



Remedy for Comment i-69 Regarding V_{On} in Table 104-6

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Presentation Objective - Propose a remedy to comment i-69 regarding V_{On} min error in Table 104-6

- Comment i-69:

Subclause 104.5.6.1 'PD input voltage' states that 'Once the PD is turned on, the PD may remain on in the input voltage range less than V_{On} min but greater than V_{Off} .'. Based on this I suspect that there may be an error for the unregulated (sic) 24 V class values in Table 104-6 for V_{On} min (item 4d) which is 17.8 V and V_{Off} (item 5d) which is 19.5 V. For this class, unlike all others, the V_{On} min is lower than the V_{Off} value, hence there is no range where V_{On} min is greater than V_{Off} .

Table 104-6—PD power supply limits (continued)

Item	Parameter	Symbol	Unit	Min	Max	PD Type	Additional Information
4a	Power supply turn on voltage (unregulated 12 V classes)	V_{On}	V	5.18	5.75	All	See 104.5.6.1
4b	Power supply turn on voltage (regulated 12 V classes)			12.2	13.6		
4c	Power supply turn on voltage (unregulated 24 V classes)			10.3	11.4		
4d	Power supply turn on voltage (regulated 24 V classes)			17.8	24.7		
4e	Power supply turn on voltage (regulated 48 V classes)			38.4	45.6		
5a	Power supply turn off voltage (unregulated 12 V classes)	V_{Off}	V	3.6	—		
5b	Power supply turn off voltage (regulated 12 V classes)			9.56	—		
5c	Power supply turn off voltage (unregulated 24 V classes)			7.97	—		
5d	Power supply turn off voltage (regulated 24 V classes)			19.5	—		
5e	Power supply turn off voltage (regulated 48 V classes)			33	—		

These values conflict

104.5.6.1 PD input voltage

The PD shall remain off until the input voltage reaches a value in the range of V_{On} , as specified in Table 104–6, after a delay greater than T_{power_dly} . Once the PD is turned on, the PD may remain on in the input voltage range less than V_{On} min but greater than V_{Off} . When the input voltage is less than V_{Off} min, as specified in Table 104–6, the PD shall be turned off.

The PD shall turn on or off without startup oscillation and within the first trial when a voltage in the range of V_{PSE} (as defined in Table 104–1) is applied with a series resistance within the range of valid channel resistance.

The PD shall operate in the PD_SLEEP state with an input voltage greater than V_{Sleep_PD} min as specified in Table 104–6.

Proposed Remedy

- Delete the V_{On} min specifications from Table 104-6 for all PD classes
 - Specifying V_{On} min unnecessarily limits implementations since there is already a requirement that the PD startup without oscillation and within the first trial for any valid load condition
- Change 104.5.6.1 as follows:

~~The PD shall remain off until the input voltage reaches a value in the range of V_{On} , as specified in Table 104-6, after a delay greater than T_{power_dly} . Once the PD is turned on, the PD may remain on in the input voltage range less than V_{On} min but greater than V_{Off} . When the input voltage is less than V_{Off} min, as specified in Table 104-6, the PD shall be turned off.~~

The PD shall turn on at a voltage less than or equal to V_{On} max and with a delay greater than T_{power_dly} min. After the PD turns on, the PD shall stay on over the range from V_{PD} min to V_{PSE} max. The PD shall turn off at a voltage in the range of V_{PD} min to V_{Off} min. Table 104-1 defines the values for V_{PD} min and V_{PSE} max. Table 104-6 defines the values for V_{On} , T_{power_dly} , and V_{Off} .

Questions?

Annex A – D3.0 Table 104-1

Table 104–1—System class power requirements matrix for PSE, PI, and PD

Class Code	System class									
	12 V unregulated PSE		12 V regulated PSE		24 V unregulated PSE		24 V regulated PSE		48 V regulated PSE	
	0	1	2	3	4	5	6	7	8	9
$V_{PSE(max)}$ (V) ^a	18	18	18	18	36	36	36	36	60	60
$V_{PSE_OC(min)}$ (V) ^b	6	6	14.4	14.4	12	12	26	26	48	48
$V_{PSE(min)}$ (V)	5.6	5.77	14.4	14.4	11.7	11.7	26	26	48	48
$I_{PI(max)}$ (mA) ^c	101	227	249	471	97	339	215	461	735	1360
$V_{PD(min)}$ (V)	4.94	4.41	12	10.6	10.3	8.86	23.3	21.7	40.8	36.7
P_{PD} (W) ^d	0.5	1	3	5	1	3	5	10	30	50

^a V_{PSE} is the voltage measured at the PSE PI over the full range of operating conditions.

^b $V_{PSE_OC(min)}$ is the minimum allowed open circuit voltage measured at the PSE PI.

^c $I_{PI(max)}$ is the maximum current flowing at the PSE and PD PIs except during inrush or an overload condition. $I_{PI(max)}$ may be exceeded during inrush or an overload (see 104.4.6.2).

^d P_{PD} is the guaranteed available power at the PD PI.