Crane_Fex_Guide

V0.4

2011-11-4

Revision History

Version	Date	Section/ Page	Changes compared to previous issue
V0.1	2011-08-26		Initial version
V0.2	2011-09-28		
V0.3	2011-10-25		SPI configuration
V0.4	2011-11-04		Update lcd,g2d,rtp,wifi

Table of Contents

1 Remark

1. Following configurations inBLUE characters refer to IC pin configurations, and configurations in BLACK characters refer to internal control configurations.

2. GPIO Configuration Description Format:
   Port: port+number<function><internal resistence><drive strength><output level>

2 System

2.1 [Target]

Configuration Item	Description
boot_clock=xx	boot frequency; MHZ
dcdc2_vol=1400	Dcdc2 output voltage，mV，
dcdc3_vol=1250	Dcdc3 output voltage，mV，
ldo2_vol=3000	Ldo2 output voltage，mV，
ldo3_vol=2800	Ldo3 output voltage，mV，
ldo4_vol=2800	Ldo4 output voltage，mV，

Configuration Examples：

```
[target]
boot_clock          = 1008
dcdc2_vol           = 1400
dcdc3_vol           = 1250
ldo2_vol            = 3000
ldo3_vol            = 2800
ldo4_vol            = 2800
```

2.2 [card_boot]

Configuration Item	Description
Logical_start=xx	

Sprite_gpio0=	Sprite GPIO configuration

Configuration Examples：

```
[card_boot]
logical_start          = 40960
sprite_gpio0           =
```

2.3 [card_boot0_para]

Configuration Item	Description
card_ctrl=0	Card boot controller 0
card_high_speed=xx	Speed mode; 0 : low speed, 1: high speed
card_line=4	4-line card
sdc_d1=xx	GPIO configuration of SD card data cable 1
sdc_d0=xx	GPIO configuration of SD card data cable 0
sdc_clk=xx	GPIO configuration of SD card clock signal
sdc_cmd=xx	GPIO configuration of SD card command signal
sdc_d3=xx	GPIO configuration of SD card data cable 3
sdc_d2=xx	GPIO configuration of SD card data cable 2

Configuration Examples：

```
card_ctrl              = 0
card_high_speed        = 1
card_line              = 4
sdc_d1                 = port:PF0<2><1><default><default>
sdc_d0                 = port:PF1<2><1><default><default>
sdc_clk                = port:PF2<2><1><default><default>
sdc_cmd                = port:PF3<2><1><default><default>
sdc_d3                 = port:PF4<2><1><default><default>
sdc_d2                 = port:PF5<2><1><default><default>
```

2.4 [card_boot2_para]

Configuration Items	Description
card_ctrl=2	Card boot controller 2
card_high_speed=xx	Speed mode;

	0 : low speed, 1: high speed
card_line=4	4-line card
sdc_ cmd =xx	GPIO configuration of SD card command signal
sdc_ clk =xx	GPIO configuration of SD card clock signal
sdc_ d0 =xx	GPIO configuration of SD card data cable 0
sdc_ d1 =xx	GPIO configuration of SD card data cable 1
sdc_d3=xx	GPIO configuration of SD card data cable 3
sdc_d2=xx	GPIO configuration of SD card data cable 2

Configuration Examples：

```
card_ctrl          = 2
card_high_speed    = 1
card_line          = 4
sdc_cmd            = port:PC6<3><1>
sdc_clk            = port:PC7<3><1>
sdc_d0             = port:PC8<3><1>
sdc_d1             = port:PC9<3><1>
sdc_d2             = port:PC10<3><1>
sdc_d3             = port:PC11<3><1>
```

2.5 [twi_para]

Configuration Items	Description
twi_port= xx	Boot TWI port
twi_scl=xx	GPIO configuration of Boot TWI clock
twi_sda=xx	GPIO configuration of Boot TWI data

Configuration Examples：

```
twi_port           = 0
twi_scl            = port: PB0<2><default><default><default>
twi_sda            = port: PB1<2><default><default><default>
```

2.6 [uart_para]

Configuration Items	Description
uart_debug_port=xx	Boot serial port controller number
uart_debug_tx=xx	GPIO configuration of Boot serial port TX
uart_debug_rx=xx	GPIO configuration of Boot serial port RX

Configuration Examples：

uart_debug_port = 0
uart_debug_tx = port: PB22<2>
uart_debug_rx = port: PB23<2>

2.7 [jtag_para]

Configuration Items	Description
jtag_enable=xx	JTAG enable
jtag_ms=xx	GPIO configuration of Test Mode Select (TMS) input
jtag_ck=xx	GPIO configuration of Test Clock Input
jtag_do=xx	GPIO configuration of Test Data Output (TDO)
jtag_di=xx	GPIO configuration of Test Data Input (TDI）

Configuration Examples：

[jtag_para]
jtag_enable = 1
jtag_ms = port: PB14<3>
jtag_ck = port: PB15<3>
jtag_do = port: PB16<3>
jtag_di = port: PB17<3>

3 SDRAM

3.1 [dram_para]

Configuration Items	Description
dram_baseaddr=xx	DRAM base address: 0x40000000 (Fixed)
dram_clk =xx	DRAM clock MHz; a multiple of 24 that ranges from 120 to 480；
dram_type =xx	DRAM type; 2 : DDR2, 3: DDR3
dram_rank_num =xx	DRAM chip select number; 1: ONE chip select; 2 : TWO chip select;
dram_chip_density =xx	Density of single-chip DRAM, Mb, such as 2048，1024,etc
dram_io_width=xx	Bit width of single-chip DRAM，usually set as 16
dram_bus_width=xx	BUS width of all DRAM: if two 16-bit DRAM are used, it should be set as 32.
dram_cas=xx	DRAM CAS，which can be 6,7,8 and 9 depending on DRAM spec and speed.
dram_zq=xx	DRAMC internal parameters, which are set by vendors and cannot be modified.
dram_odt_en=xx	ODT enable; 0： disable 1： enable This item is set to 0 for power saving consideration.
dram_size=xx	Size of all DRAM, MB;
dram_tpr0=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;
dram_tpr1=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;
dram_tpr2=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;
dram_tpr3=xx	DRAMC internal parameters, which are set

	by vendors and cannot be modified;
dram_tpr4=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;
dram_tpr5=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;
dram_emr1=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;
dram_emr2=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;
dram_emr3=xx	DRAMC internal parameters, which are set by vendors and cannot be modified;

Configuration Examples:

```
[dram_para]
dram_baseaddr          = 0x40000000
dram_clk               = 360
dram_type              = 3
dram_rank_num          = 1
dram_chip_density      = 2048
dram_io_width          = 16
dram_bus_width         = 32
dram_cas               = 6
dram_zq                = 0x7b
dram_odt_en            = 0
dram_size              = 512
dram_tpr0              = 0x30926692
dram_tpr1              = 0x1090
dram_tpr2              = 0x1a0c8
dram_tpr3              = 0x0
dram_tpr4              = 0x0
dram_tpr5              = 0x0
dram_emr1              = 0x0
dram_emr2              = 0x0
dram_emr3              = 0x0
```

4 GPU (Mali)

4.1 [mali_para]

Configuration Items	Description
mali_used=xx	MALI enable
mali_clkdiv=xx	960MHz / mali_clkdiv as the GPU input clock

5 2D Acceleration（G2D）

5.1 [g2d_para]

Configuration Items	Description
g2d_used=xx	g2d enable / disable
g2d_size=xx	g2d reserved memory size，default to be 0x1000000

6 Ethernet MAC

6.1 [emac_para]

Configuration Items	Description
emac_used =xx	Emac enable
emac_rxd3 =xx	GPIO configuration of emac RX data line
emac_rxd2 =xx	/
emac_rxd1 =xx	/
emac_rxd0 =xx	/
emac_txd3 =xx	GPIO configuration of emac data TX line
emac_txd2 =xx	/
emac_txd1 =xx	/
emac_txd0 =xx	/
emac_rxclk =xx	GPIO configuration of emac RX clock
emac_rxerr =xx	GPIO configuration of emac RX error
emac_rxdV =xx	GPIO configuration of emac RX enable
emac_mdc =xx	GPIO configuration of emac mii clock
emac_mdio =xx	GPIO configuration of emac mii data
emac_txen=xx	GPIO configuration of emac TX enable
emac_txclk=xx	GPIO configuration of emac TX clock
emac_crs =xx	GPIO configuration of emac carrier state
emac_col=xx	GPIO configuration of emac conflict test
emac_reset =xx	GPIO configuration of emac phy reset signal
dram_emr3=xx	/

Configuration Examples：

```
[emac_para]
emac_used          = 1
emac_rxd3          = port: PA00<2><default><default><default>
emac_rxd2          = port: PA01<2><default><default><default>
emac_rxd1          = port: PA02<2><default><default><default>
emac_rxd0          = port: PA03<2><default><default><default>
emac_txd3          = port: PA04<2><default><default><default>
```

emac_txd2 = port: PA05<2><default><default><default>
emac_txd1 = port: PA06<2><default><default><default>
emac_txd0 = port: PA07<2><default><default><default>
emac_rxclk = port: PA08<2><default><default><default>
emac_rxerr = port: PA09<2><default><default><default>
emac_rxdV = port: PA10<2><default><default><default>
emac_mdc = port: PA11<2><default><default><default>
emac_mdio = port: PA12<2><default><default><default>
emac_txen = port: PA13<2><default><default><default>
emac_txclk = port: PA14<2><default><default><default>
emac_crs = port: PA15<2><default><default><default>
emac_col = port: PA16<2><default><default><default>
emac_reset = port: PA17<1><default><default><default>

7 TWI

7.1 [twi0_para]

Configuration Items	Description
twi0_used =xx	TWI enable/disable; 1: enable，0: disable
twi0_scl =xx	GPIO configuration of TWI SCK
twi0_sda=xx	GPIO configuration of TWI SDA

Configuration Examples：

```
twi0_used       = 1
twi0_scl        = port: PB0<2><default><default><default>
twi0_sda        = port: PB1<2><default><default><default>
```

7.2 [twi1_para]

Configuration Items	Description
twi1_used =xx	TWI enable/disable; 1: enable，0: disable
twi1_scl =xx	GPIO configuration of TWI SCK
twi1_sda=xx	GPIO configuration of TWI SDA

Configuration Examples：

```
[tw1_para]
Twi1_used       = 1
Twi1_scl        = port: PB0<2><default><default><default>
Twi1_sda        = port: PB1<2><default><default><default>
```

7.3 [twi2_para]

Configuration Items	Description
twi2_used =xx	TWI enable/disable; 1: enable，0: disable
twi2_scl =xx	GPIO configuration of TWI SCK
twi2_sda=xx	GPIO configuration of TWI SDA

Configuration Examples：

[twi2_para]

Twi2_used = 1

Twi2_scl = port: PB0<2><default><default><default>

Twi2_sda = port: PB1<2><default><default><default>

8 UART

8.1 [uart_para0]

Configuration Items	Description
uart_used =xx	UART enable/disable; 1: enable, 0:disable
uart_port =xx	UART port number
uart0_tx =xx	GPIO configuration of UART TX
uart0_rx=xx	GPIO configuration of UART RX

Configuration Examples：

[uart_para0]

uart_used = 1

uart_port = 0

uart0_tx = port: PB22<2>

uart0_rx = port: PB23<2>

8.2 [uart_para1]

Configuration Items	Description
uart_used =xx	UART enable/disable;1: enable，0:disable
uart_port =xx	UART port number
uart_type =xx	UART type
uart1_tx =xx	GPIO configuration of UART TX
uart1_rx＝xx	GPIO configuration of UART RX
uart1_rts=xx	GPIO configuration of UART RTS
uart1_cts=xx	GPIO configuration of UART CTS
uart1_dtr=xx	GPIO configuration of UART DTR
uart1_dsr=xx	GPIO configuration of UART DSR
uart1_dcd=xx	GPIO configuration of UART DCD
uart1_ring=xx	GPIO configuration of UART RING

Configuration Examples：

[uart_para1]

```
uart_used           = 0
uart_port           = 1
uart_type           = 8
uart1_tx            = port:PA10<4><default><default><default>
uart1_rx            = port:PA11<4><default><default><default>
uart1_rts           = port:PA12<4><default><default><default>
uart1_cts           = port:PA13<4><default><default><default>
uart1_dtr           = port:PA14<4><default><default><default>
uart1_dsr           = port:PA15<4><default><default><default>
uart1_dcd           = port:PA16<4><default><default><default>
uart1_ring          = port:PA17<4><default><default><default>
```

8.3 [uart_para2]

Configuration Items	Description
uart_used =xx	UART enable/disable;1: enable，0:disable
uart_port =xx	UART port number
uart_type =xx	UART type
uart2_tx =xx	GPIO configuration of UART TX
uart2_rx＝xx	GPIO configuration of UART RX
uart2_rts=xx	GPIO configuration of UART RTS
uart2_cts=xx	GPIO configuration of UART CTS

Configuration Examples：

```
[uart_para2]
uart_used           = 0
uart_port           = 2
uart_type           = 4
uart2_tx            = port:PI18<3><default><default><default>
uart2_rx            = port:PI19<3><default><default><default>
uart2_rts           = port:PI16<3><default><default><default>
uart2_cts           = port:PI17<3><default><default><default>
```

8.4 [uart_para3]

Configuration Items	Description

uart_used =xx	UART enable/disable;1: enable，0:disable
uart_port =xx	UART port number
uart_type =xx	UART type
uart3_tx =xx	GPIO configuration of UART TX
uart3_rx＝xx	GPIO configuration of UART RX
uart3_rts=xx	GPIO configuration of UART RTS
uart3_cts=xx	GPIO configuration of UART CTS

Configuration Examples：

```
[uart_para3]
uart_used       = 0
uart_port       = 3
uart_type       = 4
uart3_tx        = port:PH00<4><default><default><default>
uart3_rx        = port:PH01<4><default><default><default>
uart3_rts       = port:PH02<4><default><default><default>
uart3_cts       = port:PH03<4><default><default><default>
```

8.5 [uart_para4]

Configuration Items	Description
uart_used =xx	UART enable/disable;1: enable，0:disable
uart_port =xx	UART port number
uart_type =xx	UART type
uart4_tx =xx	GPIO configuration of UART TX
uart4_rx＝xx	GPIO configuration of UART RX

Configuration Examples：

```
[uart_para4]
uart_used       = 0
uart_port       = 4
uart_type       = 2
uart4_tx        = port:PH04<4><default><default><default>
uart4_rx        = port:PH05<4><default><default><default>
```

8.6 [uart_para5]

Configuration Items	Description
uart_used =xx	UART enable/disable;1: enable，0:disable
uart_port =xx	UART port number
uart_type =xx	UART type
uart5_tx =xx	GPIO configuration of UART TX
uart5_rx＝xx	GPIO configuration of UART RX

Configuration Examples：

```
[uart_para5]
uart_used       = 0
uart_port       = 5
uart_type       = 2
uart5_tx        = port:PH06<4><default><default><default>
uart5_rx        = port:PH07<4><default><default><default>
```

8.7 [uart_para6]

Configuration Items	Description
uart_used =xx	UART enable/disable;1: enable，0:disable
uart_port =xx	UART port number
uart_type =xx	UART type
uart6_tx =xx	GPIO configuration of UART TX
uart6_rx＝xx	GPIO configuration of UART RX

Configuration Examples：

```
[uart_para6]
uart_used       = 0
uart_port       = 6
uart_type       = 2
uart6_tx        = port:PA12<4><default><default><default>
uart6_rx        = port:PA13<4><default><default><default>
```

8.8 [uart_para7]

Configuration Items	Description

uart_used =xx	UART enable/disable;1: enable，0:disable
uart_port =xx	UART port number
uart_type =xx	UART type
uart7_tx =xx	GPIO configuration of UART TX
uart7_rx＝xx	GPIO configuration of UART RX

Configuration Examples：

```
[uart_para7]
uart_used          = 0
uart_port          = 7
uart_type          = 2
uart7_tx           = port:PA14<4><default><default><default>
uart7_rx           = port:PA15<4><default><default><default>
```

9 SPI

9.1 [spi0_para]

Configuration Items	Description
spi_used =xx	SPI enable/disable;1: enable，0: disable
spi_cs0 =xx	GPIO configuration of SPI CS0
spi_cs1 =xx	GPIO configuration of SPI CS1
spi_sclk =xx	GPIO configuration of SPI CLK
spi_mosi＝xx	GPIO configuration of SPI MOSI
spi_miso=xx	GPIO configuration of SPI MISO

Configuration Examples：

```
[spi0_para]
spi_used                = 0
spi_cs_bitmap           = 1
;--- spi0 mapping0 ---
spi_cs0                 = port:PI10<3><default><default><default>
;spi_cs1                = port:PI14<3><default><default><default>
spi_sclk                = port:PI11<3><default><default><default>
spi_mosi                = port:PI12<3><default><default><default>
spi_miso                = port:PI13<3><default><default><default>
;--- spi0 mapping1 ---
;spi_mosi                = port:PC00<3><default><default><default>
;spi_miso                = port:PC01<3><default><default><default>
;spi_sclk                = port:PC02<3><default><default><default>
;spi_cs0                 = port:PC23<3><default><default><default>
```

9.2 [spi1_para]

Configuration Items	Description
spi_used =xx	SPI enable/disable;1: enable，0: disable
spi_cs0 =xx	GPIO configuration of SPI CS0
spi_cs1 =xx	GPIO configuration of SPI CS1

spi_sclk =xx	GPIO configuration of SPI CLK
spi_mosi＝xx	GPIO configuration of SPI MOSI
spi_miso=xx	GPIO configuration of SPI MISO

Configuration Examples：

```
[spi1_para]
spi_used                = 0
spi_cs_bitmap           = 1
;--- spi1 mapping0 ---
spi_cs0                 = port:PA00<4><default><default><default>
spi_sclk                = port:PA01<4><default><default><default>
spi_mosi                = port:PA02<4><default><default><default>
spi_miso                = port:PA03<4><default><default><default>
;spi_cs1                = port:PA04<4><default><default><default>
;--- spi1 mapping1 ---
;spi_cs1                = port:PI15<2><default><default><default>
;spi_cs0                = port:PI16<2><default><default><default>
;spi_scl                = port:PI17<2><default><default><default>
;spi_mosi               = port:PI18<2><default><default><default>
;spi_miso               = port:PI19<2><default><default><default>
```

9.3 [spi2_para]

Configuration Items	Description
spi_used =xx	SPI enable/disable;1: enable，0: disable
spi_cs0 =xx	GPIO configuration of SPI CS0
spi_cs1 =xx	GPIO configuration of SPI CS1
spi_sclk =xx	GPIO configuration of SPI CLK
spi_mosi＝xx	GPIO configuration of SPI MOSI
spi_miso=xx	GPIO configuration of SPI MISO

Configuration Examples：

```
spi_used                = 0
spi_cs_bitmap           = 1
;--- spi2 mapping0 ---
;spi_cs1                = port:PB13<2><default><default><default>
spi_cs0                 = port:PB14<2><default><default><default>
spi_sclk                = port:PB15<2><default><default><default>
```

```
spi_mosi                = port:PB16<2><default><default><default>
spi_miso                = port:PB17<2><default><default><default>
;--- spi2 mapping1 ---
spi_cs0                 = port:PC19<3><default><default><default>
spi_sclk                = port:PC20<3><default><default><default>
spi_mosi                = port:PC21<3><default><default><default>
spi_miso                = port:PC22<3><default><default><default>
```

9.4 [spi3_para]

Configuration Items	Description
spi_used =xx	SPI enable/disable;1: enable，0: disable
spi_cs0 =xx	GPIO configuration of SPI CS0
spi_cs1 =xx	GPIO configuration of SPI CS1
spi_sclk =xx	GPIO configuration of SPI CLK
spi_mosi＝xx	GPIO configuration of SPI MOSI
spi_miso=xx	GPIO configuration of SPI MISO

Configuration Examples：

```
[spi3_para]
spi_used                = 0
spi_cs_bitmap           = 1
;--- spi3 mapping0 ---
spi_cs0                 = port:PA05<3><default><default><default>
spi_sclk                = port:PI06<3><default><default><default>
spi_mosi                = port:PI07<3><default><default><default>
spi_miso                = port:PI08<3><default><default><default>
spi_cs1                 = port:PA09<3><default><default><default>
```

9.5 [spi_devices]

Configuration Items	Description
spi_dev_num=xx	This item is related to following [spi_board0], which defines the number of SPI devices connected to the main board.

9.6 [spi_board0]

Configuration Items	Description
modalias=xx	Spi modual name
max_speed_hz =xx	Maximum speed
bus_num =xx	Spi device controller number
chip_select=xx	Therotically, 0/1/2/3 CS are supported, but now only 1/2 CS are supported.
mode＝xx	GPIO configuration of SPI MOSI
full_duplex=xx	Work mode; 1: full-duplex, 0: half-duplex
manual_cs=xx	CS level select: not supported now

10 RTP

10.1[rtp_para]

Configuration Items	Description
rtp_used=xx	RTP enable/disable
rtp_screen_size =xx	Screen size: the diagonal length measured in unit of inch
rtp_regidity_level=xx	Screen rigidity: by measuring the time (unit: 10ms) hardware cannot get data after gentle press and then lift；Normally, to screens we recommend, 5 inch screen is set to 5and 7 inch screen is set to 7; Screens provided by suppliers may not meet the requirement on rigidity, so proper adjustment should be made.
rtp_press_threshold_enable=xx	RTP press threshold enable/disable; Recommend: select 0 to disable
rtp_press_threshold＝xx	It's only valid when rtp_press_threshold_ enable is 1: its value ranges from 0 to 0xFFFFFF, and the smaller, the more sensitive. Recommend: 0xF
rtp_sensitive_level=xx	Sensitive level: its value ranges from 0 to 0xF, and the larger, the more sensitive. Recommend: 0xF
rtp_exchange_x_y_flag=xx	If the X axis and Y axis need to exchange, set it to 1, otherwise set it to 0 in most cases.

11 CTR

11.1[ctp_para]

Configuration Items	Description
ctp_used=xx	CTP enable/disable; 1: enable, 0: disable
ctp_name =xx	CTP name: now support "ft5x_ts" and "Goodix-TS"
ctp_twi_id=xx	Select TWI adapter: now support 0 and 2
ctp_twi_addr =xx	TWI device address
ctp_screen_max_x＝xx	Maximum coordinate of X axis
ctp_screen_max_y=xx	Maximum coordinate of Y axis
ctp_revert_x_flag=xx	Revert X axis or not; 1: revert, 0: not revert
ctp_revert_y_flag=xx	Revert Y axis or not; 1: revert, 0: not revert
ctp_int_port=xx	GPIO configuration of CTP interrupt
ctp_wakeup=xx	GPIO configuration of CTP wakeup
ctp_io_port=xx	CTP IO signal: now share port with Interrupt

Configuration Examples：

```
ctp_used        = 1
ctp_name        = "ft5x_ts"
ctp_twi_id      = 2
ctp_twi_addr    = 0x70
ctp_screen_max_x    = 800
ctp_screen_max_y    = 480
ctp_revert_x_flag   = 0
ctp_revert_y_flag   = 0
ctp_int_port    = port: PH21<6><default>
ctp_wakeup      = port: PB13<1><default><default><1>
ctp_io_port     = port: PH21<0><default>
```

Note:

To add new TP IC to the support list, corresponding modification should be made based on the original TP IC code and A10 BSP configuration. To be more specific,

1. In sys_config, *ctp_twi_id* should be in line with the hardware;
2. In the driver code, the TWI slave device name and address should be in line with the *ctp_name* and *ctp_twi_addr*. Moreover, other subkeys in *sysconfig* should be correctly configured.

12 Touch Key

12.1[tkey_para]

Configuration Items	Description
tkey_used =xx	Touch key is used or not: 1: used; 0: not used
tkey_name =xx	Touch key name: now only support hv_keypad
tkey_twi_id=xx	To selelct twi adapter: now support 0 and 2
tkey_twi_addr=xx	To define TWI device address: related to hardware
tkey_int＝xx	GPIO configuration of touch key interrupt

Configuration Examples：

```
tkey_used       = 0
tkey_name       = "hv_keypad"
tkey_twi_id     = 2
tkey_twi_addr   = 0x62
tkey_int        = port: PI13<6><default><default><default>
```

Note:

If touch key is supported, set *tkey_used* to 1 and configure related subkey value, otherwise, set *tkey_used* to 0.

13 Motor

13.1[motor_para]

Configuration Items	Description
motor_used =xx	Motor enable/disable; 1: enable, 0: disable
motor_shake=xx	GPIO configuration of motor shake

Configuration Examples：

motor_used = 0

motor_shake = port: PB03<1><default><default><1>

Note:

motor_shake = port: PB03<1><default><default><0>

the IO output is default to be 0, so that it won't shake after initialization.

14 NAND Flash

14.1[nand_para]

Configuration Items	Description
nand_used =xx	Nand enable/disable
nand_we =xx	GPIO configuration of nand write clock
nand_ale =xx	GPIO configuration of nand address enable
nand_cle =xx	GPIO configuration of nand commend enable
nand_ce1 =xx	GPIO configuration of nand chip select1
nand_ce0 =xx	GPIO configuration of nand chip select0
nand_nre =xx	GPIO configuration of nand read clock
nand_rb0=xx	GPIO configuration of nand R/B1
nand_rb1 =xx	GPIO configuration of nand R/B0
nand_d0=xx	GPIO configuration of nand data
nand_d1=xx	/
nand_d2=xx	/
nand_d3=xx	/
nand_d4=xx	/
nand_d5=xx	/
nand_d6=xx	/
nand_d7=xx	/
nand_wp=xx	GPIO configuration of nand write protection
nand_ce2=xx	GPIO configuration of nand chip select2
nand_ce3=xx	GPIO configuration of nand chip select3
nand_ce4=xx	GPIO configuration of nand chip select4
nand_ce5=xx	GPIO configuration of nand chip select5
nand_ce6=xx	GPIO configuration of nand chip select6
nand_ce7=xx	GPIO configuration of nand chip select7
nand_spi=xx	/
nand_ndqs=xx	GPIO configuration of nand DDR clock

Configuration Examples：

```
[nand_para]
nand_used               = 1
nand_we                 = port:PC00<2><default><default><default>
nand_ale                = port:PC01<2><default><default><default>
nand_cle                = port:PC02<2><default><default><default>
nand_ce1                = port:PC03<2><default><default><default>
nand_ce0                = port:PC04<2><default><default><default>
nand_nre                = port:PC05<2><default><default><default>
nand_rb0                = port:PC06<2><default><default><default>
nand_rb1                = port:PC07<2><default><default><default>
nand_d0                 = port:PC08<2><default><default><default>
nand_d1                 = port:PC09<2><default><default><default>
nand_d2                 = port:PC10<2><default><default><default>
nand_d3                 = port:PC11<2><default><default><default>
nand_d4                 = port:PC12<2><default><default><default>
nand_d5                 = port:PC13<2><default><default><default>
nand_d6                 = port:PC14<2><default><default><default>
nand_d7                 = port:PC15<2><default><default><default>
nand_wp                 = port:PC16<2><default><default><default>
nand_ce2                = port:PC17<2><default><default><default>
nand_ce3                = port:PC18<2><default><default><default>
nand_ce4                =
nand_ce5                =
nand_ce6                =
nand_ce7                =
nand_spi                = port:PC23<3><default><default><default>
nand_ndqs               = port:PC24<2><default><default><default>
```

15 Display Initialization

15.1[disp_init]

Configuration Items	Description
disp_init_enable=xx	Display initialization enable/disable
disp_mode =xx	Display mode： 0:screen0<screen0,fb0> 1:screen1<screen1,fb0>

	2:two_diff_screen_diff_contents <screen0,screen1,fb0,fb1>; 3:two_same_screen_diff_contets <screen0,screen1,fb0> 4:two_diff_screen_same_contents <screen0,screen1,fb0>
screen0_output_type=xx	Screen 0 output type; (0:none; 1:lcd; 2:tv; 3:hdmi; 4:vga)
screen0_output_mode =xx	Screen0 output mode (used for tv/hdmi output, 0:480i 1:576i 2:480p 3:576p 4:720p50 5:720p60 6:1080i50 7:1080i60 8:1080p24 9:1080p50 10:1080p60 11:pal 14:ntsc)
screen1_output_type＝xx	Screen 1 output type; (0:none; 1:lcd; 2:tv; 3:hdmi; 4:vga)
screen1_output_mode=xx	Screen1 output mode: (used for tv/hdmi output, 0:480i 1:576i 2:480p 3:576p 4:720p50 5:720p60 6:1080i50 7:1080i60 8:1080p24 9:1080p50 10:1080p60 11:pal 14:ntsc)
fb0_framebuffer_num=xx	fb0 buffer number: how many buffers are divided to fb0, for example, if double-buffer are used, set it to 2.
fb0_format=xx	fb0 format: (4:RGB655 5:RGB565 6:RGB556 7:ARGB1555 8:RGBA5551 9:RGB888 10:ARGB8888 12:ARGB4444)
fb0_pixel_sequence=xx	fb0 pixel sequence(0:ARGB 1:BGRA 2:ABGR 3:RGBA)
fb0_scaler_mode_enable=xx	fb0 scaler mode enable/disable
fb1_framebuffer_num=xx	fb1 buffer number
fb1_format=xx	fb1 format : (4:RGB655 5:RGB565 6:RGB556 7:ARGB1555 8:RGBA5551 9:RGB888 10:ARGB8888 12:ARGB4444)
fb1_pixel_sequence=xx	fb1 pixel sequence(0:ARGB 1:BGRA 2:ABGR 3:RGBA)
fb1_scaler_mode_enable=xx	fb1scaler mode enable/disable

Configuration Examples：

```
[disp_init]
disp_init_enable        = 1
disp_mode               = 0
screen0_output_type     = 1
screen0_output_mode     = 4
screen1_output_type     = 1
screen1_output_mode     = 4
fb0_framebuffer_num     = 2
fb0_format              = 10
fb0_pixel_sequence      = 0
fb0_scaler_mode_enable  = 0
fb1_framebuffer_num     = 2
fb1_format              = 10
fb1_pixel_sequence      = 0
fb1_scaler_mode_enable  = 0
```

16 LCD Screen 0

16.1[lcd0_para]

Configuration Items	Description
lcd_used=xx	lcd0 interface enable/disable: valid when all following setup are enabled
lcd_x=xx	lcd active width
lcd_y =xx	lcd active height
lcd_dclk_freq=xx	pixel clock, in unit of MHZ
lcd_pwm_not_used=xx	PWM enable/disable; 0: use PWM;1: not use PWM(directly pull high/low PWM IO).
lcd_pwm_ch=xx	PWM channel; 0:PWM0; 1:PWM1. Generally LCD0 uses PWM0 and LCD1 uses PWM1.
lcd_pwm_freq＝xx	pwm freq, in unit of HZ
lcd_pwm_pol =xx	pwm polarity
lcd_if =xx	lcd interface(0:hv(sync+de); 1:8080; 2:ttl; 3:lvds)
lcd_hbp=xx	hsync back porch
lcd_ht=xx	hsync total cycle
lcd_vbp=xx	vsync back porch
lcd_vt=xx	vysnc total cycle *2
lcd_hv_if =xx	hv interface(0:hv parallel 1:hv serial)
lcd_hv_smode=xx	serial i/f mode(0:RGB888 1:CCIR656)
lcd_hv_s888_if=xx	serial RGB format
lcd_hv_syuv_if=xx	serial YUV format
lcd_hv_vspw=xx	vysnc plus width
lcd_hv_hspw=xx	hsync plus width
lcd_lvds_ch=xx	0:single channel; 1:dual channel
lcd_lvds_mode=xx	0:NS mode; 1:JEIDA mode
lcd_lvds_bitwidth=xx	0:24bit; 1:18bit
lcd_lvds_io_cross=xx	0:normal; 1:pn cross

lcd_cpu_if=xx	cpu i/f mode(0:18bit; 1:16bit mode0; 2:16bit mode1; 3:16bit mode2; 4:16bit mode3; 5:9bit; 6:8bit 256K; 7:8bit 65K)
lcd_frm=xx	0:disable; 1:enable rgb666 dither; 2:enable rgb656 dither
lcd_io_cfg0=xx	lcd io inv
lcd_gamma_correction_en=xx	Gamma correction enable/disable: if to enable, write the 256 gama parameters.
lcd_gamma_tbl_0=xx	The first gamma parameter, (red<<16)||(gree<<8)||blue.
lcd_gamma_tbl_1=xx	The second gamma parameter, (red<<16)||(gree<<8)||blue.
lcd_gamma_tbl_255=xx	The 256th gamma parameter, (red<<16)||(gree<<8)||blue.
lcd_bl_en_used=xx	LCD_BL_EN is used or not
lcd_bl_en=xx	GPIO configuration of LCD_BL_EN
lcd_power_used=xx	LCD_VCC control pin is used or not
lcd_power=xx	GPIO configuration of LCD_VCC control
lcd_pwm_used=xx	lcd PWM pin is used or not (always used, and no modification is needed.)
lcd_pwm=xx	GPIO configuration of lcd PWM (PWM0 uses PB02 and PWM1 uses PI03. No modification is needed.)
lcd_gpio_0=xx	SCL GPIO configuration of 2/3-wire I/F
lcd_gpio_1=xx	SDA GPIO configuration 2/3-wire I/F
lcd_gpio_2=xx	SCEN GPIO configuration of 2/3-wire I/F
lcd_gpio_3=xx	GPIO configuration of LCD RESET
lcdd0=xx	GPIO configuration of lcd data
lcdd1=xx	GPIO configuration of lcd data
lcdd2=xx	GPIO configuration of lcd data
lcdd3=xx	GPIO configuration of lcd data
lcdd4=xx	GPIO configuration of lcd data
lcdd5=xx	GPIO configuration of lcd data
lcdd6=xx	GPIO configuration of lcd data
lcdd7=xx	GPIO configuration of lcd data
lcdd8=xx	GPIO configuration of lcd data

lcdd9=xx	GPIO configuration of lcd data
lcdd10=xx	GPIO configuration of lcd data
lcdd11=xx	GPIO configuration of lcd data
lcdd12=xx	GPIO configuration of lcd data
lcdd13=xx	GPIO configuration of lcd data
lcdd14=xx	GPIO configuration of lcd data
lcdd15=xx	GPIO configuration of lcd data
lcdd16=xx	GPIO configuration of lcd data
lcdd17=xx	GPIO configuration of lcd data
lcdd18=xx	GPIO configuration of lcd data
lcdd19=xx	GPIO configuration of lcd data
lcdd20=xx	GPIO configuration of lcd data
lcdd21=xx	GPIO configuration of lcd data
lcdd22=xx	GPIO configuration of lcd data
lcdd23=xx	GPIO configuration of lcd data
lcdclk=xx	GPIO configuration of lcd signal（related to the actual electic circuit）
lcdde=xx	GPIO configuration of lcd signal（related to the actual electic circuit）
lcdhsync=xx	GPIO configuration of lcd signal（related to the actual electic circuit）
lcdvsync=xx	GPIO configuration of lcd signal（related to the actual electic circuit）

Configuration Examples：

```
[lcd0_para]
lcd_used            = 1
lcd_x               = 800
lcd_y               = 480
lcd_dclk_freq       = 33
lcd_pwm_freq        = 1000
lcd_pwm_pol         = 0
lcd_srgb            = 0x00202020
lcd_swap            = 0
lcd_if              = 0
lcd_hbp             = 215
lcd_ht              = 1055
lcd_vbp             = 34
lcd_vt              = 1050
```

lcd_hv_if = 0
lcd_hv_smode = 0
lcd_hv_s888_if = 0
lcd_hv_syuv_if = 0
lcd_hv_vspw = 0
lcd_hv_hspw = 0
lcd_hv_lde_used = 0
lcd_hv_lde_iovalue = 0
lcd_ttl_stvh = 0
lcd_ttl_stvdl = 0
lcd_ttl_stvdp = 0
lcd_ttl_ckvt = 0
lcd_ttl_ckvh = 0
lcd_ttl_ckvd = 0
lcd_ttl_oevt = 0
lcd_ttl_oevh = 0
lcd_ttl_oevd = 0
lcd_ttl_sthh = 0
lcd_ttl_sthd = 0
lcd_ttl_oehh = 0
lcd_ttl_oehd = 0
lcd_ttl_revd = 0
lcd_ttl_datarate = 0
lcd_ttl_revsel = 0
lcd_ttl_datainv_en = 0
lcd_ttl_datainv_sel = 0
lcd_lvds_ch = 0
lcd_lvds_mode = 0
lcd_lvds_bitwidth = 0
lcd_lvds_io_cross = 0
lcd_cpu_if = 0
lcd_cpu_da = 0
lcd_frm = 0
lcd_io_cfg0 = 0x10000000
lcd_io_cfg1 = 0
lcd_io_strength = 0
lcd_bl_en_used = 1
lcd_bl_en = port:PH07<1><0><default><1>
lcd_power_used = 1
lcd_power = port:PH08<1><0><default><1>

lcd_pwm_used = 1
lcd_pwm = port:PB02<2><default><default><default>
lcd_gpio_0 =
lcd_gpio_1 =
lcd_gpio_2 =
lcd_gpio_3 =
lcdd0 = port:PD00<2><default><default><default>
lcdd1 = port:PD01<2><default><default><default>
lcdd2 = port:PD02<2><default><default><default>
lcdd3 = port:PD03<2><default><default><default>
lcdd4 = port:PD04<2><default><default><default>
lcdd5 = port:PD05<2><default><default><default>
lcdd6 = port:PD06<2><default><default><default>
lcdd7 = port:PD07<2><default><default><default>
lcdd8 = port:PD08<2><default><default><default>
lcdd9 = port:PD09<2><default><default><default>
lcdd10 = port:PD10<2><default><default><default>
lcdd11 = port:PD11<2><default><default><default>
lcdd12 = port:PD12<2><default><default><default>
lcdd13 = port:PD13<2><default><default><default>
lcdd14 = port:PD14<2><default><default><default>
lcdd15 = port:PD15<2><default><default><default>
lcdd16 = port:PD16<2><default><default><default>
lcdd17 = port:PD17<2><default><default><default>
lcdd18 = port:PD18<2><default><default><default>
lcdd19 = port:PD19<2><default><default><default>
lcdd20 = port:PD20<2><default><default><default>
lcdd21 = port:PD21<2><default><default><default>
lcdd22 = port:PD22<2><default><default><default>
lcdd23 = port:PD23<2><default><default><default>
lcdclk = port:PD24<2><default><default><default>
lcdde = port:PD25<2><default><default><default>
lcdhsync = port:PD26<2><default><default><default>
lcdvsync = port:PD27<2><default><default><default>

17 LCD Screen 1

17.1[lcd1_para]

Configuration Items	Description
lcd_used=xx	Lcd1 interface enable/disable: valid when all following setup are enabled
lcd_x=xx	lcd active width
lcd_y =xx	lcd active height
lcd_dclk_freq=xx	pixel clock, in unit of MHz
lcd_pwm_not_used=xx	PWM enable/disable; 0: use PWM; 1: not use PWM (directly pull high/low PWM IO).
lcd_pwm_ch=xx	PWM channel; 0:PWM0; 1:PWM1. Generally LCD0 uses PWM0 and LCD1 uses PWM1.
lcd_pwm_freq＝xx	pwm freq, in unit of Hz
lcd_pwm_pol =xx	pwm polarity
lcd_if =xx	lcd interface(0:hv(sync+de); 1:8080; 2:ttl; 3:lvds)
lcd_hbp=xx	hsync back porch
lcd_ht=xx	hsync total cycle
lcd_vbp=xx	vsync back porch
lcd_vt=xx	vysnc total cycle *2
lcd_hv_if =xx	hv interface(0:hv parallel 1:hv serial)
lcd_hv_smode=xx	serial i/f mode(0:RGB888 1:CCIR656)
lcd_hv_s888_if=xx	serial RGB format
lcd_hv_syuv_if=xx	serial YUV format
lcd_hv_vspw=xx	vysnc plus width
lcd_hv_hspw=xx	hsync plus width
lcd_lvds_ch=xx	0:single channel; 1:dual channel
lcd_lvds_mode=xx	0:NS mode; 1:JEIDA mode
lcd_lvds_bitwidth=xx	0:24bit; 1:18bit
lcd_lvds_io_cross=xx	0:normal; 1:pn cross
lcd_cpu_if=xx	cpu i/f mode(0:18bit; 1:16bit mode0; 2:16bit mode1; 3:16bit mode2;

	4:16bit mode3; 5:9bit; 6:8bit 256K; 7:8bit 65K)
lcd_frm=xx	0:disable; 1:enable rgb666 dither; 2:enable rgb656 dither
lcd_io_cfg0=xx	lcd io inv
lcd_gamma_correction_en=xx	Gamma correction enable/disable: if enable, write the 256 gama parameters.
lcd_gamma_tbl_0=xx	The first gamma parameter, (red<<16)||(gree<<8)||blue.
lcd_gamma_tbl_1=xx	The second gamma parameter, (red<<16)||(gree<<8)||blue.
lcd_gamma_tbl_255=xx	The 256th gamma parameter, (red<<16)||(gree<<8)||blue.
lcd_bl_en_used=xx	LCD_BL_EN is used or not
lcd_bl_en=xx	GPIO configuration of LCD_BL_EN
lcd_power_used=xx	LCD_VCC control pin is used or not
lcd_power=xx	GPIO configuration of LCD_VCC control
lcd_pwm_used=xx	lcd PWM pin is used or not (always used, and no modification is needed.)
lcd_pwm=xx	GPIO configuration of lcd PWM (PWM0 uses PB02 and PWM1 uses PI03. No modification is needed.)
lcd_gpio_0=xx	SCL GPIO configuration of 2/3-wire I/F
lcd_gpio_1=xx	SDA GPIO configuration 2/3-wire I/F
lcd_gpio_2=xx	SCEN GPIO configuration of 2/3-wire I/F
lcd_gpio_3=xx	GPIO configuration of LCD RESET
lcdd0=xx	GPIO configuration of lcd data
lcdd1=xx	GPIO configuration of lcd data
lcdd2=xx	GPIO configuration of lcd data
lcdd3=xx	GPIO configuration of lcd data
lcdd4=xx	GPIO configuration of lcd data
lcdd5=xx	GPIO configuration of lcd data
lcdd6=xx	GPIO configuration of lcd data
lcdd7=xx	GPIO configuration of lcd data
lcdd8=xx	GPIO configuration of lcd data
lcdd9=xx	GPIO configuration of lcd data
lcdd10=xx	GPIO configuration of lcd data

lcdd11=xx	GPIO configuration of lcd data
lcdd12=xx	GPIO configuration of lcd data
lcdd13=xx	GPIO configuration of lcd data
lcdd14=xx	GPIO configuration of lcd data
lcdd15=xx	GPIO configuration of lcd data
lcdd16=xx	GPIO configuration of lcd data
lcdd17=xx	GPIO configuration of lcd data
lcdd18=xx	GPIO configuration of lcd data
lcdd19=xx	GPIO configuration of lcd data
lcdd20=xx	GPIO configuration of lcd data
lcdd21=xx	GPIO configuration of lcd data
lcdd22=xx	GPIO configuration of lcd data
lcdd23=xx	GPIO configuration of lcd data
lcdclk=xx	GPIO configuration of lcd signal（related to the actual electic circuit）
lcdde=xx	GPIO configuration of lcd signal（related to the actual electic circuit）
lcdhsync=xx	GPIO configuration of lcd signal（related to the actual electic circuit）
lcdvsync=xx	GPIO configuration of lcd signal（related to the actual electic circuit）

Configuration Examples：

```
[lcd1_para]
lcd_used            =0
lcd_x               = 800
lcd_y               = 480
lcd_dclk_freq       = 33
lcd_pwm_freq        = 1000
lcd_pwm_pol         = 0
lcd_srgb            = 0x00202020
lcd_swap            = 0
lcd_if              = 0
lcd_hbp             = 215
lcd_ht              = 1055
lcd_vbp             = 34
lcd_vt              = 1050
lcd_hv_if           = 0
lcd_hv_smode        = 0
lcd_hv_s888_if      = 0
```

```
lcd_hv_syuv_if          = 0
lcd_hv_vspw             = 0
lcd_hv_hspw             = 0
lcd_hv_lde_used         = 0
lcd_hv_lde_iovalue      = 0
lcd_ttl_stvh            = 0
lcd_ttl_stvdl           = 0
lcd_ttl_stvdp           = 0
lcd_ttl_ckvt            = 0
lcd_ttl_ckvh            = 0
lcd_ttl_ckvd            = 0
lcd_ttl_oevt            = 0
lcd_ttl_oevh            = 0
lcd_ttl_oevd            = 0
lcd_ttl_sthh            = 0
lcd_ttl_sthd            = 0
lcd_ttl_oehh            = 0
lcd_ttl_oehd            = 0
lcd_ttl_revd            = 0
lcd_ttl_datarate        = 0
lcd_ttl_revsel          = 0
lcd_ttl_datainv_en      = 0
lcd_ttl_datainv_sel     = 0
lcd_lvds_ch             = 0
lcd_lvds_mode           = 0
lcd_lvds_bitwidth       = 0
lcd_lvds_io_cross       = 0
lcd_cpu_if              = 0
lcd_cpu_da              = 0
lcd_frm                 = 0
lcd_io_cfg0             = 0x10000000
lcd_io_cfg1             = 0
lcd_io_strength         = 0
lcd_bl_en_used          = 1
lcd_bl_en               = port:PH07<1><0><default><1>
lcd_power_used          = 1
lcd_power               = port:PH08<1><0><default><1>
lcd_pwm_used            = 1
lcd_pwm                 = port:PB02<2><default><default><default>
lcd_gpio_0              =
```

lcd_gpio_1 =
lcd_gpio_2 =
lcd_gpio_3 =
lcdd0 = port:PD00<2><default><default><default>
lcdd1 = port:PD01<2><default><default><default>
lcdd2 = port:PD02<2><default><default><default>
lcdd3 = port:PD03<2><default><default><default>
lcdd4 = port:PD04<2><default><default><default>
lcdd5 = port:PD05<2><default><default><default>
lcdd6 = port:PD06<2><default><default><default>
lcdd7 = port:PD07<2><default><default><default>
lcdd8 = port:PD08<2><default><default><default>
lcdd9 = port:PD09<2><default><default><default>
lcdd10 = port:PD10<2><default><default><default>
lcdd11 = port:PD11<2><default><default><default>
lcdd12 = port:PD12<2><default><default><default>
lcdd13 = port:PD13<2><default><default><default>
lcdd14 = port:PD14<2><default><default><default>
lcdd15 = port:PD15<2><default><default><default>
lcdd16 = port:PD16<2><default><default><default>
lcdd17 = port:PD17<2><default><default><default>
lcdd18 = port:PD18<2><default><default><default>
lcdd19 = port:PD19<2><default><default><default>
lcdd20 = port:PD20<2><default><default><default>
lcdd21 = port:PD21<2><default><default><default>
lcdd22 = port:PD22<2><default><default><default>
lcdd23 = port:PD23<2><default><default><default>
lcdclk = port:PD24<2><default><default><default>
lcdde = port:PD25<2><default><default><default>
lcdhsync = port:PD26<2><default><default><default>
lcdvsync = port:PD27<2><default><default><default>

18 CSI

18.1[csi0_para]

Configuration Items	Description
csi_used =xx	csi0 enable/disable
csi_twi_id =xx	csi0 TWI
csi_mname=xx	csi0 module name，which should be align with the driver, and reference can be made to *readme* in driver directory. Options: ov7670，gc0308，gt2005，hi704, sp0338, mt9m112
csi_twi_addr=xx	csi0 IIC address: reference can be made to Readme in driver directory
csi_if	CSI interface timing: 0:8bit data line，with Hsync,Vsync 1:16bit data line，with Hsync,Vsync 2:24bit data line，with Hsync,Vsync 3:8bit data cable,BT656 embedded sync signal, single-channel 4:8bit data cable, BT656 embedded sync signal, dual-channel 5:8bit data cable, BT656 embedded sync signal, quad-channel
csi_mode	csi receive buffer mode: 0: one csi for one buffer 1：two csi for one buffer
csi_dev_qty	Device quantity connected to csi. Options:1, 2
csi_vflip	Whether images received by csi are upside down or not by default: 0：normal 1：upside down
csi_hflip	Whether images received by csi is left-right reversed or not:

	0：normal 1：left-right reversed
csi_stby_mode	modes when csi enters Standby： 0：not disable the power, only pull standby io 1：disable the power, and pull standby io
csi_iovdd	csi io power source： “axp20_pll”: power comes from pmu ldo3 “axp20_hdmi”: power comes from pmu ldo4 “”: power comes from non-pmu ldo Usually, it is configured as “” on EVB, and *axp20_pll* in many solutions.
csi_avdd	csi avdd power source： “axp20_pll”: power comes from pmu ldo3 “axp20_hdmi”: power comes from pmu ldo4 “”: power comes from non-pmu ldo Usually, it is configured as “” on EVB, and *axp20_pll* in many solutions.
csi_dvdd	csi dvdd power source： “axp20_pll”: power comes from pmu ldo3 “axp20_hdmi”: power comes from pmu ldo4 “”: power comes from non-pmu ldo Usually, it is configured as “” on EVB and in many solutions.
csi_pck＝xx	GPIO configuration of Clock from modules to csi0
csi_ck=xx	GPIO configuration of Clock from csi0 to modules
csi_hsync=xx	GPIO configuration of Hsync signal from modules to csi0
csi_vsync=xx	GPIO configuration of Vsync signal from modules to csi0
csi_d0=xx …	GPIO configuration of 8/16-bit data from modules to csi0

csi_d15=xx	
csi_reset=xx	Reset GPIO configuration of control module: Reset is valid by default (high / low valid depends on modules)
csi_power_en=xx	Power GPIO configuration of control module: if csi_stby_mode is set to 0，csi_power_en is set to 1 by default；if csi_stby_mode is set to 1，csi_power_en is set to 0 by default.
csi_stby=xx	Standby GPIO configuration of control module: standby is valid by default (high /low valid depends on modules)
csi_reset_b=xx	If two modules are connected to one CSI in the mean time, extra io control is needed; Reset GPIO configuration of control module: Reset is valid by default (high / low valid depends on modules)
csi_power_en_b=xx	If two modules are connected to one CSI in the mean time, extra io control is needed; Power GPIO configuration of control module: if csi_stby_mode is set to 0，csi_power_en is set to 1 by default；if csi_stby_mode is set to 1，csi_power_en is set to 0 by default.
csi_stby_b=xx	If two modules are connected to one CSI in the mean time, extra io control is needed; Standby GPIO configuration of control module: standby is valid by default (high /low valid depends on modules)

Configuration Examples：

```
[csi0_para]
csi_used        = 1
csi_twi_id      = 1
csi_mname       = "gt2005"
csi_twi_addr    = 0x78
csi_if          = 0
csi_mode        = 0
csi_dev_qty     = 1
```

```
csi_vflip                = 0
csi_hflip                = 0
csi_stby_mode            = 1
csi_iovdd                = "axp20_pll"
csi_avdd                 = "axp20_pll"
csi_dvdd                 = ""
csi_pck                  = port:PE00<3><default><default><default>
csi_ck                   = port:PE01<3><default><default><default>
csi_hsync                = port:PE02<3><default><default><default>
csi_vsync                = port:PE03<3><default><default><default>
csi_d0                   = port:PE04<3><default><default><default>
csi_d1                   = port:PE05<3><default><default><default>
csi_d2                   = port:PE06<3><default><default><default>
csi_d3                   = port:PE07<3><default><default><default>
csi_d4                   = port:PE08<3><default><default><default>
csi_d5                   = port:PE09<3><default><default><default>
csi_d6                   = port:PE10<3><default><default><default>
csi_d7                   = port:PE11<3><default><default><default>
csi_d8                   =
csi_d9                   =
csi_d10                  =
csi_d11                  =
csi_d12                  =
csi_d13                  =
csi_d14                  =
csi_d15                  =
csi_reset                = port:PH13<1><default><default><0>
csi_power_en             = port:PH16<1><default><default><0>
csi_stby                 = port:PH18<1><default><default><0>
csi_reset_b              =
csi_power_en_b           =
csi_stby_b               =
```

18.2[csi1_para]

Configuration Items	Description
csi_used =xx	csi1 enable/disable
csi_twi_id =xx	csi1 TWI

csi_mname=xx	Csi1 module name，which should be align with the driver, and reference can be made to *readme* in driver directory. Options: ov7670， gc0308，gt2005，hi704, sp0338, mt9m112
csi_twi_addr=xx	CSI1 TWI address: reference can be made to Readme in driver directory
csi_if	Interface timing of the modules being used： 0:8bit data cable，with Hsync,Vsync 1:16bit data cable，with Hsync,Vsync 2:24bit data cable，with Hsync,Vsync 3:8bit data cable,BT656 embedded sync signal, single-channel 4:8bit data cable, BT656 embedded sync signal, dual-channel 5:8bit data cable, BT656 embedded sync signal, quad-channel
csi_mode	csi receive buffer mode: 0: one csi for one buffer 1：two csi for one buffer
csi_dev_qty	Device quantity connected to csi. Options:1, 2
csi_vflip	Whether images received by csi are upside down or not by default: 0：normal 1：upside down
csi_hflip	Whether images received by csi is left-right reversed or not: 0：normal 1：left-right reversed
csi_stby_mode	modes when csi enters Standby： 0：not disable the power, only pull standby io 1：disable the power, and pull standby io
csi_iovdd	csi io power source： “axp20_pll”: power comes from pmu ldo3 “axp20_hdmi”: power comes from pmu ldo4 “”: power comes from non-pmu ldo Usually, it is configured as “” on EVB, and *axp20_hdmi* in many solutions.
csi_avdd	csi avdd power source： “axp20_pll”: power comes from pmu ldo3 “axp20_hdmi”: power comes from pmu ldo4

	“”: power comes from non-pmu ldo Usually, it is configured as “” on EVB, and *axp20_hdmi* in many solutions.
csi_dvdd	csi dvdd power source： “axp20_pll”: power comes from pmu ldo3 “axp20_hdmi”: power comes from pmu ldo4 “”: power comes from non-pmu ldo Usually, it is configured as “” on EVB and in many solutions.
csi_pck＝xx	GPIO configuration of Clock from modules to csi1
csi_ck=xx	GPIO configuration of Clock from csi1 to modules
csi_hsync=xx	GPIO configuration of Hsync signal from modules to csi1
csi_vsync=xx	GPIO configuration of Vsync signal from modules to csi1
csi_d0=xx … csi_d23=xx	GPIO configuration of 8/16/24-bit data from modules to csi0
csi_reset=xx	Reset GPIO configuration of control module: Reset is valid by default (high / low valid depends on modules)
csi_power_en=xx	Power GPIO configuration of control module: if csi_stby_mode is set to 0，csi_power_en is set to 1 by default；if csi_stby_mode is set to 1，csi_power_en is set to 0 by default.
csi_stby=xx	Standby GPIO configuration of control module: standby is valid by default (high /low valid depends on modules)
csi_reset_b=xx	If two modules are connected to one CSI in the mean time, extra io control is needed; Reset GPIO configuration of control module: Reset is valid by default (high / low valid depends on modules)
csi_power_en_b=xx	If two modules are connected to one CSI in the mean time, extra io control is needed; Power GPIO configuration of control module: if csi_stby_mode is set to 0，csi_power_en is set to 1 by default；if csi_stby_mode is set to 1，csi_power_en is set to 0 by default.
csi_stby_b=xx	If two modules are connected to one CSI in the mean time, extra io control is needed; Standby

	GPIO configuration of control module: standby is valid by default (high /low valid depends on modules)

Configuration Examples：

```
[csi1_para]
csi_used            = 1
csi_mname           = "gc0308"
csi_twi_id          = 1
csi_twi_addr        = 0x42
csi_if              = 0
csi_mode            = 0
csi_dev_qty         = 1
csi_vflip           = 0
csi_hflip           = 0
csi_stby_mode       = 1
csi_iovdd           = "axp20_hdmi"
csi_avdd            = "axp20_hdmi"
csi_dvdd            = ""
csi_pck             = port:PG00<3><default><default><default>
csi_ck              = port:PG01<3><default><default><default>
csi_hsync           = port:PG02<3><default><default><default>
csi_vsync           = port:PG03<3><default><default><default>
csi_d0              = port:PG04<3><default><default><default>
csi_d1              = port:PG05<3><default><default><default>
csi_d2              = port:PG06<3><default><default><default>
csi_d3              = port:PG07<3><default><default><default>
csi_d4              = port:PG08<3><default><default><default>
csi_d5              = port:PG09<3><default><default><default>
csi_d6              = port:PG10<3><default><default><default>
csi_d7              = port:PG11<3><default><default><default>
csi_d8              =
csi_d9              =
csi_d10             =
csi_d11             =
csi_d12             =
csi_d13             =
csi_d14             =
csi_d15             =
csi_d16             =
```

```
csi_d17                 =
csi_d18                 =
csi_d19                 =
csi_d20                 =
csi_d21                 =
csi_d22                 =
csi_d23                 =
csi_reset               = port:PH14<1><default><default><0>
csi_power_en            = port:PH17<1><default><default><0>
csi_stby                = port:PH19<1><default><default><1>
csi_reset_b             =
csi_power_en_b          =
csi_stby_b              =
```

19 TV Out/In

19.1[tvout_para]

Configuration Items	Description
tvout_used =xx	
tvout_channel_num=xx	
tv_en =xx	

19.2[tvin_para]

Configuration Items	Description
tvin_used =xx	
tvin_channel_num=xx	

20 SATA

20.1[sata_para]

Configuration Items	Description
sata_used=xx	
sata_power_en=xx	

21 SD / MMC

21.1[mmc0_para]

Configuration Items	Description
sdc_used=xx	SDC enable/disable; 1: enable，0: disable
sdc_detmode=xx	Detect mode:1--gpio，2--data3 detect，3--no detect, and the card is always there(no plug)，4 - manual mode(from proc file system node)
bus_width=xx	Bit width：1--1bit，4--4bit
sdc_d1=xx	GPIO configuration of SDC DATA1
sdc_d0＝xx	GPIO configuration of SDC DATA0
sdc_clk=xx	GPIO configuration of SDC CLK
sdc_cmd=xx	GPIO configuration of SDC CMD
sdc_d3=xx	GPIO configuration of SDC DATA3
sdc_d2=xx	GPIO configuration of SDC DATA2
sdc_det=xx	GPIO configuration of SDC DET
sdc_use_wp=xx	SDC write protection：1--enable，0--disable
sdc_wp=xx	GPIO configuration of SDC WP

Configuration Examples：

```
[mmc0_para]
sdc_used            = 1
sdc_detmode         = 1
bus_width           = 4
sdc_d1              = port:PF0<2><1><default><default>
sdc_d0              = port:PF1<2><1><default><default>
sdc_clk             = port:PF2<2><1><default><default>
sdc_cmd             = port:PF3<2><1><default><default>
sdc_d3              = port:PF4<2><1><default><default>
sdc_d2              = port:PF5<2><1><default><default>
sdc_det             = port:PH1<0><1><default><default>
sdc_use_wp          = 0
sdc_wp              =
```

21.2[mmc1_para]

Configuration Items	Description
sdc_used=xx	SDC enable/disable; 1: enable，0: disable
sdc_detmode=xx	Detect mode:1--gpio，2--data3 detect，3--no detect, and the card is always there(no plug)，4 - manual mode(from proc file system node)
bus_width=xx	Bit width：1--1bit，4--4bit
sdc_d1=xx	GPIO configuration of SDC DATA1
sdc_d0＝xx	GPIO configuration of SDC DATA0
sdc_clk=xx	GPIO configuration of SDC CLK
sdc_cmd=xx	GPIO configuration of SDC CMD
sdc_d3=xx	GPIO configuration of SDC DATA3
sdc_d2=xx	GPIO configuration of SDC DATA2
sdc_det=xx	GPIO configuration of SDC DET
sdc_use_wp=xx	SDC write protection： 1--enable，0--disable
sdc_wp=xx	GPIO configuration of SDC WP

Configuration Examples：

```
[mmc1_para]
sdc_used        = 1
sdc_detmode     = 1
bus_width       = 4
sdc_cmd         = port:PH22<5><1><default><default>
sdc_clk         = port:PH23<5><1><default><default>
sdc_d0          = port:PH24<5><1><default><default>
sdc_d1          = port:PH25<5><1><default><default>
sdc_d2          = port:PH26<5><1><default><default>
sdc_d3          = port:PH27<5><1><default><default>
sdc_det         = port:PH2<0><1><default><default>
sdc_use_wp      = 0
sdc_wp          =
```

21.3[mmc2_para]

Configuration Items	Description
sdc_used=xx	SDC enable/disable; 1: enable，0: disable
sdc_detmode=xx	Detect mode:1--gpio，2--data3 detect，3--no detect, and the card is always there(no plug)，4 - manual mode(from proc file system node)
bus_width=xx	Bit width：1--1bit，4--4bit
sdc_d1=xx	GPIO configuration of SDC DATA1
sdc_d0＝xx	GPIO configuration of SDC DATA0
sdc_clk=xx	GPIO configuration of SDC CLK
sdc_cmd=xx	GPIO configuration of SDC CMD
sdc_d3=xx	GPIO configuration of SDC DATA3
sdc_d2=xx	GPIO configuration of SDC DATA2
sdc_det=xx	GPIO configuration of SDC DET
sdc_use_wp=xx	SDC write protection： 1--enable，0--disable
sdc_wp=xx	GPIO configuration of SDC WP

Configuration Examples：

```
[mmc2_para]
sdc_used        = 1
sdc_detmode     = 1
bus_width       = 4
sdc_cmd         = port:PH22<5><1><default><default>
sdc_clk         = port:PH23<5><1><default><default>
sdc_d0          = port:PH24<5><1><default><default>
sdc_d1          = port:PH25<5><1><default><default>
sdc_d2          = port:PH26<5><1><default><default>
sdc_d3          = port:PH27<5><1><default><default>
sdc_det         = port:PH2<0><1><default><default>
sdc_use_wp      = 0
sdc_wp          =
```

21.4[mmc3_para]

Configuration Items	Description
sdc_used=xx	SDC enable/disable; 1: enable，0:disable
sdc_detmode=xx	Detect mode:1--gpio，2--data3 detect，3--no detect, and the card is always there(no plug)，4 - manual mode(from proc file system node)
bus_width=xx	Bit width：1-1bit，4-4bit
sdc_d1=xx	GPIO configuration of SDC DATA1
sdc_d0＝xx	GPIO configuration of SDC DATA0
sdc_clk=xx	GPIO configuration of SDC CLK
sdc_cmd=xx	GPIO configuration of SDC CMD
sdc_d3=xx	GPIO configuration of SDC DATA3
sdc_d2=xx	GPIO configuration of SDC DATA2
sdc_det=xx	GPIO configuration of SDC DET
sdc_use_wp=xx	SDC write protection： 1--enable，0--disable
sdc_wp=xx	GPIO configuration of SDC WP

Configuration Examples：

```
[mmc3_para]
sdc_used        = 1
sdc_detmode     = 1
bus_width       = 4
sdc_cmd         = port:PH22<5><1><default><default>
sdc_clk         = port:PH23<5><1><default><default>
sdc_d0          = port:PH24<5><1><default><default>
sdc_d1          = port:PH25<5><1><default><default>
sdc_d2          = port:PH26<5><1><default><default>
sdc_d3          = port:PH27<5><1><default><default>
sdc_det         = port:PH2<0><1><default><default>
sdc_use_wp      = 0
sdc_wp          =
```

22 Memory Stick

22.1[ms_para]

Configuration Items	Description
ms_used =xx	MS enable/disable：1--enable，0--disable
ms_bs=xx	GPIO configuration of MS BS
ms_clk=xx	GPIO configuration of MS CLK
ms_d0=xx	GPIO configuration of MS DATA0
ms_d1＝xx	GPIO configuration of MS DATA1
ms_d2=xx	GPIO configuration of MS DATA2
ms_d3=xx	GPIO configuration of MS DATA3
ms_det=xx	GPIO configuration of MS DET

Configuration Examples：

```
[ms_para]
ms_used         = 0
ms_bs           = port:PH06<5><default><default><default>
ms_clk          = port:PH07<5><default><default><default>
ms_d0           = port:PH08<5><default><default><default>
ms_d1           = port:PH09<5><default><default><default>
ms_d2           = port:PH10<5><default><default><default>
ms_d3           = port:PH11<5><default><default><default>
ms_det          =
```

23 SIM Card

23.1[smc_para]

Configuration Items	Description
smc_used =xx	
smc_rst=xx	
smc_vppen=xx	
smc_vppp=xx	
smc_det＝xx	
smc_vccen=xx	
smc_sck=xx	
smc_sda=xx	

24 PS/2Mouse

24.1[ps2_0_para]

Configuration Items	Description
ps2_used=xx	PS/2enable/disable：1--enable，0--disable
ps2_scl =xx	GPIO configuration of PS/2 SCK
ps2_sda=xx	GPIO configuration of PS/2 SDA

Configuration Examples：

```
[ps2_0_para]
ps2_used                = 0
ps2_scl                 = port:PI20<2><1><default><default>
ps2_sda                 = port:PI21<2><1><default><default>
```

24.2[ps2_1_para]

Configuration Items	Description
ps2_used=xx	PS/2 enable/disable：1--enable，0--disable
ps2_scl =xx	GPIO configuration of PS/2 SCK
ps2_sda=xx	GPIO configuration of PS/2 SDA

Configuration Examples：

```
[ps2_1_para]
ps2_used        = 0
ps2_scl         = port:PI20<2><1><default><default>
ps2_sda         = port:PI21<2><1><default><default>
```

25 CAN

25.1[can_para]

Configuration Items	Description
can_used=xx	CAN enable/disable：1--enable，0--disable
can_tx=xx	GPIO configuration of CANT TX
can_rx=xx	GPIO configuration of CAN RX

Configuration Examples：

```
[can_para]
can_used        = 0
can_tx          = port:PA16<3><default><default><default>
can_rx          = port:PA17<3><default><default><default>
```

26 Key Matrix

26.1[keypad_para]

Configuration Items	Description
kp_used=xx	KEYPAD enable/disable; 1: enable，0: disable
kp_in_size=xx	KEYPAD rank width
kp_out_size=xx	KEYPAD row width
kp_in0=xx	GPIO configuration of KEYPAD IN0
kp_in1＝xx	GPIO configuration of KEYPAD IN1
kp_in2=xx	GPIO configuration of KEYPAD IN2
kp_in3=xx	GPIO configuration of KEYPAD IN3
kp_in4=xx	GPIO configuration of KEYPAD IN4
kp_in5=xx	GPIO configuration of KEYPAD IN5
kp_in6=xx	GPIO configuration of KEYPAD IN6
kp_in7=xx	GPIO configuration of KEYPAD IN7
kp_out0=xx	GPIO configuration of KEYPAD OUT0
kp_out1=xx	GPIO configuration of KEYPAD OUT1
kp_out2=xx	GPIO configuration of KEYPAD OUT2
kp_out3=xx	GPIO configuration of KEYPAD OUT3
kp_out4=xx	GPIO configuration of KEYPAD OUT4
kp_out5=xx	GPIO configuration of KEYPAD OUT5
kp_out6=xx	GPIO configuration of KEYPAD OUT6
kp_out7=xx	GPIO configuration of KEYPAD OUT7

Configuration Examples：

```
[keypad_para]
kp_used          = 0
kp_in_size       = 8
kp_out_size      = 8
kp_in0           = port:PH08<4><1><default><default>
kp_in1           = port:PH09<4><1><default><default>
kp_in2           = port:PH10<4><1><default><default>
kp_in3           = port:PH11<4><1><default><default>
kp_in4           = port:PH14<4><1><default><default>
kp_in5           = port:PH15<4><1><default><default>
```

kp_in6 = port:PH16<4><1><default><default>
kp_in7 = port:PH17<4><1><default><default>
kp_out0 = port:PH18<4><1><default><default>
kp_out1 = port:PH19<4><1><default><default>
kp_out2 = port:PH22<4><1><default><default>
kp_out3 = port:PH23<4><1><default><default>
kp_out4 = port:PH24<4><1><default><default>
kp_out5 = port:PH25<4><1><default><default>
kp_out6 = port:PH26<4><1><default><default>
kp_out7 = port:PH27<4><1><default><default>

27 USB

27.1[usbc0]

Configuration Items	Description
usb_used =xx	USB enable/disable; 1:enable, 0:disable. This flag is only valid to specific USB controller module.
usb_port_type =xx	USB port type; 0：device only 1：host only 2：OTG
usb_detect_type=xx	USB detect type: 0：no detect 1：vbus/id detect
usb_id_gpio=xx	USB ID pin configuration: please refer to *Configuration and GPIO.doc*.
usb_det_vbus_gpio＝xx	USB DET_VBUS pin configuration: please refer to *Configuration and GPIO.doc*.
usb_drv_vbus_gpio=xx	USB DRY_VBUS pin configuration: please refer to *Configuration and GPIO.doc*.
usb_host_init_state=xx	Host initialization state in host only mode: 0—usb doesn't work after initialization; 1—usb works after initialization.

Configuration Examples：

```
[usbc0]
usb_used                = 1
usb_port_type           = 2
usb_detect_type         = 1
usb_id_gpio             = port:PH4<0><1><default><default>
usb_det_vbus_gpio       = port:PH5<0><0><default><default>
usb_drv_vbus_gpio       = port:PB9<1><0><default><0>
usb_host_init_state     = 0
```

27.2[usbc1]

Configuration Items	Description
usb_used =xx	USB enable/disable: 1--enable, 0--disable. This flag is only valid to specific USB controller module.
usb_port_type =xx	USB port type; 0：device only 1：host only 2：OTG
usb_detect_type=xx	USB detect type: 0：no detect 1：vbus/id detect
usb_id_gpio=xx	USB ID pin configuration: please refer to *Configuration and GPIO.doc*.
usb_det_vbus_gpio＝xx	USB DET_VBUS pin configuration: please refer to *Configuration and GPIO.doc*.
usb_drv_vbus_gpio=xx	USB DRY_VBUS pin configuration: please refer to *Configuration and GPIO.doc*.
usb_host_init_state=xx	Host initialization state in host only mode: 0—usb doesn't work after initialization; 1—usb works after initialization.

Configuration Examples：

```
[usbc1]
usb_used                = 1
usb_port_type           = 1
usb_detect_type         = 0
usb_id_gpio             =
usb_det_vbus_gpio       =
usb_drv_vbus_gpio       = port:PH6<1><0><default><0>
usb_host_init_state     = 1
```

27.3[usbc2]

Configuration Items	Description
usb_used =xx	USB enable/disable: 1--enable,

	0--disable. This flag is only valid to specific USB controller module.
usb_port_type =xx	USB port type; 0：device only 1：host only 2：OTG
usb_detect_type=xx	USB detect type: 0：no detect 1：vbus/id detect
usb_id_gpio=xx	USB ID pin configuration: please refer to *Configuration and GPIO.doc*.
usb_det_vbus_gpio＝xx	USB DET_VBUS pin configuration: please refer to *Configuration and GPIO.doc*.
usb_drv_vbus_gpio=xx	USB DRY_VBUS pin configuration: please refer to *Configuration and GPIO.doc*.
usb_host_init_state=xx	Host initialization state in host only mode: 0—usb doesn't work after initialization; 1—usb works after initialization.

Configuration Examples：

```
[usbc2]
usb_used                = 1
usb_port_type           = 1
usb_detect_type         = 0
usb_id_gpio             =
usb_det_vbus_gpio       =
usb_drv_vbus_gpio       = port:PH3<1><0><default><0>
usb_host_init_state     = 1
```

28 USB Device

28.1[usb_feature]

Configuration Items	Description
vendor_id=xx	USB vendor ID
mass_storage_id =xx	U-disk ID
adb_id =xx	USB adjust bridge ID
manufacturer_name=xx	USB manufacturer name
product_name＝xx	USB product name
serial_number=xx	USB serial number

Configuration Examples：

```
[usb_feature]
vendor_id           = 0x18D1
mass_storage_id     = 0x0001
adb_id              = 0x0002
manufacturer_name   = "USB Developer"
product_name        = "Android"
serial_number       = "20080411"
```

28.2[msc_feature]

Configuration Items	Description
vendor_name=xx	U-disk vendor name
product_name=xx	U-disk product name
release=xx	Release version
luns=xx	U-disk logical unit number (U-disk letter number in PC)

Configuration Examples：

```
[msc_feature]
vendor_name         = "USB 2.0"
product_name        = "USB Flash Driver"
```

release = 100
luns = 2

29 G-Sensor

29.1[g-sensor_para]

Configuration Items	Description
gsensor_used=xx	G-sensor is used or not
gsenser_name =xx	The driver name is G-sensor, and the EVB1.2 supports bma250 and mxc622x.
gsensor_twi_id =xx	TWI ID; 0：TWI0;1:TWI1;2:TWI2
gsensor_twi_addr=xx	TWI address
gsensor_int1＝xx	GPIO configuration of interrupt1
gsensor_int2=xx	GPIO configuration of interrupt2

Configuration Examples：

```
[gsensor_para]
gsensor_used        = 1
gsenser_name        = "bma250"
gsensor_twi_id      = 1
gsensor_twi_addr    = 0x18
gsensor_int1        = port: PH00<6><1><default><default>
gsensor_int2        = port: PI10<6><1><default><default>
```

30 GPS

30.1[gps_para]

Configuration Items	Description
gps_used=xx	
gps_spi_id =xx	
gps_spi_cs_num =xx	
gps_lradc=xx	
gps_clk＝xx	
gps_sign=xx	
gps_mag	
gps_vcc_en	
gps_osc_en	
gps_rx_en	

31 WIFI (SDIO)

31.1[sdio_wifi_para]

Configuration Items	Description
sdio_wifi_used=xx	SDIO WIFI enable/disable; 1: enable，0: disable
sdio_wifi_sdc_id=xx	SDIO WIFI SDC ID
sdio_wifi_mod_sel=xx	sdio_wifi select: 0-none,1-swl-n20(wifi), 2-usi bm-01(wifi+bt+fm), 3-ar6302qfn, 4-apm6xxx, 5-swb b23(wifi+bt+fm)
swl_n20_shdn=xx	GPIO configuration of swl_n20_shdn
swl_n20_host_wakeup=xx	GPIO configuration of swl_n20_host_wakeup
swl_n20_vdd_en＝xx	GPIO configuration of swl_n20_vdd_en
swl_n20_vcc_en =xx	GPIO configuration of swl_n20_vcc_en

Configuration Examples：

```
[sdio_wifi_para]
sdio_wifi_used          = 1
sdio_wifi_sdc_id        = 3
sdio_wifi_mod_sel       = 1
sdio_wifi_shdn          = port:PH09<1><default><default><0>
sdio_wifi_host_wakeup   = port:PH10<1><default><default><1>
sdio_wifi_vdd_en        = port:PH11<1><default><default><0>
sdio_wifi_vcc_en        = port:PH12<1><default><default><0>
```

32 WIFI (USB)

32.1[usb_wifi_para]

Configuration Items	Description
usb_wifi_used=xx	USB Wifi enable/disable； 1：enable; 0:disable
usb_wifi_usbc_num=xx	USB controller number of USB Wifi（xx=0、1、2）, which should be used in conjuction with USB controller *configuration usb_host_init_state*, for example, if xx=2, the [USBC2] *usb_host_init_state* should be 0.

Configuration Examples：

```
[usb_wifi_para]
usb_wifi_used           = 0
usb_wifi_usbc_num       = 2
```

33 3G

33.1[3g_para]

Configuration Items	Description
3g_used=xx	
3g_usbc_num=xx	
3g_uart_num=xx	
3g_pwr=xx	
3g_wakeup＝xx	
3g_int =xx	

34 gyroscope

34.1[gy_para]

Configuration Items	Description
gy_used=xx	Gyroscope is used or not
gy_twi_id=xx	Gyroscope TWI ID
gy_twi_addr=xx	Gyroscope TWI address
gy_int1=xx	Gyroscope interrupr1
gy_int2＝xx	Gyroscope interrupt2

35 Light Sensor

35.1[ls_para]

Configuration Items	Description
ls_used =xx	Light sensor is used or not
ls_twi_id=xx	Light sensor TWI ID
ls_twi_addr =xx	Light sensor TWI address
ls_int=xx	Light sensor interrupt

36 Compass

36.1[compass_para]

Configuration Items	Description
compass_used=xx	Compass is used or not
compass_twi_id=xx	Compass TWI ID
compass_twi_addr =xx	Compass TWI address
compass_int =xx	Compass interrupt

37 Bluetooth

37.1 [bt_para]

Configuration Items	Description
bt_used=xx	Bluetooth enable/disable； 1:enable; 0:disable
bt_uart_id=xx	Bluetooth UART controller ID
bt_wakeup =xx	GPIO configuration of Bluetooth wakeup
bt_gpio=xx	Bluetooth GPIO configuration
bt_rst=xx	GPIO configuration of Bluetooth RESET

Configuration Examples：

```
[bt_para]
bt_used          = 0
bt_uart_id       = 2
bt_wakeup        = port:PI20<1><default><default><default>
bt_gpio          = port:PI21<1><default><default><default>
bt_rst           = port:PB05<1><default><default><default>
```

38 I2S

38.1[i2s_para]

Configuration Items	Description
i2s_used=xx	I2S enable/disable; 0: disabled, 1: enable
i2s_channel=xx	Channel control
i2s_mclk =xx	GPIO configuration of I2S MCLK
i2s_bclk=xx	GPIO configuration of I2S BCLK
i2s_lrclk =xx	GPIO configuration of I2S LRCK
i2s_dout0	GPIO configuration of I2S out0
i2s_dout1	Not used now
i2s_dout2	Not used now
i2s_dout3	Not used now
i2s_din	GPIO configuration of I2S IN

Configuration Examples：

```
i2s_used        = 0
i2s_channel     = 2
i2s_mclk        = port:PB5<2><1><default><default>
i2s_bclk        = port:PB6<2><1><default><default>
i2s_lrclk       = port:PB7<2><1><default><default>
i2s_dout0       = port:PB8<2><1><default><default>
i2s_dout1       =
i2s_dout2       =
i2s_dout3       =
i2s_din         = port:PB12<2><1><default><default>
```

39 S/PDIF

39.1[spdif_para]

Configuration Items	Description
spdif_used=xx	SPDIF is used or not
spdif_mclk =xx	GPIO configuration of SPDIF MCLK
spdif_dout =xx	GPIO configuration of SPDIF out
spdif_din=xx	GPIO configuration of SPDIF IN

40 Audio

40.1[audio_para]

Configuration Items	Description
audio_used =xx	Audio loudspeaker enable/disable; 1：enable（default）0：disable
audio_pa_ctrl=xx	Audio GPIO control
audio_lr_change=xx	Sound track reverse; 1: reverse, 0: not reverse；

Configuration Examples：

```
[audio_para]
audio_used          = 1
audio_pa_ctrl       = port:PH15<1><default><default><0>
audio_lr_change=xx  = 0
```

41 IR

41.1[ir_para]

Configuration Items	Description

ir_used=xx	IR is used or not
ir0_rx =xx	IR RX

42 PMU

42.1[pmu_para]

Configuration Items	Description
pmu_used=xx	Pmu enable/disable; 0：disable，1：enable
pmu_twi_addr=xx	Pmu TWI address
pmu_twi_id=xx	Pmu TWI ID; 0：twi0，1：twi1，2：twi2
pmu_irq_id=xx	Pmu interrupt ID; 0：NMI，1：INT1， 2：INT2
pmu_battery_rdc=xx	Battery resistence，mΩ
pmu_battery_cap=xx	Battery capacity，mAh
pmu_init_chgcur=xx	Startup charge current，mA， 300/400/500/600/700/800/900 /1000/1100/1200/1300 /1400/1500/1600/1700/1800
pmu_suspend_chgcur=xx	Suspend charge current，mA， 300/400/500/600/700/800/900 /1000/1100/1200/1300 /1400/1500/1600/1700/1800
pmu_resume_chgcur=xx	Resume charge current，mA， 300/400/500/600/700/800/900 /1000/1100/1200/1300 /1400/1500/1600/1700/1800
pmu_shutdown_chgcur=xx	Shurdown charge current，mA 300/400/500/600/700/800/900 /1000/1100/1200/1300 /1400/1500/1600/1700/1800
pmu_init_chgvol=xx	Target charge voltage ，mV ， 4100/4150/4200/4360
pmu_init_chgend_rate=xx	Charge end current rate，%，10，15
pmu_init_chg_enabled=xx	Charge enable/disable; 0：disable，1：enable

pmu_init_adc_freq=xx	ADC sample rate，Hz，25/50/100/200
pmu_init_adc_freqc=xx	Coulomb sample rate，Hz，25/50/100/200
pmu_init_chg_pretime=xx	Precharge timeout，min，40/50/60/70
pmu_init_chg_csttime=xx	Constant current charge timeout, min，360/480/600/720
pmu_bat_para1=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para2=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para3=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para4=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para5=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para6=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para7=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para8=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para9=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para10=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para11=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para12=xx	Zero-load battery voltage parameter, %:

	please refer to the *Battery Parameter Test Guide*.
pmu_bat_para13=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para14=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para15=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*.
pmu_bat_para16=xx	Zero-load battery voltage parameter, %: please refer to the *Battery Parameter Test Guide*. Recommend: Fixed to be 100.
pmu_usbvol_limit=xx	USB voltage limit; 0: disable, 1: enable
pmu_usbvol=xx	USB limit voltage，mV，4000/4100/4200/4300/4400/4500/4600/4700
pmu_usbcur_limit=xx	USB current limit; 0: disable, 1: enable
pmu_usbcur=xx	USB limit current，mA，100/500/900
pmu_pwroff_vol=xx	Hardware protection voltage at startup，mV，2600/2700/2800/2900/3000/3100/3200/3300
pmu_pwron_vol=xx	Hardware protection voltage during power on, mV，2600/2700/2800/2900/3000/3100/3200/3300
pmu_pekoff_time=xx	Power off time，ms，4000/6000/8000/10000
pmu_pekoff_en=xx	Power off; 0: disable, 1: enable
pmu_peklong_time=xx	Long-press interrupt time，ms，1000/1500/2000/2500
pmu_pekon_time=xx	Power on time，ms，128/1000/2000/3000
pmu_pwrok_time=xx	Pwrok delay after the power startup，ms，8/64
pmu_pwrnoe_time=xx	Power off delay after n_oe changes from low to high，ms，128/1000/2000/3000
pmu_intotp_en=xx	Over-temperature protection; 0：disable，1：enable

Configuration Examples：

```
pmu_used                = 1
pmu_twi_addr            = 0x34
pmu_twi_id              = 0
pmu_irq_id              = 0
pmu_battery_rdc         = 200
pmu_battery_cap         = 2600
pmu_init_chgcur         = 300
pmu_suspend_chgcur      = 1000
pmu_resume_chgcur       = 300
pmu_shutdown_chgcur     = 1000
pmu_init_chgvol         = 4200
pmu_init_chgend_rate    = 15
pmu_init_chg_enabled    = 1
pmu_init_adc_freq       = 100
pmu_init_adc_freqc      = 100
pmu_init_chg_pretime    = 50
pmu_init_chg_csttime    = 720
pmu_bat_para1           = 0
pmu_bat_para2           = 0
pmu_bat_para3           = 1
pmu_bat_para4           = 5
pmu_bat_para5           = 7
pmu_bat_para6           = 13
pmu_bat_para7           = 16
pmu_bat_para8           = 26
pmu_bat_para9           = 36
pmu_bat_para10          = 46
pmu_bat_para11          = 53
pmu_bat_para12          = 61
pmu_bat_para13          = 73
pmu_bat_para14          = 84
pmu_bat_para15          = 92
pmu_bat_para16          = 100
pmu_usbvol_limit        = 1
pmu_usbvol              = 4400
pmu_usbcur_limit        = 0
pmu_usbcur              =   900
pmu_pwroff_vol          = 3300
```

pmu_pwron_vol = 2900
pmu_pekoff_time = 6000
pmu_pekoff_en = 1
pmu_peklong_time = 1500
pmu_pekon_time = 1000
pmu_pwrok_time = 64
pmu_pwrnoe_time = 2000
pmu_intotp_en = 1