



EMERSONTM

Sponsor: Bert Downing

Ethernet APL Media Converter

A communication device that translates USB data into Ethernet APL

Our Journey

- Diode trace routing issue-holdover from eval board
- Minor software issues-CRC firing incorrectly, timeout, etc.
- Several versions of the boost converter needed for ideal results

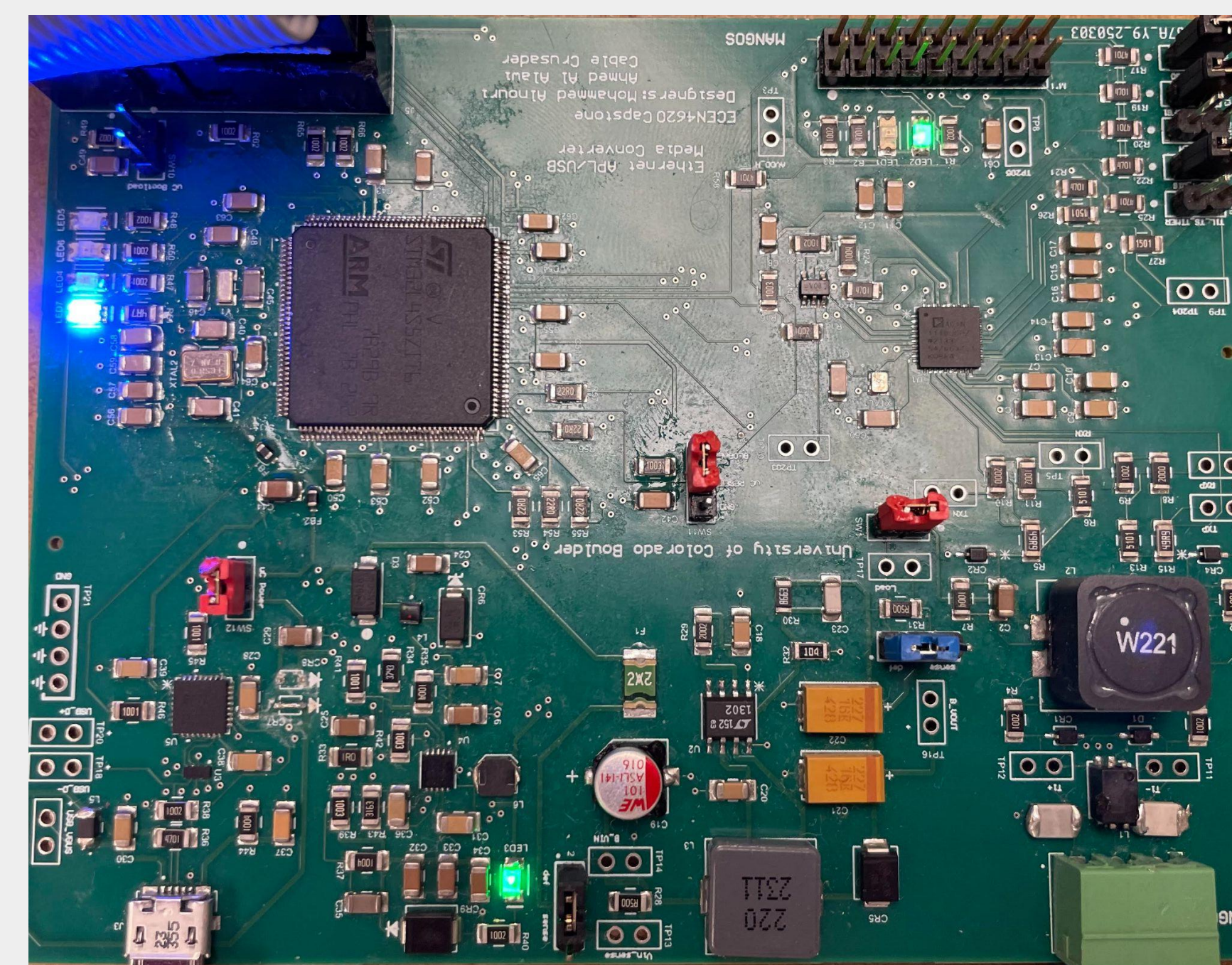
Ethernet APL

- 10 Mbit
- Effective up to 1000m
- 2-wire
- Intrinsically safe

Comparison	4 mA to 20 mA with HART	Field Bus	10BASE-T1L
Data Bandwidth	1.2 kbps	31.25 kbps	10 Mbps
Higher Level Ethernet Connectivity	Complex gateways	Complex gateways	No gateways, seamless connectivity
Power to Instrument	<40 mW	Limited power	IS: 500 mW non IS up to 60 W (cable dependent)
Knowledge/Expertise	Shrinking knowledge/expertise	Shrinking knowledge/expertise	Ethernet technology is very familiar to all college graduates

Features

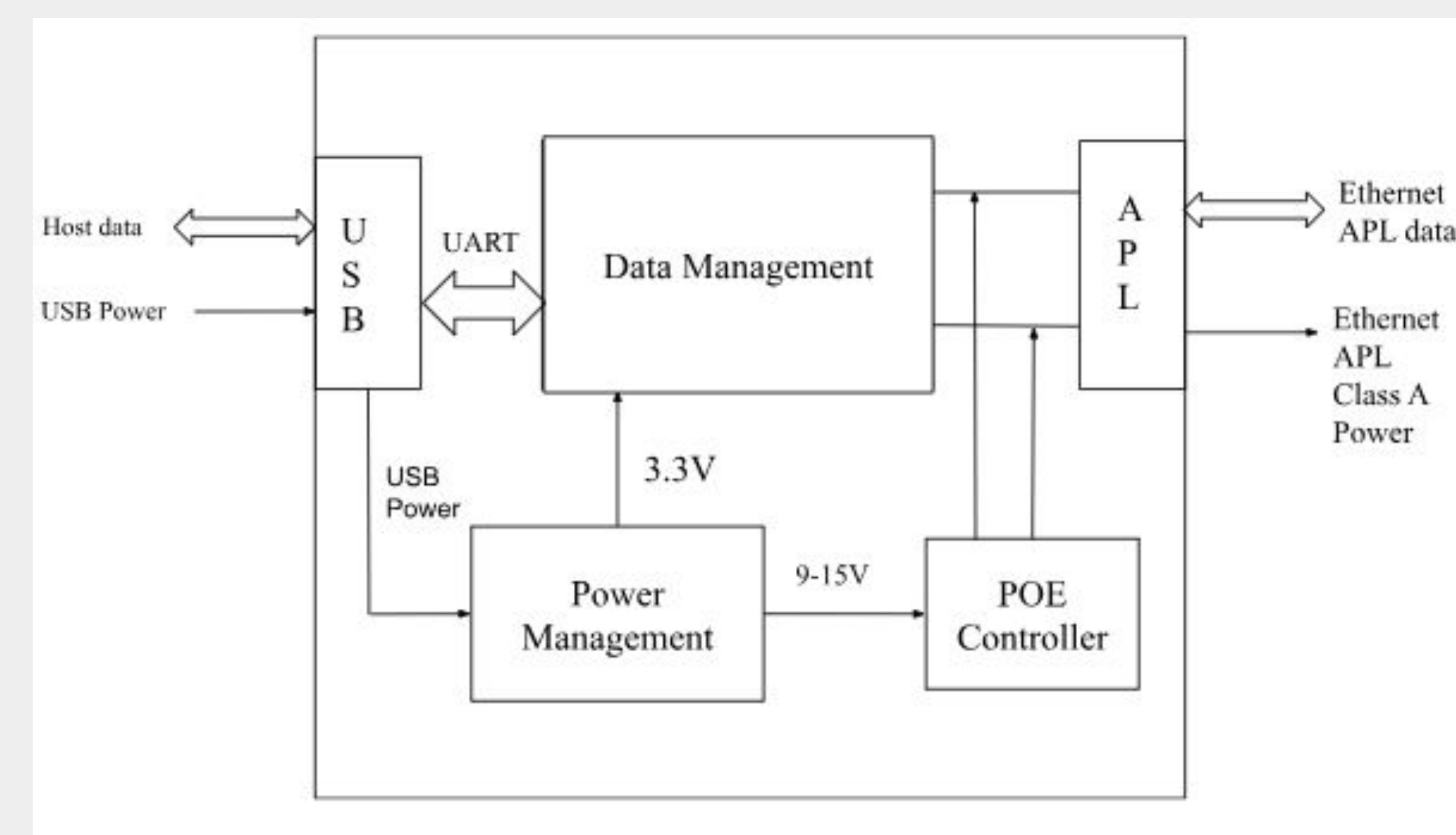
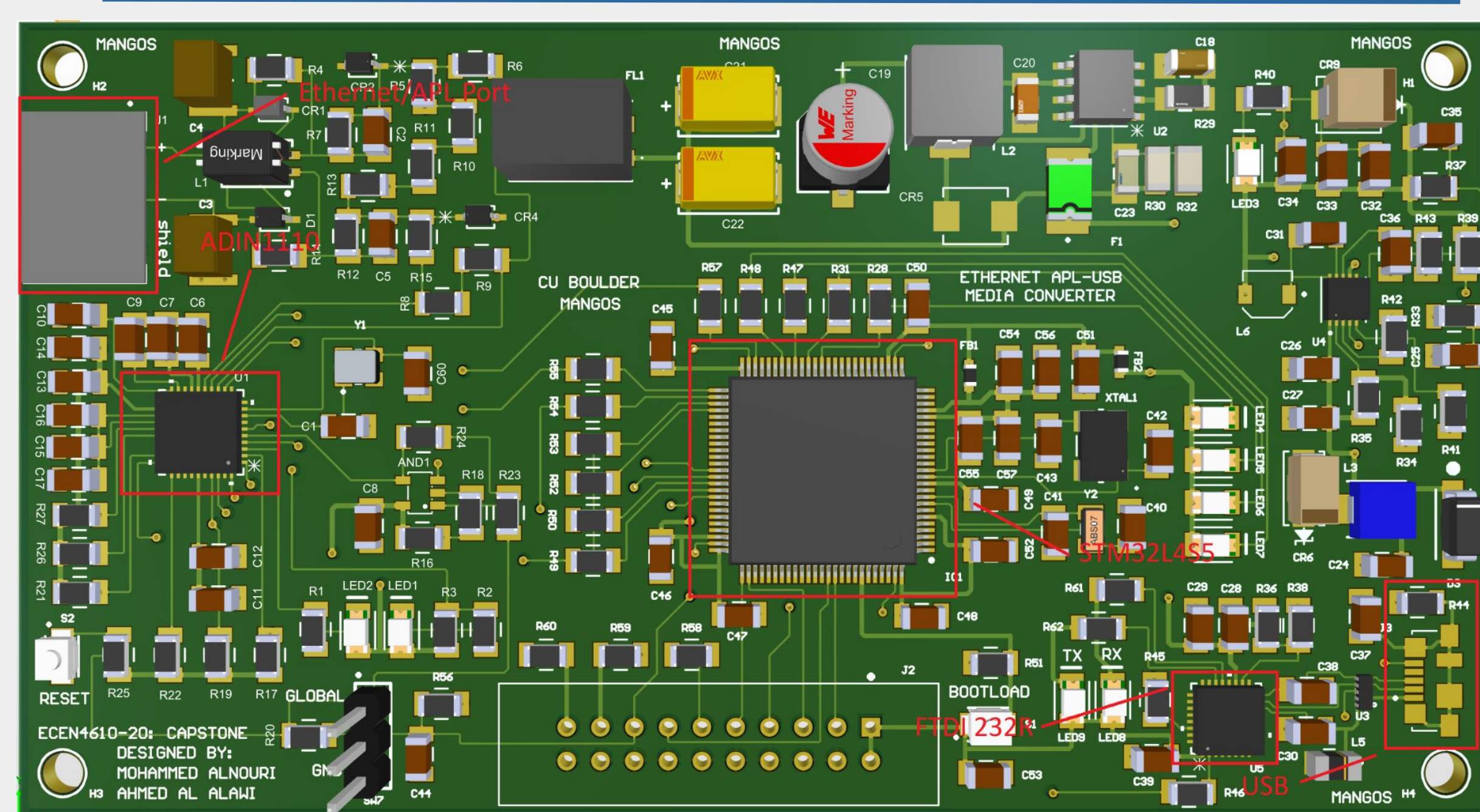
- Enclosed/partially sealed
- Fully powered from USB port
- 2 total connections
- Customizable software



How it Works

- The pc sends instructions in the form of Modbus RTU data packets to the media converter over a USB connection-also powers the entire converter
- Our device converts the Modbus RTU packets into Modbus TCP packets and sends these packets to the connected APL device.
- Essentially a translator that could be expanded to other ethernet protocols (PROFINET, NetBIOS, ARP)

Final PCB



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