



## HARTING RJ Industrial® Ethernet connector family

The modular HARTING RJ Industrial® family of connectors is based on the standard RJ 45 connector pattern, and is specifically developed for use in harsh industrial environments. It points the way forward in connecting Ethernet devices in industrial applications. In many circumstances it is necessary for connectors to be assembled on site, regardless of whether they are being used for power or communication. HARTING is making consistent use of their *HARAX*® rapid termination technology, which has been proven in many industrial applications. With *HARAX*® the user can terminate the cable at the connectors without the need for special tools. The design of the HARTING RJ Industrial® family of connectors allows for quick and easy termination and connection to Ethernet devices in either data only or hybrid networks.

HARTING RJ Industrial® is the only RJ 45 connector in the world that allows robust Ethernet cables with a solid and stranded AWG 22 cross section to be connected using IDC technology. The heart of each of these connectors is the RJ 45 data module with fast termination technology. This functions without needing to prestrip insulation from the cores and without special tools, creating a gas-tight connection, which is secure against vibration. The data module has four *HARAX*® fast termination contacts. These make reliable contact with stranded, industry-standard Category 5 cables with dimensions from AWG 22 to 24, and solid cables with conductor cross-sections from AWG 22 to 23.

HARTING has developed a complete family of connectors around this innovative data module, meeting all the needs of industrial environments. Solutions for IP 20 and IP 67 protection levels, standard, push pull and latching clip-locks are available.



Data and hybrid cables can be used. The user can fit stranded cores with a cross section of 1.5 mm<sup>2</sup> for the IDC power contacts on the Hybrid version, and these can be loaded with up to 16 A.

At the device end, panel feed throughs or couplings integrated directly into the device can be accommodated. Consistent application of SMD components for both data and power at the device end keeps manufacturing costs low, and permits high packing density within the assembly.

### Field assembly of Industrial Ethernet connectors

The facility of on-site assembly was given high priority in the development of the new HARTING RJ Industrial® family of connectors. As a result, the connector is not just faster to terminate, but is also easier to handle due to the reduced number of individual parts.

All of the HARTING RJ Industrial® range connectors can be re-terminated up to ten times. An electrician can carry out assembly of the IP 20 Data version on site in less than one minute, while the IP 67 Hybrid version requires less than three minutes. Dismantling is just as quick. New personnel can also learn the individual steps involved very quickly and carry them out reliably.

Another advantage of the quick-connection technology is provided by the industrial-quality shielding of the data module in the connector. Termination of the shield which in the past has been achieved by crimping is no longer necessary. In the RJ Industrial connection technology, a pair of shielding plates are simply pushed over the data module, and pressed together with an audible "click". With this, complete, 360 degree connection of the shield and the sheath is achieved.

Various special tools for handling the RJ 45 data module and the power leads are unnecessary. HARTING supplies all the necessary components in a complete set.



**Specified for PROFINet®**



From the very beginning, HARTING saw it as its task to set a broad standard for Ethernet in industrial environments through a uniform connector solution. Through its involvement in the PNO (PROFIBUS Nutzerorganisation e.V.), the IAONA (Industrial Automation Open Networking Alliance e.V.), the DKE (Deutsche Kommission Elektrotechnik Elektronik Informationstechnik) and also with the

IEC (International Electrotechnical Committee), HARTING contributed to advancing the specification of industry-standard Ethernet connectors. At the beginning of 2003, the PNO decided to use the HARTING solution of the RJ Industrial family as the general concept for PROFINet®.

In addition to this an international standardisation process was initiated, because the HARTING approach is not a proprietary system, but an open solution for Industrial Ethernet interfaces.

		Device side			
		IP 20 Data Standard RJ 45 jack	IP 67 Push Pull	IP 67 Hybrid	IP 67 Data 3A
Cable side	IP 20 Data				
		✓	✓	✓	✓
	IP 67 Push Pull				
			✓		
	IP 67 Hybrid				
			✓		
IP 67 Data 3A					
				✓	

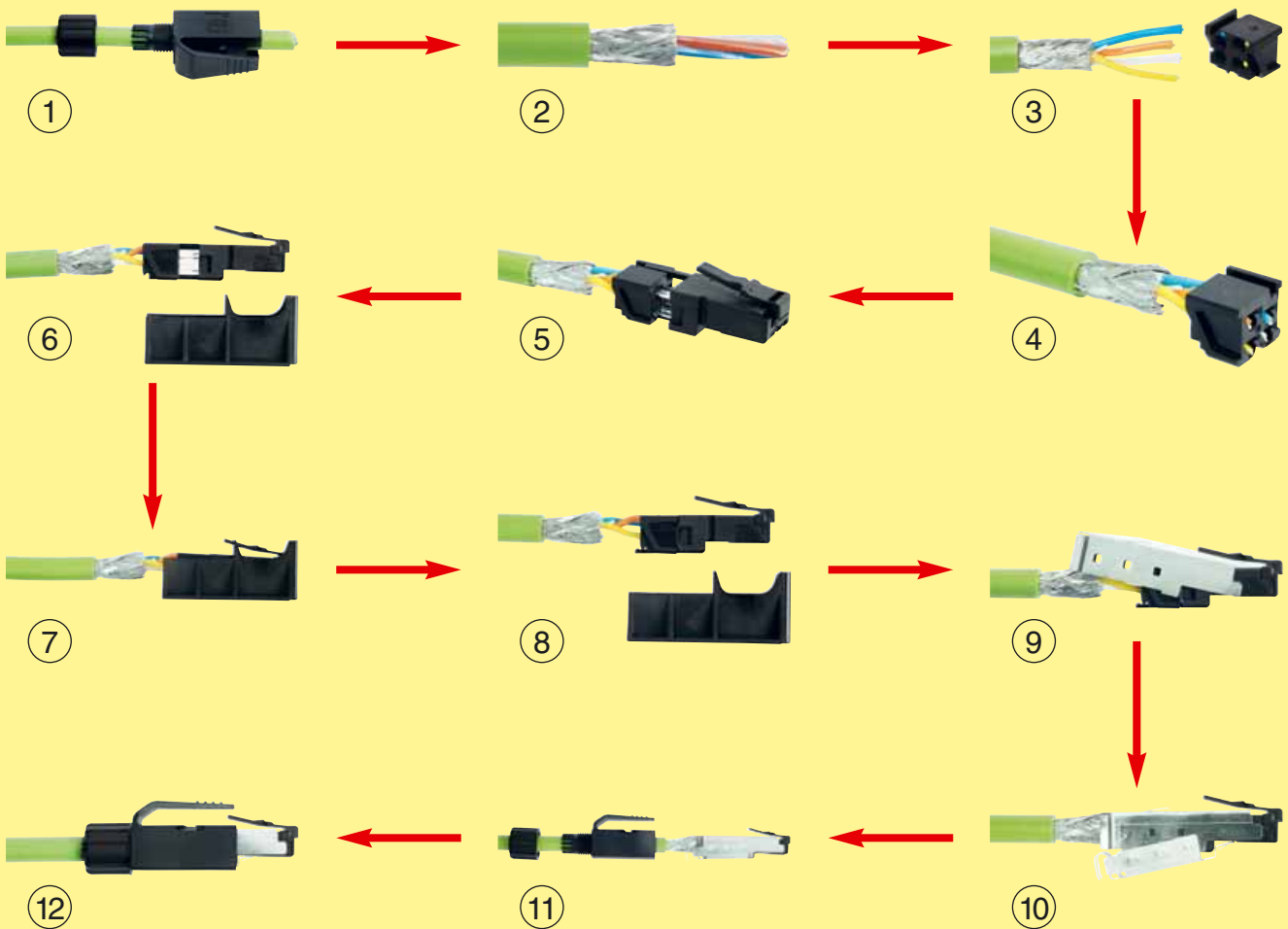
Mating compatibility of the HARTING RJ Industrial® family

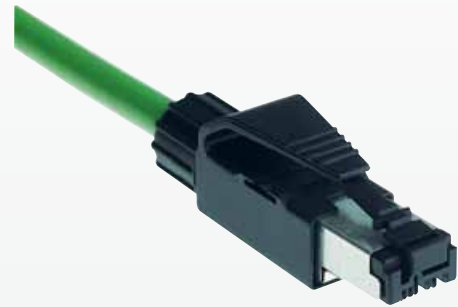
**Assembly operations**  
**HARTING RJ Industrial® IP 20 Data**

Only a few steps are necessary to quickly and reliably connect an Industrial Ethernet cable to a HARTING RJ Industrial® connector with IDC connection technology.

- ① Push the housing complete with cable gland over the outer insulation of the cable
- ② Strip the correct length of outer insulation and shielding braid
- ③ Prepare the cores to match the splicing piece in accordance with the colour code
- ④ Insert the cores into the splicing piece to the required depth
- ⑤ Place the splicing piece on the RJ 45 data module and engage it

- ⑥ Place the data module and the splicing piece into the supplied IDC assembly tool
- ⑦ Press the data module and the IDC assembly tool together, to make the insulation displacement contact
- ⑧ Remove the assembled data module from the IDC assembly tool
- ⑨ Put on the upper shield plate, and push it over the cable shield
- ⑩ Put the lower shield plate in place, and latch it to the upper shield plate with an audible click
- ⑪ Push the housing over the assembled data module, latching it into place with an audible click
- ⑫ Tighten the cable gland





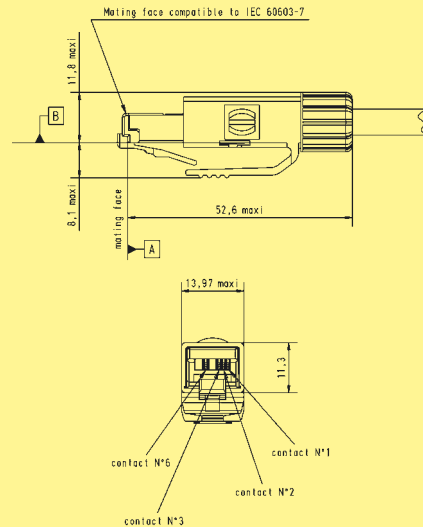
IP 20 Data connectors

Identification	Part No.	Drawing	Dimensions in mm
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Connector set

incl. housing, cable gland and instruction manual

**09 45 151 1100**



Technical characteristics

Transmission properties in accordance with Category 5 ISO/IEC 11 801:2002 and EN 50173-1

Protection level:	IP 20
Mating interface:	RJ 45 in accordance with IEC 60603-7
Wire gauge data <sup>1)</sup> :	AWG 22 - 24 stranded AWG 22 - 23 solid
Temperature range:	-40 °C ... +70 °C
Cable sheath diameter:	6.5 mm - 6.9 mm
Mating cycles:	min. 750
Housing material:	Thermoplastic, black UL 94-V0

General information

The IP 20 Data connector complies with the requirements of industrial applications. This RJ 45 Ethernet connector can be connected to AWG-22 cables with IDC technology and is designed with a standard pitch of just 14 mm, which guarantees maximum packing density in the application. An additional latching clip on the housing makes its significantly easier to unlock the connector.

This connector can be assembled on site, permitting Industrial Ethernet installation cable to be connected directly to IP 20 devices located inside a control cabinet. A special panel feed through to provide the transition between protection level IP 67 and IP 20 is therefore not necessary. This lessens the installation work required from the customer, while the reduced number of contact points offers increased reliability.

<sup>1)</sup> Details see technical data sheet

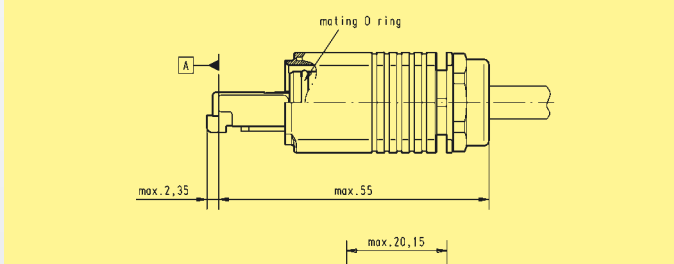
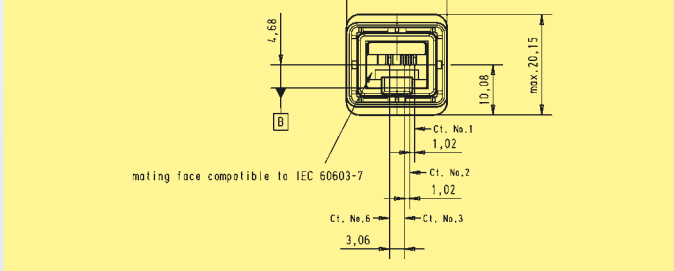


Connectors

IP 67 Push Pull connectors

Identification	Part No.	Drawing	Dimensions in mm
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<p>Connector set incl. housing, cable gland and instruction manual</p>	<p><b>09 45 145 1100</b></p>		
<p>Protection cover for connectors with cord, IP 67/65</p>			

Technical characteristics

Transmission properties in accordance with Category 5 ISO/IEC 11 801:2002 and EN 50173-1

Protection level: IP 67/65

Mating interface: RJ 45 in accordance with IEC 60603-7

Wire gauge data<sup>1)</sup>: AWG 22 - 24 stranded  
AWG 22 - 23 solid

Temperature range: -40 °C ... +70 °C

Cable sheath diameter: 6.5 mm - 7.2 mm

Mating cycles: min. 750

Housing material: Thermoplastic, black  
UL 94-V0

General information

The IP 67 Data version in a push pull housing is fitted with innovative housing locking technology. The housing of the connector is locked tightly to the hood by means of a locking sleeve that surrounds it. The connector can be locked and unlocked using one hand and only minimal force. In spite of its high degree of protection, the housing is very compact, and is ideally suited for compact industrial applications.

The HARTING RJ Industrial® Push Pull is thus the smallest IP 67/65 Industrial Ethernet connector based on RJ 45 with IDC connection technology in the world.

<sup>1)</sup> Details see technical data sheet





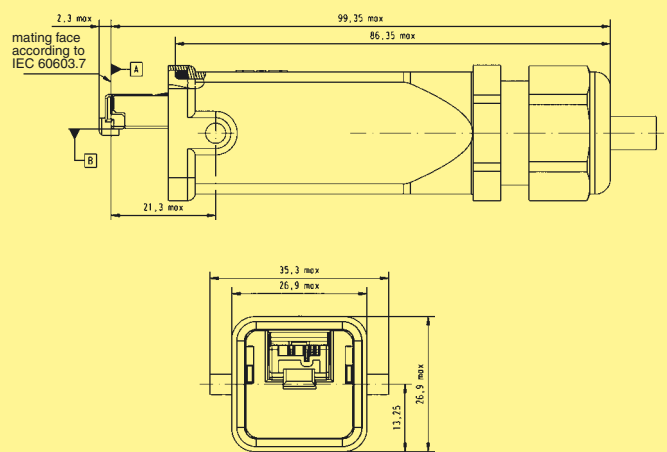
IP 67 Data 3A connectors

Connectors

Identification	Part No.	Drawing	Dimensions in mm
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Connector set incl. housing, cable gland and instruction manual			
Plastic version	<b>09 45 125 1100</b>		
Metal version	<b>09 45 115 1100</b>		
Coding pin set	<b>09 45 820 0000</b>		

Protection cover for connectors with cord, IP 67/65			
Plastic version	<b>09 20 003 5442</b>		
Metal version	<b>09 20 003 5422</b>		



Dimensions valid for plastic version

Technical characteristics

Transmission properties in accordance with Category 5 ISO/IEC 11 801:2002 and EN 50173-1

Protection level:	IP 67/65
Mating interface:	RJ 45 in accordance with IEC 60603-7
Wire gauge data <sup>1)</sup> :	AWG 22 - 24 stranded AWG 22 - 23 solid
Temperature range:	-40 °C ... +70 °C
Cable sheath diameter:	6.5 mm - 6.9 mm
Mating cycles:	min. 500
Housing material:	Thermoplastic, black UL 94-V0 Zinc die cast, grey

General information

The IP 67 Data version of the RJ Industrial is based on the RJ 45 Data module, integrated into a standard Han® 3A industry housing that can be used for most industrial applications. The housing is available in plastic or metal, and offers protection level IP 67/65.

Implementing a uniform pattern for all the connectors based on the Han® 3A contour for data and hybrid solutions means that all versions are plug-compatible for data signals. Optional coding prevents incorrect mating up to four different connectors.

<sup>1)</sup> Details see technical data sheet



IP 67 Data 3A panel feed through

Identification	Part No.	Drawing	Dimensions in mm
<b>Panel feed through set</b> incl. housing and instruction manual  Plastic version  Metal version  Coding pin set	  <b>09 45 225 1100</b>  <b>09 45 215 1100</b>  <b>09 45 820 0000</b>		
<b>Protection cover for panel feed through with cord, IP 67/65</b>  Plastic version  Metal version	  <b>09 20 003 5409</b>  <b>09 20 003 5430</b>		

Technical characteristics

Transmission properties in accordance with Category 5 ISO/IEC 11 801:2002 and EN 50173-1

Protection level:	IP 67/65
Mating interface internal and external:	RJ 45 jack in accordance with IEC 60603-7
Panel cut out:	22 x 22 mm
Temperature range:	-40 °C ... +70 °C
Mating cycles:	min. 500
Housing material:	Thermoplastic, black UI 94-V0 Zinc die cast, grey

General information

The IP 67 panel feed through data version of the RJ Industrial is based on an RJ 45 jack, integrated into a Han® 3A housing that can be used for most industrial applications. The housing is available in plastic or metal, and offers protection level IP 67/65.

Implementing a uniform plug pattern for all the connectors based on the 3A contour for data and hybrid solutions means that all versions are plug-compatible for data signals. Optional coding prevents incorrect mating up to four different connectors. The panel feed through is compatible with RJ 45 connectors, which means that standard patch cables for service and test purposes can be used. The data lines are connected at the rear via an RJ 45 jack meeting IP 20.