AISTARVISION MIPI Adapter V2.0 UserGuide

This MIPI adapter board is designed for 96Boards CE edition.By providing a simple way to integrate camera system to your project,you could build “smart” application based on it,no matter it’s drone,robot or even IoT. Our goal of this project is to make 96Boards support multiple image sensors,include raw bayer sensor and SOC sensor.

Sensors support list by 05/04/2017:

1) OV5645:YUYV
2) OV5640:YUYV
3) OV7251:RAW10

Hardware

1 High speed connector(Camera interface)

This adapter supports both CSI0 and CSI1 from High Speed Connector of 96Boards,so you can have two cameras streaming simultaneously.It has up to 4 data lanes for CSI0 and 2 data lanes for CSI1.

Sensor input clock ,reset and power down

You have three different options to select the input clock for image sensor of each CSI interface:clock from adapter board, 96Boards or sensor board itself.And for sensor reset or power down ,following CE spec,controlled by GPIO of 96Boards by default

1.1 Camera Module Connector J3 and J4

1) Sensor support and status

These two connectors are only for 2 data lane mipi modules. So far we have OV5645 and OV5640 supported by J3 and J4.

OV5645 Module Part#:AMC5014OV-ATV01 V1.0(auto focus)
OV5640 Module Part#:AMC5014OV-ATV00 V1.0(auto focus)
Driver Status: DONE

Note:

OV5645 module based on our MIPI Adapter works for Dragonboard410C since Linaro release 16.06.OV5640 also works,but needs a little bit setting change,we’ve uploaded the modified driver for OV5640 to our github,see the last page for software and support

2)Hardware configuration on MIPI Adapter board for OV5645/OV5640

CSI0/CAM0 Jumpers:

J13: 19-20 for CSI0 CCI SCL
J13: 21-22 for CSI0 CCI SDA
J14: 5-6 for 24MHz OSC clock for camera module of CSI0

CSI1/CAM1 Jumpers:

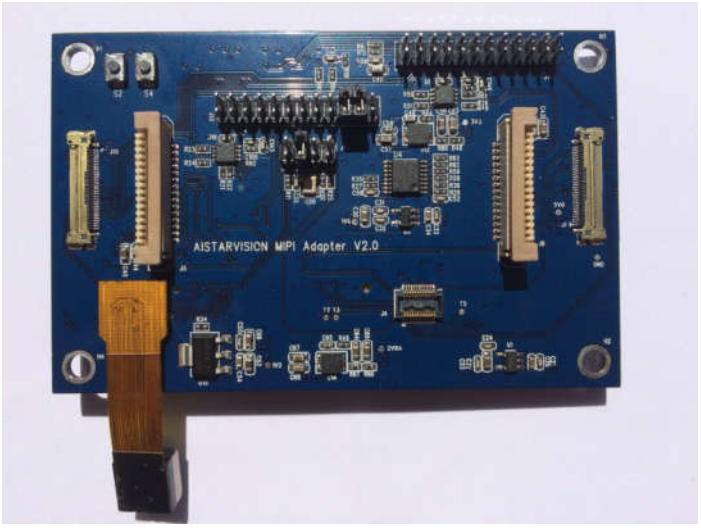
J13: 15-16 for CSI1 CCI SCL

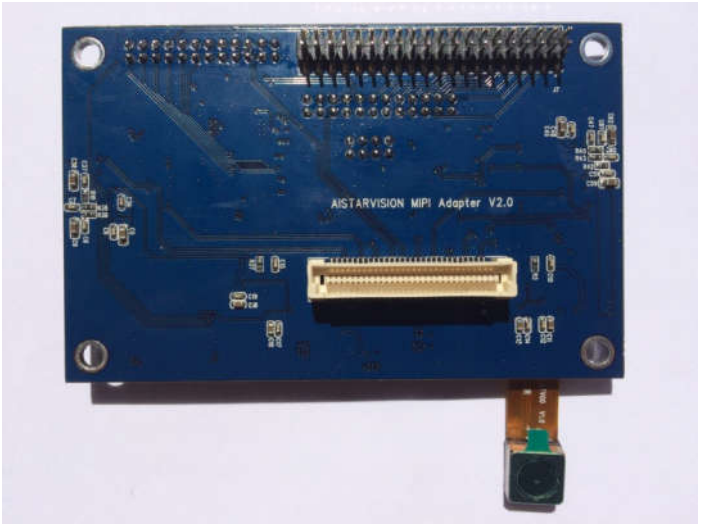
J13: 17-18 for CSI1 CCI SDA

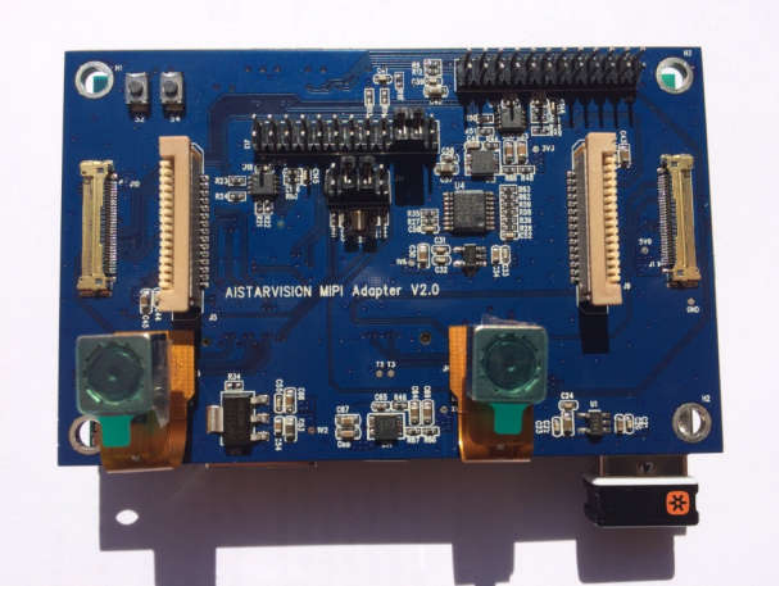
J14: 3-4 for 24MHz OSC clock for camera module of CSI1

Note:We will provide updated driver for CSI1 hardware configuration in about one month.The current driver uses I2C2 for both CSI0 and CSI1 at this moment,which means CSI1/CAM1 uses the same i2c bus as CSI0/CAM0,you may need some rework to get CSI1/CAM1 work:I2C2_SCL to CAM1_SCL and CAM2_SCL;I2C2_SDA to CAM1_SDA and CAM2_SDA.

3) OV5645/OV5640 on AISTARVISION MIPI Adapter V2.0







1.2 Camera Connector J5 and J9 for Raspberry PI module

Raspberry PI is a popular SBC,a lots of developers build camera applications with Raspberry PI camera module.So we want people also have this option if they already had a Raspberry PI camera when using 96Boards

OV5647 camera module Part#:Raspberry Pi Camera Rev1.3
IMX219 camera module Part#:Raspberry Pi Camera Module V2
Drivers Status:TBD

1.3 Camera Connector with I-IPEX for J1 and J10

A lots of drones and robots use IPEX connector as their camera interface,so we have this interface supported.The first sensor supported by IPEX connector is OV7251 camera module.
OV7251 with AISTAR-OV adapter
Driver Status:DONE

2. Low speed connector(serial and GPIO)

Those following peripherals are still available on MIPI adapter board:
Serial Ports:UART0,UART1,I2C0,I2C1 and I2C2,SPI0 and SPI1
GPIO:12, 13,24,25,28,33,34,35,36,69,110,113,114,115,

Software and Support

You should be able to find everything regarding this project from our github：
https://github.com/Kevin-WSCU/Dragonboard410C-Camera
This includes schematic for adapter board,module spec,driver sample code and driver status as well.If you have any question,let us know,we will try our best to help you.Here is our email address:support@aistarvision.com

About US

We've been doing some machine vision project based on Dragonboard410C,and we realized that it's not just us, many people are working on drones ,robots and IoT projects. So we hope this adapter board would make it much easier for everyone who are interested in building camera applications based on Dragonboard410C.

Document History:

Revision	Date	Notes	Who
Rev1.0	03/01/2017	Initial draft	Allen.Z
Rev1.1	05/04/2017	Update OV7251 driver	Kevin.W