Getting started with ST25DV64KC discovery kit

Introduction

The ST25DV64KC-DISCO is a kit that evaluates the features and capabilities of the ST25DV64KC devices.

The kit is composed of three boards:

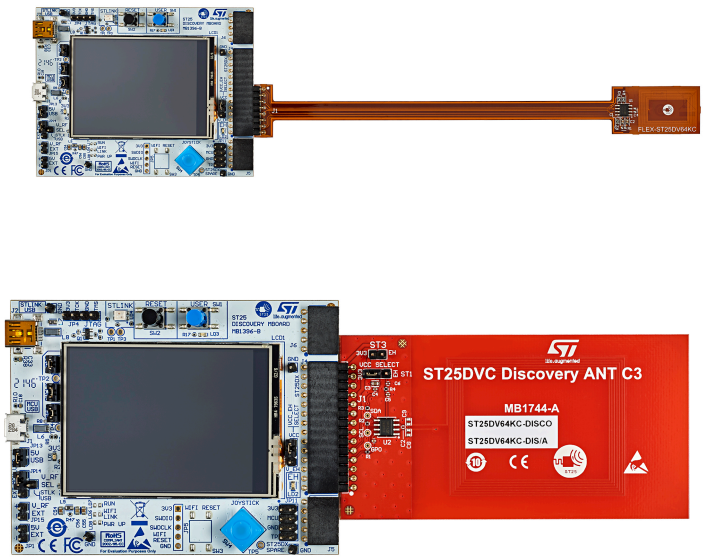
- **Microprocessor motherboard:** includes hardware and software tools allowing the use the full STM32 Nucleo ecosystem. The board is powered through one USB connector.
- **Daughterboard:** embeds the ST25DV64KC dynamic NFC / RFID tag device and a Class 3 antenna
- **Daughterboard:** embeds the ST25DV64KC dynamic NFC / RFID tag device and a Class 6 antenna on a flex PCB.

The communication link between boards is the I^2C serial, and the power is provided by the processor card or via energy harvesting. Specific data lines complete the pin connector assignment shared between cards.

The kit also allows the users to develop and to test their own applications.

All boards schematics, BOM, Gerber files, drivers and firmware are available at www.st.com.

Figure 1. ST25DV64KC-DISCO motherboard and daughterboards



1 General information

This document applies to Arm®-based devices.

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

2 Description

The MB1396 motherboard is designed to help the user to explore the features of the ST25DV64KC products with the support of the STM32 Nucleo ecosystem.

This motherboard uses a 32-bit Arm® Cortex®-M4 CPU with FPU high-performance microcontroller to develop the applications.

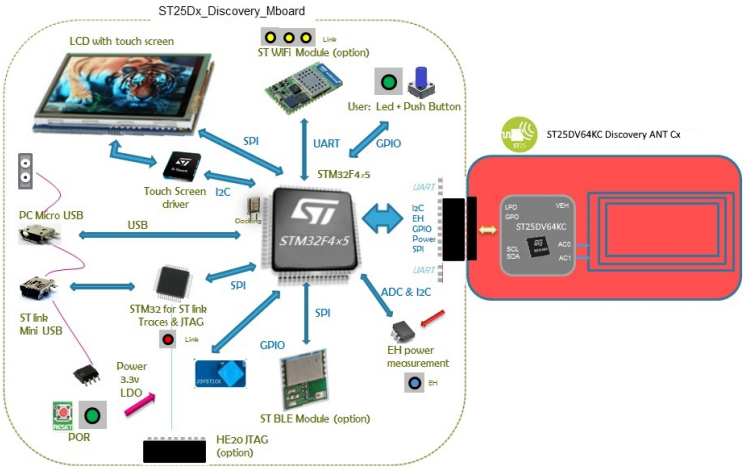
The MB1396 board, powered through the USB, is based on the STM32L476 microcontroller and includes:

- ST-LINK embedded debug tool interface
- 2.4” TFT LCD with touch screen capability
- LEDs
- Push buttons (reset and user)
- Mini USB debug connector
- User dedicated micro USB connectors

The daughterboards are dynamic NFC/RFID tag providing a buffering data transfer capability expansion board usable with the MB1396 motherboard. They are connected to STM32 MCU via I²C.

All documents related to ST25DV64KC-DISCO can be downloaded from www.st.com.

Figure 2. ST25DV64KC-DISCO architecture



2.1 Motherboard features

The MB1396 is a ready-to-use printed circuit board (PBC) that includes:

- STM32F476VGT6 LQFP100 32-bit microcontroller with 1 Mbyte of Flash memory and 192 + 4 Kbyte of SRAM
- LCD color screen (320 x 200 pixels)
- Various color LEDs (power, user, WiFi® status)
- Touch screen driver
- User push button
- Reset button
- Joystick for menu selection
- On-board ST-LINK for microcontroller firmware upgrade and debug
- ST-LINK mini USB
- User micro USB
- USB micro or mini connector for board powering
- Demonstration use cases flashed in memory

2.2 Daughterboards features

Daughterboards are ready-to-use PCBs including:

- ST25DV64KC dynamic NFC/RFID tag IC with 64 Kbit, EEPROM, which provides a buffering data transfer capability
- Class 3 or Class 6 single layer inductive antenna etched on the PCB.

3 Quick start

The motherboard and the daughterboards must be connected.

The ST25DV64KC-DISCO kit is powered by the micro USB bus via a cable connected to the power source.

The unit must be supplied by a safety extra low voltage (SELV) limited power source through the USB port, the source must not exceed 60 VDC / 8 A / 100 VA.

When powered up, the microcontroller starts the firmware, which is already downloaded in the Flash memory. This demonstrates the different capabilities of the ST25DV64KC such as:

- NFC Type V dynamic tag
- Energy harvesting
- Fast transfer mode

There is no need configurations to run the demonstration.

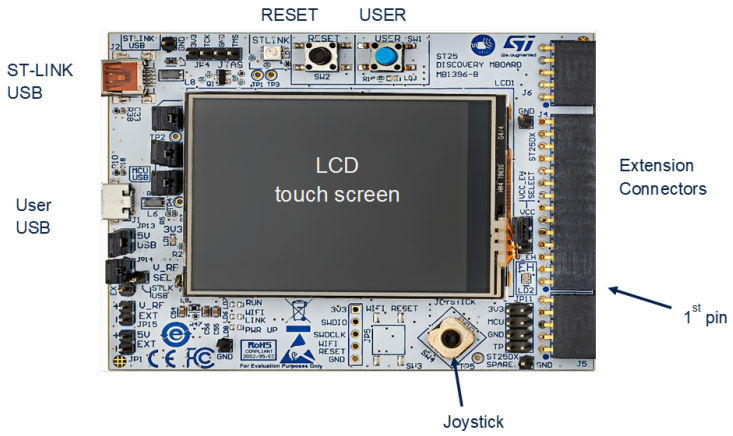
Refer to the user manual of the firmware available on www.st.com to get more details.

3.1 Hardware layout

The PCB of the motherboard is usually connected via USB to the PC. The embedded firmware controls the STM32 MCU, which manages the ST25DV64KC via the extension connectors. Both boards are powered by the 5 V supply of the USB bus. An LDO converts this voltage down to 3.3 V to supply the microcontroller and the ST25DV64KC. The extension board is provided with both 3.3 V and 5 V supplies, it is possible to select one of them.

A green LED close to the motherboard micro USB plug indicates when the board is powered.

Figure 3. ST25DV64KC-DISCO motherboard MB1396



3.2 Daughterboards layout

Figure 4. **ST25DV64KC-DISCO Antenna Class 3 daughterboard top view**

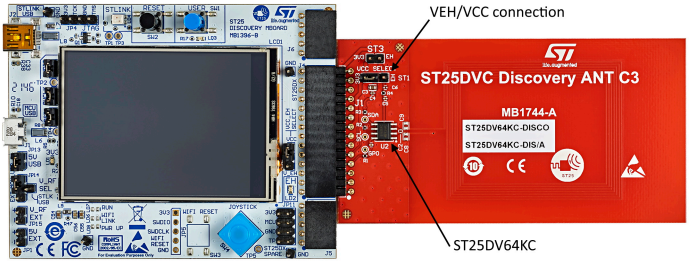
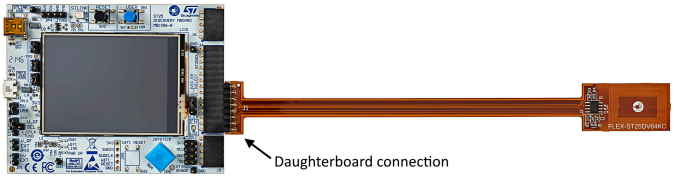


Figure 5. **ST25DV64KC-DISCO Antenna Class 6 daughterboard top view**



4 Program and debug the ST25DV64KC-DISCO discovery kit

In order to flash or debug an STM32 microcontroller application on the ST25DV64KC-DISCO kit, simply connect the mini USB cable.

The on-board ST-LINK in circuit debugger and programmer allows the user to start the dedicated tools. Then, launch the ST-LINK utility PC software.

For more information or documentation on the ST-LINK in circuit debugger and programmer, visit www.st.com.

Revision history

Table 1. **Document revision history**

Date	Version	Changes
18-Oct-2021	1	Initial release.
02-Feb-2022	2	Updated images in: Introduction, Description, Daughterboards layout

Contents

1 General information 2
2 Description 3
2.1 Motherboard features 3
2.2 Daughterboards features 4
3 Quick start 5
3.1 Hardware layout 5
3.2 Daughterboards layout 6
4 Program and debug the ST25DV64KC-DISCO discovery kit 7
Revision history 8
Contents 9
List of tables 10
List of figures 11

List of tables

Table 1. Document revision history 8

List of figures

Figure 1. ST25DV64KC-DISCO motherboard and daughterboards . . . 1
Figure 2. ST25DV64KC-DISCO architecture . . . 3
Figure 3. ST25DV64KC-DISCO motherboard MB1396 . . . 5
Figure 4. ST25DV64KC-DISCO Antenna Class 3 daughterboard top view . . . 6
Figure 5. ST25DV64KC-DISCO Antenna Class 6 daughterboard top view . . . 6

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. For additional information about ST trademarks, please refer to www.st.com/trademarks. 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.

© 2022 STMicroelectronics – All rights reserved