Android sys_config.fex

使用指南

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版本历史

版本号	日期	制/修订人	内容描述
1.0	2024.10.31	XAA0312	初始版本
1.1	2025.3.18	XAA0312	更新适用范围

目　录

1 概述

本文档目的是介绍 sys_config.fex 各个节点配置的意义，让用户明确掌握 sys_config.fex 配置和使用方法。

本文以 A523 pro1 原型机作为例子说明。

1.1 适用范围

Android 版本：适用于 Allwinner Android 平台，包括 Android12、Android13、Android14、Android15。

Linux-kernel 版本：适用于 Linux-4.9 以上内核版本。

1.2 系统 (SYSTEM)

1.2.1 [product]

配置项	配置项含义
version	sdk 版本号
machine	sdk 代号

配置举例：

```
version = "a523"
machine = "pro1"
```

1.2.2 [platform]

配置项	配置项含义
debug_mode	boot0 打印等级。0=LOG_LEVEL_EMERG; 1=LOG_LEVEL_ALERT; 2=LOG_LEVEL_CRITICAL; 3=LOG_LEVEL_ERROR; 4=LOG_LEVEL_WARNING; 5=LOG_LEVEL_NOTICE; 6=LOG_LEVEL_INFO; 7=LOG_LEVEL_DEBUG

配置举例：

```
debug_mode  = 3
```

1.2.3 [target]

配置项	配置项含义
storage_type	启动介质选择 0： nand, 1：card0,2：card2,-1（defualt）:auto scan
power_mode	axp_type, 0:axp81X, 1:dummy, 2:axp305/axp806, 3:axp2202, 4:axp858

配置举例：

```
storage_type  = -1
power_mode    = 3
```

1.2.4 [card0_boot_para]

配置项	配置项含义
card_ctrl	卡量产相关的控制器选择 0
card_high_speed	速度模式 0 为低速，1 为高速
card_line	4：4 线卡，8：8 线卡
sdc_d1	sdc 卡数据 1 线信号的 GPIO 配置
sdc_d0	sdc 卡数据 0 线信号的 GPIO 配置
sdc_clk	sdc 卡时钟信号的 GPIO 配置
sdc_cmd	sdc 命令信号的 GPIO 配置
sdc_d3	sdc 卡数据 3 线信号的 GPIO 配置
sdc_d2	sdc 卡数据 2 线信号的 GPIO 配置

配置举例：

```
card_ctrl     = 0
card_high_speed = 1
card_line     = 4
sdc_d1        = port:PF0<2><1><3><default>
sdc_d0        = port:PF1<2><1><3><default>
sdc_clk       = port:PF2<2><1><3><default>
sdc_cmd       = port:PF3<2><1><3><default>
sdc_d3        = port:PF4<2><1><3><default>
sdc_d2        = port:PF5<2><1><3><default>
```

1.2.5 [card2_boot_para]

配置项	配置项含义
card_ctrl	卡启动控制器选择 2
card_high_speed	速度模式 0 为低速，1 为高速
card_line	4：4 线卡，8：8 线卡
sdc_ds	ds 信号的 GPIO 配置
sdc_d1	sdc 卡数据 1 线信号的 GPIO 配置
sdc_d0	sdc 卡数据 0 线信号的 GPIO 配置
sdc_clk	sdc 卡时钟信号的 GPIO 配置
sdc_cmd	sdc 命令信号的 GPIO 配置
sdc_d3	sdc 卡数据 3 线信号的 GPIO 配置
sdc_d2	sdc 卡数据 2 线信号的 GPIO 配置
sdc_d4	sdc 卡数据 4 线信号的 GPIO 配置
sdc_d5	sdc 卡数据 5 线信号的 GPIO 配置
sdc_d6	sdc 卡数据 6 线信号的 GPIO 配置
sdc_d7	sdc 卡数据 7 线信号的 GPIO 配置
sdc_emmc_rst	emmc_rst 信号的 GPIO 配置
sdc_ex_dly_used	ex_dly_used 信号
sdc_io_1v8	sdc_io_1v8 高速 emmc 模式配置

配置举例：

```
card_ctrl     = 2
card_high_speed = 1
card_line     = 8
sdc_clk       = port:PC5<3><1><3><default>
sdc_cmd       = port:PC6<3><1><3><default>
sdc_d0        = port:PC10<3><1><3><default>
sdc_d1        = port:PC13<3><1><3><default>
sdc_d2        = port:PC15<3><1><3><default>
sdc_d3        = port:PC8<3><1><3><default>
sdc_d4        = port:PC9<3><1><3><default>
sdc_d5        = port:PC11<3><1><3><default>
sdc_d6        = port:PC14<3><1><3><default>
sdc_d7        = port:PC16<3><1><3><default>
sdc_emmc_rst  = port:PC1<3><1><3><default>
```

```
sdc_ds       = port:PC0<3><2><3><default>
sdc_ex_dly_used = 2
sdc_io_1v8   = 1
```

1.2.6 [uart_para]

配置项	配置项含义
uart_debug_port	调试串口选择
uart_debug_tx	调试串口 TX 端 GPIO 配置
uart_debug_rx	调试串口 RX 端 GPIO 配置

配置举例：

```
[uart_para]
uart_debug_port = 0
uart_debug_tx   = port:PB09<2><1><default><default>
uart_debug_rx   = port:PB10<2><1><default><default>
```

1.2.7 [jtag_para]

配置项	配置项含义
jtag_enable	JTAG 使能
jtag_ms	测试模式选择输入 (TMS) 的 GPIO 配置
jtag_ck	测试时钟输入 (CLK) 的 GPIO 配置
jtag_do	测试数据输出 (TDO) 的 GPIO 配置
jtag_di	测试数据输出 (TDI) 的 GPIO 配置

配置举例：

```
jtag_enable      = 1
jtag_ms      = port:PH9<3><default><default><default>
jtag_ck      = port:PH10<3><default><default><default>
jtag_do      = port:PH11<3><default><default><default>
jtag_di      = port:PH12<3><default><default><default>
```

1.3 DRAM 配置

1.3.1 [dram_select_para]

配置项	配置项含义
select_mode	dram 模式选择, 0: 不进行自动识别。1:gpio 识别模式 (dram_para, dram_para1-15, 共 16 组有效)。2:gpadc 识别模式 (dram_para, dram_para1-7, 共 8 组有效)。3:1 个 IO+gpadc 识别模式 (dram_para, dram_para1-15, 共 16 组有效)。其中 IO 配置优先级按 select_gpio0>select_gpio1>select_gpio2>select_gpio3。4:2 个 gpadc 识别模式 (dram_para, dram_para1-15, 共 16 组有效)。
gpadc_channel	选择 gpadc 通道当 select_mode 为 2 时，代表 adc 通道号，当 select_mode 为 4 时，后 4 位代表第一个要读的 adc 通道号，前 4 位代表第二个要读的 adc 通道号。
select_gpio1-4	选择 gpio pin

```
select_mode    = 0
gpadc_channel  = 1
select_gpio0   = port:PB7<0><1><default><default>
select_gpio1   = port:PB4<0><1><default><default>
select_gpio2   = port:PH1<0><1><default><default>
select_gpio3   = port:PH0<0><1><default><default>
```

1.3.2 [dram_para]

配置项	配置项含义
dram_clk	DRAM 的时钟频率，单位为 MHz
dram_type	DRAM 类型：8 为 LPDDR4 , 由原厂调节，请勿修改
dram_zq	DRAM 控制器内部参数，由原厂调节，请勿修改
dram_odt_en	ODT 是否需要使能，为了省电，一般设置为 0, 由原厂调节，请勿修改
dram_mr0	DRAM CAS 值，可为 6,7,8,9；由原厂调节，请勿修改
dram_xxx	由原厂调节，请勿修改

配置举例：

```
[dram_para]

dram_clk     = 672
dram_type    = 7
dram_dx_odt  = 0x06060606
dram_dx_dri  = 0x0c0c0c0c
dram_ca_dri  = 0x1919
dram_para0   = 0x17171412
dram_para1   = 0x30eb
dram_para2   = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
```

```
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x1e1a1a17
dram_mr22    = 0x2a28282b
dram_tpr0    = 0x1616181e
dram_tpr1    = 0x1c1a1a16
dram_tpr2    = 0x18181818
dram_tpr3    = 0x00800000
dram_tpr6    = 0x2fb88080
dram_tpr10   = 0x002fbbcf
dram_tpr11   = 0x1415110a
dram_tpr12   = 0x14141616
dram_tpr13   = 0x2008021
dram_tpr14   = 0x25242629

[dram_para1]

dram_clk     = 672
dram_type    = 7
dram_dx_odt  = 0x06060606
dram_dx_dri  = 0x0c0c0c0c
dram_ca_dri  = 0x1919
dram_para0   = 0x16171411
dram_para1   = 0x30eb
dram_para2   = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10   = 0x002f876b
dram_tpr11   = 0x10120c05
dram_tpr12   = 0x12121111
dram_tpr13   = 0x61
dram_tpr14   = 0x211e1e22

[dram_para2]

dram_clk     = 672
dram_type    = 7
```

```
dram_dx_odt   = 0x06060606
dram_dx_dri   = 0x0c0c0c0c
dram_ca_dri   = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0      = 0x0
dram_mr1      = 0xc3
dram_mr2      = 0x6
dram_mr3      = 0x2
dram_mr4      = 0x0
dram_mr5      = 0x0
dram_mr6      = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
dram_mr13     = 0x0
dram_mr14     = 0x0
dram_mr16     = 0x0
dram_mr17     = 0x0
dram_mr22     = 0x0
dram_tpr0     = 0x0
dram_tpr1     = 0x0
dram_tpr2     = 0x0
dram_tpr3     = 0x0
dram_tpr6     = 0x2fb48080
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22

[dram_para3]

dram_clk      = 672
dram_type     = 7
dram_dx_odt   = 0x06060606
dram_dx_dri   = 0x0c0c0c0c
dram_ca_dri   = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0      = 0x0
dram_mr1      = 0xc3
dram_mr2      = 0x6
dram_mr3      = 0x2
dram_mr4      = 0x0
dram_mr5      = 0x0
dram_mr6      = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
dram_mr13     = 0x0
dram_mr14     = 0x0
dram_mr16     = 0x0
dram_mr17     = 0x0
dram_mr22     = 0x0
dram_tpr0     = 0x0
dram_tpr1     = 0x0
dram_tpr2     = 0x0
dram_tpr3     = 0x0
dram_tpr6     = 0x2fb48080
```

```
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22

[dram_para4]

dram_clk     = 672
dram_type     = 7
dram_dx_odt    = 0x06060606
dram_dx_dri    = 0x0c0c0c0c
dram_ca_dri    = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
dram_mr13     = 0x0
dram_mr14     = 0x0
dram_mr16     = 0x0
dram_mr17     = 0x0
dram_mr22     = 0x0
dram_tpr0     = 0x0
dram_tpr1     = 0x0
dram_tpr2     = 0x0
dram_tpr3     = 0x0
dram_tpr6     = 0x2fb48080
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22

[dram_para5]

dram_clk     = 672
dram_type     = 7
dram_dx_odt    = 0x06060606
dram_dx_dri    = 0x0c0c0c0c
dram_ca_dri    = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
```

```
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10   = 0x002f876b
dram_tpr11   = 0x10120c05
dram_tpr12   = 0x12121111
dram_tpr13   = 0x61
dram_tpr14   = 0x211e1e22

[dram_para6]

dram_clk     = 672
dram_type    = 7
dram_dx_odt  = 0x06060606
dram_dx_dri  = 0x0c0c0c0c
dram_ca_dri  = 0x1919
dram_para0   = 0x16171411
dram_para1   = 0x30eb
dram_para2   = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10   = 0x002f876b
dram_tpr11   = 0x10120c05
dram_tpr12   = 0x12121111
dram_tpr13   = 0x61
dram_tpr14   = 0x211e1e22

[dram_para7]

dram_clk     = 672
dram_type    = 7
dram_dx_odt  = 0x06060606
dram_dx_dri  = 0x0c0c0c0c
dram_ca_dri  = 0x1919
dram_para0   = 0x16171411
dram_para1   = 0x30eb
```

```
dram_para2    = 0x0000
dram_mr0      = 0x0
dram_mr1      = 0xc3
dram_mr2      = 0x6
dram_mr3      = 0x2
dram_mr4      = 0x0
dram_mr5      = 0x0
dram_mr6      = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
dram_mr13     = 0x0
dram_mr14     = 0x0
dram_mr16     = 0x0
dram_mr17     = 0x0
dram_mr22     = 0x0
dram_tpr0     = 0x0
dram_tpr1     = 0x0
dram_tpr2     = 0x0
dram_tpr3     = 0x0
dram_tpr6     = 0x2fb48080
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22

[dram_para8]

dram_clk      = 672
dram_type     = 7
dram_dx_odt   = 0x06060606
dram_dx_dri   = 0x0c0c0c0c
dram_ca_dri   = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0      = 0x0
dram_mr1      = 0xc3
dram_mr2      = 0x6
dram_mr3      = 0x2
dram_mr4      = 0x0
dram_mr5      = 0x0
dram_mr6      = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
dram_mr13     = 0x0
dram_mr14     = 0x0
dram_mr16     = 0x0
dram_mr17     = 0x0
dram_mr22     = 0x0
dram_tpr0     = 0x0
dram_tpr1     = 0x0
dram_tpr2     = 0x0
dram_tpr3     = 0x0
dram_tpr6     = 0x2fb48080
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22
```

```
[dram_para9]

dram_clk     = 672
dram_type    = 7
dram_dx_odt   = 0x06060606
dram_dx_dri   = 0x0c0c0c0c
dram_ca_dri   = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22

[dram_para10]

dram_clk     = 672
dram_type    = 7
dram_dx_odt   = 0x06060606
dram_dx_dri   = 0x0c0c0c0c
dram_ca_dri   = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
```

```
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10   = 0x002f876b
dram_tpr11   = 0x10120c05
dram_tpr12   = 0x12121111
dram_tpr13   = 0x61
dram_tpr14   = 0x211e1e22

[dram_para11]

dram_clk     = 672
dram_type    = 7
dram_dx_odt  = 0x06060606
dram_dx_dri  = 0x0c0c0c0c
dram_ca_dri  = 0x1919
dram_para0   = 0x16171411
dram_para1   = 0x30eb
dram_para2   = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10   = 0x002f876b
dram_tpr11   = 0x10120c05
dram_tpr12   = 0x12121111
dram_tpr13   = 0x61
dram_tpr14   = 0x211e1e22

[dram_para12]

dram_clk     = 672
dram_type    = 7
dram_dx_odt  = 0x06060606
dram_dx_dri  = 0x0c0c0c0c
dram_ca_dri  = 0x1919
dram_para0   = 0x16171411
dram_para1   = 0x30eb
dram_para2   = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
```

```
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10   = 0x002f876b
dram_tpr11   = 0x10120c05
dram_tpr12   = 0x12121111
dram_tpr13   = 0x61
dram_tpr14   = 0x211e1e22

[dram_para13]

dram_clk     = 672
dram_type    = 7
dram_dx_odt  = 0x06060606
dram_dx_dri  = 0x0c0c0c0c
dram_ca_dri  = 0x1919
dram_para0   = 0x16171411
dram_para1   = 0x30eb
dram_para2   = 0x0000
dram_mr0     = 0x0
dram_mr1     = 0xc3
dram_mr2     = 0x6
dram_mr3     = 0x2
dram_mr4     = 0x0
dram_mr5     = 0x0
dram_mr6     = 0x0
dram_mr11    = 0x0
dram_mr12    = 0x0
dram_mr13    = 0x0
dram_mr14    = 0x0
dram_mr16    = 0x0
dram_mr17    = 0x0
dram_mr22    = 0x0
dram_tpr0    = 0x0
dram_tpr1    = 0x0
dram_tpr2    = 0x0
dram_tpr3    = 0x0
dram_tpr6    = 0x2fb48080
dram_tpr10   = 0x002f876b
dram_tpr11   = 0x10120c05
dram_tpr12   = 0x12121111
dram_tpr13   = 0x61
dram_tpr14   = 0x211e1e22

[dram_para14]

dram_clk     = 672
dram_type    = 7
```

```
dram_dx_odt   = 0x06060606
dram_dx_dri   = 0x0c0c0c0c
dram_ca_dri   = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0      = 0x0
dram_mr1      = 0xc3
dram_mr2      = 0x6
dram_mr3      = 0x2
dram_mr4      = 0x0
dram_mr5      = 0x0
dram_mr6      = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
dram_mr13     = 0x0
dram_mr14     = 0x0
dram_mr16     = 0x0
dram_mr17     = 0x0
dram_mr22     = 0x0
dram_tpr0     = 0x0
dram_tpr1     = 0x0
dram_tpr2     = 0x0
dram_tpr3     = 0x0
dram_tpr6     = 0x2fb48080
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22

[dram_para15]

dram_clk      = 672
dram_type     = 7
dram_dx_odt   = 0x06060606
dram_dx_dri   = 0x0c0c0c0c
dram_ca_dri   = 0x1919
dram_para0    = 0x16171411
dram_para1    = 0x30eb
dram_para2    = 0x0000
dram_mr0      = 0x0
dram_mr1      = 0xc3
dram_mr2      = 0x6
dram_mr3      = 0x2
dram_mr4      = 0x0
dram_mr5      = 0x0
dram_mr6      = 0x0
dram_mr11     = 0x0
dram_mr12     = 0x0
dram_mr13     = 0x0
dram_mr14     = 0x0
dram_mr16     = 0x0
dram_mr17     = 0x0
dram_mr22     = 0x0
dram_tpr0     = 0x0
dram_tpr1     = 0x0
dram_tpr2     = 0x0
dram_tpr3     = 0x0
dram_tpr6     = 0x2fb48080
```

```
dram_tpr10    = 0x002f876b
dram_tpr11    = 0x10120c05
dram_tpr12    = 0x12121111
dram_tpr13    = 0x61
dram_tpr14    = 0x211e1e22
```

2 GO 版本特殊 sys_config.fex 配置

从 Android13 开始，我司 go 版本与非 Go 版本内部开使用同一款样机，内存大于 2GB。通过 sys_config.fex 不同配置，将 go 版本方案可用内存在软件上限制为 2GB. 通过修改方案 mk 文件指定使用 2G sys_config 即可。配置方法可参考 device/softwinner/saturn/a523_pro_arm_go.mk, 如下

```
# since we use the same board but only diffirent ddr, override sys_config.fex
BOARD_ADD_PACK_CONFIG += longan/device/config/chips/$(TARGET_BOARD_IC)/configs/$(PRODUCT_BOARD)/
    sys_config_ddr_2GB.fex:sys_config.fex
```

3 FAQ

3.1 sys_config.fex 跟 dts 配置同一个节点，会冲突吗

答：sys_config.fex 的配置不会合入 dts 里，sysc_config.fex 和 dts 配置相互独立。

3.2 sys_config.fex 的作用

答：sys_config.fex 目前已精简为 boot0 专属的配置文件用于更新 boot0 参数。

3.3 如果看到同一 pin 脚被两个节点复用，是否有问题

答：这个问题有以下两种可能。（1）首先判断两个节点的有没有同时开启，如果没有同时开启，就不会有问题。（2）如果两个节点同时开启，则容易出现问题。

```
example:
[twi]
twi_port      = 0
twi_scl       = port:PH0<2><default><default><default>
twi_sda       = port:PH1<2><default><default><default>

[uart0]
uart0_used    = 1
uart0_port    = 0
uart0_type    = 2
uart0_tx      = port:PH0<3><1><default><default>
uart0_rx      = port:PH1<3><1><default><default>
```

注意：如果两个节点被调用的阶段相同，则不允许复用。

3.4 为何 sys_config.fex 相比以往的 Android 版本配置少了这么多

答：自 Android 11 开始，除 boot0 的配置，所有 uboot 中要使用的配置将不再体现在 sys_config.fex，而是使用独立 dts 配置，在 device/product/configs/版型/uboot-board.dts 修改，配置 boot0 参数配置方法不变。

3.5 SDK Android 方案配置目录下为何也有 sys_config.fex 出现

答：从 Android13 开始，我司 go 版本与非 Go 版本内部开使用同一款样机，内存大于 2GB。通过 sys_config.fex 不同配置，将 go 版本方案可用内存在软件上限制为 2GB：

```
//该sys_config.fex文件 DDR模板对内存大小进行了限制，内部开发使用，切勿用于量产
device/softwinner/saturn/a523-pro/system/sys_config.fex

// 将Android方案配置中的sys_config.fex替代longan下的sys_config.fex
// 如保留使用longan下的sys_config.fex文件，请勿在方案配置中添加此行
ceres_p25_arm_go.mk:
BOARD_ADD_PACK_CONFIG += $(PRODUCT_PLATFORM_PATH)/$(PRODUCT_DEVICE)/system/sys_config.fex
```

如无特殊需求，建议仍将 sys_config.fex 配置文件放在 longan 下使用。

```
longan/device/config/chips/a523/configs/pro1/sys_config.fex
```

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