



Type 1 Power Parameter Adjustments

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Introduction

After adjusting $R_{conn} = 150\text{m}\Omega$ and adjusting Type0 power parameters at the last meeting, there is extra power delivery capability in the system for Type1 MPSEs / MPDs

This presentation proposes increasing Type 1 MPD 1U power to 4W and details the changes needed to power parameters

The numbers are proposed in this presentation are slightly different from the numbers proposed in d2.2 comments, so that there will be more margin between $V_{\{Porty_MPD_Type1,min\}}$ and $V_{\{PORT_MPD_TYPE0,max\}}$ (5.5V instead of 4v)

Power Budgeting for Type 1

Requirement to reach 50m with 16 nodes

Assume 50m 20AWG cable @ 65C \approx 4 Ω

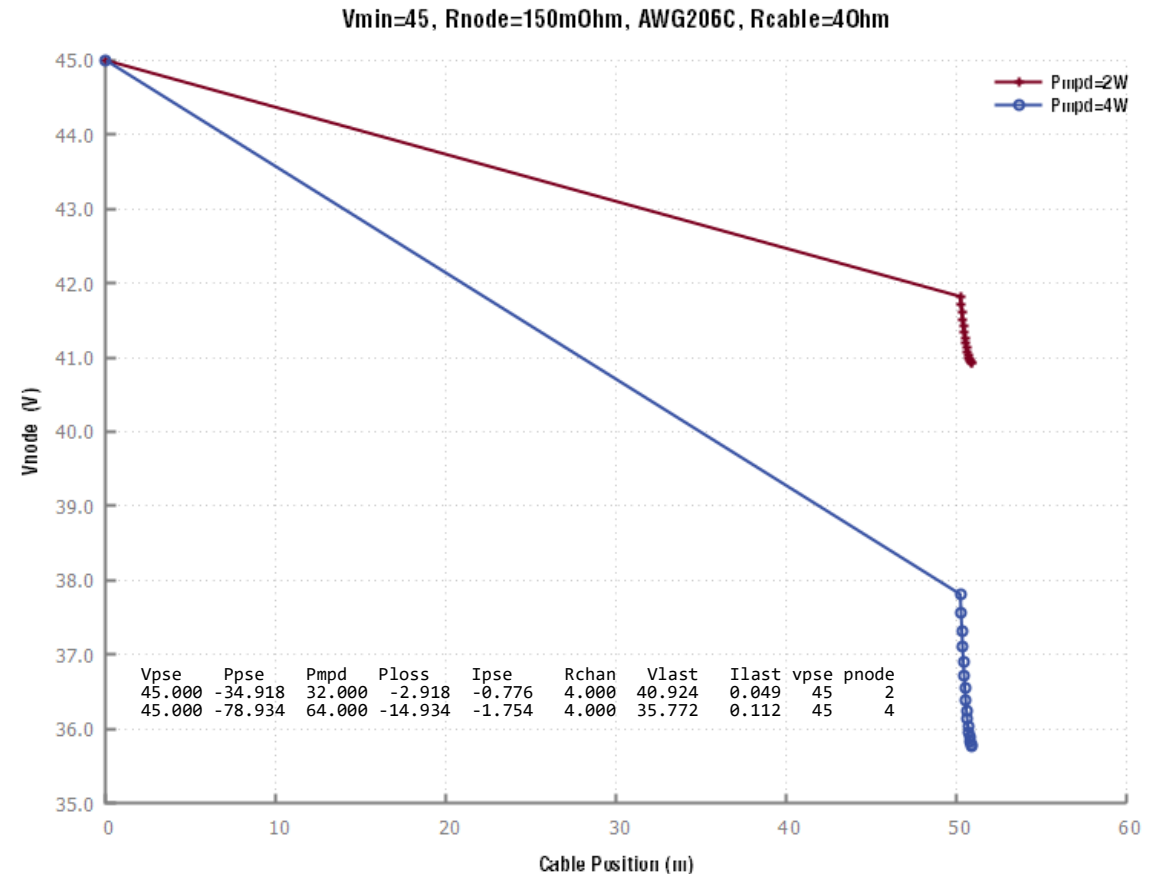
Assume 20cm node separation

16 Nodes at end of mixing segment

Adjust power parameters while keeping last node voltage above ~35V

Table 189-1—System power types

	30 V Max MPSE (Type 0)	50 V Max MPSE (Type 1)	Units
V _{MPSE} max	30	50	V
V _{MPSE} min	21.6	45	V
V _{MPD} min	16	34 35.5	V
I _{MPSE} min	1100	1000 1760	mA
P _{MPSE} min	23.76	45 78.75	W
P _{MPD_IU} max	1.1	2 4	W



Edits Satisfy D2.2 Comments:
52, 53, 59, and 59

MPSE / MPD Table Changes

Table 189-5—MPSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
1	DC output voltage during POWER_ON state	V_{MPSE}	V	21.6	30	0	
				45	50	1	
2	Continuous output capability in POWER_ON state	P_{MPSE}	W	23.76	—	0	See 189.4.7
				45 78.75	—	1	
3	Output slew rate dV/dt		V/ms	—	9.5	ALL	
4	Output current - at short circuit condition	I_{LIM}	A	1.2	2.3	ALL	See 189.4.9
5	Short-circuit time limit	T_{LIM}	ms	50	75	ALL	See 189.4.9
6	Inrush time	T_{Inrush}	ms	10	20	ALL	
7	MPD maintain power signature dropout time limit	T_{TPSDO}	ms	320	400	ALL	See 189.4.10.1
8	PD TPS time for validity	T_{TPS}	ms	6	—	ALL	See 189.4.10.1
9	DC TPS current	I_{HOLD}	mA	4	9	ALL	See 189.4.10.1
10	Error delay timing	T_{ED}	ms	750	—	ALL	
11	Overload current	I_{CUT}	A	P_{MPSE}^{min}/V_{MPSE}	—	ALL	See 189.4.8
12	Overload time limit	T_{CUT}	ms	50	70	ALL	See 189.4.8

Table 189-9—MPD power supply limits

Item	Parameter	Symbol	Unit	Min	Max	Type	Additional Information
1	Input voltage ^a	V_{Port_MPD}	V	16	30	0	
				34 35.5	50	1	
2	Unit power	P_{MPD_1U}	W	—	1.1	0 and 0/1	1 unit load
				—	2 4	1	1 unit load
3	Unit loading	N_{unit}	-	1	16	ALL	See 189.5.5.3
4	Input power	P_{MPD}	W	1.1	17.6	0 and 0/1	$N_{unit} \times P_{MPD_1U}$
				2 4	32 64	1	
5	Inrush current	I_{Inrush_MPD}	mA	—	20	ALL	See 189.5.5.2
6	MPD Type 0 Voltage threshold	V_{type0_th}	V	11.9	16	ALL	
7	MPD Type 1 Voltage threshold	V_{type1_th}	V	30.1	34	ALL	

Edits Satisfy D2.2 Comments:

54, 56, 57

Withdraw comment 55 (Change to MPSE Ilim not required)