Fieldbus Technology

Ex e Field Device Couplers Series 9411/11

- For FOUNDATION™ fieldbus H1 and Profibus PA
- Connection of up to 4 or 8 explosion protected (Ex d / Ex m) field devices to a non-intrinsically safe / Ex e / Nonincendive fieldbus
- Spur protection for each spur
- Reduced starting and low fault current through power management
- LED indication of faults on each spur
- Switchable termination on board
- Screw or cage clamp terminals
- Customer specific enclosures available in different versions

Zone	0	1	2	20	21	22
Class	I			NEC 506		
Zone	0	1	2	20	21	22
Ex interface		X	X		X	X
Installation in		X	X		X	X

Class	I		II / III	
Division	1	2	1	2
Ex interface		X		X
Installation in		X		X

The Ex e Field Device Couplers connect 4 or 8 explosion protected (Ex d / Ex m) FOUNDATION™ fieldbus H1 or Profibus PA field devices to a non-intrinsically safe / Ex e / Nonincendive fieldbus (high energy trunk). A feedback effect from the spurs on the trunk is prevented in the case of short-circuits by current limiting (spur protection). The Field Device Couplers feature a power management to minimise current from the trunk.
The couplers are mounted on DIN rail or in housings made of fibre glass-reinforced polyester, sheet steel or stainless steel. The cable shields can be connected via capacitive connections at the terminals or directly at the cable screen bus bar.

Selection Table

Version	Field enclosure	Number of channels (spurs)	Terminals	Order number
Field Device Coupler without enclosure	without, DIN rail mount	4	screw terminals	**9411/11-210-30**
			spring cage terminal	**9411/11-220-30**
		8	screw terminals	**9411/11-210-40**
			spring cage terminal	**9411/11-220-40**
Field Device Coupler in the standard enclosure	made of polyester	4	screw terminals	**9411/11-211-30**
			spring cage terminal	**9411/11-221-30**
		8	screw terminals	**9411/11-211-40**
			spring cage terminal	**9411/11-221-40**
	made of stainless steel	4	screw terminals	**9411/11-212-30**
			spring cage terminal	**9411/11-222-30**
		8	screw terminals	**9411/11-212-40**
			spring cage terminal	**9411/11-222-40**

Explosion Protection

Certificates	
IECEx	IECEx BVS 08.0056 X
Europe (ATEX)	BVS 06 ATEX E 003 X
USA (NEC)	3026646 (FM)
Other countries	Brazil (INMETRO), Canada (cFM), Kazakhstan (JSC), Belarus (Promatomnadzor)
Marking	
IECEx	
Coupler mounted on DIN rail	
Gas explosion protection	Ex mb eb IIC T4
Coupler in the standard enclosure	
Gas explosion protection	Ex mb eb IIC T4
Dust explosion protection	Ex tD A21 IP 6X T80 °C
Europe (ATEX)	
Coupler mounted on DIN rail	
Gas explosion protection	Ⓔx II 2 G Ex mb eb IIC T4
Coupler in the standard enclosure	
Gas explosion protection	Ⓔx II 2 G Ex mb eb IIC T4
Dust explosion protection	Ⓔx II 2 D Ex tD A21 IP 6X T80 °C
USA (NEC)	see certificate
Installation	in Zones 1 and 2, Zones 21 and 22 (dust), Class I, Zones 1 and 2, Class I Division 2 and in the safe area suitable enclosure neccessary (e.g. R. STAHL Series 8146 or Series 8125)

Ex e Field Device Couplers
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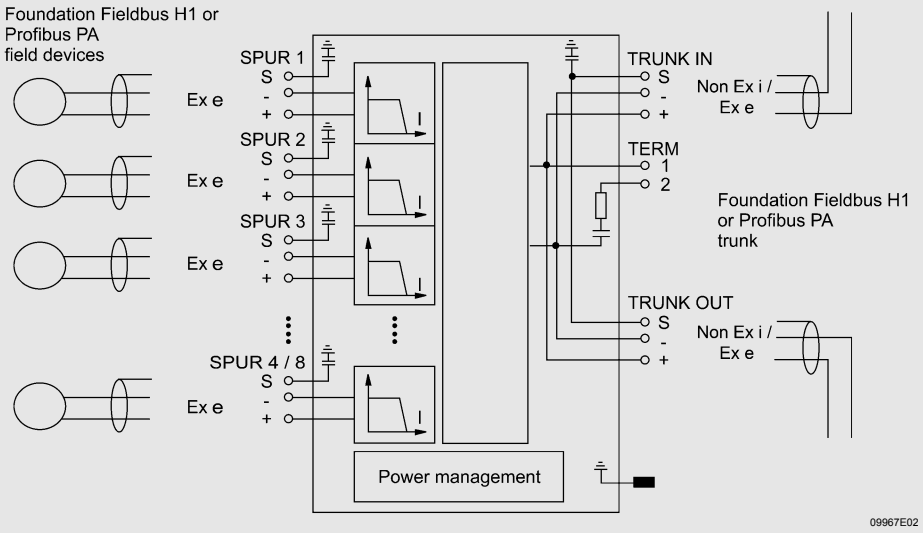
Technical Data

Power supply	not needed, the Field Device Coupler is powered from the trunk		
Galvanic isolation	no isolation		
Data transmission			
between trunk and spurs	passive, no repeater function		
Trunk, non-intrinsically safe / Ex e			
Connections	2 trunk connections (in, out), internally interconnected		
Voltage range	12 ... 32 V		
Undervoltage monitoring	U < 12 V, spurs deenergized		
Max. current consumption		**9411/11-...-30** (4 spurs)	**9411/11-...-40** (8 spurs)
	0 mA each spur	25 mA	25 mA
	20 mA each spur	105 mA	185 mA
	40 mA each spur	185 mA	345 mA
	3 or 7 spurs each at 40 mA, 1 spur with short-circuit	190 mA	350 mA
	all spurs with short-circuit	75 mA	75 mA
Max. power dissipation	1.1 W		
Indication	LED green „PWR“ (U ≥ 12 V on trunk)		
Reverse polarity protection	yes		
Max. number of Field Device Couplers	4 per trunk		
Terminating resistor	The Field Device Couplers have a built-in, switchable termination resistor 100 Ω + 1 uF (IEC 61158-2). A jumper between terminals TERM 1 and 2 connects termination to the trunk. As an alternative, it is also possible to use an external terminating resistor Series 9418.		
Spurs, Ex e			
Number	4 / 8		
Max. cable length	120 m / 394 ft		
Output voltage	≥ 10.8 V at 40 mA per spur		
Current range	0 ... 41 mA per spur		
Min. no-load voltage	11 V		
Max. internal resistance	4 Ω		
Max. short-circuit current	50 mA		
Earthing of cable shields (trunk and spurs)			
Direct earthing	on grounding bar		
Capacitive earthing	via 4.7 nF at terminal „S“; (grounding bolt M6)		
Power management	When the trunk voltage exceeds 12 V the spurs are energized one after the other to avoid high starting current resulting from field devices. A short circuit detected on a spur will deenergize the respective spur until the short-circuit is removed. Regardless how many spurs are short-circuited the trunk is loaded with max one spur short-circuit current. Thus the trunk current and the device power dissipation are minimized under all conditions.		
Fault detection			
Spur short-circuit	≥ 42 ... 50 mA		
Indication of short-circuit per spur	LED red „S1“ ... „S4“ or ... „S8“: ON		

Technical Data

Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326 (IEC/EN 61000-4-1...6 and 11; EN 55022 class B); NAMUR NE 21 (IEC/EN 61000-4-1...6, 8 and 11; EN 55022 class B)		
Ambient conditions			
Ambient temperature	Coupler mounted on DIN rail:	- 40 ...+ 75 °C / - 40 ... + 167 °F	
	Coupler installed in the standard enclosure:	- 20 ...+ 70 °C / - 4 ... + 158 °F	
Storage temperature	- 40 ... + 75 °C / -40 ... +167 °F		
Relative humidity (no condensation)	< 95 %		
MTBF (to SN 29500)	227 years (4 channels) / 181 years (8 channels)		
Connection diagram			
Mechanical data			
Terminals	3 pole (+, -, screen)	screw terminals trunk / spurs Ex e	spring cage terminals trunk / spurs Ex e
	rigid	0.2 ... 4 mm² / 24 ... 12 AWG	0.5 ... 2.5 mm² / 20 ... 14 AWG
	flexible	0.25 ... 2.5 mm² / 22 ... 14 AWG	0.5 ... 2.5 mm² / 20 ... 14 AWG
	flexible, end covering sleeves	0.25 ... 2.5 mm² / 22 ... 14 AWG	0.5 ... 1.5 mm² / 22 ... 16 AWG
Assembly type	on DIN rail, EN 50022 (NS 35/15, NS 35/7.5) or mounting plate		
Installation position	vertical or horizontal		
Degree of protection			
Enclosure	IP30		
Ex e terminals	IP20		
Fire protection class (UL-94)	HB		

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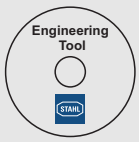
Technical Data

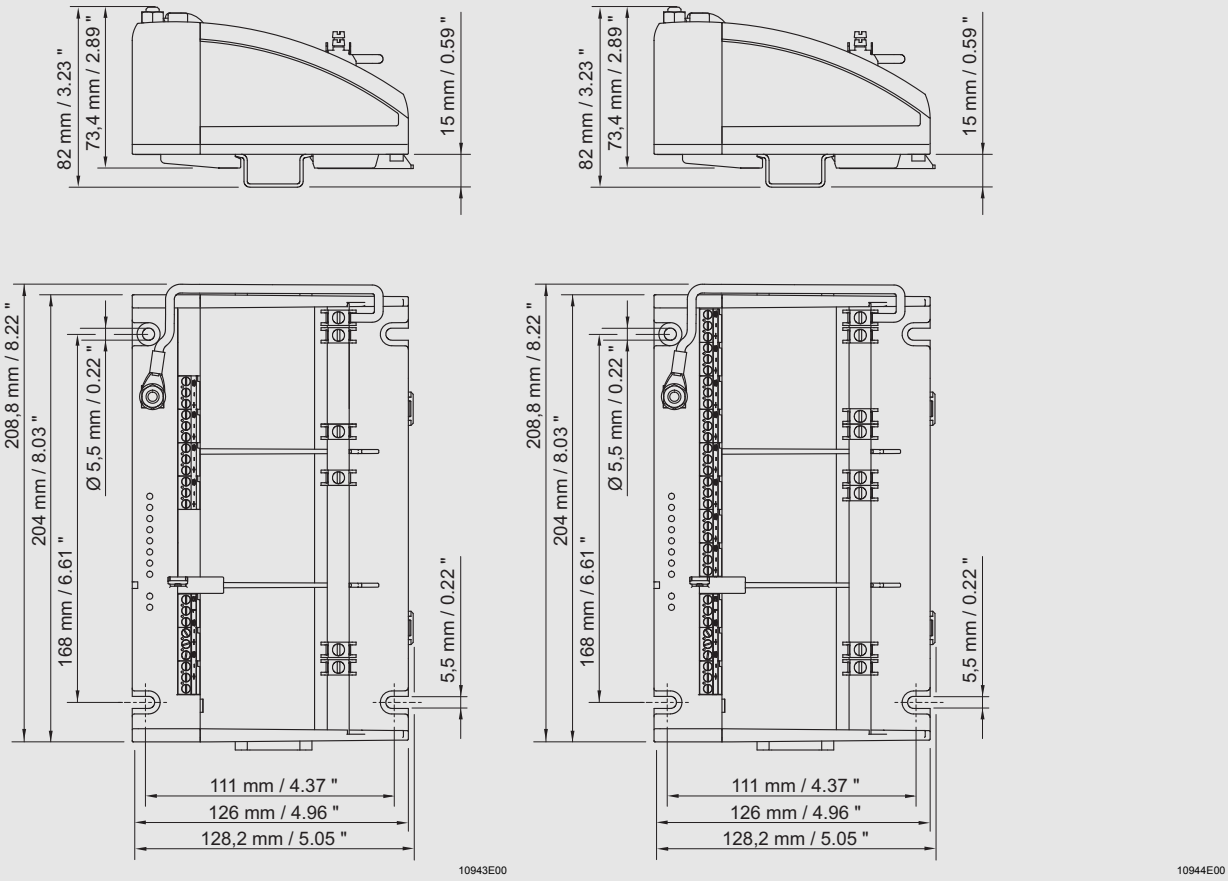
Field Device Coupler in the standard enclosure

Version	material	enclosure Series	Field Device Coupler
	polyester	8146/.061	9411/11-211-30 9411/11-221-30
		8146/.S71	9411/11-211-40 9411/11-221-40
	stainless steel	8125/.061	9411/11-212-30 9411/11-222-30
		8125/.071	9411/11-212-40 9411/11-222-40
Degree of protection	IP66		
Cable entries	cable glands Series 8161		4 / 8 x M20 black (Ex e spurs) 2 x M20 black (Ex e trunk) 1 x M16 black (earth)
	breathing gland Series 8162		1 x M25

Accessories and Spare Parts

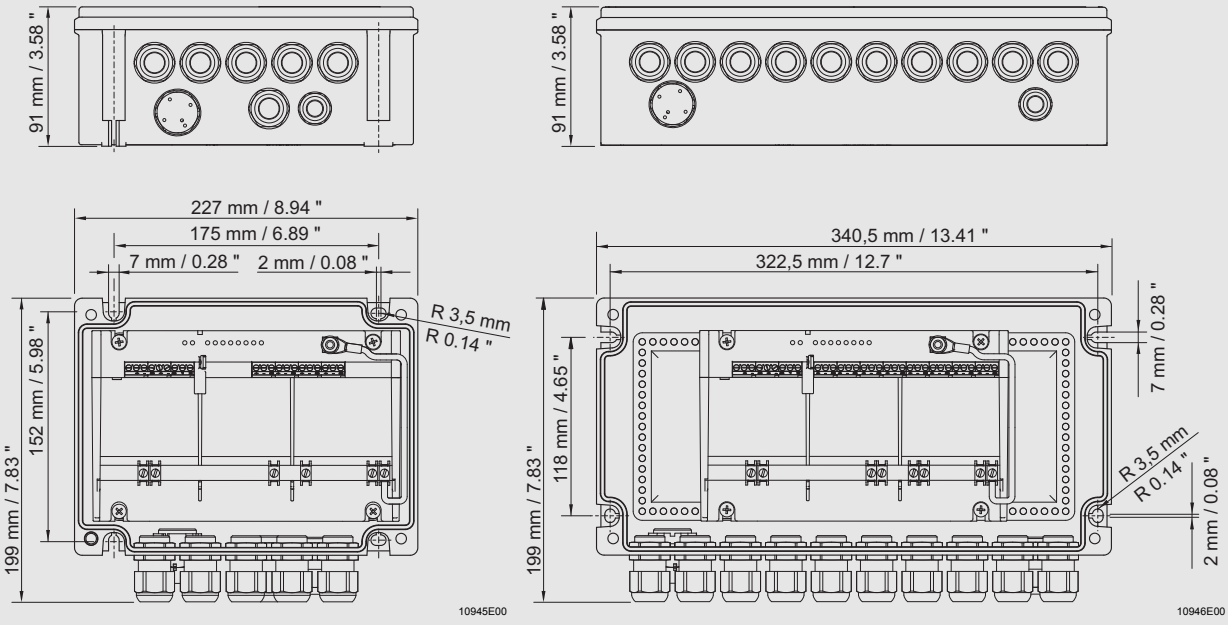
Designation	Illustration	Description	Order number	Weight kg / lbs
Terminator	 06501E00	Fieldbus Terminator "Ex m"	**9418/01-201-10**	0.080 / 0.176
		Fieldbus Terminator "Ex i"	**9418/02-201-10**	0.080 / 0.176
Fieldbus Wizard Engineering Tool	 07376E00	Engineering tool for segment design of Fieldbus Foundation or Profibus PA Fieldbus segments **Download under www.fieldbus-solutions.info**	**Download under www.fieldbus-solutions.info**	
Fieldbus Power Supply	 12783E00	fieldbus power supply and diagnostics	**9412/00-310-11s**	0.135 / 0.298
	 12809E00	fieldbus power supply, diagnostics and adjustable warning level	**9412/00-320-11s**	0.135 / 0.298

Dimensional Drawings (All Dimensions in mm / inches) - Subject to Alterations



9411/11-210-30 and 9411/11-220-30
Field Device Coupler, 4 Spurs, without enclosure

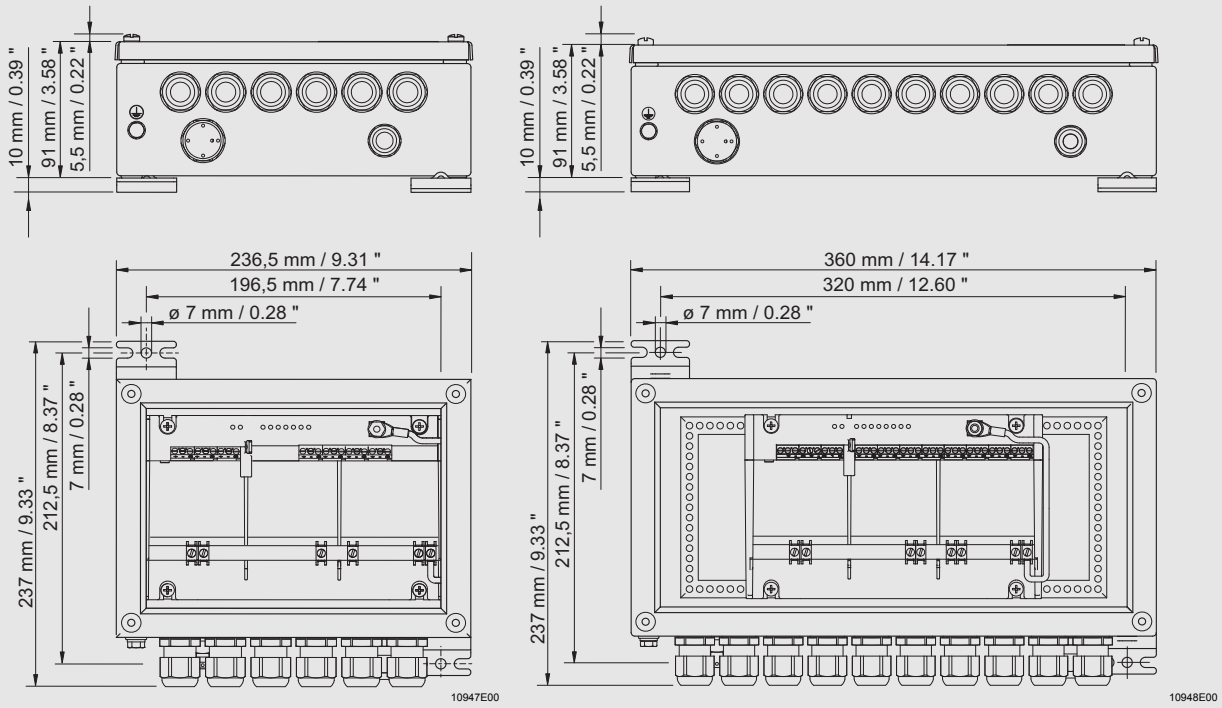
9411/11-210-40 and 9411/11-220-40
Field Device Coupler, 8 Spurs, without enclosure



9411/11-211-30 and 9411/11-221-30
Enclosure 8146/.061 incl. Field Device Coupler

9411/11-211-40 and 9411/11-221-40
Enclosure 8146/.S71 incl. Field Device Coupler

Dimensional Drawings (All Dimensions in mm / inches) - Subject to Alterations



9411/11-212-30 and 9411/11-222-30
Enclosure 8125/.061 incl. Field Device Coupler

9411/11-212-40 and 9411/11-222-40
Enclosure 8125/.071 incl. Field Device Coupler

We reserve the right to make alterations to the technical data, dimensions, weights, designs and products available without notice. The illustrations cannot be considered binding.