09746E00

- One unit for nearly all temperature sensors indivdually configurable
- Intrinsically safe input [Ex ia] IIC
- Signal duplication possible
- Galvanic isolation between input, output, power supply and configuration interface
- Open-circuit and short-circuit monitoring and messaging (can be switched off)
- Simple configuration with PC or DIP-switches
- Versions can be used up to SIL 2 (IEC 61508)

Basic function: temperature input, Ω, 1 and 2 channels.
The temperature transmitter is used for intrinsically safe operation of temperature sensors. Most currently available sensors can be connected, such as Pt 100, Pt 500, Pt 1000, Ni 100, thermocouples and resistance transmitters. The parameters can be set using parameterising software ISpac Wizard or alternative via DIP-switches.

	ATEX / IECEx					
Zone	0	1	2	20	21	22
Ex i interface	x	x	x	x	x	x
Installation in			x*)			x*)

	NEC 505 Class I			NEC 506		
Zone	0	1	2	20	21	22
Ex i interface	x	x	x			
Installation in			x*)			x*)

	NEC 500					
	Class I		Class II		Class III	
Division	1	2	1	2	1	2
Ex i interface	x	x	x	x	x	x
Installation in		x*)		x*)		x*)

*) Restrictions see table explosion protection

WebCode 9182A

Selection Table

Version	Channels	Output	Limit value contact (per channel)	SIL	Order number	Tech. data see page
Temperature transmitter Series 9182, field circuit Ex i	1	0/4 ... 20 mA active / source	without	– –	**9182/10-51-11s**	A3/3
				2	**9182/10-51-13s**	
			2 NO / NC	– –	**9182/10-51-12s**	A3/9
				2	**9182/10-51-14s**	
		0/4 ... 20 mA passive / sink	without	2	**9182/10-59-13s**	A3/3
	2	0/4 ... 20 mA active / source	without	– –	**9182/20-51-11s**	A3/3
		without	2 NO / NC	– –	**9182/20-50-12s**	A3/13
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.					
	Signal duplication due to parallel connection of inputs of 9182/20-51-.. (dual channel). Further information see operating instruction.					
	Limited configuration possibilities via DIP switches - see section "configuration". Complete configuration possibilities by means of parameterisation software ISpac Wizard or customer specific parameterisation ex factory - please see "customer specific set-up sheet"					

Explosion Protection

Global (IECEx)		
Gas	IECEx BVS 09.0046X Ex nAc nCc [ia] IIC T4 [Ex ia] IIIC	
Europe (ATEX)		
Gas and dust	DMT 02 ATEX E 243 X ⟨Ex⟩ II 3 (1) G Ex nAc nCc [ia] IIC T4 ⟨Ex⟩ II (1) D [Ex ia] IIIC	
Certifications and certificates		
Version	**9182/.0-5.-11**	**9182/10-5.-13, SIL 2**
Certificates	IECEx, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Korea (KTL), Russia (TR), Ukraine (TR), USA (FM, UL), Belarus (TR)	IECEx, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Korea (KTL), Russia (TR), Ukraine (TR), USA (FM, UL), Belarus (TR)
Ship approval	DNV	DNV
Safety data		
Max. voltage U_o	6.5 V	
Max. current I_o	19.7 mA	
Max. power P_o	32 mW (linear characteristic)	
Max. connectable capacitance C_o		
IIC	25 µF	
IIB	570 µF	
Max. connectable inductance L_o		
IIC	90 mH	
IIB	330 mH	
Internal capacitance C_i	negligible	
Internal inductance L_i	negligible	
Insulation voltage U_m	253 V	
Further parameters		
Installation	in Zone 2, Div. 2 and in the safe area	
Further information	see respective certificate and operating instructions	
Functional safety (IEC 61508)		
Version	**9182/10-5.-13, SIL 2**	
Test report	Exida FMEDA Stahl 07/07-23-R016	
Max. SIL	2	
Safe Failure Fraction SFF	78 %	
MTBF	120 years	
PFD_{AVG} at $T_{[Proof]}$	T[Proof] 1 year 3 years 5 years PFD_{AVG} 7.59×10^{-4} 1.44×10^{-3} 3.48×10^{-3}	
Further information	see safety manual and test report	

Technical Data

Electrical data	
Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 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 module / output states)

Technical Data

Electrical data

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	
I.S. inputs		
At thermocouples	20 V	
At resistance sensors	– –	
Version	**9182/.0-5.-11**	**9182/10-5.-13, SIL 2**
Configuration		
Interface		
Version	RS 232 C	RS 232 C
Software	ISpac Wizard 9199	ISpac Wizard 9199
Connection	4-pole plug on the front	4-pole plug on the front
Settings	all device functions and diagnostics	all device functions and diagnostics
Switch		
Version	12 + 4-pole DIP switches	– –
Settings	Pt 100; thermocouple B, E, J, K, N, R, T with approx. 90 measurement ranges (°C + °F) Pt 100 in 2-, 3- or 4-wire connection Output signal 0/4 ... 20 mA Line fault monitoring activated / deactivated	– –
Ex i Input	The input parameters can be set via parameterising software ISpac Wizard or DIP switch.	The input parameters can be set via parameterising software ISpac Wizard.

Input resistance temperature detector (RTD)

Types	Standard	Basic range	Min. span	Middle resolution	Middle measurement error
Pt 100 Pt 500 Pt 1000	IEC 60751	-200 ... +850 °C	50 K	0.1 K	0.35 K
Pt 250	IEC 60751	-200 ... +850 °C	40 K	0.1 K	0.5 K
Pt 2000	IEC 60751	-200 ... +850 °C	40 K	0.1 K	0.35 K
Ni 100 Ni 500 Ni 1000	DIN 43760	-60 ... +180 °C	31 K	0.1 K	0.25 K
PT100	GOST 6651-94	-200 ... +1100 °C	40 K	0.1 K	0.7 K
M50	GOST 6651-94	-200 ... +200 °C	70 K	0.1 K	0.7 K
M53	GOST 6651-94	0 ... +120 °C	70 K	0.1 K	0.5 K
M100	GOST 6651-94	-200 ... +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)

Technical Data

Electrical data

Input thermocouple

Types	Standard	Basic range [°C]	Min. span	Middle resolution	Middle measurement error
B	IEC 60584	250 ... 1800	314 K	0,1 K	1,2 K
E		- 200 ... 1000	36 K	0,1 K	0,2 K
J		- 200 ... 1200	42 K	0,1 K	0,2 K
K		- 200 ... 1370	63 K	0,1 K	0,3 K
N		- 200 ... 1300	75 K	0,1 K	0,3 K
R		- 50 ... 1767	171 K	0,1 K	0,7 K
S		- 50 ... 1767	185 K	0,1 K	0,8 K
T		- 200 ... 400	60 K	0,1 K	0,3 K
L	DIN 43710	- 200 ... 900	55 K	0,1 K	0,3 K
U		- 200 ... 600	48 K	0,1 K	0,3 K
XK	GOST	- 200 ... 800	50 K	0,1 K	0,2 K

Linearity	temperature / voltage
Max. line resistance per conductor	≤ 1000Ω
External references	Pt 100 2-wires connection (-40 ... +85 °C) constant temperature (-40 ... +85 °C)

Input potentiometer

Basic measuring range	Middle measurement error
50 ... 500 Ω	0,1 Ω
0,5 ... 5 kΩ	1 Ω
1 ... 10 kΩ	2 Ω
10 ... 100 kΩ *)	--

*) with parallel 10 kΩ Shunt, no open-circuit detection

Circuit type	3-wire connection
Measuring current	≤ 0.25 mA

Version	**0/4 ... 20 mA, active / source 9182/.0-51-1.**	**0/4 ... 20 mA, passive / sink 9182/10-59-1.**
Output		
Output signal	0/4 ... 20 mA (configurable)	– –
Functional range	0 ... 21 mA	– –
Connectable load resistance R_L		
1 channel	0 ... 750 Ω	– –
2 channels	0 ... 600 Ω	– –
Resolution	≤ 1 µA	– –
Response time (10 ... 90 %)	≤ 35 ms	– –
Delay input - output	≤ 500ms	– –
Passive output		
Output signal	– –	Current sink 0/4 ... 20 mA (configurable)
Supply voltage	– –	max. 31.2 V DC
Internal voltage drop	– –	≤ 3.0 V
Minimum load resistance R_L	– –	0 Ω at 3 ... 20 V 200 Ω at 24 V 500 Ω at 30 V
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 ... 23 mA or "hold last value")	
Settings (switch LF)	activated / deactivated (only 9182/x0-51-11)	activated / deactivated (only 9182/10-59-11)
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	

Technical Data

Ambient conditions

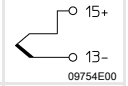
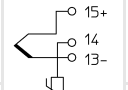
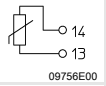
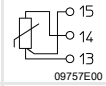
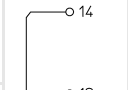
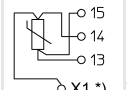
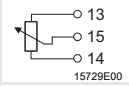
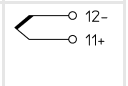
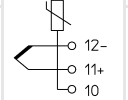
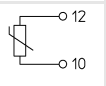
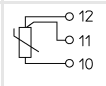
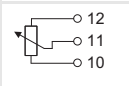
Ambient temperature	
Single device	-20 ... +70 °C
Group assembly	-20 ... +60 °C The installation conditions affect the ambient temperature. Observe operating instructions.
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %

Technical Data

Electrical connection

Version **9182/.0-5.-11**

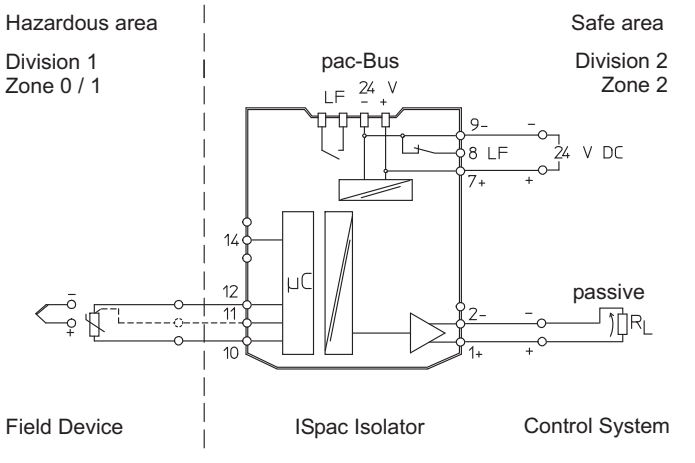
Configuration input

	Thermocouple		Resistance thermometer				Resistance transmitter (RTD)
	Cold junction compensation		2-wire	3-wire	4-wire (1 channel)	4-wire (2 channels)	3-wire
	const. temp.	ext. Pt. 100					
Channel 2							
Channel 1							

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

Connection diagram

1 channel, active
9182/10-51-11



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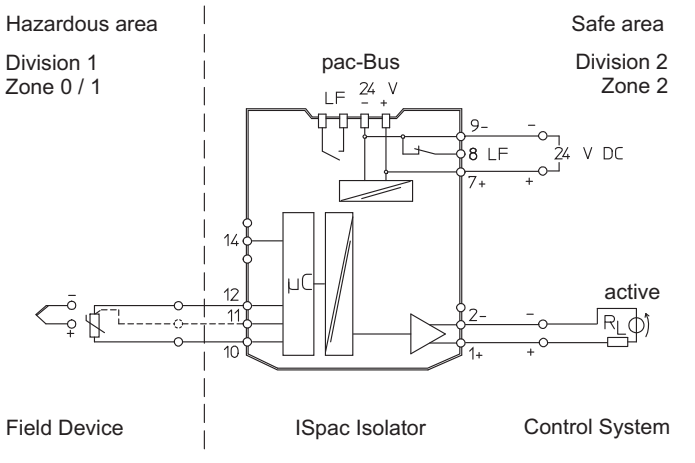
1 channel, passive
9182/10-59-11



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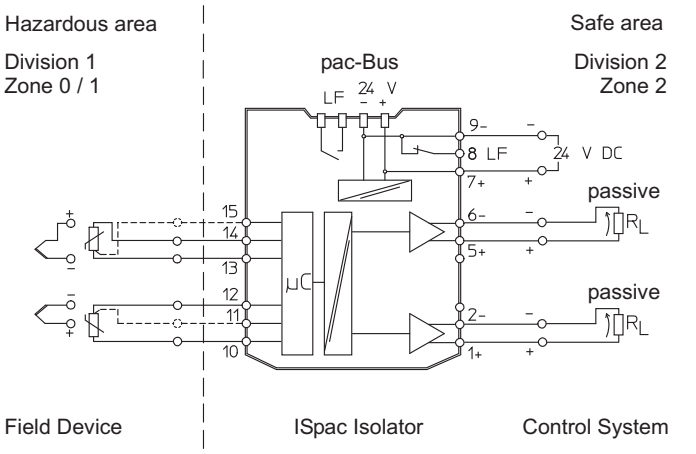
Technical Data

Electrical connection

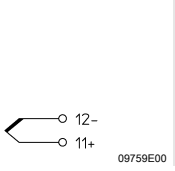
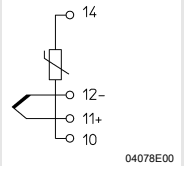
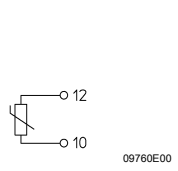
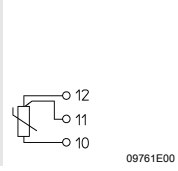
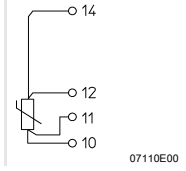
Connection diagram

2 channels, active
9182/20-51-11



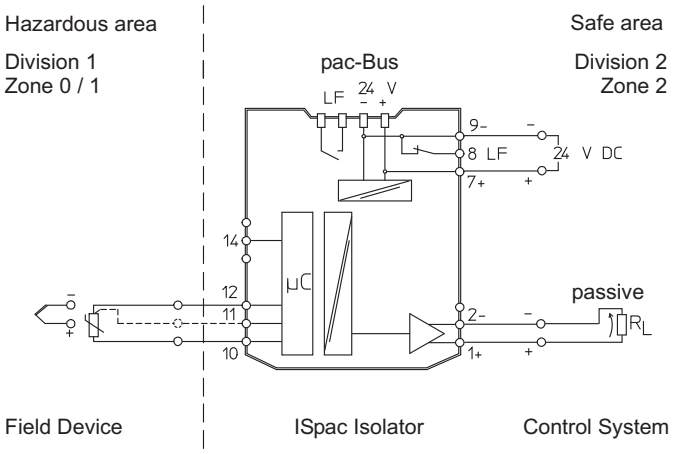
Version
9182/10-5.-13, SIL 2

Configuration input

Thermocouple		Resistance thermometer / Resistance transmitter (TRD)		
Cold junction compensation const. temp.	ext. Pt. 100	2-wire	3-wire	4-wire
				

Connection diagram

1 channel, active
9182/10-51-13

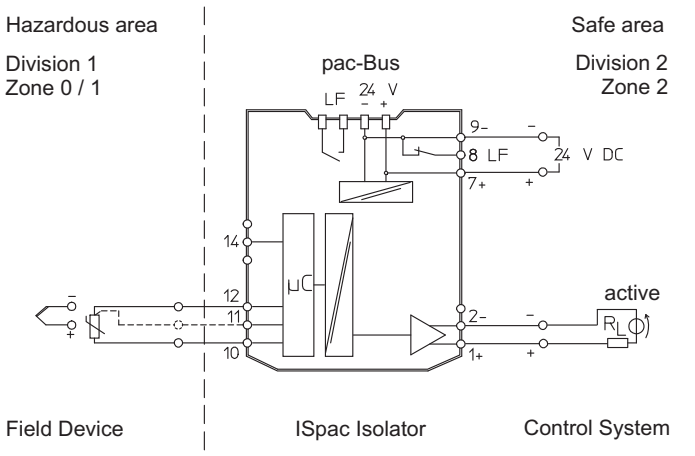


Technical Data

Electrical connection

Connection diagram

1 channel, passive
9182/10-59-13



Explosion Protection

Global (IECEx)		
Gas	IECEx BVS 09.0046X Ex nAc nCc [ia] IIC T4 [Ex ia] IIIC	
Europe (ATEX)		
Gas and dust	DMT 02 ATEX E 243 X ⟨Ex⟩ II 3 (1) G Ex nAc nCc [ia] IIC T4 ⟨Ex⟩ II (1) D [Ex ia] IIIC	
Certifications and certificates		
Version	**9182/10-51-12**	**9182/10-51-14, SIL 2**
Certificates	IECEx, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Korea (KTL), Russia (TR), Ukraine (TR), USA (FM, UL), Belarus (TR)	IECEx, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Korea (KTL), Russia (TR), Ukraine (TR), USA (FM, UL), Belarus (TR)
Ship approval	DNV	DNV
Safety data		
Max. voltage U_o	6.5 V	
Max. current I_o	19.7 mA	
Max. power P_o	32 mW (linear characteristic)	
Max. connectable capacitance C_o		
IIC	25 µF	
IIB	570 µF	
Max. connectable inductance L_o		
IIC	90 mH	
IIB	330 mH	
Internal capacitance C_i	negligible	
Internal inductance L_i	negligible	
Insulation voltage U_m	253 V	
Further parameters		
Installation	in Zone 2, Div. 2 and in the safe area	
Further information	see respective certificate and operating instructions	

Functional safety (IEC 61508)

Version		**9182/10-51-14, SIL 2**		
Test report		Exida STAHL 07/07-23 R016 and STAHL 07/07-23 R017		
Max. SIL		2		
Safe Failure Fraction SFF		4 ... 20 mA	Limit value contact	Limit value contact parallel
		78 %	78.4 %	81.1 %
MTBF		4 ... 20 mA	Limit value contact	Limit value contact parallel
		120 years	114 years	114 years
PFD_{AVG} at $T_{[Proof]}$		4 ... 20 mA	Limit value contact	Limit value contact parallel
	1 year	7.59×10^{-4}	7.03×10^{-4}	6.17×10^{-4}
	2 years	1.44×10^{-3}	1.34×10^{-3}	1.17×10^{-3}
	5 years	3.48×10^{-3}	3.23×10^{-3}	2.84×10^{-3}
Further information	see safety manual and test report			

Technical Data

Electrical data	
Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 31.2 V
Residual ripple within voltage range	≤ 3.6 V_{SS}
Nominal current at U_N	70 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 module / output states)

Technical Data

Electrical data

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
I.S. inputs	
At thermocouples	20 V
At resistance sensors	– –
Configuration	
Interface	
Version	RS 232 C
Software	ISpac Wizard 9199
Connection	4-pole plug on the front
Settings	all device functions and diagnostics
Ex i Input	The input parameters can be set via parameterising software ISpac Wizard.
Input resistance temperature detector (RTD)	

Types	Standard	Basic range	Min. span	Middle resolution	Middle measurement error
Pt 100 Pt 500 Pt 1000	IEC 60751	-200 ... +850 °C	50 K	0.1 K	0.35 K
Pt 250	IEC 60751	-200 ... +850 °C	40 K	0.1 K	0.5 K
Pt 2000	IEC 60751	-200 ... +850 °C	40 K	0.1 K	0.35 K
Ni 100 Ni 500 Ni 1000	DIN 43760	-60 ... +180 °C	31 K	0.1 K	0.25 K
PT100	GOST 6651-94	-200 ... +1100 °C	40 K	0.1 K	0.7 K
M50	GOST 6651-94	-200 ... +200 °C	70 K	0.1 K	0.7 K
M53	GOST 6651-94	0 ... +120 °C	70 K	0.1 K	0.5 K
M100	GOST 6651-94	-200 ... +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)

Technical Data

Electrical data

Input thermocouple

Types	Standard	Basic range [°C]	Min. span	Middle resolution	Middle measurement error
B	IEC 60584	250 ... 1800	314 K	0,1 K	1,2 K
E		- 200 ... 1000	36 K	0,1 K	0,2 K
J		- 200 ... 1200	42 K	0,1 K	0,2 K
K		- 200 ... 1370	63 K	0,1 K	0,3 K
N		- 200 ... 1300	75 K	0,1 K	0,3 K
R		- 50 ... 1767	171 K	0,1 K	0,7 K
S		- 50 ... 1767	185 K	0,1 K	0,8 K
T		- 200 ... 400	60 K	0,1 K	0,3 K
L	DIN 43710	- 200 ... 900	55 K	0,1 K	0,3 K
U		- 200 ... 600	48 K	0,1 K	0,3 K
XK	GOST	- 200 ... 800	50 K	0,1 K	0,2 K

Linearity	temperature / voltage
Max. line resistance per conductor	≤ 1000Ω
External references	Pt 100 2-wires connection (-40 ... +85 °C) constant temperature (-40 ... +85 °C)

Input potentiometer

Basic measuring range	Middle measurement error
50 ... 500 Ω	0,1 Ω
0,5 ... 5 kΩ	1 Ω
1 ... 10 kΩ	2 Ω
10 ... 100 kΩ *)	--

*) with parallel 10 kΩ Shunt, no open-circuit detection

Circuit type	3-wire connection
Measuring current	≤ 0.25 mA

Output

Output signal	0/4 ... 20 mA (configurable)
Functional range	0 ... 21 mA
Connectable load resistance R_L	0 ... 750 Ω
Resolution	≤ 1 µA
Response time (10 ... 90 %)	≤ 35 ms
Delay input - output	≤ 500ms

Limiting values

Message	2 NO / NC (configurable using ISpac Wizard)
Switching voltage	≤ ± 30 V
Switching current (resistive load)	≤ 100 mA
Switch on resistance	≤ 2.5 Ω (typical < 1 Ω)
Reclosing lockout	Reset using the DIP switch or „Power-Off“ (configurable)

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 ... 23 mA or "hold last value")
Settings (switch LF)	activated / deactivated
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

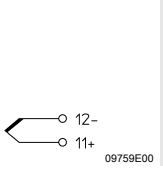
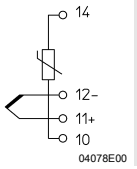
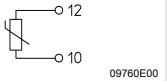
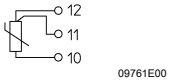
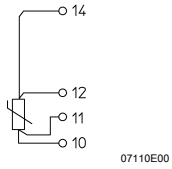
Ambient temperature

Single device	-20 ... +70 °C
Group assembly	-20 ... +60 °C The installation conditions affect the ambient temperature. Observe operating instructions.
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %

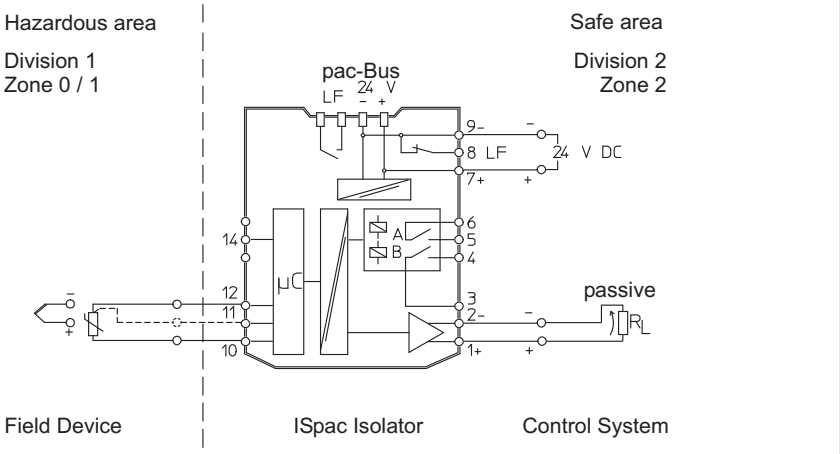
Technical Data

Electrical connection

Configuration input

Thermocouple		Resistance thermometer / Resistance transmitter (RTD)		
Cold junction compensation const. temp.	ext. Pt. 100	2-wire	3-wire	4-wire
				

Connection diagram



Explosion Protection	
Global (IECEx)	
Gas	IECEx BVS 09.0046X Ex nAc nCc [ia] IIC T4 [Ex ia] IIIC
Europe (ATEX)	
Gas and dust	DMT 02 ATEX E 243 X Ⓔx II 3 (1) G Ex nAc nCc [ia] IIC T4 Ⓔx II (1) D [Ex ia] IIIC
Certifications and certificates	
Certificates	IECEx, ATEX, Brazil (INMETRO), India (PESO), Canada (CSA), Kazakhstan (TR), Korea (KTL), Russia (TR), Ukraine (TR), USA (FM, UL), Belarus (TR)
Ship approval	DNV
Safety data	
Max. voltage U_o	6.5 V
Max. current I_o	19.7 mA
Max. power P_o	32 mW (linear characteristic)
Max. connectable capacitance C_o	
IIC	25 µF
IIB	570 µF
Max. connectable inductance L_o	
IIC	90 mH
IIB	330 mH
Internal capacitance C_i	negligible
Internal inductance L_i	negligible
Insulation voltage U_m	253 V
Further parameters	
Installation	in Zone 2, Div. 2 and in the safe area
Further information	see respective certificate and operating instructions

Technical Data	
Electrical data	
Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	18 ... 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 module / output states)
Electrical data	
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

Electrical data

Galvanic separation	
I.S. inputs	
At thermocouples	20 V
At resistance sensors	- -
Configuration	
Interface	
Version	RS 232 C
Software	ISpac Wizard 9199
Connection	4-pole plug on the front
Settings	all device functions and diagnostics
Ex i Input	The input parameters can be set via parameterising software ISpac Wizard.

Input resistance temperature detector (RTD)

Types	Standard	Basic range	Min. span	Middle resolution	Middle measure-ment error
Pt 100 Pt 500 Pt 1000	IEC 60751	-200 ... +850 °C	50 K	0.1 K	0.35 K
Pt 250	IEC 60751	-200 ... +850 °C	40 K	0.1 K	0.5 K
Pt 2000	IEC 60751	-200 ... +850 °C	40 K	0.1 K	0.35 K
Ni 100 Ni 500 Ni 1000	DIN 43760	-60 ... +180 °C	31 K	0.1 K	0.25 K
PT100	GOST 6651-94	-200 ... +1100 °C	40 K	0.1 K	0.7 K
M50	GOST 6651-94	-200 ... +200 °C	70 K	0.1 K	0.7 K
M53	GOST 6651-94	0 ... +120 °C	70 K	0.1 K	0.5 K
M100	GOST 6651-94	-200 ... +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)

Input thermocouple

Types	Standard	Basic range [°C]	Min. span	Middle resolution	Middle measurement error
B	IEC 60584	250 ... 1800	314 K	0,1 K	1,2 K
E		- 200 ... 1000	36 K	0,1 K	0,2 K
J		- 200 ... 1200	42 K	0,1 K	0,2 K
K		- 200 ... 1370	63 K	0,1 K	0,3 K
N		- 200 ... 1300	75 K	0,1 K	0,3 K
R		- 50 ... 1767	171 K	0,1 K	0,7 K
S		- 50 ... 1767	185 K	0,1 K	0,8 K
T		- 200 ... 400	60 K	0,1 K	0,3 K
L	DIN 43710	- 200 ... 900	55 K	0,1 K	0,3 K
U		- 200 ... 600	48 K	0,1 K	0,3 K
XK	GOST	- 200 ... 800	50 K	0,1 K	0,2 K

Linearity	temperature / voltage
Max. line resistance per conductor	≤ 1000Ω
External references	Pt 100 2-wires connection (-40 ... +85 °C) constant temperature (-40 ... +85 °C)

Technical Data

Electrical data

Input potentiometer

Basic measuring range	Middle measurement error
50 ... 500 Ω	0,1 Ω
0,5 ... 5 kΩ	1 Ω
1 ... 10 kΩ	2 Ω
10 ... 100 kΩ *)	--

*) with parallel 10 kΩ Shunt, no open-circuit detection

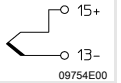
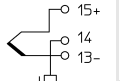
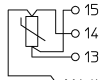
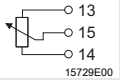
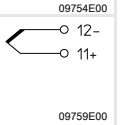
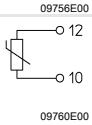
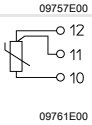
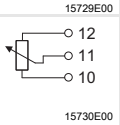
Circuit type	3-wire connection
Measuring current	≤ 0.25 mA
Limiting values	
Message	2 NO / NC (configurable using ISpac Wizard)
Switching voltage	≤ ± 30 V
Switching current (resistive load)	≤ 100 mA
Switch on resistance	≤ 2.5 Ω (typical < 1 Ω)
Reclosing lockout	Reset using the DIP switch or „Power-Off“ (configurable)
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 ... 23 mA or "hold last value")
Settings (switch LF)	activated / deactivated
Error detection	LED red "LF" each channel
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 ... +70 °C
Group assembly	-20 ... +60 °C The installation conditions affect the ambient temperature. Observe operating instructions.
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %

Electrical connection

Configuration input

	Thermocouple		Resistance thermometer				Resistance transmitter (RTD)
	Cold junction compensation		2-wire	3-wire	4-wire (1 channel)	4-wire (2 channels)	3-wire
	const. temp.	ext. Pt. 100					
Channel 2							
Channel 1							

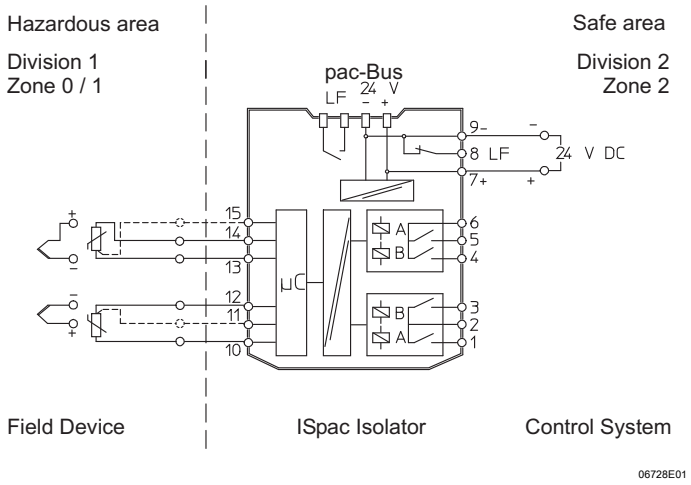
*) The connection of two sensors in 4-wire scheme requires an additional external terminal X1.

Technical Data

Electrical connection

Connection diagram

2 channels
9182/20-50-12

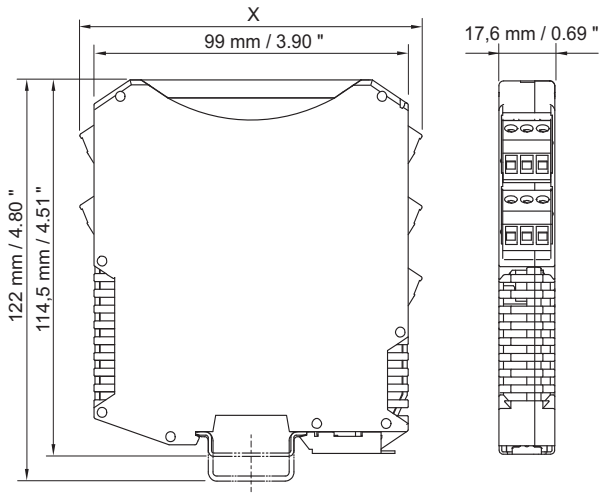


Technical Data

Mechanical data

		Screw-type terminals	Spring-type terminals
Connection			
	Single-wire connection		
	- rigid	0.2 ... 2.5 mm²	0.2 ... 2.5 mm²
	- flexible	0.2 ... 2.5 mm²	0.2 ... 2.5 mm²
	- flexible with core end sleeves (without / with plastic sleeve)	0.25 ... 2.5 mm²	0.25 ... 2.5 mm²
	Two-wire connection		
	- rigid	0.2 ... 1 mm²	- -
	- flexible	0.2 ... 1.5 mm²	- -
	- flexible with core end sleeves	0.25 ... 1 mm²	0.5 ... 1 mm²
Weight		approx. 160	
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	

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



	Dimension X
Screw-type terminals	108 mm / 4.25″
Spring-cage terminals	128 mm / 5.04″

Accessories and Spare Parts

Designation	Description	Order number
Front cover	yellow, transparent. Clear marking of the device for SIL applications. (Packaging unit: 10 pieces)	**200914**
Cold Junction Compensation	Serves for measurement of the junction temperature with a Pt 100 in 2-wires circuit	
	Compact screw terminal (applicable for single- or dual-channel terminal)	**9191/VS-05**
	Terminal (DIN-rail assembly) for the single-channel version 9182	**9191/VS-03**
	Terminal (DIN-rail assembly) for the dual-channel version 9182	**9191/VS-04**
Parameterising set - ISpac - Wizard	The software serves for commissioning, configuring and diagnosing the ISpac isolators Series 9146, 9162 and 9182. For further information, see operating instructions. Form of delivery: CD-ROM; parameterising software incl. parameterising cable / adaptor System requirements: • IBM compatible PC with MS Windows 98, NT, 2000, XP, Vista, Windows 7 • CD-ROM drive • RS 232 C interface • RS 232 / USB adaptor	**9199/20-02**

Customer-specific parameterization

R. STAHL offers the service to configure ISpac isolators according to your requirements.
There are two options:

1. The form can be downloaded on the product page ISpac, section "Data sheet". Please edit the form directly on your PC.
2. Download the software at ISpac Wizard free: "http://www.r-stahl.com/downloads/software/ex-i-isolators.html". Create them using the software configuration. Forward the .prj file to your R. STAHL sales office.

Order-No.: **- Pos.:** **Pieces:**

	Type	channels	output	Limit value
☐	9182 / 10 - 51 - 11.	1	0/4...20 mA	none
☐	9182 / 10 - 51 - 13.	1	0/4...20 mA	none
☐	9182 / 10 - 51 - 12.	1	0/4...20 mA	2 NC / NO
☐	9182 / 10 - 51 - 14.	1	0/4...20 mA	2 NC
☐	9182 / 10 - 59 - 13.	1	passive	none
☐	9182 / 20 - 51 - 11.	2	0/4...20 mA	none
☐	9182 / 20 - 50 - 12.	2	none	2 NC / NO per channel

with: ☐ Screw terminal s (standard) ☐ Spring clamp terminal k
Please read the operating instructions before you fill in the following form. Please select only one item parameter and channel.

	Default	Channel 1	Channel 2
Signal-Tag	ID-Nr.		
I.S. input			
Resistance Thermometer	☒	☐	
Sensor type	PT 100	☐ PT 100 ☐ PT 500 ☐ PT 1000 ☐ NI 100 ☐ NI 500 ☐ NI 1000	☐ PT 100 ☐ PT 500 ☐ PT 1000 ☐ NI 100 ☐ NI 500 ☐ NI 1000
Circuit type	3-Wires	☐ 2-Wires ☐ 3-Wires ☐ 4-Wires	☐ 2-Wires ☐ 3-Wires ☐ 4-Wires
Measurement range	0 °C ... 400 °C	from to ☐ °C ☐ °F ☐ K ☐ Ω	from to ☐ °C ☐ °F ☐ K ☐ Ω
Thermocouple		☐	
Type		☐ Type B ☐ Type E ☐ Type J ☐ Type K ☐ Type N ☐ Type R ☐ Type S ☐ Type T ☐ Type L ☐ Type U ☐ Type XK	☐ Type B ☐ Type E ☐ Type J ☐ Type K ☐ Type N ☐ Type R ☐ Type S ☐ Type T ☐ Type L ☐ Type U ☐ Type XK
CJC type		☐ external PT 100 ☐ fixed Temp. ☐ internal	☐ external PT 100 ☐ fixed Temp. ☐ internal
Measurement range		from to ☐ °C ☐ °F ☐ K ☐ mV	from to ☐ °C ☐ °F ☐ K ☐ mV
Resistance Transmitter		☐	
Range		☐ up to 500 Ω ☐ up to 5 kΩ ☐ up to 10 kΩ ☐ up to 100 kΩ (+ Shunt)	☐ up to 500 Ω ☐ up to 5 kΩ ☐ up to 10 kΩ ☐ up to 100 kΩ (+ Shunt)
Measurement range		from % to %	from % to %
Output (only 9182/*0-51-1* and 9182/*0-59-1*)			
Signal	4 mA ... 20 mA	☐ 0 mA ... 20 mA *) ☐ 4 mA ... 20 mA	☐ 0 mA ... 20 mA *) ☐ 4 mA ... 20 mA
Fault behavior	Output Fault value	☐ Hold last value (start with fault value) *) ☐ Fault control off ☐ Output Fault value: (standard 2.4 mA)	☐ Hold last value (start with fault value) *) ☐ Fault control off ☐ Output Fault value: (standard 2.4 mA)
Limit value for Relay A (9182/*0-5*-12. and 9182 / 10 - 51 - 14.)			
Signaling	inactive	☐ active ☐ inactive	☐ active ☐ inactive
Value	25 %	% or absolute:	% or absolute:
Behavior contact	inactive	☐ inactive ☐ closes, if value > limit value *) ☐ closes, if value < limit value *) ☐ opens, if value > limit value ☐ opens, if value < limit value	☐ inactive ☐ closes, if value > limit value *) ☐ closes, if value < limit value *) ☐ opens, if value > limit value ☐ opens, if value < limit value
Hysteresis	1 %	% (0.1 % ... 10 %)	% (0.1 % ... 10 %)
Lockout function	inactive	☐ active ☐ inactive ☐ active-pwrrst	☐ active ☐ inactive ☐ active-pwrrst
Limit value for Relay B (9182/*0-5*-12. and 9182 / 10 - 51 - 14.)			
Signaling	inactive	☐ active ☐ inactive	☐ active ☐ inactive
Value	75 %	% or absolute:	% or absolute:
Behavior contact	inactive	☐ inactive ☐ closes, if value > limit value *) ☐ closes, if value < limit value *) ☐ opens, if value > limit value ☐ opens, if value < limit value	☐ inactive ☐ closes, if value > limit value *) ☐ closes, if value < limit value *) ☐ opens, if value > limit value ☐ opens, if value < limit value
Hysteresis	1 %	% (0.1 % ... 10 %)	% (0.1 % ... 10 %)
Lockout Function	inactive	☐ active ☐ inactive ☐ active-pwrrst	☐ active ☐ inactive ☐ active-pwrrst

*) Not for 9182 / 10 - 51 - 14.

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