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Driver v. 1.02

Diego Piccinin

# Interfacing FlashRunner 2.0 with ZHIXIN Z20K

SMH Technologies S.r.l.

UNIVERSAL PRODUCTION IN-SYSTEM PROGRAMMING


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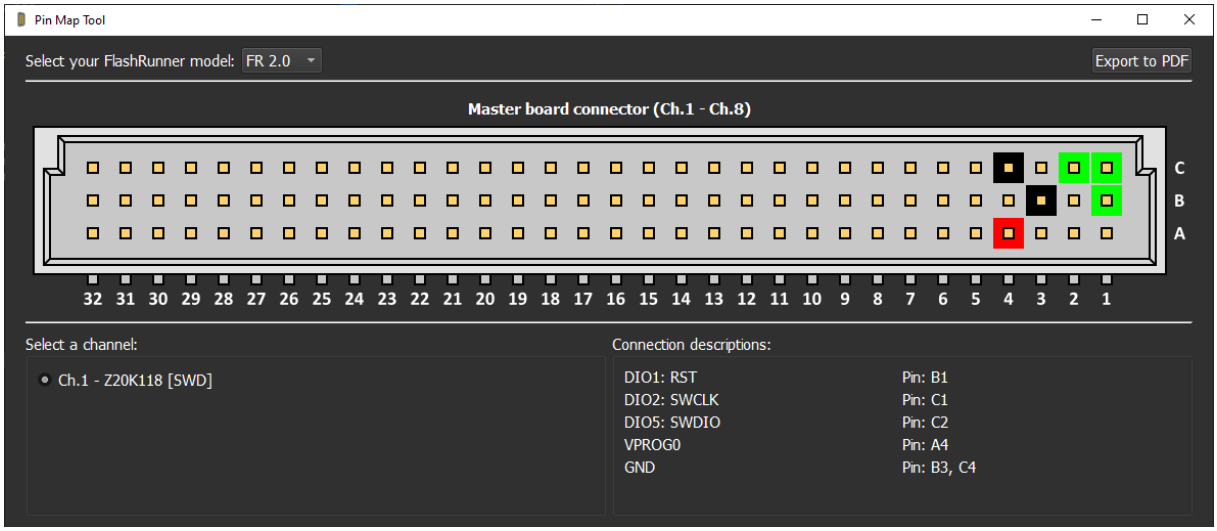
# Z20K Protocols and PIN maps

All the Z20K devices support the SWD protocol.

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

## SWD PIN MAP





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# Z20K Available Commands

## Z20K11x family

| MEMORY | MASSERASE | ERASE PAGE | BLANKCHECK | PROGRAM | VERIFY READOUT | VERIFY CHECKSUM | READ | DUMP |
|---|---|---|---|---|---|---|---|---|
| Flash [F] | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| DataFlash [D] | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| IFR [I] | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |

### Z20K11x Additional Commands

Commands for device memories:

#TPCMD SECTOR_ERASE

Commands for device cybersecurity features:

#TPCMD LOCK
#TPCMD PERMANENT_LOCK
#TPCMD UNLOCK

Commands for restarting the device:

#TPCMD RUN

## Z20K14x family

| MEMORY | MASSERASE | ERASE PAGE | BLANKCHECK | PROGRAM | VERIFY READOUT | VERIFY CHECKSUM | READ | DUMP |
|---|---|---|---|---|---|---|---|---|
| Flash [F] | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DataFlash [D] | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| IFR [I] | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

### Z20K14x Additional Commands

Commands for device memories:

#TPCMD SECTOR_ERASE

Commands for device cybersecurity features:

#TPCMD LOCK
#TPCMD PERMANENT_LOCK
#TPCMD UNLOCK

Commands for restarting the device:

#TPCMD RUN


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# Z20K Driver Commands

## Z20K Standard Commands

Here you can find the complete list of all available commands for Z20K driver.

```
Memory type:

F → FLASH
D → DATAFLASH
I → IFR
```

### #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|D|I>
```
F: Masserase command for Flash memory of target device.
D: Masserase command for DataFlash memory of target device.
I: Masserase command for IFR memory of target device.

### #TPCMD BLANKCHECK

```
#TPCMD BLANKCHECK <F|D|I>
```
Blankcheck is available for all memories.
Verify if all memory is erased.

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

### #TPCMD PROGRAM

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

### #TPCMD VERIFY

```
#TPCMD VERIFY <F|D|I> <R>
```
R: Readout Mode.
Verify Readout is available for all memories.
Verify all memory of the selected type based on the data in the FRB file.
```
#TPCMD VERIFY <F|D|I> <S>
```
S: Checksum 32 Bit Mode. Available only for Z20K14x devices.
Verify Checksum is available for all memories.
Verify all memory of the selected type based on the data in the FRB file.

### #TPCMD READ

```
#TPCMD READ <F|D|I>
```
Read is available for all memories.
Read all memory of the selected type.
The result of the read command will be visible in the Terminal.


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`#TPCMD READ <F|D|I> <start address> <size>`
Read is available for all memories.
Read the selected part of the memory of the selected type.
The result of the read command will be visible in the Terminal.

## #TPCMD DUMP

`#TPCMD DUMP <F|D|I>`
Dump is available for all memories.
Dump all memory of the selected type.
The result of the dump command will be stored in the FlashRunner 2.0 internal memory.

`#TPCMD DUMP <F|D|I> <start address> <size>`
Dump is available for all memories.
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.

## #TPCMD DISCONNECT

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


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# Z20K Additional Commands for Flash Memory

These commands are used to perform some specific operations into Z20K Flash memory.

## #TPCMD SECTOR_ERASE F [Address] [Size]

*Syntax:* `#TPCMD SECTOR_ERASE F <Address> <Size>`

| | |
|---|---|
| <Address> | Address in HEX format (i.e., 0x08000000) |
| <Size> | Size in HEX format (i.e., 0x2000) |

*Prerequisites:* none

*Description:* Erase all memory with Page/Sector erase.
With this command, a Page/Sector Erase of the device FLASH memory will be performed. If multiple sectors are included in the size, the corresponding sectors will be erased.

Typically running the Page Erase of the entire Flash memory takes much longer than running the Masserase command.

Available for all Z20K Devices

## #TPCMD LOCK

*Syntax:* `#TPCMD LOCK`

*Prerequisites:* none

*Description:* Lock Read and Write operations on the device memories.
Nothing happens if the device is already protected.
To access the memory again, use the UNLOCK command.

## #TPCMD PERMANENT_LOCK

*Syntax:* `#TPCMD PERMANENT_LOCK`

*Prerequisites:* none

*Description:* Permanently lock the device memory access.

*Note:* **THIS OPERATION CAN NOT BE UNDONE.**

## #TPCMD UNLOCK

*Syntax:* `#TPCMD UNLOCK`

*Prerequisites:* none

*Description:* Unlock the device protection memories and execute a complete erase.

## #TPCMD RUN

*Syntax:* `#TPCMD RUN <Time>`

*Prerequisites:*

| | |
|---|---|
| <Time> | time in milliseconds (i.e., 5000) |

*Description:* 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.
Time is expressed in seconds.


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# Z20K Driver Changelog

**Info about driver version 1.00 - 28/07/2023**
Supported Z20K11x Family.

**Info about driver version 1.01 - 29/08/2024**
Updated some functions.

**Info about driver version 1.02 – 20/09/2024**
Supported Z20K14x Family.

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