



HiKey970

Update Image Guide

Issue	01
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Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 01 (2018-03-11)

The first version.



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1 Base Firmware Files and Installation

This section shows how to install all base firmware components for the HiKey970. Once finished with these instructions, please continue to the [HiKey970 documentation landing page](#) to flash an operating system.

Step 1: Material and Preparations

Step 2: Dependencies

Step 3: Enter recovery/forced-download mode on HiKey970

Step 4: Flash Base Firmware

Step 5: Explore other modes, proceed to OS installation

Troubleshooting

1.1 Step 1: Materials and Preparations

Materials

- [HiKey970](#)
- USB Type-A (Host machine) to USB Type-C (96Boards) cable
- [96Boards compliant power supply](#)
- To boot into **fastboot mode everytime** set switch 1 & 3 to ON state and switch 2 to OFF state.
- To boot into **fastboot mode at every alternate reboot** set switch 1 to ON and switch 2 & 3 to OFF state.
- To boot into **recovery mode** set switch 1 & 2 & 3 to ON state

1.2 Step 2: Dependencies

Host Linux Machine



- Remove modemmanager. At least in Ubuntu 14.04 and 16.04 versions, we found a conflicting issue if modemmanager is installed and active. Modemmanager monitors ttyUSBx's incoming data, when it reads some given pattern, it will send some bytes back into the tty as response. And those bytes sent by modemmanager can make board side recovery flashing tool confuse and fail. Solution is to uninstall this service. If you have a doubt whether you are safe to remove it or not, double confirm here: [ModemManager homepage](#).

```
$ sudo dpkg -s modemmanager
```

```
$ sudo apt-get remove modemmanager
```

- Android SDK "Platform-Tools" for Linux can be downloaded [here](#)

- Use terminal to clone this repository into desired folder and cd into tools-images-HiKey970

```
$ git clone https://github.com/96boards-hikey/tools-images-hikey970.git
```

```
$ cd tools-images-hiKey970
```

1.3 Step 3: Enter recovery/forced-download mode on HiKey970:

- Remove power from the board

Change Jumper/DIP switch settings, to enter recovery/forced-download mode:

Name	Switch	State
Auto Power up	Switch 1	ON
Recovery	Switch 2	ON
Fastboot	Switch 3	ON

- Apply power to the board using [96Boards compliant power supply](#)
- Insert USB Type-C cable (OTG port) to the board, and connect the other end to your Linux PC
- Check whether there is a device node "/dev/ttyUSBx". If there is, it means your PC has detected the target board; If there is not, try to repeat previous steps.

1.4 Step 4: Flash base firmware

Once again using the terminal on your host machine, execute the following command. Be sure to replace /dev/ttyUSBx with the USB value detected by your machine.

```
$ sudo ./recovery-flash.sh /dev/ttyUSBx
```

After it completes, the base firmware will be flashed to the device, this does not mean OS.

The board will then be in fastboot mode.



1.5 Step 5: Explore other modes, proceed to OS installation

- sw2402 mode

Proceed to OS "Installation" through the [HiKey970 documentation landing page](#)

Switch	Normal Mode	Fastboot Mode	Recovery Mode
Switch 1	ON	ON	ON
Switch 2	OFF	OFF	ON
Switch 3	OFF	ON	ON

1.6 Troubleshooting

- If recovery script `./recovery-flash.sh /dev/ttyUSBx` fail to run to completion and you see "`< waiting for any device >`" in a loop, then try uninstalling modem manager from your host machine. The script will work after that. Don't forget to install modem manager back after recovery.
- If you run into trouble, see the [README-technical.md](#) file in this directory.



2 Hisi-idt

A tool for downloading binaries to soc ram and ddr through serial port.

2.1 Command

Linux:

```
sudo python hisi-idt.py -d /dev/ttyUSBx --img1 ./ sec_usb_xloader.img  
--img2 ./sec_usb_xloader2.img --img3 ./l-loader.bin
```

Windows:

```
python hisi-idt.py -d commxx --img1 sec_usb_xloader.img  
--img2 sec_usb_xloader2.img --img3 l-loader.bin
```

2.2 Download Steps

- a. Insert USB cable and connect with PC;
- b. Enter force download mode:

For hikey970 board: sw2402

swich 1 mode: ON
swich 2 mode: ON
swich 3 mode: ON

release “Reset” key then will enter into “force download” mode;

- c. Check if there have the device node “/dev/ttyUSBx”, if there have device node that means the PC has detected the target board;
- d. Use command "sudo python hisi-idt.py" to run the script; after idt download binaries successfully, it will print out below log:

```
+-----+  
Serial: /dev/ttyUSB1
```




```
Image1: fastboot1.img
Image2: fastboot2.img
+-----+

Sending fastboot1.img ...
Done

Sending fastboot2.img ...
Done
```

2.3 Burn Images

After download fastboot1.img and fastboot2.img on the board, then can use fastboot command to burn images:

```
sudo fastboot flash fip fip.bin
sudo fastboot flash fastboot l-loader.bin
```

2.4 Troubleshooting

- After enter the force download mode, if Ubuntu PC cannot recognize the device ttyUSBx; this issue can be fixed by input below commands: `sudo echo 12D1 3609 > /sys/bus/usb-serial/drivers/option1/new_id` `sudo makenod /dev/ttyUSB0 c 188 0`
- Need supervisor permission for hisi-idt.py: "`sudo python hisi-idt.py`"
- Need supervisor permission for fastboot: "`sudo fastboot`"
- If download binaries failed with below message:

```
Sending fastboot1.img ...
failed
failed
```

Usually this means you are using the wrong ttyUSBx device; the reason is when connect board with the uart cable and usb cable, then PC will create two device nodes /dev/ttyUSB0 and /dev/ttyUSB1;

But the nodes which are randomly binding to uart and usb, so sometimes /dev/ttyUSB0 is created for the uart and /dev/ttyUSB1 is for the usb port, in this case should use /dev/ttyUSB1 for the idt; if PC exchanges the nodes then should use /dev/ttyUSB0.

