

# Источники питания полевой шины FieldConnex

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Россия +7(495)268-04-70

Казахстан +7(727) 345-47-04

Беларусь +(375) 257-127-884

Узбекистан +998(71)205-18-59

Киргизия +996(312)96-26-47

эл.почта: [phb@nt-rt.ru](mailto:phb@nt-rt.ru) || сайт: <https://pepperl-fuchs.nt-rt.ru/>



## Fieldbus Power Supply

### FieldConnex® Fieldbus

#### HD2-FBPS-1.25.360

- 2 segments, simplex, individual modules per segment
- Couples PROFIBUS PA devices transparently to PROFIBUS DP
- High-power trunk: Live work on devices in any hazardous area
- Transparent, configuration free
- Optimized for size and quality, low heat dissipation
- Automatically adapts speed on DP - up to 12 Mbit/s
- Output: 25 ... 28 V/360 mA
- Universal power supply for most applications
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

Fieldbus power supply, module for fieldbus power hub



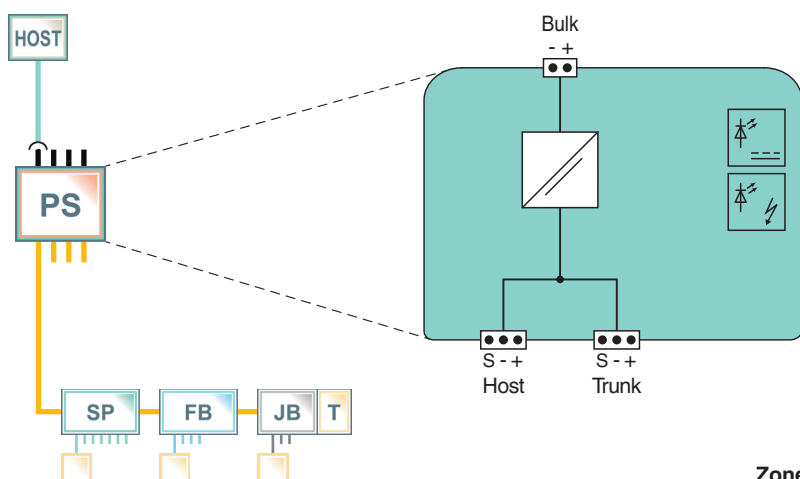
### Function

This Power Supply Module is a system component for the FieldConnex® Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

This power supply satisfies the needs of most fieldbus applications with regards to cable lengths and number of devices.

Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

### Connection



Zone 2/Div. 2

### Technical Data

#### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

#### Supply

Rated voltage	$U_r$	19.2 ... 35 V DC
Rated current	$I_r$	670 ... 360 mA



## Technical Data

Power dissipation		typ. 2 W
<b>Fieldbus connection</b>		
Rated voltage	$U_N$	25 ... 28 V
Rated current	$I_N$	360 ... 10 mA
Short-circuit current		typ. 400 mA
<b>Indicators/operating means</b>		
LED ERR		red flashing: overload error at output
LED PWR		Power LED: green if $U_{out} > 25$ V
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 06 ATEX 553229 X
Marking		Ⓔ II 3 G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 11.0003X
IECEx marking		Ex nA IIC T4 Gc
<b>General information</b>		

Assembly





# Advanced Diagnostic Module

## FieldConnex® Fieldbus

### HD2-DM-A

- Comprehensive diagnostics for fieldbus physical layer and power supply
- Plug-in Module for the FieldConnex Power Hub
- Precise measurements through passive circuits
- For commissioning, online monitoring and troubleshooting
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Installation in Zone 2/Class I, Div. 2
- System state and fault indication via LEDs
- Display of data in the safety of the control room
- Automatic setup of diagnostic system
- Full software integration into PCS and PAM possible

Advanced diagnostic module, plug-in module for the fieldbus power hub

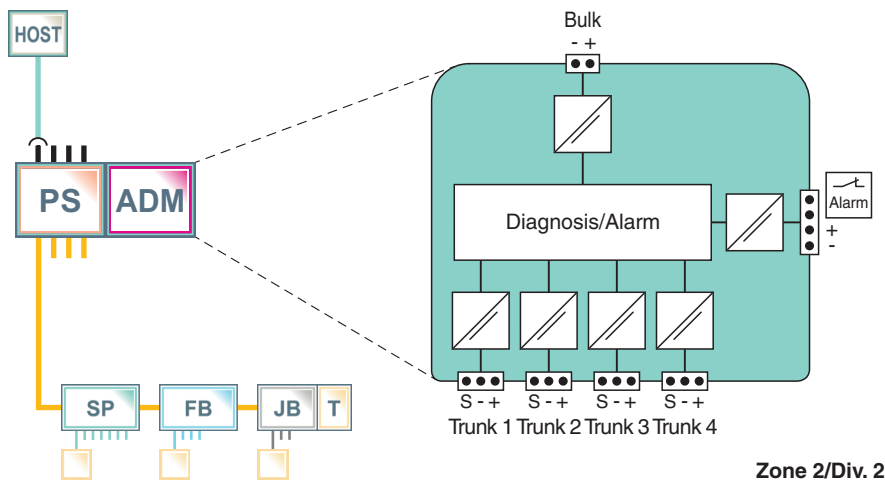


## Function

Designed as a plug-in module for the FieldConnex® Power Hub, this Advanced Diagnostic Module (ADM) is a comprehensive measurement tool for the physical layer of up to four fieldbus segments. It's passive input circuits leave the physical layer untouched for exact data. The ADM detects gradual or sudden changes and helps trace even intermittent malfunctions.

The ADM supports commissioning, online monitoring and troubleshooting. It can be integrated tightly into the DCS and PAM via a separate diagnostic bus, making the fieldbus physical layer itself a manageable asset. Configuration tools automate setup of the ADM and of selected DCS. The Diagnostic Manager is the software for display and operation from the safety of the control room. The Professional Edition provides powerful functions and wizards simplifying and automating work procedures: an embedded expert system, a data historian, and a built-in oscilloscope (see datasheet DTM-FC.AD\*).

## Connection



## Technical Data

General specifications		
Design / Mounting		Motherboard based
Installation in hazardous area		Zone 2 / Div. 2
Supply		
Rated voltage	U <sub>r</sub>	19.2 ... 35 V
Rated current	I <sub>r</sub>	110 ... 30 mA
Power dissipation		max. 2 W

## Technical Data

### Fieldbus connection

Number of segments		4
Fieldbus type		FOUNDATION Fieldbus/PROFIBUS PA
Rated voltage	U <sub>N</sub>	9 ... 32 V

### Indicators/operating means

LED PRI PWR		green: on, primary bulk power supply connected
LED SEC PWR		green: on, secondary bulk power supply connected
LED Seg 1...4		yellow: bus activity; red 2 Hz flashing: alarm; red: hardware error
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
DIP switch		diagnostic address 1...247, binary coded

### Interface

Interface type		diagnostic bus: RS 485
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### Galvanic isolation

Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>

### Directive conformity

Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013

### Standard conformity

Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6

### Ambient conditions

Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3

### Mechanical specifications

Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 100 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
Mating cycles		100

### Data for application in connection with hazardous areas

Certificate		TÜV 04 ATEX 2500 X
Marking		Ⓔ II 3 G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010

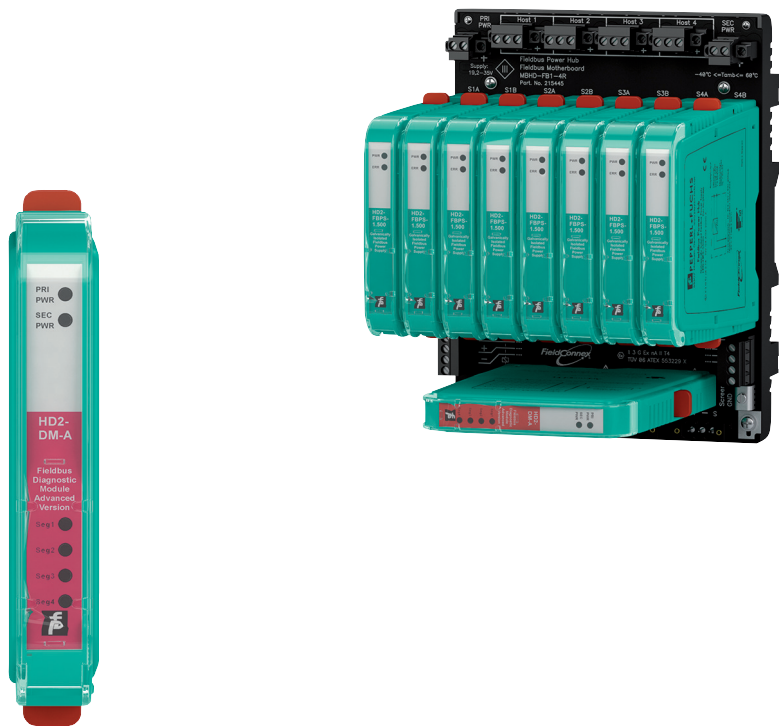
### International approvals

FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0038X

Technical Data

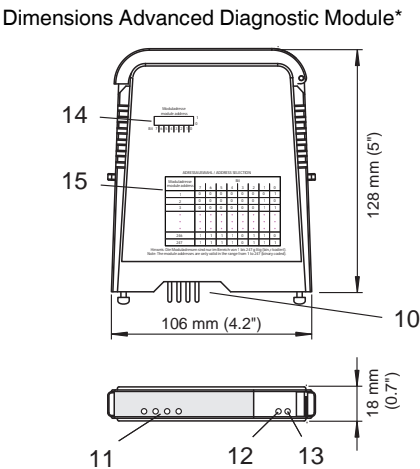
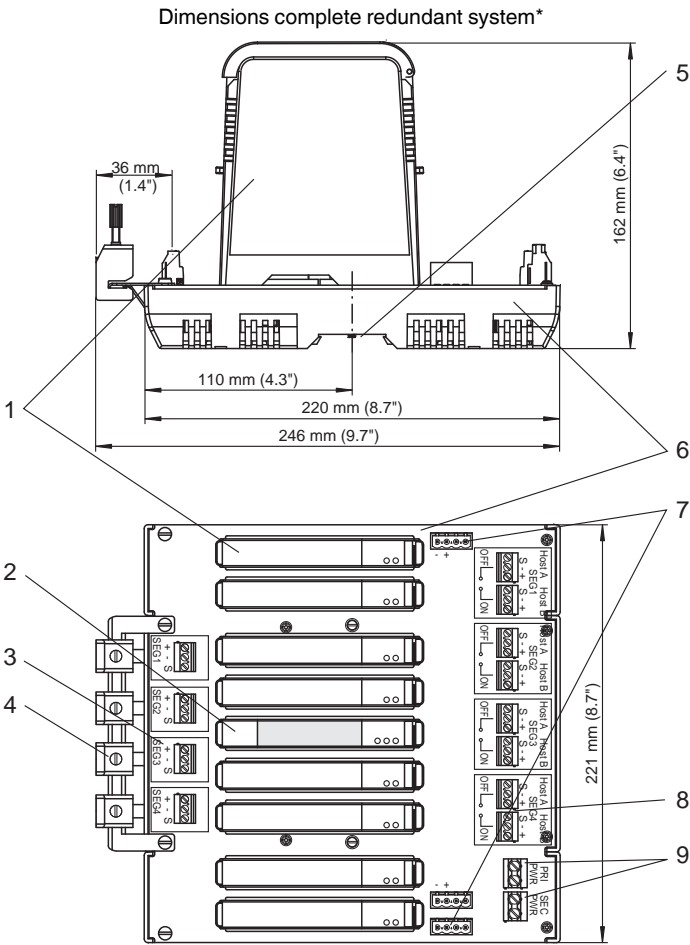
IECEEx marking	Ex nA IIC T4 Gc
Certificates and approvals	
Patents	This product may be covered by the following patent: US7,698,103
General information	

Product Photo



Additional Information

Dimensions and Assembly



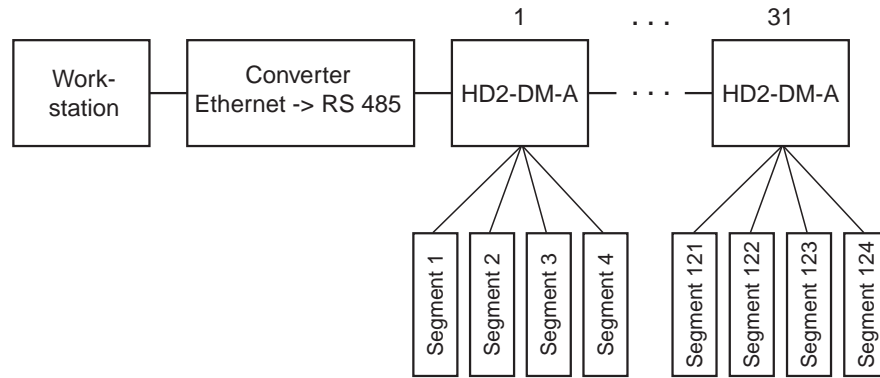
\*all dimensions without tolerance indication

- Description:
- 1 Power Supply Modules, see separate data sheets
  - 2 Advanced Diagnostic Module
  - 3 Connections for fieldbus trunk, terminator switch
  - 4 Screening/earthing kit for trunk cables shield, optional accessory
  - 5 Mounting slot for DIN rail
  - 6 Motherboard, see separate data sheets
  - 7 Connections for alarm, voltage free contact and diagnostics bus
  - 8 Connections for redundant host
  - 9 Connections for redundant bulk power supply

- 10 Plug connections to Motherboard
- 11 LED Seg 1 ... Seg 4
- 12 LED green SEC Power
- 13 LED green PRI Power
- 14 Dip-Switch-Array for diagnostic address or address on the diagnostics bus
- 15 Address selection overview

Installation

System topology



Installation notes see manual.

### Accessories

- Software User Interface for monitoring up to or including 100 fieldbus segments: Diagnostic Manager, Professional Edition DTM-FC.AD
- Software User Interface for monitoring more than 100 fieldbus segments: Diagnostic Manager, Professional Edition DTM-FC.AD.1
- KT-MB-GT2AD Diagnostic Gateway



# Basic Diagnostic Module

## FieldConnex® Fieldbus

### HD2-DM-B

- Basic monitoring for power supply output and health
- Plug-in Module for the FieldConnex Power Hub
- Plug and play - no engineering required
- For online monitoring
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Installation in Zone 2/Class I, Div. 2
- System state and fault indication via LEDs

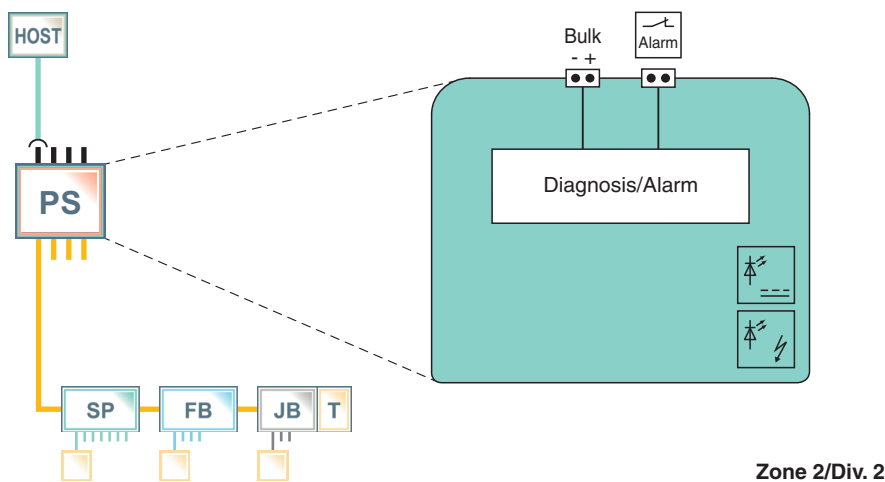
Basic diagnostic module, base module for fieldbus power hub physical layer diagnostics



## Function

Designed as a plug-in module for the FieldConnex® Power Hub, the Basic Diagnostic Module HD2-DM-B provides basic system diagnostics. It checks for proper operation of bulk power supplies and monitors the connected trunks for overload or short-circuit conditions. All Power Hub modules are checked for proper function. On redundant power modules it indicates mismatching pairs. The module indicates a fault condition via voltage-free contact. It provides monitoring "plug-and-play" without additional engineering. LED signals indicate a fault for easy detection.

## Connection



## Technical Data

General specifications			
Design / Mounting		Motherboard based	
Installation in hazardous area		Zone 2 / Div. 2	
Supply			
Rated voltage	U <sub>r</sub>	19.2 ... 35 V	
Rated current	I <sub>r</sub>	20 mA	
Power dissipation		max. 0.5 W	
Fieldbus connection			
Number of segments		4	
Indicators/operating means			
LED PRI PWR		green: on, primary bulk power supply connected	



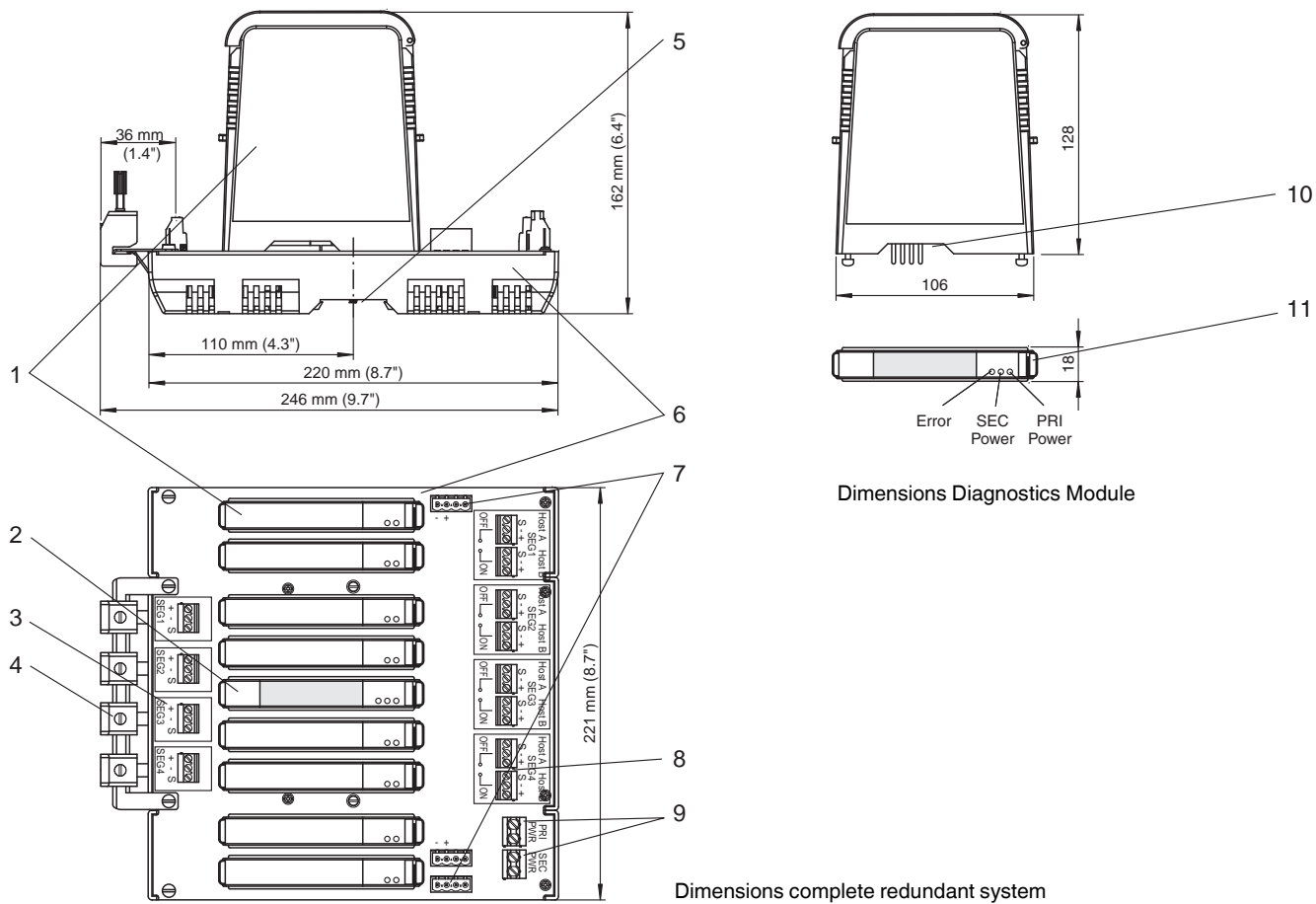
Technical Data		
LED SEC PWR		green: on, secondary bulk power supply connected
LED ERR		red: 2 Hz flashing, power supply fault (short-circuit, undervoltage), redundancy fault
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
Galvanic isolation		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Standard conformity		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
Ambient conditions		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
Mechanical specifications		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 70 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
Data for application in connection with hazardous areas		
Certificate		TÜV 04 ATEX 2500 X
Marking		Ⓔ II 3 G Ex nA nC IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
International approvals		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex nA nC IIC T4
IECEX approval		
IECEX certificate		IECEX TUN 13.0038X
IECEX marking		Ex nA IIC T4 Gc
General information		

Product Photo



Additional Information

Dimensions



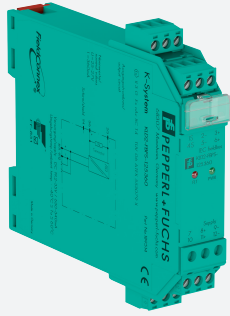
- Description:
- 1 Power Supply Modules, see separate data sheets
  - 2 Diagnostics Module
  - 3 Connections for fieldbus trunk, terminator switch
  - 4 Screening/earthing kit for trunk cables shield, optional accessory
  - 5 Mounting slot for DIN rail
  - 6 Motherboard, see separate data sheets
  - 7 Connections for alarm, voltage free contact and diagnostics bus
  - 8 Connections for redundant host
  - 9 Connections for redundant bulk power supply
  - 10 Plug connections to Motherboard
  - 11 State and fault indication LEDs

Installation

see manual

Accessories

see system datasheet



# Fieldbus Power Supply

## FieldConnex® Fieldbus

### KLD2-FBPS-1.25.360

- Output: 25 ... 27 V/360 mA
- For most fieldbus applications
- High-power trunk for high device count and long cable lengths
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1
- Fixed, high-availability terminator
- No spacing required between modules

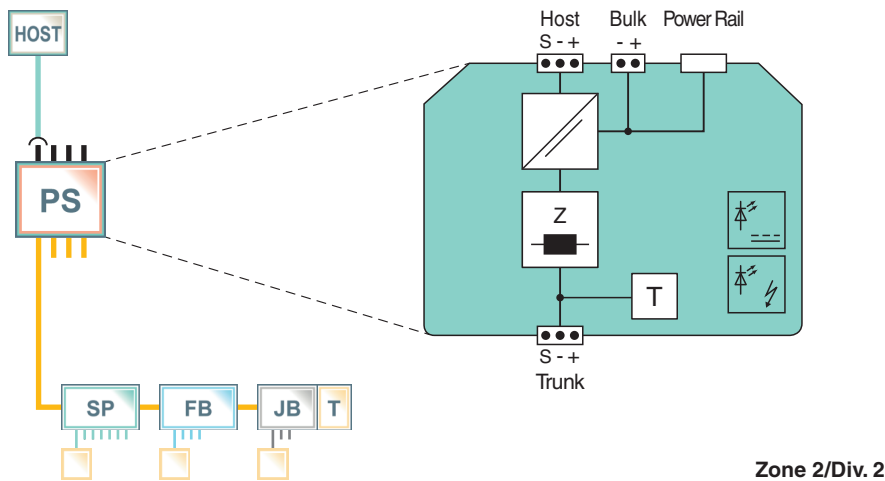
## Fieldbus Power Supply



## Function

This fieldbus power supply is an all-in-one module for single fieldbus segments. It adapts current and voltage and provides the impedance filter required. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Power output is designed for long cable lengths and device counts suiting the needs of most fieldbus applications. Fieldbus couplers provide explosion protection for live work at the spur where needed. Availability and a long service life are achieved through a passive impedance filter and a design optimized for low heat dissipation. Modules can be mounted with no spacing required in any direction for an optimized and space-saving cabinet layout. The mobile Advanced Diagnostic Module connects directly to test plug sockets located on the plug-in terminal. In conjunction with the modular Segment Protector it is a perfectly expandable solution.

## Connection



## Technical Data

### General specifications

Installation in hazardous area Zone 2 / Div. 2

### Supply

Connection	Power Rail or terminals 8+, 11+; 9-, 12-	
Rated voltage	$U_r$	19.2 ... 35 V DC
Rated current	$I_r$	630 ... 340 mA
Power dissipation		typ. 2,0 W

### Fieldbus connection

Number of segments	1
Connection	terminals 3+, 6+; 2-, 5-; 1S, 4S (S=screen connection)

## Technical Data

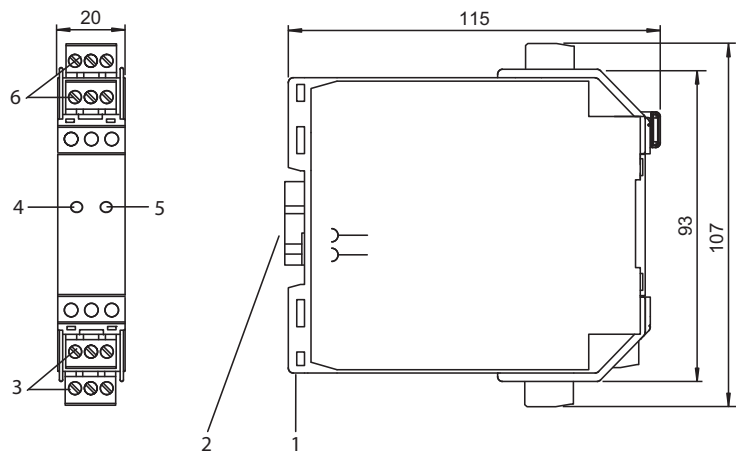
Rated voltage	U <sub>N</sub>	25 ... 28 V
Rated current	I <sub>N</sub>	360 mA
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V AC
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		
		NE 21:2006
Degree of protection		
		IEC/EN 60529
Fieldbus standard		
		IEC 61158-2, ISA S 50.02 part 2
Shock resistance		
		EN 60068-2-27
Vibration resistance		
		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		
		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		
		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		
		< 95 % non-condensing
Shock resistance		
		15 g 11 ms
Vibration resistance		
		1 g , 10 ... 150 Hz
Pollution degree		
		max. 2, according to IEC 60664
Corrosion resistance		
		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		
		screw terminal , pluggable
Core cross section		
		up to 2.5 mm <sup>2</sup>
Housing		
		20 mm x 115 mm x 107 mm
Housing material		
		Polycarbonate
Degree of protection		
		IP20
Mass		
		approx. 210 g
Mounting		
		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		
		TÜV 06 ATEX 553079 X
Marking		
		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-7:2015
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		
		AEx/Ex ec IIC T4
<b>General information</b>		

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Extendable lugs
  - 2 Protective cap, remove for power supply via Power Rail
  - 3 Removeable terminals
  - 4 LED red: Fault signal
  - 5 LED green: Power supply
  - 6 Test plug socket; removeable terminals

Indication

LED indicators:	Conditions
green ON red OFF	Device ready for operation
green OFF red OFF	Device not ready for operation
green OFF red 2 Hz flashing	OVERLOAD, load current > 400 mA typ.



## Fieldbus Power Supply

### FieldConnex® Fieldbus

#### HD2-FBPS-1.25.360

- 2 segments, simplex, individual modules per segment
- Couples PROFIBUS PA devices transparently to PROFIBUS DP
- High-power trunk: Live work on devices in any hazardous area
- Transparent, configuration free
- Optimized for size and quality, low heat dissipation
- Automatically adapts speed on DP - up to 12 Mbit/s
- Output: 25 ... 28 V/360 mA
- Universal power supply for most applications
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

Fieldbus power supply, module for fieldbus power hub



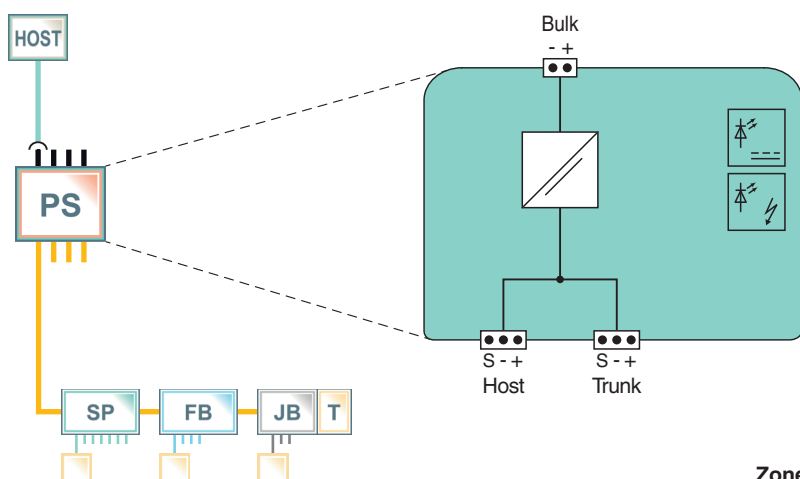
### Function

This Power Supply Module is a system component for the FieldConnex® Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

This power supply satisfies the needs of most fieldbus applications with regards to cable lengths and number of devices.

Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

### Connection



Zone 2/Div. 2

### Technical Data

#### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

#### Supply

Rated voltage	$U_r$	19.2 ... 35 V DC
Rated current	$I_r$	670 ... 360 mA



## Technical Data

Power dissipation		typ. 2 W
<b>Fieldbus connection</b>		
Rated voltage	$U_N$	25 ... 28 V
Rated current	$I_N$	360 ... 10 mA
Short-circuit current		typ. 400 mA
<b>Indicators/operating means</b>		
LED ERR		red flashing: overload error at output
LED PWR		Power LED: green if $U_{out} > 25$ V
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 06 ATEX 553229 X
Marking		Ⓔ II 3 G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 11.0003X
IECEx marking		Ex nA IIC T4 Gc
<b>General information</b>		





# Advanced Diagnostic Module

## FieldConnex® Fieldbus

### HD2-DM-A.RO

- Diagnostics for fieldbus physical layer and power supply
- Plug-in Module for the FieldConnex Power Hub
- Plug and play - no engineering required
- For online monitoring
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Installation in Zone 2/Class I, Div. 2
- System state and fault indication via LEDs
- Alarm limits configurable via DIP switches
- Fault indication transmission by voltage free contact

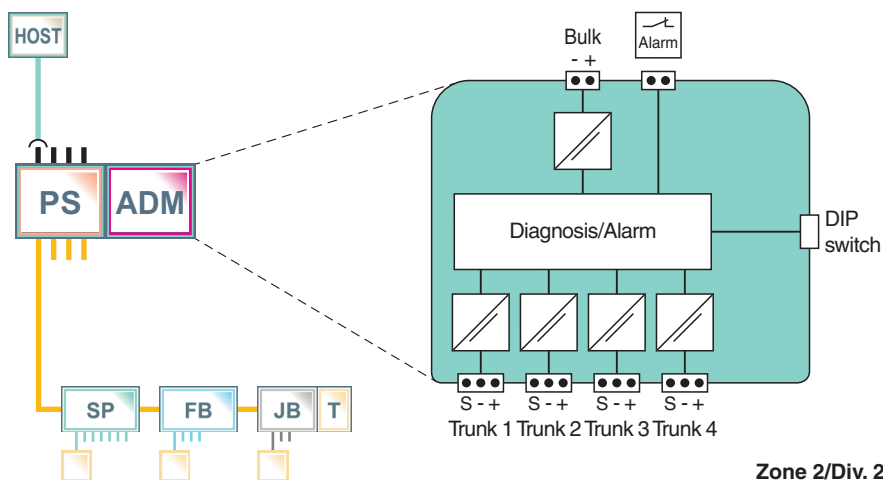
Advanced diagnostic module with relay output for fieldbus power hub physical layer diagnostics



## Function

Designed as a plug-in module for the FieldConnex® Power Hub, the Advanced Diagnostic Module (ADM) with relay output is a monitoring tool for the physical layer of up to four fieldbus segments. Passive input circuits leave the physical layer untouched, avoiding alteration of the signal. The ADM indicates unwanted conditions via voltage-free contact. It provides physical layer diagnostics "plug-and-play", without additional engineering. If desired, the values for maintenance and out-of-specification limit ranges are configurable via DIP switches. LED signals indicate that a limit has been exceeded. For commissioning and troubleshooting, a comprehensive diagnostic module such as the FieldConnex(R) mobile ADM (see DM-AM-KIT) is recommended.

## Connection



## Technical Data

### General specifications

Design / Mounting		Motherboard based
Installation in hazardous area		Zone 2 / Div. 2
Supply		
Rated voltage	U <sub>r</sub>	19.2 ... 35 V
Rated current	I <sub>r</sub>	40 ... 25 mA
Power dissipation		max. 1 W
Fieldbus connection		
Number of segments		4

## Technical Data

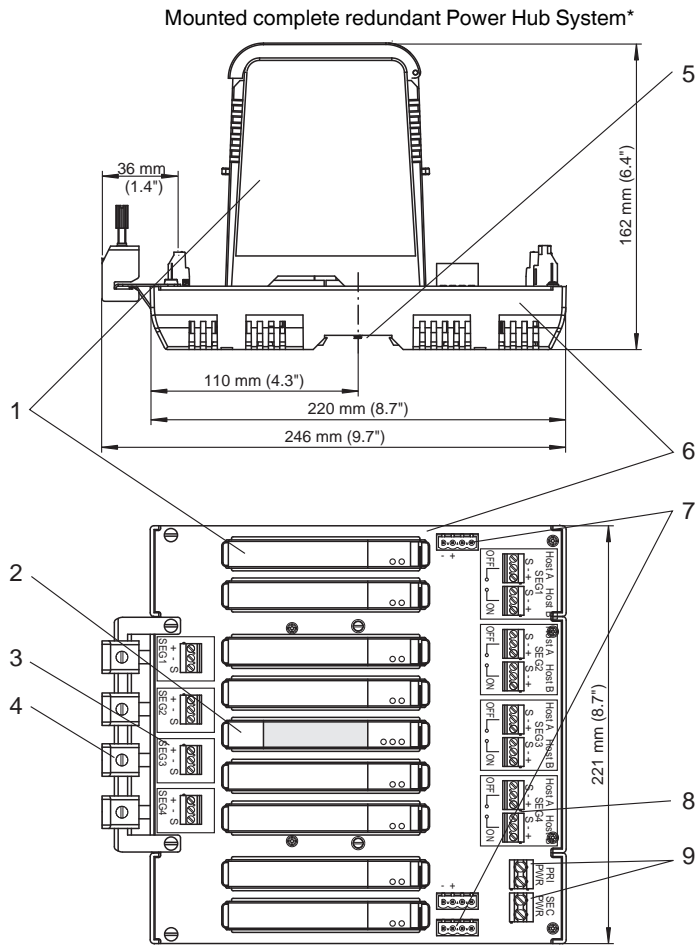
Fieldbus type		FOUNDATION Fieldbus/PROFIBUS PA
Rated voltage	$U_N$	9 ... 32 V
<b>Indicators/operating means</b>		
LED PRI PWR		green: on, primary bulk power supply connected
LED SEC PWR		green: on, secondary bulk power supply connected
LED Seg 1...4		yellow: bus activity; yellow 2 Hz flashing: Maintenance required; red 2 Hz flashing: specification limit violated; red: hardware error
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
DIP switch		fieldbus type , redundant supply , Signal level , Noise level , Jitter
<b>Galvanic isolation</b>		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 100 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 04 ATEX 2500 X
Marking		Ⓔ II 3 G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0038X
IECEx marking		Ex nA IIC T4 Gc
<b>Certificates and approvals</b>		
Patents		This product may be covered by the following patent: US7,698,103
<b>General information</b>		

Assembly

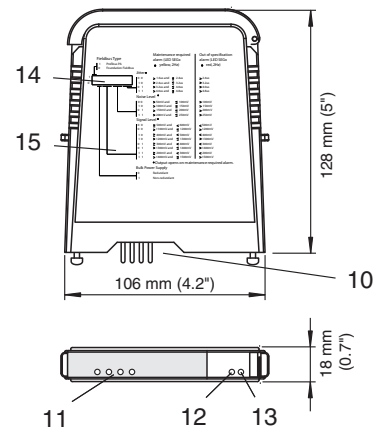


## Additional Information

### Dimensions and Assembly



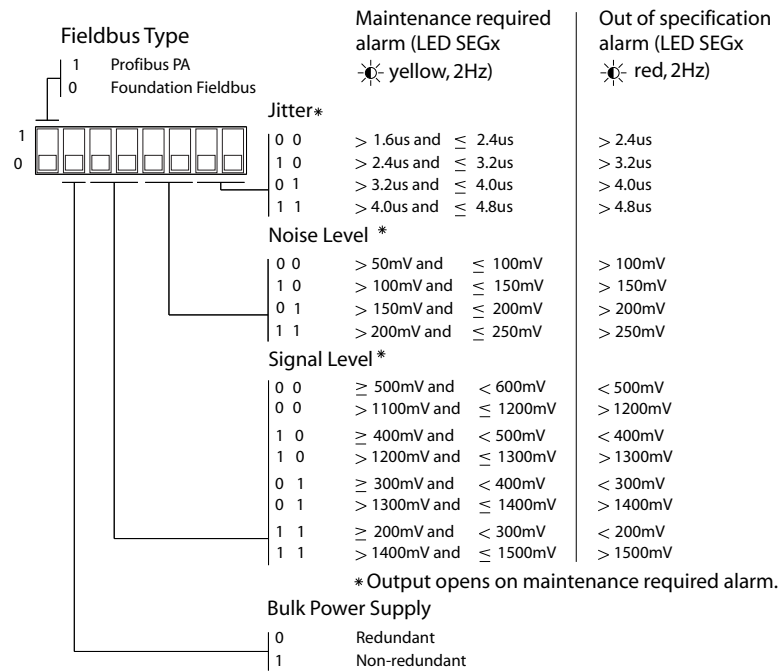
Advanced Diagnostic Module, Relay Output\*



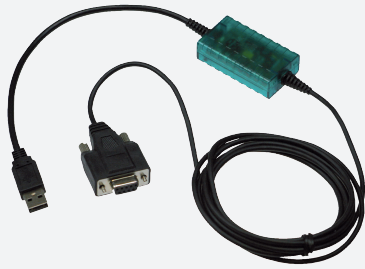
\*all dimensions without tolerance

#### Description:

- 1 Power Supply Modules, see separate data sheets
- 2 Advanced Diagnostic Module, Relay Output
- 3 Connections for fieldbus trunk, terminator switch
- 4 Screening/earthing kit for trunk cables shield, optional accessory
- 5 Mounting slot for DIN rail
- 6 Motherboard, see separate data sheets
- 7 Connections for alarm, voltage free contact and diagnostic bus (not applicable for HD2-DM-A.RO)
- 8 Connections for redundant host
- 9 Connections for redundant bulk power supply
- 10 Plug connections to Motherboard
- 11 LED Seg 1 ... Seg 4
- 12 LED green SEC PWR
- 13 LED green PRI PWR
- 14 DIP switch array
- 15 DIP switch settings overview



DIP switch settings overview



# USB Fieldbus Power Supply

## FieldConnex® Fieldbus

### USB-FBPS-1.11.45.NI

- Output: min. 11 V/45 mA
- For 1...2 devices/test setups
- In conjunction with NI PCMCIA-FBUS card
- Permitted for Zone 2 operation
- For FOUNDATION Fieldbus H1
- Compatible with Windows® XP, Vista, 7, 8, or 10
- USB 1.1/2.0 compatible

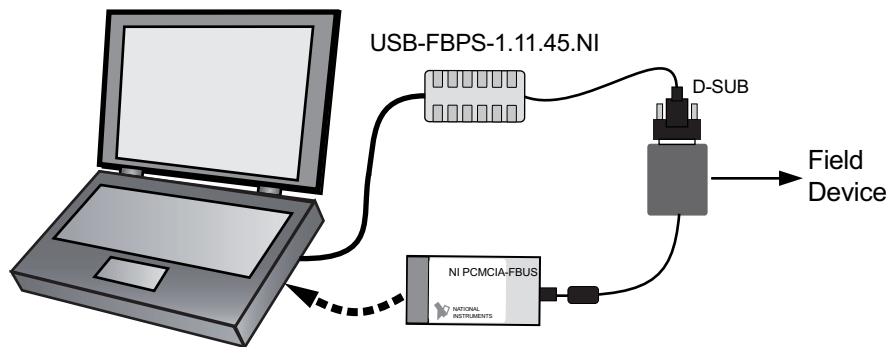
USB fieldbus power supply for 1 or 2 field devices with D-sub socket for connecting to National Instruments NI PCMCIA FBUS card



## Function

The USB-FBPS-1.11.45.NI fieldbus power supply powers one or two field devices. It connects via D-SUB female connector to the popular NI PCMCIA FBUS card by National Instruments. This small unit is designed to enable commissioning and maintenance personnel to conduct single field device work typical during plant start-up or maintenance: device configuration download, functional test, and device tagging. The power supply provides the infrastructure from the convenience of a laptop or PC, or any other USB-port. This device complements the portfolio of FieldConnex® tools for the fieldbus practitioner on the go. It complements the mobile Diagnostic Module DM-AM for check-out, monitoring, and troubleshooting of single fieldbus segments.

## Connection



## Technical Data

### General specifications

Design / Mounting	Handheld/mobile
Installation in hazardous area	Zone 2

### Supply

Connection	USB-Male Connector Typ A (Standard)
Rated voltage	$U_r$ typ. 5 V
Rated current	$I_r$ max. 350 mA
Power dissipation	typ. 250 mW

### Fieldbus connection

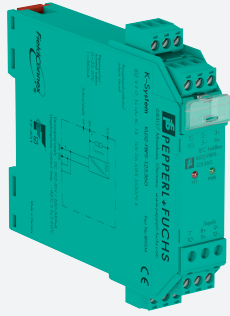


## Technical Data

Connection		D-Sub socket 9-pin ; pin 6: Bus + , pin 7: Bus -
Rated voltage	$U_N$	min. 11 V
Rated current	$I_N$	45 mA
Short-circuit current		typ. 60 mA
Terminating resistor		50 $\Omega$
<b>Indicators/operating means</b>		
LED ERR		red flashing: short-circuit or undervoltage at output
LED PWR		green: Interface Power ON/OK
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Degree of protection		IEC/EN 60529
Fieldbus standard		IEC 61158-2
<b>Ambient conditions</b>		
Ambient temperature		-10 ... 50 °C (14 ... 122 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Pollution degree		max. 2, according to IEC 60664
<b>Mechanical specifications</b>		
Connection type		USB-Male Connector Typ A (Standard)
Housing		56 x 32 x 17 mm
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 105 g
<b>Data for application in connection with hazardous areas</b>		
Outputs		
Voltage	$U_o$	17.5 V
Certificate		PF 08 CERT 1303 X
Marking		Ⓔ II 3G Ex nA II T4
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>General information</b>		

Assembly





# Fieldbus Power Supply

## FieldConnex® Fieldbus

### KLD2-FBPS-1.12.220

- Output: 12 ... 13 V/220 mA
- For battery or solar-powered applications
- For demanding environmental conditions
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1
- Fixed, high-availability terminator
- Low heat dissipation

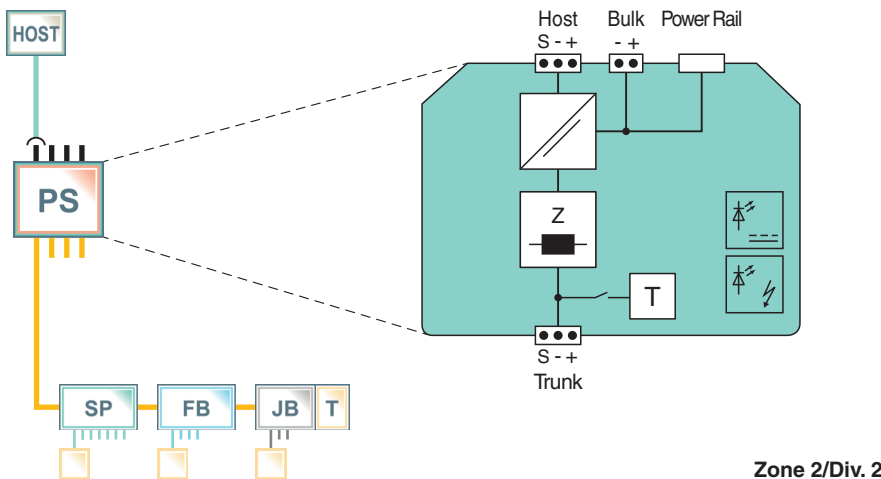
Fieldbus power supply with low voltage for compact plants also in island mode



## Function

This fieldbus power supply is an all-in-one module for single fieldbus segments. It adapts current and voltage and provides the impedance filter required. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. This supply is specifically designed for very demanding environmental conditions. Low input ratings and very low heat dissipation are suitable for battery or solar-powered application. Availability and a long service life are achieved through a passive impedance filter and a design optimized for low heat dissipation. Modules can be mounted with no spacing required in any direction for an optimized and space-saving cabinet layout. The mobile Advanced Diagnostic Module connects directly to test plug sockets located on the plug-in terminal. In conjunction with the modular Segment Protector it is a perfectly expandable solution.

## Connection



## Technical Data

### General specifications

Installation in hazardous area Zone 2 / Div. 2

### Supply

Connection	Power Rail or terminals 8+, 11+; 9-, 12-	
Rated voltage	$U_r$	10 ... 30 V DC
Rated current	$I_r$	350 ... 120 mA
Power dissipation		typ. $\leq 0.5$ W

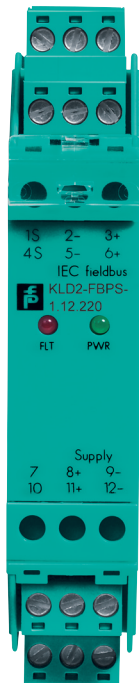
### Fieldbus connection

Number of segments	1
Connection	terminals 3+, 6+; 2-, 5-; 1S, 4S (S=screen connection)

## Technical Data

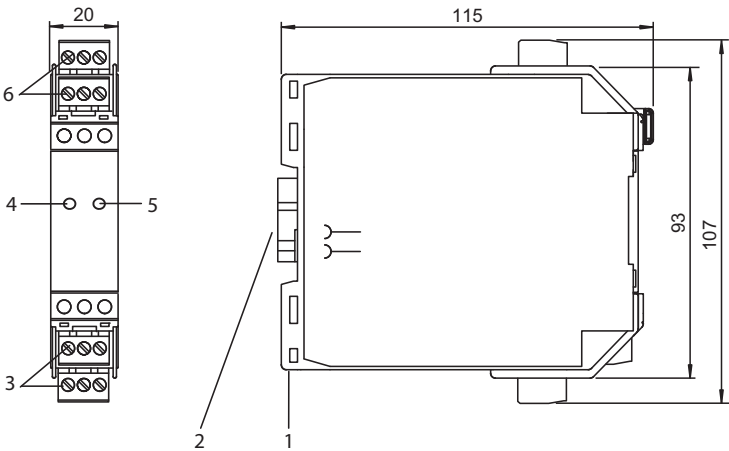
Rated voltage	U <sub>N</sub>	12 ... 13 V
Rated current	I <sub>N</sub>	220 mA
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V AC
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2006
Degree of protection		IEC/EN 60529
Fieldbus standard		IEC 61158-2, ISA S 50.02 part 2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		screw terminal , pluggable
Core cross section		up to 2.5 mm <sup>2</sup>
Housing		20 mm x 115 mm x 107 mm
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 210 g
Mounting		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 06 ATEX 553079 X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-7:2015
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
<b>Certificates and approvals</b>		
Marine approval		DNV A-14038
<b>General information</b>		

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Extendable lugs
  - 2 Protective cap, remove for power supply via Power Rail
  - 3 Removeable terminals
  - 4 LED red: Fault signal
  - 5 LED green: Power supply
  - 6 Test plug socket; removeable terminals

Operation

Indication

LED indicators:	Conditions
green ON red OFF	Device ready for operation
green OFF red OFF	Device not ready for operation
green OFF red 2 Hz flashing	OVERLOAD, load current > 250 mA typ.



## Fieldbus Power Supply FieldConnex® Fieldbus HD2-FBPS-1.500

- Output: 28 ... 30 V/500 mA
- High-power trunk for high device count and long cable lengths
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

Fieldbus power supply, module for fieldbus power hub



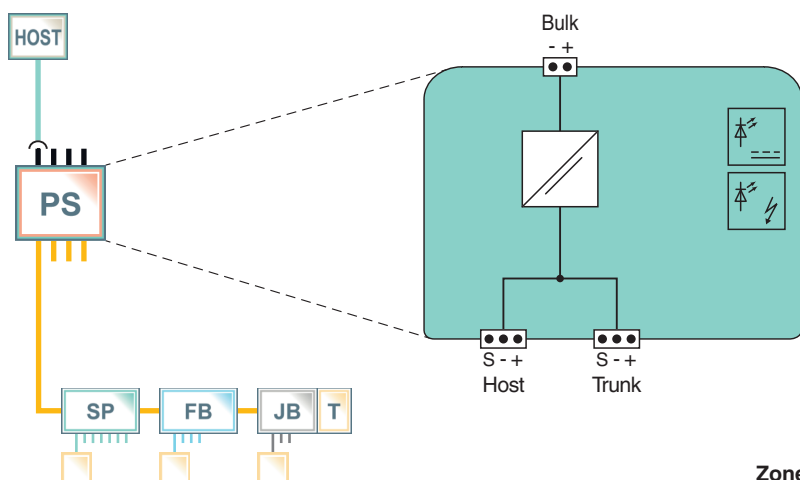
### Function

This Power Supply Module is a system component for the FieldConnex® Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices.

This power supply features the highest output power and allows for maximum cable lengths and highest number of devices in hazardous areas with the High-Power Trunk concept.

Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

### Connection



Zone 2/Div. 2

### Technical Data

#### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

#### Supply

Rated voltage	$U_r$	19.2 ... 35 V DC
Rated current	$I_r$	910 ... 490 mA
Power dissipation		typ. 1.8 W

#### Fieldbus connection

Rated voltage	$U_N$	28 ... 30 V
Rated current	$I_N$	500 ... 10 mA

## Technical Data

Short-circuit current		550 mA
<b>Indicators/operating means</b>		
LED ERR		red flashing: short-circuit or undervoltage at output
LED PWR		green if $U_{out} > 28 \text{ V}$
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V AC
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		
		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Outputs		
Voltage	$U_o$	32 V
Certificate		TÜV 04 ATEX 2500 X
Marking		Ⓔ II 3 G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0038X
IECEx marking		Ex nA IIC T4 Gc
<b>Certificates and approvals</b>		
Marine approval		pending
<b>General information</b>		



Assembly





# Fieldbus Power Supply

## FieldConnex® Fieldbus

### HD2-FBPS-1.23.500

- Output: 21 ... 23 V/500 mA
- Voltage limitation for Entity ic and Ex nL
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

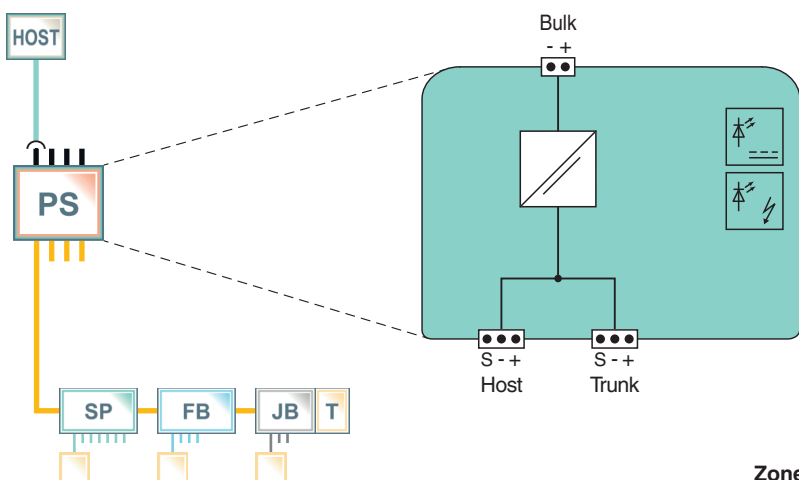
Fieldbus power supply, module for fieldbus power hub



## Function

This Power Supply Module is a system component for the FieldConnex® Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices. The combination of this power supply, selected motherboards and R2 Segment Protector provide outputs certified for explosion protection Entity Ex ic and Ex nL. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

### Supply

Rated voltage	$U_r$	19.2 ... 35 V DC
Rated current	$I_r$	700 ... 390 mA
Power dissipation		typ. 1.5 W

### Fieldbus connection

Rated voltage	$U_N$	21 ... 23 V
Rated current	$I_N$	500 ... 10 mA

## Technical Data

Short-circuit current		550 mA
<b>Indicators/operating means</b>		
LED ERR		red flashing: short-circuit or undervoltage at output
LED PWR		green if $U_{out} > 21 \text{ V}$
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V AC
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		
		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Outputs		
Voltage	$U_o$	24 V
Certificate		TÜV 04 ATEX 2500 X
Marking		Ⓔ II 3 G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0038X
IECEx marking		Ex nA IIC T4 Gc
<b>Certificates and approvals</b>		
Marine approval		pending
<b>General information</b>		

Assembly





# Fieldbus Power Supply

## FieldConnex® Fieldbus

### HD2-FBPS-1.17.500

- Output: 15 ... 17 V/500 mA
- Voltage limitation for FISCO ic, Entity ic, also FNICO and Ex nL
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- High efficiency, low heat dissipation for high packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

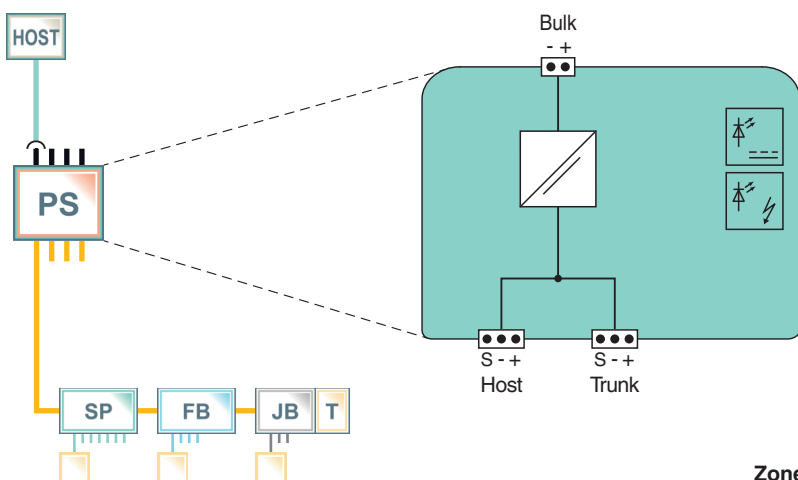
Fieldbus power supply, module for fieldbus power hub



## Function

This Power Supply Module is a system component for the FieldConnex® Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices. The combination of this power supply, selected motherboards and R2 Segment Protectors provide outputs certified for explosion protection Ex ic according to FISCO or Entity. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

## Connection



Zone 2/Div. 2

## Technical Data

### General specifications

Design / Mounting	Motherboard based	
Installation in hazardous area	Zone 2 / Div. 2	

### Supply

Rated voltage	$U_r$	19.2 ... 35 V DC
Rated current	$I_r$	520 ... 290 mA
Power dissipation	typ. 1.3 W	

### Fieldbus connection

Rated voltage	$U_N$	15 ... 17 V
Rated current	$I_N$	500 ... 10 mA

## Technical Data

Short-circuit current		550 mA
<b>Indicators/operating means</b>		
LED ERR		red flashing: short-circuit or undervoltage at output
LED PWR		green if $U_{out} > 15\text{ V}$
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V AC
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		
		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		
Height		106 mm
Width		18 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Outputs		
Voltage	$U_o$	17.5 V
Certificate		TÜV 04 ATEX 2500 X
Marking		Ⓔ II 3 G Ex nA IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0038X
IECEx marking		Ex nA IIC T4 Gc
<b>Certificates and approvals</b>		
Marine approval		pending
<b>General information</b>		

Assembly





# Fieldbus Power Supply

## FieldConnex® Fieldbus

### HCD2-FBPS-1.500

- Output: 28 ... 30 V/500 mA
- High-power trunk for high device count and long cable lengths
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Highest efficiency, lowest heat dissipation for highest packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

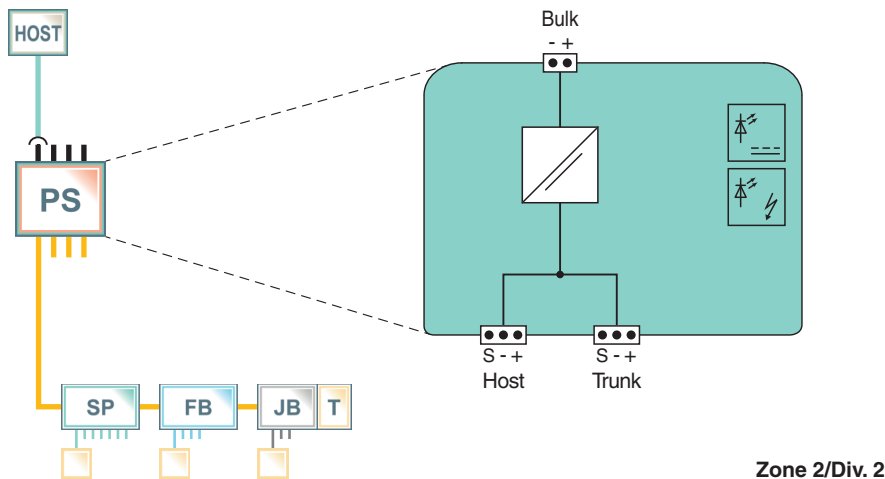
Fieldbus power supply, module for fieldbus power hub



## Function

This Power Supply Module is a system component for the FieldConnex® Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices. This power supply features the highest output power and allows for maximum cable lengths and highest number of devices in hazardous areas with the High-Power Trunk concept. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based	
Installation in hazardous area	Zone 2 / Div. 2	

### Supply

Rated voltage	$U_r$	19.2 ... 35 V DC
Power dissipation	typ. 1.6 W	

### Fieldbus connection

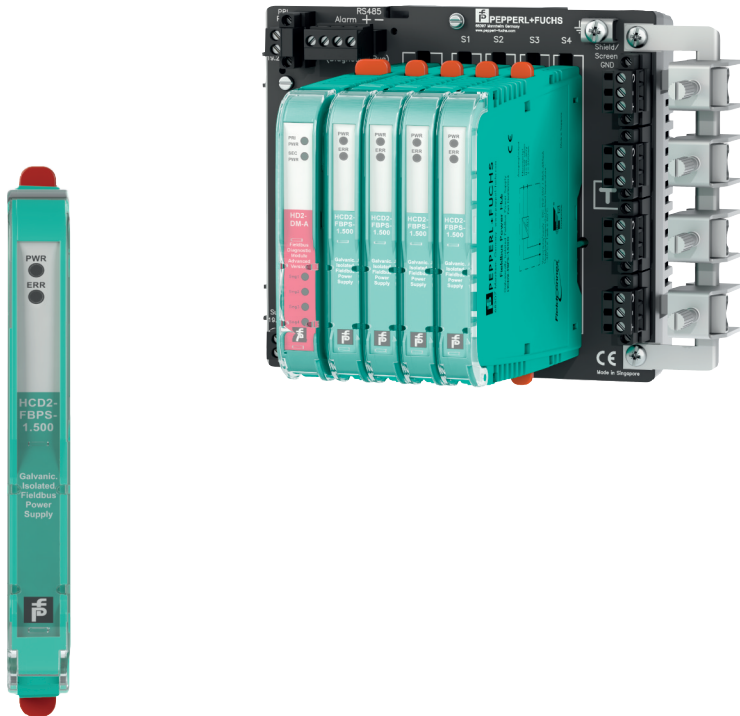
Rated voltage	$U_N$	28 ... 29.5 V
Rated current	$I_N$	500 ... 10 mA
Short-circuit current	550 mA	



## Technical Data

Terminating resistor		motherboard specific
<b>Indicators/operating means</b>		
LED ERR		red flashing: short-circuit or undervoltage at output
LED PWR		green if $U_{out} > 28 \text{ V}$
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V AC
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		
		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		
Height		106 mm
Width		12.5 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Outputs		
Voltage	$U_o$	30 V
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN IEC 60079-7:2015+A1:2018 , EN 60079-11:2012
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0037X
IECEx marking		Ex ec IIC T4 Gc
<b>General information</b>		

Assembly





# Fieldbus Power Supply

## FieldConnex® Fieldbus

### HCD2-FBPS-1.23.500

- Output: 21 ... 23 V/500 mA
- Voltage limitation for Entity ic and Ex nL
- With galvanic isolation
- Installation in Zone 2/Class I, Div. 2
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Highest efficiency, lowest heat dissipation for highest packing density
- Hot swappable in redundant configuration
- Module exchange without tools during operation

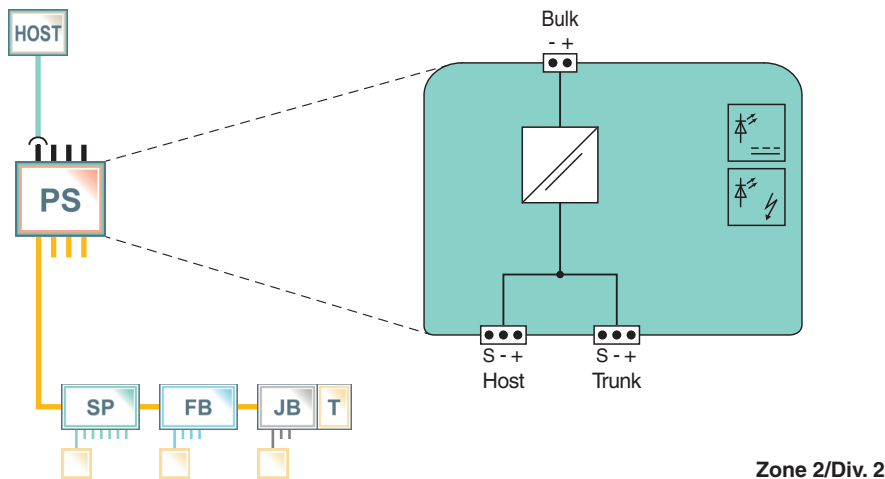
Fieldbus power supply, module for fieldbus power hub



## Function

This Power Supply Module is a system component for the FieldConnex® Power Hub and can be plugged into the motherboard. It adapts current and voltage for the supply of fieldbus segments and field devices. The combination of this power supply, selected motherboards and R2 Segment Protector provide outputs certified for explosion protection Entity Ex ic and Ex nL. Reliability of communication is enhanced through galvanic isolation between segment and bulk power supply. Two LEDs indicate power and status. In redundant configuration two modules are connected in parallel via simple circuits ensuring seamless operation.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based	
Installation in hazardous area	Zone 2 / Div. 2	

### Supply

Rated voltage	$U_r$	19.2 ... 35 V DC
Power dissipation	typ. 1.2 W	

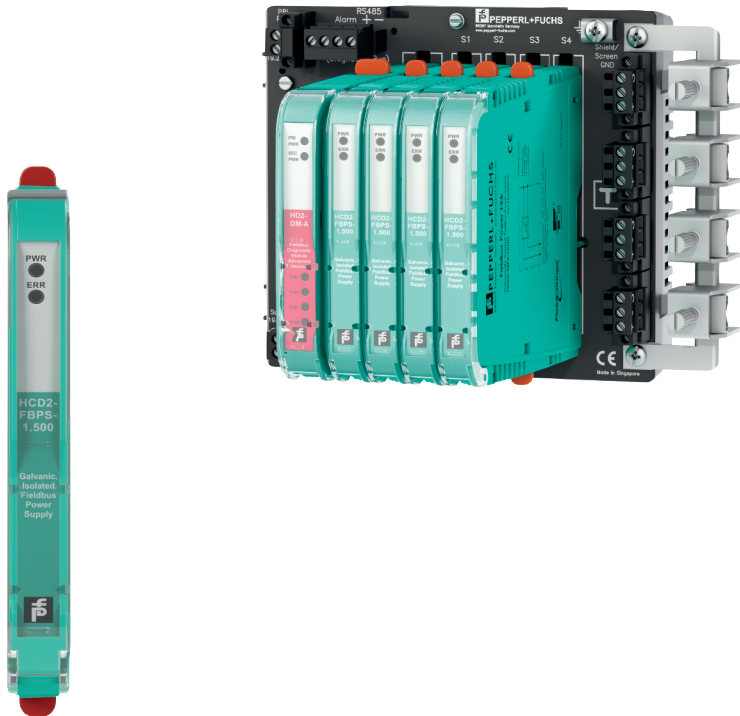
### Fieldbus connection

Rated voltage	$U_N$	21 ... 23 V
Rated current	$I_N$	500 ... 10 mA
Short-circuit current	550 mA	

## Technical Data

Terminating resistor		motherboard specific
<b>Indicators/operating means</b>		
LED ERR		red flashing: short-circuit or undervoltage at output
LED PWR		green if $U_{out} > 21 \text{ V}$
<b>Galvanic isolation</b>		
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V AC
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		
		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Core cross section		motherboard specific
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 150 g
Dimensions		
Height		106 mm
Width		12.5 mm
Depth		128 mm
Mounting		motherboard mounting
<b>Data for application in connection with hazardous areas</b>		
Outputs		
Voltage	$U_o$	24 V
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN IEC 60079-7:2015+A1:2018 , EN 60079-11:2012
<b>International approvals</b>		
FM approval		
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0037X
IECEx marking		Ex ec IIC T4 Gc
<b>General information</b>		

Assembly





# Power Hub Motherboard

## FieldConnex® Fieldbus

### MBHC-FB-8R.YO\*

- 8 segments, redundant, individual modules per segment
- Customized for Yokogawa, ALF 111
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable
- Left/right version for optimized cabinet layout

Power hub motherboard for Yokogawa ALF111



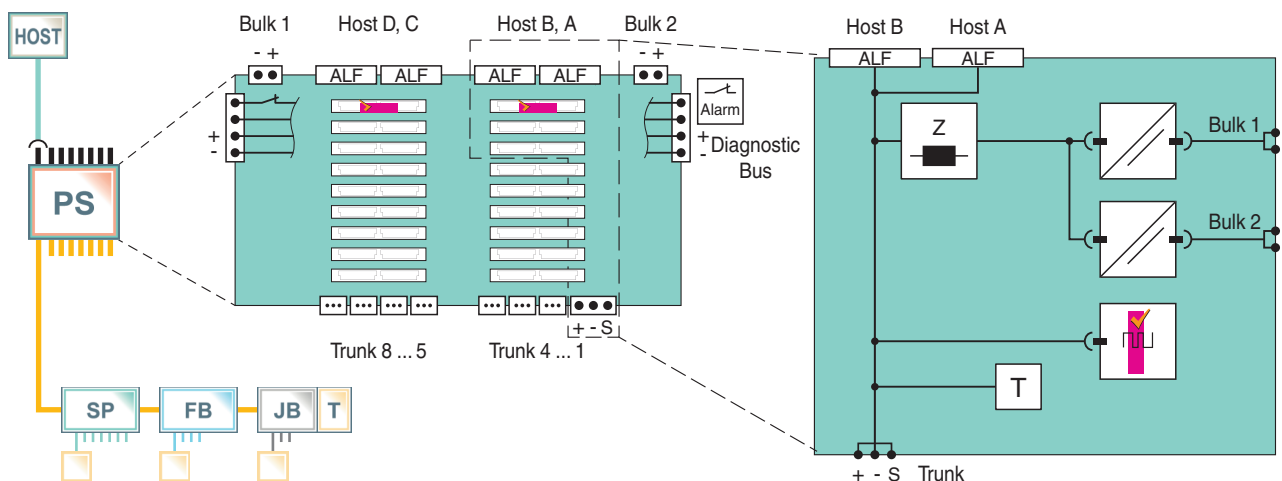
## Function

The FieldConnex® compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the high-power trunk for longest cable run and highest device count. The Power Hub supports optional advanced diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface with connectors for direct DCS hook-up via the AKB 336 system cable. The version with type code extension ".R" has host connections on the right-hand side for symmetrical cabinet layout. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. Wire connections can be selected as spring terminals or screw terminals.

This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plugs with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

### Supply

Connection	redundant
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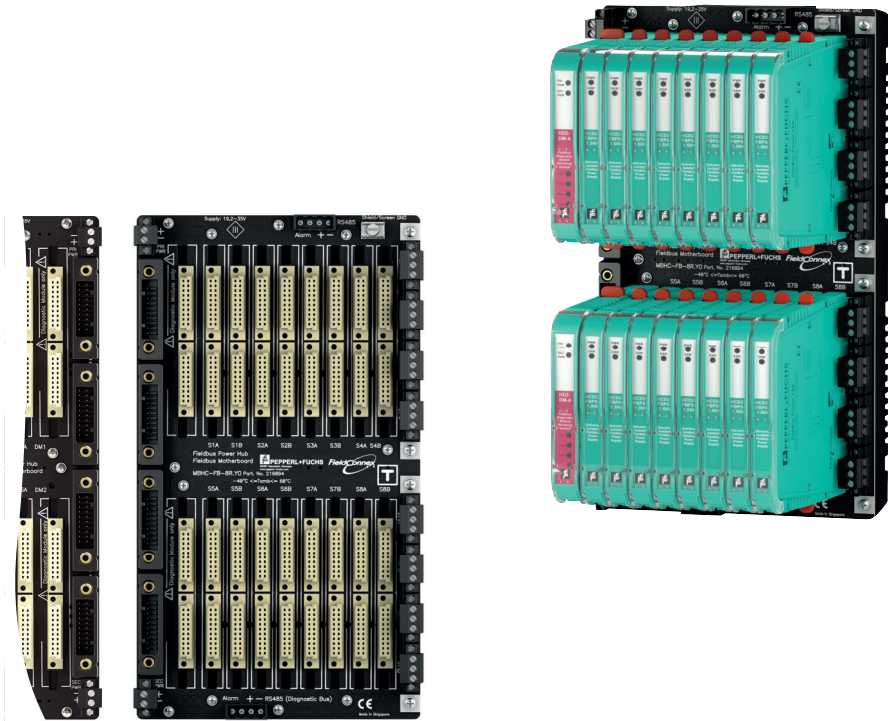
## Technical Data

Rated voltage	U <sub>r</sub>	19.2 ... 35 V SELV/PELV
Rated current	I <sub>r</sub>	16 A
Power dissipation		typ. 0.4 W per segment
<b>Fieldbus connection</b>		
Number of segments		8 Redundant Power Supply
Host-side		redundant Yokogawa ALF111 with AKB336 interface cables
Terminating resistor		100 Ω integrated
<b>Indicators/operating means</b>		
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		screw terminal , pluggable spring terminal , pluggable
Core cross section		2.5 mm <sup>2</sup>
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 1350 g
Dimensions		
Height		150 mm
Width		268 mm
Depth		69 mm
Mounting		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-7:2015
<b>International approvals</b>		
FM approval		FM19US0015X FM19CA0011X
Approved for		Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0037X
IECEx marking		Ex ec IIC T4 Gc
<b>General information</b>		

Technical Data

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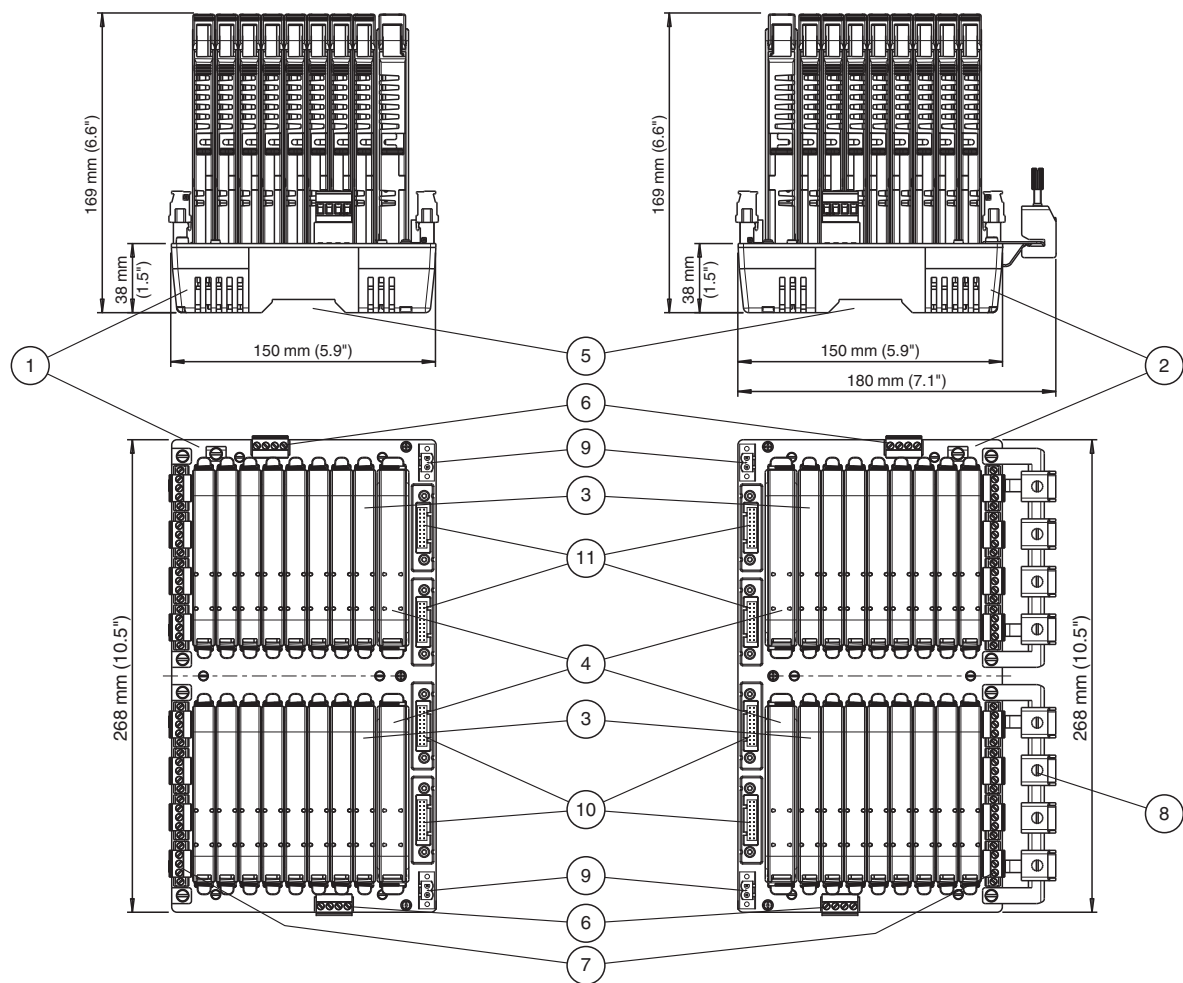
Assembly





Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-8R.YO.R\*
  - 2 Motherboard MBHC-FB-8R.YO\*
  - 3 Power supply modules
  - 4 Diagnostic modules
  - 5 Mounting slot for DIN mounting rail
  - 6 Connections for alarm volt-free contact and diagnostic bus
  - 7 Connections for fieldbus trunk
  - 8 Screening/earthing kit for trunk cables shield, optional accessory
  - 9 Connections for bulk power supply
  - 10 Redundant connection to Yokogawa ALF111 segments 5 to 8
  - 11 Redundant connection to Yokogawa ALF111 segments 1 to 4

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection			Required Installation Components

Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended

For more details on the power supply modules see respective data sheets.

## Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

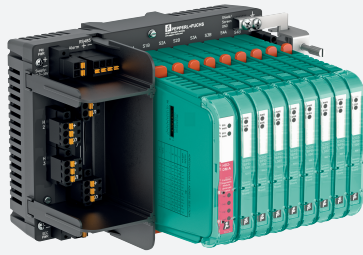
## Product Versions

Type code	Description
MBHC-FB-8R.YO	Redundant motherboard with pluggable screw terminals and connectors for direct DCS hook-up
MBHC-FB-8R.YO.1	Redundant motherboard with pluggable spring terminals and connectors for direct DCS hook-up
MBHC-FB-8R.YO.R	Redundant motherboard with pluggable screw terminals and connectors for direct DCS hook-up on the right-hand side

# Power Hub Motherboard

## FieldConnex® Fieldbus

### MBHC-FB-4R\*



- 4 segments, redundant, individual modules per segment
- Supports all PLC and PCS hosts
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable

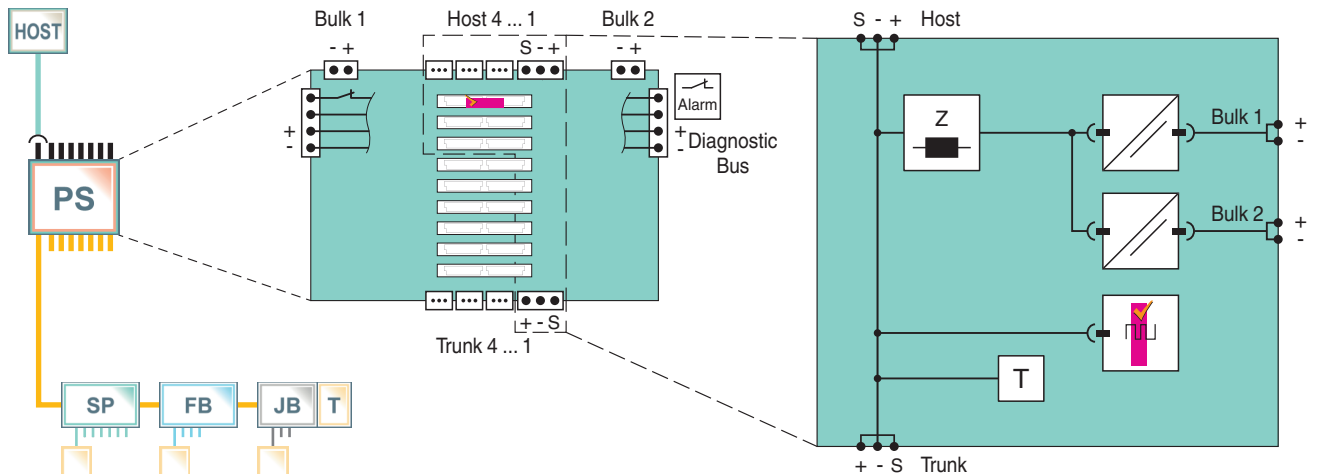
Power hub motherboard with common host interface



## Function

The FieldConnex® Compact Power Hub is a modular fieldbus power supply for four segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard for redundant power supply modules is the wiring interface with connectors for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. Wire connections can be selected as spring terminals or screw terminals. This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



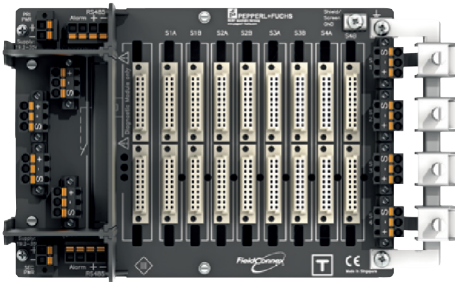
## Technical Data

General specifications		
Design / Mounting		Motherboard based
Installation in hazardous area		Zone 2 / Div. 2
Supply		
Connection		redundant
Rated voltage	U <sub>r</sub>	19.2 ... 35 V SELV/PELV
Rated current	I <sub>r</sub>	12 A

Technical Data

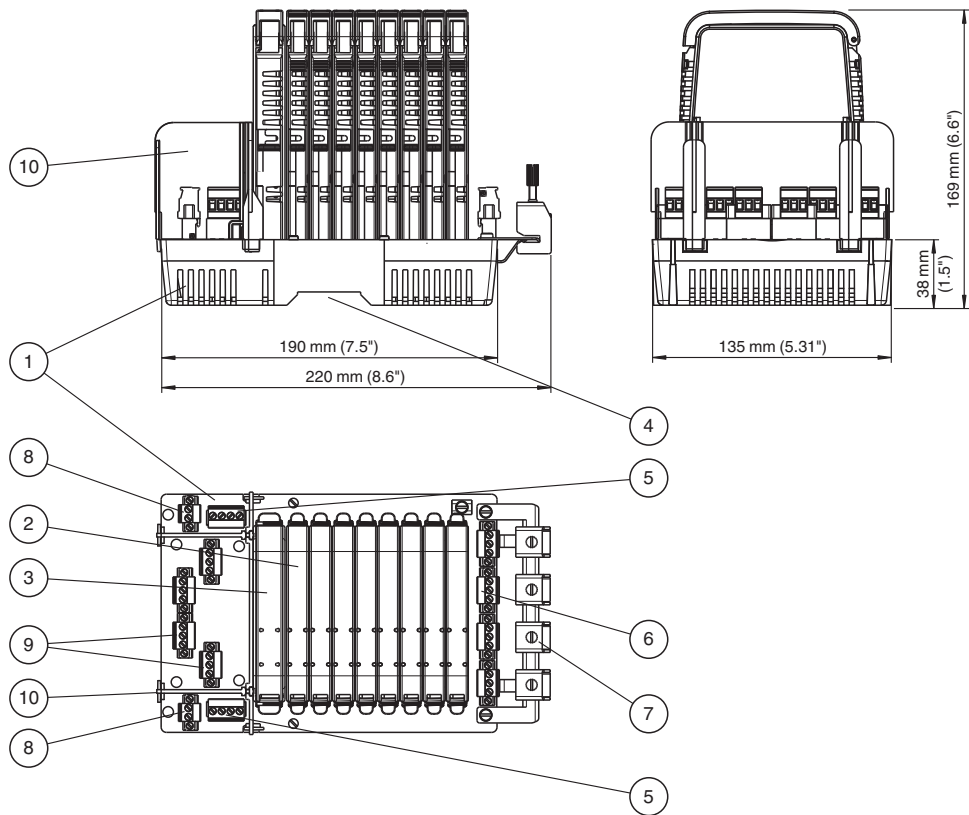
Power dissipation	typ. 0.4 W per segment
<b>Fieldbus connection</b>	
Number of segments	4 Redundant Power Supply
Host-side	general purpose host
Terminating resistor	100 Ω integrated
<b>Indicators/operating means</b>	
Fault signal	VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>	
Fieldbus segment/Fieldbus segment	functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply	functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
<b>Standard conformity</b>	
Electromagnetic compatibility	NE 21:2011
Degree of protection	IEC 60529
Fieldbus standard	IEC 61158-2
Shock resistance	EN 60068-2-27
Vibration resistance	EN 60068-2-6
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	< 95 % non-condensing
Shock resistance	10 g , 11 ms
Vibration resistance	1 g , 10 ... 150 Hz
Pollution degree	max. 2, according to IEC 60664
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>	
Connection type	screw terminal , pluggable spring terminal , pluggable
Core cross section	2.5 mm <sup>2</sup>
Housing material	Polycarbonate
Degree of protection	IP20
Mass	approx. 580 g
Mounting	DIN rail mounting
<b>Data for application in connection with hazardous areas</b>	
Certificate	TÜV 10 ATEX 555761X
Marking	Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>	
FM approval	CoC 3024816, CoC 3024816C
Approved for	Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
<b>IECEx approval</b>	
IECEx certificate	IECEx TUN 13.0037X
IECEx marking	Ex ec IIC T4 Gc
<b>General information</b>	

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-4R\*
  - 2 Power supply modules
  - 3 Diagnostic module
  - 4 Mounting slot for DIN mounting rail
  - 5 Connections for alarm voltage-free contact and diagnostic bus
  - 6 Connections for fieldbus trunk
  - 7 Screening/earthing kit for trunk shields, optional accessory
  - 8 Connections for bulk power supply
  - 9 Connections for host
  - 10 Separation wall

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection	Required Installation Components		
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device

Safe Area	No specific type of protection		■	Segment Protector recommended
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For more details on the power supply modules see respective data sheets.

## Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

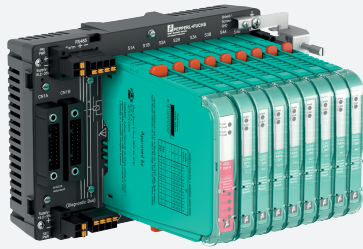
## Product Versions

Type code	Description
MBHC-FB-4R	Motherboard for redundant power supplies with pluggable screw terminals applicable for all systems
MBHC-FB-4R.1	Motherboard for redundant power supplies with pluggable spring terminals applicable for all systems

# Power Hub Motherboard

## FieldConnex® Fieldbus

### MBHC-FB-4R.YO\*



- 4 segments, redundant, individual modules per segment
- Customized for Yokogawa, ALF 111
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable
- Left/right version for optimized cabinet layout

Power hub motherboard for Yokogawa ALF111



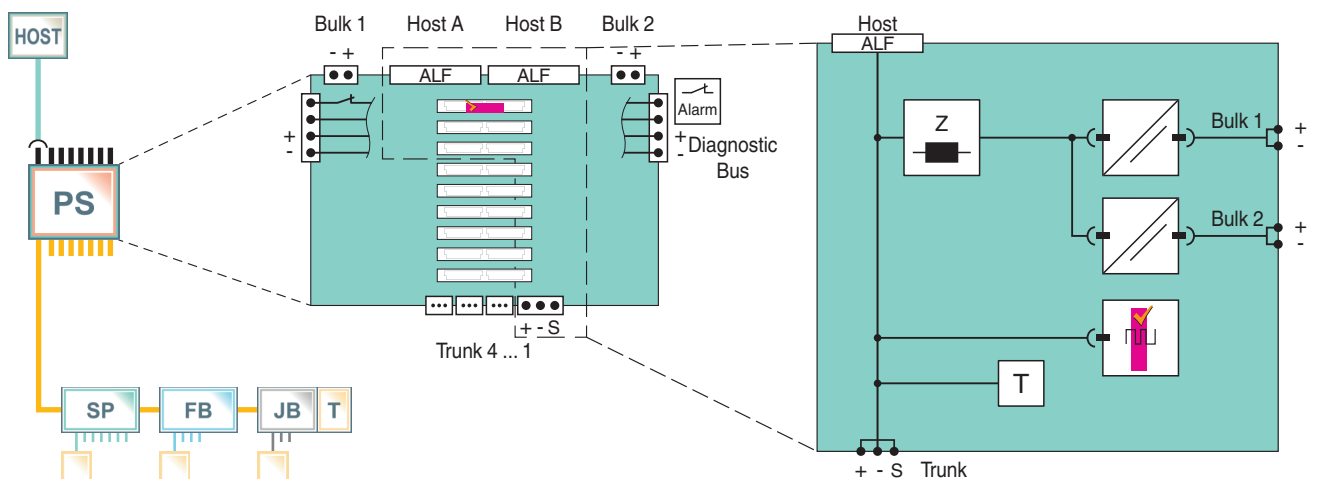
## Function

The FieldConnex® Compact Power Hub is a modular fieldbus power supply for four segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface with redundant connectors for direct DCS hook-up via the AKB system cable. The version with type code extension ".R" has host connections on the right side for symmetrical cabinet layout. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. Wire connections can be selected as spring terminals or screw terminals.

This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plugs with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



## Technical Data

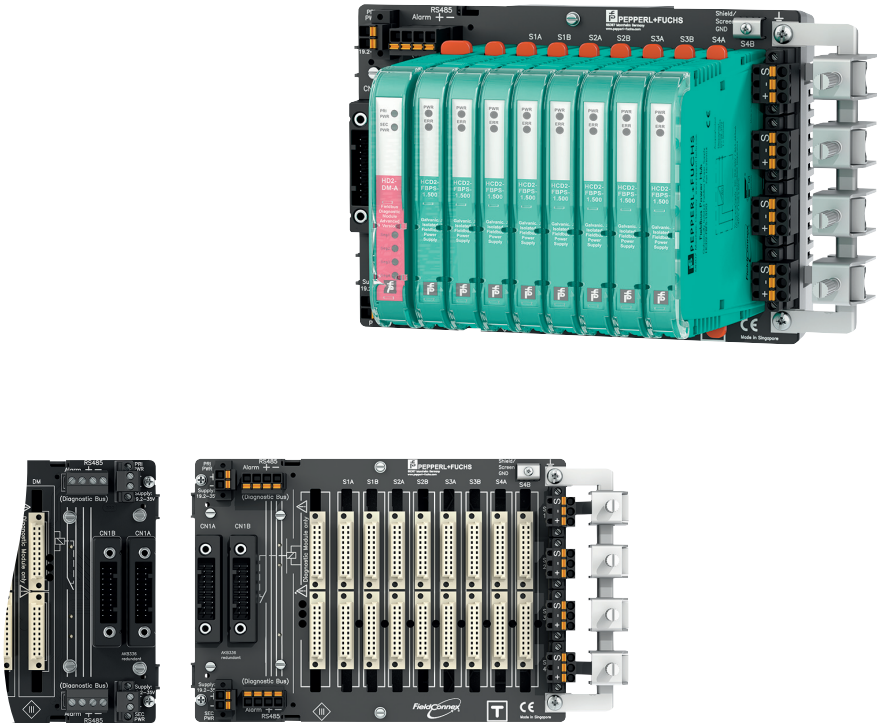
General specifications	
Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2
Supply	
Connection	redundant



## Technical Data

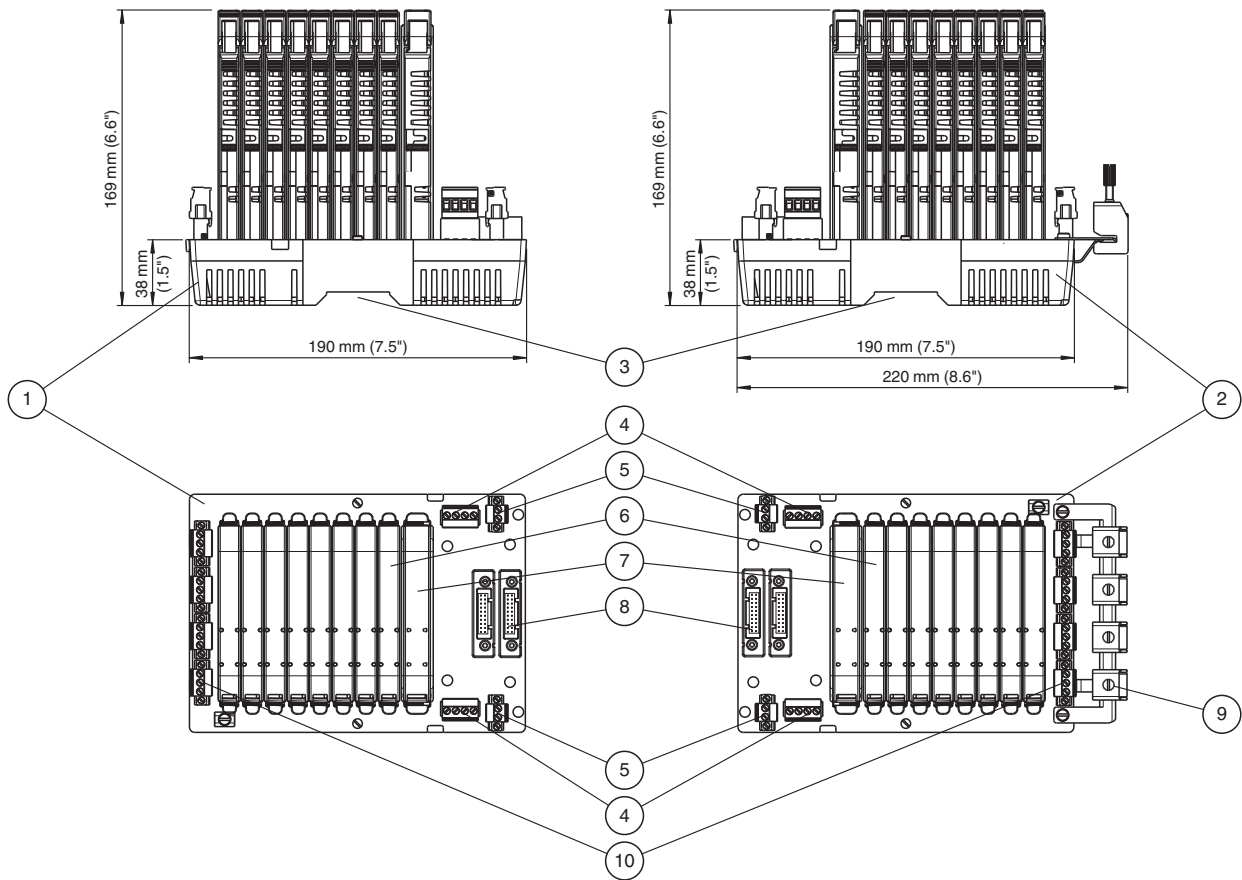
Rated voltage	$U_r$	19.2 ... 35 V SELV/PELV
Rated current	$I_r$	12 A
Power dissipation		typ. 0.4 W per segment
<b>Fieldbus connection</b>		
Number of segments		4 Redundant Power Supply
Host-side		Yokogawa ALF111 for AKB336 interface cable
Terminating resistor		100 $\Omega$ integrated
<b>Indicators/operating means</b>		
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2012
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g , 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		screw terminal , pluggable spring terminal , pluggable
Core cross section		screw terminals: 0.25 ... 2.5 mm <sup>2</sup> spring terminals: 0.25 ... 1.5 mm <sup>2</sup>
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 610 g
Mounting		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		CoC 3024816, CoC 3024816C
FM certificate		FM 19 US 0015 X and FM 19 CA 0011 X
FM marking		AEx/Ex ec IIC T4
Approved for		Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4 , AEx/Ex ec IIC T4
IECEx approval		
IECEx certificate		IECEx TUN 13.0037X
IECEx marking		Ex ec IIC T4 Gc
<b>General information</b>		

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-4R.YO.R\*
  - 2 Motherboard MBHC-FB-4R.YO\*
  - 3 Mounting slot for DIN mounting rail
  - 4 Connections for alarm voltage-free contact and diagnostic bus
  - 5 Connections for bulk power supply
  - 6 Power supply modules
  - 7 Diagnostic module
  - 8 Connectors for redundant AKB system cables to Yokogawa ALF111
  - 9 Screening/earthing kit for trunk shields, optional accessory
  - 10 Connections for fieldbus trunk

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection			Required Installation Components
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2

Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended

For more details on the power supply modules see respective data sheets.

## Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

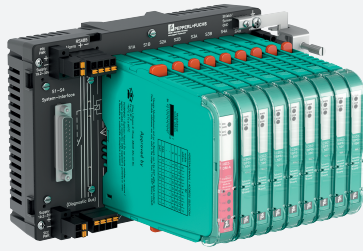
## Product Versions

Type code	Description
MBHC-FB-4R.YO	Motherboard for redundant power supplies with pluggable screw terminals applicable for Yokogawa and connector for AKB system cable positioned on the left hand side
MBHC-FB-4R.YO.1	Motherboard for redundant power supplies with pluggable spring terminals applicable for Yokogawa and connector for AKB system cable positioned on the left hand side
MBHC-FB-4R.YO.R	Motherboard for redundant power supplies with pluggable screw terminals applicable for Yokogawa and connector for AKB system cable positioned on the right hand side

# Power Hub Motherboard

## FieldConnex® Fieldbus

### MBHC-FB-4R.HSC\*



- 4 segments, redundant, individual modules per segment
- Customizable cable connections to any PLC and PCS hosts
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus and PROFIBUS PA
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable

Power hub motherboard with host system connectors



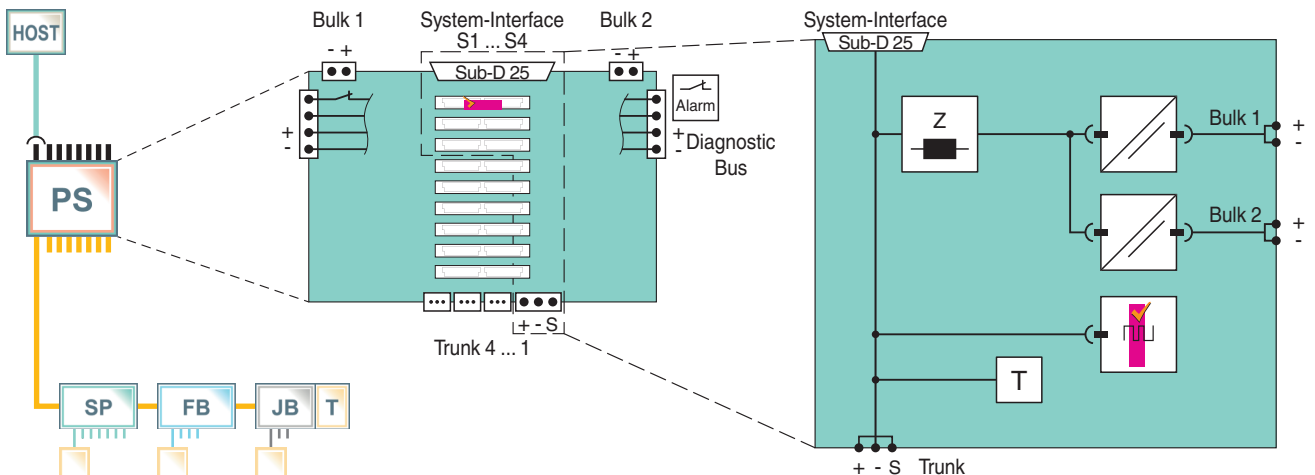
## Function

The FieldConnex® Compact Power Hub is a modular fieldbus power supply for four segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface and is equipped with a DB 25 connector. Manufactured cables with DCS system plugs reduce the number connection points and effort for check-out. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. Wire connections can be selected as spring terminals or screw terminals.

This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

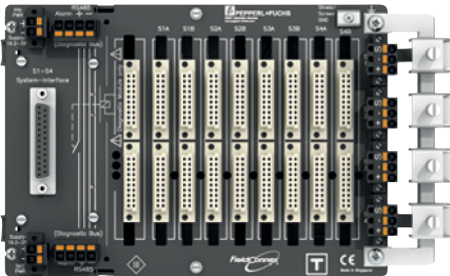
### Supply

Connection	redundant
Rated voltage	$U_r$ 19.2 ... 35 V SELV/PELV

## Technical Data

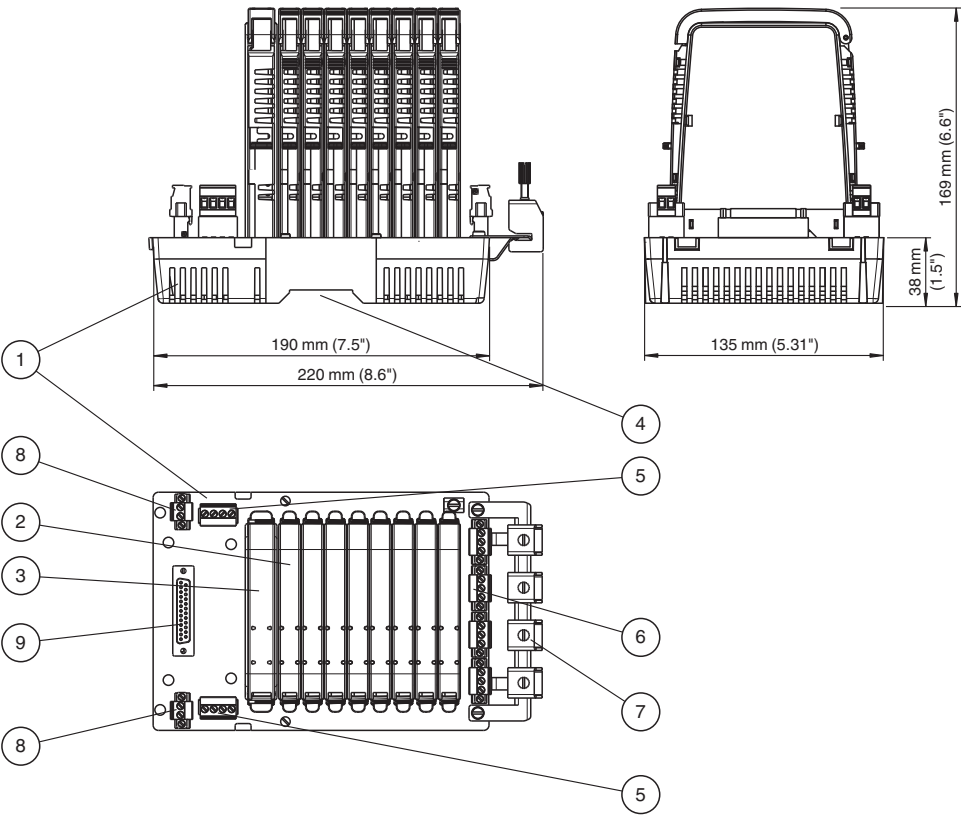
Rated current	$I_r$	12 A
Power dissipation		typ. 0.4 W per segment
<b>Fieldbus connection</b>		
Number of segments		4 Redundant Power Supply
Host-side		system specific cable connection
Terminating resistor		100 $\Omega$ integrated
<b>Indicators/operating means</b>		
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		10 g , 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		screw terminal , pluggable spring terminal , pluggable
Core cross section		2.5 mm <sup>2</sup>
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 580 g
Mounting		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		CoC 3024816, CoC 3024816C
Approved for		Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
IECEx approval		IECEx TUN 13.0037X
Approved for		Ex ec IIC T4 Gc
<b>Certificates and approvals</b>		
Marine approval		DNV A-14038
<b>General information</b>		

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-4R.HSC\*
  - 2 Power supply modules
  - 3 Diagnostic module
  - 4 Mounting slot for DIN mounting rail
  - 5 Connections for alarm voltage-free contact and diagnostic bus
  - 6 Connections for fieldbus trunk
  - 7 Screening/earthing kit for trunk shields, optional accessory
  - 8 Connections for bulk power supply
  - 9 DB 25 connector for host via custom cable

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection	Required Installation Components		
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended



For more details on the power supply modules see respective data sheets.

Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

Product Versions

Type code	Description
MBHC-FB-4R.HSC	Motherboard for redundant power supplies with pluggable screw terminals and host system connector (Pepperl+Fuchs custom cable with 25-pin sub-D connector to a DCS typical system connection)
MBHC-FB-4R.HSC.1	Motherboard for redundant power supplies with pluggable spring terminals and host system connector (Pepperl+Fuchs custom cable with 25-pin sub-D connector to a DCS typical system connection)

Interface

Connection to FOUNDATION Fieldbus Hosts

Invensys

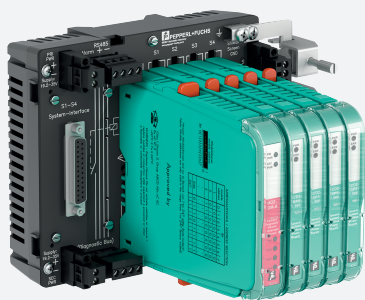
The motherboard can be connected to Foxboro I/A series with FBM228 host modules using a dedicated system cable. The number of cables required is determined by the number of system connectors on the Power Hub motherboard.

Type code	Description
ACC-MB-HGC.FOX.010	FieldConnex Power Hub system cable for Foxboro FBM228, length 1 m
ACC-MB-HGC.FOX.020	FieldConnex Power Hub system cable for Foxboro FBM228, length 2 m
ACC-MB-HGC.FOX.030	FieldConnex Power Hub system cable for Foxboro FBM228, length 3 m
ACC-MB-HGC.FOX.050	FieldConnex Power Hub system cable for Foxboro FBM228, length 5 m
ACC-MB-HGC.FOX.100	FieldConnex Power Hub system cable for Foxboro FBM228, length 10 m
ACC-MB-HGC.FOX.150	FieldConnex Power Hub system cable for Foxboro FBM228, length 15 m
ACC-MB-HGC.FOX.200	FieldConnex Power Hub system cable for Foxboro FBM228, length 20 m

Honeywell

The motherboard can be connected to Honeywell series C with FIM4/FIM8 host modules using a dedicated system cable. The number of cables required is determined by the number of system connectors on the Power Hub motherboard.

Type code	Description
ACC-MB-HGC.HON.010	FieldConnex Power Hub system cable for Honeywell C300, length 1 m
ACC-MB-HGC.HON.020	FieldConnex Power Hub system cable for Honeywell C300, length 2 m
ACC-MB-HGC.HON.030	FieldConnex Power Hub system cable for Honeywell C300, length 3 m
ACC-MB-HGC.HON.050	FieldConnex Power Hub system cable for Honeywell C300, length 5 m
ACC-MB-HGC.HON.100	FieldConnex Power Hub system cable for Honeywell C300, length 10 m
ACC-MB-HGC.HON.150	FieldConnex Power Hub system cable for Honeywell C300, length 15 m
ACC-MB-HGC.HON.200	FieldConnex Power Hub system cable for Honeywell C300, length 20 m



## Power Hub Motherboard

### FieldConnex® Fieldbus

### MBHC-FB-4.HSC\*

- 4 segments, individual modules per segment
- Customizable cable connections to any PLC and PCS hosts
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus and PROFIBUS PA
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable

Power hub motherboard with host system connectors



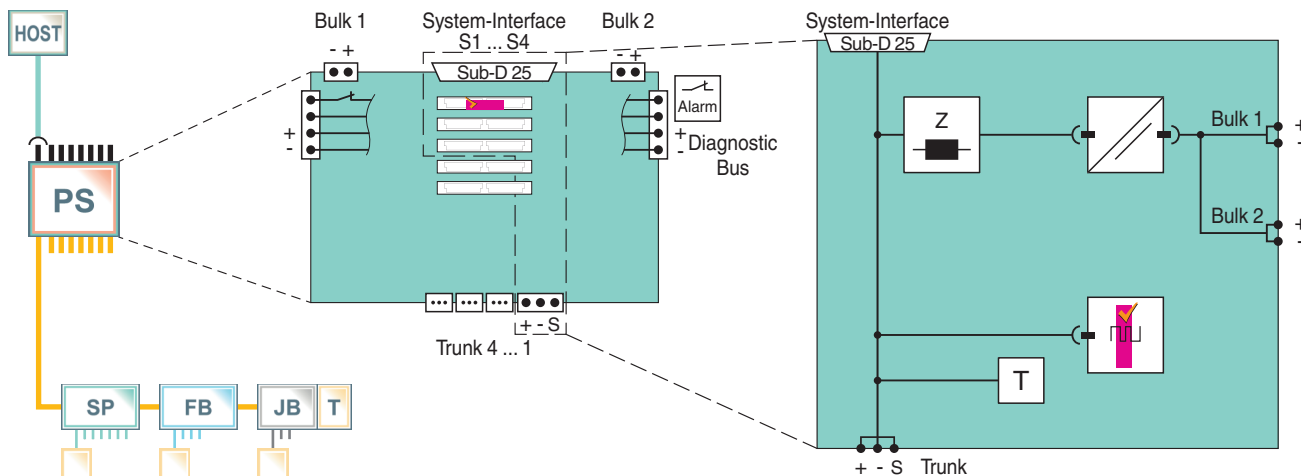
## Function

The FieldConnex® Compact Power Hub is a modular fieldbus power supply for four segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface and is equipped with a DB 25 connector. Manufactured cables with DCS system plugs reduce the number connection points and effort for check-out. Sockets for all modules enable simple installation and replacement without tools. Wire connections can be selected as spring terminals or screw terminals.

This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



## Technical Data

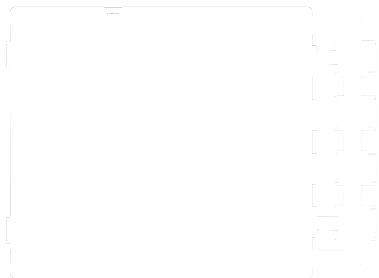
### General specifications

Design / Mounting		Motherboard based
Installation in hazardous area		Zone 2 / Div. 2
Supply		
Connection		redundant
Rated voltage	U <sub>r</sub>	19.2 ... 35 V SELV/PELV
Rated current	I <sub>r</sub>	12 A

## Technical Data

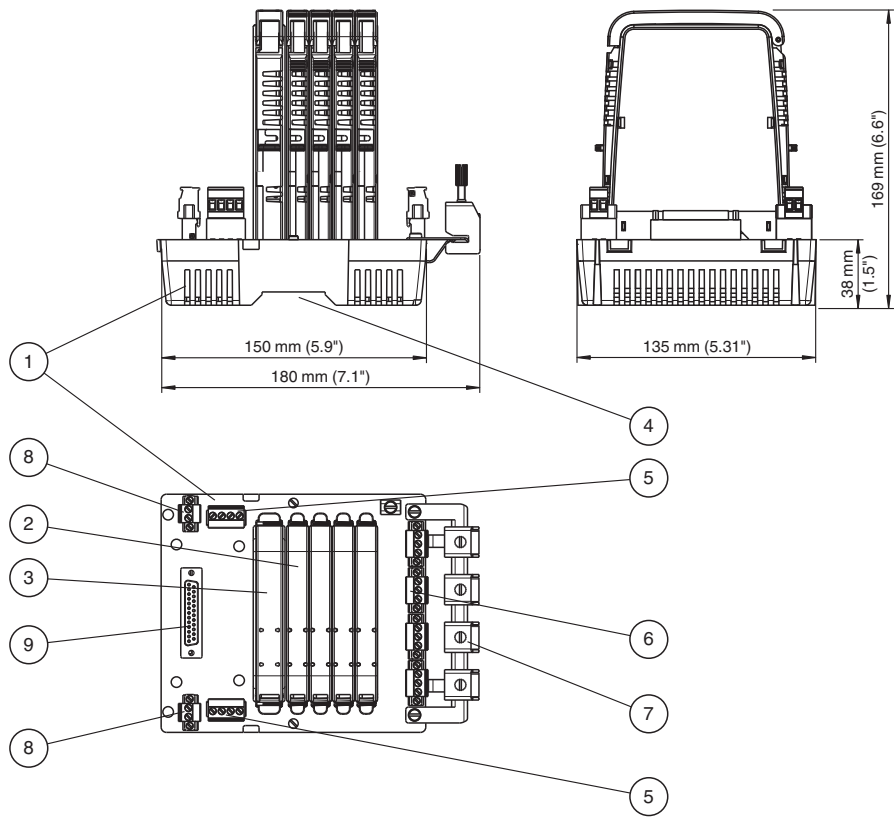
Power dissipation	typ. 0.4 W per segment
<b>Fieldbus connection</b>	
Number of segments	4
Host-side	system specific cable connection
Terminating resistor	100 $\Omega$ integrated
<b>Indicators/operating means</b>	
Fault signal	VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>	
Fieldbus segment/Fieldbus segment	functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply	functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
<b>Standard conformity</b>	
Electromagnetic compatibility	NE 21:2011
Degree of protection	IEC 60529
Fieldbus standard	IEC 61158-2
Shock resistance	EN 60068-2-27
Vibration resistance	EN 60068-2-6
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	< 95 % non-condensing
Shock resistance	10 g , 11 ms
Vibration resistance	1 g , 10 ... 150 Hz
Pollution degree	max. 2, according to IEC 60664
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>	
Connection type	screw terminal , pluggable spring terminal , pluggable
Core cross section	2.5 mm <sup>2</sup>
Housing material	Polycarbonate
Degree of protection	IP20
Mass	approx. 540 g
Mounting	DIN rail mounting
<b>Data for application in connection with hazardous areas</b>	
Certificate	TÜV 10 ATEX 555761X
Marking	Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>	
FM approval	CoC 3024816, CoC 3024816C
Approved for	Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
IECEX approval	IECEX TUN 13.0037X
Approved for	Ex ec IIC T4 Gc
<b>Certificates and approvals</b>	
Marine approval	DNV A-14038
<b>General information</b>	

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-4.HSC\*
  - 2 Power supply modules
  - 3 Diagnostic module
  - 4 Mounting slot for DIN mounting rail
  - 5 Connections for alarm voltage-free contact and diagnostic bus
  - 6 Connections for fieldbus trunk
  - 7 Screening/earthing kit for trunk shields, optional accessory
  - 8 Connections for bulk power supply
  - 9 DB 25 connector for host via custom cable

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection			Required Installation Components
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended

For more details on the power supply modules see respective data sheets.

## Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

## Product Versions

Type code	Description
MBHC-FB-4.HSC	Standard motherboard with pluggable screw terminals and host system connector (Pepperl+Fuchs custom cable with 25-pin sub-D connector to a DCS typical system connection)
MBHC-FB-4.HSC.1	Standard motherboard with pluggable spring terminals and host system connector (Pepperl+Fuchs custom cable with 25-pin sub-D connector to a DCS typical system connection)

## Interface

### Connection to FOUNDATION Fieldbus Hosts

#### Invensys

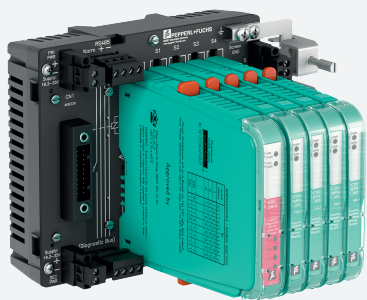
The motherboard can be connected to Foxboro I/A series with FBM228 host modules using a dedicated system cable. The number of cables required is determined by the number of system connectors on the Power Hub motherboard.

Type code	Description
ACC-MB-HGC.FOX.010	FieldConnex Power Hub system cable for Foxboro FBM228, length 1 m
ACC-MB-HGC.FOX.020	FieldConnex Power Hub system cable for Foxboro FBM228, length 2 m
ACC-MB-HGC.FOX.030	FieldConnex Power Hub system cable for Foxboro FBM228, length 3 m
ACC-MB-HGC.FOX.050	FieldConnex Power Hub system cable for Foxboro FBM228, length 5 m
ACC-MB-HGC.FOX.100	FieldConnex Power Hub system cable for Foxboro FBM228, length 10 m
ACC-MB-HGC.FOX.150	FieldConnex Power Hub system cable for Foxboro FBM228, length 15 m
ACC-MB-HGC.FOX.200	FieldConnex Power Hub system cable for Foxboro FBM228, length 20 m

#### Honeywell

The motherboard can be connected to Honeywell series C with FIM4/FIM8 host modules using a dedicated system cable. The number of cables required is determined by the number of system connectors on the Power Hub motherboard.

Type code	Description
ACC-MB-HGC.HON.010	FieldConnex Power Hub system cable for Honeywell C300, length 1 m
ACC-MB-HGC.HON.020	FieldConnex Power Hub system cable for Honeywell C300, length 2 m
ACC-MB-HGC.HON.030	FieldConnex Power Hub system cable for Honeywell C300, length 3 m
ACC-MB-HGC.HON.050	FieldConnex Power Hub system cable for Honeywell C300, length 5 m
ACC-MB-HGC.HON.100	FieldConnex Power Hub system cable for Honeywell C300, length 10 m
ACC-MB-HGC.HON.150	FieldConnex Power Hub system cable for Honeywell C300, length 15 m
ACC-MB-HGC.HON.200	FieldConnex Power Hub system cable for Honeywell C300, length 20 m



# Power Hub Motherboard

## FieldConnex® Fieldbus

### MBHC-FB-4.YO\*

- 4 segments, individual modules per segment
- Customized for Yokogawa, ALF 111
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable

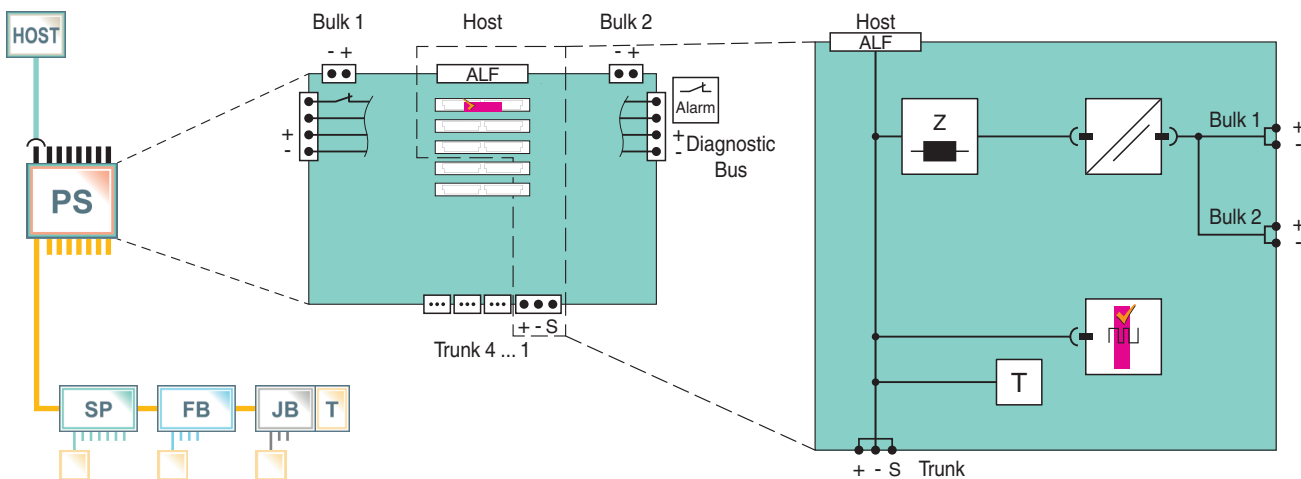
Power hub motherboard for Yokogawa ALF111



## Function

The FieldConnex® Compact Power Hub is a modular fieldbus power supply for four segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface with connectors for direct DCS hook-up via the AKB 336 system cable. Sockets for all modules enable simple installation and replacement without tools. Wire connections can be selected as spring terminals or screw terminals. This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



## Technical Data

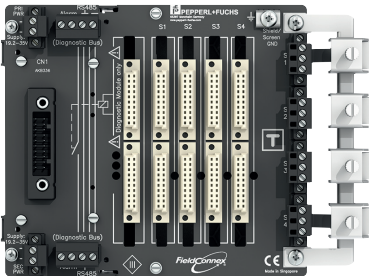
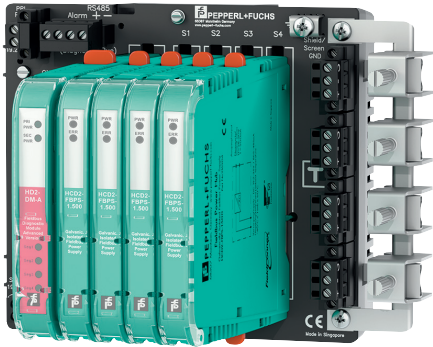
### General specifications

Design / Mounting		Motherboard based
Installation in hazardous area		Zone 2 / Div. 2
Supply		
Connection		redundant
Rated voltage	U <sub>r</sub>	19.2 ... 35 V SELV/PELV
Rated current	I <sub>r</sub>	12 A

Technical Data		
Power dissipation		typ. 0.4 W per segment
<b>Fieldbus connection</b>		
Number of segments		4
Host-side		Yokogawa ALF111 for AKB336 interface cable
Terminating resistor		100 Ω integrated
<b>Indicators/operating means</b>		
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		10 g , 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		screw terminal , pluggable spring terminal , pluggable
Core cross section		2.5 mm <sup>2</sup>
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 540 g
Mounting		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		CoC 3024816, CoC 3024816C
Approved for		Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
IECEX approval		IECEX TUN 13.0037X
Approved for		Ex ec IIC T4 Gc
<b>Certificates and approvals</b>		
Marine approval		DNV A-14038
<b>General information</b>		

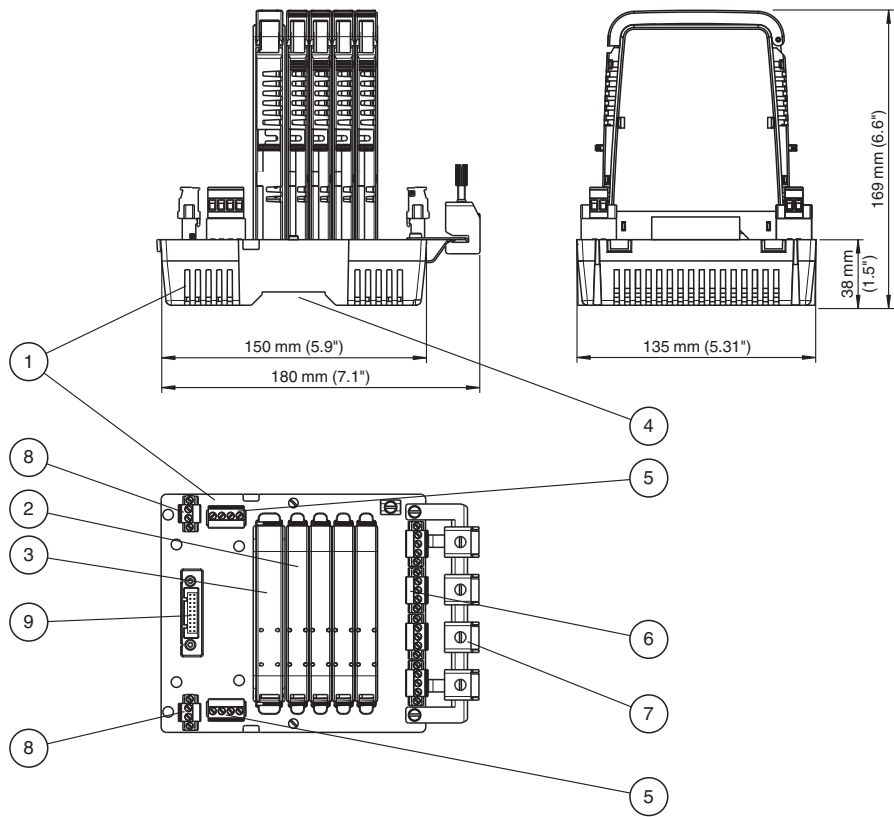


Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-4.YO\*
  - 2 Power supply modules
  - 3 Diagnostic module
  - 4 Mounting slot for DIN mounting rail
  - 5 Connections for alarm voltage-free contact and diagnostic bus
  - 6 Connections for fieldbus trunk
  - 7 Screening/earthing kit for trunk shields, optional accessory
  - 8 Connections for bulk power supply
  - 9 Connector for AKB336 system cable to Yokogawa ALF111

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection			Required Installation Components
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended

For more details on the power supply modules see respective data sheets.

### Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

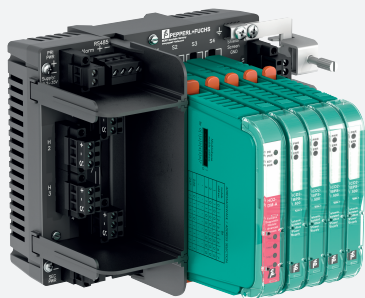
The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

### Product Versions

Type code	Description
MBHC-FB-4.YO	Standard motherboard with pluggable screw terminals applicable for Yokogawa and connector for AKB 338 system cable
MBHC-FB-4.YO.1	Standard motherboard with pluggable spring terminals applicable for Yokogawa and connector for AKB 338 system cable



## Power Hub Motherboard

### FieldConnex® Fieldbus

### MBHC-FB-4\*

- 4 segments, individual modules per segment
- Supports all PLC and PCS hosts
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable

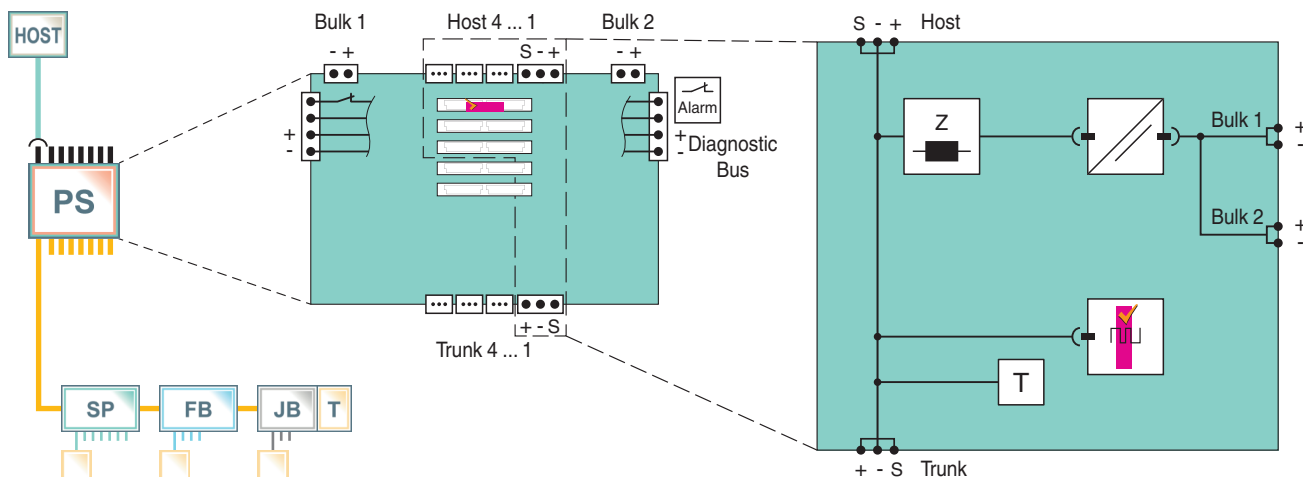
Power hub motherboard with common host interface



## Function

The FieldConnex® Compact Power Hub is a modular fieldbus power supply for four segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the High-Power Trunk for longest cable run and highest device count. The Power Hub supports optional Advanced Diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface with connectors for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. Wire connections can be selected as spring terminals or screw terminals. This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plug-in connectors with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



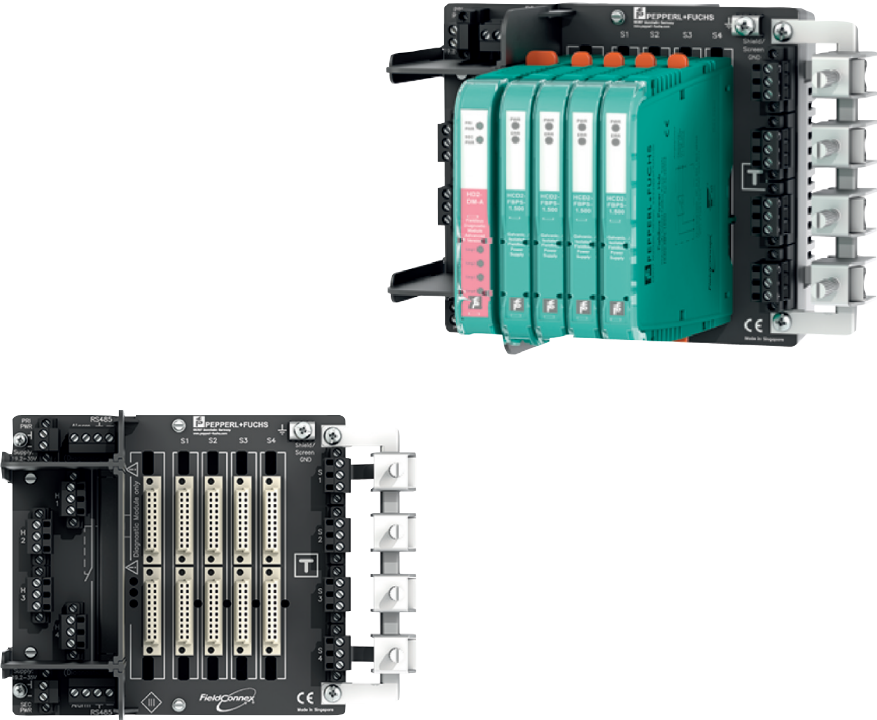
## Technical Data

### General specifications

Design / Mounting		Motherboard based
Installation in hazardous area		Zone 2 / Div. 2
Supply		
Connection		redundant
Rated voltage	U <sub>r</sub>	19.2 ... 35 V SELV/PELV
Rated current	I <sub>r</sub>	12 A

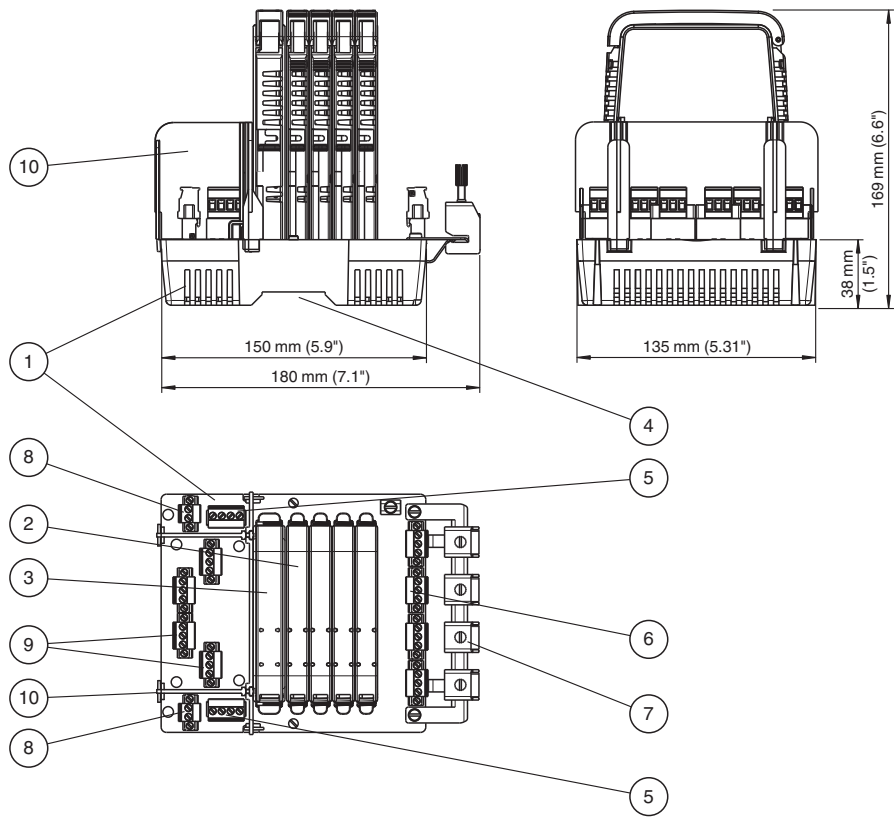
Technical Data		
Power dissipation		typ. 0.4 W per segment
<b>Fieldbus connection</b>		
Number of segments		4
Host-side		general purpose host
Terminating resistor		100 Ω integrated
<b>Indicators/operating means</b>		
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		10 g , 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		screw terminal , pluggable spring terminal , pluggable
Core cross section		2.5 mm <sup>2</sup>
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 540 g
Mounting		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		CoC 3024816, CoC 3024816C
Approved for		Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
IECEX approval		IECEX TUN 13.0037X
Approved for		Ex ec IIC T4 Gc
<b>Certificates and approvals</b>		
Marine approval		DNV A-14038
<b>General information</b>		

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-4\*
  - 2 Power supply modules
  - 3 Diagnostic module
  - 4 Mounting slot for DIN mounting rail
  - 5 Connections for alarm voltage-free contact and diagnostic bus
  - 6 Connections for fieldbus trunk
  - 7 Screening/earthing kit for trunk shields, optional accessory
  - 8 Connections for bulk power supply
  - 9 Connections for host
  - 10 Separation wall for Ex ic hazardous area application, optional accessory

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection	Required Installation Components		
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device

Safe Area	No specific type of protection		■	Segment Protector recommended
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For more details on the power supply modules see respective data sheets.

## Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

## Product Versions

Type code	Description
MBHC-FB-4	Standard motherboard with pluggable screw terminals applicable for all systems
MBHC-FB-4.1	Standard motherboard with pluggable spring terminals applicable for all systems





# Power Hub Motherboard

## FieldConnex® Fieldbus

### MBHC-FB-8R.RH\*

- 8 segments, redundant, individual modules per segment
- Supports all PLC and PCS hosts, redundant terminals
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2

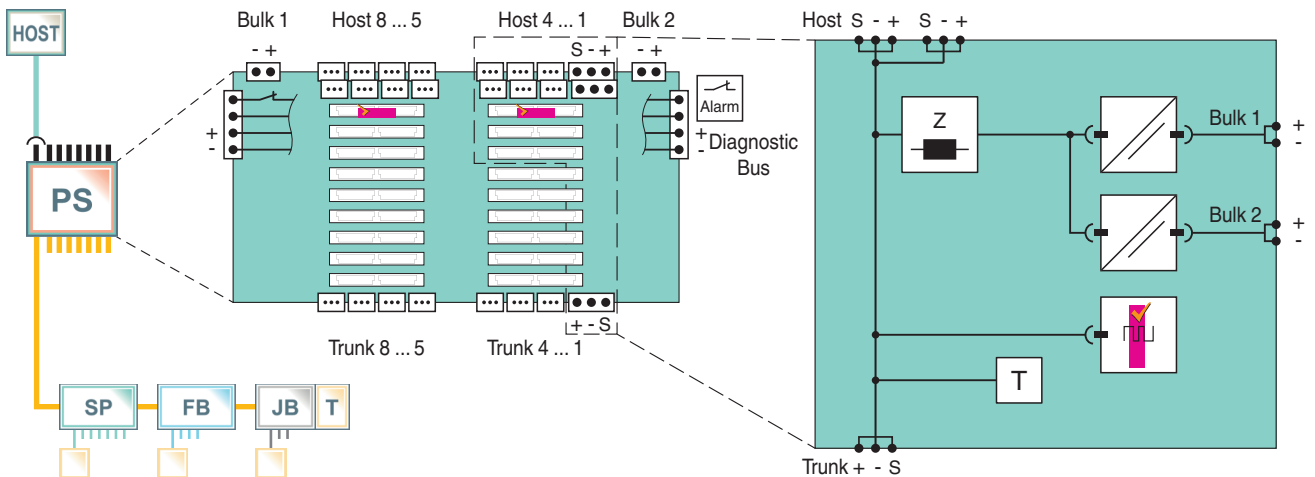
Power hub motherboard with redundant host terminals



## Function

The FieldConnex® compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the high-power trunk for longest cable run and highest device count. The Power Hub supports optional advanced diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface with redundant terminals for all DCS and PLC host systems on the left side of the motherboard. The version with type code extension ".R" has redundant terminals for host connections on the right side for symmetrical cabinet layout. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plugs with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

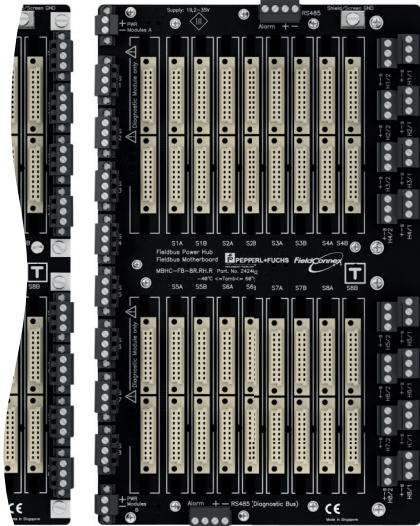
### Supply

Connection	redundant
Rated voltage	$U_r$ 19.2 ... 35 V SELV/PELV
Rated current	$I_r$ 16 A

## Technical Data

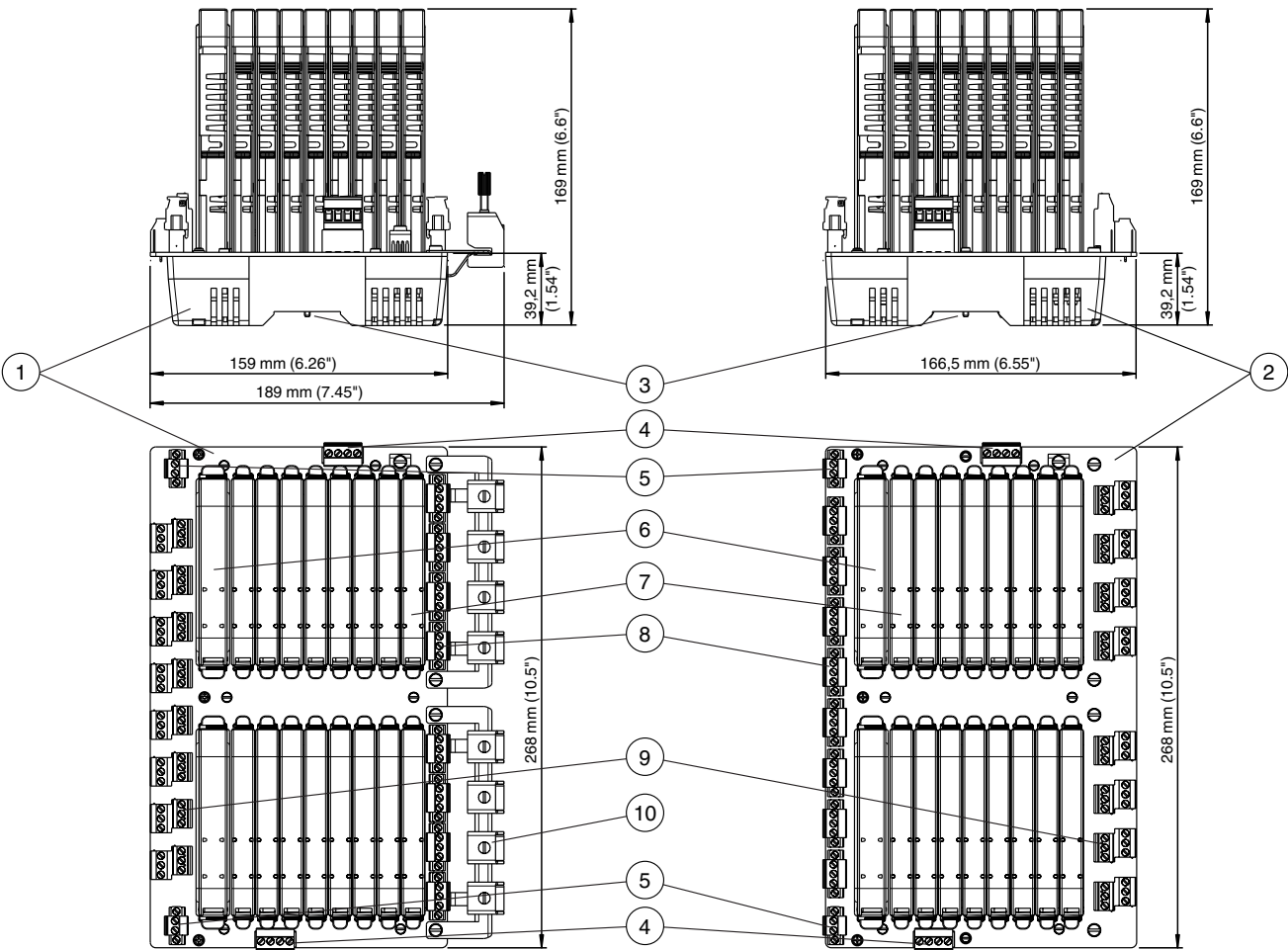
Power dissipation	typ. 0.4 W per segment
<b>Fieldbus connection</b>	
Number of segments	8 Redundant Power Supply
Host-side	redundant general purpose host
Terminating resistor	100 $\Omega$ integrated
<b>Indicators/operating means</b>	
Fault signal	VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>	
Fieldbus segment/Fieldbus segment	functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply	functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
<b>Standard conformity</b>	
Electromagnetic compatibility	NE 21:2011
Degree of protection	IEC 60529
Fieldbus standard	IEC 61158-2
Shock resistance	EN 60068-2-27
Vibration resistance	EN 60068-2-6
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	< 95 % non-condensing
Shock resistance	15 g 11 ms
Vibration resistance	1 g , 10 ... 150 Hz
Pollution degree	max. 2, according to IEC 60664
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>	
Connection type	screw terminal , pluggable
Core cross section	2.5 mm <sup>2</sup>
Housing material	Polycarbonate
Degree of protection	IP20
Mass	approx. 1350 g
Dimensions	
Height	see dimensions
Width	see dimensions
Depth	see dimensions
Mounting	DIN rail mounting
<b>Data for application in connection with hazardous areas</b>	
Certificate	TÜV 10 ATEX 555761X
Marking	Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>	
FM approval	CoC 3024816, CoC 3024816C
Approved for	Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
IECEx approval	IECEx TUN 13.0037X
Approved for	Ex ec IIC T4 Gc
<b>Certificates and approvals</b>	
Marine approval	DNV A-14038
<b>General information</b>	

Assembly



Additional Information

Dimensions and Assembly



All dimensions in millimeters (mm) and inches (") and without tolerance indication.

- Description:
- 1 Motherboard MBHC-FB-8R.RH\*
  - 2 Motherboard MBHC-FB-8R.RH.R\*
  - 3 Mounting slot for DIN mounting rail
  - 4 Connections for alarm volt-free contact and diagnostic bus
  - 5 Connections for bulk power supply
  - 6 Diagnostic modules
  - 7 Power supply modules
  - 8 Connections for fieldbus trunk (8 connections per motherboard)
  - 9 Connections for host (8 redundant connections per motherboard)
  - 10 Screening/earthing kit for trunk cable shields, optional accessory for MBHC-FB-8R.RH and MBHC-FB-8R.RH.1

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection			Required Installation Components
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier

Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended

For more details on the power supply modules see respective data sheets.

## Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

## Product Versions

Type code	Description
MBHC-FB-8R.RH	Redundant motherboard with redundant terminals applicable for all PLC and DCS host systems
MBHC-FB-8R.RH.R	Redundant motherboard with redundant terminals positioned on the right side applicable for all PLC and DCS host systems



## Power Hub Motherboard

### FieldConnex® Fieldbus

### MBHC-FB-8R.HSC\*

- 8 segments, redundant, individual modules per segment
- Supports all PLC and PCS hosts
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable

Power hub motherboard with host system connectors



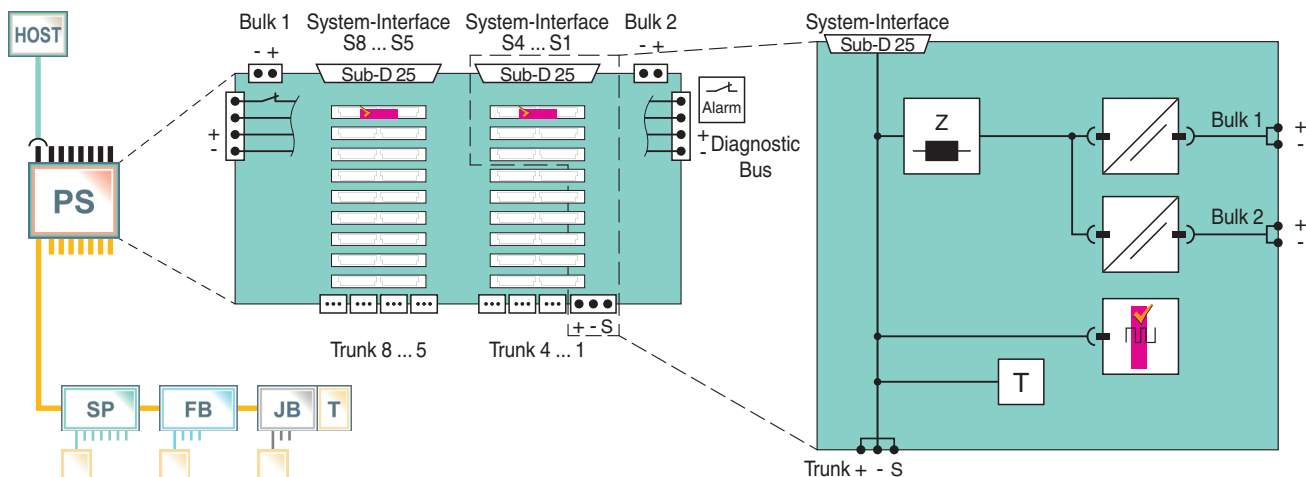
## Function

The FieldConnex® compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the high-power trunk for longest cable run and highest device count. The Power Hub supports optional advanced diagnostics for fast fieldbus commissioning and online monitoring.

The motherboard is the wiring interface and is equipped with two DB 25 connectors on the left side. The version with type code extension ".R" has DB 25 connectors on the right side for symmetrical cabinet layout. Manufactured cables with DCS system plugs reduce the number of connection points and effort for checkout. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. Wire connections can be selected as spring terminals or screw terminals.

This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plugs with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

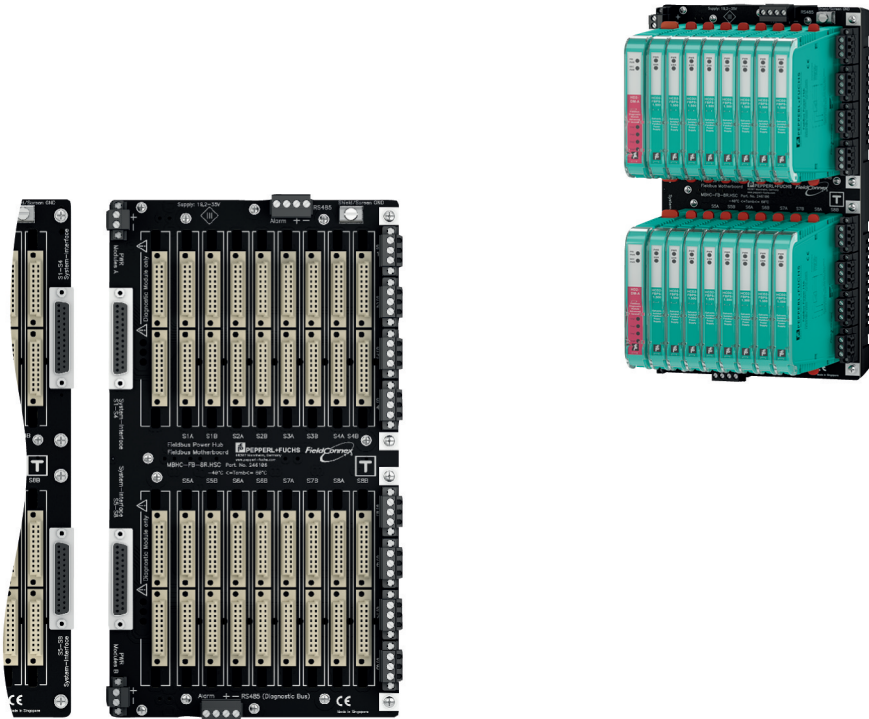
### Supply

Connection	redundant
Rated voltage	$U_r$ 19.2 ... 35 V SELV/PELV

Technical Data

Rated current	I <sub>r</sub>	16 A
Power dissipation		typ. 0.4 W per segment
<b>Fieldbus connection</b>		
Number of segments		8 Redundant Power Supply
Host-side		system specific cable connection
Terminating resistor		100 Ω integrated
<b>Indicators/operating means</b>		
Fault signal		VFC alarm 1 A, 30 V DC, normally closed
<b>Galvanic isolation</b>		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
<b>Standard conformity</b>		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		15 g 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>		
Connection type		screw terminal , pluggable spring terminal , pluggable
Core cross section		2.5 mm <sup>2</sup>
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 1350 g
Dimensions		
Height		150 mm
Width		268 mm
Depth		69 mm
Mounting		DIN rail mounting
<b>Data for application in connection with hazardous areas</b>		
Certificate		TÜV 10 ATEX 555761X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>		
FM approval		CoC 3024816, CoC 3024816C
Approved for		Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
IECEx approval		IECEx TUN 13.0037X
Approved for		Ex ec IIC T4 Gc
<b>Certificates and approvals</b>		
Marine approval		DNV A-14038
<b>General information</b>		

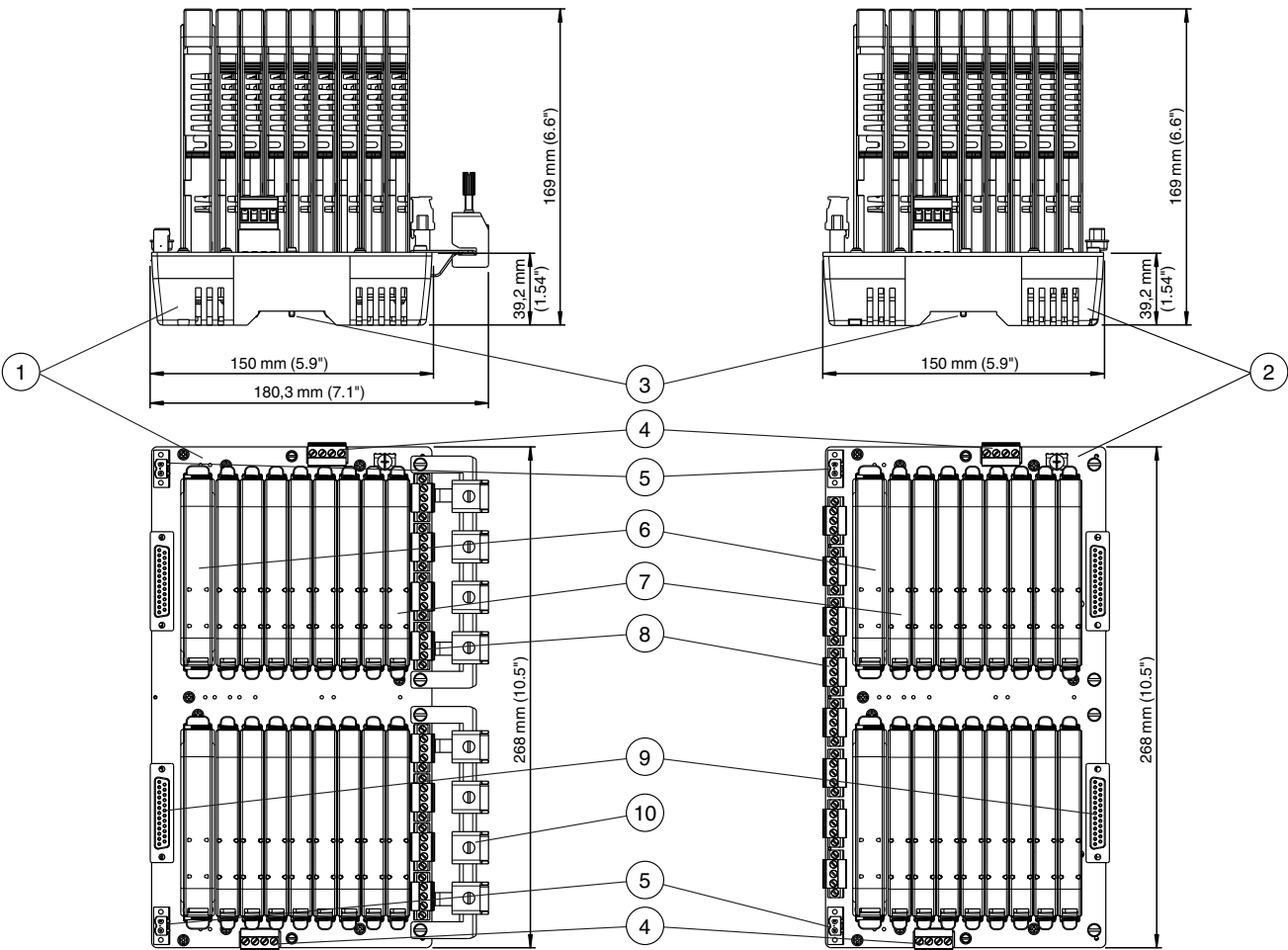
Assembly





Additional Information

Dimensions and Assembly



All dimensions in millimeters (mm) and inches (") and without tolerance indication.

- Description:
- 1 Motherboard MBHC-FB-8R.HSC\*
  - 2 Motherboard MBHC-FB-8R.HSC.R\*
  - 3 Mounting slot for DIN mounting rail
  - 4 Connections for alarm volt-free contact and diagnostic bus
  - 5 Connections for bulk power supply
  - 6 Diagnostic modules
  - 7 Power supply modules
  - 8 Connections for fieldbus trunk (8 connections per motherboard)
  - 9 Connections for host (2 connections per motherboard)
  - 10 Screening/earthing kit for trunk cable shields, optional accessory for MBHC-FB-8R.HSC and MBHC-FB-8R.HSC.1

Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

## Interface

### Connection to FOUNDATION Fieldbus Hosts

#### Invensys

The motherboard can be connected to Foxboro I/A series with FBM228 host modules using a dedicated system cable.

The number of cables required is determined by the number of system connectors on the Power Hub motherboard.

Type code	Description
ACC-MB-HGC.FOX.010	FieldConnex Power Hub system cable for Foxboro FBM228, length 1 m
ACC-MB-HGC.FOX.020	FieldConnex Power Hub system cable for Foxboro FBM228, length 2 m
ACC-MB-HGC.FOX.030	FieldConnex Power Hub system cable for Foxboro FBM228, length 3 m
ACC-MB-HGC.FOX.050	FieldConnex Power Hub system cable for Foxboro FBM228, length 5 m
ACC-MB-HGC.FOX.100	FieldConnex Power Hub system cable for Foxboro FBM228, length 10 m
ACC-MB-HGC.FOX.150	FieldConnex Power Hub system cable for Foxboro FBM228, length 15 m
ACC-MB-HGC.FOX.200	FieldConnex Power Hub system cable for Foxboro FBM228, length 20 m

#### Honeywell

The motherboard can be connected to Honeywell series C with FIM4/FIM8 host modules using a dedicated system cable.

The number of cables required is determined by the number of system connectors on the Power Hub motherboard.

Type code	Description
ACC-MB-HGC.HON.010	FieldConnex Power Hub system cable for Honeywell C300, length 1 m
ACC-MB-HGC.HON.020	FieldConnex Power Hub system cable for Honeywell C300, length 2 m
ACC-MB-HGC.HON.030	FieldConnex Power Hub system cable for Honeywell C300, length 3 m
ACC-MB-HGC.HON.050	FieldConnex Power Hub system cable for Honeywell C300, length 5 m
ACC-MB-HGC.HON.100	FieldConnex Power Hub system cable for Honeywell C300, length 10 m
ACC-MB-HGC.HON.150	FieldConnex Power Hub system cable for Honeywell C300, length 15 m
ACC-MB-HGC.HON.200	FieldConnex Power Hub system cable for Honeywell C300, length 20 m

## Additional Information

### Accessories

Type code	Description
ACC-MB-HSK	Screening/earthing kit <b>Note:</b> the screening/earthing kit is not available for the version with type code extension ".R"
ACC-MB-HDC	Diagnostic link cable, length 6 cm
ACC-MB-SW	Separation wall for Ex ic hazardous area applications
ACC-MB-CC	2 protective covers for motherboards with screw terminals for Ex ic hazardous area applications <b>Note:</b> protective covers are only required for the version with type code extension ".R"
ACC-MB-CC.1	2 protective covers for motherboards with spring terminals for Ex ic hazardous area applications <b>Note:</b> protective covers are only required for the version with type code extension ".R"

### Installation

See manual

## Product Versions

Type code	Description
MBHC-FB-8R.HSC	Redundant motherboard with pluggable screw terminals and host system connector (D-sub connector to typical DCS system connection)
MBHC-FB-8R.HSC.1	Redundant motherboard with pluggable spring terminals and host system connector (D-sub connector to typical DCS system connection)

MBHC-FB-8R.HSC.R	Redundant motherboard with pluggable screw terminals and host system connector positioned on the right side (D-sub connector to typical DCS system connection)
MBHC-FB-8R.HSC.R.1	Redundant motherboard with pluggable spring terminals and host system connector positioned on the right side (D-sub connector to typical DCS system connection)



## Power Hub Motherboard

### FieldConnex® Fieldbus

#### MBHC-FB-8R\*

- 8 segments, redundant, individual modules per segment
- Supports all PLC and PCS hosts
- High-power trunk: Live work on devices in any hazardous area
- Best quality, smallest size and lowest heat dissipation
- For FOUNDATION Fieldbus H1
- Optional advanced diagnostics
- Passive impedance for high reliability
- Supports Ex ic voltage limitation
- Installation in Zone 2/Div. 2
- Spring terminals or screw terminals selectable

Power hub motherboard with common host interface

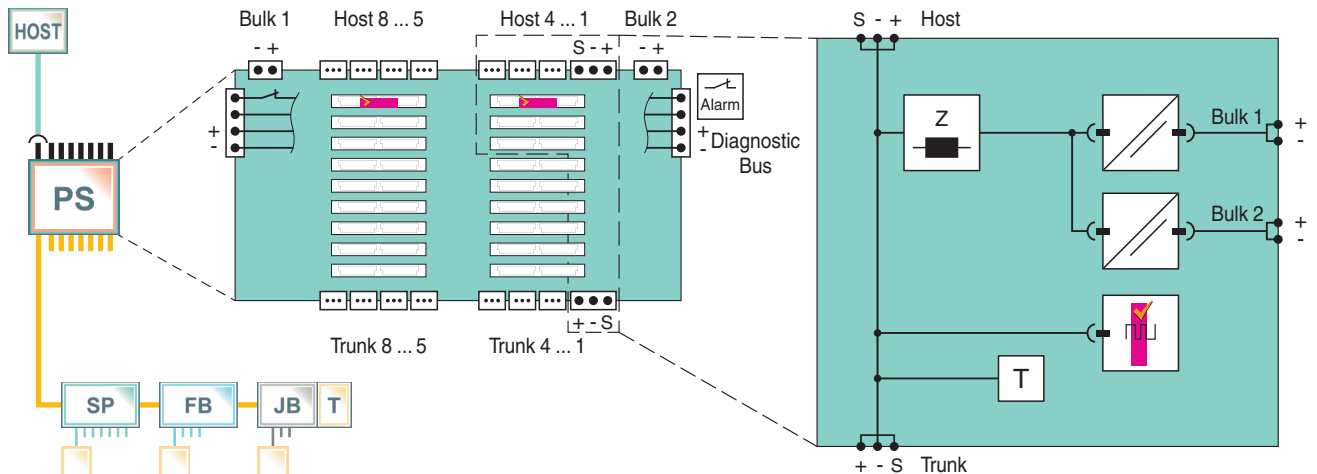


### Function

The FieldConnex® compact Power Hub is a modular fieldbus power supply for eight segments with lowest power dissipation and smallest foot print. It supports explosion protection e.g. the high-power trunk for longest cable run and highest device count. The Power Hub supports optional advanced diagnostics for fast fieldbus commissioning and online monitoring. The motherboard is the wiring interface with terminals for all DCS and PLC host systems. Sockets for all modules enable simple installation and replacement without tools. For power redundancy with seamless transfer, pairs of modules feed each segment. Wire connections can be selected as spring terminals or screw terminals.

This design allows the most compact cabinet layout. Excellent availability and a very long service life are achieved through: passive impedance filter per segment, high-availability fieldbus termination and plugs with retaining screws. Electronics are optimized for lowest power dissipation and compactness.

### Connection



### Technical Data

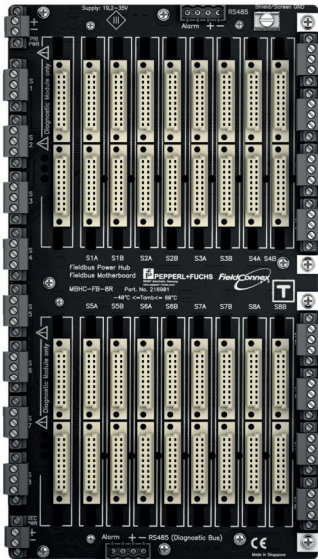
#### General specifications

Design / Mounting		Motherboard based
Installation in hazardous area		Zone 2 / Div. 2
Supply		
Connection		redundant
Rated voltage	U <sub>r</sub>	19.2 ... 35 V SELV/PELV
Rated current	I <sub>r</sub>	16 A

## Technical Data

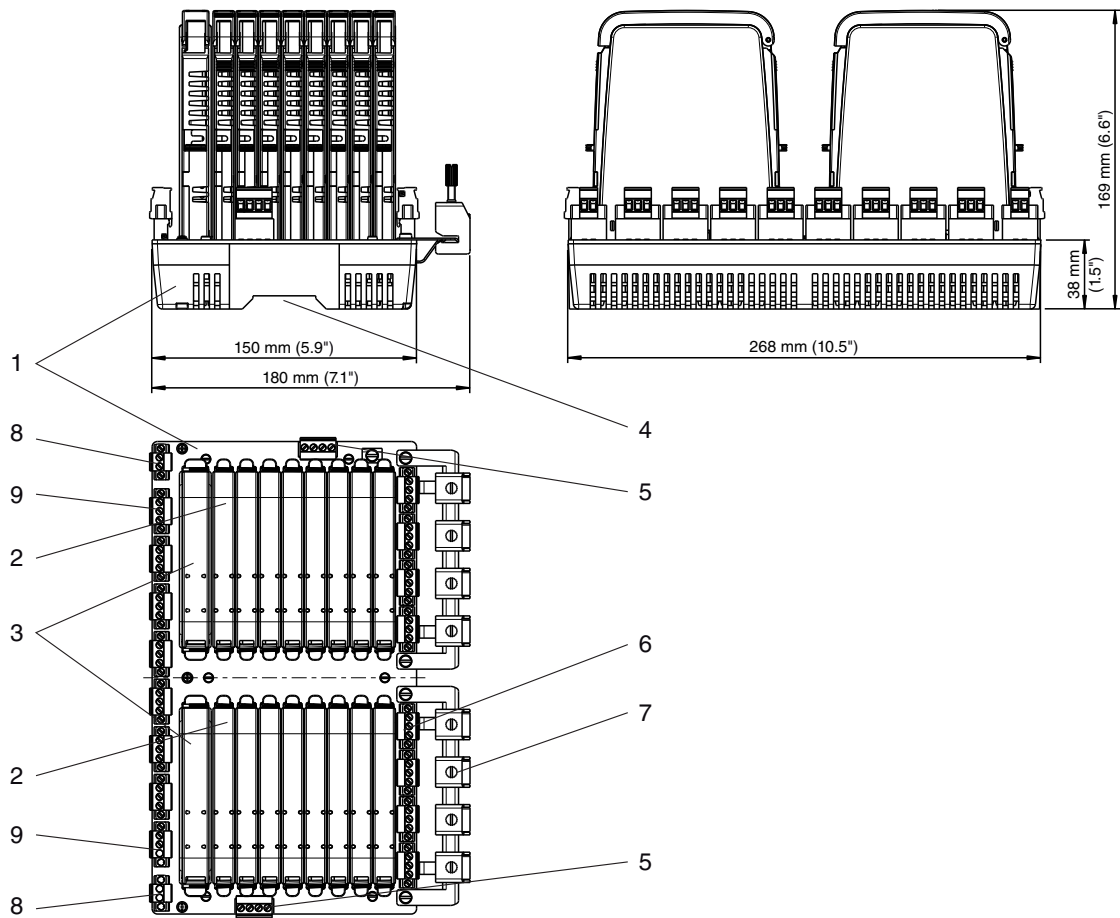
Power dissipation	typ. 0.4 W per segment
<b>Fieldbus connection</b>	
Number of segments	8 Redundant Power Supply
Host-side	general purpose host
Terminating resistor	100 $\Omega$ integrated
<b>Indicators/operating means</b>	
Fault signal	VFC alarm 1 A, 50 V DC, normally closed
<b>Galvanic isolation</b>	
Fieldbus segment/Fieldbus segment	functional insulation acc. to IEC 62103, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply	functional insulation acc. to IEC 62103, rated insulation voltage 250 V <sub>eff</sub>
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
<b>Standard conformity</b>	
Electromagnetic compatibility	NE 21:2011
Degree of protection	IEC 60529
Fieldbus standard	IEC 61158-2
Shock resistance	EN 60068-2-27
Vibration resistance	EN 60068-2-6
<b>Ambient conditions</b>	
Ambient temperature	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	< 95 % non-condensing
Shock resistance	15 g 11 ms
Vibration resistance	1 g , 10 ... 150 Hz
Pollution degree	max. 2, according to IEC 60664
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>	
Connection type	screw terminal , pluggable spring terminal , pluggable
Core cross section	2.5 mm <sup>2</sup>
Housing material	Polycarbonate
Degree of protection	IP20
Mass	approx. 1350 g
Dimensions	
Height	150 mm
Width	268 mm
Depth	69 mm
Mounting	DIN rail mounting
<b>Data for application in connection with hazardous areas</b>	
Certificate	TÜV 10 ATEX 555761X
Marking	Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-15:2010
<b>International approvals</b>	
FM approval	CoC 3024816, CoC 3024816C
Approved for	Class I, Division 2, Groups A, B, C, D, T4 / Class I, Zone 2, AEx/Ex nA IIC T4
IECEx approval	
IECEx certificate	IECEx TUN 13.0037X
IECEx marking	Ex ec IIC T4 Gc
<b>General information</b>	

Assembly



Additional Information

Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-8R\*
  - 2 Power supply modules
  - 3 Diagnostic modules
  - 4 Mounting slot for DIN mounting rail
  - 5 Connections for alarm volt-free contact and diagnostic bus
  - 6 Connections for fieldbus trunk
  - 7 Screening/earthing kit for trunk cables shield, optional accessory
  - 8 Connections for bulk power supply
  - 9 Connections for host

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection	Required Installation Components		
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2

Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended

For more details on the power supply modules see respective data sheets.

## Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

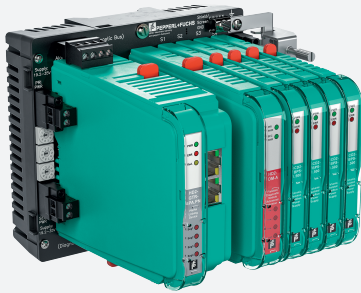
- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

## Product Versions

Type code	Description
MBHC-FB-8R	Redundant motherboard with pluggable screw terminals
MBHC-FB-8R.1	Redundant motherboard with pluggable spring terminals





# Power Hub Motherboard

## FieldConnex® Fieldbus

### MBHC-FB-4.GT\*

- 4 segments, simplex, individual modules per segment
- For PROFIBUS PA
- For gateway and power supply modules
- High-power trunk: Live work on devices in any hazardous area
- Optional advanced diagnostics
- Installation in Zone 2/Class I, Div. 2
- Spring terminals or screw terminals selectable

Power hub motherboard for gateway and power supply modules



## Function

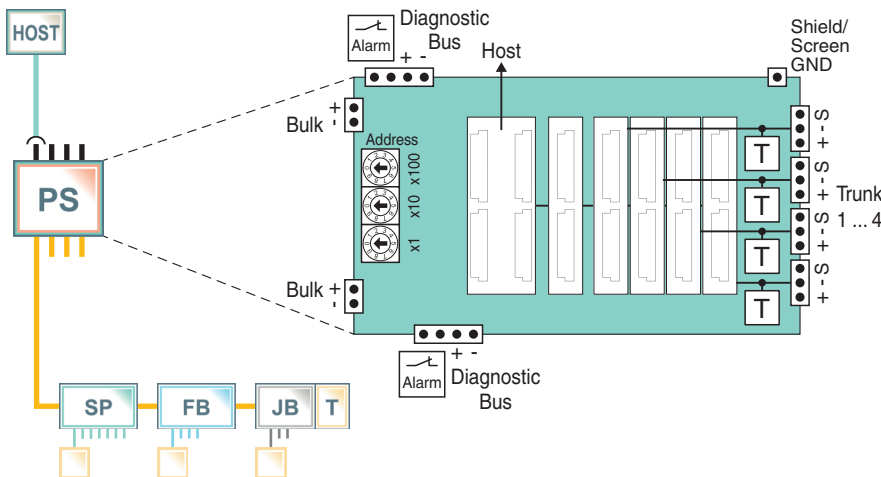
The motherboard is a system component of the FieldConnex®Power Hub, a modular fieldbus power supply for 4 segments. It is the wiring interface for one gateway, one advanced diagnostic module, and 4 power supply modules. The power supply supports explosion protection, e. g., the high-power trunk for long cable lengths and high device counts. The Power Hub supports advanced diagnostics for fast fieldbus commissioning and online monitoring.

Sockets for all modules enable simple installation and replacement without tools. Wire connections can be selected as spring terminals or screw terminals.

The motherboard supports a choice of gateways for different host protocols. A PROFIBUS PA master for each segment enables short bus cycle times. The DCS can access the advanced diagnostic module directly via the gateway without additional wiring or configuration.

This design allows the most compact cabinet layout. Excellent availability and a long service life are achieved through the following features: A passive impedance filter per segment without active electronic components, a high-availability fieldbus termination, and plugs with retaining screws.

## Connection



## Technical Data

### General specifications

Design / Mounting	Motherboard based
Installation in hazardous area	Zone 2 / Div. 2

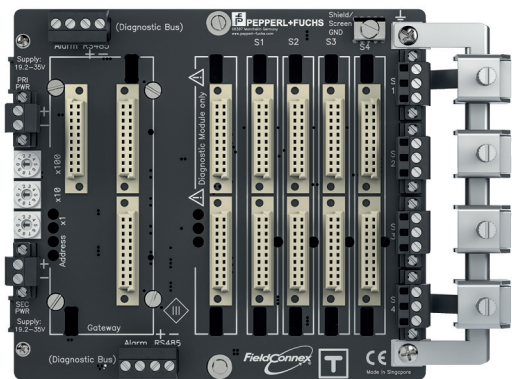
### Supply

Connection	redundant
Rated voltage	$U_r$ 19.2 ... 35 V SELV/PELV
Rated current	$I_r$ 12 A
Power dissipation	typ. 0.4 W per segment

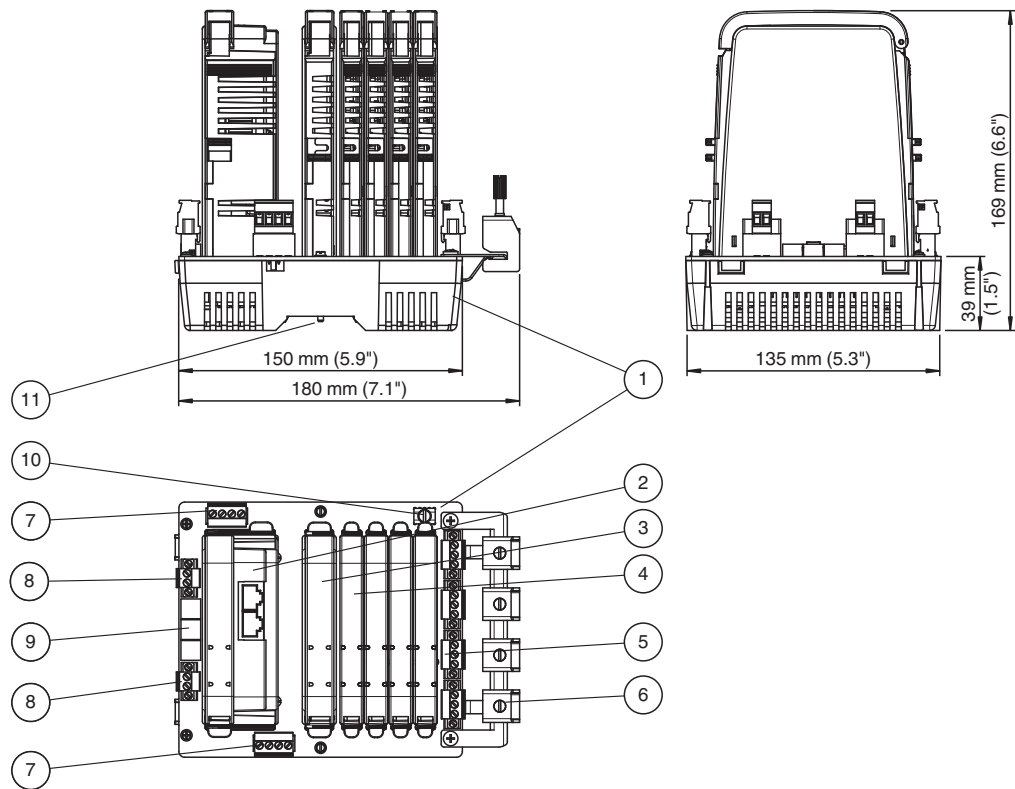
Technical Data

Fieldbus connection		
Number of segments		4
Terminating resistor		100 Ω integrated
Indicators/operating means		
Fault signal		VFC alarm 1 A, 50 V DC, normally closed
Rotary switch		bus addressing, gateway-specific
Galvanic isolation		
Fieldbus segment/Fieldbus segment		functional insulation acc. to IEC 61010, rated insulation voltage 50 V <sub>eff</sub>
Fieldbus segment/Supply		functional insulation acc. to IEC 61010, rated insulation voltage 50 V <sub>eff</sub>
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Standard conformity		
Electromagnetic compatibility		NE 21:2011
Degree of protection		IEC 60529
Fieldbus standard		IEC 61158-2
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
Ambient conditions		
Ambient temperature		-40 ... 70 °C (-40 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		< 95 % non-condensing
Shock resistance		10 g , 11 ms
Vibration resistance		1 g , 10 ... 150 Hz
Pollution degree		max. 2, according to IEC 60664
Corrosion resistance		acc. to ISA-S71.04-1985, severity level G3
Mechanical specifications		
Connection type		screw terminal , pluggable spring terminal , pluggable
Core cross section		2.5 mm <sup>2</sup>
Housing material		Polycarbonate
Degree of protection		IP20
Mass		approx. 540 g
Mounting		DIN rail mounting
Data for application in connection with hazardous areas		
Certificate		TÜV 15 ATEX 7735 X
Marking		Ⓔ II 3G Ex ec IIC T4 Gc
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-7:2015+A1:2018
International approvals		
IECEx approval		
IECEx certificate		IECEx TUR 16.0007X
IECEx marking		Ex ec IIC T4 Gc
General information		

Assembly



Dimensions and Assembly



- Description:
- 1 Motherboard MBHC-FB-4.GT
  - 2 Gateway module
  - 3 Diagnostic module
  - 4 Power supply modules (x 4)
  - 5 Trunk connection
  - 6 Shielding/grounding kit for trunk shields, optional accessory
  - 7 Connections: Volt-free contact alarm and diagnostic bus (x 2)
  - 8 Connection for bulk power supply (x 2)
  - 9 Rotary switches for gateway addressing x1, x10, x100
  - 10 Shield connection
  - 11 Mounting slot for DIN rail mounting

Product Versions

Type Code	Description
MBHC-FB-4.GT	Motherboard with pluggable screw terminals
MBHC-FB-4.GT.1	Motherboard with pluggable spring terminals

Components

Compatible Power Supply Modules

		HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	
Power Output				
Voltage (V)		21 ... 23	28 ... 29.5	
Current (mA)		500	500	
Limit U <sub>0</sub> (V)		24	30	
Device in ...	Type of Protection			Required Installation Components
Zone 0/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier

Zone 1/Div. 1	Intrinsically safe Ex ia		■	FieldBarrier
Zone 1/Div. 1	Flameproof Ex d		■	Segment Protector R-SP-E12 or any Segment Protector installed in Zone 2
Zone 2	Intrinsically safe Ex ic (Entity)	■	■	Selected Segment Protectors
Div. 2	Non-incendive	■	■	Any Segment Protector; power module selection depends on voltage of field device
Safe Area	No specific type of protection		■	Segment Protector recommended

For more details on the power supply modules see respective data sheets.

Diagnostic Module Selection

The following diagnostic modules are compatible with this motherboard.

Type code	Description
HD2-DM-B	Diagnostic Module, basic version
HD2-DM-A	Diagnostic Module, advanced version
HD2-DM-A.RO	Diagnostic Module, advanced version, relay output

The stationary and mobile Advanced Diagnostic Module (ADM) and related components provide measurement tools for the fieldbus physical layer. The ADM monitors many quality indicating values of the fieldbus physical layer. An expert system, which is included, analyzes the values and issues easy to understand messages indicating cause and remedy. The ADM is recommended for:

- **Faster commissioning and plant start-up:** Installation issues are known and corrected before loop check commences
- **Reliable operation through online monitoring:** The quality of the physical layer and installation is monitored making fieldbus a manageable asset
- **Efficient troubleshooting:** An expert system guides the user through issues and faults in the fieldbus installation

Many other tools are included that enhance fieldbus installation and upkeep. Please see datasheet on HD2-DM-A.

Available PROFIBUS and PROFINET Power Hub System Components

The following list describes all available PROFIBUS and PROFINET Power Hub system components as an overview and quick reference beyond the component described in this datasheet.

Type Code	Description
HD2-GTR-4PA	PROFIBUS DP to PROFIBUS PA gateway module, 4 PROFIBUS PA segments.
HD2-GTR-4PA.PN	PROFINET to PROFIBUS PA gateway module, 4 PROFIBUS PA segments.
HCD2-FBPS-1.500	Power supply module 30 V/500 mA.
HCD2-FBPS-1.23.500	Power supply module 23 V/500 mA.
HD2-DM-A*	Advanced physical layer diagnostic module.
HD2-DM-B	Basic diagnostic module.
MB-FB-GTR1	Motherboard for gateway redundancy, slots for 2 gateway modules.
MBHC-FB-4.GT*	Compact Power Hub motherboard for 4 segments, slots for 4 power supply modules, 1 diagnostic module, and 1 gateway module. Connector options: Removable screw terminals or spring terminals.
MBHC-FB-4.HSC*	Compact Power Hub motherboard for 4 segments, slots for 4 power supply modules and 1 diagnostic module. Connector options: Removable screw terminals or spring terminals.
MBHC-FB-4R.HSC*	Compact Power Hub motherboard for 4 redundant segments, slots for 8 power supply modules and 1 diagnostic module. Connector options: Removable screw terminals or spring terminals.
KT-MB-FB-D-4R.GEN	DART high-density Power Hub with generic interface for 4 redundant segments, slots for 8 power supply modules with 1 diagnostic module.

### Applicable Combinations of Gateway Motherboards, System Modules with Motherboards

		GW MBs	GW Modules		Power Supplies		Diagnostic Modules	
		MB-FB-GTR1	HD2-GTR-4PA	HD2-GTR-4PA.PN	HCD2-FBPS-1.23.500	HCD2-FBPS-1.500	HD2-DM-A*	HD2-DM-B
MBs or Power Hub Kits	MBHC-FB-4.HSC*	x			x	x	x	x
	MBHC-FB-4R.HSC*	x			x	x	x	x
	KT-MB-FB-D-4R.GEN	x					x	x
GW MBs	MB-FB-GTR1		x	x				
	MBHC-FB-4.GT		x	x	x	x	x	x

For more details on the components see respective datasheets.

### Example: Simplex Power Hub for 4 Segments

The table lists the components of a typical Power Hub.  
Optional accessories are also listed.

No.	Product Component	Model Type/Order Number
1	Motherboard	MBHC-FB-4.GT
4	Power supply modules	HCD2-FBPS-1.500
4	Surge protectors	TPH-LBF-IA1.36.DE*
1	Earth bar for surge protectors	ACC-LBF-EB.8
1	Advanced diagnostic module	HD2-DM-A
1	PROFIBUS or PROFINET gateway module	HD2-GTR-4PA*

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Россия +7(495)268-04-70

Казахстан +7(727) 345-47-04

Беларусь +(375) 257-127-884

Узбекистан +998(71)205-18-59

Киргизия +996(312)96-26-47

эл.почта: [phb@nt-rt.ru](mailto:phb@nt-rt.ru) || сайт: <https://pepperl-fuchs.nt-rt.ru/>