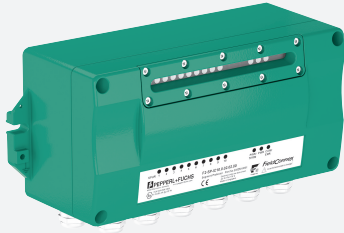


# Segment Protector

## 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

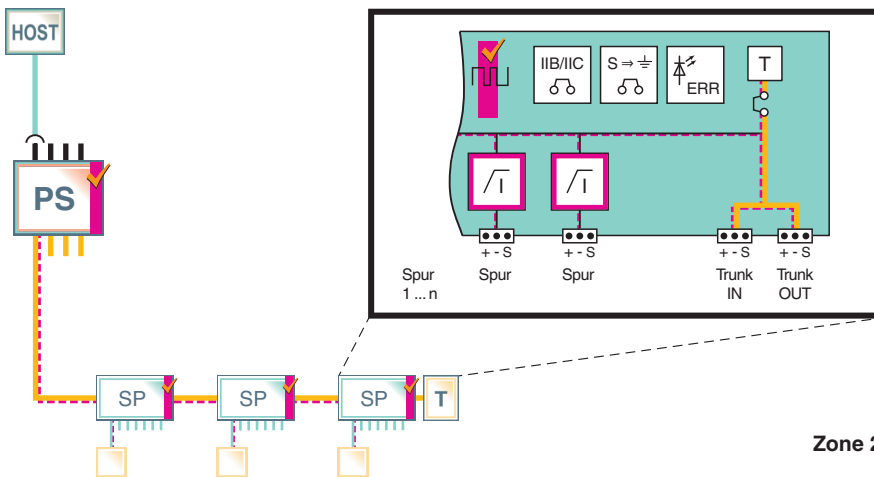
Segment protector, junction box for fieldbus with short-circuit and fault protection, field junction box, stand-alone device in aluminum housing for field installation



## 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



Zone 2

## 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

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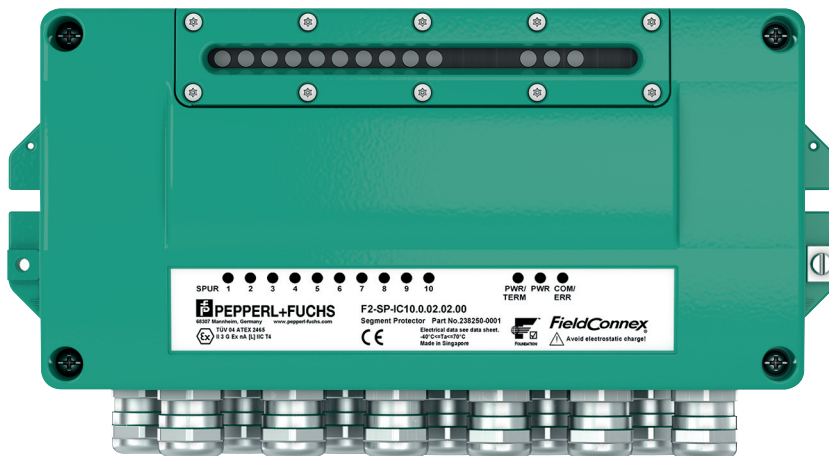
## Technical Data

<b>Outputs</b>		
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 $\Omega$ +/- 10 %
Surge protection		trunk, spurs overvoltage protected if voltage exceeds typ. 39 V, max. 41 V
<b>Indicators/operating means</b>		
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
<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
Climatic conditions		IEC 60721
Shock resistance		EN 60068-2-27
Vibration resistance		EN 60068-2-6
<b>Ambient conditions</b>		
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
<b>Mechanical specifications</b>		
Connection type		screw terminal , fixed screw terminal , pluggable spring terminal
Core cross section		max. 2.5 mm <sup>2</sup> /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
<b>Data for application in connection with hazardous areas</b>		
EU-type examination certificate		TÜV 13 ATEX 107689 X
Marking		Ⓢ II 3G Ex nA [ic] IIC T4 Gc , Ⓢ II 2(3)D Ex tb [ic Dc] IIIC T130°C Db
Supply		

## Technical Data

Maximum safe voltage	$U_m$	35 V
<b>Outputs</b>		
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
<b>Directive conformity</b>		
Directive 2014/34/EU		EN IEC 60079-0:2018+AC:2020 , EN 60079-11:2012 , EN 60079-15:2010 , EN 60079-31:2014
<b>International approvals</b>		
IECEX approval		
IECEX certificate		IECEX TUN 13.0004X
IECEX marking		Ex nA [ic] IIC T4 Gc Ex tb [ic Dc] IIIC T130°C Db
<b>Certificates and approvals</b>		
FOUNDATION Fieldbus		FF-846
<b>General information</b>		
Supplementary information		Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .
<b>Accessories</b>		

## Assembly



**Additional Information**

**Type Code**

<b>Type of housing</b>												
F2	Field housing, aluminum, IP66											
<b>Function</b>												
SP	Segment Protector											
<b>Type of protection</b>												
IC	Ex ic, non-incendive field wiring rated spur outputs											
<b>Number of outputs</b>												
04	4 spurs											
06	6 spurs											
08	8 spurs											
10	10 spurs											
<b>Terminal options</b>												
0	Screw terminal, non-pluggable											
1	Screw terminal, pluggable											
2	Spring terminal											
<b>Trunk entry options<sup>3</sup></b>												
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 <sup>2</sup>											
10	M12 plug connection, nickel plated brass PROFIBUS PA <sup>2</sup>											
11	M12 plug connection, stainless steel FOUNDATION Fieldbus <sup>1</sup>											
12	M12 plug connection, stainless steel PROFIBUS PA <sup>1</sup>											
<b>Spur cable entry options<sup>3</sup></b>												
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											
<b>Accessory options</b>												
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:**

- <sup>1</sup> If no surge protector is selected, one trunk entry is closed with a stainless steel stopping plug.
- <sup>2</sup> If no surge protector is selected, one trunk entry is closed with a plastic stopping plug.
- <sup>3</sup> Only options with cable glands are permitted for dust hazardous areas.

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**Dimensions**

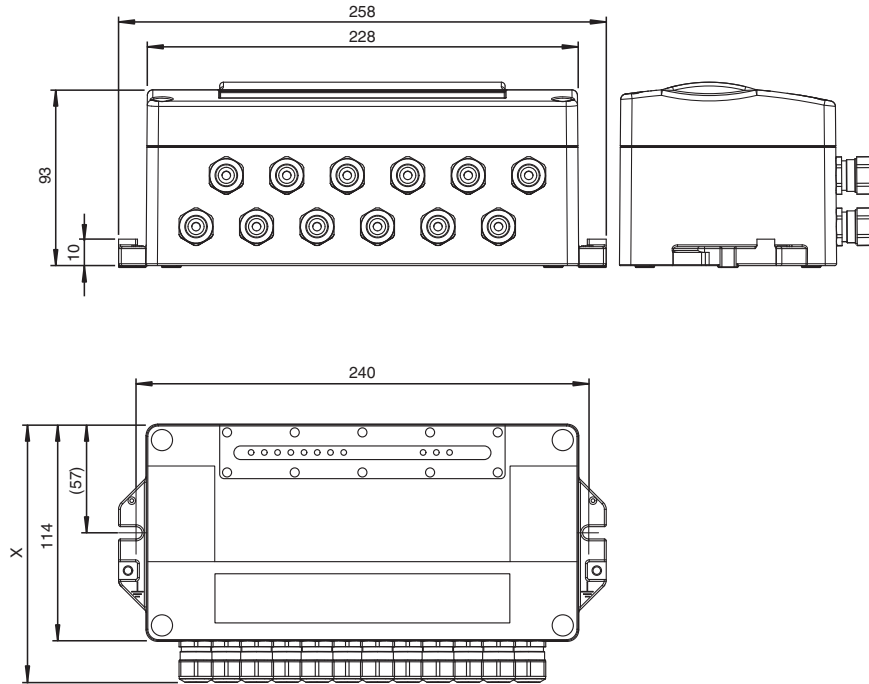


Figure 1: Housing dimensions

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

**Assembly**

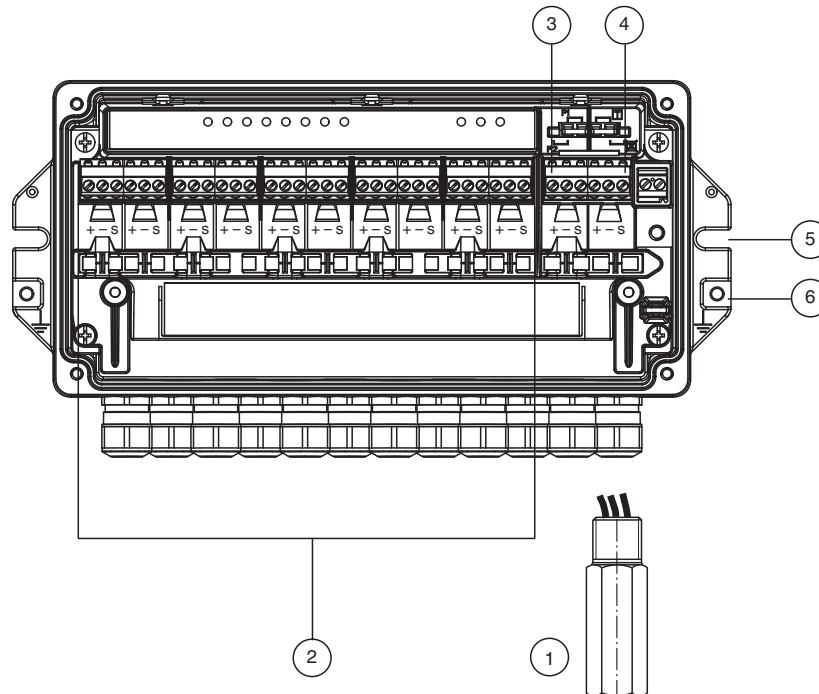


Figure 2: Component overview

**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

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## 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) <sup>1</sup>	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

<sup>1</sup> 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).