

Isolators

Resistance isolator

Ex i field circuit ISpac

9180/21-77-11k Art. No. 160503



- Resistance isolator for intrinsically safe Pt100 (9180/.0) or Pt1000 (9180/.1)
- World's only two-channel device requiring just 8.8 mm of space per channel
- For two-, three- and four-wire connection

WebCode **9180A**



9180 series resistance isolators can be used for the intrinsically safe operation of Pt100 (9180/.1) 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
IECEEx gas certificate	IECEEx BVS 10.0055 X
IECEEx gas explosion protection	Ex nA nC [ia Ga] IIC T4 Gc
IECEEx dust certificate	IECEEx BVS 10.0055 X
IECEEx dust explosion protection	[Ex ia Da] IIIC
ATEX gas certificate	BVS 05 ATEX E 176 X
ATEX gas explosion protection	II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc
ATEX dust certificate	BVS 05 ATEX E 176 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 ia]/[Ex ia] IIC T4 at Ta = 70°C See Doc. 9180 6 031 001 1
Certificates	ATEX (BVS), Brazil (ULB), Canada (FM), IECEEx (BVS), India (PESO), Korea (KTL), USA (FM)
Ship approval	CCS, EU RO MR (DNVGL)
Notes	CCC, UKCA certificate available from 2022 onward
Safety Data	
Max. voltage U ₀	6.5 V

Safety Data

Max. current I_o	16.4 mA
Max. power P_o	27 mW
Max. permissible external capacity C_o for IIC	25 μ F
Max. permissible external capacity C_o for IIB	570 μ F
Max. permissible external inductance L_o for IIC	120 mH
Max. permissible external inductance L_o for IIB	450 mH
Internal capacitance	Negligible
Internal inductance	Negligible
Safety-related max. voltage	253 V

Electrical Data

Number of channels	2
LFD relay	Yes
Measuring range	180 to 3910 Ω

Auxiliary Power

Auxiliary power	24 V DC
Nominal voltage	24 V DC
Auxiliary power voltage range	18 to 31.2 V
Voltage range residual ripple	$\leq 3,6 V_{ss}$
Nominal current	37 mA
Power consumption	0.89 W
Max. power dissipation	0.72 W
Polarity reversal protection	Yes
Undervoltage monitoring	Yes
Operation indication	Green "PWR" LED

Galvanic Isolation

Test voltage as per standard	IEC EN 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

Medium resolution input	0.1 Ω
2-conductor adjustment	Via ADJ DIP switch
Sensor adjustment	DIP switch
Line fault and loss of power signalisation	- Contact (30 V / 100 mA) closed to ground in case of fault - pac-Bus, floating contact (30 V / 100 mA)
Input for resistance temperature detector	Pt 1000
RTD input	2-, 3- and 4-wire circuits

Input

Sensor current	≤ 0.25 mA
Input resistance	≤ 5 ohm (2-wire circ.)

Output

Output signal	Equal to input signal (resistance value)
RTD output	2-, 3- and 4-wire circuits
Settling time output	< 10 ms
Response time output	< 1 s
Sensor current range	200 uA to 0.5 mA/2.5 mA
Average measurement fault	< 0,1%
Fault message contact switching capacity	30 V / 100 mA
LF switch user adjustment	Activated/deactivated
Indication of line fault	Red "LF" LED
Wire breakage error detection	> 3,94 ohm
Short circuit error detection	< 160 ohm
Behaviour of output with DB	> 10 kΩ
Behaviour of output with KS	> 10 kΩ

Ambient Conditions

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)
Storage temperature	-40 °C ... +80 °C
Storage temperature	-40°F ... +176°F
Maximum relative humidity	95%
Max. additional relative humidity	No condensation
Temperature influence	≤ 0,25 %/10K
Use at the height of	< 2000 m

Mechanical Data

Degree of protection (IP)	IP30
Degree of protection (IP) terminals	IP20
Fire resistance (UL 94)	V0
Enclosure material	Polyamide
AWG clamping range	16 – 12
Grid dimension	17.6 mm
Width	17.6 mm
Width, inches	0.69 in
Height	114.5 mm
Length	128 mm
Length, inches	5.04 in
Mounting depth, inches	4.51 in
Weight	0.18 kg
Weight	0.4 lb

Mounting / Installation

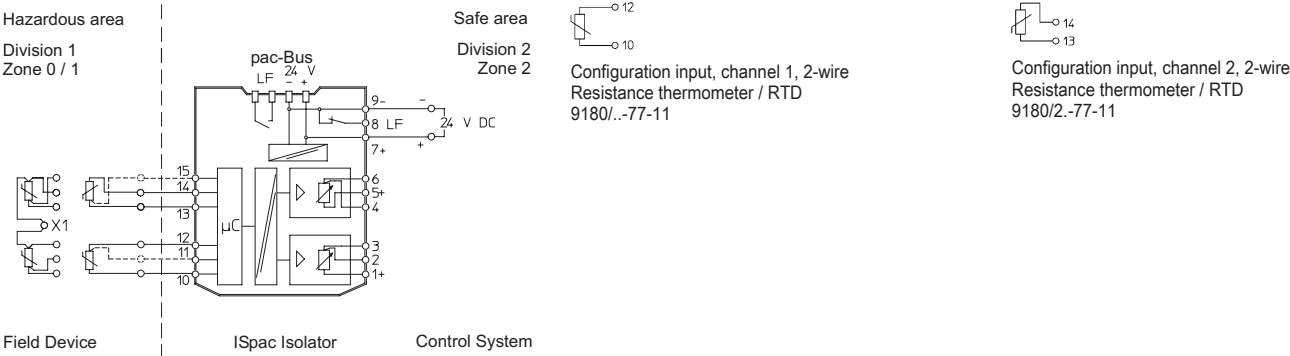
Mounting type	DIN rail NS35/15, NS35/7.5
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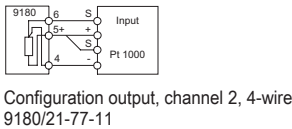
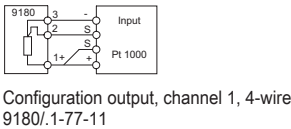
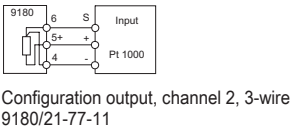
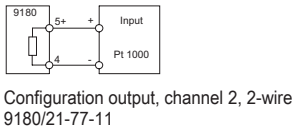
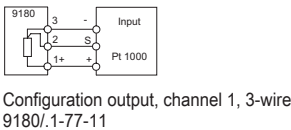
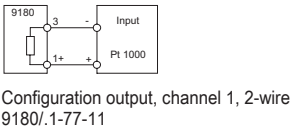
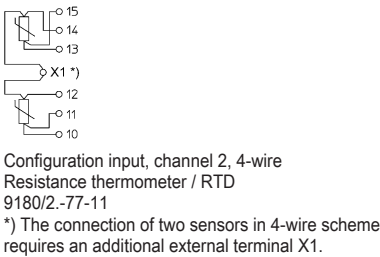
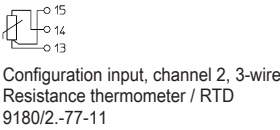
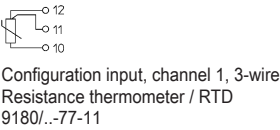
Mounting / Installation

Mounting orientation	Horizontal Vertical
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

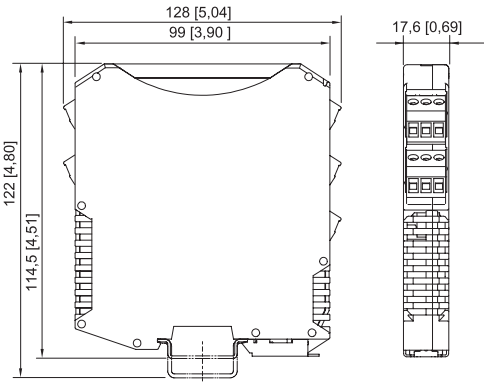
Technical Drawings – Subject to Alterations



Connection diagram 9180/2.-77-11



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, ISbus Series 9412 with spring clamp terminal

Accessories

Front cover		Art. No.
	for ISpac modules 91xx yellow, transparent Clear marking of the device for SIL applications. (Packaging unit: 10 pieces)	200914

Spare Parts

Spring clamp terminal		Art. No.
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm colour: blue	112826
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm colour: green	112825
	3-pole plug with test tap, spring clamp connection stripping length: 10 mm colour: black	112824

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.