Edition 2018

# »Secure Connections. World-wide.«





## » The STOCKO Success Story«

#### From the beginnings...

STOCKO is a company with a tradition going back for more than one hundred years. The foundation stone was laid by Alfred Aders, Heinrich Pfeiffer, and Johann August Stock 1901 at Wuppertal under the name of Stock & Co. - as button manufacturers. Amongst other items, they produced hollow rivets, eyelets, and press fasteners that, during the Wilhelmian boom era, were in great demand and were even shipped to South America. When Stock & Co. developed the eyelet tag from a shoe eyelet with a solder tag added, the future direction of the company's activities was set: electrical technologies. Very soon there followed additional pressed, drawn, and seamed metal parts all of which could be manufactured with the same machines as the button parts up until now.

#### ... to the present

During the Weimar period that is during the twenties of the last century, the living habits of the people changed dramatically; modern electrical devices such as the radio, telephone, or even the electric shaver found entry into the households in large scale. The new direction of the company proved to be a particularly lucky move, 500 people were employed 1935; two years later there were already 1000. Now under the sole company name STOCKO. With the new factory at Malmedy in Belgium 1940, the company grew to a concern employing 1800 people. However, the war was not without consequences, and the number sank down to 300. There followed the years of the so-called "economic miracle", and STOCKO, too, gained by the new boom. Subsidiaries were founded like in England, France, Switzerland, and overseas. With the expertise, which STOCKO had gained in the manufacture of plastic parts, the product range was extended by film spools, tape cassettes, slide frames etc.. During these years, the expansions abroad continued steadily until far-reaching re-structuring measures took place during the nineties. In 1994, STOCKO divorced themselves from the division Fasteners. In 1998 a merger with the Bamberg Wieland Group took place and since then the company's name is STOCKO Contact GmbH. & Co. KG. Today STOCKO employ about 550 people at three locations: Sales and Marketing are at Wuppertal, production is distributed among the plants at Hellenthal (Germany) and Andlau/France.

1901	1911	1929	1950
in Wuppertal-Elberfeld. The	Eifel is set up. Stock & Co. employ already 110 workers	At the end of the twenties, start of the production of special parts for the electro-technical and radio industries	Steady growth of the company





» STOCKO has met the great ruptures and frequent changes of the industry in masterly fashion. Today the company is well prepared to continue with the 100 year old tradition also in the future.«

1960	1998	2001	2007	2009	2011	2012/2013	2014
Dr. Dirk Henkels,	Wieland Holding GmbH. take	STOCKO celebrate	STOCKO France	The Malmedy factory,	STOCKO Hellenthal	A high volume of	Production area
grandson of	over Stocko Metallwaren-	their centenary at	celebrate their	one of four production	celebrate their	investment in all factories	extension by 1,000m <sup>2</sup>
Hugo Henkels and	fabriken, Henkels und Sohn	Wuppertal.	50th anniversary	facilities to date, will be	100th anniversary.	and divisions. Significant	in Hellenthal
son of Kurt Henkels	GmbH & Co		at Andlau.	closed in spring 2009		improvement in	Construction work in the
(with the company	New name : STOCKO Contact		ļ	and the production		infrastructure, machinery	order of 3,000m <sup>2</sup> is being
since 1930) joins	GmbH & Co. KG.		ļ	will be relocated to		and large parts of	completed in Andlau.
the firm				Hellenthal.		production.	l
Fiji RHP	≡ <u>38</u>	39		40 of	UL RHP III	41	42



## » Secure Connections. World-wide.«

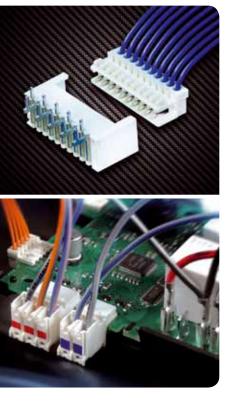
Today, STOCKO is one of the leading European manufacturers of electro-mechanical components; for very good reasons, because, for more than one hundred years, we are focussed in our daily work on the most important object, to satisfy our customers. Of course, it is not easy to meet these expectations over such a long period of time. Electronic component manufacturing is a key industry that does not tolerate mistakes, and customers' requirements are very complex and challenging. Again and again, they demand our full efforts beginning with research and development and finally in logistics and marketing. Hence we invite our customers' involvement in numerous stages of production processes but above all with regard to quality assurance, right from the beginning, and thus make sure that we continue to offer our products at a high quality level. Products that can be found equally in heating controls, drink dispensing machines, dish washers or motor cars.

If, at STOCKO, we talk of secure connections then for this reason that in every one of our connectors an element of conviction reverberates that good connections are always a matter of trust.



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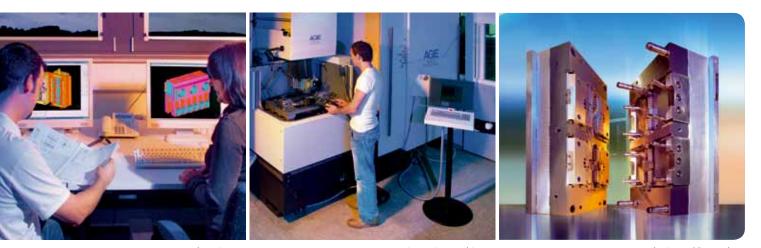
## »Development «

#### **Design and Development**

STOCKO products are renowned and held in high estimation. They represent solid solutions and a multitude of applications as connectors and terminals. The growing functionality and complexity in this sector, however, limits the usage of volume-produced standard components; more and more customers demand individual applications or new designs. Such processes need know-how, ideas, and adjustment to technical and economical philosophies in a sensible manner. Together with our customers, we are concentrating our energy on the expected performance of the new product and, step by step, work out the details – the material, the surface finish, the physical properties and finally the design. For design and development, we have the most modern, computer aided systems at our disposal. With the stereolithography method for example, we are in a position to check the precision of future products with the aid of prototypes, or manufacture prototype samples for testing purposes. Before reaching marketing stages, all STOCKO products are subjected to rigorous test procedures in our laboratories to check the mechanical and electrical properties as well as the influence they may have on the environment.

### Toolmaking

Absolutely essential and a decisive component in our successful connector technology, is our toolmaking capability and that takes place inhouse at STOCKO. The production tools with which amongst other things the negative forms of housings are produced are of paramount importance that quality is assured, and our design teams for electro-technical components have to adhere to strict guidelines with regard to the mechanical design of such components. All press and moulding tools are built by STOCKO according to the latest state of the art. They are central in a value producing chain that ultimately is to the benefit of our customers.



CAD work station

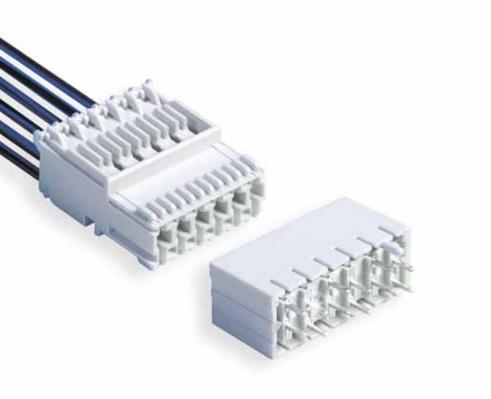
Wire erosion machine

Plastic moulding tool



» Our laboratories test all components of their suitability for volume production. The quality and equipment of our laboratories are of such high level that the VDE approvals and certification institute uses them to carry out their own independent tests. These include VDE and even the stringent CSA and UL tests for the international markets.«







# »Manufacturing Technology«

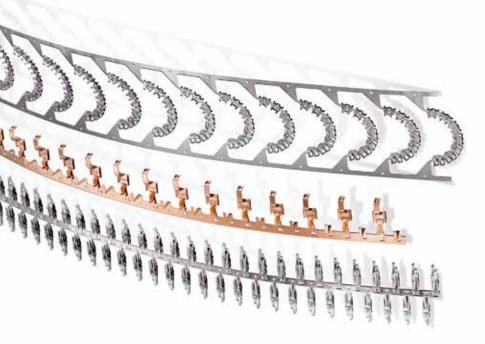
## **Production of Plastic Mouldings**

Production at STOCKO is concentrated in manufacturing centres to secure the highest quality even with growing output rates. Thus the whole production of plastic parts is at our Hellenthal plant. With this location specializing on this sector, they can fully concentrate on to the highly technical requirements of those parts such as the production of a maximum number of pin count with a minimum contact spacing and the closest possible tolerances, processing special flame retarding plastic materials, usage of a wide range of materials, and a high machine output rate. For this, we rely on the most modern machines available. We compliment our fully automated moulding presses with intelligent ancillary devices and tooling from our own in-house production. With regard to production techniques and the development of new possibilities for plastic materials, we are constantly aiming for the best possible solutions. This is hard cast quality.



»Quality from a single cast.«







## »Manufacturing Technology«

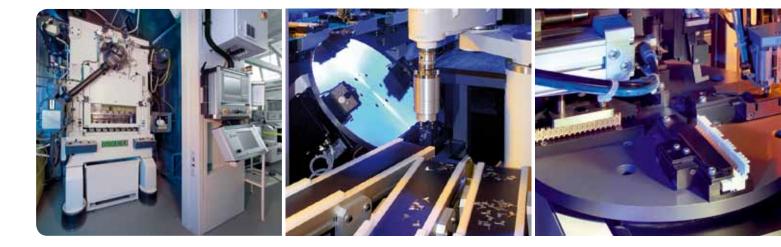
#### Stamping

Stamping technology at STOCKO stands for the highest level of economy and quality. At our production centres in Hellenthal and Andlau we produce the precision stamped parts for our various product groups both in bands and loose. For this we have the latest high-performance stamping machines with speeds of between 100 and 1400 strokes per minute and a compression force range of up to 160 tonnes. All the presses are equipped with the latest peripherals.

Rationalised production stages, a high level of automation and well designed integrated process monitoring systems guarantee year-on-year increased productivity that we ensure with the latest electronic quality control. Here we produce our stamped, drawn and formed parts with downstream composite tools made in-house and precisely tailored to the process architecture. This creates further cost benefits that we can pass on to our customers.

#### Assembly

Our connector systems are assembled by STOCKO in Hellenthal (Germany) and Sokolov (Czech Republic) using fully automated processes. Here, too, we apply the STOCKO philosophy of developing and producing most of the machinery, tooling and auxiliary devices in-house. The result is a highly flexible degree of automation leading to our high quality standards, which are assured with control systems that have also been developed in-house.



## » Machine Building «

We give high priority to our STOCKO terminating systems, because the quality and reliability of an electrical connection is largely determined by the high levels of the terminating technology. That is why we allocate considerable financial resources to the development and production of such systems. In addition to quality, innovation and economies play important parts. Our aim is to improve the productivity of our customers by integrating our terminating machines smoothly into their production processes. Thus once more, STOCKO solutions act as catalysts and enable profitable competition. And to make sure everything runs smoothly, training is given to your staff for the various production processes, and our team of service engineers is always at your disposal with help and advice to ensure productivity all along the line.









» STOCKO Terminating Technology - for every type of application, from simple hand tools, to semi-automated machines, and ultimately to fully automated modular machines with "Just in Time" functions, computer controlled, automated quality control functions, modem connections for outside diagnostic centres and the option to programme sequences of cable forms.«



» We take it as our social responsibility to integrate environmental protection in our manufacturing processes. For this reason, the plating shop at our manufacturing centre at Andlau was only recently modernized and converted taking account of the latest environmental and ecological developments. In an elaborate process, all effluents are returned to nature, purified and completely free of harmful substances.«

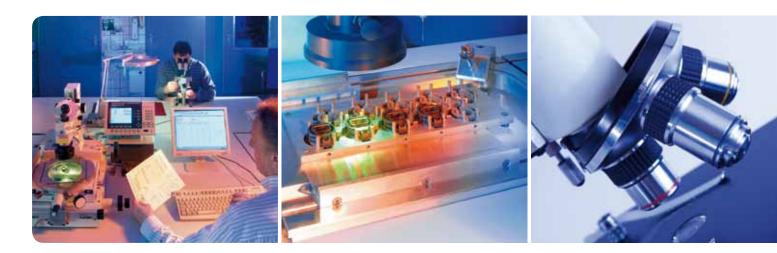


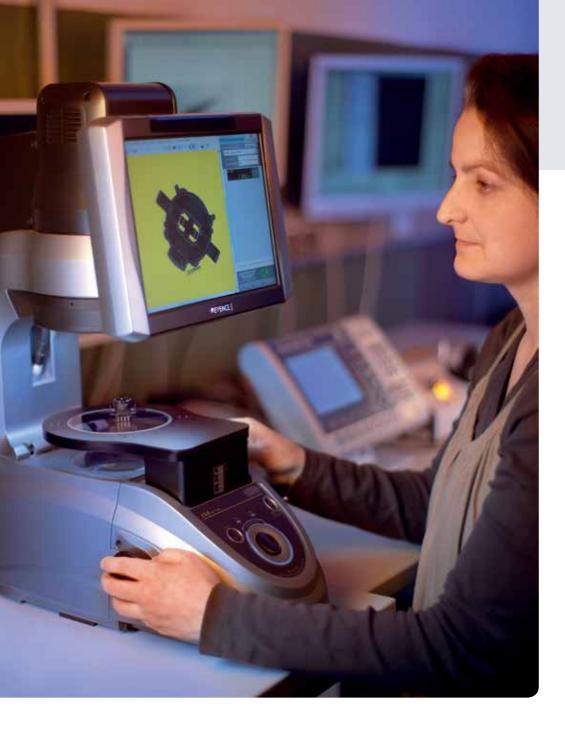
## »STOCKO Quality«

Quality is our highest premise. For it is the best argument for customers' satisfaction and a solid position in a hard fought market. This quality approach at STOCKO does not simply begin at the manufacturing stage.

From the first initial contact, we wish our customers to know they are in safe hands and can rely on this also during the planning and development stages: with an application oriented design, the uncompromising selection of the most suitable materials, and strict observation of the customers' requirements profile. International standards can only act as guidelines for us. We exceed their demands by setting our own additional standards: with our own designed testing programs, in-house laboratories, a continued striving for optimal organisational processes during all phases and a close exchange of experiences and know-how with our customers and users.

In addition to this, our quality offensive goes even further in that our environmental responsibilities are firmly imbedded in our manufacturing processes. Right from the development stage of our products, we aim for the conscientious use of our raw material resources. All our plastics and metal materials are recyclable and our state-of-the-art production processes completely eliminate the use of chlorinated hydrocarbons and chlorofluorocarbons. Moreover and to avoid waste, STOCKO are using re-usable packaging systems such as blister packs, reels, and magazines.





» Preserving our environment and natural resources for future generations is an integral part of the company policy and is enshrined in the management principles of STOCKO CONTACT.«



For the sake of the environment.

## » STOCKO Quality «

#### DIN EN ISO 9001 and ISO / IATF 16949

Having been awarded certification to ISO 9001, we have received approval that a quality management system is in operation throughout all areas of activity that assures a uniform high level of quality. Likewise, this is also the basis for specification ISO/TS 16949. This certification is a prerequisite to qualify as supplier to the automotive industry. It acknowledges that the company has set up special procedures in all areas of activity and, therefore, complies with customers' specific demands in the automotive sector. Thus and in the long-term, STOCKO increase the efficiency and safety for their customers and themselves.

#### **DIN EN ISO 14001**

In recent years we have with great commitment incorporated numerous improvement processes into our company environmental policy and constantly expanded them. Since 2011 our factory in Andlau has met the strict requirements of environmental management standard ISO 14001 and since 2012 our factory in Hellenthal has done so too. By doing so, we commit ourselves to a far greater extent than normal to the voluntary reduction of environmental risks such as waste, waste water and emissions. We are constantly planning, implementing and monitoring our goals in this regard. For us they are a major factor in our value system.

#### **DIN EN ISO 50001**

It has long been one of our corporate goals to keep increasing the energy efficiency in our plants while at the same time reducing energy consumption as well as CO2 emissions.

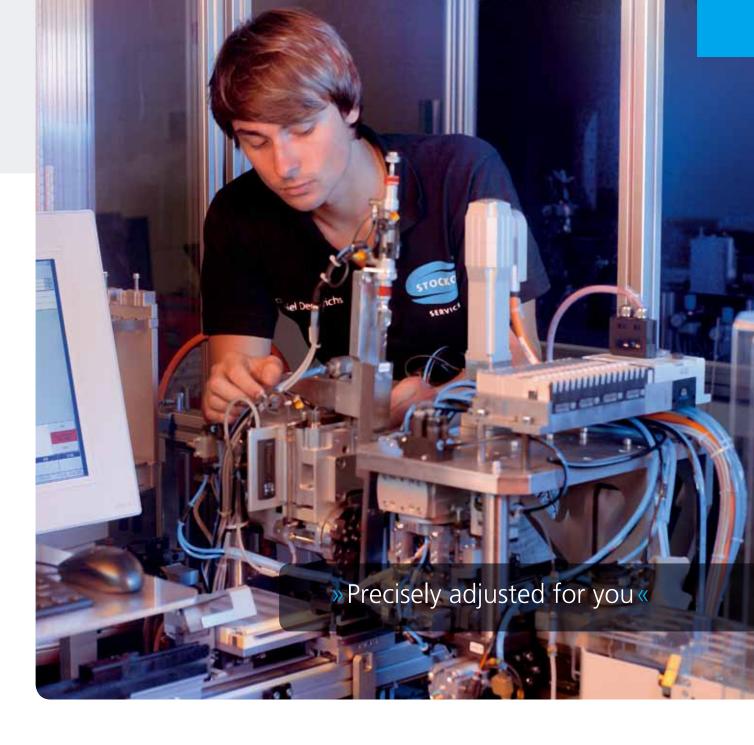
For sustainable control and optimisation, STOCKO has developed an intelligent energy management system with which we can precisely detect any energy losses and initiate countermeasures at an early stage. ISO 50001 certification for this is for us the worthwhile supplement to ISO 14001. Whereas there energy is only a partial aspect, the focus in ISO 50001 lies on the energy efficiency of a company. With our energy management system we are, in the best-case scenario, even going beyond the strict requirements of this ISO because we can among other things increase our efficiency even without increasing our energy consumption.



## » Service «

Service and close proximity with our customers has always been a top priority and form an integral part of the STOCKO philosophy. Of course, to discuss with our customers their specific requirements and to meet their expectations in the best possible way is part of our flexibility. We wish to offer our customers superior performance characteristics and to support them in their business activities by anticipating future requirements. Our customers shall be able to rely upon us so that they become true partners eventually. Partners, who we can assist with our know-how and comprehensive knowledge of the markets. Particularly our sales engineers and our service engineers carry this part of our philosophy outside. Moreover, an extensive network of subsidiaries, sales offices, and agencies around the world assist in bringing this principle close to our customers wherever they are. This network will be expanded still further during the next few years so that our customers can benefit from close on-site support even more efficiently. And should one of our customers ever ask if we are the right partners then something must have gone wrong from our part.









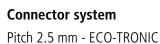
## »Our Markets«

Developments in the electro-technical market are short-lived and permanently exposed to innovative pressures; again and again the limits are newly defined. How gratifying, there is a safe constancy on which one can rely. STOCKO offer such constancy. Our name stands synonymous for connector systems in crimp and ID form, crimp contacts, solderless terminals, and special parts. Millions of all these elements perform their tasks unnoticed and reliably day in, day out. STOCKO components ensure secure and advanced connections and progress in a wide range of industries and areas of application. A range as wide as household appliances, the heating industry, automotives, industrial and entertainment electronics, control equipment and machine building, as well as the sectors multi-media and telecommunication. Maintaining the well-proven STOCKO quality, we are continuously upgrading the performance of our products to changing market conditions enabling us to set standards for customers of the highest levels of expectation.

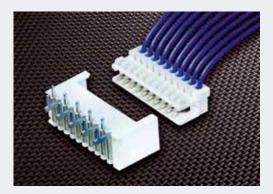
## »Our Products«

- · Connector systems in insulation displacement, crimp or solder form
- · Crimp contacts
- Solderless terminals
- · Customers' special products
- · Terminating systems for all STOCKO products: hand tools, semi-automated and fully automated machines.









## IDC housings

- Direct and indirect connectors with IDC termination in accordance with the RAST 2.5 standard specification for domestic appliances
- Closed cable entries ensure long air and creepage distances
- Trimming polarizing pegs to individual requirements produces a large number of clearly defined connector combinations
- With direct edge versions, polarizing and locking feature for PCB

#### **Pin connectors**

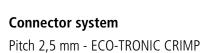
- In vertical and horizontal versions facilitate 90° and 180° cable angles
- SMT version for vertical PC board assembly

#### Pin connector panel mount

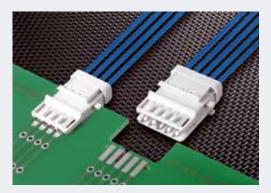
- Pin connector with IDC termination for entry through back panel
- Lockable in metal thickness 0.8  $\pm$  0.1 mm

Mechanical	Pitch Positions Termination Wire size Insulation Ø Hardness of insulation Type of wire Temperature range Board thickness	2.5 mm 2 - 20 IDC 0.12-0.14mm <sup>2</sup> / 0.22 - 0.35 mm <sup>2</sup> max. 1.6 mm Shore A 90° ± 5 solid, stranded -40°C+ 120°C 1.55 ± 0.19 mm
Electrical	Rated current Rated voltage	2 A Pitch 2.5 mm: 32 V Pitch 5 mm: 250 V
	Dielectric strength	Fully assembled 2.5 mm: 1.4 kV Partially assembled 5 mm: 2.8 kV
	Insulation resistance	> 10 <sup>9</sup> Ω
	Contact resistance	$<$ 10 m $\Omega$
	Air gap and creeping distances	Pitch 2.5 mm: > 1 mm Pitch 5 mm: > 3 mm
	Creeping strength	$CTI \ge 400$
	Approved by	DIN EN 61984 (IEC 61984) UL / ULC E96569
Materials	Contact	Socket: CuSn, Cu-alloy Pin: CuZn
	Contact finishing	Socket: Sn, NiAu Pin: Sn
	Housing	PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1
	SMT pin connector	PA, glow wire resistant, GWT 750 $^{\circ}\text{C}$ acc. to IEC 60335-1
	Colour of housing	natural, SMT pin connector black
	Polarizing	to RAST 2.5









## Crimp housings

- Direct and indirect connectors with crimp termination
- Codings in accordance with the RAST 2.5 standard specification for domestic appliances
- Closed cable entries ensure long air and creepage distances
- Trimming polarizing pegs to individual requirements produces a large number of clearly defined connector combinations
- With direct edge versions, polarizing and locking feature for PCB
- Primary and secondary lock

#### Pin connectors

- In vertical and horizontal versions facilitate 90° and 180° cable angles
- SMT version for vertical PC board assembly

#### Pin connector panel mount

- Compatible with pin connector of ECO-TRONIC with IDC termination
- Lockable in metal thickness  $0.8 \pm 0.1$  mm

Mechanical	Pitch	2.5 mm
	Positions	2 – 12 (up to 20 on request)
	Termination	crimp technology
	Wire size	0.22 and 0.35 mm <sup>2</sup>
	Insulation Ø	max. 1.4 mm
	Hardness of insulation	Shore A 90° $\pm$ 5
	Type of wire	stranded
	Temperature range	-40 °C+ 120 °C (Sn)
	Board thickness	$1.55\pm0.19\text{ mm}$
Electrical	Rated current	2 A
	Rated voltage	Pitch 2.5 mm: 32 V
		Pitch 5 mm: 250 V
	Dielectrical strength	Fully assembled 2.5 mm: 1.4 kV Partially assembled 5 mm: 2.8 kV
	Insulation resistance	> 10 <sup>9</sup> Ω
	Contact resistance	< 10 m Ω
	Air gap and creeping distances	Pitch 2.5 mm: > 1 mm
		Pitch 5 mm: > 3 mm
	Creeping strength	$CTI \ge 400$
	Approved by	according to VW 60330
		LV 214, USCAR 2 (on preparation)
Materials	Contact Socket:	CuSn, Cu-alloy
	Contact finishing	Sn, NiAu
	Housing	PA, glow wire resistant,
		GWT 750°C acc. to IEC 60335-1
	Colour of housing	natural
	Polarizing	to RAST 2.5



**Connector system** Pitch 2.5 mm - RFK 2





## Description of system

## Socket connectors

- Crimp version for indirect connections, wire range 0.12 0.5  $\mbox{mm}^2$
- IDC version for direct and indirect connections, wire range 0.14 0.25 mm<sup>2</sup>
- Suitable for terminating ribbon cables and discrete wires

### Pin connectors

- With or without snap-in locking device, for vertical or horizontal connections
- The tandem pin connectors can be used as flying lead connection

Mechanical	Pitch Positions Termination Temperature range	2.5 mm up to 20 IDC, crimp, soldering -40 °C + 115 °C
Electrical	Rated current Insulation resistance Contact resistance Test voltage Rated voltage Approved by	5 A / 30 °C 2.5 A / 70 °C >10 <sup>9</sup> Ω <10 m Ω ≥ 1 kV 32 V UL E96569
Materials	Housing Contact Finishing	PC, glow wire resistant, GWT 750 °C acc. to IEC 60335-1 CuSn Sn





## **Connector system**

Pitch 2.54 mm - S-GRID 2.54





## Description of system

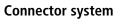
- Suitable for the connection to HVAC periphery
  devices a g stanning/same maters or linear actu
- devices, e. g. stepping/servo motors or linear actuators
- Housing variants
  - In-line 3-positions or
- dual-line 6-positions
- Three different coding variants
- Crimped wires are insertable from the rear
- Cable exit 180°

## SMD Socket Connector

- 4 to 80 poles socket connector doublerow
- Board to board connection (bottom entry) with 0.64 x 0.64 mm pins
- Surface Mount Technology
- Contact area flash gold, soldering area tin plated

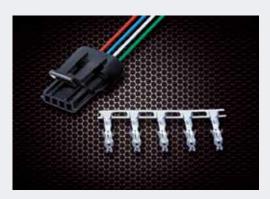
		Housing	SMD Socket connector
Mechanical	Positions Pitch Termination Wire size	3 / 6 2.54 mm Crimp 0.14 - 0.34 mm <sup>2</sup> AWG 26-22	4-80 2.54 mm SMD soldering
	Temperature range	- 20 °C + 110 °C	- 40 °C + 105 °C
Electrical	Rated current	max. 3 A at T <sub>amb</sub> 80 °C	max. 1 A at T <sub>amb</sub> 95 °C (max. 3 A at T <sub>amb</sub> 47 °C)
	Rated voltage	250 V	250 V
	Dielectrical strength	$\geq$ 2.5 kV	≥ 1.39 kV
	Insulation resistance	$> 10^9 \Omega$	> 10 <sup>9</sup> Ω
	Contact resistance	$<$ 10 m $\Omega$	< 40 m Ω
	Air gap	1.5 mm	1.5 mm
	Creeping distances	1.8 mm	≥ 1.25 mm
	Creeping strength	CTI ≥ 425	CTI ≥ 600
Materials	Housing	PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1	PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1
	Colour of housing	various colors	black
	Associated contact	RVB 8231.001 Z 0.64-0.35	
	Contact	CuSn	CuSn
	Contact finishing	Sn	Contact area: gold flash, Soldering area: Sn





Pitch 3.5 mm - HLK 3500



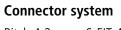


## Description of system

- Suitable for the connection to HVAC periphery devices, e. g. stepping/servo motors or linear actuators
- Pitch 3.5 mm
- Pluggable connector with external locking feature
- Crimped wires are from the rear insertable
- Cable exit 180°
- Remarks with or without seal
- With seal IP 44
- Clear positioning

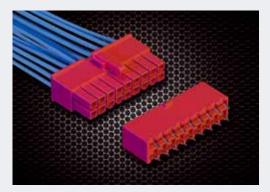
Mechanical	Positions Pitch Termination Temperature range Wire size	4 3.5 mm Crimp -40 °C +120 °C 0.12 - 0.5 mm <sup>2</sup>
Electrical	Rated current Rated voltage Insulation resistance Contact resistance	max. 5 A 250 V > 10 <sup>9</sup> Ω < 10 m Ω
Materials	Housing Colour of housing Associated contact Contact Contact finishing	PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1 black RFB 7808 V 0.6-0.5 CuSn Sn





Pitch 4.2 mm - S-FIT 4.20





## Description of system

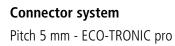
- Universal connector system for internal equipment wiring
- Applicable as flying lead coupling, for panel mounting or for printed circuit board contacting
- Available in a range of versions and materials
- Crimp contacts are touch-protected into the housing located
  Cable exit 180°

## Technical data

Mechanical	Positions	Single-row Dual-row	2 - 6 2 - 24
	Pitch		4.20 mm
	Termination	Connector, Counter part Headers	Crimp Solder
	Wire size		0.22 - 0.48 mm² / AWG 24-22 0.50 - 1.00 mm² / AWG 20-18
	Degree of pollution		II
	Temperature range		-40 °C +110 °C
Electrical	Rated current		7 A
	Rated voltage		250 V
	Insulation resistance		> 10 <sup>9</sup> Ω
	Contact resistance		< 10 m Ω
	Air gap and creeping di	stances	$\geq$ 3 mm
	Creeping strength		$CTI \ge 325*$
	Surge category		II
	Insulation group		III a*
	Dielectric strength		3 kV
	Approved by		UL / ULC E96569
Materials	Housing		PA
			PA, glow wire resistant,
			GWT 750 °C acc. to IEC 60335-1
	Colour of housing		natural, other colours on request
	Contact		CuZn
	Contact		CULII

\* Depending on material









## IDC housings

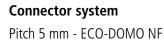
- Direct and indirect connectors with IDC termination in according to the RAST 2.5 standard specification for domestic appliances
- Closed cable entries ensure long air and creepage distances
- Trimming polarizing pegs to individual requirements produces a large number of clearly defined connector combinations
- With direct edge versions, polarizing and locking feature for PCB

#### Pin connectors

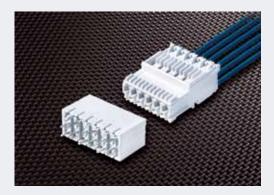
• Versions for vertical or horizontal PC board assembly

Mechanical	Pitch Positions Termination Wire size Insulation Ø Hardness of insulation Type of wire Temperature range Board thickness	5 mm 2 - 10 IDC 0.35 - 0.75 mm <sup>2</sup> max. 2.4 mm Shore A 90° ± 5 stranded -40 °C+ 120 °C 1.55 ± 0.19 mm
Electrical	Rated current Rated voltage Dielectric strength Insulation resistance Contact resistance Air gap and creeping distances Creeping strength Approved by	Direct connector 6 A Indirect connector 10 A / 2 - 4 way 250 V 2.8 kV > $10^9 \Omega$ < 10 m $\Omega$ > 3.2 mm CTI ≥ 400 DIN EN 61984 (IEC 61984) UL / ULC E96569
Materials	Contact Contact finishing Housing Colour of housing Polarizing	Socket: CuSn Cu-alloy Pin: CuZn Socket: Sn Pin: Sn PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1 natural to RAST 2.5









## IDC housings

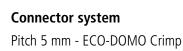
- Direct and indirect connector with IDC termination in accordance with the RAST 5 standard specifications for domestic appliances, with locking features inside or outside
- Direct connector with central polarizing and polarizing pegs at sides, locking features for PCB
- Cable exit 90° and 180° according to RAST 5

#### Tab connectors

 Versions for vertical or horizontal PC board assembly see series ECO-FLEX M

Mechanical	Pitch		5 mm
	Positions	Direct connector Indirect connector	2 - 12 1 - 12
	Locking features	Direct connector	PCB inside and outside
	Termination		IDC
	Wire size	Direct connector Indirect connector	0.5 - 0.75 mm² 0.35 - 1.5 mm²
	Insulation diameter		3.0 mm
	Cable exit 180°		max. $\leq$ 2.4 mm
	Type of wire		stranded
	Temperature range		- 40 °C+ 110 °C
Electrical	Rated current	Direct connector	6 A
	Deterline to a	Indirect connector	16 A 250 V
	Rated voltage Delectrical strength		> 3.0 kV
	Insulation resistance		$\geq 10^9 \Omega$
	Contact resistance		< 5 m Ω
	Air gap		> 3 mm
	Creeping distance		≥ 3.6 mm
	Creeping strength		CTI > 400
	Approved by		DIN EN 61984 (IEC 61984)
			UL / ULC E96569
Materials	Contakt		Socket: CuSn
	Contact finishing		Socket: Sn
	Housing		PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1
	Colour of housing		natural









EH 688

## Description of system Housings

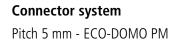
- Housing with crimp connection
- Dimensions of housing in accordance with RAST 5 standard specification for domestic appliance
- Different polarizing features
- Indirect connector with inside locking device
- Cable exit 90° / 180°

#### Technical data



Mechanical	Pitch Positions	EH 699 EH 688 EH 788	5 mm 2 – 5 1 – 8 2 – 6
	Locking features		inside 6.3 FSH
	Termination Wire size Insulation-Ø		Crimp technology 0.5 – 1.5 mm <sup>2</sup> max. 3.3 mm
	Temperature range	EH 688 / EH 699 EH 788	-40 °C +120 °C -40 °C +135 / 140 °C
Electrical	Rated current Rated voltage Dielectrical strength Air gap Creeping distance Approved by	EH 688 / EH 699 EH 688 EH 699 EH 788	16 A 250 / 400 V ≥ 3.0 kV ≥ 3 mm ≥ 3 mm DIN EN 61984 (IEC 61984) UL / ULC E96569 UL E306640 UL E306845
Materials	Housing Colour of housing		PA, glow wire resistant, GWT 750°C acc. to IEC 60335-1 natural other colours on request







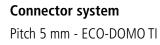


#### Tab connector

- For flying lead or panel mounting
- Dimensions of housing in accordance with RAST 5 standard specification for domestic appliance
- Mating connector for series ECO-DOMO NF and ECO-DOMO Crimp
- The connection is made on 6.3 x 0.8 mm tab
- Different codings

Mechanical	Pitch Positions Temperature range	5 mm 2 - 10 -40 °C +130 °C
Electrical	Rated current Rated voltage Tabs	max. 16 A max. 400 V 6.3 x 0.8 mm
Materials	Housing Contact	PA, glow wire resistant, GWT 750°C acc. to IEC 60335-1 CuZn, Sn





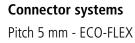




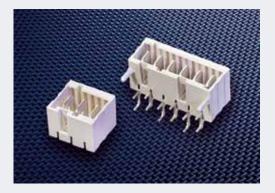
- Tab connector for IDC termination as flying lead coupling or for panel mounting application
- Versions with / without back panel clips
- Cable exits 90°, 180° (optional 270°)
- Single and / or twin terminations depending on wire size
- Codings in accordance with the RAST 5 standard specifications for domestic appliance
- Label optional

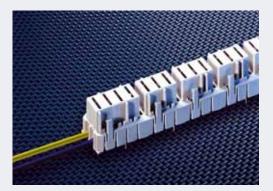
Mechanical	Pitch Positions Termination Wire size Insulation diameter Type of wire Temperature range	5 mm 2 - 10 IDC 0.5 - 0.75 mm <sup>2</sup> / 0.5 + 0.5 mm <sup>2</sup> 2.3 mm stranded wire - 40 °C+ 110 °C
Electrical	Rated current Rated voltage Dielectrical strength Creeping strength Air gap and creeping distance Insulation resistance Contact resistance Approved by	10 A 250 V 2,5 kV CTI ≥ 400 ≥ 4 mm > 10 <sup>9</sup> Ω < 10 m Ω DIN EN 61984 (IEC 61984)
Materials	Contact Contact material Contact finishing Housings Colour of housing	tabs 6.3 x 0.8 mm CuSn Sn PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1 natural











#### Variants

ECO-FLEX M Tab connector ECO-FLEX ML Tab connector with bridging contacts ECO-FLEX BL Socket connector with bridging contacts ECO-FLEX MBL Connectors in tab/socket combinations with bridging contacts ECO-FLEX SMT Tab connector SMT

#### Description of system

- Connector system allowing individual, free contact combinations in accordance with the RAST 5 - standard specification for domestic appliances
- SMT version for vertical PC board assembly
- Versions for vertical or horizontal PC board assembly
- For dual-in-line or in-line hole patterns
- Individual polarizing and positioning possible
- Clear grouping of connecting positions using movable inserts or empty spaces
- Neutral and/or grounded bridging contacts
- Polarizing pegs optional
- Advancing tab contacts as grounded conductor optional

#### Mating connectors

- Suitable for RAST 5 indirect connectors in screw, crimp, or IDC technology
- 8105B / 8105FU (screw type)
- EH 688 / EH 699 (crimp type)
- ECO-DOMO NF (IDC type)

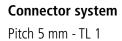
#### Technical data



Mechanical	Pitch Positions		5 mm
	<ul> <li>ECO-FLEX M</li> <li>ECO-FLEX ML, B</li> </ul>	without inserts with inserts	2 - 12 2 - 20
	with inserts or en Pitch Termination Temperature range		2 - 30* 7.5 mm, 10 mm soldering 40 °C +120 °C
Electrical	Rated current Rated voltage Approved		<ul> <li>Tab contacts 16 A</li> <li>Socket contacts 10 A</li> <li>Bridging contacts over IDC 10 A</li> <li>250 V</li> <li>DIN EN 61984 (IEC 61984)</li> <li>UL/ULC E96569 (only series MS 941x)</li> </ul>
Materials	Housings		PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1
	Colour Contacts Tabs Contact materials Contact surface	housing Tab connector SMT	natural black 6.3 x 0.8 mm CuZn / CuSn Sn

\* depending on number of inserts or empty spaces, higher pole versions on request









## IDC housings

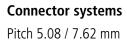
- Direct and indirect connectors with IDC termination
- The leaf spring contacts ensure trouble-free connections even in large multi-way systems
- Suitable for termination with hand tools, or on semi automated machines

#### Pin connectors

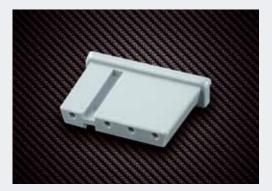
• Versions for vertical or horizontal PC board assembly

Mechanical	Pitch Positions Termination Wire size Insulation Ø Hardness of insulation Type of wire Temperature range Board thickness	5 mm 2 - 12 IDC 0.5 / 0.75 mm <sup>2</sup> max. 2.5 mm Shore A 90° ± 5 solid, stranded -40 °C + 110 °C 1.6 ± 0,14 mm
Electrical	Rated current Dielectric strength Insulation resistance Contact resistance Air gap and creeping distance Creeping strength Rated voltage Approved by	6 A > 3.0 kV > 10 <sup>9</sup> Ω < 5 m Ω > 3 mm CTI $\ge$ 250 250 V DIN EN 61984 (IEC 61984) UL / ULC E96569
Materials	Contact Contact finishing Housing Colour of housing	Socket: CuSn - Pin: CuZn Socket: Sn - Pin: Sn PBT natural









## Series MKH 2800, for pin connectors series MKS 2820

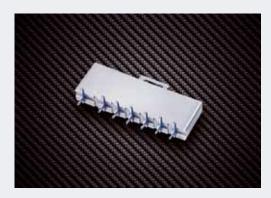
## Technical data

Mechanical	Pitch Positions Termination Temperature range Wire size crimp contact	5.08 / 7.62 mm 1-8 / 11 crimp -40 °C+100 °C, PBT: +125 °C 0.22-1 mm <sup>2</sup>
Electrical	Max. current load per contact Rated current Rated voltage Insulation resistance Contact resistance	4 A 3 A 250 V > $10^{9} \Omega$ < 10 m Ω
Materials	Housings Crimp contact	PC, 2-way: PBT RFB 7851 CuSn tin plated



#### Series MKS 2820, vertical, for socket connectors series MKF 2800

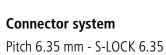
Technical data		
Mechanical	Pitch Positions Termination Temperature range	5.08 / 7.62 mm 2-8 / 11 soldering -40 °C+100 °C, PBT: +125 °C
Electrical	Max. current load per contact Rated current Rated voltage Insulation resistance Contact resistance	4 A 3 A 250 V > 10 $^{\circ}$ Ω < 10 m Ω
Materials	Contact Contact finishing Housings	CuZn Sn PC, 2-way: PBT

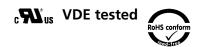


#### Series MKS 2820, horizontal, for socket connectors series MKF 2800

Mechanical	Pitch Positions Termination Temperature range	5.08 / 7.62 mm 2-8 / 11 soldering -40 °C+100 °C PBT: +125 °C
Electrical	Max. current load per contact Rated current Rated voltage Insulation resistance Contact resistance	4 A 3 A 250 V > $10^{9} \Omega$ < 10 m Ω
Materials	Contact Contact finishing Housings	CuZn Sn PC, 2-way: PBT









- Universal connector system for white goods, industrial electronics and commercial building equipment appliances.
- Application as flying lead assemblies, panel mounting and for PCB connections.
- Pitch 6.35 mm
- 2 to 15 positions with crimp contacts and locking feature outside
- Suitable for power connections up to 16 A
- Headers pre-loaded for PCB assembly
- Cable exit 180°
- Coding via contact types
- Clear positioning

#### Technical data

Mechanical	Pitch	6.35 mm	
	Positions	In-line	2 - 5
		Multi-row	6 - 15
	Termination	Connector / Counter Part Headers	Crimp Solder
	Wire size	0.34 - 0.82 mm <sup>2</sup> / AWG 22-18 0.75 - 2.03 mm <sup>2</sup> / AWG 18-14	
	Locking feature	ves	
	Degree of pollution	2	
	Temperature range	-40 °C +110 / +120 °C *	
Electrical	Rated current	max. 16 A	
	Rated voltage	400 V	
	Dielectric strength	2.21 kV	
	Insulation resistance	10º Ω	
	Contact resistance	< 10 m Ω	
	Air gap and creeping distances	≥4 mm	
	Creeping strength	CTI 600 / ≥ 300 *	
	Surge category		
	Insulation group	/    a *	h
	Approved by	UL E306640 and UL/ULC E9656 VDE tested	9
Materials	Contact	CuZn, CuSn	
	Contact finishing	Sn	
	Housing	PA	
		PA, glow wire resistant,	
		GWT 750 °C acc. to IEC 60335-	1
	Colour of housing	natural	
	Polarizing	yes	

\* Depending on material





Connector Pitch 6.5 mm – Sensor Plug





# Description

- 2-pole sensor plug
  Pitch 6.5 mm
  Loadable with flag receptacles 4.8 mm RSB 8186
  Cable exit 90°

- Locking capDifferent colours

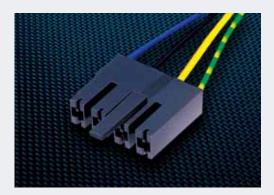
## Technical data

Mechanical	Positions Pitch Termination Wire size Insulation Ø max. Stripping length Locking feature Temperature range	2 6.5 mm Crimp 0.5 - 1.5 mm <sup>2</sup> (AWG 20-16) 2.8 mm 4.5 ± 0.5 mm Locking cap -40 °C +110 °C
Electrical	Rated current Rated voltage Overvoltage category Test voltage Dielectric strength at housing material Insulation group Degree of pollution Creeping strength Air gap Creeping distances Insulation resistance Contact resistance	16 A 250 V III 1.39 kV / 60 s 5 kV III a 3 CTI $\ge$ 325 $\ge$ 1.5 $\ge$ 2.5 $>$ 10 <sup>9</sup> $\Omega$ $<$ 10 m $\Omega$
Materials	Contact material Contact finishing Housing Colour of housing	CuZn Sn PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1 Different colours



**Connector systems** Pitch 8 mm - Series TL 3 HT





# Description of system

This connector range, which consists of housings EH 700/4-2 HT and receptacle RSB 8180.1158, is designed to interconnect with tabs 6.3 x 0.8 mm to DIN spec. 46244. The housings have a connector spacing of 8 mm and are ideally suitable to mate with interconnections of electric kitchen hobs. Temperature range max. 270° C.



Circular Connector MH 2490 / MV 2490





## Description of system

- 1 to 4 poles circular connector
- Round contacts for crimp termination
- Sealed according to IP44
- Two-sided external locking latches
- Possibility of coding
- Single or hose cable
- Cable exit 180°
- Clamping possibility for lateral plate cut out
- Housing rip

### Technical data

Mechanical	Poles Termination Applicable terminals	1 - 4 Crimp
	Socket	RBB 8210
	Pin	RTB 8211
	Split pin, low insertion force	RTB 8212
	Wire size	0.35 - 2.03 mm <sup>2</sup>
	Temperature range	-40 °C + 120 °C
Elektrical	Rated current	16 A
	Rated voltage	250 V
	Dielectrically strength	> 2.21 kV
	Insulation resistance	> 10 <sup>9</sup> Ω
	Contact resistance	$<$ 10 m $\Omega$
	Creeping distance	≥ 2.2 mm
	Creeping strength	$CTI \ge 400$
Materials	Housing	PA, glow wire resistant, GWT 750 °C acc. to IEC 60335-1
	Colour of housing	natural
	Contact material	CuZn or CuSn
	Contact finishing	Sn



**Pin strips** Pitch 2.54 mm





# Versions: vertical, horizontal, single row, double row

# Technical data

Mechanical	Positions	single row 2-40 double row 4-80
	Termination	soldering
	Temperature range	-40 °C+100 °C
Electrical	Max. current load per contact	*
	Rated current	*
	Rated voltage	*
	Insulation resistance	*
	Contact resistance	*
Materials	Contact	CuZn
	Contact finishing	Sn
	Housings	PBT
	nousings	

\* Electrical data are dependent on the application. Information is available on request.



# **Insulation housings**





# Single or multi-way housings for receptacles and tabs, available in following versions

- Glow wire resistant, GWT 750 °C acc. to IEC 60335-1
- Flammability class UL 94 V2 or V0
- Natural or in different colours



STOCKO products are fully tested at our laboratories. VDE, UL / ULC and other approvals for the main STOCKO items are regularly updated.

Technical data sheets are available on request.



**Crimp contacts** in bandolier form





# Receptacles for tab width 6.3 mm, in versions self locking, permanently engaged, with low insertion force, as timer contact, inserted into housing, suitable for RAST 5 connector housings

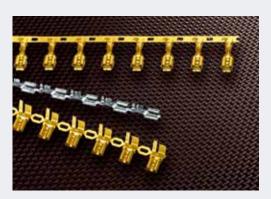
brass, phosphor bronze or steel, other materials on request

- Material:
- Finishing:
- Wire size:
- Tab thickness: 0.8 mm in accordance with DIN or IEC specifications

natural, tin plated or nickel plated

0.2 - 6 mm<sup>2</sup> / AWG 24 - 10

• Temperature range: - 40 °C to +300 °C



# Receptacles for tab width 4.8 mm, in versions self-locking, permanently engaged, with low insertion force, inserted into housing

- Material:Finishing:
- brass, phosphor bronze or steel, other materials on request
- natural, tin plated or nickel plated 0.14 - 2.5 mm² / AWG 26 - 14
- Wire size:
- Tab thickness: 0.5 0.8 mm in accordance with DIN or IEC specifications
- Temperature range: 40 °C to +300 °C



# Receptacles for tab width 2.8 mm, in versions permanently engaged, with low insertion force, as timer contact, inserted into housing

- Material: brass, phosphor bronze or steel, other materials on request
- Finishing: natural, tin plated or nickel plated

0.14 -1.5 mm<sup>2</sup> / AWG 26 -16

- Wire size:
- Tab thickness: 0.5 0.8 mm in accordance with DIN or IEC specifications
- Temperature range: 40 °C to +300 °C

STOCKO products are fully tested at our laboratories. VDE, UL / ULC and other approvals for the main STOCKO items are regularly updated.

Technical data sheets are available on request.









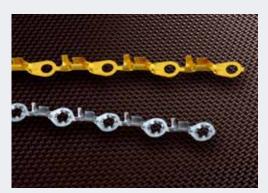
### Tabs 2.8 / 4.8 or 6.3 mm wide for STOCKO receptacles

- For crimping
- For PC Board assembly
- Weld tabs



### End splices with or without insulation crimp

- For longitudinal or transverse transport
- For stranded or enamel wires
- Wire size: 0.2 16 mm<sup>2</sup> / AWG 24 6



### Open barrel terminals in ring or c-type version, with or without insulation crimp

- Drill hole diameter: 2.3 10 mm
- Wire size: 0.25 20 mm<sup>2</sup> / AWG 22 4

Complementary to our product range "Crimp Contacts", STOCKO offers

- Circular sockets
- Circular pins
- PC board contacts
- Miscellaneous special types

STOCKO products are fully tested at our laboratories. VDE, UL / ULC and other approvals for the main STOCKO items are regularly updated.

Technical data sheets are available on reques





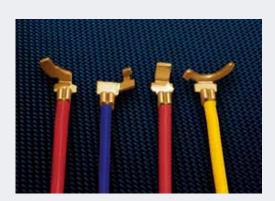
Standard program and custom design solutions



Spark plug connectors



Spark plug connectors



Ignition lock



Scrubber bracket





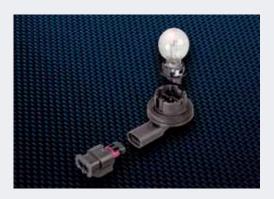
Examples for custom design solutions



# NCC Plug-in

Bulb holder HiperVision New Cap Concept i. a. for turn indicator or daytime running light

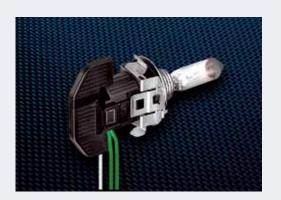
- crimp acc. to VW 60330
- unsealed
- plug-in-Interface
- various hand grips and covers are available



# NCC Bajonet

Bulb holder HiperVision New Cap Concept i. a. for turn indicator or fog lamp

- connector socket
- sealed
- bayonet-Interface



#### H7

Bulb holder for headlight H7 Different contours and grips



# BL

Bulb holder for turn indicator and parklight Customized parts on request





Examples for custom design solutions



### **Stamping Parts**

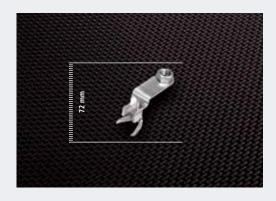
# Precision in big dimension

We have transferred our well-known and usual high precision in the fine blanking range also to big stamping parts. By request, we develop, validate and produce stamping/bending parts with smallest shape and position tolerances, e.g. with regard to solderless terminals and current bridges, in order to meet at any time the increasing precision and quality requirements in the automotive sector.

#### Features

- Press capacity up to 160 tons
- Sheet thicknesses up to 5 mm
- Band widths up to 300 mm
- Part size up to 120 x 250 mm
- Copper metals, aluminium and steels







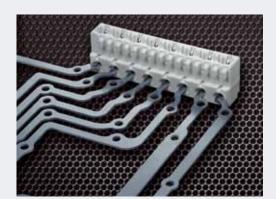


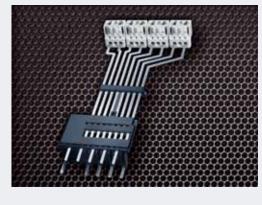
Automotive Examples for custom design solutions

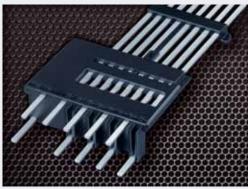


# **Customer-Specific Clinch Frames**

- Direct-Connector as an option
- With or without overmoulding
- Contour-forming, also 3D
- Part size up to 120 x 250 mm
- Full-, selective-, or special-finishing
- Various metals and plastics, standard to high temperature



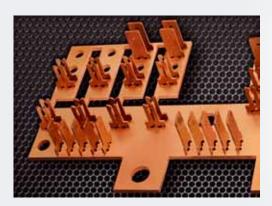








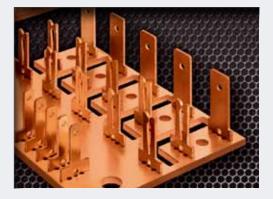
Examples for custom design solutions



# Busbar

- Sheet thickness up to 5 mm
- Part size up to 120 x 250 mm
- With or without overmoulding
- Usage: Fuse Box
   Power distribution
- Customer specific applicationsCombinable with fuse- and
- relay-contacts
- Specific materials and surfaces







# Examples for custom design solutions



Ring terminals with assembled nut



## Loudspeaker module

Centre disc and contact unit for miniature loudspeakers 13 mm dia.

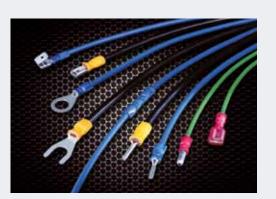
# Application Mobile telephones



# Charge contacts for battery shavers



# Solderless terminals



- Solderless terminals with and without insulation
- Pin terminals
- Parallel splices
- Butt splices
- Receptacles
- Tabs
- Terminal blocks
- Circular terminals and blocks
- End splices
- Insulation housings
- Terminating technology:
   Cable stripper, hand tools, electrical and hydraulic crimping tools







# Terminating technology



The quality and reliability of an electrical connection depend largely on the terminating technology.

Consequently, STOCKO offers an economical and efficient terminating technique for every product.

Whatever the particular requirements and production quantities are, we offer state-of-the art tools and machinery.

From a simple hand tool to semi-automated machines and to fully automated machines of modular construction incorporating "Just-in-Time" functions, Computer controlled machine operation, automated quality control, modem connection for remote diagnostics, and the option to program sequences in cableform output.

With the object in mind improving our customers' productivity through optimum production rationalization.

A qualified STOCKO team of service engineers is always at your disposal for advice and practical assistance. In an emergency, they attend to prompt machine maintenance and carry out preventative servicing tasks.







- 1 Service hand tool for IDC connector systems
- 2 STOCKOMAT ECO-DOMO professional line
- Semi-automated terminating machine for connector ECO-DOMO according to RAST 5 specification
- 3 STOCKOMAT CRIMP professional line
- Semi-automatic terminating machine for crimp contacts in bandolier form
- 4 ECO-MASTER
  - Fully automated terminating machine for connector series ECO-TRONIC, ECO-TRONIC pro and crimp contacts.



# **Contact adresses**



Distribution / Distribution

Zweigwerk / Plant Vertretung / Representation Tochtergesellschaft / Subsidiary

SO Vertriebsbüro / Sales Office

#### Germany

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