

### Getting started with the STM32F072 Discovery kit

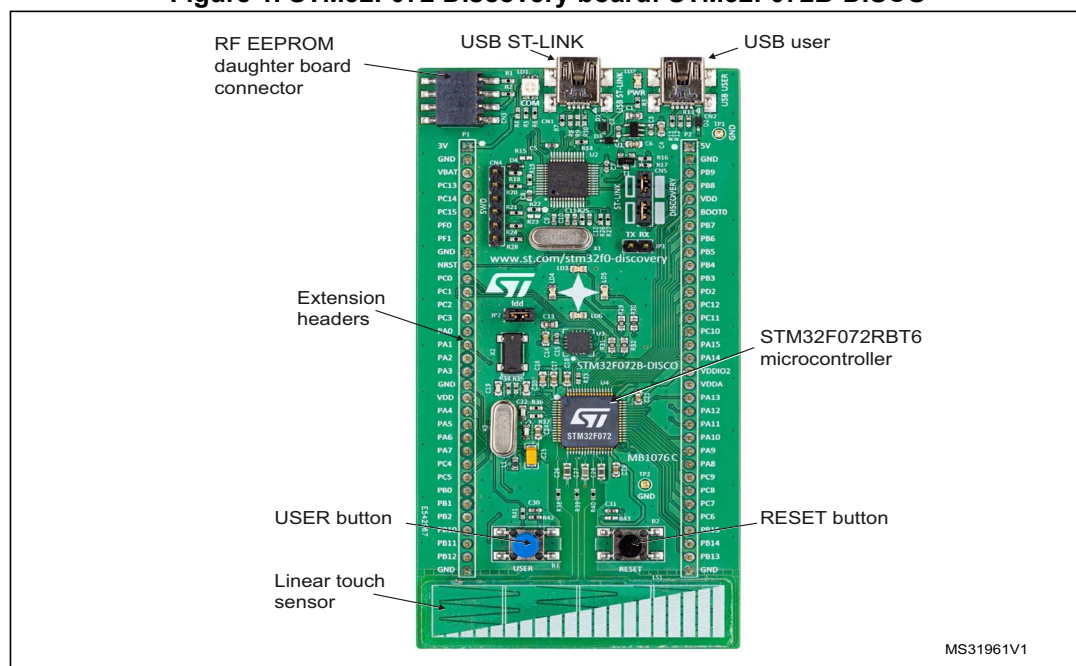
## Introduction

This document describes the software, firmware environment and development recommendations required to build an application around the STM32F072 Discovery kit (32F072BDISCOVERY) with demonstration firmware (STSW-STM32139).

The STM32F072 Discovery kit is a low-cost and easy-to-use development kit to quickly evaluate and start applications with an STM32F0 series ARM<sup>®</sup> 32-bit Cortex<sup>™</sup>-M0 high-performance microcontroller. Before installing and using the product, please accept the Evaluation Product License Agreement from [www.st.com/stm32f0-discovery](http://www.st.com/stm32f0-discovery).

For more information on the STM32F072 Discovery kit, visit [www.st.com/stm32f0-discovery](http://www.st.com/stm32f0-discovery). To order the STM32F072 Discovery kit, use the STM32F072B-DISCO order code.

**Figure 1. STM32F072 Discovery board: STM32F072B-DISCO**



## References

- STM32F072x datasheet
- STM32F0x1/STM32F0x2/STM32F0x8 advanced ARM<sup>®</sup>-based 32-bit MCUs reference manual (RM0091)
- Discovery kit for STM32F072 line (UM1690)
- Getting started with STM32F072 Discovery software development tools
- Forum: user questions/discussion

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# 1 Quick start

The STM32F072 Discovery kit demonstration software is already preloaded in the Flash memory on the board. The latest versions of the source code and associated documentation can be downloaded from [www.st.com/stm32f0-discovery](http://www.st.com/stm32f0-discovery).

This document describes step-by-step how to start using the STM32F072 Discovery kit demonstration.

## 1.1 Hardware requirements

To configure the STM32F072B-DISCO board and start the demo, two 'USB type A to Micro-B' cables are required. Connect them between the host PC and the board as follows:

- USB connector CN1: to power on the STM32F072B-DISCO board from the USB ST-LINK
- USB connector CN2: to connect the board to the host PC as a USB Device

Establish the connection with the STM32F072 Discovery board as shown in [Figure 2](#).

Check jumper positions on the board, JP2 and CN5 are set to **ON** (Discovery mode).

**Figure 2. Hardware environment**



## 1.2 Run pre-loaded demo

Follow the sequence below (Function 0 to Function 3) to launch the demo application:

Function 1 is executed and each click on user button B1 changes the executed function as shown in [Table 1](#).

**Table 1. STM32F072B-DISCO functions and LEDs**

Function	LED	Displayed description	Main function
0	LD3/4/5/6 <i>blinking</i>	Four LEDs LD3, LD4, LD5, LD6 are blinking	LEDs blinking
1	LD3/4/5/6 <i>ON or OFF</i>	The four LEDs will indicate the board movement.	MEMS sensor
2	LD3/6 blinking	Connect a second USB type A to Micro-B cable between CN2 and the PC, then observe the mouse cursor moving according to the board movement.	Standard mouse
3	LD3/4/5/6 <i>ON or OFF</i>	The LEDs will light up according to the position of the user's fingertip on the linear touch sensor.	Linear sensor

The following is the detailed procedure and description of each function.

Function 0:

When connecting the STM32F072 Discovery board to a PC, the LEDs LD1 (COM) and LD2 (PWR) will light up and four LEDs LD3, LD4, LD5, LD6 are blinking.

Function 1:

Press the User button B1 to enable the gyroscope MEMS sensor (L3GD20). The four LEDs will indicate the board motion, direction and speed.

Function 2:

Connect STM32F072 Discovery board to a PC with a 'USB type A to Micro-B' cable through USB connector CN2 (USB USER). This converts the board to a standard mouse. Press User button to start the USB test. Move the STM32F072 Discovery board and see the mouse move according to the board movement.

Function 3:

Press the User button again to enable the linear touch sensor; the four LEDs will be *ON* or *Off* according to the position of the fingertip on the linear touch sensor.

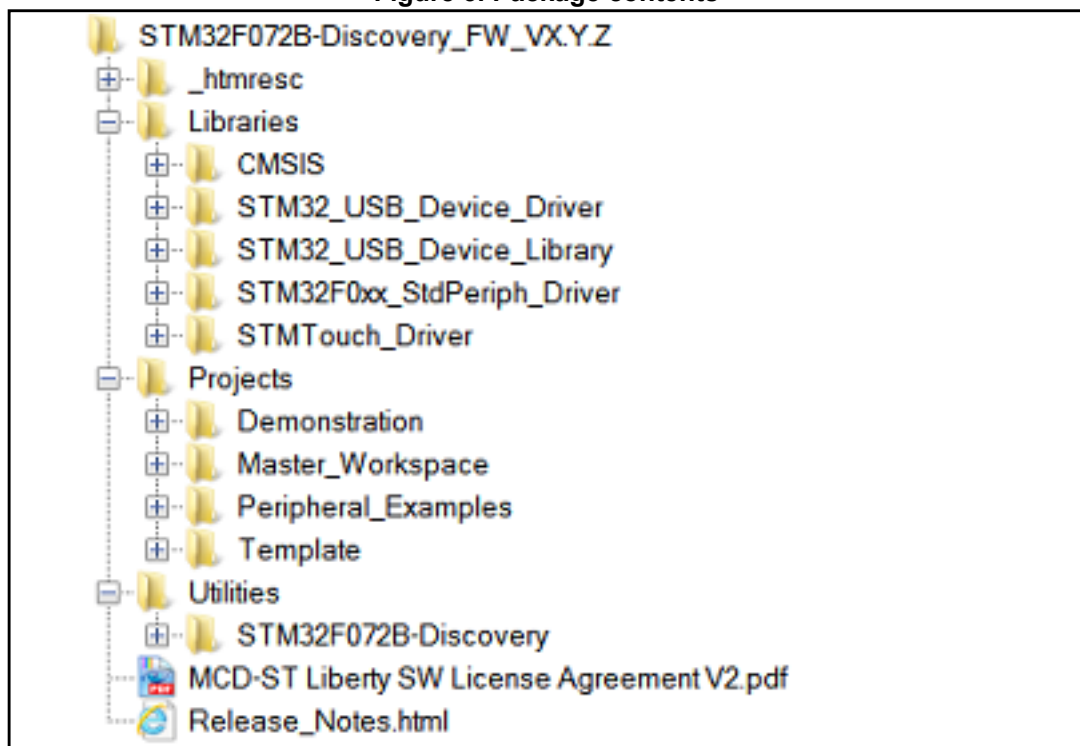
## 2 Firmware package

To get started with the STM32F072 Discovery kit, a firmware package that contains a set of IP examples and demos of some features is available at [www.st.com/stm32f0-discovery](http://www.st.com/stm32f0-discovery).

### 2.1 Package description

The STM32F072 Discovery firmware applications and related documentation are provided in one single package and supplied in one single ZIP file. The extraction of the ZIP file generates one folder, *STM32F072B-Discovery\_FW\_VX.Y.Z*, which contains the following subfolders:

Figure 3. Package contents



**Libraries** folder:

- **CMSIS** subfolder: Cortex-M0 CMSIS files
- **STM32\_USB\_Device\_Driver** subfolder: USB device low-level driver
- **STM32\_USB\_Device\_Library** subfolder: USB device library core and class drivers
- **STM32F0xx\_StdPeriph\_Driver** subfolder: standard peripherals drivers
- **STMTouch** subfolder: STMTouch drivers

**Project** folder:

- **Demonstration** subfolder: firmware of preloaded demo
- **Master\_Workspace** subfolder: common project for all examples
- **Peripheral\_Examples** subfolder: examples ready to run
- **Template** subfolder: pre-configured project templates

**Utilities** folder:

- **STM32F072-Discovery** subfolder: for the abstraction layer of the supported board

The user can run examples provided within this package. A set of examples for each peripheral are ready to be run.

## 2.2 Programming firmware application

### 2.2.1 IDE requirements

To start programming, user must:

- Install the preferred Integrated Development Environment (IDE).
- Install the ST-LINK/V2 driver from the ST web site.

*Note:* Required information to download and install desired IDE and ST-LINK/V2 are detailed in [Getting started with STM32F072 Discovery software development tools](#).

### 2.2.2 Programming application

Several IP examples are provided with the firmware package (see [Figure 3](#)) under *STM32F072B-Discovery\_FW\_VX.Y.Z /Projects/* and the user must use one of the three tool chains supported to program applications on the STM32F072B-DISCO board.

To program the **Template** example, follow the sequence below:

1. Open application folder *STM32F072B-Discovery\_FW\_VX.Y.Z /Projects/Template*.
2. Select the desired IDE project (EWARM for IAR, MDK-ARM for Keil or TrueSTUDIO for Atollic).
3. Double click on the project file (for example, *Template.eww* for EWARM).
4. Rebuild all files: Project->Rebuild all.
5. Load project image: Project->Debug.
6. Run program: Debug->Go.

The demo software, as well as other software examples that allow you to discover the STM32 F0 series features, are available at [www.st.com/stm32f0-discovery](http://www.st.com/stm32f0-discovery).

### 3 Revision history

**Table 2. Document revision history**

Date	Revision	Changes
14-Jan-2014	1	Initial release.



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