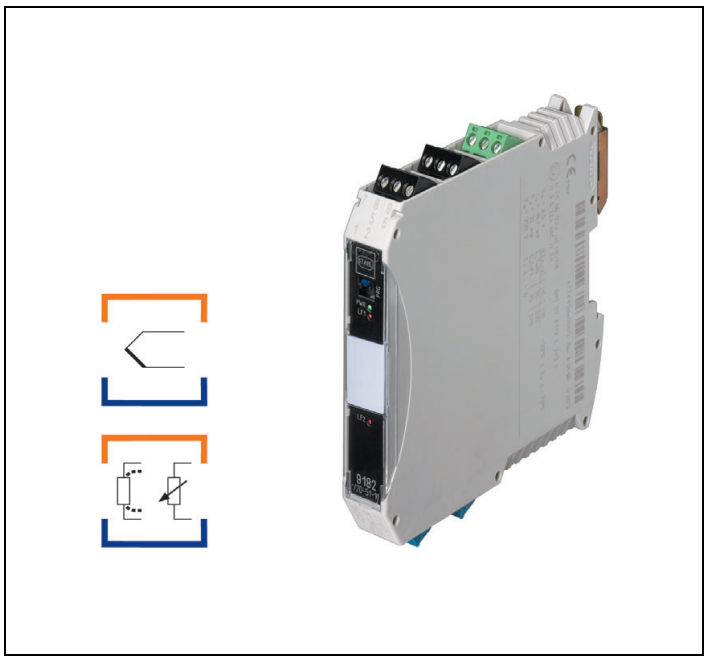


Manual

Additional languages www.r-stahl.com

EN

Temperature transmitter Ex i

Series 9182

EN

3.4 Modifications and Alterations

	**DANGER** Explosion hazard due to modifications and alterations to the device! Non-compliance results in severe or fatal injuries. • Do not modify or alter the device.
	No liability or warranty for damage resulting from modifications and alterations.

4 Function and Device Design

	**DANGER** Explosion hazard due to improper use! Non-compliance results in severe or fatal injuries. • The device may only be used according to the operating conditions described in this manual. • Use the device only for the intended purpose specified in this manual.

4.1 Function

Application range

The temperature transmitter is used for intrinsically safe operation of temperature sensors or resistance transmitters. Virtually all conventional sensors, such as Pt100, Pt500, thermocouples and potentiometers, can be connected.

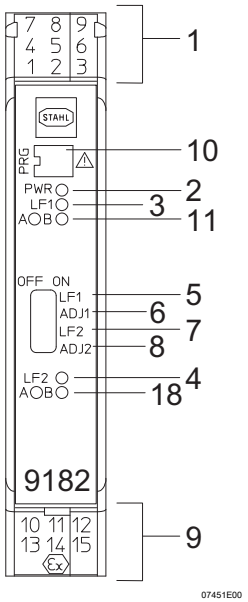
Mode of operation

The parameters of the device can be adjusted using the ISpac Wizard software or alternatively by means of a DIP switch (only with Type 9182/.0-5.-11).

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4.2 Device Design



#	Device component	Description
1	Black/ green terminals	Connection terminals for the safe area
2	"PWR" LED, green	Auxiliary power indication
3	"LF1" LED, red	Indication of line fault detection for channel 1
4	"LF2" LED, red	Indication of line fault detection for channel 2
5	DIP switch "LF1"	Reset activation of the line fault detection and anti-pumping device of the limiting value for channel 1
6	DIP switch "ADJ1"	Adjustment of line resistance in channel 1
7	DIP switch "LF2"	Reset activation of the line fault detection and anti-pumping device of the limiting value for channel 2
8	DIP switch "ADJ2"	Adjustment of line resistance in channel 2
9	Blue terminals	Connection terminals for the hazardous area (intrinsically safe Ex i)
10	Parameterization interface	Configuration of the device by means of ISpac Wizard software Type "9199"
11	"A" and "B" LED, yellow	Indication for limit contacts for channel 1
18	"A" and "B" LED, yellow	Indication for limit contacts for channel 2

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Technical Data	
Version	**for all types 9182/.0-5.-1.**
Electrical data	
Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 to 31.2 V
Residual ripple within voltage range	≤ 3.6 V_{SS}
Nominal current at U_N	
1 channel	70 mA
2 channels	80 mA
Power consumption at U_N	≤ 1.9 W
Power dissipation at U_N	≤ 1.9 W
Polarity reversal protection	yes
Operation indication	LED green "PWR"
Undervoltage monitoring	yes (no faulty devices / output states)
Galvanic separation	
Test voltages	
acc. to standard	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 configuration interface	1.5 kV AC
Ex i input to error message 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

Technical Data

EN

Technical Data

Ex i inputs	
At thermocouples	20 V
Configuration	
Interface	
Version	RS 232 C
Software	ISpac Wizard 9199
Connection	4-pole plug on the front
Settings	all device functions and diagnostics
Version	**9182/.0-5.-11**
Switch	
Version	12 + 4-pole DIP switches
Settings	Pt100; thermocouple B, E, J, K, N, R, T each with approx. 90 measuring ranges (°C + °F) Pt100 in 2-, 3- or 4-wire connection Output signal 0/4 to 20 mA Line fault monitoring activated / deactivated
Version	**for all types 9182/.0-5.-1.**
Ex i Input	The input parameters can be set via parameterising software ISpac Wizard or DIP switch.

Input for resistance temperature detector

Types	Standard	Basic measuring range	Min. measuring range	Medium resolution	Medium measure-ment error
Pt100 Pt500 Pt1000	IEC 60751	-200 to +850 °C	50 K	0.1 K	0.35 K
Pt250	IEC 60751	-200 to +850 °C	40 K	0.1 K	0.5 K
Pt2000	IEC 60751	-200 to +850 °C	40 K	0.1 K	0.35 K
Ni100 Ni500 Ni1000	DIN 43760	-60 to +180 °C	31 K	0.1 K	0.25 K
Pt100	GOST 6651-94	-200 to +1100 °C	40 K	0.1 K	0.7 K
M50	GOST 6651-94	-200 to +200 °C	70 K	0.1 K	0.7 K
M53	GOST 6651-94	0 to +120 °C	70 K	0.1 K	0.5 K
M100	GOST 6651-94	-200 to +200 °C	40 K	0.1 K	0.45 K

Type of circuit	2-, 3-, 4-wire circuit
Linearity	temperature / resistance
Measuring current	≤ 0.25 mA
Max. line resistor each core	50 Ω (2-wire connection) 100 Ω (3-, 4-wire connection)

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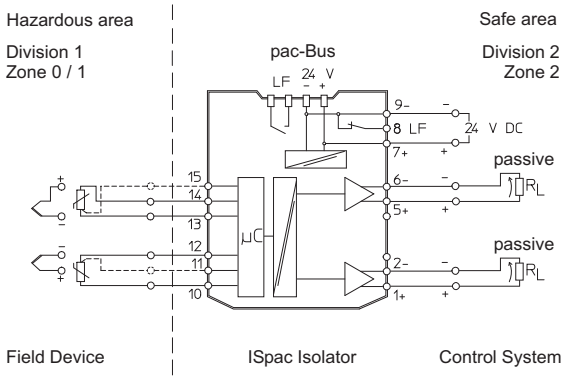
Technical Data	
Version	**for all types 9182/.0-5.-1.**
Error detection Ex i input	
Open circuit	for resistance thermometers, thermocouples and resistance transmitters > 1 kΩ
Short-circuit	for resistance thermometers with temperature linearisation and resistance transmitters
Behaviour of the output	2.4 mA (configurable 0 to 23 mA or "hold last value")
Settings (switch LF)	activated / deactivated (only 9182/.0-51-11, 9182/10-59-11, 9182/10-51-12, 9182/10-51-14, 9182/.0-50-12)
Error detection	LED red "LF"
Message of line fault and auxiliary power failure	- contact (30 V / 100 mA) closed to earth in case of error - pac-Bus, potential-free contact (30 V / 100 mA)
Error limits	
	Accuracy, typical data expressed as % of the basic measuring range at U_N, 23 °C
Middle measurement error	≤ 0.1 %
Temperature influence	≤ 0.1 % / 10 K
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326-1 Use in industrial environment; NAMUR NE 21
Ambient conditions	
Ambient temperature	
Single device	-20 to +70 °C
Group assembly	-20 to +60 °C
	The installation conditions affect the ambient temperature.
	Observe the "Cabinet installation guide"
Storage temperature	-40 to +80 °C
Relative humidity (no condensation)	≤ 95 %
Use at the height of	< 2000 m

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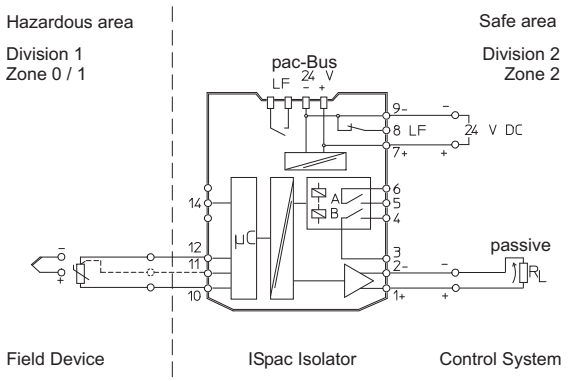
Technical Data

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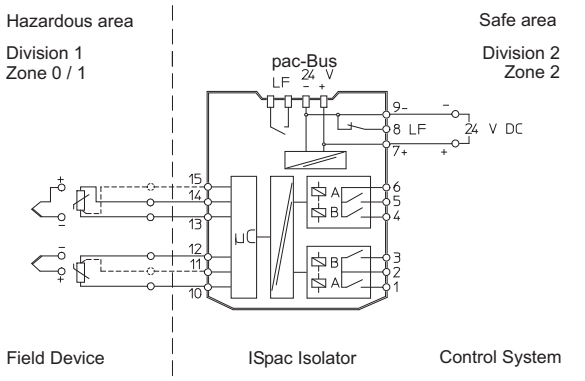
2 channels, active 9182/20-51-11



1 channel, active 9182/10-51-12



2 channels 9182/20-50-12



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Technical Data

Mechanical data

Connection		Screw terminals	Spring clamp terminals
	Single-wire connection		
	- rigid	0.2 to 2.5 mm^2	0.2 to 2.5 mm^2
	- flexible	0.2 to 2.5 mm^2	0.2 to 2.5 mm^2
	- flexible with core end sleeve (without / with plastic sleeve)	0.25 to 2.5 mm^2	0.25 to 2.5 mm^2
	Two-core connection		
	- rigid	0.2 to 1 mm^2	–
	- flexible	0.2 to 1.5 mm^2	–
	- flexible with core end sleeve	0.25 to 1 mm^2	0.5 to 1 mm^2
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			
Enclosure	IP30		
Terminals	IP20		
Enclosure material	PA 6.6		
Fire resistance (UL 94)	V0		

For further technical data, see www.r-stahl.com.

6 Engineering

NOTICE

Failure of the devices installed in the cabinet caused by too high ambient temperature!

Non-compliance can result in material damage.

- Install and adjust the cabinet in such a way that it is always operated within the permissible temperature range.
- Carefully observe the "Cabinet installation guide".

You can find detailed information about project engineering in the "Cabinet installation guide" (download from www.r-stahl.com, Product documentation, subitem "Engineering").

7 Transport and Storage

- Transport and store the device only in the original packaging.
- Store the device in a dry place (no condensation) and vibration-free.
- Do not drop the device.

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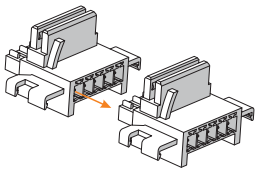
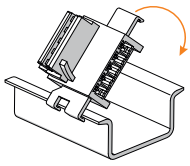
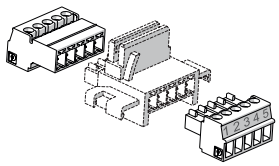
8.2 Mounting / Dismounting, Operating Position

8.2.1 Mounting / Dismounting pac-Bus

The pac-Bus is an accessory which facilitates wiring of the auxiliary power and reading out of the collective error message.

i	The components for the pac-Bus Type 9194 must be ordered separately.

Mounting

 07392E00	• Connect the required number of pac-Bus elements.
 07391E00	• Engage the pac-Bus elements on the top hat rail.
 15551E00	• Connect the terminal set at the beginning and at the end.

Dismounting

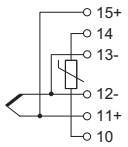
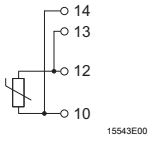
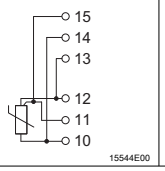
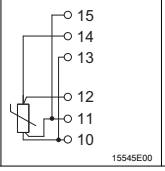
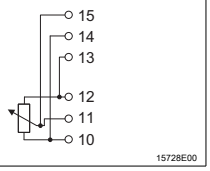
- Proceed in the reverse order to mounting.

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Signal duplication of the input wiring in 2-channel Types 9182/20-5d-1f (d=0.1; f=1.2)

- For two-channel ISpac 9182, both multiplexed Ex i inputs can be switched to a sensor in parallel. Signal duplication is both functional and possible in terms of safety (Ex i).

	Thermocouple	Resistance temperature detector			Potentiometer
	External reference junction	2-wire	3-wire	4-wire	3-wire
Input, 2 channels					

8.3.3 Connection of Supply

Type of supply	Connection
Direct supply of the device via 24 V connection	Green terminal "7+" and "9-"
Supply via pac-Bus	pac-Bus terminal "1+" and "2-"

8.3.4 Reference Junction Compensation

If "external reference junction in two-tier terminal" is selected:

- Set the DIP switch "S2" to "1" or
- and select corresponding setting in the ISpac Wizard.

a) External reference junction

Using the external reference junction in the form of a top hat rail terminal (9191/VS-03 or 9191/VS-04) allows a higher accuracy of measurement to be achieved based on temperature thanks to the separation from heat sources.

- Install the reference junction on a top hat rail so that it is spatially separated from heat sources.
- Connect reference junction type 9191/VS-03 for single-channel versions and Type 9191/VS-04 for two-channel versions.
- Guide the compensation line of the thermocouple to the reference junction.

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