Features

- 8 ... 12 outputs Ex ia IIC, FISCO and Entity
- Advanced fault isolation and diagnostics at the spur
- FieldBarrier in Zone 1/Div. 2
- Instruments in Zone 0...1/Div. 1
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Supports plug-in surge protectors
- Very compact, small footprint
- Designed for high reliability

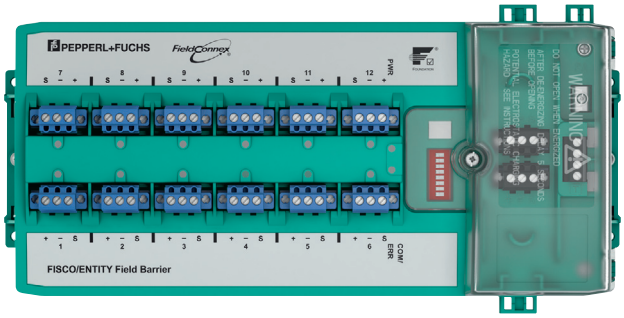
Function

The FieldBarrier is a diagnostic-enabled, isolated device coupler for DIN rail mounting and connects 8 … 12 instruments with intrinsic safety. At the spur, advanced fault protection isolates conditions such as short circuit, jabber, or bounce. Advanced Diagnostics at the spur detect installation quality issues for optimum segment availability.

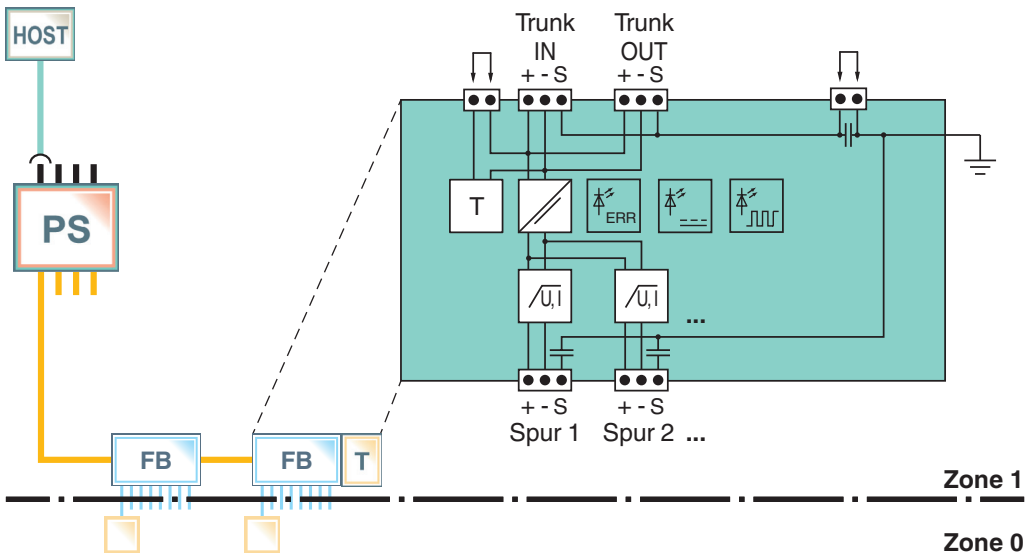
Internal components such as the terminator are connected without wiring. Connections requiring maintenance are minimized. Critical components are designed with redundancy or monitored for degradation. All attributes ensure high product integrity.

The FieldBarrier supports diagnostic-enabled accessories such as enclosure leakage sensors and surge protectors. They all transmit fault and diagnostic information to the control room indicating the affected spur. All features contribute to simplified installation, troubleshooting and increased plant up-time.

Assembly



Connection



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General specifications	
Design / Mounting	Cabinet installation
Fieldbus interface	
Power dissipation	see table 1
Main cable (Trunk)	
Rated voltage	16 ... 32 V DC , min. 15 V in case of brown out
Rated current	trunk IN to trunk OUT ≤ 2 A see table 1
Cable screen grounding option	Capacitive via 5.7 nF Direct
Voltage drop	trunk IN to trunk OUT 100 mV max.
Number of couplers	max. 3 per segment
Reverse polarity protection	Built-In
Outputs	
Number of outputs	8, 10 or 12
Number of devices per output	1
Cable length	120 m
Rated voltage	10 ... 14 V
Rated current	≤ 43 mA at one spur , ≤ 320 mA total current at all spurs
Short-circuit current	53 mA , 1 mA in fallback state
Cable screen grounding option	Capacitive via 4.4 nF
Terminating impedance	selectable via Jumper
Surge protection	Trunk overvoltage protection if voltage exceeds typ. 39 V, max. 41 V
Diagnostic and Protection Features	
Fault Isolation	Short Circuit Current Limitation at spurs Bounce Protection at spurs Signal inhibit at spurs
Physical Layer Diagnostic	Signal level at spurs Signal jitter at spurs Noise level at spurs
Indicators/operating means	
Switch	S1 ON: diagnostic alarms activated S2 ON: diagnostic warnings activated S3-S8: not used
LED PWR	green: Fieldbus voltage > 16 V
LED COM/ERR	yellow flashing: fieldbus communication and physical layer status , red: Hardware error
LED SPURS	red: 2 Hz flashing in short-circuit condition
Galvanic isolation	
Main wire/outputs	isolation is not affected by interference according to EN 60079-11, voltage peak value 375 V
Output/Output	No Isolation
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013
Standard conformity	
Electromagnetic compatibility	NE 21:2011
Degree of protection	IEC/EN 60529
Fieldbus standard	IEC 61158-2
Climatic conditions	IEC 60721
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
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
Mechanical specifications	
Connection type	pluggable , screw terminal or spring terminal
Core cross-section	see table 2
Housing material	Polycarbonate
Degree of protection	IP20 , IP30 for Ex-e terminal cover

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Mass		2100 g
Dimensions		see dimensions
Mounting		DIN rail mounting and panel mounting
Data for application in connection with hazardous areas		
EU-Type Examination Certificate		BVS 13 ATEX E 121 X
Marking		⟨Ex⟩ II 2 (1)G Ex e ib mb [ia Ga] IIC T4 Gb , ⟨Ex⟩ II 2 G (1D) Ex e ib mb [ia IIIC Da] IIC T4 Gb
Main cable (Trunk)		
Maximum safe voltage	U_m	253 V AC
Outputs		in accordance to FISCO and Entity
Power	P_o	1.063 W
Voltage	U_o	17.1 V
Current	I_o	248.55 mA
Inductance	L_o	gas group IIC 470 µH , gas group IIB 2 mH
Capacitance	C_o	gas group IIC 367 nF , gas group IIB 2.15 µF
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012 , EN 60079-7:2007 , EN 60079-11:2012 , EN 60079-18:2009
International approvals		
CSA approval		CSA 14.70004139
Control drawing		116-0400
Approved for		Class I, Division 2, Groups A, B, C, D T4 Class I, Zone 1, AEx/Ex e ib mb [ia Ga] IIC T4 Gb Class I, Zone 1, AEx/Ex e ib mb [ia IIC Da] IIC T4 Gb Associated equipment for Class I, Division 1 Groups A, B, C, D Associated equipment for Class II, Division 1 Groups E, F, G Associated equipment for Class III, Division 1
IECEx approval		IECEx BVS 13.0119X
Approved for		Ex e ib mb [ia Ga] IIC T4 Gb , Ex e ib mb [ia IIIC Da] IIC T4 Gb
Certificates and approvals		
FOUNDATION Fieldbus		FF-846
Marine approval		DNV A-14038
General information		
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

Type Code/Order Designation

Type of housing

R4D0 DIN rail device coupler

Function

FB FieldBarrier

Type of protection

IA intrinsically safe "Ex ia"

Number of outputs

08 8 spurs

10 10 spurs

12 12 spurs

Connection options

0 Pluggable connectors with screw terminals,

1 Pluggable connectors with spring terminals

R4D0	-	**FB**	-	**IA**		.	
A	-	**B**	-	**C**	**D**	.	**E**

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Dimensions

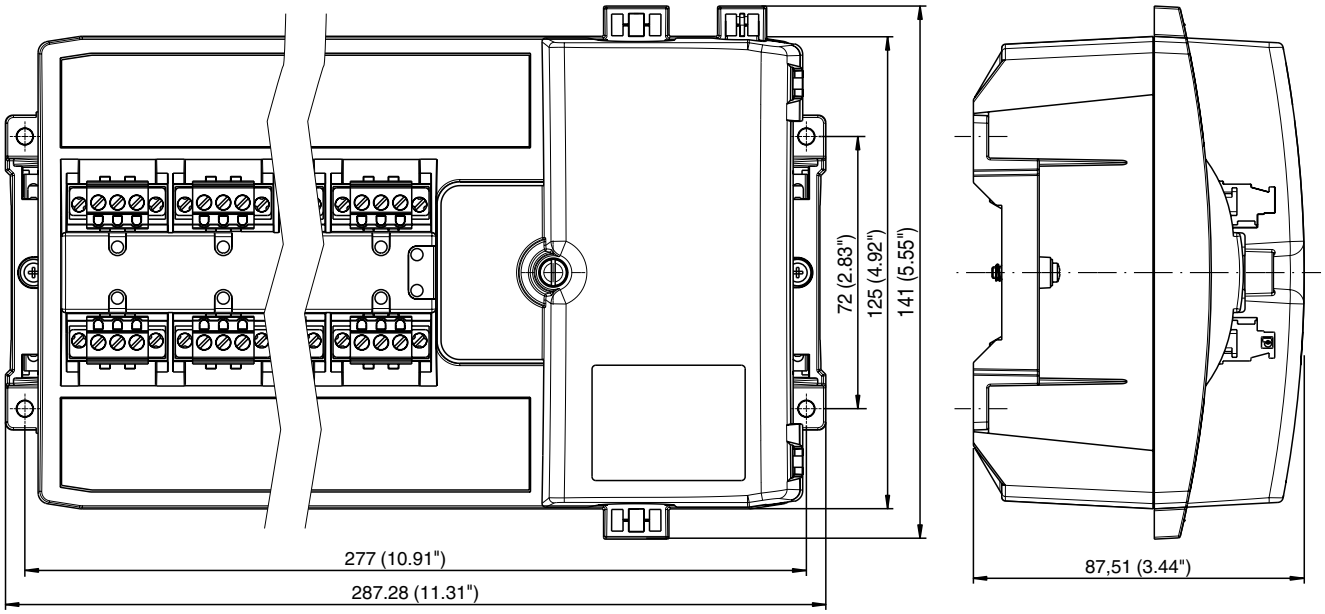

Figure 1: housing dimensions

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

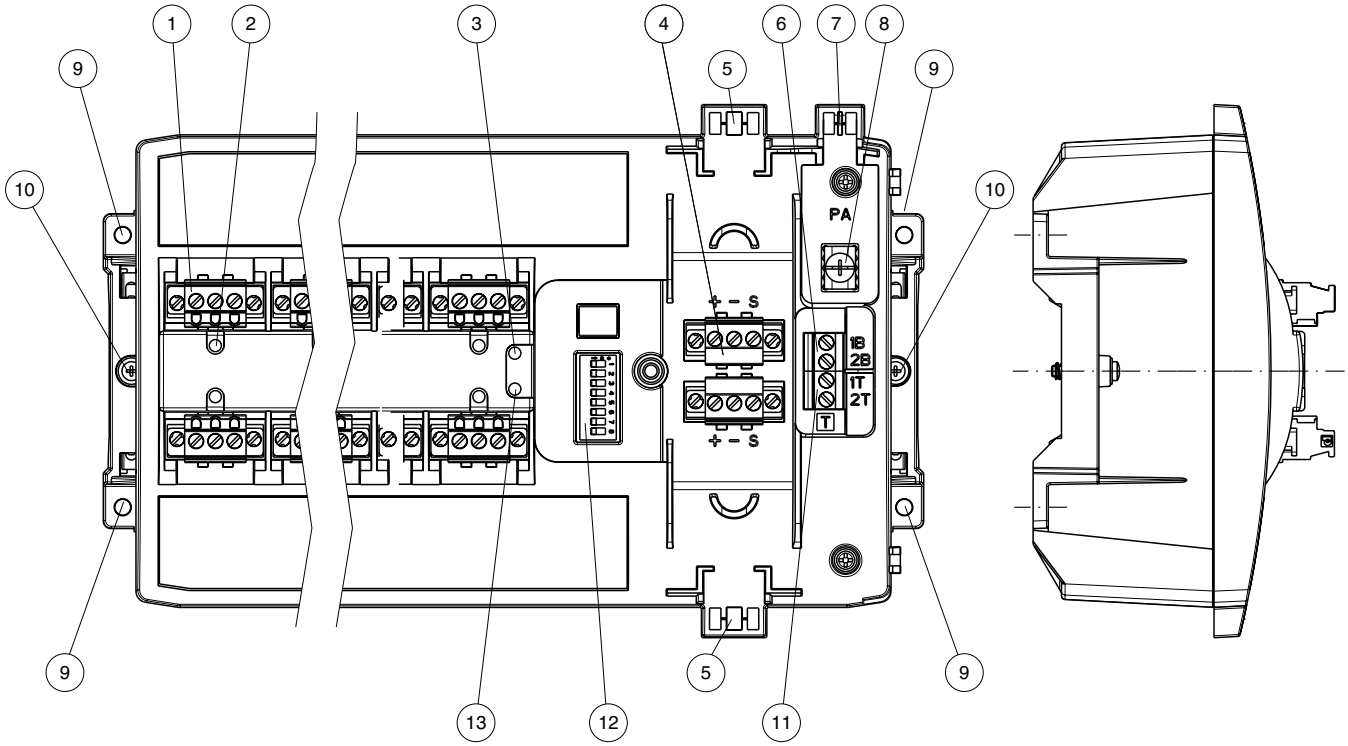

Figure 2: component overview

Description:

1 Spur connectors (* no. of spurs)
2 Spur LEDs (* no. of spurs)
3 PWR-LED
4 Trunk connection
5 Cable ties fixture for trunk cable (* 2)
6 Terminal for cable shield grounding configuration
7 Cable ties fixture for grounding cable
8 Grounding terminal
9 DIN rail mounting fixture (* 2)
10 Hole for wall mounting (* 4)
11 Terminal for terminator configuration
12 DIP switches for diagnostic configuration (1-2 in use, 3-8 n/a)
13 LED COM/ERR (communication/diagnostics)

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Electrical connection

Table 1: Technical data depending on model

Input voltage, current and power loss (power dissipated)		Zero load	1 x 20 m A load	20 mA loads all spurs	20 mA loads all spurs and 1 spur short circuit	Full capacity load (320 mA total)
12 Spur						
16 V	Trunk current	55 mA	75 mA	316 mA	356 mA	414 mA
	Power loss	-	0.85 W	2.4 W	2.7 W	3.1 W
32 V	Trunk current	43 mA	54 mA	172 mA	188 mA	213 mA
	Power loss	-	1.8W	2.7 W	3 W	3.3 W
10 Spur						
16 V	Trunk current	55 mA	75 mA	270 mA	308 mA	414 mA
	Power loss	-	0.85 W	2 W	2.4 W	3.1 W
32 V	Trunk current	43 mA	54 mA	150 mA	168 mA	213 mA
	Power loss	-	1.8 W	2.4 W	2.7 W	3.3 W
8 Spur						
16 V	Trunk current	55 mA	75 mA	225 mA	262 mA	414 mA
	Power loss	-	0.85 W	1.7 W	2 W	3.1 W
32 V	Trunk current	43 mA	54 mA	127 mA	146 mA	213 mA
	Power loss	-	1.8 W	2 W	2.3 W	3.3 W

Table 2: Wire cross section

Wire cross section		Trunk terminals	Spur terminals
Screw terminal	flexible wire	0.2-2.5 mm^2	0.2-2.5 mm^2
	rigid wire	0.2-2.5 mm^2	0.2-2.5 mm^2
Spring terminal	flexible wire	0.5-2.5 mm^2	0.2-2.5 mm^2
	rigid wire	0.5-2.5 mm^2	0.2-2.5 mm^2

Installation note

see manual

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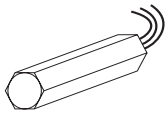
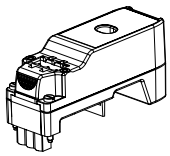
Accessories

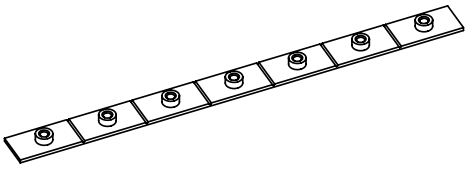
F*-LBF-D1.32 Surge Protector for trunk connection



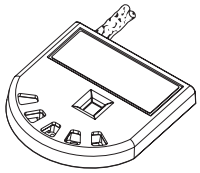


Spur surge protector
SCP-LBF-IA1.36.IE0: Surge Protector for spur connection, shield grounded via gas discharge tube
or
SCP-LBF-IA1.36.IE1: Surge Protector for spur connection, diagnostic included, shield grounded via gas discharge tube
Installation on spur connection of device coupler, for example FieldBarrier

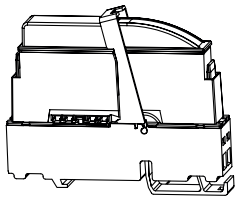
ACC-LBF-EB.6 grounding rail
Installation on up to six SCP-LBF-IA1.36.IE* spur surge protector modules to provide a common earth point and mechanical support



Enclosure Leakage Sensor ELS-1 for water ingress detection



Multi Function Terminal MFT-2L.1600 and MFT-BASE.4P for the trunk connection of the FieldBarrier. The MFT allows live disconnect and maintenance in Zone 1 without requiring a hot work permit.



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