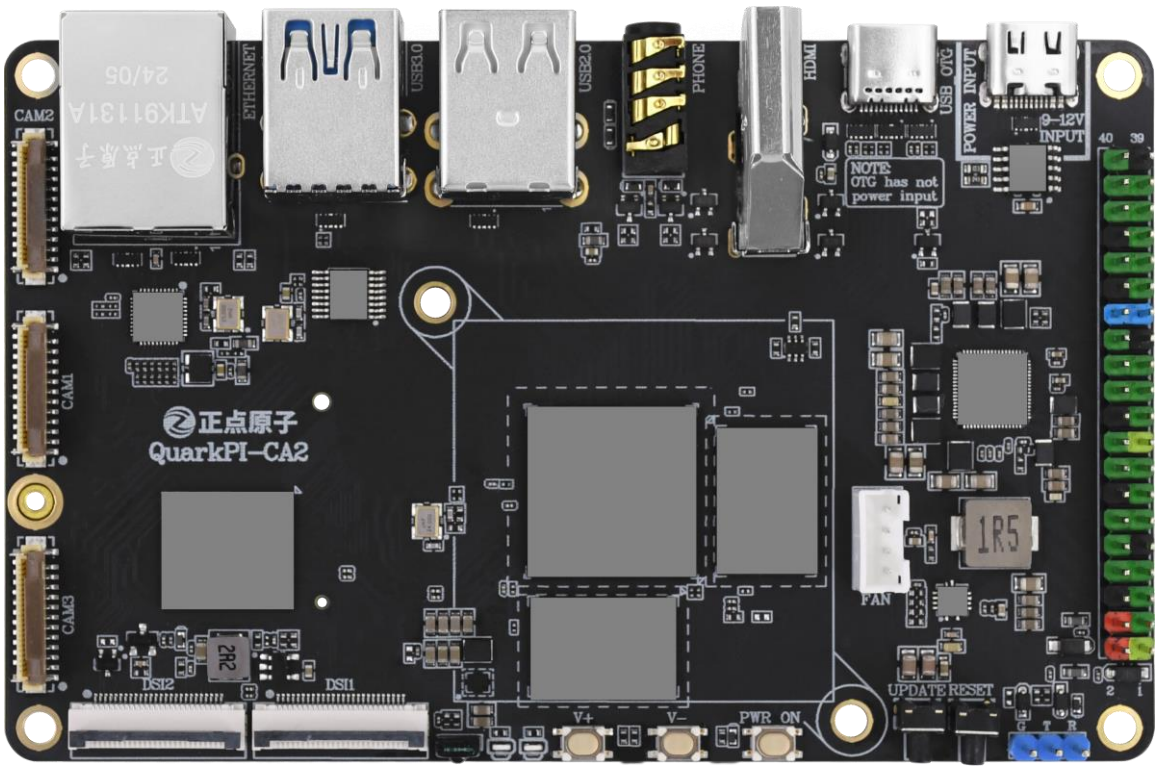
# QuarkPi-CA2 Start-up

## Logo Custom Reference manual

## V1.0



ALIENTEK

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**Revision History:**

| Version | Version Update Notes | Responsible person | Proofreading | Date |
|---|---|---|---|---|
| V1.0 | release officially | ALIENTEK | ALIENTEK | 2025.04.07 |

# Catalogue

# Brief

The Debian system has no logo!!!

# Chapter 1. Customization of Boot Logo

This chapter introduces how to change the boot logo, how to rotate the boot logo, and how to disable the display of the logo.

## 1.1 Replacing the logo

The boot-up logo includes the u-boot stage logo and the kernel stage logo. Both of these logo files are stored in the kernel source code directory:

```
tgg@tgg-virtual-machine:~/rk3568_android_sdk/kernel$
tgg@tgg-virtual-machine:~/rk3568_android_sdk/kernel$ pwd
/home/tgg/rk3568_android_sdk/kernel
tgg@tgg-virtual-machine:~/rk3568_android_sdk/kernel$
tgg@tgg-virtual-machine:~/rk3568_android_sdk/kernel$ ls -l *.bmp
-rw-rw-r-- 1 tgg tgg 177700 4月  28 15:24 logo.bmp
-rw-rw-r-- 1 tgg tgg 177764 4月  28 15:24 logo_kernel.bmp
tgg@tgg-virtual-machine:~/rk3568_android_sdk/kernel$
```

Figure 1.1-1 Logo image files

It can be seen that both of these logo files are in BMP format. The default logo is as follows: U-Boot logo:


Figure 1.1-2 U-Boot logo

Kernel logo:


Figure 1.1-3 Kernel logo

If you need to change the startup logo, you first need to rename the U-Boot logo file (bmp image) you provided to "logo.bmp", and rename the kernel logo file (bmp image) you provided to "logo_kernel.bmp". Then, copy these two logos to the Linux kernel source code directory and replace the old logos!

Next, in the root directory of the SDK, execute the following command to recompile the Linux kernel and generate the boot.img image:

```
# If using the Linux SDK, the following command should be executed:：
# The generated image is stored in the directory "output/firmware/"
./build.sh alientek_quarkpi_ca2_defconfig
./build.sh kernel



# If it is the Android SDK, then execute the following command:
# The generated image is stored in the directory rockdev/Image-atk_quarkpi_ca2/
source build/envsetup.sh
lunch atk_quarkpi_ca2-userdebug
./build.sh -KA -J12
```

When compiling the Linux kernel, the logo.bmp and logo_kernel.bmp files as well as other necessary resources will be packaged into a resource image named resource.img. Eventually, this resource.img image will be merged into the boot.img image.

After burning the compiled boot.img onto the development board and powering it on, the logo will have been changed at this point.

When the U-Boot code is running, it will load the two bmp files into memory. The logo.bmp will start to display at the beginning of the U-Boot stage, while the address of logo_kernel.bmp in the memory will be passed to the Linux Kernel by U-Boot, and it will be displayed during the initialization stage of the DRM driver in the Linux Kernel.

## 1.2 Rotating Logo

The RK platform U-Boot does not support the logo rotation function by default. ALIENTEK has implemented the logo rotation function based on the RK U-Boot. The usage is very simple. You can directly configure the rotation angle of the logo through the kernel device tree.

Enter the Linux kernel source code directory, open the device tree file arch/arm64/boot/dts/rockchip/rk3588s-atk-lcds.dtsi. For example, if you want to modify the display direction of the MIPI screen logo, you need to add the "logo,rotate" attribute in the route_dsi0 node (the board has two MIPI screen interfaces, MIPI_DSI0 corresponds to route_dsi0, and MIPI_DSI1 corresponds to route_dsi1). As shown below:

```
194 /******************** MIPI DSI TX0 ********************/
195 &dsi0 {
196         status = "disabled";
197 };
198
199 &dsi0_in_vp2 {
200         status = "disabled";
201 };
202
203 &dsi0_in_vp3 {
204         status = "disabled";
205 };
206
207 &route_dsi0 {
208         status = "disabled";
209
210         logo,rotate = <1>;
211 };
```

Figure 1.2-1 Modify the display direction of the MIPI DSI0 logo

```
241 /******************** MIPI DSI TX1 ********************/
242 &dsi1 {
243         status = "disabled";
244 };
245
246 &dsi1_in_vp2 {
247         status = "disabled";
248 };
249
250 &dsi1_in_vp3 {
251         status = "disabled";
252 };
253
254 &route_dsi1 {
255         status = "disabled";
256
257         logo,rotate = <1>;
258 };
259
260 //&mipi_dcphy1 {
261 //      status = "disabled";
262 //};
263
```

Figure 1.2-2 Modify the display direction of the MIPI DSI1 logo

The "logo,rotate" attribute can take values of 0, 1, 2, and 3, respectively indicating that the logo is rotated 0 degrees, 90 degrees, 180 degrees, and 270 degrees in a clockwise direction.

If you need to modify the display direction of the HDMI screen logo, then you need to add the "logo,rotate" attribute in the route_hdmi0 interface node, as shown below:

```
/******************* HDMI TX0 *******************/
//<!- HDMI TX0与EDP TX0不可同时使能 ->
&hdmi0 {
        enable-gpios = <&gpio4 RK_PB1 GPIO_ACTIVE_HIGH>;
        status = "disabled";
};

&hdmi0_in_vp0 {
        status = "disabled";
};

&hdmi0_in_vp1 {
        status = "disabled";
};

&hdmi0_in_vp2 {
        status = "disabled";
};

&route_hdmi0 {
        status = "disabled";

        logo,rotate = <1>;
};

&hdptxphy_hdmi0 {
        status = "disabled";
};

&hdmi0_sound { //i2s5_8ch
        status = "disabled";
};
/******************* END *******************/
```

Figure 1.2-3 Modify the display direction of the HDMI_TX0 logo

The meaning of the "logo,rotate" attribute is the same as above.

After the modification is completed, save and exit. Return to the root directory of the SDK, and execute the following command to recompile the Linux kernel and generate the boot.img image:

```
# If using the Linux SDK, the following command should be executed:：
# The generated image is stored in the directory "output/firmware/"
./build.sh alientek_quarkpi_ca2_defconfig
./build.sh kernel



# If it is the Android SDK, then execute the following command:
# The generated image is stored in the directory rockdev/Image-atk_quarkpi_ca2/
source build/envsetup.sh
lunch atk_quarkpi_ca2-userdebug
./build.sh -KA -J12
```

Burn the compiled boot.img onto the development board, then power on the development board. At this point, you will notice that the display direction of the logo has changed as follows:


Figure 1.2-4 Effect when not rotating (default)


Figure 1.2-5 Rotate clockwise by 90 degrees


Figure 1.2-6 Rotate clockwise by 180 degrees


Figure 1.2-7 Rotate clockwise by 270 degrees

## 1.3 Disable Logo Display

For example, to disable the MIPI screen logo display, you need to disable the route_dsi0 (corresponding to route_dsi1 for MIPI_DSI1) node. Enter the Linux kernel source code directory, open the device tree file rk3588s-atk-quarkpi-ca2.dts in the arch/arm64/boot/dts/rockchip directory (if it is an Android system, open rk3588s-atk-quarkpi-ca2.dts in the arch/arm64/boot/dts/rockchip directory), and add the following content at the end of the file:

```
// Disable the logo display of the MIPI DSI0 interface
```

```
&route_dsi0 {
        status = "disabled";
};



// Disable the logo display of the MIPI DSI1 interface
&route_dsi1 {
        status = "disabled";
};
```

```
7  /dts-v1/;
8
9  #include "rk3588s-atk-quarkpi-ca2.dtsi"
10 #include "rk3588s-atk-camera.dtsi"
11 #include "rk3588s-atk-screen_choose.dtsi"
12 #include "rk3588s-atk-lcds.dtsi"
13 #include "rk3588-linux.dtsi"
14
15 / {
16         model = "Rockchip RK3588S EVB8 LP4X V10 Board";
17         compatible = "rockchip,rk3588s-evb8-lp4x-v10", "rockchip,rk3588";
18 };
19
20 &route_dsi0 {
21         status = "disabled";
22 };
```

To disable the display of the HDMI screen logo, the route_hdmi0 node needs to be disabled as follows:

```
// Disable the logo display of the HDMI TX0 interface
&route_hdmi0 {
        status = "disabled";
};
```

After the modification is completed, save and exit. Return to the root directory of the SDK, and execute the following command to recompile the Linux kernel and generate the boot.img image:

```
# If using the Linux SDK, the following command should be executed:：
# The generated image is stored in the directory "output/firmware/"
./build.sh alientek_quarkpi_ca2_defconfig
./build.sh kernel



# If it is the Android SDK, then execute the following command:
# The generated image is stored in the directory rockdev/Image-atk_quarkpi_ca2/
source build/envsetup.sh
lunch atk_quarkpi_ca2-userdebug
./build.sh -KA -J12
```

Burn the compiled boot.img onto the development board, then power on the board and start it. At this point, you will notice that the logo is no longer displayed.