

Isolator Barriers

Ex i relay modules

Ex i field circuit

9172/21-11-00k Art. No. 160370



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

MY R. STAHL 9172A



The 9172 series relay module separates intrinsically safe and non-intrinsically safe binary signal and control circuits. To do this, it makes intrinsically safe inputs and outputs available with two channels. Depending on the version, the device has either an intrinsically safe drive 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 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	⊕ II 3 (1) G Ex ec nC [ia Ga] IIC T4 Gc
ATEX dust certificate	BVS 04 ATEX E 097 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, 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), India (PESO), 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 in the safe area

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Explosion Protection

Further information see respective certificate and operating instructions

Safety Data

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		
Safety-related max. voltage	253 V		
Internal capacitance C_i (contact)	negligible		
Internal inductance L_i (contact)	negligible		
Max. voltage U_i	30 V AC	45 V DC	30 V DC
Max. current I_i	4 A	0.5 A	4 A

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	2
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Auxiliary Power

Auxiliary power	without
Max. power dissipation	0.4 W
Polarity reversal protection	Yes

Galvanic Isolation

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

Input

Input	Non-Ex i signal
Switching signal input	12 – 31.2 V
Input current consumption 1	< 25 mA at 12 V
Input current consumption 2	< 17 mA at 24 to 31.2 V

Output

Output	Change-over contact - Ex i
Min. output load condition	1 V / 1 mA
Max. output DC load condition	30 V / 4 A 45 V/0.25 A
Max. output AC load condition	30 V / 4 A $\cos \varphi > 0.7$
Output electrical service life	$\geq 1 \times 10^5$ operating cycles
Output mechanical service life	$\geq 1 \times 10^7$ operating cycles
Output switching frequency	≤ 15 Hz

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Output	
Switching delay ON/OFF	≤ 10 ms
Switching delay OFF/ON	≤ 10 ms
Ambient Conditions	
Ambient temperature °C	-20 °C ... +70 °C (Single device) -20 °C ... +60 °C (Group assembly)
Ambient temperature °F	-4 °F ... +158 °F (Single device) -4 °F ... +140 °F (Group assembly)
Storage temperature °C	-40 °C ... +80 °C
Storage temperature °F	-40 °F ... +176 °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
Grid dimension	17.6 mm
Width	17.6 mm
Width, inches	0.69 in
Height	114.5 mm
Height, inches	4.51 in
Length	128 mm
Length, inches	5.04 in
Weight	190 g
Weight	0.42 lb
Mounting / Installation	
Mounting type	DIN rail NS35/15, NS35/7.5
Connection type	Spring clamp terminal
Min. rigid conductor cross section	0.2 mm ²
Max. rigid conductor cross section	2.5 mm ²
Min. flex conductor cross section	0.2 mm ²
Max. flex conductor cross section	2.5 mm ²
Connection cross-section AWG	24 – 14

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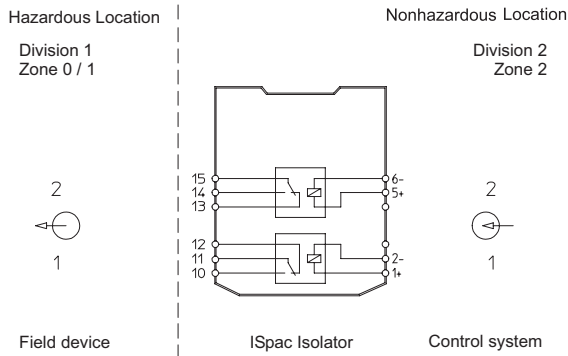
Ex i relay modules



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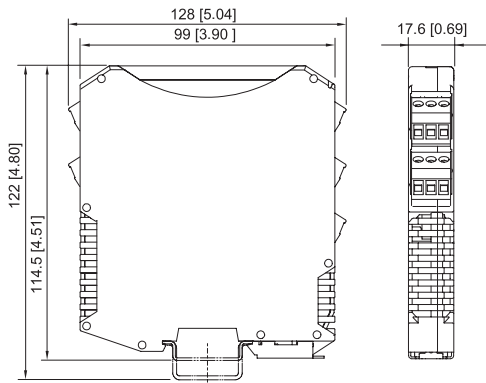
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Technical Drawings – Subject to Alterations



Connection Diagram 9172/21-11-00

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



ISpac Series 9146, 9147, 9160, 9162, 9163, 9165, 9167, 9170, 9172, 9175, 9176, 9180, 9182, 9193, Fieldbus Power Supply Series 9412 with spring clamp terminal

Accessories

Transparent cover



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

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