IEEE 802.3af DTE Power via MDI

AC disconnect detection- Demonstration on 1G system.

Ad hoc A.I. 6.2

- Yair Darshan, PowerDsine
- yaird@powerdsine.com

- Acknowledgments to Nadav Barnea/PowerDsine

Objectives

- To confirm that ac disconnect signals are not affecting 10/100/1000MB/s

Test setup – PSE side

PARAMETERS:

Cpse = 0.22uF

Cprobe = 10uF

Rpse = 400k

Rprobe = 7.5K

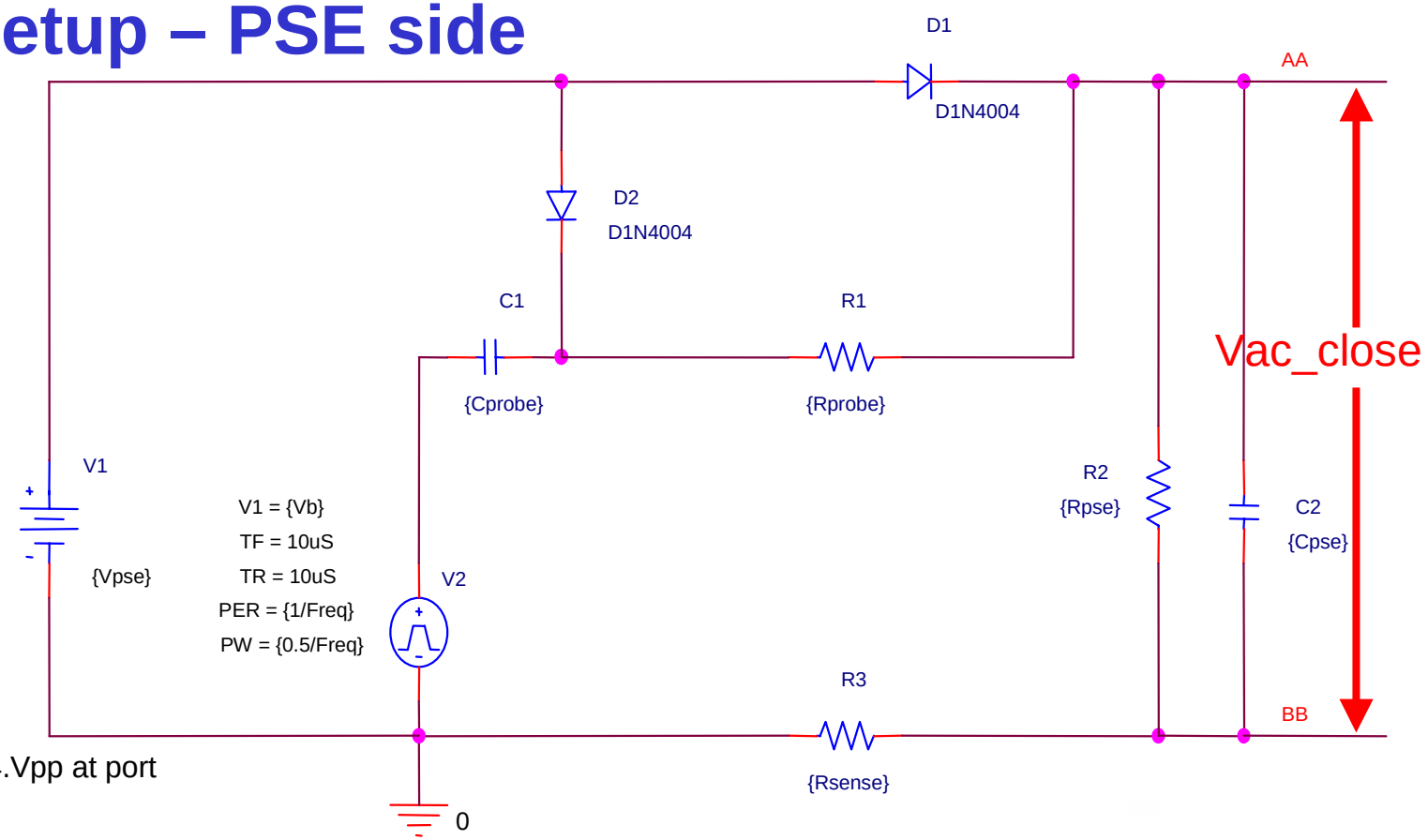
Rsense = 2

Freq = 125

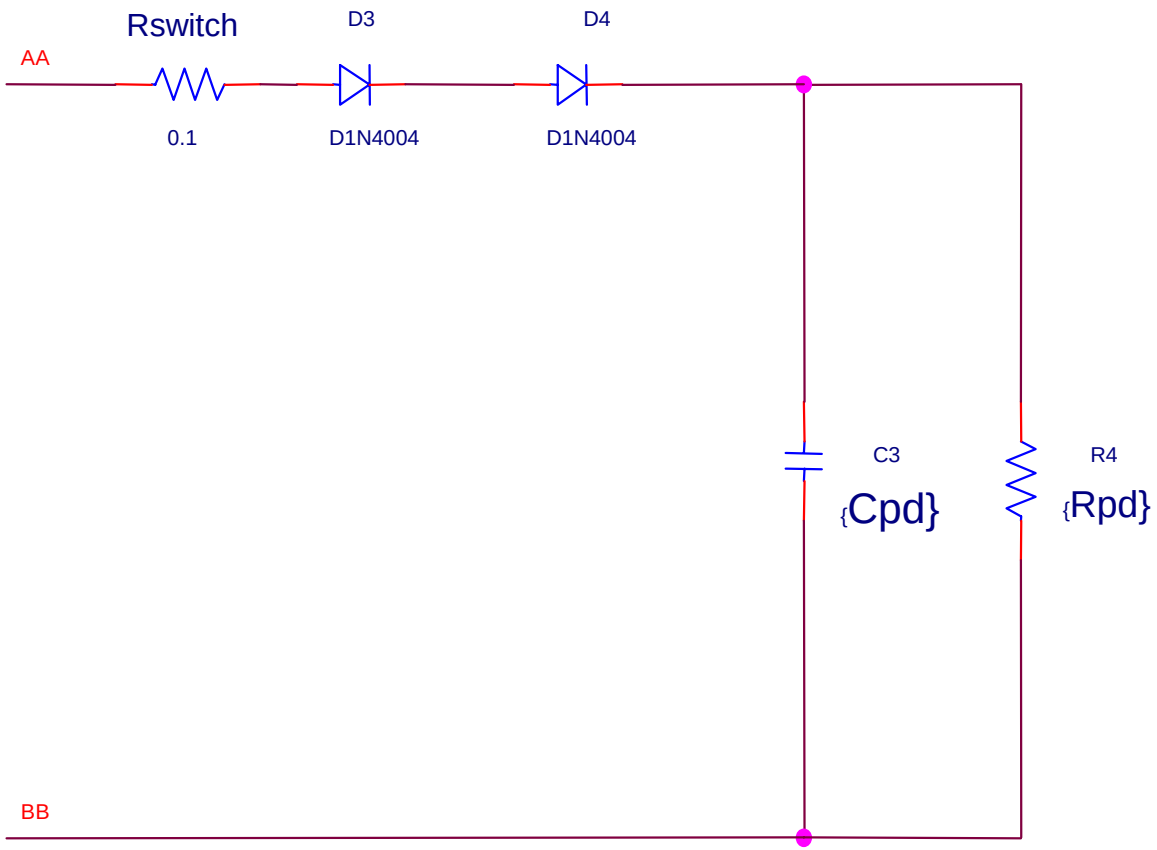
Vpse = 48

D1,D2 =1N4004

Vb = set to have 4.4.Vpp at port

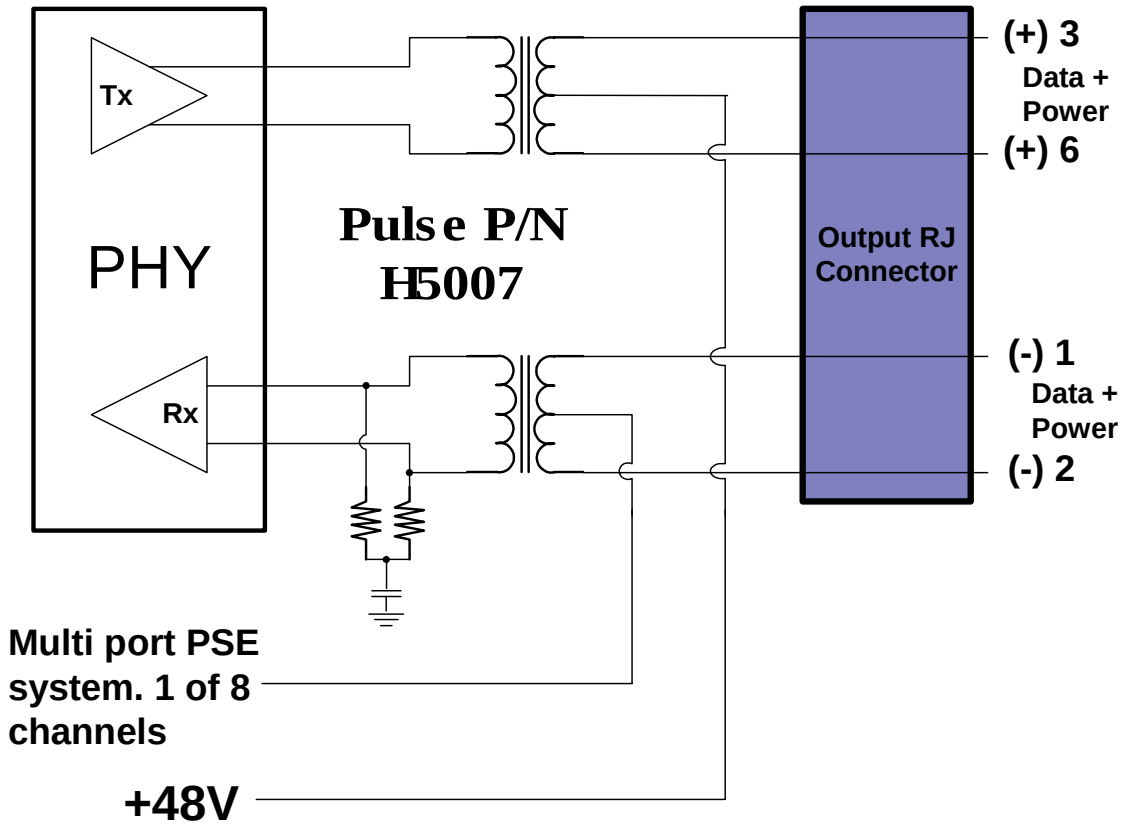


Test setup – PD side

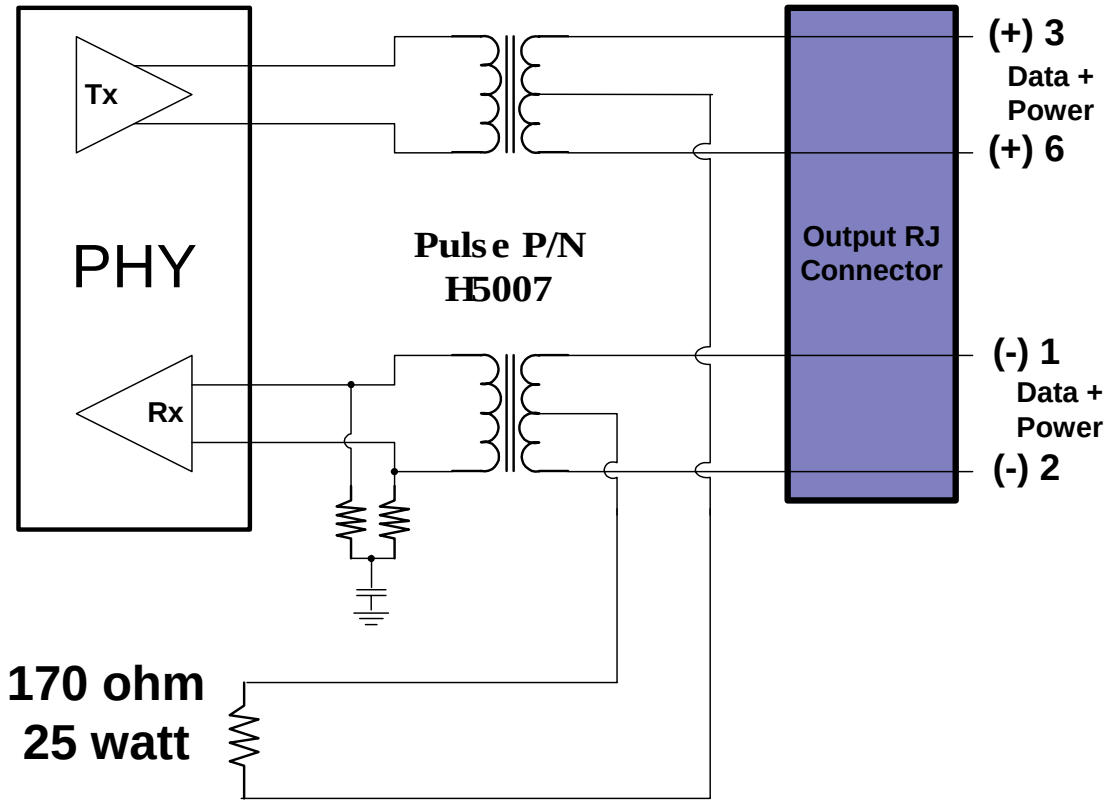


Test setup #1: PSE side

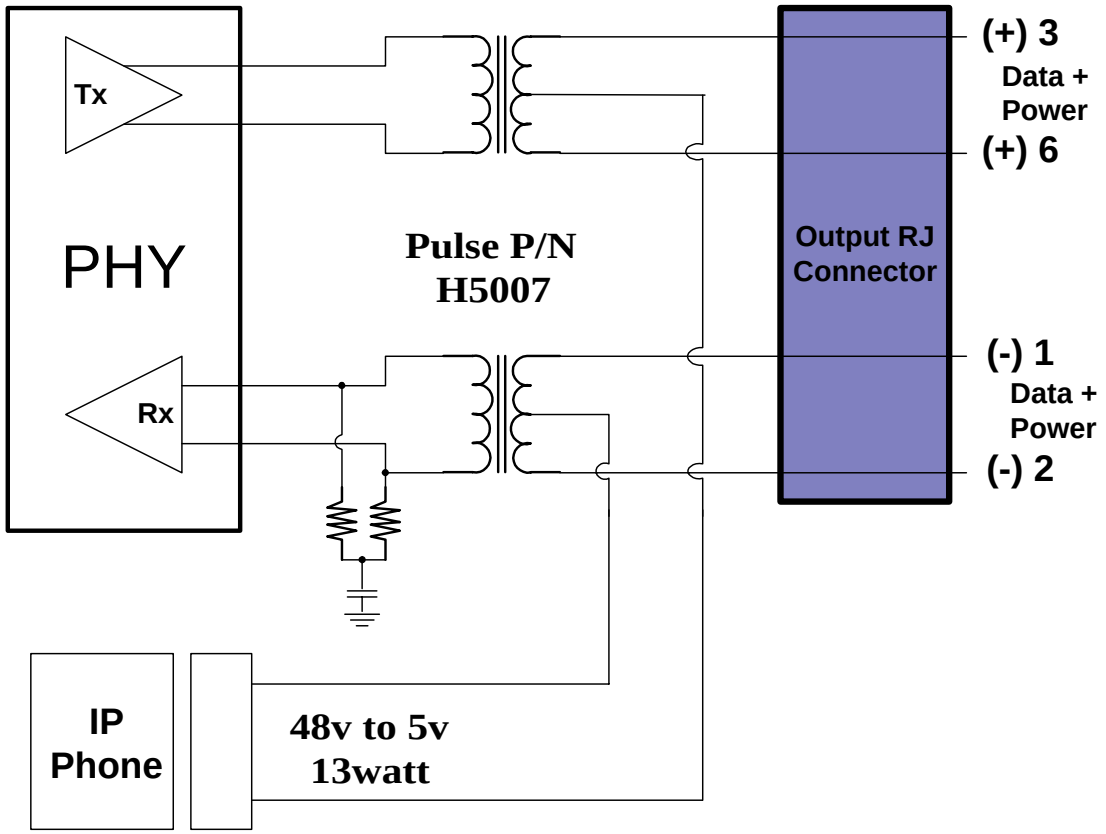
- 48v from external power supply (LAB)
- Multi port PSE was used to drive the ports
- No terminations were placed over the POL wires



Test setup #1: PD side



Test setup #2: PD side, with active DC/DC load



Test procedure

- A 1G system without ac disconnect function were tested to comply with 802.3 standard and the results recorded as reference
- The ac disconnect function was activated and all tests were repeated and compared to the reference tests.

Test results

No	Action performed	Expected Results	Actual Results	Pass/Fail
1.	Set PSE voltage to 48Vdc with DC to DC load. Set 1 gig. Data generation into continues mode. UTP Cat5 Cable length = 10m	Data Rx. With NO Errors. (CRC, Symbol errors, alignments, signal loss, Packet loss)	No Errors were traced (1E6 packets)	**Pass**
2.	Set PSE voltage to 48Vdc with DC to DC load. Set 1 gig. Data generation into continues mode UTP Cat5 Cable length = 100m	Data Rx. With NO Errors. (CRC, Symbol errors, alignments, signal loss, Packet loss)	No Errors were traced (1E6 packets)	**Pass**
3.	Set PSE voltage to 48Vdc with DC to DC load. Set 1 gig. Data generation into continues mode UTP Cat5 Cable length = 120m	Data Rx. With NO Errors. (CRC, Symbol errors, alignments, signal loss, Packet loss)	No Errors were traced (1E6 packets)	**Pass**

Test results

- Additional tests:

- All tests regarding the presence of continuous and periodic ac signal up to 30Vp, through minimum 5K resistance as specified by Item 6.3 where tested without any degradation in data performance

Summary and conclusions

- AC disconnect signal as specified in the test setup is not affecting 1G system.
- Resistor detection with 30Vp ac signal, continuous, periodic across the port is not affecting the system performance as per A.I. 6.3