

## IEEE 802.3 Ethernet Working Group Liaison Communication

Source: IEEE 802.3 Working Group<sup>1</sup>

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From: David Law                      Chair, IEEE 802.3 Ethernet Working Group  
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Subject: Power Delivery over Communications Cabling

Dear Mr. Earley,

We have previously sent liaisons and comments expressing our concerns with the 2017 National Electrical Code® revision as it relates to Power over Ethernet.

We are aware and concerned that the wattage value alone listed in 840.160 is not sufficient to limit temperature rise on communications cabling. Ampacity, and not wattage, is directly related to the temperature rise of the cable and is not specified in the code text. We repeat our request that an ampacity value be added to limit the temperature rise of the cable.

We are now additionally concerned that the 2017 National Electrical Code® revisions in Table 725.144 have effectively created a “new” class of communication cables for operating temperatures greater than 60°C with designated ampacity limits for powering without consideration for the transmission characteristics related to the application usage.

The present 840.160 and 725.144 text for communications circuits allows for conductor temperatures that may not be advisable for reliable and/or proper operation of communication systems, including critical circuits such as fire alarms or patient care. Further study or electrical changes to the LP cable definition may be required.

At this time, no known IEEE 802.3 communications and/or power delivery have been specified for operation on data center or enterprise Ethernet based communications circuits at 90°C conductor temperature. IEEE 802.3 references TIA and ISO/IEC cabling functionally

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<sup>1</sup> 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.

specified over the temperature range from -10°C to +60°C. Cabling transmission characteristics beyond 60°C are not specified, therefore 802.3 operation may not be supported. This is independent of whether the cabling itself may survive exposure to such temperatures.

Given the above, we are writing in support of adding ampacity as specified in the appeal relating to NEC §840.160 submitted by Joel Goergen found at the following URL:  
[http://www.nfpa.org/~media/files/codes-and-standards/standards-council/august-2016/sc\\_agenda\\_08\\_16.pdf?la=en](http://www.nfpa.org/~media/files/codes-and-standards/standards-council/august-2016/sc_agenda_08_16.pdf?la=en)

Sincerely,

David Law

Chair, IEEE 802.3 Ethernet Working Group