Copper Wiring Standard Meets the Need for Speed in Commercial Building Applications

Copper Offers Key Advantages for Local Networks

Commercial-building designers and architects continue to use copper in local networks because copper delivers on performance. The latest generation of copper communications wiring for office environments is Augmented Category 6 copper wiring, commonly referred to as “Cat-6a.”

Cat-6a copper satisfies data-transfer requirements in the majority of horizontal office-environment applications as well as many network “backbone” applications. It operates at frequencies up to 500 MHz, which is twice that of Cat 6. It was defined in February 2008 in ANSI/TIA/EIA-568-B.2-10.

Cat-6a is ideal for installing multiple applications through the network simultaneously. It allows large-file transfers and bundled cable implementations for channels up to 100 meters. It can support high-end security applications and the distribution of digital audio and video.

Bigger Wires, Tighter Twists

Cat-6a cable is designed to avoid crosstalk interference between cables, a technical hurdle that had to be overcome in achieving 10G data rates, explains David Brender, National Program Manager at the Copper Development Association.

“It uses larger-diameter conductors, lower packing density and tighter twists,” he says. “In some cable designs, foil shields are utilized to achieve the necessary performance. The result is less loss of signal strength at high frequencies, significantly better crosstalk isolation between cables and improved heat dissipation.”

Why Copper?

In local networks, copper is preferred over fiber-optic cable because total network costs are less expensive using copper. Another advantage is that copper can carry low levels of power, enough to power security cameras, card readers or other devices.

“Fiber optics has its uses in large networks but copper remains the preferred physical medium for cabling to the desktop. Cat-6a is expected to extend the dominance of copper cable for datacom applications for many years to come,” says Brender.

Wireless data transmission is equally problematic. “A wireless channel with 50 megabits per second might suit a single user in a home office,” says Brender, “but it is inadequate in a busy office environment where capacity is shared. On the other hand, a 10GE copper cabling network could support 10 one-gigabit data rates for each user simultaneously. That’s exactly the solution that IT managers are seeking.”

For more information about copper communications wiring, visit www.copper.org. The Copper Development Association is the information, education, market and technical development arm of the copper, brass and bronze industries in the USA.

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