HARTING. The *One* for the Ethernet

Ethernet Solutions for Automation IT

Quality Connections Worldwide

HARTING was founded in 1945 by the family that still owns the company.

Today, HARTING employs approximately 2,000 people worldwide, including 150 qualified engineers. The sales team, including more than 100 sales engineers is in daily contact with our customers.

The company is one of the world's leading manufacturers of connectors, and currently have 34 subsidiary companies in Europe, the United States and Asia. In several product areas, HARTING is a market leader.
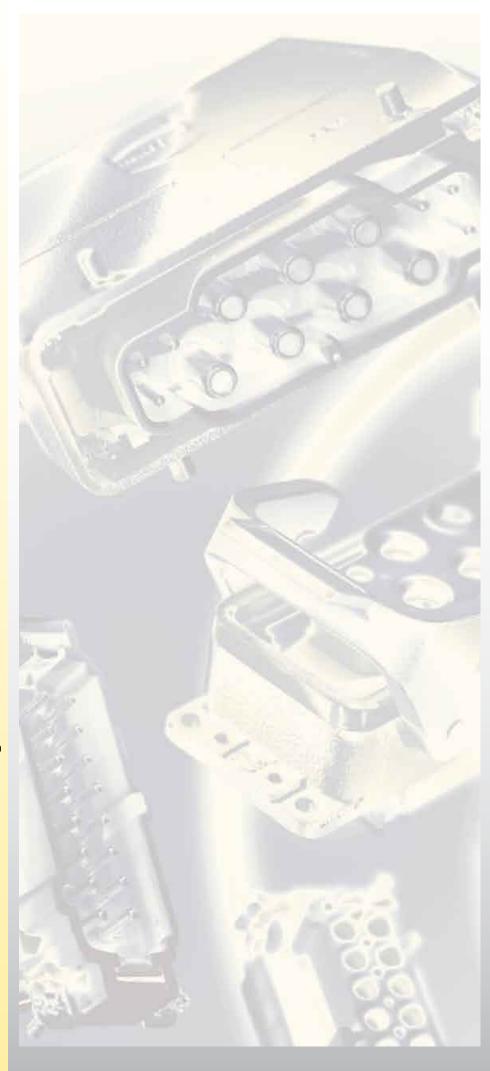
Great emphasis is placed on close links with customers, including the provision of a 'Just-in-Time'-Service to ensure rapid delivery to key customers.

HARTING products are designed and manufactured using the latest automated techniques, from CAD systems in the research and development department to automatic production techniques on the assembly lines.

Production and quality control is based on a 'zero-defect' philosophy which can only be reached by the continuous successful implementation of fully automated pro- duction techniques.

The organisation and procedures for quality assurance are based on the EN ISO 9001 standard.

A total of 60 engineers and other employ- ees, most of whom are trained and qua- lified to standards laid down by the DGQ (German Association of Quality) or the SAQ (Swiss Association of Quality), are employed solely on quality-assurance activities.

HARTING is the only provider that you need for the Ethernet.

- HARTING has the competence and decisive innovation for the Ethernet - and most importantly it has the right people as well. For example, HARTING supplies the complete network infrastructure for communication from the director's office to the machine with HARTING Automation IT, bringing together the worlds of industrial automation and office IT. And not just in theory, but in practice with manageable solutions. For the benefit of decision-makers, IT specialists, automation specialists and users.

- HARTING Automation IT is the answer to the requirements of top management in manufacturing companies: quality and process security, networking of value-added chains, worldwide diagnose and much more. The complete infrastructure from HARTING makes possible consistent communication and thus consistent quality management. In other words, HARTING Automation IT opens the door to the transparent factory.

- As such, HARTING is one of the first providers to take on the paradigm shift in industrial communications: with a universal Ethernet network that fulfills both automation and IT requirements. The full-range program from HARTING creates the infrastructure basis for using the Ethernet as an universal network for industrial IT and automation. From the connector all the way to active network components.

- Previously critical interfaces between the classic IT specialists from office IT and the generalists working in automation have been overcome. IT specialists do not need to handle automation, meaning no additional burden is placed on them. Automation technicians have less worries when it comes to the network's operating safety.

- The great practical benefit of HARTING Automation IT can be illustrated using a theoretical model. The office IT pyramid is migrating into the classic automation pyramid. This migration gives rise to a new world of products, solution and applications - to HARTING Automation IT.

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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.

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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 Electric GmbH & Co. KG, Espelkamp. We are bound by the German version only.

Contents

HARTING. *One* for the Ethernet

Universal Ethernet networks represent the future for communication in industrial automation.

Ethernet open up the possibility for barrier-free communications without artificial hurdles - from the office through to the machine.

In addition, utilising Ethernet offers the opportunity to supplement conventional fieldbus systems or even replace these with a universal network architecture.

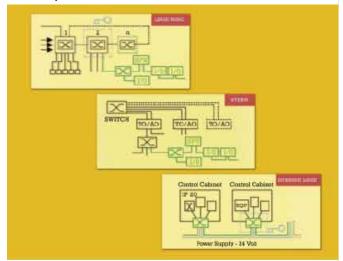HARTING is playing a decisive role in merging IT from both the office world and industrial automation:
HARTING Automation IT

The migration of office IT to industrial applications and the associated paradigm change is primarily being driven by the demands of top management in manufacturing companies. Anyone today with responsibility for a business simply expects quality and process reliability, the networking of value chains and a global diagnostics capability.

HARTING makes the transparent factory possible – from the office through to the machine, even to the final customer. The foundation for this is a comprehensive infrastructure, company-wide quality management and company-wide communications. Together these ensure the high-level availability of the automation and office networks.

When taking a close look at the HARTING Automation IT model, it will become clear

that until now there had been a critical interface to be overcome: classic IT specialists from the office world were on the one side of the equation and generalists from the world of automation were on the other. Both will have to move towards one another if a comprehensive solution to the challenge that Ethernet represents is to be found.

Knowledge of individual system landscapes is a basis for achieving the required products. These represent the abstract applications. What is more, it is only with this knowledge of the applications that suitable products can be developed.

Thus, for example, a line topology can be modified to an optimum to network an application in materials handling engineering.

An Ethernet switch with hybrid technology can be utilised to provide simple cabling of the line topology. In this sense, hybrid means realising the connections for data and 24 V DC voltage supply via a joint connector.

In an office environment, these HARTING Automation IT Ethernet switches can be managed by a central administration using SNMP protocol. If the necessity for real-time functionality and top-level availability is taken into consideration, then these can be achieved through the compatibility with various Ethernet protocols.
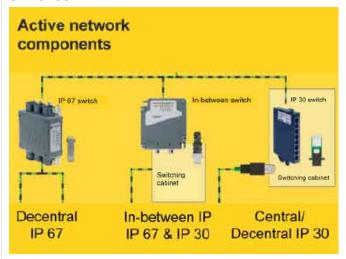
For example, these include PROFINET and Ethernet IP. This compatibility is required in all conformance classes.

Rated to IP 67, the Ethernet Switch is by design an optimum solution for use in completely decentralised applications in harsh industrial environments. The model 'In-between' is an optimum solution for integrating individual switchgear cabinets into a network. Ethernet switches sealed to IP 20 can be utilised in pure structures in a protected environment (for example in a switchgear cabinet).

HARTING has a solution for all of these requirements in a comprehensive family of switches.

Rapid access to the world-wide Ethernet network is guaranteed via the 'simple' Ethernet connector. This is where HARTING has set the standard world-wide by offering the IT specialists the usual performance and compatibility to the RJ45 as well as offering the automation engineer the usual simple connection technology common to fieldbus systems without having to forgo features such as robustness and top IP ratings.

HARTING's Industrial Outlets – basically Ethernet wall mounted sockets – from the point of view of data transmission and connection technology these function the same manner as in a normal IT environment and can, therefore, be utilised by IT specialists in communication networks without any problem – and the automation engineer can rely on the proverbial robustness common to all HARTING solutions.
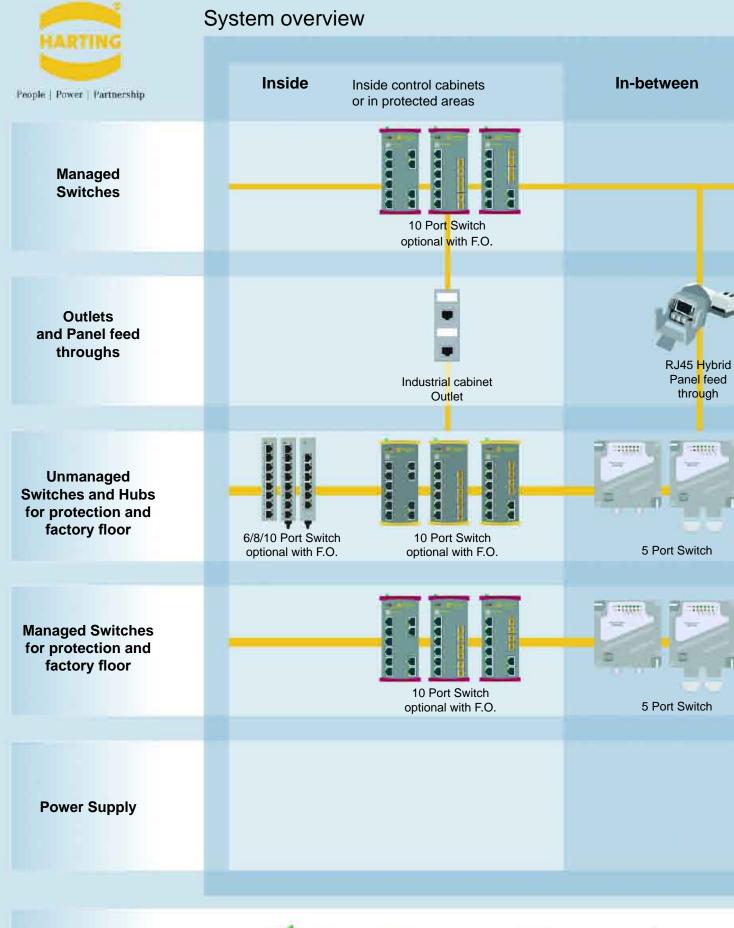
The industry is known for different networking philosophies, which allows the customer to choose from a wide spectrum of connector solutions for IP 67 applications. This spectrum ranges from M12, D-coded circular connectors through to RJ45 connectors that fulfil individual user organisation specifications (for example, PROFINET and Ethernet IP).

In IP 20, the RJ45 is offered across the board rating for twisted pair cabling in switchgear cabinets providing a protected environment.

There is no such unity to be seen for solutions for optical data transmissions in IP 20 environments. Whereas the LC connector is the most prevalent solution for office environments, the SCRJ connector is often preferred in industrial applications. The SCRJ is backwards compatible to the SC connector: most standard SC connectors can be used in conjunction with an SCRJ socket.

HARTING supports the spectrum of connectors defined for Ethernet in the standard for Structured Building Cabling (ISO/IEC 24 702) and the fieldbus standard (IEC 61 1918).

With HARTING Automation IT, HARTING is setting the standard for universal Ethernet networks in industry.

System overview

	Inside Inside control cabinets or in protected areas	**In-between**

Managed Switches

10 Port Switch optional with F.O.

Outlets and Panel feed throughs

Industrial cabinet Outlet

RJ45 Hybrid Panel feed through

Unmanaged Switches and Hubs for protection and factory floor

6/8/10 Port Switch optional with F.O.

10 Port Switch optional with F.O.

5 Port Switch

Managed Switches for protection and factory floor

10 Port Switch optional with F.O.

5 Port Switch

Power Supply

Connectors and System cables

RJ45 in 3 A   System cables 4 pairs   RJ45 4 pairs   IP 20

The transition from control cabinet
into the production areas

Outside

Outside control cabinets or directly
used in industrial environments

Ethernet

RJ45
Panel feed
through

Push Pull
Panel feed
through

Industrial
Outlet Cat 6

Industrial
Outlet Cat 5

PushPull
Outlet Cat 6

8 Port Switch

8 Port Switch
Hybrid

5 Port Hub

10 Port Switch

5 Port Switch

8 Port Switch

10 Port Switch

5 Port Switch

24 Volt

Push Pull

System cables 2 pairs

M12

RJ45 Hybrid

F.O.

Contents

Ethernet Switch ESC TP08

Ethernet Switch
IP 30

Advantages

- Small housing format
- Robust metal housing
- Adapted for mounting onto top hat mounting rail 35 mm according to EN 60 715
- RoHS compliant

General Description

The Ethernet switch ESC TP08 can be used in industrial environments and supports Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). Up to 8 Ethernet devices can be connected via the RJ45-ports.

The Ethernet switch supports a simple and quickly network diagnostics with integrated LEDs at every port. It works as unmanaged switch in the Store and Forward switching mode and supports Auto-crossing, Auto-negotiation and Auto-polarity.

Identification	Part number	Drawing	Dimensions in mm
ESC TP08 Ethernet switch with 8 ports RJ Industrial	20 76 108 3000		

Ethernet Switch ESC TP08

Technical characteristics

Features	• Auto-crossing
	• Auto-negotiation
	• Auto-polarity
	• Store and Forward switching mode

Ethernet Interface

Number of ports	• 8x 10/100Base-TX, unmanaged
Cable types acc. to IEEE 802.3	• Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	• 10/100 Mbit/s (RJ45)
Maximum cable length	• 100 m (Twisted Pair; with cable Category 5 acc. to EN 50 173-1)
Terminating method	• RJ45 (Twisted Pair)
Diagnostics (via LED)	• Power supply
	• Status Link - Green
	• Status Data transfer (Act) - Green flashing
	• Data transfer rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Power Supply

Power supply	24 V DC
Permissible range	12 V to 30 V
Current consumption	125 mA (at 24 V DC)
Terminating Power supply	3-pole pluggable contact (24 V; GND; PE)

Design features

Material of housing	Sheet steel (grey painted)
Dimensions (W x H x D)	23 x 130 x 100 mm (without connectors)
Degree of protection acc. to DIN 60 529	IP 30

Environmental conditions

Operating temperature	0 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Approvals

cUL	(in preparation)

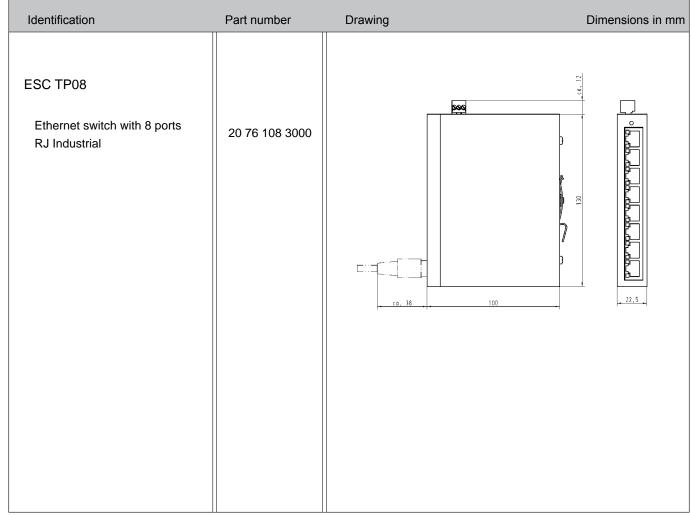# Ethernet Switch ESC TP08-F

HARTING

Ethernet Switch
IP 30

Advantages

- Flat housing format
- Robust metal housing
- Adapted for mounting onto top hat mounting rail 35 mm according to EN 60 715
- RoHS compliant

General Description

The Ethernet switch ESC TP08-F can be used in industrial environments and supports Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). Up to 8 Ethernet devices can be connected via the RJ45-ports.

The Ethernet switch supports a simple and quickly network diagnostics with integrated LEDs at every port. It works as unmanaged switch in the Store and Forward switching mode and supports Auto-crossing, Auto-negotiation and Auto-polarity.

Identification	Part number	Drawing	Dimensions in mm
ESC TP08-F Ethernet switch with 8 ports RJ Industrial	20 76 108 3001		

Ethernet Switch ESC TP08-F

Technical characteristics

Features
- Auto-crossing
- Auto-negotiation
- Auto-polarity
- Store and Forward switching mode

Ethernet Interface

Number of ports	8x 10/100Base-TX, unmanaged
Cable types acc. to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10/100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair; with cable Category 5 acc. to EN 50 173-1)
Terminating method	RJ45 (Twisted Pair)
Diagnostics (via LED)	• Power supply • Status Link - Green • Status Data transfer (Act) - Green flashing • Data transfer rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Power Supply

Power supply	24 V DC
Permissible range	12 V to 30 V
Current consumption	125 mA (at 24 V DC)
Terminating Power supply	3-pole pluggable contact (24 V; GND; PE)

Design features

Material of housing	Sheet steel (grey painted)
Dimensions (W x H x D)	130 x 23 x 100 mm (without connectors)
Degree of protection acc. to DIN 60 529	IP 30

Environmental conditions

Operating temperature	0 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Approvals

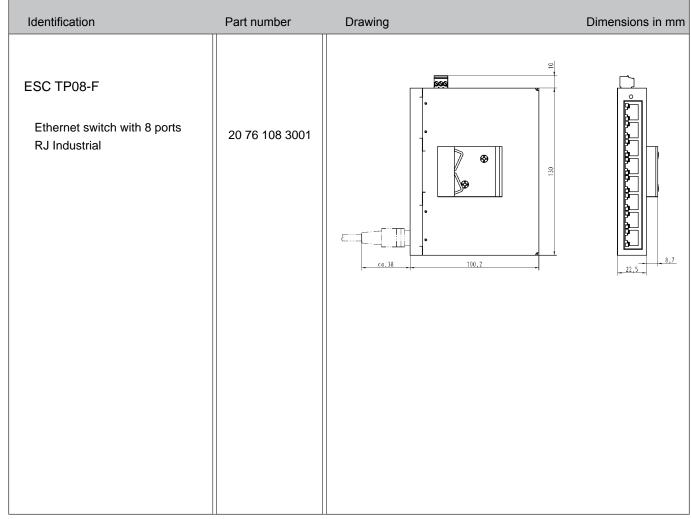|	
cUL	(in preparation)

Ethernet Switch ESC TP06/FX02-SC

HARTING

Ethernet Switch
IP 30

Advantages

- Small housing
- Robust metal housing
- Adapted for mounting onto top hat mounting rail according to EN 60 715
- Extended temperature range
- RoHS compatible

General

The Ethernet switch ESC TP06/FX02-SC has been designed for use in industrial environments and supports Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). The Ethernet switch can support linear, star and mixed topologies.

Up to 8 Ethernet devices can be connected: 6 to RJ45 and 2 to SC fibre optic ports (100 Base-FX; Full Duplex, SC connectors).

The Ethernet switch has quick and simple network diagnostics via integrated LEDs.

Identification	Part number	Drawing	Dimensions in mm
ESC TP06/FX02-SC Ethernet switch with 6 ports RJ Industrial 2 ports F.O.	20 76 108 3100		

Technical characteristics

Features
- Auto-crossing
- Auto-negotiation
- Auto-polarity
- Store and Forward switching mode

Power Supply

Power supply	24 V DC
Permissible range	12 V to 48 V
Current consumption	max. 250 mA (at 24 V DC)
Terminating Power supply	2-pole pluggable contact
Diagnostics (via LED)	Power supply

Ethernet Interface RJ45

Number of ports	• 6x 10/100Base-TX, unmanaged
Cable types acc. to IEEE 802.3	• Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	• 10/100 Mbit/s
Maximum cable length	• 100 m (Twisted Pair; with cable Category 5 according to EN 50 173-1)
Terminating method	• RJ45 (Twisted Pair)
Diagnostics (via LED)	• Status Link - Green
	• Data transfer (Act) - Green flashed
	• Data transfer rate (Speed) - 100 Mbit/s: Yellow 10 Mbit/s: OFF
Topology	Line, Star or mixed

Ethernet Interface - Fibre Optic

Number of ports	2x 100 Base-FX, unmanaged
Cable types acc. to IEEE 802.3	Multimode-fibre, 1300 nm; 50 / 125 µm or 62.5 / 125 µm
Data rate	100 Mbit/s
Maximum cable length	2000 m
Terminating method	SC-D female
Diagnostics (LED)	• Status Link - green
	• Data transfer (Act) - green flashed
Wave length	1300 nm
Transceive power TX max. (dynamic)	• -14 dBm (50 / 125 µm)
	• -14 dBm (62.5 / 125 µm)
Transceive power TX min.	• -23.5 dBm (50 / 125 µm)
	• -20 dBm (62.5 / 125 µm)
Receive power RX typical (dynamic)	• -33.9 dBm (window)
	• -35.2 dBm (centre)
Receive power RX max. (dynamic)	-14 dBm
Signal detection (dynamic)	-33 dBm
Topology	Line, Star or mixed

Design features

Material of housing	Steel panel (grey painted)
Dimensions (W x H x D)	23 x 130 x 100 mm (without F.O.)
Weight	approx. 0.5 kg
Degree of protection acc. to DIN 60 529	IP 30

Mechanical solidness

Shock	according to IEC 60 068-2-27
	• 15 g
	• 11 ms duration
	• Shock form: Half sinus
Vibration	according EN 60 068-2-6
Rail-standard	according EN 50 155, Class 1

Environmental conditions

Operating temperature	-10 °C to +70 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Approvals

cUL	(in preparation)

EMC standards

Interference immunity ESD	IEC 61 000-4-2
Interference immunity, HF radiated	IEC 61 000-4-3
Interference immunity, Burst	IEC 61 000-4-4
Interference immunity, Surge	IEC 61 000-4-5
Interference immunity	IEC 61 000-4-6
Emitted radiation	EN 55 011, Class A
Rail-standard	EN 50 121-3-2

Ethernet Switch ESC TP08/FX02-SC

Ethernet Switch
IP 30

Advantages

- Small housing
- Robust metal housing
- Adapted for mounting onto top hat mounting rail according to EN 60 715
- Extended temperature range
- RoHS compatible

General

The Ethernet switch ESC TP08/FX02-SC has been designed for use in industrial environments and supports Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s). The Ethernet switch can support linear, star and mixed topologies.

Up to 10 Ethernet devices can be connected: 8 to RJ45 and 2 to SC fibre optic ports (100 Base-FX; Full Duplex, SC connectors).

The Ethernet switch has quick and simple network diagnostics via integrated LEDs.

Identification	Part number	Drawing	Dimensions in mm
ESC TP08/FX02-SC Ethernet switch with 8 ports RJ Industrial 2 ports F.O.	20 76 110 3100		

HARTING

Technical characteristics

Features	• Auto-crossing
	• Auto-negotiation
	• Auto-polarity
	• Store and Forward switching mode

Power Supply	
Power supply	24 V DC
Permissible range	12 V to 48 V
Current consumption	max. 250 mA (at 24 V DC)
Terminating Power supply	2-pole pluggable contact
Diagnostics (via LED)	Power supply

Ethernet Interface RJ45	
Number of ports	8x 10/100Base-TX, unmanaged
Cable types acc. to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data rate	10/100 Mbit/s
Maximum cable length	100 m (Twisted Pair; with cable Category 5 according to EN 50 173-1)
Terminating method	RJ45 (Twisted Pair)
Diagnostics (via LED)	• Status Link - Green
	• Data transfer (Act) - Green flashed
	• Data transfer rate (Speed) - 100 Mbit/s: Yellow
	10 Mbit/s: OFF
Topology	Line, Star or mixed

Ethernet Switch ESC TP08/FX02-SC

Technical characteristics

Ethernet Interface - Fibre Optic

Number of ports	2x 100 Base-FX, unmanaged
Cable types acc. to IEEE 802.3	Multimode-fibre, 1300 nm; 50 / 125 µm or 62.5 / 125 µm
Data rate	100 Mbit/s
Maximum cable length	2000 m
Terminating method	SC-D female
Diagnostics (LED)	• Status Link - green
	• Data transfer (Act) - green flashed
Wave length	1300 nm
Transceive power TX max. (dynamic)	• -14 dBm (50 / 125 µm)
	• -14 dBm (62.5 / 125 µm)
Transceive power TX min.	• -23.5 dBm (50 / 125 µm)
	• -20 dBm (62.5 / 125 µm)
Receive power RX typical (dynamic)	• -33.9 dBm (window)
	• -35.2 dBm (centre)
Receive power RX max. (dynamic)	-14 dBm
Signal detection (dynamic)	-33 dBm
Topology	Line, Star or mixed

Ethernet Switch ESC TP08/FX02-SC

HARTING

Technical characteristics

Design features

Material of housing	Steel panel (grey painted)
Dimensions (W x H x D)	23 x 130 x 100 mm (without F.O.)
Weight	approx. 0.5 kg
Degree of protection acc. to DIN 60 529	IP 30

Mechanical solidness

Shock	according to IEC 60 068-2-27
	• 15 g
	• 11 ms duration
	• Shock form: Half sinus
Vibration	according EN 60 068-2-6
Rail-standard	according EN 50 155, Class 1

Environmental conditions

Operating temperature	-10 °C to +70 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Approvals

cUL	(in preparation)

EMC standards

Interference immunity ESD	IEC 61 000-4-2
Interference immunity, HF radiated	IEC 61 000-4-3
Interference immunity, Burst	IEC 61 000-4-4
Interference immunity, Surge	IEC 61 000-4-5
Interference immunity	IEC 61 000-4-6
Emitted radiation	EN 55 011, Class A
Rail-standard	EN 50 121-3-2

Introduction

For the user, HARTING's novel and innovative solutions open up new, more convenient and extensive options for configuring unmanaged Ethernet switches. The solutions available to date offered only very limited or basic options for making alterations to different settings on an Ethernet switch.

The user made changes to the settings or the configuration via the DIP switches on the Ethernet switch. The extensive possibilities for applications were physically restricted by the enormous space requirements of the mechanical solution.

Now for the first time, HARTING's SmartCon solution makes it possible for the user to realise configurations than have been possible to date.

Ease of handling and simple operation have been designed in to meet real-life application requirements. Simple and fast configuration is what this solution aims to achieve.

All SmartCon Ethernet switches can be configured via a USB connection cable.

At first sight, SmartCon Ethernet switches do not differ from the Ethernet switches available to date. However, the possibilities that SmartCon has to offer become more than apparent to the user when he connects the Ethernet switch via the front-side USB socket to a PC, laptop or hand-held PC.

Figure 1   The Start-up menu

Once the SmartCon Ethernet switch has been connected to a PC, it can be accessed on-screen in much the same manner as a commercially available USB stick (figure 1: The Start-up menu).

The user only has to copy the SmartCon software in advance onto the respective PC. No administrator rights are required. The respective Ethernet switch does not have to be connected to a power supply for configu-

ration purposes. That means that the configuration procedure can take place at the user's location of choice: in the office, workshop or production facility. The SmartCon Ethernet switch automatically detects which power supply is connected: mains supply or power supply via the USB port. Please note that it is not possible to operate the Ethernet switch purely via the USB port. For normal industry operations, the power must be supplied via one of the redundant inputs.

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Making configuration settings by means of DIP switches may appear to be uncomplicated. However, accidentally initiating an alteration to the configuration can happen more quickly than one would think possible, and in so doing make considerable changes to the previously set procedures. The SmartCon family prevents these inadvertent alterations to the configuration. No alteration can be made to the configuration without an USB connection and the software.

Each configuration can be archived and the back-ups retrieved for future projects. By making back-ups of the configuration, all settings can be conveniently stored in case servicing is necessary.

Archived configurations can be imported and printed out when convenient. These extensive options in SmartCon ensure that data security enjoys the significance it deserves.

The switch configuration is transmitted only when a new configuration is uploaded via the corresponding 'Send' button. That means that until the data has actually been uploaded, it is still possible to read-in the 'old' data from the SmartCon Ethernet switch via the Refresh option. This means it is easily possible to reverse any inadvertent activation in the corresponding menu.

Figure 2   Example of a configuration

Once configured, the Ethernet switch can be utilised immediately. The configuration remains stored in the Ethernet switch after the USB cable is removed.

Meeting international standards, the USB port described is recognised as state-of-the-art technology. The standardised possibility for worldwide utilisation with all notebooks, PCs and Palmtops (revisions 1.0, 1.1 and 2.0) mean that this technology is suitable for universal usage. The intuitive, but extensive setting options via corresponding buttons and the various options offered by SmartCon extend the range of applications for unmanaged Ethernet switches. With SmartCon, the gap between unmanaged and manageable switches is getting smaller.

It is true that SmartCon is a solution for unmanaged Ethernet switches; however, it comes very close to managed Ethernet switch functionality.

Ethernet Switch SmartCon - Introduction

Ethernet Switch SmartCon

General description

Ethernet switches devide former collision domains into point-to-point connections between the network components and the user equipment involved. Constructing the network this way prevents collisions.

The Fast Ethernet switches of the type SmartCon allow up 10 items (depending upon used type) of user equipment to be connected through Shielded Twisted Pair cable or multimode fibres (50/125 µm or 62.5/125 µm) in accordance to IEC 802.3. The degree of protection, temperature range and mechanical stability provide high operating security and satisfy the toughest demands.

The Fast Ethernet switches of the type SmartCon from HARTING are designed for an industrial, effective and individual use.
A maximum of flexibility is warranted by the using of SmartCon.

Features

- Ethernet switch according to IEEE 802.3
- Store and Forward Switching Mode non blocking, unmanaged
- Auto-crossing, Auto-negotiation, Auto-polarity
- For Ethernet (10 Mbit/s) and Fast Ethernet (100 Mbit/s)
- Diagnostics LEDs (Link status, Act, Data transmission rate, Power, Error)
- Following settings are adjustable via USB port:
  - o Alarm signalling contact
  - o Auto-negotiation
  - o 10/100 Mbit/s
  - o Full/Half Duplex
  - o Parallel redundancy
  - o Ports enable/disenable
  - o Priority Handling

Advantages

- Individual configurable via USB port

- Robust metal housing

- EMC, temperature range and mechanical stability for the toughest demands

Application fields

- Industrial automation

- Power distribution systems

- Automotive industry

- Mechanical engineering

Technical characteristics

Features	• Auto-crossing
	• Auto-negotiation
	• Auto-polarity
	• Store and Forward Switching Mode

Design features

Material of housing	Metal (coated)
Dimension (W x H x D)	59 x 104 x 132 mm (without connectors)
Degree of protection according to DIN 60 529	IP 30
Mounting	• 35 mm top hat mounting rail according to EN 60 715
	• Wall mounting, vertical
Weight	approximately 0.6 kg

Environmental conditions

Operating temperature	0 °C to +70 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Mechanical solidness

Shock	IEC 60 068-2-27
Vibration	IEC 60 068-2-6
Rail-standard	EN 50 155, Class 1

EMC

Interference immunity ESD	IEC 61 000-4-2
Interference immunity HF, radiated	IEC 61 000-4-3
Interference immunity Burst	IEC 61 000-4-4
Interference immunity Surge	IEC 61 000-4-5
Interference immunity	IEC 61 000-4-5
Emitted radiation	EN 55 011, Class A

Approvals

cUL	(in preparation)

ESC TP10-SmartCon

ESC TP10-SmartCon
RJ45

Identification	Part number	Drawing	Dimensions in mm
ESC TP10-SmartCon Ethernet switch 10 ports RJ45 including set for assembly onto top hat mounting rail	20 76 110 1000		

ESC TP10-SmartCon

Technical characteristics

Features
- Auto-crossing
- Auto-negotiation
- Auto-polarity
- Store and Forward Switching Mode
- Parallel redundancy
- Port priorisation

Ethernet Interface

Number of ports	10x 10/100Base-TX, unmanaged
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data transmission rate	10 Mbit/s or 100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair; with cable Categorie 5 according to EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	• Status Link - Green • Status data transfer (Act) - Green flashing • Data transmission rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Power supply

Power supply	24 V DC
Permissible range	18 V to 30 V
Input current	250 mA (at 24 V DC)
Termination power supply	5-pole pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact

ESC TP08/FX02-SC-SmartCon

ESC TP08/FX02-SC-SmartCon
RJ45 / SC

Identification	Part number	Drawing	Dimensions in mm
ESC TP08/FX02-SC-SmartCon Ethernet switch 8 ports RJ45 2 ports SC including set for assembly onto top hat mounting rail	20 76 110 1100		

ESC TP08/FX02-SC-SmartCon

HARTING

Technical characteristics

Features	• Auto-crossing
	• Auto-negotiation
	• Auto-polarity
	• Store and Forward Switching Mode
	• Parallel redundancy
	• Port priorisation

Ethernet Interface RJ45

Number of ports	8x 10/100Base-TX, unmanaged
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data transmission rate	10 Mbit/s or 100 Mbit/s
Maximum cable length	100 m (Twisted Pair; with cable Categorie 5 according to EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	• Status Link - Green
	• Status data transfer (Act) - Green flashing
	• Data transmission rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Ethernet Interface F.O.

Number of ports	2, unmanaged
Cable types according to IEEE 802.3	Multimode fibre, 50 / 125 µm or 62.5 / 125 µm
Data transmission rate	100 Mbit/s
Maximum cable length	2000 m
Termination	SC-D female
Wave length	1300 nm
Diagnostics (LED)	• Status Link - Green
	• Status data transfer (Act) - Green flashing
Topology	Line, Star or mixed

Power supply

Power supply	24 V DC
Permissible range	18 V to 30 V
Input current	250 mA (at 24 V DC)
Termination power supply	5-pole pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
	3-pole pluggable screw contact

ESC TP06/FX03-SC-SmartCon

ESC TP06/FX03-SC-SmartCon
RJ45 / SC

Identification	Part number	Drawing	Dimensions in mm
ESC TP06/FX03-SC-SmartCon Ethernet switch 6 ports RJ45 3 ports SC including set for assembly onto top hat mounting rail	20 76 109 1100		

ESC TP06/FX03-SC-SmartCon

HARTING

Technical characteristics

Features	• Auto-crossing
	• Auto-negotiation
	• Auto-polarity
	• Store and Forward Switching Mode
	• Parallel redundancy
	• Port priorisation

Ethernet Interface RJ45

Number of ports	6x 10/100Base-TX, unmanaged
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data transmission rate	10 Mbit/s or 100 Mbit/s
Maximum cable length	100 m (Twisted Pair; with cable Categorie 5 according to EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	• Status Link - Green
	• Status data transfer (Act) - Green flashing
	• Data transmission rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Ethernet Interface F.O.

Number of ports	3, unmanaged
Cable types according to IEEE 802.3	Multimode fibre, 50 / 125 µm or 62.5 / 125 µm
Data transmission rate	100 Mbit/s
Maximum cable length	2000 m
Termination	SC-D female
Wave length	1300 nm
Diagnostics (LED)	• Status Link - Green
	• Status data transfer (Act) - Green flashing
Topology	Line, Star or mixed

Power supply

Power supply	24 V DC
Permissible range	18 V to 30 V
Input current	350 mA (at 24 V DC)
Termination power supply	5-pole pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
	3-pole pluggable screw contact

**Fast Ethernet Switch, managed
for industrial applications**

General description

Ethernet switches devide former collision domains into point-to-point connections between the network components and the user equipment involved. Constructing the network this way prevents collisions.

The managed Fast Ethernet switches (IP 30) of HARTING allow up 10 items (depending upon used type) of user equipment to be connected through Shielded Twisted Pair cable or multimode fibres (50 / 125 µm or 62.5 / 125 µm) in accordance to IEC 802.3. The degree of protection, temperature range and mechanical stability provide high operating security and satisfy the toughest demands.

The Fast Ethernet switches ESC TPxxM from HARTING are designed for an industrial, effective and individual use. They provide two alternative access methods for the management: SNMP and a comfortable web access.

Application fields

- Industrial automation

- Automotive industry

- Wind power

- Power distribution systems

Advantages

- Robust metal housing

- EMC, temperature range and mechanical stability for the toughest demands

- Management functions integrated

Technical characteristics

- Ethernet switch according to IEEE 802.3

- Store and Forward Switching mode

- up to 10 ports, managed, non-blocking

- Auto-crossing, Auto-negotiation, Auto-polarity

Management

Web-based access with password protection

- Status overview
- Port Settings
- Network Configuration
- Password settings
- Alarm Settings
- Diagnostics
- Parameter Import / Export
- Firmware Import / Export

SNMP Agent

- SNMP V1 and SNMP V3
- MIB II objects:
    - TCP/IP
    - UDP
    - System
    - Interface
    - IP
    - ICMP
    - SNMP
- HARTING MIB

Additional services

- DHCP
- DNS
- E-Mail
- Parameter and firmware import and export via TFTP
- System time via SNTP
- Service Mode via port 1

Diagnostics

- LEDs for Power, Link, Status, Data transmission and Fault
- Port diagnostic
- Port mirroring
- History
- Alarms via signalling contact and / or E-Mail

ESC TP10-M, managed
RJ45

Identification	Part number	Drawing	Dimensions in mm
ESC TP10-M Ethernet switch, managed 10 ports RJ45 including set for assembly onto top hat mounting rail	20 76 110 4000		

ESC TP10-M, managed

Technical characteristics

Features	• Auto-crossing
	• Auto-negotiation
	• Auto-polarity
	• Store and Forward Switching Mode
	• full managed

Ethernet Interface

Number of ports	10x 10/100Base-TX
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data transmission rate	10 Mbit/s or 100 Mbit/s (RJ45)
Maximum cable length	100 m (Twisted Pair; with cable Categorie 5 according to EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	• Status Link - Green
	• Status data transfer (Act) - Green flashing
	• Data transmission rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Power supply

Power supply	24 V DC
Permissible range	18 V to 30 V
Input current	250 mA (at 24 V DC)
Termination power supply	5-pole pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
	3-pole pluggable screw contact

ESC TP08/FX02-SC-M, managed

ESC TP08/FX02-SC-M, managed
RJ45 / SC

Identification	Part number	Drawing	Dimensions in mm
ESC TP08/FX02-SC-M Ethernet switch, managed 8 ports RJ45 2 ports SC including set for assembly onto top hat mounting rail	20 76 110 4100		

ESC TP08/FX02-SC-M, managed

Technical characteristics

Features	• Auto-crossing
	• Auto-negotiation
	• Auto-polarity
	• Store and Forward Switching Mode
	• full managed

Ethernet Interface RJ45

Number of ports	8x 10/100Base-TX, unmanaged
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data transmission rate	10 Mbit/s or 100 Mbit/s
Maximum cable length	100 m (Twisted Pair; with cable Categorie 5 according to EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	• Status Link - Green
	• Status data transfer (Act) - Green flashing
	• Data transmission rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Ethernet Interface F.O.

Number of ports	2
Cable types according to IEEE 802.3	Multimode fibre, 50 / 125 µm or 62.5 / 125 µm
Data transmission rate	100 Mbit/s
Maximum cable length	2000 m
Termination	SC-D female
Wave length	1300 nm
Diagnostics (LED)	• Status Link - Green
	• Status data transfer (Act) - Green flashing
Topology	Line, Star or mixed

Power supply

Power supply	24 V DC
Permissible range	18 V to 30 V
Input current	250 mA (at 24 V DC)
Termination power supply	5-pole pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A
	3-pole pluggable screw contact

ESC TP06/FX03-SC-M, managed

ESC TP06/FX03-SC-M, managed
RJ45 / SC

Identification	Part number	Drawing	Dimensions in mm
ESC TP06/FX03-SC-M Ethernet switch, managed 6 ports RJ45 3 ports SC including set for assembly onto top hat mounting rail	20 76 109 4100		

ESC TP06/FX03-SC-M, managed

Technical characteristics

Features	• Auto-crossing • Auto-negotiation • Auto-polarity • Store and Forward Switching Mode • full managed

Ethernet Interface RJ45

Number of ports	6x 10/100Base-TX
Cable types according to IEEE 802.3	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Data transmission rate	10 Mbit/s or 100 Mbit/s
Maximum cable length	100 m (Twisted Pair; with cable Categorie 5 according to EN 50 173-1)
Termination	RJ45 (Twisted Pair)
Diagnostics (LED)	• Status Link - Green • Status data transfer (Act) - Green flashing • Data transmission rate (Speed) - 100 Mbit/s: Yellow / 10 Mbit/s: OFF
Topology	Line, Star or mixed

Ethernet Interface F.O.

Number of ports	3, managed
Cable types according to IEEE 802.3	Multimode fibre, 50 / 125 µm or 62.5 / 125 µm
Data transmission rate	100 Mbit/s
Maximum cable length	2000 m
Termination	SC-D female
Wave length	1300 nm
Diagnostics (LED)	• Status Link - Green • Status data transfer (Act) - Green flashing
Topology	Line, Star or mixed

Power supply

Power supply	24 V DC
Permissible range	18 V to 30 V
Input current	350 mA (at 24 V DC)
Termination power supply	5-pole pluggable screw contact, for redundant power supply
Diagnostics (LED)	Power supply

Alarm signalling contact	Change-over contact, potential-free, 24 V DC / 0.5 A 3-pole pluggable screw contact

Contents

ESC 67-10 TP10U M12 D-coding

HARTING®

ESC 67-10 TP10U M12
M12 D-coding

Identification	Part number	Drawing	Dimensions in mm
ESC 67-10 TP10U Ethernet switch M12 D-coding	20 70 310 3941	87 121	90

Technical characteristics

Power supply

Input voltage	24 V DV (16,8 ... 30 V DV)
Current consumption	approx. 180 mA (at 24 V DC)
Connections	Compatible with circular connector, A-coding, redundant power supply

Ethernet Interface

Ports	10
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	Pluggable with connectors M12 D-coding
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

Dimensions (W x D x H)	90 x 120 x 87 mm (without connectors)
Mounting	Panel mounting, upright or flat assembly; mounting onto top hat mounting rail 35 mm according to DIN EN 60 715
Weight	approx. 1.4 kg

ESC 67-10 TP10M M12 D-coding

HARTING

Identification	Part number Power termination	Ethernet termination	
HARAX® M12-L circular connector female, A-coding	21 03 212 2305		
HARAX® M12-L circular connector shielded, 4-wires, male, D-coding		21 03 281 1405	
Protection cover M12	21 01 000 0003	21 01 000 0003	

Identification			Part number		
System cables for Industrial Ethernet, pre-assembled at both ends IP 65 / IP 67 (when mated)	Length:	1 m 3 m 5 m	21 03 483 1401 21 03 483 1403 21 03 483 1405 21 03 483 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable, 2x2 x AWG 26 / 0,14 mm² 2x circular connectors M12 D-coding, straight
	Length:	1 m 3 m 5 m	21 03 485 1401 21 03 485 1403 21 03 485 1405 21 03 485 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable, 2x2 x AWG 22 / 0,34 mm² 2x circular connectors M12 D-coding, straight

Identification	Part number	Drawing	Dimensions in mm
Set for wall mounting vertical assembly	20 80 010 0002		

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[1] Please state length separately

Ethernet Switch, managed - Introduction

Fast Ethernet Switch, managed
for industrial applications

General description

Ethernet switches devide former collision domains into point-to-point connections between the network components and the user equipment involved. Constructing the network this way prevents collisions.

The managed Fast Ethernet switches of the type ESC 67-x0 TPxxM allow up 10 items (depending upon used type) of user equipment to be connected through Shielded Twisted Pair cable in accordance to IEC 802.3. The degree of protection, temperature range and mechanical stability satisfy the toughest demands. The Fast Ethernet Switche can therefore be directly used in industrial environments.

The Fast Ethernet switches ESC 67-x0 TPxxM from HARTING provides two alternative access methods for the management:
SNMP and a comfortable web access.

Application fields

- Industrial automation

- Automotive industry

- Wind power

- Power distribution systems

Advantages

- High degree of protection IP 65 / IP 67

- Robust metal housing, zinc die-cast

- Can be used directly in industrial environments

- EMC, temperature range and mechanical stability for the toughest demands

- Management functions integrated

Technical characteristics

- Ethernet switch according to IEEE 802.3

- Store and Forward Switching mode

- 5 or 10 ports, managed, non-blocking

- Auto-crossing, Auto-negotiation, Auto-polarity

Management

Web-based access with password protection
- Status overview
- Port Settings
- Network Configuration
- Password settings
- Alarm Settings
- Diagnostics
- Parameter Import / Export
- Firmware Import / Export

SNMP Agent
- SNMP V1 and SNMP V3
- MIB II objects:
  - TCP/IP
  - UDP
  - System
  - Interface
  - IP
  - ICMP
  - SNMP
- HARTING MIB

Additional services
- DHCP
- DNS
- E-Mail
- Parameter and firmware import and export via TFTP
- System time via SNTP
- Service Mode via port 1

Diagnostics
- LEDs for Power, Link, Status, Data transmission and Fault
- Port diagnostic
- Port mirroring
- History
- Alarms via signalling contact and / or E-Mail

ESC 67-10 TP05M HARTING RJ Industrial® IP 67 Data 3A

HARTING

ESC 67-10 TP05M
HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	Drawing	Dimensions in mm
ESC 67-10 TP05M Ethernet switch, managed HARTING RJ Industrial® IP 67 Data 3A	20 70 305 4921	c.a.101 87 120 45	

Technical characteristics

Power supply

Input voltage	24 V DV (16,8 ... 30 V DV)
Current consumption	max 160 mA (at 24 V DC)
Connections	Compatible with Han® 4 A connector, redundant power supply (incl. fixing srew 09 20 000 9918, to maintain IP 67)

Ethernet Interface

Ports	5
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	Pluggable with connectors HARTING RJ Industrial® Data 3A
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

Dimensions (W x D x H)	45 x 120 x 87 mm (without connectors)
Mounting	Panel mounting, upright or flat assembly; mounting onto top hat mounting rail 35 mm according to DIN EN 60 715
Weight	approx. 0.8 kg

ESC 67-10 TP05M HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number Power termination	Ethernet termination
Hood metal, straight, metric	19 20 003 1440 [1]	
Protection cover Han® 3 A	09 20 003 5422	09 20 003 5425
Han® 4 A female insert	09 20 004 2711	
Cable gland metal IP 65, metric M20, cable diameter: 5 ... 9 mm	19 00 000 5080	
Connector set HARTING RJ Industrial® IP 67 Data 3 A in metal		09 45 115 1100
Coding pin set		09 45 820 0000

Identification		Part number		

System cables for
Industrial Ethernet,
pre-assembled at both ends
    metal,
    IP 65 / IP 67
    (when mated)
	Length: 1.5 m
	3.0 m
	5.0 m
	10.0 m
	20.0 m
	50.0 m
	100.0 m
		09 45 715 1123
		09 45 715 1123
		09 45 715 1123
		09 45 715 1123
		09 45 715 1123
		09 45 715 1123
		09 45 715 1123
			Cable type:
			
			Connectors:
				Industrial Ethernet Standard cable, 2x2 x AWG 22/1, double shielding
				
				2x HARTING RJ Industrial® IP 67 Data 3A in metal with IDC fast termination technology

Identification	Part number	Drawing	Dimensions in mm
Set for assembly on standard rail 35 mm according to DIN EN 60 715	20 80 000 0003		
Set for wall mounting vertical assembly	20 80 010 0001		
Set for wall mounting flat assembly	20 80 024 0002		

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[1]   Order insert fixing screw 09 20 000 9918 separately

ESC 67-10 TP05M M12 D-coding

HARTING

ESC 67-10 TP05M M12
M12 D-coding

Identification	Part number	Drawing	Dimensions in mm
ESC 67-10 TP05M Ethernet switch, managed M12 D-coding	20 70 305 4941		

ca. 56
87
120
45

Technical characteristics

Power supply

Input voltage	24 V DV (16,8 ... 30 V DV)
Current consumption	max 160 mA (at 24 V DC)
Connections	Compatible with circular connector, A-coding, redundant power supply

Ethernet Interface

Ports	5
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	Pluggable with connectors M12 D-coding
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

Dimensions (W x D x H)	45 x 120 x 87 mm (without connectors)
Mounting	Panel mounting, upright or flat assembly; mounting onto top hat mounting rail 35 mm according to DIN EN 60 715
Weight	approx. 0.8 kg

ESC 67-10 TP05M M12 D-coding

Identification	Part number Power termination	Ethernet termination	
HARAX® M12-L circular connector female, A-coding	21 03 212 2305		
HARAX® M12-L circular connector shielded, 4-wires, male, D-coding		21 03 281 1405	
Protection cover M12	21 01 000 0003	21 01 000 0003	

Identification			Part number		
System cables for Industrial Ethernet, pre-assembled at both ends IP 65 / IP 67 (when mated)	Length:	1 m 3 m 5 m	21 03 483 1401 21 03 483 1403 21 03 483 1405 21 03 483 1400[1)]	Cable type: Connectors:	Industrial Ethernet Standard cable, 2x2 x AWG 26 / 0,14 mm² 2x circular connectors M12 D-coding, straight
	Length:	1 m 3 m 5 m	21 03 485 1401 21 03 485 1403 21 03 485 1405 21 03 485 1400[1)]	Cable type: Connectors:	Industrial Ethernet Standard cable, 2x2 x AWG 22 / 0,34 mm² 2x circular connectors M12 D-coding, straight

Identification	Part number	Drawing	Dimensions in mm
Set for assembly on standard rail 35 mm according to DIN EN 60 715	20 80 000 0003		
Set for wall mounting vertical assembly	20 80 010 0001		
Set for wall mounting flat assembly	20 80 024 0002		

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[1)] Please state length separately

ESC 67-10 TP10M HARTING RJ Industrial® IP 67 Data 3A

ESC 67-10 TP10M
HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	Drawing	Dimensions in mm
ESC 67-10 TP10M Ethernet switch, managed HARTING RJ Industrial® IP 67 Data 3A	20 70 310 4921		

Technical characteristics

Power supply

Input voltage	24 V DV (16,8 ... 30 V DV)
Current consumption	approx. 260 mA (at 24 V DC)
Connections	Compatible with Han® 4 A connector, redundant power supply (incl. fixing srew 09 20 000 9918, to maintain IP 67)

Ethernet Interface

Ports	10
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	Pluggable with connectors HARTING RJ Industrial® Data 3A
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

Dimensions (W x D x H)	90 x 120 x 87 mm (without connectors)
Mounting	Panel mounting, upright or flat assembly; mounting onto top hat mounting rail 35 mm according to DIN EN 60 715
Weight	approx. 1.4 kg

ESC 67-10 TP10M HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number Power termination	Ethernet termination	
Hood metal, straight, metric	19 20 003 1440 [1]		
Protection cover Han® 3 A	09 20 003 5422	09 20 003 5425	
Han® 4 A female insert	09 20 004 2711		
Cable gland metal IP 65, metric M20, cable diameter: 5 ... 9 mm	19 00 000 5080		
Connector set HARTING RJ Industrial® IP 67 Data 3 A in metal		09 45 115 1100	
Coding pin set		09 45 820 0000	

Identification		Part number		
System cables for Industrial Ethernet, pre-assembled at both ends metal, IP 65 / IP 67 (when mated)	Length: 1.5 m 3.0 m 5.0 m 10.0 m 20.0 m 50.0 m 100.0 m	09 45 715 1123 09 45 715 1123 09 45 715 1123 09 45 715 1123 09 45 715 1123 09 45 715 1123 09 45 715 1123	Cable type: Connectors:	Industrial Ethernet Standard cable, 2x2 x AWG 22/1, double shielding 2x HARTING RJ Industrial® IP 67 Data 3A in metal with IDC fast termination technology

Identification	Part number	Drawing	Dimensions in mm
Set for wall mounting vertical assembly	20 80 010 0002		

[1] Order insert fixing screw 09 20 000 9918 separately

ESC 67-10 TP10M M12 D-coding

HARTING®

ESC 67-10 TP05M M12
M12 D-coding

Identification	Part number	Drawing	Dimensions in mm
ESC 67-10 TP10M Ethernet switch, managed M12 D-coding	20 70 310 4941	87 121	90

Technical characteristics

Power supply

Input voltage	24 V DV (16,8 ... 30 V DV)
Current consumption	approx. 260 mA (at 24 V DC)
Connections	Compatible with circular connector, A-coding, redundant power supply

Ethernet Interface

Ports	10
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	Pluggable with connectors M12 D-coding
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

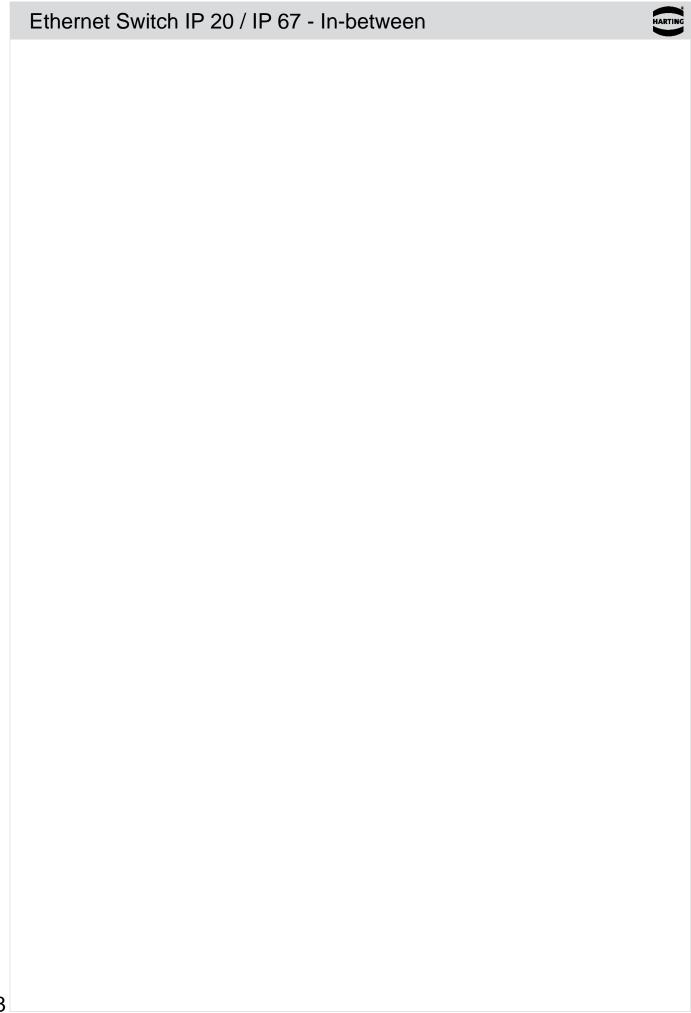|	
Dimensions (W x D x H)	90 x 120 x 87 mm (without connectors)
Mounting	Panel mounting, upright or flat assembly; mounting onto top hat mounting rail 35 mm according to DIN EN 60 715
Weight	approx. 1.4 kg

ESC 67-10 TP10M M12 D-coding

HARTING

Identification	Part number Power termination	Ethernet termination	
HARAX® M12-L circular connector female, A-coding	21 03 212 2305		
HARAX® M12-L circular connector shielded, 4-wires, male, D-coding		21 03 281 1405	
Protection cover M12	21 01 000 0003	21 01 000 0003	

Identification			Part number		
System cables for Industrial Ethernet, pre-assembled at both ends IP 65 / IP 67 (when mated)	Length:	1 m 3 m 5 m	21 03 483 1401 21 03 483 1403 21 03 483 1405 21 03 483 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable, 2x2 x AWG 26 / 0,14 mm² 2x circular connectors M12 D-coding, straight
	Length:	1 m 3 m 5 m	21 03 485 1401 21 03 485 1403 21 03 485 1405 21 03 485 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable, 2x2 x AWG 22 / 0,34 mm² 2x circular connectors M12 D-coding, straight

Identification	Part number	Drawing	Dimensions in mm
Set for wall mounting vertical assembly	20 80 010 0002		

[1] Please state length separately

Contents

ESC 67-30 TP08U HARTING RJ Industrial® IP 67 Data 3A

ESC 67-30 TP08U
HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	Drawing	Dimensions in mm
ESC 67-30 TP08U Ethernet switch HARTING RJ Industrial® IP 67 Data 3A	20 73 308 3921		

Technical characteristics

Power supply

Input voltage	24 V DV (18 ... 30 V DV)
Current consumption	approx. 140 mA (at 24 V DC)
Connections	Screw terminal with 5 contacts, plug-in, for redundant power supply (on the inside of control cabinet)

Alarm signal contact   Change-over contact, potential-free, 24 V DC / 0.5 A (on the inside of cabinet)
Screw terminal with 3 contacts, pluggable

Ethernet Interface

Ports	8 (2x IP 65 / 6x IP 20)
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	On the outside of control cabinet: 2x connectors HARTING RJ Industrial® IP 67 Data 3A
	On the inside of control cabinet 6x RJ45 connectors
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

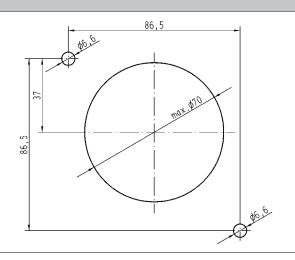|	
Dimensions (W x D x H)	105 x 40 x 105 mm (without connectors)
Mounting	Directly on control cabinets and terminal boxes
Weight	approx. 0.6 kg

ESC 67-30 TP08U HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	
Connector set HARTING RJ Industrial® IP 67 Data 3A, metal	09 45 115 1100	
Coding pin set	09 45 820 000	
Mounting plate to the inside of control cabinet	20 80 000 0004	

Identification			Part number		
System cables for Industrial Ethernet, pre-assembled at both ends IP 65 / IP 67 (when mated)	Length:	1 m	09 45 715 1123	Cable type:	Industrial Ethernet standard cable, 2x2 x AWG 22/1 double shielding
		3 m	09 45 715 1125		
		5 m	09 45 715 1127	Connectors:	2x HARTING RJ Industrial® IP 67 Data 3A with IDC fast termination technology and zinc die-cast full metal housing
		10 m	09 45 715 1151		
		20 m	09 45 715 1153		
		50 m	09 45 715 1156		
		100 m	09 45 715 1161		
	Length:	1 m	09 45 715 1164	Cable type:	Industrial Ethernet stranded cable, 2x2 x AWG 22/7 double shielding
		3 m	09 45 715 1166		
		5 m	09 45 715 1168	Connectors:	2x HARTING RJ Industrial® IP 67 Data 3A with IDC fast termination technology and zinc die-cast full metal housing
		10 m	09 45 715 1173		
		20 m	09 45 715 1175		
		50 m	09 45 715 1178		
		100 m	09 45 715 1183		

Details for panel holes

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ESC 67-30 TP08U M12 D-coding

HARTING

ESC 67-30 TP08U
M12 D-coding

Identification	Part number	Drawing	Dimensions in mm
ESC 67-30 TP08U Ethernet switch M12 D-coding	20 73 308 3941		

Technical characteristics

Power supply

Input voltage	24 V DV (18 ... 30 V DV)
Current consumption	approx. 140 mA (at 24 V DC)
Connections	Screw terminal with 5 contacts, plug-in, for redundant power supply (on the inside of control cabinet)

Alarm signal contact

	Change-over contact, potential-free, 24 V DC / 0.5 A (on the inside of cabinet) Screw terminal with 3 contacts, pluggable

Ethernet Interface

Ports	8 (2x IP 65 / 6x IP 20)
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	On the outside of control cabinet: 2x circular connectors, M12, D-coding On the inside of control cabinet 6x RJ45 connectors
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

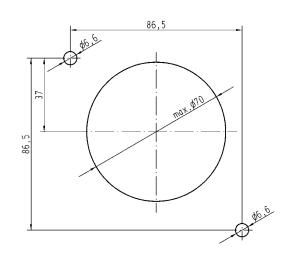|	
Dimensions (W x D x H)	105 x 40 x 105 mm (without connectors)
Mounting	Directly on control cabinets and terminal boxes
Weight	approx. 0.6 kg

ESC 67-30 TP08M M12 D-coding

HARTING

Identification	Part number	
HARAX® M12-L circular connector shielded, 4 contacts, male, D-coding	21 03 281 1405	
Protection cover M12	21 01 000 0003	
Mounting plate to the inside of control cabinet	20 80 000 0004	

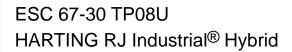| Identification			Part number		

System cables for
Industrial Ethernet,
pre-assembled at both ends
    IP 65 / IP 67
    (when mated)
	Length:	1 m
		3 m
		5 m
			21 03 483 1401
			21 03 483 1403
			21 03 483 1405
			21 03 483 1400[1]
				Cable type:
				
				Connectors:
					Industrial Ethernet Standard cable
					2x2 x AWG 26 / 0.14 mm²
					2x circular connectors
					M12, D-coding, straight

	Length:	1 m 3 m 5 m	21 03 485 1401 21 03 485 1403 21 03 485 1405 21 03 485 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable 2x2 x AWG 22 / 0.34 mm² 2x circular connectors M12, D-coding, straight

Details for panel holes

[1] Please state length separately

ESC 67-30 TP08U HARTING RJ Industrial® Hybrid

HARTING

ESC 67-30 TP08U
HARTING RJ Industrial® Hybrid

Identification	Part number	Drawing	Dimensions in mm
ESC 67-30 TP08U Ethernet switch HARTING RJ Industrial® Hybrid	20 73 308 3972		

Technical characteristics

Power supply

Input voltage	24 V DV (18 ... 30 V DV)
Current consumption	approx. 150 mA (at 24 V DC)

Connections (plug-in)　　　　On the inside of control cabinet:　　Screw terminal with 5 contacts,
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　for redundant power supply

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Screw terminal with 6 contacts,
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　for hybrid power supply

Alarm signal contact　　Change-over contact, potential-free, 24 V DC / 0.5 A (on the inside of cabinet)
　　　　　　　　　　　　　　Screw terminal with 3 contacts, pluggable

Ethernet Interface

Ports	8 (2x IP 65 / 6x IP 20)
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5

Connections　　　　　　　　On the outside of control cabinet:　2x connectors HARTING RJ Industrial®
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Hybrid

　　　　　　　　　　　　　　On the inside of control cabinet:　　6x RJ45 connectors

Maximum cable length	100 m (with Category 5 Kabel) according to EN 50 173

Mechanical data

Dimensions (B x T x H)	105 x 40 x 105 mm (without connectors)
Mounting	Directly on control cabinets and terminal boxes
Weight	approx. 0.6 kg
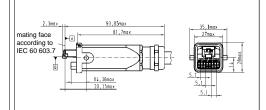
ESC 67-30 TP08U HARTING RJ Industrial® Hybrid

HARTING

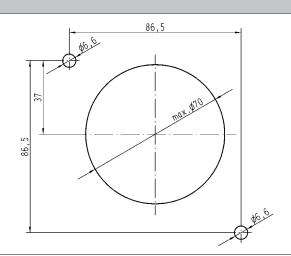| Identification	Part number	
Connector set HARTING RJ Industrial® Hybrid metal	10 12 005 2001	
Mounting plate to the inside of control cabinet	20 80 000 0004	
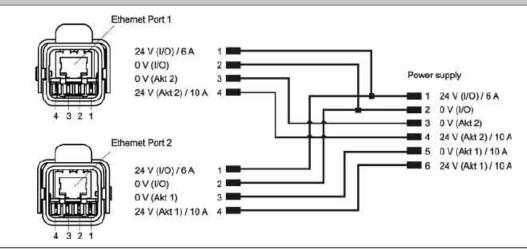
Identification	Part number	
System cables for Industrial Ethernet, pre-assembled at both ends IP 65 / IP 67 (when mated)	on request	

Details for panel holes
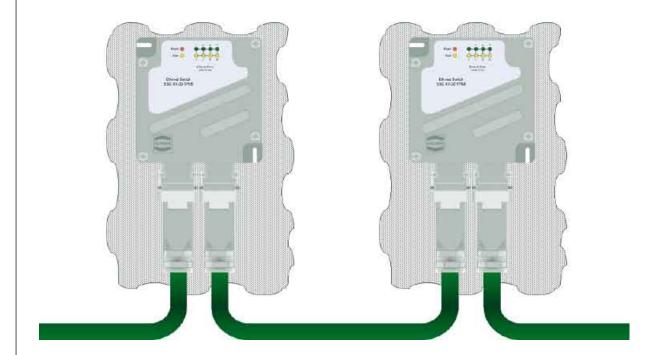

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Hybrid connector - Contact assignment 24 V DC

Ethernet Port 1

24 V (I/O) / 6 A	1	
0 V (I/O)	2	
0 V (Akt 2)	3	
24 V (Akt 2) / 10 A	4	

4 3 2 1

Power supply

1	24 V (I/O) / 6 A	
2	0 V (I/O)	
3	0 V (Akt 2)	
4	24 V (Akt 2) / 10 A	
5	0 V (Akt 1) / 10 A	
6	24 V (Akt 1) / 10 A	

Ethernet Port 2

24 V (I/O) / 6 A	1	
0 V (I/O)	2	
0 V (Akt 1)	3	
24 V (Akt 1) / 10 A	4	

4 3 2 1

Power supply, alternative 1

Voltage supply and distribution are made by both hybrid haven. A feed over the post plug connector on the switchgear cabinet inside does not take place.
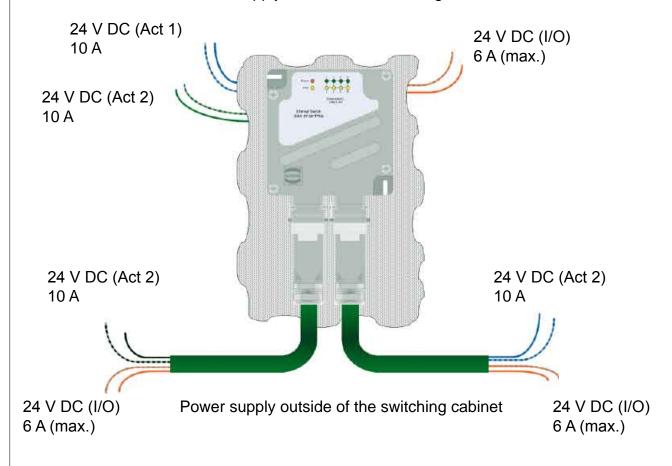
65

Power supply, alternative 2

The feed is made by the post plug connector on the switchgear cabinet inside of the
Ethernet Switch, the distribution by means of the hybrid plug connectors.

Power supply inside of the switching cabinet

24 V DC (Act 1)
10 A

24 V DC (I/O)
6 A (max.)

24 V DC (Act 2)
10 A

24 V DC (Act 2)
10 A

24 V DC (Act 2)
10 A

24 V DC (I/O)   Power supply outside of the switching cabinet   24 V DC (I/O)
6 A (max.)   6 A (max.)

Fast Ethernet Switch, managed
for industrial applications

General description

Ethernet switches devide former collision domains into point-to-point connections between the network components and the user equipment involved. Constructing the network this way prevents collisions.

The managed In-between Fast Ethernet switches of the type ESC 67-x0 TPxxM are an integrated solution, combining an Ethernet switch with a through panel connection in one device. The compact housing is mounted directly on the external wall of a control cabinet or a terminal box. Up to 6 ports in IP 20 are available for connection inside. For networking outside of the cabinet, the Ethernet switch allows the connection of up 2 items of user equipment to be connected through Shielded Twisted Pair cable in accordance to IEC 802.3 in IP 65 / IP 67.

The Fast Ethernet switches ESC 67-x0 TPxxM from HARTING provides two alternative access methods for the management:
SNMP and a comfortable web access.

Application fields

- Industrial automation

- Automotive industry

- Wind power

- Power distribution systems

Advantages

- High degree of protection IP 65 / IP 67

- Robust metal housing, zinc die-cast

- Can be used directly in industrial environments

- EMC, temperature range and mechanical stability for the toughest demands

- Management functions integrated

Technical characteristics

- Ethernet switch according to IEEE 802.3

- Store and Forward Switching mode

- up to 6 ports, managed, non-blocking, IP 20
  2 ports, managed, non-blocking, IP 65 / IP 67

- Auto-crossing, Auto-negotiation, Auto-polarity

Ethernet Switch, managed

Management

Web-based access with password protection
- Status overview
- Port Settings
- Network Configuration
- Password settings
- Alarm Settings
- Diagnostics
- Parameter Import / Export
- Firmware Import / Export

SNMP Agent
- SNMP V1 and SNMP V3
- MIB II objects:
    - TCP/IP
    - UDP
    - System
    - Interface
    - IP
    - ICMP
    - SNMP
- HARTING MIB

Additional services
- DHCP
- DNS
- E-Mail
- Parameter and firmware import and export via TFTP
- System time via SNTP
- Service Mode via port 1

Diagnostics
- LEDs for Power, Link, Status, Data transmission and Fault
- Port diagnostic
- Port mirroring
- History
- Alarms via signalling contact and / or E-Mail

ESC 67-30 TP05M HARTING RJ Industrial® IP 67 Data 3A

HARTING

ESC 67-30 TP05M
HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	Drawing	Dimensions in mm
ESC 67-30 TP05M Ethernet switch, managed HARTING RJ Industrial® IP 67 Data 3A	20 73 305 4921		

Technical characteristics

Power supply

Input voltage	24 V DV (18 ... 30 V DV)
Current consumption	approx. 160 mA (at 24 V DC)
Connections	Screw terminal with 5 contacts, plug-in, for redundant power supply (on the inside of control cabinet)

Alarm signal contact Change-over contact, potential-free, 24 V DC / 0.5 A (on the inside of cabinet)
Screw terminal with 3 contacts, pluggable

Ethernet Interface

Ports	5 (2x IP 65 / 3x IP 20)
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	On the outside of control cabinet: 2x connectors HARTING RJ Industrial® IP 67 Data 3A On the inside of control cabinet 3x RJ45 connectors
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

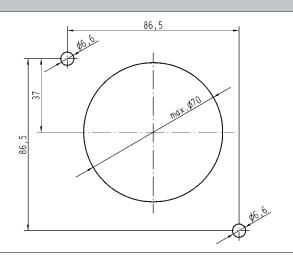|	
Dimensions (W x D x H)	105 x 40 x 105 mm (without connectors)
Mounting	Directly on control cabinets and terminal boxes
Weight	approx. 0.6 kg

ESC 67-30 TP05M HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	
Connector set HARTING RJ Industrial® IP 67 Data 3A, metal	09 45 115 1100	
Coding pin set	09 45 820 000	
Mounting plate to the inside of control cabinet	20 80 000 0004	

Identification		Part number		

System cables for Industrial Ethernet, pre-assembled at both ends
  IP 65 / IP 67
  (when mated)
	Length:			

	1 m	09 45 715 1123	Cable type:	Industrial Ethernet standard cable, 2x2 x AWG 22/1 double shielding
	3 m	09 45 715 1125		
	5 m	09 45 715 1127	Connectors:	2x HARTING RJ Industrial® IP 67 Data 3A with IDC fast termination technology and zinc die-cast full metal housing
	10 m	09 45 715 1151		
	20 m	09 45 715 1153		
	50 m	09 45 715 1156		
	100 m	09 45 715 1161		
	Length:			
	1 m	09 45 715 1164	Cable type:	Industrial Ethernet stranded cable, 2x2 x AWG 22/7 double shielding
	3 m	09 45 715 1166		
	5 m	09 45 715 1168	Connectors:	2x HARTING RJ Industrial® IP 67 Data 3A with IDC fast termination technology and zinc die-cast full metal housing
	10 m	09 45 715 1173		
	20 m	09 45 715 1175		
	50 m	09 45 715 1178		
	100 m	09 45 715 1183		

Details for panel holes

ESC 67-30 TP05M M12 D-coding

ESC 67-30 TP05M
M12 D-coding

Identification	Part number	Drawing	Dimensions in mm
ESC 67-30 TP05M Ethernet switch, managed M12 D-coding	20 73 305 4941		

Technical characteristics

Power supply

Input voltage	24 V DV (18 ... 30 V DV)
Current consumption	approx. 160 mA (at 24 V DC)
Connections	Screw terminal with 5 contacts, plug-in, for redundant power supply (on the inside of control cabinet)

Alarm signal contact — Change-over contact, potential-free, 24 V DC / 0.5 A (on the inside of cabinet)
Screw terminal with 3 contacts, pluggable

Ethernet Interface

Ports	5 (2x IP 65 / 3x IP 20)
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	On the outside of control cabinet: 2x circular connectors, M12, D-coding On the inside of control cabinet 3x RJ45 connectors
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

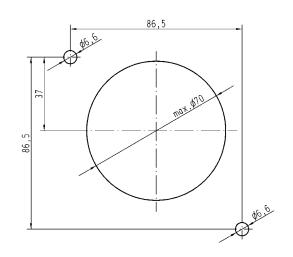|	
Dimensions (W x D x H)	105 x 40 x 105 mm (without connectors)
Mounting	Directly on control cabinets and terminal boxes
Weight	approx. 0.6 kg

ESC 67-30 TP05M M12 D-coding

Identification	Part number	
HARAX® M12-L circular connector shielded, 4 contacts, male, D-coding	21 03 281 1405	
Protection cover M12	21 01 000 0003	
Mounting plate to the inside of control cabinet	20 80 000 0004	

Identification			Part number		

System cables for
Industrial Ethernet,
pre-assembled at both ends
    IP 65 / IP 67
    (when mated)
	Length:	1 m
		3 m
		5 m
			21 03 483 1401
			21 03 483 1403
			21 03 483 1405
			21 03 483 1400[1]
				Cable type:
				
				Connectors:
					Industrial Ethernet Standard cable
					2x2 x AWG 26 / 0.14 mm²
					
					2x circular connectors
					M12, D-coding, straight

	Length:	1 m 3 m 5 m	21 03 485 1401 21 03 485 1403 21 03 485 1405 21 03 485 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable 2x2 x AWG 22 / 0.34 mm² 2x circular connectors M12, D-coding, straight

Details for panel holes

[1]   Please state length separately

ESC 67-30 TP08M HARTING RJ Industrial® IP 67 Data 3A

HARTING®

ESC 67-30 TP08M
HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	Drawing	Dimensions in mm
ESC 67-30 TP08M Ethernet switch, managed HARTING RJ Industrial® IP 67 Data 3A	20 73 308 4921		

Technical characteristics

Power supply

Input voltage	24 V DV (18 ... 30 V DV)
Current consumption	approx. 190 mA (at 24 V DC)
Connections	Screw terminal with 5 contacts, plug-in, for redundant power supply (on the inside of control cabinet)

Alarm signal contact Change-over contact, potential-free, 24 V DC / 0.5 A (on the inside of cabinet)
Screw terminal with 3 contacts, pluggable

Ethernet Interface

Ports	5 (2x IP 65 / 3x IP 20)
Data transmission rate	10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity
Cable	Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5
Available device	On the outside of control cabinet: 2x connectors HARTING RJ Industrial® IP 67 Data 3A
	On the inside of control cabinet 6x RJ45 connectors
Maximum cable length	100 m (with Category 5 cable) according to EN 50 173

Mechanical data

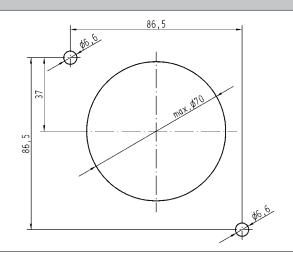|	
Dimensions (W x D x H)	105 x 40 x 105 mm (without connectors)
Mounting	Directly on control cabinets and terminal boxes
Weight	approx. 0.6 kg

ESC 67-30 TP08M HARTING RJ Industrial® IP 67 Data 3A

Identification	Part number	
Connector set HARTING RJ Industrial® IP 67 Data 3A, metal	09 45 115 1100	
Coding pin set	09 45 820 000	
Mounting plate to the inside of control cabinet	20 80 000 0004	

Identification		Part number		

System cables for Industrial Ethernet, pre-assembled at both ends
    IP 65 / IP 67
    (when mated)
	Length: 1 m
	3 m
	5 m
	10 m
	20 m
	50 m
	100 m
		09 45 715 1123
		09 45 715 1125
		09 45 715 1127
		09 45 715 1151
		09 45 715 1153
		09 45 715 1156
		09 45 715 1161
			Cable type:
			
			Connectors:
				Industrial Ethernet standard cable, 2x2 x AWG 22/1 double shielding
				2x HARTING RJ Industrial® IP 67 Data 3A with IDC fast termination technology and zinc die-cast full metal housing

	Length: 1 m 3 m 5 m 10 m 20 m 50 m 100 m	09 45 715 1164 09 45 715 1166 09 45 715 1168 09 45 715 1173 09 45 715 1175 09 45 715 1178 09 45 715 1183	Cable type: Connectors:	Industrial Ethernet stranded cable, 2x2 x AWG 22/7 double shielding 2x HARTING RJ Industrial® IP 67 Data 3A with IDC fast termination technology and zinc die-cast full metal housing

Details for panel holes

ESC 67-30 TP08M M12 D-coding

HARTING

ESC 67-30 TP08M
M12 D-coding

Identification	Part number	Drawing	Dimensions in mm

ESC 67-30 TP08M
 	
  Ethernet switch, managed
  M12 D-coding
	20 73 308 4941	105
		86,5
		105
		86,5
		40
		6,6	

Technical characteristics

Power supply

Input voltage   24 V DV (18 ... 30 V DV)

Current consumption   approx. 190 mA (at 24 V DC)

Connections   Screw terminal with 5 contacts, plug-in, for redundant power supply
                         (on the inside of control cabinet)

Alarm signal contact   Change-over contact, potential-free, 24 V DC / 0.5 A (on the inside of cabinet)
                         Screw terminal with 3 contacts, pluggable

Ethernet Interface

Ports   8 (2x IP 65 / 6x IP 20)

Data transmission rate   10 Mbit/s or 100 Mbit/s / Auto-crossing, Auto-negotiation, Auto-polarity

Cable   Shielded Twisted Pair (STP) or Unshielded Twisted Pair (UTP), Category 5

Available device   On the outside of control cabinet: 2x circular connectors, M12, D-coding
                         On the inside of control cabinet   6x RJ45 connectors

Maximum cable length   100 m (with Category 5 cable) according to EN 50 173

Mechanical data

Dimensions (W x D x H)   105 x 40 x 105 mm (without connectors)

Mounting   Directly on control cabinets and terminal boxes
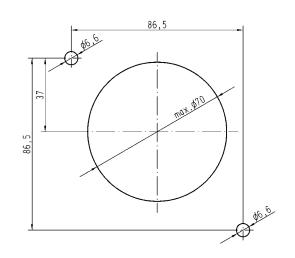
Weight   approx. 0.6 kg

ESC 67-30 TP08M M12 D-coding

Identification	Part number	
HARAX® M12-L circular connector shielded, 4 contacts, male, D-coding	21 03 281 1405	
Protection cover M12	21 01 000 0003	
Mounting plate to the inside of control cabinet	20 80 000 0004	

Identification			Part number		
System cables for Industrial Ethernet, pre-assembled at both ends IP 65 / IP 67 (when mated)	Length:	1 m 3 m 5 m	21 03 483 1401 21 03 483 1403 21 03 483 1405 21 03 483 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable 2x2 x AWG 26 / 0.14 mm² 2x circular connectors M12, D-coding, straight
	Length:	1 m 3 m 5 m	21 03 485 1401 21 03 485 1403 21 03 485 1405 21 03 485 1400[1]	Cable type: Connectors:	Industrial Ethernet Standard cable 2x2 x AWG 22 / 0.34 mm² 2x circular connectors M12, D-coding, straight

Details for panel holes

[1] Please state length separately

Contents

HARTING Industrial Cabinet Outlet Cat. 6

HARTING Industrial Cabinet Outlet Cat. 6

Advantages

- Small package size for two RJ45 ports
- Angled area (45°) for simple plugin of patch cables
- Future-proof due to Category 6 de-embedded
- Termination of installation cables without special tools
- Label for individual customer marking

General Description

The Industrial Ethernet Cabinet Outlet is an interchange module between an installation cable and a patch cable.

The small housing equipped with two RJ45 keystone jacks is directly mounting onto a top-hat mounting rail 35 mm according to EN 60 715.

Identification	Part number	Drawing	Dimensions in mm
HARTING Industrial Cabinet Outlet Cat. 6 Industrial Ethernet termination unit IP 20 including: 2 x Category 6 keystone jacks 1 x Housing with dust protection covers 1 x Mounting instructions	20 76 102 8000		

Technical characteristics

Transmission performance	Category 6 according to ISO / IEC 11 801:2002 for class E links
Transmission rate	• Ethernet 10 Mbit/s • Fast Ethernet 100 Mbit/s • Gigabit Ethernet 1000 Mbit/s
Transmission frequency	max. 250 MHz
Termination	2x KRONE KM8 RJ45 keystone jack, Category 6
Wiring	IDC without special tools (2x LSA-PLUS®) min. 200 times reusable
Strands diameter	0.5 to 0.65 mm / AWG 24 to 22; flexible and solid
Cross section strands isolation	0.7 to 1.6 mm
Cross section sheath diameter	6 to 9 mm
Cable type	• 2 pair installation cables, Category 5, 6 and 7 according to IEC 11801 • 4 pair installation cables, Category 5, 6 and 7 according to IEC 11801
Cable feeding	1 to 2 cable(s); from top side
Mating face	• RJ45 according to IEC 60 603-7 • Compatible to all standard RJ45 connectors
Mating cycles	min. 750
Shielding	360 °

Mechanical data

Housing type	Plastic
Dimensions (W x H x D)	approx. 28 x 82 x 68 mm (without connectors)
Degree of protection according to DIN 60 529	IP 20
Mounting	Onto top-hat mounting rail 35 mm according to EN 60 715
Colour	Light-grey, RAL 7035

Einvironmental conditions

Operating temperature range	-20 °C to +70 °C
Storage temperature range	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Approvals

cUL	(in preparation)

HARTING RJ Industrial® Metal Outlet Cat. 6

HARTING RJ Industrial® Metal Outlet Cat. 6

Advantages

- High IP 65 protection level
- Robust housing
- Can be used directly in industrial environments
- Future-proof due to Category 6 de-embedded
- Termination without special tools
- PROFINET compatible

General Description

The Industrial Outlet permits structrured building cabling in accordance with ISO / IEC 11 801:2002 or with EN 50 173:2002 to be continued in the industrial environment through to the machine.

With its aluminium die cast housing the Metal Outlet fulfills even the toughest requirements on the production floor. Thus it is possible to install network access directly within the unprotected environment of machines, welding robots etc.

Identification	Part number	Drawing	Dimensions in mm
HARTING RJ Industrial® Metal Outlet Cat. 6 Industrial Ethernet network outlet IP 65 including: 2 x Category 6 keystone jacks 1 x Housing including protection covers 2 x Cable glands 1 x Mounting instructions	20 79 302 0922		

HARTING RJ Industrial® Metal Outlet Cat. 6

Technical characteristics

Transmission performance	Category 6 according to ISO / IEC 11 801:2002 for class E links
Transmission rate	• Ethernet 10 Mbit/s • Fast Ethernet 100 Mbit/s • Gigabit Ethernet 1000 Mbit/s
Transmission frequency	max. 250 MHz
Termination	2x KRONE KM8 RJ45 keystone jack, Category 6, vibration proof mounted
Wiring	IDC without special tools (2x LSA-PLUS®) min. 200 times reusable
Strands diameter	0.5 to 0.65 mm / AWG 24 to 22; flexible and solid
Cross section strands isolation	0.7 to 1.6 mm
Cross section sheath diameter	6 to 9 mm
Cable type	• 2 pair installation cables, Category 5, 6 and 7 according to IEC 11801 • 4 pair installation cables, Category 5, 6 and 7 according to IEC 11801
Cable feeding	1 to 2 cable(s); on the opposite side of the connector terminals
Connector	HARTING RJ Industrial® Data 3A Metal (PROFINET compliant)
Mating face	• RJ45 according to IEC 60 603-7 • Compatible to all standard RJ45 connectors
Mating cycles	min. 750
Shielding	360 °

Mechanical data

Housing type	Aluminium die cast
Dimensions (W x H x D)	125 x 80 x 57.5 mm (without connectors)
Degree of protection according to DIN 60 529	IP 65; mated and unmated (by Han® 3A protection covers)
Mounting	On-wall mounting with 4 screws
Colour	Grey, RAL 7037

Environmental conditions

Operating temperature range	-20 °C to +70 °C
Storage temperature range	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Approvals
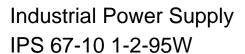
cUL	(in preparation)

Industrial Power Supply

Contents

Industrial Power Supply

Contents

Industrial Power Supply
IPS 67-10 1-2-95W

Advantages

General

- High degree of protection IP65/67
- Robust metal housing
- Worldwide assignment by long range input
- Suitable for the direct use in industrial environments
- Temperature range and mechanical solidness for highest demands

The Industrial Power Supply IPS 67-10 1-2-95W is available with termination versions M12 and Han® 4 A.

The Industrial Power Supply is applicable for the worldwide assignment by the long range input. It can be inserted thus at each manufacturing place of the world problem-free at walls, columns, carriers or manufacturing cells.

Identification	Part number	Drawing	Dimensions in mm
IPS 67-10 1-2-95W Han® 3 A Industrial Power Supply with termination Han® 4 A	20 80 300 3011		
IPS 67-10 1-2-95W M12 Industrial Power Supply with termination M12, A-coding	20 80 300 3012		

Industrial Power Supply IPS 67-10 1-2-95W

HARTING

Identification	Part number	Drawing	Dimensions in mm
IPS 67-10 1-2-95W Han® 3 A Industrial Power Supply with termination Han® 4 A	20 80 300 3011		
IPS 67-10 1-2-95W M12 Industrial Power Supply with termination M12, A-coding	20 80 300 3012		

Identification	Part number	Drawing	Dimensions in mm
Set for mounting on standard rail according to DIN EN 60 715	20 80 000 0003		
Set for panel mounting vertical	20 80 010 0001		
Set for panel mounting horizontal	20 80 024 0002		

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Industrial Power Supply IPS 67-10 1-2-95W

HARTING

Technical characteristics

Input power supply

Input rated voltage	115 V AC / 230 V AC (Auto-ranging)
	• 85 V AC ... 264 V AC
	• Tolerances of input voltage according to IEC 1131-2 and DIN 19 240
Input frequency	47 ... 63 Hz
Input rated current	< 2 A
Input current (typ./cold start)	< 30 A
Termination power supply	Han® 4 A (male insert)
Diagnostics (LED)	Input voltage is active: Green
Efficiency (for rated values)	> 85 %
Open loop current	< 10 mA (at DC)
buffer time/Hold time	> 20 ms at 230 V AC
Recommended back-up fuse	10 A characteristic B (EN 898)
Transient firmness	according to VDE 0160

Output power supply

Output rated voltage	24 V DC
Range of output voltage	22.5 V ... 28.5 V DC (V_{out})
Output current	3.9 A (at 24 V DC)
Output power	95 W
Termination output voltage	Han® 4 A (female insert) / M12 A-coding (female insert)
Diagnostics (LED)	Output voltage is active: Yellow (OFF at V_{out} < 22.5 VDC)
Sensibility	< 2 %
Protection function	Durable short-circuit proof, overload-proof and no-load operation
Power Factor Correction	active PFC
Remaining ripple (at rated values)	< 50 mVss
Setup Time	< 500 ms
Rise Time	< 50 ms
Hold Time	> 20 ms
Overload behavior	Switch off > 1,4 x I_N

Industrial Power Supply IPS 67-10 1-2-95W

Technical characteristics

Design features

Material of housing	Robust metal housing of zinc die-cast
Dimensions (W x H x D)	77.5 x 87 x 120 mm (without connectors)
Mounting	• 35 mm top-hat mounting rail according to DIN EN 60 715,
	• Wall mounting, vertical
	• Wall mounting, horizontal
Weight	approx. 1.2 kg
Degree of protection acc. to DIN 60 529	IP 65 / IP 67

Environmental conditions

Operating temperature	-25 °C to +75 °C
Storage temperature	-40 °C to +85 °C
Relative humidity	30 % to 95 % (non-condensing)

Mechanical solidness

Shock	IEC 68-2-27-Ea
Shock and vibration according to Rail-standard	EN 50 155
Vibration	IEC 68-2-6-Fc

EMC standards

Interference immunity ESD	IEC 61 000-4-2
Interference immunity HF radiated	IEC 61 000-4-3
Interference immunity Burst	IEC 61 000-4-4
Interference immunity Surge	IEC 61 000-4-5
Interference immunity	IEC 61 000-4-6
Emitted radiation	EN 55 011, Klasse A
Rail-standard	EN 50 121-3-2
Safety extra-low voltage	• EN 50 178 (VDE 0160)
	• EN 60 204 (PELV)
Secure separation	EN 60 950 (SELV)
Protection against electrical impact	DIN VDE 0100-410
Delimitation of net harmonic stream	DIN VDE 0106-101

Connectors and Cables

Contents

HARTING RJ Industrial® IP 20
Standard patch cable, Cat. 5

General Information

- 1:1 cabling
- Shielded Twisted Pair cable
- Transmission characteristics to ISO/IEC 11 801:2002: Class D
- Mating geometry: 2x RJ45 to IEC 60 603-7
- Connectors: 2x RJ45 shielded with piercing connection technology, moulded
- Degree of protection: IP20 (when mated)
- Cable type: PUR, halogen-free
          4x 2x AWG 26/7, twisted pair, shielded

Suitable for cabling of Ethernet networks in industrial environments with limited environmental impact on the connectors.

Composed of shielded connectors and cables with a halogen-free and oil-resistant sheath, the system cables are suitable for use in switchgear cabinets. The compact dimensions of the connectors mean that the cables are also generally suitable for installations where space is restricted.

The compact size of the connectors ensures that system cables can be utilised inside switchgear cabinets or on multiport switches.

The choice between green and black cables also opens up colour coding options. The cable lengths available range from 0.5 m to 20 m. In conjunction with the other characteristics of these system cables, they offer the prospect of covering a wide range of applications.

HARTING

Identification	Part number	Drawing	Dimensions in mm
Standard patch cable for Industrial Ethernet pre-assembled; IP 20, Cat. 5		Cable type:	Industrial Ethernet cable; 4x2 x AWG 26/7, Twisted Pair, shielded
Length: 0.5 m	**09 45 971 1101**		
1.0 m	**09 45 971 1102**	Sheath:	PUR green, halogen-free
1.5 m	09 45 971 1115		
2.0 m	**09 45 971 1103**	Connectors:	2x RJ45, shielded, with piercing termination technique, extrused
2.5 m	09 45 971 1116		
3.0 m	**09 45 971 1104**		
4.0 m	09 45 971 1105		
5.0 m	**09 45 971 1106**		
7.5 m	09 45 971 1109		
10.0 m	09 45 971 1112		
15.0 m	09 45 971 1113		
20.0 m	09 45 971 1114		
Standard patch cable for Industrial Ethernet pre-assembled; IP 20, Cat. 5		Cable type:	Industrial Ethernet cable; 4x2 x AWG 26/7, Twisted Pair, shielded
Length: 0.5 m	**09 45 971 1121**		
1.0 m	**09 45 971 1122**	Sheath:	PUR black, halogen-free
1.5 m	09 45 971 1135		
2.0 m	**09 45 971 1123**	Connectors:	2x RJ45, shielded, with piercing termination technique, extrused
2.5 m	09 45 971 1136		
3.0 m	**09 45 971 1124**		
4.0 m	09 45 971 1125		
5.0 m	**09 45 971 1126**		
7.5 m	09 45 971 1129		
10.0 m	09 45 971 1132		
15.0 m	09 45 971 1133		
20.0 m	09 45 971 1134		

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Stock items in bold

Industrial Ethernet IP 20 Standard Patch cable, angled

HARTING

Leaving left   Leaving right   Leaving top   Leaving bottom

Industrial Ethernet IP 20
Standard patch cable, Cat. 5, angled

General Information

- System cables with connectors assembled on both ends
- Suitable for cabling industrial networks (for example, in accordance with PROFINET guidelines)
- Based on RJ45 connectors
- Application: switchgear cabinets and industrial environments with minor environmental impact on the connectors

Technical characteristics

Ethernet cable

Transmission characteristics	Class D according to ISO / IEC 11 801:2002
Facing geometriy	2x RJ45 according to IEC 60 603-7
Degree of protection	IP 20 (when mated)

Electrical characteristics at 20 °C

Contact resistance	≤ 20 mΩ
Insulating resistance	≥ 500 MΩ
Electrical strength	
Contact - contact	1 kV
Contact - ground	1.5 kV

Electrical characteristics after cyclic heat load

Contact resistance	≤ 20 mΩ
Insulating resistance	≥ 100 MΩ
Electrical strength	
Contact - contact	1 kV
Contact - ground	1.5 kV

Industrial Ethernet IP 20 Standard Patch cable, angled

Identification	Part number	Drawing		Dimensions in mm
Standard patch cable for Industrial Ethernet pre-assembled; leaving right		Cable type:	Industrial Ethernet cable; 2x2 x AWG 22/1, shielded twisted pair	
Length: 1.5 m	09 45 771 4023	Sheath:	PVC green, Ø 6.5 mm	
3.0 m	09 45 771 4025			
5.0 m	09 45 771 4027	Connectors:	2x HARTING RJ Industrial® IP 20 Data with extrused housing, 90° angled, leavers rigth	
10.0 m	09 45 771 4051			
20.0 m	09 45 771 4053			
50.0 m	09 45 771 4056			
100.0 m	09 45 771 4061			
leaving left	on request			
leaving top	on request			
leaving bottom	on request			
Flexible patch cable for Industrial Ethernet pre-assembled; leaving right		Cable type:	Industrial Ethernet flexible cable; 2x2 x AWG 22/7, shielded twisted pair	
Length: 1.5 m	09 45 771 4123	Sheath:	PVC green, Ø 6.5 mm	
3.0 m	09 45 771 4125			
5.0 m	09 45 771 4127	Connectors:	2x HARTING RJ Industrial® IP 20 Data with extrused housing, 90° angled, leavers rigth	
10.0 m	09 45 771 4151			
20.0 m	09 45 771 4153			
50.0 m	09 45 771 4156			
100.0 m	09 45 771 4161			
leaving left	on request			
leaving top	on request			
leaving bottom	on request			
Patch cable for power chains for Industrial Ethernet pre-assembled; leaving right		Cable type:	Industrial Ethernet cable for power chains; 2x2 x AWG 22/1, shielded twisted pair	
Length: 1.5 m	09 45 771 4164	Sheath:	PVC green, Ø 6.5 mm	
3.0 m	09 45 771 4166			
5.0 m	09 45 771 4168	Connectors:	2x HARTING RJ Industrial® IP 20 Data with extrused housing, 90° angled, leavers rigth	
10.0 m	09 45 771 4173			
20.0 m	09 45 771 4175			
50.0 m	09 45 771 4178			
100.0 m	09 45 771 4183			
leaving left	on request			
leaving top	on request			
leaving bottom	on request			

HARTING RJ Industrial® Hybrid Connector
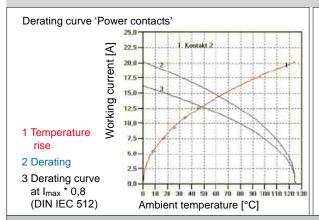
HARTING RJ Industrial® Hybrid connector IP 67 (metal)

General Information

Derating curve 'Power contacts'

1. Kontakt 2

1 Temperature rise

2 Derating

3 Derating curve at $I_{max} * 0,8$ (DIN IEC 512)

Working current [A]

Ambient temperature [°C]

With the HARTING RJ Industrial® Hybrid connector, HARTING has developed an interface solution that integrates the data lines and the power supply into one connector for hybrid Ethernet networks. The connector's geometry nevertheless maintains a clear separation between the data and the power contacts. This brings a significant reduction in the costs of installation and of field devices suitable for industrial application with hybrid cabling.

The four power contacts of the hybrid module have also been designed with *HARAX®* rapid termination technology, allowing stranded cables of up to 1.5 mm² to be connected.

Identification	Part number	Drawing	Dimensions in mm
Connector set inclusive housings, cable gland and assembly instruction	10 12 005 2001	2,3max 93,85max 81,7max Mating face according to IEC 60 603.7 A B 14,38max 20,15max 35,1max 27max 28max 14 5,1 5,1 5,1	

HARTING RJ Industrial® Hybrid Connector

Technical characteristics

Transmission characteristics	Category 5 according to ISO / IEC 11 801:2002 and EN 50 173-1
Degree of protection	IP 65 / IP 67 (when mated)
Mating interface	RJ45 according to IEC 60 603-7 plus 4x power supply
Wire diameter, data	• AWG 22 - 24 stranded • AWG 22 - 23 solid
Wire diameter, power supply	1.5 mm²
Rated voltage, power supply	48 V DC
Rated current, power supply	see Derating curve
Temperature range	-40 °C ... +70 °C
Cable sheath diameter	10 mm ... 11 mm
Mating cycles	min. 500
Housing material	Zinc die-cast, grey; UL 94-V0

HARTING RJ Industrial® Hybrid Panel feed through IP 67 (Metall)

General Description

With the HARTING RJ Industrial® Hybrid connector, HARTING has developed an interface solution that integrates the data lines and the power supply into one connector for hybrid Ethernet networks.

The connector's geometry nevertheless maintains a clear separation between the data and the power contacts. This brings a significant reduction in the costs of installation and of field devices suitable for industrial application with hybrid cabling.

The panel feed through is compatible with RJ45 connectors, which means that the standard patch cables for service and test purposes can be used.

The data lines are connected at the rear via an RJ45 jack, while the power lines use a cage clamp terminal.

Optional the hybrid interface can be integrated in the device directly, thus preventing the use of rear side data lines.

Identification	Part number	Drawing	Dimensions in mm
Panel feed through set screw termination including housing and assembly instruction	10 12 005 1001		
Panel feed through set cage clamp including housing and assembly instruction	10 12 005 1002		

Technical characteristics

Transmission characteristics   Category 5 according to ISO / IEC 11 801:2002 and EN 50 173-1

Degree of protection   IP 65 / IP 67 (when mated)

Mating interface external   RJ45 according to IEC 60 603-7
plus 4x power supply

Mating interface internal   RJ45 according to IEC 60 603-7
plus 4x power supply with cage clamp 1.5 mm²

Rated voltage power supply   48 V DC

Rated current power supply   see Derating curve on page 95

Panel cut out   22 x 22 mm

Temperature range   -40 °C ... +70 °C

Cable sheath diameter   10 mm ... 11 mm

Mating cycles   min. 500

Material RJ45 panel feed through   Metal

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HARTING RJ Industrial® Hybrid gender changer IP 67 (metal)

General Information

With the HARTING RJ Industrial® Hybrid connector, HARTING has developed an interface solution that integrates the data lines and the power supply into one connector for hybrid Ethernet networks. The connector's geometry nevertheless maintains a clear separation between the data and the power contacts. This brings a significant reduction in the costs of installation and of field devices suitable for industrial application with hybrid cabling..

The gender changer can be inserted outside control cabinets directly in the field for the separation of segments with different cable material as for example the transition to power chains.
It can directly be mounted onto machines and components as for example a bulkhead of robotics.

Identification	Part number	Drawing	Dimensions in mm
Gender changer inclusive housings, cable gland and assembly instruction	10 12 005 1003		

HARTING RJ Industrial® Hybrid Gender changer

Technical characteristics

Transmission characteristics   Category 5 according to ISO / IEC 11 801:2002 and EN 50 173-1

Degree of protection   IP 65 / IP 67 (when mated)

Mating interface   RJ45 according to IEC 60 603-7
plus 4x power supply

Wire diameter, data
- AWG 22 - 24 stranded
- AWG 22 - 23 solid

Wire diameter, power supply   1.5 mm²

Rated voltage, power supply   48 V DC

Rated current, power supply   see Derating curve on page 95

Temperature range   -40 °C ... +70 °C

Cable sheath diameter   10 mm ... 11 mm

Mating cycles   min. 500

Housing material   Metal

Han® PushPull Connectors

PROFINET
INDUSTRIAL ETHERNET

Han® PushPull
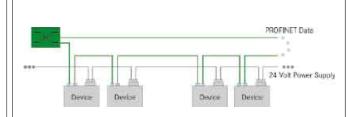## For structured cabling in the field

General description

The connector family based on HARTING
Push Pull interlocking technology.

Connectors from this family conform to the
specifications of German motor vehicle
manufacturers.

The connectors support line topology cabling.

Available: summer 2006

Application fields

PROFINET Data

24 Volt Power Supply

Device   Device   Device   Device

- Industrial automation

- Automotive industry

- Wind power

- Power distribution systems

Advantages

Automation
- Simple cabling of PROFINET in line topology

Installation
- Robust HARTING Push Pull technology

IT
- Design in IP 67 for harsh industrial environ-
  ments on the field level

Technical characteristics

- Compact design

- Conform to PROFINET standards

- For optical or electrical transmission of data
  or power

- Simple handling with Push Pull technology

- Termination technique locally configurable

Han® PushPull Data RJ45

HARTING

Han-Cubic Data
RJ45

Automation Initiative German Domestic Automobile Manufactures

Advantages

General Description

Ethernet connector on base RJ45

- HARTING Push Pull technology
- Compact design
- High density of components
- Integration of devices via RJ45 PCB connector
- Tool lots high-speed connection technology

Locking system	Push Pull
Degree of protection	IP 65 / IP 67
Mating face	RJ45 according to IEC 60 603-7
Max. cable diameter	9 mm
Wire gauge	AWG 24 - 22 flexible AWG 23 - 22 solid
Transmission characteristic	Cat 5e
Number of contacts	4, shielded
Material of housing	Plastic
Flammability according to UL 94	V0

Identification	Part number	Drawing	Dimensions in mm
Han® PushPull Data RJ45			
PROFINET identification: PROFINET O-Plug RJ45			
Cable side including hood and male insert HARTING RJ Industrial®	09 35 221 0421		
Device side bulkhead mounted housing RJ45 female not included	09 35 002 0321		Panel cut out
Female recommendation and assembly manual on request.			

Han® PushPull Data SCRJ

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Han® PushPull
Data SCRJ

Automation **I**nitiative **G**erman **D**omestic **A**utomobile Manufactures

Advantages

Optical connector on base SCRJ

- HARTING Push Pull technology
- Compact design
- High density of components
- Integration of devices via transceiver

General Description

Locking system	Push Pull
Degree of protection	IP 65
Mating face	SCRJ according to IEC 50377-3-6
Fibre types	MM 50 µm / 125µm
	MM 62.5 µm / 125µm
	SM 10 µm / 125µm
	HCS®[1] 200 µm / 230 µm
	POF[2] 1 mm
Material of housing	Plastic
Flammability accord. to UL 94	V0

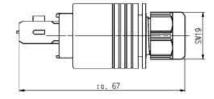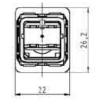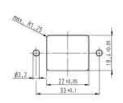| Identification	Part number	Drawing	Dimensions in mm
Han® PushPull Data SCRJ			
PROFINET identification: PROFINET O-Plug SCRJ			
Cable side including housing and insert SCRJ	09 35 241 0422	SW19 / ca. 67	26,2 / 22
Device side bulkhead mounted housing Optical transceiver not included	09 35 002 0321		Panel cut out
Transceiver recommendation and assembly manual on request.			
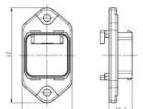
[1] HCS® = Hard Clad Silica (registered trademark of SpecTran Corporation)
[2] POF = Polymer Optical Fibre

Han® PushPull Power

Han® PushPull
Power

Advantages

Power connector for supply of device
- HARTING Push Pull technology
- Compact, space-saving design
- Finger protected
- Cable side; female
  - crimp termination
  - Tension clamp high-speed connection (planning)
- Device side; male
  - solder termination, angled

General Description

Locking system	Push Pull
Degree of protection	IP 65
Max. cable diameter	13 mm
Wire gauge	2.5 mm²
Number of contacts	4 + PE
Rated current	16 A
Rated voltage	230/400 V
Material of housing	Plastic
Flammability according to UL 94	V0

Identification	Part number	Drawing	Dimensions in mm
Han® PushPull Power Cable side including hood and female insert 16 A 230/400 V with crimp termination	09 35 231 0421		
			Panel cut out
Device side including housing and male insert 16 A 230/400 V with solder termination PCB layout on request	09 35 231 0323		

PROFINET
INDUSTRIAL ETHERNET

Han® PushPull L Power

Automation Initiative German Domestic Automobile Manufactures

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Advantages

Power connector for supply of device

- HARTING Push Pull technology
- Finger protected
- Cable side; female
  - Tension clamp high-speed connection
- Device side; male
  - solder termination, angled

General Description

Locking system	Push Pull
Degree of protection	IP 65
Max. cable diameter	13 mm
Wire gauge	2.5 mm²
Number of contacts	4 + PE
Rated current	16 A
Rated voltage	24 V
Material of housing	Plastic
Flammability according to UL 94	V0

Identification	Part number	Drawing	Dimensions in mm
Han® PushPull L Power PROFINET identification: PROFINET O-Plug Power24			
Cable side including hood and female insert 16 A 24 V with fast termination technique	09 35 431 0421		
Device side including housing and male insert 16 A 24 V with solder termination PCB layout on request	09 35 431 0321		

Push Pull Connector RJ Industrial

IP 67 Push Pull connector

Identification	Part number	Drawing	Dimensions in mm
Connector set incl. housing, cable gland and instruction manual	09 45 145 1100		
Protection cover for connectors with cord, IP 67/65	09 45 145 1100		

mating O ring

max.2,35   max.55

max.20,15

4,68

max.20,15

10,08

mating face compatible to IEC 60603-7

Ct. No.1
1,02
Ct. No.2
1,02
Ct. No.6   Ct. No.3
3,06

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.

Technical characteristics

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

Degree of protection:	IP 67/65
Locking mechanism:	Push Pull according to ISO/IEC 24 702 and IEC 61 076-3-106, variant 4
Mating interface:	RJ 45 according to IEC 60 603-7
Wire gauge data[1]:	AWG 22 - 24 stranded AWG 22 - 23 solid
Temperature range:	-40 °C … +70 °C
Cable sheath diameter:	6,5 mm ... 8,6 mm
Mating cycles:	mind. 750
Housing material:	Polyamide, black Polycarbonate, black UV resistant UL 94-V0 UL recognised, E102079

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1) Details see technical data sheet

Push Pull Connector RJ Industrial

HARTING

IP 67 Push Pull connector

Identification	Part number	Drawing	Dimensions in mm
Connector set incl. housing, cable gland and instruction manual		mating face according to IEC 60 603-7	
Cable manager, white	09 45 145 1500		
Cable manager blue	09 45 145 1510	2,35 maxi 55 maxi	
Protection cover for connectors with cord, IP 67/65	09 45 145 1100	20,15 maxi 4,68 10,08 20 maxi contact no. 8 contact no. 1	

General information

The IP 67 data version in push pull housing is fitted with innovative housing locking technology. The housing of the connector is locked tightly to the coupling by means of a surrounding locking sleeve. The connector can be locked and unlocked using one hand and only a little 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 Category 6 is ideally suited to compact industrial applications that require 4 pair or Gigabit Ethernet wiring.

For Category 6 patch cords it is recommended to use 1 connector with a white wire manager and 1 with a blue wire manager, in order to optimise the crosstalk between different signal pairs.

Technical characteristics

Transmission properties in accordance with Category 6 ISO/IEC 11 801:2002 and EN 50173-1

Degree of protection:	IP 67/65
Locking mechanism:	Push Pull according to ISO/IEC 24 702 and IEC 61 076-3-106, variant 4
Mating interface:	RJ 45 according to IEC 60 603-7
Wire gauge data[1]:	AWG 24 - 27 stranded
Temperature range:	-40 °C … +70 °C
Cable sheath diameter:	6,5 mm ... 8,6 mm
Mating cycles:	mind. 750
Housing material:	Polyamide, black Polycarbonate, black UV resistant UL 94-V0 UL recognised, E102079

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1) Details see technical data sheet

Push Pull Power 250 V

IP 67 Push Pull connector

for supply voltage 250 V

Identification	Part number	Drawing	Dimensions in mm
Connector set inkl. 3 turned crimp contacts (male), insulator body (black), housing, cable gland	09 46 145 3410		
Set of coding pins To avoid accidental incorrect mating a coding system is required. The coding pins are inserted without loss of contacts.	09 46 840 0000		
Protective cap IP 65 / 67 with cord	09 45 845 0001		

Technical characteristics

Specifications	DIN VDE 0627, DIN VDE 0110, DIN EN 61 984
Working voltage	**250 V**
Working current per contact	**16 A @ 55 °C**
Rated impulse voltage	**4.0 kV (DIN EN 61 984)**
Overvoltage category	III (DIN VDE 0110 and IEC 60 664-1)
Pollution degree	3 (DIN VDE 0110 and IEC 60 664-1)
No. of current carrying contacts	**2**
Pre-leading PE contact	**1**
Contact resistance	max. 5 mΩ
Protection against contact	acc. to IEC DIN EN 60 529
Wire gauge	1.5 mm² (AWG 16) [1], stranded
Cable sheath diameter	6.9 - 8.6 mm
Protection class – mated – unmated	IP 67 / 65 (IEC DIN EN 60 529) IP 20 (IEC DIN EN 60 529)
Vibration and shock resistance	acc. to EN 50 155
Ambient temperature	- 40 … + 70 °C
Mating security	Polarisation with polarisation nose, no mating of different connector variants possible
Coding	4 different possibilities, without losing contacts
Mating cycles	min. 750 [1]
Strain relief	min. 100 N
Housing material	Polycarbonate and Polyamide, UL 94 V-0, UV resistant

1) others on request

Push Pull Power 250 V

IP 67 Push Pull connector

for low voltage 48 V

Identification	Part number	Drawing	Dimensions in mm
Connector set inkl. 4 turned crimp contacts (male), insulator body (grey), housing, cable gland	09 46 145 4400		
Set of coding pins To avoid accidental incorrect mating a coding system is required. The coding pins are inserted without loss of contacts.	09 46 840 0000		
Protective cap IP 65 / 67 with cord	09 45 845 0001		

contact no.1   20,15 maxi   contact no.2
20 maxi
contact no.4   contact no.3

sealing gland, washer and nut PG9

41,5 maxi

Technical characteristics

Specifications	DIN VDE 0627, DIN VDE 0110, DIN EN 61 984
Working voltage	**48 V**
Working current per contact	**12 A @ 55 °C**
Rated impulse voltage	**1.5 kV (DIN EN 61 984)**
Overvoltage category	III (DIN VDE 0110 and IEC 60 664-1)
Pollution degree	3 (DIN VDE 0110 and IEC 60 664-1)
No. of current carrying contacts	**4**
Pre-leading PE contact	-
Contact resistance	max. 5 mΩ
Protection against contact	acc. to IEC DIN EN 60 529
Wire gauge	1.5 mm² (AWG 16) [1], stranded
Cable sheath diameter	6.9 - 8.6 mm
Protection class – mated – unmated	IP 67 / 65 (IEC DIN EN 60 529) IP 20 (IEC DIN EN 60 529)
Vibration and shock resistance	acc. to EN 50 155
Ambient temperature	- 40 … + 70 °C
Mating security	Polarisation with polarisation nose, no mating of different connector variants possible
Coding	4 different possibilities, without losing contacts
Mating cycles	min. 750 [1]
Strain relief	min. 100 N
Housing material	Polycarbonate and Polyamide, UL 94 V-0, UV resistant

1) others on request

Han® M12 Circular Connectors for Ethernet applications

Technical Data: Circular Connectors shielded, D-coded

	M12 / AWG 22	**M12 / AWG 26**
Working voltage	max. 50 V AC/DC	max. 50 V AC/DC
Working current per contact	max. 4 A	max. 2 A
Locking	Screw locking M12 x 1mm (recom. tightening torque 0.6 Nm) self securing	
Temperature range	- 20°C ... +60°C	- 5°C ... +60°C
Degree of Protection	IP 67	IP 67

Technical Data: System Cabling

	M12 / AWG 22	**M12 / AWG 26**
Number of wires/ wire gauge	2 x 2 x AWG 22/7	2 x 2 x AWG 26/7
Conductor insulation	Polyethylene (yellow, orange, white, blue) acc. to PROFINET	Polyethylene (white/orange, orange, white/green, green) according to EIA / TIA 568B
Arrangement of insulated strands	7 x 0.25 mm	7 x 0.16 mm
Jacket	Polyurethane (UL/CSA)	Polyurethane (UL/CSA)
Outer diameter	approx. 6.5 mm	approx. 5.6 mm
Bending radius	10 x outer diameter	10 x outer diameter
Temperature range	- 20°C ... +60°C	- 5°C ... +60°C

Identification	Part-Number	Drawing	Dimensions in mm

Pre-assembled and tested system cabling

for structured cabling of Industrial Ethernet networks based on circular connectors, M12 D-coding

Cable type:	Shielded Twisted Pair Stranded wire
Mating face:	M12 D-coding acc. to IEC 61 076-2-101
Transmission properties in accordance with ISO/IEC 11801:2002:	Class D, 100% tested
Degree of protection	IP 65 / 67 (when mated)

Pin arrangement

Signal	Function	Conductor Colour PROFINET	Conductor Colour EIA/TIA 568B	Pin no.
TD+	Transmission Data+	Yellow	White/Orange	1
TD-	Transmission Data-	Orange	Orange	3
RD+	Receiver Data+	White	White/Green	2
RD-	Receiver Data-	Blue	Green	4

2 x circular connectors M12 D-coding straight version

length:	1 m	21 03 483 1401
	3 m	21 03 483 1403
	5 m	21 03 483 1405
other lengths on request		

Cable: AWG 26 / 0.14 mm²

43,3   L ±1%

ø15,3
M12x1

2 x circular connectors M12 D-coding straight version

length:	1 m	21 03 485 1401
	3 m	21 03 485 1403
	5 m	21 03 485 1405
other lengths on request		

Cable: AWG 22 / 0.34 mm²

43,3   L ±1%

ø15,3
M12x1

Han® M12 Circular Connectors

System Cabling with
Circular Connectors Han® M12
D-coding, pre-assembled on one end

Identification	Part-Number	Drawing	Dimensions in mm
Pre-assembled and tested system cabling for structured cabling of Industrial Ethernet networks based on circular connectors, M12 D-coding		Cable type: Shielded Twisted Pair Stranded wire Mating face: M12 D-coding acc. to IEC 61 076-2-101 Transmission properties in accordance with ISO/IEC 11801:2002: Class D, 100% tested Degree of protection IP 65 / 67 (when mated) **Pin arrangement**	

Pin arrangement

Signal	Function	Conductor Colour PROFINET	Conductor Colour EIA/TIA 568B	Pin no.
TD+	Transmission Data+	Yellow	White/Orange	1
TD-	Transmission Data-	Orange	Orange	3
RD+	Receiver Data+	White	White/Green	2
RD-	Receiver Data-	Blue	Green	4

Identification	Part-Number	Drawing
1 x circular connector M12 D-coding straight version length: 1 m 3 m 5 m other lengths on request	21 03 583 1401 21 03 583 1403 21 03 583 1405	Cable: AWG 26 / 0.14 mm² 43,3 L ±1% ø15,3 M12x1
1 x circular connector M12 D-coding straight version length: 1 m 3 m 5 m other lengths on request	21 03 585 1401 21 03 585 1403 21 03 585 1405	Cable: AWG 22 / 0.34 mm² 43,3 L ±1% ø15,3 M12x1

Han® M12 Panel Feed-Throughs

Identification	Part-Number	Drawing	Dimensions in mm
M12 panel feed-through female, D-coding, 50 cm flying lead cable, 4 poles	21 03 371 2403		
female, D-coding, 4 poles solder terminal, straight version	21 03 371 2402		
male, D-coding, 50 cm flying lead cable, 4 poles	21 03 371 1403		
male, A-coding, 50 cm flying lead cable, 4 poles	21 03 311 1402		
Adaptor M12-RJ45 angled version, 4 poles	21 03 381 4400		
Adaptor M12-RJ45 straight version, 4 poles	2103 381 2400		

Han® M12 Panel Feed-Throughs

Identification	Part-Number	Drawing	Dimensions in mm
M12 Panel feed-through for outside assembly female, D-coding, shielded, 360 mm flying lead cable, 4 poles	21 03 383 6407		
M12 Panel feed-through with RJ45 female, D-coding, shielded, 48 mm cable, 4 poles	21 03 683 6401		
M12 Panel feed-through for inside assembly female, D-coding, shielded, 700 mm flying lead cable, 4 poles	21 03 383 6405		
Cap M12	21 01 000 0003		

*micro*FX

General Description

Fibre optical data transmission system for industrial applications

Optical transceiver for 660 nm and 1300 nm

Passive interface as coupling unit and panel feed-through

Based on M12 hoods and housings in accordance with IEC 61 076-2-101

Suitable for plastic fibre, multimode and singlemode optical fibre

2 supplementary electrical contacts

Degree of protection: IP 65 / IP 67

Large temperature range of -40 °C up to +85 °C

Minimum insertion loss: < 0.3 dB

Technical Data

Mechanical Features

Storage temperature	-40°C ... +85°C
Working temperature	-25°C ... +85°C
Degree of protection	IP 65 / 67
Tightening torque	50 ... 60 Ncm

Electrical Data

Rated voltage of electrical contacts	60 V DC
Rated current	4 A max.

Optical Data Transceiver for Multimode

Center wave length (λ_C)	1270 nm up to 1380 nm
Output optical power max. (P_0)	-14 dBm
Input optical power min. (P_{SAT})	-31 dBm
Data transmission rate	125 Mbit/s in accordance with Fast Ethernet 100Base FX; IEE 802.3u

Optical Data Transceiver for Singlemode

Center wave length (λ_C)	1270 nm up to 1340 nm
Output optical power max. (P_0)	-8 dBm
Input optical power min. (P_{SAT})	-31 dBm
Data transmission rate	125 Mbit/s in accordance with Fast Ethernet 100Base FX; IEE 802.3u

microFX

Identification	Part-Number	Drawing	Dimensions in mm

Transceiver

for multimode with 1300 nm
for singlemode with 1300 nm
for POF with 650nm

Part-Number:
20 50 004 3411
20 50 004 3412
on request

View mating side

Panel cut out
Ø 16.3 mm

M12 x 1

Contact	Function	Description
1	VCCRX	Receiver supply voltage 3.3 V
2	RX+	Receiver data output, noninverted, PECL
3	RX-	Receiver data output, inverted, PECL
4	GND	Ground (Receiver)
5	SD	Signal Defect, PECL
6	RSSI	Receiver signal strength indicator output, analog voltage
7	Res.	Reserved for future use
8	SCL	
9	SDA	
10	TXDIS	
11	GND	Ground (Transmitter)
12	TX-	Transmitter data input, inverted, PECL
13	TX+	Transmitter data input, noninverted, PECL
14	VCCTX	Transmitter supply voltage 3.3 V

Connector

Contacts order separately

Part-Number: 20 10 004 3411

View mating side

Optical Contacts

Multimode 125
Singlemode
POF
HCS®

HCS (=Hard Clad Silica) is a registered trade mark of SpecTran Corporation

Part-Number:
20 10 125 3411
20 10 009 3411
on request
on request

Electrical Contacts

Part-Number: 20 10 000 3411

Identification	Part-Number	Drawing	Dimensions in mm
Panel feed-through	20 80 004 3411		
Adapter	20 80 004 3412		
Jumper	on request		

HARTING Product range

Industrial connectors Han®

Fieldbus components, sensor-/actor components, Han-InduNet® cabling system

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Data Link Systems (F.O.)

Network components for industrial communication

People | Power | Partnership

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