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Antonio Di Bello

Marco Colombi

Ivan Liberotti

## Interfacing FlashRunner HS with RN93xx USB Flashing



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](https://smh-tech.com)

[info@smh-tech.com](mailto:info@smh-tech.com)

## USB Protocol

RN93xx microprocessors could be used to program huge size memories through its USB interface. FlashRunner HS combined with the USB active module allows the user to connect the USB interface of the microprocessors to SMH programming system and then send data and USB commands to program the huge size memories connected to them.

#TCSETPAR CMODE <USB>

## USB Pin Map

## Programming flow

The first part consists of sending Android Debug Bridge (ADB) commands to let the device bootloader switch to USB FastBoot protocol. During the flow, it would be possible that other ADB commands would be needed to reboot the board or execute some other commands

## Commands

### RN93xx\_USB Standard Commands

#### #TPCMD CONNECT

Used to connect to the target.

#### #TPCMD DISCONNECT

Used to disconnect to the target.

#### #TPCMD SYNC\_CHS <ADB|FASTBOOT> <timeout\_ms> <ch1> [ch2] [ch3] [ch4]

Synchronizes the selected FlashRunner channels on the specified USB transport (ADB or FASTBOOT) before continuing the flow.

The command acts as a multi-channel barrier: execution proceeds only when the participating channels reach the same synchronization point (or timeout handling is triggered).

It is used to prevent channel desynchronization during protocol transitions and critical operations (for example, one channel rebooting while another is still flashing).

Parameters:

<ADB|FASTBOOT>: transport domain used for synchronization.

<timeout\_ms>: maximum wait time for barrier completion.

<ch1>...[ch4]>: channel numbers to include in the barrier set.

Example: #TPCMD SYNC\_CHS FASTBOOT 20000 1 2 3 4

Waits up to 20 seconds for channels 1, 2, 3, and 4 to synchronize in Fastboot context before the test sequence proceeds.

## ADB commands

### #TPCMD ADB\_CMD root

Restarts addb with root privileges on the target (if supported by the device build).

Example: #TPCMD ADB\_CMD root

### #TPCMD ADB\_CMD reboot [bootloader]

Reboots the target.

- reboot: normal reboot to OS (ADB is available again after boot).
- reboot bootloader: reboot to bootloader/Fastboot mode.

Example: #TPCMD ADB\_CMD reboot bootloader

### #TPCMD ADB\_CMD shell <command> | open | close

Executes ADB shell operations on the connected target.

- <command>: runs a remote Linux/Android command.
- open: opens a persistent interactive shell session.
- close: closes the previously opened shell session.

Example: #TPCMD ADB\_CMD shell ls -l /etc/passwd

### #TPCMD ADB\_CMD devices

Lists targets currently detected by ADB and their connection state.

Example: #TPCMD ADB\_CMD devices

### #TPCMD ADB\_CMD push <remote\_path>

Uploads the current source payload to <remote\_path> on the target.

Example: #TPCMD ADB\_CMD push /tmp/200MB\_Dummy.bin

### #TPCMD ADB\_CMD pull <remote\_path>

Downloads the file from <remote\_path> on the target to the configured local dump/output.

Example: #TPCMD ADB\_CMD pull /tmp/200MB\_Dummy.bin

### #TPCMD ADB\_CMD unroot

Restarts addb on the target in non-root mode (shell user).

Example: #TPCMD ADB\_CMD unroot

## Fastboot commands

### #TPCMD FB\_CMD devices

Lists targets currently detected in Fastboot mode.

Example: #TPCMD FB\_CMD devices

### #TPCMD FB\_CMD reboot [bootloader]

Reboots the target from Fastboot mode.

- reboot: reboots to normal OS (ADB becomes available after boot).

- reboot bootloader: reboots and stays in bootloader/Fastboot mode.

Example: #TPCMD FB\_CMD reboot bootloader

### #TPCMD FB\_ERASE <partitionName>

Erases the eMMC partition specified by <partitionName>.

### #TPCMD FB\_FLASH <partitionName>

Flashes the eMMC partition specified by <partitionName>.

(Proper source firmware file required.)