

Isolator Barriers

Isolating repeater

Ex i field circuit ISpac

9165/26-11-11s Art. No. 201272



- Universal Ex i output isolating repeater
- Extremely short settling time
- Wire breakage and short-circuit monitoring
- Transparent for HART signals

MY R. STAHL 9165A



9165 series Ex i isolating repeaters can be used for the intrinsically safe operation of control valves, I/P transducers or indicators. They transmit superimposed HART communication signals in both directions. The input, output and auxiliary power are galvanically separated from one another. The two channels in the two-channel variants are galvanically separated from one another.

Technical Data

Explosion Protection

Application range (zones)	2
Ex interface zone	0, 1, 2, 20, 21, 22
IECEEx gas certificate	IECEEx BVS 10.0011 X
IECEEx gas explosion protection	Ex nA nC [ia Ga] IIC T4 Gc
IECEEx dust certificate	IECEEx BVS 10.0011 X
IECEEx dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	DMT 03 ATEX E 012 X
ATEX gas explosion protection	II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc
ATEX dust certificate	DMT 03 ATEX E 012 X
ATEX dust explosion protection	II (1) D [Ex ia Da] IIIC
FMus certificate	FM16US0122X
cFM certificate	FM16CA0067X
Marking cFMus	Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, AEx/Ex nA nC Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 0, [AEx/Ex ia] IIC T4 at Ta = 70°C See Doc. 91 656 01 31 1
Certificates	ATEX (BVS), Canada (FM), China (NEPSI), IECEEx (BVS), Korea (KTL), SIL (exida), USA (FM)
Ship approval	CCS, EU RO MR (DNV)
Declaration of conformity	ATEX (EUK)
Installation	In Zone 2, Division 2 and safe areas
Further information	See relevant certificate and operating instructions

Safety Data

Max. voltage U_o/V_{oc}	25.6 V
Max. current I_o/I_{sc}	96 mA

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Safety Data

Max. power P_o	605 mW
Max. permissible external capacitance C_o/C_s for IIC	0.103 μ F
Max. permissible external inductance L_o/L_a for IIC	1.9 mH
Max. permissible external capacitance C_o/C_s for IIB	0.8 μ F
Max. permissible external inductance L_o/L_a for IIB	11 mH
Max. perm. ext. capacit. IIIC	0.8 μ F
Max. permis. ext. induct. IIIC	11 mH
Internal capacitance	Negligible
Internal inductance	Negligible
Safety-related max. voltage	253 V

Functional Safety

PFD _{avg} at T _{proof} 3 years	8,40E-04
Further information	See test report

Electrical Data

Number of channels	2
LFD relay	Yes
Communication signal	HART

Auxiliary Power

Auxiliary power	24 V DC
Nominal voltage V_{nom}	24 V DC
Auxiliary power voltage range	18 ... 31.2 V
Voltage range residual ripple	$\leq 3,6 V_{ss}$
Nominal current	90 mA
Power consumption	2.2 W
Max. power dissipation	1.8 W
Polarity reversal protection	Yes
Undervoltage monitoring	Yes
Operation indication	Green "PWR" LED

Galvanic Isolation

Test voltage as per standard	EN IEC 60079-11
Ex i output to fault message contact	1.5 kV AC
Ex i output to auxiliary power	1.5 kV AC
Ex i output to input	1.5 kV AC
Ex i output to Ex i output	500 V AC
Test voltage as per standard	EN 50178
Fault message contact to auxiliary power	350 V AC
Input to auxiliary power	350 V AC
Input to input	350 V AC
Fault message contact to input	350 V AC

Input

Input	0/4 ... 20 mA with HART
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Input

Input signal	0/4 to 20 mA with HART
Function range input	0 – 24 mA
Maximum input current	50 mA
Input resistance	175/400 Ω
Behaviour of the input with line fault	RE $\geq$ 100 k Ω

Output

Output	0/4 to 20 mA with HART
Output signal	0/4 to 20 mA with HART
Function range output	0 – 24 mA
Open-circuit voltage U_a	22,5 V
Output residual ripple	$\leq$ 50 mV
Load resistance R_L	0 ... 800 Ω
Load at 24 mA short circuit detection=OFF	Z1
Settling time 10-90%	$\leq$ 100 μ s
LF switch user adjustment	Activated/deactivated
Line fault response threshold	$I_E > 3.6$ mA
Min. RL for KS detection	150 Ω
Wire break. err detection OFF	UA > 16 V
Short circuit error detection output	RL < 50 ohm
Line fault indication	Red "LF" LED
Line fault and loss of power signalization	Contact (30 V / 100 mA) closed to ground in case of fault pac-Bus, floating contact (30 V / 100 mA)
Deviations / error note	Information in % of the measuring range (20 mA) at U_N , 23 $^{\circ}$ C
Average measurement fault	0,10%
Temperature influence error limits	$\leq$ 0.05%/10 K

Ambient Conditions

Ambient temperature $^{\circ}$ C	-20 $^{\circ}$ C ... +70 $^{\circ}$ C (Single device) -20 $^{\circ}$ C ... +60 $^{\circ}$ C (Group assembly)
Ambient temperature $^{\circ}$ F	-4 $^{\circ}$ F ... +158 $^{\circ}$ F (Single device) -4 $^{\circ}$ F ... +140 $^{\circ}$ F (Group assembly)
Note	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide".
Storage temperature $^{\circ}$ C	-40 $^{\circ}$ C ... +80 $^{\circ}$ C
Storage temperature $^{\circ}$ F	-40 $^{\circ}$ F ... +176 $^{\circ}$ F
Max. relative humidity	95%
Use at the height of	< 2000 m
Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326-1 For use in industrial areas; NAMUR NE 21

Mechanical Data

Degree of protection (IP)	IP30
Degree of protection (IP) terminals	IP20
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
Min. rigid conductor cross section	0.2 mm ²
Max. rigid conductor cross section	2.5 mm ²

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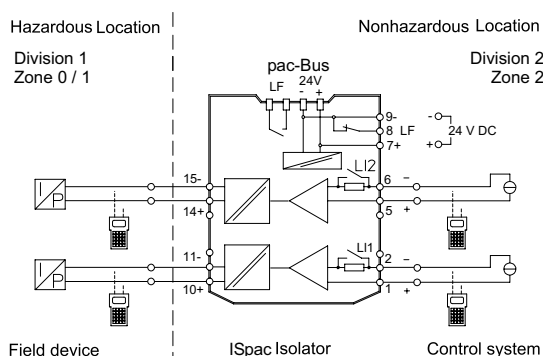
Mechanical Data

Min. flexible conductor cross section	0.2 mm ²
Max. flexible conductor cross section	2.5 mm ²
Width	17.6 mm
Width, inches	0.69 in
Height	114.5 mm
Height in inches	4.51 in
Length	108 mm
Length in inches	4.25 in
Weight	190 g
Weight	0.42 lb

Mounting / Installation

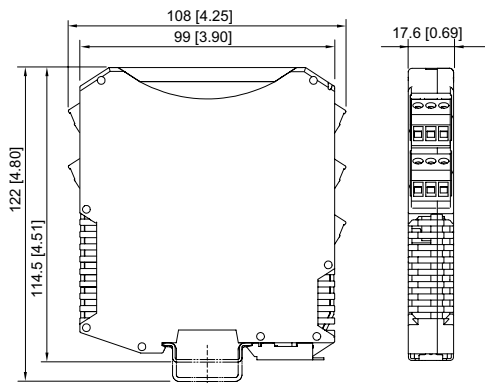
Mounting type	DIN rail NS35/15, NS35/7.5
Grid dimension	17.6 mm
Mounting orientation	Horizontal Vertical
Connection type	Screw terminal
Connection cross-section AWG	24 ... 14

Technical Drawings – Subject to Alterations



Connection diagram 9165/26-11-11

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



ISpac Series 9143, 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, ISbus Series 9412 with screw terminal

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.