

# WizFi630S Peripherals

## GPIO

(Version 1.0.0)

WIZnet <https://wiznet.io>  
WIZnet <https://wizwiki.net>



© 2019 WIZnet Co., Ltd. All Rights Reserved.

For more information, please visit our website at <http://www.wiznet.io/>

## Document Revision History

Date	Revision	Changes
2019-11-25	1.0	Release

---

## Contents

1. Overview .....	4
2. WizFi630S Pin Description .....	4
2.1 WizFi630S mini PCI-e interface.....	4
2.2 Pin map.....	5
2.3 Available GPIOs .....	6
3. GPIOs Handling .....	8
3.1 GPIO Status Check.....	8
3.2 Initialization and Setting Direction .....	9
3.3 Setting GPIO value .....	10

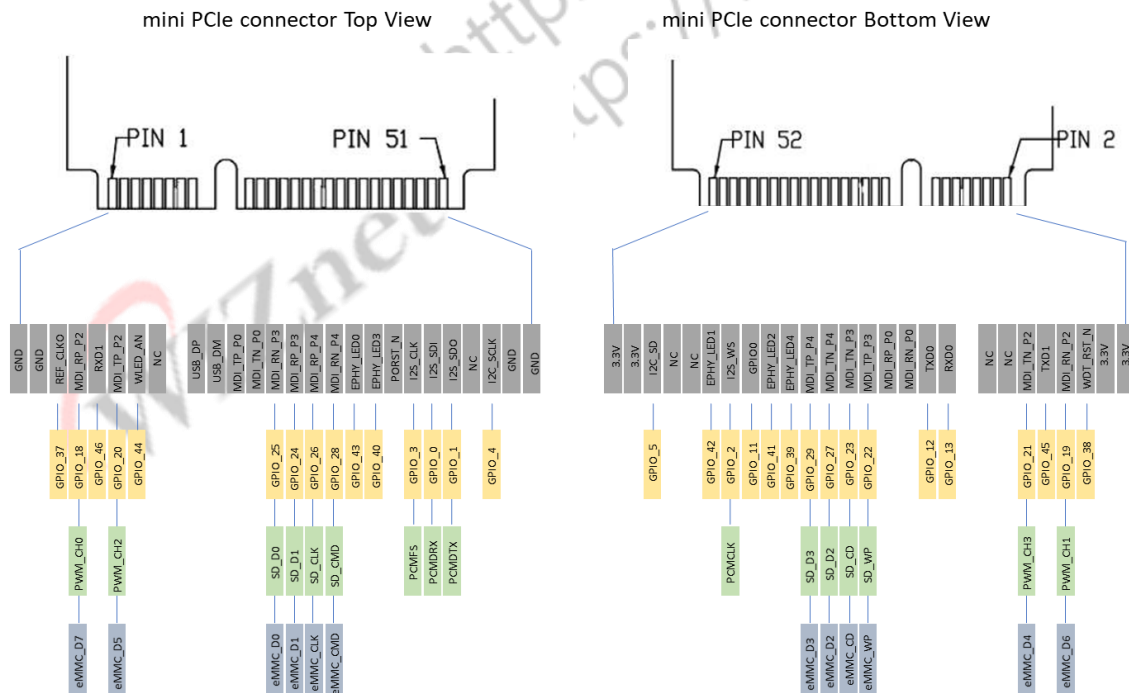
# 1. Overview

This document will guide users how to use the GPIOs of WizFi630S.

OpenWRT can control GPIOs via `sysfs(/sys/class/gpio/)` on the user-space.

## 2. WizFi630S Pin Description

### 2.1 WizFi630S mini PCI-e interface



## 2.2 Pin map

The default firmware of WizFi630S provides the pin map as shown below.

No	Type	Name	Shared	Description
1		GND		
2		3.3V		
3		GND		
4		3.3V		
5	I/O, IPD	REF_CLKO	GPIO#37	Will be provided as UART1 CTS-N
6	I/O, IPD	WDT_RST_N	GPIO#38	Will be provided as UART1 RTS-N
7	I/O, IPD	RXIP2	GPIO#18	Reserved
8	I/O, IPD	RXIM2	GPIO#19	Reserved
9	I/O, IPD	RxD1	GPIO#46	UART1 RXD
10	I/O, IPD	TxD1	GPIO#45	UART1 TXD
11	I/O, IPD	TXOP2	GPIO#20	Reserved
12	I/O, IPD	TXOM2	GPIO#21	Reserved
13	O	WLAN_LED	GPIO#44	Wireless Init On
14		NC		
15		NC(VBUS)		USB OTG VBUS pin in WizFi630
16		NC		
17	I/O	USB_PADP		USB OTG data pin Data+
18	I/O, IPD	UART_RX	GPIO#13	UART0 RxD
19	I/O	USB_PADM		USB OTG data pin Data-
20	I/O, IPD	UART_TX	GPIO#12	UART0 TxD
21	O	TXOP0		10/100 PHY Port #0 TXP
22	I	RXIM0		10/100 PHY Port #0 RXN
23	O	TXOM0		10/100 PHY Port #0 TXN
24	I	RXIP0		10/100 PHY Port #0 RXP
25	I	RXIM3	GPIO#25	10/100 PHY Port #3 RXN
26	O	TXOP3	GPIO#22	10/100 PHY Port #3 TXP
27	I	RXIP3	GPIO#24	10/100 PHY Port #3 RXP
28	O	TXOM3	GPIO#23	10/100 PHY Port #3 TXN
29	I	RXIP4	GPIO#26	10/100 PHY Port #4 RXP

30	0	TXOM4	GPIO#27	10/100 PHY Port #4 TXN
31	1	RXIM4	GPIO#28	10/100 PHY Port #4 RXN
32	0	TXOP4	GPIO#29	10/100 PHY Port #4 TXP
33	0	LINK0_LED	GPIO#43	LAN port 0 Link LED
34	0	LINK4_LED	GPIO#39	LAN port 4 Link LED
35	0	LINK3_LED	GPIO#40	LAN port 3 Link LED
36	I/O, IPD	LINK2	GPIO#41	WPS Button Push
37	1, IPU	CPURST_N		
38	I/O, IPD	GPIO_0	GPIO#11	Reset Button Push
39	I/O, IPD	I2S_CLK	GPIO#3	General Purpose Output LED
40	I/O, IPD	I2S_WS	GPIO#2	General Purpose Input Switch SW1-1
41	I/O, IPD	I2S_SDI	GPIO#0	General Purpose Output LED
42	I/O, IPD	LINK1	GPIO#42	WPS LED
43		I2S_DO	GPIO#1	GPIO
44		NC		
45		NC		
46		NC		
47	I/O, IPD	I2C_SCLK	GPIO#4	General Purpose Input Switch SW1-2
48	I/O, IPD	I2C_SD	GPIO#5	RUN LED
49		GND		
50		3.3V		
51		GND		
52		3.3V		

## 2.3 Available GPIOs

The maximum number of usable GPIOs on WizFi630S are 29, however this number can vary.

Pin Name	GPIO No	Shared	Shared	Shared
GPIO#0	GPIO#0	I2S_SDI		
GPIO#1	GPIO#1	I2S_SDO		
GPIO#2	GPIO#2	I2S_WS		
GPIO#3	GPIO#3	I2S_CLK		
GPIO#4	GPIO#4	I2C_SCLK		

GPIO#5	GPIO#5	I2C_SD		
GPIO#11	GPIO#11	GPIO0		
GPIO#18	GPIO#18	RXIP2		
GPIO#19	GPIO#19	RXIM2		
GPIO#20	GPIO#20	TXOP2		
GPIO#21	GPIO#21	TXOM2		
GPIO#22	GPIO#22	TXOP3		
GPIO#23	GPIO#23	TXOM3		
GPIO#24	GPIO#24	RXIP3		
GPIO#25	GPIO#25	RXIM3		
GPIO#26	GPIO#26	RXIP4		
GPIO#27	GPIO#27	RXIM4		
GPIO#28	GPIO#28	TXOP4		
GPIO#29	GPIO#29	TXOM4		
GPIO#37	GPIO#37	REF_CLKO		
GPIO#38	GPIO#38	WDT_RST_N		
GPIO#39	GPIO#39	LINK4_LED		
GPIO#40	GPIO#40	LINK3_LED		
GPIO#41	GPIO#41	LINK2_LED		
GPIO#42	GPIO#42	LINK1_LED		
GPIO#43	GPIO#43	LINK0_LED		
GPIO#44	GPIO#44	WAN_LED		
GPIO#45	GPIO#45	UART_TX1		
GPIO#46	GPIO#46	UART_RX1		

## 3. GPIOs Handling

### 3.1 GPIO Status Check

Enter the command shown below to check the status of GPIO.

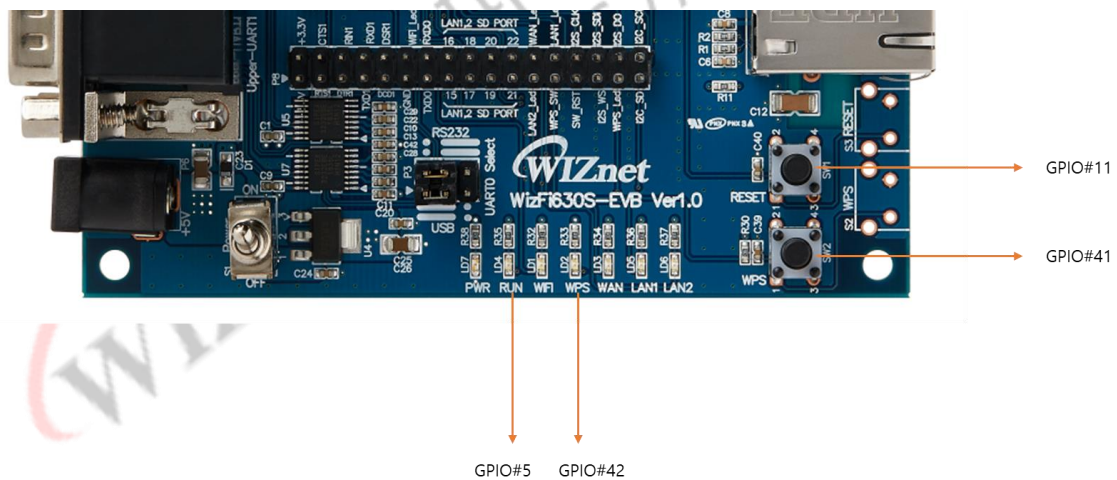
```
cat /sys/kernel/debug/gpio
```

```
root@wizfi630s:/# cat /sys/kernel/debug/gpio
gpiochip0: GPIOs 0-31, parent: platform/10000600.gpio, 10000600.gpio:
gpio-0 (                |wizfi630s:green:uart) out hi
gpio-2 (                |SCM2                ) in  lo
gpio-3 (                |wizfi630s:green:uart) out hi
gpio-4 (                |SCM1                ) in  hi
gpio-5 (                |wizfi630s:green:run ) out lo
gpio-11 (               |reset               ) in  hi

gpiochip1: GPIOs 32-63, parent: platform/10000600.gpio, 10000600.gpio:
gpio-41 (                |wps                 ) in  hi
gpio-42 (                |wizfi630s:green:wps) out hi

gpiochip2: GPIOs 64-95, parent: platform/10000600.gpio, 10000600.gpio:
```

The command shows the system reserved GPIO pins these pins are allocated for LEDs and Push Buttons.





## 3.2 Initialization and Setting Direction

Users must export the pin in order to use it.

The example below is based on GPIO#1.

```
echo 1 > /sys/class/gpio/export
```

The above command makes GPIO#1 be exported, and then makes a directory, 'gpio1' under the directory, '/sys/class/gpio'.

```
root@wizfi630s:/# ls /sys/class/gpio/
export      gpio1/      gpiochip0/  gpiochip32/ gpiochip64/ unexport
```

You can also check that 'gpio-1' is added in the GPIO status message.

```
root@wizfi630s:/# echo 1 > /sys/class/gpio/export
root@wizfi630s:/#
root@wizfi630s:/# cat /sys/kernel/debug/gpio
gpiochip0: GPIOs 0-31, parent: platform/10000600.gpio, 10000600.gpio:
gpio-0 (          |wizfi630s:green:uart) out hi
gpio-1 (          |sysfs                ) in  lo
gpio-2 (          |SCM2                 ) in  lo
gpio-3 (          |wizfi630s:green:uart) out hi
gpio-4 (          |SCM1                 ) in  hi
gpio-5 (          |wizfi630s:green:run ) out lo
gpio-11 (         |reset                ) in  hi

gpiochip1: GPIOs 32-63, parent: platform/10000600.gpio, 10000600.gpio:
gpio-41 (         |wps                  ) in  hi
gpio-42 (         |wizfi630s:green:wps ) out hi

gpiochip2: GPIOs 64-95, parent: platform/10000600.gpio, 10000600.gpio:
root@wizfi630s:/#
```

After exporting a GPIO pin, its direction should be set. The GPIO pin will act as an input pin or an output pin by its direction setting. In this example, the pin is set as 'out'.

```
echo out > /sys/class/gpio/gpio1/direction
```

```
root@wizfi630s:/# echo out > /sys/class/gpio/gpio1/direction
root@wizfi630s:/# cat /sys/class/gpio/gpio1/direction
out
```

---

You can set its direction to 'in' by issuing the command as below.

```
echo in > /sys/class/gpio/gpio1/direction
```

### 3.3 Setting GPIO value

Use the commands below to set the value of GPIO, which is set 'out.'

```
echo 0 > /sys/class/gpio/gpio1/value
```

```
echo 1 > /sys/class/gpio/gpio1/value
```

By default, if the pin is set to 'out,' the pin operates as 'active high.'

Use the command below to change its operating mode to 'active low.'

```
echo 1 > /sys/class/gpio/gpio1/active_low
```