

HUAWEI ENTERPRISE **A BETTER WAY**

How Type 1 and Type 2 PD designs work with Type 1 and Type 2 PSE deployments

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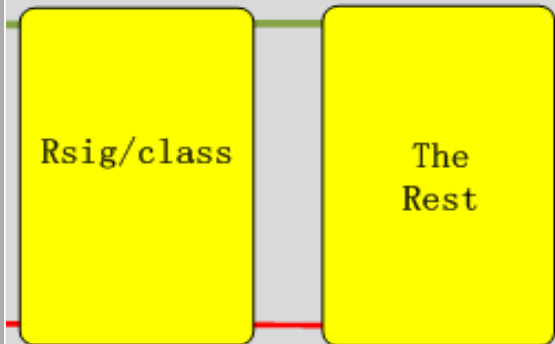


Outlines

- **Potential Type 1 and Type 2 PD designs**
- **How these potential PD designs work with different deployments of Type 1/2 PSEs**
- **Things to be considered**

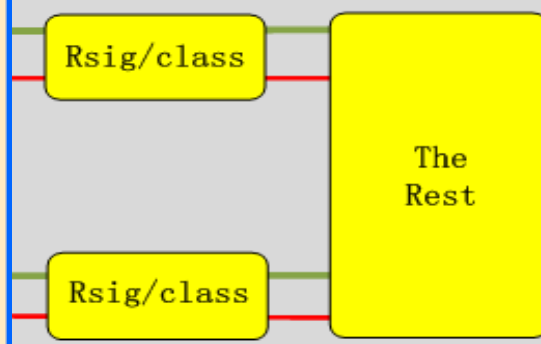
Potential Type 1 and Type 2 PD designs

Signal signature with one load



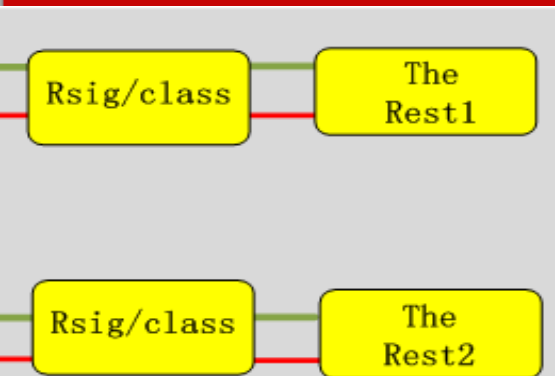
- single signature/ classification on PD PI.

Dual signatures with one load



- Two signature/ classification on one PD PI.
- Provide single load to equipment.

Dual signatures with two load



- Two signature/ classification on one PD PI.
- Provide dual loads to equipment.

To meet 802.3 at standard, PD designs Shall follow

- *The PD shall be capable of accepting power on either of two sets of PI conductors.*
- *PDs that simultaneously require power from both Mode A and Mode B are specifically not allowed by this standard.*

According to 802.3at-2012 reference as 33.3.1.

Outlines

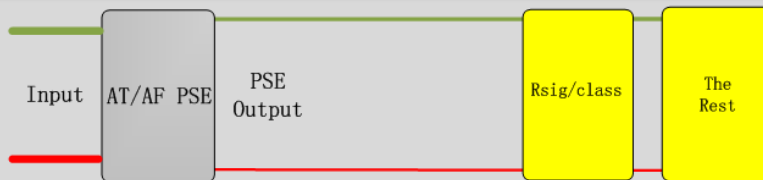
- Potential Type 1 and Type 2 PD designs
- How these potential PD designs work with different deployments of Type 1/2 PSEs
- Things to be considered

Single Load PD with a single signature

Normal Connection

One PSE PI on the other end of the link

Endpoint
/Midspan
PSE

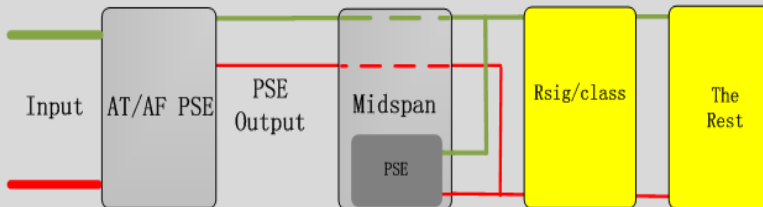


➤ Type 1/Type 2 PSE detects two pair and **provides power on the 2P.**

Midspan in the middle

A midspan in the middle of a link segment.

Endpoint
/Midspan
PSE



➤ If detecting successively, PSEs may provide power on 4P or one of the two 2Ps.

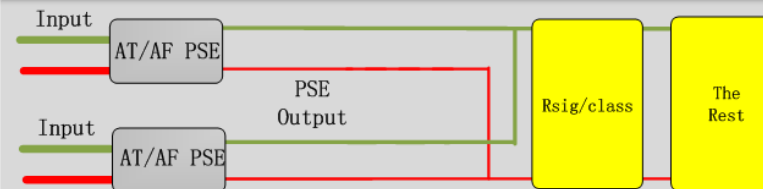
➤ If detected simultaneously on both 2Ps, the detection on each 2P will interfere each other and **PSEs won't get the good signature and can not power up.**

➤ PSEs may provide power on 4P or 2P or not.

Y-Cable Connection on PSE side

Two separate PSEs are connected to PD through Y-Cable.

Endpoint
/Midspan
PSE



➤ The same as midspan in the middle, **PSEs may provide on 4P or 2P or not.**

• The PD is capable of powering over either of the two 2Ps, while doesn't require power simultaneously from both Mode A and Mode B.

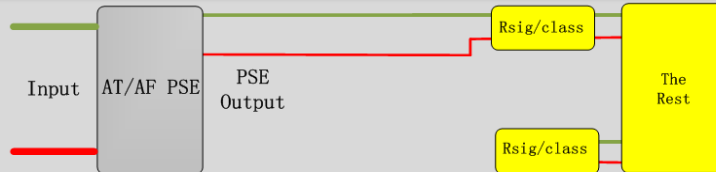
• **Type1/2 PSE(s) deployments may provide power on 4P.**

Single Load PD with Dual signatures

Normal Connection

One PSE PI on the other end of the link

Endpoint
/Midspan
PSE

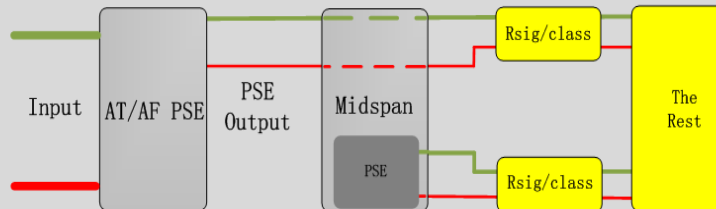


➤ Type 1/Type 2 PSE detects one of the two pair and **provides power on the 2P.**

Midspan in the middle

A midspan in the middle of a link segment.

Endpoint
/Midspan
PSE



➤ There shall be interlock between two Rsig/class to remove one while the other channel is powered. (802.3at 33.3.4)

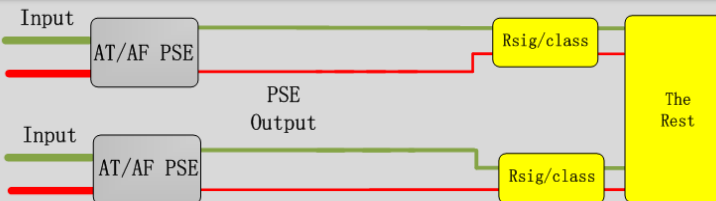
➤ If detected simultaneously on both 2Ps, PD may provide **good signature resistances** on both 2Ps and PSEs will provide power on 4P.

➤ PSEs may provide power on 4P.

Y-Cable Connection on PSE side

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Endpoint
/Midspan
PSE



➤ There shall be interlock between two Rsig/class to remove one while the other channel is powered. (802.3at 33.3.4).

➤ The same as midspan in the middle, **PSEs may provide power on 4P.**

• **PD is capable of powering over either of the two 2Ps, while it may require power simultaneously from both Mode A and Mode B when it connects to two separate PSEs on a link while the two PSEs detect simultaneously on both 2Ps.**

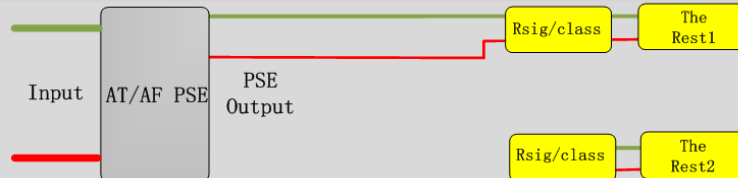
• **Type1/2 PSE(s) deployments may provide powered on 4P.**

Two load PD with Dual signatures

Normal Connection

One PSE PI
on the other
end of the link

Endpoint
/Midspan
PSE

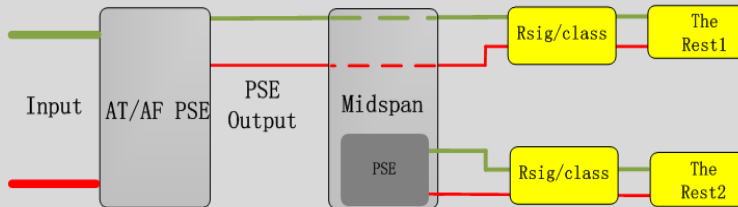


➤ Type 1/Type 2 PSE detects one of the two pair and **provides power on the 2P.**

Midspan in the middle

A midspan in
the middle of a
link segment.

Endpoint
/Midspan
PSE



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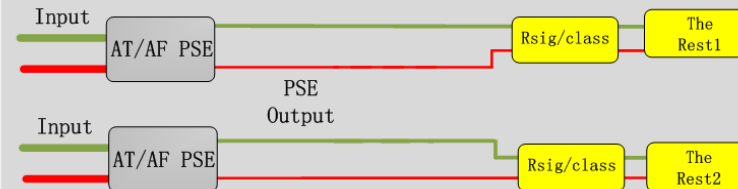
➤ If detected **simultaneously** on both 2Ps, PD may provide **good signature resistances** on both 2Ps and PSEs provide power over 4P.

➤ **PSEs may provide power on 4P.**

Y-Cable Connection on PSE side

Two separate
PSEs are
connected to PD
through Y-Cable

Endpoint
/Midspan
PSE



➤ There shall be interlock between two Rsig/class to remove one while the other channel is powered. (802.3at 33.3.4)

➤ The same as midspan in the middle, **PSEs may provide power on 4P.**

• **PD is capable of powering over either of the two 2Ps, while it may require power simultaneously from both Mode A and Mode B when connect to two separate PSEs on a link while the two PSEs detect simultaneously on both 2Ps.**

• **Type1/2 PSE(s) deployments may provide power on 4P.**

Outlines

- Potential Type 1 and Type 2 PD designs
- How these potential PD designs work with different deployments of Type 1/2 PSEs
- **Things to be considered**

Things to be considered

1. According to previous slides, Type 1/2 PSE deployments may provide power on 4P, *then does there exist any 2P only Type 1/2 PD?*
 - *If yes, will it cause any damage when work with these Type 1/2 PSE deployments?*
 - *Or, All Type 1/2 PDs are 4-pair capable.*
2. For Y-cable case and a midspan in the middle case in which there are two different PSEs on a link segment that may detect *simultaneously on both 2Ps, a proprietary PD with dual signatures may provide good signature resistances on both 2Ps.*
 - *Does it result in requiring power from both Mode A and Mode B simultaneously?*

Thank you!