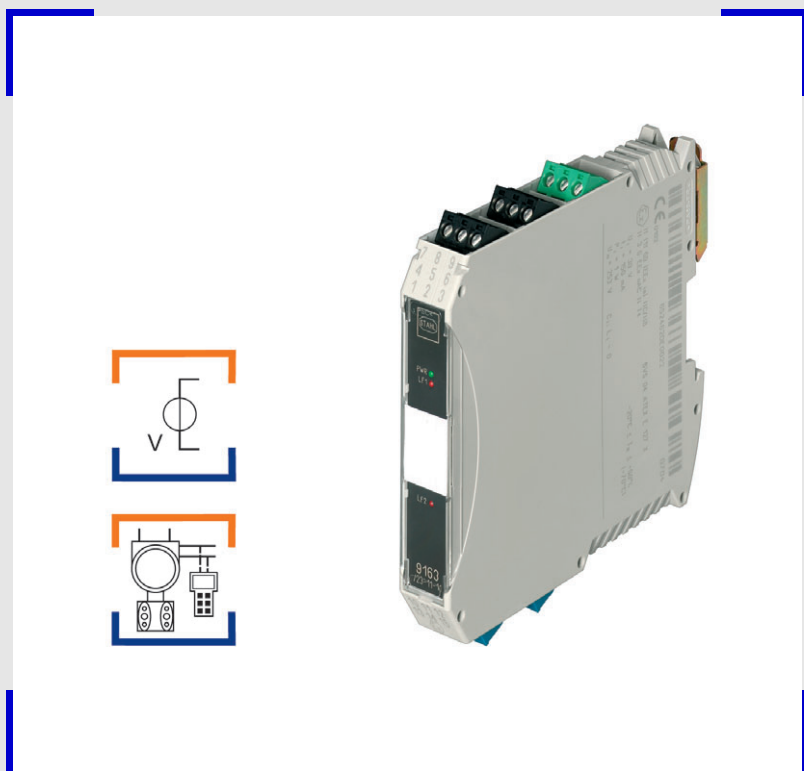


# Isolating Repeater Input Series 9163

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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

# Isolating Repeater Input

## Series 9163



### 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	<b>9163/13-11-10s</b>
		0/1 ... 5 V, 0/2 ... 10 V	0/4 ... 20 mA	no	<b>9163/11-81-10s</b>
	2	0/4 ... 20 mA with HART	0/4 ... 20 mA with HART	no	<b>9163/23-11-10s</b>
* 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
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#### 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
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### Certifications and certificates

Version	<b>9163/3-1.-1..</b>	<b>9163/11-81-10.</b>
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	<b>9163/3-1.-1..</b>	<b>9163/11-81-10.</b>
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 <sub>AVG</sub> at $T_{[Proof]}$	$T_{[Proof]}$	PFD <sub>AVG</sub>
	1 year	$2.29 \times 10^{-4}$
	2 years	$3.38 \times 10^{-4}$
	5 years	$6.64 \times 10^{-4}$
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	1.0 W
2 channels	1.6 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		
<b>Version</b>	<b>9163/3-1.-1..</b>	<b>9163/11-81-10.</b>
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	≈ 300 Ω	--
(AC impedance HART)		
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		
<b>Version</b>	<b>9163/3-1.-1..</b>	<b>9163/11-81-10.</b>
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 $\mu A_{eff}$	≤ 40 $\mu A_{eff}$
Open-circuit voltage	≤ 15.5 V	≤ 15.5 V
Communication signal	bidirectional HART transmission, 0.5 ... 10 kHz	--
Response time (10 ... 90 %)	≤ 100 $\mu s$	≤ 100 $\mu s$
Error detection Ex i input		
<b>Version</b>	<b>9163/3-1.-1..</b>	<b>9163/11-81-10.</b>
Behaviour of the output	= Input signal	= Input signal
Output current at $I_E = 0$	$I_A = 0$ mA	$I_A = 0$ mA
Error limits		
	Accuracy, typical data expressed as % of calibrated span (20 mA) at $U_N$ , 23 °C	
Deviation	≤ 0.1 %	≤ 0.2 %
Temperature effect	≤ 0.05 % / 10K	
Linearity error	≤ 0.05 %	≤ 0.15 %
Offset error	≤ 0.05 %	
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	-20 ... +70 °C
Group assembly	-20 ... +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

# Isolating Repeater Input

## Series 9163

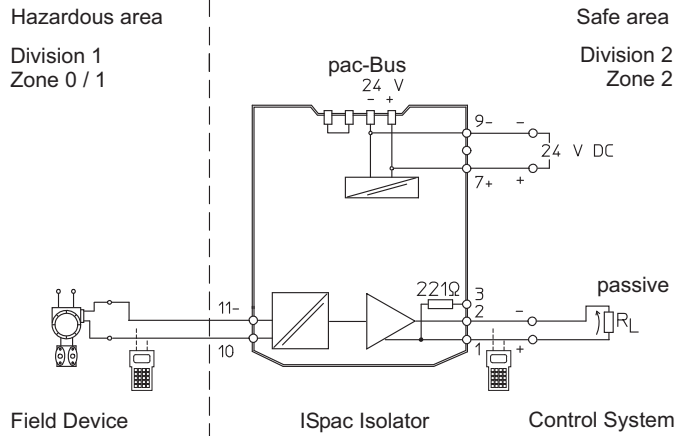


### Technical Data

#### Electrical connection

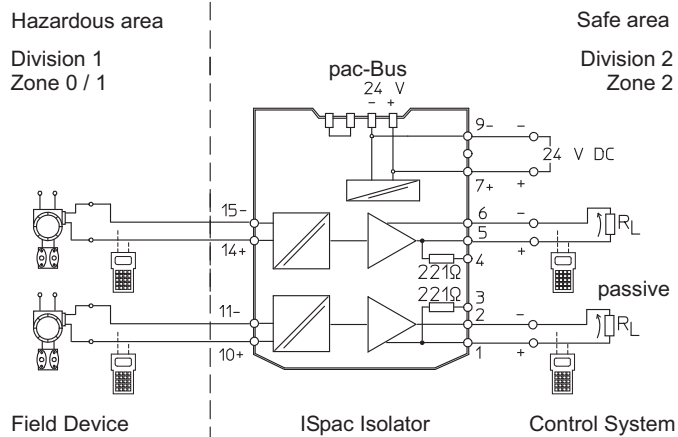
Connection diagram

**1 channel**  
**9163/13-1.-10.**



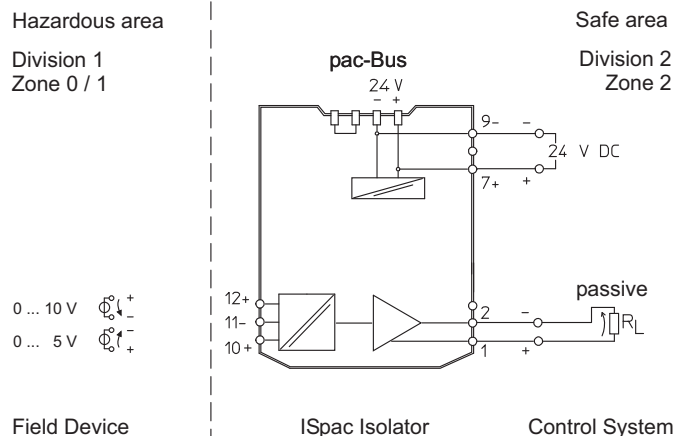
15291E03

**2 channels**  
**9163/23-1.-10.**



15292E02

**1 channels**  
**9163/11-81-10.**



15293E03

0 ... 10 V  $\Phi_{\downarrow}^+$   
0 ... 5 V  $\Phi_{\uparrow}^+$

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# Isolating Repeater Input

## Series 9163

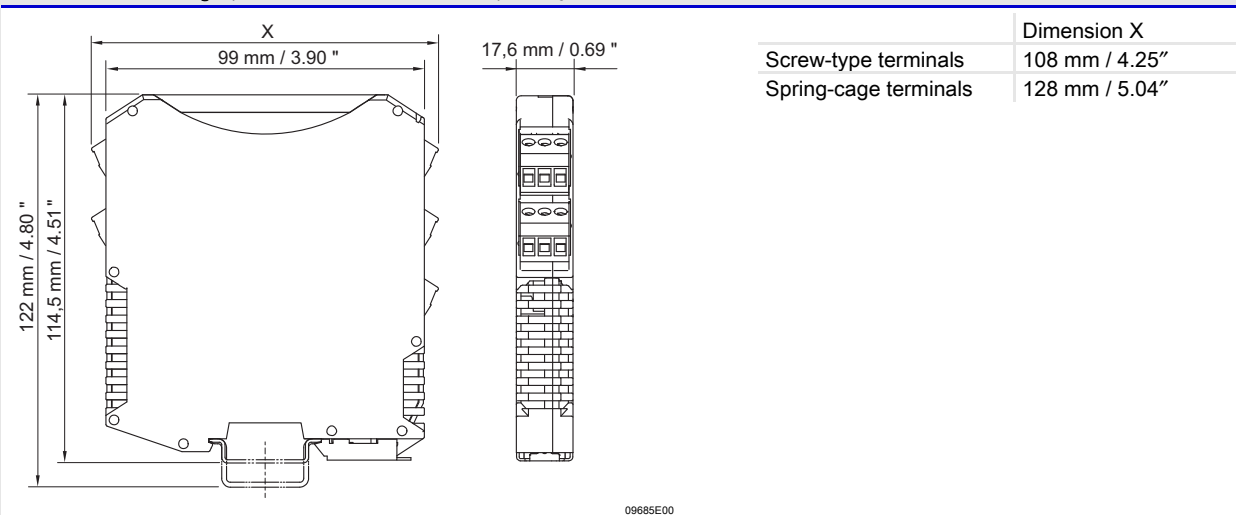


### Technical Data

#### Mechanical data

Connection		Screw-type terminals	Spring-type terminals
	Single-wire connection		
	- rigid	0.2 ... 2.5 mm <sup>2</sup>	0.2 ... 2.5 mm <sup>2</sup>
	- flexible	0.2 ... 2.5 mm <sup>2</sup>	0.2 ... 2.5 mm <sup>2</sup>
	- flexible with core end sleeves (without / with plastic sleeve)	0.25 ... 2.5 mm <sup>2</sup>	0.25 ... 2.5 mm <sup>2</sup>
	Two-wire connection		
	- rigid	0.2 ... 1 mm <sup>2</sup>	--
	- flexible	0.2 ... 1.5 mm <sup>2</sup>	--
	- flexible with core end sleeves	0.25 ... 1 mm <sup>2</sup>	0.5 ... 1 mm <sup>2</sup>
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.