NETWORK FUNDAMENTALS

Cabling Standards

The concept of a generic communication infrastructure for buildings was formed in the early 1990's resulting in the first EIA/TIA 568 standard.

Further advancements in this area saw the ISO/IEC 11801 and EN50173 standard which was created in 1993.

The purpose of these standards is to share guidelines for IT professionals to keep pace with fast developing network challenges

Cabling Classification

Network operators first need to establish what service will run on the network, and determine the performance level needed to make it available to all connected outlets/users.

Stability and performance is always a matter of teamwork – cable and connecting hardware should meet similar requirements; improving just one of these is simply not sufficient.

Over the years, several cabling classes have emerged which are listed below

CLASS	HERTS	CATEGORY	KBPS
Class D	+100 MHz	Category 5e	1000 Mbps
Class E	250 MHz	Category 6	1 Gbps
Class EA	500 MHz	Category 6_A	10 Gbps
Class F	600 MHz	Category 7	10 Gbps+

However, operators should not only consider applications for today, but anticipate ever increasing network speed and make provisions for future applications. With the network lasting in excess of 15 years, performance headroom is key to creating sustainability in networking.
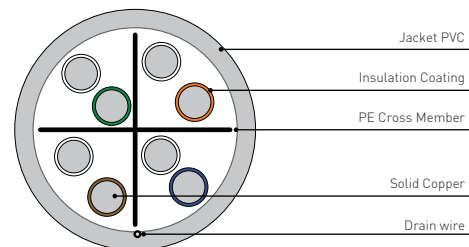
Typical network Cables in use

Twisted pair cabling has been used for been extensively used for in building cabling applications and offers ease of installation and versatility over a distances of up to 100m, applications also include remote powering through power over Ethernet (PoE) enabled devices.

Twisted Pair

A twisted pair cable is made by physically twisting together two individually insulated copper wires. The two wires are twisted together to help minimize signals from interfering with or radiating from the pair. A number of twisted pairs are bundled together under one jacket to form a cable.
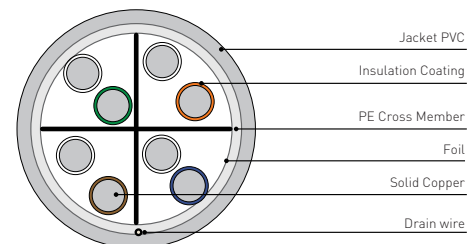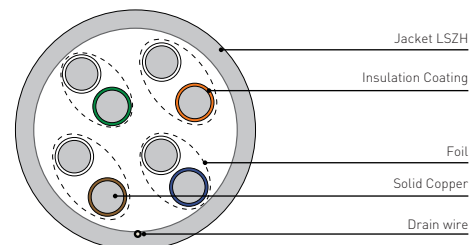
U/UTP
Unshielded Twisted Pair

Jacket PVC
Insulation Coating
PE Cross Member
Solid Copper
Drain wire

F/UTP
Foil/Unshielded Twisted Pair, Drain wire

Jacket PVC
Insulation Coating
PE Cross Member
Foil
Solid Copper
Drain wire

U/FTP
Unscreened/Foil Twisted Pair

Jacket LSZH
Insulation Coating
Foil
Solid Copper
Drain wire

S/FTP
Screened (copper braid, tinned)/Foil Shielded Twisted Pair

Steel Braiding Mesh
Jacket PVC
Insulation Coating
PE Cross Member
Foil
Solid Copper
Drain wire