Eve Autonomy

Cargo Delivery ODD Reference Hardware Architecture

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Introduction

This document has been prepared based on data received from Eve Autonomy for the cargo delivery vehicle and contains the hardware architecture of the autonomous vehicle.

Table of Content

1. Lidar's Information

1.1 Velodyne Puck Lidar

Velodyne's Puck lidar sensor (previously VLP-16) is shown in the Figure 1. This sensor's range is 100m and Horizontal/Vertical FoV values are 360°/30°.

Figure 1. Velodyne Puck Lidar

Link to ROS2 driver: https://index.ros.org/p/velodyne_driver/
Link to company website: https://velodynelidar.com/products/puck/

1.2 Livox "Horizon" Lidar

Livox's Horizon lidar sensor is shown in the Figure 2. This sensor's range is 260m and Horizontal/Vertical FoV values are 81.7°/25.1°.

Figure 2. Livox "Horizon" Lidar

Link to ROS2 driver: https://github.com/Livox-SDK/livox_ros2_driver
Link to company website: https://www.livoxtech.com/horizon

2. Sensor & Camera Locations

The locations of the sensors are given in Figure 3.

Figure 3. The Locations of All Sensors and Camera

Table 1 contains the code names and models of the sensors whose locations are given.

Table 1. The Cone Names of All Sensors and Camera

No	Sensor Model	Code Name
1	Velodyne PUCK Lidar	VLP16
2	Camera	Cam
3	Horizon Lidar	HL_R
4	Horizon Lidar	HL_M
5	Horizon Lidar	HL_L
6	GNSS/INS	GNSS

3. Sensor & Camera FoVs

The field of views (FoVs) of all camera and Lidar sensors are shown in the Figure 4 and Figure 5:

Figure 4. The FoVs of All Sensors and Camera

Figure 5. The FoVs of All Sensors and Camera

4. The Sensors and System

The computer model and hardware used in the vehicle are shown in the hardware architecture diagram in Figure 6.

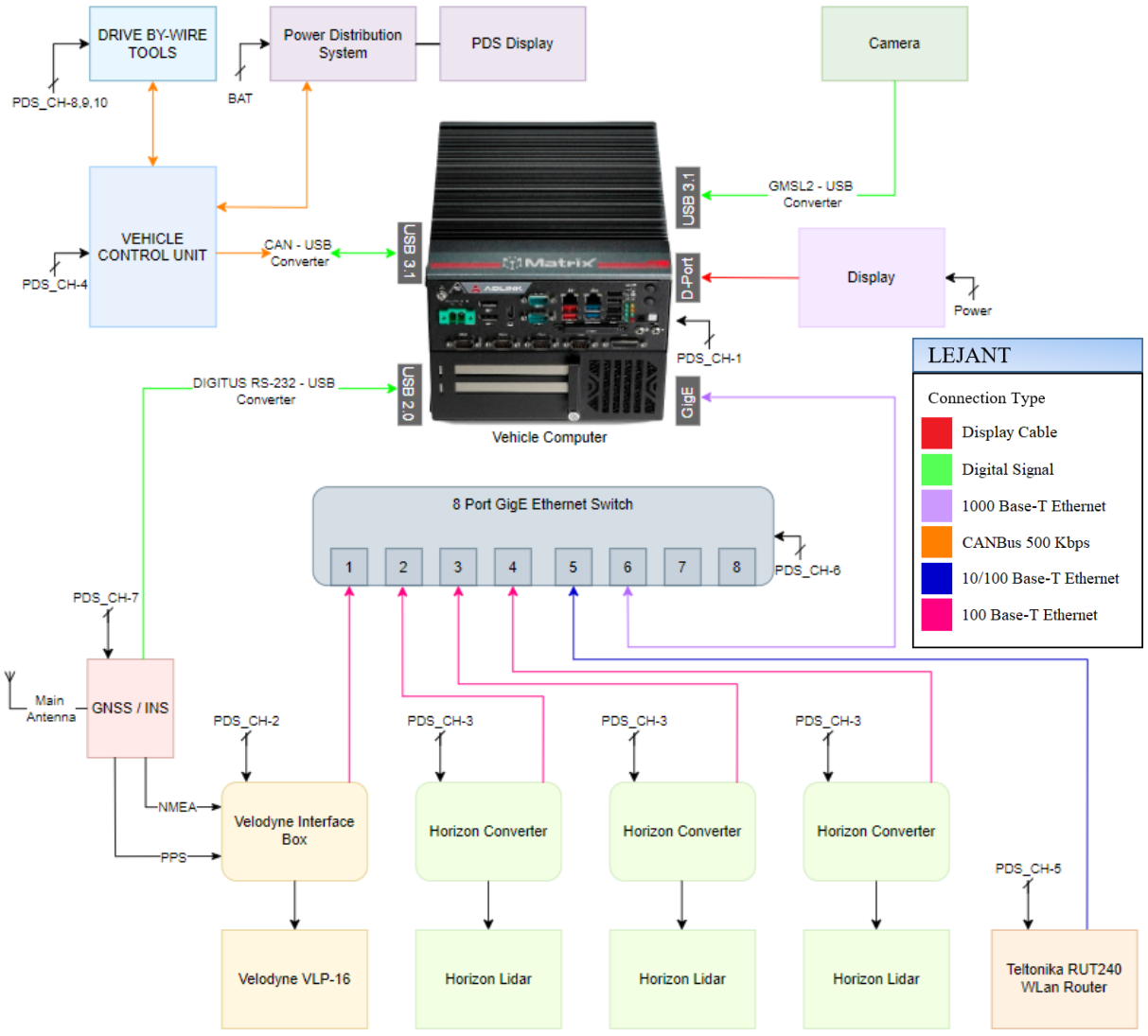

Figure 6. The Sensors and System Diagram

5. Power Distribution System

The Power Distribution System diagram of the hardware is given in Figure 7.

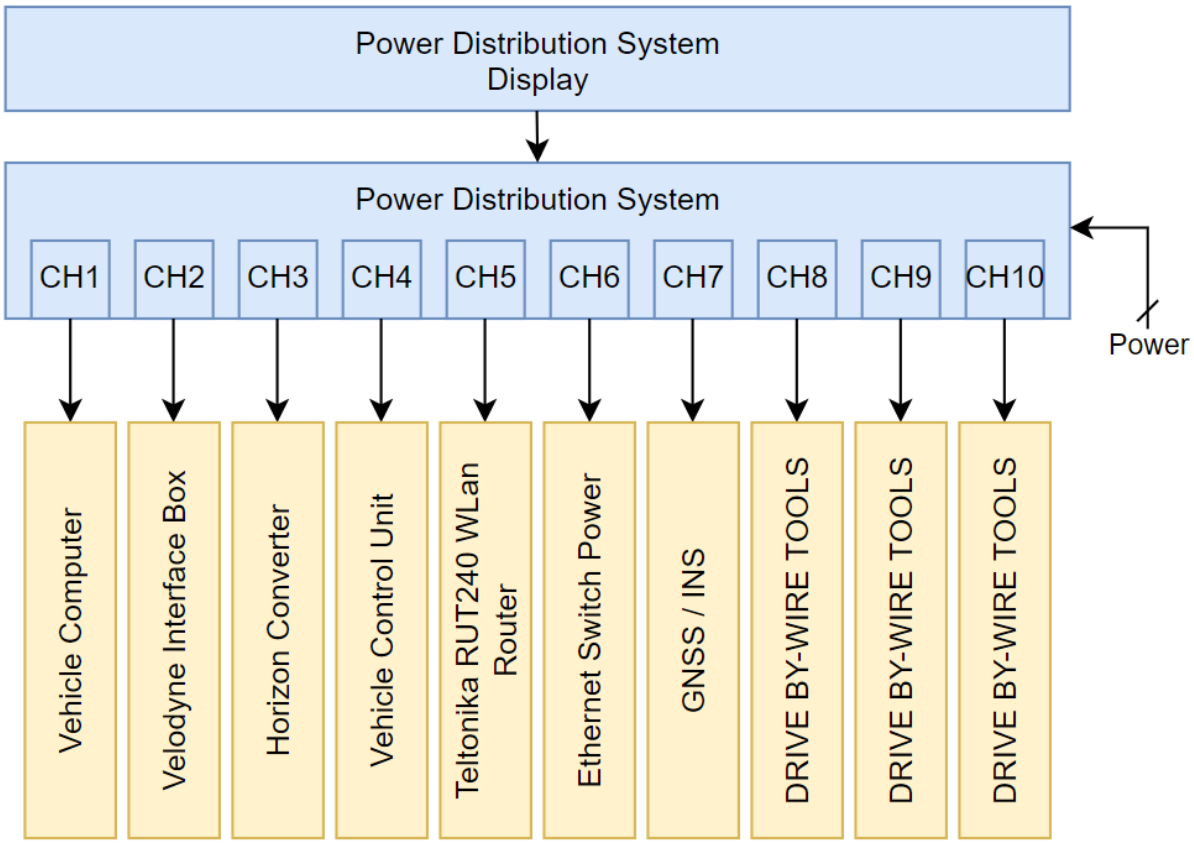

Figure 7. Power Distribution System Diagram

6. MXC-6600 Series

The port information of the MXC-6600 series computer is shown in the Functional Block Diagram in Figure 8.

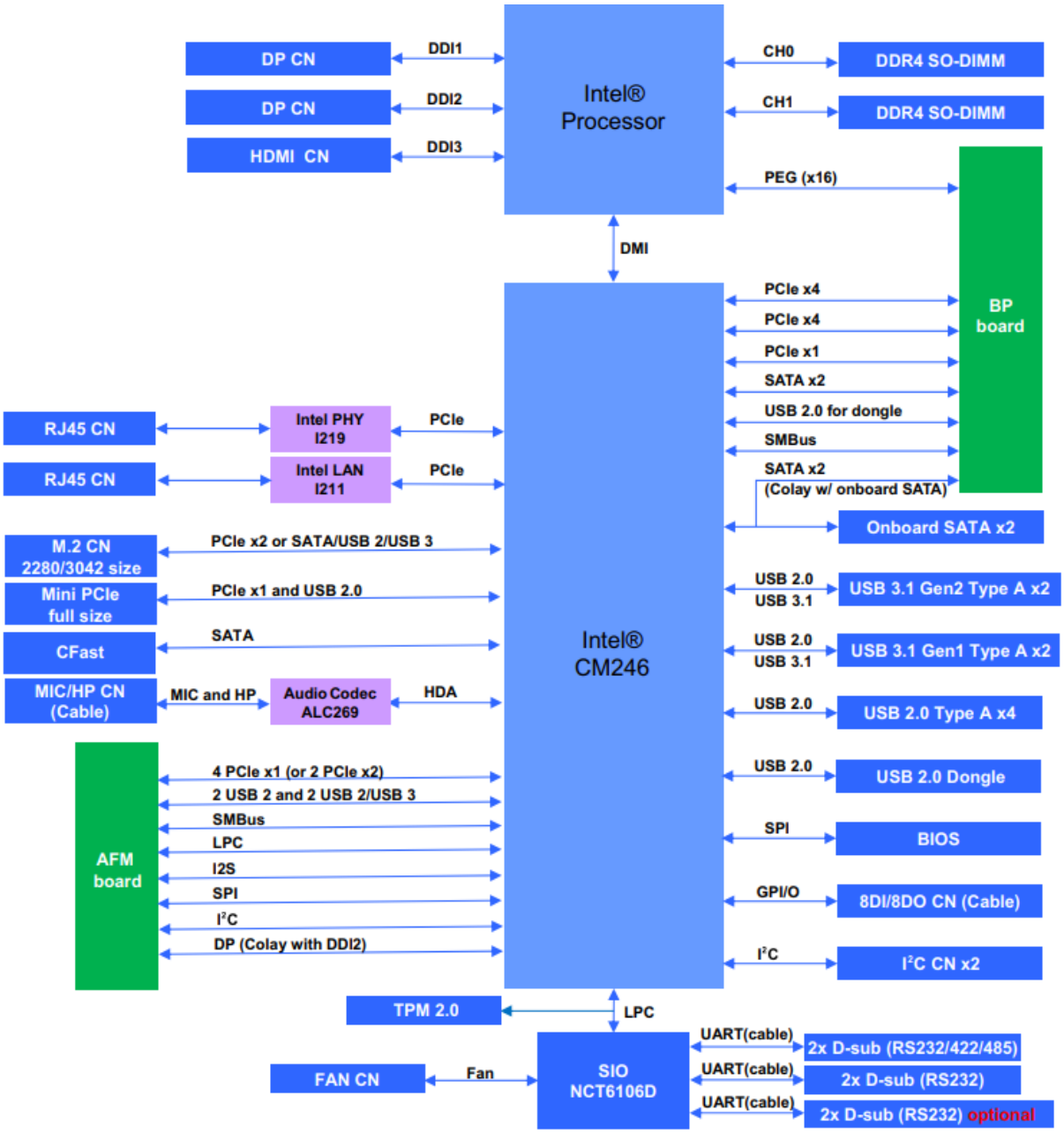

Figure 8. MXC-6600 Series Functional Block Diagram