

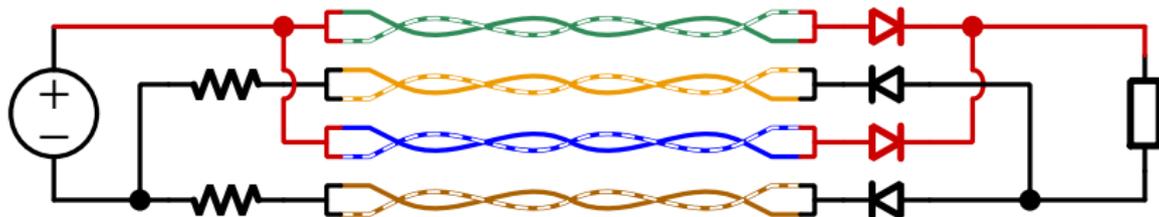
PD 4-Pair Requirements v100

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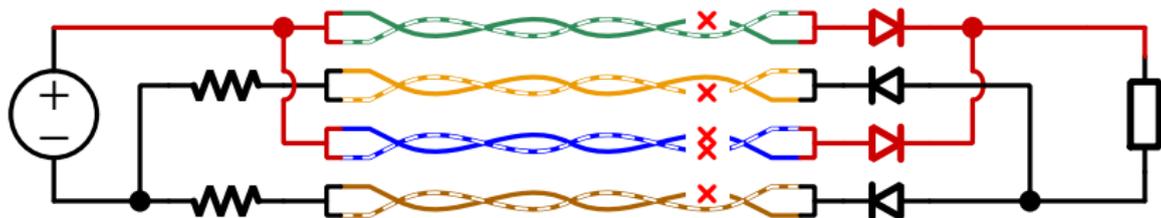
March 2016

Normal 4-pair connection



In a normal 4-pair connection all is well and currents divide properly over the conductors and components.

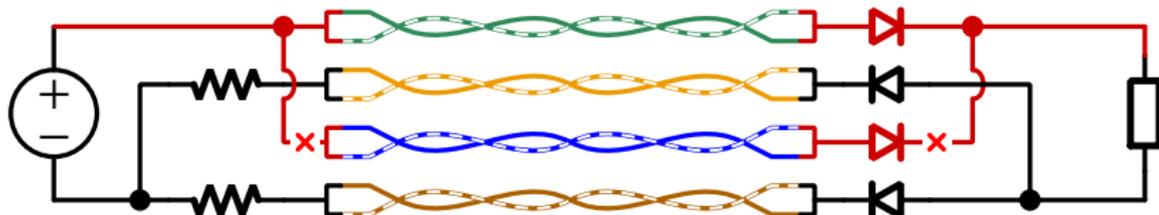
Bad 4-pair connection



In a normal 4-pair connection all is well and currents divide properly over the conductors and components.

But... various faults in the cable can either cause large unbalance, or, can cause the full current to go over a single pairset. In the most extreme case, the full current is carried by 3 conductors and neither PSE or PD see this.

Bad PSE/PD



In a normal 4-pair connection all is well and currents divide properly over the conductors and components.

Or... failures in the PSE or PD can cause a pair to get disconnected.

PD Requirement

PDs need to be able to handle any of these fault conditions.

The PD shall withstand any voltage from 0V to 57V at the PI indefinitely without any permanent damage.

Does this cover that a PD must be able to withstand improper 4P connections ? Maybe, but probably not in sufficient clarity. It is better to make an explicit requirement.

Comment #47

CI 33 SC 33.3.1 P 118 L 30 # 47
Bullock, Chris Cisco Systems

Comment Type **TR** *Comment Status* **D** *PD Power*

Since PDs have always been powered by 2-pair PSEs, all PDs have always been required to withstand the PD maximum rated power over each pair-set. With the introduction of 4-pair PSEs, the maximum power that a PD should withstand on a pair-set without incurring damage is no longer clear. Since there is no mechanism to enforce current balance between pair-sets, it is possible that a PD could be exposed to power levels up to the PSE upper-bound template for an indefinite period of time.

Suggested Remedy

Add the following text to section 33.3.1

"PDs shall implement each Mode to withstand, without permanent damage, either the PDs maximum rated power or a Type-4 PSE upper-bound template, I(pseut-Type-4-2p), whichever is lower.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

TFTD.

Proposed remedy to #47

Add the following at the end of 33.3.1 (page 118, line 36):

“A Type 3 or Type 4 PD shall withstand any combination of pairs supplied with positive V_{PD} or negative V_{PD} , connected through any resistance value to the supply, indefinitely without permanent damage.”

