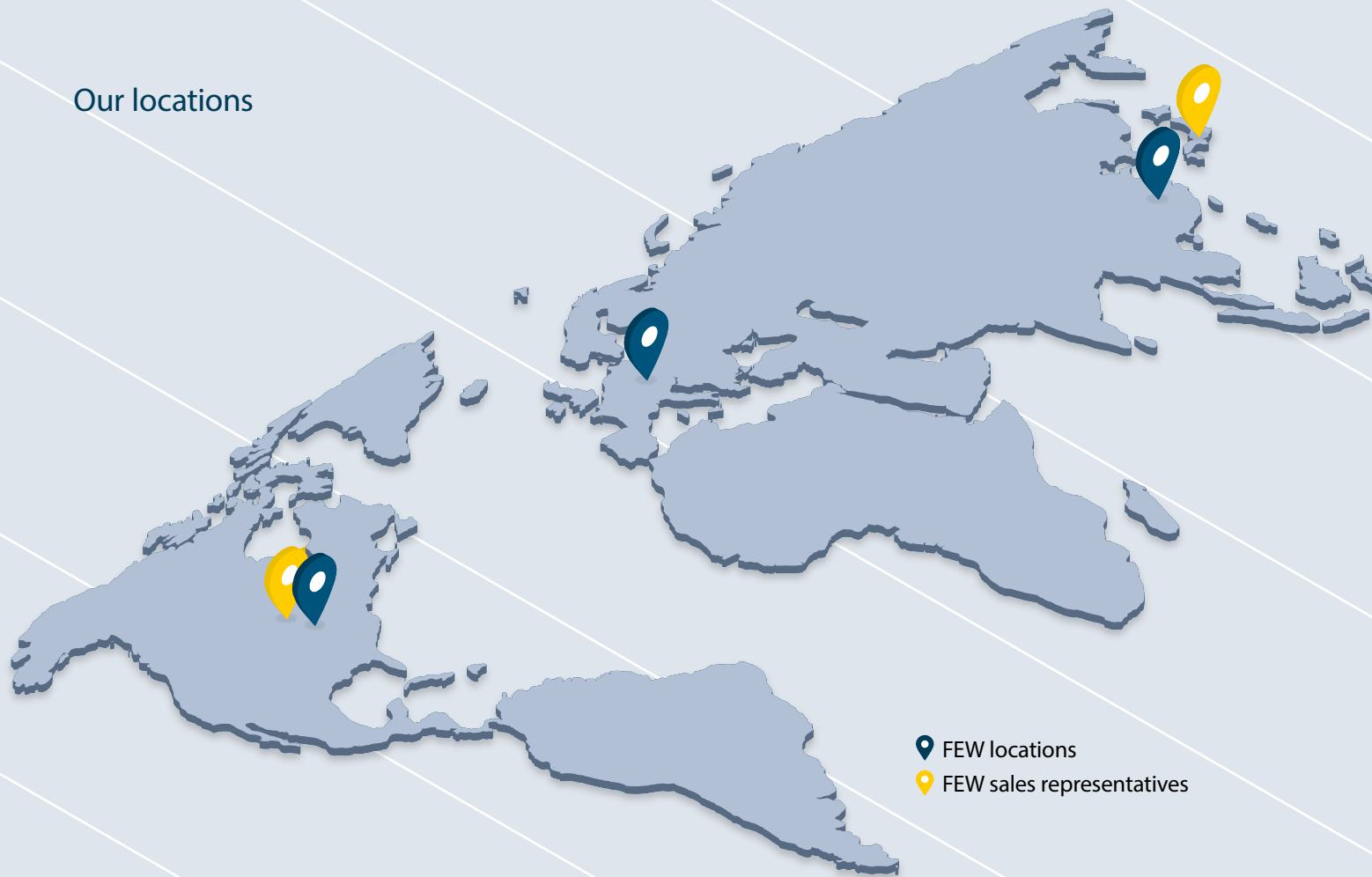




CUSTOMIZED
GLASS
CONNECTIVITY



Our locations



📍 FEW locations

📍 FEW sales representatives

Company profile

The FEW Automotive Group is one of the globally-leading manufacturers of pre-soldered connectors for the automotive industry. FEW products act as connecting elements between the electrical system and the applications on the automotive glass panels for heating grids, antennas and sensors. FEW develops and manufactures any desired shape and size of connectors, including round and braided wires, stamped parts and foil connectors, according to customer-specific requirements.

FEW, founded in Zwenkau in Saxony, Germany in 1995, has more than twenty years of experience. As a result of expansions onto the American market (USA 2011) and the Asian market (China 2007 and Japan 2016), FEW has become an important partner for the international automotive industry.

Specialized in soldering connectors for windshields and backlites, FEW manufactures using a certified quality and environmental management system (ISO 9001, ISO/TS 16949 and ISO 14001). Central factors for the manufacturing of qualitatively excellent products are a constant process control, a high level of automation and cooperation with high-performance suppliers.

An extraordinary level of expertise and extremely well-qualified employees are guarantees for creating high-quality and customized solutions with the customer – and we would gladly do this for your company as well. Contact us to implement your specific requirements!



Product overview

| | |
|--|-----------|
| Soldering connectors for backlites and side windows | 4 |
| Stamped parts | 6 |
| Connectors with round wire | 10 |
| Connectors with round wire with pre-soldered crimp contact | 12 |
| Connectors with round wire with pre-soldered solder bridge | 20 |
| Connectors with round wire with coils and capacitors | 24 |
| Connectors with braided wire | 26 |
| Soldering connectors for windshields | 32 |
| FPC connectors (Flexible Printed Circuits) | 34 |
| FFC connectors (Flexible Flat Cables) | 38 |
| Solder equipment | 44 |

Soldering connectors for backlites



Stamped parts



Connectors with round wire



Connectors with braided wire



Stamped parts

Product examples



Stamped parts

Product features

Stamped parts for backlite heating grids are available in various shapes with various alloys. The high manufacturing accuracy enables automated further processing in the customer's plant.

- ✓ Alloys:
 - Copper alloys according to European, American and Asian standards
 - Various steel alloys
- ✓ Galvanically processed surfaces, for example, silver-plated, tin-plated
- ✓ Can be ordered as complex punched/bent parts and as multi-part assemblies
- ✓ Insulation also possible with shrink tube
- ✓ Pre-soldering: Alloy, flux and solder quantity according to the customer's specifications
- ✓ Also available in a lead-free variant

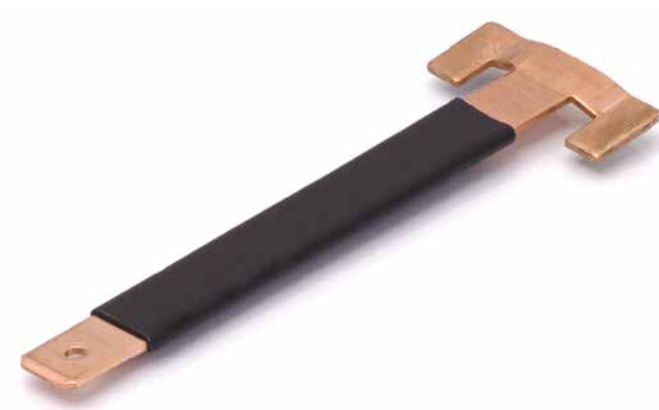
Buttons

Buttons allow automated and simple soldering. The rotational symmetry allows optimal further processing and assembly. Meanwhile, buttons have become one of the most popular antenna connections due to these properties.

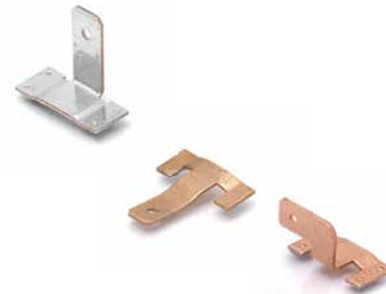


Stamped parts with and without shrink tube

Stamped parts can be delivered both with and without a shrink tube at a reasonable price. The products are manufactured according to customer-specific requirements with regard to design, material and type of alloy.



Variants



Connectors with round wire



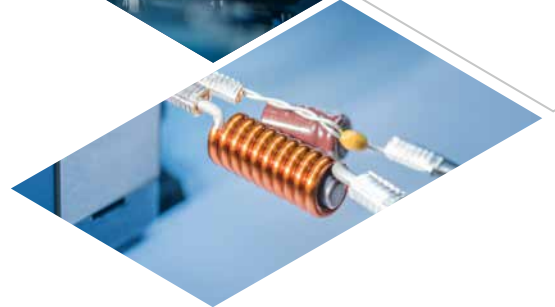
Connectors with round wire
with pre-soldered crimp contact



Connectors with round wire
with pre-soldered solder bridge



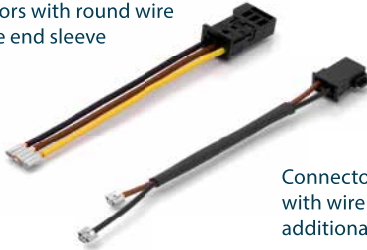
Connectors with round wire
with coils and capacitors



Connectors with round wire with pre-soldered crimp contact

Product examples

Connectors with round wire
with wire end sleeve



Connectors with round wire
with wire end sleeve and
additional solder sleeve

Connectors with round wire
with terminal block



Connectors with round wire
with riveted solder platelets



Connectors with round
wire with overmolding

Product features

Connectors with round wire, pre-soldered crimp contact and various interfaces, including housings, are available. This product is unique in combination with the patented solder platelets in the terminal block, which allow for automated removal and simple positioning.

- ✓ Available lengths: From 35.0 mm, excluding housing
- ✓ Cable cross section: 0.22 mm² up to 6.0 mm²
- ✓ Contacts and housings neutral or with OEM logo
- ✓ Available sizes:
 - Wire end sleeve: B-crimp 4.5 mm x 2.6 mm
 - Solder platelets: 6.0 mm x 8.0 mm
 - Solder platelets: 4.0 mm x 4.5 mm (patented)
 - Additional solder objects and sizes can be selected
- ✓ Pre-soldering: Alloy, flux and solder quantity according to the customer's specifications
- ✓ Overmolding according to customer requirements
- ✓ Wrapping made of felt or foam as protection from sharp edges and to prevent noise emission can be installed
- ✓ Also available in a lead-free variant

Connectors with round wire with wire end sleeve

For use as an antenna connection, connectors with round wire and pre-soldered crimped wire end sleeve that is provided with a space-saving and cost-effective solder joint, can be selected from several variants.



Variants



Connectors with round wire with wire end sleeve and additional solder sleeve

The connectors with round wire, wire end sleeve and the solder sleeve specially developed by FEW are an optimal solution for processing with a soldering iron due to the increased solder volume.



Variants



Connectors with round wire with terminal block

These connectors with round wire are provided with a patented terminal block specially developed by FEW. Defined intervals between the contacts allow for a precise application at the customer's location. The terminal block is available in both three-pin and six-pin designs. The number of pin configurations can vary.



Variants



Connectors with round wire with riveted solder platelets

The connector with round wire with riveted solder platelets is a further development of two-dimensional pre-soldering. This special manufacturing method allows for direct contact of the solder iron with the solder which leads to reduced cycle times so that costs during further processing can be minimized.

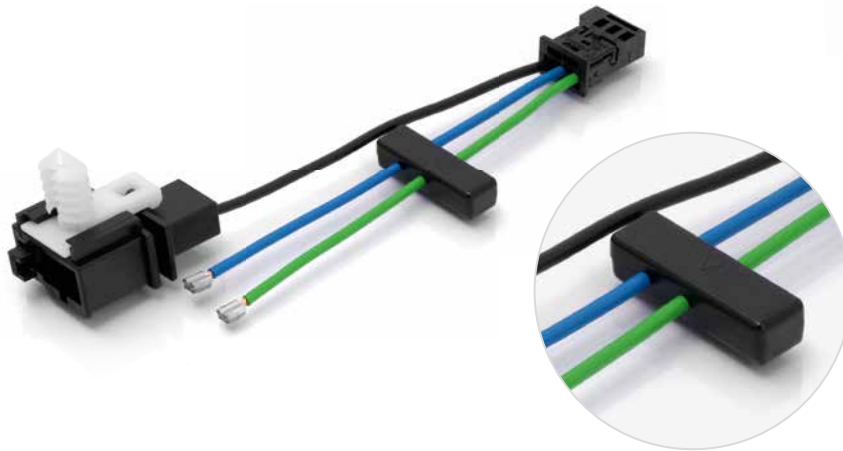


Variants



Connectors with round wire with overmolding

These connectors with round wire can be manufactured entirely according to the customer's requirements in terms of size, design and position. The overmolding body can be obtained in both rigid and in bendable variants. As an installation aid, this can optimize the soldering process and improve the antenna performance due to the defined cable intervals.



Variants



Additional variants



Connectors with round wire with pre-soldered solder bridge



Product examples

Connectors with round wire
with solder bridge



Connectors with round
wire with solder platelets



Product features

Primarily for use as a heating grid connection, these connectors with round wire can be selected in many different variants. The high dimensional accuracy of the solder bridge, combined with a perfectly adjusted solder volume, are a guarantee of high process capability during soldering.

- ✓ Cable cross section: 0.22 mm² up to 6.00 mm²
- ✓ Contacts and housings neutral or with OEM logo
- ✓ Available sizes:
 - Solder bridges: 12.0 mm and 20.3 mm, as well as 24.2 mm
 - Solder platelets: 6.0 mm x 8.0 mm / 4.0 x 4.5 mm
 - Additional solder objects and sizes can be selected
- ✓ Pre-soldering: Alloy, flux and solder quantity according to the customer's specifications
- ✓ Overmolding according to customer requirements
- ✓ Wrapping made of felt or foam as protection from sharp edges and to prevent noise emission can be installed
- ✓ Also available in a lead-free variant

Connectors with round wire with solder bridge

For heating grids with various interfaces to the electrical system, connectors with round wire with welded solder bridge that vary in length and color are available. These enable soldering with resistance or induction.



Variants



Connectors with round wire with solder platelets

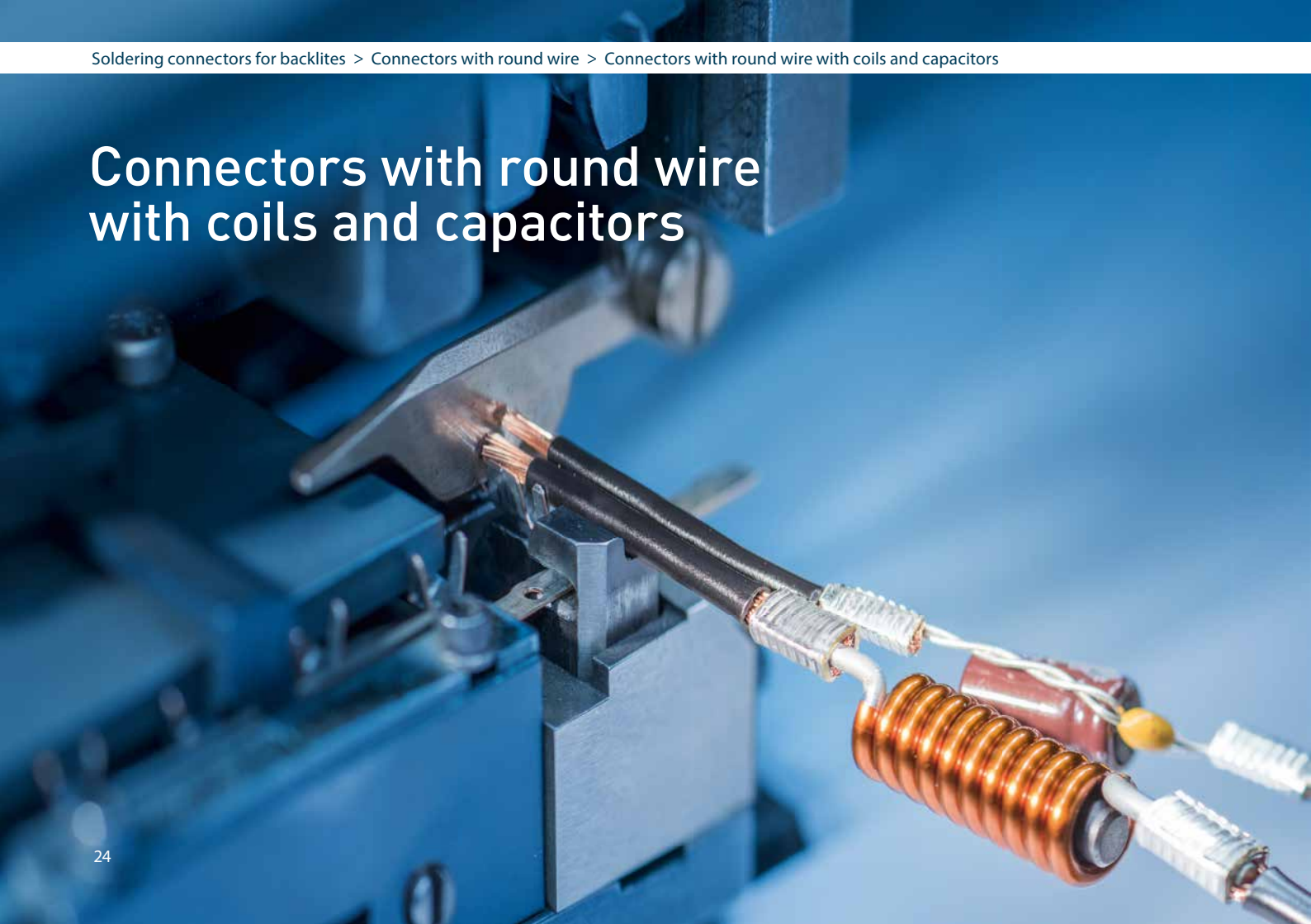
Connectors with round wire with solder platelets stand out due to their space-saving design, and are moreover a cost-effective type of contact.



Variants



Connectors with round wire with coils and capacitors



Product examples

Connectors with round wire with coils and capacitors



Product features

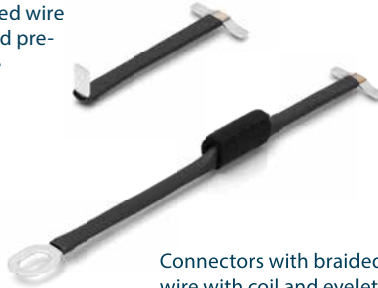
Connectors with round wire with coils and capacitors are used as contacts to the heating grid. These components prevent disruptive signals from reaching the panel and interfering with antenna signals.

- ✓ Connections can be combined with various components, for example with coils and capacitors
- ✓ Contacts and housings neutral or with OEM logo
- ✓ Wrapping made of felt or foam as protection from sharp edges and to prevent noise emission can be installed
- ✓ Clips can be installed upon customer request
- ✓ Also available in a lead-free variant

Connectors with braided wire

Product examples

Connectors with braided wire with blade terminal and pre-soldered solder bridge



Connectors with braided wire with coil and eyelet

Connectors with braided wire as T-model



Connectors with braided wire with soldering clips

Product features

The connectors with braided wire, as a braid made up of individual wires, are an alternative to the connectors with round wire for heating grids. They are very robust despite their high flexibility and low weight. A low installation height is achieved due to their special design, and in addition, they allow for automated processing.

- ✓ Cable cross section: 2.5 mm²
- ✓ For interference elimination, the connectors can be outfitted with coils
- ✓ Available sizes:
 - Solder bridges: 12.0 mm and 20.3 mm, as well as 24.2 mm
 - Additional solder objects and sizes can be selected
- ✓ Pre-soldering: Alloy, flux and solder quantity according to the customer's specifications
- ✓ Welding a pre-soldered braided wire instead of the solder bridge possible
- ✓ Wrapping made of felt or foam as protection from sharp edges and to prevent noise emission can be installed
- ✓ Also available in a lead-free variant

Connectors with braided wire with blade terminals and pre-soldered solder bridge

Connectors with braided wire with blade terminals are available in various lengths. At the same time, the blade terminals can be bent into the angle needed. Manufacturing is fully automatic and, as a result, is particularly cost-effective.



Variants



Connectors with braided wire with coil

Connectors with braided wire with coil are used to remove interference from signals to the electrical system and can be changed in structure according to the customer's requirements. They can be expanded either with eyelets or blade terminals as needed.



Variants

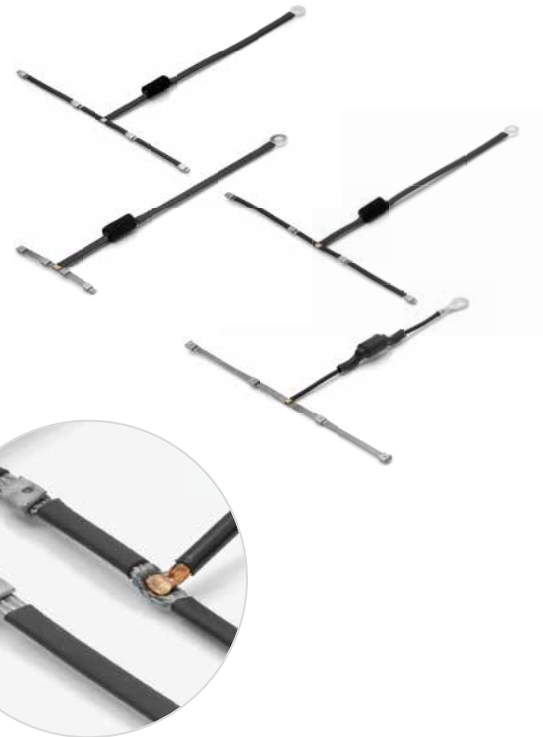


Connectors with braided wire as T-model

Braided wires with more than two solder points are used to optimize the supply of power to the heating grid. The solder can be applied directly to the wire or onto a clip previously crimped to the wire. If it is necessary for the supply of power to place the solder points at great intervals from each other, then the T-model is the ideal solution.



Variants



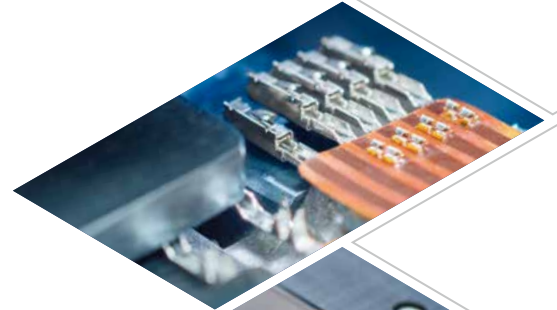
Connectors with braided wire with soldering clips

Braided wires with soldering clips are used particularly when soldering by resistance. The soldering clips are crimped around the braided wire at defined intervals and enable an automated soldering on the panel. Because solder is applied without application of heat to the braid, undesirable influences on the braided single wires are also prevented.



Soldering connectors for windshields

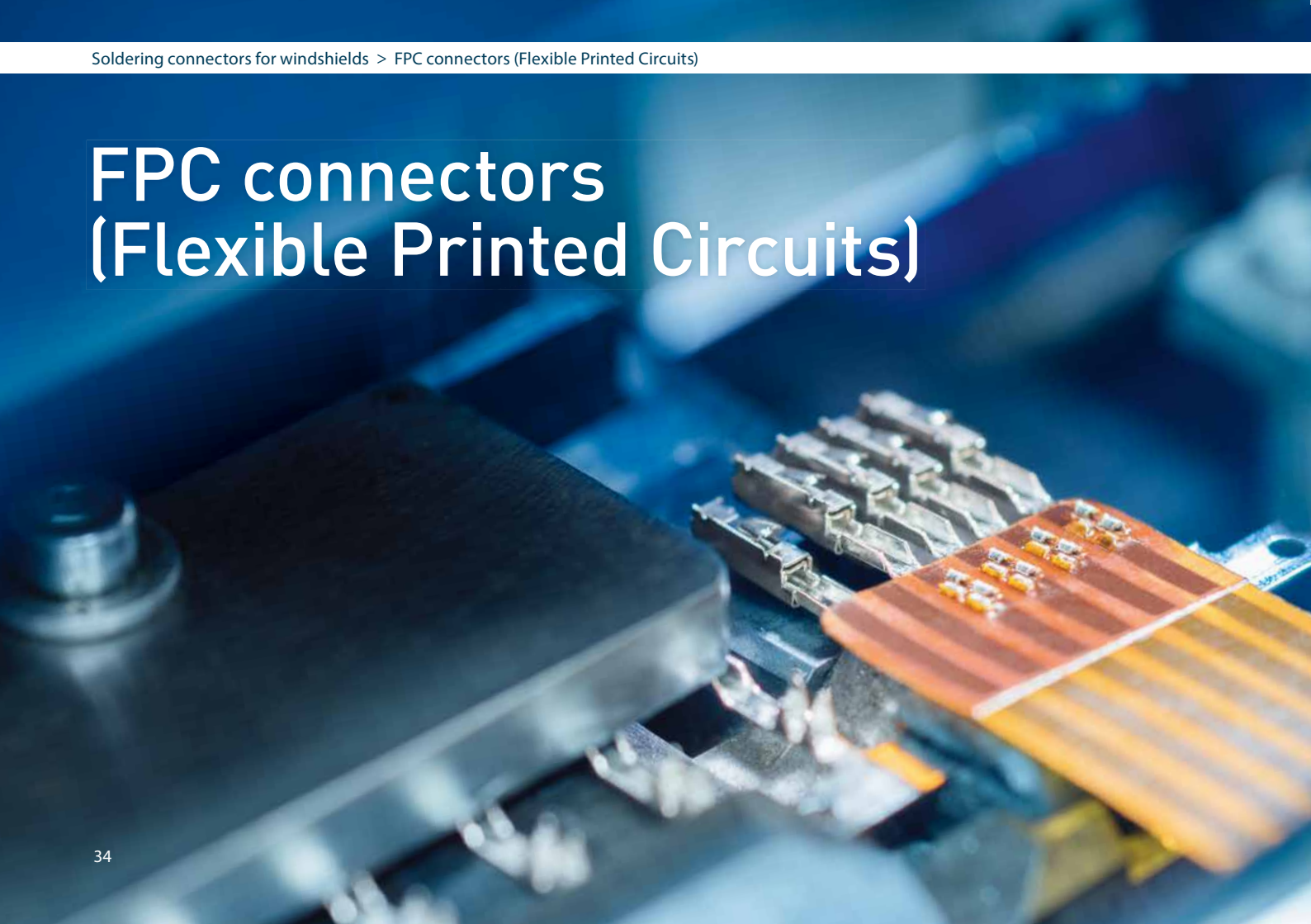
FPC connectors
(Flexible Printed Circuits)



FFC connectors
(Flexible Flat Cables)

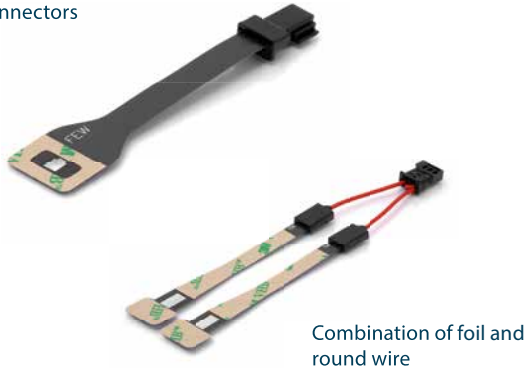


FPC connectors (Flexible Printed Circuits)



Product examples

FPC connectors



Combination of foil and round wire

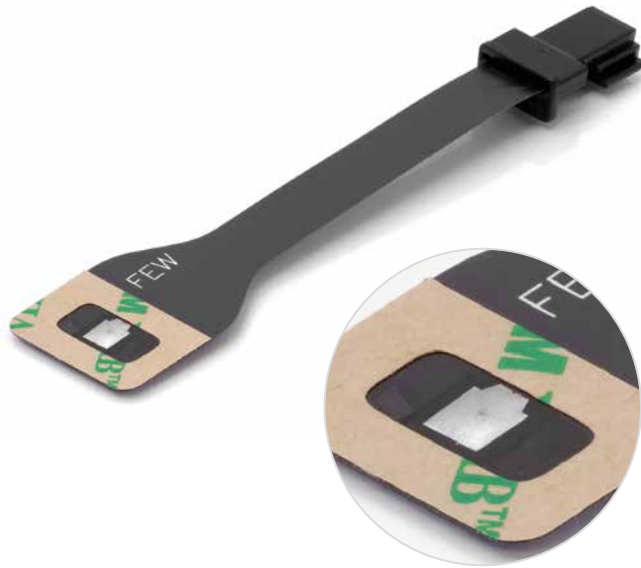
Product features

Single or multi-pin FPC foils forward antenna signals from the windshield or the backlite to the amplifier. The layout and design of the foil can be selected nearly without restrictions. Due to its properties, such as the flat shape and its flexibility, the use of the FPC foil has increased significantly.

- ✓ Layout and design according to customer requirements
- ✓ Contacts and housings neutral or with OEM logo
- ✓ Can be expanded by a cable and can be used for various housings
- ✓ Overmolding according to customer requirements
- ✓ Selection of various foil materials and adhesive tapes
- ✓ Soldering depot can be implemented in coordinated volumes, alloys and fluxes depending on the customer's requirements

FPC connectors

One of the advantages of the FPC connectors is their flat design, which is especially useful in a small installation space. With regard to size, shape and color, the customer can select nearly without restrictions.

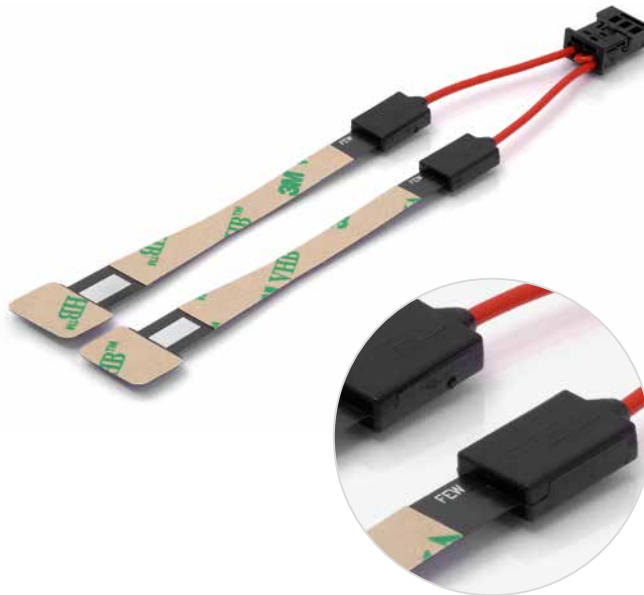


Variants

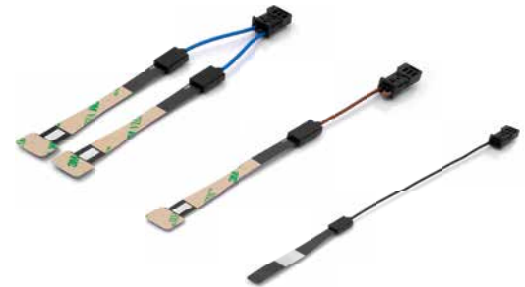


Combination of foil and round wire

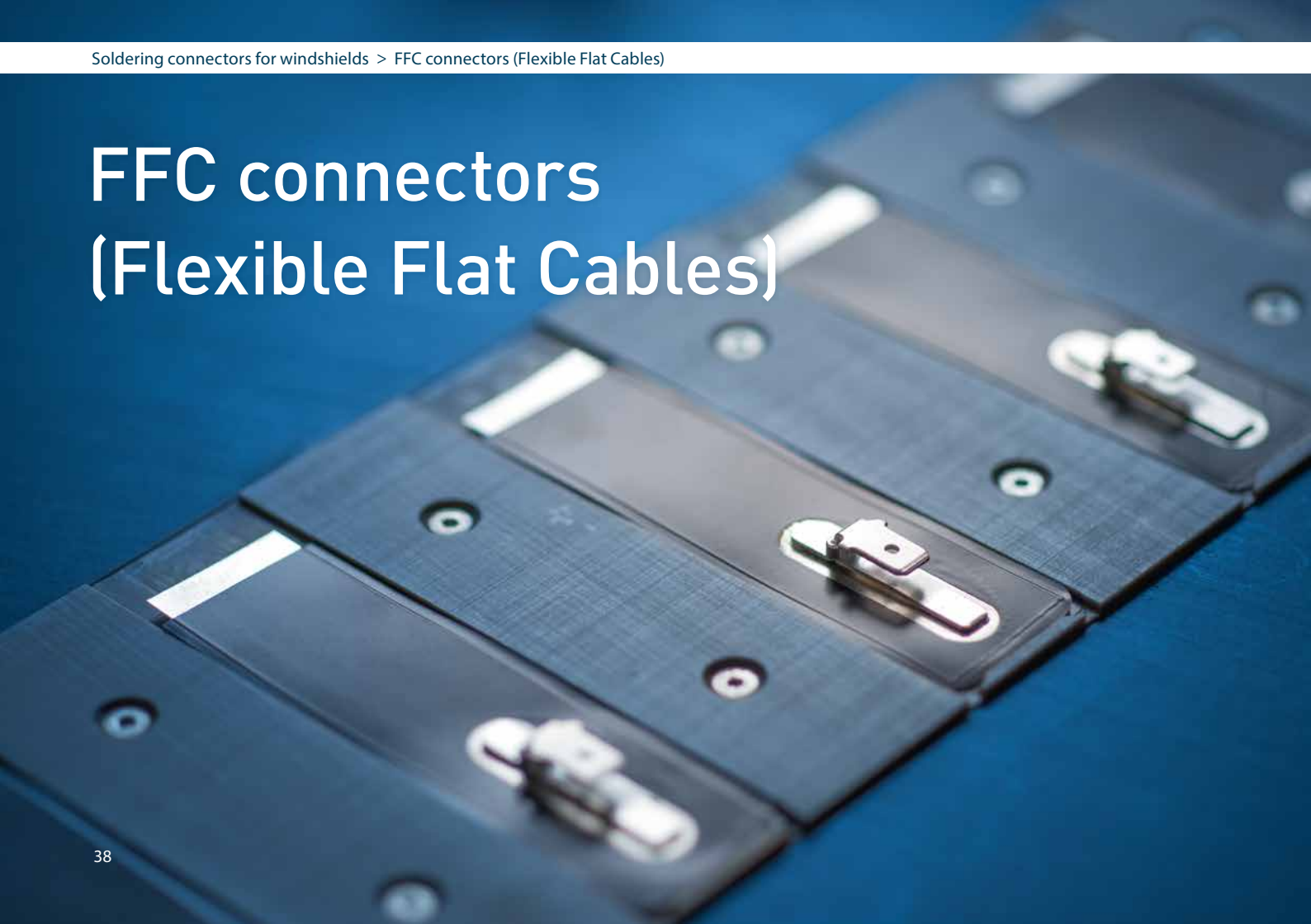
An additional round wire between the foil and the housing can be implemented as needed and allows an extended and cost-effective design.



Variants



FFC connectors (Flexible Flat Cables)



Product examples

Copper stamped parts



Laminated copper strips with electrical contact to the ground stud



Combination of laminate and round wire, protected through overmolding



Product features

Due to the copper strips laminated on both sides, the FFC connectors are ideal for applying electrical contact for heating grids in a laminated safety glass.

- ✓ Single or multi-pin connections in various lengths
- ✓ Cable cross section: 0.5 mm² to 6.0 mm²
- ✓ Length of the Kapton tape: 40.0 mm to 280.0 mm excluding housing
- ✓ Width of the copper foil: 6.0 mm up to 95.00 mm
- ✓ Contacts and housings neutral or with OEM logo
- ✓ Overmolding according to customer requirements
- ✓ Selection of various foil materials and adhesive tapes
- ✓ Soldering depot can be implemented in coordinated volumes, alloys and fluxes depending on the customer's requirements

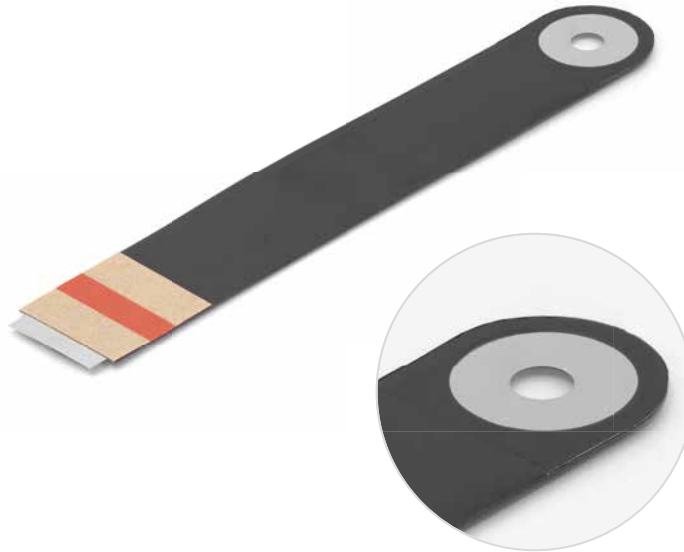
Copper stamped parts

Copper stamped parts can be used as a connector piece from the flat connector to the power bus bar.



Laminated copper strips with electrical contact to the ground stud

Laminated copper strips with punched hole are an ideal fastening option for windshield heating grids between the roof lining and the chassis due to their flat shape.



Variants



Combination of laminate and round wire, protected through overmolding

This connection is best suited as an interface between the laminated windshield or backlite and the electrical system. The flat design is characteristic for the combination of laminate and round wire.



Variants



Quality management

FEW Fahrzeugelektrik Werk GmbH & Co. KG is certified according to the following standards:

ISO 9001



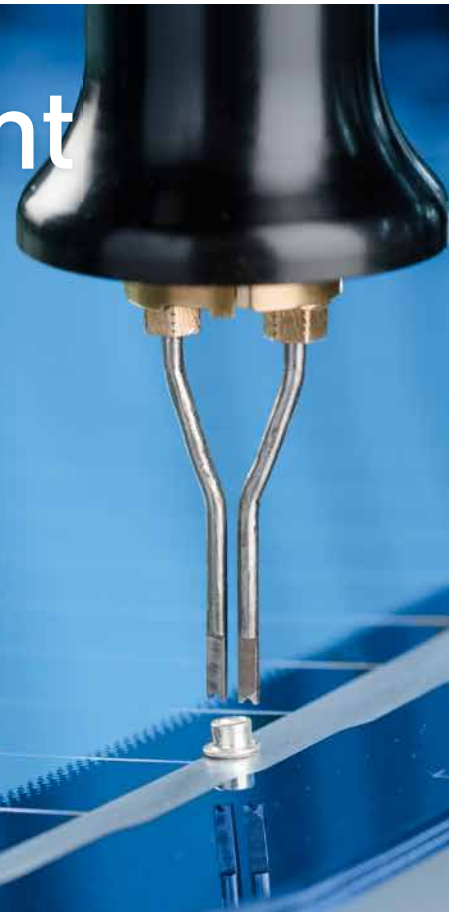
ISO/TS 16949



ISO 14001



Solder equipment



Hand Held Unit



Product features

The resistance soldering device specially developed by FEW can be adjusted according to the customer-specific requirements thanks to its modular design. Connections can be soldered both with low solder volumes, such as wire end sleeves, and with stamped parts with larger solder volumes in a semi-automated manner. The patented, low-wear electrodes provide for extended service intervals and an additional stabilization of the soldering process.

- ✓ Complete, self-sustaining system
- ✓ Supply voltage: Compatible with 120 V and 230 V
- ✓ Save and load various soldering programs
- ✓ Semi-automated for a high degree of reproducibility
- ✓ Integrated cooling systems for high-frequency use
- ✓ Inclusive suction bracket for optimization of the soldering sequence, e.g. for preventing cold solder joints and to lower cycle times
- ✓ EMC-tested and with CE certificate

Contact

Germany location

FEW Fahrzeugelektrik Werk GmbH & Co. KG

Polierweg 6
04442 Zwenkau
Germany

Phone: +49 34203 465 - 1010
Fax: +49 34203 465 - 25
Email: sales.germany@few-group.com

USA location

FEW Automotive Glass Applications

1660 Enterprise Parkway - Suite G
Wooster, OH 44691
USA

Phone: +1 234 249 - 1880 or 1872
Email: sales.usa@few-group.com

China location

FEW Fahrzeugelektrik Werk (Shanghai) Co., Ltd

菲翼汽车电气(上海)有限公司 浦东新区金沪路1151号三楼
4F/5F, No.3 building, No. 1999 Jinxiu east Road, Pudong
201206 Shanghai
China

Phone: +86 21 58303510 - 1020
Fax: +86 21 58303513
Email: sales.china@few-group.com

Sales representative for USA

Merk Industrial Solutions Inc

PO Box 192
Richfield, OH 44286
USA

Phone: +1 330 253 - 3055
Mobile: +1 440 476 - 5394
Email: sales.usa@few-group.com

Sales representative for Japan

J & E Partners

Japan and Europe Marketing & Consulting

Minami-Rinkan 8-9-17, Yamato
242-0006 Kanagawa
Japan

Phone: +81 50 3786 - 3577
Email: sales.japan@few-group.com

Legal notice

FEW Fahrzeugelektrik Werk GmbH & Co. KG

Polierweg 6

04442 Zwenkau

Germany

Phone: +49 34203 465 - 0

Fax: +49 34203 465 - 25

Website: www.few-group.com

Managing Director:

André Jenrich

Headquarters and Court of Jurisdiction

Zwenkau / Leipzig, HRA 13889

VAT ID

DE 173345311

Personally liable partner

FEW Fahrzeugelektrik Werk Verwaltungs-GmbH,

Headquarters: Zwenkau,

HRB 18201 Court of Registry Leipzig

Responsible for the content according to § 55 Sect. 2 RStV (German Interstate Broadcasting Treaty) André Jenrich