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Introduction

DEVICE CONNECTIVITY





CABLE- / WIRE-TO-BOARD

Whatever your applications may be, HARTING has the ideal solutions for your data, signal and power connectivity requirements with its matching cable-to-board and wire-to-board technologies with degree of protection IP 20 to IP 65 / IP 67.



FIEL CABINE POWER SIGNAL DATA





DEVICE CONNECTIVITY PRODUCT OVERVIEW





01. HARTING RJ INDUSTRIAL® – RJ45 ETHERNET CONNECTORS HARTING offers a wide range of RJ45 contact inserts and matching RJ45 connectors for quick and reliable termination of your 2- or 4-pair Ethernet cables. The RJ Industrial connector family also supports Ethernet automatic

cables. The RJ Industrial connector family also supports Ethernet automation profiles such as PROFINET, Ethernet/IP, EtherCAT and Powerlink. The HARTING RJ Industrial[®] connectors provide standard RJ45 connection technology for the industrial field level.

02. PushPull CONNECTORS





HARTING has set the standard for connection technology for innovative IP 65 / IP 67 installation concepts with its new generation of the PushPull series. The multifunctional PushPull connector is available for data, signal and power applications and provides a concept with many connector mating faces. The universal PushPull product line is complemented by additional interfaces such as USB, LC or SCRJ.

03. CIRCULAR CONNECTORS

HARTING offers a comprehensive portfolio of M8, M12, M23, 7/8" and Han-Max[®] circular connectors for industrial applications. In addition to assembled system cables, HARTING also offers connectors with *HARAX*[®] fast termination technology for onsite installation directly in the field.

Power

Signal

Data



04. INDUSTRIAL CONNECTORS Han®

 ${
m Han}^{\otimes}$ industrial connectors with degree of protection IP 65 / IP 67 represent the worldwide connector standard with regard to safe installation, efficient commissioning and servicing of machines and plants



D-Sub connectors are a classic solution for cable-to-board applications. Thanks to their versatility, they represent a universal solution for applications in the field of device connectivity, and offer a wide range of data, signal and power connection technology for applications in automation systems.

06. har-mik® INTERFACE CONNECTORS

Miniature D connectors are used for applications where the focus is set on space saving solutions and high data rates. HARTING offers 14-pole to 100-pole *har-mik*[®] connector variants with pin & socket and bellows contact design and 1.27 mm contact grid, covering data rates up to 600 MHz.



07. har-link® INTERFACE CONNECTORS

The *har-link*[®] connector is characterized by its ability to handle the highest data rates in combination with perfect shielding functions. HARTING complements the *har-link*[®] connector family by assembled system cables with shielded and unshielded twisted-pair design.

08. SEK INSULATION DISPLACEMENT CONNECTORS

IDC connectors for flat ribbon cables facilitate the simple and cost-effective configuration of devices and are preferably implemented as internal connections. HARTING offers a wide range of these cable-to-board connectors.

09. DIN 41 612 CONNECTORS

For many years, connectors to DIN 41 612 have established themselves as a standard both for board-to-board and cable-to-board applications. HARTING offers a wide product range of DIN 41 612 connectors for data, signal and power lines, including corresponding accessories.

10. Mini Coax CONNECTORS

Mini Coax connectors facilitate multi-channel, coaxial and highfrequency data transmission for board-to-board and cable-to-board applications. Device integration is supported with straight and angled contact inserts with press-in technology and SMT/SMC. The housings support applications up to IP 65.

11. har-bus® HM CONNECTORS

har-bus® HM connectors form the basis for the assembly of highperformance backplanes for control systems and for industrial computer systems with 19" technology. The board-to-board connectors are available with press-in technology for backplanes and solder versions for sub-boards.

12. TCA CONNECTORS

TCA connectors represent the next generation of backplane connectors. Their new concept supports direct or indirect connection. A special connector covers particularly rugged connections on the basis of indirect connection. TCA connector versions are available for connecting data channels and the power supply to the modules.

13. MICRO CARD EDGE CONNECTORS

The HARTING Micro Card Edge connector for applications requiring boardto-board mezzanine or small pluggable daughter card connections. The key feature is the very flexible stacking height of parallel boards by utilizing a small board between the connectors.

14. har-flex® CONNECTORS

HARTING's new har-flex® connector series is a space-saving, rugged and flexible PCB connector for the widest range of board-to-board and boardto-cable applications. In addition to straight connector models, the product family also includes compatible insulation displacement connectors, along with angled models.













- HARMAN MARKANNA

SELECTION GUIDE



PRODUCT GROUP	CONNECT	ΓΙΟΝ ΤΥΡΕ	ENVIRG	ONMENT	
	Board to Board	Cable / Wire to Board	IP 20	IP 65 / IP 67	Data
01 HARTING RJ Industrial [®] − RI45 Ethernet Connectors			•		•
02 PushPull Connectors		•		•	•
03 Circular Connectors		•		•	•
04 Industrial Connectors Han®		•		•	•
05 Subminiature D Connectors		•	•	•	•
06 <i>har-mik[®]</i> Interface Connectors		•	•		•
07 <i>har-link®</i> Interface Connectors		•	•		•
08 SEK IDC Connectors		•	•		•
09 DIN 41612 Connectors	•	•	•		•
10 Mini Coax Connectors	•	•	•		•
11 <i>har-bus[®] HM</i> Connectors	-		•		•
12 TCA Connectors	-		•		•
13 Micro Card Edge Connectors	•		•		•
14 <i>har-</i> flex [®] Connectors	-	•	•		

Intro-duction



Intro-duction



We ensure convincing connectivity for each and every device you bring to the markets.

HARTING will develop the ideal connectivity for your devices in cooperation with your product management and device developers. For us, this means: Design-in support.

HARTING, THE SPECIALIST FOR INDUSTRIAL DEVICE CONNECTIVITY

The versatility of industrial electronic devices and the potential solutions for device connectivity go hand in hand. HARTING supports industrial electronic systems with a wide standard portfolio of device connectivity for data, signal and power applications.

This portfolio facilitates the comfortable and quick implementation of the majority of connectivity solutions. Future device generations are frequently subject to specific requirements in terms of their interfaces. In order to implement Device Connectivity solutions that are tailored to these requirements, we utilize all expert resources of the HARTING Technology Group, drawing on our in-house development, tool production, extensive vertical range of manufacture and our accredited test laboratories. The connectivity of future industrial device generations is driven by market trends towards minimization of sizes, increase of performance and utilization of Ethernet communication with rapidly rising transmission rates. Consequently, as one of the leaders on the telecommunication connectivity market, HARTING integrates the knowledge acquired in this market segment to develop new Device Connectivity for industrial devices.

The MicroTCA telecommunications connector, for example, is implemented as a board-to-board connector for the latest devices in the field of drive control and computer technology. The new generation of PushPull connectors is also used as a robust IP 67 cable-to-board solution in both market application segments. These applications have formed a general trend of convergence in the field of device connection technology. HARTING offers more than innovative device connectors, as the connectivity provided by HARTING extends far beyond conventional connector offerings, and covers the entire range of connectors, assembled units and complete backplane solutions.

HARTING IS YOUR PARTNER IN THE DESIGN-IN PROCESS

Our field service department is your first contact partner in terms of the selection and design of the ideal connectivity solution for your device. This service is supported by HARTING's technical application support with device-specific knowledge. HARTING also places a team of experts in the fields of RF, EMC, housing technology, mechanical strength, high-current applications and installation concepts (cabling classes) at your disposal. These capabilities allow us to simulate your applications in advance and test it in the course of development in an accredited laboratory.

The HARTING Technology Group holds all the key technologies for integrated device connectivity, such as connection technology for PCBs based on SMD, THT, THR or press-fit technology and develops connectivity solutions for international standardization in cooperation with user groups. The latest generation of PushPull connectors was developed in cooperation with the German automotive industry and subsequently standardized on an international level. You determine which part of the design-In process should be handled by HARTING.

There are three ways of finding the ideal device connectivity with HARTING:

- 1. You select the suitable device connection technology from the DeviceCon catalog and handle the design-in by yourself with the help of our technical applications support.
- You define the scope of requirements for the device interfaces. HARTING supports you in selecting the device connection technology, with the focus always set on choosing the ideal connection technology for device integration. HARTING also holds the respective know-how for handling the entire design and the production of custom assembled units or backplanes.
- 3. You plan a new device generation with individualized device connectivity, which is defined in the course of a joint project. The result is a tailored, cost-effective solution for your series product and the differentiation of such products thanks to innovative device connectivity.

Whichever procedure you may prefer, you can always count on unrestricted HARTING support, as we are dedicated to ensuring convincing connectivity for each and every device you bring to the markets.

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**.

EXTENSION CONTRACTOR OF CONTRA

Product overview

Product combination

Product samples: Fast-track delivery to your desk, free of charge

The new free express sample service in the HARTING eCatalogue allows customers to order samples immediately, easily and completely free of charge. A broad selection from the device connectivity product portfolio is now available. If a product is unavailable, the system offers alternative products with similar features that can be requested at a mouse click.

The free samples are shipped within 48 hours at no cost to you. This service enables tremendous flexibility, especially in the design phase of projects.

General information

It is the customer's responsibility to check whether the components illustrated in this catalogue also comply with different regulations from those stated in special fields of applications. We reserve the right to modify designs or substance of content in order to improve quality, keep pace with technological advancement or meet particular requirements in production. No part of this catalogue may be reproduced in any form (print, photocopy, microfilm or any other process) or processed, duplicated or distributed by means of electronic systems without the prior written consent of HARTING Electronics GmbH & Co. KG, Espelkamp. We are bound by the German version only.

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Product selection

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1. HAN-QUICK LOCK® SPRING CLAMP TECHNOLOGY

The Quick Lock[®] radial spring clamp technology combines the benefits of a spring-loaded contact with crimp technology. The result is a simple and vibration-proof wiring technology with the crimp technology contact grid. Quick Lock[®] technology is suited for wiring flexible conductors. The stranded wires are split up by means of a center mandrel and are then pressed onto this mandrel by means of radial spring force. The spring is opened and activated using a standard screwdriver, which ensures convenient on-site termination, repair or service work.

2. AXIAL SCREW TERMINALS

Flexible stranded wires inserted into axial screw terminals are split up by a center mandrel and are then pressed onto the outer wall of the contact by screwing down the mandrel. This vibration-proof connection technology is also a convenient solution for repair work and is capable of handling conductor cross-sections to 100 mm². The axial screw terminal is an ideal alternative to applications that required special crimp tools for wiring large conductor cross-sections.

3. CAGE CLAMP TERMINALS

The cage clamp terminal technology is used to terminate flexible and solid conductors by means of spring force. After the spring has been opened by an actuator element, the stripped conductor is simply inserted into the contact chamber. This connection technology requires minimum operating expense and is characterized by its high functional safety. The spring-loaded connection also allows the termination of more than one wire per contact and excels with high vibration and shock resistance.

4. SCREW TERMINALS

The screw terminal represents classic connection technology, with screws retaining the stripped conductors in the contact chambers. Screw technology is suited for wiring solid and flexible conductors. Screw terminals with wire protection allows the insertion of stranded wire into the contact chamber without a ferrule. Handling screw terminal technology requires nothing more than a screwdriver. The pull out forces of screw terminal technology are standardized in IEC 60 999-1.

5. IDC INSULATION DISPLACEMENT TERMINALS

IDC (insulation displacement contact) technology facilitates the simple and safe termination of solid and flexible conductors. With IDC technology, a blade cuts through the wire insulation and produces an elastic termination in a single pass. This gas-proof connection provides maximum safety even for the lowest currents and voltages. *HARAX*[®] Fast termination technology is a special feature offered by HARTING which combines the insulation displacement connector with a wire guide element for conveniently producing onsite field installation without special tools. Technical requirements for IDC technology are standardized in IEC 60 352-3.

6. CRIMP TERMINALS

Gas-proof and the miniaturized contact technology are synonymous with crimp technology. The flexible conductor is inserted into the crimp contact and is retained by controlled deformation. This technology is similar to a cold welding process and provides maximum aging resistance and mechanical resistance to shock and vibration. Crimp machines facilitate the efficient, streamlined production of system cable assemblies, and crimp technology can also be deployed for field assemblies using the corresponding hand crimp tools. The technical requirements for crimp technology are standardized in IEC 60 352-2.

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PCB TERMINATION EXPERTISE

7. THT SOLDERING TECHNOLOGY

Proven over decades, standard soldering technologies deliver maximum stability and process reliability.

The soldering pins of the connectors are inserted into the through-plated PCB holes and can then be soldered simultaneously with other components in a wave soldering process.

8. SMC SOLDERING TECHNOLOGY

The connector is inserted into through-plated PCB holes similar to standard component assembly for processing with SMC (Surface Mount Compatible) soldering technology. Insertion of these SMT components can be automated by means of Pick & Place assembly in preparation for a reflow soldering process together with the surface-mounted component. This connection technology is characterized by high mechanical strength and is facilitated by a design that is specially adapted to the reflow soldering process (high-temperature materials).



9. SMT SOLDERING TECHNOLOGY

By contrast to through-plated assembly, the SMT (Surface Mounted Technology) connectors are soldered directly onto the PCB surface by means of soldering pads. This process represents a uniform connection technology for PCB assembly and offers the

advantage of SMT connectors that do not require separate wave soldering.



10. PRESS-IN TECHNOLOGY

This solder-free connection technology is based on press-in mounting of a pin in a throughplated PCB hole. The implementation of a state-of-the-art, flexible press-fit zone allows for the compensation of tolerances of PCB holes and meets high electrical and mechanical requirements for properties such as low press-in forces and high holding forces. Press-in technology supports unlimited cost efficient processing, especially of pins with selective gold plating for backplane bus systems.

