

# Isolator Barriers

## Switching repeater

Ex i field circuit

9270/11-19-15k Art. No. 261417



- Slim design – 12.5 mm wide – for one- and two-channel versions
- Can be used for functional safety levels up to SIL 2 (IEC/EN 61508)
- Offers line fault detection with signalization

MY R. STAHL 9270A



Series 9270 switching repeaters can be used for operating contacts, NAMUR proximity sensors or optocouplers. A relay output or electronic output transmits the signals to the control level. The intrinsically safe digital input is galvanically separated from the output and auxiliary power.

### Technical Data

Explosion Protection	
Application range (zones)	2
Ex interface zone	0, 1, 2, 20, 21, 22
IECEX gas certificate	IECEX IBE 17.0046 X
IECEX gas certificate	IECEX IBE 17.0046 X
IECEX gas explosion protection	Ex ec [ia Ga] IIC T4 Gc
IECEX dust certificate	IECEX IBE 17.0046 X
IECEX dust explosion protection	[Ex ia Da] IIIC
IECEX firedamp certificate	IECEX IBE 17.0043 X
IECEX firedamp protection	[Ex ia Ma] I
ATEX gas certificate	IBExU17ATEX1157 X
ATEX gas certificate	IBExU17ATEX1157 X
ATEX gas explosion protection	⊕ II 3 (1) G Ex ec [ia Ga] IIC T4 Gc
ATEX dust certificate	IBExU17ATEX1157 X
ATEX dust explosion protection	⊕ II (1) D [Ex ia Da] IIIC
ATEX firedamp certificate	IBExU17ATEX1151 X
ATEX firedamp protection	⊕ I (M1) [Ex ia Ma] I
cULus certificate	E81680
Marking cULus	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 ia]/[Ex ia] IIC T4 any mounting pos. Ta = 60°C See Doc. 9270 6 031 001 3
Certificates	ATEX (IBE), Canada (UL), China (CQM), IECEX (IBE), India (PESO), Korea (KTL), SIL (exida), USA (UL)
Ship approval	DNV
Declaration of conformity	ATEX (EUK), China (CCC)

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### Safety Data

Max. voltage $U_o/V_{oc}$	9.6 V
Max. current $I_o/I_{sc}$	10 mA
Max. power $P_o$	25 mW
Max. permissible external capacitance $C_o/C_a$ for IIC	3.6 $\mu$ F
Max. permissible external inductance $L_o/L_a$ for IIC	300 mH
Max. permissible external capacitance $C_o/C_a$ for IIB	26 $\mu$ F
Max. permissible external inductance $L_o/L_a$ for IIB	1000 mH
Max. permissible external capa.IIA	210 $\mu$ F
Max. permissible external inductance $L_o$ for IIA	1000 mH
Max. permissible external capacity $C_o$ for IIIC	26 $\mu$ F
Max. permissible external inductance $L_o$ for IIIC	1000 mH
Max. permissible external capacity $C_o$ for I	210 $\mu$ F
Max. permissible external inductance $L_o$ for I	1000 mH
Internal capacitance	1.1 nF
Internal inductance	Negligible
Safety-related max. voltage	253 V AC

Intrinsically safe limiting values inductance $L_o$ /capacitance $C_o$		Jointly connectable inductance $L_o$ /capacitance $C_o$				
IIC	$L_o$ [mH]	100 mH	50 mH	5 mH	1 mH	0.010 mH
	$C_o$ [ $\mu$ F]	0.510 $\mu$ F	0.580 $\mu$ F	0.600 $\mu$ F	0.600 $\mu$ F	0.600 $\mu$ F
IIB	$L_o$ [mH]	100 mH	5 mH	1 mH	0.010 mH	
	$C_o$ [ $\mu$ F]	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	
IIA	$L_o$ [mH]	100 mH	5 mH	1 mH	0.010 mH	
	$C_o$ [ $\mu$ F]	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	
IIIC	$L_o$ [mH]	100 mH	5 mH	1 mH	0.010 mH	
	$C_o$ [ $\mu$ F]	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	
I	$L_o$ [mH]	100 mH	5 mH	1 mH	0.010 mH	
	$C_o$ [ $\mu$ F]	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	1 $\mu$ F	

### Functional Safety

SIL	2
HFT	0
SFF	79%
Lambda SD	1 FIT
Lambda SU	119 FIT
Lambda DD	6 FIT
Lambda DU	33 FIT
$PFD_{avg}$ at $T_{proof}$ 1 year	2,12E-04
$PFD_{avg}$ at $T_{proof}$ 7 years	9,41E-04

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### Electrical Data

Number of channels	1
LFD relay	via 9193/21-11-11 / opt. out 2
Max. short-circuit current	8 mA

### Auxiliary Power

Auxiliary power	24 V DC
Auxiliary power voltage range	19.2 ... 30 V
Nominal current	28 mA
Power consumption	0.8 W
Max. power dissipation	0.8 W
Polarity reversal protection	Yes
Undervoltage monitoring	No
Operation indication	LED

### Galvanic Isolation

Test voltage as per standard	EN IEC 60079-11
Ex i input to output	375 V AC peak value
Ex i input to auxiliary power	375 V AC peak value
Ex i input to fault message contact	375 V AC peak value
Test voltage as per standard	EN 61010/EN 50178
Output to auxiliary power	300 V <sub>eff</sub>
Output to output	300 V <sub>eff</sub>
Fault message contact to auxiliary power	300 V <sub>eff</sub>
Fault message contact to output	300 V <sub>eff</sub>

### Input

Input signal	As per EN 60947-5-6 (NAMUR)
Input current for ON	≥ 2.1 mA
Input current for OFF	≤ 1.2 mA
Hysteresis	Approx. 0.2 mA
Input internal resistance R <sub>i</sub>	1000 Ω
Input for open-circuit voltage U <sub>a</sub>	8 V
Short-circuit current	approx. 8 mA

### Output

Output per channel	2 electronic outputs
Output	Electronic output
Min. output load condition	3 V / 5 mA
Max. output DC load condition	30 V / 50 mA
Output switching capacity	30 V DC
Overload-proof	Yes
Max. voltage drop	1.4 V
Output switching frequency	5 kHz
Switching delay ON/OFF	15 μs
Switching delay OFF/ON	70 μs
INV switch user adjustment	Activated/deactivated
Electrical service life note	Resistive load
Switching state indication	LED
LF switch user adjustment	Activated/deactivated

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### Output

Wire breakage error detection input	$I_E < 0.05$ to 0.35 mA
Short circuit error detection input	$R_E < 100$ to 360 ohm
Behaviour of the output at line fault	OFF
Line fault indication	LED

### Ambient Conditions

Ambient temperature °C	-40 °C ... +70 °C (Single device) -40 °C ... +60 °C (Group assembly)
Ambient temperature °F	-40 °F ... +158 °F (Single device) -40 °F ... +140 °F (Group assembly)
Storage temperature °C	-40 °C ... +80 °C
Storage temperature °F	-40 °F ... +176 °F
Max. relative humidity	10 to 95%
Use at the height of	< 2000 m
Electromagnetic compatibility	EN 61326-1 Use in industrial environment Immunity according to EN 61000-6-2 Interference emission to EN 61000-6-4

### Mechanical Data

Degree of protection (IP)	IP30
Degree of protection (IP) terminals	IP20
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
Grid dimension	12.5 mm
Width	12.5 mm
Width, inches	0.49 in
Height	114.5 mm
Height in inches	4.51 in
Length	116 mm
Length in inches	4.57 in
Weight	160 g
Weight	0.35 lb

### Mounting / Installation

Mounting type	DIN rail NS35/15, NS35/7.5
Mounting orientation	any
Connection type	Spring clamp terminal
Min. rigid conductor cross section	0.2 mm <sup>2</sup>
Max. rigid conductor cross section	1.5 mm <sup>2</sup>
Min. flex conductor cross section	0.2 mm <sup>2</sup>
Max. flex conductor cross section	1.5 mm <sup>2</sup>
Connection cross-section AWG	24 ... 16

# Isolator Barriers

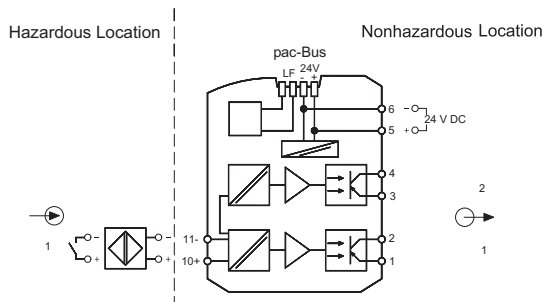
## Switching repeater

### Ex i field circuit

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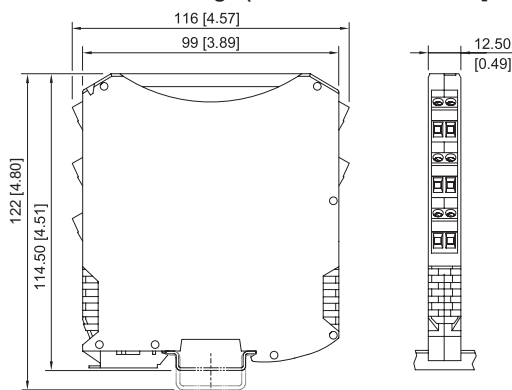


#### Technical Drawings – Subject to Alterations



Connection diagram 9270/11-19-15

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



ISpac Series 9260, 9270, 9275, 9276 with spring clamp terminal

## Accessories

### Resistive coupling element



Replacement for blue screw terminal (Ex i field circuit)  
Application: Use of the device for non-Ex i field circuits.

**Art. No.**

247644

### Screw terminal with test tap

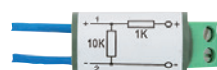


Additional connection of contacts also in hazardous areas to enable short-circuit and wire breakage detection.  
Mounting on DIN rail.

**Art. No.**

272381

### Resistive coupling element



Additional connection of contacts also in hazardous areas to enable short-circuit and wire breakage detection

**Art. No.**

105944

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.