



# OA-II VEH Camera System Design

DR00002

Rev: A01

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2019-07-10

# Table of Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
1.1	Scope . . . . .	3
1.2	Purpose . . . . .	3
<b>2</b>	<b>Revision History</b>	<b>3</b>
<b>3</b>	<b>General Structure of Camera System</b>	<b>4</b>
3.1	Introduction . . . . .	4
<b>4</b>	<b>Camera Sensor and Relative Interface</b>	<b>5</b>
4.1	Introduction . . . . .	5
4.2	DVP Interface . . . . .	5
4.3	LVDS Interface . . . . .	5
4.4	MIPI CSI-2 Interface . . . . .	5
<b>5</b>	<b>H.264 Video Steam Encoding</b>	<b>6</b>
5.1	Introduction . . . . .	6
5.2	IP core Description . . . . .	6
<b>6</b>	<b>File System and Video Storage</b>	<b>7</b>
<b>7</b>	<b>System Diagram</b>	<b>8</b>

# 1 Introduction

## 1.1 Scope

This document discuss the current camera technology and construct a design that will fullfill the need for OA-II VEH system.

## 1.2 Purpose

The goal for this document is come up with a design that will provide four 1080p 60Hz video steam and storage to a central storage media by research the current camera technology.

# 2 Revision History

Rev#	Editor	Delta	Date
A01	Jinzhi Cai	Initialize	2019-7-10

Table 1: Summary of Revision History

## 3 General Structure of Camera System

### 3.1 Introduction

The most basic camera system have three part. The camera sensor is the device that will receive data from the environment and transfer it via the camera interface. The data that flow out from the sensor is call raw data. It contain all the information that the camera get from the environment. A 1080p 60Hz camera have  $1920 * 1080 = 2073600$  pixels. One pixels usually take 3Bytes to save. For each second,  $2073600 * 3 * 60 = 373248000$  Bytes will be created. That will be 355.96MB/s for one single camera. The encoder is use to compress the video steam smaller for it to transmission via long distance data link(usually with in 1MB/s). The storage unit is use to save the video steam to a file and allow future replay.

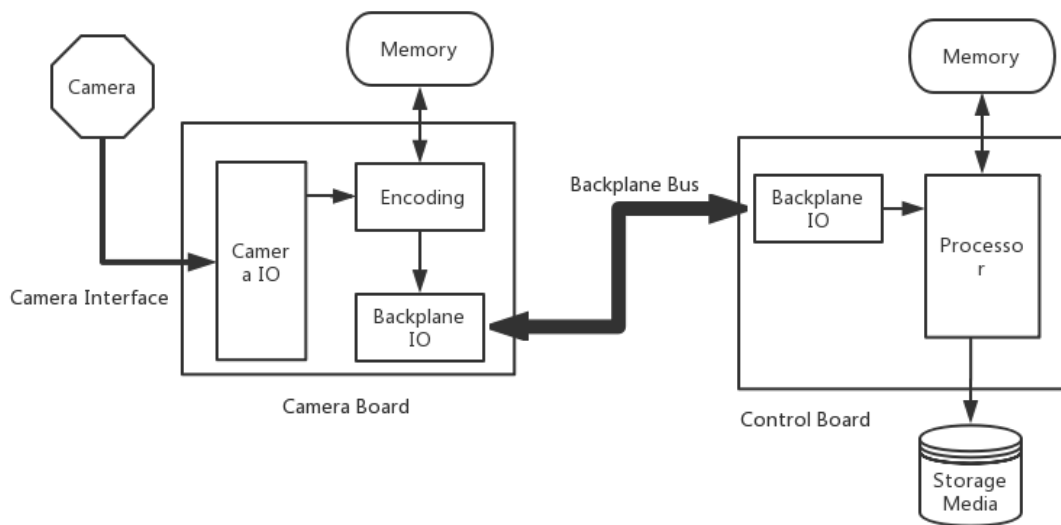


Figure 1: General Structure of Camera System

## 4 Camera Sensor and Relative Interface

### 4.1 Introduction

The camera sensor is the most important part in the camera system. Modern camera sensor usually use one of those three camera interface.

### 4.2 DVP Interface

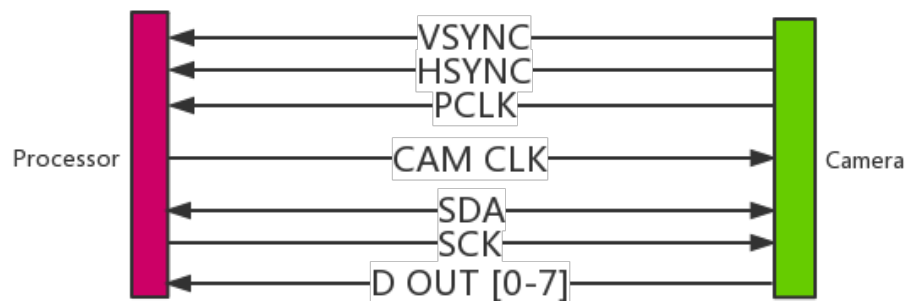


Figure 2: Physical Layer for DVP Interface

### 4.3 LVDS Interface

### 4.4 MIPI CSI-2 Interface

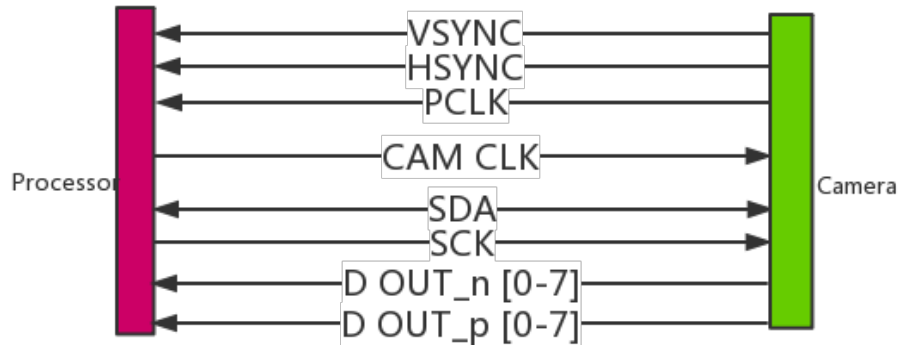


Figure 3: Physical Layer for LVDS Interface

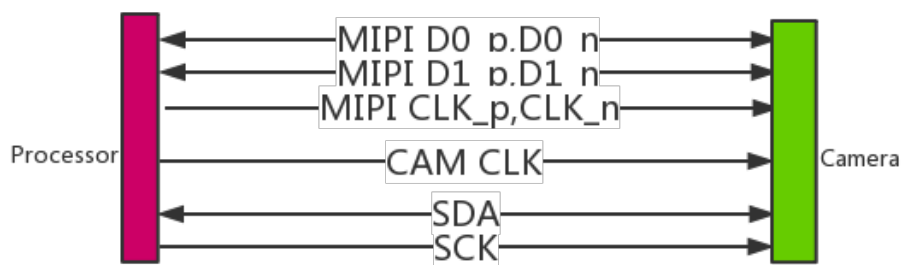


Figure 4: Physical Layer for MIPI Interface

## 5 H.264 Video Steam Encoding

### 5.1 Introduction

### 5.2 IP core Description

## **6 File System and Video Storage**

## 7 System Diagram