IEEE 802.3at
2 Pair vs 4 Pair Cost Comparison

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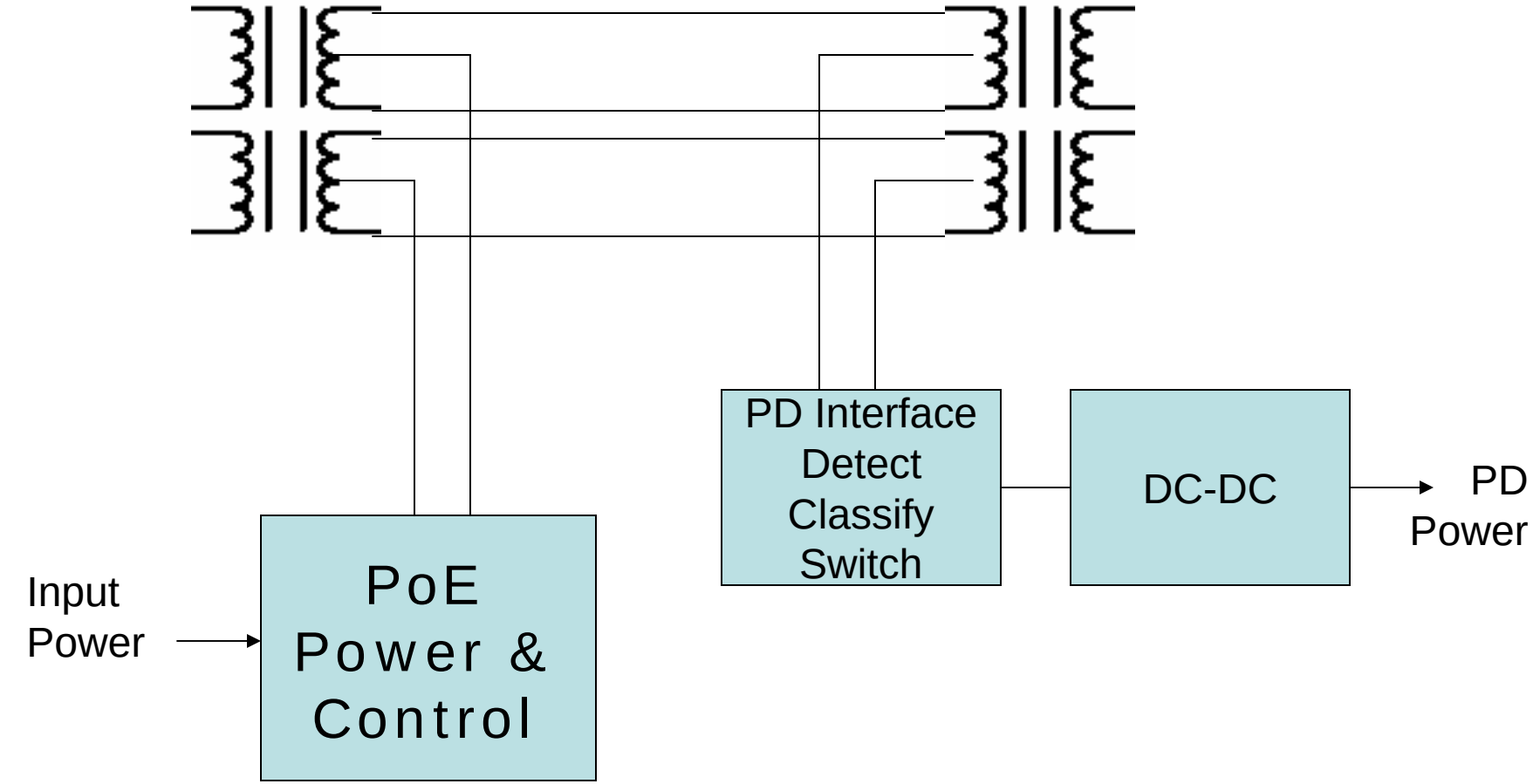
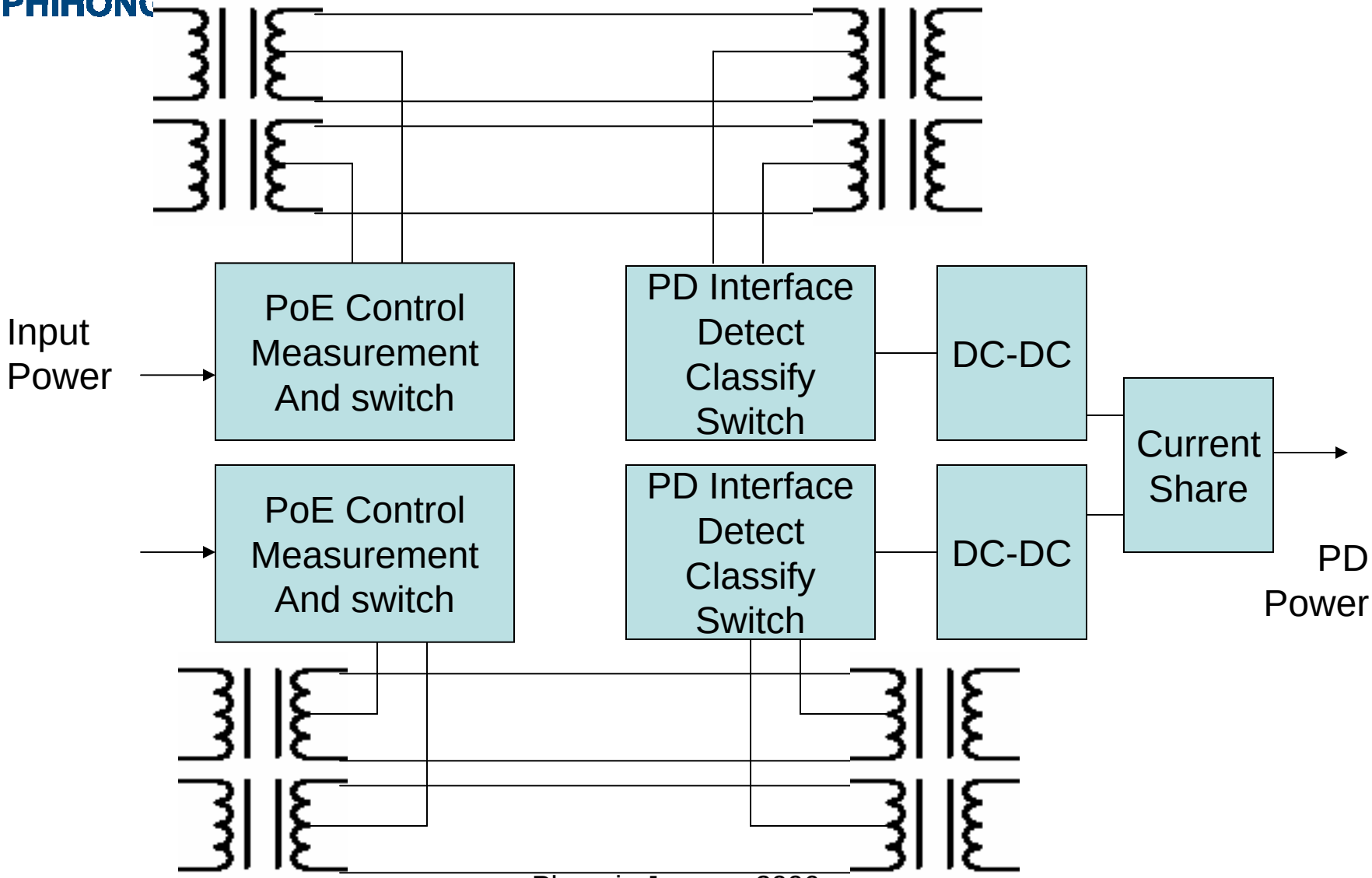
Cost Comparison done with Same Total Power 30W

2 Pair Model


PD Interface
Detect
Classify
Switch
DC-DC
PD
Power
Input
Power
PoE
Power &
Control

4 Pair Model


Input
Power
PoE Control
Measurement
And switch
PD Interface
Detect
Classify
Switch
DC-DC
PoE Control
Measurement
And switch
PD Interface
Detect
Classify
Switch
DC-DC
Current
Share
PD
Power

2 Pair vs 4Pair Per Port Comparison

Current 15.4W	*QTY*	*$*	*2 Pair 30W*	*QTY*	*$*	*4 Pair 30W*	*QTY*	*$*
Transformer	4		Transformer	4		Transformer	8	
PSE Controller	1		PSE Controller*	1		PSE Controller*	2	
PSE Switch	1		PSE Switch	1		PSE Switch	2	
Current Sense Resistor	1		Current Sense Resistor	1		Current Sense Resistor	2	
Rectifier	1		Rectifier	1		Rectifier	2	
Detection resistor	1		Detection resistor	1		Detection resistor	2	
PD Switch	1		PD Switch	1		PD Switch	2	
PD Switch Control	1		PD Switch Control*	1		PD Switch Control*	2	
12.6W DC-DC	1		30W DC-DC	1		12.6W DC-DC	2	
						Current Share	1	
Total Component Count	12			12			25	
Relative Cost		**1**			**1.4**			**2.1**
PSE Cost		0.3			0.3			0.5
PD Cost		0.7			1.0			1.6

* No estimate included for additional Classification

System Limit by Cable Temperature?

Cable Resistance	Example Current	Dissipation	
20Ohms	0.5A	10 Watts	4pair
20Ohms	0.5A	5 Watts	2pair
20Ohms	**0.7A**	10 Watts	**2pair**

If dissipation is the limit you can get 40% more current in 2 pair compared to 4 pair

Conclusion

- 2 Pair FAR lower cost than 4 Pair for same Power
- If limit is just Cable Dissipation 40% more current available for 2 Pair for same dissipation.
  - Example PD available power

  45W from 4pair = 31.5W from 2pair

  same cable heating at significantly 50% the cost