

**With advancing standards, Power over Ethernet (PoE) will enable a whole new class of sophisticated devices which will require higher levels of power than ever before.**

PoE has been an established technology for many years, powering everything from VOIP phones to wireless access points (WAPs) at relatively low power levels of less than 60 watts. With the IEEE 802.3bt standard expected to be ratified in 2018, up to 100 watts will be possible. This advance will allow you to power stronger WAPs, more sophisticated closed-circuit TVs with pan/tilt/zoom capabilities and even large-screen 4K HDTVs on your category cable infrastructure.



**Cable choice matters in high-power PoE applications. GenSPEED® Brand's LP listed cables can handle the heat!**

It is important to understand how your cabling infrastructure will perform under the higher power levels 802.3bt will allow. Factors such as copper gauge size, cable design, bundle size and installation environment all impact a cable's ability to handle heat rise generated from high-power PoE applications. General Cable's GenSPEED line of category cables were the industry's first to achieve UL's LP listing, an independent verification that they will operate at power levels above 100 watts without exceeding the temperature rating of the cable. An LP rating provides assurance that a cable can handle the heat, no matter the bundle size or installation conditions. See the reverse side of this handout for a complete list of GenSPEED's LP listed cables, rated from LP-0.5A (100 watts) up to LP-0.7A (140 watts).

**The National Fire Protection Agency (NFPA) includes LP listed cables in the 2017 revision of the National Electric Code (NEC) as a straightforward means to ensure your infrastructure can handle high-power PoE applications.**

# LP Listed Category Cables

## Simplifying Considerations for PoE

Until recently, the NEC had not specifically addressed a category cable's (defined as a Class 2 cable) ability to handle power. In the recently completed 2017 cycle, the NFPA took up this topic for the first time by providing two alternatives when assessing the power capabilities of your cabling infrastructure.

The first option is to consult the ampacity table featured in section 725.144, which is presented below. When consulting the ampacity table, you have to know your cable's gauge size, temperature rating and intended bundle size; this will allow you to understand how much power can be provided across the cable. It is important to note that it may be necessary to consult an engineering professional if the parameters of your system lie outside of this table.

As an alternative, the NEC provides LP listed cables as a means for determining the power capabilities of the system. Consulting the complicated ampacity table or an engineering professional is not needed—simply make sure your system's power levels do not exceed the LP rating of the cable. With an LP rated cable, the NEC imposes no restriction on bundle size or installation condition, and you don't have to know your cable's gauge size or temperature rating. The LP rating is all that matters and provides a simple way to plan your infrastructure.

**Table 725.144** Ampacities of Each Conductor in Amperes in 4-Pair Class 2 or Class 3 Cables Based on Copper Conductors at an Ambient Temperature of 30°C (86°F) with All Conductors in All Cables Carrying Current, 60°C (140°F), 75°C (167°F), and 90°C (194°F) Rated Cables

AWG	Number of 4-Pair Cables in a Bundle																				
	1			2-7			8-19			20-37			38-61			62-91			92-192		
	Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating			Temperature Rating					
	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C	60°C	75°C	90°C
26	1	1	1	1	1	1	0.7	0.8	1	0.5	0.6	0.7	0.4	0.5	0.6	0.4	0.5	0.6	NA	NA	NA
24	2	2	2	1	1.4	1.6	0.8	1	1.1	0.6	0.7	0.9	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
23	2.5	2.5	2.5	1.2	1.5	1.7	0.8	1.1	1.2	0.6	0.8	0.9	0.5	0.7	0.8	0.5	0.7	0.8	0.4	0.5	0.6
22	3	3	3	1.4	1.8	2.1	1	1.2	1.4	0.7	0.9	1.1	0.6	0.8	0.9	0.6	0.8	0.9	0.5	0.6	0.7

Note 1: For bundle sizes over 192 cables, or for conductor sizes smaller than 26 AWG, ampacities shall be permitted to be determined by qualified personnel under engineering supervision.

Note 2: Where only half of the conductors in each cable are carrying current, the values in the table shall be permitted to be increased by a factor of 1.4.

### GenSPEED® Brand LP Listed Cables

The LP listing is denoted as a suffix and is followed by the ampacity rating of the particular cable. Below are the GenSPEED Brand LP listed cables arranged by rating and the wattage they support when using 50 volts over four pairs.

#### UL Listed CMR-LP (0.5A) supporting up to 100 watts

- GenSPEED 6 Category 6 F/UTP (ScTP) (Riser)
- GenSPEED 6500 Premium Category 6 (Riser)
- GenSPEED 10,000 Category 6A F/UTP (ScTP) (Riser)
- GenSPEED 10 MTP™ Category 6A (Riser)

#### UL Listed CMP-LP (0.5A) supporting up to 100 watts

- GenSPEED 6 Category 6 (Plenum)
- GenSPEED 6000 Enhanced Category 6 (Plenum)

#### UL Listed CMP-LP (0.6A) supporting up to 120 watts

- New Small Diameter GenSPEED 10 UTP Category 6A (Plenum)
- GenSPEED 6500 Premium Category 6 (Plenum)
- GenSPEED 6 Category 6 (Plenum, 22 AWG)

#### UL Listed CMP-LP (0.7A) supporting up to 140 watts

- New Small Diameter GenSPEED 10 MTP Category 6A (Plenum)
- GenSPEED 6 Category 6 F/UTP (ScTP) (Plenum)
- GenSPEED 10,000 Category 6A F/UTP (ScTP) (Plenum)



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