



- Can be used universally for two- and three-conductor transmitters and mA sources (four-conductor transmitters)
- High degree of accuracy
- Standard variant can be used up to SIL 2, special variant up to SIL 3 (IEC/EN 61508)

07 b

MY R. STAHL 9160A



9160 series transmitter supply units can be used for the intrinsically safe operation of two- and three-wire transmitters or intrinsically safe mA sources such as four-wire transmitters. The unit allows HART signals to be transmitted in both directions. The portfolio includes single- and dual-channel units and a version for signal duplication. Special versions are available for lower output voltages and SIL 3.

	NEC® 500 CE Code Appendix J					
	Class I		Class II		Class III	
Division	1	2	1	2	1	2
Ex interface	•	•	•	•	•	•
Installation in		•				

	CE Code Section 18 NEC® 505 NEC® 506					
	Class I					
Zone	0	1	2	20	21	22
Ex interface	•	•	•			
Installation in			•			

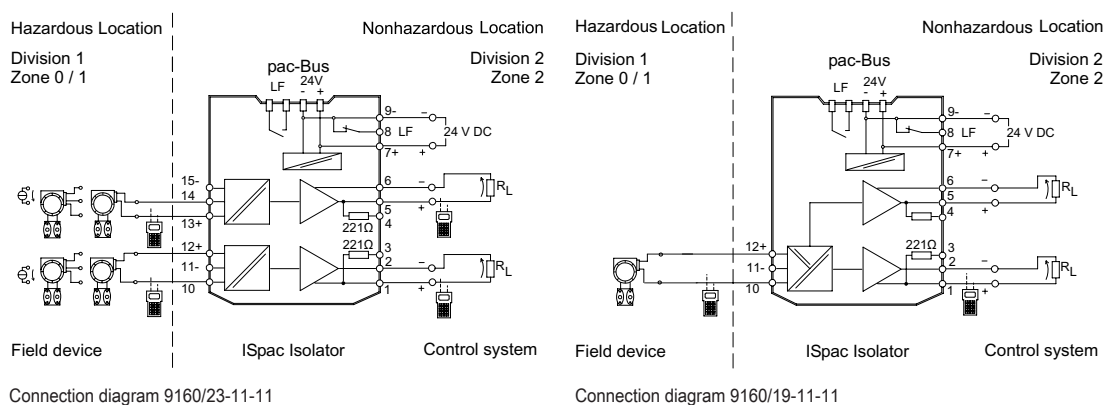
	IECEx / ATEX					
	Zone	0	1	2	20	21
Ex interface	•	•	•	•	•	•
Installation in			•			

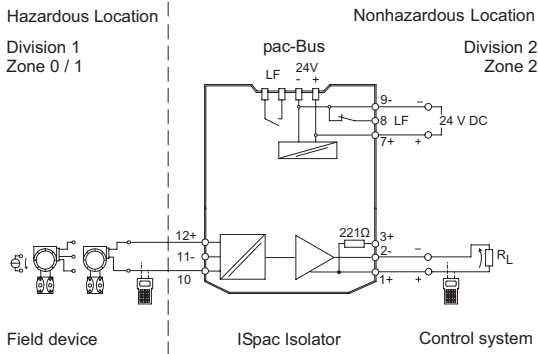
Selection Table									
Product variant		Transmitter supply unit							
Number of channels	Input	Output A	Output B	LFD relay	SIL	Connection type	Product Type	Art. No.	Weight
1	0/4 ... 20 mA with HART	0/4 to 20 mA	–	Yes	2	Screw terminal	9160/13-11-11s	214895	195 g
		0/4 to 20 mA	–	Yes	2	Spring clamp terminal	9160/13-11-11k	214896	195 g
		0/4 to 20 mA	–	Yes	3	Screw terminal	9160/13-11-13s	214897	195 g
		0/4 to 20 mA	–	Yes	3	Spring clamp terminal	9160/13-11-13k	214898	195 g
		0/4 to 20 mA	0/4 to 20 mA (without HART)	Yes	2	Screw terminal	9160/19-11-11s	220324	195 g
		0/4 to 20 mA	0/4 to 20 mA (without HART)	Yes	2	Spring clamp terminal	9160/19-11-11k	220325	195 g
2	0/4 ... 20 mA with HART	Passive	Passive	No	2	Screw terminal	9160/23-10-10s	214903	195 g
		Passive	Passive	No	2	Spring clamp terminal	9160/23-10-10k	214904	195 g
		0/4 to 20 mA	0/4 to 20 mA	Yes	2	Screw terminal	9160/23-11-11s	220322	200 g
		0/4 to 20 mA	0/4 to 20 mA	Yes	2	Spring clamp terminal	9160/23-11-11k	220323	210 g

LFD – line fault diagnostics
 No – device transmits field-side line faults via a 4 to 20 mA signal. Without LED/relay contact
 Yes – device transmits field-side line faults via a 4 to 20 mA signal. With LED/relay contact.

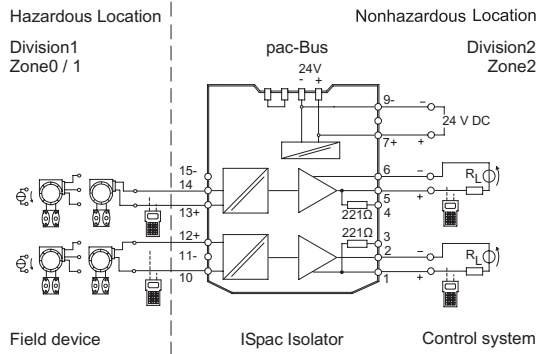
Technical Data		
Variant	9160/...-11-11 9160/13-11-13	9160/23-10-10
Explosion Protection		
FMus certificate	FM16US0122X	FM16US0122X
cFM certificate	FM16CA0067X	FM16CA0067X
Marking cFMus	Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, nA nC Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, [Ex ia] IIC T4 Mounting vert. at Ta = 70°C, or horizontal Ta = 60°C See Doc. 91 606 01 31 1	Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, nA nC Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, [Ex ia] IIC T4 Mounting vert. at Ta = 70°C, or horizontal Ta = 60°C See Doc. 91 606 01 31 1
IECEX gas explosion protection	Ex nA nC [ia Ga] IIC T4 Gc	Ex nA [ia Ga] IIC T4 Gc
IECEX dust explosion protection	[Ex ia Da] IIIC	[Ex ia Da] IIIC
IECEX firedamp protection	[Ex ia Ma] I	[Ex ia Ma] I
Certificates	ATEX (BVS), Brazil (ULB), Canada (FM), China (NEPSI), IECEX (BVS), Korea (KTL), SIL (exida), USA (FM)	ATEX (BVS), Brazil (ULB), Canada (FM), China (NEPSI), IECEX (BVS), Korea (KTL), SIL (exida), USA (FM)
Ship approval	CCS, EU RO MR (DNV)	CCS, EU RO MR (DNV)
Auxiliary Power		
Auxiliary power	24 V DC	24 V DC
Input		
Input signal	0/4 to 20 mA with HART	0/4 to 20 mA with HART
Ex i input supply voltage for transmitter	16 V at 20 mA (for 2-wire)	16 V at 20 mA (for 2-wire)
Supply voltage for transmitter	≥ 16 V at 20 mA	≥ 16 V at 20 mA
Output		
Output	0/4 to 20 mA with HART	Passive with HART
Load resistance R _L	0 to 600 Ω (terminal 1+/- or 5+/-) 0 to 379 Ω (terminal 3+/- or 4+/-) (with internal 221 Ω resistor for HART)	
Temperature influence error limits	≤ 0.05% / 10 K	≤ 0.05% / 10 K
Deviation	≤ 0,1 %	≤ 0,1 %
Ambient Conditions		
Ambient temperature °F	-4 °F ... +158 °F (Single device) -40 °F ... +140 °F (Group assembly)	-4 °F ... +158 °F (Single device) -4 °F ... +140 °F (Group assembly)
Ambient temperature °C	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)
Storage temperature °F	-40 °F ... +176 °F	-40 °F ... +176 °F
Storage temperature °C	-40 °C ... +80 °C	-40 °C ... +80 °C
Mounting / Installation		
Mounting type	DIN rail NS35/15, NS35/7.5	DIN rail NS35/15, NS35/7.5

Technical Drawings – Subject to Alterations

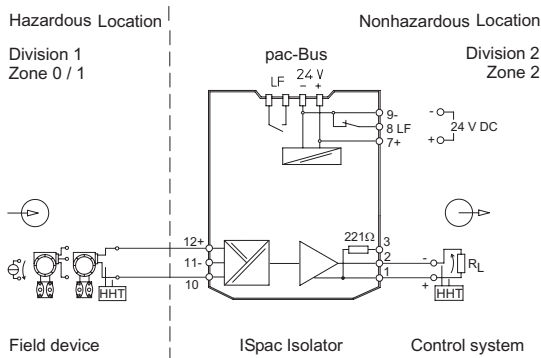




Connection diagram 9160/13-11-13









Connection diagram 9160/23-10-10



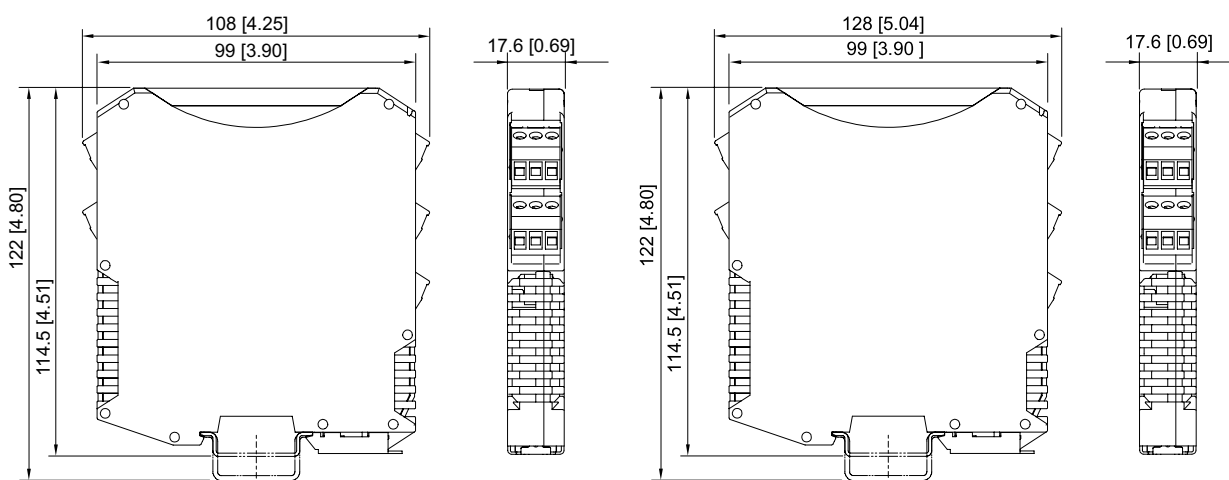
Connection diagram 9160/13-11-11

Accessories				
Figure	Description	Product Type	Art. No.	Weight
Transparent cover				
	For 91xx ISpac modules Yellow, transparent Clear identification of the device for SIL applications. (Packaging unit: 10 pieces)	-	200914	20 g
Terminal set for pac-Bus				
	For the supply of 24 V DC auxiliary power via terminals (alternative to using the supply module 9193/ 9194/50-01 21-11-11), with jumper for error message chain for ISpac module 91xx		160730 ▲	8 g

Spare Parts				
Figure	Description		Art. No.	Weight
Screw terminal				
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: green		112817	5 g
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: black		112816	4 g

Spare Parts				
Figure	Description	Art. No.	Weight	
Screw terminal				
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: blue	112818	5 g	
Screw terminal with test tap				
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: black	113005	1 g	
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: blue	113004	1 g	
Spring clamp terminal				
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: green	112825	5 g	
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: black	112824	5 g	
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: blue	112826	5 g	

Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



ISpac Series 9143, 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, ISbus Series 9412 with screw terminal

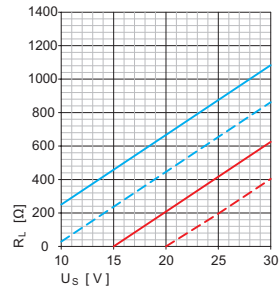
ISpac Series 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, Fieldbus Power Supply Series 9412 with spring clamp terminal

Load resistance R_L

07 b

Output version (control) 0/4 to 20 mA passive/sink with HART

Type 9160/..-10-10s



- U_S Supply voltage
- R_L Load resistance
- R_{max} Max. load resistance at terminals 1, 2 and 5, 6
- R_{min} Min. load resistance at terminals 1, 2 and 5, 6
- $R_{max R}$ Max. load resistance at terminals 1, 3 and 4, 6
- $R_{min R}$ Min. load resistance at terminals 1, 3 and 4, 6