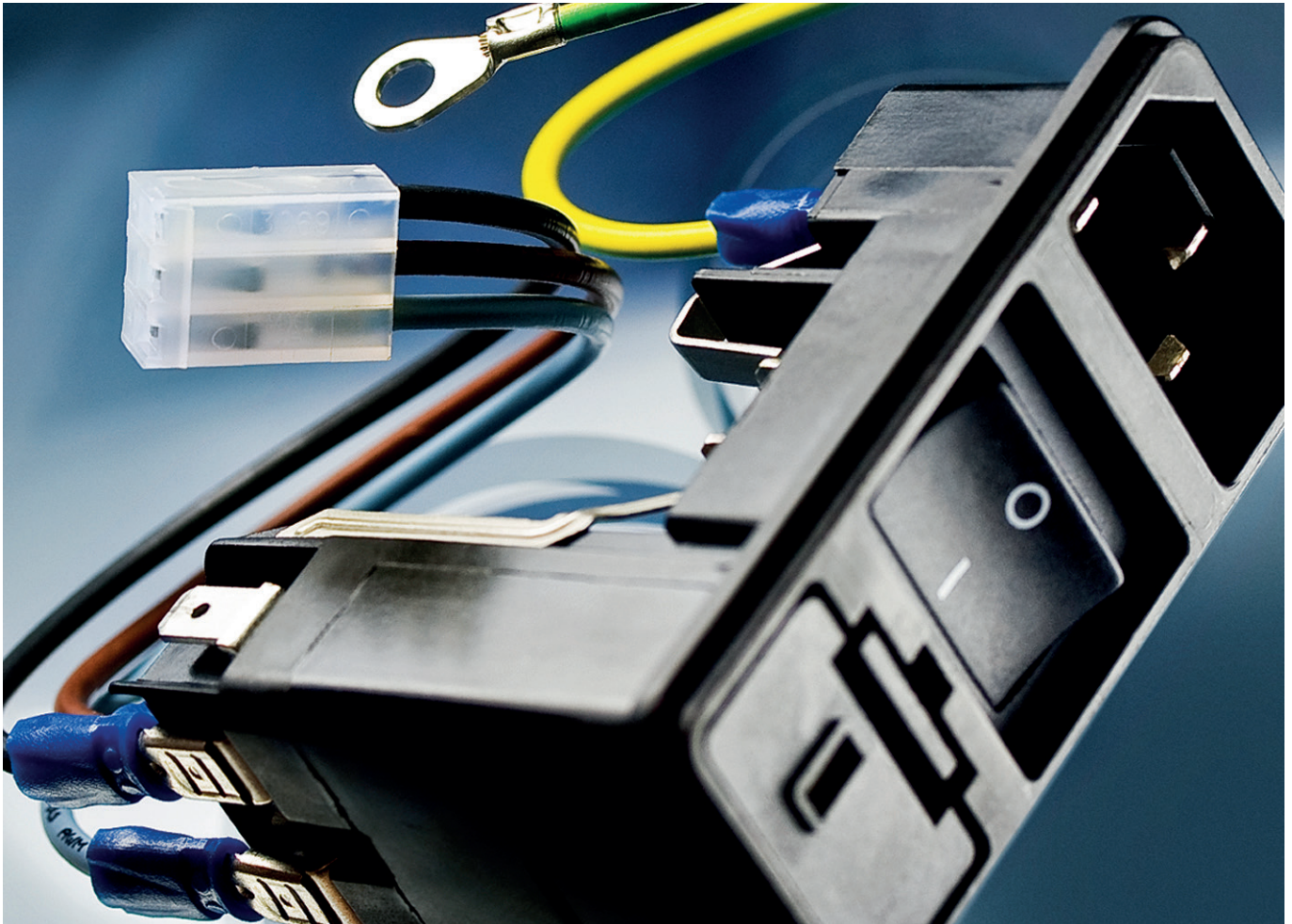


Customized Wire Harnessing

Wire harnessing is the production of ready-to-connect cables, cable bundles and complete wire harnesses with connectors, contacts or wire end sleeves.



SCHURTER Power Entry Module for screw mounting with fully insulated flat plug at their wire terminal.

Today, wire harnessing is a special discipline of electrical engineering. The enormous abundance of cables, connectors and connection options has created its own industry within the industry.

The focus is not only on small series. Wire harnessing is used in applications in the electrical and electronics industry: from prototypes to fully automated mass production.

Definition

But what exactly is wire harnessing? Wire harness is more than just a single wire that connects point A to point B. Rather, it is an assembly that is connected to a mains

connection, a filter or other components. It does not represent a separate device/product unit, but rather connects the customers' components in a customized manner.

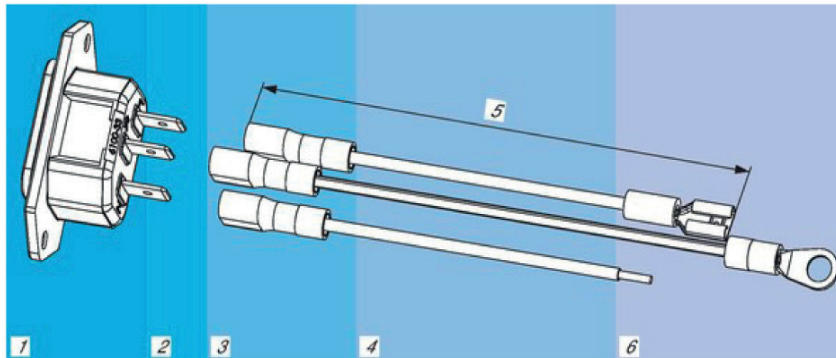
The task of Wire Harness

The task of wire harness is to connect one component (or assembly) to another in such a way that the technical, safety-related and also economic requirements of the connected final product are met.

A very accurate overview of all the steps in wire harnessing can be found in figure 1. All these steps must be precisely defined. At first glance, this looks easier than it is.

Step 1 and 2: Selection of components and terminal connections

With the choice of the component, we determine the terminal connection with its respective advantages and disadvantages or application scenarios. For example, Quick Connect and screw connections are suitable for difficult connection situations with the need for subsequent assembly and can be detached with standard tools in case of maintenance work. A disadvantage of Quick Connect could be that they could come loose in applications with strong vibrations. Soldered connections, on the other hand, create a permanent



Exploratory illustration of a wire harness

- 1 SCHURTER component
- 2 Connector terminals
- 3 Wire connection
- 4 Wire type and colour
- 5 Wire length
- 6 Wire end terminal

Fig. 1: schematic overview of a wire harness

connection, but must not be exposed to strong mechanical loads without strain relief. SCHURTER components are available with different terminal connections. For our application we choose a device connector with Quick Connect terminals.

Step 3: Wire connection

The type of wire connection was determined with the selection of the component in steps 1 and 2. For Quick Connect, for example, the question arises as to whether they should be uninsulated, partly insulated or fully insulated. According to our illustration, we select a fully insulated version.

Step 4: Wire type and colour

Let's go back to our connector, which we want to connect to the power supply. Considering the electrical parameters voltage, current and power, we have to select the appropriate cross-section of the wires. How many wires do we actually need? Three as usual for an IEC 60320 connection? Do we want to work with stranded wires, or cabled wires? Do we want the wires to meet the UL standard for the US market? Do we need the European or the US colour coding for the cabled wire? What temperature range should the wires or the cable fulfil? In this example we work with three single wires.

Step 5: Wire length

Step 5 is pleasantly simple: the length. Measure, define and plan for reserve. As short as possible, as long as necessary is a good principle. This keeps losses low, minimises

space requirements and creates enough buffer for a proper installation without pulling forces.

Step 6: Wire end terminal

For the free end of the terminal connection, we have a variety of options. In addition to flat plugs, wire end sleeves or ring cable lugs are also available. Often customers simply choose an open end with partly stripped insulation, which protects the wires during transport until assembly. In other examples, terminal blocks or connectors are defined. We are happy to advise you on our wide range of options.

Why the effort is worth it

There is a simple reason why wire harnessing has become an industry within an industry. The variety of connection options is so large that specialised knowledge is required to determine which version is best for a given application.

A second point: the customer can relinquish costly investments in tools, infrastructure, and specialised knowledge, because due to the numerous configuration options, most of the work is done manually. This requires reliable, qualified personnel.

Approvals

One more point: if you want to supply to the automotive or railway market, for example, you have to make sure that the company, where your wire harnessing is done, has the same certifications as the product to be connected.



The new building was ready in the summer of 2021. Thus, Cabex has now three times as much space at its disposal.

Cabex Kft.

Cabex Kft. in Hungary is one of the younger subsidiaries of the SCHURTER Group. It was founded as a wire harnessing company in the mid-2000s. The reason for this was that customer-specific solutions in the field of electromechanics and connectors were constantly gaining in importance. Today, the SCHURTER Group is so successful on the market with wire harnessing in solutions projects that an expansion of the production facilities became inevitable. The new building was ready in the summer of 2021. This means that Cabex now has three times as much space at its disposal. Cabex complies with IRIS ISO/TS 22163 as well as the best possible quality Q1 of Deutsche Bahn.

References / Download

[SCHURTER Wire Harness](#)

About SCHURTER

The SCHURTER Group is a globally successful Swiss technology business. With our components ensuring the clean and safe supply of power, input systems for ease of use and sophisticated overall solutions, we impress our customers with agility and excellent product and service quality.



Flat plug (faston)

Flat plug (faston)

Flat plug (faston)

Ring cable lug

Ring cable lug

The choice is yours: a selection of possible stranded wire connections with or without partial or full insulation