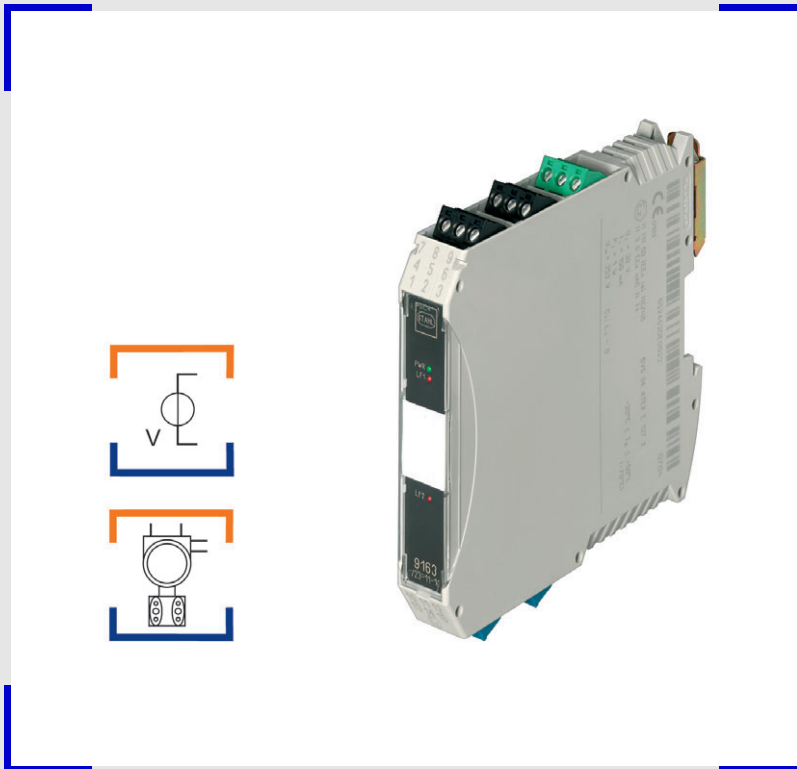


Isolating Repeater Input

Series 9163 Rev. B



www.stahl.de



15281E00

- > For 4-wire HART transmitters and voltage sources
- > Intrinsically safe input [Ex ia] IIC
- > Galvanic isolation between input, output and power supply
- > For use up to SIL 2 (IEC 61508)
- > High accuracy

A3



Basic function: analogue input 0/4 mA ... 20 mA, 0/1 ... 5 V, 0/2 ... 10 V, 1 and 2 channels.

The isolating repeaters HART Input are used for intrinsically safe operation of 4-wire transmitters or for connection to intrinsically safe voltage sources.

The output signal is a 0/4 ... 20 mA signal.

The versions for 4-wire transmitters transmit a HART communication signal bidirectionally.



Zone	ATEX / IECEx					
	0	1	2	20	21	22
Ex i interface	x	x	x	x	x	x
Installation in			x			x

Variants with FM/cFM approval on request

WebCode 9163A

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Selection Table

Version	Channels	Input	Output	LFD*	Order number
Isolating repeater input Series 9163	1	0/4 ... 20 mA with HART	0/4 ... 20 mA with HART	no	9163/13-11-10s
		0/1 ... 5 V, 0/2 ... 10 V	0/4 ... 20 mA	no	9163/11-81-10s
	2	0/4 ... 20 mA with HART	0/4 ... 20 mA with HART	no	9163/23-11-10s

* LFD - line fault diagnosis,
no - The device transmits a line fault detected in the field circuit via the 4 ... 20 mA signal.
Without LED / relay contact.

Note The order numbers listed in the table are for devices equipped with screw-type terminals.
For devices equipped with spring-type terminals, replace the ending "s" for screw-type terminals with "k" for spring-type terminals.

Explosion Protection

Global (IECEX)

Gas, dust and mining
IECEX BVS 08.0050X
Ex nA [ia Ga] IIC T4 Gc
[Ex ia Da] IIIC
[Ex ia Ma] I

Europe (ATEX)

Gas, dust and mining
DMT 03 ATEX E010X
⊕ II 3 (1) G Ex nA [ia Ga] IIC T4 Gc
⊕ II (1) D [Ex ia Da] IIIC
⊕ I (M1) [Ex ia Ma] I

Certifications and certificates

Version	9163/3-1.-1..	9163/11-81-10.
Certificates	IECEX, ATEX, Brazil (INMETRO), Russia (GOST R), Serbia (SRPS), Ukraine (TR)	IECEX, ATEX
Ship approval	DNV	DNV
Note	FM and cFM approved versions are available upon request.	

Safety data

Version	9163/3-1.-1..	9163/11-81-10.
Max. voltage U_o	negligible	4.1 V
Max. current I_o	negligible	negligible
Max. power P_o	negligible	negligible
Max. voltage U_i	30 V	30 V
Max. current I_i	150 mA	internally limited
Max. power P_i	1000 mW	internally limited
Internal capacitance C_i	negligible	negligible
Internal inductance L_i	negligible	negligible
Insulation voltage U_m	253 V AC	253 V AC

Further parameters

Installation in Zone 2, Div. 2 and in the safe area
Further information see respective certificate and operating instructions

Functional safety (IEC 61508)

Test report Exida STAHL 10/02-01 R027
Max. SIL 2
Safe Failure Fraction SFF 85 %
PFD_{AVG} at $T_{[Proof]}$

$T_{[Proof]}$	PFD _{AVG}
1 year	2.29×10^{-4}
2 years	3.38×10^{-4}
5 years	6.64×10^{-4}

For further information see safety test report.

Technical Data

Electrical data

Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 31.2 V
Residual ripple within voltage range	$\leq 3.6 V_{SS}$
Nominal current at U_N , 20 mA	
1 channel	46 mA
2 channels	76 mA
Power consumption at U_N , 20 mA	
1 channel	1.1 W
2 channels	1.8 W
Power dissipation at U_N , $R_L = 250 \Omega$	
1 channel	0.7 W
2 channels	2.0 W
Polarity reversal protection	yes
Operation indication	LED green "PWR"
Undervoltage monitoring	yes (no faulty module / output states)

Technical Data

Electrical data

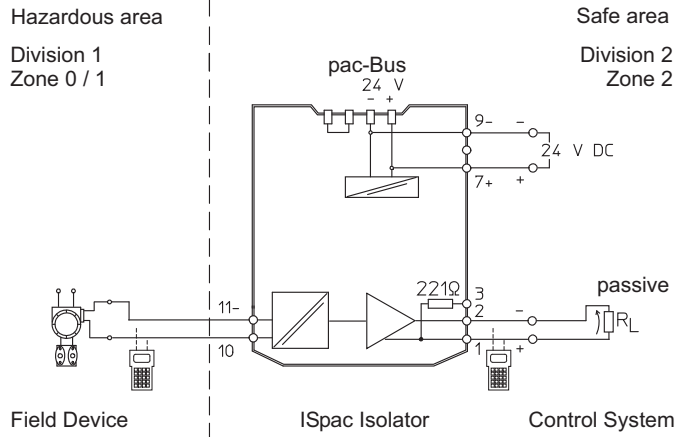
Galvanic separation		
Test voltages		
acc. to standard	EN 60079-11	
Ex i input to output	1.5 kV AC	
Ex i input to auxiliary power	1.5 kV AC	
Error message contact to Ex i input	1.5 kV AC	
Ex i inputs interconnected	500 V AC	
acc. to standard	EN 50178	
Output to auxiliary power	350 V AC	
Outputs interconnected	350 V AC	
Error message contact to auxiliary power and outputs	350 V AC	
Ex i input		
Version	9163/3-1-1..	9163/11-81-10.
Input signal	0/4 ... 20 mA with HART	0 ... 5 V resp. 0 ... 10 V
Functional range	0 ... 24 mA	0 ... 6 V resp. 0 ... 12 V
Max. input current	50 mA	50 mA
Input resistance (AC impedance HART)	≈ 300 Ω	--
Input resistance DC	≤ 150 Ω	1500 kΩ (0 ... 5 V) 1 MΩ (0 ... 10 V)
Communication signal	bidirectional HART transmission, 0.5 ... 10 kHz	--
Output		
Version	9163/3-1-1..	9163/11-81-10.
Output signal	9163/3-11-10.: 0/4 ... 20 mA with HART	0/4 ... 20 mA
Load resistance R_L	0 ... 600 Ω (terminal 1+/2- resp. 5+/6-) 0 ... 479 Ω (terminal 3+/2- resp. 4+/6-) (with internal 221 Ω resistor for HART)	0 ... 600 Ω (terminal 1+/2- resp. 5+/6-)
Residual ripple	≤ 40 μA_{eff}	≤ 40 μA_{eff}
Open-circuit voltage	≤ 15.5 V	≤ 15.5 V
Communication signal	bidirectional HART transmission, 0.5 ... 10 kHz	--
Response time (10 ... 90 %)	≤ 100 μs	≤ 100 μs
Error detection Ex i input		
Version	9163/3-1-1..	9163/11-81-10.
Behaviour of the output	= Input signal	= Input signal
Output current at $I_E = 0$	$I_A = 0$ mA	$I_A = 0$ mA
Error limits		
Linearity error	≤ 0.05 %	≤ 0.15 %
Offset error	≤ 0.05 %	
Temperature effect	≤ 0.05 % / 10 K	
Power supply effect within voltage range	≤ 0.01 %	
Load resistance influence	≤ 0.02 %	
Cross-talk		
Channel 1	≤ 0.01 %	
Channel 2	≤ 0.01 %	
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (Use in industrial environment), NE21	
Ambient conditions		
Ambient temperature		
Single device	-40 ... +70 °C	
Group assembly	-40 ... +60 °C	
	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide".	
Storage temperature	-40 ... +80 °C	
Relative humidity (no condensation)	≤ 95 %	
Use at the height of	< 2000 m	

Technical Data

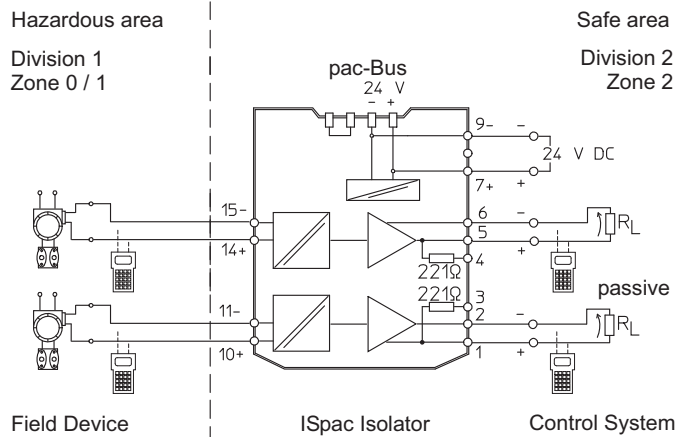
Electrical connection

Connection diagram

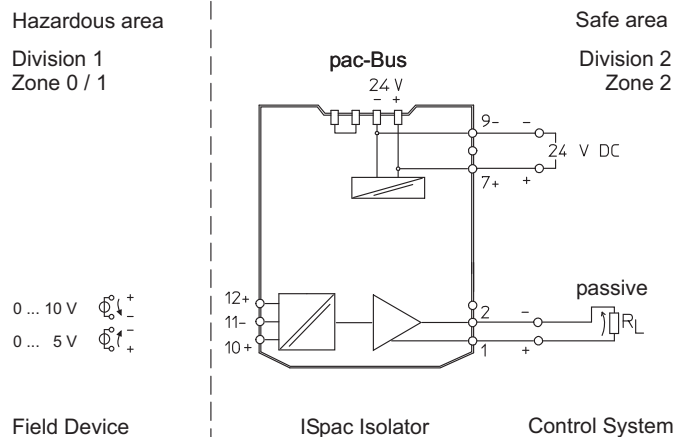
1 channel
9163/13-1.-10.



2 channels
9163/23-1.-10.



1 channels
9163/11-81-10.



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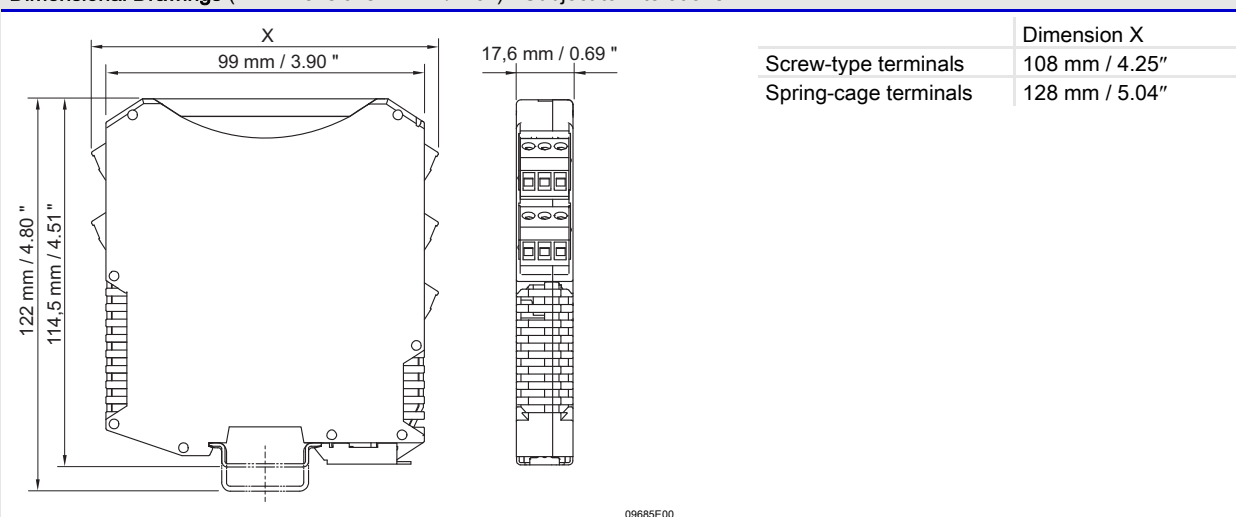


Technical Data

Mechanical data

Connection		Screw-type terminals	Spring-type terminals
	Single-wire connection		
	- rigid	0.2 ... 2.5 mm ²	0.2 ... 2.5 mm ²
	- flexible	0.2 ... 2.5 mm ²	0.2 ... 2.5 mm ²
	- flexible with core end sleeves (without / with plastic sleeve)	0.25 ... 2.5 mm ²	0.25 ... 2.5 mm ²
	Two-wire connection		
	- rigid	0.2 ... 1 mm ²	--
- flexible	0.2 ... 1.5 mm ²	--	
- flexible with core end sleeves	0.25 ... 1 mm ²	0.5 ... 1 mm ²	
Weight	approx. 160 g		
Mounting type	on top hat rail (NS35/15, NS35/7.5) or in pac-Carrier		
Mounting orientation	horizontal or vertical		
Enclosure	IP30		
Terminals	IP20		
Enclosure material	PA 6.6		
Fire resistance (UL-94)	V0		

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



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.