Isolating Repeater Field Circuit Non-Ex i
Series 9165



07191E00

- For HART output signals 0/4 mA ... 20 mA
- Galvanic isolation between input, output and power supply
- Open circuit / short-circuit monitoring and messaging (can be switched off)
- For use up to SIL 2 (IEC 61508)

A3

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Basic function: analog output 0/4 mA ... 20 mA with HART, 1 and 2 channels.
These isolating repeaters are used to operate control valves, i/p-converters or indicators. Operation of HART-valves is possible, too. The isolators transmit the HART communication signal bidirectionally.

	ATEX / IECEx / GOST					
Zone	0	1	2	20	21	22
Installation in			x*)			x*)

*) suitable enclosure necessary

WebCode 9165B

Selection Table

Version	Channels	Input	Output	Order number	Tech. data see page
Isolating Repeater Field Circuit Non-Ex i Series 9165	1	0/4 ... 20 mA with HART	0/4 ... 20 mA with HART	**9165/16-11-61s**	3
	2	0/4 ... 20 mA with HART	0/4 ... 20 mA with HART	**9165/26-11-61s**	3
Note	The order code above is with screw type removable terminals. For spring clamp terminals, please substitute the „s“ with „k“.				

Explosion Protection	
Global (IECEx)	
Gas and dust	IECEx BVS 10.0011X Ex nAc nCc T4
Europe (ATEX)	
Gas and dust	BVS 10 ATEX E 025 X Ⓔx II 3 G Ex nAc nCc II T4
Russia (Gost-R)	
Gas	2 Ex nA nC [ia] IIC T4 X 2 Ex nA nC IIC T4 X
Certificates and Approvals	
Certificates	IECEx, ATEX, Kazakhstan (GOST-K), Russia (GOST-R), Ukraine (GOST-U), Belarus (GOST-B)
Other approvals	ship approval (DNV)
Further parameters	
Installation	in Zone 2 and in the safe area
Further information	see respective certifcate and operating instructions
Functional safety (IEC 61508)	
Test report	Exida STAHL 04/04-03 R004
Max. SIL	2
Safe Failure Fraction SFF	82 %
MTBF	193 years
PFD_{AVG} at $T_{[Proof]}$	$T_{[Proof]}$ / PFD_{AVG}: 1 year / 3.17×10^{-4} 5 years / 1.58×10^{-3} 10 years / 3.16×10^{-3}
Further information	For further information see safety test report.

Technical Data	
Electrical data	
Power supply	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 31.2 V
Residual ripple within voltage range	3.6 VSS
Nominal current at U_N, 20 mA	
1 channel	55 mA
2 channels	90 mA
Power consumption at U_N, 20 mA	
1 channel	1.3 W
2 channels	2.2 W
Power dissipation at U_N, R_L = 500 Ω	
1 channel	1.1 W
2 channels	1.8 W
Reverse polarity protection	yes
Indication	LED green "PWR"
Undervoltage monitoring	yes (no faulty module / output states)
Galvanic isolation	
Test voltages	
Outputs to inputs	1.5 kV AC
Outputs to power supply	1.5 kV AC
Error contact to outputs	1.5 kV AC
Outputs interconnected	500 V AC
according to regulation	EN 50178
Inputs to power supply	350 V AC
Inputs to each other	350 V AC
Error contact to power supply and inputs	350 V AC

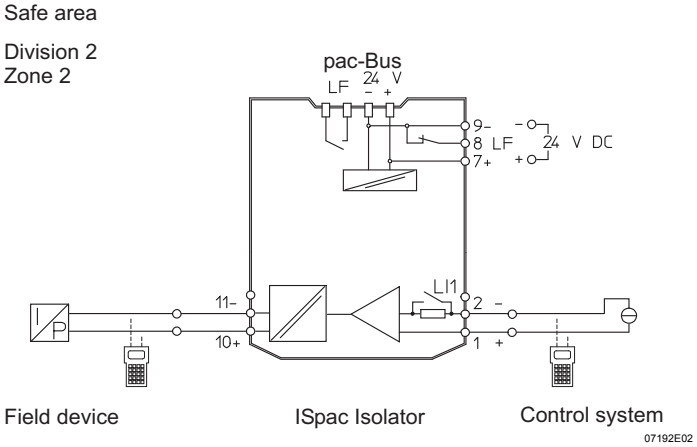
Technical Data	
Electrical data	
Input from nonhazardous location	
Input signal	0/4 ... 20 mA with HART
Input_Function range	0 ... 24 mA
Max. input current	50 mA
Input resistance (changeable switch LI)	225 / 550 Ω
Communication signal	bi-directional HART transmission, 0.5 ... 10 kHz
Output	
Output signal	0/4 ... 20 mA with HART
Load resistance	0 ... 800 Ω
Min. load resistance for short-circuit detection	150 Ω
Residual ripple	≤ 50 mV
No-load voltage	≤ 22,5 V
Response time (10 ... 90 %)	≤100 µs
Fault detection output	
Open-circuit	
Output voltage	> 16 V
Short circuit	
Output load	< 50 Ω
Behavior of input	≥ 100
Input current for line break detection	≥ 3.6 mA
Settings (Switch LF)	activated / deactivated
Error detection	LED rot "LF" je Kanal
Signalization of faulty line and power supply failure	- Contact (30 V / 100 mA) closed to ground in case of fault - pac-Bus, floating contact (30 V / 100 mA)
Error limits	
	Accuracy, typical data expressed as % of calibrated undervoltage monitoring
Linearity error	≤ 0.05 %
Offset error	≤ 0.05 %
Temperature effect	≤ 0.05 % / 10 K
Power supply effect within voltage range	≤ 0.01 %
effect load resistance	≤ 0.02 %
Cross-talk	≤ 0.01 %
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 (Use in industrial environment)
Ambient Conditions	
Ambient temperature	
Single device	-20 ... +70 °C / -4 ... +158 °F
Group installation	-20 ... +60 °C / -4 ... +140 °F
	Installation conditions affect the ambient temperature. Please follow the operating instructions.
Storage temperature	-40 ... +80 °C / -40 ... +176 °F
Relative humidity (no condensation)	≤ 95 %

Technical Data

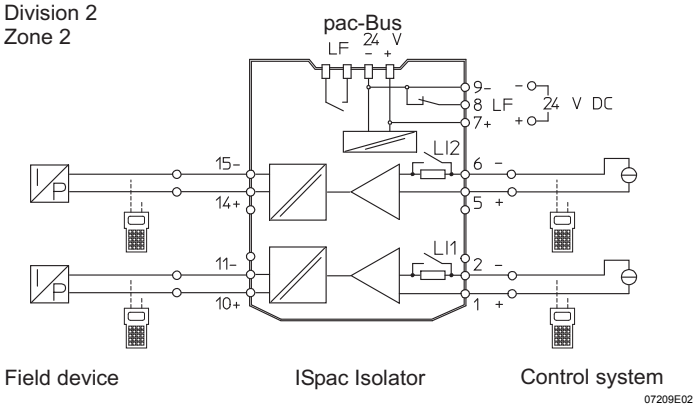
Electrical connection

Connection diagram

1 channel
9165/16-11-61.



2 channels
9165/26-11-61.

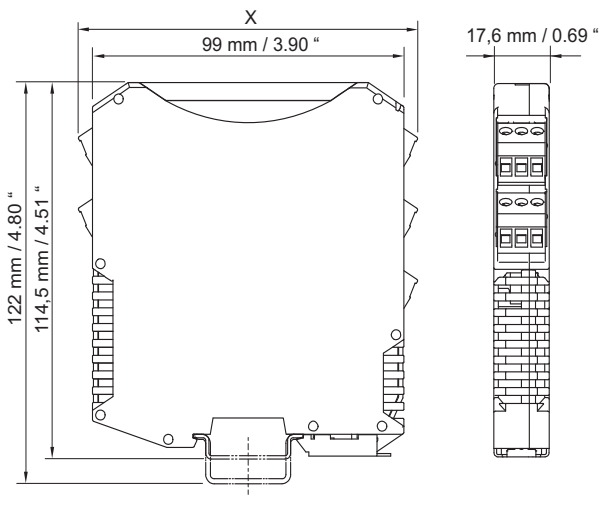


Technical Data

Mechanical data

		Screw terminals	Spring clamp terminals
Connection			
	Connection single-wire		
	- rigid	0.2 ... 2.5 mm² / 24 ... 14 AWG	0.2 ... 2.5 mm² / 24 ... 14 AWG
	- flexible	0.2 ... 2.5 mm² / 24 ... 14 AWG	0.2 ... 2.5 mm² / 24 ... 14 AWG
	- flexible, end covering sleeves (without / with plastic sleeving)	0.25 ... 2.5 mm² / 22 ... 14 AWG	0.25 ... 2.5 mm² / 22 ... 14 AWG
	Connection two wires		
	- rigid	0.2 ... 1 mm² / 24 ... 14 AWG	- -
	- flexible	0.2 ... 1.5 mm² / 24 ... 16 AWG	- -
	- flexible, end covering sleeves	0.25 ... 1 mm² / 22 ... 16 AWG	0.5 ... 1 mm² / 20 ... 16 AWG
Weight	approx. 160 g		
Assembly	on DIN rail (NS35/15, NS35/7.5)		
Installation position	horizontal or vertical		
Enclosure	IP30		
Terminals	IP20		
Enclosure material	PA 6.6		
Fire protection class (UL-94)	V0		

Dimensional Drawing (All Dimensions in mm / inches) - Subject to Alterations



	Dimension X
Screw terminals	108 mm / 4.25″
Spring clamp terminals	128 mm / 5.04″

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.