



DTE Power over MDI: Constraints in the Solution Space

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Issues in the solution space

- **The pertinent UL/CSA/ISO safety standards for in-building current limited circuits are:**
 - **A maximum of 60 Volts DC (excepting Japan with 45 Volts max.);**
 - **The source of the power must be limited to 100 VA.**
- **The contacts of an RJ-45 connector have limited current carrying capacity with a absolute maximum being on the order of 1.3-1.5 Amperes.**

Power Limitation

- **The wire for a single pair of a 100m LAN drop, assuming 24 AWG wire, has a nominal DC resistance of 17 Ohms.**
- **Given a source supply of 48 Volts DC the maximum power available to a terminal device at the maximum loop length is 34 Watts.**
- **At this maximum power level, the loop current would be 1.4 Amps.**

Loop Current vs. Power

- **Given a source supply of 48 Volts DC on a single pair, the profile of the power available to a terminal device at the 100 m maximum loop length is as follows.**

I Loop	V Load	P Load
Amps	Volts DC	Watts
0.1	46.3	4.6
0.2	44.6	8.9
0.3	42.9	12.9
0.4	41.2	16.5
0.5	39.6	19.8
1.4	24	34.1