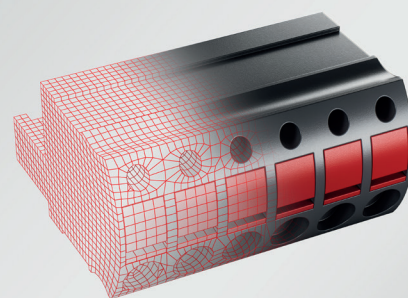
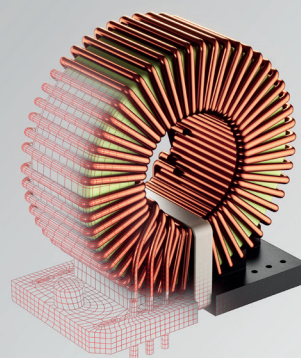
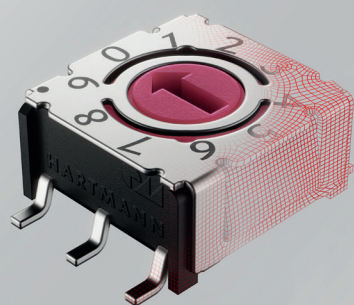




PTR HARTMANN

A Phoenix Mecano Company



**ELECTRICAL
COMPONENTS**

**Creative.
Capable.
International.**



PTR HARTMANN ...

Internationally active company domiciled in Germany –
and linked into Switzerland’s Phoenix Mecano AG.

PTR HARTMANN, with five locations around the globe employing 1,850 persons, achieves sales of some 50 million euros. Together, we develop, produce and market, around the world, high-quality electrical components, always with the aim of supplying our customers, every time, with the best possible solutions for their needs. Our extensive range of products and services, carefully harmonised with each other, covers the most diverse range of applications. Our standard and customised products extend from switches and precision test probes, via inductances and wound components, interface-pin blocks, PCB terminal blocks and PCB multi-connectors up to and including fully integrated connecting systems.

Our leading role on the markets of more than fifty countries is the fruit of a combination of renowned German engineering, top-quality materials, flexibly adaptable production with certified Quality Assurance and high-efficiency logistics. These advantages have for decades made us a reliable partner for the electronics and automotive industries throughout the world.



65

MARKETING/SALESPARTNERS
AND DEPOTS



50

COUNTRIES



1,850

EMPLOYEES GLOBAL

... A PHOENIX MECANO GROUP COMPANY

Switzerland's Phoenix Mecano AG is a globally positioned technology company with a presence in the international growth markets. With our three divisions, DewertOkin Technology Group, Industrial Components and Enclosure Systems (until 2020, as Enclosures, Mechanical Components and ELCOM / EMS), we are the leaders in many of our markets. Important areas of application are mechanical and plant engineering, measurement and control technology, electrical engineering, automotive and railway technology, energy technology, medical technology, aerospace technology and home and hospital care.

VISION

As a global player in the field of technical components and a systems supplier, Phoenix Mecano develops detailed innovative technical solutions with and for its customers. As a specialised partner, we meet our customers' maximum demands for technological sophistication, service, customer orientation and even higher added-value potential.

MISSION

Our success hangs on that of our customers. Close cooperation, constant communication and intensive exchanges of well-targeted ideas are our main precepts. We support our customers as best as we can, making full use of our employees' know-how.

VALUE

Reliability vis-à-vis all interested parties is a prerequisite for credibility. Every day we work on putting these maxims into practice, with the management setting an example by fulfilling a responsible leadership function. Profitability and growth are key requirements for maintaining competitiveness and value added and for creating new jobs both at home and abroad. The sustainability factor is underpinned by our careful use of natural resources and our commitment to corporate responsibility.



687.4

MILLION EUR SALES



48.2

MILLION EUR EBITDA



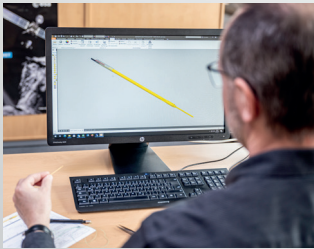
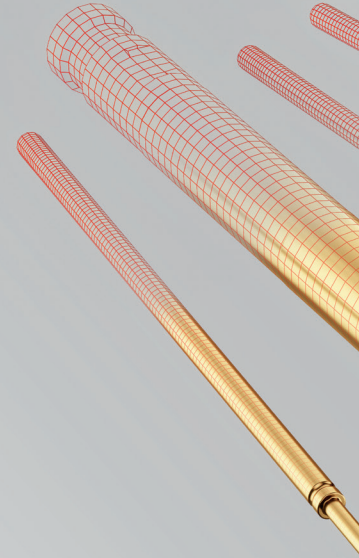
7,426

EMPLOYEES

TESTING TECHNOLOGY

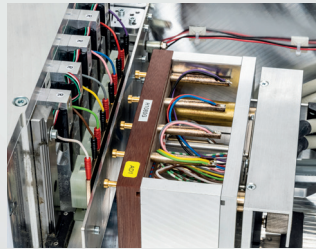
We continuously optimise our range of products with the development and design of test technology for customer-orientated applications.

Our Competence Centre Testing Technology develops test probe solutions for ICT testing, final inspection of cable harnesses and battery testing to assure electromobility. We use our turning shop in Werne for rapid prototyping for testing of new technological solutions, including, for example, small diameters for micro-test probes. The attached laboratory performs the necessary spring-force characteristic curves and heating tests in real time, and also cyclical loading trials for fatigue tests. The know-how of our competence centres for Connection Technology and Plastics Technology is employed in the use of test probes in combination with plastic enclosures.



Development

As a manufacturer of test probes and of battery contacts, we possess within our organisation all the capabilities for the development and production of high-precision standard products and customised solutions.



Test laboratory

Our QA laboratories feature all the facilities and equipment necessary for continuous quality monitoring of our products and for VDE and UL tests. Service-life and climatic tests, inter alia, are also performed in these facilities.



Turning shop

This is where we produce non-plated parts – plungers, enclosures and insulation elements – for test probes, assuring fast flexible completion of prototypes/short runs, and the rapid adoption of new technologies.



Production

Our highly flexible production system specialises in the assembly of complex test probes with maximum quality standards. Not only standard products, but also the production of prototypes and special solutions are also possible.

ICT test probes (E-series)

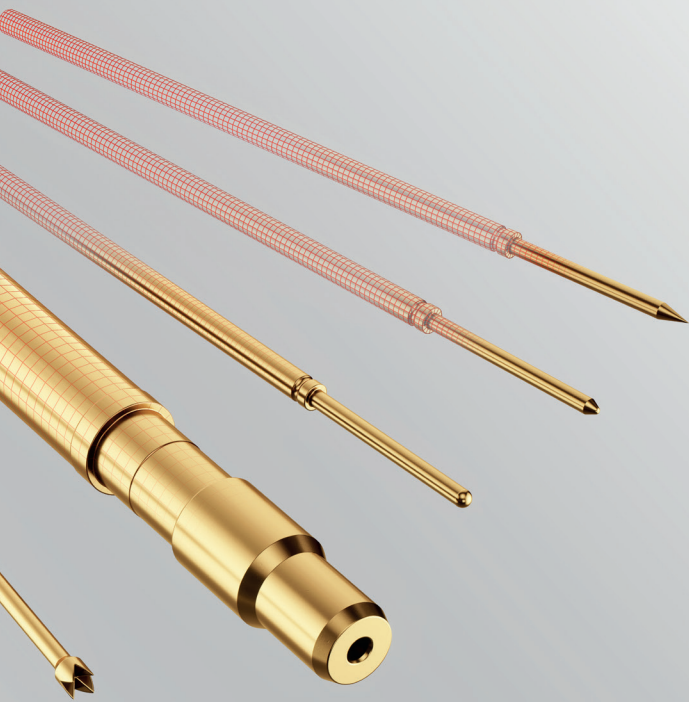
Our range of ICT test probes includes all the widely used series now acknowledged as international standards on the market.

- » Variants from centres of 40 mil (1.00 mm) to 100 mil (2.54 mm)
- » Long-stroke test probes for two-level applications
- » HPL (high-preload) test probes for contact-making of PCBs that have been oxidised or otherwise contaminated with residues after soldering

Cable-testing probes

For the cable-testing sector, we supply a broad range of test probes that meet the needs of all essential applications.

- » Threaded test probes for centres of 50 mil (1.27 mm) to 177 mil (4.5 mm)
- » Plate needles for testing of correct position of sockets in the PCB connectors
- » Switching test probes with thread and quick-change system
- » Non-rotating test probes for accurate-position contact-making
- » Push-back test probes for correct locking of contacts in PCB connectors



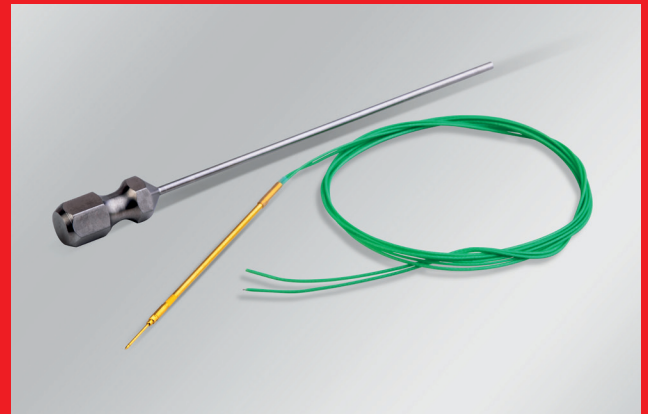
Production facility, Tunisia
The test probes and battery contacts that are needed in large numbers around the world are made in our Tunisian production centre. Core capabilities: Top-quality series production.



Production facility, China
The components for test probes and battery contacts are produced at our CNC centre in China. High-precision automatic lathes produce enclosures and plungers for installation at all of our locations.

Test probes for diverse applications

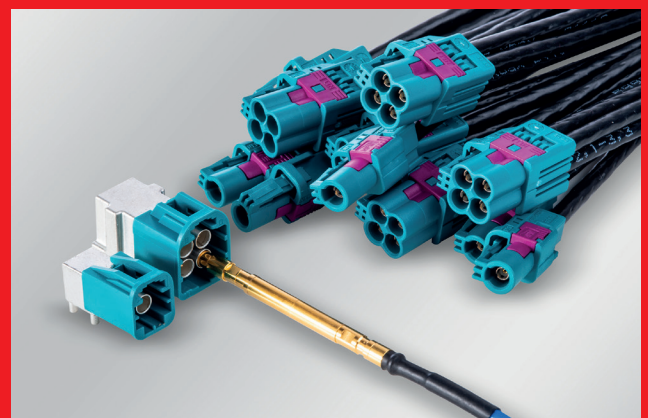
- » High-current test probes, 16 A to 400 A
- » Pneumatic test probes for function testing
- » High-frequency test probes
- » Battery-charging contacts
- » Interface-pin blocks
- » Customised test probes



3037/GW-50MIL switching test probe
Miniaturisation is advancing relentlessly in the field of multi-connectors. Switching test probes are required here to meet special conditions. We have developed the 3037/GW specifically for this application. 50MIL centre and quick-change system, combined with a prewired sleeve (AWG32), assure all the familiar features for this miniature switching test probe.



5455 series high-current test probe
Electromobility is booming. In the automotive sector, in particular, the amount of power electronics installed continues to rise sharply – as is, for this reason, also the demands made on testing technology. Our 5455 high-current test probe carrying up to 400 A is the perfect solution for assuring trouble-free contact-making.

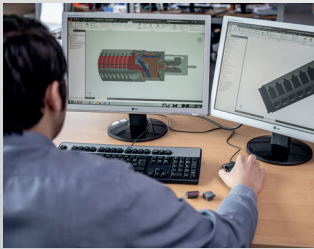
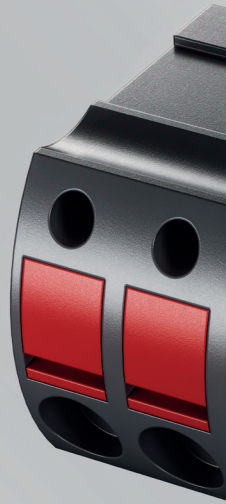


7890 series miniature high-frequency test probes for Mini-Fakra multi-connectors
Designed for the ever more complex high-frequency test and inspection standards encountered in the automotive sector. Driverless travel, driver-assistance systems, navigation and infotainment make maximum demands on test and inspection technology.

CONNECTION TECHNOLOGY

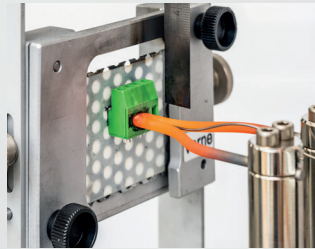
We set standards – with renowned German Engineering, high-quality materials, flexible production systems and clever, sophisticated logistics. Our range is expanding continuously.

The Competence Centre Connection Technology specialises in the development of standard and customised connecting solutions for PCBs and electrical devices. The integration of live contact components in device or socket enclosures has become an essential part of many of our connecting solutions. Our competence centre's expertise includes rational-cost designs for open pins on SMD boards and hybrid solutions for punched and spring contacts. A dedicated test/inspection laboratory is available for inspection of connections to VDE and UL standards. And yet another bonus: prototypes and jigs can be created rapidly, often using 3D printers.



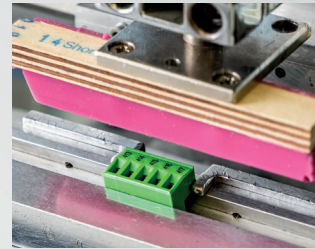
Development

In addition to the design of standard products, our product development team focuses, above all, on customised solutions and cost-saving production potentials.



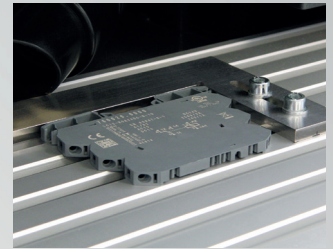
Test laboratory

Connection tests to VDE and UL standards, and tests for determination of combustibility classes, along with numerous other test types, are performed in our own dedicated test/inspection laboratory.



Printing

Two methods are available for individual customised printing of our PCB terminal blocks: ink-jet and pad printing.



Laser labelling

We offer extensive services in the field of laser labelling, in particular: OEM products can be printed to customer requirements, including QR codes, order numbers and customer logos.

Service

Our scope of supply includes special types of PCB terminal blocks and PCB multi-connectors, including, for example, special soldering-pin lengths, a range of colours, partially equipped PCB terminal blocks, and printing/laser labelling. Our range is rounded off by the supply of modules/assemblies, fully equipped PCBs with or without fully finished cables, and PCB terminal blocks and pin strips packed in tape-on-reel systems, tubes or trays.

PCB terminal blocks

- » Screw-type terminal blocks, wire-guard, lift or excenter type
- » Spring terminal block applying the push-in or tension-spring principle

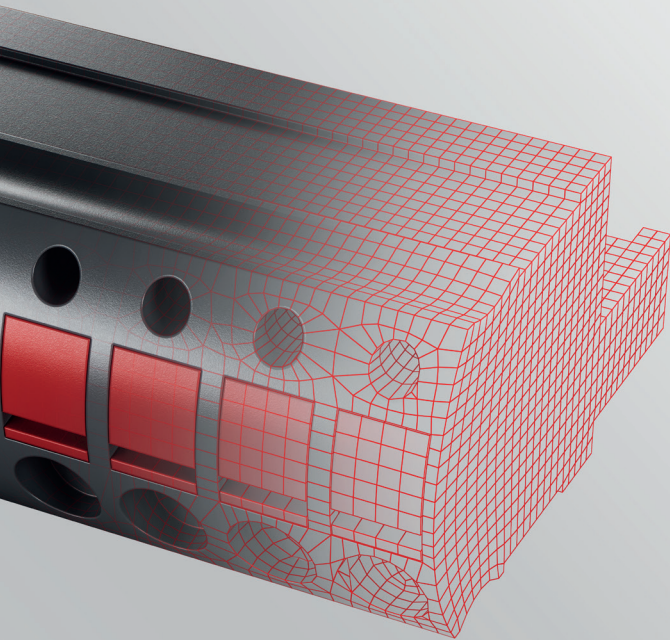
PCB multi-connectors

- » Screw-type terminal blocks, wire-guard, lift or excenter type
- » Spring terminal block applying the push-in or tension-spring principle

Our PCB multi-connector range is rounded off by an extensive selection of accessories, providing our customers with maximum user-satisfaction in connection technology and reliable processing. Together with the pin strips, the PCB multi-connector forms a so-called "multi-connector system". These systems are available in a diverse range of colours.

Pin strips

Our pin strips are available in a range of pin lengths.



Production facility, Tunisia
The components warehouse at our Tunisian production facility is replenished once every week. Finished components are supplied two or three times each week to Germany in return.



Production facility, China
Important feed components for the production of PCB terminal blocks and multi-connectors, such as screws and clamps, are supplied by our production facility in China.

DIN rail terminal blocks

» Optionally with push-in, screw, tension-spring or push-in tension-spring principle

We supply all widely used feed-through terminal blocks, earth terminal blocks, disconnect terminal blocks, fuse terminal blocks, multi-level terminal blocks, installation terminal blocks and initiator terminals up to and including motor-connection, isolating (blade) and direct mounting terminal blocks.



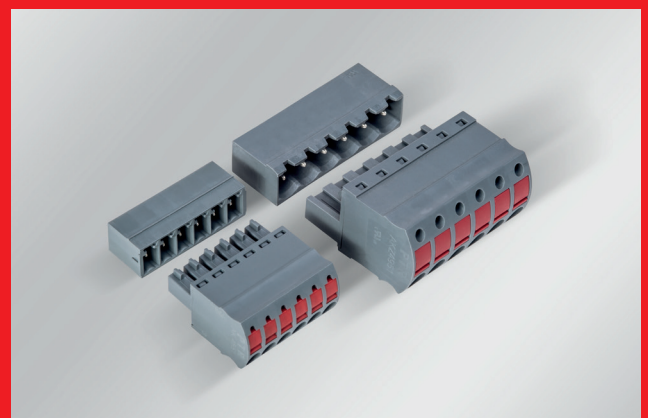
AK4200 PCB terminal block

These universal PCB terminal blocks can be supplied with up to 41 A in horizontal and vertical versions, and in twelve colours. Our injection-moulding production system permits two-colour injection moulding for the manufacture, for example, of "green-yellow marbled" PCB terminal blocks. Individual design in any order of colours can be specified by the customer.



STL190 pin strips

Unique worldwide: We supply SMT-capable pins with Pick&Place pads for automatic equipping – to save space on the underside of the PCB. These pins can be used for connection of four socket-terminal strips or for KNX technology. The pad keeps the pins in position during equipping and reflow-soldering and is then simply and easily detached and disposed of.



AK(Z)4551 and 4951 PCB multi-connector

The design of these PCB multi-connectors, in basalt grey with red actuators, convince users not only with their appearance but also with their optimum handling: recessed handle, test jacks and spring-terminal systems ensure fast and simple production and assembly.

INDUCTORS/WOUND COMPONENTS

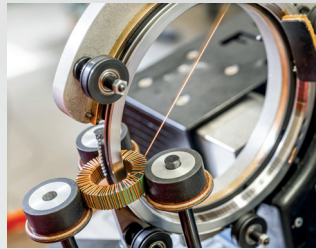
We develop and produce smart, cost-effective solutions for inductances, carefully tailored to our customers' individual requirements.

For more than 50 years, our experts working in the Competence Centre Inductors have been developing inductive components optimally tailored to our customers' technical specifications. The applications for wound components are just as diverse as their component geometries, size and rating classes. Inductors with powdered-iron components, produced in our own facilities, have always been one of our basic products, and can be produced in any number required. An extensive range of company plastic injection-moulding tools and mouldings in plastic permit maximum flexibility, improved supply options and a plus in depth of production.



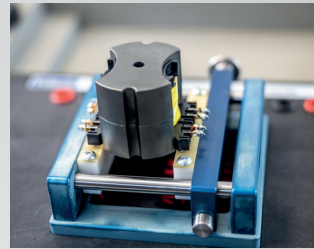
Development

Our engineers and technicians have decades of practical experience working with ultra-modern metrology and test equipment on new projects, optimisation updates and process improvements.



Prototyping

The Prototyping department, linked directly to Development, features the same equipment as our production facilities. Meaning that feasibility studies can be completed in the shortest possible time.



Test laboratory

In our test laboratory, 100 % verification of all electrical parameters is performed using an automated test and inspection system, with measuring adapters matched to component geometry and spacing.



Pressing plant

Various component geometries are produced in the powdered-iron components production section and then insulated using a special UL-certified material.

Power supply units | Power packs

LLC converters, half-bridge converters, common-mode chokes, toroidal chokes, flyback converters, forward converters, push-pull converters, full-bridge converters, storage chokes, PFC chokes, transformers (general), current converters, interference-suppression chokes, toroidal transformers

Industrial electronics | Power electronics

Drive transformers, common-mode chokes, toroidal chokes, flyback converters, storage chokes, PFC chokes, transformers (general), current converters, interference-suppression chokes, pot-core chokes, air coils, high-voltage transformers, toroidal transformers, full-bridge converters

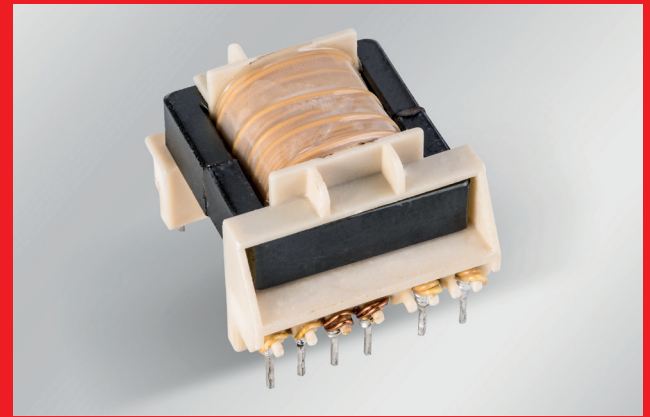
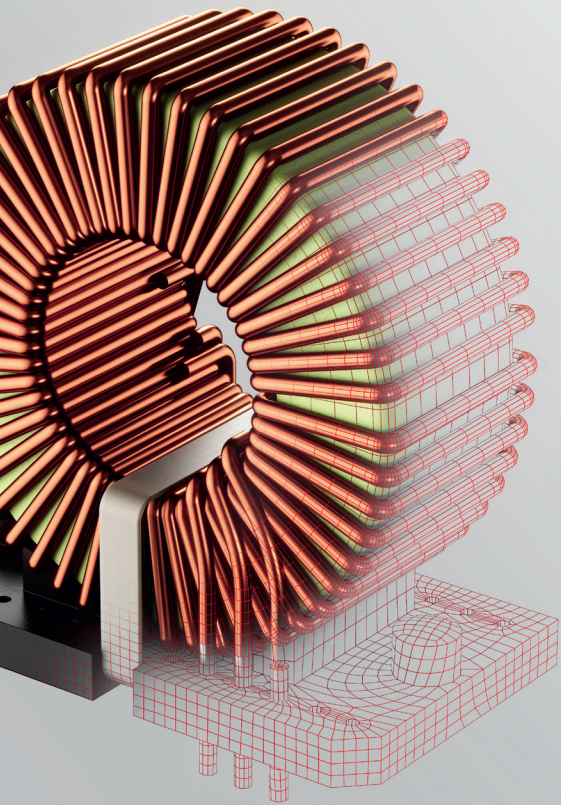
Propulsion technology | Motor-control systems | Frequency converters

Drive transformers, common-mode chokes, toroidal chokes, flyback converters, full-bridge converters, storage chokes, PFC chokes, transformers (general), current converters, interference-suppression chokes, pot-core chokes

Building automation | Lighting systems

LLC converters, half-bridge converters, drive transformers, swinging chokes, common-mode chokes, toroidal chokes, powdered-iron chokes, transformers (general), interference-suppression chokes, toroidal transformers





Switched-mode power supply transformer

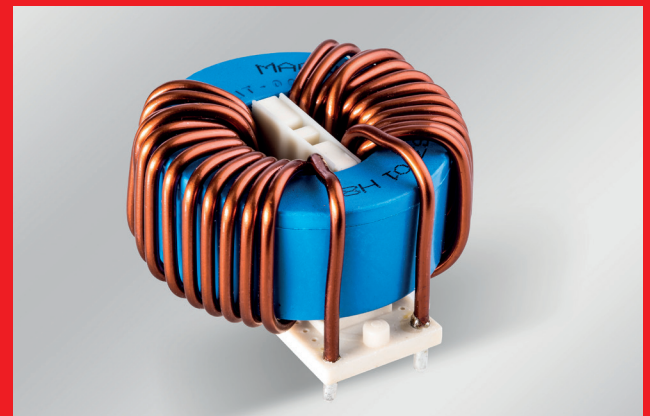
Power transformers with heavier insulation as per DIN EN 61558-2-16 and DIN EN 62368-1. Material selection from our own UL insulation systems, conformant to Classes B or F possible. Bobbin design with extended clearance and creepage distance. Plastic mouldings using our own injection-moulding tools. Selection of granulate to match the particular application requirements possible.



Production facility, Tunisia
A view into wound-component production: the number of necessary working operations, machines and process sequences up to the finished product is familiar to many of our customers who have visited this plant.



Production facility, China
The production of wound components at the location in China is to start in 2021.



Common-mode chokes

For suppression of asymmetrical mains-cable-transmitted interference throughout the field of power electronics. The use of various core materials and geometries is matched to the frequency spectrum and permits a compact design. Types with two, three or four windings possible, depending on application.

Renewable energy | Power inverters | E-mobility

Common-mode chokes, toroidal chokes, flyback converters, storage chokes, PFC chokes, transformers (general), current converters, interference-suppression chokes

Medical technology

Common-mode chokes, toroidal chokes, flyback converters, storage chokes, PFC chokes, transformers (general), current converters, interference-suppression chokes, toroidal transformers

Interference suppression

Common-mode chokes, toroidal chokes, powdered-iron chokes, interference-suppression chokes, mains filters, filter chokes



PFC chokes

Components for storage of energy in PFC circuits as per DIN EN 6100-3-2. Good EMC performance is achieved thanks to low-capacity structure with metal-powder cores. Metal-powder materials are notable in use for a low scatter field and high saturation currents. A large selection of core materials is available, to assure optimum adaptation.

SWITCHES AND PLASTICS TECHNOLOGY

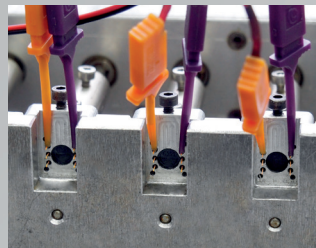
The development and production of switches for PCBs in a range of standard versions and customised variants are important facets of our range.

The Switches Competence Centre concentrates our know-how as a market leader in rotary code switches. A speciality: mechanical switching action in the few tenths of a millimetre range. This enables us to produce rotary code switches and thumb-wheel switches of ultra-compact design featuring up to 64 switching positions. Together with our partners, we develop unique solutions, such as miniature tact switches and DIP switches featuring three switching positions, for example. At our Biersdorf location, we also possess the know-how for production and repair of tools for plastic components and for the manufacture of jigs and prototypes.



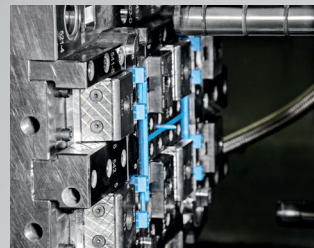
Development

A 3D simulation process is used in the development of injection-moulding tools. This process makes it possible to optimise the flow of material in the tool during the injection process as early as the design stage.



Test laboratory

Our test laboratory inspects products for series-production release and during production itself. Endurance tests, service-life and climatic exposure tests are continuously performed and documented in the CAQ database.



Injection-moulding shop

Components for our products, ranging from small switch actuators up to and including enclosure components for integrated connection technology are injection-moulded here in a large and diverse range of commercial plastics.



Production

Rotary code switches and microswitches are produced on automated lines. Correct and reliable functioning of our switches is assured on all automatic systems by means of a 100 % final electronic inspection.

Rotary code switches

- » High reliability
- » Five switch sizes
- » Through-hole, SMT or J-hook soldering pins
- » Large range of different code modes available
- » Vertical and horizontal types
- » Extra-tight design available
- » Available for ambient temperatures from -60 to +125° C

DIP switches

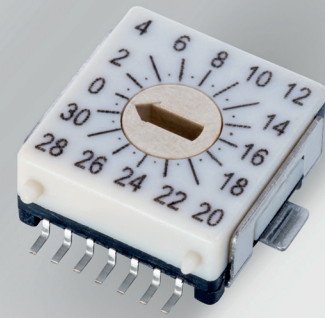
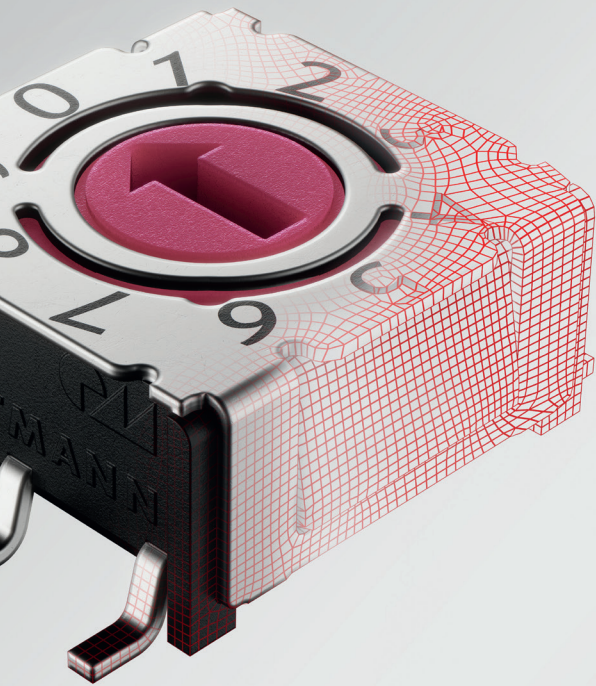
- » 1.27 mm and 2.54 mm centre
- » Through-hole, SMT and J-hook soldering pins
- » Horizontal, vertical and piano actuation
- » SPST, SPDT, DPST, DPDT, 3PST, 4PST, Tri-State (+, 0, -)

Thumb-wheel switches

- » For narrow top-hat rail enclosures
- » Installed width from 3.3 mm
- » 10, 16 and 32 positions
- » With/without operating crown
- » For right/left PCBs
- » Customer-specific printing possible

Tact switches

- » Various switch sizes
- » Large range of actuator heights and actuation forces
- » Horizontal and vertical types
- » Ultra-flat switches
- » Watertight switches



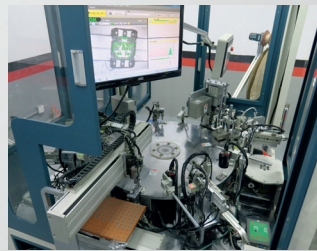
P56 rotary code switch

In rotary code switches with numerous positions, the dimensions of the mechanical switching actions are in the tenth-of-a-millimetre range. Locating springs and detent grooves must be matched optimally to each other, in order to attain perfect detent even in rotary code switches with 32 or 64 switching positions.



Production facility, Tunisia

At our Tunisia location, we produce special solutions and short-run series either manually or by means of semi-automated production.



Production facility, China

The Lechang location specialises in the meeting of the requirements made by our Asian customers. Our fully and semi-automated production systems also supply the global market.



P25 rotary code switch

Our rotary code switches are very largely finished using the reflow-soldering process. Our expertise in plastics enable us to equip the switches with preassembled actuators in customised colours with no negative effects on the reflow process.

Microswitches

- » Various sizes and types, e.g. watertight models
- » Soldering and plug connections
- » Normally closed (NC), normally open (NO), changeover contacts, various auxiliary actuators
- » Ambient temperatures up to 130° C possible
- » cURus, ENEC-VDE approvals

Slide switches

- » Through-hole and SMT soldering pins
- » Can be used for On/Off or double-throw switch function

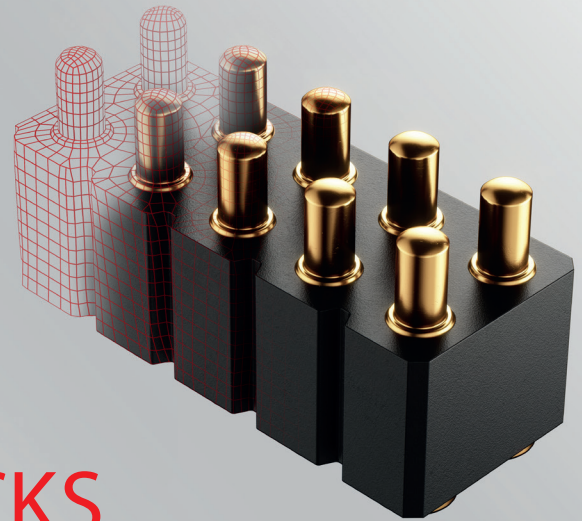
Fibre-optics cables

- » For front-panel installation
- » Featuring soldering pins or push-fit pegs
- » For SMT LEDs
- » Customised designs possible



DH2 thumb-wheel switch

We combine plastics and switch technology to achieve switch solutions unique anywhere in the world. The combination of rotary code switches with special actuators opens up totally new potential applications – in narrow top-hat rail enclosures, for example.



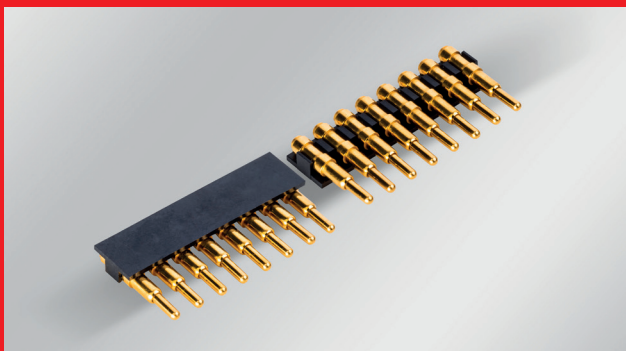
INTERFACE-PIN BLOCKS

Spring-loaded battery-charging contacts constitute a highly dependable and precise connection solution. Perfectly suitable to meet ultra-demanding requirements on electronic connections in a wide range of applications.



FKB 5458-SMD

Short, compact design, board-to-board contact-making, reflow-capable – SMD



FKB 5457-SMD

Horizontal positioning, board-to-board contact-making, reflow-capable – SMD

Contacts known as “battery probes”, or also “spring-loaded pogo pins”, are designed for transmission of battery-charging currents and signals. Their applications extend from board-to-board contact-making immediately on the PCB, via hand-held devices as a charging contact, up to and including charging appliances for high-grade laptops, Smartphones and e-bikes. Test probes have the advantage of more flexible use, compared to conventional PCB multi-connectors, as connecting elements: thanks to their positioning tolerance, installation discrepancies between the connecting components can be balanced out.

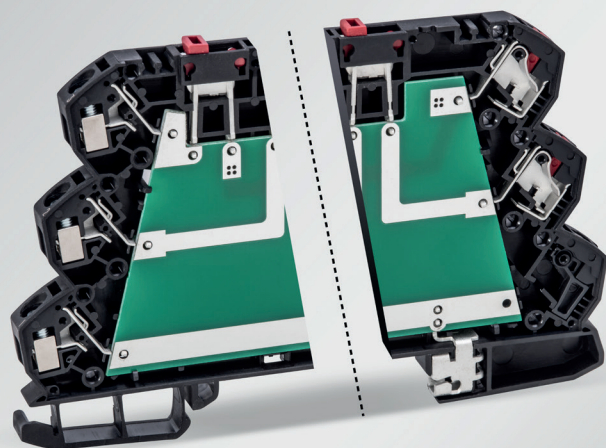
Customer benefits

- » Compact design
- » Vibration-proof/electromechanical connection
- » Large positioning tolerance
- » Balancing out of installation discrepancies
- » Mechanical durability
- » High continuous charging currents (up to 10 A)
- » Blind mating
- » Low push/pull forces

Connection options

- » SMD (surface-mounted design) for mechanical equipping
- » THR (through-hole reflow) for manual/mechanical equipping
- » Crimp connection – for manual wiring
- » Sleeve connection
- » Soldered connection
- » Vertical or horizontal

INTEGRATED CONNECTION TECHNOLOGY



Overcome the limitations of conventional PCB connection systems: using our integrated connection technology, electrical contacts can be directly integrated into insulation enclosures. The equally innovative and flexible solution thus becomes an integrated component of the final system.

Compact design in a laser-labellable enclosure, with a large selection of individual labelling possibilities and high compatibility for all modules, assemblies and connecting technologies. In the IN series, we have in our range top-hat rail enclosures equipped with integrated connecting technology. We provide our customers with an all-in service incorporating complete production of the final systems – including installation under ESD conditions, function testing, laser labelling, plus packing and shipment.

In addition to IN enclosures, our experts are also continuously pursuing the development of integrated connection technology. This concept is being incorporated into more and more customised solutions and standard products in which secure connection of conductors with components such as switches, microswitches, lighting, relays and/or inductances is necessary. Up to now, the form of the PCB connection technology has also determined the design of the final system. Now, using integrated connection technology, the design can be orientated individually around our customers' application requirements. Such integration of the technology makes a separate insulation enclosure superfluous. The advantage: the smaller space occupied can be used for miniaturisation of the application or for greater use of the existing installation capacity.

Benefits

- » Height on TS35 DIN rail less than 80 mm – permitting use in field distribution boxes
- » Tried-and-proven screw and time-saving push-in connection technology
- » Unequivocal system identification thanks to up to eight labelling panels
- » Inspection ports below the central labelling panels
- » Contour uniformity and continuous jumper-capability by means of insulated jumpers for all designs and connecting technologies
- » Laser-labellable plastic, conforms to the UL94 V0 and NFF 16 101/102 I2F2 requirements
- » Snap-on foot on both sides with individually installable DIN rail code for use, for example, as an input/output system
- » Optional enclosure apertures for LED prisms, DIP and slide switches

ADDED VALUE FOR OUR CUSTOMERS ...

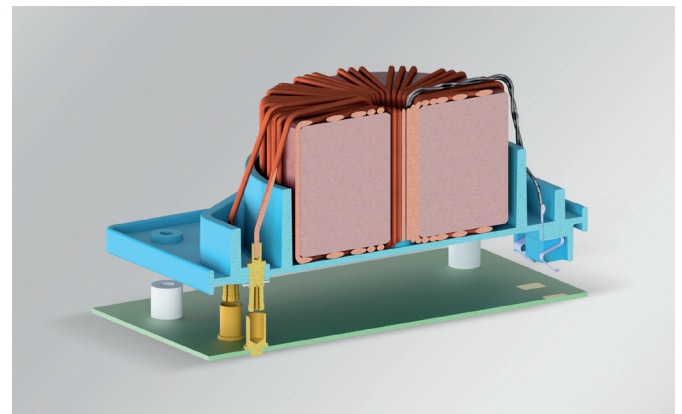
What our customers have always appreciated: the opportunity of concentrating all the capabilities for optimised application solutions from a single source – from development, via production up to and including individualised assembly and packing.



Voltage tap with connection to the Smart Meter Gateway

This customer-specific special solution incorporates multiple PTR HARTMANN capabilities simultaneously. Connection to the overvoltage-protection device is by means of test probes from the test and inspection technology sector. Standard components from Connection Technology, which are directly integrated into the voltage tap enclosure, are used for connection of the conductors to the Smart Meter Gateway. Connection to the Smart Meter Gateway is accomplished by means of AKZ4951 series push-in multi-connectors.

PTR HARTMANN performs not only production at the Tunisia location (assembly, including wiring, pad printing, function checking and packing in customer-specific packaging) but also the procurement of all components. The complete supply chain, from development/procurement to delivery of the series-manufactured product, guarantees a high-quality product at an extremely good price: benefit ratio. And this enables our customers to act and trade competitively on the global market.



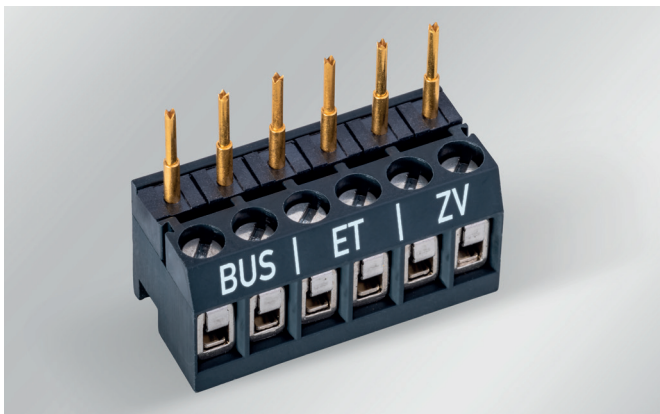
System solution: wound components in installation unit with flexible contact-making

In cooperation with our competence sectors Connection Technology and Inductors/Wound Components, we create innovative system solutions for the most diverse requirements and applications.

The best example: the flexible combination of wound components of various sizes and contacting variants with carrying and installation units. These units can, if specified, be moulded watertight. If required, they feature a seal on the contact/installation side facing the finished device and include height-adjustable contacting facilities. Tolerances existing between the system groups requiring combination can thus be balanced out.

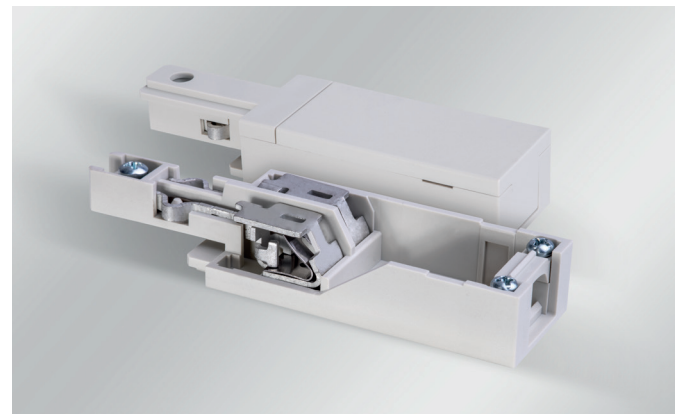
Using these solutions, our customers receive ready-to-install modules and assemblies for production of the finished devices. Only little effort is required for their replacement outside.

... COMBINE OUR CAPABILITIES



Ultra-high standard (Smart Home) connection technology for home and building automation | AK 1350 push-in PCB terminal block with test-probe strip

PTR HARTMANN's capabilities in the field of components and test/inspection technology generate creative solutions and innovative combinations. This illustration shows our tried-and-proven push-in AK 1350 PCB terminal block in combination with a pin strip equipped with test probes. These two components generate a detachable connection in a door-communication system, in order to be able to separate the control unit from the electronics for servicing and maintenance purposes.



Power feed and connection element for busbar system

The interaction of the Connection Technology and Plastics Technology Competence Centres with the various production facilities guarantees our customers a high-quality product with an excellent price : benefit ratio.

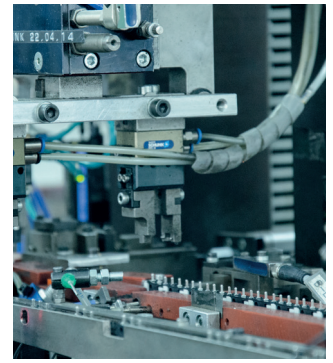
Connection of the conductor within the in-feed unit and other components of the busbar system is accomplished by means of time-saving push-in technology. The components developed by the Competence Centre Connection Technology are directly integrated into the enclosure of the in-feed unit and/or of all other elements. Tried-and-proven technical solutions are combined with new contact-making elements to generate a new, technically innovative product. Production (assembly, function inspection and packing in customer-specific packaging) takes place at the production location in Tunisia. PTR HARTMANN takes care of all activities from development up to and including delivery of the series-manufactured product to the customer.



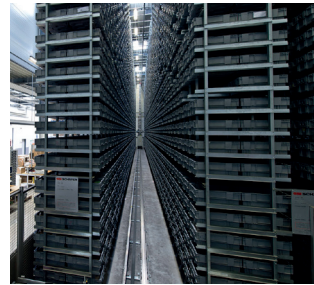
Toolmaking



Production, Test probes



Automated production, Microswitches



Logistics centre



Pressing plant

PTR HARTMANN – GERMAN LOCATIONS

Our production facilities in Baiersdorf, Grävenwiesbach and Werne assure a great depth of production and the ideal realisation of even the most demanding customer requirements.

These locations feature our five competence centres for: Testing Technology, Connection Technology, Inductances/Wound Components, Switches and Plastics Technology. Our holistic orientation, covering our own departments for development, turning, injection-moulding, punching, pressing, toolmaking, prototyping, production, Quality Assurance, laboratory, marketing/sales and logistics assure fast implementation and on-time delivery of both standard and customised products. Our turning shop makes it possible to produce fast prototypes for the testing of new technologies. Having our own injection-moulding shop, we also have the advantage of the ability to rapidly produce both standard and also custom injection-mouldings for our products. Also on site are production facilities for test probes and switches. The adjacent laboratory drafts the necessary spring-force characteristic curves and temperature-rise tests in real time, inter alia, or performs cyclical-loading tests for fatigue testing. Our prototype and jig-making generates quickly and efficiently initial prototypes and jigs, frequently using 3D printers. The production of cores in prototype or series-production quantities is possible in the pressing plant for inductances based on powdered-iron cores. In the adjoining toolmaking department, ultra-modern machine tools are used for the construction and repair of dies and moulds for plastics production.



3,270

SQMOF PRODUCTIONS SPACE



260

EMPLOYEES

PRODUCTION LOCATION, TUNISIA

Outstanding quality for more than 20 years from a near-Europe production location – guaranteed by means of regular internal and external audits. Yet another plus: high flexibility thanks to automatic, semi-automatic and manual production modes.

Our Tunisian production centre deploys optimally trained employees who produce connection technology, switches and test/inspection systems – and, where necessary, our integrated connection technology under EMS conditions. The scope of production here also includes layer-wound components, toroidal-core wound components, flat-wire windings, pull-winder technology, and vacuum and atmospheric casting methods. Lived-out Lean Management, close cooperation with the German team and continuous Quality Assurance in all production sectors assure reliable and durable product solutions for each specific requirement.



5,300

SQMOF PRODUCTIONS SPACE



“Committed and motivated employees are the foundation of our success – in every sector, whether in Quality, process or production operations. For more than twenty years, we have attached the greatest importance to continuous further development, maximum quality and unbeatable production skills.”

Chokri Fitouri, CEO, Phoenix Mecano ELCOM S.à.r.l.



1,300

EMPLOYEES



Manual assembly



Assembly of wound components



Production location, Tunisia



Production of PCB terminal blocks



Automatic production equipment



ESD sector



Switch production



Toolmaking



Toolmaking



Clamp production



Fully automated machines for connection technology

PRODUCTION FACILITY, CHINA

We have been producing electrical elements and high-precision CNC turnings for production of test probes in China for more than ten years now. Since 2020, we have concentrated these capabilities in a new plant located in Lechang, in the north of the Province of Guangdong.

The Lechang plant features more than some 15,000 m² of production and storage space, combined with a modern office infrastructure. Its products cover a broad range of components for PCB terminal blocks and multi-connectors. These include, for example, screws, turnings and broached components for the various contact-making systems for PCB connectors. The necessary punched and bent elements and injection mouldings are also produced in this facility. Short communication paths and high transparency, achieved via the use of "lean management" methods, assure efficient production combined with the highest possible quality standard. Tooling for the production methods used are designed in the company's own tooling-engineering department and produced in the toolmaking department using ultra-modern high-precision machines. Production accessories and complex fully-automated systems for product assembly are made in the Automation department.

Also included in the fully and partially automated, quality-controlled production range: numerous series of switches, a large selection of components supplied to our other production locations, and various series of rotary code switches – and, starting in 2021, inductances.



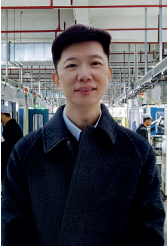
15,000

SQMOFPRODUCTIONSPACE



290

EMPLOYEES



"At Lechang, we supply our customers with an all-in package comprising product design, plastic mouldings, metal components and final assembly. Optimally trained, highly motivated employees and perfect quality management assure excellent products and delivery services."

Eddy Lam, CEO, PTR HARTMANN (Shaoguan) Ltd.



PTR HARTMANN employees (Shaoguan)



Lathe centre



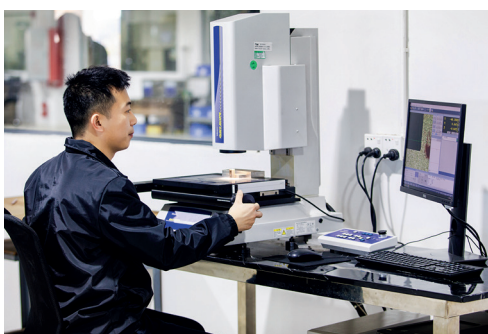
Automatic broaching centres



CNC automatic lathes



Manual assembly



QA toolmaking



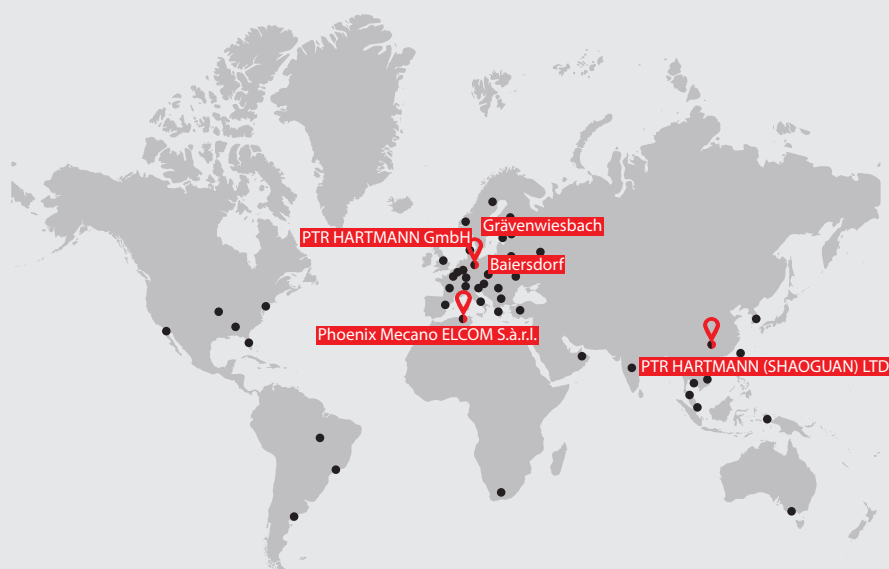
Toolmaking



PTR HARTMANN

A Phoenix Mecano Company

PTR HARTMANN GmbH – a member of Switzerland's Phoenix Mecano AG – is an internationally present company with its home offices in Werne (North Rhine-Westphalia) and locations in Germany, Tunisia and China. With more than 60 years of experience, and based on "German Engineering", we develop, produce and market high-quality electrical components for optimised customer solutions in an extremely diverse range of applications throughout the entire world: these products include switches, high-precision test probes, inductances, interface-pin blocks, PCB terminal blocks/multi-connectors and integrated connection technology – with assured flexibility of production and highly efficient logistics.



GLOBAL MARKETING/SALES LOCATIONS

● = Marketing/sales centres

● = Production facilities

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