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# T-Connector Resistance

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# 802.3da Topics for Honolulu

- T-Connector Resistance Update
  - Reallocate / increase power per node based on more realistic compensator resistance
- Unit Load Concept
  - How are physical attributes (lcouple, cnode, etc.) affected at different unit load levels
- Wake Signaling
  - Effects on Inductor Relative Cost
  - Attenuation (Rcable) effect on 625kHz
- Clause 169
  - Insert PSE Inrush State Machine
  - 169 Text updates for clarity, etc

# Topic Relationships

| Topic | T-Conn Model | L - Coupling | Node Power | Voltage Thresholds |
|---|---|---|---|---|
| | | | | |
| Clause169 Update | X | X | X | X |
| Wake Signaling | | X | X | |
| Discovery Thresholds | X | | X | X |
| T-Conn Resistance | X | | X | X |
| Unit Load Concept | X | X | X | X |

- Topic order for following presentations:
  - T-conn Resistance
    - Reallocate Node Power
  - Unit Load Concept
  - Wake Signaling
  - Clause 169 Update

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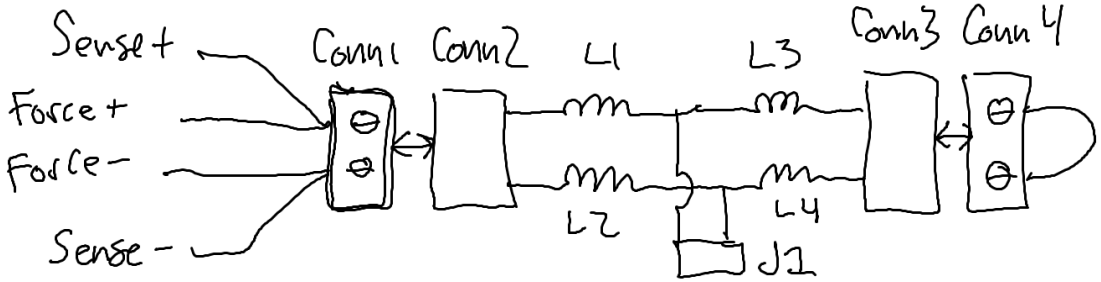
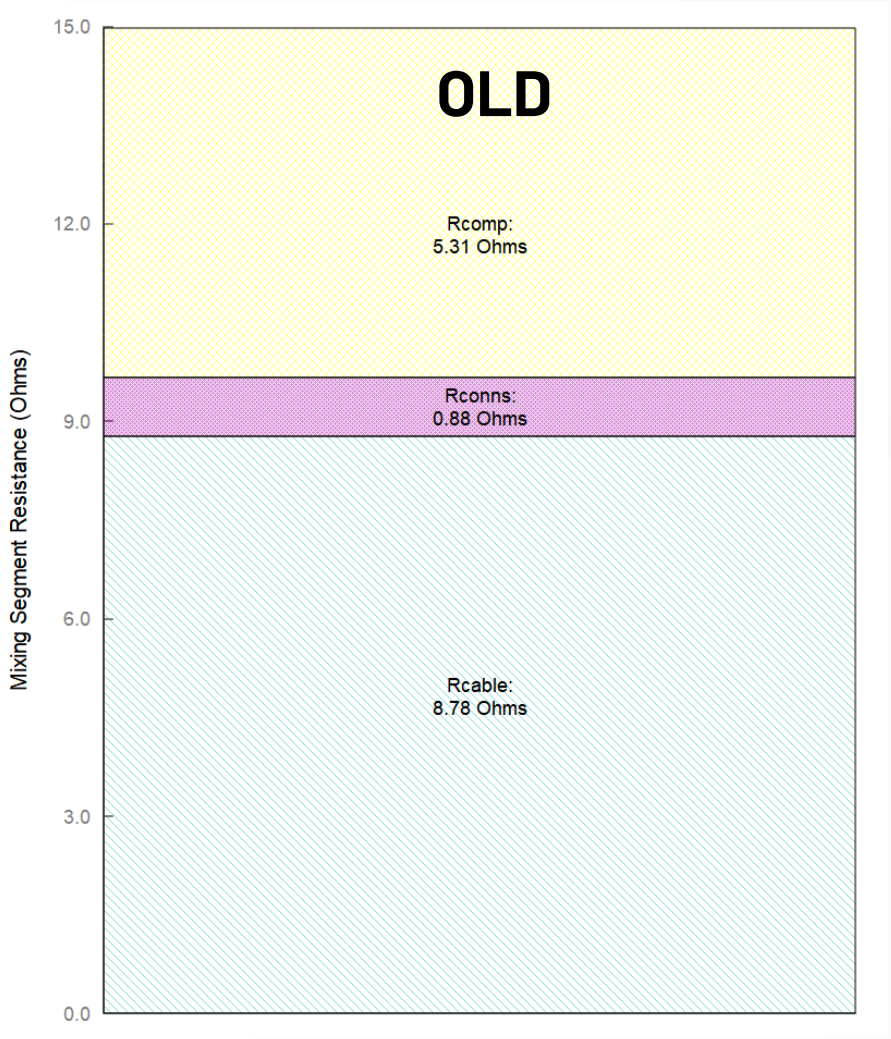
# T-Connector Resistance

- Reconfigure system based on updated t-connector resistance
- T-connector resistance components:
  - Compensator resistance (L1-L4)
  - Connector resistance (Conn1-Conn4)

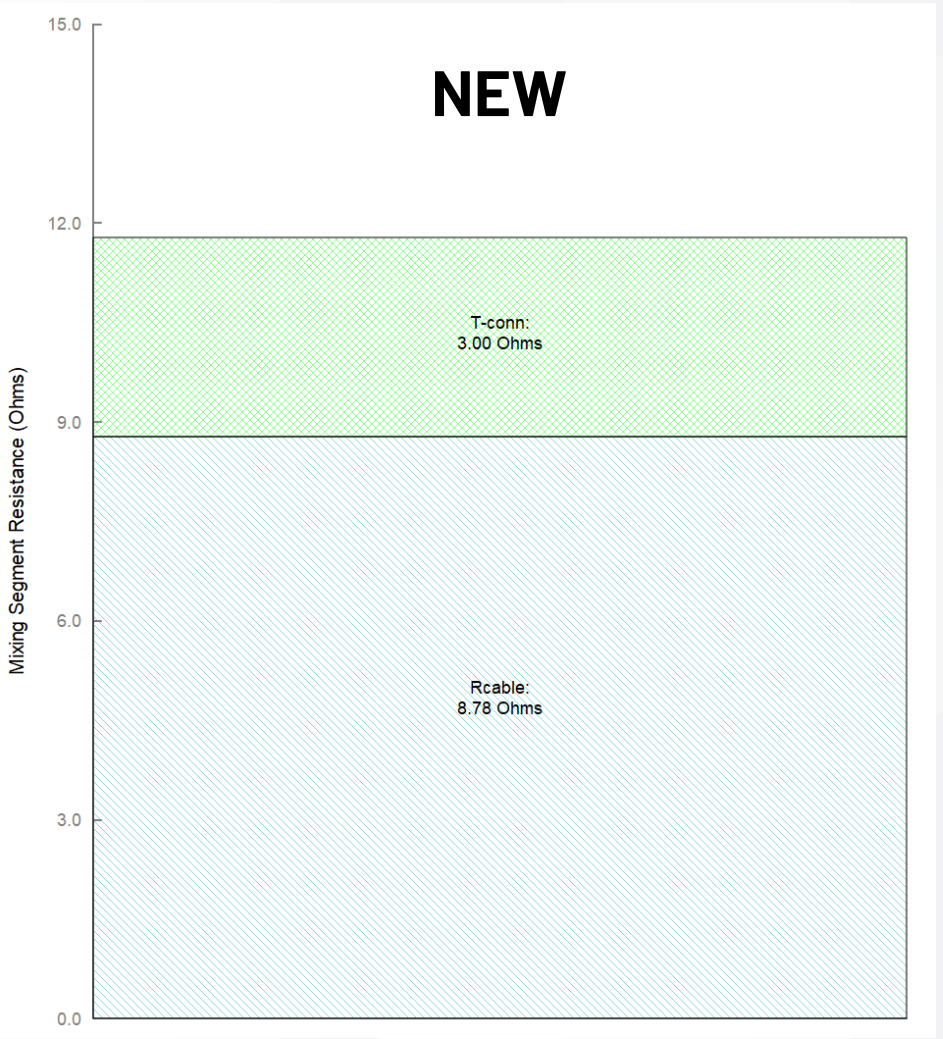



- Compensator resistance
  - Number used in Paul_da_01_2023_08_30.pdf (355mΩ) is far too high
  - Realistic compensators will have negligible resistance (<10mΩ)
- What is appropriate connector resistance?
  - IEC63171 specifies one pin 50mΩ max
  - Measurements (not mine) have demonstrated <10mΩ per pin
- **Set T-connector resistance to 200mΩ max**
  - Assume compensator resistance << connector resistance
  - Assume 4-pins in one node reaching 50mOhm is improbable
  - Assume all nodes in the system approaching 200mOhm is impossible

# New Channel Resistance Stack-up Proposal




15Ω Total, 433mΩ / Tconnector




12Ω Total, 200mΩ / Tconnector

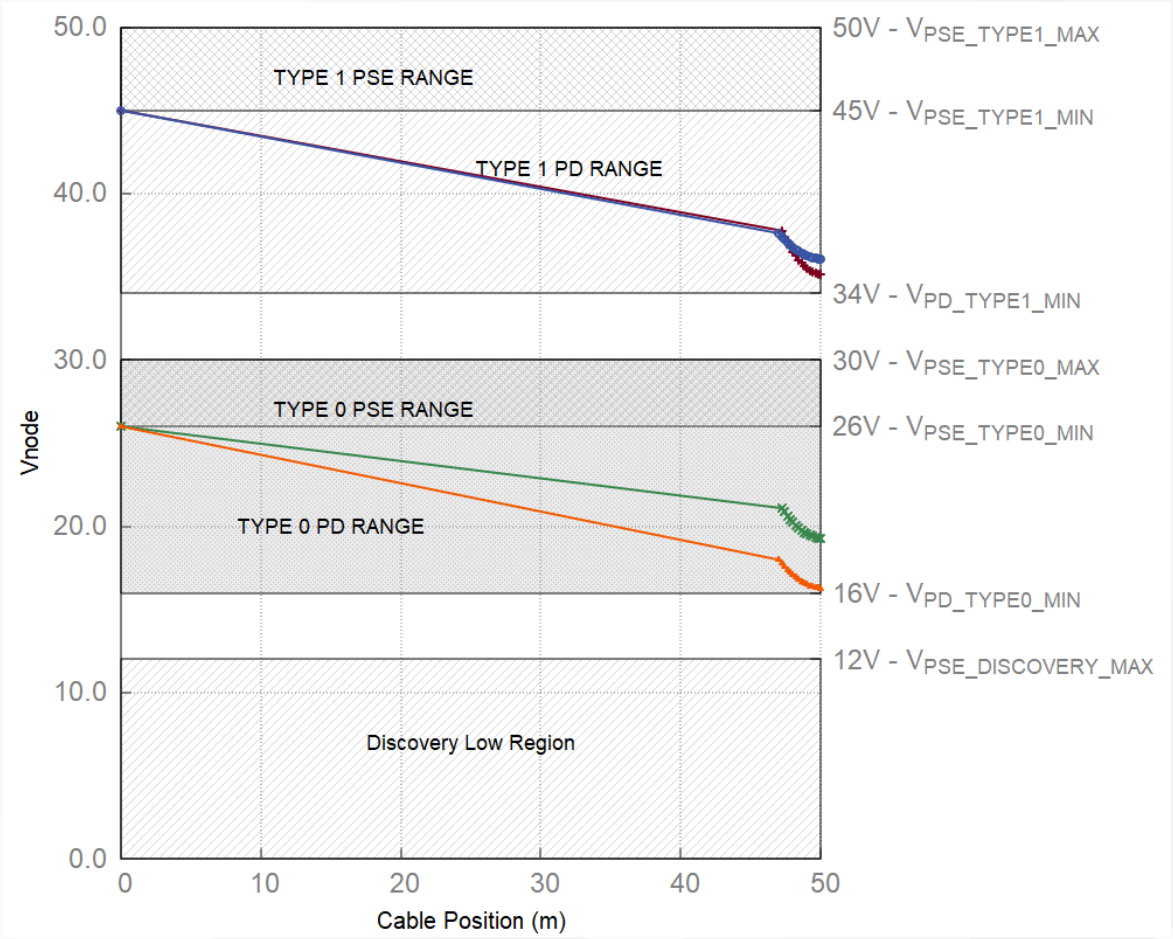
# With lower compensation resistance….

- Distribute gains as
  - Add another powered node to the mixing segment
    - (16 + 1) not (15+1)
  - More power per node
    - Change unit load in Type 0 to 1W (was 0.75W)

# Proposed Operational Voltage Stack-Up

| Param | Min | Max | Note |
|---|---|---|---|
| Vpse_type0 | 26V | 30V | 28.0V +/- 7.1% |
| Vpse_type1 | 45V | 50V | 47.5V +/- 5.3% |
| Ppd_type0 | | ~~0.75W~~ 1W | 1U Device |
| Ppd_type1 | | 2W | 1U Device |
| Vpd_type0 | ~~18V~~ 16V | 30V | |
| Vpd_type1 | 34V | 50V | |

- Plot Key
  - Maroon - 15 MPDs 2.00W 413mΩ/node
  - Blue - 16 MPDs 2.00W 200mΩ/node
  - Green - 15 MPDs 0.75W 413mΩ/node
  - Orange - 16 MPDs 1.00W 200mΩ/node



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# Thank You