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The Main Technical Indicators for High Voltage Cables

The main technical indicators for <u>shielded high voltage cables include insulation thickness</u>, cross-sectional area, maximum current capacity and temperature limits.

In terms of maximum current capacity, HV cables have different requirements for different applications: for example, power transmission cables must meet a large current requirement; while short circuit protection cables must meet a small current requirement; and auxiliary power cables must meet a medium current requirement.

HV cables can be divided into two types: one is insulated wire, and the other is coaxial cable. Insulated wire is a single-core or multi-core wire that has been coated with insulating material. They transfer the power from the battery to the motors and make sure it reaches them in time. The cables need to be strong enough to withstand high temperatures and pressure, but at the same time flexible enough to allow for maximum range and speed.



Introduction

When it comes to charging and powering an electric vehicle, there are many things to consider. There are the obvious considerations such as what kind of battery you need and how much power that battery can discharge. Then there are other considerations like the distance between your home and where you usually drive. However, one often overlooked aspect of charging an electric vehicle is selecting the right cables for your system. <u>High voltage cables have a number</u> of specifications that must be met in order to ensure they perform properly in any given application. These include nominal cross-section, operating voltage, dielectric strength and maximum conductor temperature just to name a few!

Nominal cross-section

Nominal cross-section is the cross-sectional area of a wire, expressed in circular mils (mm^2). In general, smaller nominal sections have higher current capacities than larger ones. Typically, this relationship holds true until you get to a point where there's not much difference between two different types of cable with different nominal sizes; at that point it becomes more important to consider things like insulation type and construction materials when choosing which cable will be best for your application.

Operating voltage

Operating voltage is the maximum voltage that the cable can withstand. It's determined by the cable type and application, as well as the manufacturer.

In general terms, operating voltage refers to a single value such as 600 volts or 1000 volts; however, it can also be stated as a range of voltages (i.e., 600-1000 V). If you know your application's operating voltage requirements but don't know what type of cable will work best for it, consult an engineer who specializes in HVAC engineering or high-voltage cables



Dielectric strength

Dielectric strength is the maximum voltage that a cable can withstand without damage to its insulation. It's measured in kilovolts (kV).

Cables with thicker insulation have higher dielectric strength, so they're better suited for applications where there's a high risk of electrical shock or fire.

Maximum conductor temperature

Maximum conductor temperature is the highest temperature that a conductor can be exposed to without causing damage.

This is usually expressed as a percentage of its rated operating temperature and is known as the maximum allowable sustained temperature (MAS), or maximum ambient temperature rise above ambient (MATR). For example, if you choose an LSZH cable with an operating range of -40[degrees]C to +80[degrees]C and a MATR of +25[degrees]C, then this means that you can operate your cables at up to 105[degrees]C without them becoming damaged.

There are many technical aspects to consider when <u>choosing high voltage cables for your</u> <u>electric vehicle</u>.

◆ Nominal cross-section: The nominal cross-section of a conductor is the area of its circular section, expressed in square millimeters or circular mils (circular mils are equal to one thousandth of an inch). This value can be calculated by multiplying its diameter by pi (3.14159265359). For example, if a conductor has an outside diameter of 1/2 inch (.500), its nominal cross section would be .00025 square inches or .00113 square centimeter--or 113 microinches!

◆ Operating voltage: The operating voltage refers to how much electrical potential energy is stored within each unit length of cable as measured against earth ground reference point at any given moment during operation under normal conditions or load conditions such as heating due to current flow through them or other factors like insulation breakdown which lead up to arcing that cause sparks between two points separated by some distance away from each other on opposite sides along their length axis line direction(s). In most cases this means "across" since we're talking about DC systems here but sometimes it might mean just one direction depending upon your application needs; this distinction matters because it determines whether you need expensive materials such as copper instead cheap ones like aluminum."

Conclusion

We hope this article has helped you understand some of the most important technical aspects of high voltage cables. If you're planning to build an electric vehicle, then choosing the right cables can be a daunting task. But don't worry! With some research and knowledge about what type of cable you need, it should be easy enough to find some affordable options online or at local hardware stores near where you live.



<u>Guchen Electronics has been specialized in the manufacture of high voltage connectors</u>, high voltage cable connectors and other electrical connector since 2010.

Our main products include:

- ◆ <u>High Voltage Cable Connector</u>
 - <u>HV Cable</u>
 - HV Wiring Harness
- Battery Energy Storage Connector

We are dedicated to providing customers with high quality products and services. Our main product lines include power distribution connectors, high voltage connectors and cable accessories. We take great pride in our products, which are manufactured to meet or exceed international standards such as UL, CE, TUV and RoHS ratings.

