

Rated vs. Nominal Current

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“Rated current” is defined by the following:

Generally, rated means that the product is marked on the nameplate with the “rating”. E.g. 100-120Vac, 1A, 50/60Hz. Then, in most standards, there is an “input current/power test” where you verify that you do not exceed the rating by more than 10%.

This should give a user the ability to ensure that they do not “overload” a branch circuit by adding up the various current ratings for the devices that they install on the branch.

Rated defn: A stated operating limit of a machine expressible in power units (such as kilowatts of a direct-current generator) or in characteristics such as voltage or current.

Limited Power Circuits

POE port (source) would be loaded to the rated. On the load side (AP or Phone), that would be verified that they draw less than 110% of the rating.

Defining IEEE PoE - From POE_Basics_Goergen_1Dec2016_r2.pdf and P802.3bt latest version 3.2

Power over Ethernet - Power over Ethernet is defined over 4 basic power types.

Type 1 - 15.4 Watts : 175mA nominal, 206mA max/conductor -> 17% imbalance

Type 2 – 30 Watts : 300mA nominal, 352mA max/conductor -> 17% imbalance

Type 3 – 60 Watts : 300mA nominal, 361mA max/conductor -> 20% unbalance 60 Watt PoE example in nominal current

Type 4 – 75 Watts : 361mA nominal, 427mA max/conductor -> 18% unbalance

Type 4 – 90 Watts : class 8: 433mA nominal, 510mA max/conductor -> 18% unbalance.

840.160 Powering Circuits.

Communications cables listed in accordance with 800.179, in addition to carrying the communications circuit, shall also be permitted to carry circuits for powering communications equipment. ~~Where the power supplied over a communications cable to communications equipment is greater than 60 watts, communication cables and the power circuit listed in accordance with 800.170. The power shall be listed in accordance with 840.170(G). Installation of the listed communications cables shall comply with 725.144 where communications cables are used in place of substituted for Class 2 and Class 3 cables in accordance with 725.154(A).~~

Exception: Installing communications cables in compliance with 725.144 shall not be required for listed 4-pair communications cables where the rated current does not exceed 0.3 amperes in any conductor 24 AWG or larger.

Informational Note: A typical communications cable for this application is a 4-pair cable sometimes referred to as Cat5e (or higher) LAN cable or balanced twisted pair cable. These types of cables are often used to provide Ethernet and Power over Ethernet (PoE) type services. A large number of such powering cables bundled together can cause overheating of the cables not controlled as described in Table 725.144.

Current CMP16 Text

Exception: Installing communications cables in compliance with 725.144 shall not be required for listed 4-pair communications cables where the rated current does not exceed 0.3 amperes in any conductor 24 AWG or larger.

NOTE: By definition of “rated current” we only allow exception for 15.4 Watt power sources

We should be using the word nominal

However, CMP16 could have addressed 840.160 the following:

Exception: Installing communications cables in compliance with 725.144 shall not be required for listed 4-pair communications cables where the rated current does not exceed 0.3 amperes in any conductor 24 AWG or larger, or 0.6 amperes in any twisted pair consisting of 2 parallel conductors per pair 24 AWG or larger, or 1.2 amperes in any 2 sets of twisted pair consisting of 2 parallel conductors per pair 24 AWG or larger.

Recommended CMP3 text from PI 1021

Leave as is. Nominal current is the correct term.

725.2 Nominal Current. The designated current per conductor as specified by equipment design.

Informational Note. One example of nominal current is 4-pair Power over Ethernet (PoE) applications based on IEEE Std. 802.3--2015, *IEEE Standard for Ethernet*, that supplies current over 2 or 4 twisted pairs. The nominal current for 60 watt PoE power sourcing equipment is 0.3 amperes per conductor, where the current in one conductor can be 0.36 amperes and another conductor can be 0.24 amperes.

Exception: Compliance with Table 725.144 shall not be required for installations where conductors are 24 AWG or larger and the nominal current does not exceed 0.3 amperes in any conductor.

However, if the will of CMP3 is to maintain “rated current”, then the following exception should be used:

Exception: Compliance with Table 725.144 shall not be required for installations where conductors are 24 AWG or larger and the rated current does not exceed 0.3 amperes in any conductor.

Exception: Installing cables in compliance with 725.144 shall not be required for listed 4-pair communications cables where the rated current does not exceed 0.3 amperes in any conductor 24 AWG or larger, or 0.6 amperes in any twisted pair consisting of 2 parallel conductors per pair 24 AWG or larger, or 1.2 amperes in any 2 sets of twisted pair consisting of 2 parallel conductors per pair 24 AWG or larger.