CAM8200-U
Digital Camera Module

User Manual

Version 1.1 – Aug. 15th, 2014

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Revision History:

Version	Date	Description
1.0	2014-6-30	Original Version
1.1	2014-8-15	Added contents for the use under Linux (Yocto)

Table of Contents

Chapter 1 Product Overview

1.1 About CAM8200-U

CAM8200-U is a new 5-megapixel USB camera module designed by Embest Technology and featured with automatic focus, white balance, exposure control and gain control. It is currently compatible with Atmel SAMA5D4-XULT and Freescale i.MX 6 processors-based evaluation boards from Embest including RIoTboard and MarS Board. CAM8200-U can also work with PCs installed with Windows 2000\Windows XP\Windows 7 system (the driver required will be installed automatically under Windows systems). CAM8200-U implements image capture by working with an evaluation board to which the module is connected through a mini USB cable.

1.2 Packing List

- CAM8200-U Module×1
- Mini USB Cable×1 (Mini type B male to USB2.0 type A male)

1.3 Product Features

- Product Dimensions: 43mm×43mm×5.88mm
- Operating Temperature: -20 ℃ ~ 70 ℃
- Operating Temperature for Stable Imaging: 0℃ ~ 50℃
- Focus: Auto
- Object Distance: 30cm ~∞
- Resolution: 600LW/PH (Center)
- Interface: USB 2.0
- Power Consumption: 150mW (VGA), 200 mW (QSXGA)
- Active Array Size: 2592×1944
- Pixel Size: 1.4μm×1.4μm

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- Max Frame Rate: 15 fps (QSXGA)
- AGC/AEC/White Balance: Auto
- Compatible Boards: SAMA5D4-XULT, MarS Board and RIoTboard (can also work with a PC installed with Windows 2000\Windows XP\Windows 7)

Chapter 2 Interface Definitions

This chapter lists the pin definitions of the OTG interface on CAM8200-U:

Table 2-1 USB OTG interface

Pins	Definitions	Descriptions
1	VBUS	+5V
2	DN	USB Data-
3	DP	USB Data+
4	ID	USB ID
5	GND	GND

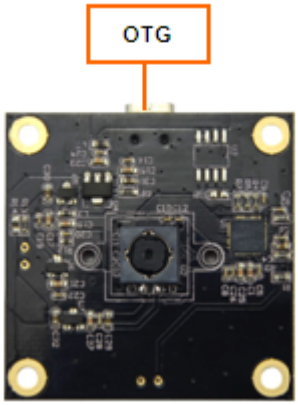


Figure 2-1 OTG interface of CAM8200-U

Chapter 3 Hardware Preparations

This chapter contains a list of hardware required and will introduce how to connect them together.

3.1 Hardware Requirements

- Evaluation Board Installed with Linux System*1 (SAMA5D4-XULT,RIoTboard/MarS Board)
- CAM8200-U Camera Module*1
- Mini USB Cable*1
- TF Card*1 (optional)
- 5V Power Adapter*1

3.2 Hardware Connections

1） As shown in the following image, please use the Mini USB cable to connect CAM8200-U camera module to the USB interface of an evaluation board (SAMA5D4-XULT is taken as an example here)

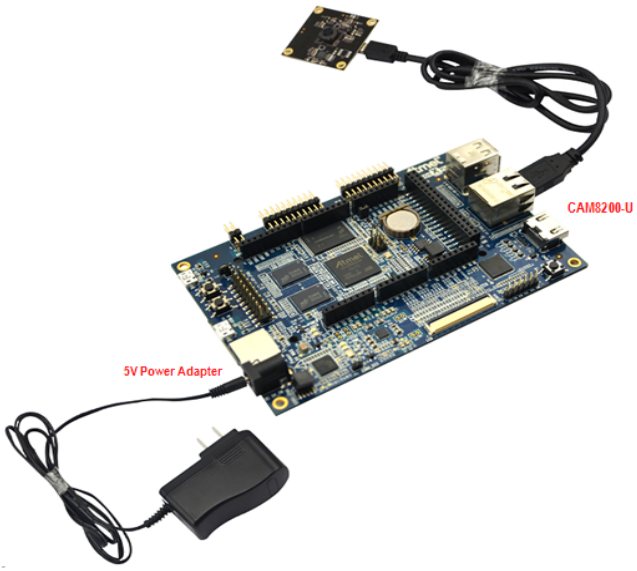
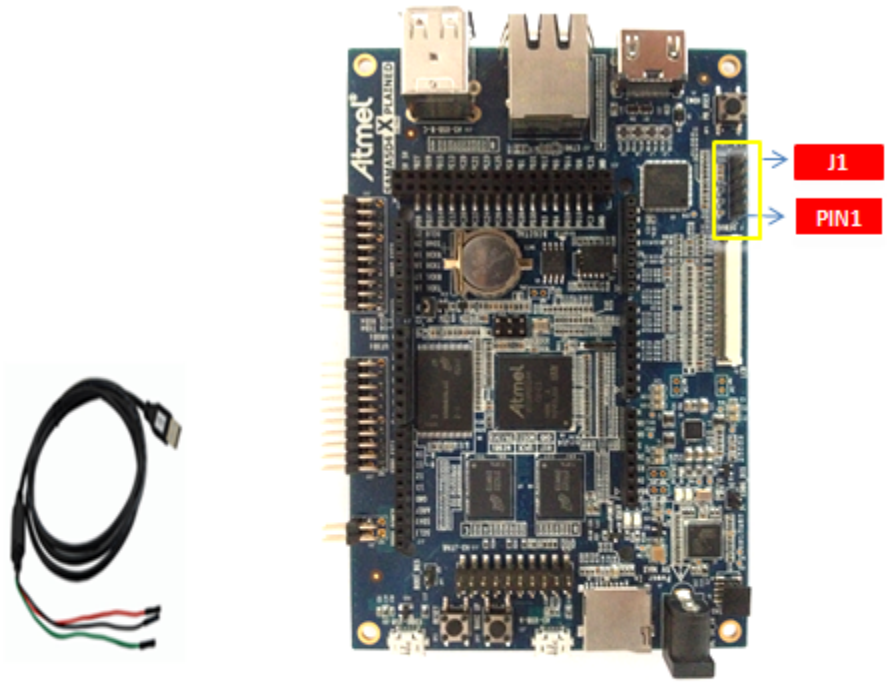


Figure 3-1 Hardware Connections 1

2） Connect an UART8000-U converter cable to the J1 pin header on SAMA5D4-XULT according to the illustration shown below, and then connect the other end of the cable to an USB interface of your PC.



UART8000-U	
Line	Signal
Black	GND
Red	TXD
Green	RXD

SAMA5D4-XULT	
PIN	Signal
6	GND
3	RXD
2	TXD

Figure 3-2 Hardware Connections 2

Note:

🕮 Please refer to UART8000-U User Manual for information on software configurations.

Chapter 4 Use under Linux

4.1 System platform

Hardware:

- Target board (SAMA5D4-XULT)
- CAM8200-U Module
- SD card
- 5V power adapter

Software:

- Boot image(target board\linux\image\）
- luvc_test(disk-CAM8200-U\linux\)

4.2 Preparation

1. According to the target board using a corresponding image to start the development board.

2. If the customer had modified the kernel source, the user can added the new configuration to the kernel, refer the following steps:

Enter to the following kernel:

```
cd linux-at91
make distclean
make sama5d4_defconfig
make menuconfig
```

As the following kernel configs:

```
Device Drivers  --->
  Multimedia devices  --->
    [*] Video capture adapters  --->
      [*]   V4L USB devices  --->
        <*>   USB Video Class (UVC)
        [*]     UVC input events device support
```

Input the following commands to compile the kernel:

```
make
make uImage
```

You can find the file “uImage” on the directory of arch/arm/boot/, replace the uImage on the SD card and run the board.

4.3 Testing

1) Copy the file luvc_test(disk\linux\) to the SD card

2) Insert the SD card to the target board

3) Turn on the board and input the following commands:

Photographed testing:

4.3-inch LCD:

```
./luvc_test -c -f yuyv -s 320x240 -c --skip 10 /dev/video0
```

7-inch LCD:

```
./luvc_test -c -f yuyv -s 640x480 -c --skip 10 /dev/video0
```

The photo capture.jpg will be generated on the directory /tmp/.

The command "-skip 10" means skip 10 frames which can catch the image clearly.

Technical Support and Warranty

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Embest Technology provides its product with one-year free technical support including:

- Providing software and hardware resources related to the embedded products of Embest Technology;
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- Helping customers troubleshoot the products.

The following conditions will not be covered by our technical support service. We will take appropriate measures accordingly:

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- Customers encounter issues related to their own applications;
- Customers encounter issues caused by any unauthorized alter to the source code provided by Embest Technology;

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- Customers fail to provide valid purchase vouchers or the product identification tag is damaged, unreadable, altered or inconsistent with the products.
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- Products are damaged in appearance or function caused by power failure, external forces, water, animals or foreign materials;
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- Product failures caused by the software or system installed by customers or inappropriate settings of software or computer viruses;
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3） Within the period of warranty, the freight for sending products from customers to Embest Technology should be paid by customers; the freight from Embest to customers should be paid by us. The freight in any direction occurs after warranty period should be paid by customers.

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Note:

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