



# **SigmaStar Camera** **UART 使用参考**

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**REVISION HISTORY**

<b>Revision No.</b>	<b>Description</b>	<b>Date</b>
{000001}	• {Initial release}	{07/31/2019}



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## 1. 概述

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本篇文档主要介绍 uart 口如何配置以及如何在用户层使用 uart。

## 2. KERNEL 配置

### 2.1. Kernel padmux dts 文件中将对应的 pad 配置成对应的 uart mode

```

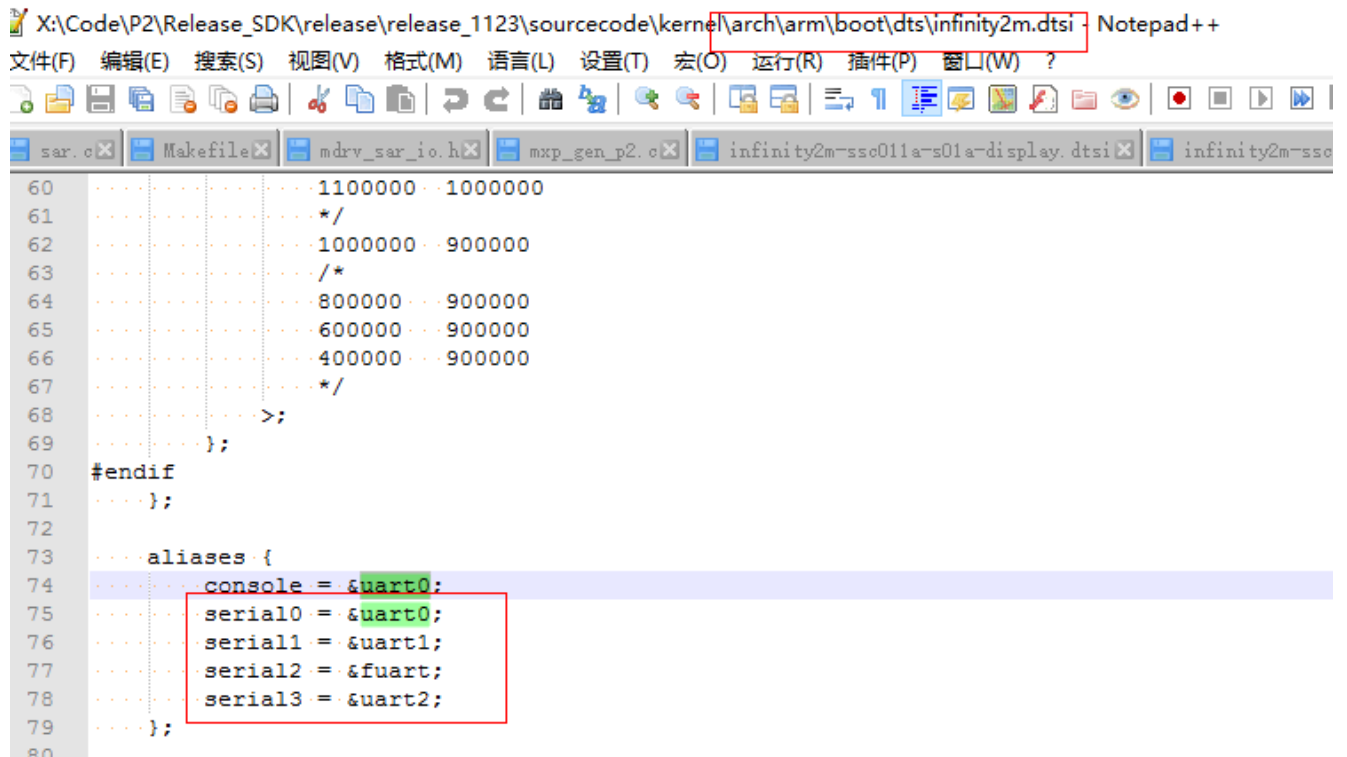
*X:\Code\P2\Release_SDK\release\release_1123\sourcecode\kernel\arch\arm\boot\dts\infinity2m-ssc011a-s01a-padmux-display.dtsi - Notepad++
文件(F) 编辑(E) 搜索(S) 视图(V) 格式(M) 语言(L) 设置(O) 宏(O) 运行(R) 插件(P) 窗口(W) ?
infini2m_ssc011a_s01a_minigui_defconfig  infinity2m-ssc011a-s01a-padmux-display.dtsi  sar.o  Makefile  mdrv_sar_io.h  mxp.g
62 ..... <PAD_TTL16 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT16 >,
63 ..... <PAD_TTL17 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT17 >,
64 ..... <PAD_TTL18 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT18 >,
65 ..... <PAD_TTL19 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT19 >,
66 ..... <PAD_TTL20 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT20 >,
67 ..... <PAD_TTL21 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT21 >,
68 ..... <PAD_TTL22 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT22 >,
69 ..... <PAD_TTL23 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DOUT23 >,
70 ..... <PAD_TTL24 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_CLK >,
71 ..... <PAD_TTL25 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_HSYNC >,
72 ..... <PAD_TTL26 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_VSYNC >,
73 ..... <PAD_TTL27 ..... PINMUX_FOR_TTL_MODE_1 ..... MDRV_PUSE_TTL_DE >,
74 ..... <PAD_UART0_RX ..... PINMUX_FOR_UART0_MODE_1 ..... MDRV_PUSE_UART0_RX >,
75 ..... <PAD_UART0_TX ..... PINMUX_FOR_UART0_MODE_1 ..... MDRV_PUSE_UART0_TX >,
76 ..... <PAD_FUART_RX ..... PINMUX_FOR_FUART_MODE_1 ..... MDRV_PUSE_FUART_RX >,
77 ..... <PAD_FUART_TX ..... PINMUX_FOR_FUART_MODE_1 ..... MDRV_PUSE_FUART_TX >,
78 ..... //<PAD_UART1_RX ..... >,
79 ..... //<PAD_UART1_TX ..... >,
80 ..... //<PAD_SD_CLK ..... PINMUX FOR I2S MODE 3 ..... MDRV_PUSE_I2S_BCK >.
    
```

配置完成后，重新编译 kernel，替换 kernel image 到 project 烧录

## 3. 用户空间如何使用 UART

### 3.1. 如何确认使用的 uart pin 使用的是哪个/dev/ttySx

通过查看 dts，确认 uart 对应的是哪路 serialx，serialx 对应的就是/dev/ttySx



The screenshot shows a Notepad++ window editing a DTS file. The file path is X:\Code\P2\Release\_SDK\release\release\_1123\sourcecode\kernel\arch\arm\boot\dts\infinity2m.dtsi. The code snippet is as follows:

```
60 .....1100000..1000000
61 .....*/
62 .....1000000..900000
63 ...../*
64 .....800000..900000
65 .....600000..900000
66 .....400000..900000
67 .....*/
68 .....>;
69 .....};
70 #endif
71 .....};
72
73 .....aliases {
74 ..... console = &uart0;
75 ..... serial0 = &uart0;
76 ..... serial1 = &uart1;
77 ..... serial2 = &fuart;
78 ..... serial3 = &uart2;
79 .....};
80
```

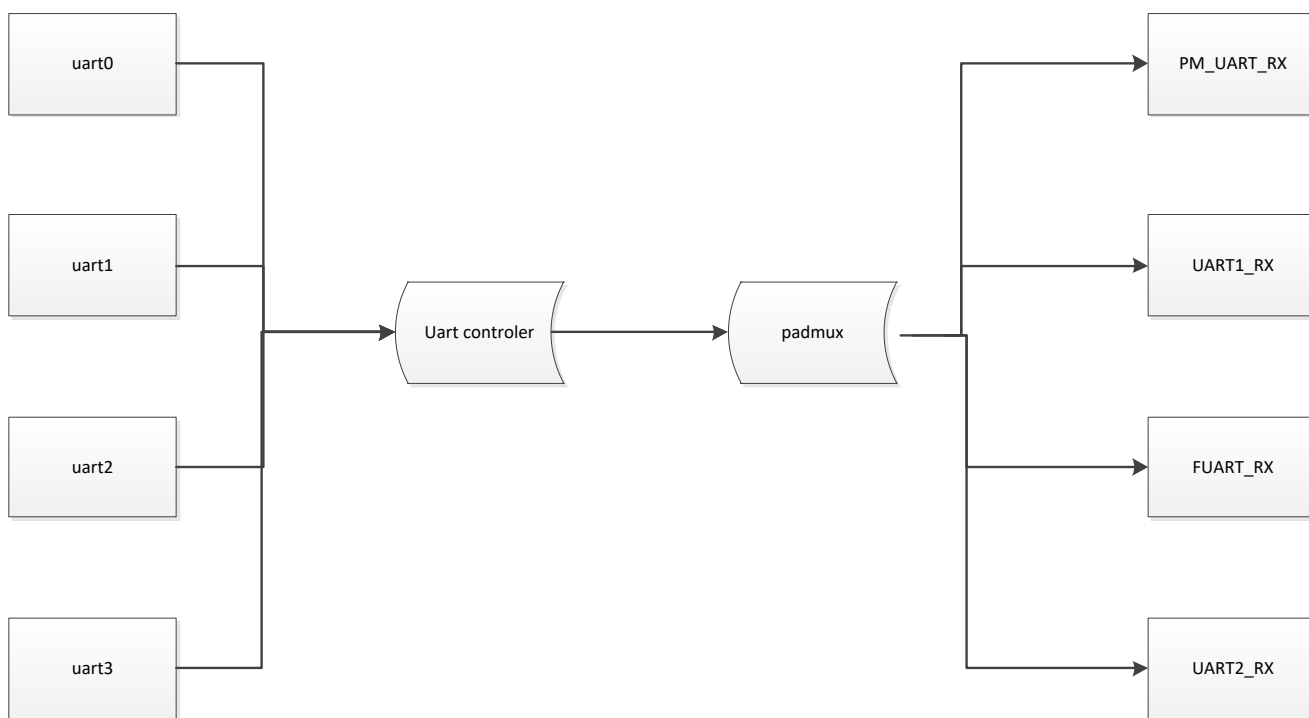
### 3.2. 应用层如何使用

应用层使用参考如下链接：

[https://blog.csdn.net/aaron\\_111/article/details/84876508](https://blog.csdn.net/aaron_111/article/details/84876508)

## 4. UART 驱动架构及 DEBUG 方法

Uart 驱动主要框架图如下：



从上图可以看出驱动的主要工作就是把 **uart controller** 和对应的 **pad** 串接起来。

可以通过以下寄存器确定对应的 **uart controller** 和 **padmux** 有没有串起来：

**Uart controller:**

**0x101e 0x53(16bit)**

h0053	h0053	3	0	reg_uart_sel0	3	0	4	h0	rw	Select controller for PAD_PM_UART_RX and PAD_PM_UART_TX 0000: N/A 0001: FUART 0010: UART0 0011: UART1 0100: <b>UART2</b> 0101: <b>UART_DEC</b> Note: For PAD_PM_UART_RX and PAD_PM_UART_TX, please refer to the "reg_hk51_uart0_en" and "reg_uart_rx_enable" in reg_pm_sleep.xls (a). "reg_hk51_uart0_en" == 0 (b). "reg_uart_rx_enable" == 1
h0053	h0053	7	4	reg_uart_sel1	3	0	4	h1	rw	Select controller for PAD_FUART_RX and PAD_FUART_TX

h0053	h0053	15	12	reg_uart_sel3	3	0	4	h3	rw	Select controller for PAD_UART1_RX and PAD_UART1_TX
h0054	h0054	3	0	reg_uart_sel4	3	0	4	h4	rw	Select controller for PAD_UART2_RX and PAD_UART2_TX

Padmux:

0x101e 0x03(16bit)

h0003	h0003	2	0	reg_fuart_mode	2	0	3	h0	rw	FUART Mode
h0003	h0003	6	4	reg_uart0_mode	2	0	3	h0	rw	UART0 Mode
h0003	h0003	10	8	reg_uart1_mode	2	0	3	h0	rw	UART1 Mode
h0003	h0003	14	12	reg_uart2_mode	2	0	3	h0	rw	UART2 Mode

公版 demo 板四路 uart 目前对应关系如下:

```
<PAD_FUART_RX      PINMUX_FOR_FUART_MODE_2      MDRV_PUSE_FUART_RX >,
<PAD_FUART_TX      PINMUX_FOR_FUART_MODE_2      MDRV_PUSE_FUART_TX >,
<PAD_UART1_RX      PINMUX_FOR_UART1_MODE_1      MDRV_PUSE_UART1_RX >,
<PAD_UART1_TX      PINMUX_FOR_UART1_MODE_1      MDRV_PUSE_UART1_TX >,
<PAD_GPIO8         PINMUX_FOR_UART2_MODE_2      MDRV_PUSE_UART2_RX >,
<PAD_GPIO9         PINMUX_FOR_UART2_MODE_2      MDRV_PUSE_UART2_TX >,
```

PM\_UART 是终端串口, 默认已经配置好, 不需要额外配置

```
< PAD_PM_UART_RX      PINMUX_FOR_UART0_MODE_0      MDRV_PUSE_UART0_RX >,
< PAD_PM_UART_TX      PINMUX_FOR_UART0_MODE_0      MDRV_PUSE_UART0_TX >,
```