

# Isolators

Ex i relay modules

Ex i field circuit

9172/12-11-00s Art. No. 169651



- Binary input or output with two channels
- For separating intrinsically safe and non-intrinsically safe signal and control circuits
- For use up to SIL 2 (IEC/EN 61508)

MY R. STAHL 9172A



The Series 9172 relay module separates intrinsically safe and non-intrinsically safe binary signal and control circuits. To do this, it makes intrinsically safe binary inputs and outputs with two channels available. Depending on the version, the device has either an intrinsically safe control system or an intrinsically safe output contact, and can therefore be used as an output or input isolator.

## Technical Data

Explosion Protection	
Application range (zones)	2
Ex interface zone	0, 1, 2, 20, 21, 22
IECEX gas certificate	IECEX BVS 09.0002 X
IECEX gas certificate	IECEX BVS 09.0002 X
IECEX gas explosion protection	Ex ec nC [ia Ga] IIC T4 Gc
IECEX dust certificate	IECEX BVS 09.0002 X
IECEX dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	BVS 04 ATEX E 097 X
ATEX gas explosion protection	Ex II (1) G Ex ec nC [ia Ga] IIC T4 Gc
ATEX dust certificate	BVS 04 ATEX E 097 X
ATEX dust explosion protection	Ex 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, 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 at Ta = 70°C See Doc. 91 726 01 31 1
Certificates	ATEX (BVS), Canada (FM), China (NEPSI), IECEX (BVS), SIL (exida), USA (FM)
Ship approval	CCS, EU RO MR (DNV)
Declaration of Conformity	ATEX (EUK), China (CCC)
Installation	In Zone 2, Division 2 and safe areas
Further information	See relevant certificate and operating instructions
Safety Data	
Max. voltage $U_i$	30 V
Max. current $I_i$	150 mA

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## Safety Data

Max. power $P_i$	1.3 W
Internal capacitance	Negligible
Internal inductance	Negligible
Contact Ui/li AC	45 V/4 A
Contact Ui/li DC 1	45 V/0.25 A
Contact Ui/li DC 2	30 V/4 A
Internal capacitance $C_i$ (contact)	negligible
Internal inductance $L_i$ (contact)	negligible
Safety-related max. voltage	253 V

## Functional Safety

SIL	2
HFT	0
SFF	62%
Lambda SD	0 FIT
Lambda SU	41 FIT
Lambda DD	0 FIT
Lambda DU	25 FIT
$PFD_{avg}$ at $T_{proof}$ 1 year	1,17E-04
$PFD_{avg}$ at $T_{proof}$ 2 years	2,23E-04
$PFD_{avg}$ at $T_{proof}$ 5 years	5,42E-04

## Electrical Data

Number of channels	1
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## Auxiliary Power

Auxiliary power	without
Auxiliary power voltage range	Loop-powered
Max. power dissipation	0.4 W
Polarity reversal protection	Yes
Undervoltage monitoring	No

## Galvanic Isolation

Test voltage as per standard	EN IEC 60079-11
Ex i input to output	1.5 kV AC
Ex i input to Ex i input	350 V AC
Test voltage as per standard	EN 50178
Output to output	500 V AC

## Input

Input signal	Ex i
Switching signal input	14 – 30 V
Current consumption at 12 V	< 16 mA
Current consumption at 24–30 V	< 11 mA
Notes	Digital output with electronic limitation requires a minimum output current of 20 mA.

## Output

Output per channel	Ex i, 1 change-over contact
Output	Change-over contact - Ex i
Min. output load condition	1 V / 1 mA

<b>Output</b>	
Max. output DC load condition	45 V / 0.5 A 30 V / 4 A
Max. output AC load condition	30 V / 4 A $\cos \varphi > 0.7$
Output switching frequency	$\leq 15$ Hz
Switching delay ON/OFF	$\leq 10$ ms
Switching delay OFF/ON	$\leq 10$ ms
Output electrical service life	$\geq 1 \times 10^5$ operating cycles
Electrical service life note	Resistive load
Output mechanical service life	$\geq 1 \times 10^7$ operating cycles
Switching state indication	LED

<b>Ambient Conditions</b>	
Ambient temperature	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)
Ambient temperature	-4 °F ... +158 °F (Single device) -4 °F ... +140 °F (Group assembly)
Note	Installation conditions influence the ambient temperature. Please observe the "Cabinet installation guide".
Storage temperature	-40 °C ... +80 °C
Storage temperature	-40 °F ... +176 °F
Maximum 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

<b>Mechanical Data</b>	
Degree of protection (IP)	IP30
Degree of protection (IP) terminals	IP20
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
Grid dimension	17.6 mm
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	175 g
Weight	0.39 lb

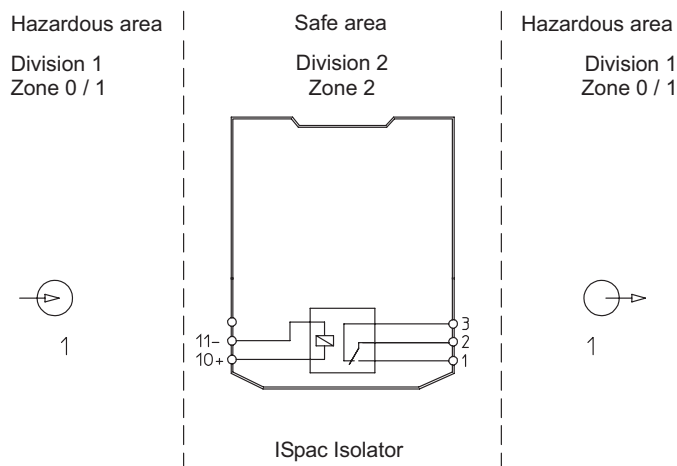
<b>Mounting / Installation</b>	
Mounting type	DIN rail NS35/15, NS35/7.5
Mounting orientation	Vertical Horizontal
Connection type	Screw terminal
Min. rigid conductor cross section	0.2 mm <sup>2</sup>
Max. rigid conductor cross section	2.5 mm <sup>2</sup>
Min. flex conductor cross section	0.2 mm <sup>2</sup>
Max. flex conductor cross section	2.5 mm <sup>2</sup>

### Mounting / Installation

Connection cross-section AWG

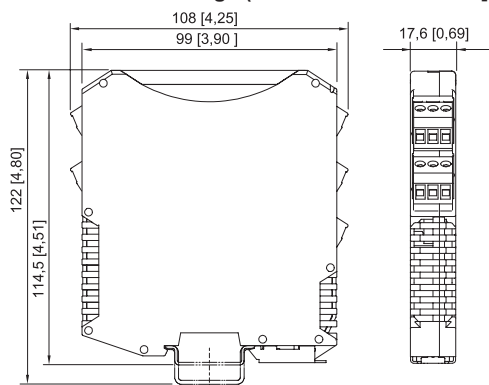
24 ... 14

### Technical Drawings – Subject to Alterations



Connection diagram 9172/12-11-00

### 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

### Accessories

#### Transparent cover



For 91xx ISpac modules  
 Yellow, transparent  
 Clear identification of the device for SIL applications.  
 (Packaging unit: 10 pieces)

**Art. No.**

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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.