HARTING

®

Pushing Performance

HARTING Component Range

People | Power | Partnership

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 more than 3,300 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 36 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 protects customer investment and ensures long-term functionality.

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.
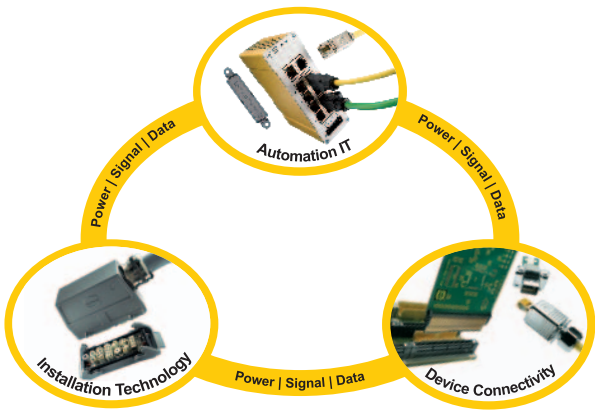
Connectivity & Networks

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 Automation IT – 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, machinery and telecom.

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.

Automation IT
With its product series **Ha-VIS**, HARTING offers a consistent range of Ethernet network components and cabling products, which from the communication platform of convergent automation IT 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 IP 20 to IP 65 / IP 67 protection categories.
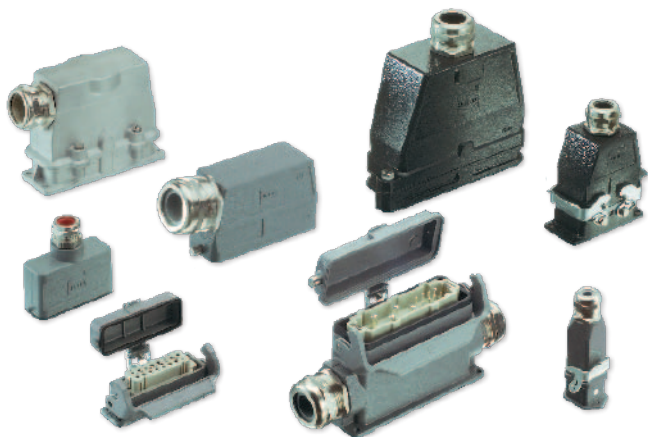
Industrial connectors Han®

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 IP 44 up to IP 69K. Almost every size is available in four different housing types.

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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-pole + 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® EMC
Accessories:	Covers, cable glands and PCB adapters
Approvals:	UL, CSA for inserts Nema 4/12 for hoods and housings CCC

IRIS Certification — International Railway Industry Standard

DQS — EN ISO 9001 and 14 001 certified
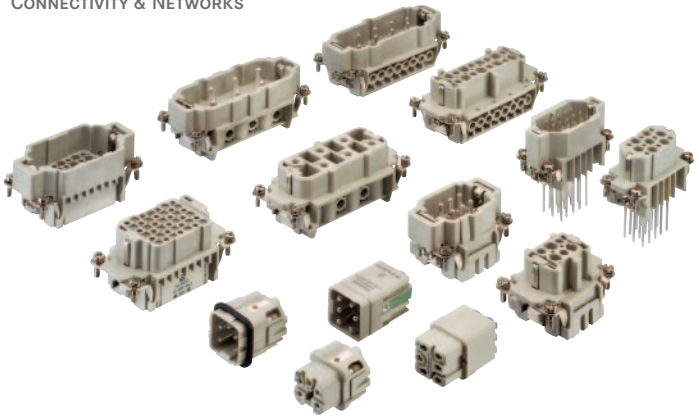
Standard inserts Han®

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.

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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) Connection of test and diagnostic devices (i.e. on vehicles) Exchange of production units for a model change etc.
Numbers of contacts:	1 up to 400 poles + PE
Rated voltage:	25 V up to 690 V
Rated current:	5 A up to 100 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
Accessories:	PE-multiplier, docking frames, coding pins
Approvals:	UL, CSA for inserts CCC

IRIS Certification   International Railway Industry Standard

DQS   EN ISO 9001 and 14 001 certified
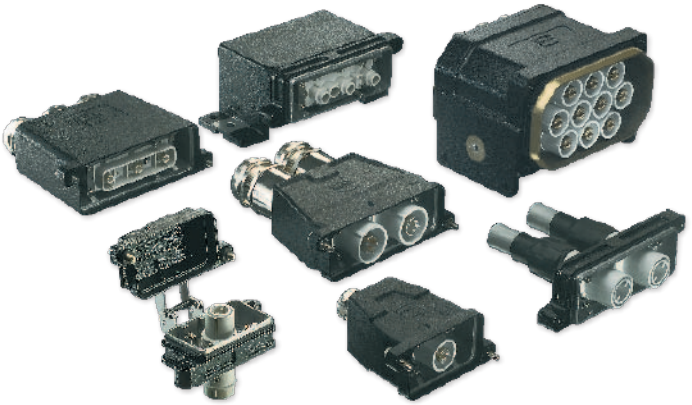
High Current connectors Han® HC

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.

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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 overhaul
Numbers of contacts:	1 – 10 poles
Rated voltage:	2000 V up to 4000 V
Rated current:	200 A up to 650 A
Series:	Han® K3/0, K3/2 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

IRIS Certification	International Railway Industry Standard
DQS	EN ISO 9001 and 14 001 certified
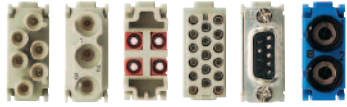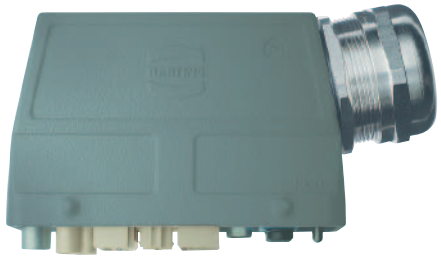
Han-Modular®

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.

Advantages:	Custom designs can be simply assembled 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
Numbers of contacts:	1 up to 300 pins
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 Han-Quick Lock® terminal PCB solder terminal
Approvals:	UL for Modules Nema 4/12 for hoods and housings CCC

EN ISO 9001 and 14 001 certified

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:	- 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
Numbers of contacts:	1 up to 48 poles + PE
	Possible use of different media and contact arrangements with Han-Modular®
Rated voltage:	500 V
Rated current:	20 A
Termination:	Crimp terminal, Han-Quick Lock® terminal
Size:	30 and 60
Accessories:	Coding pins, ground terminal
Approvals:	cUL
	EN ISO 9001 and 14 001 certified

Han-Eco®

Han-Eco® – a new housing series made of 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. Depending on size, versions of the bulkhead mounting and 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
- 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
- Limiting temperatures -40 °C ... +125 °C
- Flammability acc. to UL 94 V 0
- Degree of protection acc. to DIN EN 60 529 for coupled connector IP 65
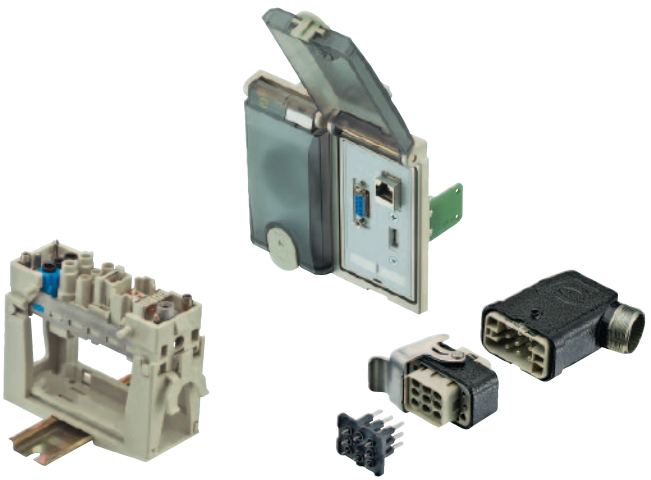
Components for switch cabinets, service interfaces and PCB adaptors

Connectors

Series: Han-Snap®

                            Series for connectors within closed electrical
                            operating environments.

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®

Type: Han® Q 5/0
                            Han® Q 7/0
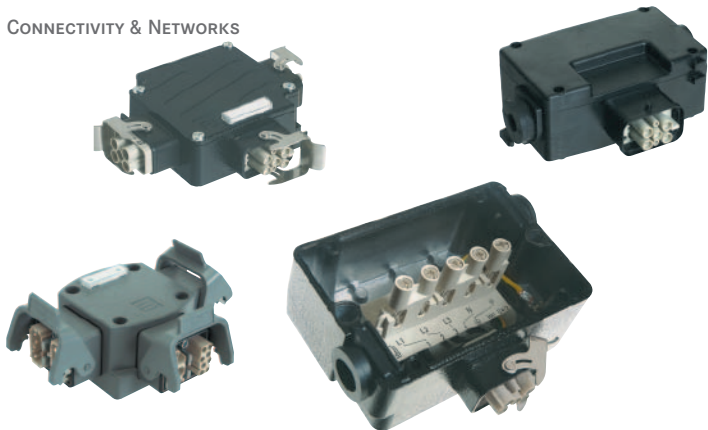   Han® Q 4/2
                            Han® Q 8/0
                            Han DD®
                            Han E®
                            Han DD® module
                            Han® Axial screw module

EN ISO 9001 and 14 001 certified

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
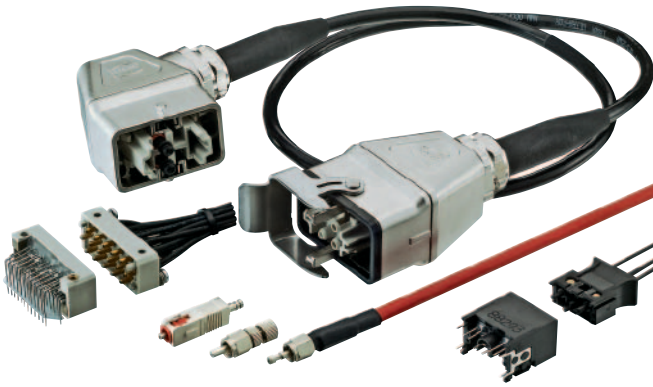   plastic with Han® Q 5/0
                             plastic with Han® Q 2/0
                             metal with Han® Q 4/2
                  Han-Power® T Modular Twin

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

Fields of application: Transfer of power

Approvals: UL, CSA

EN ISO 9001 and 14 001 certified

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 IP 68
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

EN ISO 9001 and 14 001 certified
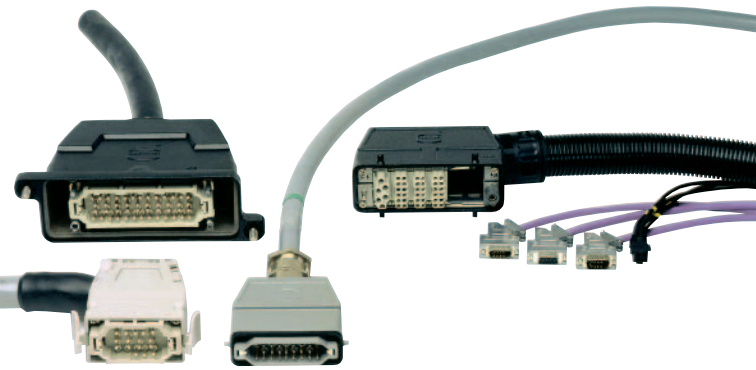
Value Added Business (VAB)

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

EN ISO 9001 and 14 001 certified

Ha-VIS RFID system solutions

Ha-VIS RFID system solutions from HARTING provide transparency of data within applications like tracking & tracing, asset management, supply chain management and production planning.

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

Integrated device and data management

Embedded data base features

Automated processing of occurrences

Efficient analysis of transponder data

Integrated programming interface for MS Windows Visual Studio

Server for SQL data bases

Capable with Win CE handhelds

List and print generating tool

RFID label designer

Panel for administrators, web based

Extension of Visual Studio

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

IP 30 Ethernet Switches

The Fast and Gigabit Ethernet Switches of the product families Ha-VIS eCon 2000, 3000, 9000, Ha-VIS sCon 3000, 9000 as well as Ha-VIS mCon 3000, 9000 are designed for industrial areas. The Ha-VIS eCon and Ha-VIS sCon Ethernet Switches operate as unmanaged Switch 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.
Real Time applications can be easily implemented with the innovtive Fast Track Switching technology.

Advantages:	Metal housing
	Plug & Play Installation with Ha-VIS eCon & Ha-VIS sCon
	Ha-VIS mCon comes with SNMP and Web-Access
	RoHS compliant
Ethernet Switches:	Data transfer rates of 10/100/1000 Mbit/s
	Ethernet conform to PROFINET and ODVA
	Ha-VIS sCon individually configurable via USB Interface
	F.O. ports are available in single mode or multi mode versions
	Ethernet Switches with an extended operational temperature range of -40 °C up to +70 °C are available
	Ha-VIS mCon supports two access methods for management: SNMP and a convenient Web-Access
	EN ISO 9001 and 14 001 certified

IP 40 / IP 65 / IP 67 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 (IP 40 – IP 67), 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 Mbit/s)
	Ethernet interfaces conform to PROFINET and ODVA
	High IP 65 / IP 67 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

EN ISO 9001 and 14 001 certified
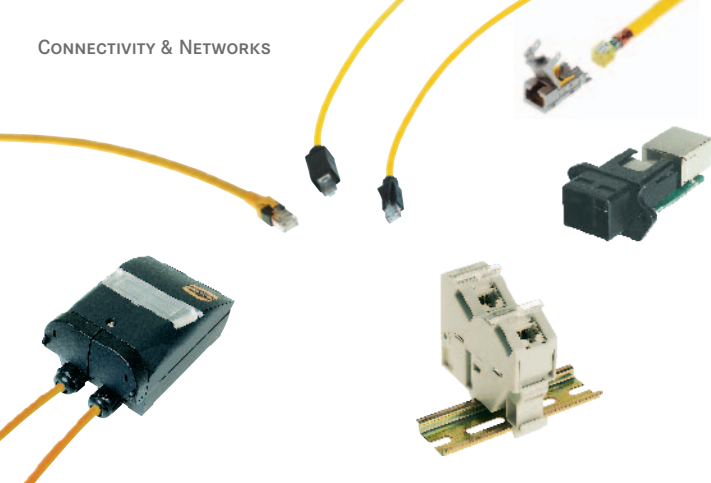
Cabling systems and components

Structured cabling (Generic cabling):
A complete range of cabling components for the installation of an application-independent passive infrastructure in industry, especially in automation. Universal 8-wire screened cabling for the seamless advancement of the IT infrastructure into harsh IP 65 / IP 67 environments and for outdoor areas.

Specification:
Network installation according to ISO/IEC 24 702 and EN 50 173-3 (Structured Cabling in Industrial Environments) – recommended for the transmission of data, voice/VoIP, video and other services – Ethernet transmission at 10 Mbit/s, 100 Mbit/s and 1000 Mbit/s (Gigabit Ethernet) – 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 incl. AMD1:2008 and EtherNET/IP according to IEC/TR 61158-1 (CPF number CP 2/2) and Category 5e according to EIA/TIA 568

Product range:

Consists of:	Outlets and junctions boxes
	Panel feed-throughs
	Patch cables
	Connector sets for on-site cable assembly
	Cables for both fixed and flexible installation
Connector types:	RJ45, IP 20
	HARTING PushPull RJ45, IP 67
	HARTING PushPull LC duplex, IP 67
	Han® 3 A RJ45, IP 67
	Ha-VIS preLink®

Installation:
Modular component range for free combination to meet special installation requirements. Patch cables and connecting cables are available both as quality inspected cable assemblies or as components sets for on-site assembly.

Benefits:
Real-time capable and future-proof cabling suitable for Gigabit Ethernet and beyond
In compliance with ISO/IEC 24 702 for signal transmission in all services in IT and automation environments guaranteeing compatibility with equipment and facilities.
Modular component range for cabling according to the specific customer requirements
Easy and quick assembly
The high quality of the cabling system guarantees long operation, reliability and protection in investment
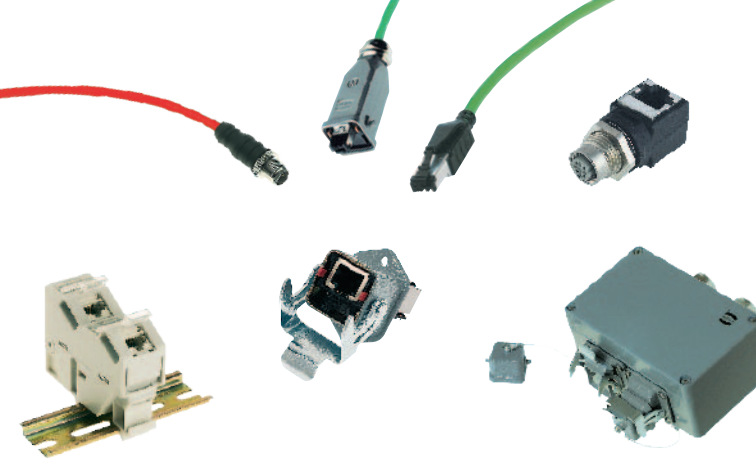
Cabling systems and components

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 screened cabling for the connection of automation solutions and control units in harsh IP 65 / IP 67 environments and for outdoor areas.

Specification:
Network installation according to ISO/IEC 61 918 and the guidelines of specific automation protocols (profiles) like:
- PROFINET according to IEC/TR 61 158-1, CPF3
- EtherCAT according to IEC/TR 61 158-1, CPF12
- Ethernet Powerlink according to IEC/TR 61 158-1, CPF13
- SERCOS III according to IEC/TR 61 158-1, CPF16

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 according to ISO/IEC 11 801:2002 and cat. 5e according to EIA/TIA 568

Product range:

|	
Consists of:	Outlets and junctions boxes
	Panel feed-throughs
	Patch cables
	Connector sets for on-site cable assembly
	Cables for both fixed and flexible installation
Connector types:	RJ45, IP 20
	Han® 3 A RJ45 and Hybrid, IP 67
	M12, IP 67
	Han® PushPull RJ45, IP 67
	Han® PushPull SCRJ, IP 67

Installation:
Modular component range for free combination to meet special installation requirements. Patch cables and connecting cables are available both as quality inspected cable assemblies or as components sets for on-site assembly.

Benefits:
In compliance with ISO/IEC 61 918 and with the guidelines of several user organisation groups like PNO, EtherCAT, EPSG, SERCOS
Real-time capable, robust cabling suitable for Fast Ethernet
Modular component range for cabling according to the specific customer requirements
Easy and quick assembly
The high quality of the cabling system guarantees long operation, reliability and protection in investment
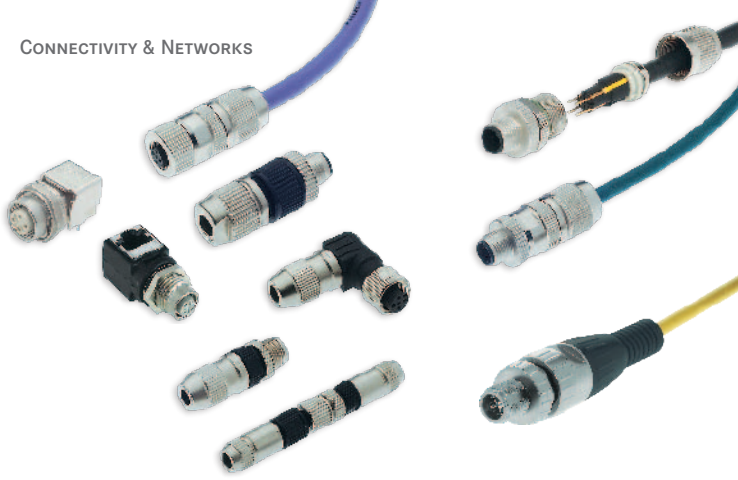
Circular connectors

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
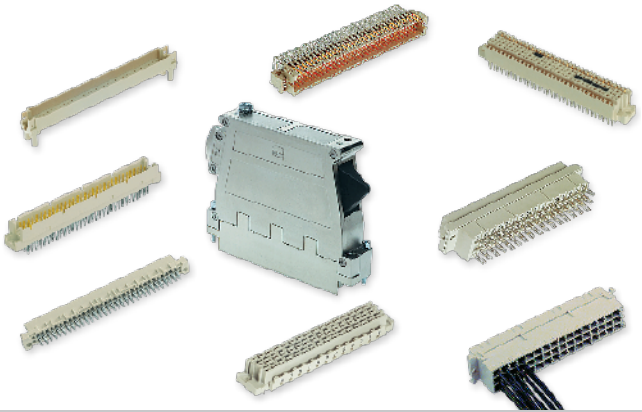Quick and easy field assembly with HARTING
crimp tooling

M12 Connectors for high data rates – *har*-speed M12

Types:
Straight and angled receptacles
M12 connectors
Overmoulded cordsets

Advantages:
x-coding acc. to PAS 61076-2-109
Performance class E_A
Component category 6_A
AWG 23-28
Robust and vibration safe

EN ISO 9001 and 14 001 certified

PCB connectors contact spacing 2.54 mm

Connectors
DIN 41 612   acc. to IEC 60 603-2

Types: B, C, D, E, F, FM, H, MH, M, Q, R, R (HE 11), M inverse,
                        short types 2B, 2C, 3B, 3C, 2F, F9, H3, 2Q, 2R,
                        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
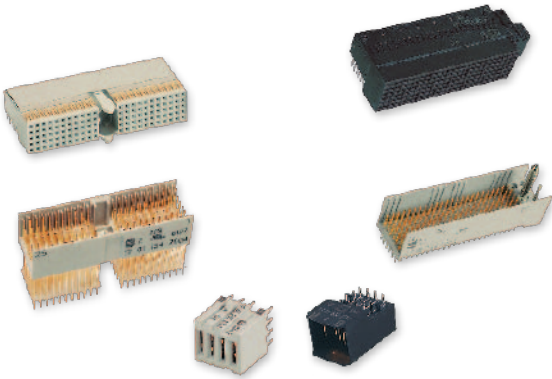   Tooling for press-in and crimp termination
Service: Concepts for SMC and press-in technology

Approvals: UL, VDE, IEC, CECC, NFF

                        EN ISO 9001 and 14 001 certified

Metric connectors

har-bus® HM
with 5 resp. 8 rows acc. to IEC 61 076-4-101, CompactPCI

Types:	A, AB19, AB22, AB25, B19, B22, B25, C, D, DE, E, Monoblock 47 (A + B22)
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

EN ISO 9001 and 14 001 certified

Mezzanine connectors

har-flex connectors

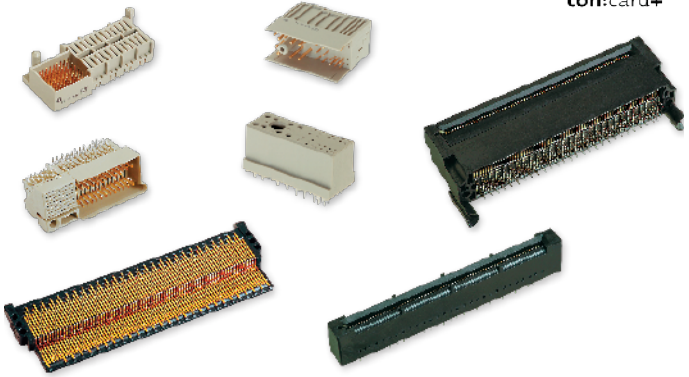|	
Variants:	Straight / angled (available Q4/2011) / IDC (available Q3/2011)
Advantages:	Optimized utilization of PCB real estate due to flexibility in choice of contact count
	Various stacking heights
	High contact density for reduced footprint
	Suitability for automated processing
Number of contacts:	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

EN ISO 9001 and 14 001 certified

con:card+

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. Plug connector mounted on the AdvancedMC™ module replaces PCB gold pads.
Number of contacts:	170
Contact spacing:	0.75 mm
Termination:	Press-in technology, 0.55 mm PCB hole diameter, Pin-in-hole-reflow soldering for plug connector
Data rate:	Suitable for 12.5 Gbps applications

*Advanced***TCA®** *µ***TCA™**

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)
	EN ISO 9001 and 14 001 certified
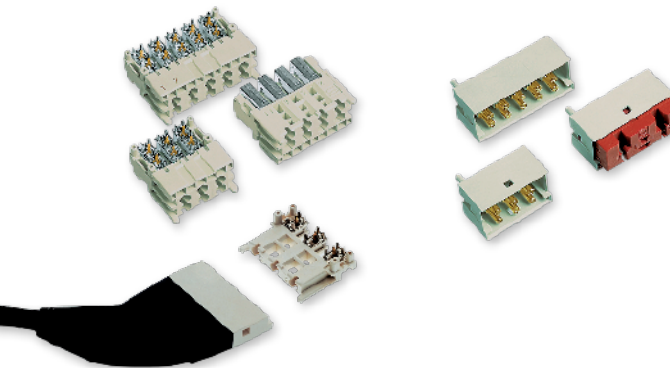
Mini Coax connector system

Mini Coax

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

Mini Coax+

Frequency range:	0 – 4 GHz
Nominal impedance:	50 Ω
Termination:	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
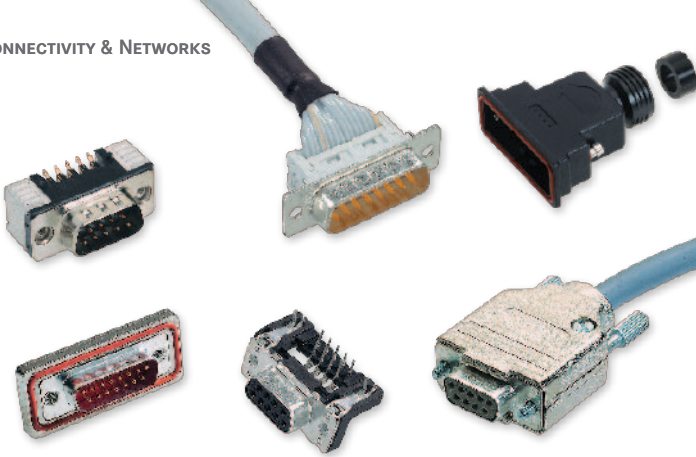
Standard, IP 67 D-sub connectors

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:	Solder buckets
	Straight and angled solder pins
	European, US and low-profile footprint
	SMC (Surface Mount Compatible) types
	SMT (Surface Mount Technology) types
	Wire wrap terminals
	Crimp terminals
	Insulation displacement termination
	Press-in technology
Accessories:	Extensive range of hoods: plastic, metallized plastic, plastic with internal metal plate and full metal
	A large choice of locking systems
Approval:	UL

D-Sub IP 67	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 IP 67 hood range
Accessories:	IP 67 plastic or metallized plastic hoods with a large range of screws
Approval:	UL

EN ISO 9001 and 14 001 certified

Mixed, high density, filter D-Sub connectors

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 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
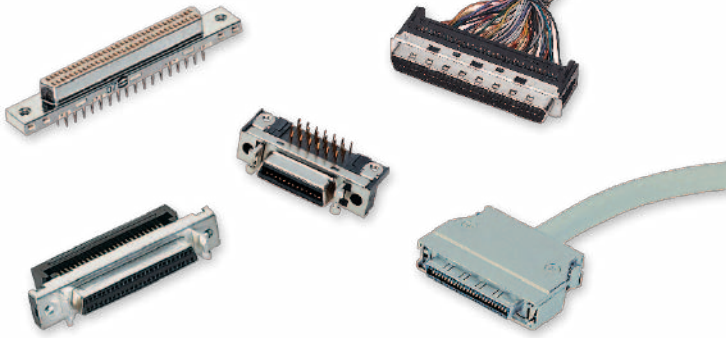|	
Accessories:	Extensive range of hoods
	Tooling for crimp termination
	Special configurations on request
Fields of application:	Industrial, medical, telecom, computer and aerospace applications
Approval:	UL
	EN ISO 9001 and 14 001 certified

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).
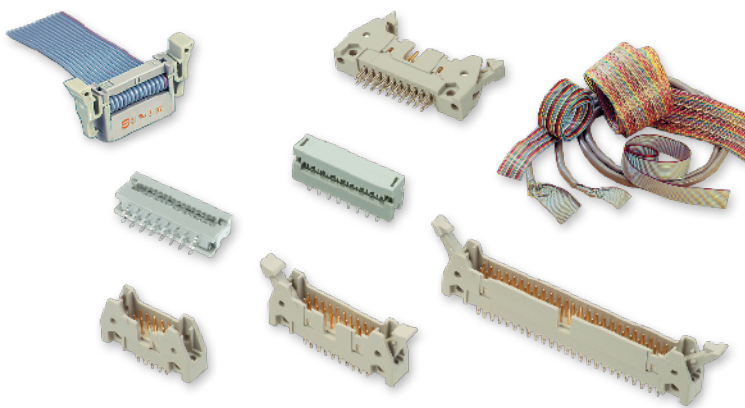
Both connector families

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:	$_c\boldsymbol{\mathcal{H}}_{us}$
Service:	Concepts for SMC and press-in technology

PCB transition
connectors: 2-rows, 4-rows, DIP

Number of contacts:	
2 rows:	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

EN ISO 9001 and 14 001 certified

Compact IP 65 / IP 67 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
Automobile industry
PROFINET applications
Industrial electronics
Transportation
Lighting and display technology
Telecommunication and wireless networks

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: IP 65 and IP 67

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: 32 V DC
Wire terminations: Crimp and solder terminals

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

EN ISO 9001 and 14 001 certified

Outdoor solutions

HARTING's new range of products for outdoor solutions combines the advantages of the reliable HARTING PushPull technology and Han® 3 A housings with innovative inserts for fibre optic and copper.

The integration of the standard LC fibre optic connectors, in singlemode and multimode, meets the demands set by harsh outdoor environments. The hybrid variants combine data (LC fibre or RJ45) and power in one connector for easy installation and maintenance.

These high-quality, robust HARTING interfaces offer vibration protection and IP 65 / IP 67 as standard.

Advantages:	Standardized housings
	The smallest dimensions in IP 65 / IP 67
	Up to four standardized LC fibre optic contacts
	Hybrid connectors for data & power
	Easy installation and maintenance
	Suitable for singlemode or multimode fibres
	Ready-to-use cable assemblies available

Housing types:	HARTING PushPull	
	Han® PushPull	
	Han® 3 A	Straight and angled
		Metal and plastic

Insert types:	Power	DC 48 V / 300 V
		AC 230 V / 300 V
	Fibre	LC duplex
		2 x LC duplex
	Hybrid	RJ45 & power
		LC duplex & power

EN ISO 9001 and 14 001 certified

I/O cable assemblies

System cables for applications in IP 20 and IP 67 environment

Based on the connector series D-Sub, D-Sub high density, *har-mik®* (SCSI), *har-link®*, DIN 41612, Mini Coax and IDC connector systems for flat cables

Advantages:	No additional assembly
	Manufacturing of different lengths according to customer requirements
	Available as round and flat cables
	Ready-to-use and inspected products

| Terminations:	Solder pins
	Crimp terminals
	Wire wrap termination
	Insulation displacement termination
	Strain relief and latching mechanism according to the connectors used

| Types:	Variants with or without overmoulding technology depending on the application.
	The housings are available in plastic, metallized plastic or full metal.

EN ISO 9001 and 14 001 certified
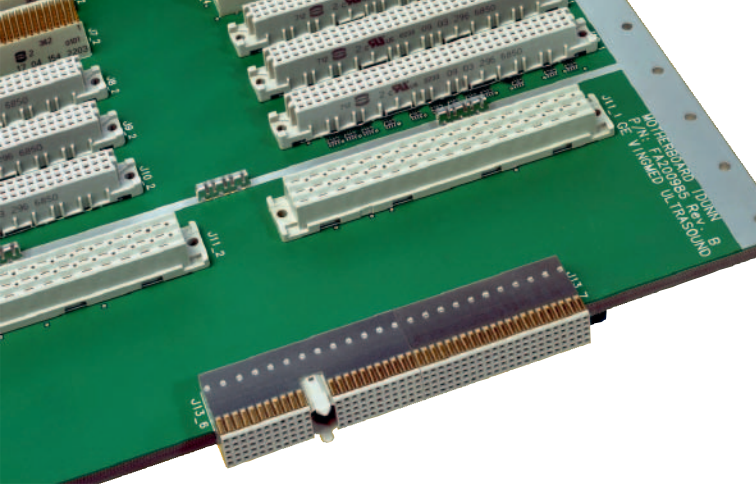
HARTING Integrated Solutions

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
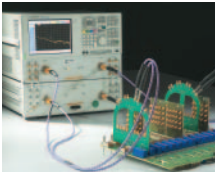
Manufacturing:
Focused on backplane assembly, prototypes to volume production
Assembly standards to IPC610 'J' Standard

- 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

Sales Network – worldwide

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