

Resistance Isolator Series 9180



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11026E00

- > World-wide unique dual channel solution
 - space saving, only 8.8 mm per channel
- > For 2-, 3- and 4-wire circuits
- > Resistance range from 18 ... 391 Ω or 180 ... 3910 Ω
- > For 2-, 3- and 4-wire circuits
- > Galvanic isolation between input, output and power supply

A3



Basic function: analog input, Ω , 1 and 2 channels.
 The resistance isolators are used for intrinsically safe operation of Pt 100 and Pt 1000 resistance thermometer or other resistance sensors.
 The measured value is transferred to the output

ATEX / IECEx							NEC 505							NEC 506						NEC 500					
							Class I													Class I					
							Class I													Class I		Class II		Class III	
Zone	0	1	2	20	21	22	Zone	0	1	2	20	21	22	Division	1	2	1	2	1	2					
Ex i interface	x	x	x	x	x	x	Ex i interface	x	x	x				Ex i interface	x	x	x	x	x	x	x				
Installation in			x			x	Installation in			x			x	Installation in		x		x			x				

WebCode 9180A

Resistance Isolator

Series 9180



Selection Table

Version	Channels	Measuring range	Order number
Resistance isolator Series 9180	1	18 ... 391 Ω (Pt100)	9180/10-77-11s
	1	180 ... 3910 Ω (Pt1000)	9180/11-77-11s
	2	18 ... 391 Ω (Pt100)	9180/20-77-11s
	2	180 ... 3910 Ω (Pt1000)	9180/21-77-11s
Note	The order numbers listed in the table are for devices equipped with screw-type terminals. For devices equipped with spring-type terminals, replace the ending "s" for screw-type terminals with "k" for spring-type terminals.		

Explosion Protection

Global (IECEx)	
Gas and dust	IECEx BVS 10.0055X Ex nA nC [ia Ga] IIC T4 Gc [Ex ia Da] IIIC
Europe (ATEX)	
Gas and dust	BVS 05 ATEX E 176 X Ⓔ II 3 (1) G Ex nA nC [ia Ga] IIC T4 Gc Ⓔ II (1) D [Ex ia Da] IIIC
Certifications and certificates	
Certificates	IECEx, ATEX, Brazil (INMETRO), China (China-Ex), India (PESO), Canada (cFM), Kazakhstan (TR), Russia (TR), USA (FM), Belarus (TR)
Ship approval	DNV
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. connectable capacitance C_o / C_a	
IIC	25 μ F
IIB	570 μ F
Max. connectable inductance L_o / L_a	
IIC	120 mH
IIB	450 mH
Internal capacitance C_i	negligible
Internal inductance L_i	negligible
Insulation voltage U_m	250 V
Further parameters	
Installation	in Zone 2, Div. 2 and in the safe area
Further information	see respective certificate and operating instructions

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Technical Data

Electrical data

Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 31.2 V
Nominal current at U_N	
1 channel	27 mA
2 channels	37 mA
Power consumption at U_N	
1 channel	≤ 650 mW
2 channels	≤ 890 mW
Power dissipation at U_N	
1 channel	≤ 600 mW
2 channels	≤ 720 mW
Operation indication	LED green "PWR"
Polarity reversal protection	yes
Undervoltage monitoring	yes (no faulty module / output states)

Galvanic separation

Test voltages

acc. to standard	EN 60079-11
Ex i / I.S. input to output	1.5 kV AC
Ex i / I.S. input to power supply	1.5 kV AC
Ex i input to configuration interface	1.5 kV AC
Ex i / I.S. input to error contact	1.5 kV AC
acc. to standard	EN 50178
Output to auxiliary power	350 V AC
Output to configuration interface	350 V AC
Outputs interconnected	350 V AC
Error message contact to auxiliary power and outputs	350 V AC

There is no galvanic isolation between the I.S. input channels

Version

Ex i / I.S. input

Connection type (no. of wires)

Sensor current

Max. line resistance per conductor suitable for connection

Measuring range

Middle resolution

Output

Output signal

Response time (10 ... 90 %)

Multiplexer operation

Response time (input = output)

Sensor current

Connection type (no. of wires)

Fault detection Ex i / I.S. input

Open circuit

Short-circuit

Short-circuit

(Behaviour of the outputs)

Open-circuit

(Behaviour of the output)

Settings (switch LF)

Error detection

Message of line fault and auxiliary power failure

9180/0

2-, 3-, 4-wire circuits, setup via DIP switches
≤ 0.25 mA
$\leq 50 \Omega$ at 2-wire circuits $\leq 100 \Omega$ at 3 and 4-wire circuits
18 ... 391 Ω (Pt100)
10 m Ω

equals input signal (resistance)
< 10 ms
< 1 sec
200 μ A ... 5 mA

2, 3, 4-wire circuits
> 394 Ω
< 16 Ω
> 10 k Ω
> 10 k Ω
activated / deactivated
LED red "LF" each channel
- contact (30 V / 100 mA) closed to earth in case of error - pac-Bus, potential-free contact (30 V / 100 mA)

9180/1

2-, 3-, 4-wire circuits, setup via DIP switches
≤ 0.25 mA
$\leq 50 \Omega$ at 2-wire circuits $\leq 100 \Omega$ at 3 and 4-wire circuits
180 ... 3910 Ω (Pt1000)
100 m Ω

equals input signal (resistance)
< 10 ms
< 1 sec
200 μ A ... 0.5 mA resp. 200 μ A ... 2.5 mA till max. 2 V output voltage $I_{fmax} = 2 V / R_{Ptmax}$

2, 3, 4-wire circuits
> 3940 Ω
< 160 Ω
> 10 k Ω
> 10 k Ω
activated / deactivated
LED red "LF" each channel
- contact (30 V / 100 mA) closed to earth in case of error - pac-Bus, potential-free contact (30 V / 100 mA)

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Technical Data

Electrical data

Error limits

Middle measurement error

Temperature effect

Electromagnetic compatibility

Accuracy, typical data expressed in % of basic measuring range at U_N , 23 °C

≤ 0.1 %

≤ 0.1 % / 10 K

Tested under the following standards and regulations:

EN 61326-1 Use in industrial environment;

NAMUR NE 21

Ambient conditions

Ambient temperature

Storage temperature

Relative humidity (no condensation)

-20 ... +60 / +70 °C / -4 ... +140 / +158 °F
(Observe the "Cabinet installation guide")

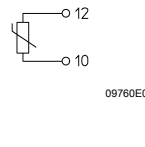
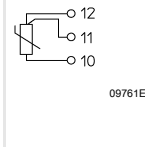
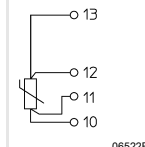
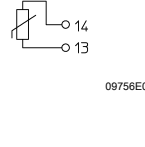
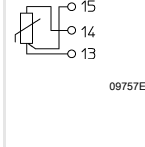
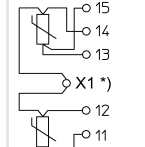
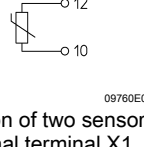
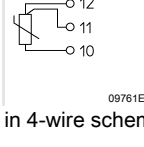
-40 ... +80 °C / -40 ... +176 °F

≤ 95 %

Technical Data

Electrical connection

Configuration input

		Resistance thermometer / RTD		
		2-wire	3-wire	4-wire
9180/1.-77-11. Channel 1				
		09760E00	09761E00	06522E00
9180/2.-77-11. Channel 2				
		09756E00	09757E00	06525E00
Channel 1				
		09760E00	09761E00	

*) The connection of two sensors in 4-wire scheme requires an additional external terminal X1.

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Technical Data

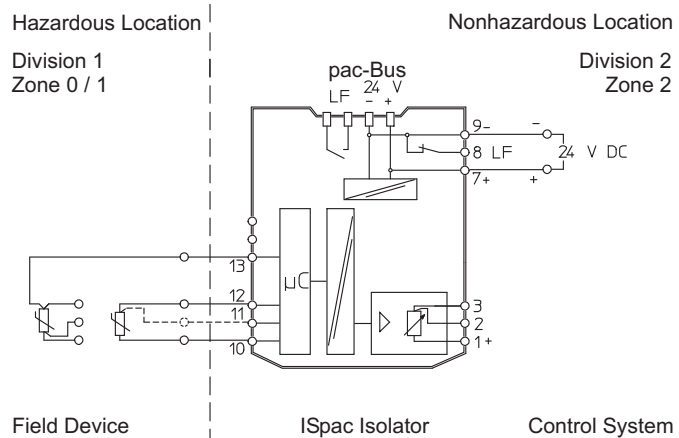
Electrical connection

Configuration output

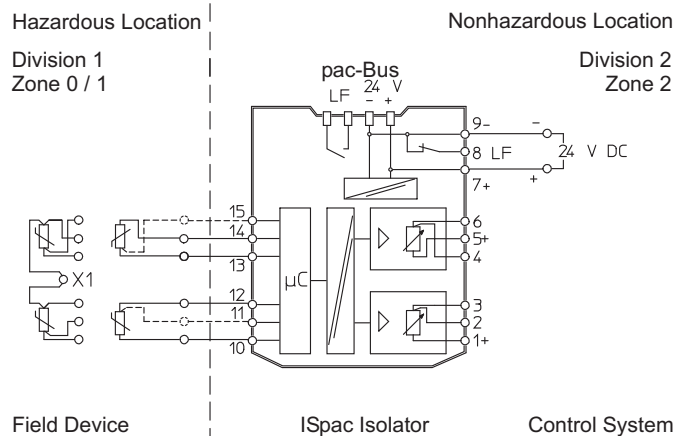
Type	Channel	2-wire	3-wire	4-wire
9180/10-77-11 9180/20-77-11	Channel 1			
		07237E02	07238E02	07239E02
9180/20-77-11	Channel 2			
		07240E02	07241E02	07242E02
Type	Channel	2-wire	3-wire	4-wire
9180/11-77-11 9180/21-77-11	Channel 1			
		07251E02	07252E02	07253E02
9180/21-77-11	Channel 2			
		07254E02	07255E02	07256E02

Connection diagram

for 9180/1.-77-11
(1 channel)



for 9180/2.-77-11
(2 channels)



Note: X1 is an external terminal

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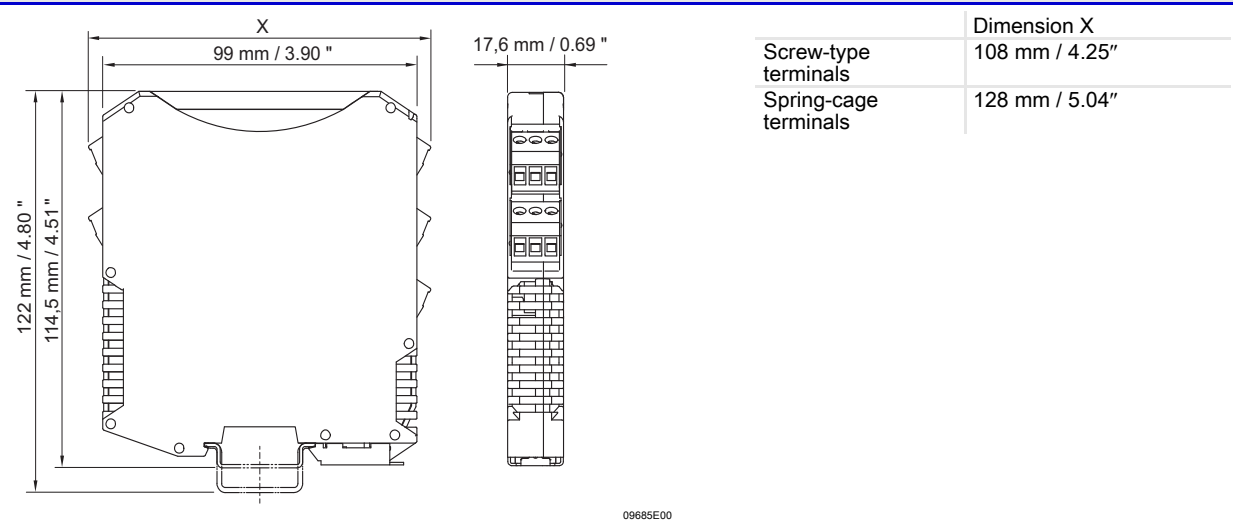


Technical Data

Mechanical data

Connection	Screw-type terminals	Spring-type terminals
Connection single-wire	- rigid	0.2 ... 2.5 mm ² / 24 ... 14 AWG
	- flexible	0.2 ... 2.5 mm ² / 24 ... 14 AWG
	- flexible, end covering sleeves (without / with plastic sleeving)	0.25 ... 2.5 mm ² / 22 ... 14 AWG
Connection two wires	- rigid	0.2 ... 1 mm ² / 24 ... 14 AWG
	- flexible	0.2 ... 1.5 mm ² / 24 ... 16 AWG
	- flexible, end covering sleeves	0.25 ... 1 mm ² / 22 ... 16 AWG
Weight	approx. 160 g	
Mounting type	on top hat rail (NS35/15, NS35/7.5) or in pac-Carrier	
Mounting orientation	horizontal or vertical	
Degree of protection	IP30	
Enclosure	IP20	
Terminals	PA 6.6	
Enclosure material	V0	
Fire resistance (UL-94)	V0	

Dimensional Drawings (All Dimensions in mm / inch) - Subject to Alterations



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.