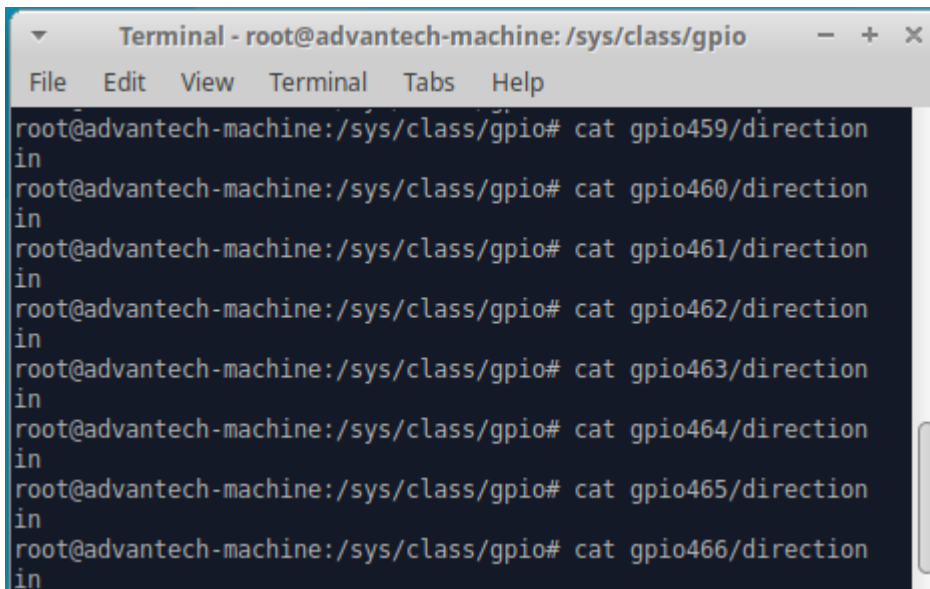


Advantech AE Technical Sharing Document

Date	2022/ 2 /24	Release Note	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
Category	<input checked="" type="checkbox"/> FAQ <input type="checkbox"/> SOP	Related OS	AdvLinux2.0.6 、 Linux
Abstract	About AdvLinux & general Linux GPIO usage instructions.		
Keyword	AdvLinux/Linux/UNO-137/UNO-148/ UNO-238/UNO-420/GPIO/Driver		
Related Product	UNO-137/UNO-148/UNO-238/UNO-420		

■ **Problem Description:**

1. There is no relevant document explaining the mapping and how to use the GPIO in Advlinux/Linux.
2. The default direction of DO0-DO7 is Input.



```
Terminal - root@advantech-machine: /sys/class/gpio
File Edit View Terminal Tabs Help
root@advantech-machine:/sys/class/gpio# cat gpio459/direction
in
root@advantech-machine:/sys/class/gpio# cat gpio460/direction
in
root@advantech-machine:/sys/class/gpio# cat gpio461/direction
in
root@advantech-machine:/sys/class/gpio# cat gpio462/direction
in
root@advantech-machine:/sys/class/gpio# cat gpio463/direction
in
root@advantech-machine:/sys/class/gpio# cat gpio464/direction
in
root@advantech-machine:/sys/class/gpio# cat gpio465/direction
in
root@advantech-machine:/sys/class/gpio# cat gpio466/direction
in
```

■ **Brief Analysis and Solution :**

1. AdvLinux : The GPIO driver is already installed in the image file, can be use directly. (Take UNO-137 as sample)
 - i. If using driver to control GPIO : Please visit "/usr/src/advantech/advdio/"
Additional driver installation is not necessary.
Use the Demo script:
"do_write" is for DO, numbered 0-7, the same as the pins on the machine.
"di_read" is for DI, numbered 0-7, the same as the pin on the machine.
 - ii. If using sysFs to control GPIO :
 - A. Need to remove the original GPIO driver first. Otherwise, the Linux default sysFs cannot be used.
 - B. Use "rmmod acpi-gpio" to remove the GPIO driver of Advlinux.
 - C. And the sysFs can be used now. Please visit "sys/class/gpio".

```
root@advantech-machine:/usr/src/advantech/advdio/driver# lsmod | grep gpio
acpi_gpio 16384 0
root@advantech-machine:/usr/src/advantech/advdio/driver# rmmod acpi-gpio
root@advantech-machine:/usr/src/advantech/advdio/driver#
```

Note: Please refer to the following for the GPIO mapping.

2. The general Linux : Please use Linux default sysFs to control GPIO in the path "sys/class/gpio".
Additional driver installation is not necessary.

Note: Please refer to the following for the GPIO mapping

3. Mapping corresponding to GPIO is as follows :
 - a. UNO-137

DI0	/sys/class/gpio/gpio451
DI1	/sys/class/gpio/gpio453
DI2	/sys/class/gpio/gpio454
DI3	/sys/class/gpio/gpio455
DI4	/sys/class/gpio/gpio456
DI5	/sys/class/gpio/gpio457
DI6	/sys/class/gpio/gpio458
DI7	/sys/class/gpio/gpio452
DO0	/sys/class/gpio/gpio459
DO1	/sys/class/gpio/gpio460
DO2	/sys/class/gpio/gpio461
DO3	/sys/class/gpio/gpio462
DO4	/sys/class/gpio/gpio463
DO5	/sys/class/gpio/gpio464

D06	/sys/class/gpio/gpio465
D07	/sys/class/gpio/gpio466

b. UNO-148

DI0	/sys/class/gpio/gpio424
DI1	/sys/class/gpio/gpio425
DI2	/sys/class/gpio/gpio426
DI3	/sys/class/gpio/gpio427
DI4	/sys/class/gpio/gpio428
DI5	/sys/class/gpio/gpio429
DI6	/sys/class/gpio/gpio430
DI7	/sys/class/gpio/gpio431
D00	/sys/class/gpio/gpio314
D01	/sys/class/gpio/gpio315
D02	/sys/class/gpio/gpio325
D03	/sys/class/gpio/gpio326
D04	/sys/class/gpio/gpio327
D05	/sys/class/gpio/gpio328
D06	/sys/class/gpio/gpio329
D07	/sys/class/gpio/gpio330

c. UNO-238

GPIO0	/sys/class/gpio/gpio192
GPIO1	/sys/class/gpio/gpio193
GPIO2	/sys/class/gpio/gpio194
GPIO3	/sys/class/gpio/gpio195
GPIO4	/sys/class/gpio/gpio196
GPIO5	/sys/class/gpio/gpio197
GPIO6	/sys/class/gpio/gpio198
GPIO7	/sys/class/gpio/gpio199

d. UNO-420

GPIO0	/sys/class/gpio/gpio504
GPIO1	/sys/class/gpio/gpio505
GPIO2	/sys/class/gpio/gpio506
GPIO3	/sys/class/gpio/gpio507
GPIO4	/sys/class/gpio/gpio508
GPIO5	/sys/class/gpio/gpio509

GPI06	/sys/class/gpio/gpio510
GPI07	/sys/class/gpio/gpio511

4. Export the pin you need first.

“**echo XXX > export**” to export the pin

```

root@kyle-UNO-410-E1: /sys/class/gpio
File Edit View Search Terminal Help
root@kyle-UNO-410-E1:/sys/class/gpio# echo 451 > export
root@kyle-UNO-410-E1:/sys/class/gpio# cat gpio451/direction
in

```

5. The default direction of DO0-DO7 must be changed to Input.

Use “**echo out> gpio459/direction**” to change the direction of DO0-DO7

```

root@advantech-machine:/sys/class/gpio# echo out > gpio459/direction
root@advantech-machine:/sys/class/gpio# cat gpio459/direction
out

```

6. DO lines have be reverted, so the signal of the docking will be the opposite.

■ **Contact Window:**

If you need further information from headquarter, please contact ACL PAE team.