SMH Technologies®

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Driver v. 1.01

Diego Piccinin

Interfacing FlashRunner 2.0 with INPLAY IN6 devices

SMH Technologies S.r.l.

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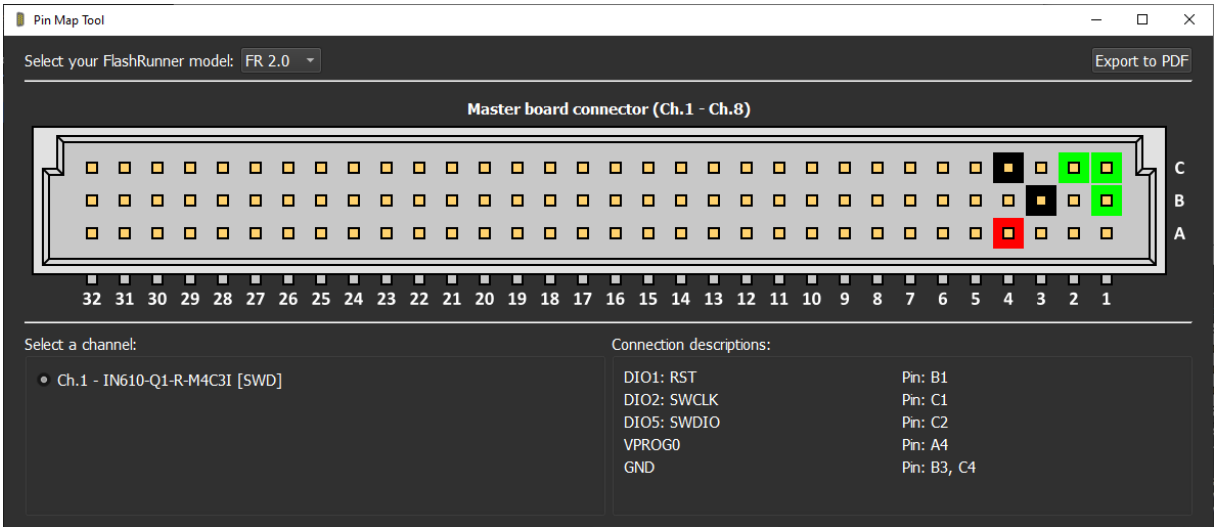
IN6 Protocols and PIN maps

All the IN6 devices support the SWD protocol.

```
#TCSETPAR CMODE <SWD>
```

SWD PIN MAP



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IN6 Available Commands

IN6 Devices

MEMORY	MASSERASE	ERASE PAGE	BLANKCHECK	PROGRAM	VERIFY READOUT	VERIFY CHECKSUM	READ	DUMP
Flash [F]	✓	✓	✓	✓	✓		✓	✓

IN6 Additional Commands

Commands for Flash memory:

#TPCMD SECTOR_ERASE <memory> <start_address> <size>
#TPCMD RUN <Time[s]>
#TPCMD READ_DECRPYT <memory> <start_address> <size>
#TPCMD DUMP_DECRPYT <memory> <start_address> <size>

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IN6 Driver Commands

IN6 Standard Commands

Here you can find the complete list of all available commands for IN6 driver.

```
Memory type:

F → FLASH
```

#TPCMD CONNECT

```
#TPCMD CONNECT
```
This function performs the entry and is the first command to be executed when starting the communication with the device.

#TPCMD MASSERASE

```
#TPCMD MASSERASE <F>
```
F: Masserase command for Flash memory of target device.

#TPCMD BLANKCHECK

```
#TPCMD BLANKCHECK <F>
```
Blankcheck is available for Flash memory.
Verify if all memory is erased.

```
#TPCMD BLANKCHECK <F> <start address> <size>
```
Blankcheck is available for Flash memory.
Verify if selected part of memory is erased.
Enter the Start Address and Size in hexadecimal format.

#TPCMD PROGRAM

```
#TPCMD PROGRAM <F>
```
Program is available for Flash memory.
Programs all memory of the selected type based on the data in the FRB file.

```
#TPCMD PROGRAM <F> <start address> <size>
```
Program is available for Flash memory.
Programs 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 VERIFY

```
#TPCMD VERIFY <F> <R>
```
R: Readout Mode.
Verify Readout is available for Flash memory.
Verify all memory of the selected type based on the data in the FRB file.

```
#TPCMD VERIFY <F> <R> <start address> <size>
```
R: Readout Mode.
Verify Readout is available for Flash 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.

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#TPCMD READ

`#TPCMD READ <F>`
Read all memory of selected type.
The result of the read command will be visible into the Terminal.
This command will print data as read from the memory, **without** applying **decryption** operations.

`#TPCMD READ <F> <start address> <size>`
Read selected part of memory of the selected type.
The result of the read command will be visible into the Terminal.
This command will print data as read from the memory, **without** applying **decryption** operations.

#TPCMD DUMP

`#TPCMD DUMP <F>`
Dump all memory of selected type.
The result of the dump command will be stored in the FlashRunner 2.0 internal memory.
This command will print data as read from the memory, **without** applying **decryption** operations.

`#TPCMD DUMP <F> <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.
This command will print data as read from the memory, **without** applying **decryption** operations.

#TPCMD DISCONNECT

`#TPCMD DISCONNECT`
Disconnect function. Power off and exit.

IN6 Additional Commands

#TPCMD SECTOR_ERASE

`#TPCMD SECTOR_ERASE <F>`
`#TPCMD SECTOR_ERASE <F> <start address> <size>`
This function performs a sector erase of Flash memory or External memory.
Enter the Start Address and Size in hexadecimal format.

#TPCMD RUN

`#TPCMD RUN <Time[s]>`
Move the Reset line up and down quickly if no parameter `<Time[s]>` is inserted.
`#TPCMD RUN <Time[s]>` instead moves the Reset line down and high, then waits for the entered time.
This command typically can be used to execute the firmware programmed in the device.

#TPCMD READ_DECRYPT

`#TPCMD READ_DECRPT <F>`
`#TPCMD READ_DECRPT <F> <start address> <size>`
Read selected part of memory of the selected type, applying the decryption algorithm.
The result of the read command will be visible into the Terminal.
This command will decrypt only data that starts after the unencrypted header that is automatically retrieved from the programmed data.

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#TPCMD DUMP_DECRYPT

```
#TPCMD DUMP_DECRPT <F>
#TPCMD DUMP_DECRPT <F> <start address> <size>
```

Dump selected part of memory of the selected type, applying the decryption algorithm.
The result of the dump command will be stored in the FlashRunner 2.0 internal memory.
This command will decrypt only data that starts after the unencrypted header that is automatically retrieved from the programmed data.

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IN6 Driver Parameters

The additional parameters are used to configure some specific options inside the IN6 driver.

IN6 Additional Parameters:

#TCSETPAR ENABLE_ENCRYPTION

Syntax: `#TCSETPAR ENABLE_ENCRYPTION <YES/NO>`

`<YES/NO>` Enables or disables encryption.

Default: This parameter is enabled by default (set to YES).

Description: This parameter allows the user to enable or disable the encryption functions of these devices while programming and verifying.

Note: This parameter will **only** affect **data** in the **Application Code** section since the BootROM and BootRAM sections should always be programmed without encryption.

Example: This parameter can be used in two different ways. It should be set once for the entire project to enable or disable encryption of all Application Code data, whose start address is automatically retrieved from the firmware.

The following example shows how to enable the encryption for all the Application Code data.

```
…
#TCSETPAR CMODE SWD
#TCSETPAR ENABLE_ENCRYPTION YES
#TPSETSRC test.frb
#TPSTART
#TPCMD CONNECT
#TPCMD MASSERASE F
#TPCMD BLANKCHECK F
#TPCMD PROGRAM F
#TPCMD VERIFY F R
#TPCMD DISCONNECT
#TPEND
```

If the user needs to encrypt a specific area of the firmware, this parameter should be used together with the corresponding Program/Verify command with 3 parameters, indicating which area should apply encryption or not.

See the following example which programs and verifies encrypted data from the address starting at 0x308000 to the end of the firmware. In this case, the first program and verify commands will operate with plain data, while the second ones will encrypt them.

```
…
#TCSETPAR CMODE SWD
#TPSETSRC test.frb
#TPSTART
#TPCMD CONNECT
#TPCMD MASSERASE F
#TPCMD BLANKCHECK F
#TCSETPAR ENABLE_ENCRYPTION NO
#TPCMD PROGRAM F 0x00300000 0x8000
#TPCMD VERIFY F R 0x00300000 0x8000
#TCSETPAR ENABLE_ENCRYPTION YES
#TPCMD PROGRAM F 0x00308000 0x78000
#TPCMD VERIFY F R 0x00308000 0x78000
#TPCMD DISCONNECT
#TPEND
```


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IN6 Driver Changelog

Info about driver version 1.01 - 11/08/2025
Added READ_DECRYPT and DUMP_DECRYPT commands.

Info about driver version 1.00 - 20/03/2025
Supported Flash memory Commands with encryption functions.

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