



- 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

WebCode **9160A**



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

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

	CEC 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
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 ... 20 mA	–	Yes	2	Screw terminal	9160/13-11-11s	214895	0.43
		0/4 ... 20 mA	–	Yes	3	Screw terminal	9160/13-11-13s	214897	0.43
		0/4 ... 20 mA	0/4 ... 20 mA (without HART)	Yes	2	Screw terminal	9160/19-11-11s	220324	0.43
2	0/4 ... 20 mA with HART	Passive	Passive	No	2	Screw terminal	9160/23-10-10s	214903	0.43
		0/4 ... 20 mA	0/4 ... 20 mA	Yes	2	Screw terminal	9160/23-11-11s	220322	0.44

LFD – line fault diagnosis
 no – device transmits line fault on the field side via the 4 ... 20 mA signal. Without LED / relay contact.
 yes – device transmits line fault on the field side via the 4 ... 20 mA signal. With LED / relay contact.

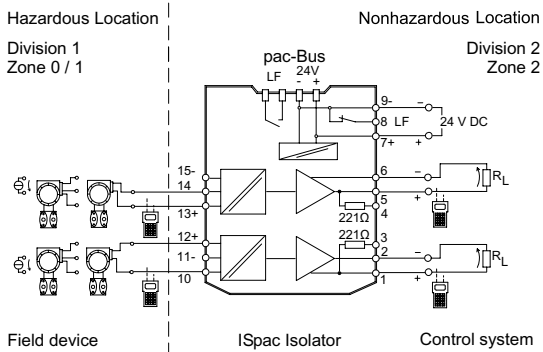
Further versions on the Internet r-stahl.com.

Technical Data		
Variant	9160/...-11-11 9160/13-11-13	9160/23-10-10
Explosion Protection		
Certificate FMus	FM16US0122X	FM16US0122X
Certificate cFM	FM16CA0067X	FM16CA0067X

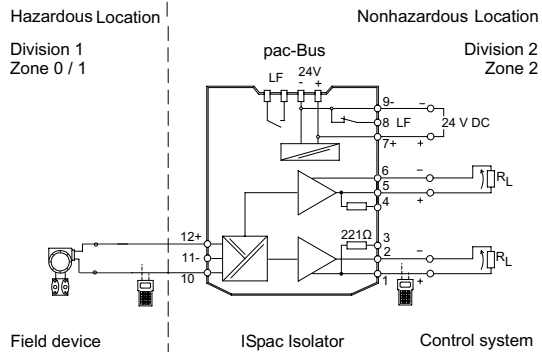
Technical Data		
Variant	9160/...-11-11 9160/13-11-13	9160/23-10-10
Explosion Protection		
Marking cFMus	Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, nA nC Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, [Ex ia] IIC T4 Mounting vert. at Ta = 70°C, or horizontal Ta = 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), EAC (ENDCE), IECEX (BVS), India (PESO), Korea (KTL), Russia (Meteorological certificate), SIL (exida), USA (FM)	ATEX (BVS), Brazil (ULB), Canada (FM), EAC (ENDCE), IECEX (BVS), India (PESO), Korea (KTL), Russia (Meteorological certificate), SIL (exida), USA (FM)
Ship approval	CCS, EU RO MR	CCS, EU RO MR
Auxiliary Power		
Auxiliary power	24 V DC	24 V DC
Input		
Input signal	0/4 ... 20 mA with HART	0/4 ... 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 ... 20 mA with HART	Passive with HART
Load resistance R _L	0 ... 600 Ω (terminal 1+ / 2- or 5+ / 6-) 0 ... 379 Ω (terminal 3+ / 2- or 4+ / 6-) (with internal 221 Ω resistor for HART)	
Load resistance R _L max. HART	379 Ω	See characteristic curve
Load R _L max. with resistor	379 Ω	
Load resistance R _L max.	600 Ω	
Load resistance R _L max. note	With internal 221 Ω resistor	
Temperature influence error limits	≤ 0,05 % / 10K	≤ 0,05 % / 10K
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	NS35/15, NS35/7.5 DIN rail	NS35/15, NS35/7.5 DIN rail

Technical Drawings – Subject to Alterations

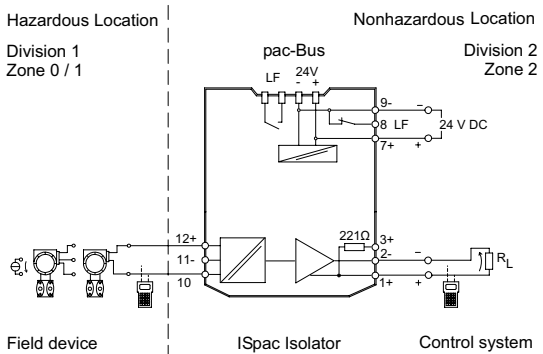
07 b



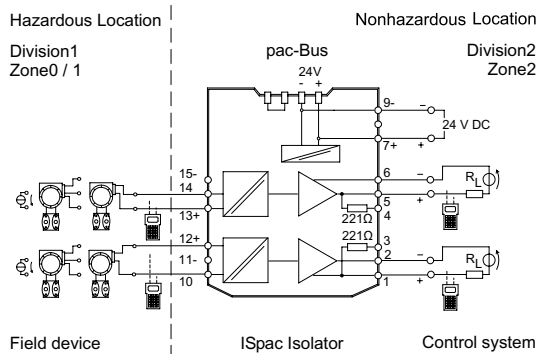
Connection diagram 9160/23-11-11



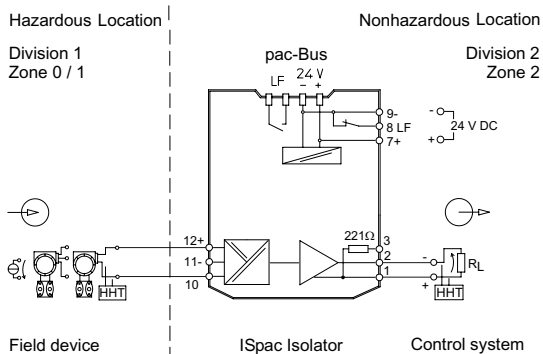
Connection diagram 9160/19-11-11



Connection diagram 9160/13-11-13



Connection diagram 9160/23-10-10









Connection diagram 9160/13-11-11

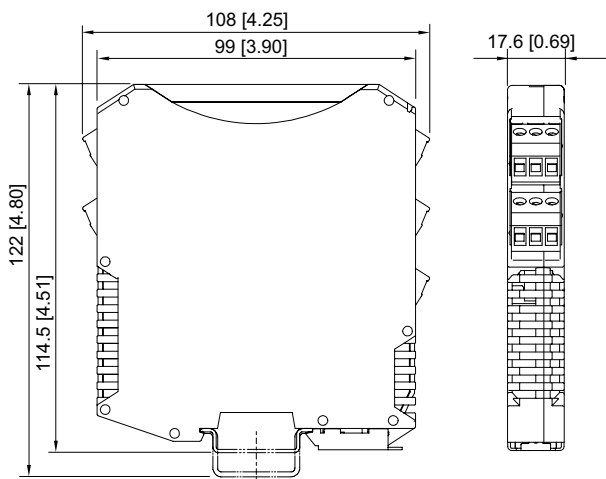
Accessories

Figure	Description	Art. No.	Weight lb
	for ISpac modules 91xx yellow, transparent Clear marking of the device for SIL applications. (Packaging unit: 10 pieces)	200914	0.04

Spare Parts

Figure	Description	Art. No.	Weight lb
Screw terminal			
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: green	112817	0.01
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: black	112816	0.01
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: blue	112818	0.01
Spring clamp terminal			
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: green	112825	0.01
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: black	112824	0.01
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm color: blue	112826	0.01

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



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

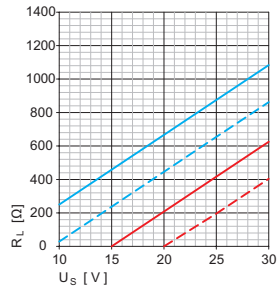
Load Resistance R_L

Output version (control)

0/4 ... 20 mA passive / sink with HART

07 b

Type 9160/...-10-10s



U_S supply voltage
 R_L load resistance
 R_{max} max. load resistance terminals 1, 2 & 5, 6
 R_{min} min. load resistance terminals 1, 2 & 5, 6
 $R_{max R}$ max. load resistance terminals 1, 3 & 4, 6
 $R_{min R}$ min. load resistance terminals 1, 3 & 4, 6