HARTING Technologies meet markets

Connectors and System Components for

- Machine manufacturing
- Transportation
- Automation technology
- Energy
- Telecommunications

HARTING People | Power | Partnership

Contents

The Technology Group HARTING

Using the strength of our expertise and the experience of our employees, we recognize customer needs and develop solutions. For decades, we have been ranked as a leading specialist in the field of electrical and electronic connection technology. We develop, produce and sell connectors, system components and complete systems for connecting and supplying machines, plants, appliances, railways, base stations, and many other customer applications with power and data.

We do this by drawing on the extensive performance range of the Technology Group HARTING that currently has subsidiaries in 22 countries. Our connectivity technologies and the competence of over 2,000 employees promote the creation of products that have one common aim: meeting customer requirements to an optimum degree.

We focus on a total of five core markets in the field of connection technology and our experience spans all continents. A selection of projects serves to illustrate the wide diversity of potential and applications in these areas:

- Machine Manufacturing
- Transportation
- Factory Automation
- Energy
- Telecommunications

Combining our experience and available expertise we work to create market-oriented solutions.

TECHNOLOGIES MEET MARKETS.

MACHINE MANUFACTURING

Operating under tough ambient conditions, modern industrial connectors for mechanical and plant engineering have to be capable of interference-free transfer of power in the high-current range for drive systems while also transmitting bus signals from the automation system. The decentralized structure of power and control systems in connection with bus systems is gaining increasing significance.

Drawing on standard products from the comprehensive HARTING range, it is possible to configure virtually any plug connection to meet the needs of the respective application in terms of space requirements, assembly requirements and transfer medium (electrical, optical, pneumatic). Solutions for industrial Ethernet in IP 67 protection expand the range of solutions to meet emerging customer requirements.

Machine frame/housing with distribution unit. ULVAC, Inc., Susono City, Japan

Compact connections for distribution units

ULVAC was founded in 1952 and is one of the largest manufacturers of semiconductor equipment in Japan. Their customers are global manufacturers of semiconductors and electronic equipment.
Currently ULVAC has developed a new generation of machinery called Entron, which is the successor of the Daytona machine type. Han® connectors are applied for the connection of the control panels to the different racks that are part of the machine.

Customer benefits:

- The coding system prevents incorrect mating when connectors are mounted side by side
- The locking system is superior in terms of safety to that of circular connectors
- The compact and space saving size of Han® 3A

When ULVAC reduced the size of their machinery, less space was left for connectivity with the circular connectors they were using. The Han® 3A's size and its locking system, not requiring any room for twisting it to lock, led ULVAC to decide to use Han® connectors. Since ULVAC particularly likes the Han® 3A size, there are new opportunities for applications of other products of that size.

Distribution unit with Han® 3A panel feed-through housings

Han® Q 5/0 inserts

The DESINA® concept delivers cost savings thanks to decentralization

Machine for grinding outer gears. KAPP GmbH, Coburg, Germany

Detail of KAPP machine: grinding of a gear wheel

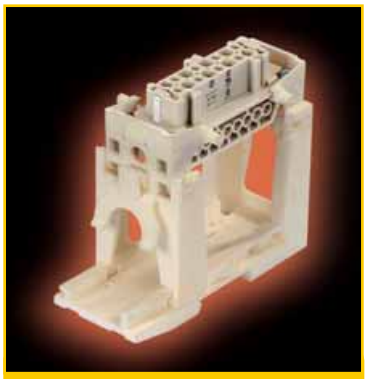
The KAPP Group, headquartered in Coburg Germany, is one of the world's leading manufacturers of machine tools specialized in gear and profile grinding machines. Its core activity is the finish processing of gears.

KAPP machines are installed in accordance with the DESINA® concept – a project of the German Machine and Tool Builders' Association for decentralized installation of machine control networks. HARTING supplies the hybrid field-bus connector, Han-Brid®, which is tailored to the requirements of the field-bus world. This connector enables the transmission of bus signals and voltage supply in one single connector in areas requiring at least an IP 65 degree of protection. The sensor and actuator cables can be easily connected in the field to the field-bus components via the rapid termination technology provided by the *HARAX*® M12 circular connector. A power bus structure can also be realized via the standardized Han® Q 8/0 connector series for the supply of power and signals for the motor connection.

Thanks to the decentralized installation technology in connection with modern field bus systems, complex substations and control cabinets can be dispensed with. Moreover, both installation costs and the risk of connection errors are reduced and component exchange is simplified.

Han-Brid® F.O. connector

Han® Q 8/0 contact inserts



Han-Snap® Insert mounting parts, swinging

Assembly system for control cabinets

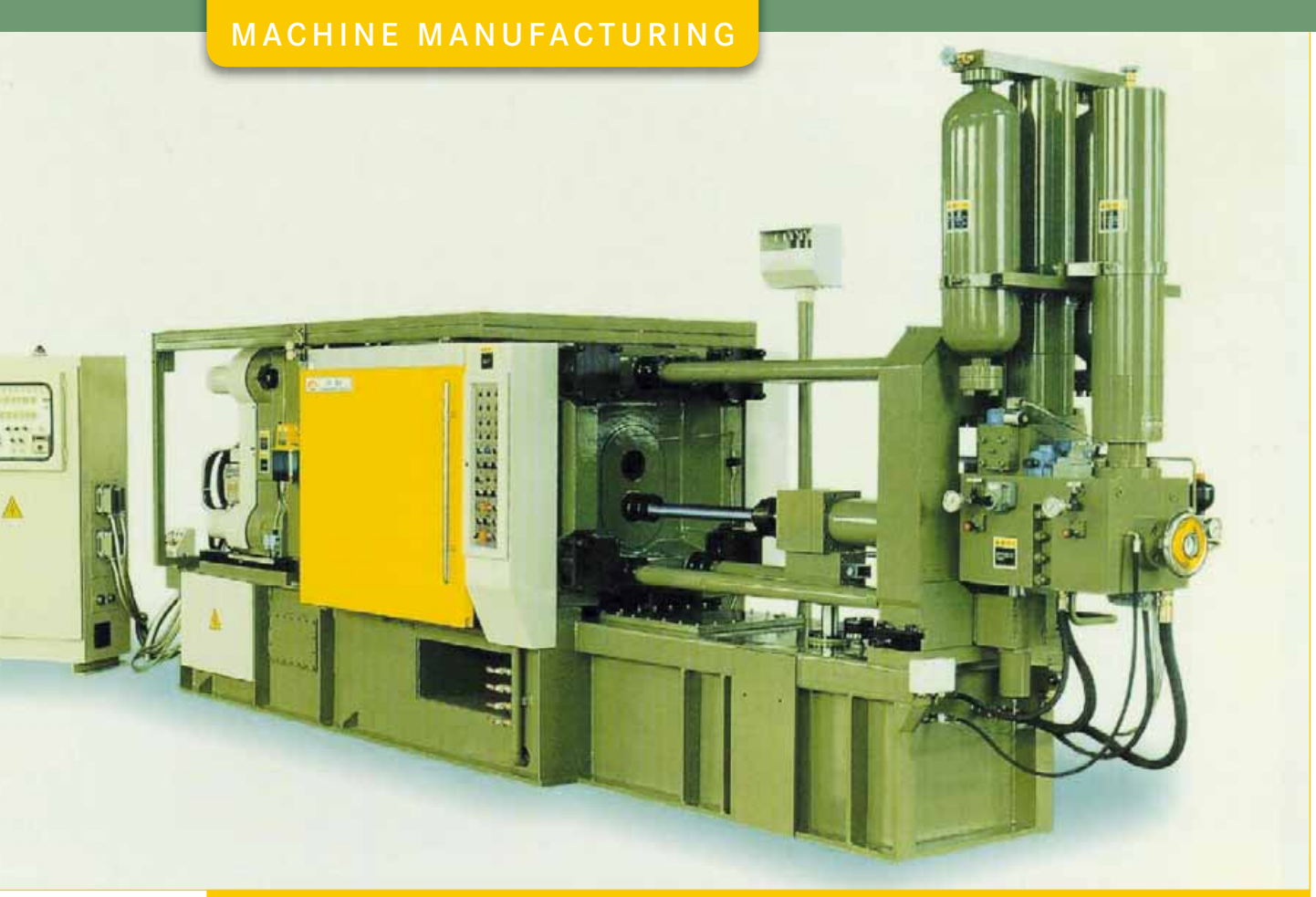
In order to be able to respond with flexibility to individual customer requirements, manufacturers are increasingly building equipment with a modular design concept. Machine complexity is increasing, as are the demands to meet cost budgets and tight installation deadlines.

The HARTING Han-Snap® System provides a solution for assembly of standard Han® connector inserts in the control cabinet. Multi-pole connectors from the diverse Han® series can be easily ”snapped” to standard rails without the use of special tools by using the polycarbonate Han-Snap® attaching pieces.

Installation of Han® inserts within the protected environment of the control cabinet, eliminates the need for metal hoods/housings and conventional terminal blocks are no longer required, thus material and assembly costs are reduced. Modular and complex power and control components, such as devices for the dimensionally accurate, parallel and angular assembly of work pieces, can be pre-assembled and tested separately.

After completion of all modules, the Han® connectors are mounted quickly and securely. The tilt function enables the simple inspection of the cable, as well as testing with the connector plugged in. This results in efficient manufacturing operations – saving time and money.

Control cabinet. IMA Maschinenfabriken Klessmann GmbH, Lübbecke, Germany



Die-casting machine. L. K. Machinery Co. Ltd., Hong Kong

Greater flexibility thanks to modular machine structures

The L.K. Group is one of the largest machine manufacturers in Hong Kong, South China.

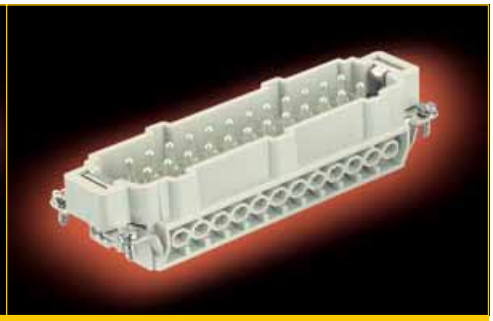
The company's annual capacity totals an impressive 2,000 – 4,000 machines. The L.K. Group has branches in the USA, Canada, Japan, Taiwan and Indonesia, as well as dealerships throughout the world.

Han® connectors are utilized in the "IMPRESS" cold-chamber die-casting machines. The decisive advantage for the customer is shorter manufacturing times because operating terminals and machine parts can be manufactured simultaneously at different locations. Using Han® connectors, the very flexible and modular structure of the "IMPRESS" machine is realized.

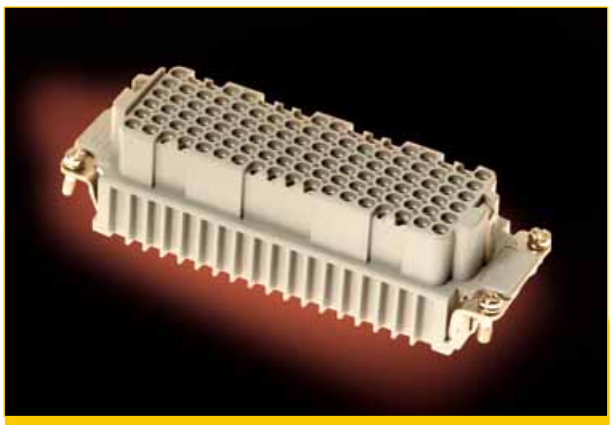
HARTING is the preferred supplier to the L.K. Group, particularly for high-end plants and facilities. Han-Modular® (D-Sub) connectors are currently being tested in prototypes in two new projects, where the connectors are interfacing with the respective computers.

Han® D-Sub modules

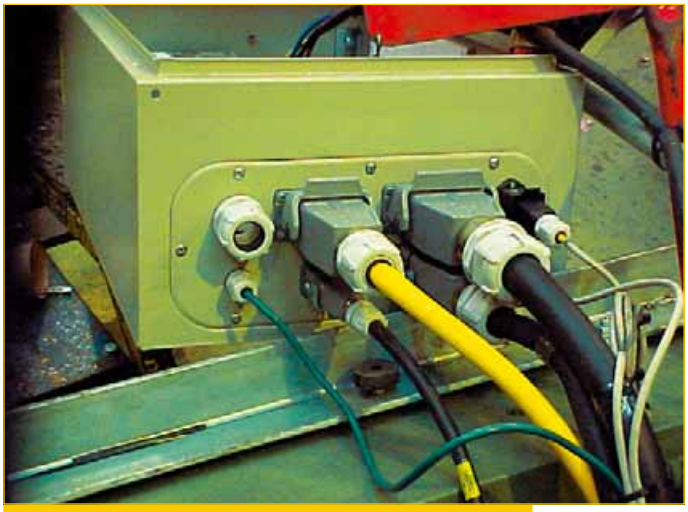
Han® 24 B bulkhead mounted housing



Han® 24 E male insert



Han® DD female insert

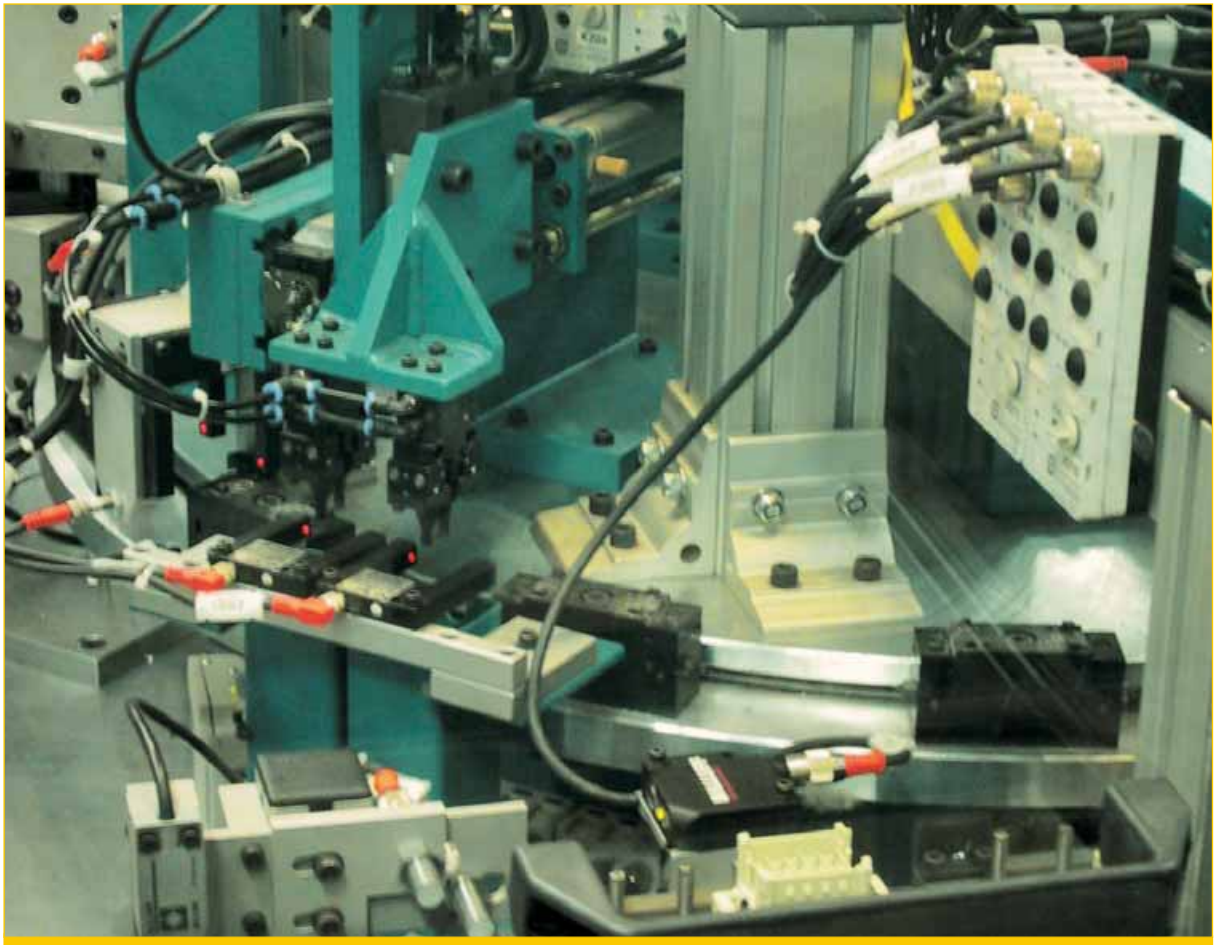


Distribution Box.
THYSSENKRUPP NORTE S.A., Mieres, Spain

Enhancing manufacturing processes

In order to interconnect the various different modules quickly and flexible, THYSSENKRUPP NORTE S.A., Spain is working with distribution boxes that are connected via multi-conductor cables.
The cables are connected using Han DD® and Han-Modular® connectors. The connector pin assignment is always the same and redundant wires are available for flexible installation. This greatly facilitates the wiring process. The same cables are used always, which eases testing. The finished products from each production cell are 100 % tested and pass through an automatic control system before they will be used in the final product.

Han-Modular® connector



Automatic assembly machine with *HARAX*® compact module for AS interface. SIM Automation GmbH &Co. KG, Heiligenstadt, Germany

Rapid termination technology for sensor-/actuator boxes

The proven axial *HARAX*® insulation displacement connector technology simplifies the connection of sensors and actuators.

HARAX® connection technology allows the connection of sensors in the field and no special tools for stripping the wires or for assembling the components are required.

As a result, popular sensor types with fixed cable lengths can be customized in the field. Money spent on excess cable lengths and resultant unwanted cable loops is saved.

The *HARAX*® components can be reused several times. The high requirements of IP 67 environmental protection are fulfilled. In addition to passive sensor/actuator boxes, compact modules for the AS interface with a maximum of 8 *HARAX*® terminals are also available.

HARAX® M12 circular connectors

HARAX®-passive sensor-/actuator box

Mobile X-ray system. Ziehm GmbH, Nuremberg, Germany

Image transmission with modular connectors

The Ziehm 8000 of Ziehm GmbH, Germany is a state-of-the-art mobile C-arm – highly rated for its mobility and simple operation. The system is equipped with a sophisticated radiograph delivering the highest image quality and excellent reliability.

The Ziehm 8000 impresses with one of the smallest footprints of any mobile C-arm available, while also featuring one of the largest C-arms. The small footprint, the reduced weight and the large C-arm make the Ziehm 8000 the perfect choice for intra-operative fluoroscopy and digital radiography.

The system is available in a pluggable design exclusively. The connection of the moving part to the monitor cart is achieved by way of a HARTING Han-Modular® connector in a Han® 10 B housing with one Han E® module and two Han DD® modules.

For the next generation of C-arms, the modular connector is to be extended by one multi-contact module with 75 Ohm coaxial cable thereby enabling higher data rates for image transmission.

Example for a Han-Modular® connector

TRANSPORTATION

Modularity is a trend that is increasingly gaining ground in the rail technology field. The development and manufacture of modules that are assembled to produce a complete unit require simple, safe and reliable electrical and electronic connections. This applies to both the control signal and power transmission areas.

HARTING offers a complete connector range to fulfill these needs. The spectrum ranges from shielded connectors for the transmission of sensitive signals to the interface for power connections on main propulsion units.

“Hercules” diesel locomotive. Siemens Krauss-Maffei, Munich, Germany

Flexibility in rail applications

The “Hercules” BR 2016 diesel locomotive of the Austrian State Railways, features Han® standard connectors with Han-Easy Lock® or central-locking lever which are used inside the vehicle.

In both diesel and electric locomotives, a wide range of signals or power has to be transmitted for control purposes. Here – as in diverse other applications – customers require safe commissioning, the possibility to easily search for faults or, if necessary, the quick exchange of components or modules.

The suitability of a connector always depends on the respective usage requirements and ambient conditions. The ambient conditions inside locomotives and train cars differ from those outside. The restricted access for installation is a typical aspect of interior applications. However, simple operation and accessibility of the connectors must be guaranteed at the same time. HARTING meets these requirements by providing a wide variety of different hoods and housings as well as the associated locking systems.

The 2016 series diesel locomotive features connectors with a central locking lever which provides easy operation in areas that are difficult to access – both from below and from the side. Connectors with the Han-Easy Lock® lever were chosen for the generator area, since installation conditions would only allow locking from the side.

Han-Easy Lock® lever

Han® B housing with central locking

"Blue Tiger" diesel locomotive.
Bombardier Transportation, Kassel, Germany

Bogie of the diesel locomotive with Han® HPR housing

Safe use under extreme environmental conditions

In this rail bogie application, connectors are used to transmit rpm and bearing temperature signals at the bogie of the "Blue Tiger" diesel locomotive.

Sensors are fitted to the axles in order to obtain information about the correct functioning of the bearings and current speed. Connectors along with cables are used with these sensors to transmit the relevant signals to the evaluation electronics. In the event of a fault, quick and safe disassembly is a low cost experience.

Since the Han® connectors are located externally, they are consequently subjected to thermal, mechanical and corrosive ambient conditions: namely heat, cold, vibration, and the impact of stones, salt, etc. In order to guarantee problem-free operation even under these extreme conditions, a connector is required that is specially designed for this type of demand: the solution is the use of a HARTING Han® HPR housing (HPR: High Pressure Resistant).

Han® HPR hoods and housings are suitable for maximum protection underneath and external to the vehicle and in extreme conditions. The connector function is guaranteed by the following features, e.g.:

- IP 68 protection
- Use of a non-corrosive alloy
- Internal, protected seal
- Fastening screws within the sealed area
- Locking elements made of stainless steel

Han® HPR housing

Etris H2000 power converter.
ELIN EBG Traction, Vienna, Austria

Compact and modular connection of power converters

Locomotives and trains operate on high power. Overhead lines are used to transmit electrical power to the train and carry very high voltages and currents.

The power converter is an essential element of drive technology within the “overhead line” to the “engine” power chain.

To ensure that these power converters fit into the modular system concept and that assembly and maintenance can take place quickly and flexibly, connections for the safe transmission of high currents must be used.

In these applications, HARTING is offering the Han® HC Modular connectors. These are capable of safely transmitting up to 650 A.

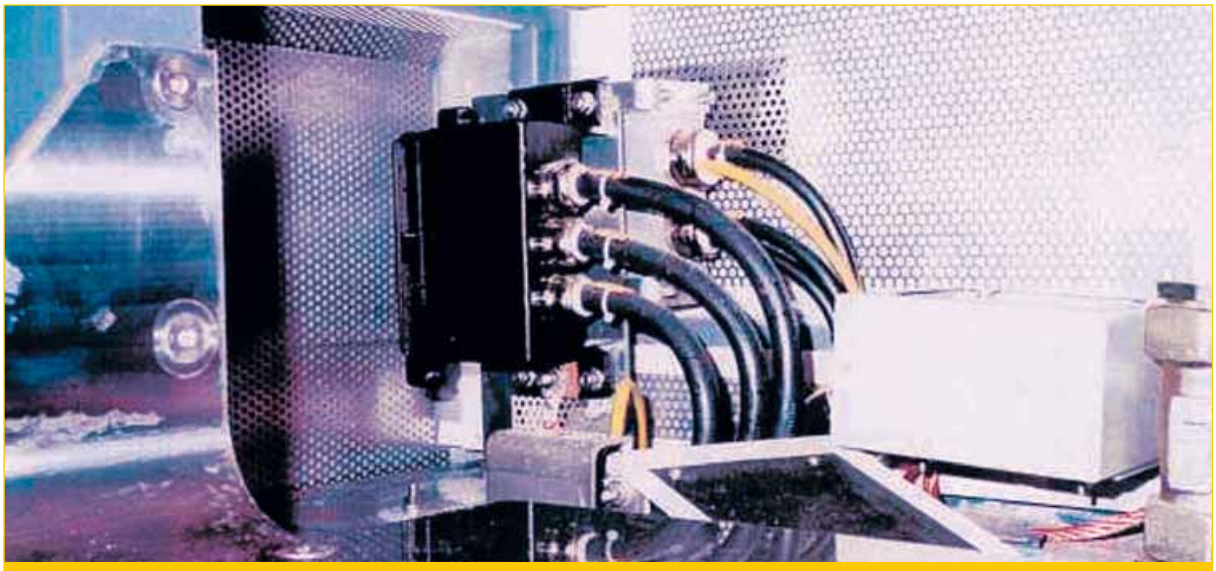
The use of the axial screw termination results in a compact and space-saving electrical connection.

The connectors are installed in the Han® HPR housing that is specially designed for outdoor use.

Han® HC Modular 350 with Han® HPR housing

Han® HC Modular 650 with Han® HPR housing

Quick connection of drive motors



Motor connection of the traction bogie. Siemens AG TS, Erlangen, Germany

Power-transmission connectors are at work here; the traction-bogie motor is connected via the Han® K 3/0 (rated 200 amps) in the Han® HPR housing.

The advantages of optimized manufacturing and faster servicing are strong arguments in favor of the modular principle. The trend towards making higher voltages or currents connectable is continuing undiminished, whether as an interface for grounding circuits on the vehicle chassis or as a motor connection for the motor bogies. HARTING has mastered these demands by offering a cost-effective termination system: the axial screw termination. The system significantly reduces connection time and enables, for example, the design of drive bogies – increasingly with modular structures – to be quickly connected/disconnected. Use of the Han® K 3/0 and Han® HC Modular in the pressure-tight Han® HPR series (IP 68) hoods and housings for outdoor applications, efficiently connectorizes the supply lines to the bogie drive motors.

Han® HPR housing

Han® K 3/0 high current connectors

Ethernet-Interface Passenger information system

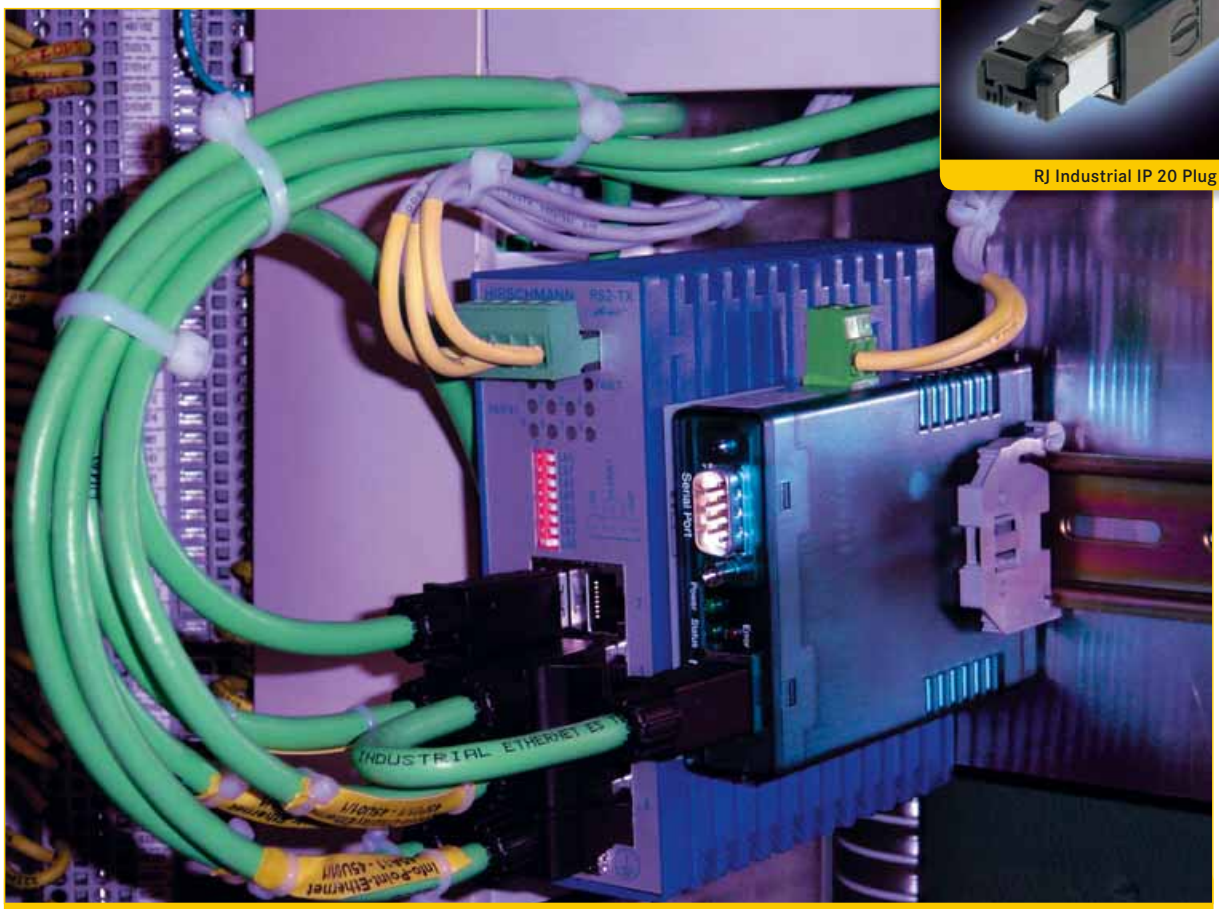
Ethernet is used extensively in the office environment and is gaining more and more importance as a bus system in industrial applications. But commercially available office equipment connectors can not be utilized offhand in industrial applications. This is due to the harsh environmental conditions which are typically found in factories and manufacturing.

Ethernet has already established a presence in the railway market and is applied in rolling stock and stationary systems. At present, Ethernet is mostly used as a bus system for passenger information systems. For example, it is used to connect the central units of audio- and video-systems within the train or for ticketing. The HARTING RJ Industrial® Ethernet connectors and Ethernet cable from HARTING are currently being tested for networking in these applications by the Stadler Rail Group, Switzerland.

The HARTING RJ Industrial® connector family includes several variants which have been developed for use in harsh industrial environments. The connectors feature a time saving and easy mounting capability as no additional tools are needed for their assembly. One can assemble RJ Industrial connectors to cable for industrial Ethernet with stranded or solid wires with a conductor cross section up to AWG 22/0.34 mm². Through the use of *HARAX*® insulation displacement contacts, the HARTING RJ Industrial® connector has proven to be reliable and time saving. Special stamped metal sheets have been designed and implemented for EMC protection around the connector body.

In addition to Ethernet connectors, HARTING offers harnessed system cables in various lengths, Ethernet switches for building Ethernet networks, and a complete line of Ethernet connectivity solutions for your needs.

RJ Industrial IP 20 Plug



HARTING RJ Industrial® Stadler Rail Group, Altenrhein., Switzerland

AUTOMATION TECHNOLOGY

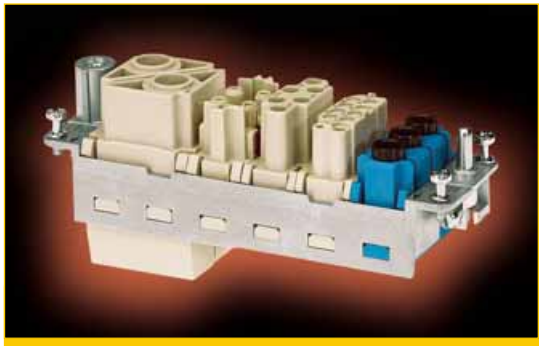
Flexibility and modularity are key terms in the world of modern automation technology. During development, assembly, transport and operation, both flexibility and modularity can only be achieved with the help of the appropriate connection technology.

HARTING offers the appropriate solutions for virtually all automation applications. The available range includes connectors for electrical signal and power transmission, fiber-optic technology, and interfaces for pneumatic lines.

Complete solutions for industrial Ethernet are also available, ranging from connectors based on the RJ 45 and M12 systems, system cabling, to devices such as industrial switches or outlets. The main focus is on products offering IP 65 / 67 protection.

Han Quintax® connectors

Modular connector systems for packaging machines



Han-Modular® modules

Today's modular packaging systems require flexible interfaces. HARTING's Han-Modular® connector series is a driving force behind this trend.

In place of a moulded, pre-configured insert, the Han-Modular® system is based on a retaining frame and individual modules. Using this system, the modules can be assembled and disassembled in the die-cast retaining frames without the use of tools. Finished module/frame assemblies are mounted into robust Han® hoods and housings that offer the right protection for virtually all applications.

With the help of different modules, electrical signals and power can be made pluggable. Moreover, standard modules are available and provide plug-in facilities for pneumatic tubes, fiber optic and coaxial cables. In addition, a module is available with the Han Quintax®, a shielded communication connector that enables a highly shielded transmission of signals.

Cigarette packing machine. G.D.S.p.A., Bologna, Italy

DESINA® encoder with PROFIBUS interface for optical data transmission. TWK-Elektronik GmbH, Dusseldorf, Germany

DESINA® encoder with PROFIBUS interface for optical data transmission with Han-Brid®

For high-resolution angle encoders with PROFIBUS or CAN interface: Han-Brid® connectors ensure an easy, standardized connection to the transmission medium.

The DESINA® concept (DEcentralised and Standardized INstAllation technology) developed under the direction of the German Machine and Tool Builders' Association defines various aspects, including profiles for electro-mechanical interfaces, for cable and interconnection engineering, as well as for frequently used field components, such as sensors, valves and I/O distributor modules.

Copper-based signal lines are of interest for standard applications in angle measurement engineering; fiber-optic cables are used to meet higher-speed requirements for transmission security and distance. Both types of signal lines are combined with copper wires for power supply (in Europe) in one connector.

TWK-Elektronik offers high-resolution angle encoders with PROFIBUS interface for both variants. Han-Brid® connectors ensure easy, standardized connection to the transmission medium.

The main application for angle encoders with PROFIBUS is, wherever angles and distances must be identified as efficiently as possible, for example, in transport and feed units, peripheral units, extended cranes and loading systems or in the paper machine industry, to name just a few.

The DESINA® concept that was originally developed for the machine tool industry is now proving beneficial in many other segments and application areas.

Han-Brid® F.O. connector

Han-Brid® Cu connector

Power and signal transmission in robots

Han® industrial connectors are important components in realizing maximum flexibility when it comes to assembly, testing, transportation and commissioning of modern robotic systems.
An industrial robot essentially consists of two components: the control cabinet, which controls the functions of the robot and communicates with other robots or plant components, and the industrial robot itself.

Various Han® industrial connectors are used to transmit both signals and power between the control cabinet and robot.
Connectors from the Han-Modular® series in particular, play an important role and enable the combination of both signal and power transmission in a single connector. In addition, connectors from the Han DD® series are often used and enable signal transmission (10 A / 250 V) in a minimum amount of space. Other products from the Han® EE series provide connectorization for power transmission and are rated at 16 A / 500 V.

The supply of power to the entire robotic system can also be designed to be pluggable for example, by using a Han® 6 HsB insert (rated at 35 A / 500 V).
Various other Han® industrial connectors are also available for communication with additional machine or plant components, and allow the robotic head tools to be pluggable. Using the strength of their robust mechanical design and IP 65 protection, the Han® connectors are suitable for all industrial applications.
Connectors are essential to low cost robotic applications, as fixed wiring for assembling, testing, transport and commissioning of the system in the field would be far too expensive.

Robot. KUKA Roboter GmbH, Augsburg, Germany

Han® 6 HsB contact inserts

RJ Industrial connectors and system cables

Robot networks with HARTING industrial Ethernet

The new DaimlerChrysler A-Class is produced in Rastatt, Germany. HARTING now supplies the industrially proven connector technology for linking the robot and welding controls to the internal DaimlerChrysler Ethernet company network at the A-Class production facility.

More than 1,000 industrial connection points – so called "Industrial Outlets" – panel feed throughs, and industrial Ethernet system cables with IP 67 RJ Industrial DATA 3 A connectors connect the robot and welding controls.

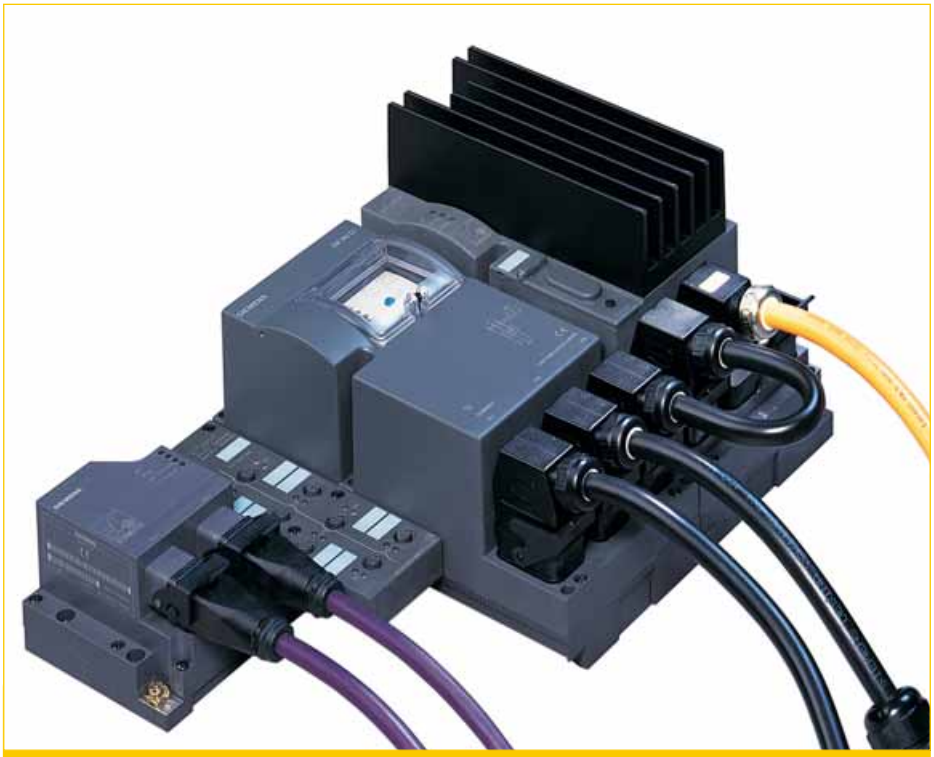
According to Mr. Fabien Beill, network manager at DaimlerChrysler, the robustness of the components and the backward compatibility of the RJ 45 interface that allows diagnostics and service with standard patch cables, were the main reason to choose the HARTING technology. Especially in welding applications, the weld splatter resistance of the network components is evident. Metal outlets and connectors from HARTING were used in this application.

With its robust design and its IP 65 / 67 protection degree the HARTING Industrial Outlet INO 67-30 TP02 can be easily mounted on walls and lattices inside and on the outside of production facilities. The approved LSA-Plus® termination technology allows a quick and easy harnessing of horizontal cables. The internal DaimlerChrysler Ethernet network is linked to the production plant via a user friendly termination and easy to lock RJ 45 system cable. The Industrial Outlet INO 67-30 TP02 is designed and built according to the PROFInet® installation guideline.

Switch Cabinet

RJ Industrial device connectors in switch cabinets for robot controls an industrial environment.

Industrial Outlet mounted at production line.
DaimlerChrysler AG, Rastatt, Germany



SIEMENS ET 200 X decentral peripheral devices. Siemens AG, A&D, Germany

Decentralized installation technology interacting with SIEMENS automation components

In modern machine and plant configurations, conventional industrial installation technology with central switch cabinets is being replaced by decentralized installation structures.

The modules necessary for the automation functions, such as I/O modules or motor control units, are no longer being installed in the switch cabinets, but rather in the field on/or close to a machine.

Essential cost savings can be achieved during planning, installation and commissioning by combining serial wiring for communication via field bus systems and power.

Installation components with a high degree of protection are basic necessities for the development of decentralized installation structures. The ET 200 X, ET 200 ECO and ECOFAST® series from Siemens AG, A&D offers a broad range of products that support these structures. Han-Brid® connectors are integrated into these components as interfaces for the combined data and auxiliary energy transmission and Han® Q and Han-Drive® connectors for the energy supply. Combined with system cables, these interfaces enable simple, fault-free installation, thereby forming the foundation for the above-mentioned cost savings.

Han® Q 8/0 connector

In power plants, the rapid exchange of systems or subsystems is a particularly vital aspect. HARTING offers a wide range of connectors serving a wide variety of application areas, thereby making a key contribution as a supplier to the energy industry.

The required product spectrum ranges from high-current components for applications up to 650 A to solutions for data transfer, such as the RJ 45 in robust industrial housings.

Cost efficient connection of high-voltage switches for outdoor use

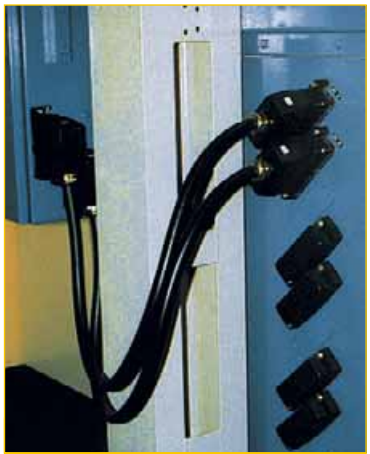
The 3AP1 FI power circuit breaker is designed for high voltages up to 145 kV for outside operations. The power circuit breaker consists of three insulator columns with one operating unit each and a shared control unit. The insulator columns each contain an interrupter unit and the necessary drives. To ensure secure and controlled switching of the high power, the three interrupters are controlled electronically. A secure connection between the drives and the control unit is therefore essential.

This connection is realized by using 46 conductor special cables to transmit the sensor and actuator signals. The connections are pluggable in order to reduce assembly work. The pre-manufactured cables are tested before shipping and thus minimize the possibility of wiring errors. Service and maintenance are simple procedures.

The relevant environmental conditions have to be taken into account as the circuit breaker can be used outdoors. Temperature fluctuations and humidity in particular play a key role. Even snow and ice can not be excluded. Consequently, Han® HPR housings and seals have been chosen and have been specially developed to withstand these types of stress.

Han® 46 EE contact inserts

Han® HPR housing



High-voltage power switch.
Siemens AG, PTD, Berlin, Germany

Wind turbine. ENERCON Electric GmbH, Aurich, Germany

Rapid replacement of systems in wind turbines

The functions involved in energy generation necessitate the multiple connection of high currents and voltages. If the connection is to be made pluggable, the high current connection possibility using the Han® HC Modular line is suitable for a number of configurations. With a current-carrying capacity of up to 650 A at voltages of up to 4 kV, such multiple-pin plug connections in conjunction with Han® HPR housings can be combined to form an extremely robust system.

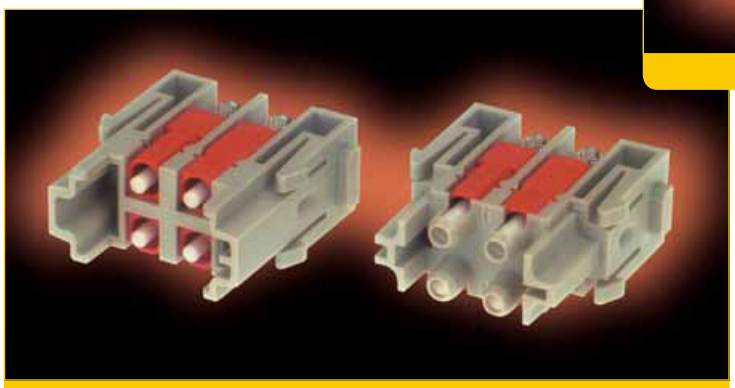
High-performance, reliable connections for data exchange and local power supply are the basic requirements when implementing a modern control system. Operating, monitoring, and programming units are usually networked via the widely used RJ 45 interface. For this application, HARTING offers a variety of industrial connections such as the RJ Industrial family of Ethernet connectors. The Han Quintax® is recommended for high shielding within the connection. The Han Quintax® connection allows secure data exchange of sensitive signals, e.g. for bus systems (transmission rate: 100 Mbit/s) and is based on a coaxial plug connection.

The fiber-optic connections widely employed in networking must be designed to be pluggable for different optical fiber types and must also meet the requirements described above. The Han-Modular® SC module allows the integration of standard SC connectors from different vendors into one module from the Han-Modular® line. Using the “snap-in” technique, up to 4 fiber-optic connections (50/125 µm; 62.5/125 µm) can be installed in the Han-Modular® SC module without any additional tools and can be removed just as easily. Thanks to a host of installation options, such as a Han-Modular® Compact housing, this connection also achieves a protection degree of at least IP 65.

The interface of a hybrid connector, as defined in the DESINA® standard, offers transmission of fiber optic signals and a copper connection with up to five 10 A contacts, which can be used for the bus power supply.

The fiber-optic connection – which can be designed for POF and HCS® – allows transmission rates via a HCS® fiber of up to 12 Mbit/s at a maximum distance of 300 m. The maximum cable length of the POF cable is 50 m.

Han-Modular® Compact connector



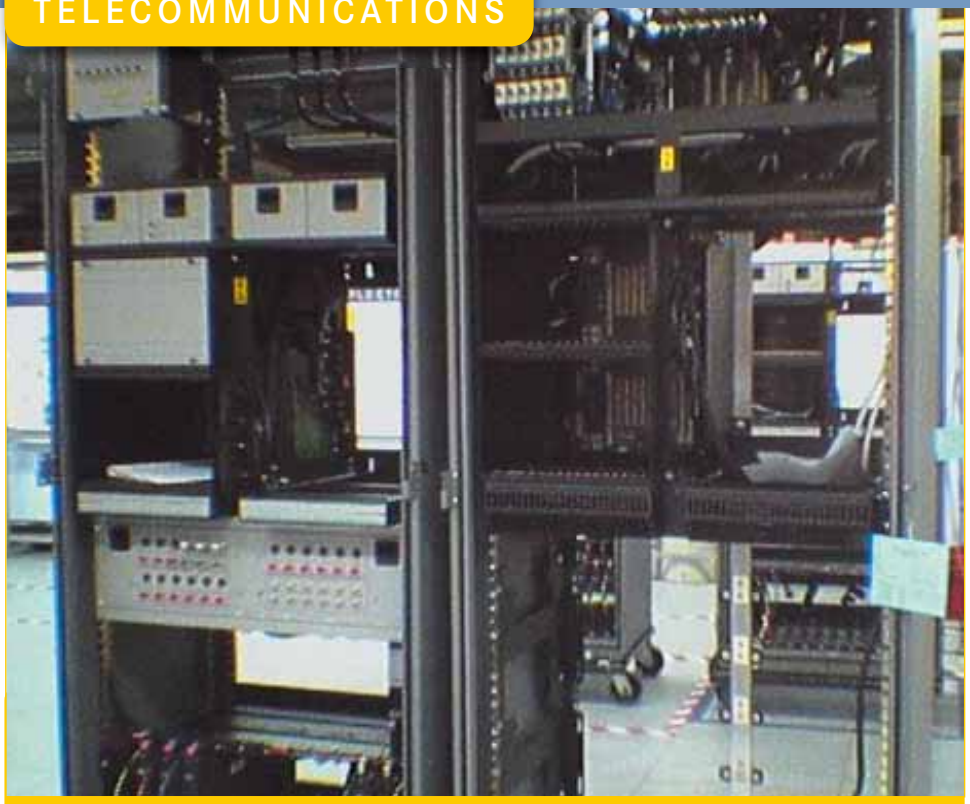
Han-Modular® SC module

TELECOMMUNICATIONS

Connector technologies have to cope with extreme demands in terms of the transmission of maximum data volumes especially in the telecommunications area. Base stations must be able to reliably guarantee the operation of cellular radiocommunications, even during heavy traffic periods.

HARTING solutions are easy to work with and install, and they uphold the required performance characteristics. When considering multimedia applications and their constantly increasing data rates and the steadily advancing degree of integration of electronic modules and components, the choice of connectors having high-frequency transmission characteristics, such as crosstalk, insertion loss, reflection property, etc., plays an ever increasing important role.

In all areas of connector technology, HARTING is supporting leading manufacturers of telecommunications infrastructure equipment early in the design-in stage.



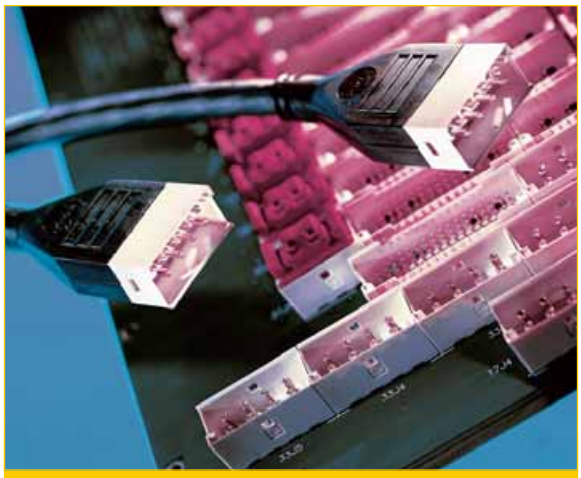
CDMA base station

Connectivity solutions for specific base station requirements

A global supplier of CDMA infrastructure equipment selected HARTING connectors to solve specific problems it had with its CDMA cellular Base Stations.

The HARTING Mini-Coax RF connectors and cables and the HARTING 2.5 mm *har-pak*® digital connectors were selected to ensure that the cellular Base Transceiver System (BTS) would have 6 sigma board mating, to allow RF and digital signal inter-connections to be integrated in one back plane and to minimize RF cable routing that ensures ease of assembly and field service, as well as maintain a clean appearance.

To bring low power RF signals from the Site Interface Frame (SIF) to the Modem Frame (MOPA) a dust proof solution was required. HARTING utilized the HARTING Mini-Coax cable assemblies and the Han® 6 B housing and hood to more than execute these requirements.



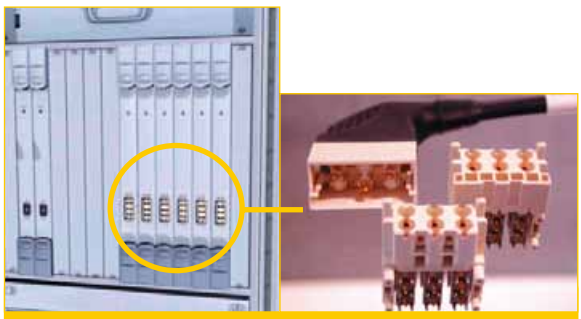
Mini-Coax connectors and cables

Mini-Coax in Han® 6 B housing

har-pak® and Mini-Coax in CDMA base station

Front access solution for 20 mm slot pitch

The new Samsung „SlimBTS SCBS-508M“ base station (CDMA2000 1xEV-DO) opens the possibilities for data connections, which are controlled by the Base Station Controller (ANC, Access Network Controller), to mobile phones.
HARTING redesigned the existing Mini-Coax system to a low profile Mini-Coax connector & cable version to meet Samsungs requirements for a 20 mm slot pitch.



Transceiver unit

har-link® connector & cable assembly

Application – Telecom

Channel card

People | Power | Partnership

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HARTING Technologies meet markets

Connectors and System Components for

- Machine manufacturing
- Transportation
- Automation technology
- Energy
- Telecommunications

HARTING People | Power | Partnership