

## Electrical and mechanical connection of PCBs in just one process step.

### ept flexilink<sub>b-t-b</sub> and flexilink<sub>jumper</sub> make it possible

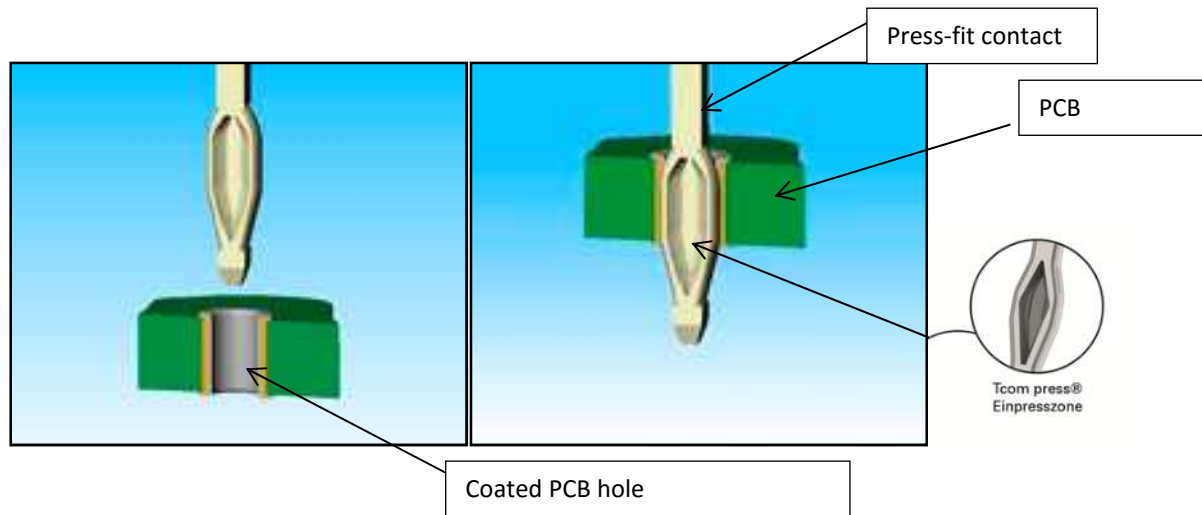
Press-fit technology continues to be highly popular. Especially for rugged applications where temperature fluctuations, shock, vibrations, moisture, dust, and dirt play a major role, press-fit technology is a reliable partner.

The company ept has been developing and producing press-fit systems for more than 40 years. The Tcom press<sup>®</sup> press-fit system developed by ept has been standing up particularly well to consistently rising requirements over the years.

#### Press-fit connection

The purpose of a press-fit connection is to create a permanent mechanical and electrically conductive connection between the PCB and connectors. In order to accomplish this, the diameter of the press-fit system has to be larger than the diameter of the metalized hole in the PCB. The contact is pressed into the PCB hole by applying just the right force. This results in cold welding between the press-fit pin and the contacted PCB hole. Cold welding joins the outer metal atoms of the PCB hole and press-fit pin, creating a stable atomic lattice. This type of connection comes very close to thermal welding. The final result is a gas-tight and mechanically very strong connection that conducts electricity with great reliability.

Press-fitting is intended to cause cold welding, but with minimal deformation of the hole wall. With the flexible ept Tcom press<sup>®</sup> press-fit system, this challenge is resolved by means of the elastic zone. The elastic zone absorbs the force and deforms itself so the hole wall is not damaged.



#### The ratio of the press-fitting force to the holding force is an important quality criterion.

The highest possible holding force has to be achieved with the minimum possible press-fitting force. The holding force is indicative of the cold welding quality. The higher the holding force, the stronger the mechanical connection. This is an important characteristic value, especially as regards the system's ability to withstand shocks and vibrations.

#### Press-fit systems have to meet various requirements.

A press-fit system can meet very different requirements depending on the contact material, material thickness, hole diameter, and coating of the contact and PCB hole. Highspeed signals of more than 40 Gbps or currents up to 45 A can be transmitted. While the smallest possible hole diameter is required for signal transmission, a large hole diameter is helpful for current transmission.

#### It's all about using the right tools.

#### Press Contact

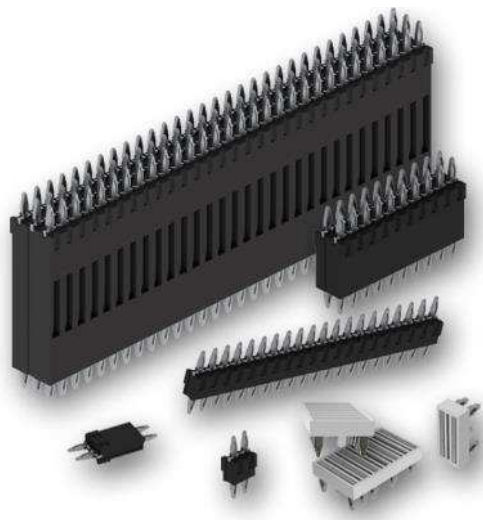
ept GmbH • Irina Nowomiejski • Bergwerkstr. 50 • 86971 Peiting, Germany • +49 (0)8861 / 250 134 0 • [irina.nowomiejski@ept.de](mailto:irina.nowomiejski@ept.de)

The press-fit tool is an important factor for the quality of the press-fit system. ept acknowledges this by developing press-fit tools individually matched to the connectors. The top tool transmits the force of the press to the pin while the bottom tool is designed so the applied force does not damage the other components on the PCB or the PCB itself. Both tools need to be perfectly aligned with one another.

To make the press-fitting process even more reliable, ept offers presses with force–path monitoring. This technology can be integrated into any tool from a simple hand lever press to a fully automatic assembly and pressing machine.

## Electrical and mechanical connection of PCBs in just one process step?

The ept flexilink<sub>b-t-b</sub> and flexilink<sub>jumper</sub> PCB connectors make it possible!



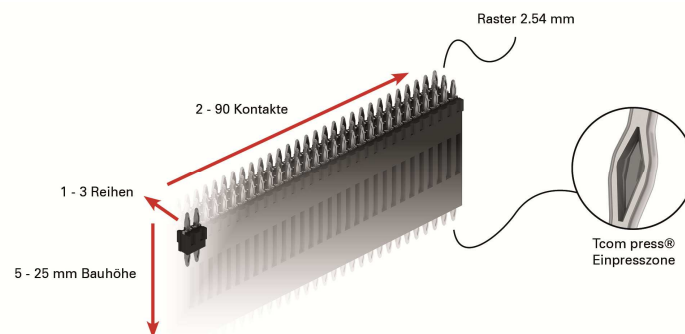
The flexilink PCB connector product family from ept

With its two new products flexilink<sub>b-t-b</sub> and flexilink<sub>jumper</sub>, press-fitting technology specialist ept offers a simple and robust solution for connecting PCBs.

### flexilink<sub>b-t-b</sub> for parallel PCB connections

Using traditional methods, it took several process steps to connect two boards to each other vertically. First, the connectors had to be soldered to both PCBs. Additional spacer pins for mechanical joining and secure fixation of the clearance were required when plugging the PCBs together. With ept flexilink<sub>b-t-b</sub> and the press-fit technology it provides, both PCBs are connected electrically and mechanically in just one process step. No additional screw connections are needed thanks to its high intrinsic stability. The electrical and mechanical connection is maintained even while molding the assembly. The assembly size and costs can be reduced in most any scenario.

The flexilink<sub>b-t-b</sub> is available for 5–25 mm board spacings with one to three rows and pin counts from 2 to 90.



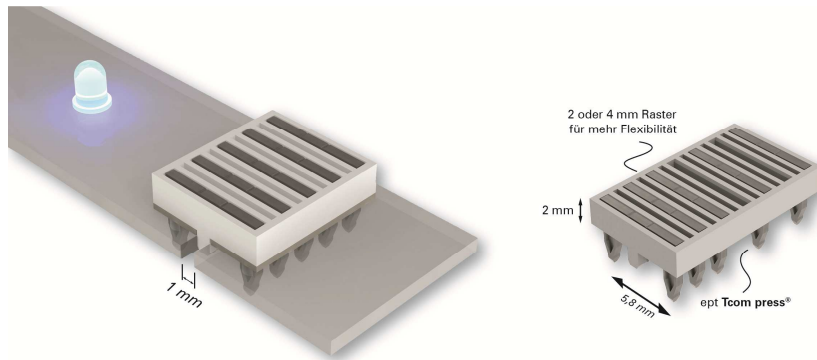
Thanks to its shock and vibration resistance, the automotive industry has long since recognized the benefits of this connector and has been using it successfully for years.

### flexilink<sub>jumper</sub> for horizontal PCB connections

The flexilink<sub>jumper</sub> from ept makes the horizontal (butt joint) connection of PCBs straightforward and efficient. Two PCBs are electrically and mechanically connected to each other in a single press-fit process. Foolproof processing is accomplished with a flat-board press-fitting tool. Soldering and screw connections are obsolete, yet any number of PCBs can be linked in a row.

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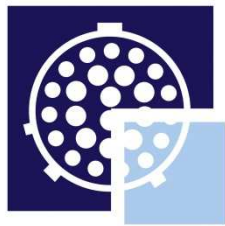


There are numerous possible flexilink<sub>jumper</sub> usage scenarios, such as LED applications. Low space requirements, high stability, and a current rating of up to 8 A per contact make this connector ideally suited to this field of application.

### Everything from a single source

Naturally, ept also offers the required press-fitting tools and presses for processing PCB connectors. The two connectors can be processed using simple manual workstations for sample fabrication and small series, up to fully automatic processing lines for mass production.

The benefits of press-fit technology are generally known in the industry. Press-fitting of connectors eliminates the greatest disadvantages of the soldering technology, such as thermal stress on the PCB, the cold solder joint, short circuits due to solder bridges, and the cost of inspecting the solder joints. As a result, press-fit technology saves time and money in virtually any scenario.



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