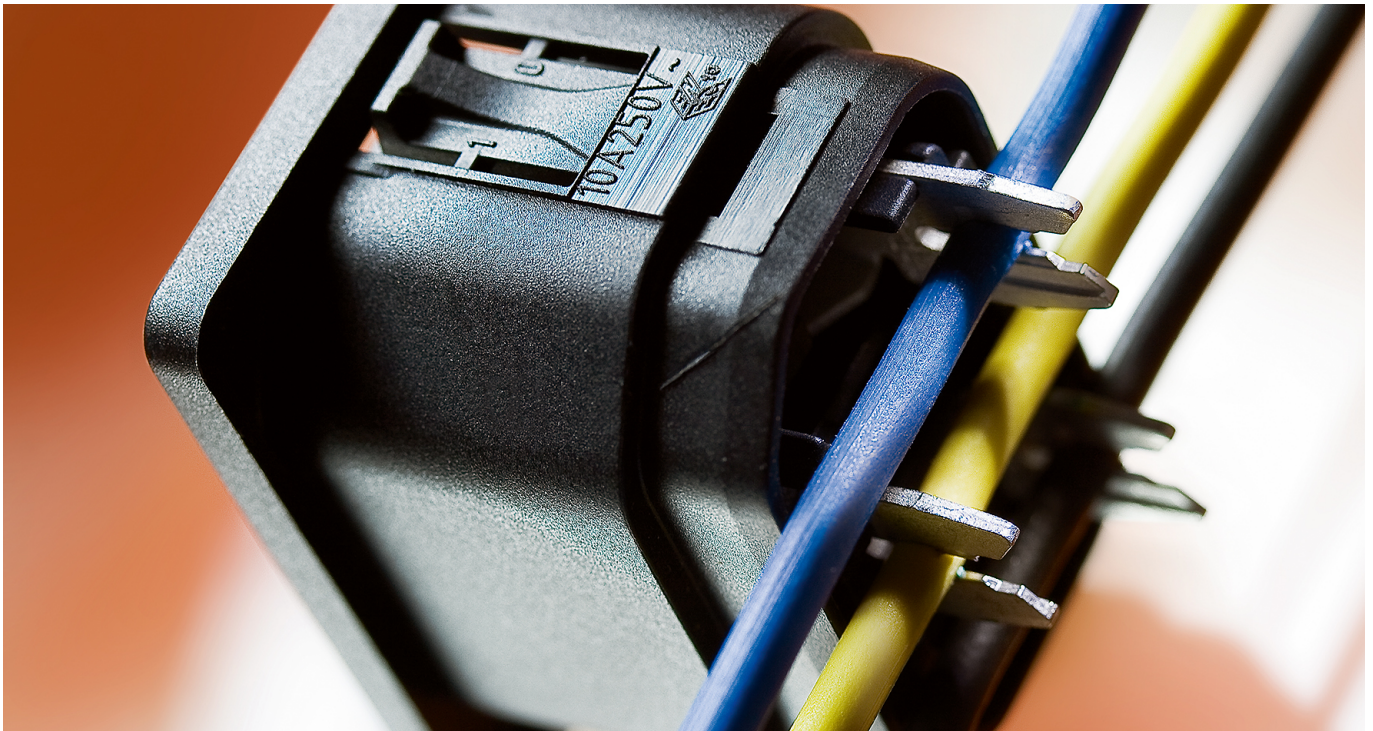


# Efficiency has a name: IDC

Current obviously only flows when the circuit is closed. But the way to get there leaves many options. For example, how do you connect appliance sockets in a power distribution unit in the most efficient way? An overview of possible connection technologies for this application.



SCHURTER 6610 device socket outlet with IDC terminals for snap-in mounting.

A power distribution unit has the purpose of supplying power to a large number of devices. It is subject to moderate mechanical shocks due to the plugging in and unplugging of device connection cables. In most cases, it also performs its duties in a thermally stable, ventilated room. So much for the general conditions. The connectors of the appliance couplers refer to the contacts on the inside of the connector. The following connection variants are being differentiated. Let's take a closer look at the advantages and disadvantages of each variant.

## Manual soldering connection

Soldering is the joining of metal parts by a metal alloy (solder) under the impact of heat. The melting temperature of the solder is below the other metals to be joined. At the right temperature, the hot solder flows between the two metal parts.

Under appropriate conditions, a strong, tight, corrosion-resistant, current- and heat-conducting joint is formed between the solder and the metals.

In general, a distinction is made between soft and hard soldering. Soft solders have a melting point below 450 °C. Brazing solders have a melting point between 450 °C and 1100 °C. In electronics, soft soldering is standard.

- Advantages: If the soldering is done by a professional and all contact points are free of oils, oxidation or other contaminants, a very good connection is made.
- Disadvantages: Manual soldering requires a comparatively high effort. The cable or stranded wire must be stripped, and the work requires attention to detail.

## Printed circuit board connection

The printed circuit board connection

consists of a coated metal contact for soldering to a contact point of a conductor track on a printed circuit board. Basically, a distinction is made between through-hole technology (THT) and surface mounting technology (SMT). In the case of a power distribution unit, THT is the standard case.

- Advantages: No cables are involved. Stripping is not necessary. If the soldering is also carried out by a professional in this case, all contact points are clean, a very good connection is created.
- Disadvantages: A mechanical load on the socket always leads to a load on the PCB as well, since these are rigidly connected. The soldering itself is again almost always done manually, which requires time and care.

## IDC

An insulation displacement contact (IDC) is an electrical connector designed to be connected to the conductor of

an insulated cable by a mechanical connection process. In this process, a blade sharpened on the contact surfaces to the cable is pressed through the cable insulation. When professionally handled, this connector blade welds to the conductor and makes a reliable, gas-tight connection.



Multiple cables can be gas-tightly pressed into the 6610 in one step with the cover.

- **Advantages:** Enormously efficient process that does not require stripping or soldering. The connection withstands mechanical stresses well. Oxidation is also hardly an issue if done properly. Very cost-effective process. Can't be done any faster.
- **Disadvantages:** Cable diameters must match the insulation displacement connectors and may be rather stiff and straight. Thin strands are therefore less suitable. Pressing in the cables by means of special tools or the cover must be done with care and precision.

### Quick Connect

Quick Connect connectors correspond to metal terminals with standardized dimensions. Another common term for this is also Faston connectors, typically with dimensions of 4.8 x 0.8 mm or 6.3 x 0.8 mm. Accordingly, the connecting leads must be assembled with flat receptacles of the same dimensions.

- **Advantages:** Very fast and easy-to-use connection technology.
- **Disadvantages:** Since the metal tongues (pins) have standardized dimensions, the cable ends must be assembled with the matching counterpart, the flat receptacles, of the same dimensions. This makes the whole process time-consuming. The connection itself is purely

mechanical. Oxidation can be an issue, as can mechanical shock.

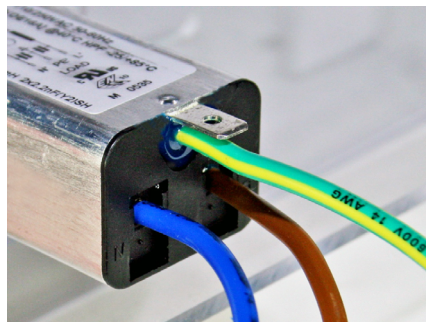
### Screw terminals

This is also a classic. In screw terminals, mechanical fastening of the stripped wire or stranded wire takes place by means of a grub screw.

- **Advantages:** No soldering necessary, only stripping. Mechanically ultra-stable solution.
- **Disadvantages:** The design of the connection with a solid grub screw is clearly more complex than a pure pin. The cable ends or strands are exposed to air, which leads to oxidation and correspondingly increased contact resistances.

### Tailor-made strands

The ultimate solution: The power supply can also be provided without additional cabling elements. For this purpose, the device plugs are supplied directly with the connection strands. Pre-assembled stranded wires with connectors are even possible here, so that the power supply component can be mounted in the target device without any further work steps.



Example of a SCHURTER filter with preassembled strands and potting compound

- **Advantage:** Perfectly adaptable to the customer's needs. Potting compound possible against potentially damaging mechanical influences.
- **Disadvantage:** At first sight more expensive, since all the work to be accomplished has already been done.

### Summary

For smaller quantities, manual soldering still has its justification. If done professionally, you get a very good connection. Electrically as well as mechanically. For larger quantities - and when it really

has to go fast - the IDC connection can hardly be surpassed. Here too, however, care is required when pressing in the non-stripped cables.

However, the customized version is undoubtedly the ultimate solution. For high-end applications (e.g. medical technology) it is the ideal way to go. SCHURTER has been offering this service for several years and plans to expand it massively.

### 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.

SCHURTER AG  
Werkhofstrasse 8-12  
6002 Lucerne  
CH-Switzerland  
+41 41 369 31 11  
contact.ch@schurter.com  
schurter.com

### References / Documents

[Datasheet SCHURTER 6610](#)