INSCAPE DATA CORPORATION

Selecting the Correct Cable for PoE?

The quality of a Power over Ethernet (PoE) cable has a large impact on the performance of your networks, such as power loss, signal quality, and heat dissipation. Today, the newest standard PoE switch is capable of delivering up to 95W DC via power over Ethernet cable up to 100 meters distance. When the cable gets hotter, insertion loss increases. So, the better the PoE cable, the longer the life of your switch and better network performance.

When comparing the transmission distance and speed, the following table illustrates the performance of the CAT 5E, CAT 6, CAT 6A Ethernet Cables for PoE network applications.

Recommneded	*AWG*	*Power over Ethernet*	*Speed (Mbps), Distance (Meters)*	*Speed (Gbps), Distance (Meters)*	*MHz Range*
CAT 5E	24	Yes	10/100, 100	1 ~ 10, 45	100
CAT 6	23	Yes	10/100, 100	1~10, 55	250
CAT 6A	23	Yes	10/100, 100	1~10, 100	500

In particular, when comparing 23-gauge and 24-gauge cabling, there is a large variance in how power is handled. As much as 20% of the power through the cable can get lost in a 24-gauge Category 5e cable, leading to less performance efficiency.

Nex, the shielded and unshielded twisted pair cable, the shield around each pair of wire in the cable is to protect the pairs from crosstalk internally. The following table illustrates the recommended applications for STP and UTP.

Recommneded	*Network Applications*
STP (Shielded Tristed Pair)	Used for areas with high interference and running cables outdoors or inside walls
UTP (Unshielded Twisted Pair)	Used for cables between your computer and the wall

Stranded cable is more flexible and should be used at your desk or anywhere you may be moving the cable around often. Solid cable is not as flexible, but it is more durable, which makes it ideal for permanent installations as well as outdoor and in walls.

In conclusion, the type of Ethernet cable you select can make a major difference in terms of how heat inside the cable is managed, as well as how it impacts the network performance. CAT 5E and CAT 6 cable can be used to support PoE devices. But, the winner is clear, it is best to use CAT 6A solid and shielded cable for longer-distance outdoor applications for several reasons provided above.

Additionally, there are four ways to ensure the quality of the Ethernet cable you invest:

1. Look for UL Mark
2. Plenum-Rated, i.e., low-flame and low-smoke materials
3. Pure Copper or Copper-Clad
4. TIA and IEC Standards for structured cabling and network speed

Inscape Data offers a complete line of outdoor PoE switch products based on 802.3af, at, and bt, as well as commercial PoE switch products. Depending on your particular application, please visit Inscape Data's outdoor PoE product page and find one of the switches for your needs.

Contact: Sales Department
Phone: (408) 392-9800 Option 1
Email: sales@inscapedata.com
Address: 1620 Oakland Road, STE D101, San Jose, CA 95131
Fax: (408) 392-9812
Website: http://www.inscapedata.com