STRUCTURED CABLING INSTALLATION GUIDE

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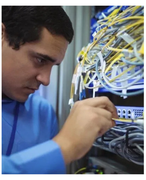
Low Voltage Structured Cabling Installation



Low voltage structured cabling installation is currently the core foundation of any voice and data network in any office, data center, or commercial building. It entails the systematized assembly of fiber or copper cabling and other elements on your building, that link all your IT devices such as telephones, computers, security cameras, access points, and copiers to your communication network.

However, this setup is unique with every building or facility installation, depending on the communication needs. Besides the low voltage cabling, the infrastructure will include various trunks, patch panels, and multiple other components, to make the ideal telecommunication solution.

Simply put, it's like the central nervous system of a human body. It helps to send signals and messages throughout the facility.

For this reason, low voltage, structured cabling needs to be designed and installed by professionals. If you are to reap the system's total benefits, make sure that you seek the services of trusted low voltage contractors. When done right, it offers flexibility, eliminates downtime, and can be up-scaled if need be.

Types of Structured Cabling Systems and how they Work

First things first – what is structured cabling installation?

Structured cabling simply refers to the process of designing and installing a cabling system, meant to support several hardware applications, and that is suitable for present and future needs.

On the other hand, a structured cabling system refers to the entire system of wiring and related hardware, which offers a complete telecommunication infrastructure. The system consists of six different subsets. Each subset has a different function and its distinct subsystems.

These 6 subsystems include:

Horizontal Cabling or Cabling System 1

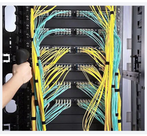
These are subsystems that extend from a work area's telecommunication outlet to the (TE) telecommunications enclosure or TR (telecommunications room). It consists of horizontal cables, jumpers, mechanical terminations, telecommunication outlets, and patch cords.

Telecommunications Enclosure (TE or TR)

A telecommunications enclosure (TR or TE) is the termination and cross-connection point of vertical and horizontal cables. It houses several components, including the patch cords, main or intermediate cross-connects (IC or MC), as well as the connecting equipment.

Entrance Facilities

This comprises cables, connecting hardware, protection devices, network demarcation point, and several other components that link to the AP (access provider), or the private network cabling. The subsystem includes the link between the interior building cabling and the outside plant. The electrical codes applied in the building's location, define the necessary components of the subsystem.

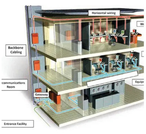


The Backbone or Vertical Cabling

This cabling subsystem interlinks the telecommunication rooms, entrance facilities, equipment rooms, and AP (access provider) spaces. A vertical cabling installation has two defined subsystems, namely: Cabling Subsystem 2 and Cabling Subsystem 3.

Equipment Room (ER)/ Consolidation Point Cabling

For larger networks, several centralized, environmentally controlled Equipment Rooms are used. It houses major equipment, including routers, MC and IC, servers, etc. The ER is the consolidation point for a structured cabling system.



Work Area Components (WA)

These are responsible for connecting the user's workstations devices, such as phones, copiers, and computers, with the telecommunications connectionoutlet. And, for each WA, at least two telecommunications outlets must be provided. Components of a WA (work area) include outlet cables, patch cables, fiber cables, and PC adapter.

Work area components include the outlet and patch cables, as well as a PC adapter, fiber optic, and other cables. Usually, the work station equipment is also considered a component of this subsystem.

Ethernet Cabling Installation

When we talk about low voltage cabling, Ethernet cabling is one perfect example. Ethernet cables can be used in any local network to connect various devices such as computers, copiers, and routers. The type of Ethernet cable used will depend entirely on the required data transmission speed and the distance.

For instance, Cat5 cables are ideal for speeds between 10 to 100 Mbps for around 300ft. Cat5e, on the other hand, is ideal for maximum data speeds of 1000 Mbps.

For much faster transmissions, Cat6 cables are perfect. They support speeds of up to 10Gbps within a distance of 700ft.

Fiber optic cables support the fastest speeds and even longer distances. They are made of glass, unlike the Ethernet ones, which are made of copper.

Security system installations

Security system installers also use low voltage cabling to connect your security system. They'll mostly use Cat5e and Cat6 cable categories to link the security cameras to the server, or the video monitoring equipment.

In addition, the cables are also ideal in powering various devices, including security cameras, and phones. This eliminates the need to have electrical wires to power the system. The process is known as PoE (power- over-internet).

Voice and Data Installation

For both phone and internet connections, just like in Ethernet cabling, CAT5, CAT5E, CAT6, and fiber optic cables are used. And similarly to the Ethernet cabling, the type of cables used is dependent on the speed and distance covered.

Intercom Cabling

As with the rest of the security and communication systems in your property, intercom cabling installation also can use low voltage cables. The intercom system is usually a stand-alone door access control system that enables visitors to talk to the home's owner or an admin who determines whether or not to grant them access.

An intercom system can also be used with a microphone and a speaker, to speak to people in different rooms in a building and pass a message. When used as part of a larger security system, Cat5, Cat 5E or Cat 6, can be used for the connection.

Conclusion on Structured Cabling Installation Guide

When it comes to structured cabling installation, low voltage cables are mostly used. We have just highlighted some of the areas where this cabling is applicable and some of its complexities, to help you better understand the concept.

However, there are still a myriad of other factors that affect the design and the installations of such infrastructures. So, to avoid making the wrong choice, make sure that you hire qualified low voltage cabling installers. This way, you can get a system that is efficient and effective to meet your needs.

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