

IEEE 802.3 Ethernet Working Group Liaison Communication

Source: IEEE 802.3 Working Group¹

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From: David Law Chair, IEEE 802.3 Ethernet Working Group
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Subject: TIA TR-42 liaison regarding connectors and topologies for single pair applications

Approval: Agreed to at IEEE 802.3 plenary meeting, Orlando, FL, USA, 9th November 2017

Dear Mr. Emplit,

Thank you for the continued liaison correspondence regarding single-pair Ethernet. Please find responses below to the 14th October 2017 TIA TR42 liaison correspondence as well as requested feedback on TIA TR42 draft 0.3 of TIA-568.5, *Single Balanced Twisted-pair Telecommunications Cabling and Components Standard*.

Regarding feedback on the TIA TR42 draft 0.3 of TIA-568.5, *Single Balanced Twisted-pair Telecommunications Cabling and Components Standard*:

- Section 4.1 describes adaptation to four pair cabling. Please note that the published single-pair standards IEEE Std 802.3bw-2015, IEEE Std 802.3bp-2016, and IEEE Std 802.3bu-2016 and the adopted baseline for IEEE P802.3cg (10 Mb/s Single Twisted-Pair Ethernet) specify link segment parameters that may differ from TIA's four-pair cabling standards. Would you please clarify the statement that "Applications running single pair cabling shall be supported by four pair cabling"?

¹ This document solely represents the views of the IEEE 802.3 Working Group, and does not necessarily represent a position of the IEEE, the IEEE Standards Association, or IEEE 802.

- Section 5.4.1 limits cord cable to a maximum size of “24 AWG (TBD)”. Powering over a single pair under IEEE Std 802.3bu-2016 may support currents up to 1.36 Amperes per conductor, which may require heavier gauge cordage.
- Channel configurations: In addition to the 100 m and 15 m channel configurations in the TIA draft, the IEEE P802.3cg Task Force is developing link segment specifications up to 1000 m with 18 AWG cable including up to 10 inline connectors. Process control industry applications and building automation systems have requested these long reaches. (see, e.g., http://www.ieee802.org/3/10SPE/public/adhoc/hoglund_10SPE_161005_01_bldg.pdf as an example).
- Cable heating due to power provision and bundling restrictions: It would be beneficial to provide guidelines for bundling configurations vs. temperature rise for IEEE Std 802.3bu-2016 powering, similar to what was done for four-pair Power over Ethernet in TIA TSB-184-A.
- Progress on Multidrop
 - The IEEE P802.3cg Task Force is considering a multidrop topology of up to 25 m in length with up to 8 nodes. While designed primarily for automotive applications, it’s possible that multidrop topologies may be used beyond their original intended application. Further details on the multidrop topology, including representative performance, may be found at http://www.ieee802.org/3/cg/public/Sept2017/kaindl_matheus_3cg_01c_09_2017.pdf
- Connectors
 - The IEEE P802.3cg Task Force has not yet engaged in a detailed discussion of connector characteristics beyond assumptions used to develop the link segment characteristics. Further details may be found in http://www.ieee802.org/3/cg/public/Mar2017/diminico_01_0317.pdf. Our work to date has been focused on selecting baselines for the PHYs and powering. We will keep you informed when we have more on the topic of connectors.

Attached please find a liaison of the current, early draft of IEEE P802.3cg. We hope you will find it useful in your work.

Sincerely,

David Law

Chair, IEEE 802.3 Ethernet Working Group

(Attachment: IEEE P802.3cg draft 0.3)