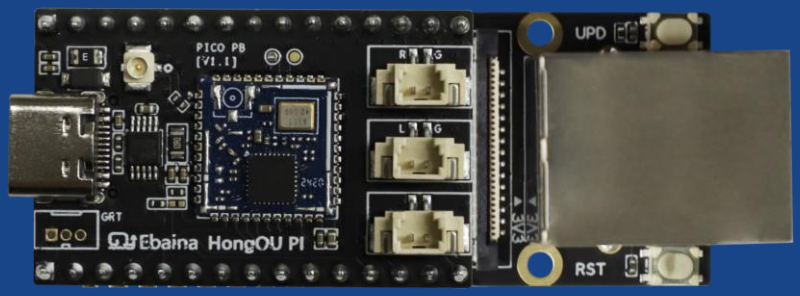
快速体验手册

Ebaina
易百纳技术社区



HongOU PI PICO（PB）

www.ebaina.com

让AI触手可及，让连接无处不在

易百纳技术社区

版本历史

版本	版本更新说明	责任人	校审人	发布时间
V1.0	初次	易百纳板卡团队	易百纳板卡团队	2024/08/05
V1.1	新增 OHOS 系统	易百纳板卡团队	易百纳板卡团队	2024/08/23

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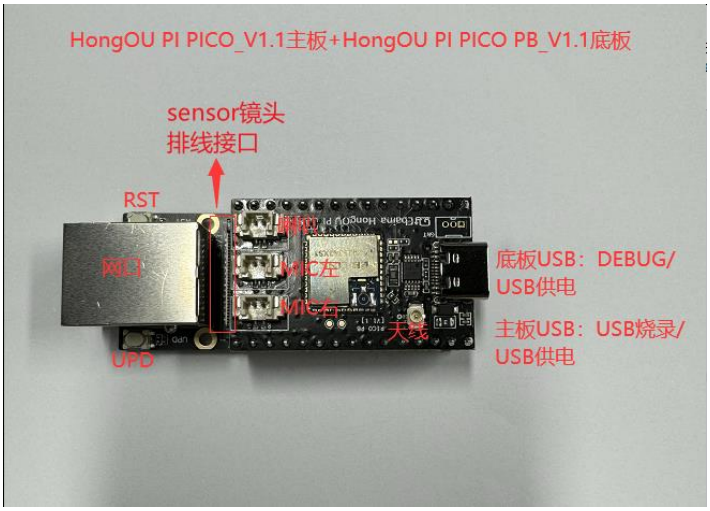
板卡外围接口示意图

HongOU PI PICO_V1.1 主板+HongOU PI PICO PB_V1.1 底板

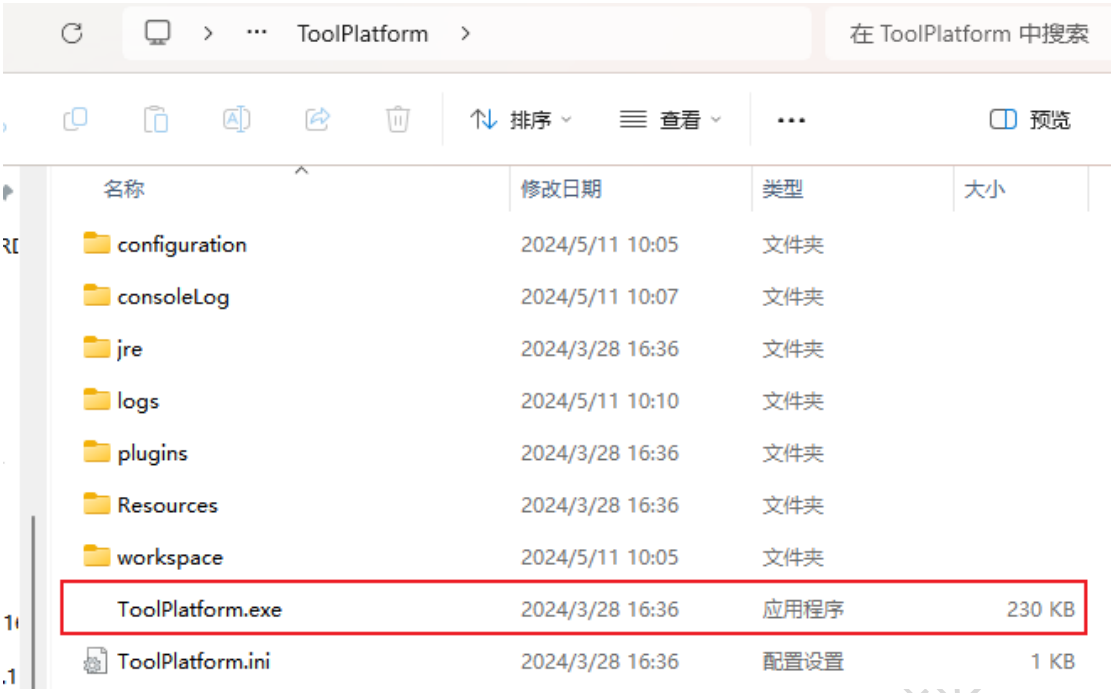


1、烧录固件

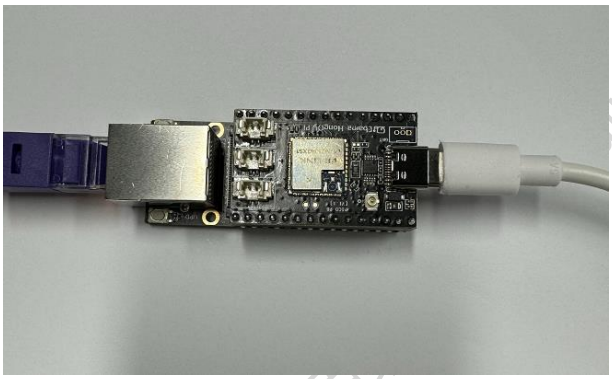
可通过串口或者 update 按键烧写（二选一）

串口烧写方法：

烧录工具：ToolPlatform.exe



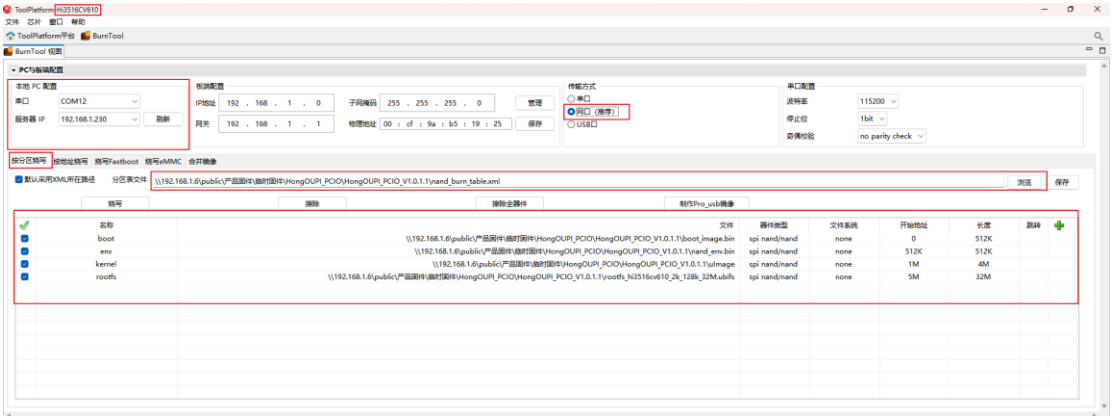
串口烧写时板卡连接示意图



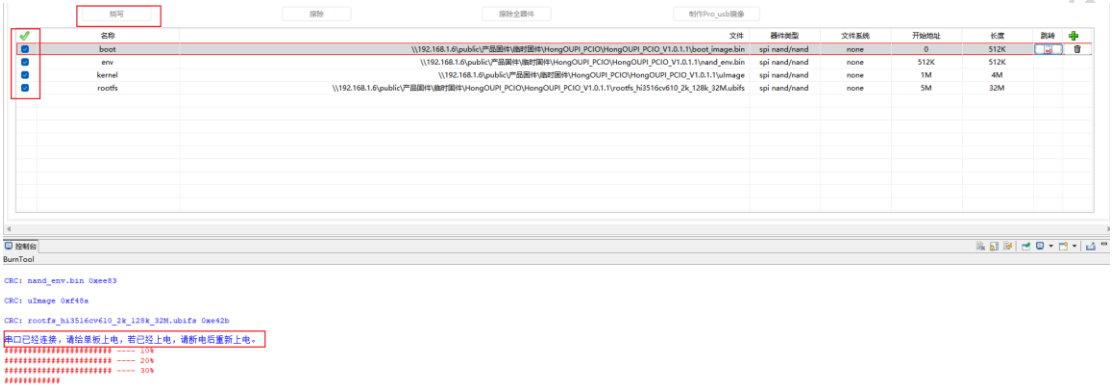
1、产品选择 Hi3561CV610

选择正确的串口、主机 IP 和板卡 IP 设置为同一网段

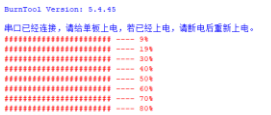
选择分区烧写，点击浏览，选择对应的烧录固件



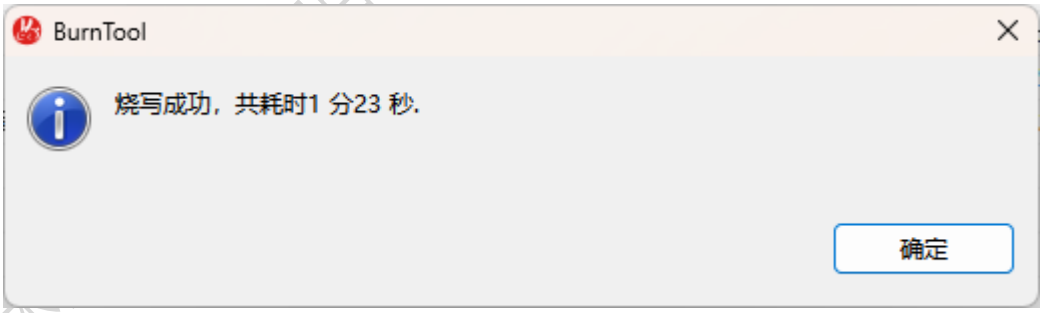
2、点击烧写，按 RST 进行烧录



烧录中烧录工具状态

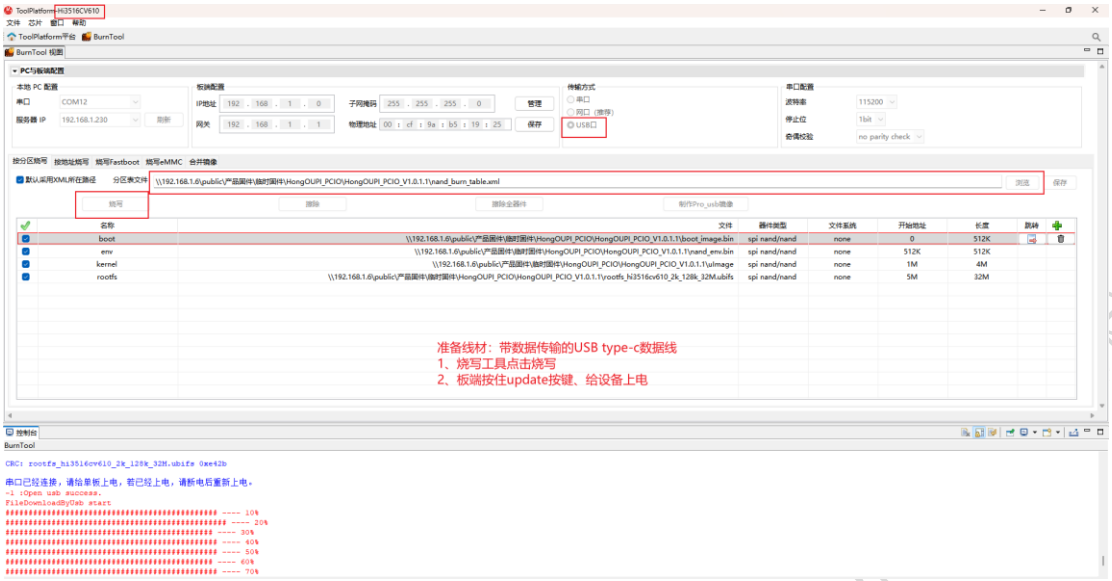


3、烧写成功后弹窗提示



Update 按键升级方法：

烧写前需安装驱动



USB烧写.zip

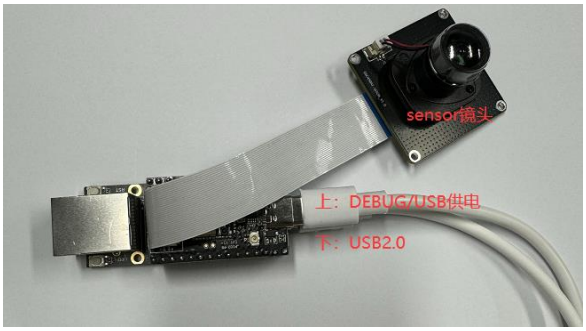
2、准备工作

./insmod.sh
./init.sh

```
~ # ./insmod.sh
sys_config: loading out-of-tree module taints kernel.
sys_config_parse_board,166: ==========board_type: dmeb_qfn==========
sys_config_parse_board,173: g_board 1
sensor_cfg,400: ==========sensor0: sc4336p==========
sensor_cfg,400: ==========sensor1: sc4336p==========
Media Memory Zone Manager
load mmz ....OK!
ot_base: module license 'Proprietary' taints kernel.
Disabling lock debugging due to kernel taint
load base.ko ....OK!
load vb.ko ....OK!
load vca.ko ....OK!
load sys.ko ....OK!
load region.ko ....OK!
load vpp.ko ....OK!
load vgs.ko ....OK!
load vi.ko ....OK!
load isp.ko ....OK!
load vpss.ko ....OK!
load chnl.ko ....OK!
load rc.ko ....OK!
load venc.ko ....OK!
load h264e.ko ....OK!
load h265e.ko ....OK!
load svac3e.ko ....OK!
load jpege.ko ....OK!
load svp_npu.ko ....OK!
load ive.ko ....OK!
load pwm.ko ....OK!
load ot_piris.ko ....OK!
load sensor_i2c.ko ....OK!
load aio.ko ....OK!
load ai.ko ....OK!
load ao.ko ....OK!
load aenc.ko ....OK!
load adec.ko ....OK!
load acodec.ko ....OK!
load mipirx_dev.ko ....OK!
load uvc.ko ....OK!
load pm.ko ....OK!
load cipher.ko success!
load km.ko success!
/komod/load3516cv610
/root
~ # ./init.sh
*** Board tools : ver0.0.1_20121120 ***
[debug]: {source/utils/cmdshell.c:58}cmdstr:bspmm
0x17940090: 0x00001200 --> 0x00001200
[END]
*** Board tools : ver0.0.1_20121120 ***
[debug]: {source/utils/cmdshell.c:58}cmdstr:bspmm
xxx
[END]
*** Board tools : ver0.0.1_20121120 ***
[debug]: {source/utils/cmdshell.c:58}cmdstr:bspmm
0x11130050: 0x00001205 --> 0x00001205
[END]
*** Board tools : ver0.0.1_20121120 ***
[debug]: {source/utils/cmdshell.c:58}cmdstr:bspmm
0x11130054: 0x00001131 --> 0x00001205
[END]
~ # random: crng init done
```

3. 接口验证

3.1 ircut 测试



开启 IR　ircut 关闭时开启，sensor 镜头发出“咔嚓”的声音

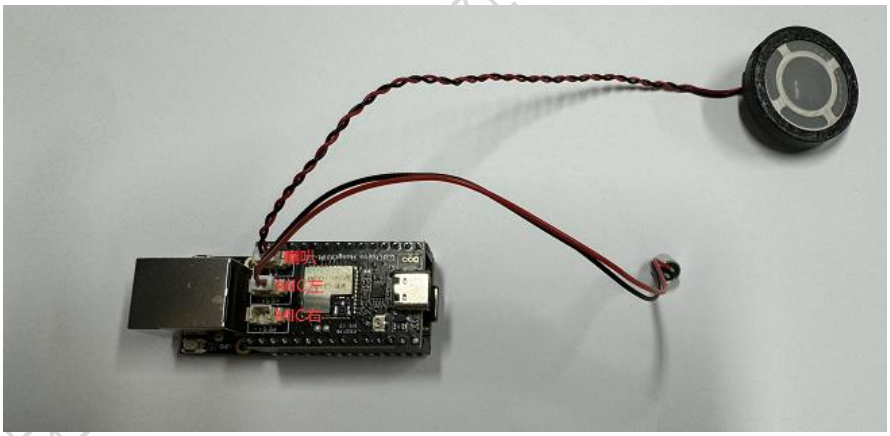
./ircut.sh on

关闭 IR　ircut 开启时关闭，sensor 镜头发出“咔嚓”的声音

./ircut.sh off

```
~ # ./ircut.sh on
~ # ./ircut.sh off
~ #
```

3.2 音频测试



从音频输入循环到音频输出

MIC 左**./sample_audio0 0**

MIC 右**./sample_audio1 0**

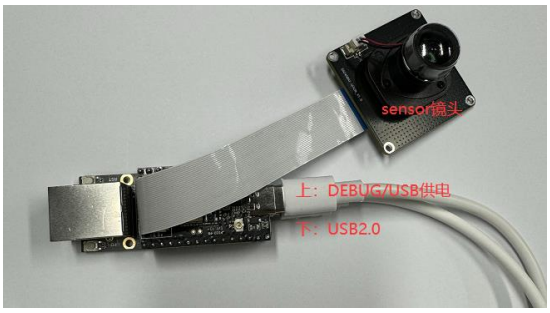
```
[END]
~ # ./sample_audio0 0  MIC左
set inner audio codec ok: sample_rate = 48000.
ai(0,0) bind to ao(0,0) ok

please press twice ENTER to exit this sample
random: crng init done


~ # ./sample_audio1 0  MIC右
set inner audio codec ok: sample_rate = 48000.
ai(0,1) bind to ao(0,0) ok

please press twice ENTER to exit this sample
```

3.3 sample_venc 测试



输入命令后按”0“，按”c“退出程序，**ls -lh** 查看是否生成 stream_chn0.h265，stream_chn1.h264 文件及大小

注：支持 GSC4336P_SEN38/GSC450AI-SEN38/GSC500AI_SEN38 sensor 模块

./sample_venc_sc450ai 0 0

举例测试：SC450AI 镜头

```
~ # ./sample_venc_sc450ai 0 0
wrap online is 1, buf line is 128, buf size is 458544

[MPP] Version: [HI3516CV610_MPP_V1.0.0.3 B030 Release], Build Time[Jun 15 2024, 1
6:34:49]

linear 4M30fps mode
==========================================================================
==
vi_pipe:0,== SC450AI_MIPI_27MInput_2lane_720Mbps_10bit_30fps_2688x1520 Init OK! =
=
==========================================================================
==
ISP Dev 0 running !
please input choose gop mode!
        0) normal p.
        1) dual p.
        2) smart p.
0
please input choose rc mode!
        c) cbr.
        v) vbr.
        b) abr.
        a) avbr.
        x) cvbr.
        q) qvbr.
        f) fix_qp
c
please press twice ENTER to exit this sample


program exit normally!
~ #
```

```
~ # ls -lh
total 18M
-rwx------    1 root     0           6.0K Aug  9  2024 ConfigUVC.sh
-rwx------    1 root     0           1.9K Aug  9  2024 ble.sh
-rwx------    1 root     0           1.7K Aug  9  2024 exio.sh
-rwx------    1 root     0            742 Aug  9  2024 init.sh
-rwx------    1 root     0             87 Aug  9  2024 insmod.sh
-rwx------    1 root     0            608 Aug  9  2024 ircut.sh
-rwx------    1 root     0           3.9K Aug  9  2024 readme.md
-rwx------    1 root     0           2.8M Aug  9  2024 sample_audio0
-rwx------    1 root     0           2.8M Aug  9  2024 sample_audio1
-rwx------    1 root     0           1.2M Aug  9  2024 sample_uvc_sc4336p
-rwx------    1 root     0           1.3M Aug  9  2024 sample_uvc_sc450ai
-rwx------    1 root     0           1.3M Aug  9  2024 sample_uvc_sc500ai
-rwx------    1 root     0           1.2M Aug  9  2024 sample_venc_sc4336p
-rwx------    1 root     0           1.3M Aug  9  2024 sample_venc_sc450ai
-rwx------    1 root     0           1.3M Aug  9  2024 sample_venc_sc500ai
-rwx------    1 root     0            923 Aug  9  2024 start_uvc.sh
-rw-------    1 root     0           4.0M Jan  1 00:09 stream_chn0.h265
-rw-------    1 root     0         516.7K Jan  1 00:09 stream_chn1.h264
-rwx------    1 root     0          12.3K Aug  9  2024 uart_test
-rwx------    1 root     0            174 Aug  9  2024 version
-rwx------    1 root     0            776 Aug  9  2024 wifi_ap.sh
-rwx------    1 root     0            772 Aug  9  2024 wifi_sta.sh
~ #
```

3.4 UVC 测试

测试 UVC 无需加载驱动

连接 sensor 镜头(支持 GSC4336P_SEN38/GSC450AI-SEN38/GSC500AI_SEN38 sensor 模块)，通过 PC 端相机查看画面

[注]：可执行./start_uvc.sh -h 查看详细说明

举例测试：SC450AI 镜头

执行命令：**./start_uvc.sh sc440ai**

```
~ # ./start_uvc.sh sc450ai
sys_config: loading out-of-tree module taints kernel.
sys_config_parse_board,166: ==========board_type: dmeb_qfn==========
sys_config_parse_board,173: g_board 1
sensor_cfg,400: ==========sensor0: sc4336p==========
sensor_cfg,400: ==========sensor1: sc4336p==========
Media Memory Zone Manager
load mmz ....OK!
ot_base: module license 'Proprietary' taints kernel.
Disabling lock debugging due to kernel taint
load base.ko ....OK!
load vb.ko ....OK!
load vca.ko ....OK!
load sys.ko ....OK!
load region.ko ....OK!
load vpp.ko ....OK!
load vgs.ko ....OK!
load vi.ko ....OK!
load isp.ko ....OK!
load vpss.ko ....OK!
load chnl.ko ....OK!
load rc.ko ....OK!
load venc.ko ....OK!
load h264e.ko ....OK!
load h265e.ko ....OK!
load svac3e.ko ....OK!
load jpege.ko ....OK!
load svp_npu.ko ....OK!
load ive.ko ....OK!
load pwm.ko ....OK!
load ot_piris.ko ....OK!
load sensor_i2c.ko ....OK!
load aio.ko ....OK!
load ai.ko ....OK!
load ao.ko ....OK!
load aenc.ko ....OK!
```

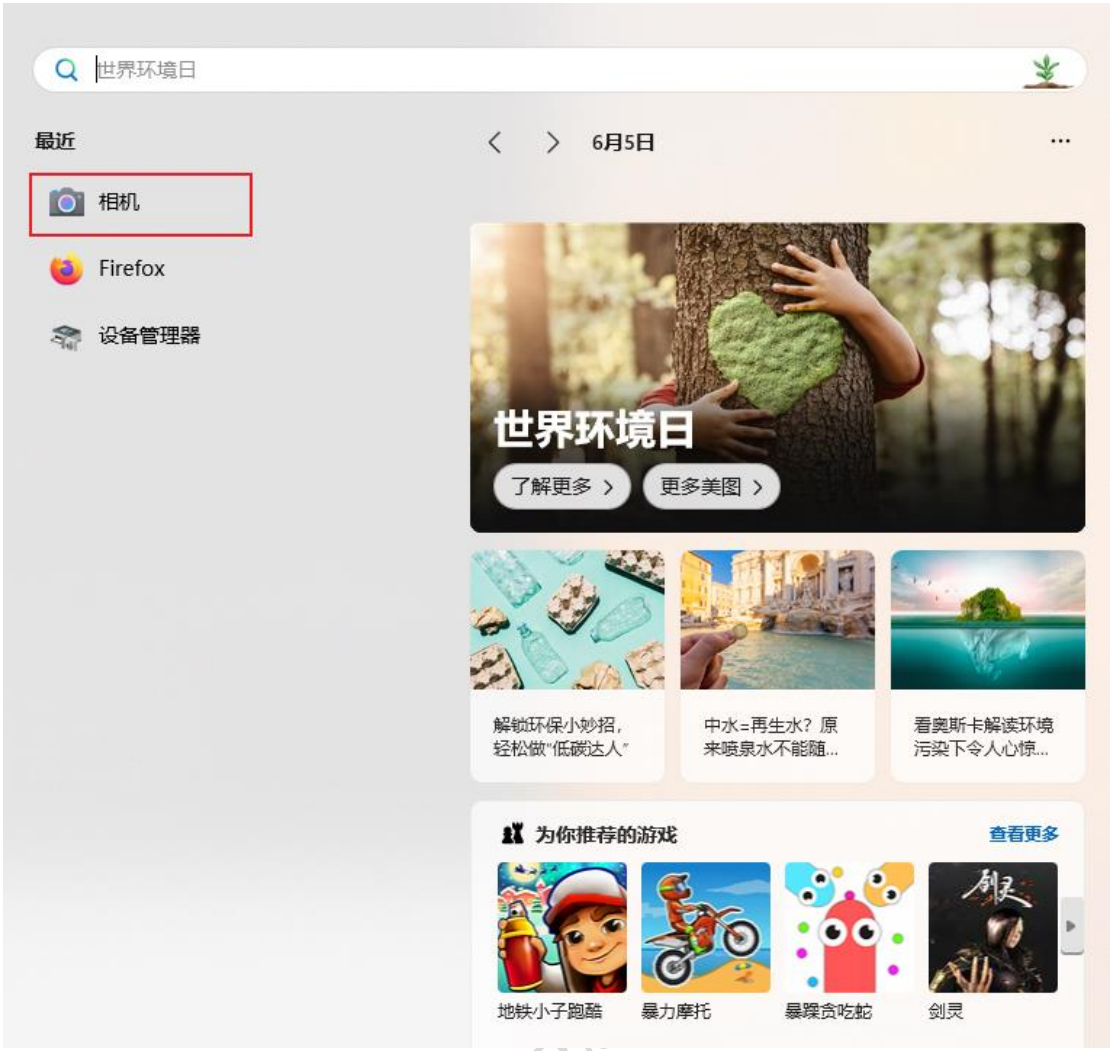
```
Add H264...
360p
720p
1080p
2160p
Added H264

configfs-gadget gadget: uvc: uvc_function_bind()

@@@@@ UVC App Sample @@@@@


[MPP] Version: [HI3516CV610_MPP_V1.0.0.3 B030 Release], Build Time[Jun 15 2024, 1
6:34:49]

configfs-gadget gadget: uvc: uvc_function_set_alt(0, 0)
configfs-gadget gadget: uvc: reset UVC Control
configfs-gadget gadget: uvc: uvc_function_set_alt(1, 0)
configfs-gadget gadget: uvc: uvc_function_set_alt(1, 0)
configfs-gadget gadget: uvc: uvc_function_set_alt(1, 0)
set format=MJPEG  1920x1080
configfs-gadget gadget: uvc: uvc_function_set_alt(1, 2)
configfs-gadget gadget: reset UVC
linear 4M30fps mode
=================================================================================
==
vi_pipe:0,== SC450AI_MIPI_27MInput_2lane_720Mbps_10bit_30fps_2688x1520 Init OK! =
=
=================================================================================
==
ISP Dev 0 running !
random: crng init done
configfs-gadget gadget: uvc: uvc_function_set_alt(1, 0)
dwc3 10300000.dwc3: request b239716f was not queued to eplin
```



3.5 按键测试

UDP 烧录固件、RST 复位

3.6 TF 卡

插入即有 TF 卡在串口打印容量

ls /dev/mmc* 查看是否有 mmcblk0 mmcblk0p1 等节点

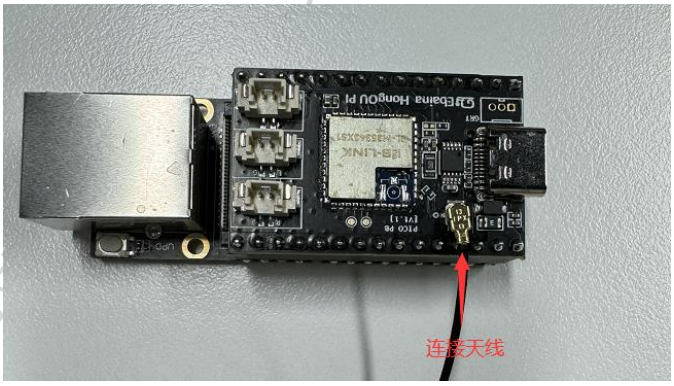
mkfs.vfat /dev/mmcblk0p1 && mount /dev/mmcblk0p1 /mnt/

[注]挂载 SD 以后，通过 df -h 查看是否成功挂载

```
mmc0: new high speed SDXC card at address 59b4
mmcblk0: mmc0:59b4 SD128 119 GiB
 mmcblk0: p1

~ # ls /dev/mmc*
/dev/mmcblk0    /dev/mmcblk0p1
~ # mkfs.vfat /dev/mmcblk0p1 && mount /dev/mmcblk0p1 /mnt/
~ # df -h
Filesystem                Size      Used Available Use% Mounted on
ubi0:ubifs               81.4M     19.4M     62.1M  24% /
devtmpfs                 11.6M         0     11.6M   0% /dev
tmpfs                    12.1M      8.0K     12.1M   0% /run
/dev/mmcblk0p1          119.0G     16.0K    119.0G   0% /mnt
~ #
```

3.7 wifi(STA/AP)测试



测试前需加载驱动 **./init.sh**

开启 WIFI STA 模式(可以通过./wifi_sta.h -h 查看使用方法)

./wifi_sta.sh start

```
udhcpc: broadcasting discover
hmac_fsm_change_state_etc state 6, vap_id 1
hmac_single_hal_device_scan_complete:vap[1] time[1012] chan_cnt[13] chan_0[1] bac
k[0] event[6] mode[0]
hmac_fsm_change_state_etc state 7, vap_id 1
scan: inform bss 8,other 0,vap 1
wlan0: Trying to associate with SSID 'Ebaina_2.4G'
connect:bw[2] chan[7] ssid[Ebaina_2.4G]
hmac_fsm_change_state_etc state 8, vap_id 1
hmac_fsm_change_state_etc state 9, vap_id 1
hmac_fsm_change_state_etc state 11, vap_id 1
FPGA DO NOT support turbo QAM
hmac_fsm_change_state_etc state 12, vap_id 1
hmac_fsm_change_state_etc state 1, vap_id 1
wlan0: Associated with 78:60:5b:39:6a:6b
wlan0: CTRL-EVENT-SUBNET-STATUS-UPDATE status=0
wlan0: WPA: Key negotiation completed with 78:60:5b:39:6a:6b [PTK=CCMP GTK=CCMP]
wlan0: CTRL-EVENT-CONNECTED - Connection to 78:60:5b:39:6a:6b completed [id=0 id_
str=]
udhcpc: broadcasting discover
udhcpc: broadcasting select for 192.168.2.64, server 192.168.2.1
udhcpc: lease of 192.168.2.64 obtained from 192.168.2.1, lease time 7200
Setting IP address 192.168.2.64 on wlan0
Deleting routers
route: SIOCDELRT: No such process
Adding router 192.168.2.1
Recreating /etc/resolv.conf
 Adding DNS server 192.168.2.1
~ # [AMPDU RX] {hmac_mgmt_tx_addba_rsp_send::TID[0] STATUS[0] LUT INDEX[0] BAWSIZ
E[32].}
[AMPDU TX] {hmac_mgmt_tx_addba_req_send::USER ID[1]TID NO[0] BAWSIZE[32] TXAMSDU[
1].}
[AMPDU TX] hmac_mgmt_rx_addba_rsp tidno[0]         status[0] dialog_token[1] ba_p
olicy[1] ba_timeout[0], baw_size[32] amsdu_supp[1] assoc_id[1]         max_rx_amp
du_factor[3] max_ampdu_len_exp[0] protocol_mode[5] min_mpdu_start_spacing[6]
```

获取到 IP 地址，通过 ping 百度或者网关，以及使用 iperf3 测试吞吐量

```
          Interrupt:29

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

wlan0     Link encap:Ethernet  HWaddr 38:7A:CC:D4:D6:72
          inet addr:192.168.2.64  Bcast:192.168.2.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:495 errors:0 dropped:213 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:86808 (84.7 KiB)  TX bytes:1193 (1.1 KiB)

~ # ping 192.168.2.1
PING 192.168.2.1 (192.168.2.1): 56 data bytes
64 bytes from 192.168.2.1: seq=0 ttl=64 time=158.397 ms
64 bytes from 192.168.2.1: seq=1 ttl=64 time=46.499 ms
^C
--- 192.168.2.1 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 46.499/102.448/158.397 ms
~ # ping www.baidu.com
PING www.baidu.com (183.2.172.42): 56 data bytes
64 bytes from 183.2.172.42: seq=0 ttl=53 time=15.673 ms
64 bytes from 183.2.172.42: seq=1 ttl=53 time=8.559 ms
64 bytes from 183.2.172.42: seq=2 ttl=53 time=8.337 ms
^C
--- www.baidu.com ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 8.337/10.856/15.673 ms
~ #
```

测试完成

./wifi_sta.sh stop

```
~ # ./wifi_sta.sh stop
hmac_fsm_change_state_etc state 5, vap_id 1
wlan0: CTRL-EVENT-DISCONNECTED bssid=78:60:5b:39:6a:6b reason=3 locally_generated
=1
wlan0: CTRL-EVENT-DSCP-POLICY clear_all
wlan0: CTRL-EVENT-DSCP-POLICY clear_all
nl80211: deinit ifname=wlan0 disabled_11b_rates=0
wlan0: CTRL-EVENT-TERMINATING
frw_util_notifier_notify,failed[6 bfbdf905]
hmac_fsm_change_state_etc state 0, vap_id 1
plat_soc:E]wlan_close_etc, exit_later_func
plat_soc:E]pm_svc_close::not rmmod svc [0], return.
[FRW] frw_timer_clean_timer enter
frw_util_notifier_notify,failed[2 bfbd5d0f]
frw_util_notifier_notify,failed[2 bfbd8639]
frw_util_notifier_notify,failed[2 bfbd8165]
dfx_user_rd_exit success!
[FRW] frw_timer_clean_timer enter
plat_soc:E]wlan_close_etc, already closed
plat_soc:E]pm_svc_close::cur_state: wlan[0] ble[0] sle[0]
plat_soc:E]pm_svc_close::wlan close, send message.
plat_soc:E]pm_svc_close::all svc closed, deinit!
frw_stop_hcc_service type:6, ret=0
frw_stop_hcc_service type:4, ret=0
[FRW] frw_timer_exit enter
[FRW] frw_main_exit_etc end
[SDIO][I]sdio state changed, tx[on =>off],rx[on =>off][sdio_print_state:385]
[SDIO][I]sdio_remove...[sdio_remove:2067]
plat_soc:ALERT]zdiag tx proc break.
plat_soc:E]plat_exit_etc::succ!
~ # mmc1: card 0001 removed
mmc1: new high speed SDIO card at address 0001
```

*[注]：修改**/etc/Wireless/wpa_supplicant.conf** 文件中的 ssid 和 psk，连接对应的路由器*

```
ctrl_interface=/etc/Wireless/wpa_supplicant
update_config=1
network={
        ssid="Ebaina_2.4G"
        proto=WPA
        key_mgmt=WPA-PSK
        pairwise=CCMP TKIP
        group=CCMP TKIP WEP104 WEP40
        psk="ebaina2023."
        priority=1
}
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
- /etc/Wireless/wpa_supplicant.conf 1/10 10%
```

WiFi名称

WiFi密码

操作步骤：

1、输入法切换为英文状态

2、按“i”输入，修改 WiFi 名称和密码

3、按 esc 退出

4、按 shift 和：后按 wq 保存退出

开启 WIFI AP 模式(可以通过./wifi_ap.h -h 查看使用方法)

./wifi_ap.sh start

```
plat_soc:E]pm_svc_open::not insmod service[0], return already opened.
plat_soc:E]wlan_close_etc, exit_later_func
plat_soc:E]pm_svc_close::not rmmod svc [0], return.
plat_soc:E]wlan_power_open_cmd
plat_soc:E]===wlan READY==
hwifi_custom_adapt_mac_device_priv_ini_param::ldpc[1].
hwifi_custom_adapt_mac_device_priv_ini_param::front_switch[0].
hwifi_custom_adapt_device_priv_ini_cali_mask_param::read cali_mask[8110]ret[0]
hwifi_custom_adapt_mac_device_priv_ini_param::g_uc_wlan_open_cnt[3]priv_cali_data
_up_down[0x10]
hwifi_custom_adapt_mac_device_priv_ini_param::g_uc_custom_cali_done_etc[1]auto_ca
li_mask[0x0]
hwifi_custom_adapt_device_priv_ini_param::data_len[46]
***hwifi_hcc_custom_ini_data_buf:46 ***********
***hwifi_hcc_custom_ini_data_buf:22 ***********
===hal_initialize_phy===269===
====hal_device_state_init_event=====623===21=
hwifi_get_country_code_etc already set country:CN
hwifi_get_region find CN in region_table_default
hwifi_get_region find CN in region_table_default
plat_soc:E]===wlan READY==
vap_id[0] {hmac_config_set_cus_dts_cali::cali time[3]ms ret[0]}
wifi_host_init_finish![wifi_cali1 cost 1836 ms].
rfkill: Cannot open RFKILL control device
[wal_cfg80211_set_channel_info] [2542] en_bandwidth[0]
wal_start_vap_etc,dev_name is:wlan0
hmac_fsm_change_state_etc state 4, vap_id 2
hmac_fsm_change_state_etc state 1, vap_id 2
wlan0: interface state UNINITIALIZED->ENABLED
wlan0: AP-ENABLED
wlan0: STA 50:84:92:f4:62:99 IEEE 802.11: associated
wlan0: AP-STA-CONNECTED 50:84:92:f4:62:99
wlan0: STA 50:84:92:f4:62:99 RADIUS: starting accounting session C01B3D8A6F8AC374
wlan0: STA 50:84:92:f4:62:99 WPA: pairwise key handshake completed (RSN)
wlan0: EAPOL-4WAY-HS-COMPLETED 50:84:92:f4:62:99
```

使用带 WIFI 的 PC 连接，通过 ping 网关，以及使用 iperf3 测试吞吐量

```
~ # ifconfig
eth0      Link encap:Ethernet  HWaddr 06:0A:41:28:77:D6
          inet addr:192.168.1.168  Bcast:192.168.1.255  Mask:255.255.255.0
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Interrupt:29

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

wlan0     Link encap:Ethernet  HWaddr 38:7A:CC:D4:D6:72
          inet addr:192.168.49.1  Bcast:192.168.49.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1588 errors:0 dropped:335 overruns:0 frame:0
          TX packets:33 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:181607 (177.3 KiB)  TX bytes:3402 (3.3 KiB)

~ # ping 192.168.49.1
PING 192.168.49.1 (192.168.49.1): 56 data bytes
64 bytes from 192.168.49.1: seq=0 ttl=64 time=0.186 ms
64 bytes from 192.168.49.1: seq=1 ttl=64 time=0.179 ms
64 bytes from 192.168.49.1: seq=2 ttl=64 time=0.179 ms
^C
--- 192.168.49.1 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 0.179/0.181/0.186 ms
~ #
```

1.ping网关
2.ping连接ap热点的PC电脑IP

测试完成

./wifi_ap.sh stop

```
~ # ./wifi_ap.sh stop
wlan0: interface state ENABLED->DISABLED
wlan0: AP-STA-DISCONNECTED 50:84:92:f4:62:99
wlan0: AP-DISABLED
wlan0: CTRL-EVENT-TERMINATING
nl80211: deinit ifname=wlan0 disabled_11b_rates=0
[AMPDU RX] {hmac_mgmt_tx_addba_rsp_send::TID[0] STATUS[0] LUT INDEX[0] BAWSIZE[32
].}
frw_util_notifier_notify,failed[6 bfbdc905]
hmac_fsm_change_state_etc state 0, vap_id 2
plat_soc:E]wlan_close_etc, exit_later_func
plat_soc:E]pm_svc_close::not rmmod svc [0], return.
[FRW] frw_timer_clean_timer enter
frw_util_notifier_notify,failed[2 bfbd2d0f]
frw_util_notifier_notify,failed[2 bfbd5639]
frw_util_notifier_notify,failed[2 bfbd5165]
dfx_user_rd_exit success!
[FRW] frw_timer_clean_timer enter
plat_soc:E]wlan_close_etc, already closed
plat_soc:E]pm_svc_close::cur_state: wlan[0] ble[0] sle[0]
plat_soc:E]pm_svc_close::wlan close, send message.
plat_soc:E]pm_svc_close::all svc closed, deinit!
frw_stop_hcc_service type:6, ret=0
frw_stop_hcc_service type:4, ret=0
[FRW] frw_timer_exit enter
[FRW] frw_main_exit_etc end
[SDIO][I]sdio state changed, tx[on =>off],rx[on =>off][sdio_print_state:385]
[SDIO][I]sdio_remove...[sdio_remove:2067]
plat_soc:ALERT]zdiag tx proc break.
plat_soc:E]plat_exit_etc::succ!
~ # mmc1: card 0001 removed
mmc1: new high speed SDIO card at address 0001

~ #
~ #
```

[注]：修改/etc/Wireless/hostapd.conf 文件中的 ssid 和 wpa_passphrase，配置 AP 的热点名称以及密码

```
interface=wlan0
driver=nl80211
ctrl_interface=/var/hostapd
ssid=HongOUPI_PICO
wpa=2
wpa_key_mgmt=WPA-PSK
wpa_passphrase=12345678
wpa_pairwise=CCMP
channel=6
hw_mode=g
ieee80211n=1
ht_capab=[SHORT-GI-20]
~
~
~
~
~
~
~
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~
~
~
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~
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~
~
~
~
~
~
~
~
~
~
- /etc/Wireless/hostapd.conf 1/11 9%
```

WiFi名称

WiFi密码

3.8 BLE(蓝牙)测试

1. 加载驱动、启动 dbus、启动 bluetoothd

./ble.sh start

2. 启动 bluetootctl

将类似以下两行（ble.sh 输出的绿色的内容）复制并粘贴到终端执行

export DBUS_SESSION_BUS_ADDRESS=unix:abstract=/tmp/dbus-2oyF2py4hP,guid=364018a3b349c49bc68953c100000064

export DBUS_SYSTEM_BUS_ADDRESS=unix:abstract=/tmp/dbus-2oyF2py4hP,guid=364018a3b349c49bc68953c100000064

bluetoothctl

```
[HCC] Get bsle device action msg, type=[0]
[HCC] ble_enable_reply_cb is NULL, return!
[HCC] get device status:1,result:1,time:61
[HCC] BLE Mac Addr: 38:7a:cc:d4:**:**
[HCC] begin to register hci device
[HCC] bt_register_hci_dev enter
[HCC] bt_register_hci_dev exit
[HCC] hcc bt rx proc ble closed
[HCC] enter hci_bt_open
plat_soc:W]bsle_open_close_cmd, service[1], type[1].
[HCC] start hcc_adapt_bsle_msg_rx_proc,type:4,device_msg:0
[HCC] Get bsle device action msg, type=[0]
[HCC]  ble btc open finish
[HCC]  ble open time:33
[HCC] hci_bt_setup
[HCC] hci_bt_flush
[HCC] hci_bt_close
plat_soc:W]bsle_open_close_cmd, service[1], type[0].
[HCC] start hcc_adapt_bsle_msg_rx_proc,type:4,device_msg:1
[HCC] Get bsle device action msg, type=[1]
[HCC]  ble btc close finish
[HCC]  ble close time:29
bluetoothd[1004]: Bluetooth daemon 5.64
bluetoothd[1004]: Starting SDP server
bluetoothd[1004]: profiles/network/bnep.c:bnep_init() kernel lacks bnep-protocol
support
bluetoothd[1004]: src/plugin.c:plugin_init() System does not support network plug
in
bluetoothd[1004]: src/rfkill.c:rfkill_init() Failed to open RFKILL control device
bluetoothd[1004]: Bluetooth management interface 1.18 initialized
将以下两行内容复制到终端并执行
export DBUS_SESSION_BUS_ADDRESS=unix:abstract=/tmp/dbus-2oyF2py4hP,guid=364018a3b
349c49bc68953c100000064
export DBUS_SYSTEM_BUS_ADDRESS=unix:abstract=/tmp/dbus-2oyF2py4hP,guid=364018a3b3
49c49bc68953c100000064
~ #
```

```
~ # export DBUS_SESSION_BUS_ADDRESS=unix:abstract=/tmp/dbus-2oyF2py4hP,guid=3640
18a3b349c49bc68953c100000064
~ # export DBUS_SYSTEM_BUS_ADDRESS=unix:abstract=/tmp/dbus-2oyF2py4hP,guid=36401
8a3b349c49bc68953c100000064
~ # bluetoothctl
Agent registered        uetoothd...
[CHG] Controller 38:7A:CC:D4:D6:16 Pairable: yes
[bluetooth]#
```

3. 启动蓝牙设备

[bluetooth]# **power on**　　//设备上电

```
[bluetooth]# power on
[bluetooth]#                                          [HCC] enter hci_bt_open
[bluetoplat_soc:W]bsle_open_close_cmd, service[1], type[1].
oth]# [HCC] start hcc_adapt_bsle_msg_rx_proc,type:2,device_msg:2
[HCC] start hcc_adapt_bsle_msg_rx_proc,type:2,device_msg:2
[HCC] start hcc_adapt_bsle_msg_rx_proc,type:2,device_msg:1
[HCC] start hcc_adapt_bsle_msg_rx_proc,type:4,device_msg:0
[HCC] Get bsle device action msg, type=[0]
[HCC]  ble btc open finish
[HCC]  ble open time:43
Changing power on succeeded
[CHG] Controller 38:7A:CC:D4:D6:16 Powered: yes
[bluetooth]#
```

4.执行扫描

[bluetooth]# **scan on**　　//扫描到对应的设备后，使用 **scan off** 关闭。

举例使用蓝牙鼠标测试

```
[bluetooth]# scan on
Discovery started
[CHG] Controller 38:7A:CC:D4:D6:73 Discovering: yes
[NEW] Device 4A:A1:71:F2:FD:89 4A-A1-71-F2-FD-89
[CHG] Device 3A:CA:84:5C:E2:49 RSSI: -96
[NEW] Device 69:B8:37:5E:BC:E9 69-B8-37-5E-BC-E9
[NEW] Device EF:FD:4E:B3:82:F7 Dell Mouse
[NEW] Device B4:E8:42:BA:13:71 PC-1371
[DEL] Device 44:1A:84:82:90:27 E60000230439391778
[DEL] Device 44:1A:84:82:8A:96 E60000230437911723
[bluetooth]# scan off
Discovery stopped
[CHG] Device B4:E8:42:BA:13:71 RSSI is nil
[CHG] Device EF:FD:4E:B3:82:F7 RSSI is nil
[CHG] Device 69:B8:37:5E:BC:E9 TxPower is nil
[CHG] Device 69:B8:37:5E:BC:E9 RSSI is nil
[CHG] Device 3A:CA:84:5C:E2:49 RSSI is nil
[CHG] Device 4A:A1:71:F2:FD:89 TxPower is nil
[CHG] Device 4A:A1:71:F2:FD:89 RSSI is nil
[CHG] Controller 38:7A:CC:D4:D6:73 Discovering: no
[bluetooth]#
```

5.查看扫描结果

[bluetooth]# **devices**　　// 查看扫描结果

```
[bluetooth]# devices
Device 3A:CA:84:5C:E2:49 3A-CA-84-5C-E2-49
Device B4:E8:42:BA:13:71 PC-1371
Device 69:B8:37:5E:BC:E9 69-B8-37-5E-BC-E9
Device EF:FD:4E:B3:82:F7 Dell Mouse
Device 4A:A1:71:F2:FD:89 4A-A1-71-F2-FD-89
Device 44:1A:84:82:8A:96 E60000230437911723
Device 44:1A:84:82:90:27 E60000230439391778
Device 66:62:0E:D8:95:10 66-62-0E-D8-95-10
[bluetooth]#
```

6. 执行连接

[bluetooth]# **connect xx:xx:xx:xx:xx:xx** // 连接设备

注：连接成功后会有如下提示

Attempting to connect to D1:01:D1:13:20:73
[CHG] Device D1:01:D1:13:20:73 Connected: yes
[Rapoo BT Mouse]# bluetoothd[1885]: src/device.c:load_gatt_db() No cache for D1:01:D1:13:20:73
Connection successfu

```
[bluetooth]# connect EF:FD:4E:B3:82:F7
Attempting to connect to EF:FD:4E:B3:82:F7
[CHG] Device EF:FD:4E:B3:82:F7 Connected: yes
[Dell Mouse ]# bluetoothd[924]: src/device.c:load_gatt_db() Unable to load key fi
le from //var/lib/bluetooth/38:7A:CC:D4:D6:73/cache/EF:FD:4E:B3:82:F7: (No such f
ile or directory)
bluetoothd[924]: src/device.c:load_gatt_db() No cache for EF:FD:4E:B3:82:F7
Connection successful
```

7.断开连接

[bluetooth]# **power off**

```
        /org/bluez/hci0/dev_EF_FD_4E_B3_82_F7/service0013/char0014
        00002a19-0000-1000-8000-00805f9b34fb
        Battery Level
[DEL] Primary Service (Handle 0x0000)
        /org/bluez/hci0/dev_EF_FD_4E_B3_82_F7/service0013
        0000180f-0000-1000-8000-00805f9b34fb
        Battery Service
[DEL] Descriptor (Handle 0x0000)
        /org/bluez/hci0/dev_EF_FD_4E_B3_82_F7/service0035/char0036/desc0038
        00002902-0000-1000-8000-00805f9b34fb
        Client Characteristic Configuration
[DEL] Characteristic (Handle 0x0000)
        /org/bluez/hci0/dev_EF_FD_4E_B3_82_F7/service0035/char0036
        8ec90003-f315-4f60-9fb8-838830daea50
        Vendor specific
[DEL] Primary Service (Handle 0x0000)
        /org/bluez/hci0/dev_EF_FD_4E_B3_82_F7/service0035
        0000fe59-0000-1000-8000-00805f9b34fb
        Nordic Semiconductor ASA
[DEL] Device EF:FD:4E:B3:82:F7 Dell Mouse MS3320W
[Dell Mouse ]# power off
[Dell Mouse ]#                                                          [HCC]
hci_bt_close
[Dell Mouse ]# bluetoothplat_soc:W]bsle_open_close_cmd, service[1], type[0].
d[924]: src/adv_monitor.c:btd_adv_monitor_power_down() U[HCC] start hcc_adapt_bsl
e_msg_rx_proc,type:4,device_msg:1
nexpected NULL btd_adv_monitor_manager o[HCC] Get bsle device action msg, type=[1
]
bject upon power down
[HCC]  ble btc close finish
Changing power off succeeded
[CHG] Controller 38:7A:CC:D4:D6:73 Powered: no
[CHG] Controller 38:7A:CC:D4:D6:73 Discovering: no
[Dell Mouse ]# [HCC]  ble close time:66
[Dell Mouse ]# exit
~ #
```

Exit 退出！！！

7. 停止进程并卸载驱动 **./ble.sh stop**

```
~ # ./ble.sh stop
messagebus:x:1000:1000:Linux User,,,:/home/messagebus:/bin/sh
ln: /usr/lib/libdbus-1.so.3: File exists
ln: /usr/lib/libexpat.so.1: File exists
ln: /usr/lib/libglib-2.0.so.0: File exists
ln: /usr/lib/libreadline.so.8: File exists
bluetoothd[924]: Disconnected from D-Bus. Exiting.
bluetoothd[924]: Stopping SDP server
bluetoothd[924]: Exit
[HCC] enter:ext_bluetooth_deinit
[HCC] enter bt_unregister_hci_dev
[HCC] exit bt_unregister_hci_dev
plat_soc:E]pm_svc_close::cur_state: wlan[0] ble[0] sle[0]
plat_soc:W]bsle_open_close_cmd, service[1], type[0].
plat_soc:E]pm_svc_close::all svc closed, deinit!
[HCC] enter:hcc_adapt_bsle_msg_free
[HCC] finish: pm_ble_close
[HCC] finish: H2D_MSG_BT_CLOSE
[SDIO][I]sdio state changed, tx[on =>off],rx[on =>off][sdio_print_state:385]
[SDIO][I]sdio_remove...[sdio_remove:2067]
plat_soc:ALERT]zdiag tx proc break.
plat_soc:E]plat_exit_etc::succ!
~ # mmc1: card 0001 removed
mmc1: new high speed SDIO card at address 0001
```

3.9 网口测试

插入网线后识别为百兆网络

设置静态 IP ifconfig eth0 192.168.1.xxx netmask 255.255.255.0

ping 网关 ping 192.168.1.1

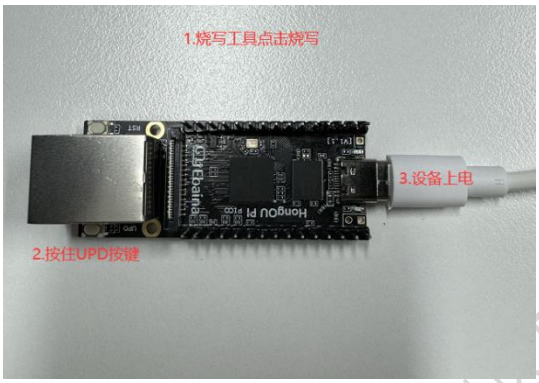
增加网关 route add default gw 192.168.1.1 可 ping 百度

ping www.baidu.com

```
~ # hleth 10290000.hlethernet eth0: Link is Up - 100Mbps/Full - flow control off

~ # ifconfig eth0 192.168.1.231 netmask 255.255.255.0
~ # ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1): 56 data bytes
64 bytes from 192.168.1.1: seq=0 ttl=64 time=0.766 ms
64 bytes from 192.168.1.1: seq=1 ttl=64 time=0.317 ms
64 bytes from 192.168.1.1: seq=2 ttl=64 time=0.314 ms
^C
--- 192.168.1.1 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 0.314/0.465/0.766 ms
~ # route add default gw 192.168.1.1
~ # ping www.baidu.com
PING www.baidu.com (183.2.172.42): 56 data bytes
64 bytes from 183.2.172.42: seq=0 ttl=54 time=6.043 ms
64 bytes from 183.2.172.42: seq=1 ttl=54 time=5.960 ms
64 bytes from 183.2.172.42: seq=2 ttl=54 time=6.192 ms
```

3.10 UPD 按键烧录



使用 USB 传输数据的 type-c 的数据线，升级设备

操作步骤：

1、烧写工具点击烧写，板端按住 update 按键、给设备上电

2、板卡上电，软件有烧写进度条说明烧写正常

3、烧写成功后，软件弹窗提示

易百纳公司名称：南京启诺信息技术有限公司

易百纳技术社区：www.ebaina.com

技术咨询电话：18013825199

技术服务微信：david089968