



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

A3

WebCode **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 higher output voltages and SIL 3.

	IECEX / ATEX					
Zone	0	1	2	20	21	22
Ex interface	•	•	•	•	•	•
Installation in			•			

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


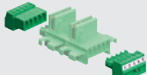
	CEC Section 18					
	NEC® 505 Class I			NEC® 506		
Zone	0	1	2	20	21	22
Ex interface	•	•	•			
Installation in			•			







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 kg
1	0/4 ... 20 mA with HART	0/4 ... 20 mA	–	Yes	2	Screw terminal	9160/13-11-11s	214895 ▲	0.195
		0/4 ... 20 mA	–	Yes	3	Screw terminal	9160/13-11-13s	214897	0.195
		0/4 ... 20 mA	0/4 ... 20 mA (without HART)	Yes	2	Screw terminal	9160/19-11-11s	220324 ▲	0.195
2	0/4 ... 20 mA with HART	Passive	Passive	No	2	Screw terminal	9160/23-10-10s	214903	0.195
		0/4 ... 20 mA	0/4 ... 20 mA	Yes	2	Screw terminal	9160/23-11-11s	220322 ▲	0.200

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](http://r-stahl.com).

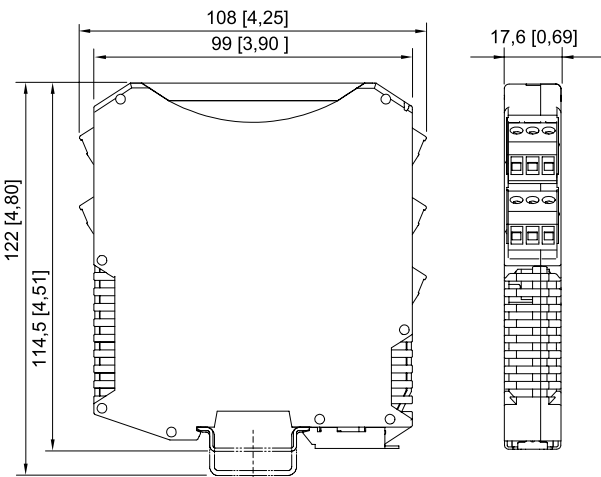
Technical Data		
Variant	9160/...-11-11 9160/13-11-13	9160/23-10-10
Explosion Protection		
IECEX gas explosion protection	Ex nA nC [ia Ga] IIC T4 Gc	Ex nA [ia Ga] IIC T4 Gc
IECEX dust explosion protection	[Ex ia Da] IIIC	[Ex ia Da] IIIC
IECEX firedamp protection	[Ex ia Ma] I	[Ex ia Ma] I
ATEX gas explosion protection	⊕ II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc	⊕ II 3 (1) G Ex nA [ia Ga] IIC T4 Gc

Technical Data		
Variant	9160/...-11-11 9160/13-11-13	9160/23-10-10
<b>Explosion Protection</b>		
ATEX dust explosion protection	Ⓔ II (1) D [Ex ia Da] IIIC	Ⓔ II (1) D [Ex ia Da] IIIC
ATEX firedamp protection	Ⓔ I (M1) [Ex ia Ma] I	Ⓔ I (M1) [Ex ia Ma] I
EAC gas explosion protection	Ⓕ 2 Ex nA nC [ia Ga] IIC T4 Gc X	Ⓕ 2 Ex nA [ia Ga] IIC T4 Gc X
EAC dust explosion protection	Ⓕ [Ex ia Da] IIIC X	Ⓕ [Ex ia Da] IIIC X
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
<b>Auxiliary Power</b>		
Auxiliary power	24 V DC	24 V DC
<b>Input</b>		
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
<b>Output</b>		
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 %
<b>Ambient Conditions</b>		
Ambient temperature	-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	-40 °C ... +80 °C	-40 °C ... +80 °C
<b>Mounting / Installation</b>		
Mounting type	NS35/15, NS35/7.5 DIN rail	NS35/15, NS35/7.5 DIN rail

Accessories			
Figure	Description	Art. No.	Weight kg
<b>Front cover</b>			
	for ISpac modules 91xx yellow, transparent Clear marking of the device for SIL applications. (Packaging unit: 10 pieces)	200914	0.020
<b>Terminal set for pac-Bus</b>			
	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	160730 ▲	0.008

Spare Parts			
Figure	Description	Art. No.	Weight kg
<b>Screw terminal</b>			
	3-pole plug, screw connector thread: M3 stripping length: 7 mm colour: green	112817	0.005
	3-pole plug, screw connector thread: M3 stripping length: 7 mm colour: black	112816	0.004
	3-pole plug, screw connector thread: M3 stripping length: 7 mm colour: blue	112818	0.005
<b>Spring clamp terminal</b>			
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm colour: green	112825	0.005
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm colour: black	112824	0.005
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm colour: blue	112826	0.005

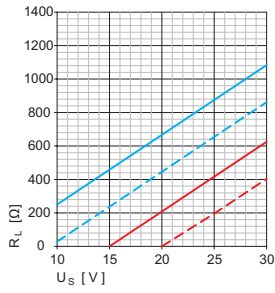
**Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations**



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

**Load Resistance  $R_L$**

Type 9160/..-10-10s



— R<sub>max</sub> [Ω]  
 - - R<sub>max R</sub> [Ω]  
 — R<sub>min</sub> [Ω]  
 - - R<sub>min R</sub> [Ω]

U<sub>S</sub> supply voltage  
 R<sub>L</sub> load resistance  
 R<sub>max</sub> max. load resistance terminals 1, 2 & 5, 6  
 R<sub>min</sub> min. load resistance terminals 1, 2 & 5, 6  
 R<sub>max R</sub> max. load resistance terminals 1, 3 & 4, 6  
 R<sub>min R</sub> min. load resistance terminals 1, 3 & 4, 6