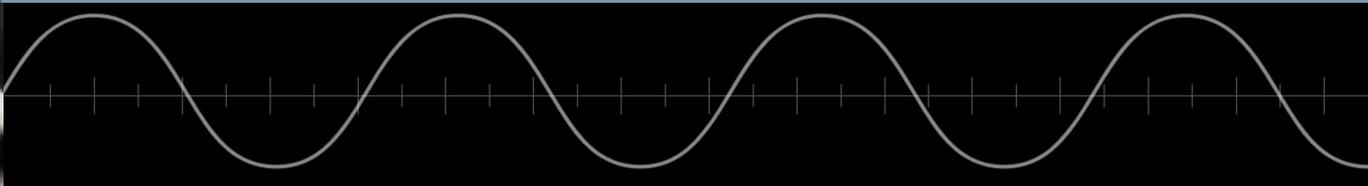


# PoDL Isolation

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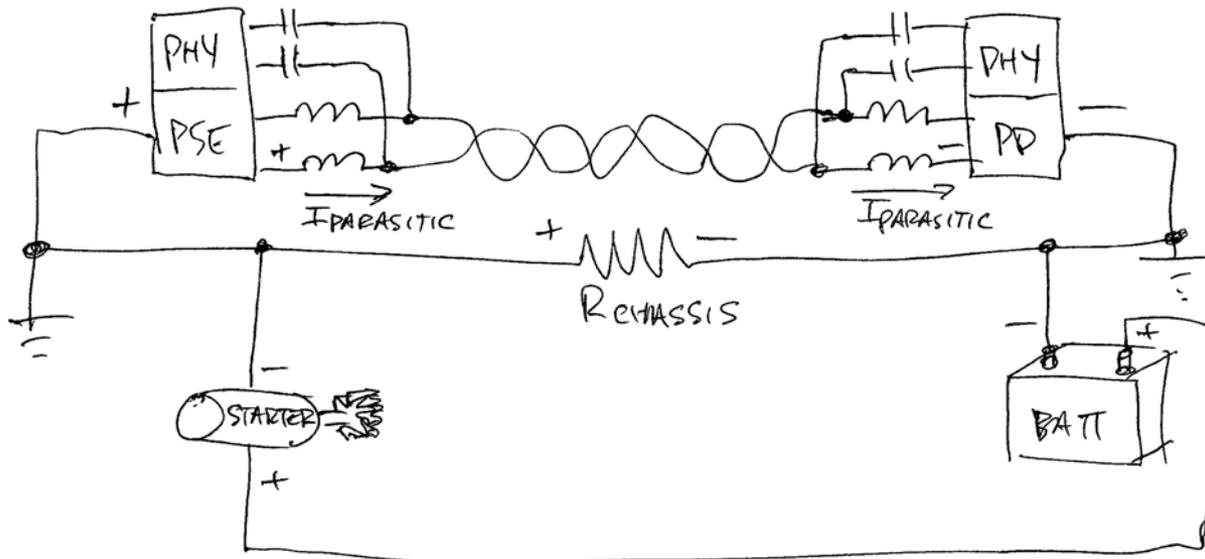


## Isolation in PoDL is needed to ensure data integrity and interoperability

- PoDL-powered links will require isolation at (at least) one end in most cases
  - PSE: Power source, typically central or satellite Ethernet switch
  - PD: Power sink, typically a camera

## Here's Why

- Parasitic ground-loop current flows in just one inductor causing saturation
- Inductance mismatch due to current mismatch causes mode conversion

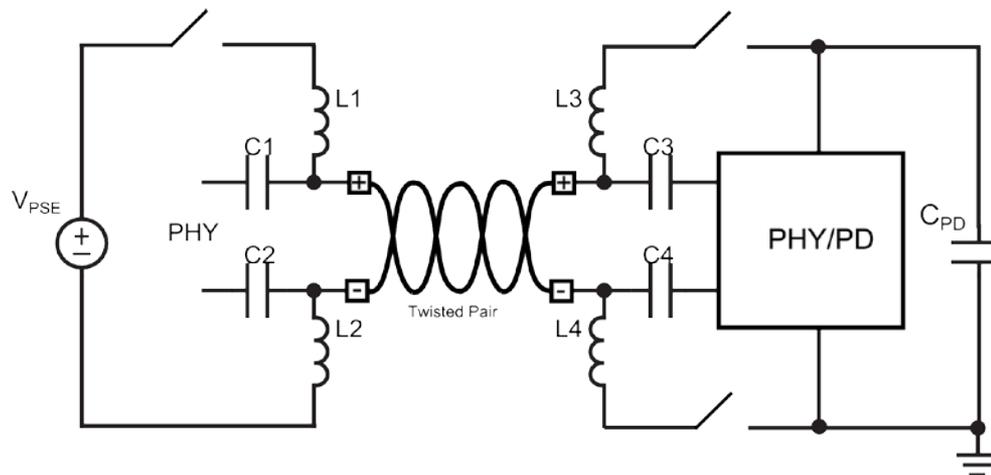


## Three Ways to Fix It

- Isolate PSE (port-chassis and port-port)
- Isolate PD power supply
- Isolate PD chassis

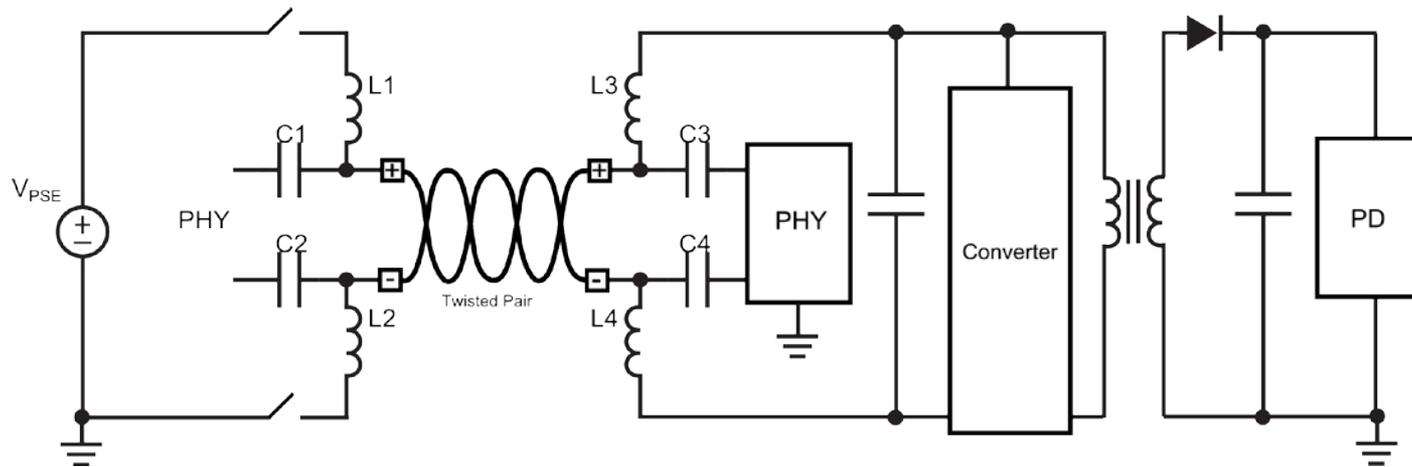
## Isolate PSE

- Pushes burden/cost into PSE (generally good)
- Multi-port PSEs must be isolated port-to-port (one supply per port adds complexity)
- Grounded PD requires two switches for fault protection (adds PD complexity)
- PD PHY caps must tolerate max fault voltage



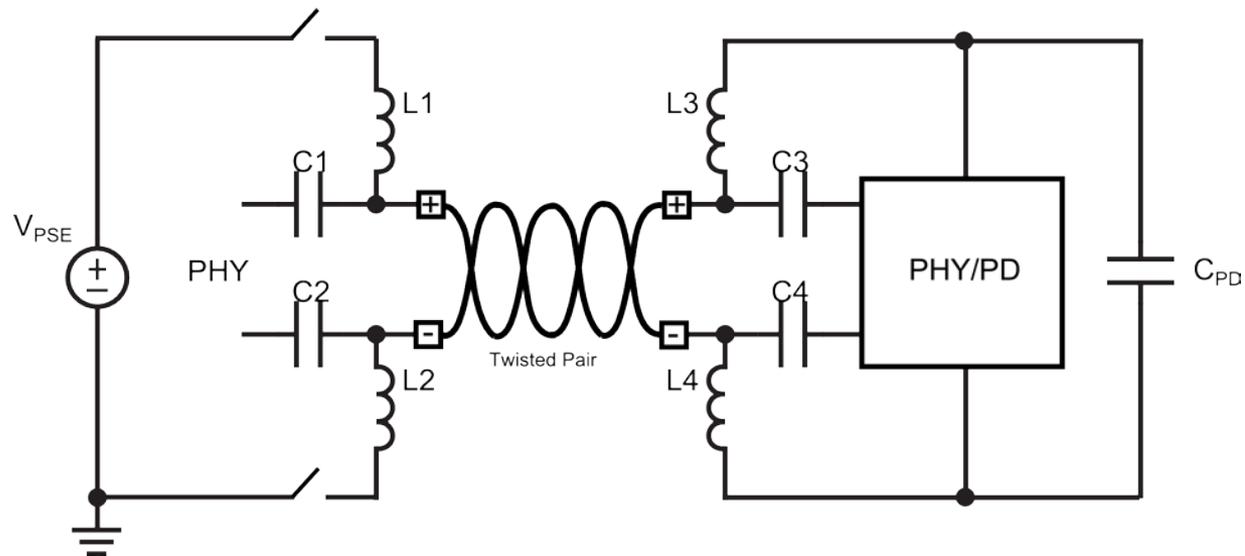
# Isolate PD Power Supply

- Simplifies PSE design
- Isolated power converter adds cost and complexity to PD
- PD PHY caps must tolerate max fault voltage



## Isolate PD Chassis

- Simplifies PSE design
- Simple PD design (plastic housing)
- PD PHY caps only see low voltage
- Lowest cost overall



# Isolation Requirements

- UL60950 style isolation is not required.
- Isolation only needs to withstand max transients seen by automotive bus (<100V?).

# Questions?