

IEEE 802.3bu Power over Data Lines 2nd Task Force review comments

CI 104 SC 104.0 P 10 L 1 # 33
 Dwelley, David LTC
 Comment Type T Comment Status X
 Edits to Clauses 1, 30, 79, and possibly other clauses will be required.
 SuggestedRemedy
 Add edits to affected clauses
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.1.3 P 12 L 52 # 45
 Dwelley, David LTC
 Comment Type TR Comment Status X
 SCCP doesn't work "subsequent to the application of power"
 SuggestedRemedy
 Replace sentence with: "Data may be transmitted and received between the PSE and PD prior to the application and subsequent to the removal of power via the MDI using the serial communication classification protocol (SCCP) which is described in 104.6."
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.1.3 P 13 L 8 # 8
 Dwelley, David LTC
 Comment Type E Comment Status X
 Figure 104-1: CSMA/CD reference is obsolete (also at line 26)
 SuggestedRemedy
 Replace "CSMA/CD LAN" with "Ethernet"
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.1.4 P 12 L 51 # 7
 Dwelley, David LTC
 Comment Type E Comment Status X
 "100BASE-T1 or 1000BASE-T1" references occur in several places. It's likely that in future there will be more data standards that use PoDL, and it would be convenient if they appear in only one place and are referred to by reference elsewhere.

SuggestedRemedy
 Change "when used in conjunction with 100BASE-T1 or 1000BASE-T1 Ethernet" to "when used in conjunction with supported Ethernet data protocols". Add a new section titled "Supported Data Protocols" before 104.1.3: "1-pair PoDL supports use with 100BASE-T1 and 1000BASE-T1 data protocols." Replace explicit 100/1000BASE-T1 references with pointers to this new 104.1.x section where possible elsewhere in the document (eg, 104.3.1, 104.4.1).

Proposed Response Response Status W
 not EZ

CI 104 SC 104.2 P 14 L 41 # 102
 Wienckowski, Natalie General Motors
 Comment Type TR Comment Status X
 Table 104-1

I thought the goal for the 12V battery system was to be able to supply the power down to 6 V. Also, The maximum voltage must be at least 16V, preferably 18V.

SuggestedRemedy
 The PSE needs to be able to source voltage (current) during an AutoStart event. Normal operation is expected during this vehicle controlled start.

Vehicle battery voltages can be up to 16V during cold temperatures, the PSE needs to be able to source voltage (current) under all normal operating ranges.

Vehicles are generally expected to operate at 16 V to 18 V for one hour during an alternator failure. Some systems that use PoDL will have to operate under this condition.

Proposed Response Response Status W
 not EZ

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CI 104 SC 104.2 P 14 L 50 # 9
 Dwelley, David LTC

Comment Type E Comment Status X

Table 104-1, Note 2: equation belongs in an informative annex.

SuggestedRemedy

Change note 2 to read: "RLoop is defined as the sum of the PSE source resistance, RPSE, and link segment round trip resistance with the maximum resistance of the link segment wire pair. See Annex XX." Merge the equation and explanatory text from the rest of Note 2 with the text in annex 104A.1.

Proposed Response Response Status W
 not EZ

CI 104 SC 104.2 P 14 L 5253 # 85
 Picard, Jean Texas Instruments

Comment Type T Comment Status X

VPSE is defined as open circuit voltage, while Rloop is defined as including Rpse. That cannot work, what is the requirement for PSE equipment then? Rpse (including series inductors) is the responsibility of PSE equipment vendor and should not be part of the channel resistance, and it should guarantee the voltage range at PI from no to full load. Rloop should exclude Rpse.

SuggestedRemedy

RLoop should not include Rpse. Vpse should be from no to full load.

Proposed Response Response Status W
 not EZ

CI 104 SC 104.3.1 P 15 L 29 # 10
 Dwelley, David LTC

Comment Type E Comment Status X

PSE (also PD) Types 1 and 2 are used in PoE - this has the potential to cause confusion

SuggestedRemedy

Change Types 1 and 2 to Types A and B to be unambiguously different from PoE. This change may end up in new section 104.1.x per my previous comment

Proposed Response Response Status W
 not EZ

CI 104 SC 104.3.3.1 P 15 L 47 # 76
 Abramson, David Texas Instruments

Comment Type TR Comment Status X

Paragraph is unclear as to behavior of a PSE with or without SCCP enabled.

I believe the intention is to only require detection and class when SCCP is enabled on a PSE.

The text says that a PSE with SCCP disabled "shall initiate and successfully complete a new detection cycle..." if it cannot supply power within Tinrush.

These statements contradict each other in regards to requiring detection/class.

SuggestedRemedy

change text to:

"If a PSE with SCCP enabled cannot supply power within Tinrush, it shall initiate and successfully complete..." and move to below line 50/51 on pg 15.

Add text: "If a PSE with SCCP disabled cannot supply power within Tinrush, it shall wait for Ted before attempting to apply power again." below line 46.

Proposed Response Response Status W
 not EZ

CI 104 SC 104.3.3.1 P 15 L 47 # 12
 Dwelley, David LTC

Comment Type E Comment Status X

This text also appears (in a clearer form) in section 104.3.6.5: "If the PSE cannot supply power within Tinrush, it shall initiate and successfully complete a new detection cycle before applying power to its PI."

SuggestedRemedy

Delete entire sentence

Proposed Response Response Status W
 not EZ

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CI 104 SC 104.3.3.1 P 17 L 51 # 83
Abramson, David Texas Instruments

Comment Type TR Comment Status X

This comment applies to Figures 104-4 and 104-5. The MPS behavior in the state diagrams does not match what is in the text and even contradicts itself. The same variable (!mr_mps_valid) is used to transition from POWER_ON to POWER_DENIED in Figure 104-4 and to move from MONITOR_MPS to DETECT_MPS in Figure 104-5.

SuggestedRemedy

The state diagram must be updated to match the text. My suggestion:

Replace "!mr_mps_valid" in Figure 104-4 with "tmpdo_timer_done" in the same way the PoE spec uses tmpdo_timer_done.

Proposed Response Response Status W

not EZ

CI 104 SC 104.3.4 P 18 L 24 # 34
Dwelley, David LTC

Comment Type T Comment Status X

The "may" in the first sentence makes this entire detection section non-normative: "The PSE may probe the PI in order..."

SuggestedRemedy

Add the concept of "enabling" detection, and if detection is enabled, make this section normative: "If detection is enabled, the PSE shall probe the PI in order..."

Add an appropriate arc to the state machine to make the optional nature of detection clear for engineered systems (per the objectives).

Proposed Response Response Status W

not EZ

CI 104 SC 104.3.4.3 P 19 L 11 # 14
Dwelley, David LTC

Comment Type E Comment Status X

Overlapping Vgood and Vbad ranges make the spec hard to understand

SuggestedRemedy

Change item a) to read "...equal to Vbad_lo max, or"
Change item b) to read "...equal to Vbad_hi min, or"
Change Vbad to Vbad_lo in Table 104-5 on page 25, move 2.8 to max column
Add a new row to Table 104-5 to define Vbad_hi, move 3.2 to min column
Fix line 17 accordingly

Proposed Response Response Status W

not EZ

CI 104 SC 104.3.5 P 19 L 32 # 35
Dwelley, David LTC

Comment Type T Comment Status X

A PSE with SCCP enabled must behave this way - a shall is appropriate. PSEs that don't include SCCP functionality can never have SCCP "enabled" and thus are exempt from the shall.

SuggestedRemedy

Change "may" to "shall"

Proposed Response Response Status W

not EZ

CI 104 SC 104.3.6 P 19 L 39 # 17
Dwelley, David LTC

Comment Type E Comment Status X

This concept has been confusing in PoE and has the potential to be that way in PoDL as well: "The output of a PSE shall conform to the electrical requirements in Table 104-5 to ensure that it does not present a valid PD detection signature."

SuggestedRemedy

Clarify by changing the sentence: "The output of a PSE shall conform to the electrical requirements in Table 104-5 in both powered and unpowered modes to ensure that it does not present a valid PD detection signature ."

Proposed Response Response Status W

not EZ

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CI 104 SC 104.3.6.2 P 20 L 26 # 46
 Dwelley, David LTC
 Comment Type TR Comment Status X
 Table 104-3: Vport_pse appears here and nowhere else - everywhere else it is Vpse
 SuggestedRemedy
 Change to Vpse
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.3.6.3 P 21 L 14 # 68
 Abramson, David Texas Instruments
 Comment Type TR Comment Status X
 Text for turn on time consequences does not use standards language.
 SuggestedRemedy
 Change text from:
 "If power is not applied as specified, a new detection cycle is initiated."
 to:
 "if power is not applied as specified, a new detection cycle shall be initiated before any subsequent applicaiton of power."
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.3.6.5 P 21 L 13 # 67
 Abramson, David Texas Instruments
 Comment Type TR Comment Status X
 The text does not match the state diagram for Tinrush because the optional classification is not stated in the text.
 SuggestedRemedy
 Change text from:
 ...Tinrush in Table 104-3 applies to the PSE power up time for a PD after completion of detection.
 to:
 ...Tinrush in Table 104-3 applies to the PSE power up time for a PD after compleiteion of detection when SCCP is disabled.
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.3.6.6 P 21 L 19 # 36
 Dwelley, David LTC
 Comment Type T Comment Status X
 320kohm value is inherited from PoE and may not be appropriate here, especially with lower Vpse voltages
 SuggestedRemedy
 Recalculate appropriate resistance (maybe 100k?)
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.3.6.8 P 21 L 35 # 20
 Dwelley, David LTC
 Comment Type E Comment Status X
 This section could be clearer
 SuggestedRemedy
 Replace with: "The PSE and/or the PD may exhibit voltage instability due to negative impedance typically seen at the PD input. See Annex 104A.1 for design guidelines regarding stable operation."
 Proposed Response Response Status W
 not EZ

CI 104 SC 104.4 P 22 L 11 # 21
 Dwelley, David LTC
 Comment Type E Comment Status X
 This text is unnecessary and arguably false: "PD capable devices that are neither drawing nor requesting power are also covered in this sub-clause."
 SuggestedRemedy
 Remove sentence
 Proposed Response Response Status W
 not EZ

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CI 104 SC 104.4 P 22 L 14 # 22
 Dwelley, David LTC

Comment Type E Comment Status X

This text was inherited from PoE but is not needed here: "Characteristics such as the losses due to voltage correction circuits, power supply inefficiencies, separation of internal circuits from external ground or other characteristics induced by circuits after the PI terminals are not specified."

SuggestedRemedy

Delete sentence

Proposed Response Response Status W
 not EZ

CI 104 SC 104.4.3.1 P 22 L 38 # 69
 Abramson, David Texas Instruments

Comment Type TR Comment Status X

The text: "The SCCP may be used by the PSE to communicate with the PD while Vpd < Vsig_disable."

A PSE behavior seems to be defined in the PD section. In addition it seems to imply that the PSE should know what Vpd is (which I imagine is not the intention).

SuggestedRemedy

Change text to:

"The SCCP may be used for communication between the PD and PSE when Vpd < Vsig_disable".

Proposed Response Response Status W
 not EZ

CI 104 SC 104.4.3.1 P 22 L 40 # 47
 Dwelley, David LTC

Comment Type TR Comment Status X

The PD signature must be disabled above Vsig_disable but that is never called out. This is the appropriate place to do it. The text referring to PD power turning on is also unclear.

SuggestedRemedy

Change sentence to read: "When the input voltage exceeds Vsig_disable, the PD shall remove the constant-voltage signature from the PI, and shall wait t_{pwr_delay} before drawing power from the MDI.

Proposed Response Response Status W
 not EZ

CI 104 SC 104.4.3.6 P 24 L 35 # 70
 Abramson, David Texas Instruments

Comment Type TR Comment Status X

There is a FAULT section of the PD state diagram, but no corresponding text.

What is meant by the "fault_detected" transition?

SuggestedRemedy

Add text for fault_detected variable.

Proposed Response Response Status W
 not EZ

CI 104 SC 104.4.4 P 25 L 36 # 71
 Abramson, David Texas Instruments

Comment Type TR Comment Status X

This comment refers to Table 104-5.

Vbad seems to be a superset of Vgood. Both are defined for the exact same conditions, Vgood is between 2.9 and 3.1 while Vbad is between 2.8 and 3.2.

The Vbad spec should be split into two lines to match the text in section 104.3.4.3.

SuggestedRemedy

Split Vbad spec into two lines:

Parameter	Condition	Min	Max	Unit
Vbad	As is	2.8		V
		3.2		V

Proposed Response Response Status W
 not EZ

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CI 104 SC 104.4.4 P 25 L 9 # 38
 Dwelley, David LTC

Comment Type T Comment Status X

This sentence borders on defining implementation: "The detection signature is a constant voltage as determined from one or more voltage measurements made during the application of a forced probe current or currents"

SuggestedRemedy

Change to: "The detection signature is a constant voltage per Table 104-4 when measured by the PSE"

Proposed Response Response Status W
 not EZ

CI 104 SC 104.4.6 P 26 L 17 # 78
 Abramson, David Texas Instruments

Comment Type TR Comment Status X

This comment relates to ites 4 and 5 of Table 104-6.

The table format does not adequately reflect what the specification actually is. The table seems to indicate that the minimum turn on voltage is between 4 and the equation listed under the max column. However, the text in section 104.4.6.1 indicates that the minimum turn on voltage is the maximum of 4 and the equation listed under the max column. This is a confusing way to present the spec.

The same applies for the Voff specification.

SuggestedRemedy

Replace the "4" in the min column of Von with "max(4,sqrt(7.2*Ppd*Rloop))"

Replace the "3.75" in the min column of Voff with "max(3.75,sqrt(4*Ppd*Rloop))"

Remove the equations from the max column for both Von and Voff.

Proposed Response Response Status W
 not EZ

CI 104 SC 104.4.6.1 P 26 L 17 # 79
 Abramson, David Texas Instruments

Comment Type TR Comment Status X

This comment would override my comment 17 if adopted.

Having turn on and turn off voltages defined by the PD power and Rloop is impractical. The PD cannot know the Rloop and cannot even know the power it is drawing without dramatically increasing cost.

Numbers should be used and the PD should be required to turn on by a certain when Vdd is rising and off by a certain voltage when Vdd is falling. (just as was the case for PoE).

In addition, the equation used here produces turn on voltages higher than the PSE minimum voltage requirements.

In order to do this, different specs will be needed for the different voltage classes.

SuggestedRemedy

See abramson_01_bu_0515.pdf submission

Proposed Response Response Status W
 not EZ

CI 104 SC 104.4.7 P 27 L 29 # 73
 Abramson, David Texas Instruments

Comment Type TR Comment Status X

Ihold_pd(min) is not defined anywhere. Tmps is only defined in the PSE section (table 104-3).

SuggestedRemedy

Either add Tmps_pd and Ihold_pd to Table 104-6 (preferred)

or

change text to Ihold(max) and refer to Table 104-3.

Proposed Response Response Status W
 not EZ

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Cl 104 SC 104.4.7 P 27 L 34 # 74
Abramson, David Texas Instruments

Comment Type TR Comment Status X

PDs that "no longer require power" should not be required to remove their current draw of the MPS.

This may rule out certain redundancy schemes that count on back up power being maintained.

Furthermore, the definition of "require power" is not obvious.

SuggestedRemedy
change shall to may.

Proposed Response Response Status W
not EZ

Cl 104 SC 104.5.3.1 P 28 L 8 # 100
Wienckowski, Natalie General Motors

Comment Type T Comment Status X

Section 104.5.3 says that this sections defines the electrical characteristics for both 100BASE-T1 and 1000BASE-T1; however, there are no requirements for 1000BASE-T1.

SuggestedRemedy
Add requirements for 1000BASE-T1.

If there requirements are the same as those in the 1000BASE-T1 spec, add a reference to this spec.

Proposed Response Response Status W
not EZ

Cl 104 SC 104.6.3.1 P 30 L 11 # 43
Dwellely, David LTC

Comment Type TR Comment Status X

The presence pulse isn't used to indicate power readiness: "...and it is ready to accept power."

SuggestedRemedy
Change to: "...and it is ready to communicate using SCCP."

Proposed Response Response Status W
not EZ

Cl 104 SC 104.6.3.1 P 30 L 15 # 30
Dwellely, David LTC

Comment Type T Comment Status X

It's not clear to me that a "shall" is appropriate here: "the master's pull-up current shall force the PSE PI port voltage high". The master *shall* provide the pull-up current (page 28 line 43), but the pull-up current *will* pull the line up - the master has no influence over this

SuggestedRemedy
Change "shall" to "will" - also on line 44 and page 31, line 6.

Proposed Response Response Status W
not EZ

Cl 104 SC 104.6.3.3 P 31 L 6 # 44
Dwellely, David LTC

Comment Type TR Comment Status X

Missing information: "...shall release its PI..."

SuggestedRemedy
Change to: "...shall hold the PI low for Tlow1 and then release its PI..."

Proposed Response Response Status W
not EZ

Cl 104 SC 104.6.3.4 P 32 L 10 # 75
Abramson, David Texas Instruments

Comment Type TR Comment Status X

This comment refers to items 3 and 4 in Table 104-7.

How can we measure Sink Current or Standby Current if we only have access to the PD PI?

Furthermore, IL (Sink current) needs to be at least 10mA if it is going to be guarenteed to pull down the PSE current source.

In addition these specs are not mentioned anywhere in the text.

SuggestedRemedy
Remove these specs and move them to an informative annex about SCCP.

Proposed Response Response Status W
not EZ

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Cl **104** SC **104.6.4.3** P **32** L **51** # **101**
 Wienckowski, Natalie General Motors

Comment Type **T** Comment Status **X**

Based on the description in the text, I assume the LSB is sent first and the MSB is sent last; however, this is not explicitly stated.

SuggestedRemedy

Add a statement that the 64-bit address code shall be transmitted LSB first.

Proposed Response Response Status **W**

not EZ

Cl **104** SC **104.6.4.3** P **33** L **23** # **32**
 Dwelley, David LTC

Comment Type **T** Comment Status **X**

Figure 104-11: Bits are shown big-endian with the MSBs on the left. It would be more clear to show the LSBs on the left, since the SCCP protocol transmits LSB-first.

SuggestedRemedy

Mirror Figure 104-11

Proposed Response Response Status **W**

not EZ

Cl **99** SC P **2** L **1** # **87**
 Wienckowski, Natalie General Motors

Comment Type **E** Comment Status **X**

The abstract text is missing. Also, should reference 802.3-2015.

SuggestedRemedy

Add an abstract and fix the reference date.

Proposed Response Response Status **W**

not EZ