IEEE P802.3da resolution to comment 48

Chad Jones

MPSE Inrush

- The inrush per unit load for the MPD is specified as 20 mA, and an MPSE is required to support 16. Therefore, an MPSE must support 320 mA during inrush.
- The MPD Tinrush is specified as 50-75 ms, while the MPSE inrush is 10-20 ms. Further, both Table 189-5 and Table 189-9 call this Tinrush, creating conflict. As the values of MPD inrush and Cport were calculated around a min 50 ms inrush time, the value in Table 189-5 item 6 needs to change.

MPD Inrush

- The MPD having a range of 50 to 75 ms means the MPSE must have a range that is 75 ms min. Digging into how this was handled in Clause 145 reminds that the PSE Tinrush is 50 – 75 ms, the PD Tinrush is 50 ms max, and there is an additional item Tdelay that states a PD must wait 80 ms before moving to full power, giving time for the PSE to move from inrush mode to full power mode.
- I propose a better way is to shorten the MPSE inrush period, lowering the max to 55 ms, then making the MPD min inrush period be 60 ms, thus giving the 5 ms for the MPSE time to move from INRUSH to POWER_ON.

Table 189-5

	limit	T_{LIM}					
6	Inrush time	T_{Inrush}	ms	~~10~~ 50	~~20~~ 55	ALL	
~~7~~ 8	MPD maintain power signature dropout time limit	T_{TPSDO}	ms	320	400	ALL	See 189.4.10.1
~~8~~ 9	PD TPS time for validity	T_{TPS}	ms	6	—	ALL	See 189.4.10.1
~~9~~ 10	DC TPS current	I_{HOLD}	mA	4	9	ALL	See 189.4.10.1
~~10~~ 11	Error delay timing	T_{ED}	ms	750	—	ALL	
~~11~~ 12	Overload current	I_{CUT}	A	$P_{MPSE}min/V_{MPSE}$	—	ALL	See 189.4.8
~~12~~ 13	Overload time limit	T_{CUT}	ms	50	70	ALL	See 189.4.8
7	Inrush current	I_{Inrush}	mA	320	—	ALL	

189.4.7 Continuous output power in POWER_ON state

More MPD Inrush

- Table 189-9 item 5 points to 189.5.5.2, but item 5 and item 10 are interrelated in this table, and when someone reads 189.5.5.2, they should also read 189.5.5.5. This needs added to item 5, additional information. Also, to further tie the items together, item 10 should be moved to item 6, and 189.5.5.5 should be moved to 189.5.5.3, or combined into 189.5.5.2.
- Since the MPSE and MPD Tinrush specs cannot match, Tinrush in Table 189-9 needs to have a different symbol, T[Inrush_MPD].

Table 189-9

				4	64	1	
5	Inrush current	I_{Inrush_MPD}	mA	—	20	ALL	See 189.5.5.2
6 7	MPD Type 0 Voltage threshold	V_{type0_th}	V	11.9	16	ALL	
7 8	MPD Type 1 Voltage threshold	V_{type1_th}	V	30.1	34	ALL	

5.5.5

Table 189-9 continued

move to 6

~~8~~ 9	Mark Timer duration	T_{Mark}	ms	50	75	ALL	See 189.5.5.2
~~9~~ 10	~~Inrush to operating state delay~~ MPD Inrush time	T_{Inrush_MPD}	ms	~~50~~ 60	~~75~~	ALL	
~~10~~ 6	MPD MPI capacitance during POWER_ON	C_{Port}	µF	—	20	ALL	Per unit load. See 189.5.5.5
~~11~~ 12	MPD current when connected to incompatible MPSE type	$I_{MPD\_Disabled}$	mA	—	5	ALL	
~~12~~ 13	MPD current slew rate dI/dt		mA/ms	—	190	ALL	

[a]Type 0/1 MPDs conform to the power supply limits compatible with the MPSE type powering the mixing segment