HARTING

Pushing Performance

People | Power | Partnership

HARTING Component Range

HARTING Worldwide

Turning customer wish lists into concrete solutions.
The HARTING Technology Group, which has its corporate headquarters in Espelkamp, Germany, develops tailored electrical and electronic connector solutions and products for power distribution, data transmission and networking applications. Founded 1945 in Minden, HARTING currently has nearly 4,000 employees worldwide. As the knowledge and information society continues to evolve, networking with customers, suppliers and technology/business partners plays an increasingly crucial role in the domestic and international marketplace.

HARTING has subsidiaries in 37 countries, which are located in close proximity to the customer base and markets. A local presence gives HARTING the opportunity to keep its ear to the ground and react quickly as situations change and developments move forwards.

Our goal is top performance.
While connectors guarantee functionality, they are by no means mere accessories. They form a core element of today's optical and electrical connectivity and infrastructure technology, and support modular machine and system design in a wide range of user industries.

Connector reliability makes a crucial contribution to the problem-free operation of production, telecommunications and medical systems and in a whole host of other applications as well. The ongoing development of our technologies against the backdrop of "Integrated Industry" protects customer investment and ensures long-term functionality in the age of the fourth industrial revolution.

Close proximity to the customer.
The increasing level of industrialization around the world creates expanding markets characterized by very diverse requirements. What they all have in common, however, is the attempt to achieve perfection, workflow efficiency and reliable technology.

The HARTING team at our international subsidiaries takes on a partnership role in the customer relationship. These professionals offer consultancy during the initial product development phase to ensure that our customers have access to the best possible solutions for their products.

Our vision: Pushing Performance.
HARTING delivers components which work very well together. However, in order to give our customers the best possible solution, HARTING can go even further to become an integral part of the value-add process. Our goal is maximum benefit to the customer with no compromises.

Quality enhances reliability and creates confidence.
The HARTING brand stands for exceptional quality around the world. This high standard of performance is the result of focused, non-compromising quality management that is certified and audited on a regular basis for compliance to EN ISO 9001, EMAS and ISO 14 001:2004. We take a proactive approach to new requirements, and HARTING ranks as the first rail equipment supplier to receive the new IRIS quality certificate.

Connectivity & Networks

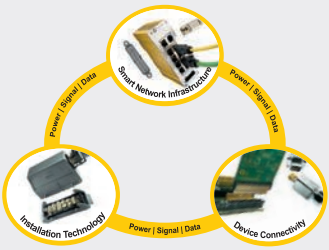
An intelligent and powerful connectivity technology forms the foundation of industrial application and manufacturing technology. Solutions from the HARTING triad – Installation Technology, Device Connectivity and Smart Network Infrastructure – generate clear benefits in applications.

The HARTING product and services spectrum covers electrical and electronic connectors, device connection technology and pre-assembled cable and network components. HARTING products supply facilities and machines with data, signals and energy. We provide solutions for application areas including automation, wind energy, solar energy, power generation and distribution, industrial network infrastructure, transportation, industrial devices, broadcast and entertainment, medical, embedded computing systems and machinery.

Installation Technology
Han® connectors are the worldwide connector standard in industry.
Han® connectors impress with their rugged design, convenient handling and modularity of data, signal and power connections. Worldwide.

Smart Network Infrastructure
With its product series **Ha-VIS**, HARTING offers a consistent range of Ethernet network components and cabling products, which form the communication platform of industrial networks. Under **Ha-VIS** HARTING offers fully integrated RFID solutions.

Device Connectivity
HARTING's ***har-*** Device Connectivity technology is a universal and innovative product portfolio of board connector and connection technology for devices in the IP20 to IP65 / IP67 protection categories.



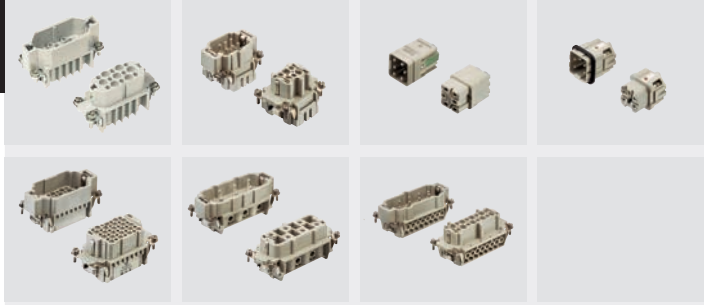
Industrial connectors Han®

HARTING industrial connectors are used in all kinds of harsh environmental conditions whenever an electrical connection is needed that is secure, robust and detachable. Our product line features contact inserts for sensitive signal transmission as well as modular contacts for power transmission up to 650 A. Our hoods and housings are available in protection degree IP44 up to IP69K. Almost every size is available in six different housing types.

Advantages	■ On-site installation of machines and facilities ■ Replacement of production units possible when converting types ■ Assembly and disassembly of production equipment possible after a change of location ■ Replacement of movable connection cables is possible
Number of contacts	1 up to 400 contacts + PE
Rated voltage	25 V up to 5000 V
Rated current	5 A up to 650 A
Terminations	■ Screw terminal ■ Crimp terminal ■ *HARAX*® IDC terminal ■ Cage-clamp terminal ■ Axial screw terminal ■ Solder terminal ■ Wrap terminal ■ Han-Quick Lock® terminal
Housing types	Han® Standard, Han® M, Han® HPR, Han® EMV, Han® HMC, Han® High Temp, Han-*Yellock*®
Accessories	Covers, cable glands and PCB adapters
Approvals	UL, CSA for inserts Nema 4/12 for hoods and housings CCC GOST GL

IRIS Certification — International Railway Industry Standard

EN ISO 9001 and 14001 certified



Standard inserts Han®

HARTING standard inserts are established main components of industrial connectors since several years.

Product range includes a huge quantity of different inserts for sensitive signals up to energy transmission until 100 A.

The inserts are related to defined housings depending on size and type of construction. To achieve various requests different types of terminations were developed.

Distinct features/ advantages	■ On-the-spot-installation of machines and plants ■ Disassembly and reassembly of production lines when moved ■ Quick exchange of cables (i.e. in case of cable break) ■ Exchange of production units for a model change etc.
Number of contacts	1 up to 400 contacts + PE
Rated voltage	25 V up to 5000 V
Rated current	5 A up to 650 A
Terminations	■ Screw terminal ■ Crimp terminal ■ *HARAX*® insulation displacement contact (IDC) ■ Cage clamp terminal ■ Axial screw terminal ■ Solder terminal ■ Wrap terminal ■ Han-Quick Lock® terminal
Types	Han A®, Han D® / DD®, Han E® /Han® ES /ESS / EE / EEE, Han HvE® / ES, Han-Com®, Han® HsB, Staf®, Han® Q, Han® HMC, Han® High Temp
Accessories	PE-multiplier, docking frames, coding pins
Approvals	UL, CSA for inserts CCC

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High Current connectors Han® HC

HARTING High Current connectors offer possibilities for power transmission in the range from 200 A up to 650 A. The inserts will be used together with Han® HPR hoods and housings which lead to guaranteed characteristics like robustness, protection against water pressure and vibration resistance.

The high current contacts are available in crimp- and axial screw termination. Thus they are the solution of choice for traction and auxiliary converters, brakes, door and air-conditioning subsystems.

Distinct features/ advantages	■ Safe current transmission due to capacious contact mass ■ On-the-spot-installation of machines and components ■ Fast exchange of application units in case of over-haul
Number of contacts	1 – 10 contacts
Rated voltage	2000 V up to 4000 V
Rated current	200 A up to 650 A
Types	Han® K3 /0, K3 /2 Han® HC Modular 250 Han® HC Modular 350 Han® HC Modular 650
Terminations	■ Screw terminal ■ Crimp terminal ■ Axial screw terminal
Accessories	Protection covers, cable glands/clamps, Crimping tools
Approvals	UL, CSA for inserts Nema 4/12 for hoods and housings CCC

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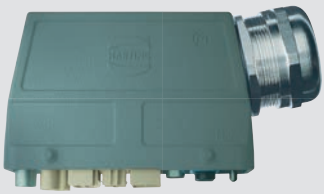

Han-Modular®

The Han-Modular® series is a system of inserts designed to meet the specific requirements of individual customers. In close cooperation with potential users a range of modular inserts has been developed allowing the simple assembly of custom designed connector sets which meet the diverse requirements encountered by designers today. The modular conception allows the transmission of electrical, optical and pneumatic signals, as well as data and power in one connector.

Advantages	■ Custom designs can be simply assembled ■ The insert can be configured individually according to the needs of the proper application ■ Optimum solutions can be reached ■ Stock can be minimized
Modules	Standard modules for 16 A Power modules up to 200 A High density signal modules with up to 25 contacts High voltage modules up to 5000 V Shielded modules for Quintax or D-Sub inserts Data modules for USB, FireWire or RJ45 Modules for coaxial wires Optical modules for POF or glass fibre Pneumatical modules for 3, 4 or 6 mm tubes
Number of contacts	1 up to 42 contacts
Rated voltage	5 V up to 5000 V
Rated current	4 A up to 200 A
Terminations	■ Crimp terminal ■ Cage clamp terminal ■ Axial screw terminal ■ Screw terminal ■ Han-Quick Lock® terminal ■ PCB solder terminal
Approvals	UL for Modules Nema 4/12 for hoods and housings CCC GOST GL

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Han-*Yellock*®

Han-*Yellock*® is a new product series which retains the core functionality but differs significantly from current size and shape formats. The approach of this series makes many new functions possible, for example:

- An internal, latched locking mechanism on the hood
- Multiplies the potentials in the connector with Han-*Yellock*® modules
- Usage of Han-Modular® modules with adapter frames
- Front and rear assembly of inserts
- Protected Earth contact (PE) in crimp or Quick Lock termination

Thus, the Han-*Yellock*® offers improved functionality in the form of increased variability, multiplied potential, simplified handling, reduced incidence of errors and maximized safety.

Advantages	■ Efficient optimisation of the purchase ■ Less article numbers and less inventory, when planning for the electrical and mechanical layout ■ Less wiring work within a machine, during the workflow ■ Less steps in the workflow and quicker assembly, even during the after-sales stage ■ Reduced down times because of the latched locking mechanism and maintenance-friendly design
Number of contacts	1 up to 48 contacts + PE Possible use of different media and contact arrangements with Han-Modular®
Rated voltage	500 V
Rated current	20 A
Terminations	■ Crimp terminal ■ Han-Quick Lock® terminal
Size	10, 30 and 60
Accessories	Coding pins, ground terminal
Approvals	cUL UL for Han-*Yellock*® inserts

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Han-Eco®

Han-Eco® – a new housing series made of hightech thermoplastic material.

Han-Eco® is the ideal solution for applications that do not require the full range of product features offered by the Han® B series of housings, and users want to take advantage of the weight and cost advantages.

Like the Han® B standard series, the Han-Eco® series is available in the following sizes: 6 B, 10 B, 16 B and 24 B. Hood with straight or angled cable exit can be supplied.

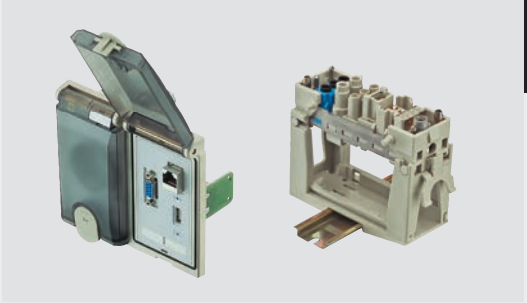
Fast, simple assembly is another outstanding product feature. Click-and-mate design totally eliminates the need for tools during assembly of the Han-Eco® housing.

The Han-Eco® housing is compatible with nearly the full range of modules from the Han-Modular® series. One extra module fits into the Han-Eco® housing compared to the equivalent product in the Han® B Standard series. This special feature applies to all four sizes.

A optional PE module has been developed specifically for the Han-Eco® housing to hold the protective ground conductor.

Advantages	■ Weight reduction combined with mechanical strength ■ Fast assembly process without tools ■ Highly resistant to environmental stress, suitable for use in outdoor applications, see Han-Eco® Outdoor ■ Nearly the complete range of modules from Han-Modular® series usable
Features	Material - Hoods/Housings: Polyamide, fibre-glass reinforced - Locking element: Polyamide, fibre-glass reinforced - Hoods/Housings seal: NBR / FPM - Limiting temperatures: -40 °C ... +125 °C - Flammability acc. to UL 94: V0 - Degree of protection acc. to DIN EN 60 529 for coupled connector: IP65

EN ISO 9001 and 14 001 certified



Components for switch cabinets, service interfaces and PCB adaptors

Connectors	
Series	Han-Snap® Series for connectors within closed electrical operating environments Han-Modular® single module locking Compact connection with one Han-Modular® module in IP20 environement
Frontpanel interfaces	
for series	Han-Port® Single- and double frames for power and signals Plug sockets for European and international markets Data inserts using standard interfaces
PCB Adaptor	
Series	Han® Q Han DD® Han E® Han-Modular®
Types	Han® Q 5 / 0 Han® Q 7 /0 Han® Q 4 /2 Han® Q 8 /0 Han DD® Han E® Han DD® module Han® Axial screw module

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Components for energy transfer and distribution

Energy distribution
The Han-Power® series makes a fast, simple and comfortable installation of machines possible. The power cable is “tapped” with the Han-Power® S. For the fast and fault-free installation the industry connector is used with the Han-Power® T.

Series	Han-Power®
Types	**Han-Power® S** - plastic - metal **Han-Power® T** - plastic with Han® Q 5 / 0 - plastic with Han® Q 2 /0 - metal with Han® Q 4 /2 **Han-Power® T Modular Twin**
Connectors	
Series	Han® Q Han-Compact®
Types	Han® Q 2 / 0 Han® Q 5 / 0 Han® Q 7 / 0 Han® Q 8 / 0 Han® Q 17 Han® Q 4 / 2
System cables	
Number of contacts	2 – 17
Rated voltage	max. 500 V
Rated current	max. 40 A
Application	Transfer of power
Approvals	UL, CSA

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HARTING Hall-Effect current transducers

HARTING's Hall-effect current transducers are used to make potential-free (floating) measurements of DC, AC and mixed currents They are used for power electronic circuits in industrial and railway applications.
HARTING offers both open-loop and closed-loop current transducers. Both types make use of the well-established Hall effect for taking measurements.

Advantages	■ Robust housing and termination technique ■ Customer-specific termination techniques are available on request ■ Excellent immunity to interference from external magnetic fields ■ Extended temperature range: -40 °C – 85 °C ■ Tested for shock and vibration in accordance with IEC 61 373 Cat 1B ■ Wide measuring range with high precision ■ Superior surge current resistance
The HCS Hall-effect current transducer: closed-loop transducers for industrial applications	
Primary rated current	200 A, 300 A, 500 A, 1000 A, 2000 A
Transmission ratios	1:2000, 1:5000
Frequency range	DC...100 kHz
The HCSR Hall-effect current transducer: closed-loop sensors for railway applications	
Primary rated current	500 A, 1000 A, 2000 A
Transmission ratios	1:4000, 1:5000
Frequency range	DC...100 kHz
The HCSE Hall-effect current transducer: open-loop transducer for industrial applications	
Primary rated current	100 A, 300 A, 500 A, 800 A
Frequency range	DC...50 kHz

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An overview of Han® tools

We offer a wide variety of processing tools for many different applications in our comprehensive Han® series of products. With a wire cross-section range from 0.14 mm^2 to 240 mm^2, they can be used for either signal or power transmission applications. You can also put our HARTING expertise to work for you when connecting sensitive fibre optic cables – for reliable and safe results.

Whether you're working on a service call or with mass-production machines, the proper tools for your purposes are available. Our high-quality HARTING tools ensure that your work meets the applicable standard specifications.

A brief overview of our Han® tools portfolio

- Manual crimping tools for Han® contacts (0.14 – 10 mm^2)
- Pneumatic crimping tools (0.14 – 10 mm^2)
- Automatic crimping machines (0.14 – 10 mm^2)
- Crimping tools for high current contacts (10 – 240 mm^2)
- Crimping tools for fibre optic contacts
- Crimping tools for other contacts (e.g. coaxial)
- Torque tools for axial screw termination technique
- Installation and removal tools
- Screwdrivers and stripping tools
- Punching tools for panel cut outs in Han® housings

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Fibre optic data link systems and components

Electro-optic converters	Solutions for optical wavelengths 660 nm, 850 nm and 1300 nm Optical transmitter and receiver for F-ST and F-SMA Special versions with up to 16 optical elements Optical transceivers for M12 connectors
Connectors	Simplex and multipole connectors for glass and polymer optical fibres Quick assembly connectors for polymer optical fibres Contacts for glass and polymer optical fibres for use in Industrial Han® connectors Connectors up to IP68
Cables	For in- and outdoor applications Hybrid cables
Cable assemblies	Cable assemblies with fibre optic and hybrid cables Customer specific harnesses
Accessories	Tools for connector assembly and test equipment for service purposes

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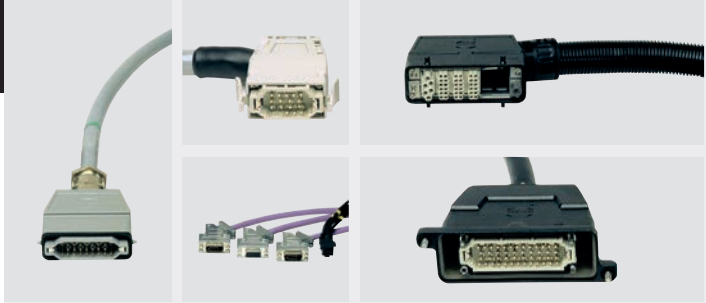

Value Added Business (VAB)

Worldwide implementation of customer specific applications. Wide range of services from specification to production. Electrical, mechanical design and engineering as well as concept development for power and data transmission for control units and systems.

Product groups	
Power Cable Solutions (PCS)	Cable assemblies for power distribution Applications with industrial connectors of the Han® product family
Data & Signal Solutions (DSS)	Cable assemblies for data and signal transmission Ethernet, fibre optics and coaxial cable for customer specific requirements
Customer Specific Solutions (CSS)	System solutions for cabling, control units and cabinets Customer specific engineering for cable harnesses, sub-systems and systems

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Ha-VIS RFID system solutions

Ha-VIS RFID system solutions from HARTING like tracking & tracing, maintenance, asset management, supply chain management and production planning.

For these applications HARTING has developed a complete and scalable product portfolio and solution portfolio of hard- and software with following characteristics:

Transponder	Robust transponder for challenging applications with up to IP69K and 210 °C Applications on metal and in concrete
Reader	High performance RFID Reader Highest read range of up to 16 m For most challenging environments with a lot of metal (e.g. in machines)
Antennas	Antennas for RFID-Gates Antennas for automation / machinery
Mobile Reader	Extremly robust Suitable for industrial applications

Ha-VIS RFID is the complete Ha-VIS RFID program for system integrators.

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IP30 Ethernet Switches

Our Ha-VIS eCon 2000/3000/9000 and our Ha-VIS mCon 3000/9000 Fast and Full Gigabit Ethernet Switches have been designed for industrial applications. Our unmanaged Ethernet Switches from our Ha-VIS eCon 2000/3000 lines have a flat/thin shape so that you can save space when mounting them on DIN rails in electrical cabinets. Various combinations of variants with RJ45, fibre optic cables and SFP ports are available. Our switches use the PoE+ standard to supply power to end devices. Auto-negotiation, auto-polarity, auto-MDI(X) and surge protection are all supported – so that the Plug-and-Play initial setup process is both quick and easy.
The fully managed Ethernet Switches from our Ha-VIS mCon product line feature a wide range of configuration and diagnostic options. These options can be easily configured using the web interface or SNMP. The switches can easily be set up and configured in the field using an SD card or the multi-functional push button. Our Ha-VIS mCon 3000 Next Generation line of Ethernet Switches can be used as PROFINET IO devices.

Their innovative fast-track switching allows them also to be used for real-time applications.

The advantages of Ha-VIS Ethernet Switches

- Fast and full gigabit Ethernet, non-blocking in accordance with IEEE 802.3
- Supports auto-negotiation, auto-polarity and auto-MDI(X)
- Industrial temperature range from -40 °C to +70 °C
- Variants with RJ45, SC multi-mode fibres, single-mode fibres and SFP
- Energy supply of up to 4 end devices via PoE+ (137 watts) in accordance with IEEE 802.3at
- Minimum energy consumption owing to energy-efficient Ethernet, IEEE 802.3az
- IP30 aluminium/steel sheet enclosures
- Wide range voltage supply, 24/48 V DC
- Surge protection and reverse voltage protection
- PROFINET IO Device (CCB)
- Time synchronization according to IEEE1588v2

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IP40 / IP65 / IP67 Ethernet Switches

The Fast and Gigabit Ethernet Switches of the product families Ha-VIS eCon 4000, Ha-VIS eCon 7000, Ha-VIS mCon 4000 and Ha-VIS mCon 7000 are designed for direct deployment in industrial areas.
Through their high degree of protection (IP40 – IP67), their industrial Ethernet interfaces (M12, Han® 3 A RJ45) and their robust metal housing, they are suitable for harsh industrial environments and for almost all mounting locations without a switch cabinet. The Ha-VIS eCon Ethernet Switches operate as unmanaged switches in Store and Forward Switching Mode and support Auto-crossing, Auto-negotiation and Auto-polarity.
The Ha-VIS mCon Ethernet Switch operates as a managed switch and comes with comprehensive management functions.

Advantages	■ Robust metal housing ■ Reduced cabling costs in building industrial Ethernet networks ■ Space saving, directly installable on machinery or in plant ■ Plug & Play Installation ■ RoHS compliant
Ethernet Switches	Fast Ethernet (Data transfer rates of 10 /100 /1000 Mbit/s) Ethernet interfaces conform to PROFINET and ODVA High IP40 / IP65 / IP67 degree of protection Extended operational temperature range and mechanical stability meet the highest demands Ha-VIS mCon supports two access methods for management: SNMP and a convenient Web-Access

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Circular connectors

Connectors with *HARAX*® termination technique	
Types	Unshielded M8 connectors Shielded and unshielded M12 connectors 7/8“ connectors Shielded M12 panel feed throughs
Advantages	■ Compact and robust design ■ Quick and easy field assembly ■ No special tools required ■ Compatible with an extensive range of cables with different cross core sections and outer diameters

Connectors with crimp termination technique	
Types	Shielded M12 connectors for data transmission and power supply Shielded panel feed throughs M12 Crimp
Advantages	■ Compact and robust design ■ Vibration safe connection ■ Quick and easy field assembly with HARTING crimp tooling

M12 Connectors for high data rates – *har*-speed M12	
Types	Connectors with crimp and *HARAX*® termination for cables Connectors for the PCB
Advantages	■ x-coding acc. to IEC 61076-2-109 ■ Performance class E_A ■ Component Category 6_A ■ AWG 23-28 ■ Robust and vibration safe

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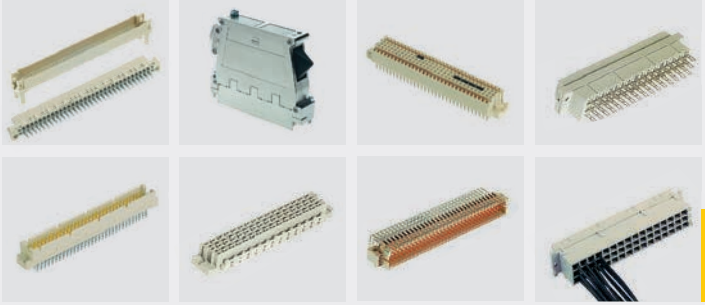

PCB connectors contact spacing 2.54 mm

Connectors DIN 41 612	acc. to IEC 60 603-2
Types	Full types: B, C, D, E, F, FM, H, Q, R, R (HE 11) Half types: 2B, 2C, 2Q, 2R, 2F Third types: 3B, 3C, 3Q, 3R Complementary types: F9, H3 Mixed types: M (24+8, 42+6, 60+4, 78+2), M inverse (6+10, 24+8, 42+6, 60+4, 78+2), MH (24+7, 21+5) ***har-bus***® 64 for VME 64x (acc. to IEC 61 076-4-113) special variants for railway (NFF)
Number of contacts	3 –160
Working current	1 –15 A max. 40 A (special contacts)
Terminations	■ Straight and angled solder pins ■ Solder lugs ■ Press-in technology ■ SMC (Surface Mount Compatible) types ■ Crimp terminals ■ Wire wrap posts 0.6 x 0.6 and 1 x 1 mm ■ Insulation displacement terminals ■ Faston blades ■ Cage clamp terminals
Accessories	Extensive range of hoods in plastic, metallized plastic or full metal Fixing brackets and interfaces Shrouds Tooling for press-in and crimp termination
Service	Concepts for SMC and press-in technology
Approvals	UL, IEC, CECC, NFF

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Metric connectors

***har-bus® HM* with 5 resp. 8 rows**	acc. to IEC 61 076-4-101, CompactPCI
Types	A, AB_{19}, AB_{22}, AB_{25}, B_{19}, B_{22}, B_{25}, C, D, DE, E, Monoblock 47 (A + B_{22})
Number of contacts	max. 220 signal contacts (308 fully shielded)

***har-bus® HM* 6 row**	Extension of IEC 61 076-4-101
Types	Modules with optional features such as guiding, coding and end wall SMC types
Number of contacts	72 or 144 signal contacts

***har-bus® HM* Power**	
Types	Straight female press-in modules Angled male press-in and SMC modules Lagging / leading contacts
Working current	max. 23 A at 70 °C

All connector families	
Accessories	Tooling for press-in termination
Service	Shielding effectiveness measurements Signal integrity analysis Computer simulations (3D-FEM) SPICE modelling Concepts for SMC technique
Approvals	UL, CSA, VDE, IEC, CECC

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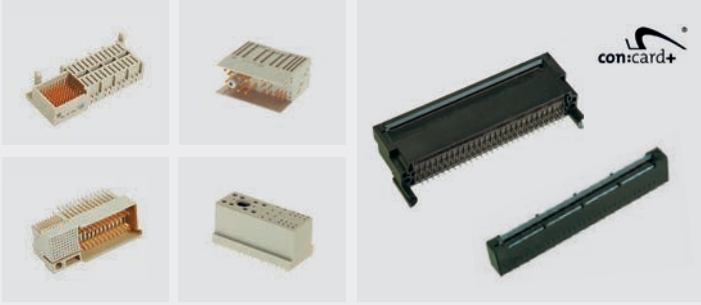

Connectors for AdvancedTCA® / MicroTCA™

AdvancedMC™ connectors	According to PICMG AMC.0 / MTCA.0 specification
Types	Right angled version for AdvancedTCA® and straight version for MicroTCA™. The card edge connectors are for direct mating with Advanced Mezzanine Cards (AdvancedMC™). With **con**:card+ features for enhanced contact reliability.
Number of contacts	170
Contact spacing	0.75 mm
Terminations	Press-in technology, 0.55 mm PCB hole diameter
Transmission rate	Suitable for 12.5 Gbps applications

AdvancedTCA® µTCA™

Power connectors	According to PICMG 3.0 / MTCA.0 specification
Types	Backplane and daughter card connectors for AdvancedTCA® Backplane and module connector for MicroTCA™ Mixed pin assignment of signal and power contacts
Number of contacts	30 / 96
Working current	16 A / 9.3 A @ 80% derating
Termination	Press-in technology

All TCA connectors	
Accessories	Tooling for press-in termination
Design-in support	Signal integrity analysis (S-parameter, TDR, eye-diagrams) Computer simulation and modelling (e.g. SPICE) Test boards and 3D models (STEP, IGES)

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Mezzanine connectors

***har*-flex® connectors**	
Variants	Straight / angled / IDC cable assemblies
Advantages	■ Optimized utilization of PCB real estate due to flexibility in choice of contact count ■ Various stacking heights ■ High contact density for reduced footprint ■ Suitability for automated processing
Number of contacts	6, 8, 10, ..., 96, 98, 100
Contact spacing	1.27 mm x 1.27 mm
Rated current	min. 0.8 A at 70 °C
Terminations	■ SMT ■ Insulation displacement termination for flat cables (AWG 30/1 or AWG 30/7)

MCE connectors	
Advantages	■ Very flexible stacking heights ■ SMT compatible ■ Data rates up to 14 Gbps ■ Tape & reel packaging for high volume production
Number of contacts	40 or 100
Contact spacing	0.8 mm
Rated current	1.7 A
Termination	SMT

For both connector families	
Service	Concepts for SMT technique
Fields of application	Industrial, telecommunications and medical

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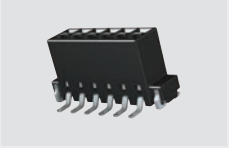

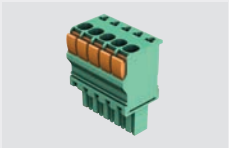


har-flexicon® PCB terminal blocks und connectors

Advantages	■ Rapid and tool-less connection of single wires ■ Low processing cost with automatic mount ■ High level of rigidity on the PCB with large-area fixings ■ High packaging density in pitches 1.27 mm and 2.54 mm
Number of contacts	2 – 25
Contact spacing	1.27 mm, 2.54 mm, 3.50 mm, 3.81 mm, 5.00 mm, 5.08 mm
Rated current	up to 17.5 A
Conductor size	0.05 – 2.5 mm^2
Terminations	■ Push-in-spring cage ■ Insulation displacement (IDC) ■ Screw ■ SMT / SMC (reflow soldering) ■ Wave soldering
Variants	Vertical, horizontal

EN ISO 9001 and 14001 certified

D-sub connectors – Standard and IP67

D-Sub	acc. to CECC 75 301-802
Number of contacts	9, 15, 25, 37, 50
Working current	2 – 7.5 A
Fields of application	Industrial electronics, office electronics, Information and telecommunication technology
Terminations	■ European, US and low-profile footprint ■ SMT (Surface Mount Technology) types ■ SMC (Surface Mount Compatible) types ■ Solder buckets ■ Straight and angled solder pins ■ Crimp terminals ■ Insulation displacement termination ■ Press-in technology ■ Wire wrap terminals
Accessories	Extensive range of hoods: plastic, metallized plastic, plastic with internal metal plate and full metal (e.g. InduCom style for special EMC requirements) A large choice of locking systems
Approval	UL

D-Sub IP67	acc. to DIN 40 050, IEC 529
Number of contacts	9, 15, 25, 37, 50
Working current	5 A
Fields of application	Any applications in the industrial, medical, machinery and transportation markets, which are to be protected from ingress
Terminations	■ Rear panel mount straight and angled for PCB application ■ Rear and front panel mount solder cup ■ Solder cup for cable inside application in conjunction with IP67 hood range
Accessories	IP67 plastic or metallized plastic hoods with a large range of screws
Approval	UL

EN ISO 9001 and 14 001 certified





D-Sub connectors – Mixed, high density and filter

D-Sub mixed	acc. to DIN 41 652 T1
Variants	2W2, 2W2C, 3W3, 3W3C, 5W1, 5W5, 7W2, 7W7, 8W8, 9W4, 11W1, 13W3, 13W6, 17W2, 21W1, 21WA4, 24W7, 25W3, 27W2, 36W4, 43W2
Working current	Signal 5 A; power up to 40 A
Terminations	■ Solder cups ■ Crimp terminals ■ SMC (Surface Mount Compatible) types on request
Accessories	■ Wide range of special contacts, like coaxial, power, high voltage and pneumatic contacts ■ Special accessories like kits for blind mating

D-Sub high density	
Number of contacts	15, 26, 44, 62, 78
Working current	up to 2 A
Terminations	■ Straight and angled solder pins ■ Solder cups ■ Crimp terminals

D-Sub filter	
Number of contacts	9, 15, 25, 37
Working current	up to 7.5 A
Terminations	■ Solder buckets ■ Straight and angled solder pins ■ SMC (Surface Mount Compatible) types
Accessories	Various integrated filters possible with ferrite filters and C filters 47 pF, 470 pF, 1000 pF and 3900 pF etc. All custom designs possible (based on a contact-by-contact approach) D-Sub filter with mixed contacts available on request

All connectors	
Accessories	Extensive range of hoods Tooling for crimp termination Special configurations on request
Fields of application	Industrial, medical, telecom, computer and aerospace applications
Approval	UL

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Micro electronic connectors

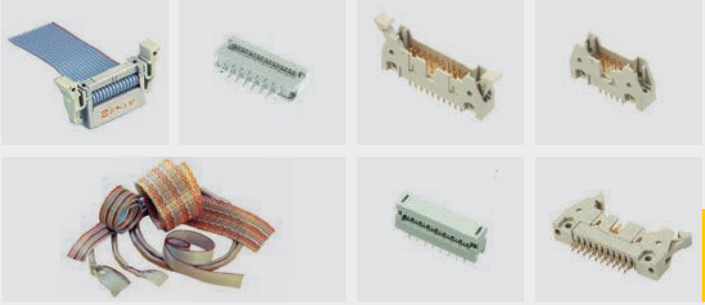
har-mik®	Miniature D connector contact spacing 1.27 mm acc. to: SCSI 2 – SCSI 3, I.P.I.2, HI.P.P.I EIA/TIA 232 E (RS 232 E), IEEE 1284 IEC 61 076-3-100 for bellows connectors (with leaf contact design) IEC 61 076-3-101 for pin and socket connectors (with blade and fork contact design)
Number of contacts	14 – 100
Working current	1 A
Working voltage	240 V ~
Fields of application	Input/output interface for use in EDP, industrial and office electronics and telecommunication
Terminations	■ Straight and right angled solder pins ■ IDC for discrete wires ■ IDC for flat cables ■ Press-in technology ■ SMC (Surface Mount Compatible) types

har-link®	Metric connector contact spacing 2.0 mm acc. to IEC 61 076-4-107
Number of contacts	10
Working current	1.5 A
Fields of application	Telecommunication Automation Professional broadcast Transportation
Terminations	■ IDC (for male connector) ■ Right angled solder pins (for female connector)

The ***har-link®*** connector system is a modular, compact and robust PCB-to-cable interface with excellent data transmission properties for high speed networking and telecommunication (up to 2 Gbit/s per twisted pair).

Both connector families	
Approval	UL

EN ISO 9001 and 14 001 certified



IDC connector systems for flat cables
Contact spacing 2.54 mm x 2.54 mm

SEK IDC connectors	
Male and female connectors	acc. to IEC 60 603-13, comply with MIL-C 83 503
Number of contacts	6, 10, 14, 16, 20, 26, 30, 34, 40, 50, 60, 64
Working current	1 A max.
Working voltage	320 V
Terminations	■ Female: IDC for flat cable ■ Male standard and low profile: - Straight and right angled solder pins - Press-in technology - SMC (Surface Mount Compatible) versions - Wire wrap posts
Accessories	Strain relief, locking lever, board lock, vacuum cover for pick-and-place assembly
Packaging	Card board box, tape on reel, tube
Approval	c UL us
Service	Concepts for SMC and press-in technology

PCB transition connectors	2-rows, 4-rows, DIP
Number of contacts	2 rows: 4, 6, 8, 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, 64 4 rows: 10, 16, 20, 26, 34, 40, 50 DIP : 14, 16, 24, 28, 40
Working current	1 A max.
Terminations	■ Cable side: IDC ■ PCB side: solder pins ■ Standard or kinked pin for 2-rows versions
Assembly	2-rows: assembled lever 4-rows and DIP: separate cover

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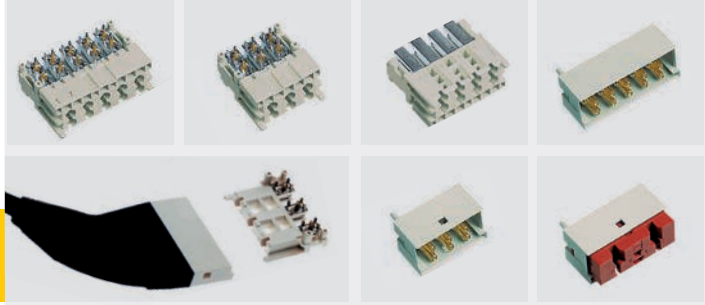


Mini Coax connector system

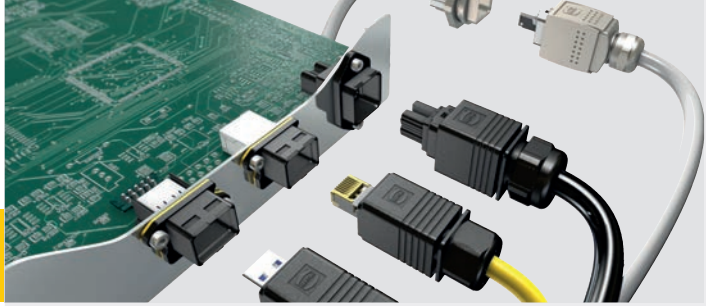
Mini Coax	
Types	1 SU, 1.25 SU, 1.5 SU (1 System Unit = 25 mm)
Number of contacts	2, 4, 6, 8 und 10 (other loadings on request)
Frequency range	0 – 2.5 GHz
Nominal impedance	50 Ω
Terminations	Press-in technology

Mini Coax+	
Frequency range	0 – 4 GHz
Nominal impedance	50 Ω
Terminations	SMT / SMC

All connectors	
Accessories	Tooling for press-in termination Pre-assembled cables Terminators
Service	Shielding effectiveness measurements Signal integrity analysis Computer simulations (3D-FEM) SPICE modelling
Approvals	UL, VDE, IEC, CECC

EN ISO 9001 and 14 001 certified

Notes



Compact IP65 / IP67 PushPull connectors for data, power and signal

PushPull connectors according to IEC 61 076-3-106 variant 4 and IEC 61 076-3-117 variant 14 for device connectivity	
Fields of application	Factory and building automation PROFINET applications, transportation, lighting and display technology. Ideal for compact devices in harsh environments or in outdoor applications
Locking mechanism	PushPull one-hand locking
Housing material	Plastic or metal
Accessories	Protective caps, cable assemblies, coding pins and tools
Protection class	IP65 and IP67
Data interface	
Copper based	RJ45 acc. to IEC 60 603-7
Number of contacts	4 or 8
Wire terminations	*HARAX*® IDC or piercing
Fibre based	LC duplex acc. to IEC 61 754-20 or SCRJ acc. to IEC 61 754-24
	LC duplex: singlemode or multimode GOF SCRJ: POF, HCS, singlemode or multimode GOF
Hybrid interface	
Number of contacts	4 x data + 3 x power
Working current	5 A
Working voltage	48 V DC
Wire terminations	Crimp and solder terminals
USB interfaces	USB types A 2.0, A 3.0 and B 2.0
Power interfaces	
Number of contacts	4 or 2 + PE or 4 + PE
Working current	12 –16 A
Working voltage	48 V DC, 250 V AC or 400 / 690 V AC
Wire terminations	Crimp, solder or cage clamp terminals and Quick Lock
Signal interface	
Number of contacts	10 x D-Sub crimp
Working current	5 A
Working voltage	60 V

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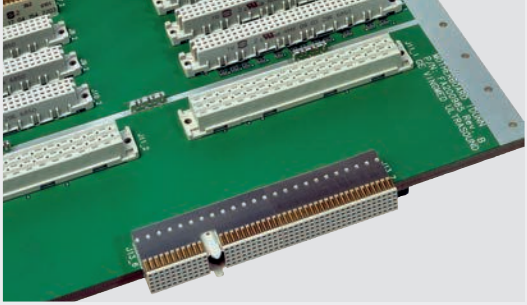

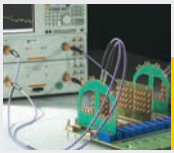

HARTING Integrated Solutions

HARTING **Integrated Solutions** (HIS) is the backplane and backplane systems assembly business unit for the HARTING Technology Group.

Manufacturing on 3 Continents, Europe, Asia and North America, based on a 'Global Footprint' of common equipment, tooling and procedures and providing a world-wide service to our customers.

Backplane design, signal integrity services:	Standard and customized backplane design/layout Simulation and modeling Measurement and verification
Manufacturing	Focused on backplane assembly, prototypes to volume production Assembly standards to IPC610 'J' Standard - All assembly to the highest level, Class III - Continuous training with in-house trainers SMT – press-in – wave solder Ability to handle large, high layer-count PCB's FAST PROTOTYPE SERVICE Vertical integration - Full integration services - Cardframes, cabinets
Test	All products tested – State-of-the-art robotic backplane testers including optical inspection System functional and safety testing

EN ISO 9001 and 14001 certified

Cabling systems and cable assemblies

HARTING offers a comprehensive portfolio of cable assemblies. This portfolio range includes solutions based on copper, to hybrid and up to glass fibre assemblies.

Any cable assembly is pre-terminated with high-quality HARTING connectors used for power, signal and data connections.

Different length and customised solutions, including overmoulding, meet a wide range of the customer applications.

With the PushPull fibre optic, QSFP+ and SFP+ cable assemblies HARTING is supporting the increasing data transmission rates required by the market. These high-speed cable assemblies are usable up to 40 Gbit per second.

The HARTING PushPull technology and the classic Han® 3 A housings with their optical and copper-based inserts open up new applications in industry, wind power and camera systems for indoor and outdoor applications.

Press and Go is setting a new standard for meeting individual customer requirements, no matter whether the cable has a diameter of 4.5 mm or 8.6 mm. The Press and Go method that HARTING has developed can always be counted on to be fast! M12 Press and Go offers individually adjustable and dependable connection technology – dispensing entirely with screwing.

EN ISO 9001 and 14 001 certified




Cabling systems

Profile-specific cabling
A complete range of cabling components for the installation of a profile-specific passive infrastructure in industry, especially in automation. Universal 4-wire resp. 8-wire screened cabling for the connection of automation solutions and control units in harsh IP65 / IP67 environments and for outdoor areas.

Specification
Network installation according to ISO/IEC 61 918 and the guidelines of specific automation protocols (profiles) like:

- PROFINET
- EtherCAT
- Ethernet Powerlink
- SERCOS III

Network installation according to ISO/IEC 24 702 and EN 50 173-3 (Structured Cabling in Industrial Environments).

Suitable for the transmission of data via Ethernet –
Ethernet transmission according to IEEE 802.3 at 10 Mbit/s and 100 Mbit/s – transmission characteristics Category 5 / Transmission Class D up to 100 MHz and Category 6 / Transmission Class E up to 250 MHz according to ISO/IEC 11 801:2002.

EN ISO 9001 and 14 001 certified




Cable assemblies

Advantages

- Real-time capable and future-proof cabling suitable for Gigabit Ethernet and beyond - in compliance with ISO/IEC 24 702
- In compliance with ISO/IEC 61 918 and with the guidelines of several user organisation groups
- No assembly work
- Pre-termination of customised solutions
- Standardised housings
- Small form factor in IP20 / IP65 / IP67
- Pre-terminated cable assemblies tested and ready to use
- High data transmission rates

Cable assembly series

Press and Go, QSFP+, SFP+, M12, M8, Mini Coax, SEK, *har*-flex®, DIN 41 612, D-Sub, D-Sub HD, *har-mik*®, *har-link*®, HARTING PushPull, HARTING PushPull LC duplex, Han® PushPull, Hybrid (Han® 3 A RJ45 / Han® 3 A FO), Han® SFP, Han® 3 A 2xLC duplex, Han® PushPull SCRJ, IP20 Fiber optic jumper cords, RJ45 (IP20), Ha-VIS preLink®

Designs

Overmoulded and standard solutions available, depending on the application. The housings are available in plastic, metallized plastic and metal.

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HARTING eCatalogue

The **HARTING eCatalogue** is an electronic catalogue with a part configuration and 3D components library.

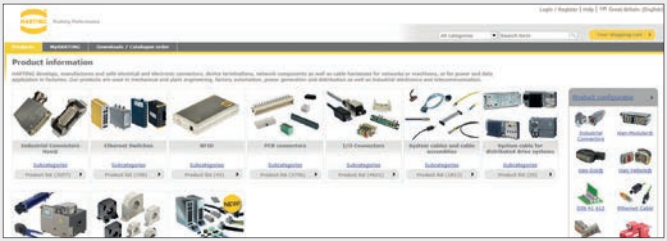
Here you can choose a connector according to your requirements. Afterwards you are able to send your inquiry directly to a HARTING sales partner.

The drawings to every single part are available in PDF-format.

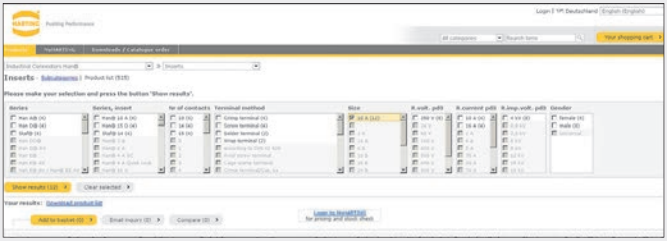
The parts are downloadable in 2D-format (DXF) and 3D-format (IGES, STEP).

The 3D-models can be viewed with a VRML-viewer.

You can find the **HARTING eCatalogue** at **www.HARTING.com**.

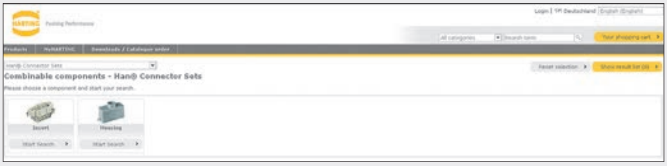


Product overview



Product selection

Product configuration



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