ST-LINK/V2 in-circuit debugger/programmer for STM8 and STM32 microcontrollers

ST-LINK/V2 (left) and ST-LINK/V2-ISOL (right). Pictures are not contractual.

Product status link
ST-LINK/V2

Features

- 5 V power supplied by a USB connector
- USB 2.0 full-speed compatible interface
- USB Type-A to Mini-B cable provided
- SWIM specific features:
  - 1.65 V to 5.5 V application voltage support on the SWIM interface
  - SWIM low-speed and high-speed modes support
  - SWIM programming speed rates: 9.7 kbyte/s in low-speed, 12.8 kbyte/s in high-speed
  - SWIM cable for connection to an application with an ERNI standard connector
    - Vertical connector reference: 284697 or 214017
    - Horizontal connector reference: 214012
  - SWIM cable for connection to an application with pin headers or 2.54 mm pitch connector
- JTAG/serial wire debug (SWD) specific features:
  - 1.65 V to 3.6 V application voltage support on the JTAG/SWD interface and 5 V tolerant inputs
  - JTAG cable for connection to a standard JTAG 20-pin 2.54 mm pitch connector
  - JTAG support
  - SWD and serial wire viewer (SWV) communication support
- Direct firmware update support (DFU)
- Status LED blinking during the communication with the PC
- Operating temperature from 0 °C to 50 °C
- 1000 V_{rms} high isolation voltage (ST-LINK/V2-ISOL only)

Description

The ST-LINK/V2 is an in-circuit debugger and programmer for the STM8 and STM32 microcontrollers. The single-wire interface module (SWIM) and JTAG/serial wire debugging (SWD) interfaces are used to communicate with any STM8 or STM32 microcontroller located on an application board. In addition to providing the same functionalities as the ST-LINK/V2, the ST-LINK/V2-ISOL features digital isolation between the PC and the target application board. It also withstands voltages of up to 1000 V_{rms}.

STM8 applications use the USB full-speed interface to communicate with the ST Visual Develop (STVD-STM8) or ST Visual Programmer (STVP-STM8) software, or with integrated development environments from third-parties.

STM32 applications use the USB full-speed interface to communicate with the STM32CubeIDE software tool or with integrated development environments from third-parties.

1 Ordering information

To order the ST-LINK/V2 in-circuit debugger and programmer, refer to Table 1. For a detailed description, refer to its user manual on the product web page.

Table 1. List of available products

Order code	User manual	ST-LINK description
ST-LINK/V2	UM1075	In-circuit debugger/programmer
ST-LINK/V2-ISOL		In-circuit debugger/programmer with 1000 V_{rms} digital isolation

2 Statement of volatility

Table 2 identifies all the memory locations in the ST-LINK/V2 products. All customer data is only stored in the RAM of the STM32F103C8T6 microcontroller resident in the ST-LINK/V2. This location is transient and volatile. All the contents in this location is deleted when the ST-LINK/V2 power is turned off. The STM32F103C8T6 also uses Flash memory, which is non-volatile. The Flash memory includes an STMicroelectronics proprietary firmware, which must not be modified by the user. This Flash memory does not store any user data under the normal mode of operation of the ST-LINK/V2 product.

Table 2. Memory locations in ST-LINK/V2

Order code	MCU device	Memory size	Type	Volatility	User data	Purpose	Sanitization procedure
ST-LINK/V2	STM32F103C8T6	64 Kbytes	Flash memory	Non-volatile	No	Stores the official ST-Link bootloader and firmware.	N/A
		20 Kbytes	RAM	Volatile	Yes	Stores the ST-Link bootloader and firmware variables, including a buffer containing a section of the user binary to be programmed into the target STM8 or STM32 device.	Complete power-down
ST-LINK/V2-ISOL		64 Kbytes	Flash memory	Non-volatile	No	Stores the official ST-Link bootloader and firmware.	N/A
		20 Kbytes	RAM	Volatile	Yes	Stores the ST-Link bootloader and firmware variables, including a buffer containing a section of the user binary to be programmed into the target STM8 or STM32 device.	Complete power-down

3 Development environment

The ST-LINK/V2 implementations embed an STM32 32-bit microcontroller based on the Arm® Cortex®-M processor.

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

3.1 System requirements

- Windows® OS (7, 8 and 10)(1), Linux® 64-bit, or macOS®
- USB Type-A to Mini-B cable (provided)

1. *The ST-LINK/V2 ecosystem is not validated on Windows 7® and Windows 8® because these systems are no longer officially maintained by Microsoft®.*

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.

3.2 Development toolchains

STM8 microcontrollers

- IAR Systems - IAR-EWSTM8(1)
- Cosmic - Free IDEA(1)
- Raisonance - RIDE-STM8(1)
- iSYSTEM - winIDEA-STM8(1)
- STMicroelectronics - STVD-STM8(1) (using Cosmic toolchain)
- STMicroelectronics - STVP-STM8(1)

STM32 microcontrollers

- IAR Systems - EWARM(1)
- Keil® - MDK-ARM(1)
- STMicroelectronics - STM32CubeIDE
- STMicroelectronics - STM32CubeProgrammer (STM32CubeProg)
- STMicroelectronics - STM32CubeMonitor

1. *On Windows® only.*

3.3 Related software

- ST-LINK firmware upgrade (STSW-LINK007)
- ST-LINK USB driver (STSW-LINK009)

Revision history

Table 3. **Document revision history**

Date	Version	Changes
21-Apr-2011	1	Initial release.
7-May-2012	2	Added SWD to JTAG connection features.
14-Sep-2012	3	Added ST-LINK/V2-ISOL.
24-Mar-2016	4	Updated V_{rms} value in *Features* and *Description*.
27-Apr-2020	5	Updated document title, and IDEs for STM8 and STM32 microcontrollers in *Description*. Added *Ordering information* and *Development environment*.
25-Nov-2020	6	Added Statement of volatility. Updated System requirements and Development toolchains.

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ST-LINK/V2 ST-LINK/V2-ISOL