



# Hardware Design Project

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## Project: 3D LiDAR Interface and CAN-FD Bridge Module

### Objective

Design a compact, MCU-based embedded system to power a 3D LiDAR sensor, receive its Ethernet output, and transmit selected, filtered data over a CAN-FD bus. The system is intended for integration into mobile robotic platforms that require a simplified LiDAR data feed over a lightweight interface.

This project is intended solely as a study case for evaluation and educational purposes. It is not intended for commercial use, deployment in production environments, or as an official design for any company product.

### Core Requirements

- Single-board design using only SMD components.
- Lidar Model: <https://www.livoxtech.com/mid-360>
- Wide-input DC power (9–36V)
- Provide regulated power output for the LiDAR
- Ethernet interface for receiving packets from the LiDAR.
- CAN-FD interface for sending processed data.
- Small form factor suitable for space-constrained robotic platforms.
- Use XT30-2+2 connector for power and CAN communication.

### Constraints

- MCU-based architecture.

- Design must consider DFM (Design for Manufacturability) and DFT (Design for Test).
- Firmware development is not required.

## **Deliverables**

- 15-minute presentation covering the system architecture, key component choices, and design rationale.
  - Schematic, PCB layout files, BOM, and Gerber files ready for manufacturing.
  - Description of how the system will handle data flow from Ethernet to CAN-FD.
  - Proposed test strategy for validating key functions.
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