

【说明】网迅网卡 LED 设置手册



北京网迅科技有限公司
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目录

1. 说明	3
2. 版本记录	4
3. 软件配置	4
3.1 使用说明	4
3.2 命令	5
3.3 运行程序	5
3.4 选项说明	7
4. OEM 配置	8
4.1 LED 配置	8
4.1.1 千兆网卡	8
4.1.1.1 内部 PHY	8
4.1.1.2 裕太 (YT8521SH) PHY	12
4.1.1.3 Marvell 88e1512 PHY	18
4.1.2 万兆网卡	22
4.1.2.1 内部 PHY	22
4.2 GPIO 配置	25
4.2.1 说明	25
4.2.2 千兆网卡	25
4.3 PHY MODE 配置	27
4.2.1 Marvell 88e1512 PHY MODE	27

1. 说明

(1) 可使用范围说明

千兆：只有固件版本 **10017 及以上版本固件**支持使用该工具配置，**ngbe 驱动版本 v1.2.0 及以上版本**。

万兆：只有固件版本 **2000c 及以上版本固件**支持使用该工具配置，**txgbe 驱动版本 v1.3.0 及以上版本**。

(2) LED 配置说明

千兆、万兆网卡 LED 配置,隶属 OME 配置;允许用户根据自身硬件(连接的 PHY, 以及 pin) 进行自定义。

需要注意以下几点:

- 自定义配置存于非易失性的 flash 中,**冷重启后生效**。
 - 所有 port 口使用同一套配置,不支持单独配置。
 - 其中千兆网卡:
 - 配置支持内部 PHY、裕太(YT) 8521s PHY、Marvell 1512 PHY。
 - 其中万兆网卡:
 - 配置只支持内部 PHY。
 - 网卡 PCIE_BSY 引脚功能将无效,建议:不适用该引脚。
 - 各 port 口的 ACT 灯亮度将会变暗,建议:减少上拉来规避。
- ethtool -p 定位灯是驱动通过开、关 LED 灯来实现闪烁的,对应的定位灯如下:**
- 千兆 Inner phy 闪烁灯为: LED2(Link 1000M 灯)。
- 千兆 YT8521 phy 闪烁灯为: LED2(默认 1000M 灯亮或闪)。
- 千兆 Marvell88e1512 闪烁灯为: LED0。
- 万兆 Inner phy 闪烁灯为: LED0(Link up 灯)。

(3) GPIO 配置说明

- 自定义配置存于非易失性的 flash 中,**冷重启后生效**。
- 只有千兆网卡支持。

(4) Marvell PHY mode 配置说明

- 自定义配置存于非易失性的 flash 中,**冷重启后生效**。
- 每个 port 支持单独配置。
- 只有千兆网卡 Marvell 88e1512 phy 支持。
- 只有 sub sys id 为 0x52 的 img 文件支持配置。

2. 版本记录

表 1. 版本记录表

版本号	作者	变更	日期
v1.0.5	yuzongzhu	1、删除 marvell 88e1512 phy LED2 配置，该 LED 引脚被用于中断 2、oem tool 配置显示部分优化	2022.06.29
v1.0.4	yuzongzhu	1、文档增加了 GPIO 定制相关说明。 2、GPIO 定制部分描述修正。 3、window 下可使用说明。（32 位/64 位均可）	2022.04.11
v1.0.4	yuzongzhu	1、文档增加了 ethtool -p 的说明 2、YT8521 phy 描述错误修改	2022.02.28
v1.0.4	yuzongzhu	新增 marvell 88e1512 phy LED Blink freq 配置功能，并更新 oem 配置软件	2021.12.20
v1.0.3	yuzongzhu	新增 Marvell 88e1512 phy mode 配置部分，并更新 oem 配置软件	2021.11.11
v1.0.2	yuzongzhu	改写寄存器描述，新增 GPIO 配置部分，优化 oem 配置软件	2021.11.04
v1.0.1	Jaly	格式调整,文档说明	2021.09.30
v1.0.0	yuzongzhu	OCM CFG 功能实现	2021.09.27

3. 软件配置

3.1 使用说明

支持的网卡（固件）类型？

该软件支持用户对**千兆与万兆固件**（img 文件）进行配置,用户通过该软件对固件进行配置后,使用网迅提供的升级工具进行烧录,即可实现不同 PHY LED/GPIO/PHY MODE 的定制。

由于千兆与万兆支持配置的模块不同,因此在运行软件程序时,程序会根据用户选择的固件文件进行判断是千兆固件还是万兆固件,两种固件的软件显示界面稍有不同。

如何配置不同的 PHY?

由于支持用户自定义 PHY 的 LED,因此我们整理了不同 PHY 的手册中的相关部分供用户查阅（见章节四:4. OEM 配置）,在该章节的每种 PHY 目录下,用户可以找到其**配置示例**以及**软件配置示例图**。用户可以使用配置示例的值或者自行组合出符合自己需求的配置,使用该程序将配置值写入固件中即可。

如果未使用该软件进行配置,那么固件会使用默认的配置值。

如何使用该软件?

见 3.2 运行程序章节。

具体如何使用该软件配置 PHY 见章节四:4. OEM 配置。

3.2 命令

命令选项支持项如下所示。

-f/-F	To select an Image File
-v/--version	To check the version of tool

（1）带参选项【-f/-F】：选择固件（Image）文件，选项后需添加 image 文件路径。

（2）带参选项【-v/--version】：获取 oem tool 版本号。

3.3 运行程序

1）运行环境:Linux/ windows。（下面示例为 Linux 下操作，windows 下运行程序为 wangxun-oem-cfg.exe）

2）解压:unzip oem-tool-1.0.0.zip。如果您没有该压缩包,请联系网迅相关人员,版本号 1.0.0 只作为示例。

3）切换到目录 oem-tool-1.0.0:cd oem-tool-1.0.0/。

文件目录如下所示:

```
img 【说明】网迅网卡 LED 配置用户手册.pdf wangxun-oem-cfg
wangxun-oem-cfg.exe
```

4) 为配置程序加上执行权限 `chmod +x wangxun-oem-cfg`。

img **【说明】** 网迅网卡 LED 配置用户手册.pdf **wangxun-oem-cfg**
wangxun-oem-cfg.exe

5) 为了便于区分使用软件修改过的固件和未修改过的固件（名字可能相同）,建议将需要修改的固件放入 `img` 文件夹中。

6) 执行程序: `./wangxun-oem-cfg -f ./img/ SF400T_10016.img`,通过-f 选项选择文件（示例为千兆固件）,程序会根据用户选择的固件文件,判断其为千兆或万兆,并显示不同的配置项。界面见图 1、图 2:

```
Please read User Manual carefully before configuring!!!
[Note] Modifying file : SF400T_20010017.img
To select config option:
1. Main switch of config val
2. YT8521s LED config
3. MV1512 LED config
4. INNER LED config
5. GPIO OEM config
6. MV1512 PHY MODE config
7. Show config val
8. Show Menu
0. Exit

Input your number:
```

图 1. 千兆固件软件运行界面

```
Please read User Manual carefully before configuring!!!
[Note] Modifying file : ./img/RP1000P2SFP_2000b.img
To select config option:
1. Main switch of config val
2. INNER LED config
3. Show config val
4. Show Menu
0. Exit

Input your number:
```

图 2. 万兆固件软件运行界面

6) 选择对应的选项进行配置,配置值见章节四:4. OEM 配置中的示例,或根据手册自定义。

7) 成功配置后使用网迅升级工具将 img 文件夹中的固件进行烧录。

3.4 选项说明

使用带参选项【-f/-F】并选择 img 文件后,会进入到配置界面。万兆支持的 PHY 为千兆的子集,因此选项说明万兆可参考千兆部分。

相关说明见图 3。

```
Please read User Manual carefully before configuring!!!
[Note] Modifying file : SF400T_20010017.img
To select config option:
1. Main switch of config val // 功能开关
2. YT8521s LED config // 裕太 PHY LED 定制
3. MV1512 LED config // MV PHY LED 定制
4. INNER LED config // 内部 PHY LED 定制
5. GPIO OEM config // GPIO 定制
6. MV1512 PHY MODE config // MV phy mode 定制
7. Show config val // 显示配置值
8. Show Menu // 显示菜单
0. Exit // 退出程序
```

图 3. 千兆软件配置选项说明

注意:

当使用软件定制 LED / GPIO / MV1512 PHY MODE 后,需要选择启用配置后定制才可生效,可以通过选项 1 开启或关闭配置值的使用(理解为开关),也可以在配置完成时进行选择。

选项 1 示例见图 4

```
Please read User_Manual carefully before configuring!!!
[Note] Modifying file : ./img/SF400T_20010017.img
To select config option:
1. Main switch of config val
2. YT8521s LED config
3. MV1512 LED config
4. INNER LED config
5. GPIO OEM config
6. MV1512 PHY MODE config
7. Show config val
8. Show Menu
0. Exit

Input your number:1

Enable LED configuration or not 'Y' or 'N' : Y
LED configuration is : ON.

Enable GPIO configuration or not 'Y' or 'N' : Y
GPIO configuration is : ON.

Enable Marvell 88e1512 phy mode configuration or not 'Y' or 'N' : Y
Marvell 88e1512 phy mode configuration is : ON.
```

图 4. 千兆功能开关软件配置示例

4. OEM 配置

通过 oem-tool-1.0.0 可以进行相关 OEM 配置,使用说明见上一章节。

4.1 LED 配置

4.1.1 千兆网卡

4.1.1.1 内部 PHY

- 内部 PHY LED 引脚图见图 5
- 网卡内部 PHY LED 的默认功能见表 2。
- 如需要定制 LED,请参考表 3 中的寄存器表,共有 16 种配置类型,见表 4。极性和

闪烁频率相关说明见表 5。

•定制 LED 的部分示例见表 6。

•软件配置示例见图 6。

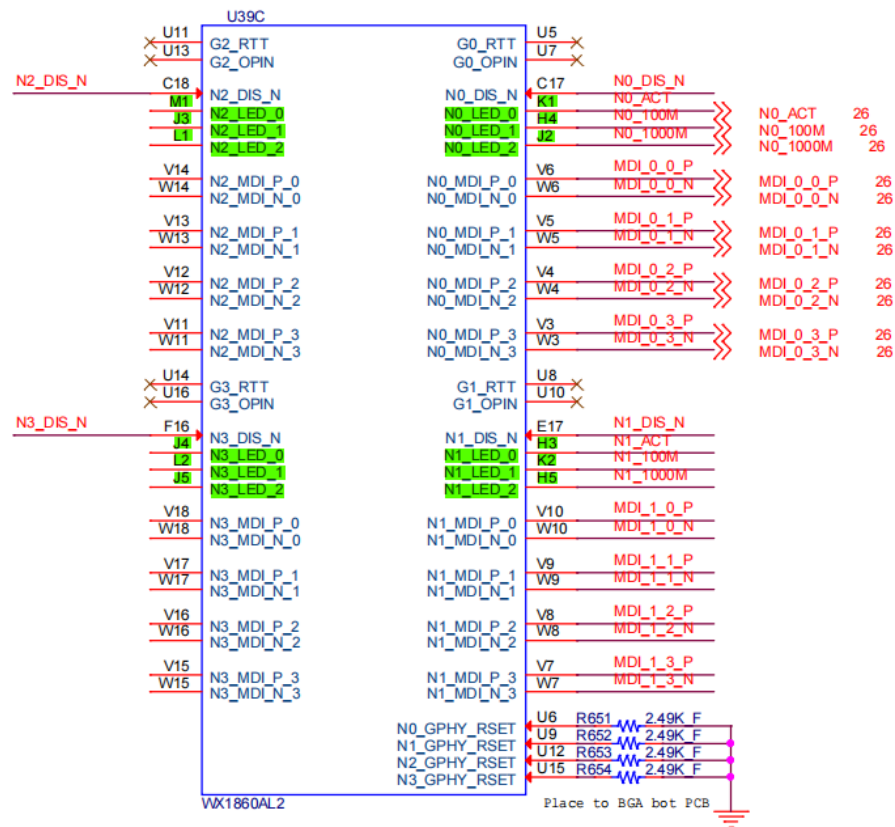


图 5. 内部 PHY LED 引脚图

表 2.网卡 LED 默认定义为如下功能

引脚	描述
LED0	Light = Link up at 10M/100M/1000M Blinking = TX/RX Polarity = Active High Blink freq = 60ms
LED1	Light = Link up at 100M Polarity = Active High
LED2	Light = Link up at 1000M Polarity = Active High

表 3. LED 寄存器表

	LINK Speed			Act(Tx/RX)	Blink freq	Polarity
	10Mbps	100Mbps	1000Mbps			

LED0	Bit0	Bit1	Bit3	Bit4	Bit17:16	Bit20
LED1	Bit5	Bit6	Bit8	Bit9		Bit21
LED2	Bit10	Bit11	Bit13	Bit14		Bit22

表 4. LED0/1/2 配置表

引脚	LINK Bit			Active (TX/RX) Bit	描述
	10M	100M	1000M		
LED0	0	0	0	0	Not support
/LED1	0	0	0	1	Not support
/LED2	0	0	1	0	Light = Link up at 1000M
	0	0	1	1	Light = Link up at 1000M Blinking = TX/RX
	0	1	0	0	Light = Link up at 100M
	0	1	0	1	Light = Link up at 100M Blinking = TX/RX
	0	1	1	0	Light = Link up at 100M/1000M
	0	1	1	1	Light = Link up at 100M/1000M Blinking = TX/RX
	1	0	0	0	Light = Link up at 10M
	1	0	0	1	Light = Link up at 10M Blinking = TX/RX
	1	0	1	0	Light = Link up at 10M/1000M
	1	0	1	1	Light = Link up at 10M/1000M Blinking = TX/RX
	1	1	0	0	Light = Link up at 10M/100M
	1	1	0	1	Light = Link up at 10M/100M Blinking = TX/RX
	1	1	1	0	Light = Link up at 10M/100M/1000M
	1	1	1	1	Light = Link up at 10M/100M/1000M Blinking = TX/RX

表 5. LED Polarity 表

Bit	名称	描述
22	LED2 polarity	0 : Active low 1 : Active high
21	LED1 polarity	0 : Active low 1 : Active high

20	LED0 polarity	0 : Active low 1 : Active high
17:16	LED blink freq	LED blink frequency control 00 : 20ms 01 : 40ms 10 : 60ms

表 6. 内部 PHY 用户配置示例

序号	功能	配置值	描述
说明:表 3 中列出的 BIT 都需要用户对应配置。			
1	默认值	0x0072205B	LED0: Light = Link up at 10M/100M/1000M、 Blinking = TX/RX、Blink freq 60ms LED1: Light = Link up at 100M LED2: Light = Link up at 1000M LED0/1/2: Polarity = Active High
2	交换序号 1 中 LED0 和 LED1	0x00722362	LED0: Light = Link up at 100M、 LED1: Light = Link up at 10M/100M/1000M、 Blinking = TX/RX、Blink freq 60ms LED2: Light = Link up at 1000M LED0/1/2: Polarity = Active High
3	交换序号 1 中 LED1 和 LED2	0x0072091B	LED0: Light = Link up at 10M/100M/1000M、 Blinking = TX/RX、Blink freq 60ms LED1: Light = Link up at 1000M LED2: Light = Link up at 100M LED0/1/2: Polarity = Active High
4	序号 1 LED 极 性反转	0x0002205B	LED0: Light = Link up at 10M/100M/1000M、 Blinking = TX/RX、Blink freq 60ms LED1: Light = Link up at 100M LED2: Light = Link up at 1000M LED0/1/2: Polarity = Active Low

Please read User_Manual carefully before configuring!!!

[Note] Modifying file : ./img/SF400T_20010017..img

To select config option:

- 1. Main switch of config val**
- 2. YT8521s LED config**
- 3. MV1512 LED config**
- 4. INNER LED config**
- 5. GPIO OEM config**
- 6. MV1512 PHY MODE config**
- 7. Show config val**
- 8. Show Menu**
- 0. Exit**

Input your number:4

Please input config val of Inner LED :0x72205b

Configuration completed successfully :

Polarity : 0x72 LED : 0x205b

Enable LED configuration or not 'Y' or 'N' : y

LED configuration is : ON.

图 6. 内部 PHY 软件配置示例

4.1.1.2 裕太（YT8521SH）PHY

- 裕太（YT）PHY LED 引脚图见图 7
- 裕太（YT）PHY LED 的默认功能见表 7。
- 如需要定制 LED,请参考表 8 至表 10 所列出的配置表（对应裕太 PHY 的寄存器为 LED 0 : 0xA00C、 LED 1 : 0xA00D、 LED2 : 0xA00E）。
- 定制 LED 的部分示例见表 11。
- 软件配置示例见图 8。
- 裕太（YT）PHY 暂不支持极性定制。

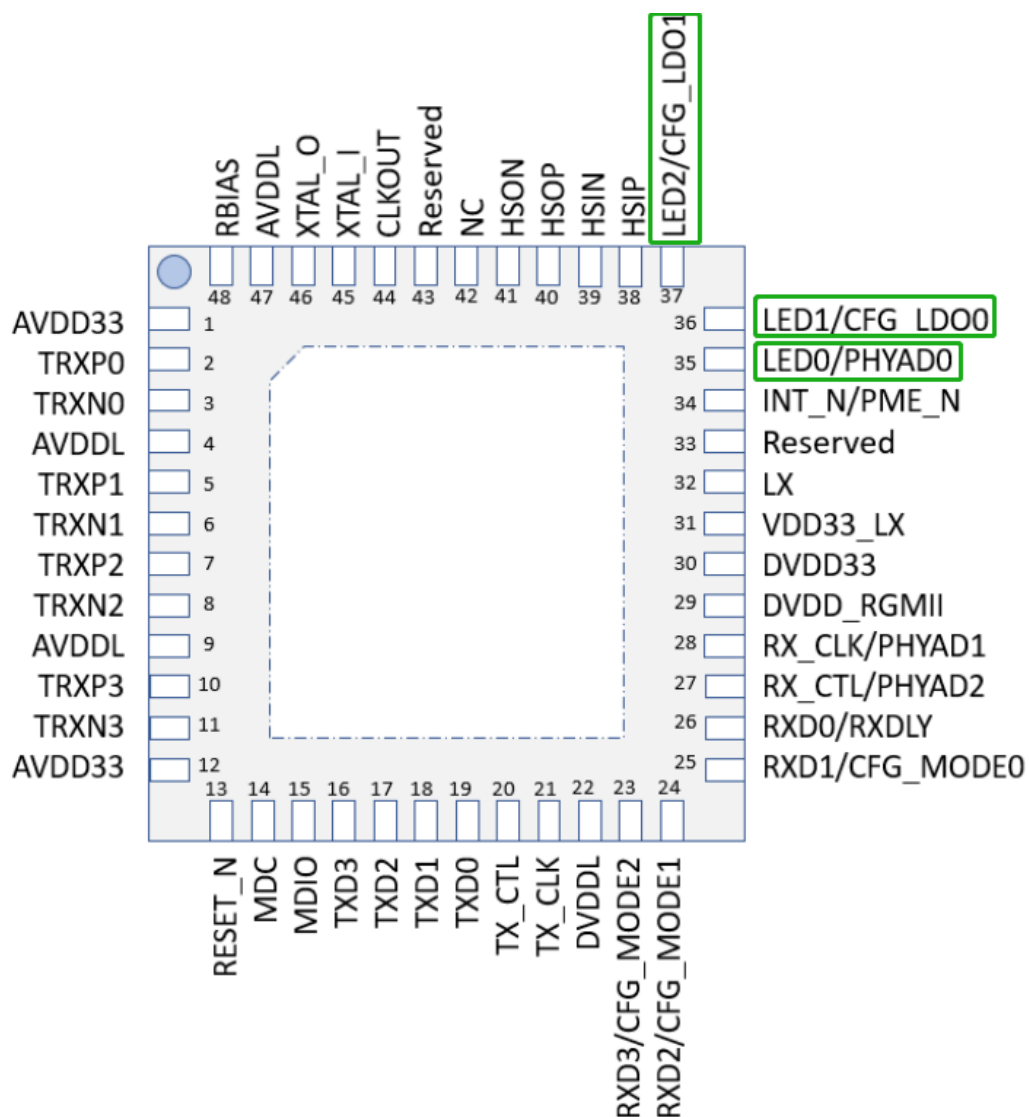


图 7. 裕太（YT）PHY LED 引脚图

表 7. LED 默认定义为如下功能

注：该表参考 YT8521SH Datasheet 中的 Table 8

Pin Name	Description
LED0	Light = Link up at 10Mbps Blinking = Transiting or Receiving
LED1	Light = Link up at 100Mbps Blinking = Transiting or Receiving
LED2	Light = Link up at 1000Mbps Blinking = Transiting or Receiving

表 8. LED0 配置 (0xA00C)

注：该表参考 YT8521SH Datasheet 中的 Table 28

Bit	Symbol	Access	Default	Description
15:14	Led_src_sel_0	RW POS	0x0	select the source of internal signals controlling LED0. 2'b00: UTP 2'b01: serdes 2'b10: UTP and serdes 2'b11: UTP or serdes Default value of LED0 cfg depends on the strapping of chip mode.
13	Led_act_blk_ind_0	RW POS	0x0	When traffic is present, make LED0 BLINK no matter the previous LED0 status is ON or OFF, or make LED0 blink only when the previous LED0 is ON.
12	Led_fdx_on_en_0	RW POS	0x0	1: If BLINK status is not activated, when PHY link up and duplex mode is full duplex, LED0 will be ON.
11	Led_hdx_on_en_0	RW POS	0x0	1: If BLINK status is not activated, when PHY link up and duplex mode is half duplex, LED0 will be ON.
10	Led_txact_blk_en_0	RW POS	0x1	1: If bit[13] is 1, or bit[13] is 0 and ON at certain speed or duplex more is/are activated, when PHY link up and TX is active, make LED0 blink at mode2.
9	Led_rxact_blk_en_0	RW POS	0x1	1: If bit[13] is 1, or bit[13] is 0 and ON at certain speed or duplex more is/are activated, when PHY link up and RX is active, make LED0 blink at mode 2.
8	Led_txact_on_en_0	RW POS	0x0	1: if BLINK status is not activated, when PHY link up and TX is active, make LED0 ON at least 10ms.
7	Led_rxact_on_en_0	RW POS	0x0	1: if BLINK status is not activated, when PHY link up and RX is active, make LED0 ON at least 10ms.
6	Led_gt_on_en_0	RW POS	0x0	1: if BLINK status is not activated, when PHY link up and speed mode is 1000Mbps, make LED0 ON.

5	Led_ht_on_en_0	RW POS	0x0	1: if BLINK status is not activated, when PHY link up and speed mode is 100Mbps, make LED0 ON;
4	Led_bt_on_en_0	RW POS	0x1	1: if BLINK status is not activated, when PHY link up and speed mode is 10Mbps, make LED0 ON;
3	Led_col_blk_en_0	RW POS	0x0	1: if PHY link up and collision happen, make LED0 BLINK;
2	Led_gt_blk_en_0	RW POS	0x0	1: if PHY link up and speed mode is 1000Mbps, make LED0 BLINK;
1	Led_ht_blk_en_0	RW POS	0x0	1: if PHY link up and speed mode is 100Mbps, make LED0 BLINK;
0	Led_bt_blk_en_0	RW POS	0x0	1: if PHY link up and speed mode is 10Mbps, make LED0 BLINK;

表 9. LED1 配置（0xA00D）

注：该表参考 YT8521SH Datasheet 中的 Table 29

Bit	Symbol	Access	Default	Description
15:14	Led_src_sel_1	RW POS	0x0	Same logic as LED0 control.
13	Led_act_blk_ind_1	RW POS	0x0	Same logic as LED0 control.
12	Led_fdx_on_en_1	RW POS	0x0	Same logic as LED0 control.
11	Led_hdx_on_en_1	RW POS	0x0	Same logic as LED0 control.
10	Led_txact_blk_en_1	RW POS	0x1	Same logic as LED0 control.
9	Led_rxact_blk_en_1	RW POS	0x1	Same logic as LED0 control.
8	Led_txact_on_en_1	RW POS	0x0	Same logic as LED0 control.
7	Led_rxact_on_en_1	RW POS	0x0	Same logic as LED0 control.
6	Led_gt_on_en_1	RW POS	0x0	Same logic as LED0 control.
5	Led_ht_on_en_1	RW POS	0x1	Same logic as LED0 control.

4	Led_bt_on_en_1	RW POS	0x0	Same logic as LED0 control.
3	Led_col_blk_en_1	RW POS	0x0	Same logic as LED0 control.
2	Led_gt_blk_en_1	RW POS	0x0	Same logic as LED0 control.
1	Led_ht_blk_en_1	RW POS	0x0	Same logic as LED0 control.
0	Led_bt_blk_en_1	RW POS	0x0	Same logic as LED0 control.

表 10. LED2 配置 (0xA00E)

注：该表参考 YT8521SH Datasheet 中的 Table 30

Bit	Symbol	Access	Default	Description
15:14	Led_src_sel_2	RW POS	0x0	Same logic as LED0 control.
13	Led_act_blk_ind_2	RW POS	0x0	Same logic as LED0 control.
12	Led_fdx_on_en_2	RW POS	0x0	Same logic as LED0 control.
11	Led_hdx_on_en_2	RW POS	0x0	Same logic as LED0 control.
10	Led_txact_blk_en_2	RW POS	0x1	Same logic as LED0 control.
9	Led_rxact_blk_en_2	RW POS	0x1	Same logic as LED0 control.
8	Led_txact_on_en_2	RW POS	0x0	Same logic as LED0 control.
7	Led_rxact_on_en_2	RW POS	0x0	Same logic as LED0 control.
6	Led_gt_on_en_2	RW POS	0x1	Same logic as LED0 control.
5	Led_ht_on_en_2	RW POS	0x0	Same logic as LED0 control.
4	Led_bt_on_en_2	RW POS	0x0	Same logic as LED0 control.
3	Led_col_blk_en_2	RW POS	0x0	Same logic as LED0 control.

2	Led_gt_blk_en_2	RW POS	0x0	Same logic as LED0 control.
1	Led_ht_blk_en_2	RW POS	0x0	Same logic as LED0 control.
0	Led_bt_blk_en_2	RW POS	0x0	Same logic as LED0 control.

表 11. 裕太（YT）PHY 用户配置示例

序号	功能	配置值	描述
1	默认值（该值为固件中的默认配置值）	LED0:0xc610 LED1:0xc620 LED2:0xc640	LED 0: Light = Link up at 10Mbps Blinking = Transiting or Receiving LED 1: Light = Link up at 100Mbps Blinking = Transiting or Receiving LED 2: Light = Link up at 1000Mbps Blinking = Transiting or Receiving
2	LED0/1 分别为 100M/1000M Speed 的 Link 灯 LED2 为 Active 灯	LED0:0xc020 LED1:0xc040 LED2:0xc670	LED0: Light = Link up at 100Mbps LED1: Light = Link up at 1000Mbps LED2: Light = Link at 10M/100M/1000M bps Blinking = Transiting or Receiving
3	交换序号 1 中 LED1 和 LED2	LED0:0xc610 LED1:0xc640 LED2:0xc620	LED 0: Light = Link up at 10Mbps Blinking = Transiting or Receiving LED 1: Light = Link up at 1000Mbps Blinking = Transiting or Receiving LED 2: Light = Link up at 100Mbps Blinking = Transiting or Receiving

```
Please read User_Manual carefully before configuring!!!
[Note] Modifying file : ./img/SF400F-YT_20010017.img
To select config option:
1. Main switch of config val
2. YT8521s LED config
3. MV1512 LED config
4. INNER LED config
5. GPIO OEM config
6. MV1512 PHY MODE config
7. Show config val
8. Show Menu
0. Exit

Input your number:2
Please input config val of YT Phy LED0 :0xc610
Please input config val of YT Phy LED1 :0xc620
Please input config val of YT Phy LED2 :0xc640

Configuration completed successfully :
    LED0 : 0xc610  LED1 : 0xc620  LED2 : 0xc640

Enable LED configuration or not 'Y' or 'N' : y
LED configuration is : ON.
```

图 8. 裕太（YT）PHY 软件配置示例

4.1.1.3 Marvell 88e1512 PHY

- Marvell PHY LED 引脚图见图 9
- Marvell PHY LED 的默认功能见表 12。
- 如需要定制 LED,请参考表 13 中的 LED 配置表（对应 marvell PHY 的寄存器为 led: reg 16 page 3, polarity: reg 17 page 3）。
- LED 的极性定制见表 13 的 Bit 21:16。
- 定制 LED 的部分示例见表 14。
- 软件配置示例见图 10。

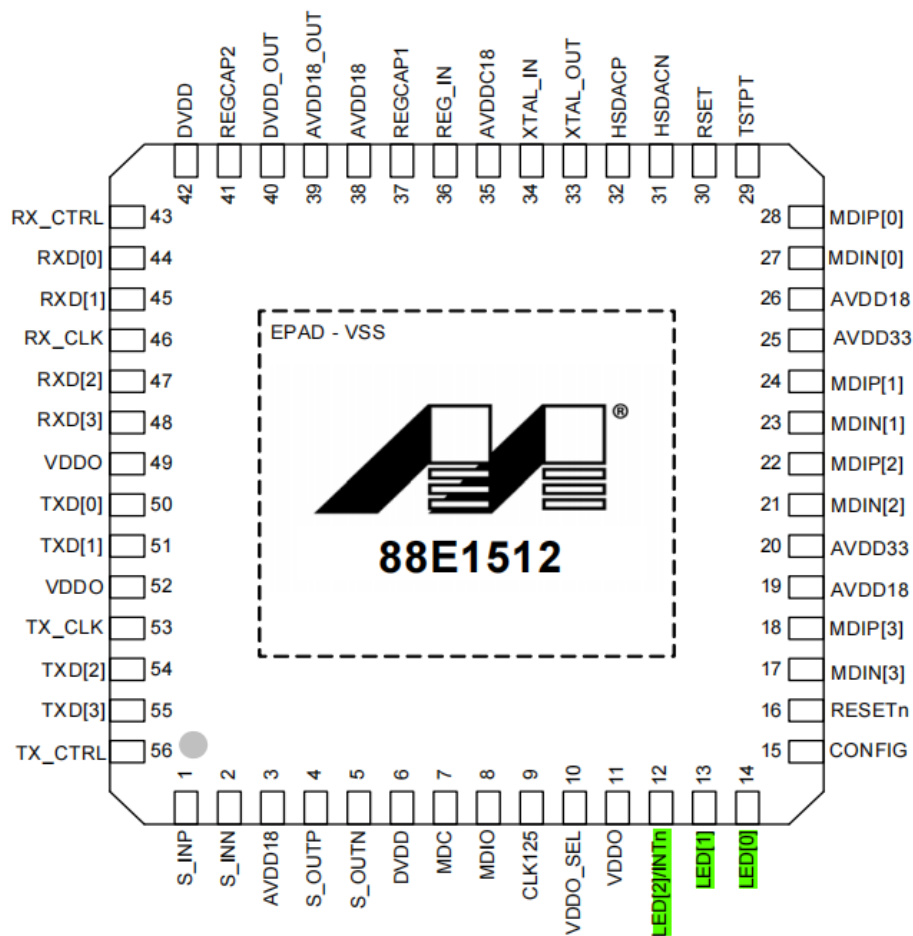


图 9. Marvell 1512 引脚图

表 12. LED 默认定义为如下功能

注：该默认值为固件中默认配置的值

引脚	描述
LED0	On = Link up at 10M/100M/1000M Off = No Link Blinking = Transiting or Receiving Polarity = Active High
LED1	On = Link up at 100M/1000M Off = Else Polarity = Active High

表 13. LED 配置表

注：该表参考 marvell 88e1512 Datasheet 中的 Table 47&Table 112&Table113,

LED2 被用于中断，不支持配置

Bit	引脚/名称	描述
24:22	Blink Rate (该部分配置仅 10018 版本及以 后能支持或联 系技术支持)	000 = 42 ms 001 = 84 ms 010 = 170 ms -- (HW Rst 对应的值) 011 = 340 ms 100 = 670 ms 101 to 111 = Reserved
19:18	LED1 polarity	00 = On - drive LED[1] low, Off - drive LED[1] high 01 = On - drive LED[1] high, Off - drive LED[1] low 10 = On - drive LED[1] low, Off - tristate LED[1] 11 = On - drive LED[1] high, Off - tristate LED[1]
17:16	LED0 polarity	00 = On - drive LED[0] low, Off - drive LED[0] high 01 = On - drive LED[0] high, Off - drive LED[0] low 10 = On - drive LED[0] low, Off - tristate LED[0] 11 = On - drive LED[0] high, Off - tristate LED[0]
7:4	LED1	If LED0 is set to 11xx then LED1 setting has no effect 0000 = On- Receive, Off- No Receive 0001 = On - Link, Blink - Activity, Off - No Link 0010 = On - Link, Blink - Receive, Off - No Link 0011 = On - Activity, Off - No Activity 0100 = Blink - Activity, Off - No Activity 0101 = On- 100 Mbps Link/ Fiber Link 0110 = On - 100/1000 Mbps Link, Off - Else 0111 = On - 100 Mbps Link, Off - Else 1000 = Force Off 1001 = Force On 1010 = Force Hi-Z 1011 = Force Blink 11xx = Reserved
3:0	LED0	0000 = On - Link, Off - No Link 0001 = On - Link, Blink - Activity, Off - No Link 0010 = 3 blinks - 1000 Mbps 2 blinks - 100 Mbps 1 blink - 10 Mbps 0 blink - No Link 0011 = On - Activity, Off - No Activity 0100 = Blink - Activity, Off - No Activity

		0101 = On - Transmit, Off - No Transmit 0110 = On - Copper Link, Off - Else 0111 = On - 1000 Mbps Link, Off - Else 1000 = Force Off 1001 = Force On 1010 = Force Hi-Z 1011 = Force Blink 1100 = MODE 1 (Dual LED mode) 1101 = MODE 2 (Dual LED mode) 1110 = MODE 3 (Dual LED mode) 1111 = MODE 4 (Dual LED mode)
--	--	--

表 14. Marvell PHY 用户配置示例

序号	功能	配置值	描述
1	默认值 (该值为固件中的默认配置值)	0x00850061	LED0 = On - Link, Blink - Activity, Off - No Link LED1 = On - 100/1000 Mbps Link, Off - Else LED0/1 Polarity = Active High Blink freq = 170ms
2	序号 1 中的默认值 改变 LED Blink freq	0x01050061	LED0 = On - Link, Blink - Activity, Off - No Link LED1 = On - 100/1000 Mbps Link, Off - Else LED0/1 Polarity = Active High Blink freq = 670ms
3	LED0 /1 分别为 1000M/100M Link 灯	0x00850077	LED0 = On - 1000 Mbps Link, Off – Else LED1 = On - 100 Mbps Link, Off – Else LED0/1 Polarity = Active High Blink freq = 170ms

```
Please read User_Manual carefully before configuring!!!
[Note] Modifying file : ./img/SF400HF_20010017.img
To select config option:
1. Main switch of config val
2. YT8521s LED config
3. MV1512 LED config
4. INNER LED config
5. GPIO OEM config
6. MV1512 PHY MODE config
7. Show config val
8. Show Menu
0. Exit

Input your number:3
Please input config val of MV Phy LED :0x850061

Configuration completed successfully :
    Polarity : 0x5  LED : 0x61  Blink_freq : 0x2

Enable LED configuration or not 'Y' or 'N' : Y
LED configuration is : ON.
```

图 10. Marvell PHY 软件配置示例

4.1.2 万兆网卡

4.1.2.1 内部 PHY

- 内部 PHY LED 的默认功能见表 15（标卡）。
- 如需要定制 LED,请参考表 16 中的 LED 配置表。
- LED 的极性定制见表 16 的 Bit 19:16。
- 定制 LED 的部分示例见表 17。
- 软件配置示例见图 11。

表 15. LED 默认定义为如下功能

引脚	描述
LED0(LINK)	Light = Link up at any speed Polarity = Active High

LED1(ACT)	Blinking = TX/RX Polarity = Active High
LED2(10G)	Light = Link up at 10G Polarity = Active High
LED3(1G)	Light = Link up at 1000M Polarity = Active High

表 16. LED 配置表

Bit	引脚/名称	描述
19	LED3 polarity	1: Active high 0: Active low
18	LED2 polarity	1: Active high 0: Active low
17	LED1 polarity	1: Active high 0: Active low
16	LED0 polarity	1: Active high 0: Active low
15:12	LED3	0000: Light = Link up at 100M 0001: Light = Link up at 1000M 0010: Light = Link up at 10G 0011: Light = Link up at any speed 0100: Force on 0101: Force off other: Not support
11:8	LED2	0000: Light = Link up at 100M 0001: Light = Link up at 1000M 0010: Light = Link up at 10G 0011: Light = Link up at any speed 0100: Force on 0101: Force off other: Not support
7:4	LED1	0000: Light = Link up at 100M 0001: Light = Link up at 1000M 0010: Light = Link up at 10G 0011: Light = Link up at any speed 0100: Blinking = TX/RX 0101: Light = Link up at any speed, Blinking = TX/RX

		0110: Force on 0111: Force off 1000: Force blink other = Not support
3:0	LED0	0000: Light = Link up at 100M 0001: Light = Link up at 1000M 0010: Light = Link up at 10G 0011: Light = Link up at any speed 0100: Force on 0101: Force off other: Not support

表 17. Inner PHY 用户配置示例

序号	配置值	描述
1	0x000F1243	LED0: Light = Link up at any speed, Polarity = Active High LED1: Blinking = TX/RX, Polarity = Active High LED2: Light = Link up at 10G, Polarity = Active High LED3: Light = Link up at 1G, Polarity = Active High
2	0x000F1253	LED0: Light = Link up at any speed, Polarity = Active High LED1: Light = Link up at any speed, Blinking = TX/RX, Polarity = Active High LED2: Light = Link up at 10G, Polarity = Active High LED3: Light = Link up at 1G, Polarity = Active High
3	0x000F2143	LED0: Light = Link up at any speed, Polarity = Active High LED1: Blinking = TX/RX, Polarity = Active High LED2: Light = Link up at 1G, Polarity = Active High LED3: Light = Link up at 10G, Polarity = Active High
4	0x000D1243	LED0: Light = Link up at any speed, Polarity = Active High LED1: Blinking = TX/RX, Polarity = Active Low LED2: Light = Link up at 10G, Polarity = Active High LED3: Light = Link up at 1G, Polarity = Active High
5	0x00001243	LED0: Light = Link up at any speed, Polarity = Active Low LED1: Blinking = TX/RX, Polarity = Active Low LED2: Light = Link up at 10G, Polarity = Active Low LED3: Light = Link up at 1G, Polarity = Active Low


```
Please read User_Manual carefully before configuring!!!
[Note] Modifying file : ./img/RP1000P2SFP_2000b.img
To select config option:
1. Main switch of config val
2. INNER LED config
3. Show config val
4. Show Menu
0. Exit

Input your number:2
Please input config val of Inner LED :0xf1253

Configuration completed successfully :
    Polarity : 0xf   LED : 0xf1253

Enable LED configuration or not 'Y' or 'N' : Y
LED configuration is : ON.
```

图 11. 万兆内部 PHY 软件配置示例

4.2 GPIO 配置

4.2.1 说明

内部 PHY 的 GPIO_0 和 GPIO_1 都支持定制，外部 PHY（裕泰 PHY, Marvell PHY）只有 GPIO_0 可以定制, GPIO_1 不可修改。

4.2.2 千兆网卡

- GPIO 引脚图见图 12。
- 如需要定制 GPIO,请参考表 18 中的 GPIO 配置表。
- 定制 GPIO 的部分示例见表 19。
- 软件配置示例见图 13。

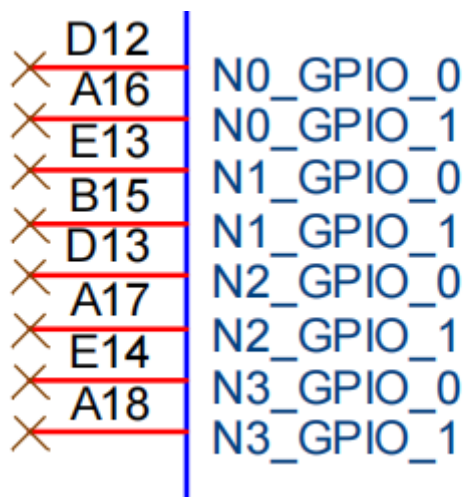


图 12. 千兆网卡 GPIO 引脚图

表 18. GPIO 配置表

Bit	说明	引脚/名称	默认值	描述
15	IO direction	N3_GPIO_1	0	Direction register written to this register. 1:output 0:input
14		N3_GPIO_0	0	
13		N2_GPIO_1	0	
12		N2_GPIO_0	0	
11		N1_GPIO_1	0	
10		N1_GPIO_0	0	
9		N0_GPIO_1	0	
8		N0_GPIO_0	0	
7	IO data	N3_GPIO_1	0	data register. 1:将该引脚电平拉高 0:将该引脚电平拉低
6		N3_GPIO_0	0	
5		N2_GPIO_1	0	
4		N2_GPIO_0	0	
3		N1_GPIO_1	0	
2		N1_GPIO_0	0	
1		N0_GPIO_1	0	
0		N0_GPIO_0	0	

表 19 定制 GPIO 用户配置示例

序号	配置值	描述
1	0x5555	N0_GPIO_0、N1_GPIO_0、N2_GPIO_0、N3_GPIO_0 信号输出 && 电平拉高
2	0x0055	N0_GPIO_0、N1_GPIO_0、N2_GPIO_0、N3_GPIO_0

	信号输入 && 电平拉高
--	--------------

```

Please read User_Manual carefully before configuring!!!
[Note] Modifying file : ./img/SF400T_20010017.img
To select config option:
1. Main switch of config val
2. YT8521s LED config
3. MV1512 LED config
4. INNER LED config
5. GPIO OEM config
6. MV1512 PHY MODE config
7. Show config val
8. Show Menu
0. Exit

Input your number:5
Please input config val of GPIO :0x5555

Configuration completed successfully
GPIO : 0x5555

Enable GPIO configuration or not 'Y' or 'N' : y
GPIO configuration is : ON.

```

图 13. GPIO 软件配置示意图

4.3 PHY MODE 配置

4.2.1 Marvell 88e1512 PHY MODE

- 如需要定制 PHY mode,请参考表 20 中的 GPIO 配置表。
- 定制 GPIO 的部分示例见表 21。
- 软件配置示例见图 14。

表 20. Marvell PHY mode 配置表

注：该表参考 Marvell 88e1512 Datasheet 中的 Table 129

只支持 000,010 两种配置

Bit	Field	HW Rst	SW Rst	Description
2:0	MODE[2:0] set port 0 phy mode	See Descri.	Update	Changes to this bit are disruptive to the normal operation; therefore, any changes to these registers must be followed by a software reset to take effect. 000 = RGMII (System mode) to Copper 001 = SGMII (System mode) to Copper 010 = RGMII (System mode) to 1000BASE-X 011 = RGMII (System mode) to 100BASE-FX 100 = RGMII (System mode) to SGMII (Media mode) 101 = Reserved 110 = Reserved 111 = Reserved 20_18.2:0 defaults to 111 for 88E1512/88E1514. Therefore, 20_18.2:0 must be programmed with the desired mode of operation. 20_18.2:0 defaults to 000 for 88E1510/88E1518.
10:8	MODE[10:8] set port 1 phy mode	See Descri.	Update	The description is the same as above.
18:16	MODE[18:16] set port 2 phy mode	See Descri.	Update	The description is the same as above.
26:24	MODE[26:24] set port 3 phy mode	See Descri.	Update	The description is the same as above.

表 20 定制 PHY MODE 用户配置示例

序号	配置值	描述
1	0x0	所有 port 设置为 RGMII (System mode) to Copper
2	0x2020202	所有 port 设置为 RGMII (System mode) to 1000BASE-X
3	0x2020000	port 0、port 1 设置为 RGMII (System mode) to Copper port 2、port 3 设置为 RGMII (System mode) to 1000BASE-X

```
Please read User_Manual carefully before configuring!!!
[Note] Modifying file : ./img/SF400T_10016.img
To select config option:
1. Main switch of config val
2. YT8521s LED config
3. MV1512 LED config
4. INNER LED config
5. GPIO OEM config
6. MV1512 PHY MODE config
7. Show config val
8. Show Menu
0. Exit

Input your number:6
Please input config val of MV1512 phy mode :0x2020000

Configuration completed successfully
PHY MODE : port0 : 0x0   port1 : 0x0
           port2 : 0x2   port3 : 0x2

Enable Marvell 88e1512 phy mode configuration or not 'Y' or 'N' : Y
Marvell 88e1512 phy mode configuration is : ON.
```

图 14. PHY MODE 软件配置示意图