DTE Power via MDI

Method for Powered DTE (PDTE) Authentication

Proposal by:

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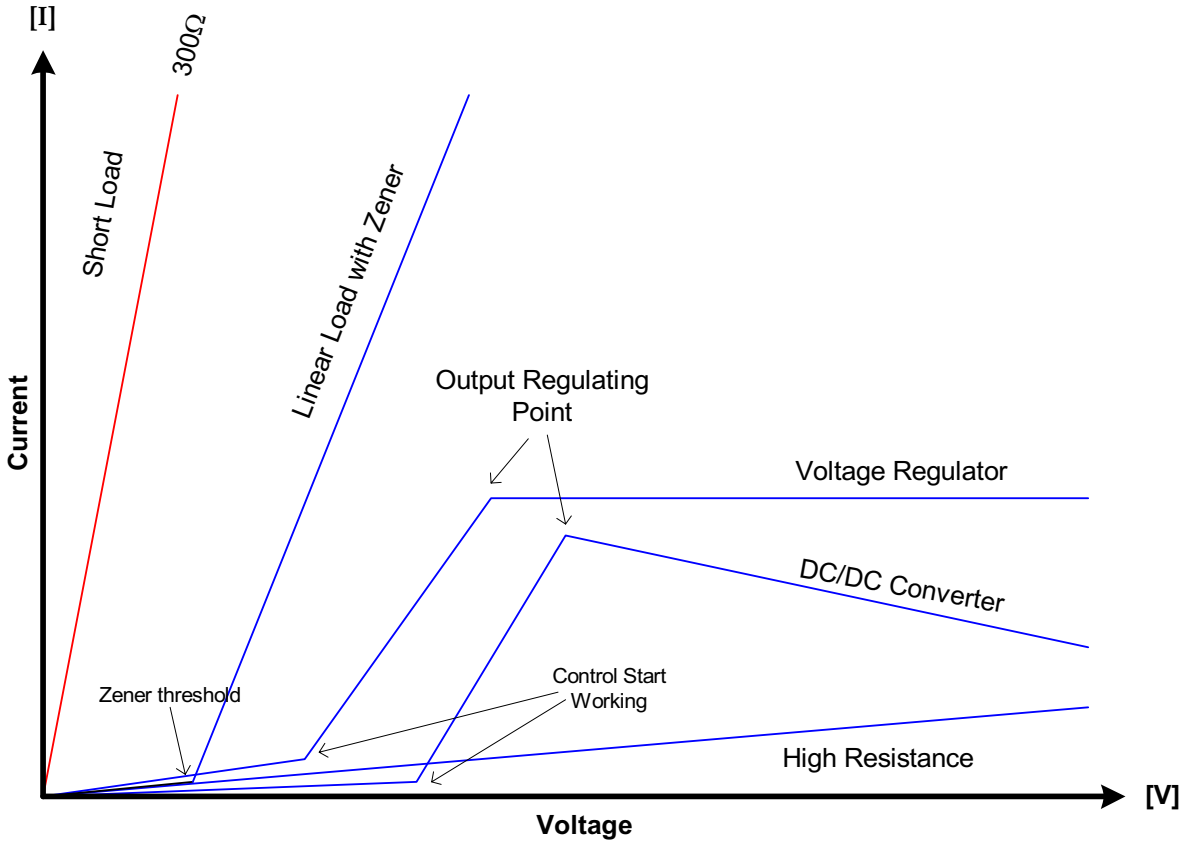
Authentication Mechanism Goals:

- Prevent damage
- Reliable determination
- Use of power path only
- No overhead & degradation to the data communication
- Identify PDTE disconnects and deactivate power ASAP
- Minimal additional cost and complexity to PDTE
- Minimal additional cost to source
- Fast as possible
- Optional PDTE classification

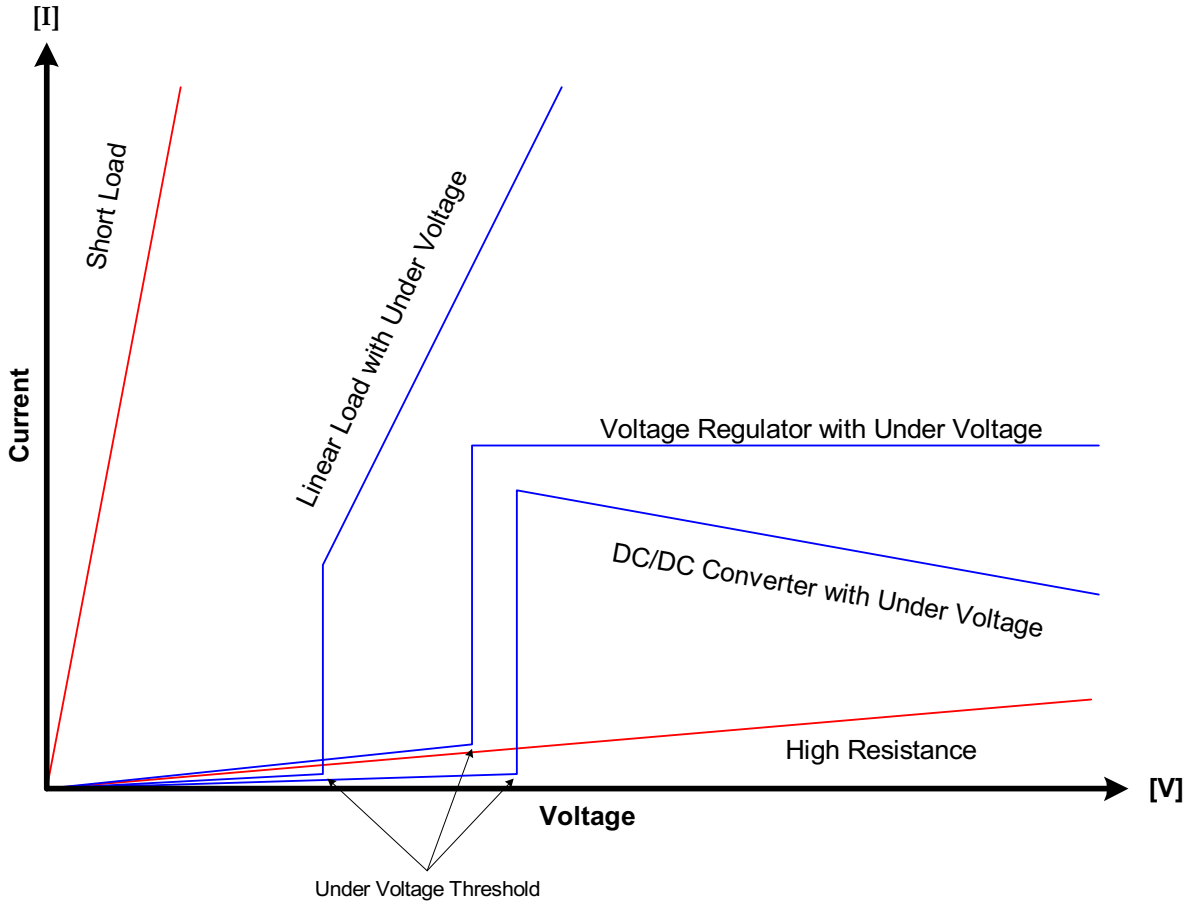
Possible RJ45 Terminal Types

- DTE
  - "Bob Smith" termination (i.e. resistance & capacitance to shield)
  - Line transformers ?
- PDTE
  - DC/DC converters
  - Voltage regulators
  - Resistive Load (bulbs, DC motors, ect.)
- Others
  - Short circuit, open circuit...

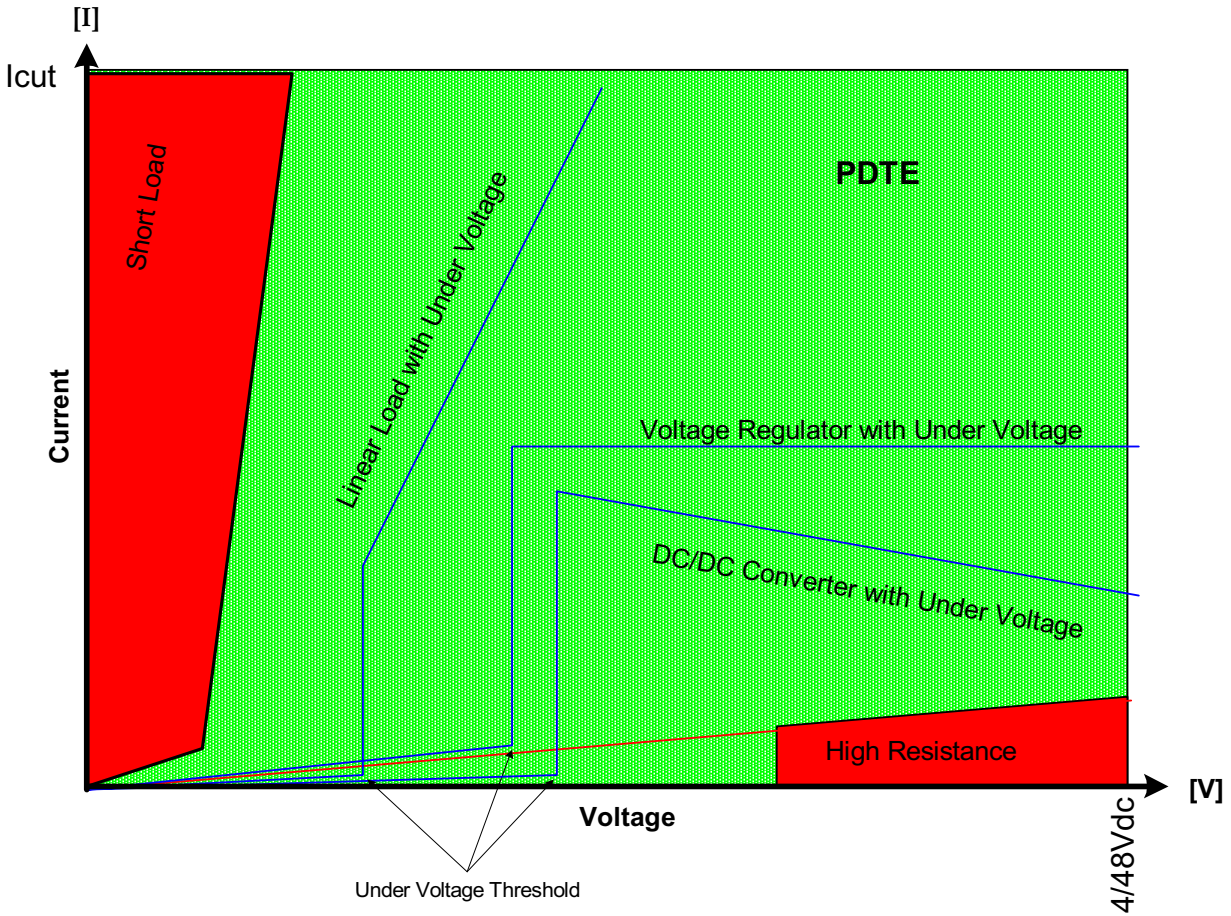
Load Mapping



Loads Mapping (utilizing Under-Voltage Protection)



PDTE Authentication Area



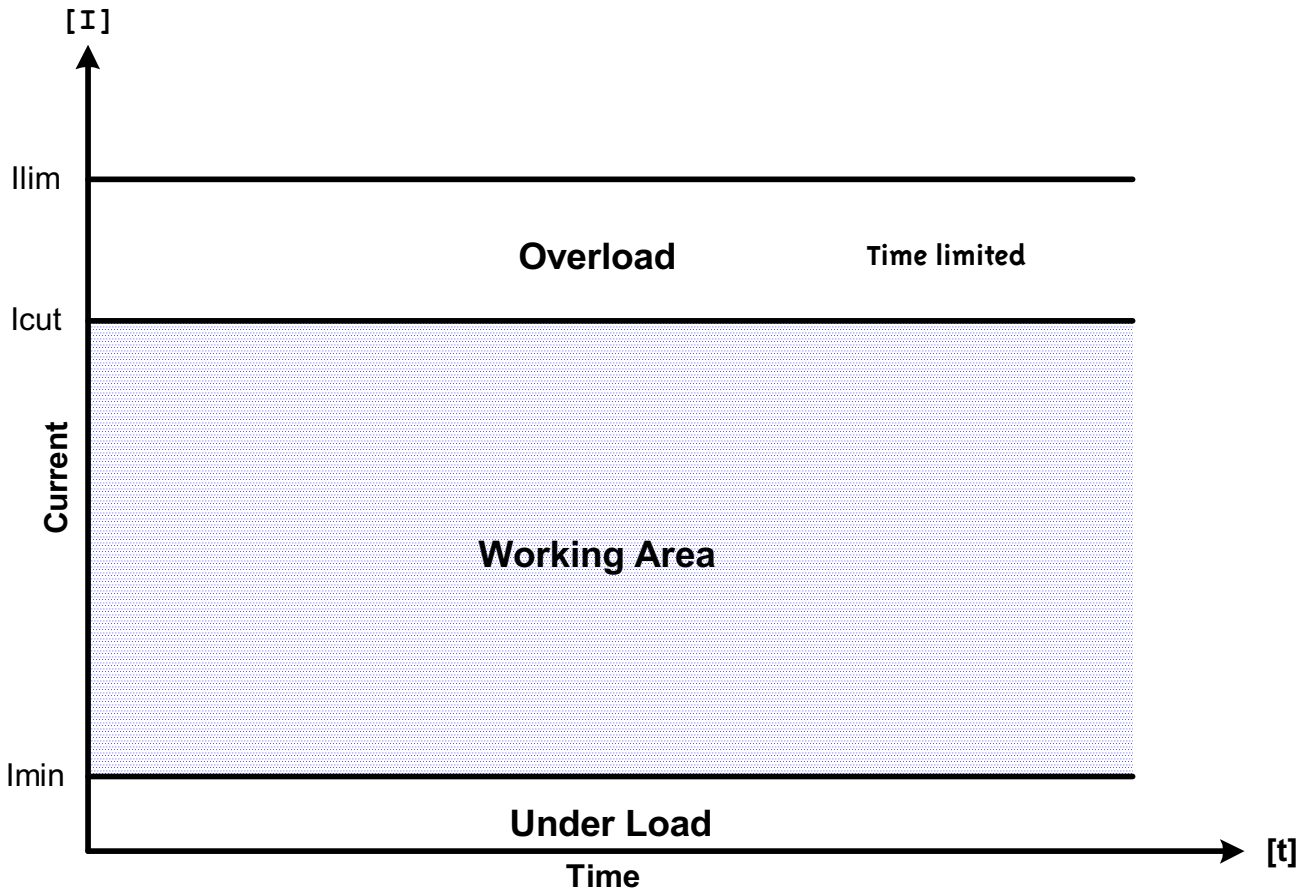
PDTE Signature

- Non Linear Load
- Current Consumption above Threshold
- C_{in} C_{max} (10x-100xμF)
- L_{in} L_{max} (10x-100xμH)
- in max (100mS)

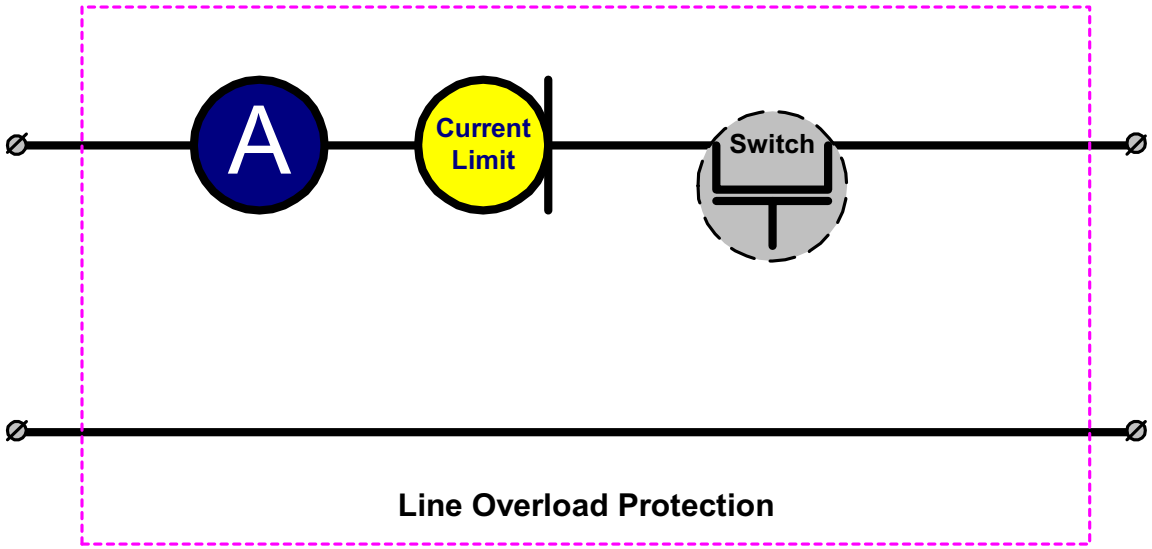
Probing Signal

- Measuring Voltage
- Driving 5mA Limited Current
- Wait for Steady State (at least 3)
- Measuring Voltage
- Map Readings
- Repeat Procedure to detect changes
- Activate / Disable

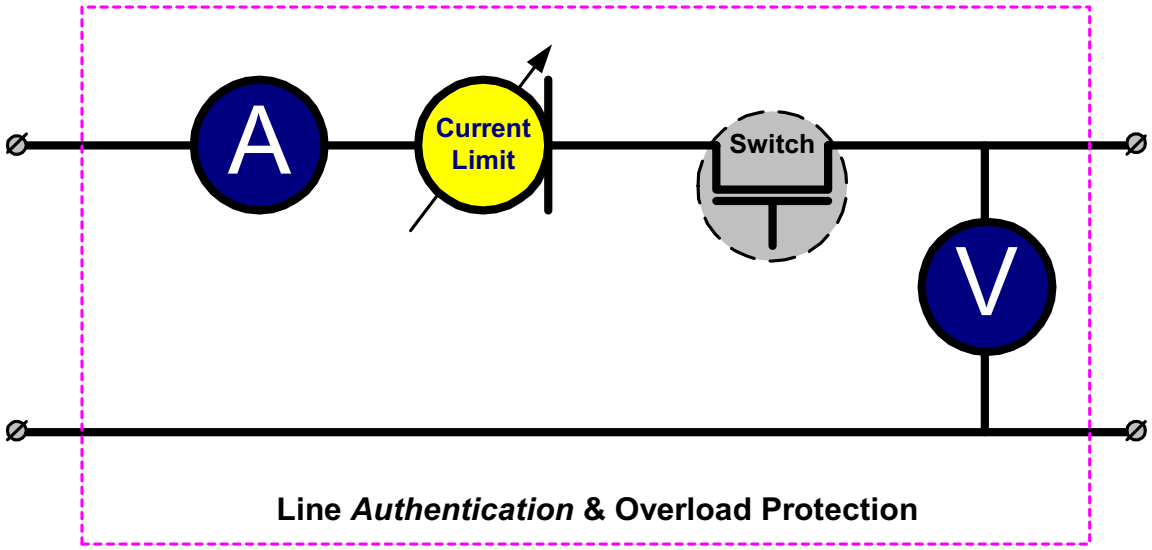
Operation Overload & Under Load Protection



Port Overload Protection Device

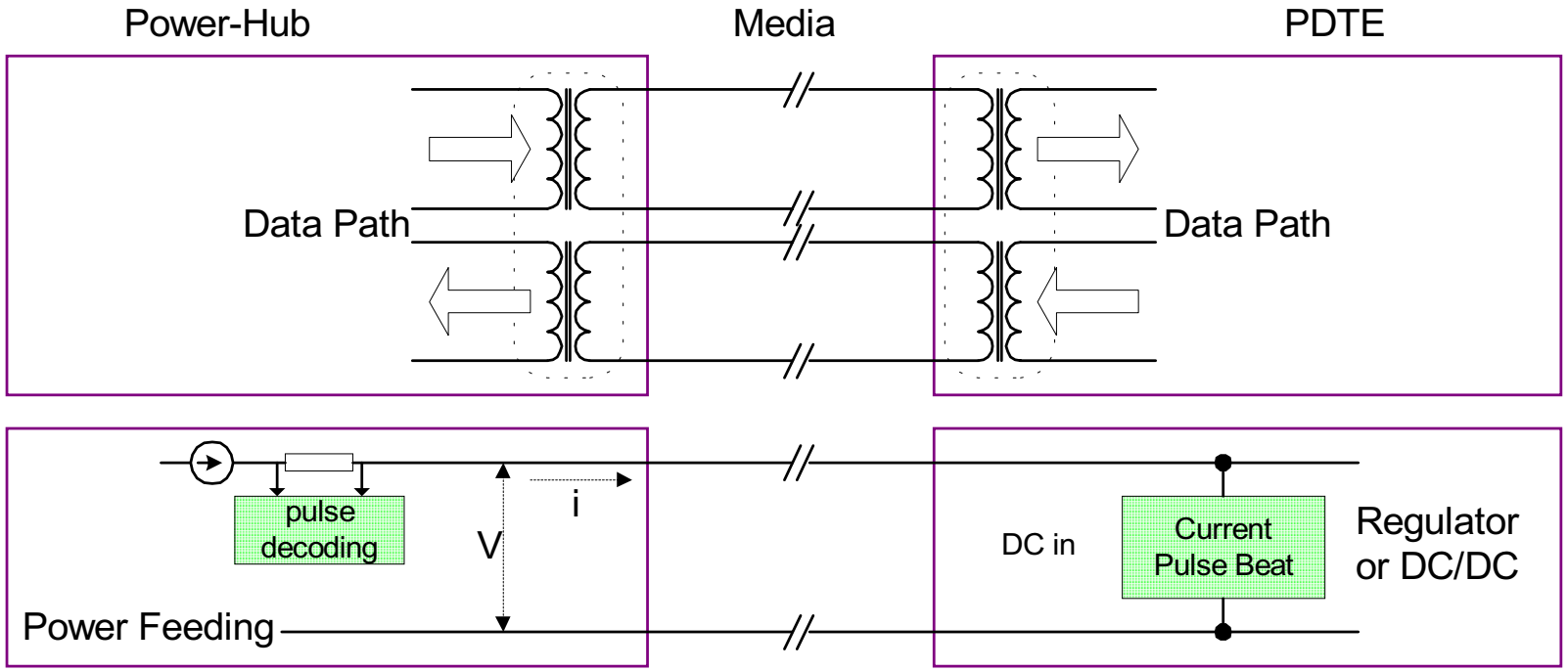


Port Authentication & Overload Protection Device

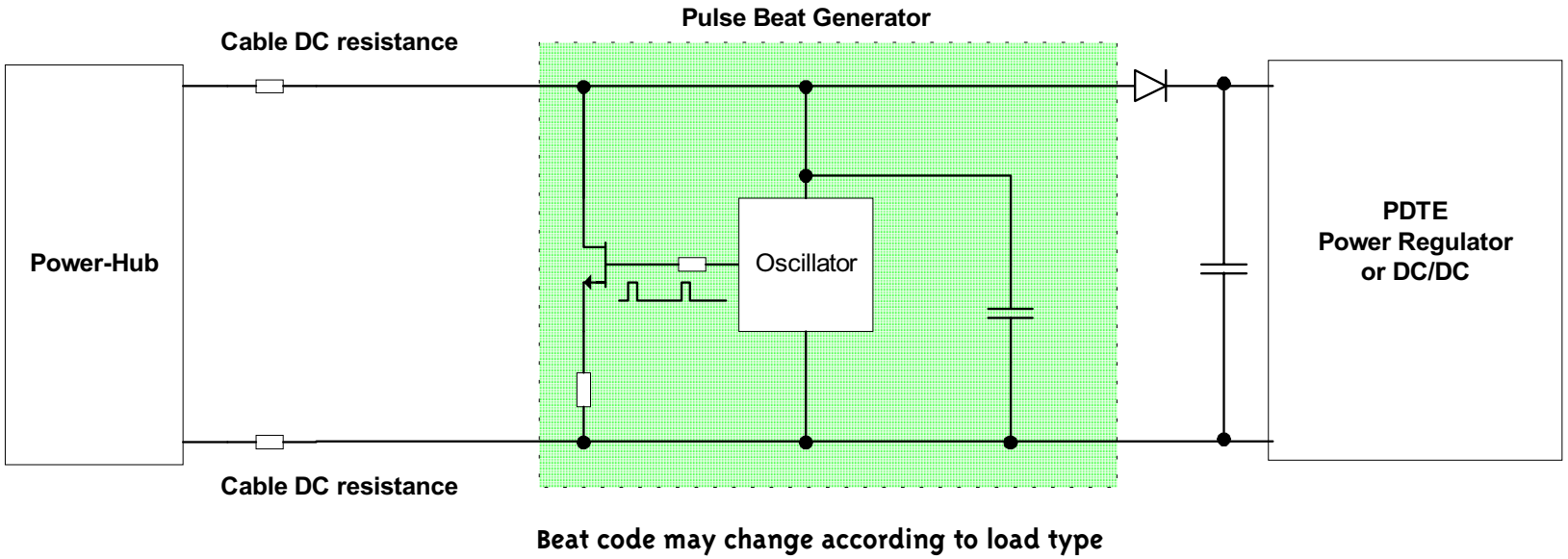


Optional Pulse Beat Generator

reduces detection time & provides load classification



Pulse Beat Generator



Recommendations

- **Numerical values for time constants and load mapping are to be determined for efficient use**