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IDO-SBC3526-V1

麒麟系统使用说明

深圳触觉智能科技有限公司

www.industio.cn

文档修订历史

版本	修订内容	修订	审核	日期
----	------	----	----	----

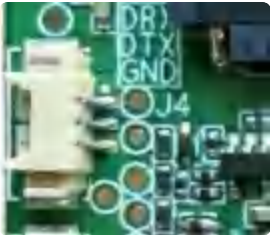
V1.0	创建文档	孟浩凯		2024/5/31

调试

IDO-SBC3526-V1开发板支持串口调试、ADB调试和远程SSH调试。

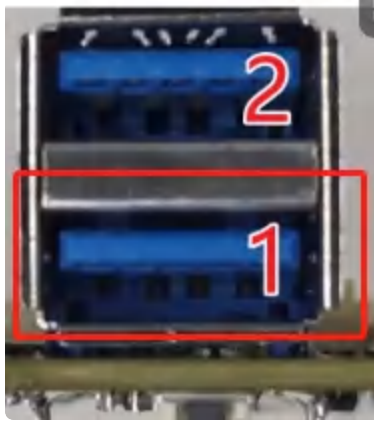
串口调试

串口调试接口位于J4端口，见下图。请使用配套的usb串口调试工具。



为TTL电平，通信参数为1500000 8 N 1。

ADB调试



上图红色框内的USB接口为支持OTG模式切换，使用双公头 USB 数据线连接开发板和 PC 端的 USB接口，在PC终端识别到 ADB 设备，即可使用 adb shell 调试。

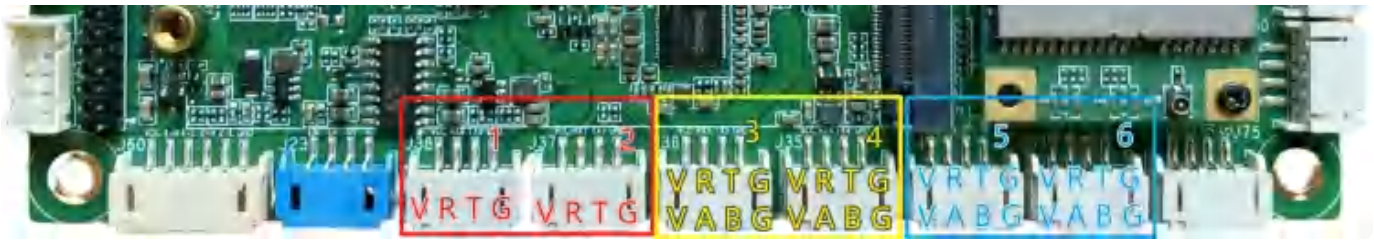
```
C:\WINDOWS\system32\cmd. X + v
Microsoft Windows [版本 10.0.22631.3593]
(c) Microsoft Corporation. 保留所有权利。

C:\Users\industio_mhk>adb shell
stat: No such file or directory
root@kylinos:/#
root@kylinos:/#
root@kylinos:/#
root@kylinos:/# |
```

SSH调试

SSH登录账号密码为： kylin/qwer1234

UART测试



串口接口位置及引脚定义如上图所示，设备节点列表如下：

序号	电平类型	设备节点
1	TTL (可修改为RS232)	/dev/ttyS9
2	TTL (可修改为RS232)	/dev/ttyS7
3	RS232 (可修改为TTL\RS485)	/dev/ttyS5
4	RS232 (可修改为TTL\RS485)	/dev/ttyS4
5	RS485 (可修改为TTL\RS232)	/dev/ttyS3
6	RS485 (可修改为TTL\RS232)	/dev/ttyS0

以上串口均可以和windows下串口调试助手和串口进行收发数据测试：
查看并修改串口波特率：

▼

Plain Text

```

1  root@linaro-alip:/# stty -a -F /dev/ttyS9           //查看波特率
2  speed 115200 baud; rows 0; columns 0; line = 0;
3  intr = ^C; quit = ^\; erase = ^?; kill = ^U; eof = ^D; eol = <undef>;
4  eol2 = <undef>; swtch = <undef>; start = ^Q; stop = ^S; susp = ^Z; rprnt
   = ^R;
5  werase = ^W; lnext = ^V; discard = ^O; min = 1; time = 0;
6  -parenb -parodd -cmspar cs8 hupcl -cstopb cread clocal -crtcts
7  -ignbrk -brkint -ignpar -parmrk -inpck -istrip -inlcr -igncr icrnl ixon -i
   xoff
8  -iuclc -ixany -imaxbel -iutf8
9  opost -olcuc -ocrnl onlcr -onocr -onlret -ofill -ofdel nl0 cr0 tab0 bs0 vt
   0 ff0
10 isig icanon iexten echo echoe echok -echonl -noflsh -xcase -tostop -echopr
   t
11 echoctl echoke -flusho -extproc
12
13 root@linaro-alip:/# stty -F /dev/ttyS9 speed 115200 //修改波特率
14 115200

```

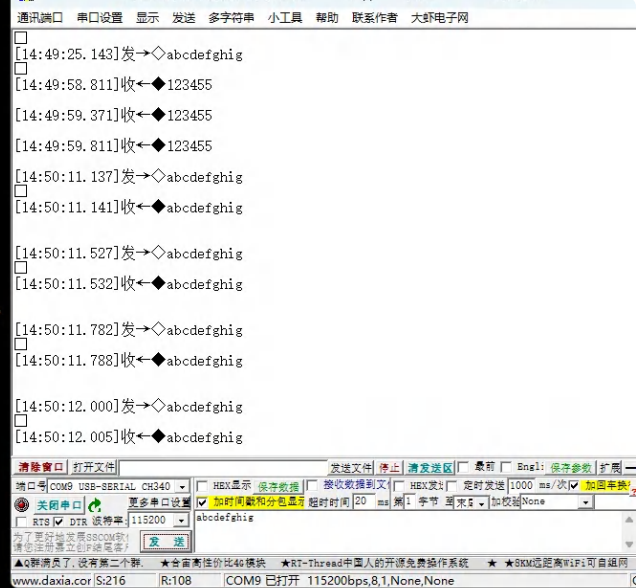
将串口波特率大小设置和windows下串口调试助手波特率大小相同。

收发数据测试：

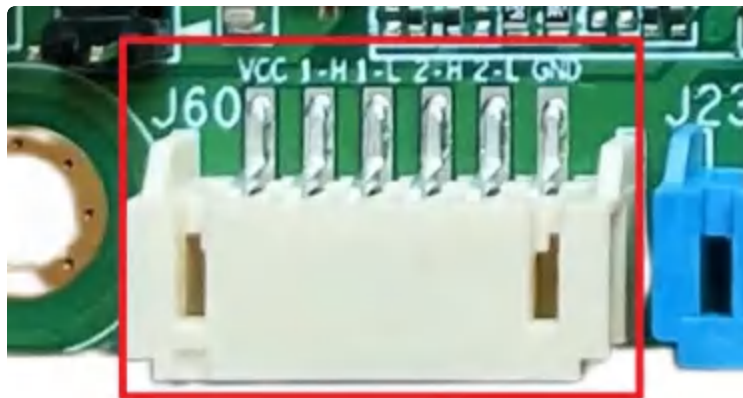
```
1 root@linaro-alip:/# cat /dev/ttyS9 //收
2 root@linaro-alip:/# echo 123455 > /dev/ttyS9 //发
```

```
Connecting to COM7...
Connected.

root@linaro-alip:/#
root@linaro-alip:/#
root@linaro-alip:/#
root@linaro-alip:/#
root@linaro-alip:/# echo 123455 > /dev/ttyS9
root@linaro-alip:/# echo 123455 > /dev/ttyS9
root@linaro-alip:/# echo 123455 > /dev/ttyS9
root@linaro-alip:/# [ 232.851221] start_addr=(0x8000),
root@linaro-alip:/#
root@linaro-alip:/# cat /dev/ttyS9
abcdefghig
abcdefghig
abcdefghig
abcdefghig
abcdefghig
abcdefghig
```



CAN测试



序号	编号	描述
1	VCC	
2	CAN1_TX	CAN1
3	CAN1_RX	
4	CAN2_TX	CAN2
5	CAN2_RX	
6	GND	

IDO-SBC3526-V1共配置两路CAN接口，分别为CAN0和CAN1。支持 CANFD 协议，CAN接口测试方法如下：

▼

Bash

```

1 root@kylinos:/# ip link set can0 type can bitrate 125000 //设置波特率
2 root@kylinos:/# ip link set can1 type can bitrate 125000
3 root@kylinos:/# ip link set up can0 //启动can
4 root@kylinos:/# ip link set up can1
5 root@kylinos:/# candump can1 & //can1后台接收
6 [1] 5627
7 root@kylinos:/# cansend can0 120#11223344 //can0发送
8 root@kylinos:/#
9 root@kylinos:/# cansend can0 120#11223344
10 root@kylinos:/# can1 120 [4] 11 22 33 44
11 can1 120 [4] 11 22 33 44
12
13 root@kylinos:/# cansend can0 120#11223344
14 can1 120 [4] 11 22 33 44
15 root@kylinos:/# cansend can0 120#11223344
16 can1 120 [4] 11 22 33 44
17 root@kylinos:/# cansend can0 120#11223344
18 can1 120 [4] 11 22 33 44
19 root@kylinos:/# cansend can0 120#11223344
20 can1 120 [4] 11 22 33 44

```

WIFI使用

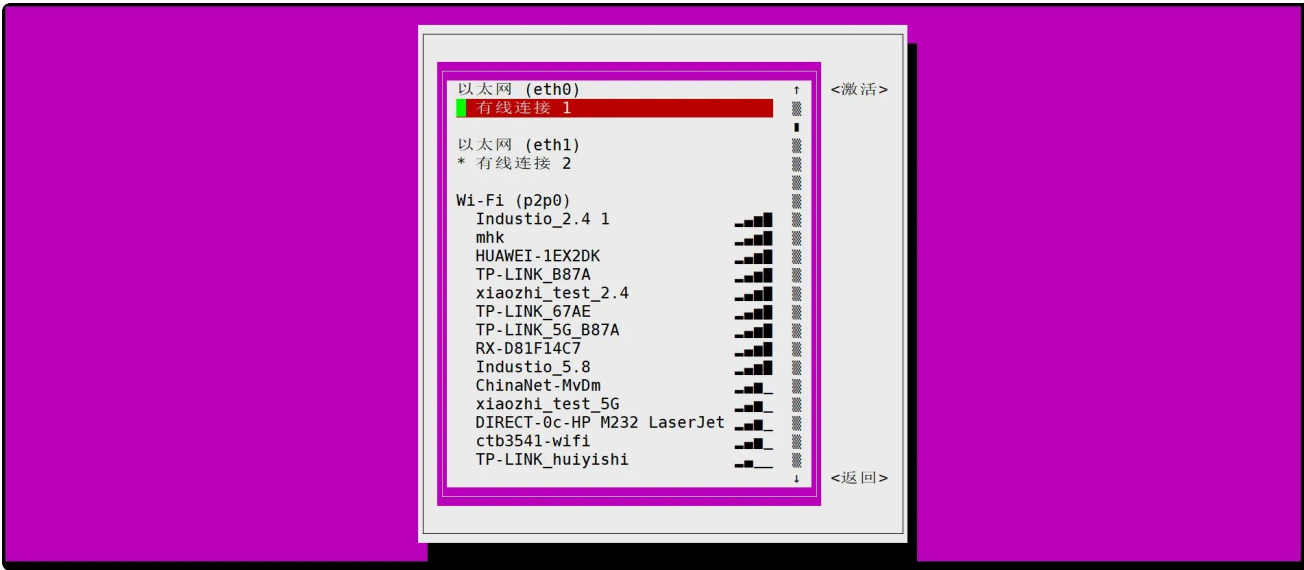
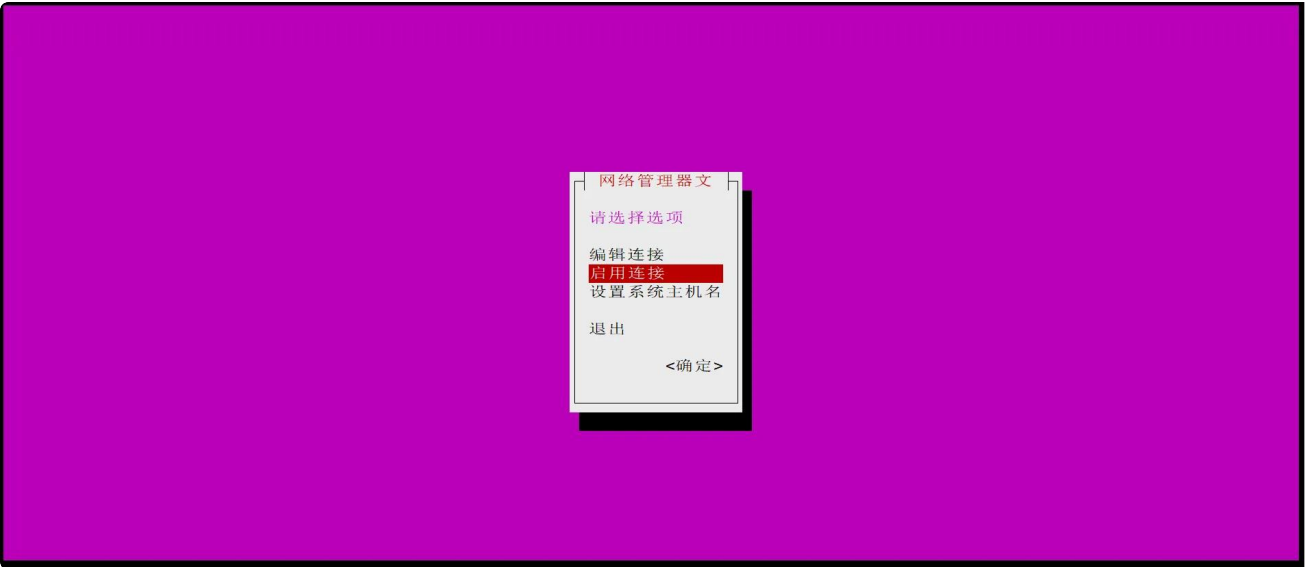
```
1  #开机启动脚本
2  root@kylinos:/# cat /etc/init.d/rkwifibt.sh
3  #!/bin/bash -e
4
5  PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
6
7  # init rkwifibt
8  sleep 2
9  if ! lsmod | grep -q "8821cs"; then
10     insmod /system/lib/modules/8821cs.ko
11 fi
12 /usr/bin/bt_init.sh
13
14 #蓝牙启动脚本
15 root@kylinos:/# cat /usr/bin/bt_init.sh
16 #!/bin/sh
17
18 #killall rtk_hciattach
19
20 echo 0 > /sys/class/rfkill/rfkill0/state
21 sleep 1
22 echo 1 > /sys/class/rfkill/rfkill0/state
23 sleep 1
24
25 if ! lsmod | grep -q "hci_uart"; then
26     insmod /usr/lib/modules/hci_uart.ko
27 fi
28 rtk_hciattach -n -s 115200 /dev/ttyS8 rtk_h5 &
29 sleep 2 # 增加一个延时, 确保设备已被识别
30 hciconfig hci0 up || echo "Failed to bring hci0 up"
31
32 #启动服务:
33 root@kylinos:/# cat /lib/systemd/system/rkwifibt.service
34 [Unit]
35 Description=Setup rockchip platform environment
36 After=NetworkManager.service
37
38 [Service]
39 Type=forking
40 ExecStart=/etc/init.d/rkwifibt.sh
41 RemainAfterExit=yes
42
43 [Install]
44 WantedBy=multi-user.target
45
```

```
46 #启动服务
47 root@kylinos:/# systemctl daemon-reload
48 root@kylinos:/# systemctl restart rkwifibt.service
```

在使用 WIFI时连接好WiFi天线，设备节点为wlan0

```
▼ Bash |
1 [root@RK356X:/]# ifconfig wlan0
2 wlan0      Link encap:Ethernet  HWaddr 2C:3B:70:14:17:95
3            inet addr:169.254.41.145  Bcast:169.254.255.255  Mask:255.255.0.0
4            inet6 addr: fe80::b05:fca4:fb45:9468/64 Scope:Link
5            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
6            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
7            TX packets:75 errors:0 dropped:0 overruns:0 carrier:0
8            collisions:0 txqueuelen:1000
9            RX bytes:0 (0.0 B)  TX bytes:21920 (21.4 KiB)
```

使用nmtui连接WiFi使用：



连

接账号，输入密码即可。

连接之后正常上网：

```
wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.27.189 netmask 255.255.255.0 broadcast 192.168.27.255
    inet6 240a:42cc:6000:837:946e:1151:4886:9215 prefixlen 64 scopeid 0x0<global>
    inet6 240a:42cc:6000:837:3148:5f61:4700:e025 prefixlen 64 scopeid 0x0<global>
    inet6 fe80::7fad:af7:b116:48d1 prefixlen 64 scopeid 0x20<link>
    ether 14:f5:f9:ca:1c:d5 txqueuelen 1000 (以太网)
    RX packets 32 bytes 370747 (370.7 KB)
    RX errors 0 dropped 1 overruns 0 frame 0
    TX packets 54 bytes 25672 (25.6 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@kylinos:/# ping www.baidu.com -I wlan0
PING www.baidu.com(240e:ff:e020:966:0:ff:b042:f296 (240e:ff:e020:966:0:ff:b042:f296)) from 240a:42cc:6000:837:3148:5f
: 56 data bytes
64 bytes from 240e:ff:e020:966:0:ff:b042:f296 (240e:ff:e020:966:0:ff:b042:f296): icmp_seq=1 ttl=47 time=174 ms
64 bytes from 240e:ff:e020:966:0:ff:b042:f296 (240e:ff:e020:966:0:ff:b042:f296): icmp_seq=2 ttl=47 time=295 ms
64 bytes from 240e:ff:e020:966:0:ff:b042:f296 (240e:ff:e020:966:0:ff:b042:f296): icmp_seq=3 ttl=47 time=113 ms
64 bytes from 240e:ff:e020:966:0:ff:b042:f296 (240e:ff:e020:966:0:ff:b042:f296): icmp_seq=4 ttl=47 time=134 ms
64 bytes from 240e:ff:e020:966:0:ff:b042:f296 (240e:ff:e020:966:0:ff:b042:f296): icmp_seq=5 ttl=47 time=158 ms
^C
```

蓝牙使用

蓝牙功能开启后，将产生hci0节点

```
▼ Bash |
1  #查看蓝牙设备
2  root@kylinos:/# hciconfig -a
3  hci0: Type: Primary  Bus: UART
4      BD Address: 14:F5:F9:C8:48:15  ACL MTU: 1021:8  SCO MTU: 255:12
5      DOWN
6      RX bytes:1744 acl:0 sco:0 events:60 errors:0
7      TX bytes:4644 acl:0 sco:0 commands:60 errors:0
8      Features: 0xff 0xff 0xff 0xfe 0xdb 0xfd 0x7b 0x87
9      Packet type: DM1 DM3 DM5 DH1 DH3 DH5 HV1 HV2 HV3
10     Link policy: RSWITCH HOLD SNIFF PARK
11     Link mode: PERIPHERAL ACCEPT
12
13  #开启蓝牙
14  root@kylinos:/# hciconfig hci0 up
15  root@kylinos:/# hciconfig -a
16  hci0: Type: Primary  Bus: UART
17      BD Address: 14:F5:F9:C8:48:15  ACL MTU: 1021:8  SCO MTU: 255:12
18      UP RUNNING PSCAN ISCAN
19      RX bytes: 0000  TX bytes: 0000  ACL MTU: 0000  SCO MTU: 0000
```

使用hcitool测试蓝牙扫描功能

```
▼ Bash |
1  root@kylinos:/# hcitool -i hci0 scan
2  Scanning ...
3      C0:F5:35:1C:9A:15  linaro-alip
4      5C:C5:63:02:31:19  客厅的小米电视
5      C8:8A:D8:1F:14:C8  RX-D81F14C7
6      AC:D6:18:5C:0D:4D  cainiaocl
```

以太网使用

开发板两路千兆以太网接口，上图红色框内接口设备节点为 eth0，黄框内接口设备节点为 eth1。



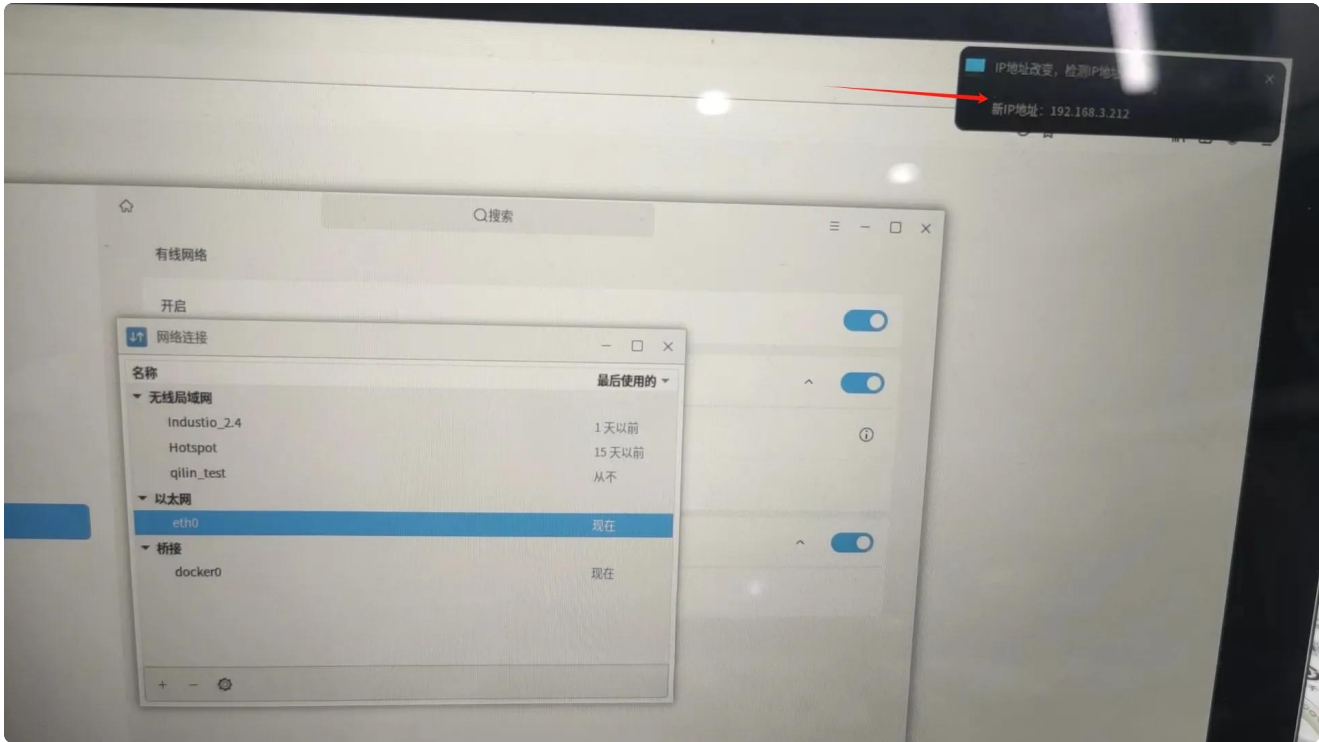
两路以太网接口默认IP获取方式为 dhcp。

静态IP设置

以eth0设置静态IP地址为例，新建/etc/netplan/文件下以yaml后缀的文件，在文件中添加如下内容

```
1 root@kylinos:/etc/netplan# cat 01-static.yaml
2 network:
3   ethernets:
4     eth0:
5       addresses: [192.168.3.200/24] # 静态IP
6       dhcp4: no
7       optional: true
8       gateway4: 192.168.3.1
9       nameservers:
10        addresses: [192.168.3.1, 114.114.114.114] # DNS
11   version: 2
12   renderer: networkd
13
14 root@kylinos:/etc/netplan# ifconfig
15 eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
16     inet 192.168.3.200 netmask 255.255.255.0 broadcast 192.168.3.255
17     inet6 fe80::a2d5:9228:8eb6:9222 prefixlen 64 scopeid 0x20<link>
18     ether ba:d9:b7:e5:b8:01 txqueuelen 1000 (以太网)
19     RX packets 357 bytes 29978 (29.9 KB)
20     RX errors 0 dropped 0 overruns 0 frame 0
21     TX packets 189 bytes 19467 (19.4 KB)
22     TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
23     device interrupt 41
24
25 root@kylinos:/etc/netplan# ping www.baidu.com -I eth0
26 PING www.a.shifen.com (183.2.172.185) from 192.168.3.200 eth0: 56(84) byte
s of data.
27 64 bytes from 183.2.172.185 (183.2.172.185): icmp_seq=1 ttl=52 time=7.65 m
s
28 64 bytes from 183.2.172.185 (183.2.172.185): icmp_seq=2 ttl=52 time=7.47 m
s
29 64 bytes from 183.2.172.185 (183.2.172.185): icmp_seq=3 ttl=52 time=7.36 m
s
30 64 bytes from 183.2.172.185 (183.2.172.185): icmp_seq=4 ttl=52 time=7.34 m
s
```

桌面下设置静态ip后，右上角弹窗会提示ip设置冲突，但是不影响使用，如下所示：



4G

IDO-SBC3526-V1 默认适配EC20模块。

检查拨号上网是否正常

```

1 root@kylinos:~# quectel-CM &
2 [1] 2679
3 root@kylinos:~# [06-05_11:14:03:156] QConnectManager_Linux_V1.6.4
4 [06-05_11:14:03:157] Find /sys/bus/usb/devices/1-1 idVendor=0x2c7c idProdu
ct=0x125, bus=0x001, dev=0x002
5 [06-05_11:14:03:158] Auto find qmichannel = /dev/cdc-wdm0
6 [06-05_11:14:03:158] Auto find usbnet_adapter = wwan0
7 [06-05_11:14:03:159] netcard driver = qmi_wwan_q, driver version = V1.2.0.
23
8 [06-05_11:14:03:159] Modem works in QMI mode
9 [06-05_11:14:03:199] cdc_wdm_fd = 7
10 [06-05_11:14:03:292] Get clientWDS = 18
11 [06-05_11:14:03:324] Get clientDMS = 1
12 [06-05_11:14:03:357] Get clientNAS = 3
13 [06-05_11:14:03:388] Get clientUIM = 1
14 [06-05_11:14:03:421] Get clientWDA = 1
15 [06-05_11:14:03:453] requestBaseBandVersion EC20CEHCLGR06A05M1G
16 [06-05_11:14:03:581] requestGetSIMStatus SIMStatus: SIM_READY
17 [06-05_11:14:03:613] requestGetProfile[1] ctnet///0/IPV4V6
18 [06-05_11:14:03:644] requestRegistrationState2 MCC: 460, MNC: 11, PS: Atta
ched, DataCap: LTE
19 [06-05_11:14:03:677] requestQueryDataCall IPv4ConnectionStatus: DISCONNECT
ED
20 [06-05_11:14:03:677] ifconfig wwan0 0.0.0.0
21 [06-05_11:14:03:684] ifconfig wwan0 down
22 [06-05_11:14:03:740] requestSetupDataCall WdsConnectionIPv4Handle: 0xe181f
f00
23 [06-05_11:14:03:869] ifconfig wwan0 up
24 [06-05_11:14:03:876] busybox udhcpd -f -n -q -t 5 -i wwan0
25 udhcpd: started, v1.30.1
26 udhcpd: sending discover
27 udhcpd: sending select for 10.3.228.99
28 udhcpd: lease of 10.3.228.99 obtained, lease time 7200
29
30 root@kylinos:~# ifconfig wwan0
31 wwan0: flags=193<UP,RUNNING,NOARP> mtu 1500
32     inet 10.3.228.99 netmask 255.255.255.248
33     inet6 fe80::c40f:d1ff:fe00:6e3a prefixlen 64 scopeid 0x20<link>
34     ether c6:0f:d1:00:6e:3a txqueuelen 1000 (以太网)
35     RX packets 19 bytes 6661 (6.6 KB)
36     RX errors 0 dropped 0 overruns 0 frame 0
37     TX packets 31 bytes 3270 (3.2 KB)
38     TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
39
40 root@kylinos:~# ping www.baidu.com -I wwan0

```

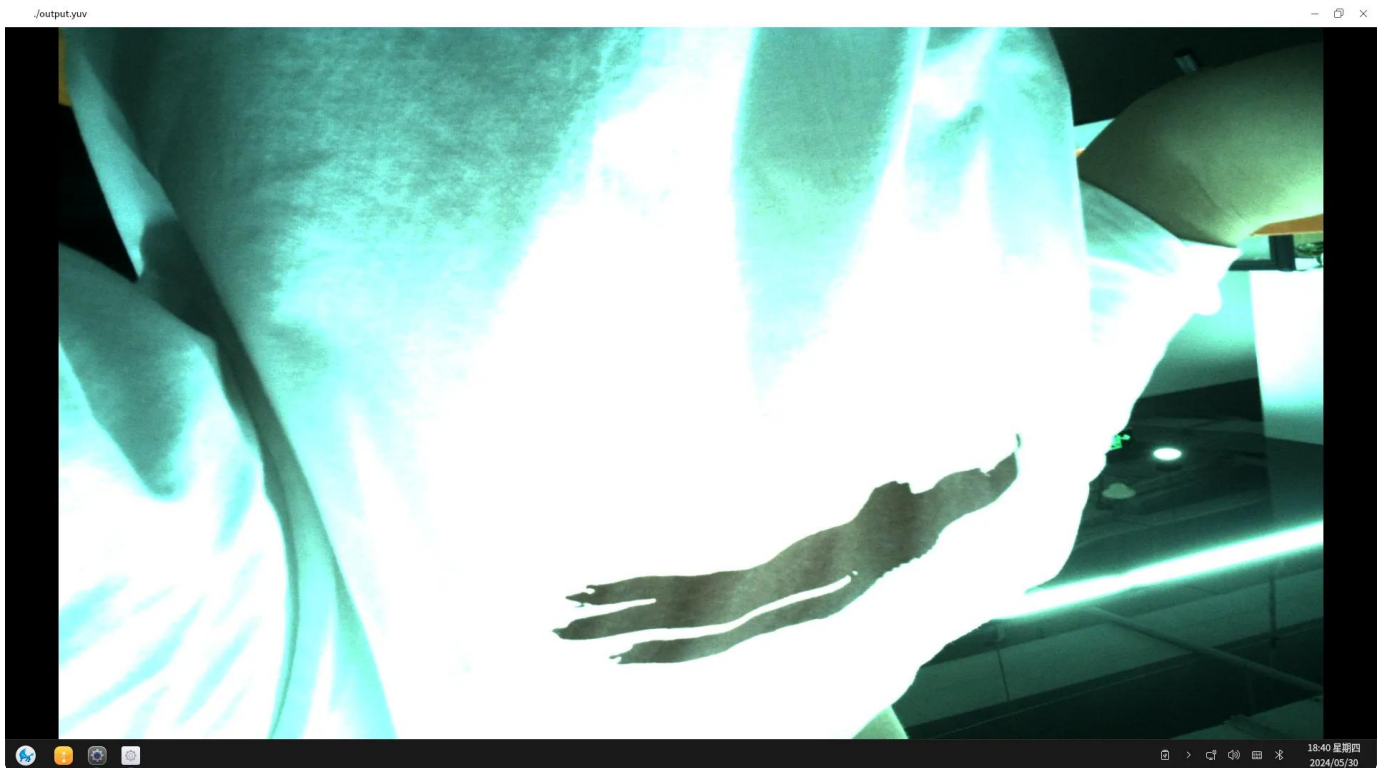
```
41  PING www.baidu.com (183.2.172.185) from 10.3.228.99 wwan0: 56(84) bytes o
42  f data.
    64 bytes from 183.2.172.185 (183.2.172.185): icmp_seq=1 ttl=52 time=61.3 m
    s
```

摄像头使用

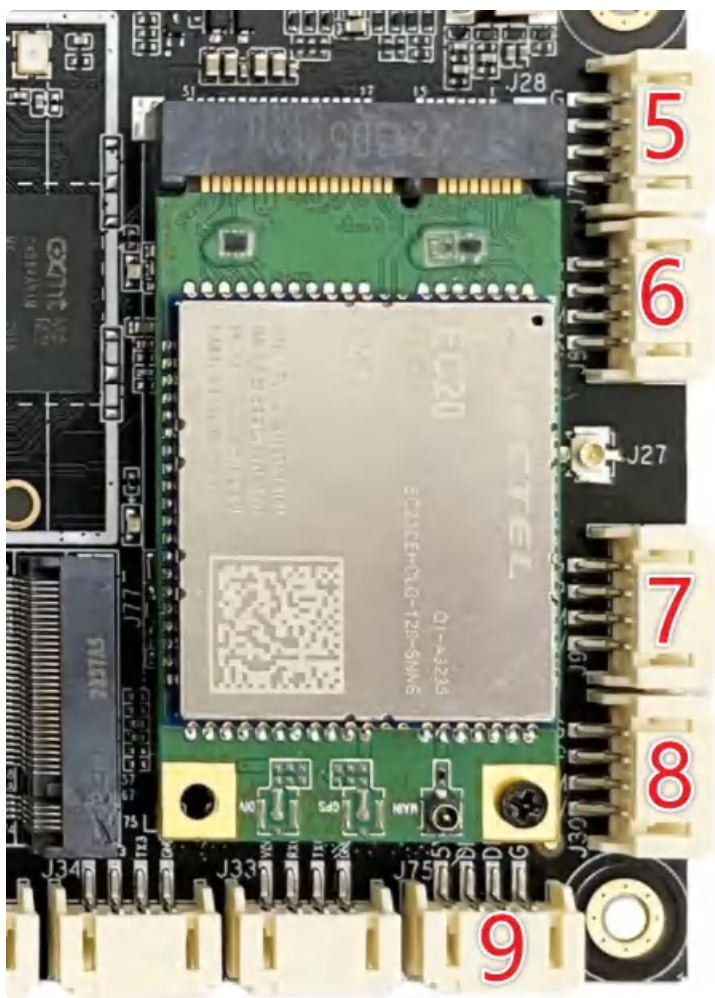
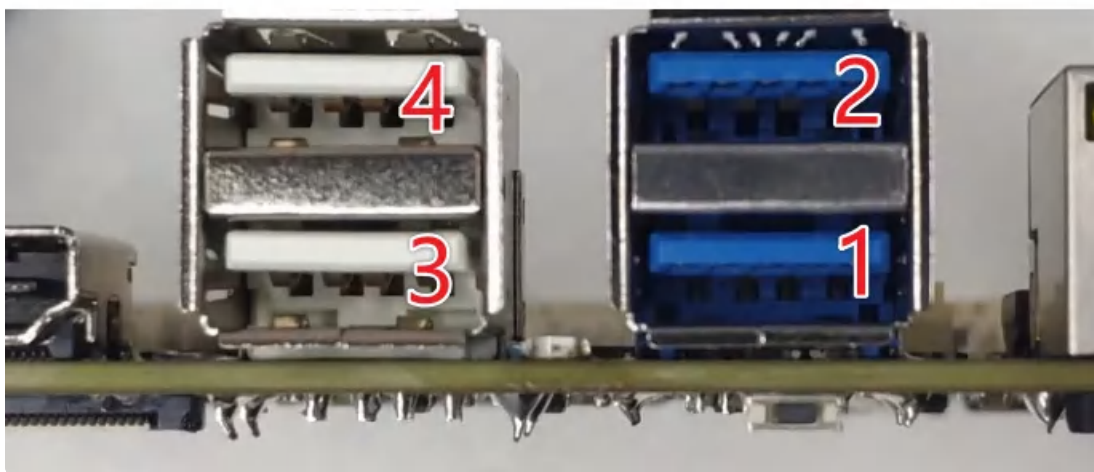
默认适配OV5648模块，对应系统中的设备节点为/dev/video0。

```
1  root@kylinos:/# export DISPLAY=:0
2  #录制视频
3  root@kylinos:/# v4l2-ctl --stream-mmap=4 -d /dev/video0 --set-fmt-video=wi
   dth=1920,height=1080,pixelformat='NV12' --stream-to=./output.yuv
4  #播放视频
5  root@kylinos:/# ffplay -f rawvideo -video_size 1920x1080 -pix_fmt nv12 ./ou
   tput.yuv
6  root@kylinos:/# export DISPLAY=:0
7  root@kylinos:/# set-launch 1 0 -x1234567890 -d /dev/video0 -l video0 -r 30 -f
```

结果：



U盘



USB1为OTG接口，默认开机为Devices模式，可用于ADB调试；切换至HOST模式时，可接U盘等设备。

USB接口如上图所示，功能说明如下：

序号	功能	控电节点
1	USB 3.0 OTG	/dev/otg_mode (切换HOST/DEVICE)

2	USB 3.0 HOST	/sys/class/leds/usb3_host_pwr/brightness
3	USB 2.0 HOST	/sys/class/leds/usb2_host_pwr/brightness
4	USB 2.0 HUB Port 2	/sys/class/leds/usb2_fe2_pwr/brightness
5	USB 2.0 HUB Port3	/sys/class/leds/usb2_fe3_pwr/brightness
6	USB 2.0 HUB Port4	/sys/class/leds/usb2_fe4_pwr/brightness
7	USB 2.0 HUB Port5	/sys/class/leds/usb2_fe5_pwr/brightness
8	USB 2.0 HUB Port6	/sys/class/leds/usb2_fe6_pwr/brightness
9	USB 2.0 HUB Port7	/sys/class/leds/usb2_fe7_pwr/brightness

供电控制说明，设备节点写0关闭电源，写1开启电源
命令行控制方法如下，以端口2为例

▼

Shell

```

1  #关闭
2  echo 0 > /sys/class/leds/usb3_host_pwr/brightness
3  #开启（默认状态）
4  echo 1 > /sys/class/leds/usb3_host_pwr/brightness

```

USB OTG 切换命令

▼

Java

```

1  host:
2  echo host > /sys/devices/platform/fe8a0000.usb2-phy/otg_mode
3  device:
4  echo peripheral > /sys/devices/platform/fe8a0000.usb2-phy/otg_mode

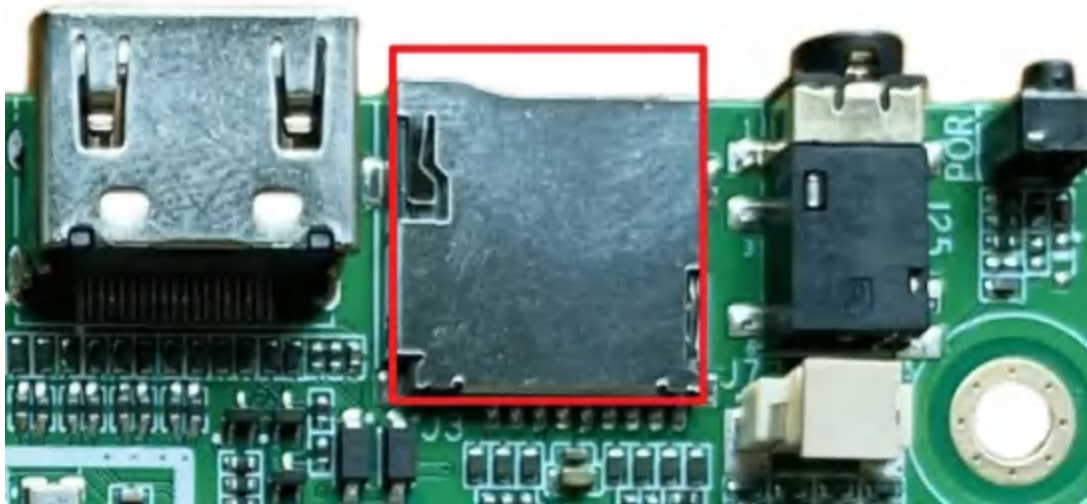
```

当接入U盘设备时，默认挂载到/media/kylin/目录下

```
1 root@kylinos:/# df -h
2 文件系统          容量  已用  可用 已用% 挂载点
3 /dev/root          29G   5.4G   22G   20% /
4 devtmpfs           1.9G     0   1.9G    0% /dev
5 tmpfs              2.0G     0   2.0G    0% /dev/shm
6 tmpfs              391M   3.4M  388M    1% /run
7 tmpfs              5.0M   4.0K   5.0M    1% /run/lock
8 tmpfs              2.0G     0   2.0G    0% /sys/fs/cgroup
9 tmpfs              391M   12K  391M    1% /run/user/1000
10 /dev/mmcblk0p7     126M   13M  107M   11% /media/kylin/24e1df61-2d78-48b8-a47
    8-05a1831dfe8b
11 /dev/mmcblk0p6     248M   2.1M  246M    1% /media/kylin/2efc5987-39d6-4a1c-93e
    c-49250c0d1b90
12 /dev/mmcblk1p1     29G    45M   28G    1% /media/kylin/a1abd2c1-1859-4540-867
    9-0173594f46b8
13 /dev/sda1          15G   1.8G   13G   13% /media/kylin/0C7E2B357E2B174C
```

SD卡

将SD卡插入到SD卡槽中，将自动挂载到/media/kylin/目录下。



```

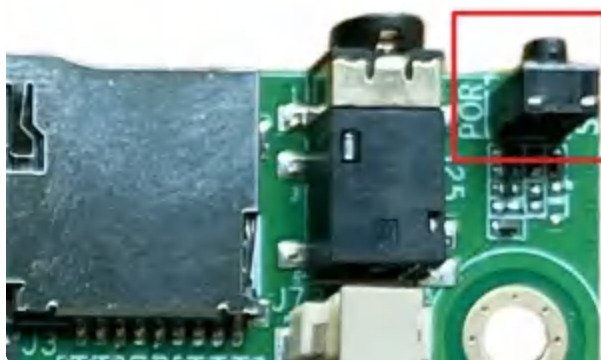
1 root@kylinos:/# df -h
2 文件系统      容量  已用  可用  已用% 挂载点
3 /dev/root      29G   5.4G   22G   20% /
4 devtmpfs       1.9G    0   1.9G    0% /dev
5 tmpfs          2.0G   4.0K   2.0G    1% /dev/shm
6 tmpfs          391M   3.4M   388M    1% /run
7 tmpfs          5.0M   4.0K   5.0M    1% /run/lock
8 tmpfs          2.0G    0   2.0G    0% /sys/fs/cgroup
9 /dev/nvme0n1p1 120G   32K  120G    1% /media/kylin/nvme
10 tmpfs          391M   20K   391M    1% /run/user/1000
11 /dev/mmcblk0p7 126M   13M  107M   11% /media/kylin/24e1df61-2d78-48b8-a47
   8-05a1831dfe8b
12 /dev/mmcblk0p6 248M   2.1M  246M    1% /media/kylin/2efc5987-39d6-4a1c-93e
   c-49250c0d1b90
13 /dev/mmcblk1p1 29G   45M   28G    1% /media/kylin/a1abd2c1-1859-4540-867
   9-0173594f46b8

```

按键



(SW1)



(SW3)

丝印	功能	节点
SW1	recovery	/dev/input/event2
SW3	power	/dev/input/event1

IDO-SBC3526-V1 配置了一个Recovery按键和power按键，Recovery在设备断电的情况下，该按键用于烧录固件。在系统正常启动后，则可作为普通按键使用。Recovery对应的设备节点为/dev/input/event2，Recovery对应的设备节点为/dev/input/event1。

使用evtest进行测试：

```
1  #recovery键测试
2  root@kylinos:/# evtest
3  No device specified, trying to scan all of /dev/input/event*
4  Available devices:
5  /dev/input/event0:  fdd70030.pwm
6  /dev/input/event1:  rk805 pwrkey
7  /dev/input/event2:  adc-keys
8  /dev/input/event3:  rk-headset
9  /dev/input/event4:  USB OPTICAL MOUSE
10 Select the device event number [0-4]: 2
11 Input driver version is 1.0.1
12 Input device ID: bus 0x19 vendor 0x1 product 0x1 version 0x100
13 Input device name: "adc-keys"
14 Supported events:
15   Event type 0 (EV_SYN)
16   Event type 1 (EV_KEY)
17     Event code 114 (KEY_VOLUMEDOWN)
18     Event code 115 (KEY_VOLUMEUP)
19     Event code 139 (KEY_MENU)
20     Event code 158 (KEY_BACK)
21 Properties:
22 Testing ... (interrupt to exit)
23 Event: time 1717068972.926568, type 1 (EV_KEY), code 115 (KEY_VOLUMEUP), value 1
24 Event: time 1717068972.926568, ----- SYN_REPORT -----
25 Event: time 1717068973.029893, type 1 (EV_KEY), code 115 (KEY_VOLUMEUP), value 0
26 Event: time 1717068973.029893, ----- SYN_REPORT -----
27
28 #power键测试
29 root@kylinos:/# apt-get install evtest
30 root@kylinos:/# evtest
31 No device specified, trying to scan all of /dev/input/event*
32 Available devices:
33 /dev/input/event0:  fdd70030.pwm
34 /dev/input/event1:  rk805 pwrkey
35 /dev/input/event2:  adc-keys
36 /dev/input/event3:  rk-headset
37 /dev/input/event4:  USB OPTICAL MOUSE
38 Select the device event number [0-4]: 1
39 Input driver version is 1.0.1
40 Input device ID: bus 0x19 vendor 0x0 product 0x0 version 0x0
41 Input device name: "rk805 pwrkey"
42 Supported events:
43   Event type 0 (EV_SYN)
```

```
44     Event type 1 (EV_KEY)
45     Event code 116 (KEY_POWER)
46 Properties:
47 Testing ... (interrupt to exit)
48 Event: time 1717068797.694773, type 1 (EV_KEY), code 116 (KEY_POWER), value 1
49 Event: time 1717068797.694773, ----- SYN_REPORT -----
50 Event: time 1717068797.871072, type 1 (EV_KEY), code 116 (KEY_POWER), value 0
51 Event: time 1717068797.871072, ----- SYN_REPORT -----
```

时间设置

RTC时间读取和同步

系统时间读取和设置

```
▼ Bash |
1 root@kylinos:/# date
2 2024年 05月 30日 星期四 19:38:17 CST
3 root@kylinos:/# date -s "2024-05-30 19:39:30"
4 2024年 05月 30日 星期四 19:39:30 CST
```

rtc时间设置

```
▼ Bash |
1 root@kylinos:/# hwclock -w //同步rtc时间
2 root@kylinos:/# hwclock -r //读取时间
3 2024-05-30 19:39:32.019563+08:00
```

NTP时间同步

系统默认开启了NTP服务，连接网络后，将自动同步网络时间。

时区

查看时区

```
1 root@kylinos:/# date -R
2 Thu, 30 May 2024 19:40:08 +0800
```

+0000表示在0时区。

设置时区

```
1 root@kylinos:/# export TZ='Asia/Shanghai'
2 root@kylinos:/# date -R
3 Thu, 30 May 2024 19:40:36 +0800
4 root@kylinos:/# date
5 2024年 05月 30日 星期四 19:40:38 CST
```

音频



(耳机)



(lineout)

PH2.54 4pin 喇叭接口，一路OTMP标准四节耳机座。喇叭支持最大8Ω@5W
使用[aplay](#)工具查看声卡设备

```

1 root@kylinos:/# aplay -l
2 **** PLAYBACK 硬體裝置清單 ****
3 card 0: rockchiphdmi [rockchip,hdmil], device 0: fe400000.i2s-i2s-hifi i2s-hifi-0 [fe400000.i2s-i2s-hifi i2s-hifi-0]
4   子设备: 1/1
5   子设备 #0: subdevice #0
6 card 1: rockchiprk809co [rockchip,rk809-codec], device 0: fe410000.i2s-rk817-hifi rk817-hifi-0 [fe410000.i2s-rk817-hifi rk817-hifi-0]
7   子设备: 1/1
8   子设备 #0: subdevice #0

```

Lineout

不插入耳机，使用aplay播放wav音频测试

```

1 root@kylinos:/# aplay -D plughw:1,0 /usr/share/sounds/alsa/Rear_Center.wav
2 正在播放 WAVE '/record.wav' : Signed 16 bit Little Endian, 频率44100Hz, Stereo

```

耳机

插入耳机，使用aplay播放wav音频测试

```

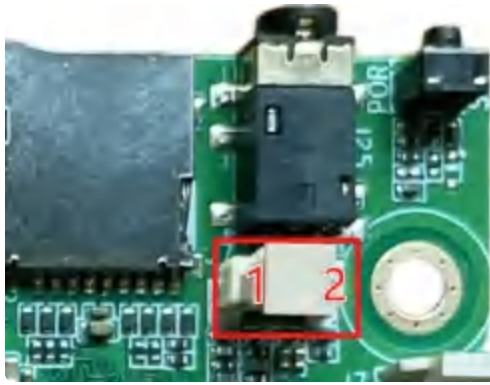
1 root@kylinos:/# aplay -D plughw:1,0 /usr/share/sounds/alsa/Rear_Center.wav
2 正在播放 WAVE '/record.wav' : Signed 16 bit Little Endian, 频率44100Hz, Stereo

```

录音

录音

参考如下示意图接上麦克风。



麦克风位于主板的J73，接口定义如下

序号	定义	说明
1	MIC1_IN/MIC1_INP	MIC输入
3	GND	GND

使用arecord工具进行录音测试。

```

1 root@kylinos:/# arecord -l
2 ***** CAPTURE 硬體裝置清單 *****
3 card 1: rockchiprk809co [rockchip,rk809-codec], device 0: fe410000.i2s-rk81
  7-hifi rk817-hifi-0 [fe410000.i2s-rk817-hifi rk817-hifi-0]
4   子设备: 1/1
5   子设备 #0: subdevice #0
6 root@kylinos:/# arecord -D hw:1,0 -f S16_LE -r 16000 -c 2 test.wav
7 正在录音 WAVE 'test.wav' : Signed 16 bit Little Endian, 频率16000Hz, Stereo

```

播放录音

```

1 [root@RK356X:/]# aplay test.wav

```