

Maser Cable Training: Level 2

This is a brief overview about cable characteristics.

We will cover some of the specific features of small conductor cable and their applications.

Content



What did we cover in Level 1

Conductors

- Copper, Aluminium...

Abbreviations

- PAC, TCW, BC, CCA...

How to measure the conductor

- Metric, Imperial (AWG)...

Insulation

- PVC, PE...

Shield

- Foil, Braid...

Jacket

- PVC, PE, LSZH...

Conductor Stranding

Solid conductors are made from one conductor.

The benefit for a solid conductor is that it is easy to terminate

The disadvantage is that it is NOT very flexible

Stranded conductors are made from multiple conductors that are wound, braided.

The benefit being the cable is more flexible and easy to install

More time to terminate

Resistance/Volt Drop

All cables have resistance

Resistance is a type of opposition to current flow of electricity on a conductor

Resistance converts current flow into heat

The higher the resistance the greater conversion to heat

The smaller the conductor the greater the resistance

Resistance is directly related to the size of the conductor

Volt drop

Required voltage will drop over distance with increased resistance

Interference

Electrical Interference is also known as Electromagnetic Interference, or EMI.

EMI

Disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics and electrical equipment. It can be induced intentionally, as in some forms of electronic warfare, or unintentionally, as a result of spurious emissions.

The EMI can come from within the cable (Between pairs) or most commonly from externally as above.

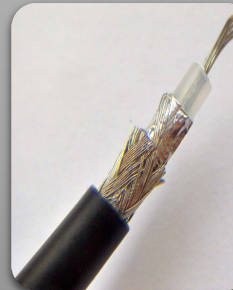
Shielding

- Shielding is used to protect the cable from interference
- Metallic layer wrapped around one or more conductors
- Shielded cables have limitations and can cause *leakage*
- Examples of shielded cables
 - Coax
 - Instrumentation



FOIL

- Most common aluminium foil
- Can obtain 100% coverage
- Good for high frequency interference protection
- No good for flexible applications



BRAID

- Interwoven multi stranded, mostly copper
- Best coverage around 95-98%
- Good for flexible applications

Summary

Stranded Cables

- Fixed cabling can have less strands
- Cables with high number of strands are good for flexible applications

Resistance & Volt Drop

- The bigger the cable size the less resistance it has
- More distance means more resistance, means bigger cable

Interference

- EMI
- Overcome with shielding

Shielding

- Two basic types of shield, Foil or Braid

End

Questions?

