED Driver using 6LoWPAN Mesh network for outdoor street lighting	STEVAL-LLL006V1
Firmware for the STEVAL-LLL006V1 evaluation board	STSW-LLL006FW
ultra-low-power ARM Cortex-M0+ MCU	STM32L071KZ
sub-1 GHz programmable transceiver module	SPSGRFC
FW download method	ST-LINK
FW development environments	• Keil • IAR • Workbench
Other utilities and applications	Android LED lighting app

1 Overview

1.1 Block diagram

Figure 1. Street lighting application block diagram



1.2 How to download the firmware

The firmware includes two .bin files for the lighting node and the DCU platform:

- To install the lighting node firmware (STSW-LLL006FW.bin), you need to connect an ST-LINK interface between your PC and the SWD connector on the STEVAL-LLL006V1 board. Please find ST-LINK/V2 on www.st.com for further instructions.

Note: If you have an STM32 Nucleo platform (e.g., for the DCU), you can use the ST-LINK interface embedded on the board. Please visit www.st.com/stm32nucleo for further information.

- To install the data concentrator unit firmware (STSW-LLL006DCUFW.bin), you can plug your PC to the STM32 Nucleo board via USB. Please visit www.st.com/stm32nucleo for further information.

Revision history

Table 1. Document revision history

Date	Version	Changes
05-Apr-2019	1	Initial release.
06-May-2020	2	Substituted X-NUCLEO-IDB05A1 (no longer recommended for new designs) with X-NUCLEO-IDB05A2