Proposed Changes to IEEE P802.3bu D3.1 PIC related

IEEE P802.3bu
Power over Data Lines Task Force

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Intro

- During D3.1 review, a number of minor PICs issues were found.
- This presentation attempts to provide a concise set of changes that are recommended to bring theClause 104 PICs up to consistency with other IEEE 802.3 clauses.
- Some changes to tables/text required to bring alignment with PICs.

Missing PSE & PD Types

- 104.9.3

PSE types aren't called out within the PICSs and PD types (A,B,C) have optional requirements called out within the PICs so should be called out within this subclause.

104.9.3 Major capabilities/options

Item	Feature	Subclause	Value/Comment	Status	Support
*PD TA	Implements PD functionality Type A	104.5	Provides support for requirements of Powered Device Equipment Type A	O	Yes [ ] No [ ]

Add TB, TC

*MAN PIC not called out in Clause 104

- 104.9.3

Management option is not called out in Clause 104 PICs, but rather, via Clause 45 PICs.

Covered by Clause 45 PICs

*MAN	PSE implements Management Registers through Clause 45 MDIO	45.2	Optional for PSEs	O	Yes [ ] No [ ]

*SCCP PIC structure removes need for individual PSE and PD SCCP option declarations

- 104.9.3

*PSECL is not required for the way we structured the PICs. We have a *SCCP subclause for both PSE &PD

Duplicate

Due to structure of PICs, *SCCP covers both PSE and PDs

~~*PSECL~~	~~Implements PSE Classification~~	~~104.4.5~~	~~Provides support for classification of PDs~~	~~O~~	~~Yes [ ] No [ ]~~
~~*PSESC~~ *SCCP	~~PSE~~ Implements SCCP Device	104.4.5	Provides support for SCCP classification ~~of PDs~~	O	Yes [ ] No [ ]
~~*PDSC~~	~~PD Implements SCCP~~	~~104.4.5~~	~~Provides support for SCCP classification by PSEs~~	~~O~~	~~Yes [ ] No [ ]~~

*MFVSD incorrectly defined as an “option” when it only indicates an optional behavior in 104.5.7

- 104.9.3

*MFVSD is not a “major capability or option”. MFVS dropout is a possible behavior that is allowed & PSE clause describes how to deal with it.

~~*MFVSD~~	~~MFVS Dropout~~	~~104.5.7~~	~~MFVS dropout capability~~	~~O~~	~~Yes [ ]~~ No [ ]

MFVSD is not really an "option", but the subclause describes optional behavior - rewrite 104.5.7 as shown.

Motion Slides

- The following slides will be called upon within a motion to adopt changes.

Proposed new 104.9.3

- 104.9.3

Item	Feature	Subclause	Value/Comment	Status	Support
*PDTA	Implements PD Type A functionality	104.5	Provides support for requirements of Type A Powered Device Equipment	O	Yes[ ] No [ ]
*PDTB	Implements PD Type B functionality	104.5	Provides support for requirements of Type B Powered Device Equipment	O	Yes[ ] No [ ]
*PDTC	Implements PD Type C functionality	104.5	Provides support for requirements of Type C Powered Device Equipment	O	Yes[ ] No [ ]
*SCCP	Implements SCCP Classification functionality	104.4.5	Provides support for SCCP Classification	O	Yes[ ] No [ ]

Proposed 104.9.4.2 fixes

104.9.4.2 Power sourcing equipment (PSE)

Item	Feature	Subclause	Value/Comment	Status	Support
PSE1	Voltage and power requirements	104.4.2	As defined in Table 104–1 for each relevant Class	M	Yes [ ]
PSE2	PSE behavior	104.4.3	In accordance with state diagram shown in Figure 104–4, 104-5 and 104-6.	M	Yes [ ]
PSE3	Complete detection of a valid PD signature	104.4.4	Within T_{det} as specified in Table 104–3	M	Yes [ ]
PSE4	Valid signature not detected and classification not performed	104.4.4	Wait at least $T_{Restart}$ before reattempting detection	M	Yes [ ]

Should include all SD figs

PSE20	POWER_UP and POWER_ON state operation	104.4.6.2.1	Limit the current ~~or~~ to I_{LIM} for a duration of up to T_{LIM} in order to account for PSE dV/dt transients at the PI as specified in Table 104–4	M	Yes [ ]

typo

Proposed 104.9.4.3 fixes

104.9.4.3 Powered Device (PD)

Item	Feature	Subclause	Value/Comment	Status	Support
PD18	Type A or Type C PD ripple and transients	104.5.6.3	In accordance with specifications shown in Table 104–7 for all operating voltages in the range of V_{PD} sourced through a DC bias coupling network with MDI return loss as specified by Clause 96, and over the range of P_{PD}	*PDTA:M *PDTC:M	Yes [ ]
PD19	Type B PD ripple and transients	104.5.6.3	In accordance with specifications shown in Table 104–7 for all operating voltages in the range of V_{PD} sourced through a DC bias coupling network with MDI return loss as specified by Clause 97, and over the range of P_{PD}	*PDTB:M	Yes [ ]
PD20	Type A or Type C PD measured ripple voltage post-processing	104.5.6.3	With transfer function $H_2(f)$ specified in Equation (104–3) where f_2=1 MHz +/-1%	*PDTA:M *PDTC:M	Yes [ ]
PD21	Type B PD measured ripple voltage post-processing	104.5.6.3	With transfer function $H_2(f)$ specified in Equation (104–3) where f_2=10 MHz +/-1%	*PDTB:M	Yes [ ]

missing options

Proposed 104.9.4.8 fix

104.9.4.8 Environmental

Item	Feature	Subclause	Value/Comment	Status	Support
ENV1	General safety for PoDL equipment	104.8.1	To conform to IEC 60950-1	M	Yes [ ]
ENV2	General safety for PoDL equipment intended for motor vehicle applications	104.8.1	To conform to ISO 26262	M	Yes [ ]
ENV3	General safety for PoDL PSEs	104.8.1	To be classified as s Limited Power Source in accordance with IEC 60950-1	M	Yes [ ]

classified as "a" Limited...

minor typo

*MFVSD incorrectly defined as an “option” when it only indicates an allowed behavior in 104.5.7

- Recommended change to 104.5.7

104.5.7 PD Maintain full voltage

In order to signal the PSE to maintain full operating voltage, the PD shall provide a valid MFVS at the PI. The MFVS shall consist of current draw equal to or greater than I_{hold_PD} for a minimum duration of T_{MFVS_PD} measured at the PD PI followed by an ~~optional~~ MFVS dropout for no longer than T_{MFVDO} min. PDs that do not require full operating voltage at the PI shall remove the current draw of the MFVS from the PI.

allowed

Correction to 104.4.3 to address PIC change

- Recommended change to 104.4.3

104.4.3 PSE state diagram

The PSE shall implement the behavior of the state diagram shown in Figure 104–4, 104-5 and 104.6.

Minor fix to Table 104-4

- Table 104-4 is called out for all PSEs to meet (PSE11), but some items are conditioned on which Type of PSE is used. The best solution is to update Table 104-4 rather than add PSE optional parameters in the PICs

Table 104–4—PSE output requirements

Item	Parameter	Symbol	Unit	Min	Max	Class	Type	Additional Information
1	DC output voltage during POWER_ON state	$V_{PSE(PON)}$	V	Class $V_{PSE(min)}$	Class $V_{PSE(max)}$	All	All	See 104.4.6.1 and Table 104–1
2	Continuous output current capability in POWER_ON state		mA	P_{Class}/V_{PSE}	—	All	All	See Table 104–1
3	Output slew rate dV/dt		V/ms	—	22	All	A, C	See 104–1
				—	40	All	A, C	During in-rush only
				—	200	All	B	See 104–1

Motion

- Adopt slides 7-13 of dove_3bu_01_0916.pdf for inclusion into IEEE P802.3bu D3.2 with appropriate editorial license.

Thank You!