



HART

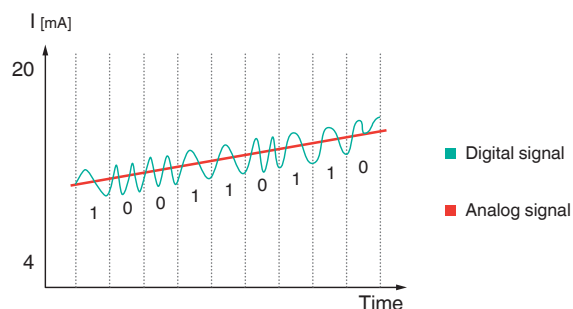
HART Interface Solutions

Edition 908837 (US) / 208599 (EU) 11/2010

At the core of HART Interface Solution (HIS), the HART Multiplexer acts like a gateway device, routing communications between the maintenance workstation PC and the HART field devices. Pepperl+Fuchs supports several different platforms (K-System, H-System).

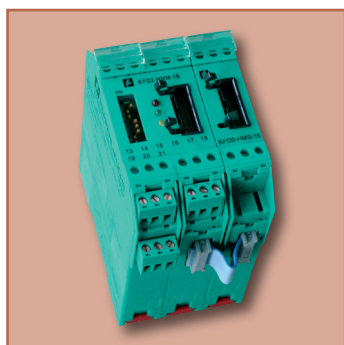
Operating principle

HART stands for **H**ighway **A**ddressable **R**emote **T**ransducer. The HART protocol makes use of the Bell 202 **F**requency **S**hift **K**eying (FSK) standard to superimpose digital communication signals at a low level on top of the 4 mA ... 20 mA control signal. This enables two-way field communication to take place and makes it possible for additional information beyond the normal process variable to be communicated to and from a SMART field instrument.



K-System

526



- Master/slave system for up to 7,936 field devices
- Compact design, DIN rail mounting
- Network up to 31 Multiplexers via RS 485
- Compatible with operating and asset management software (AMS, PDM, FieldCare, **PACTware™**)
- Suitable for loop integrity up to SIL3

H-System

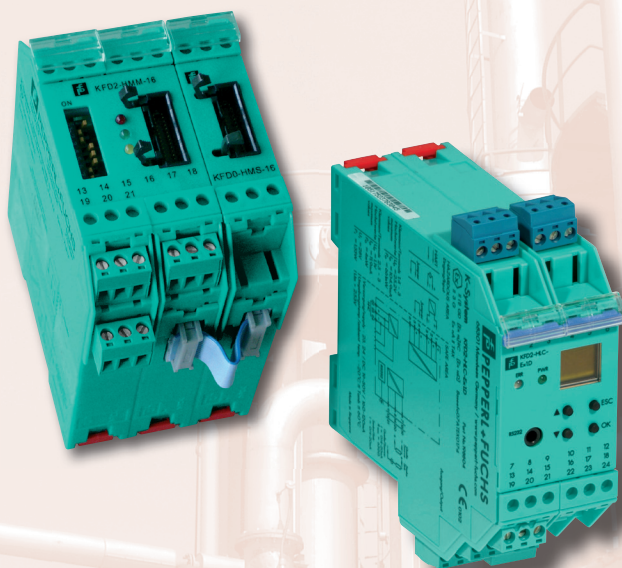
550



- Stand-alone Multiplexer for up to 992 field devices
- Termination Board solution
- Network up to 31 Multiplexers via RS 485
- Compatible with operating and asset management software (AMS, PDM, FieldCare, **PACTware™**)
- Suitable for loop integrity up to SIL3

HART

K-System





System Description	528
HART Multiplexers	
Selection Tables	535
Product Data Sheets	537
Termination Boards	
Selection Tables	535
Product Data Sheets	539
HART Loop Converters	
Selection Tables	535
Product Data Sheets	545
Accessories	
Selection Tables	536
Product Data Sheets	548

HART
K-System
HART Multiplexers
Termination Boards
HART Loop Converters
Accessories

Introduction

The K-system provides single- and multi-channel solutions for HART applications.

The K-System HART Multiplexer works as a master/slave system and when fully occupied can drive up to 256 HART field devices. Up to 15 additional slaves can be connected to the master, each of which can support another 16 channels. This allows up to 7936 field devices to be addressed through one RS 485 interface (31 addresses x 256 field devices).

The HART Loop Converter converts the HART communication signal of a field device in analog values or trip points.

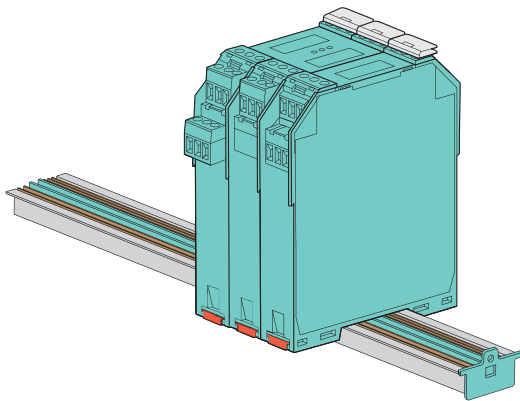


Figure 1 K-System HART communication

Components

HART Multiplexer

HART Multiplexer Master

- HART field device inputs
- 16 field devices and up to 15 KFD0-HMS-16 slave units can be connected
- Configured using **PACTware™**
- Power supply via Power Rail

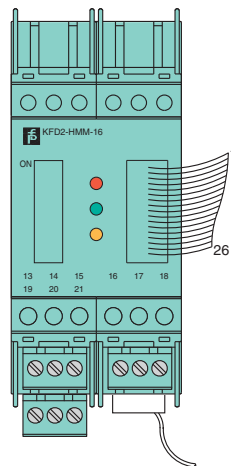


Figure 2 40 mm housing (KFD2-HMM-16)

HART Multiplexer Slave

- Compact 20 mm housing
- HART field device inputs
- Up to 16 field devices can be connected
- Used with HART Multiplexer Master KFD2-HMM-16

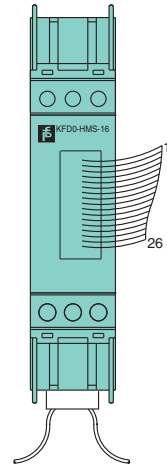


Figure 3 20 mm housing (KFD0-HMS-16)

HART Termination Boards

The wiring of the single I/O components of the HART product portfolio is done via a Termination Board. Since a wide variety of Termination Boards are available, only the basic wiring options are described here.

Field devices and DCS are connected via Termination Boards. The Termination Boards are designed to establish the connection of a KFD*-HM*-16 HART Multiplexer to up to 16 field devices.

More detailed information to connection layout can be found in the data sheet of the according Termination Board.

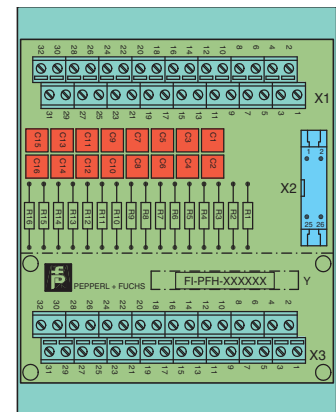


Figure 4 HART Termination Board

HART Loop Converter

HART Loop Converters use the full potential of new and existing multivariable HART field devices.

- HART input with transmitter supply
- One field device can be connected
- Up to 4 relay outputs
- 3 analog outputs 4 mA ... 20 mA
- Sink and source mode output
- Configurable by keypad

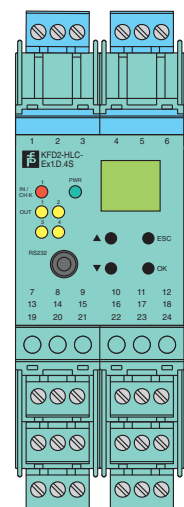


Figure 5 40 mm housing (KFD2-HLC-Ex1.D.4S)

Topology

HART Multiplexer

A wide variety of Termination Boards are available. For additional information about topology, refer to HART Multiplexer System manual.

Multiplexer Master and Slaves are connected to Termination Boards, which transmits the control signals via screw terminals. In this case the Termination Board provides a parallel connection to the Multiplexer or Slave. This assembly method is completely independent of DCS.

For hazardous location applications, the intelligent field device must be isolated from the safe area via a K-System isolator. The isolated signals are then connected to Termination Boards, where a parallel connection to the Multiplexer or Slave is made via a 26-pin ribbon cable.

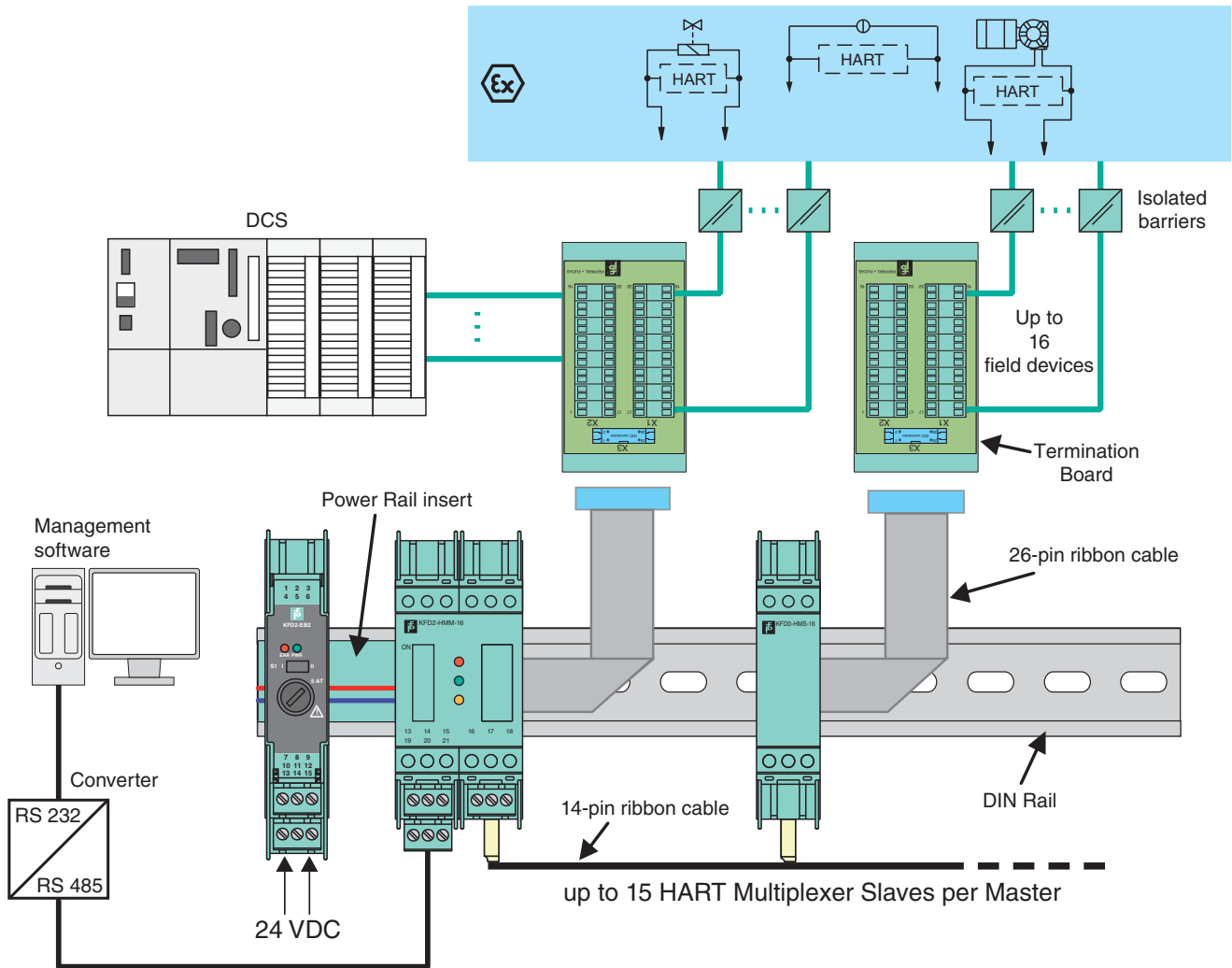


Figure 6 Example of HART Interface topology

HART Loop Converter

The HART Loop Converter has an active and passive input for the field device. The active input can be used for the transmitter supply. When using the passive input (passive mode), the HLC connected in parallel to the existing field circuit and performs the communication.

Active input

Transmitter supply

The active input is used for supply of a transmitter. The measured value is transmitted via the HART communication not via the 4 mA ... 20 mA signal. The field device (transmitter) is connected to terminals 1(+) and 3(-). The terminals 4 and 5 are jumpered.

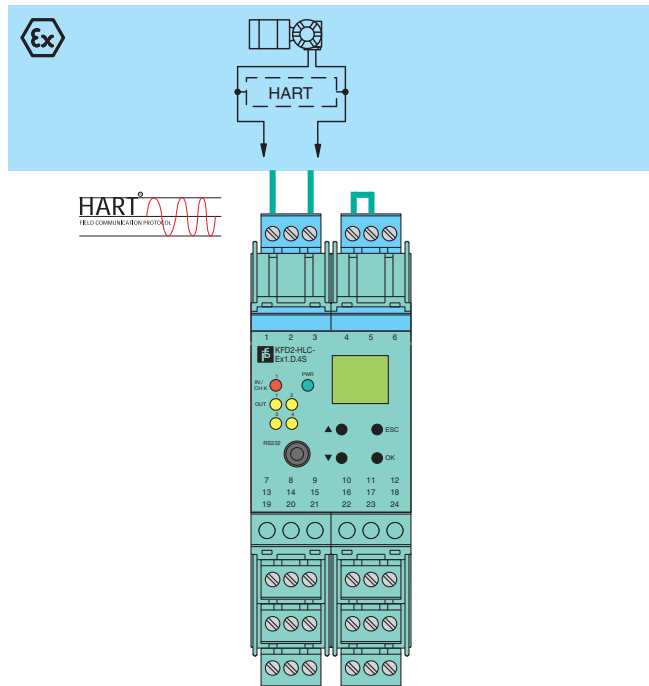


Figure 7 Signal transfer with HART Loop Converter (HLC) – active mode

Passive input

Connection to existing field circuit

The HART Loop Converter can be connected in parallel to an existing, externally-powered field circuit. The field circuit is connected to terminals 2(+) and 3(-).

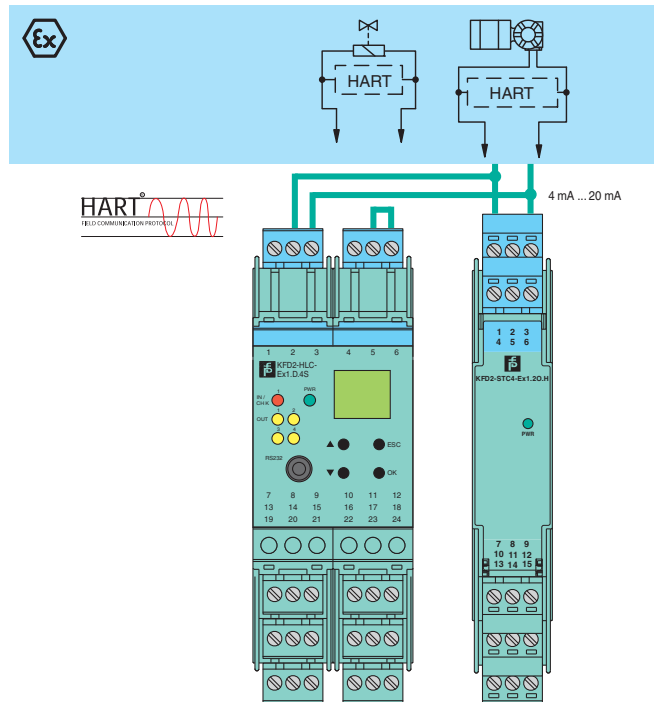


Figure 8 Signal transfer with HART Loop Converter (HLC) – connection to existing field circuit

Connection to field device with active current output

If the HART Loop Converter is connected to an active current source of a 3-wire or 4-wire field device, in addition to the connection to terminals 2(+) and 3(-), terminals 5 and 6 should be jumpered.

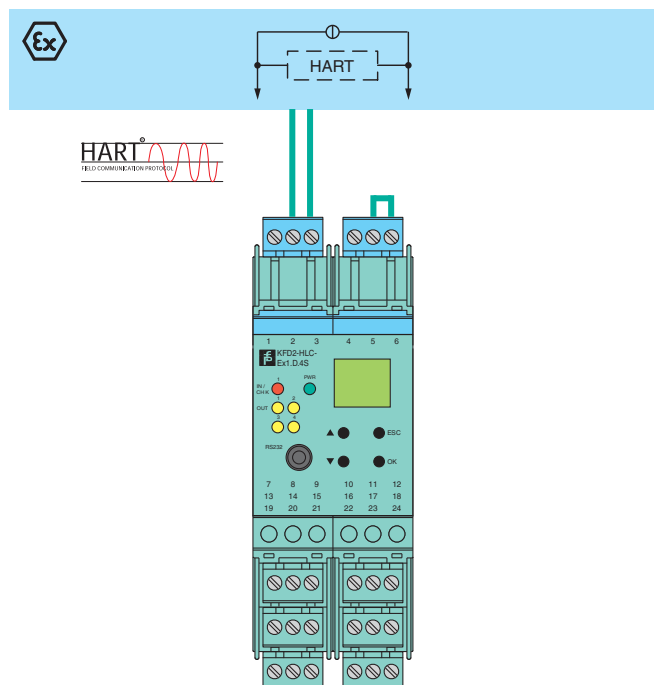


Figure 9 Signal transfer with HART Loop Converter (HLC) – connection to field device with active current source

Mounting and supply

The HIS devices of K-System are mounted on a 35 mm DIN rail acc. to EN 60715. To reduce wiring and installation costs, Power Rail is the optimum solution.

Low heat dissipation allows vertical or horizontal mounting.

Power Rail

The Power Rail is a plastic insert into a standard DIN rail and contains two leads that deliver power to the modules. Power is sent through the rail by a power feed module that delivers 24 V DC at 4 A. The module uses a 5 A fuse to protect the barriers. The Power Rail virtually eliminates the risk of wiring faults and facilitates easy expansion. Power Rail is available in two versions:

- UPR-03: 3-lead version supplies two leads for power and one lead for error signal
- UPR-05: 5-lead version supplies two leads for power, one lead for error signal and two leads for serial data exchange.

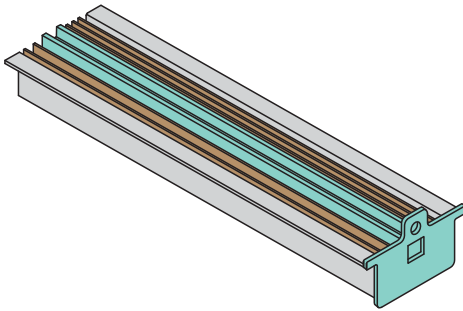


Figure 10 Universal Power Rail UPR-05

Mounting on Power Rail

As shown in the figure, the isolation modules are snapped onto the Universal Power Rail in a vertical downward movement.

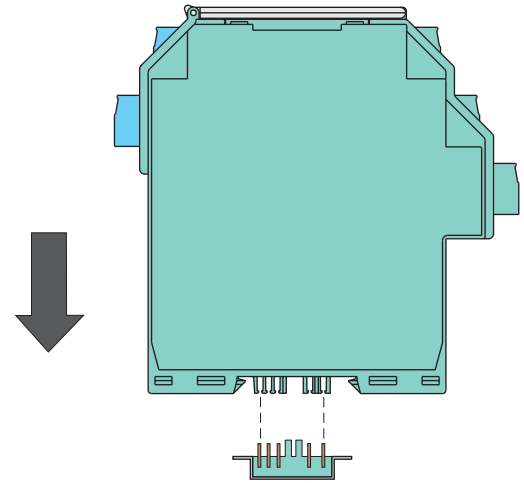


Figure 11 Proper K-System mounting

CORRECT: Device snapped on vertically.

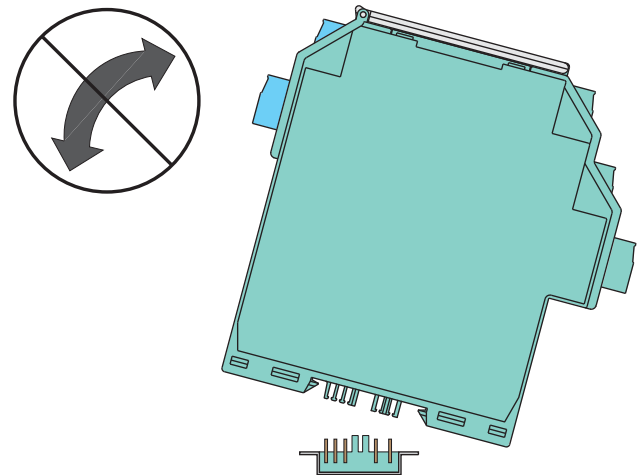


Figure 12 Improper K-System mounting

INCORRECT: Device snapped on from the side.

Mounting the Termination Board

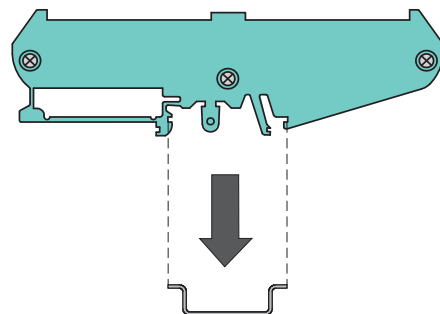


Figure 13 Termination Board mounting on DIN rail

Conventional power supply without Power Rail

Conventional power supplies create complicated and expensive wiring systems. After all isolated barriers are connected, there is a significant amount of wiring and more wiring must be added for features such as lead breakage and short-circuit monitoring.

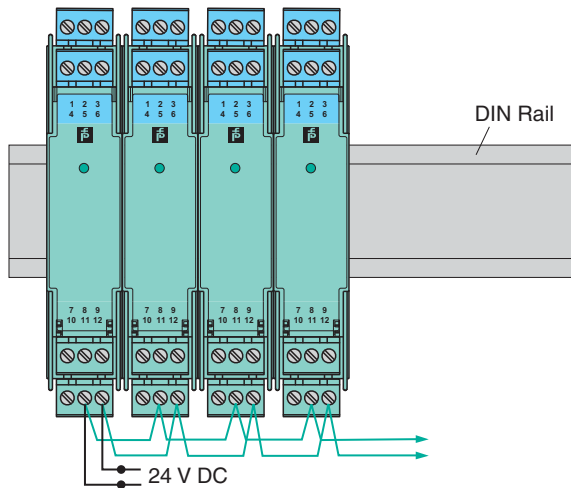


Figure 14 Conventional installation

Power supply with Power Rail

The Pepperl+Fuchs Power Rail eliminates wiring hassles and reduces expense. The power feed module mounts on the Power Rail for easy and reliable distribution of power to all connected isolated modules. This method eliminates all of the parallel power wiring necessary on a conventional installation without Power Rail.

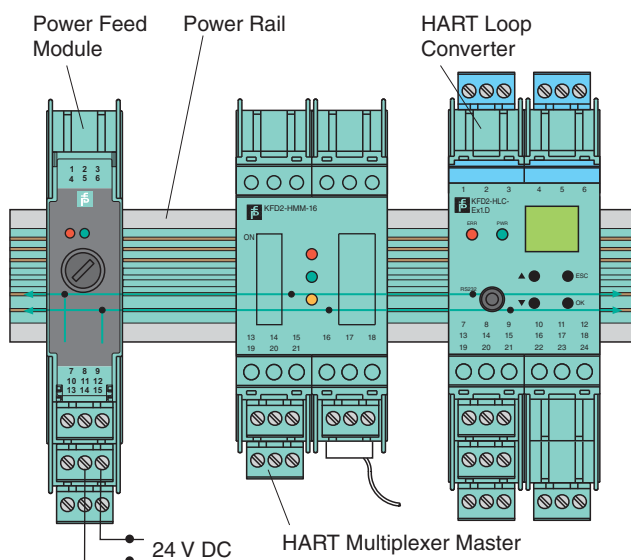


Figure 15 Power Rail installation

For additional information about connection, refer to system description Isolated Barriers K-System.

Safety information

The corresponding data sheets, the Declaration of Conformity, the EC-Type Examination Certificate and applicable certificates (see data sheet) are an integral part of this document.

Intended use

Laws and regulations applicable to the usage or planned purpose of usage must be observed. Devices are only approved for proper usage in accordance with intended use. Improper handling will result in voiding of any warranty or manufacturer's responsibility.

These devices are used in C&I technology for the galvanic isolation of C&I signals, such as 20 mA and 10 V unit signals, and also for the adaptation and/or standardization of signals.

The devices are not suitable for the isolation of signals in power engineering, unless this is specifically referred to in the respective data sheet.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

Installation and commissioning

Commissioning and installation must be carried out by specially trained and qualified personnel only.

Installation of the interface devices in the safe area

The devices are constructed to satisfy the IP20 protection classification and must be protected from adverse environmental conditions such as water spray or dirt exceeding the pollution degree 2.

The devices must be installed outside the hazardous area!

Installation and commissioning of the interface devices within Zone 2/Div. 2 of the hazardous area

Only devices with the corresponding manufacturer's Declaration of Conformity or separate certificate of conformity can be installed in Zone 2/Div. 2.

The individual data sheets indicate whether these conditions are met.

For US and Canada installations, in Zone 2/Div. 2 follow the NEC and CEC wiring methods. The enclosure must be able to accept Zone 2/Div. 2 wiring methods. The referenced product certification control drawing must be observed.

For all other applications, the devices should be installed in a switch or junction box that:

- meets at least IP54 in accordance to EN 60529.
- meets to the requirements of resistance to light and resistance to impact according to EN 60079-0/IEC 60079-0.
- meets to the requirements of thermal endurance according to EN 60079-15/IEC 60079-15.
- must not cause ignition danger by electrostatic charge during intended use, maintenance and cleaning.

The EC-Type Examination Certificates, standard certificates/approvals or the manufacturer's Declaration of Conformity should be observed. It is especially important to observe the "special conditions" if these are included in the certificates.

Repair and maintenance

The transfer characteristics of the devices remain stable over long periods of time. This eliminates the need for regular adjustment. Maintenance is not required.

Fault elimination

No changes can be made to devices that are operated in hazardous areas. Repairs on the device are not allowed.

Isolation coordinates for installations for galvanic isolation according to EN 50178 and EN 61140

The devices of the K-System are electronic equipment for use in secluded electrical operating sites where only skilled personnel or electrically instructed personnel will have admission or access.

The devices are assessed for pollution degree 2 and overvoltage category II according to EN 50178.

For additional details, see data sheets.

Technical data

Electrical data

For electrical data, see data sheets.

Mechanical data

Mounting

- Snap-on 35 mm standard DIN rail acc. to EN 60715. Can be mounted horizontally or vertically, side by side.
- Panel mount: The lugs on the base of the modules must be extended and used for mounting purposes with 3 mm screws.
- K-MS mounting base for screw attachment

Mass

Termination Boards: 200 g to 400 g

Modules: 100 g to 250 g

Housing material

Polycarbonate (PC)

Dimensions

Housing drawings please refer to the appendix.

Protection degree

Modules: IP20 acc. to EN 60529

Connection

- Removable connector with integrated self-opening device terminals for leads of up to a max. of 1 x 2.5 mm² (14 AWG)
- Signal connection via ribbon cable

Labeling

place for labeling on the front side, label: 8 mm x 18 mm

Ambient conditions**Ambient temperature**

Modules: -20 °C to 60 °C (-4 °F to 140 °F)

Termination Boards: 0 °C to 55 °C (32 °F to 131 °F)

Storage temperature

-40 °C to 90 °C (-40 °F to 194 °F)

Reference conditions for adjustment

20 °C (68 °F)

Relative humidity

max. 95 % without moisture condensation

Vibration resistance

acc. to EN 60068-2-6, 10 Hz to 150 Hz, 1 g, high crossover frequency

Shock resistance

acc. to EN 60068-2-27, 15 g, 11 ms, half-sine

Conformity with standards and directives**General**

- EMC acc. to NAMUR NE21 and EN 61326
- LEDs acc. to NAMUR NE44
- Software acc. to NAMUR NE53
- Switch-on pulse suppression
- HART Multiplexer Master KFD2-HMM-16:
 - Supply voltage 20 V DC to 30 V DC via Power Rail or supply terminals
 - Fault signals via Power Rail
- HART Multiplexer Slave KFD0-HMS-16: no additional power supply necessary
- Safety devices acc. to VDE 0660 T.209, AK acc. to DIN 19250

HART Multiplexers

Model Number	Channels	Master	Slave	Power Rail	SIL *	Zone 2/Division 2 Mounting	Page
KFD2-HMM-16	16	■		■	3	■	537
KFD0-HMS-16	16		■		3	■	538

* see also table Termination Boards

Termination Boards

Model Number	Channels	Communication Resistor	Capacitive Communication Isolation	Parallel Connection	HART Multiplexer Connection	SIL (together with KFD*-HM*-16)	Zone 2 Mounting	Page
FI-DO-Y37023	16			■	■	2	■	539
FI-DO-R-Y41610	16	■			■	2		540
FI-DO-R-Y49092	16			■	■	2		541
FI-PFH-108874	16		■	■	■	3	■	542
FI-PFH-110469	16	■	■		■	3	■	543
FI-PFH-127720	16	■	■		■	3	■	544

HART Loop Converters

Model Number	Channels	Input (Field)		Output (Control System)		Supply 24 V DC	SIL	Zone 2/Division 2 Mounting	Page
		Signal	Transmitter Supply	0/4 mA ... 20 mA (Active/Passive)	Relay				
KFD2-HLC-Ex1.D	1	HART	■	3		■		■	545
KFD2-HLC-Ex1.D.2W	1	HART	■	3	2	■		■	546
KFD2-HLC-Ex1.D.4S	1	HART	■	3	4	■		■	547

HART

K-System

HART Multiplexers

Termination Boards

HART Loop Converters

Accessories



Accessories

Model Number	Description	Page
HISHF-AI-02	HART Filter	548
HISHF-AO-02	HART Filter	548
K-22μ	HART Filter	549
K-HM14	HART Connection Cable with Connectors (Master – Slave)	549
K-HM26	HART Connection Cable with Connectors (Master/Slave – Termination Board)	549

Technical data

Supply	
Rated voltage	20 ... 32 V DC typical at 100 mA
Power consumption	≤ 3 W
HART signal channels (intrinsically safe)	
HART signal channels	
Connection	26-pin flat cable for analog connections 14-pin flat cable for master-slave connection between KFD2-HMM-16 and KFD0-HMS-16
Leakage current	< 3 µA at -20 ... 85 °C (-4 ... 185 °F)
Terminating resistor	external 230 ... 500 Ω standard (up to 1000 Ω possible)
Output voltage	≥ 400 mV _{pp} (with the terminator resistance specified above)
Output resistance	100 Ω or smaller, capacitive coupling
Input impedance	according to HART specification
Input voltage range	0.08 ... 4 V _{pp} ; typ. ± 5.2 V as local reference
Interface	
Transfer rate	9600, 19200, or 38400 Bit/s (selectable with DIL switch (2 and 3) by the user)
Type	RS 485 2-wire multidrop
Address selection	One of 31 possible addresses selectable per DIL switch (4 ... 8)
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 250 g
Dimensions	40 x 107 x 115 mm (1.6 x 4.2 x 4.5 in), housing type C1
Data for application in connection with Ex-areas	
Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	Ex II 3G Ex nA II T4 X

Features

- 16-channel
- 24 V DC supply (Power Rail)
- HART field device inputs
- Up to 15 KFD0-HMS-16 slave units can be connected
- Up to SIL3 acc. to IEC 61508

Function

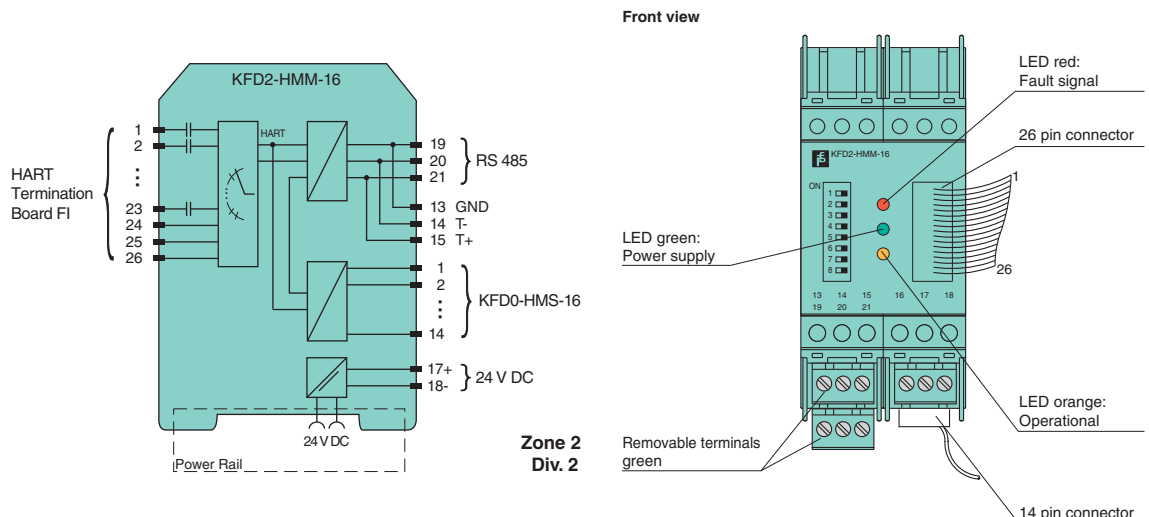
This HART Multiplexer Master operates up to 256 analog field instruments. The built-in slave unit in the HART master operates the first 16 field instruments. If more than 16 field instruments are required, up to 15 additional HART Multiplexer Slaves KFD0-HMS-16 can be connected.

The slave units are connected to the master with a 14-pin flat cable. The connector for the ribbon cable is found on the same housing side as the connectors for the interface and the power supply.

The analog signals are separately linked to a termination board via a 26-pin flat cable for each unit. Sixteen leads are reserved for the HART signal of the analog measurement circuits. The remaining 10 leads are sent to ground.

This unit is designed with removable terminals and can be connected to the Power Rail.

Diagrams



Features

- 16-channel
- No external power required
- HART field device inputs
- Used with HART Multiplexer Master KFD2-HMM-16
- Up to SIL3 acc. to IEC 61508

Function

This HART Multiplexer Slave operates up to 16 analog field instruments. It can be operated only with the HART Multiplexer Master KFD2-HMM-16 and is powered by the master across a 14-pin flat cable connection.

Up to 15 slaves can be connected to the master.

The slave address is set with a 16-position rotary switch (addresses 1 ... 16). If only one slave is connected to the master, then the slave address should be 1. If multiple slaves are connected, slaves must be assigned addresses in ascending order.

The analog signals are fed into the slave by means of a 26-pin flat cable. Sixteen leads are reserved for the HART signal of the analog measurement circuits. The remaining 10 leads are assigned to ground.

Technical data

Supply

Connection via 14-channel flat cable form master KFD2-HMM-16

HART signal channels (intrinsically safe)

HART signal channels

Connection

26-pin flat cable for analog connections
14-pin flat cable for master-slave connection between KFD2-HMM-16 and KFD0-HMS-16

Leakage current

< 3 μ A at -20 ... 85 °C (-4 ... 185 °F)

Terminating resistor

external 230 ... 500 Ω standard (up to 1000 Ω possible)

Output voltage

400 mV_{pp} (with the terminator resistance specified above)

Output resistance

100 Ω or smaller, capacitive coupling

Input impedance

according to HART specification

Input voltage range

0.08 ... 4 V_{pp}; typ. \pm 5.2 V as local reference

Ambient conditions

Ambient temperature

-20 ... 60 °C (-4 ... 140 °F)

Mechanical specifications

Protection degree

IP20

Mass

approx. 100 g

Dimensions

20 x 93 x 115 mm (0.8 x 3.7 x 4.5 in), housing type B1

Data for application in connection with Ex-areas

Statement of conformity

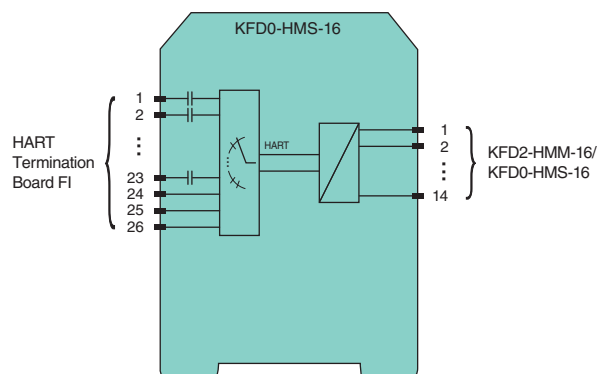
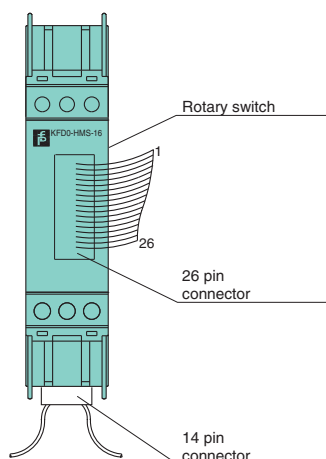
Pepperl+Fuchs

Group, category, type of protection, temperature classification

Ex II 3G Ex nA II T4 X

Diagrams

Front view



Zone 2
Div. 2

Edition 11/2010
908837 (US) / 208599 (EU)

Technical data**HART signal channels
(intrinsically safe)****HART signal channels**

Load resistor	no
---------------	----

Electrical isolation

HART signal channels	no
----------------------	----

Ambient conditions

Ambient temperature	0 ... 55 °C (32 ... 131 °F)
---------------------	-----------------------------

Mechanical specifications

Core cross-section	2.5 mm ² (16 AWG)
Connection	field side: screw terminals control side: screw terminals multiplexer connection: 26-pin NFP-26A (Yamaichi)
Mass	approx. 200 g
Dimensions	67 x 50 x 126 mm (2.6 x 1.9 x 5 in)
Mounting	DIN rail mounting

**Data for application in connection
with Ex-areas**

Statement of conformity	PF 10 CERT 1617 X
Group, category, type of protection	Ex II 3G Ex nA II T4

Features

- 16-channel
- Connection board for K-System HART Multiplexer
- Interface for parallel connections

Function

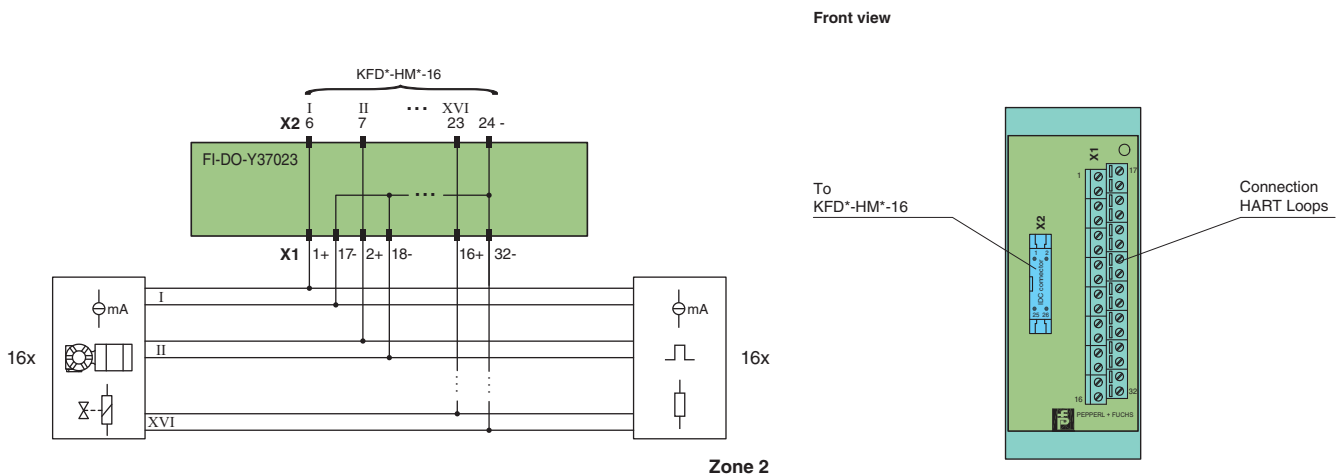
This HART Termination Board have 16 terminal blocks to connect up to 16 HART field devices.

It does not have a 250 Ω HART pick-up resistor built in and can be used only in applications that have a 250 Ω resistor in the DCS/PLC or I/O card. It does not come with terminal blocks for 4 mA ... 20 mA signal to DCS/PLC.

The Termination Board can be used for general-purpose applications or in conjunction with intrinsic safety barriers for hazardous applications.

A 26-pin flat cable K-HM26 is used for connection of each HART Multiplexers KFD*-HM*-16 to the Termination Board.

Other Termination Boards are available. Contact Pepperl+Fuchs for details.

Diagrams

Features

- 16-channel
- Connection board for K-System HART Multiplexer
- Interface for series connections
- Integrated 250 Ω resistor

Function

This HART Termination Board have 16 terminal blocks to connect up to 16 HART field devices.

It has a 250 Ω HART pick-up resistor built in, and terminal blocks for the 4 mA ... 20 mA signal to the DCS/PLC.

The Termination Board can be used for general-purpose applications or in conjunction with intrinsic safety barriers for hazardous applications.

A 26-pin flat cable K-HM26 is used for connection of each HART Multiplexers KFD*-HM*-16 to the Termination Board.

Other Termination Boards are available. Contact Pepperl+Fuchs for details.

Technical data

HART signal channels (intrinsically safe)

HART signal channels

Load resistor 250 Ω

Electrical isolation

HART signal channels no

Ambient conditions

Ambient temperature 0 ... 55 $^{\circ}\text{C}$ (32 ... 131 $^{\circ}\text{F}$)

Mechanical specifications

Core cross-section 2.5 mm² (16 AWG)

Connection

field side: screw terminals
control side: screw terminals
multiplexer connection: 26-pin NFP-26A (Yamaichi)

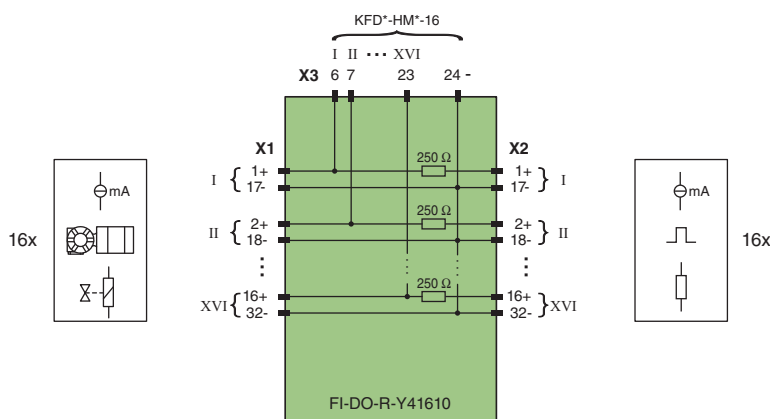
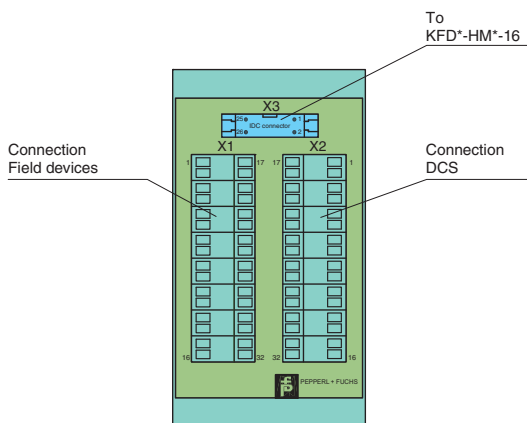
Mass approx. 300 g

Dimensions 67 x 70 x 126 mm (2.6 x 2.8 x 5 in)

Mounting DIN rail mounting

Diagrams

Front view



Technical data

HART signal channels (intrinsically safe)	
HART signal channels	
Load resistor	no
Electrical isolation	
HART signal channels	no
Ambient conditions	
Ambient temperature	0 ... 55 °C (32 ... 131 °F)
Mechanical specifications	
Core cross-section	2.5 mm ² (16 AWG)
Connection	field side: screw terminals control side: screw terminals multiplexer connection: 26-pin NFP-26A (Yamaichi)
Mass	approx. 300 g
Dimensions	67 x 70 x 126 mm (2.6 x 2.8 x 5 in)
Mounting	DIN rail mounting

Features

- 16-channel
- Connection board for K-System HART Multiplexer
- Interface for series connections

Function

This HART Termination Board have 16 terminal blocks to connect up to 16 HART field devices.

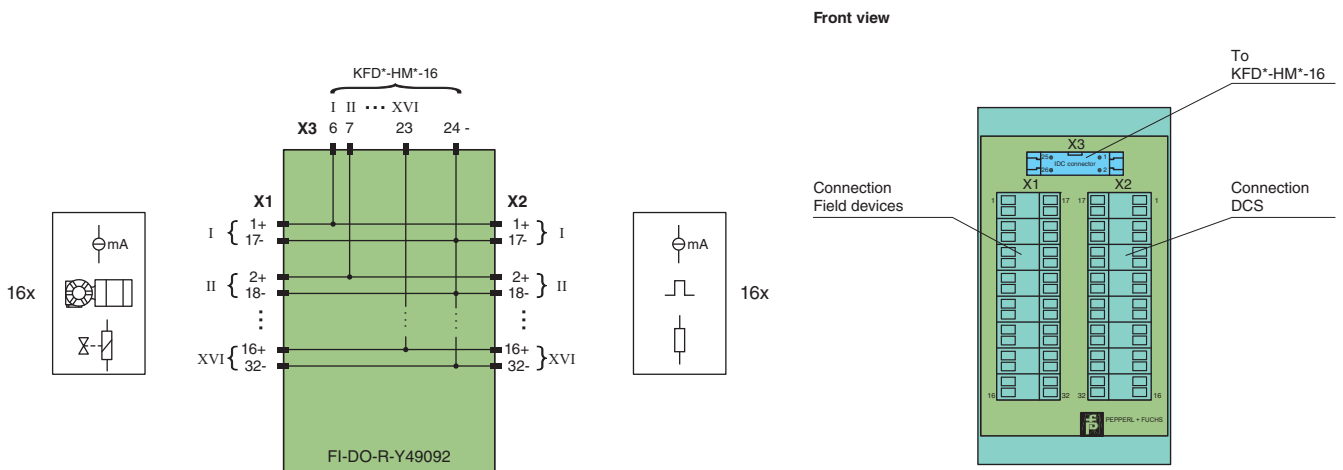
It does not have a 250 Ω HART pick-up resistor built in and can be used only in applications that have a 250 Ω resistor in the DCS/PLC or I/O card. It does not come with terminal blocks for 4 mA ... 20 mA signal to DCS/PLC.

The Termination Board can be used for general-purpose applications or in conjunction with intrinsic safety barriers for hazardous applications.

A 26-pin flat cable K-HM26 is used for connection of each HART Multiplexers KFD*-HM*-16 to the Termination Board.

Other Termination Boards are available. Contact Pepperl+Fuchs for details.

Diagrams



Features

- 16-channel
- Connection board for K-System HART Multiplexer
- Interface for parallel connections
- Galvanic isolation of HART signal

Function

This HART Termination Board have 16 terminal blocks to connect up to 16 HART field devices.

The connection board is connected in parallel into the field device loop. The HART signal is galvanically isolated via capacitors.

The Termination Board can be used for general-purpose applications or in conjunction with intrinsic safety barriers for hazardous applications.

A 26-pin flat cable K-HM26 is used for connection of each HART Multiplexers KFD*-HM*-16 to the Termination Board.

Other Termination Boards are available. Contact Pepperl+Fuchs for details.

Technical data

HART signal channels (intrinsically safe)

HART signal channels

Load resistor

no

Electrical isolation

HART signal channels

yes

Ambient conditions

Ambient temperature

0 ... 55 °C (32 ... 131 °F)

Mechanical specifications

Core cross-section

2.5 mm² (16 AWG)

Connection

field side: screw terminals
control side: screw terminals
multiplexer connection: 26-pin NFP-26A (Yamaichi)

Mass

approx. 200 g

Dimensions

67 x 50 x 126 mm (2.6 x 1.9 x 5 in)

Mounting

DIN rail mounting

Data for application in connection with Ex-areas

Statement of conformity

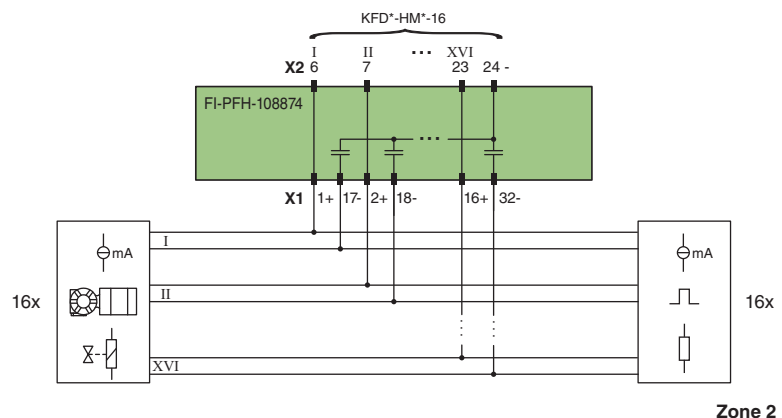
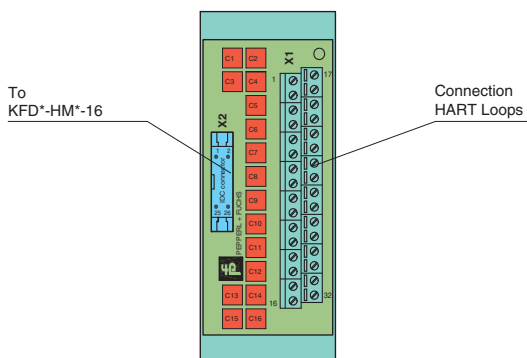
PF 10 CERT 1617 X

Group, category, type of protection

Ex II 3G Ex nA II T4

Diagrams

Front view



Zone 2

Technical data	
HART signal channels (intrinsically safe)	
HART signal channels	
Load resistor	250 Ω
Electrical isolation	
HART signal channels	yes
Ambient conditions	
Ambient temperature	0 ... 55 °C (32 ... 131 °F)
Mechanical specifications	
Core cross-section	2.5 mm ² (16 AWG)
Connection	field side: screw terminals control side: screw terminals multiplexer connection: 26-pin NFP-26A (Yamaichi)
Mass	approx. 400 g
Dimensions	67 x 100 x 126 mm (2.6 x 3.9 x 5 in)
Mounting	DIN rail mounting
Data for application in connection with Ex-areas	
Statement of conformity	PF 10 CERT 1617 X
Group, category, type of protection	⊗ II 3G Ex nA II T4

- 16-channel
- Connection board for K-System HART Multiplexer
- Interface for series connections
- Integrated 250 Ω resistor
- Galvanic isolation of HART signal

This HART Termination Board have 16 terminal blocks to connect up to 16 HART field devices.

It has a 250 Ω HART pick-up resistor and a ground capacitor built in. It also has terminal blocks for the 4 mA ... 20 mA signal to the DCS/PLC.

A 26-pin flat cable K-HM26 is used for connection of each HART Multiplexers KFD*-HM*-16 to the Termination Board.

Other Termination Boards are available. Contact Pepperl+Fuchs for details.

Diagrams

Diagram 1: Terminal Block Connection

The diagram shows the terminal block of the FI-PFH-110469 module. The terminals are labeled as follows:

- X1:** 1+, 1-, 2+, 2-, 3+, 3-, 4+, 4-, 31+, 32-
- X2:** 6, 7, 23, 24
- X3:** 1+, 1-, 2+, 2-, 3+, 3-, 4+, 4-, 31+, 32-
- X4:** 1+, 1-, 2+, 2-, 3+, 3-, 4+, 4-, 31+, 32-

The module is labeled **FI-PFH-110469**. A legend shows the connection for 16x mA (terminal 1+), 16x (terminal 2+), and 16x (terminal 3+).

Diagram 2: Front View

The diagram shows the front view of the FI-PFH-110469 module. The module is labeled **FI-PFH-110469**. It shows the connection for 16x mA (terminal 1+), 16x (terminal 2+), and 16x (terminal 3+). The module is connected to the KFD*-HM*-16 module via the X1 and X2 terminals. The connection for DCS is shown via the X3 and X4 terminals.

Features

- 16-channel
- Connection board for K-System HART Multiplexer
- Interface for series connections
- Galvanic isolation of HART signal

Function

This HART Termination Board have 16 terminal blocks to connect up to 16 HART field devices.

The connection board is connected serially into the field device loop to access the HART signal which is galvanically isolated via capacitors.

The Termination Board can be used for general-purpose applications or in conjunction with intrinsic safety barriers for hazardous applications.

A 26-pin flat cable K-HM26 is used for connection of each HART Multiplexers KFD*-HM*-16 to the Termination Board.

Other Termination Boards are available. Contact Pepperl+Fuchs for details.

Technical data

HART signal channels (intrinsically safe)

HART signal channels

Load resistor

0 Ω

Electrical isolation

HART signal channels

yes

Ambient conditions

Ambient temperature

0 ... 55 °C (32 ... 131 °F)

Mechanical specifications

Core cross-section

2.5 mm² (16 AWG)

Connection

field side: screw terminals
control side: screw terminals
multiplexer connection: 26-pin NFP-26A (Yamaichi)

Mass

approx. 400 g

Dimensions

67 x 100 x 126 mm (2.6 x 3.9 x 5 in)

Mounting

DIN rail mounting

Data for application in connection with Ex-areas

Statement of conformity

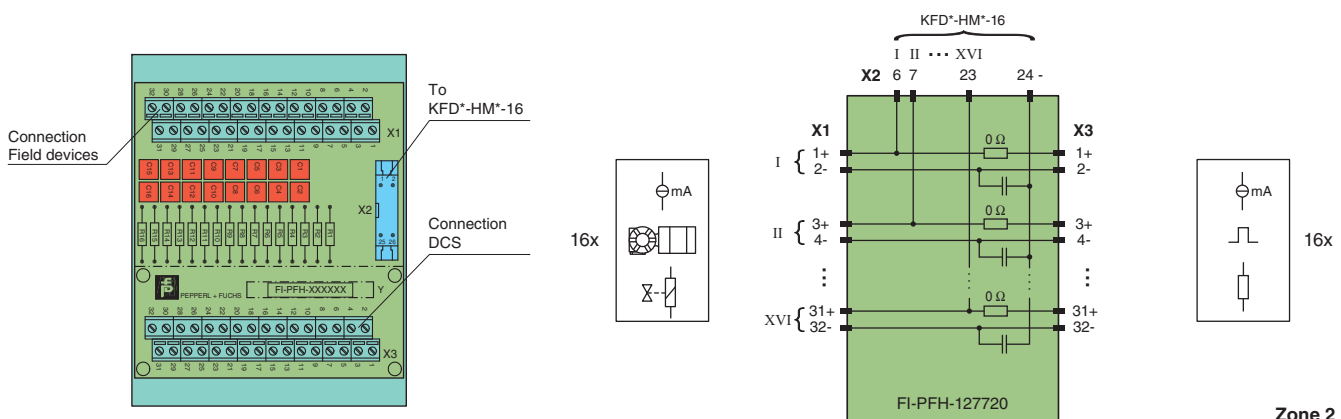
PF 10 CERT 1617 X

Group, category, type of protection

Ex II 3G Ex nA II T4

Diagrams

Front view



Technical data

Supply	
Rated voltage	19 ... 30 V DC
Rated current	approx. 120 mA at 24 V DC
Power loss	2.3 W
Power consumption	2.9 W
Input	
Input signal	HART communication, transmitter supply
Open circuit voltage/short-circuit current	typ. 24 V/28 mA
Input resistance	250 Ω, 5 % (terminals 2, 3 and with jumper on 5, 6)
Available voltage	≥ 15.5 V at 20 mA, short-circuit proof
Output	
Output signal	analog
Current range	4 ... 20 mA, source or sink mode
Load	≤ 650 Ω, source mode
Voltage range	5 ... 30 V, sink mode from external supply
Collective error message	Power Rail and LED red
Fault signal	downscale I ≤ 2 mA, upscale I ≥ 21.5 mA (acc. NAMUR NE43) or hold measurement value
Other outputs	HART communicator on terminals 22, 24
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3
Data for application in connection with Ex-areas	see page 258 for entity parameters
EC-Type Examination Certificate	BASEEFA 07 ATEX 0174
Group, category, type of protection	Ex II (1)GD [Ex ia] IIC, [Ex iaD]
Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	Ex II 3G Ex nA II T4 X

Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input HART with transmitter supply
- 3 analog outputs 4 mA ... 20 mA
- Sink and source mode output
- Configurable by keypad

Function

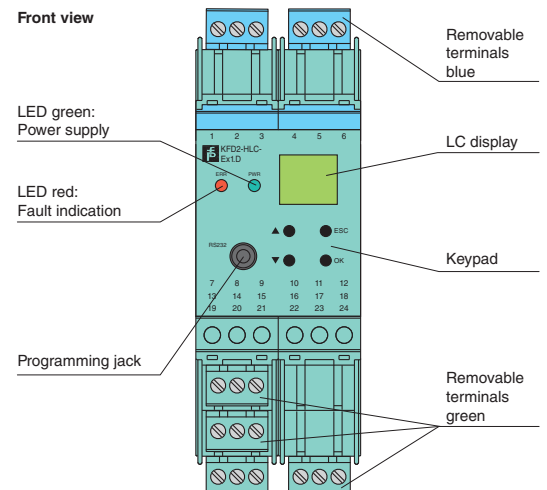
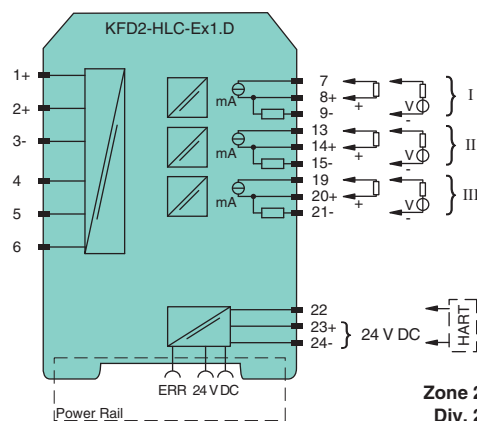
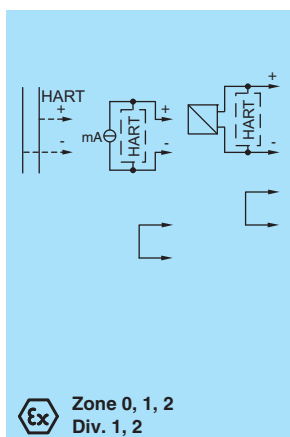
This isolated barrier is used for intrinsic safety applications. It is a HART loop converter that provides power to transmitters or can be connected to existing HART loops in parallel.

It is able to evaluate up to four HART variables (PV, SV, TV, QV). Of those four HART variables, the data contained in any three of them can be converted to three different 4 mA ... 20 mA current signals. These loop signals can be connected to display devices or analog inputs on the process control system/control system.

The unit is easily programmed by the use of a keypad located on the front of the unit.

For additional information, refer to the manual and www.pepperl-fuchs.com.

Diagrams



Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input HART with transmitter supply
- 2 relay outputs (changeover contacts)
- 3 analog outputs 4 mA ... 20 mA
- Sink and source mode output
- Configurable by keypad

Function

This isolated barrier is used for intrinsic safety applications. It is a HART loop converter that provides power to transmitters or can be connected to existing HART loops in parallel.

It is able to evaluate up to four HART variables (PV, SV, TV, QV). Of those four HART variables, the data contained in any three of them can be converted to three different 4 mA ... 20 mA current signals. These loop signals can be connected to display devices or analog inputs on the process control system/control system.

In addition to the current outputs, two form C changeover relay contacts are available and can be programmed to operate at trip values from the HART variables.

The unit is easily programmed by the use of a keypad located on the front of the unit.

For additional information, refer to the manual and www.pepperl-fuchs.com.

Technical data

Supply

Rated voltage	19 ... 30 V DC
Rated current	approx. 130 mA at 24 V DC
Power loss	2.5 W
Power consumption	3.1 W

Input

Input signal	HART communication, transmitter supply
Open circuit voltage/short-circuit current	typ. 24 V/28 mA
Input resistance	250 Ω, 5 % (terminals 2, 3 and with jumper on 5, 6)
Available voltage	≥ 15.5 V at 20 mA, short-circuit proof

Output

Collective error message	Power Rail and LED red
Output I, II	
Output signal	relay and LED yellow
Mechanical life	10 ⁷ switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output III, IV, V	
Output signal	analog
Current range	4 ... 20 mA, source or sink mode
Load	≤ 650 Ω, source mode
Voltage range	5 ... 30 V, sink mode from external supply
Fault signal	downscale I ≤ 2 mA, upscale I ≥ 21.5 mA (acc. NAMUR NE43) or hold measurement value
Other outputs	HART communicator on terminals 22, 24

Ambient conditions

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

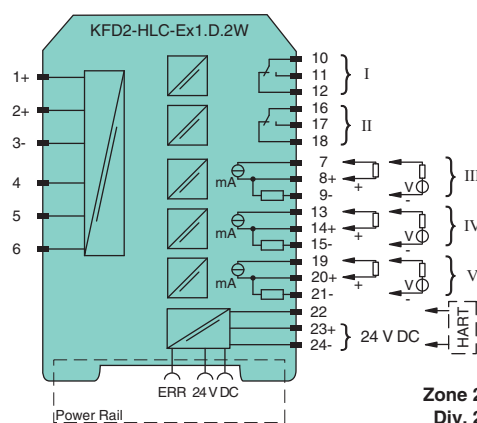
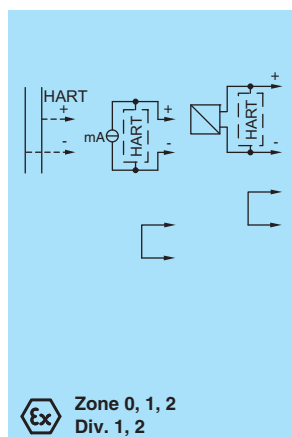
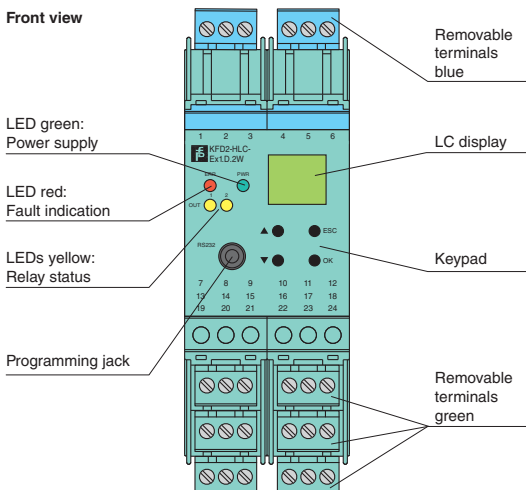
Mechanical specifications

Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

Data for application in connection with Ex-areas

EC-Type Examination Certificate	BASEEFA 07 ATEX 0174
Group, category, type of protection	⊕ II (1)GD [Ex ia] IIC, [Ex iaD]
Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	⊕ II 3G Ex nA nC II T4 X

Diagrams



Technical data

Supply

Rated voltage	19 ... 30 V
Rated current	approx. 140 mA at 24 V DC
Power loss	2.7 W
Power consumption	3.3 W

Input

Input signal	HART communication, transmitter supply
Open circuit voltage/short-circuit current	typ. 24 V/28 mA
Input resistance	250 Ω , 5 % (terminals 2, 3 and with jumper on 5, 6)
Available voltage	≥ 15.5 V at 20 mA, short-circuit proof

Output

Collective error message	Power Rail and LED red
Output I, II, III, IV	
Output signal	relay and LED yellow
Mechanical life	10^7 switching cycles
Energized/De-energized delay	approx. 20 ms/approx. 20 ms
Output V, VI, VII	
Output signal	analog
Current range	4 ... 20 mA, source or sink mode
Load	$\leq 650 \Omega$, source mode
Voltage range	5 ... 30 V, sink mode from external supply
Fault signal	downscale $I \leq 2$ mA, upscale $I \geq 21.5$ mA (acc. NAMUR NE43) or hold measurement value
Other outputs	HART communicator on terminals 22, 24

Ambient conditions

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
---------------------	-------------------------------

Mechanical specifications

Protection degree	IP20
Mass	300 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 in), housing type C3

Data for application in connection with Ex-areas

EC-Type Examination Certificate	BASEEFA 07 ATEX 0174
Group, category, type of protection	Ex II (1)GD [Ex ia] IIC, [Ex iaD]
Statement of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	Ex II 3G Ex nA nC II T4 X

Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Input HART with transmitter supply
- 4 relay outputs (NO)
- 3 analog outputs 4 mA ... 20 mA
- Sink and source mode output
- Configurable by keypad

Function

This isolated barrier is used for intrinsic safety applications. It is a HART loop converter that provides power to transmitters or can be connected to existing HART loops in parallel.

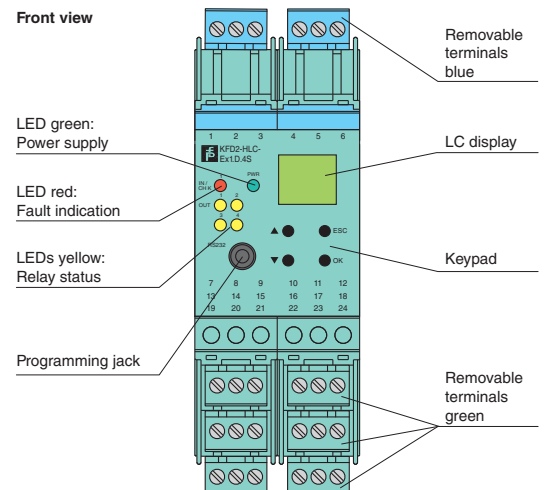
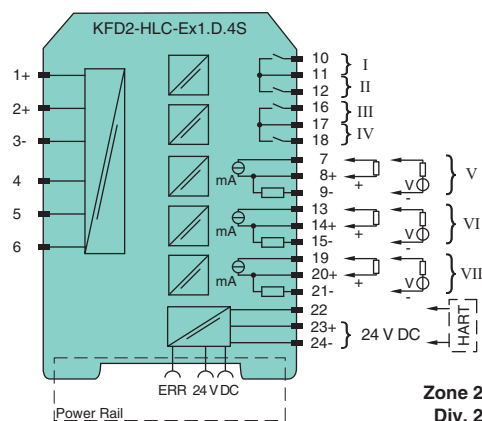
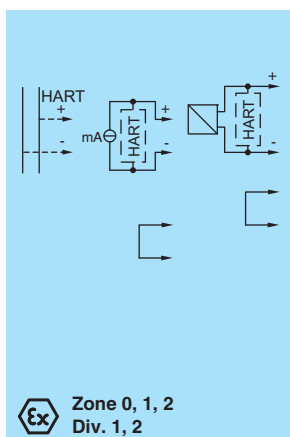
It is able to evaluate up to four HART variables (PV, SV, TV, QV). Of those four HART variables, the data contained in any three of them can be converted to three different 4 mA ... 20 mA current signals. These loop signals can be connected to display devices or analog inputs on the process control system/control system.

In addition to the current outputs, four form A normally open relay contacts are available and can be programmed to operate at trip values from the HART variables.

The unit is easily programmed by the use of a keypad located on the front of the unit.

For additional information, refer to the manual and www.pepperl-fuchs.com.

Diagrams



HART

**HART Filter
HISHF-AI-02****Features**

- 2-channel
- Ideal for retrofitting existing installations
- Connection terminals for HART communicators
- Analog input only
- Current limiting

Function

The unit is a stand-alone HART analog input filter. It is designed to complement the I/O Termination Boards. It filters the HART signal from the 4 mA ... 20 mA control loop.

This unit mounts on DIN rail, has removable terminal blocks, and includes connections for HART communicators.

Technical data**HART signal channels
(intrinsically safe)****HART signal channels**

Isolation	30 V DC
-----------	---------

Ambient conditions

Ambient temperature	0 ... 60 °C (32 ... 140 °F)
---------------------	-----------------------------

Mechanical specifications

Mass	510 g
------	-------

K-System

HART
Multiplexers**HART Filter
HISHF-AO-02****Features**

- 2-channel
- Ideal for retrofitting existing installations
- Connection terminals for HART communicators
- Analog output only
- Current limiting

Function

This unit is a stand-alone HART analog output filter. It is designed to complement the I/O Termination Boards. It filters the HART signal from the 4 mA ... 20 mA control loop.

This unit mounts on DIN rail, has removable terminal blocks, and includes connections for HART communicators.

Technical data**HART signal channels
(intrinsically safe)****HART signal channels**

Isolation	30 V DC
-----------	---------

Ambient conditions

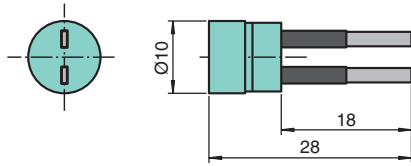
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
---------------------	-----------------------------

Mechanical specifications

Mass	510 g
------	-------

Termination
BoardsHART Loop
Converters

Accessories

**Technical data****Electrical specifications**

Capacitance	22 μ F, 16 V
Damping	20 μ A, at 250 Ω

Mechanical specifications

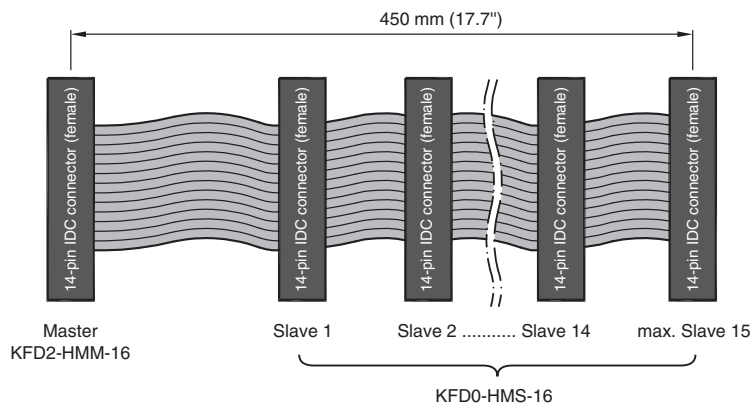
Dimensions	Ø10 x 28 mm (0.4 x 1.1 in)
------------	----------------------------

**HART Filter
K-22 μ** **Features**

- 1-channel
- Parallel connection to HART loop
- Filters HART signal from control loop

Function

The capacitor is used to filter or suppress HART communication.

**Technical data****Ambient conditions**

Ambient temperature	0 ... 55 °C (32 ... 131 °F)
---------------------	-----------------------------

Mechanical specifications

Connection	14-pin IDC female connector
Cable length	0.45 m
Note	distance of plugs 3 cm (1.2 in)

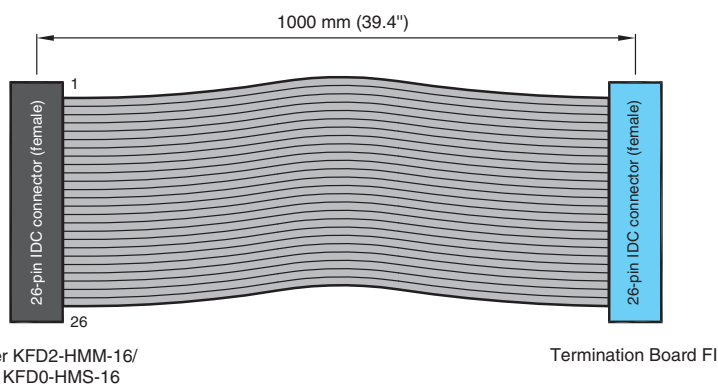
**HART Connection Cable with
Connectors
K-HM14****Features**

- K-System accessory
- Connection cable for KFD2-HMM-16 to up to 15 KFD0-HMS-16
- 14-pin flat cable

Function

The connection cable K-HM14 is used for connection of a HART Multiplexer Master KFD2-HMM-16 to up to 15 HART Multiplexer Slaves KFD0-HMS-16.

The connection cable has 16 connectors and a length of 0.45 m. Other cable lengths (max. 8 m) are available upon request.

**Technical data****Ambient conditions**

Ambient temperature	0 ... 55 °C (32 ... 131 °F)
---------------------	-----------------------------

Mechanical specifications

Connection	26-pin IDC female connector
Cable length	1 m

**HART Connection Cable with
Connectors
K-HM26****Features**

- K-System accessory
- Connection cable for KF*-HM*-16 to Termination Board
- 26-pin flat cable

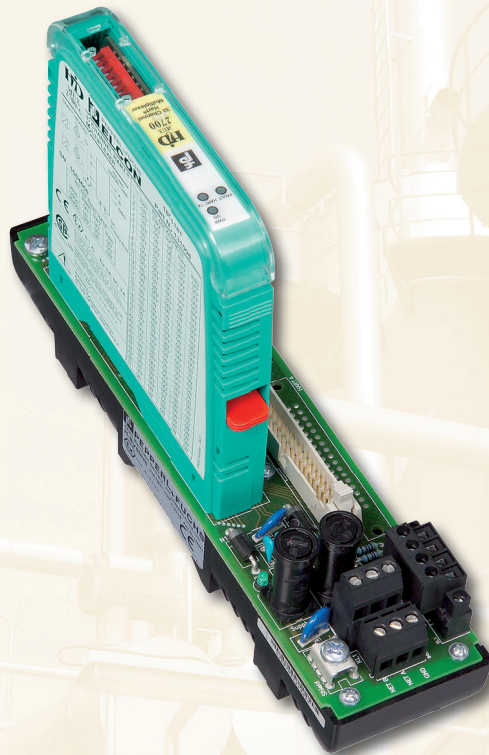
Function

The connection cable K-HM26 is used for connection of a HART Multiplexer KFD*-HM*-16 to a K-System Termination Board.

The connection cable has a length of 1 m. Other cable lengths (max. 8 m) are available upon request.

HART

H-System



Edition 908837 (US) / 208599 (EU) 11/2010

550

Subject to modifications without notice

Pepperl+Fuchs Group
www.pepperl-fuchs.comUSA: +1 330 486 0002
pa-info@us.pepperl-fuchs.comGermany: +49 621 776 2222
pa-info@de.pepperl-fuchs.comCopyright Pepperl+Fuchs
Singapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com**PEPPERL+FUCHS**
PROTECTING YOUR PROCESS



System Description	552
HART Multiplexers	
Selection Tables	557
Product Data Sheets	558
Termination Boards	
Selection Tables	557
Product Data Sheets	559
Accessories	
Selection Tables	557
Product Data Sheets	563

HART
H-System
HART Multiplexers
Termination Boards
Accessories

Introduction

The H-System HART Multiplexer (HiDMux2700) provides communication to 32 HART devices. A network is built by multidropping Multiplexers; up to 31 Multiplexers are connected to support a single network with a maximum of 992 field devices per communication port on one RS 485 interface.

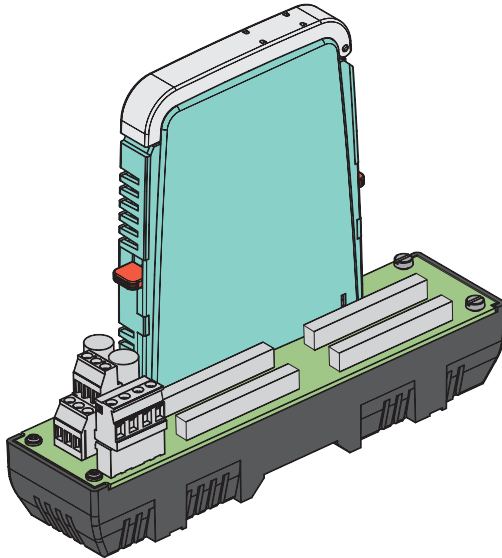


Figure 1 H-System HART Communication Board

Components

HART Multiplexer

- Compact 18 mm housing
- HART field device inputs
- Termination Board mounted
- DIP switch settings for RS 485



Figure 2 18 mm housing (HiDMux2700)

HART Communication Board

The HART Communication Board can interface with HART enabled H-System Termination Boards. It contains one slot to mount the 32-channel HART Multiplexer type HiDMux2700.

The HiACA-UNI-FLK34-*. cables provide easy connection between the HiD/HiC (H-System) Termination Boards and the HART Communication Board.

It offers redundantly fused, power supply connections with LED indication. Redundant RS 485 terminals are also available and can be wired in a daisy chain configuration.

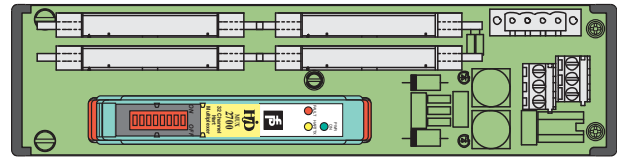


Figure 3 HART Communication Board

Topology

This figure illustrates a typical H-System solution. It contains a Termination Board, Fault Indication Board and HART Communication Board. One HART Communication Board is required for each Termination Board while one Fault Indication Board can be used for many Termination Boards.

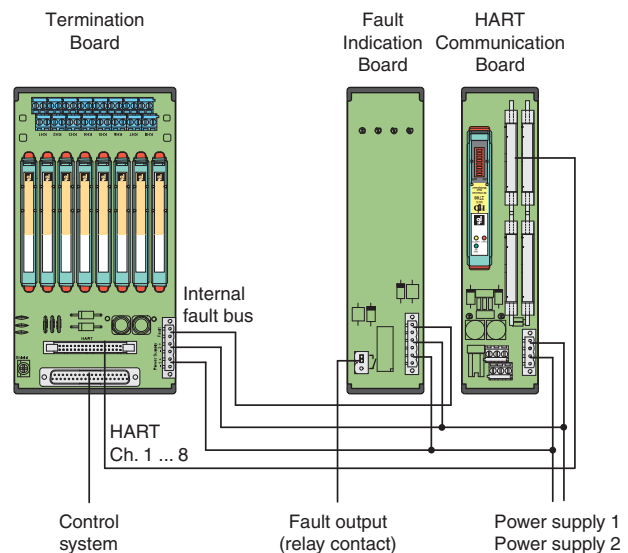


Figure 4 H-System topology

Mounting

The Termination Boards are mounted on 35 mm DIN rail. The DIN rail is centered under the Termination Board.

The H-System Termination Boards have been designed for protection category IP20 with isolated barriers installed (IP00 without modules) according to EN 60529; therefore, the boards must be appropriately protected against splashing water and contamination.

Mounting the Termination Board

- Place the Termination Board onto the DIN rail (Figure 5).
- Tighten the fastening screws (Figure 6).

The Termination Board is now properly mounted and secured.

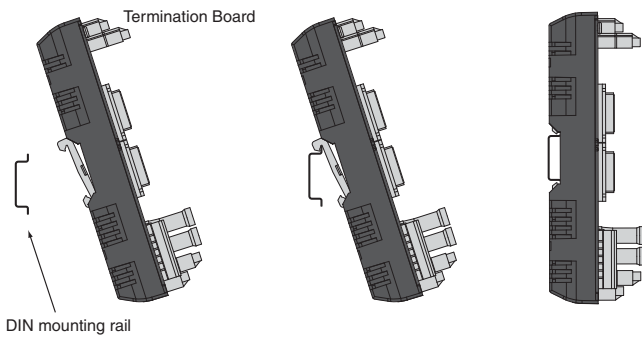


Figure 5 Proper mounting of the H-System Termination Board

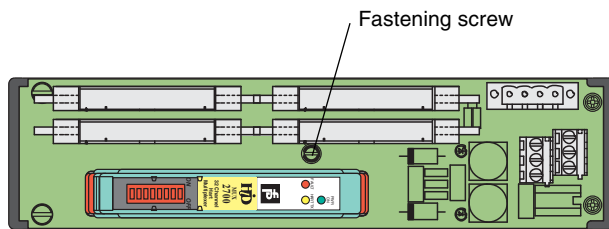


Figure 6 Top view of the H-System HART Communication Board

Mounting the module on the Termination Board

- Ensure that the red Quick Lok Bar (1) is in the upper position
- Center the pins over the contacts on the Termination Board and observe the plug orientation of the device
- Carefully press the device into the contacts
- Press the red Quick Lok Bar (1) down on either side of the device (see Figure 7)

This completes the mounting of a module.

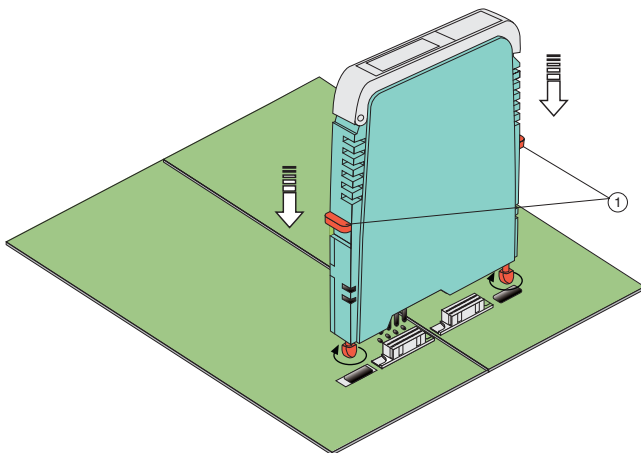


Figure 7 Proper mounting of an HiDMux2700 module

Model number description

Module

Hi	D	Mux	2	7	0	0
			Model number			
			2700			
		Type				
		Mux	HART Multiplexer			
		Housing				
	D	18 mm module				
Hi	H-System					

HART Communication Boards

HiATB	01	-	HART	-	
HiATB	01	-	HART	-	
					Number of connectors and terminals
					2X16 with 2 connectors of 16 channels each
					4X8 with 4 connectors of 8 channels each
					Type of communication
			HART		HART communication
					Number of slots
	01				1 slot
Termination Board type					
HiATB	for HiD accessory modules				

Safety information

The corresponding data sheets, the Declaration of Conformity, the EC-Type Examination Certificate and applicable certificates (see data sheet) are an integral part of this document.

Intended use

Laws and regulations applicable to the usage or planned purpose of usage must be observed. Devices are only approved for proper usage in accordance with intended use. Improper handling will result in voiding of any warranty or manufacturer's responsibility.

These devices are used in C&I technology for the galvanic isolation of C&I signals, such as 20 mA and 10 V unit signals, and also for the adaptation and/or standardization of signals.

The devices are not suitable for the isolation of signals in power engineering, unless this is specifically referred to in the respective data sheet.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

Installation and commissioning

Commissioning and installation must be carried out by specially trained and qualified personnel only.

Installation of the interface devices in the safe area

The devices are constructed to satisfy the IP20 protection classification and must be protected from adverse environmental conditions such as water spray or dirt exceeding the pollution degree 2.

The devices must be installed outside the hazardous area!

Installation and commissioning of the interface devices within Zone 2/Div. 2 of the hazardous area

Only devices with the corresponding manufacturer's Declaration of Conformity or separate certificate of conformity can be installed in Zone 2/Div. 2.

The individual data sheets indicate whether these conditions are met.

For US and Canada installations, in Zone 2/Div. 2 follow the NEC and CEC wiring methods. The enclosure must be able to accept Zone 2/Div. 2 wiring methods. The referenced product certification control drawing must be observed.

For all other applications, the devices should be installed in a switch or junction box that:

- meets at least IP54 in accordance to EN 60529.
- meets to the requirements of resistance to light and resistance to impact according to EN 60079-0/ IEC 60079-0.
- meets to the requirements of thermal endurance according to EN 60079-15/IEC 60079-15.
- must not cause ignition danger by electrostatic charge during intended use, maintenance and cleaning.

The EC-Type Examination Certificates, standard certificates/approvals or the manufacturer's Declaration of Conformity should be observed. It is especially important to observe the "special conditions" if these are included in the certificates.

Repair and maintenance

The transfer characteristics of the devices remain stable over long periods of time. This eliminates the need for regular adjustment. Maintenance is not required.

Fault elimination

No changes can be made to devices that are operated in hazardous areas. Repairs on the device are not allowed.

Isolation coordinates for installations for galvanic isolation according to EN 50178 and EN 61140

The devices of the K-System are electronic equipment for use in secluded electrical operating sites where only skilled personnel or electrically instructed personnel will have admission or access.

The devices are assessed for pollution degree 2 and overvoltage category II according to EN 50178.

For additional details, see data sheets.

Technical data

Electrical data

Power supply (modules)

20.4 V DC to 30 V DC

Each module is protected internally. The Termination Boards have redundant power supply connections with fuses that can be replaced by the customer.

Mechanical data

Location

Mounting outside hazardous areas possible as well as in Zone 2/Div. 2 where a manufacturer's Declaration of Conformity exists.

Protection degree

- Termination Boards: IP20 with modules plugged in (IP00 without modules)
- Modules: IP20

Mass

Termination Boards:

- HiATB01 approx. 150 g

Modules:

- HiDMux2700 approx. 140 g

Material

Modules: Polycarbonate

Termination Boards: Polycarbonate, fiber glass reinforced

Dimensions

Termination Boards (height inclusive module assembly):

- HiATB01: 50 x 190 x 200 mm

Modules:

- HiD module: 18 x 106 x 130 mm

Housing drawings please refer to the appendix.

Labeling

A plastic label holder is available on the front of the module:

- HiD module: 35 x 10.5 mm

A large label carrier kit HiALC-... for the Termination Boards is available as an option.

Fire protection class

Housing: V2 according to UL 94 standard. (Unless stated otherwise all details relate to the reference conditions.)

Ambient conditions

Ambient temperature:

-20 °C to 60 °C, (-4 °F to 140 °F)

Storage temperature:

-40 °C to 70 °C, (-40 °F to 158 °F)

Relative humidity:

max. 95 % no moisture condensation

Reference conditions

- Temperature: 20 °C (68 °F)
- Relative humidity: 50 %
- Supply voltage: 24 V DC
- Working resistance, where applicable: 250 Ω
- Full scale value: 20 mA

Conformity with standards and directives

General

- EMC acc. to NAMUR NE21 and EN 61326
- LEDs acc. to NAMUR NE44
- Software acc. to NAMUR NE53

HART

H-System

HART
MultiplexersTermination
Boards

Accessories

Edition 908837 (US) / 208599 (EU) 11/2010



HART Multiplexers

Model Number	Channels	RS 485 Connection	Supply 24 V DC	Zone 2/Division 2 Mounting	Page
HiDMux2700	32	■	■	■	558

Termination Boards

Model Number	Channels	2 x 16 Channels	4 x 8 Channels	RS 485 Connection	Redundant Power Supply	Supply 24 V DC	Zone 2/Division 2 Mounting	Page
HiATB01-HART-2X16	32	■		■	■	■	■	559
HiATB01-HART-4X8	32		■	■	■	■	■	560
HISHPSM/32/MM-01	32			■	■	■		561
HISHPSM/32/TB-02/HF32	32			■	■	■		562

Accessories

Model Number	Description	Page
HiACA-UNI-FLK34-FLK34-0M5	HART Interface Cable	563
HiACA-UNI-FLK34-FLK34-2M0	HART Interface Cable	563
HiACA-UNI-FLK34-FLK34-3M0	HART Interface Cable	563
HiACA-UNI-FLK34-FLK34-6M0	HART Interface Cable	563

HART

H-System

HART Multiplexers

Termination Boards

Accessories



Features

- 32-channel
- 24 V DC supply
- HART field device inputs
- RS 485 interface
- Up to SIL3 acc. to IEC 61508

Function

The HART Multiplexer Master provides 32 signal channels for connection to SMART transmitters or control devices supporting digital communication according to the HART standard.

Full three-port isolation is included and each input channel has dual capacitor isolation for freedom of loop connection.

Each HART Multiplexer Master is networked simply by connecting the high-speed RS 485 output in a multidrop configuration.

The device interrogates each field device, under the supervision of the workstation, retrieving information for storage in its internal database, which is then easily accessed.

This module is intended to mount on an HiD Termination Board or HART Communication Board. Also special boards for DCS integration are available.

For additional information, refer to the manual and www.pepperl-fuchs.com.

Technical data

Supply

Rated voltage	20.4 ... 30 V DC via Termination Board
Power loss	0.7 W at 24 V

HART signal channels (intrinsically safe)

HART signal channels	
Number of channels	32
Signal range	$0.12 V_{pp} < \text{signal} < 1.5 V_{pp}$
Leakage current	$< 3 \mu A$ at $-20 \dots 85^\circ C$ ($-4 \dots 185^\circ F$)
Terminating resistor	external $230 \dots 500 \Omega$ standard (up to 1000Ω possible)
Output voltage	$\geq 400 mV_{pp}$ (with the terminator resistance specified above)
Output resistance	100Ω or smaller, capacitive coupling
DC isolation	dual capacitor each channel
Common mode voltage	up to 30 V
Input impedance	$> 5 k\Omega$ according to HART specification
Input voltage range	$0.12 \dots 1.5 V_{pp}$
Common mode voltage	$\leq 30 V$
Differential mode clamping	$\pm 5.2 V$, for transient or AC signals
Common mode clamping	$\pm 10 V$, for transient or AC signals
Device type	DC isolated bus device
Data link type	HART primary and secondary
Field multi point support	option available upon request

Interface

Transfer rate	9600 MBit/s, 19200 MBit/s or 38400 MBit/s, selectable via switch
Address	1 ... 31, adjustable via DIP switch
Topology	multi point, master/slave connection

Ambient conditions

Ambient temperature	$0 \dots 60^\circ C$ ($32 \dots 140^\circ F$)
---------------------	---

Mechanical specifications

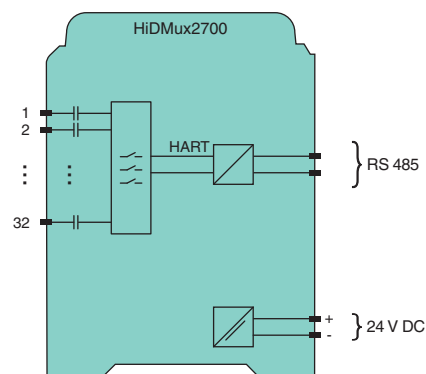
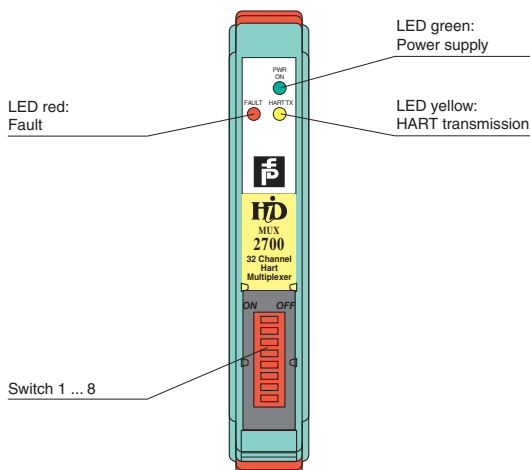
Protection degree	IP20
Mass	approx. 140 g
Dimensions	$18 \times 106 \times 128 \text{ mm}$ ($0.7 \times 4.2 \times 5 \text{ in}$)

Data for application in connection with Ex-areas

Declaration of conformity	Pepperl+Fuchs
Group, category, type of protection, temperature classification	$\text{Ex} \text{ II } 3G \text{ Ex nA II T4}$
CSA approval	1256050
Approved for	Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, IIC

Diagrams

Front view



Zone 2
Div. 2

Technical data

Supply	
Rated voltage	24 V DC, in consideration of rated voltage of used isolated barriers
Voltage drop	0.9 V, voltage drop across the series diode on the Termination Board must be considered
Ripple	≤ 10 %
Power loss	≤ 500 mW, without module
Reverse polarity protected	yes
Redundancy	
Supply	Redundancy available. Each supply is decoupled and fused (500 mA).
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Protection degree	IP20
Connection	screw terminal for max. 2.5 mm ² , fixed
Mass	approx. 150 g
Dimensions	50 x 200 x 163 mm (1.97 x 7.9 x 6.42 in), height including module assembly
Mounting	DIN rail mounting
Accessories	
Designation	optional accessories: - HART Multiplexer Master HiDMux2700 - HART connection cable HiACA-...

Features

- 2 x 16-channel
- 24 V DC supply
- Suitable for HART communication
- Dual RS 485 connections
- Used with HiD/HiC Termination Boards
- LED indicator for supply status

Function

This HART Communication Board can interface with two, 16-channel H-System Termination Boards.

It contains one slot to mount the 32-channel HART Multiplexer Master type HiD Mux2700.

HART interface cables provide easy connection between the HiD/HiC Termination Boards and the HART Communication Board.

It offers fused redundant power supply connections with LED indication. RS 485 terminals are redundant and can be daisy chained.

HART

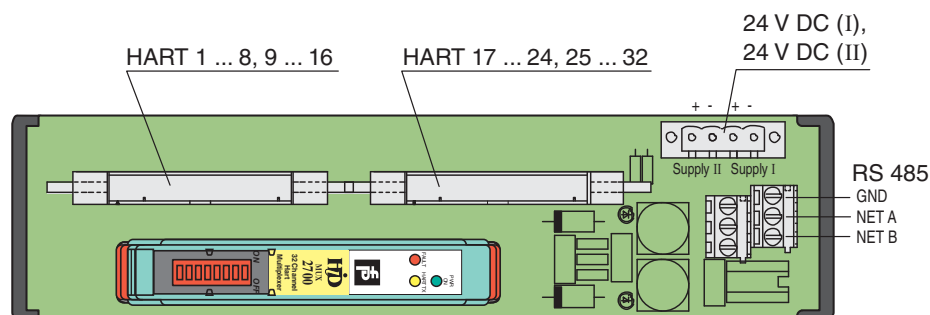
H-System

HART Multiplexers

Termination Boards

Accessories

Diagrams



Zone 2
Div. 2

Features

- 4 x 8-channel
- 24 V DC supply
- Suitable for HART communication
- Dual RS 485 connections
- Used with HiD/HiC Termination Boards
- LED for supply status

Function

This HART Communication Board can interface with four, 8-channel H-System Termination Boards.

It contains one slot to mount the 32-channel HART Multiplexer type HiD Mux2700.

The HART interface cable provides easy connection between the HiD/HiC Termination Boards and the HART Communication Board.

It offers fused redundant power supply connections with LED indication. RS 485 terminals are redundant and can be daisy chained.

Technical data

Supply

Rated voltage 24 V DC, in consideration of rated voltage of used isolated barriers

Voltage drop 0.9 V, voltage drop across the series diode on the Termination Board must be considered

Ripple $\leq 10\%$

Power loss ≤ 500 mW, without module

Reverse polarity protected yes

Redundancy

Supply Redundancy available. Each supply is decoupled and fused (500 mA).

Ambient conditions

Ambient temperature $-20 \dots 60\text{ }^{\circ}\text{C}$ ($-4 \dots 140\text{ }^{\circ}\text{F}$)

Mechanical specifications

Protection degree IP20

Connection screw terminal for max. 2.5 mm^2 , fixed

Mass approx. 150 g

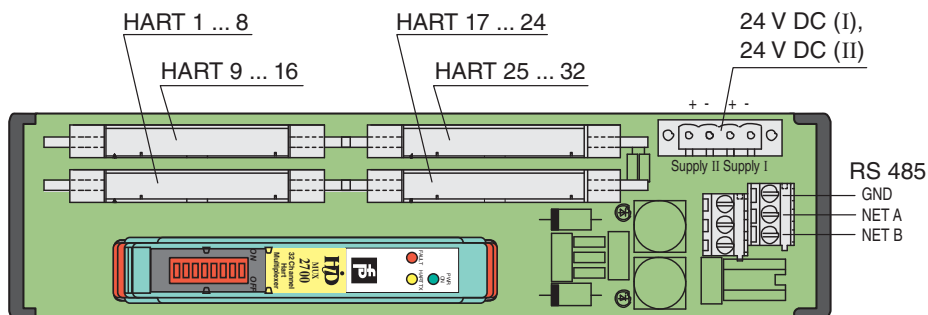
Dimensions $50 \times 200 \times 163\text{ mm}$ ($1.97 \times 7.9 \times 6.42\text{ in}$), height including module assembly

Mounting DIN rail mounting

Accessories

Designation optional accessories:
- HART Multiplexer Master HiDMux2700
- HART connection cable HiACA-...

Diagrams



Zone 2
Div. 2

Edition 908837 (US) / 208599 (EU) 11/2010

Technical data

Supply	
Rated voltage	20 ... 30 V DC
Fusing	3.15 A, 5 x 20 mm (0.2 x 0.8 in)
Power loss	0.7 W, with Multiplexer
Reverse polarity protected	yes
HART signal channels (intrinsically safe)	
HART signal channels	
Number of channels	32 unbalanced signal loops
Redundancy	
Supply	yes
Ambient conditions	
Ambient temperature	-20 ... 55 °C (-4 ... 131 °F)
Mechanical specifications	
Core cross-section	2.5 mm ² (16 AWG)
Connection	field side: fixed screw terminals control side: fixed screw terminals RS 485 interface: removable screw terminals power: removable screw terminals
Mass	approx. 500 g
Dimensions	222 x 122 x 208 mm (8.7 x 4.8 x 8.2 in), height including module assembly
Mounting	DIN rail mounting

Features

- 32-channel
- 24 V DC supply
- Interface for serial or parallel wiring options
- Dual RS 485 connections
- Slot for HART Multiplexer

Function

This HART Termination Board has 32 terminal blocks to connect up to 32 HART field devices.

It contains one slot to mount the 32-channel HART Multiplexer Master type HiDMux2700.

The Termination Board can be used for general-purpose applications or in conjunction with intrinsic safety barriers for hazardous applications.

It offers fused redundant power supply connections. RS 485 terminals are redundant and can be daisy chained.

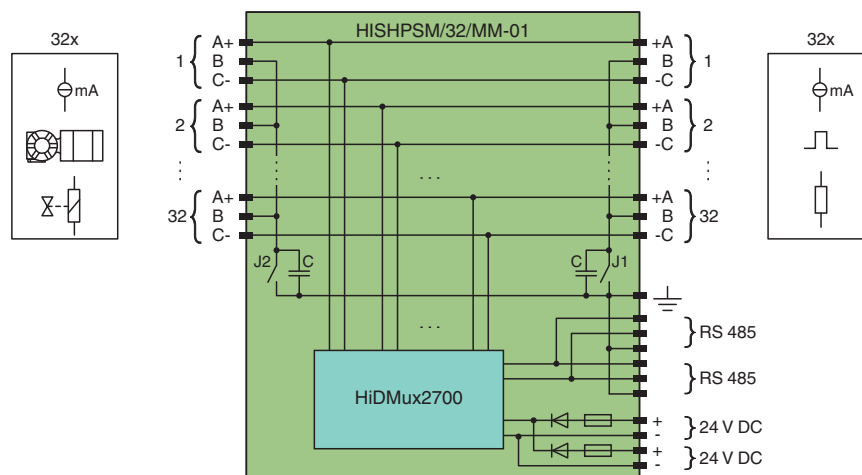
HART

H-System

HART
MultiplexersTermination
Boards

Accessories

Diagrams



Features

- 32-channel
- 24 V DC supply
- For analog output cards
- HART output filters
- Interface for serial or parallel wiring options
- 37-pin Sub-D connectors
- Slot for HART Multiplexer

Function

The Termination Board is designed to complement the I/O termination panels and provide access to all HART information.

The Termination Board provides a robust solution for on-line HART communications, interfaces up to 32 field located HART devices, and it allows the user to retain standard DCS field termination panels. This ideal for retrofitting existing installations and maintains all existing hardware and field wiring.

The Termination Board offers analog output filters.

Technical data

Supply

Rated voltage	20 ... 30 V DC
Fusing	100 mA, 5 x 20 mm (0.2 x 0.8 in)
Power loss	0.7 W, with Multiplexer
Reverse polarity protected	yes

HART signal channels (intrinsically safe)

HART signal channels	
Number of channels	32 unbalanced signal loops

Redundancy

Supply	yes
--------	-----

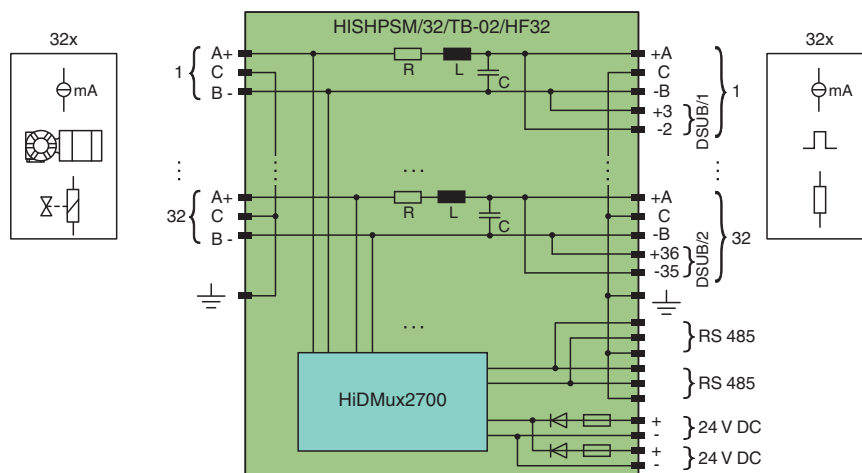
Ambient conditions

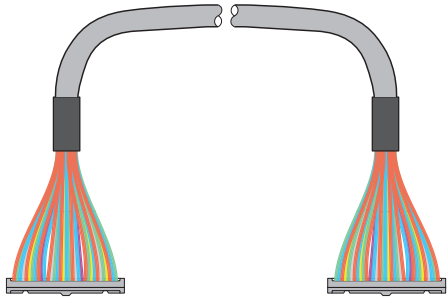
Ambient temperature	-20 ... 55 °C (-4 ... 131 °F)
---------------------	-------------------------------

Mechanical specifications

Core cross-section	2.5 mm ² (16 AWG)
Connection	field side: screw terminals control side: screw terminals/Sub-D socket 2 x 37-pin RS 485 interface: removable screw terminals power: removable screw terminals
Mass	approx. 700 g
Dimensions	300 x 127 x 186 mm (11.8 x 5 x 7.3 in), height including module assembly
Mounting	DIN rail mounting

Diagrams





Technical data

Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Connection	34-pin FLK connector (female)
Mass	HiACA-UNI-FLK34-FLK34-0M5: approx. 150 g HiACA-UNI-FLK34-FLK34-2M0: approx. 600 g HiACA-UNI-FLK34-FLK34-3M0: approx. 900 g HiACA-UNI-FLK34-FLK34-6M0: approx. 1800 g
Cable length	HiACA-UNI-FLK34-FLK34-0M5: 0.5 m HiACA-UNI-FLK34-FLK34-2M0: 2 m HiACA-UNI-FLK34-FLK34-3M0: 3 m HiACA-UNI-FLK34-FLK34-6M0: 6 m

HART Interface Cables
HiACA-UNI-FLK34-FLK34-0M5
HiACA-UNI-FLK34-FLK34-2M0
HiACA-UNI-FLK34-FLK34-3M0
HiACA-UNI-FLK34-FLK34-6M0

Features

- H-System accessory
- Connection cable between HART Communication Board and Termination Board
- 34-pin cable

Function

The HART connection cable is used for connection of a HART Communication Board to a H-System Termination Board.

HART

H-System

HART Multiplexers

Termination Boards

Accessories