Isolator Barriers
Resistance isolator
Ex i field circuit ISpac
9180/11-77-11s Art. No. 160499

- Ex i resistance isolator 9180/.0 for Pt100 or 9180/.1 for Pt1000
- World's only two-channel device requiring just 8.8 mm of space per channel
- For two-, three- and four-conductor connection

MY R. STAHL **9180A**

9180 series Ex i resistance isolators can be used for the intrinsically safe operation of Pt100 (9180/.0) or Pt1000 (9180/.1) resistance temperature detectors. The resistance measured at the input is transmitted to the output and can thereby be measured by an I/O card. The auxiliary power, output and intrinsically safe input are galvanically separated.

Technical Data

Explosion Protection	
Application range (zones)	2
Ex interface zone	0, 1, 2, 20, 21, 22
IECEx gas certificate	IECEx BVS 10.0055 X
IECEx gas explosion protection	Ex ec nC [ia Ga] IIC T4 Gc
IECEx dust certificate	IECEx BVS 10.0055 X
IECEx dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	BVS 05 ATEX E 176 X
ATEX gas explosion protection	Ⓔx II 3 (1) G Ex ec nC [ia Ga] IIC T4 Gc
ATEX dust certificate	BVS 05 ATEX E 176 X
ATEX dust explosion protection	Ⓔx 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 ia]/[Ex ia] IIC T4 at Ta = 70°C See Doc. 9180 6 031 001 1
Certificates	ATEX (BVS), Brazil (ULB), Canada (FM), China (NEPSI), IECEx (BVS), India (PESO), Korea (KTL), USA (FM)
Ship approval	CCS, EU RO MR (DNV)
Declaration of conformity	ATEX (EUK), China (CCC)
Safety Data	
Max. voltage U_o/V_{oc}	6.5 V
Max. current I_o/I_{sc}	16.5 mA
Max. power P_o	27 mW
Max. permissible external capacitance C_o/C_a for IIC	25 µF

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Safety Data

Max. permissible external inductance L_o/La for IIC		120 mH			
Max. permissible external capacitance C_o/C_a for IIB		570 µF			
Max. permissible external inductance L_o/La for IIB		450 mH			
Max. permissible external capacity C_o for IIIC		570 µF			
Max. permissible external inductance L_o for IIIC		450 mH			
Internal capacitance		Negligible			
Internal inductance		Negligible			
Safety-related max. voltage		253 V			
Intrinsically safe limiting values inductance L_o/capacitance C_o		Jointly connectable inductance L_o/capacitance C_o			
IIC	L_o [mH]	50 mH	5 mH	1 mH	0.200 mH
	C_o [µF]	1.100 µF	1.700 µF	2.300 µF	3.400 µF
IIB	L_o [mH]	100 mH	20 mH	2 mH	0.500 mH
	C_o [µF]	5.300 µF	6.900 µF	11 µF	1.500 µF
IIIC	L_o [mH]	100 mH	20 mH	2 mH	0.500 mH
	C_o [µF]	5.300 µF	6.900 µF	11 µF	1.500 µF

Electrical Data

Number of channels	1
LFD relay	Yes
Measuring range	180 to 3910 Ω

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	≤ 3,6 V_{SS}
Nominal current	27 mA
Power consumption	0.65 W
Max. power dissipation	0.6 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 input to output	1.5 kV AC
Ex i input to auxiliary power	1.5 kV AC
Ex i input to fault message contact	1.5 kV AC
Test voltage as per standard	EN 50178
Output to auxiliary power	350 V AC
Output to output	350 V AC
Fault message contact to auxiliary power	350 V AC
Fault message contact to output	350 V AC

Input	
Sensor adjustment	DIP switch
Medium-resolution input	0.2 Ω
Input for resistance temperature detector	Pt 1000
Connection type RTD input	2-, 3- and 4-wire circuits
2-conductor adjustment	Via ADJ DIP switch
Sensor current RTD	200 uA ... 0.5 mA
Max. line resistance per wire RTD	50 Ω (2-wire connection) 100 Ω (3-, 4-wire connection)
Output	
Output signal	Equal to input signal (resistance value)
Connection type RTD output	2-, 3- and 4-wire circuits
Settling time output	< 10 ms
Response time output	< 1 s
Sensor current range	200 uA ... 0.5 mA
LF switch user adjustment	Activated/deactivated
Wire breakage error detection input	> 3940 ohm
Short circuit error detection input	< 160 ohm
Behaviour of the output at line fault	> 10 kΩ
Line fault indication	Red "LF" LED
Fault message contact switching capacity	30 V / 100 mA
Line fault and loss of power signalization	- Contact (30 V/100 mA), closed against earth in case of error - pac-Bus, potential-free contact (30 V/100 mA)
Deviations / error note	Information in % of the measuring range (20 mA) at U_N, 23 °C
Average measurement fault	< 0,1%
Temperature influence	≤ 0,1 %/10K
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)
Note	The installation conditions affect the ambient temperature. Observe the "Cabinet installation guide".
Storage temperature °C	-40 °C ... +80 °C
Storage temperature °F	-40°F ... +176°F
Max. relative humidity	95%
Max. additional relative humidity	No condensation
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

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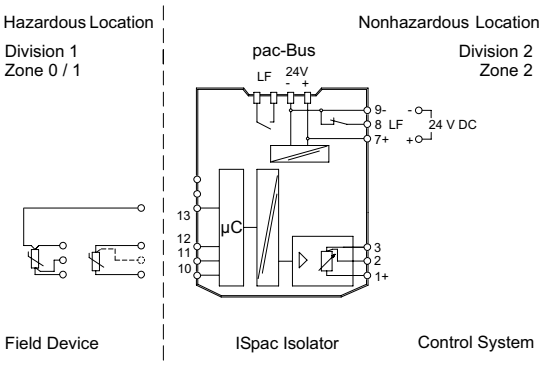
Mechanical Data

Connection cross-section	0.2 to 2.5 mm² flexible 0.25 to 2.5 mm² flexible with core end sleeve 0.2 to 2.5 mm² rigid
Grid dimension	17.6 mm
Width	17.6 mm
Width, inches	0.69 in
Height	114.5 mm
Length	108 mm
Length in inches	4.25 in
Mounting depth in inches	4.51 in
Weight	160 g
Weight	0.35 lb

Mounting / Installation

Mounting type	DIN rail NS35/15, NS35/7.5
Mounting orientation	Vertical Horizontal
Connection type	Screw terminal
Min. rigid conductor cross section	0.2 mm²
Max. rigid conductor cross section	2.5 mm²
Min. flex conductor cross section	0.2 mm²
Max. flex conductor cross section	2.5 mm²
Connection cross-section AWG	24 ... 14

Technical Drawings – Subject to Alterations



Connection diagram 9180/11-77-11

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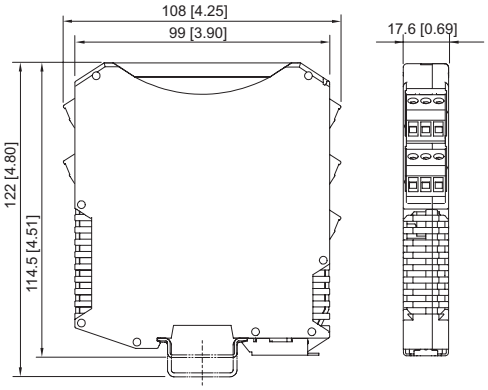
Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



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		Art. No.
	For 91xx ISpac modules Yellow, transparent Clear identification of the device for SIL applications. (Packaging unit: 10 pieces)	200914

Spare Parts

Screw terminal		Art. No.
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: black	112816
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: blue	112818
	3-pole plug, screw connector thread: M3 stripping length: 7 mm color: green	112817

Screw terminal with test tap		Art. No.
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: blue	113004
	3-pole plug with test tap, screw connector thread: M3 stripping length: 7 mm colour: black	113005