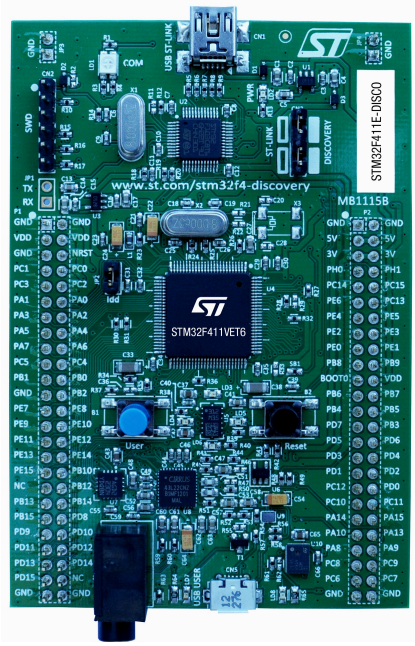
32F411EDISCOVERY

Data brief

Discovery kit with STM32F411VE MCU



32F411EDISCOVERY top view.
Picture is not contractual.

Product status link
32F411EDISCOVERY

Features

- STM32F411VET6 microcontroller featuring 512 Kbytes of Flash memory and 128 Kbytes of RAM in an LQFP100 package
- USB OTG FS
- ST MEMS 3-axis digital output gyroscope
- ST MEMS 3D digital linear accelerometer and magnetic sensor
- ST MEMS digital microphone
- Audio DAC with integrated class-D speaker driver
- Eight LEDs:
  - LD1 (red/green) for USB communication
  - LD2 (red) for 3.3 V power on
  - Four user LEDs: LD3 (orange), LD4 (green), LD5 (red) and LD6 (blue)
  - Two USB OTG LEDs: LD7 (green) V_{BUS} and LD8 (red) over-current
- Two user and reset push-buttons
- Board connectors:
  - USB OTG FS Micro-AB connector
  - ST-LINK Mini-B USB connector
  - Extension header for all LQFP100 I/Os for quick connection to the prototype board and easy probing
- Flexible power-supply options:
  - ST-LINK USB connector
  - External 5 V supply voltage
- On-board ST-LINK/V2 debugger/programmer with mode selection switch to use the kit as a standalone ST-LINK probe (featuring an SWD connector for programming and debugging)
- Comprehensive free software including a variety of examples, part of the STM32CubeF4 MCU Package or STSW-STM32136 for legacy Standard Libraries usage
- Support of a wide choice of Integrated Development Environments (IDEs) including IAR Embedded Workbench®, MDK-ARM, and STM32CubeIDE

Description

The 32F411EDISCOVERY Discovery kit helps users to discover the STM32F411 entry-level microcontrollers in the STM32F4 Series, and develop their applications easily. It offers everything required for beginners and experienced users to get started quickly.

Based on the STM32F411VET6, it includes an ST-LINK/V2 embedded debug tool, a gyroscope, an e-compass, a digital microphone, an audio DAC with integrated class-D speaker driver, an OTG Micro-AB connector, LEDs, and push-buttons.

1 Ordering information

To order the 32F411EDISCOVERY Discovery kit, refer to Table 1. For a detailed description, refer to the user manual on the product web page. Additional information is available from the datasheet and reference manual of the target STM32.

Table 1. List of available products

Order code	Board reference	User manual	Target STM32	Differentiating features
STM32F411E-DISCO	MB1115B	UM1842	STM32F411VET6	• L3GD20 3-axis gyroscope(1) • LSM303DLHC e-compass • MP45DT02 digital MEMS microphone(1)
	MB1115D			• I3G4250D 3-axis gyroscope • LSM303AGR e-compass • IMP34DT05 digital MEMS microphone

1. *Obsolete.*

1.1 Product marking

The sticker located on the top or bottom side of the PCB board shows the information about product identification such as board reference, revision, and serial number.

The first identification line has the following format: “MBxxxx-Variant-yzz”, where “MBxxxx” is the board reference, “Variant” (optional) identifies the mounting variant when several exist, "y" is the PCB revision and "zz" is the assembly revision: for example B01.

The second identification line is the board serial number used for traceability.

Evaluation tools marked as “ES” or “E” are not yet qualified and therefore not ready to be used as reference design or in production. Any consequences deriving from such usage will not be at ST charge. In no event, ST will be liable for any customer usage of these engineering sample tools as reference designs or in production.

“E” or “ES” marking examples of location:

- On the targeted STM32 that is soldered on the board (For an illustration of STM32 marking, refer to the STM32 datasheet “Package information” paragraph at the *www.st.com* website).
- Next to the evaluation tool ordering part number that is stuck or silk-screen printed on the board.

1.2 Codification

The meaning of the codification is explained in Table 2.

Table 2. Codification explanation

32XXYYZDISCOVERY	Description	Example: 32F411EDISCOVERY
32XX	MCU series in STM32 32-bit Arm Cortex MCUs	STM32F4 Series
YY	MCU product line in the series	STM32F411
Z	STM32 Flash memory size: • E for 512 Kbytes	512 Kbytes
DISCOVERY	Discovery kit	Discovery kit

2 Development environment

The 32F411EDISCOVERY runs with the STM32F411VE 32-bit microcontroller based on the Arm® Cortex®-M4 core.

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

2.1 System requirements

- Windows® OS (7, 8, and 10), Linux® 64-bit, or macOS®
- USB Type-A or USB Type-C® to Mini-B cable

Note: macOS® is a trademark of Apple Inc. registered in the U.S. and other countries.
All other trademarks are the property of their respective owners.

2.2 Development toolchains

- IAR Systems - IAR Embedded Workbench®(1)
- Keil® - MDK-ARM(1)
- STMicroelectronics - STM32CubeIDE

1. *On Windows® only.*

2.3 Demonstration software

The demonstration software, included in the STM32Cube MCU Package corresponding to the on-board microcontroller, is preloaded in the board Flash memory for easy demonstration of the device peripherals in standalone mode. It uses the button User and the LEDs to switch from a simple blinking of the LEDs to an indication of the movements of the board. Connect the board to a PC with a second USB cable to have it recognized as a standard mouse. The latest versions of the demonstration source code and associated documentation can be downloaded from the www.st.com/stm32f4discovery webpage.

Revision history

Table 3. Document revision history

Date	Version	Changes
4-Nov-2014	1	Initial version.
7-Sep-2020	2	Added sensor differences for board variants in Ordering information and reorganized the entire document: • Updated title, Features, Description, Ordering information, System requirements, Development toolchains, and Demonstration software • Added Product marking and Codification