

Zone 1 Ex e Field Device Couplers Series 9411/11



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11008E00

- > 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
- > Short-circuit protection for each spur
- > Reduced starting and low short-circuit 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



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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.

	ATEX / IECEx							Class I (NEC 505) (NEC 506)							Class I Class II Class III							
	0	1	2	20	21	22		0	1	2	20	21	22		1	2	1	2	1	2		
Zone							Zone							Division								
Ex interface	x	x			x	x	Ex interface	x	x			x	x	Ex interface	x			x				x
Installation in	x	x			x	x	Installation in	x	x			x	x	Installation in	x			x				x

WebCode 9411B

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Selection Table

Version	Field enclosure	Number of channels (spurs)	Terminals	Order number
Ex e 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
Ex e 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 (GOST-K), Belarus (GOST-B), Russia (GOST-R)

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	⊕ II 2 G Ex mb eb IIC T4
Coupler in the standard enclosure	
Gas explosion protection	⊕ II 2 G Ex mb eb IIC T4
Dust explosion protection	⊕ 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 necessary (e.g. R. STAHL Series 8146, Series 8125 or Series 8150)

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Technical Data

Trunk, non-intrinsically safe / Ex e

Connections	2 trunk connections (IN, OUT), internally bridged		
Minimum input voltage	10.7 V acc. to FF-846 Note: this guarantees an output voltage (spurs) at full load of min. 9.3 V		
Rated operational voltage	9 ... 32 V		
Rated operational current	≤ 2 A		
Undervoltage monitoring	U < 9 V, spurs deenergized		
Surge protection	yes		
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
	41 mA each spur	189 mA	353 mA
	3 or 7 spurs each at 41 mA, 1 spur with short-circuit	198 mA	362 mA
	all spurs with short-circuit	75 mA	75 mA
Power management	When the trunk voltage exceeds 9 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.		
Max. power dissipation	1.1 W		
Indication	LED green „PWR“ (U ≥ 9 V on trunk)		
Reverse polarity protection	yes		
Voltage drop	≤ 60 mV (at 2 A / 25 °C)		
Trunk IN / Trunk OUT			
Max. number of Field Device Couplers per segment	4		
Terminating resistor	The field device couplers have a built-in, switchable terminating resistor 100 Ω + 1 uF (IEC 61158-2). A jumper between the terminals TERM 1 and 2 connects the terminating resistance to the trunk. As an alternative, it is also possible to use an external terminating resistor Series 9418.		

Spurs, Ex e

Quantity	4 / 8
Galvanic isolation	no isolation
Number of field devices per spur	1
Max. cable length	120 m / 394 ft
Voltage drop trunk / spur	≤ 1.4 V
Current range	0 ... 41 mA per spur
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)

Fault detection

Spur short-circuit	≥ 42 ... 50 mA
Indication of short-circuit per spur	LED red „S1“ ... „S4“ or ... „S8“: ON
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 %

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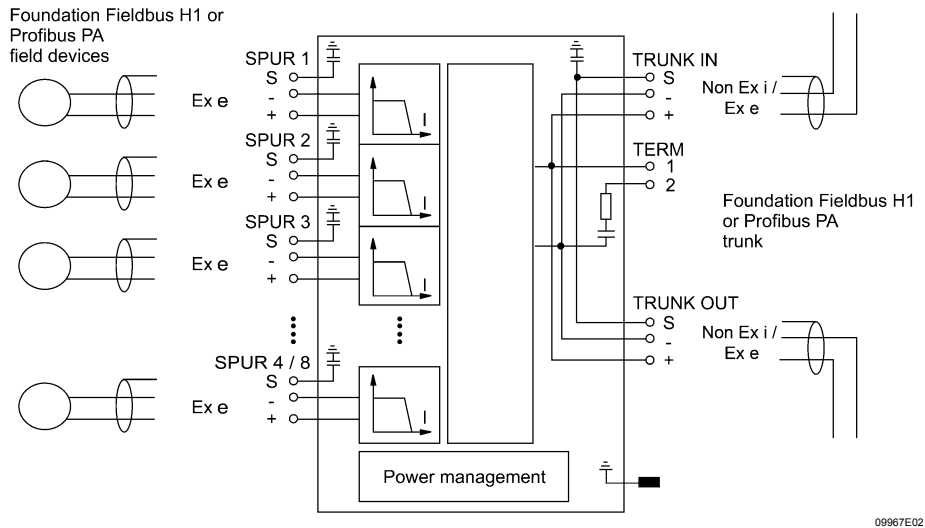
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Technical Data

Connection diagram



Mechanical data

Terminals	3 pole (+, -, screen) rigid	screw terminals trunk / spurs Ex e 0.2 ... 4 mm ² / 24 ... 12 AWG	spring cage terminals trunk / spurs Ex e 0.5 ... 2.5 mm ² / 20 ... 14 AWG
	flexible	0.25 ... 2.5 mm ² / 22 ... 14 AWG	0.5 ... 2.5 mm ² / 20 ... 14 AWG
	flexible, end covering sleeves	0.25 ... 2.5 mm ² / 22 ... 14 AWG	0.5 ... 1.5 mm ² / 22 ... 16 AWG
Assembly	on DIN rail, EN 50022 (NS 35/15, NS 35/7.5) or mounting plate		
Installation position	vertical or horizontal		
Degree of protection	IP30		
Enclosure	IP20		
Ex e terminals	HB		
Fire protection class (UL-94)	HB		

Field Device Coupler in a standard enclosure


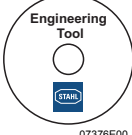




Version	material	enclosure Series	Field Device Coupler
	polyester	8146/.061	9411/11-211-30
			9411/11-221-30
		8146/.S71	9411/11-211-40
	stainless steel	8125/.061	9411/11-221-40
			9411/11-212-30
		8125/.071	9411/11-222-30
			9411/11-212-40
			9411/11-222-40
Degree of protection	IP66		
Cable glands	cable 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

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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 installations	Download under www.fieldbus-solutions.info	
Fieldbus Power Supply	 12783E00	Fieldbus power supply and diagnosis	9412/00-310-11s	0.135 / 0.298
	 12809E00	Fieldbus power supply, diagnosis and adjustable warning level	9412/00-320-11s	0.135 / 0.298
Earthing bar set for 4 Spurs	 01525E00	Earthing bar 9411 spring terminal strap with 6 terminals	202774	0.000 / 0.000
Earthing bar set for 8 Spurs	 04079E00	Earthing bar 9411 spring terminal strap with 10 terminals	202775	0.000 / 0.000

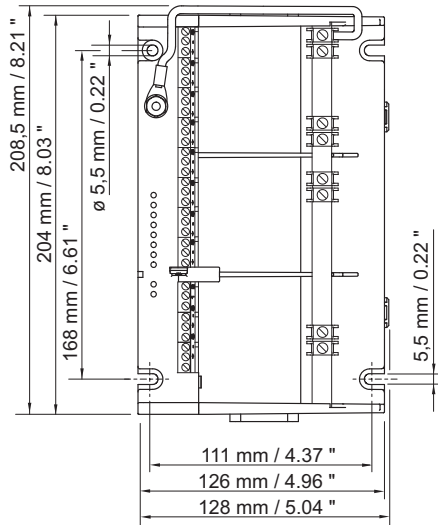
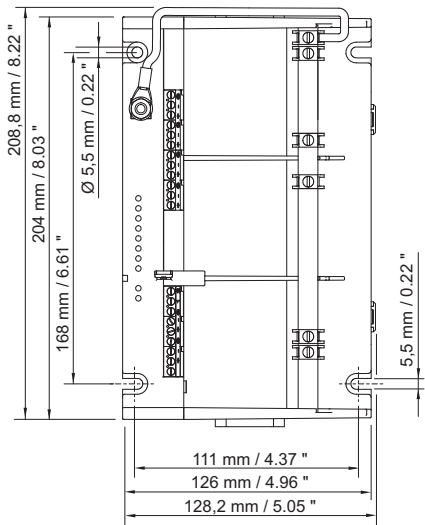
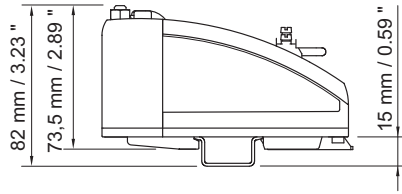
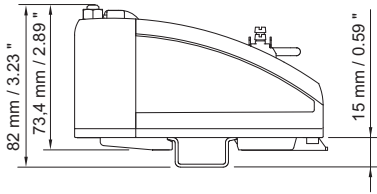
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Dimensional Drawings (All Dimensions in mm / inches) - Subject to Alterations

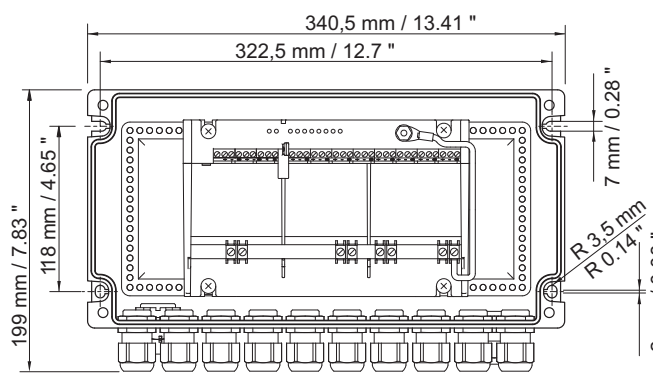
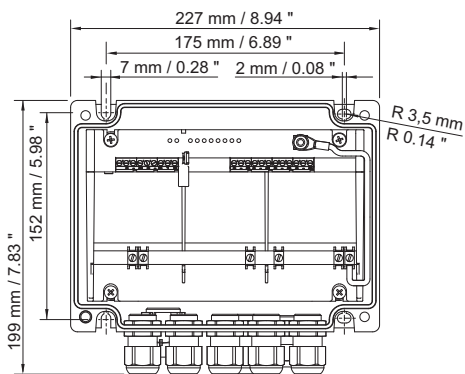
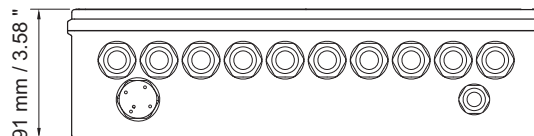
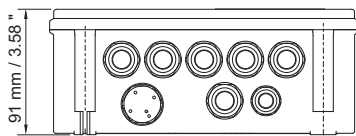


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9411/11-210-30 and 9411/11-220-30
Field Device Coupler, 4 Spurs, without enclosure

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



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

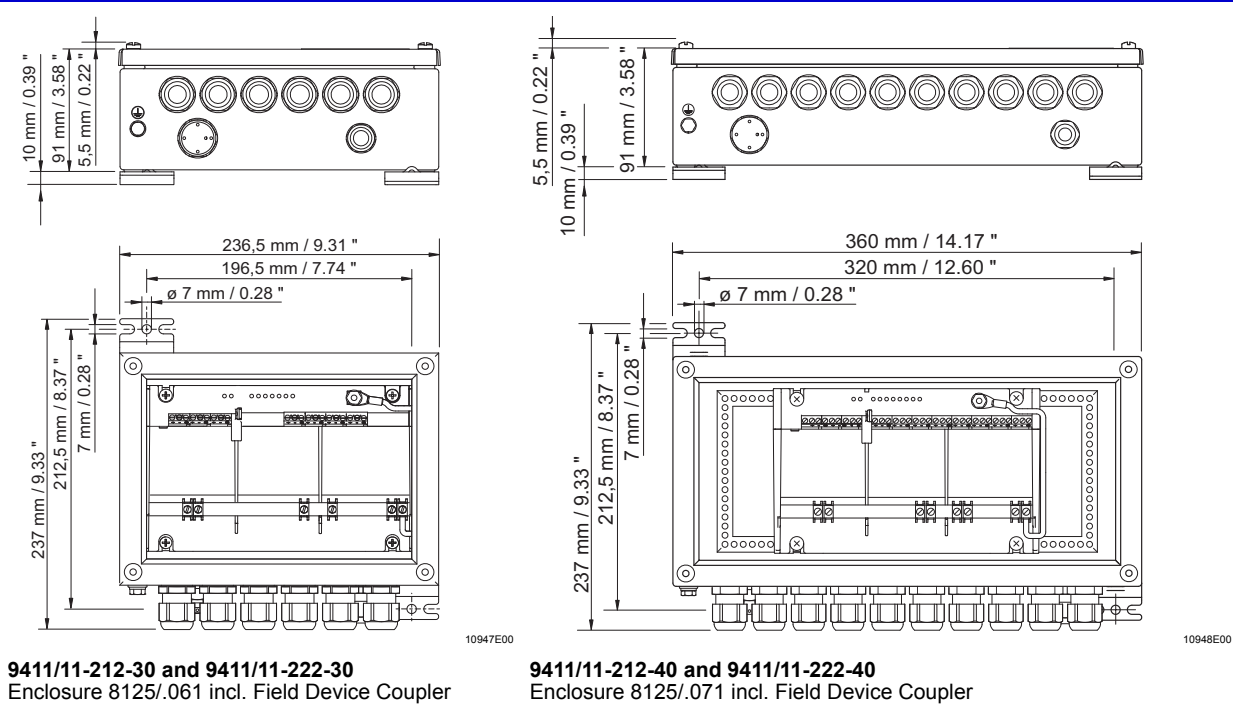
9411/11-211-40 and 9411/11-221-40
Enclosure 8146/.S71 incl. Field Device Coupler

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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.