

P802.3bt D3.0 – Inrush v102

Info (not part of baseline)

Homework: inrush cleanup.

145.2.8 Power supply output

Change Table 145–16 as follows:

Item	Parameter	Symbol	Unit	Min	Max	PSE Type	Additional information
6	Total output current of both pairsets of the same polarity in the POWER_UP state per the assigned Class						
	Total output current of both pairs of the same polarity during POWER_UP per the assigned Class						
	Single-signature PD, Class 1 to 4	I_{Inrush}	A	0.4	0.45	3,4	...
	Single-signature PD, Class 5 to 6			0.4	0.9	3,4	
	Single-signature PD, Class 7 to 8			0.8	0.9	4	
	Type 3 dual-signature PD			0.5	0.9	3,4	
Type 4 dual-signature PD	0.65			0.9	4		
7	Output current per pairset in the POWER_UP state per the assigned Class						
	Output current per pairset during power up per the assigned Class						
	Single-signature PD, Class 1 to 4	$I_{\text{Inrush-2P}}$	A		0.45	3,4	...
	Single-signature PD, Class 5 to 6				0.6	3,4	
	Single-signature PD, Class 7 to 8				0.6	4	
	Type 3 dual-signature PD			0.25–0.4	0.6 0.45	3,4	
Type 4 dual-signature PD	0.325 0.4			0.6 0.45	4		

145.2.8.6 Output current during power up

Power up occurs on each pairset between the transition to POWER_UP on that pairset and the expiration of $T_{\text{Inrush-2P}}$. PSEs that have assigned Class 5 to 8 to a single-signature PD shall reach POWER_ON on both pairsets within $T_{\text{Inrush-2P max}}$, starting with the first pairset transitioning into POWER_UP, and where the second pairset transitions to POWER_UP anytime within this time period.

~~The PSE shall limit $I_{\text{Inrush-2P}}$ and I_{Inrush} during POWER_UP per the requirements of Table 145–16. The maximum inrush current sourced by the PSE per pairset shall not exceed the per pairset inrush template in Figure 145–23 and Equation (145–18).~~

The PSE shall limit the current on each powered negative pair to $I_{\text{Inrush-2P}}$ and the total output current on the negative pairs to I_{Inrush} during power up per the requirements of Table 145–16, with the exception of the initial per pairset transient described in Equation (145–18) and Figure 145–23.

Info (not part of baseline)

Most of the trouble with $I_{PSEIT-2P}$ is that it tries to be clever and handle pairsets and total port currents in one equation/figure. By lifting out the I_{Inrush} requirement, the need for this is gone. $I_{PSEIT-2P}$ now only needs to deal with the inrush transient. So we replace I_{max} with $I_{Inrush-2P}$.

The PSE inrush maximum limit, $I_{PSEIT-2P}$, is defined by the following segments:

$$I_{PSEIT-2P}(t) = \left\{ \begin{array}{ll} I_{Inrush-2P} & \text{for } 0 \leq t < t_0 \\ 50 & \text{for } t_0 \leq t < (t_0 + 10 \times 10^{-6}) \\ I_{Inrush-2P} + \frac{(50 - I_{Inrush-2P}) \times (0.001 + t_0 - t)}{99 \times 10^{-5}} & \text{for } (t_0 + 10 \times 10^{-6}) \leq t < (t_0 + 0.001) \\ I_{Inrush-2P} & \text{for } (t_0 + 0.001) \leq t < 0.075 \end{array} \right\}_A \quad (145-18)$$

where

t is the time in seconds

$I_{Inrush-2P}$ is the per pairset inrush current as defined in Table 145-16

t_0 is the time when $I_{Port-2P}$ exceeds $I_{Inrush-2P}$ max for the first time during **POWER-UP** during the power up states.

The range for t_0 is $0 \leq t_0 \leq 49ms$.

Replace Figure 145-23 as follows:

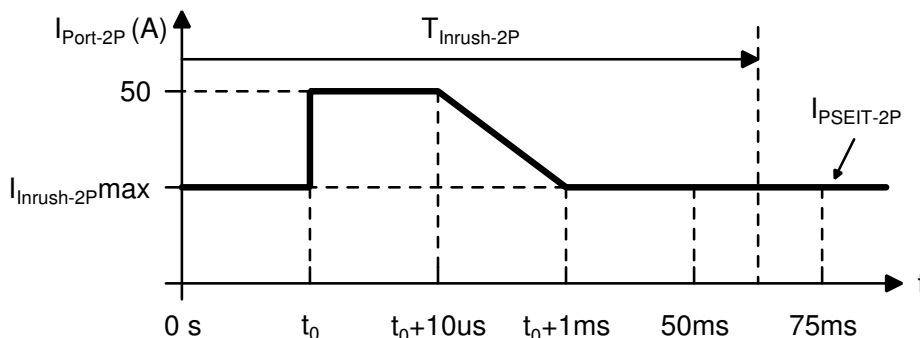


Figure 145-23 — Per pairset inrush transient limits

145.3.8 PD power

Change Table 145-28 as follows:

Item	Parameter	Symbol	Unit	Min	Max	PD Type	Additional information
4	Input inrush current per the assigned Class						
	Single-signature PD, Class 1 to 6	I_{Inrush_PD}	A		0.4	3,4	...
	Single-signature PD, Class 7 to 8				0.8	4	
	Dual-signature PD, Class 1 to 4				0.5	3,4	
Dual-signature PD, Class 5				0.65	4		
5	Input inrush current per pairset per the assigned Class						
	Single-signature PD, Class 1 to 6	I_{Inrush_PD-2P}	A		0.4	3,4	...
	Single-signature PD, Class 7 to 8				0.6	4	
	Dual-signature PD, Class 1 to 4				0.6 0.4	3,4	
Dual-signature PD, Class 5				0.6 0.4	4		