

---

**Quick start guide STKNX evaluation board (EVALKITSTKNX)**

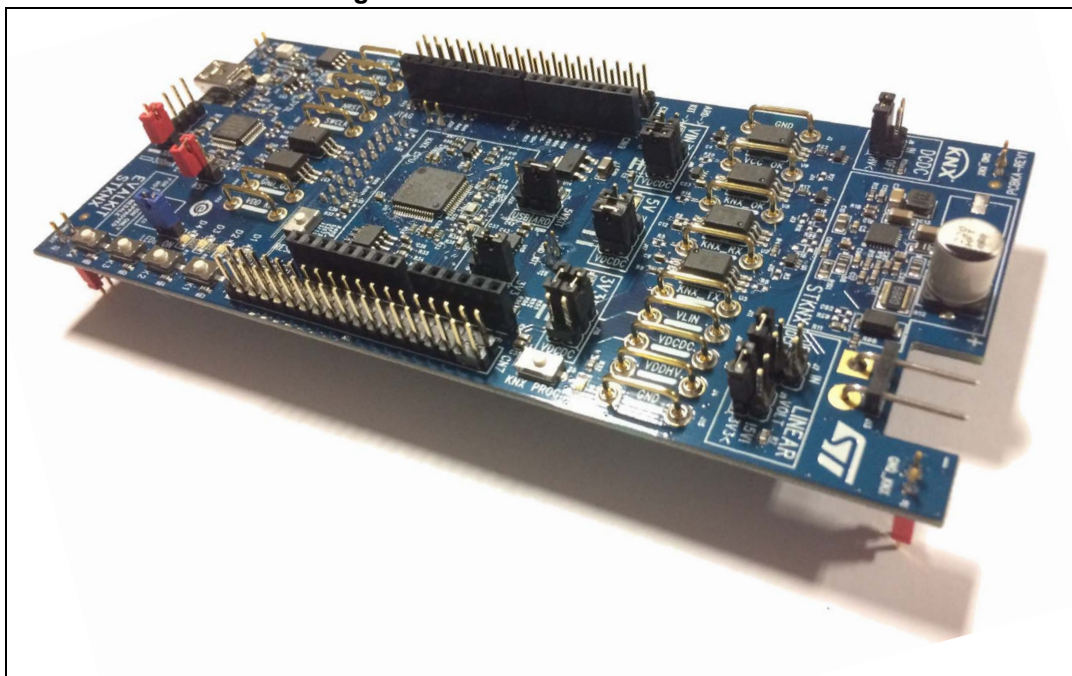
---

**Introduction**

The EVALKITSTKNX is a hardware platform to evaluate and to develop applications for the STKNX miniature transceiver with the STM32F103 microcontroller.

This document gives an overview of the software architecture and describe how to use this software with the evaluation kit.

**Figure 1. STKNX evaluation board**



# Contents

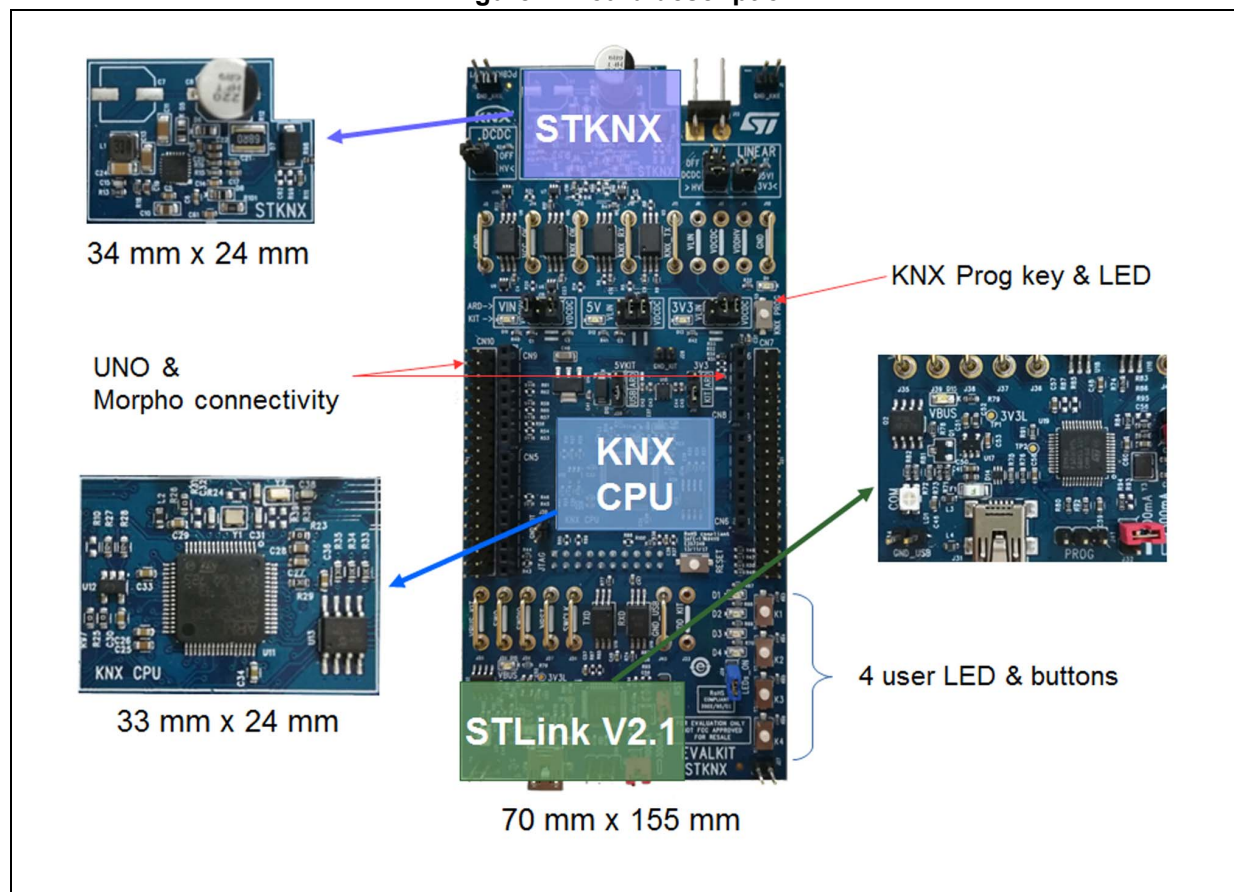
|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Overview</b>                                      | <b>3</b>  |
| 1.1      | EVALKITSTKNX development platform overview           | 3         |
|          | Board description                                    | 3         |
| 1.2      | Development platform spirit                          | 4         |
| <b>2</b> | <b>Software overview and setup</b>                   | <b>5</b>  |
| 2.1      | Software components                                  | 5         |
| 2.2      | Software overview                                    | 6         |
|          | STM32F103RB-STKNX software description               | 6         |
| 2.3      | Software prerequisites                               | 6         |
| 2.4      | Install and build firmware with Ac6 System Workbench | 7         |
| <b>3</b> | <b>Setup and demonstration examples</b>              | <b>10</b> |
| 3.1      | Hardware prerequisites                               | 10        |
| 3.2      | Setup a simple KNX network                           | 11        |
| <b>4</b> | <b>Revision history</b>                              | <b>14</b> |

# 1 Overview

## 1.1 EVALKITSTKNX development platform overview

### Board description

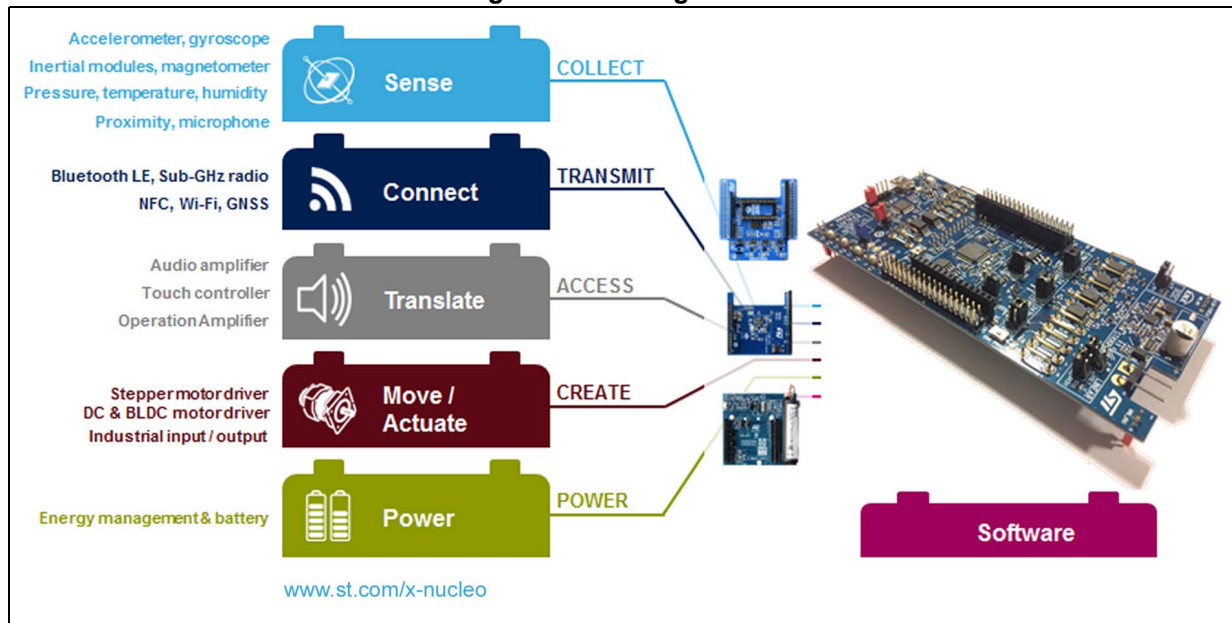
Figure 2. Board description



## 1.2 Development platform spirit

- The **EVALKITSTKNX** has been developed in the spirit of the STM32™ Nucleo boards.
- Expansion boards with additional functionality can be **plugged directly on top of the Eval Kit** development board or stacked on another expansion board.

Figure 3. Building blocks

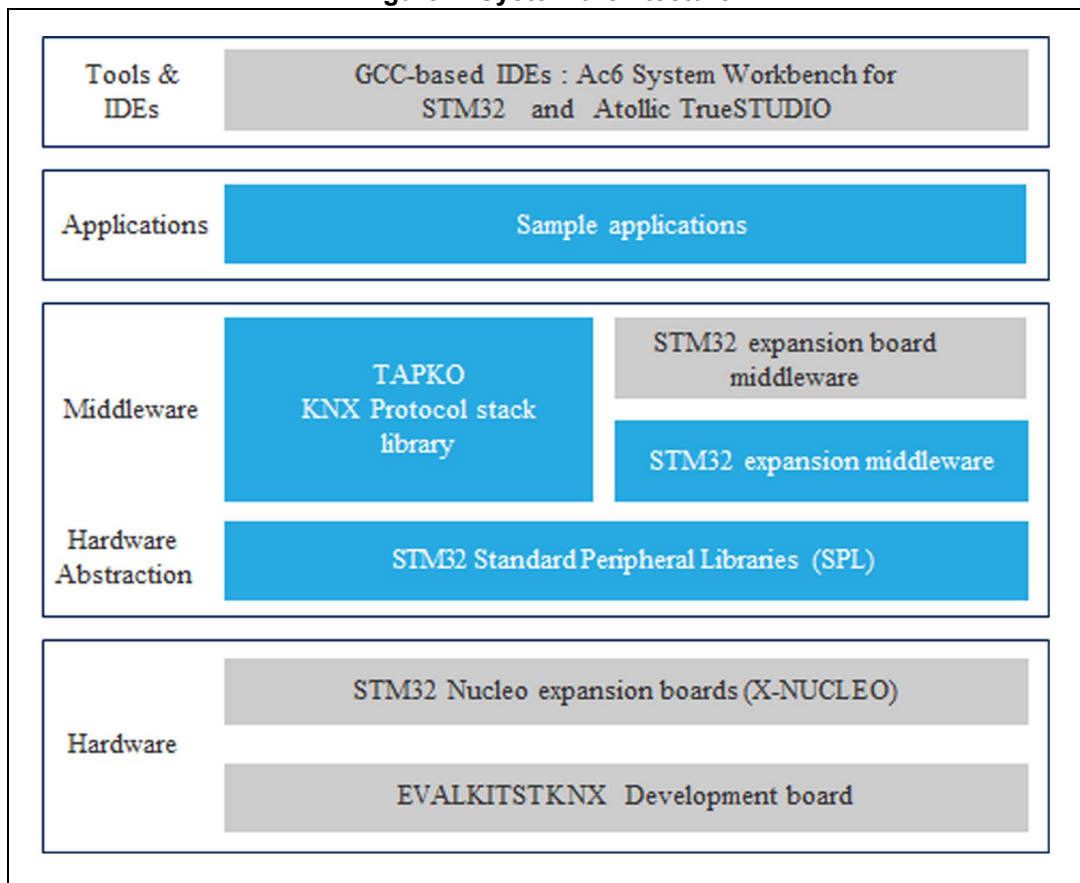


## 2 Software overview and setup

### 2.1 Software components

- The **EVALKITSTKNX** comes with a complete software package. A sample application is provided.
- Access to hardware features is simplified with the utilization of the **STM32 Standard Peripheral Libraries (SPL)**
- A demonstration version of the **TAPKO's KNX protocol stack** is provided as a binary file.
- The software package is compatible with two free GCC-based IDEs: **Ac6 System Workbench for the STM32** and **Atollic TrueSTUDIO®**. Versions of these two IDEs exist for the Linux® and Windows OS.

Figure 4. System architecture

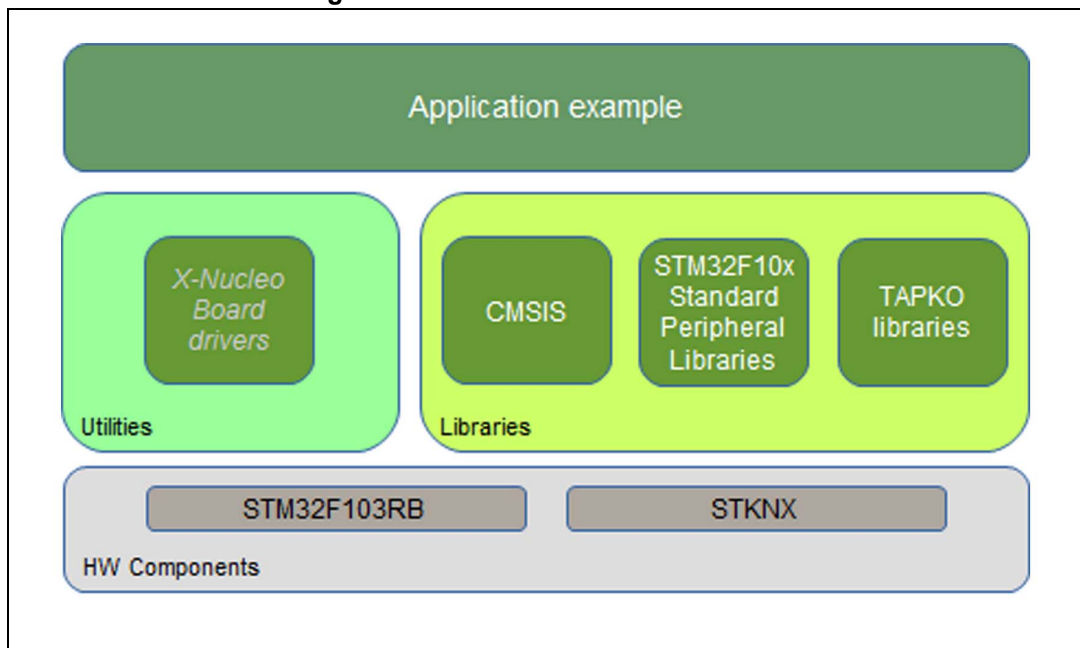


## 2.2 Software overview

### STM32F103RB-STKNX software description

- This software, running on the STM32F103, demonstrates the STKNX capabilities.
- It is built on the top of the STM32 Standard Peripheral Libraries (SPL) that eases access to STM32 features.
- It uses a demonstration version of the TAPKO KNX protocol stack.
- Example to demonstrate actuator and sensor.

**Figure 5. Overall software architecture**



## 2.3 Software prerequisites

- A Linux computer or a Windows computer with one of the supported development toolchains:
  - Atollic: TrueSTUDIO ([Link](#))
  - Ac6 System Workbench for STM32: SW4STM32 ([Link](#))
- Or a Mac OSX computer with Ac6 System Workbench for STM32
- EVALKITSTKNX firmware example
- ST-LINK/V2-1 USB driver ([Link](#))
- ST-LINK/V2-1 firmware upgrade ([Link](#))
- KNX ETS5 (engineering tool software) application ([Link](#))

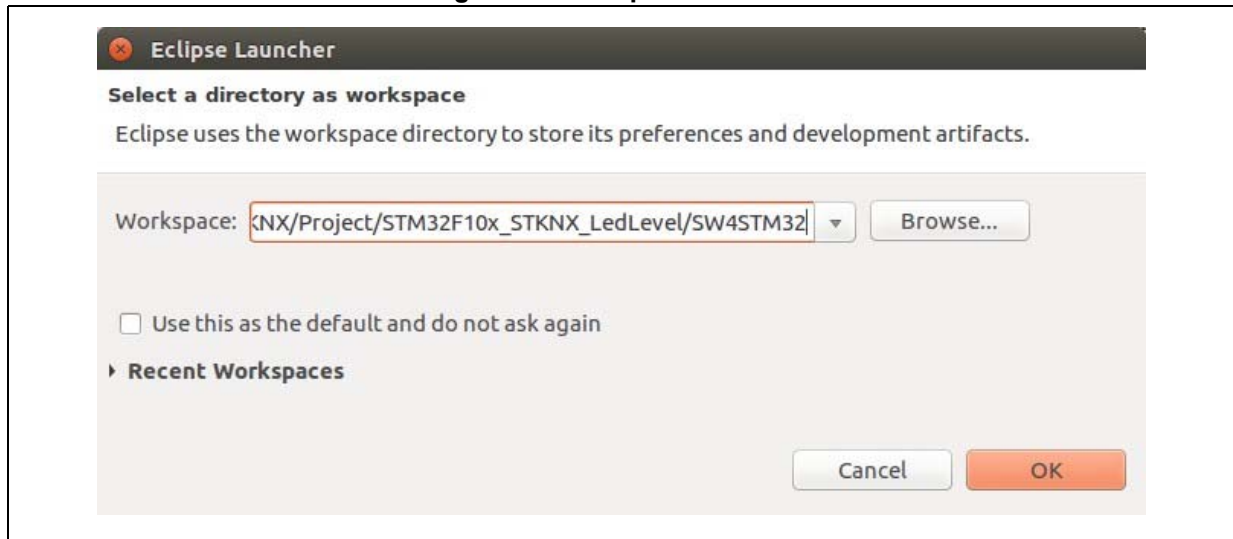
## 2.4 Install and build firmware with Ac6 System Workbench

1. Download the STM32F103RB-STKNX package and extract it in your file system.

Open the AC6 System Workbench for the STM32 and when requested to select a directory as workspace, browse to:

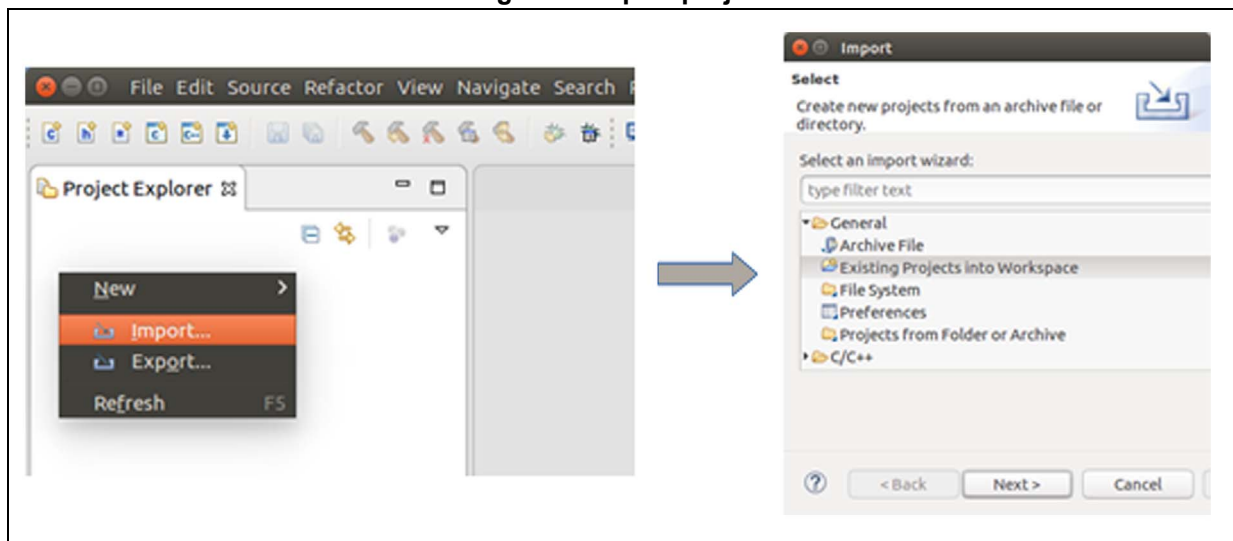
<your path>/STM32F103RB-STKNX/Project/STM32F10x\_STKNX\_LedLevel/SW4STM32

Figure 6. Workspace selection

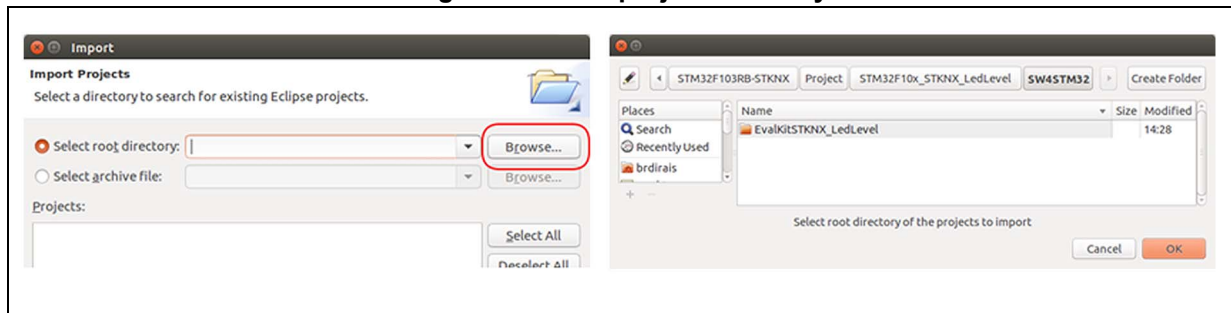


2. In the **Project Explorer** panel, right click and select *Import* → *General* → “Existing Projects into Workspace”.

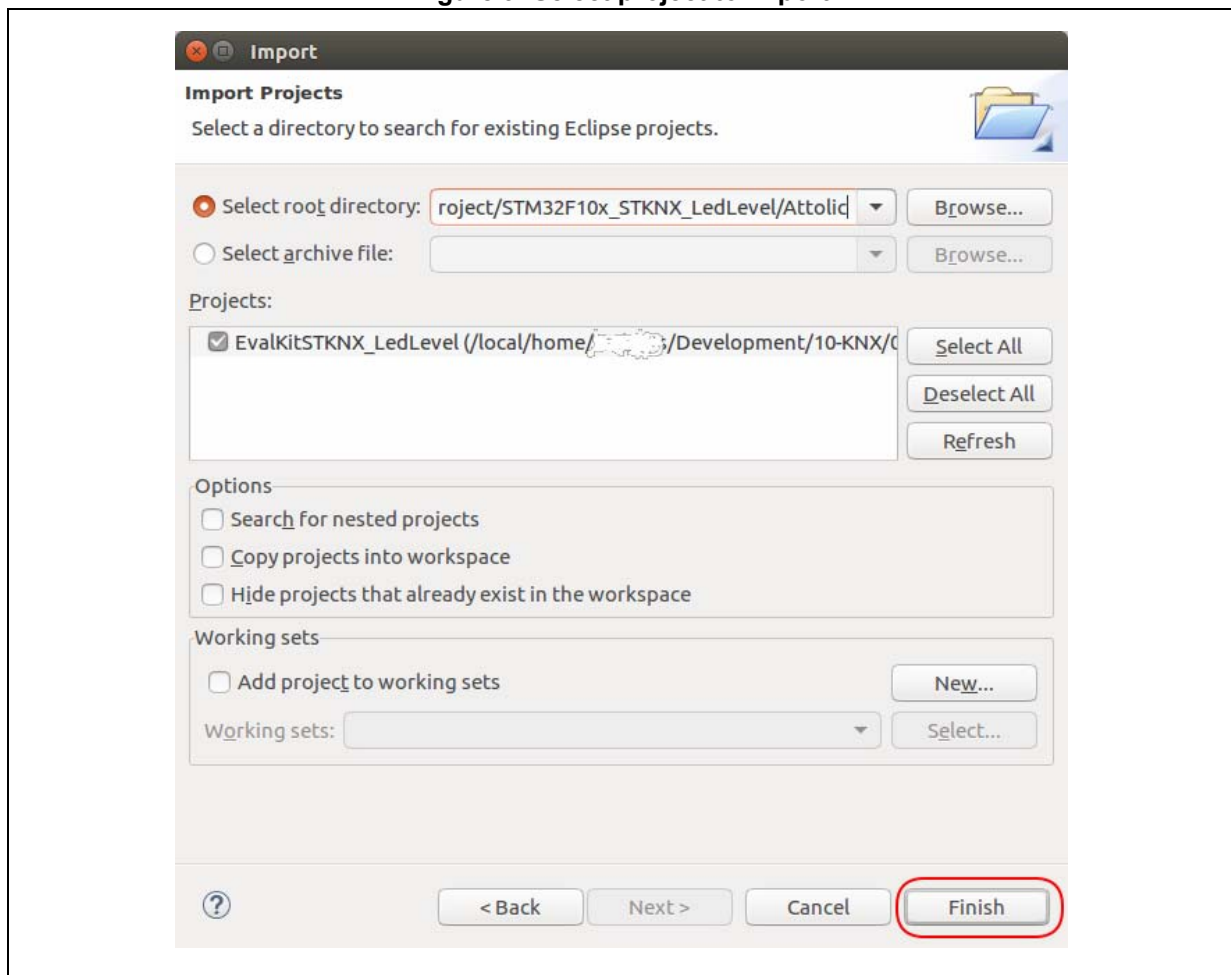
Figure 7. Import project





3. In the **Import** windows, click on *Browse* and on *OK* in the next window.

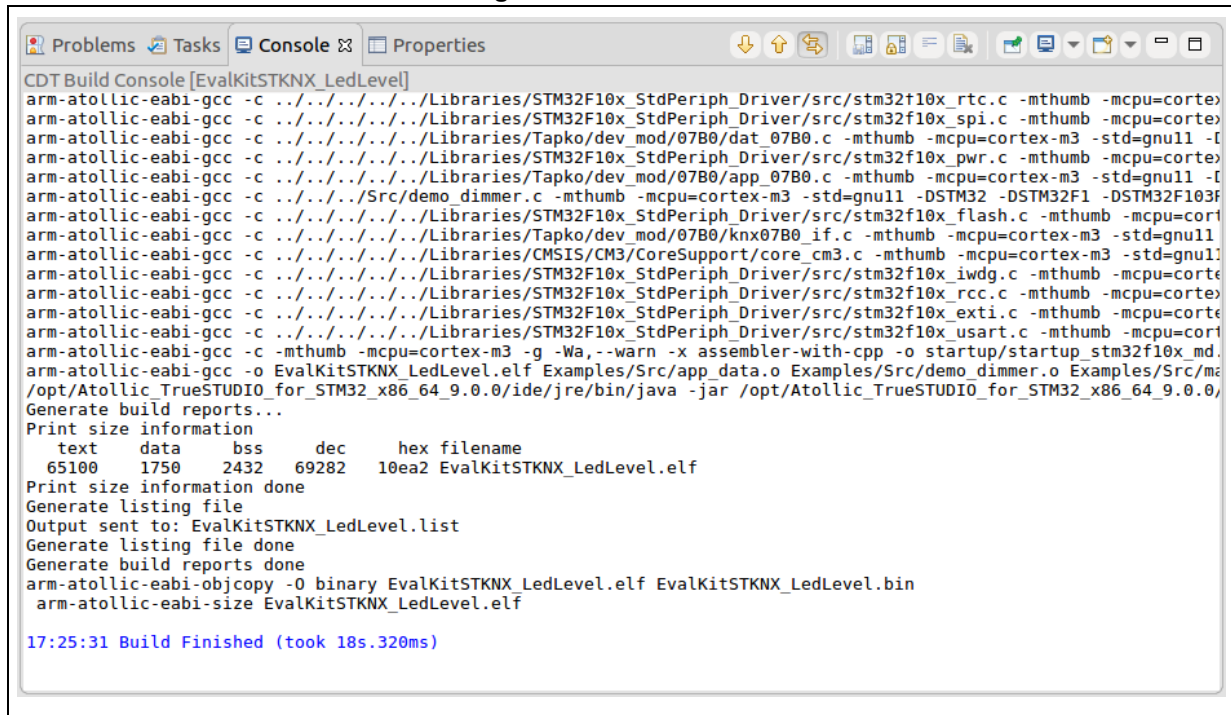
**Figure 8. Select project directory**


4. The project to import has been automatically selected. You can now click on *Finish*. The project is imported.

**Figure 9. Select project to import**

5. Select the project name in the **Project Explorer**, and click on the Clean icon  or select *Clean Project* in the contextual menu.
6. Click on the build icon  or select *Clean Project* in the contextual menu.

### Figure 10. Console view



- Once build is finished, you can start debugging the project click on the Clean icon  or select *Debug As* → *Embedded C/C++ Application* in the contextual menu.

Or you can drag and drop the binary (*EvalKitSTKNX\_LedLevel.bin*), available in **Debug**, to the virtual drive that is mounted when you connect the EVALKITSTKNX board to your computer. The name of this virtual drive is STKNX.

## 3 Setup and demonstration examples

### 3.1 Hardware prerequisites

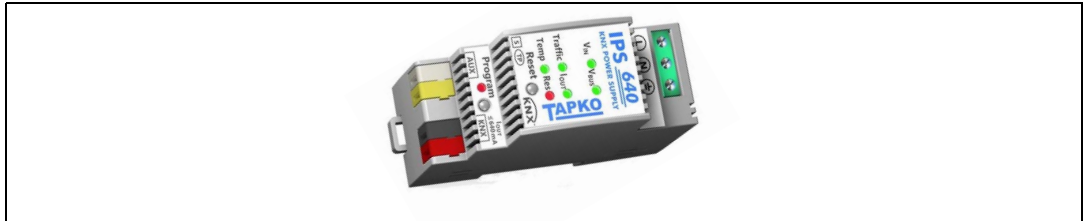
- One EVALKITSTKNX board
- One KNX sensor: Apricum TAI-KNX 4

Figure 11. Apricum TAI-KNX 4



- One KNX power supply

Figure 12. KNX power supply



- One KNX TP interface (USB-KNX interface)

Figure 13. KNX TP interface



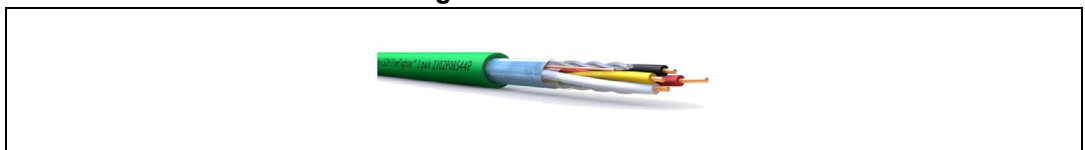
- A type A to type B USB cable

Figure 14. USB cable



- KNX cable

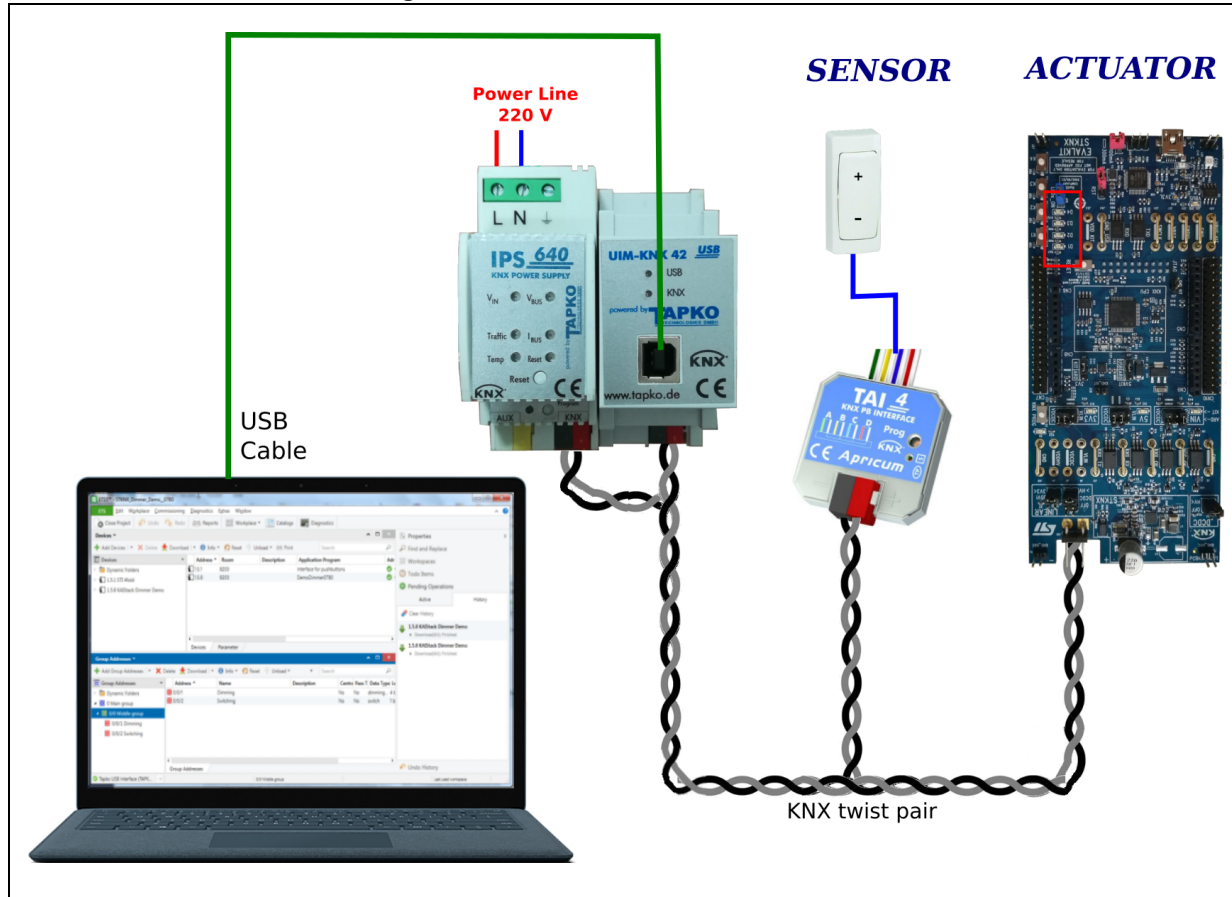
Figure 15. KNX cable



### 3.2 Setup a simple KNX network

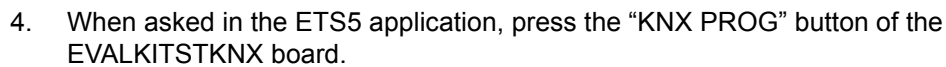
1. Setup the KNX network in accordance to description in [Figure 16](#).

Figure 16. KNX demonstration network



2. In the ETS5 application, import the project STKNX\_LED\_Level\_Demo.knxproj available in the:  
STM32F103RB-STKNX/Project/STM32F10x\_STKNX\_LedLevel/ETS5\_ProjectFile

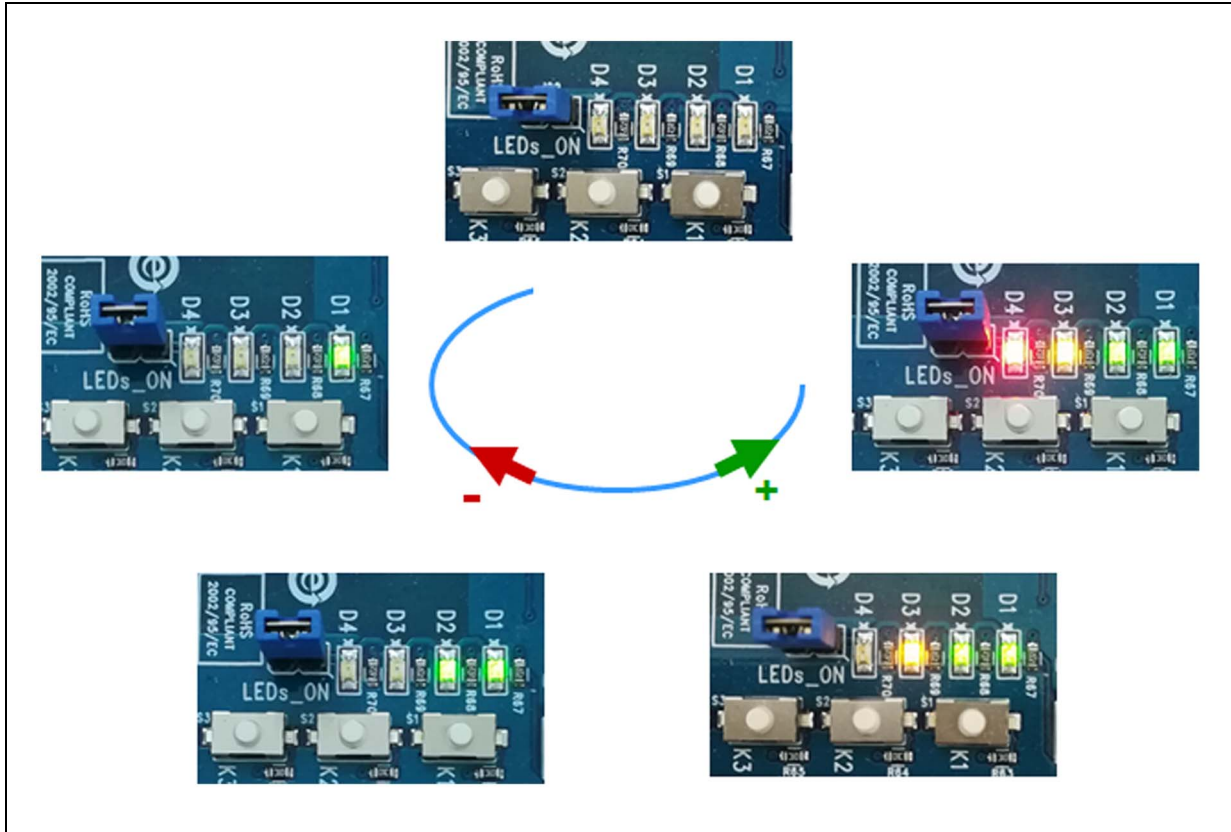
- Figure 17. ETS5 application screenshot**



## 5. Tests:

- ON button of the sensor is used to increase the number of the LED switched on.
- OFF button of the sensor is used to decrease the number of the LED switched on.

Figure 19. Test description



4      **Revision history**

**Table 1. Document revision history**

| Date        | Revision | Changes          |
|-------------|----------|------------------|
| 23-Jul-2018 | 1        | Initial release. |



**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

