SMH Technologies®

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Driver v. 1.00

Diego Piccinin

Interfacing FlashRunner 2.0 with STMICROELECTRONICS SPSB

SMH Technologies S.r.l.

UNIVERSAL PRODUCTION IN-SYSTEM PROGRAMMING

HQ and Registered Office
Via Giovanni Agnelli 1
33083 Villotta di Chions (PN) Italy
Società Unipersonale

Capitale sociale €102.040
P.I. 01697470936
C.F. 01697470936
REA PN-97255

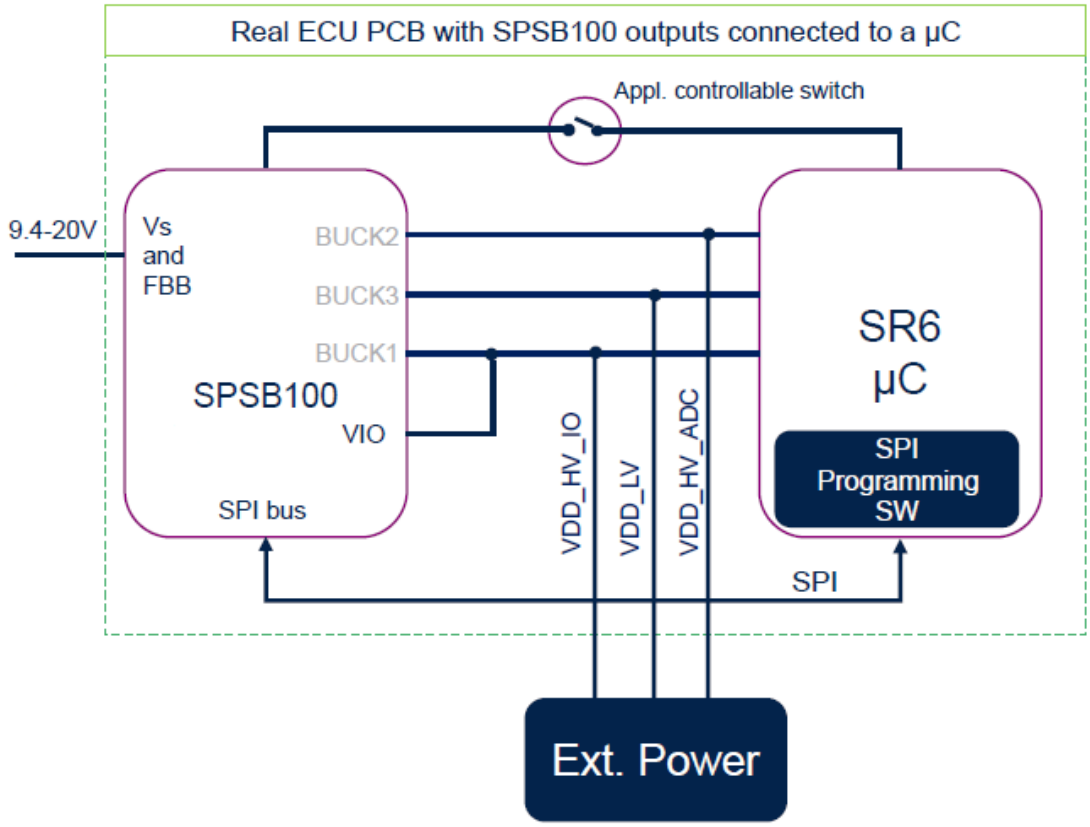
D-U-N-S® 51-724-9350
T + 39 0434 421 111
F + 39 0434 639 021

→smh-tech.com

info@smh-tech.com

SPSB Introduction

The SPSB devices are fully integrated automotive power management system ICs, specially designed for highly integrated application processors (for example, Stellar G and P MCU families), offering low-power mode and high current capability.



Different combinations enable the supply of the system microcontroller, external peripheral loads, and sensors in several adjustable voltage and current ranges. SPSB is delivered out of ST factory with default values (rails, power-up and down sequences) stored in USER-NVM space, but it can also be reprogrammed by customers based on different application needs. FlashRunner Technology supports these programming features, and this wiki explains all necessary steps to program SPSB devices. Once programmed, they can no longer be accessed in programming mode, meaning only read operations are permitted. FlashRunner automatically detects this condition and restricts access accordingly, allowing only read operations on already programmed devices.

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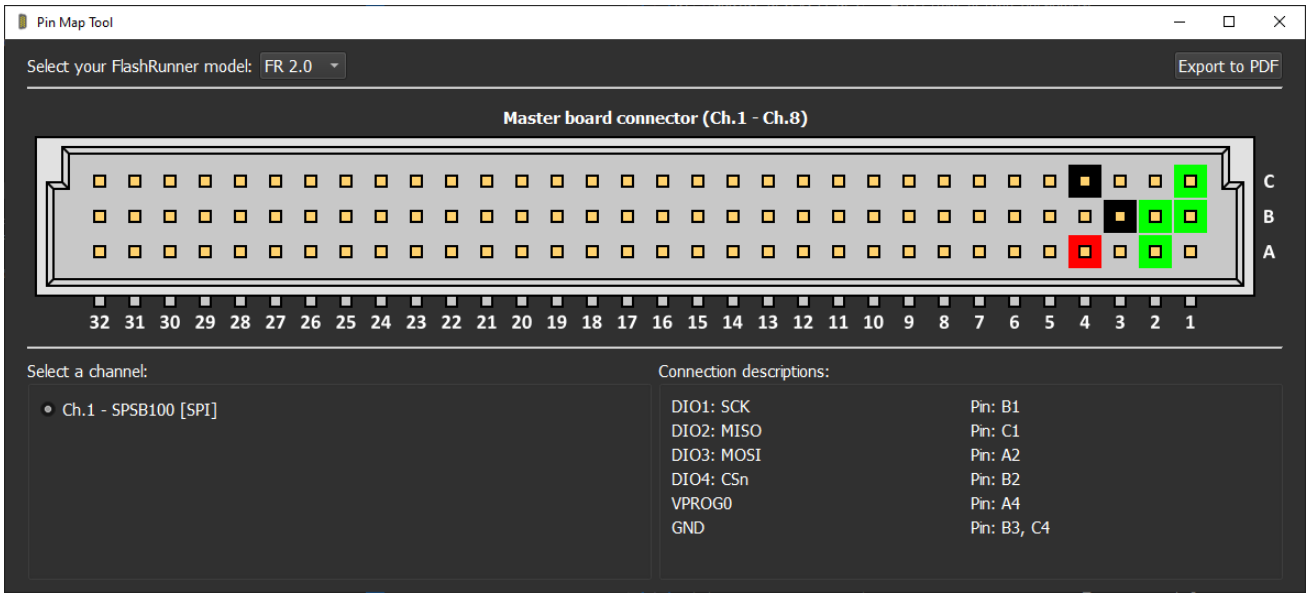
SPSB Protocols and PIN maps

All the SPSB devices support the SPI protocol.

```
#TCSETPAR CMODE <SPI>
```

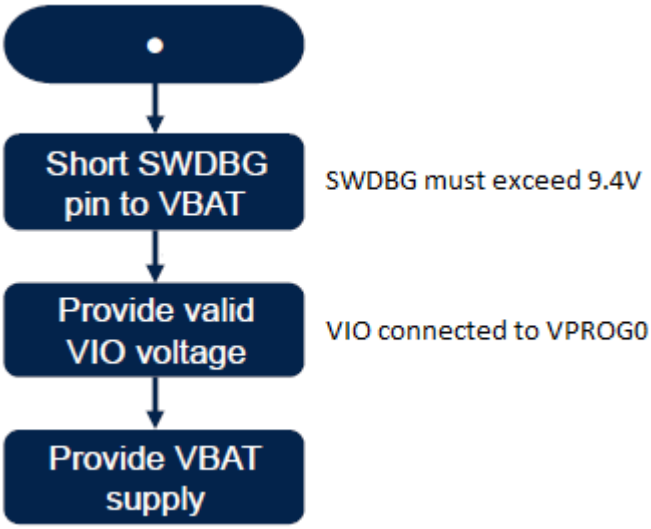
SPI PIN MAP



SPSB Additional connection

When programming these devices, it is important to notice that during the power-up sequence, the SWDBG pin must exceed the 9.4V threshold.
This is required for entering the device programming mode, which enables the write operations of the NVM internal memory.
To accomplish this, shorting this line to the power supply line connected to the VS pin of the device is recommended.

The VPROG0 line of the FlashRunner should be connected to the VIO pin of the device to enable SPI lines' voltages, which cannot be generated by the output lines of the SPSB device.



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SPSB Driver Commands

MEMORY	MASSERASE	ERASE PAGE	BLANKCHECK	PROGRAM	VERIFY READOUT	VERIFY CHECKSUM	READ	DUMP
OTP [O]				✓	✓		✓	✓

SPSB Standard Commands

Here you can find the complete list of all available commands for the SPSB driver.

```
Memory type:

O → OTP
```

#TPCMD CONNECT

```
#TPCMD CONNECT
```

This function performs the entry and is the first command to be executed when starting the communication with the device.
During this operation, the device ID will be checked, along with the possibility for these devices to be programmed.

#TPCMD PROGRAM

```
#TPCMD PROGRAM <O>
```

Program is available for OTP memory.
Programs all memory of the selected type based on the data in the FRB file.
These devices require the entire memory to be programmed simultaneously, including registers that are not intended to be modified. Any registers that should remain unchanged must retain their default values within the firmware.
If the device is already programmed, the programmer automatically recognizes it and skips this operation. In this case, a warning message will be printed in the log.

#TPCMD VERIFY

```
#TPCMD VERIFY <O> <R>
```

R: Readout Mode.
Verify Readout is available for OTP memory.
Verify all memory of the selected type based on the data in the FRB file.

```
#TPCMD VERIFY <O> <R> <start address> <size>
```

R: Readout Mode.
Verify Readout is available for OTP memory.
Verify selected part of memory of the selected type based on the data in the FRB file.
Enter the Start Address and Size in hexadecimal format.

#TPCMD READ

```
#TPCMD READ <O>
```

Read all memory of selected type.
The result of the read command will be visible into the Terminal.

```
#TPCMD READ <O> <start address> <size>
```

Read selected part of memory of the selected type.
The result of the read command will be visible into the Terminal.
Enter the Start Address and Size in hexadecimal format.

#TPCMD DUMP

```
#TPCMD DUMP <O>
```


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Dump all memory of selected type.
The result of the dump command will be stored in the FlashRunner 2.0 internal memory.

```
#TPCMD DUMP <O> <start address> <size>
```

Dump selected part of memory of the selected type.
The result of the dump command will be stored in the FlashRunner 2.0 internal memory.
Enter the Start Address and Size in hexadecimal format.

#TPCMD DISCONNECT

```
#TPCMD DISCONNECT
```

Disconnect function. Power off and exit.

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SPSB Driver Changelog

Info about driver version 1.00 - 10/04/2025
Supported OTP programming operations.

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