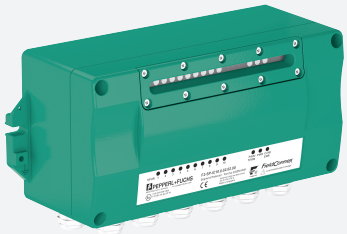


Segment Protector

FieldConnex® Fieldbus

F2-SP-IC*

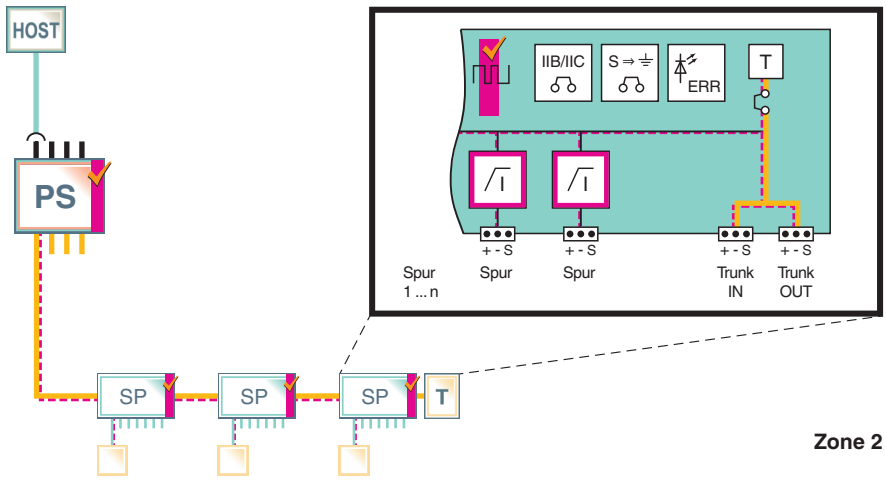
- 4 ... 10 outputs Ex ic (FISCO or Entity)
- Advanced fault isolation at the spur
- Segment Protector in Zone 2
- Instruments in Zone 2 or Zone 1
- For FOUNDATION Fieldbus H1 and PROFIBUS PA
- Advanced Diagnostics at the spur
- Power, Com, Terminator, Diagnostics, and Error LEDs

Segment protector, junction box for fieldbus with short-circuit and fault protection, field junction box, stand-alone device in aluminum housing for field installation

Function

The F2 Segment Protector with integrated diagnostics, a device coupler in aluminum housing, connects 4 ... 10 instruments to the segment with intrinsic safety (Ex ic, Zone 2). Device connections in Zone 1 require additional methods of ignition protection. Pre-engineering options are: cable glands in various materials; a choice of fixed or plug-in terminals with screw or spring-clamp connections. Short circuit, jabber, and bounce protection isolate most fault condition types from the segment.
The short circuit current limitation is adjustable for maximum load with Ex ic for gas groups IIB and IIC. The shield can be connected hard-to-ground or floating. A terminator with LED indication is selectable via jumper.
Short circuit protection ensures proper operation of the segment in case of unwanted faults at the spur. Intrinsic safety at the spur enables work on devices with hot work permit. The integrated fieldbus terminator features a high-availability design and can be chosen via a jumper.

Connection



Technical Data

General specifications		
Design / Mounting		Outside installation
Installation in hazardous area		Zone 2 / Div. 2
Fieldbus connection		
Main cable (Trunk)		
Cable entry type		see table 2
Rated voltage		9 ... 31 V DC 10.5 V DC minimum input voltage acc. to FF-846
Rated current		max. 4.5 A

Release date: 2024-12-23 Date of issue: 2024-12-23 Filename: 238250_eng.pdf

Technical Data

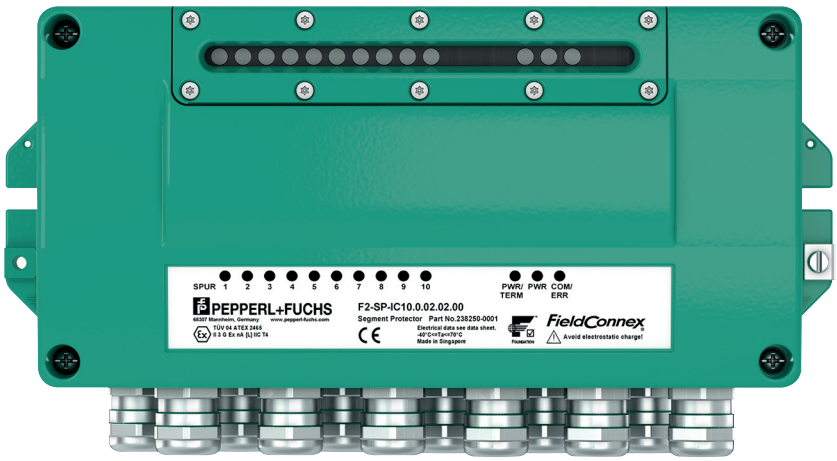
Outputs	
Number of outputs	see table "Technical data depending on model"
Cable entry type	see table 2
Number of devices per output	1
Rated voltage	max. 31 V
Rated current	max. 32 mA jumper 1, position 2 max. 43 mA jumper 1, position 1
Short-circuit current	46 mA jumper 1, position 2 57 mA jumper 1, position 1
Self current consumption	see table "Technical data depending on model"
Voltage drop main cable/outputs	max. 1.2 V
Voltage drop trunk In/Out	0 V
Terminating resistor	selectable via Jumper 100 Ω +/- 10 %
Surge protection	trunk, spurs overvoltage protected if voltage exceeds typ. 39 V, max. 41 V
Indicators/operating means	
LED PWR	green: Fieldbus voltage > 10 V and fieldbus terminator is deactivated
LED PWR/TERM	green: Fieldbus voltage > 10 V and fieldbus terminator is activated
LED COM/ERR	yellow: flashing: fieldbus communication status and physical layer diagnostic status
LED SPURS	red: 2 Hz flashing in short-circuit condition
Jumper 1	configuration of short-circuit current/rated current
Jumper 2	configuration of grounding option for trunk and cable screen/shield
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
Climatic conditions	IEC 60721
Shock resistance	EN 60068-2-27
Vibration resistance	EN 60068-2-6
Ambient conditions	
Ambient temperature	see table 2
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	< 95 % non-condensing
Shock resistance	15 g , 11 ms
Vibration resistance	5 g , 10 ... 150 Hz
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
Mechanical specifications	
Connection type	screw terminal , fixed screw terminal , pluggable spring terminal
Core cross section	max. 2.5 mm² /AWG 12-24
Cable diameter	see table 3
Housing	see figure 1
Housing material	Aluminum
Degree of protection	IP66
Mass	max 2.6 kg , depending on model
Dimensions	see table 2
Mounting	wall mounting
Data for application in connection with hazardous areas	
EU-type examination certificate	TÜV 13 ATEX 107689 X
Marking	⟨Ex⟩ II 3G Ex nA [ic] IIC T4 Gc , ⟨Ex⟩ II 2(3)D Ex tb [ic Dc] IIIC T130°C Db
Supply	

Release date: 2024-12-23 Date of issue: 2024-12-23 Filename: 238250_eng.pdf

Technical Data

Maximum safe voltage	U_m	35 V
Outputs		
Voltage	U_o	32 V
Current	I_o	46 mA jumper 1, position 2 65 mA jumper 1, position 1
Inductance	L_o	0.25 mH jumper 1, position 1 0.125 mH jumper 1, position 2
Capacitance	C_o	60 nF
Directive conformity		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010 , EN 60079-31:2014
International approvals		
IECEx approval		
IECEx certificate		IECEx TUN 13.0004X
IECEx marking		Ex nA [ic] IIC T4 Gc Ex tb [ic Dc] IIIC T130°C Db
Certificates and approvals		
FOUNDATION Fieldbus		FF-846
General information		
Supplementary information		Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.
Accessories		

Assembly



Additional Information

Type Code

Type of housing
- **F2** Field housing, aluminum, IP66

Function
- **SP** Segment Protector

Type of protection
- **IC** Ex ic, non-incendive field wiring rated spur outputs

Number of outputs
- **04** 4 spurs
- **06** 6 spurs
- **08** 8 spurs
- **10** 10 spurs

Terminal options
- **0** Screw terminal, non-pluggable
- **1** Screw terminal, pluggable
- **2** Spring terminal

Trunk entry options[3]
- **00** M20 stopping plug, plastic
- **02** M20 cable gland, plastic
- **03** M20 cable gland, nickel plated brass
- **04** M20 cable gland, stainless steel
- **05** M20 cable gland, nickel plated brass for armored cable
- **09** M12 plug connection, nickel plated brass FOUNDATION Fieldbus[2]
- **10** M12 plug connection, nickel plated brass PROFIBUS PA[2]
- **11** M12 plug connection, stainless steel FOUNDATION Fieldbus[1]
- **12** M12 plug connection, stainless steel PROFIBUS PA[1]

Spur cable entry options[3]
- **00** M20 stopping plug, plastic
- **02** M20 cable gland, plastic
- **03** M20 cable gland, nickel plated brass
- **04** M20 cable gland, stainless steel
- **05** M20 cable gland, nickel plated brass for armored cable
- **09** M12 plug connection, nickel plated brass FOUNDATION Fieldbus
- **10** M12 plug connection, nickel plated brass PROFIBUS PA
- **11** M12 plug connection, stainless steel FOUNDATION Fieldbus
- **12** M12 plug connection, stainless steel PROFIBUS PA

Accessory options
- **0** No tag plate
- **1** Tag plate stainless steel incl. printing
- **2** Tag plate stainless steel excl. printing

- **0** No trunk surge protector
- **1** Trunk surge protector

F2	-	SP	-	IC		.		.		.		.		.		
A	-	B	-	C	D	.	E	.	F	.	G	.	H	I		

Note:

[1] If no surge protector is selected, one trunk entry is closed with a stainless steel stopping plug.

[2] If no surge protector is selected, one trunk entry is closed with a plastic stopping plug.

[3] Only options with cable glands are permitted for dust hazardous areas.

Release date: 2024-12-23 Date of issue: 2024-12-23 Filename: 238250_eng.pdf

Dimensions

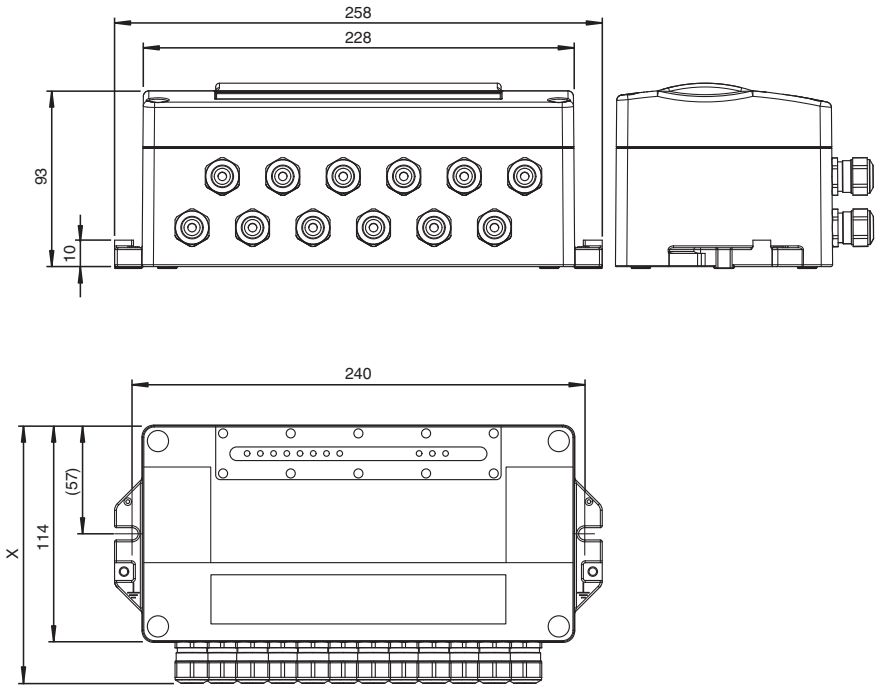


Figure 1: Housing dimensions

All dimensions in millimeters (mm) and without tolerance indication.
Height "X" see table 2.

Assembly

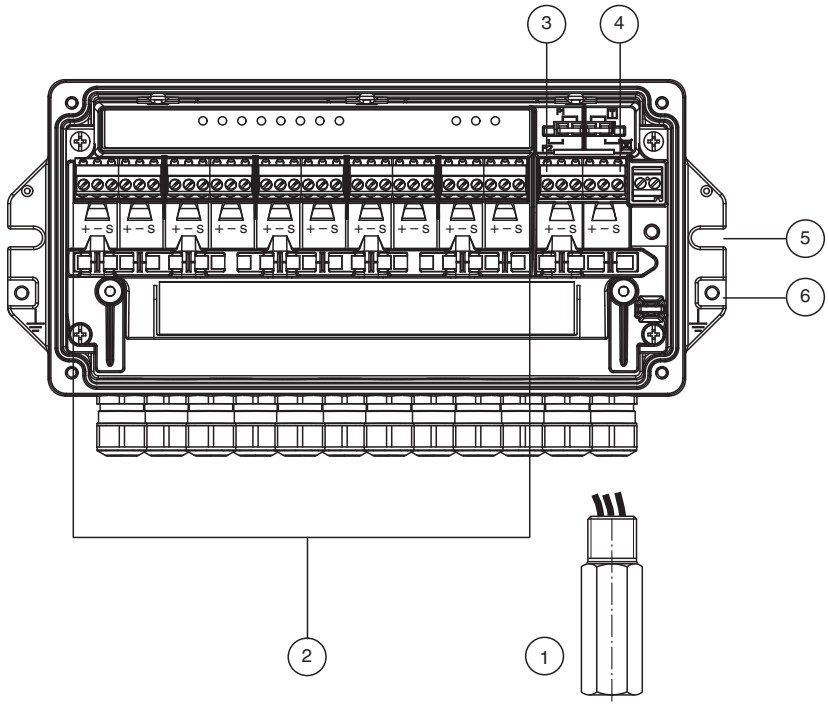


Figure 2: Component overview

Description:
1 Surge protector (preinstalled option)
2 Spur terminals
3 Trunk IN
4 Trunk OUT
5 Notch for fixing with screw M6
6 Grounding point

Release date: 2024-12-23 Date of issue: 2024-12-23 Filename: 238250_eng.pdf

Installation

Electrical Connection

Table 1: Technical Data Depending on Model

Number of outputs	4	6	8	10
Quiescent current	max. 15 mA	max. 17 mA	max. 17 mA	max. 19 mA
Power dissipation at 31 V input	470 mW**	530 mW**	530 mW**	590 mW**

** + 10 mW per spur at 20 mA load

Table 2: Variants of Cable Connections, Housing Types, and Temperature Ranges

Type of connection		Number of outputs				Fixed screw	Pluggable screw	Pluggable spring terminal	Height "X" (mm)[1]	AF (mm)	Temperature range (°C)
		4	6	8	10						
00	Stopping plug plastic	x	x	x	x	x	x	x	120	8	-40 ... +70
02	Cable glands plastic	x	x	x	x	x	x	x	150	24	-40 ... +70
03	Cable glands nickel plated brass	x	x	x	x	x	x	x	140	24	-40 ... +70
04	Cable glands stainless steel	x	x	x	x	x	x	x	140	24	-40 ... +70
05	Cable glands nickel plated brass for armored cable	x	x	x	x	x	x	x	160	24	-40 ... +70
09, 10	Plug connection M12 nickel plated brass	x	x	x	n/a	n/a	n/a	n/a	135	n/a	-25 ... +70
11, 12	Plug connection M12 stainless steel	x	x	x	n/a	n/a	n/a	n/a	135	n/a	-25 ... +70

[1] Height "X" including trunk surge protection: 170 mm; available for all variants

Table 3: Cable Diameter Depending on Cable Gland

Type of connection		Cable diameter (mm)
00	Stopping plug plastic	n/a
02	Cable glands plastic	6 ... 13
03	Cable glands nickel plated brass	7 ... 12
04	Cable glands stainless steel	7 ... 12
05	Cable glands nickel plated brass for armored cable	10 ... 16 outside 7 ... 12 inside 0 ... 1.25 armor
09, 10	Plug connection M12 nickel plated brass	n/a
11, 12	Plug connection M12 stainless steel	n/a

Table 4: Pinout of Plug Connections

Outputs:

M12 x 1

Pin	PROFIBUS PA	FOUNDATION Fieldbus
1	PA+	Data-
2	n.c. (GND)	Data+
3	PA-	Shield
4	Shield	n.c. (GND)

Note:

Outputs are always sockets (female).

Release date: 2024-12-23 Date of issue: 2024-12-23 Filename: 238250_eng.pdf