

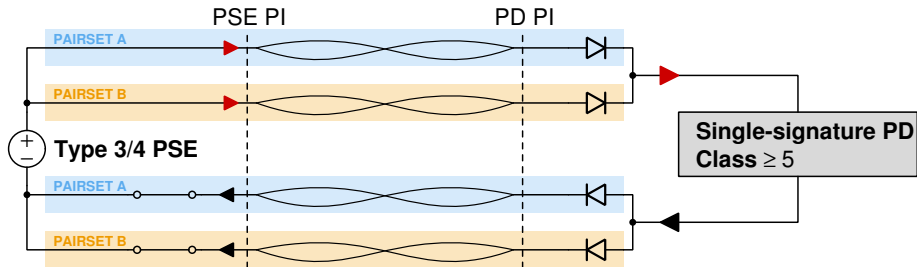
# PSE 4P Fault behaviour II v101

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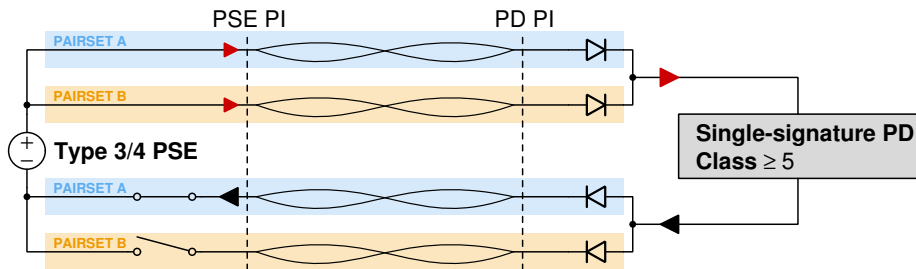
March 2016

# Scope



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A fault occurs on a pairset and the PSE turns it off.

## Fault resolution

If the connected PD is near the maximum allowed power of its Class, the complete  $I_{\text{Port}}$  current transfers to the remaining pairset, causing it to turn off as well. **OK.**

If the connected PD is drawing less than  $I_{\text{Con-2P\_unb}} \times V_{\text{PSE}}$ , the system could continue to operate. **ISSUE.**

What is the desired behaviour in this case?

- ▶ The PSE is allowed, but not required, to shut down the remaining pairset
- ▶ The PSE is required to shut down the remaining pairset within a small (some 100ms) amount of time

## Reasons to **STAY ON**

A single-signature PD that is designed to deal with this specific case can continue to operate at reduced power.

But...

- ▶ Dual-signature PDs are the right tool for the job if independent pairset behaviour is desired
- ▶ Getting to this scenario most likely due to a cable fault → data probably gone
- ▶ Only works if PSE doesn't shut down both pairsets anyway (market confusion). A PD would have a much better chance of reverting to 2P mode after fault, if it is a dual-sig PD.

## Reasons to SHUT DOWN

- ▶ Shutting down upon fault is simple and consistent behaviour across all PSEs, which aids in fault diagnostics.
- ▶ PDs may *seem* to work after a pairset fault, but may get disconnected as soon as power consumption increases. This will cause confusion.
- ▶ The PD negotiated a certain amount of power. After such a fault, the PD no longer can draw  $P_{\text{Class\_PD}}$ . It is hard for a PD to find this out.  
This behaviour is not specified for PSEs → interoperability issue.
- ▶ Results in  $>30\text{W}$  power over 2P, which is against our PAR:
  - Class 5: 27W
  - Class 6: 34W
  - Class 7: 40W
  - Class 8: 48W

## Conclusion

While there certainly is a valid case to maintain 2P power in case of a fault, this use-case is best addressed by dual-signature PDs. Allowing 2P-after-fault for single-signature PDs introduces a weird and confusing operating mode that is sure to generate phonecalls.

Change (page 111, line 14):

When connected to a single-signature PD, a Type 3 or Type 4 PSE should (TBD) remove power from both pairsets before the current exceeds the "PSE upperbound template" on either pairset.

To:

When connected to a single-signature PD, assigned to Class 5, 6, 7, or 8, a Type 3 or Type 4 PSE shall remove power from both pairsets, whenever power is removed from one pairset due to an overload condition, within  $T_{\text{CUT-2P max}}$ .

