Perfect load balancing in PDUs

In addition to 1-phase systems, 3-phase systems are also used in many places in industry and commerce. They often offer decisive advantages. It is important to ensure safe load balancing in order to prevent overloads.

Power Distribution Unit (PDU) with integrated light pipes

Power Distribution Units [1] with multiple IEC outlets are a practical, space-saving solution for supplying power to a variety of devices. Nevertheless, this large number of loads can also tempt you to want to operate the electrical power capacity of the PDU up to its limit or even above it. This must be prevented under all circumstances. SCHURTER provides a wide range of technologies and components to ensure the safe use of power distribution units in 1-phase and 3-phase systems.

Choice of IEC appliance outlets

The correct dimensioning and selection of the IEC outlets (type J with 10 A or type F with 16 A) must be the very beginning. How much power is required from the distribution unit? How many loads must the Distribution unit be able to supply? Should or must the supply be 1-phase or 3-phase for power reasons? These questions are elementary for a safe load distribution of the PDU.

A primary fuse on the respective phase ensures that the permissible supply power of 2.5 kW, for example, is not exceeded.

Light pipe for status display

A typical application for light pipes (see Application Note Light Pipes for Status Indication [2]) are power distribution units in data centers. Switched outlets today have displays. However, these are usually located at the head of the strip. With the latest SCHURTER appliance outlets, the available information can be used intelligently.

The service technician on site, for example, can see at a glance which outlets are working or where a problem exists. For example, a failure can be signalled with a red LED or a critical power consumption pattern with a yellow LED. This makes both repairs and preventive interventions easier and more efficient.

The integration of the light pipe into the appliance outlet has several advantages: The light indicator is located directly at the socket. This makes it easy to assign the signal even in large power cabinets with many outlets and cables.

The space requirement is also minimal and fewer openings are required in the PDU. The installation effort is significantly reduced.

Cord retention systems: V-Lock and Twylock

The high packing density of servers in modern data centers demands the same on PDUs. However, in order not to unintentionally pull out the wrong cable, high-quality, modern outlets offer a pull-out protection. Depending on the arrangement of the outlets in the PDU - horizontal or vertical - the SCHURTER V-Lock (see Application Note Cord retaining for power supply cord [3]) or other systems with lateral locking (e.g. SCHURTER Twylock, SecureLock, etc.) are available. Both cord retention versions (see Landing Page V-Lock [4]), which are approximately equal in value, are available as standard.

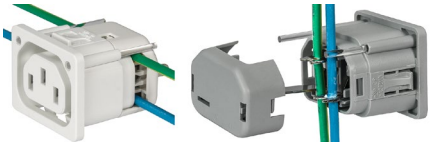
Tamper Resistant Outlet Lock Type F / Type J

In order to prevent overload of modern power Distribution units with multiple IEC outlets, individual outlets can be blocked by means of protective caps: so-called Tamper Resistant Outlet Locks. In most cases, you have more outlets than loads on one strip. These Tamper Resistant

Outlet Locks are plugged onto the power distribution unit just like a plug. For safety reasons, the optionally available protective caps cannot be removed without special a tool.
This solution is particularly suitable for the supply of very different loads, which are also noticeable by increased operating temperatures. More detailed information on the permissible operating temperatures can be found in the application note Application Note IEC Outlets at elevated temperatures [5].

State-of-the-art IEC distribution unit with power indicator, light pipes, Twylock cord retention and Tamper Resistant Outlet Lock Type J (red); source: Bachmann

Colour coding of the outlets by phase
Power distribution units in 3-phase systems are ideal for colour-coding the individual phases. Various IEC outlets of SCHURTER types J and F are therefore no longer only available in black, but also in white and grey. In the often poorly lit server and control cabinets of a data center, this makes it easier to visually distinguish the individual phases.



SCHURTER 6610-5: Wiring with IDC connectors, cross (left) and along (right, rear view) in white and grey

The matching connector
SCHURTER stands for safe and easy power supply and, in addition to the components for PDUs, also offers the appropriate plug connections (see White Paper Mating Components [6]). Mains connection cables, country-specific or also connection plugs for cable installation are included in the range of device plugs (see Connectors [7]).

About SCHURTER
SCHURTER continues to be a progressive innovator and manufacturer of electronic and electrical components worldwide. Our products ensure safe and clean supply of power, while making equipment easy to use.

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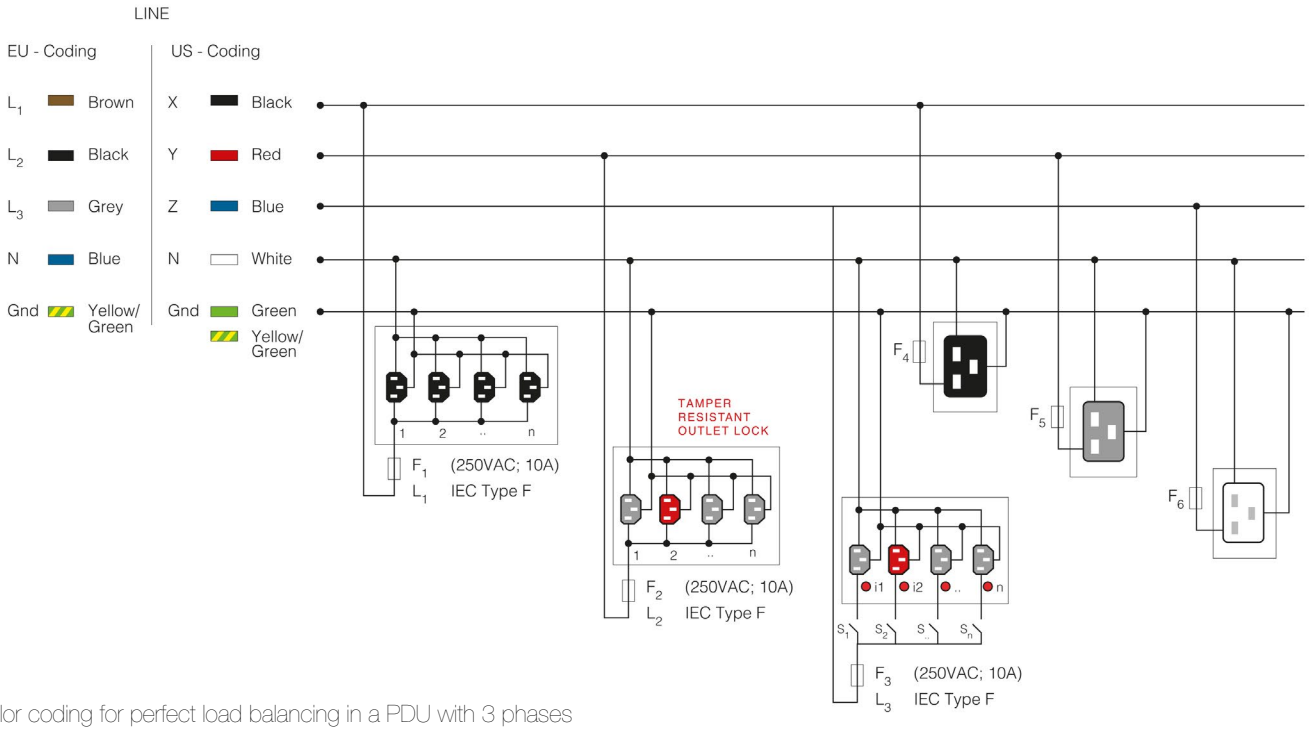

Color coding for perfect load balancing in a PDU with 3 phases

References / Document Downloads
[1]: https://www.schurter.com/pdu
[2]: https://www.schurter.com/data/download/2558435
[3]: https://www.schurter.com/data/download/2219908
[4]: https://www.schurter.com/v-lock
[5]: https://www.schurter.com/data/download/2515815
[6]: https://www.schurter.com/data/download/676167
[7]: https://www.schurter.com/ec

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