

**Comment (Two comments marked ISO\_01 and ISO\_02, clause 145.4.1 page 217 line 39)**

There are few errors in the text "Dual-signature PDs shall have less than or equal to 10  $\mu$ A of current between any one conductor of Mode A and any one conductor of Mode B when VPD, as defined in 145.1.3, of either Mode is less than VOff\_PD min, as defined in Table 145–29. See Table 79–6f."

- a) we can't ask for 10uA leakage current between any one conductor of Mode A and any one conductor of Mode B since there are pins that connected to diodes in forward bias conduction. The intent was to have isolation between pairs of the same polarity at polarity where the PSE guaranteed switching and measures the current/voltage when doing connection check and/or detection.
- b) The requirement should apply to the negative pairs while for the positive pairs it should be optional and the reason is that the PSE has a mandatory requirement to switch on the negative pairs hence PD is guaranteed to be supported in terms of isolation on the negative pairs but there is not guaranteed for the positive pairs to be supported.
- c) in addition to (b) there is no technical need to require both sides isolated in the PD since it is not cost effective and it doesn't give any technical value to do it. In addition, it is actually limits the use of TVS connected to a common point.
- d) The 10uA isolation requirement value is correct up to 10.1V but need to be higher than 10uA between 10.1V and 30V since the source of the leakage is voltage depended and leakage current is increased as voltage increased.

**Proposed remedy:**

**Change from:** "Dual-signature PDs shall have less than or equal to 10  $\mu$ A of current between any one conductor of Mode A and any one conductor of Mode B when VPD, as defined in 145.1.3, of either Mode is less than VOff\_PD min, as defined in Table 145–29. See Table 79–6f."

**To** "Dual-signature PDs shall have less than or equal to ILeak\_dual of current between any negative pairs when VPD, as defined in 145.1.3, of either Mode is in the range as defined in Table 145–X1. See Table 79–6f."

2. Add Table 145-X1 as follows:

Item	Value	VPD range
ILeak_dual	10 $\mu$ A	0 V $\leq$ VPD $\leq$ 10.1 V
	30uA	10.1 V < VPD $\leq$ VOff_PD min

**End of proposed Remedy.**



## Annex A – PSE – PD configurations for specifying isolation.

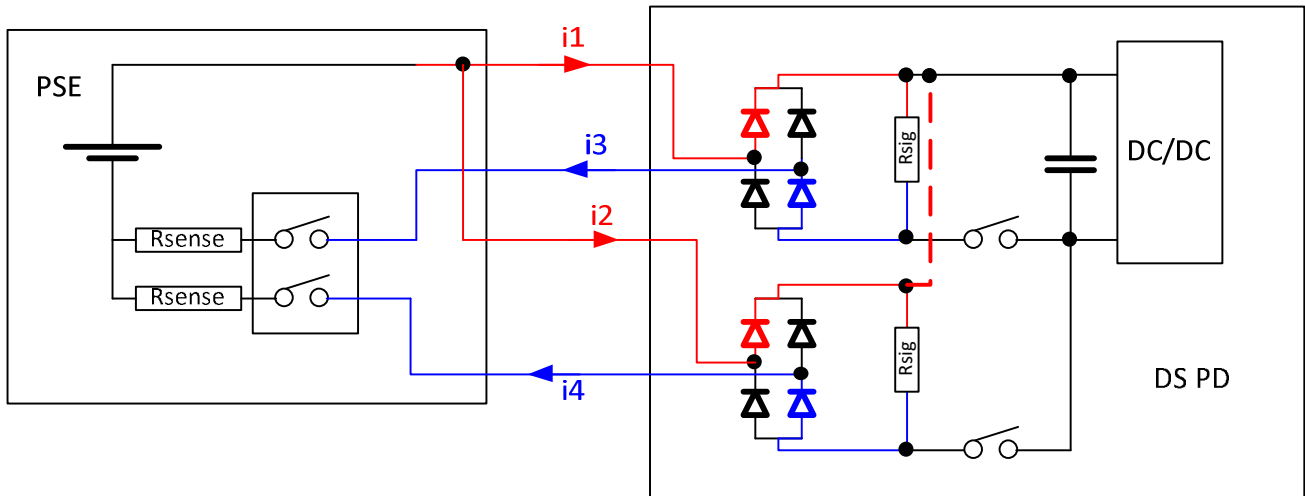


Figure 1: Dual-signature, single load PD.

Figure 1:

- Switching on the negative is mandatory
- Measuring current on the negative when switching on the negative is the only practical choice since measuring on the positive will result with pairs currents that are not correlated to the negative pairs currents due to unbalance.
- As a result, it is guaranteed only in the negative pairs, that PSE will support PD successfully when measuring the pair current for connection check, detection and classification circuits in dual-signature PDs.
- In addition, the positive side is tied together at the PSE side which effectively, tied the positive pairs at the PD side as well.

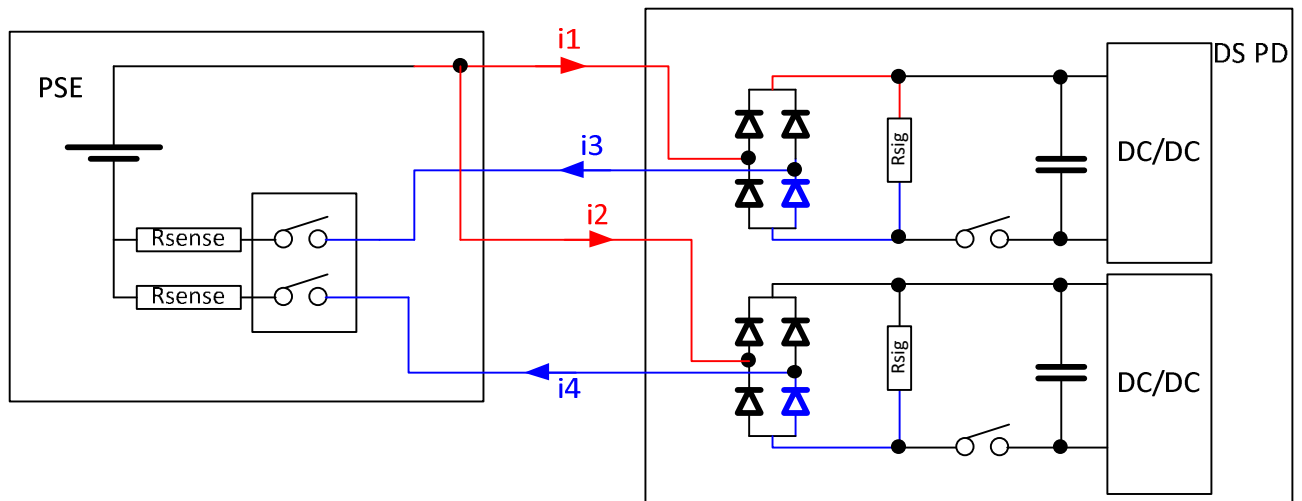


Figure 2: Dual-signature, dual load PD.

Figure 1:

By definition, the positive pairs and negative pairs are isolated in the PD primary side (secondary may have common GND and typically this is the case). However, since as in the previous case the PSE is required to support switching on the negative pairs, PD is not guaranteed to be supported on the positive pairs making the isolation requirements on the PD positive pairs with no value.

