- Can be used universally for 2- and 3-wire transmitters and mA sources (4-wire transmitters)
- High degree of accuracy
- Variants with wire breakage and short-circuit monitoring
- Transparent for HART signals

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.

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

	IECEx / ATEX					
Zone	0	1	2	20	21	22
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 lb
1	0/4 ... 20 mA with HART	0/4 to 20 mA	–	Yes	2	Screw terminal	**9160/13-11-11s**	214895	0.43 lb
		0/4 to 20 mA	–	Yes	2	Spring clamp terminal	**9160/13-11-11k**	214896	0.43 lb
		0/4 to 20 mA	–	Yes	3	Screw terminal	**9160/13-11-13s**	214897	0.43 lb
		0/4 to 20 mA	–	Yes	3	Spring clamp terminal	**9160/13-11-13k**	214898	0.43 lb
		0/4 to 20 mA	0/4 to 20 mA (without HART)	Yes	2	Screw terminal	**9160/19-11-11s**	220324	0.43 lb
		0/4 to 20 mA	0/4 to 20 mA (without HART)	Yes	2	Spring clamp terminal	**9160/19-11-11k**	220325	0.43 lb
2	0/4 ... 20 mA with HART	Passive	Passive	No	2	Screw terminal	**9160/23-10-10s**	214903	0.43 lb
		Passive	Passive	No	2	Spring clamp terminal	**9160/23-10-10k**	214904	0.43 lb
		0/4 to 20 mA	0/4 to 20 mA	Yes	2	Screw terminal	**9160/23-11-11s**	220322	0.44 lb
		0/4 to 20 mA	0/4 to 20 mA	Yes	2	Spring clamp terminal	**9160/23-11-11k**	220323	0.46 lb

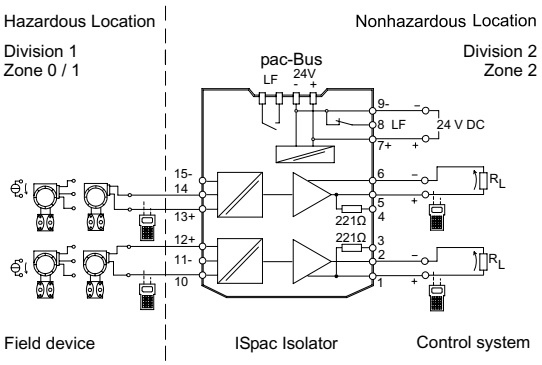
LFD – line fault diagnostics
No – device transmits field-side line faults via a 4 to 20 mA signal. Without LED/relay contact
Yes – device transmits field-side line faults via a 4 to 20 mA signal. With LED/relay contact.

07 b

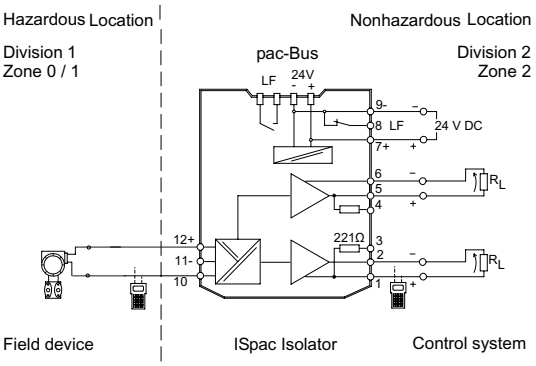
Technical Data

Variant	9160/ . .-11-11 9160/13-11-13	9160/23-10-10
Explosion Protection		
FMus certificate	FM16US0122X	FM16US0122X
cFM certificate	FM16CA0067X	FM16CA0067X
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, [AEx/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, [AEx/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
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 ... 600 Ω (terminal 1+/2- resp. 5+/6-) 0 ... 379 Ω (terminal 3+/2- resp. 4+/6-) (With internal 221 ohm resistor for HART)	See characteristic curve
Deviation	≤ 0,1 %	≤ 0,1 %
Temperature influence error limits	≤ 0.05% / 10 K	≤ 0.05% / 10 K
Ambient Conditions		
Ambient temperature °F	-4 °F ... +158 °F (Single device) -40 °F ... +140 °F (Group assembly)	-4 °F ... +158 °F (Single device) -40 °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

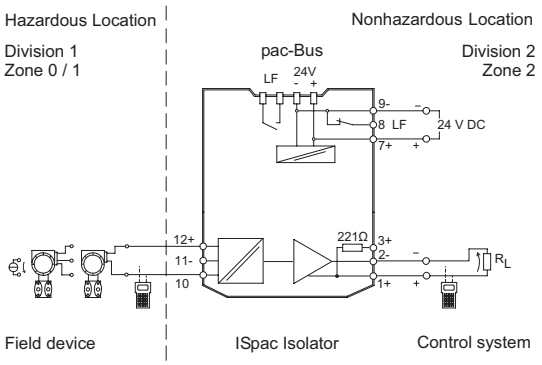
Technical Drawings – Subject to Alterations



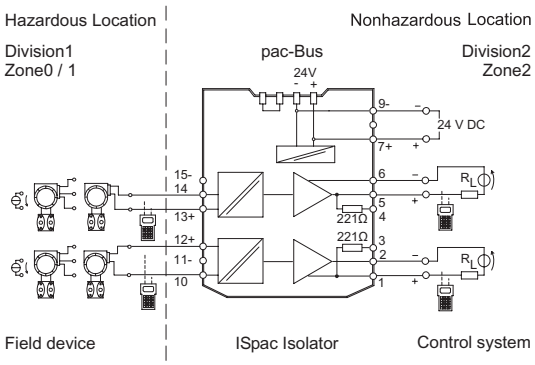
Connection diagram 9160/23-11-11



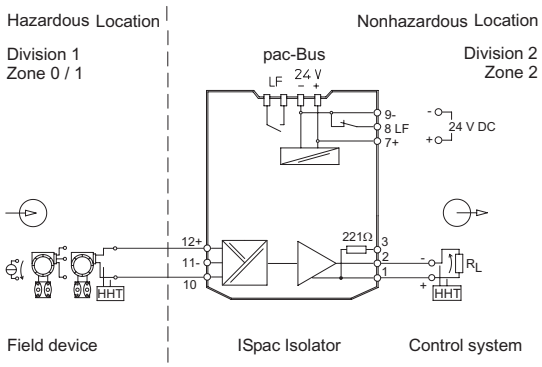
Connection diagram 9160/19-11-11



Connection diagram 9160/13-11-13

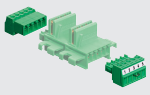


Connection diagram 9160/23-10-10



Connection diagram 9160/13-11-11

Accessories

Figure	Description	Product Type	Art. No.	Weight lb
Transparent cover				
	For 91xx ISpac modules Yellow, transparent Clear identification of the device for SIL applications. (Packaging unit: 10 pieces)	cover 17,6 yellow transparent	200914	0.04
Terminal set for pac-Bus				
	For the supply of 24 V DC auxiliary power via terminals (alternative to using the supply module 9193/21-11-11), with jumper for error message chain for ISpac module 91xx	9194/50-01	160730	0.02

Spare Parts

Figure	Description	Product Type	Art. No.	Weight lb
Screw terminal				
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: green	Terminal block 3-pole green	112817	0.01
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: black	Terminal block 3-pole black	112816	0.01

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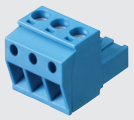
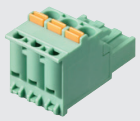
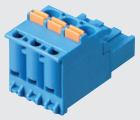
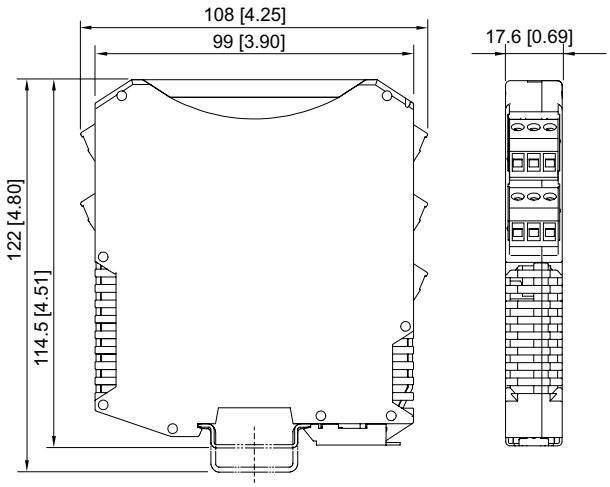
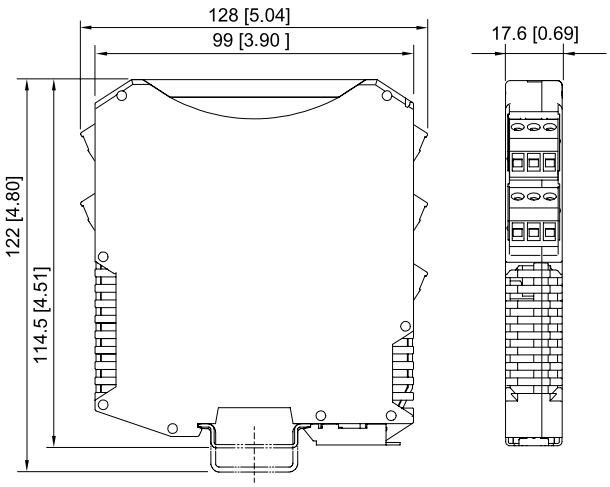
Spare Parts

Figure	Description	Product Type	Art. No.	Weight lb
Screw terminal				
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: blue	Terminal block 3-pole blue	112818	0.01
Screw terminal with test tap				
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: black	Terminal block 3-pole black Screwable co	113005	0.01
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: blue	Terminal block 3-pole blue Screwable con	113004	0.01
Spring clamp terminal				
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: green	terminal block 3-pole green spring force	112825	0.01
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: black	terminal block 3-pole black spring force	112824	0.01
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: blue	terminal block 3-pole blue spring force	112826	0.01

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

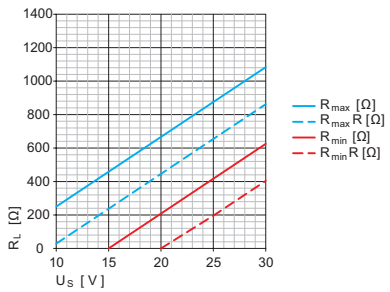


ISpac Series 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, Fieldbus Power Supply Series 9412 with spring clamp terminal

Load resistance R_L

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