

Screened and Shielded Twisted Pair Cabling

Differences Between Screened and Shielded Cables

There are two common methods of shielding a twisted pair cable. One method is used in Foiled Twisted Pair (FTP) cable - sometimes called Screened Twisted Pair (ScTP). This method provides an overall screen or metal foil around the four pairs of conductors, but each individual twisted pair is unshielded. The FTP cable is screened from interference, but also does not have the heavy weight and diameter of a typical STP cable.

Another method is used in Shielded Twisted Pair (STP) cable. Shielded twisted pair is best illustrated by what was at one time called IBM Type I cable. This construction has each individual pair in the cable wrapped with a metal foil. This makes the shielded cable more expensive and cumbersome to install, but it also provides extra protection in heavy EMI environments.

Finally, Screened Shielded Twisted Pair cable (SSTP), more commonly known as Industrial Screened twisted pair, provides shielding for each individual pair plus a protective foil wrap or braid around all four pairs in the cable. This type of cable is practically a combination of FTP and STP cables. The Cat 7 standard (ISO/IEC 11801:2002 Category 7/Class F) covers examples of STP and SSTP cables.

Total Solution Ensures Solid Connection

To take full advantage of the screen and shield properties, the system needs to be a total end-to-end solution, and the installer must ensure the cable is properly terminated and grounded. Unfortunately for shielded cables, the foil shield used in the solution is also a conductor. This means, if the shield is not treated properly (i.e., terminated and grounded), it will act more like an antenna - carrying a signal and radiating noise like any other conductor.

The following conditions are some of the most important considerations when considering screened or shielded cabling for the telecommunications infrastructure:

- Proper cable shield/screen design
- Proper connector design
- Proper termination of shield/screen at connector
- Availability of clean power supply
- Availability of good grounding system

CommScope® offers a total end-to-end solution that includes the information outlets, patch cords and patch panels. All components are designed to connect together and offer the highest EMI protection. A screened or shielded solution will help to protect the network in environments where electromagnetic interference may be disruptive.



6554+ Category 6 FTP Cable

The Importance of Proper Termination

One of the key factors in ensuring the performance of an FTP installation is proper termination. One of the buzz phrases in the shielded cabling industry is 360° shield termination and integrity, which refers to techniques that ensure correct termination of a foil shield. When performed correctly, 360° termination ensures complete shield coverage.

The Uniprise Solutions Foiled Twisted Pair (FTP) Installation Guidelines provide step-by-step instructions for preparing, handling, terminating, and installing FTP cables and connectors. Following these guidelines will help to ensure the installation meets all ANSI/TIA/EIA requirements and provides the highest protection possible.

The Importance of Proper Earthing, Grounding, and Bonding

Another important step in the installation of shielded/screened cabling is the earthing, grounding, and bonding of the cabling system. Earthing helps to assure personnel safety and helps to protect the installation from EMI. Two important phenomena are lightning and power system faults. These can cause circulation of large currents, which may create hazardous voltages in the installation. Grounding is the intentional or unintentional connection to earth. The purpose of grounding the shielded system is to provide a low-resistance path to the ground for stray voltages, including electromagnetic interference. Proper grounding prevents the foil shield/screen from acting like an antenna.

Bonding establishes a low impedance path between two metal surfaces. In other words, bonding is the connecting of metal parts so they make low-resistance electrical contact for direct current and lower frequency alternating currents. Bonding is required to meet safety requirements.

What is the 607 Standard?

The J-STD-607-A Commercial Grounding (Earthing) and Bonding Requirements for Telecommunications is the standard for grounding components of the telecommunications infrastructure. This Standard outlines the requirements for a uniform telecommunications grounding and bonding infrastructure that should be followed within commercial buildings where telecommunications equipment will be installed.

Bonding and Grounding is also covered in Articles 250 and 800 of the National Electrical Code (NFPA 70).

Summary

There are significant differences in the construction of FTP, STP, and SSTP cabling. Regardless of which type of shielded cabling is used in your installation, proper installation, termination and grounding will ensure the highest performance and reliability of the shield integrity over time.



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