PCB terminals with quick connector
Wiring made easier

Manufacturers of high-current applications know many ways to transfer power to PCBs. However, many of those methods are cost-intensive and time-consuming. Busbars with complex wiring and installations with ring cable lugs or external wiring are some of the more common approaches. PCB terminals with quick connection technology offer an ideal alternative, as they allow cables to be connected quickly, safely, and without tools in a wide range of applications.

Device manufacturers know many methods for transmitting current to the PCB. PCB terminals with quick connection technology connect the cable quickly, securely, and without the need for any tools.

Device manufacturers are increasingly faced with a challenge: With each new generation, their devices must be more compact and less expensive, while at the same time more powerful and service-friendly. For this reason, more and more components and functions are being placed onto the powerful PCBs. In the case of high-current applications, PCBs are often used in multi-layer configurations. This requires an accompanying connection technology. Press-in technology is often still used in the case of currents above 20 A, where massive contact elements are pressed onto the PCB. However, this approach has a
significant drawback in that it takes place in a separate operation, along with soldering, and the massive contact elements have to be connected with ring cable lugs.

Other options offer greater convenience

An excellent alternative to press-in technology is the PCB terminal with screw connections that uses tension sleeve technology. This connection principle, in successful use for decades, enables a current of up to 125 A to be transmitted, depending on the model. But there is a key disadvantage in this case as well: The cable must be connected using a screwdriver at a predefined torque. In an industrial context, in which time and costs are very important, the PCB terminal with quick connection technology appears to be the ideal alternative. This is because it allows for quick, low-cost, and above all easy connection of the cables.

The PCB terminals of Phoenix Contact mainly use two different quick connection technologies: push-in and push-lock spring connection – see sidebar text. The push-in spring connection technology from the SPT series is the optimal connection for pre-assembled flexible cables with ferrules, for example for the internal wiring of devices. The cable can be directly inserted into the terminal point without any tools. A secure contact is then established by way of the spring. This also removes a potential source of errors that may occur in industrial series production: an incorrect locking torque for the terminal point.

Another quick connection technology is the push-lock spring cage connection; the PL series from Phoenix Contact features this technology. It is based on the ‘one-hand tilting lever principle’ and permits the easy and tool-free connection of the cable – with or without ferrule. The orange stepped lever is easy to use, making intuitive operation a snap. This operating principle is not only well-suited for the internal wiring of devices, but also for field wiring. The PCB terminal is delivered
Both connection technologies – push-in and push-lock – are available in the Phoenix Contact range of products up to a current of 76 A and a cable cross-section of 16 mm². The SPT series is available with both a horizontal and a vertical direction of connection. In addition, the range of products is currently being expanded to include another bridgeable version (SPTA) that is placed at an angle of 30° to the PCB (Figure 3). The terminals in the PL series are available with a horizontal direction of connection, with the 41 A version also available at a 30° angle to the PCB.

**Coding options prevent errors**

In an industrial context, wiring often takes place under time pressure. In order to avoid wiring errors, the PCB terminals feature a labelling and printing surface required to ensure that the cables can be correctly matched to the corresponding terminal points. Furthermore, the housing can be color-coded from pin to pin thanks to the individual wafer configuration (Figure 4). Depending on the customer’s requirements, a customized, multi-pin PCB terminal is available in different colours, e.g., the colours of the cables to be connected.

**Conclusion**

In an industrial context, PCB terminals featuring quick connection technology are the ideal alternative to standard connection technologies, as they...
allow for more efficient and intelligent wiring. In this way, assembly times can be reduced and costs saved. This is why the trend of quick connection technology will continue.

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