



STM8 Toolset & Firmware Library

STM8L Technical Training

- The purpose of this chapter is to introduce you
 - New set of tools available to develop and debug your application
 - Firmware library available
- The objective is to help you to select the right tools for your needs

- To provide an easy way to start using STM8 microcontroller
- To be compliant with the industry standard of coding rules
- To validate the silicon in application environment

- STVD & STVP – get it for free at <http://www.st.com>
 - Integrated visual development environment & programming toolchain
- Cosmic C compiler
 - Free up to 16K of code
- Raisonance C compiler
 - Free up to 16K of code
- ST Firmware Library
 - ST Library with user API



STM8 Tools

STM8L Technical Training

STICE Emulator (1)



The STICE is ST's advanced emulation system for MCUs. It connects to the PC via USB interface and to the application board in place of the target microcontroller. It is supported by the free ST MCU Toolset: STVD IDE, STVP programmer and the STM8 Assembler.

FCPU	32kHz to 50MHz
Memory-Read	All memory and registers, also NEM and write-protected Granularity 1byte
Instruction Breakpoints	Full Memory
Advanced breakpoints	Bus-event machine 4 user-configurable levels
Data Breakpoints	Yes
RW on the fly	All memory and registers
Trace	128K with 10ns timestamp
Coverage	code & data
Profiling	timing & occurrence
Voltage range	0.8V to 5.5V
Standalone	user mode, without PC

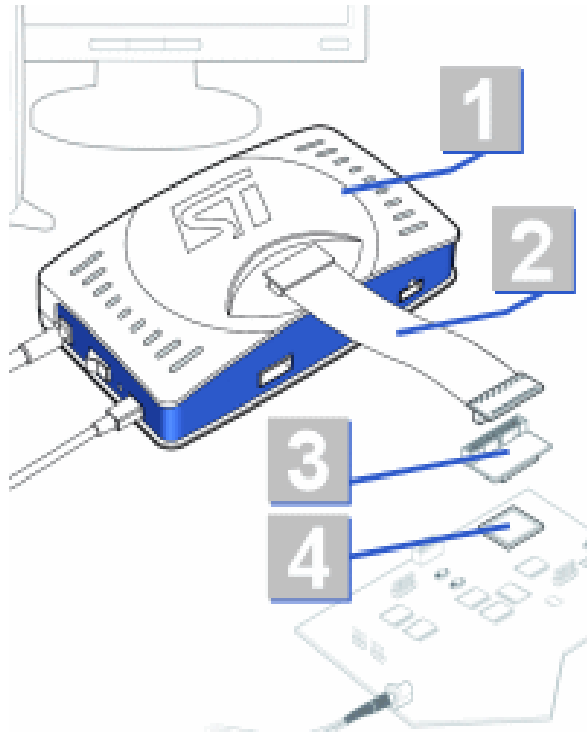
Triggers	1 IN, 2 OUT
Analyzer	8-bit probe
In-circuit programming / debugging	Via SWIM protocol



STICE Emulator (2)



The STICE system permits Emulation and ICP / ICD



STICE BASE

1. Emulation System

Order code: **STICE-SYS001**

- Emulator box with MEB S60C4 / 512KB, TEB GB12 (no PEB needed)
- Cables for USB, Power supply etc.

EMULATION

2. Connection Flex

Order code: **CF/ FP 60 or 120**

- 60 - (up to 48-pin) or 120-wire flex cable

3. Connection Adapter

Order code: **AD / QFP80 ...QFP32**

- Adapts the Connection Flex to the socket

4. Adapter Socket

Order code: **AS / QFP80 ...QFP32**

- Package specific socket

In-circuit Programming / Debugging

Order code: **AD-ICD/ICP**

- In addition to STICE-SYS001 you need only the ICD/ICP Kit (includes cable, five 4-pin ERNI connectors for evaluation boards and an adapter for the SWIM cable)

R-Link provides low-cost debugging and programming capabilities



R-Link BASE MODULE

In-circuit
Programming /
Debugging

Order code: **STX-RLINK**

- RLink extends programming and debugging capabilities to STM8 with addition of SWIM adapter.

Note: RLink supports connections for a complete range of ST MCUs including JTAG for ARM core-based families and uPSD, plus ICC for ST7.

In-circuit Debugging (1)



Integrated STM8 debug-module enables low-cost, **non-intrusive** in-application **debugging** and fast **NVM programming**. The DM is connected via the single wire interface SWIM and debugging hardware (RLink, STICE) to a PC's USB port.

Single wire debug interface	▪ Debug module activation and data exchange via a high speed, single wire interface - Effective SWIM data transmission speed of 145 bytes/ms
Non-intrusive Debugging	▪ Debugging while executing the application program ▪ No need for resources (RAM, NVM) of the target product ▪ No restrictions on the use of flash addresses ▪ All Instructions and Interrupts remain usable during debugging
Instruction Breakpoints	▪ Unlimited - Full Memory ▪ Software breakpoints
Real-time Read/Write	▪ Read/Write of all memory and peripheral registers during application execution (no interrupt, no monitor – CPU stall for 1..2 clock cycles) ▪ Real-time read access to CPU registers
Advanced Breakpoints	▪ 2 configurable advanced breakpoints - 23 different configurations) ▪ Data break-points
Code Execution control	▪ Step by step execution
Fast memory programming	▪ Programming and verification of 128Kbytes flash via SWIM in less than 5s

In-circuit Debugging (2)



Debugging power of the integrated DM is close to a full feature emulator.

Feature	STice Emulator	Debug module & SWIM
Memory size	• Same as MCU	
Timing Accuracy	• Real time execution	
Memory read / write	• RAM, Flash and peripheral registers can be read/ written “on the fly” • All other resources can be read / written when the application is stopped.	
Instruction breakpoints	• On all program memory instructions	
	• Hardware breakpoints	• Software breakpoints
Advanced breakpoints	• Powerful 4 level state machine • INPUT: instruction and data bus events, external trigger • OUTPUT: trace control and trigger	• 23 easy to use configurable predefined configurations • Can only trigger breakpoints
Peripheral & memory Accuracy	• Analog part of peripherals are rebuilt • Flash programming is not emulated	• 100% accurate (actual chip)
Trace	• Yes	• None
Coverage	• Code & data coverage monitors code execution and data accesses	• None
Profiling	• Analyze performance on whole code & data, counting event occurrences and durations	• None

STM8L-EVAL – From ST



- Hardware Evaluation Platform for all interfaces
 - STM8L101-EVAL
 - STM8L1526-EVAL
- Possible connection to all I/Os and all peripherals
- Flash is loaded with self-test firmware, and demos for majority of peripherals.
- Firmware projects available from www.st.com/mcu
- Vendor neutral (comes with no IDE or JTAG cable).
- ST-Link embedded for STM8L1526-EVAL

Note: This is NOT a starter kit.
Tools must be purchased separately



STM8L101 Low-Cost/Low-Power Demo Board STEVAL-IAS003V1

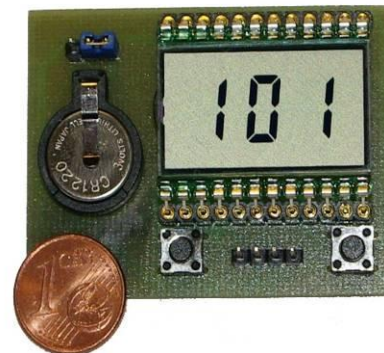


STM8L101 low-power demonstrator with software-driven LCD

– Features:

- 1.25 μ A consumption @ 36Hz refresh rate
- 3-digit LCD glass driven by software
- 2 buttons
- CR1220 battery operated (not included)
- Minimum external components: only 2 capacitors, battery, LCD, MCU, buttons)
- Low-cost PCB – single layer
- Price: \$27

<http://www.st.com/mcu/>



STM8L15x Low-Cost/Ultra-Low-Power Demo Board STM8L15LPBOARD



- **Small & low-cost board demonstrates all low-power modes and functions to measure current sourced by the battery while paused in each of the modes**
- **7 different modes to demonstrate STM8L15x ultra-low power**
 - 1 LCD glass
 - Battery CR2032 + Socket
 - 1 header 2x1 and jumper for supply
 - 2 buttons on the board
 - 1 SWIM connector for STM8L board config
 - 1 JTAG connector for STM32L board config
 - 1 I/O access port connector 2x12



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