Automated Vehicle Display/Data Logging Application

The Demands Autonomous Vehicle Applications Place On Embedded Systems

The complex challenges required to develop a truly autonomous vehicle are brought to the forefront in the research and design phase. Using COTS embedded intelligence to allow for vehicle deployed, "always on" systems provide engineers with terabytes of data. Resulting technologies will contribute to future autonomous vehicle/ augmented active safety systems that will eventually become standard throughout the industry. Tested under arduous on and off road track conditions, embedded systems on these test vehicles need to meet near military grade shock/vibration and extended temperature demands.

Recognizing the SWaP value and rugged "stacking" profile of the PCIe/104 small form factor, a need was defined to create a compact, vehicle ready data logging "black box" with removable high capacity SSD storage. It also required multi-core Intel i7 processing power, dual Gig-E networking capability, and automatic event logging. The specification required operation in hot vehicle trunk spaces where temperatures could reach over 110 degrees Fahrenheit, but with little airflow or chassis thermal mass to cool to.

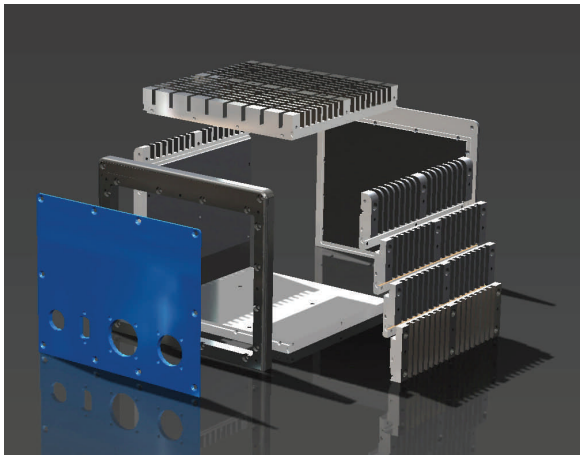

Fig. 1: Exploded View

ADLMES-8200-P1 (4-Card Chassis)

The Solution

ADL Embedded Solutions' Modular Enclosure System (MES), with its configurable dimension flexibility and fast turn modular construction, represented the ideal enclosure to build the system around. Using an ADLQM67PC-i7-2655 SBC, a highly efficient ADLPS35-150 watt power supply, and 500 GB removable SSDs, the resulting MES "Data logger" system boasts high IP rating, fan assisted radiant cooling, dual Gig-E networking, and "mount anywhere" flexibility. All in a ribbed aluminum walled enclosure measuring, 4.6"h x 7.0"w x 6.6"d.

With minimal NRE and readily available standard IO faceplates, the MES represents a fast turn system enclosure compliment for all our market leading SBCs. Our design team stands ready to develop similar systems as per customer needs, using Solidworks tools and superlative front end engineering support to minimize delay and maximize ROI.

Platform Hardware Options and Features

- ADLQM67PC "Sandy Bridge" or ADLQM87PC "Haswell" i5/i7 Dual and Quad Processors
- 1-2 Gig-E Ports with Option for 4 more with ADLLAN
- 500GB Removable SSD (not shown)
- -40C to +50C Temp Passive Air Assist
- -40C to +85C Temp Range with Chassis Cooling

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