

09746E00

- > One unit for nearly all temperature sensors individually 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)

A3



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						NEC 505			NEC 506			NEC 500							
	0	1	2	20	21	22	Class I						Class I		Class II		Class III			
Zone	x	x	x	x	x	x	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
Installation in			x ^{*)}			x ^{*)}	Installation in			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	
		0/4 ... 20 mA passive / sink	2 NO / NC	--	9182/10-51-12s	A3/9
				2	9182/10-51-14s	
	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	<p>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.</p> <p>Signal duplication due to parallel connection of inputs of 9182/20-51-.. (dual channel). Further information see operating instruction.</p> <p>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"</p>					

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 II 3 (1) G Ex nAc nCc [ia] IIC T4 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 x 10 ⁻⁴	1.44 x 10 ⁻³	3.48 x 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	-20 ... +70 °C
Single device	
Group assembly	
Storage temperature	-40 ... +80 °C
Relative humidity (no condensation)	≤ 95 %

The installation conditions affect the ambient temperature.
 Observe operating instructions.

Technical Data

Electrical connection

Version
 Configuration input

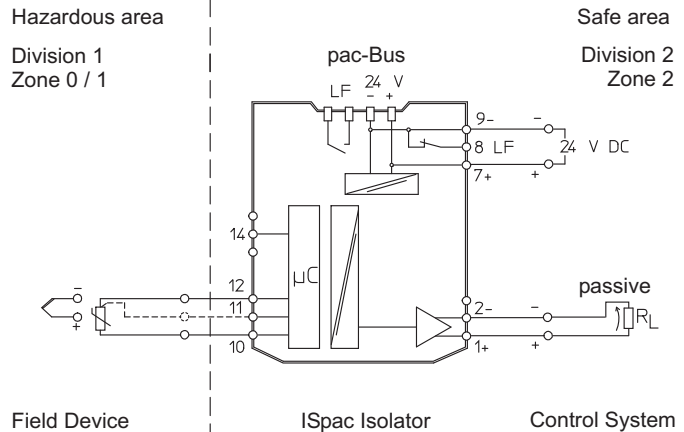
9182/0-5.-11

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

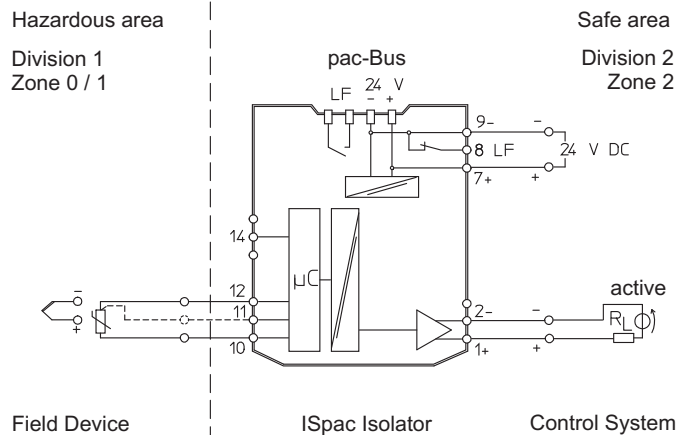
*) The connection of two sensors in 4-wire scheme requires an additional external terminal X1.

Connection diagram

**1 channel, active
 9182/10-51-11**



**1 channel, passive
 9182/10-59-11**

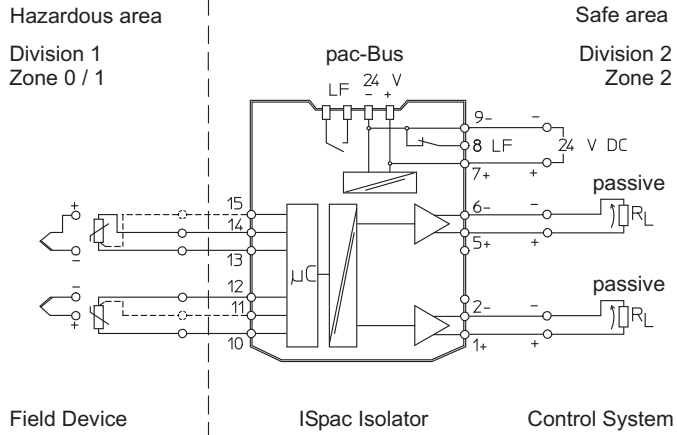


Technical Data

Electrical connection

Connection diagram

**2 channels, active
 9182/20-51-11**



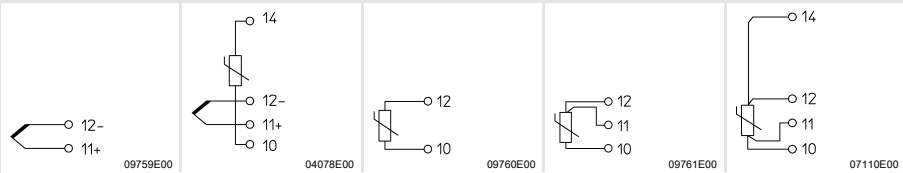
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Version

9182/10-5.-13, SIL 2

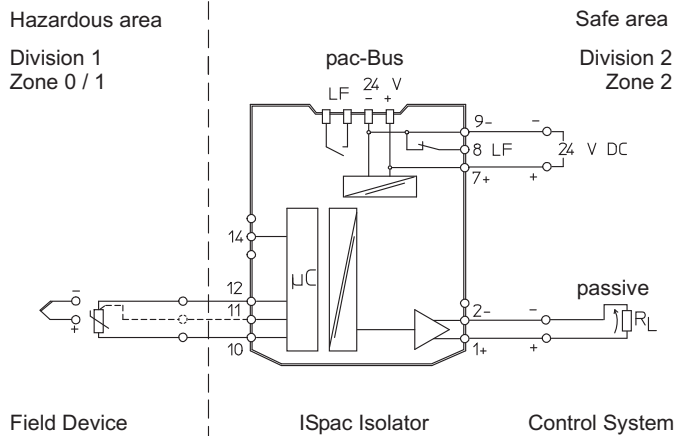
Configuration input

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



Connection diagram

**1 channel, active
 9182/10-51-13**



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Technical Data

Electrical connection

Connection diagram

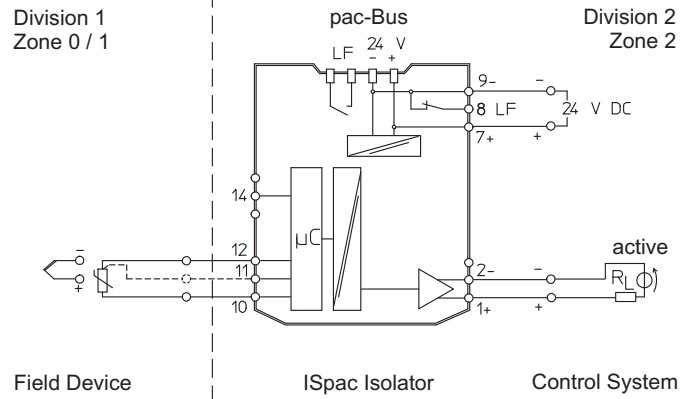
1 channel, passive
9182/10-59-13

Hazardous area

Division 1
 Zone 0 / 1

Safe area

Division 2
 Zone 2



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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 Ⓜ II 3 (1) G Ex nAc nCc [ia] IIC T4 Ⓜ 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 x 10 ⁻⁴	7.03 x 10 ⁻⁴	6.17 x 10 ⁻⁴
2 years	1.44 x 10 ⁻³	1.34 x 10 ⁻³	1.17 x 10 ⁻³
5 years	3.48 x 10 ⁻³	3.23 x 10 ⁻³	2.84 x 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 Pt 2000	IEC 60751	-200 ... +850 °C	40 K	0.1 K	0.5 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

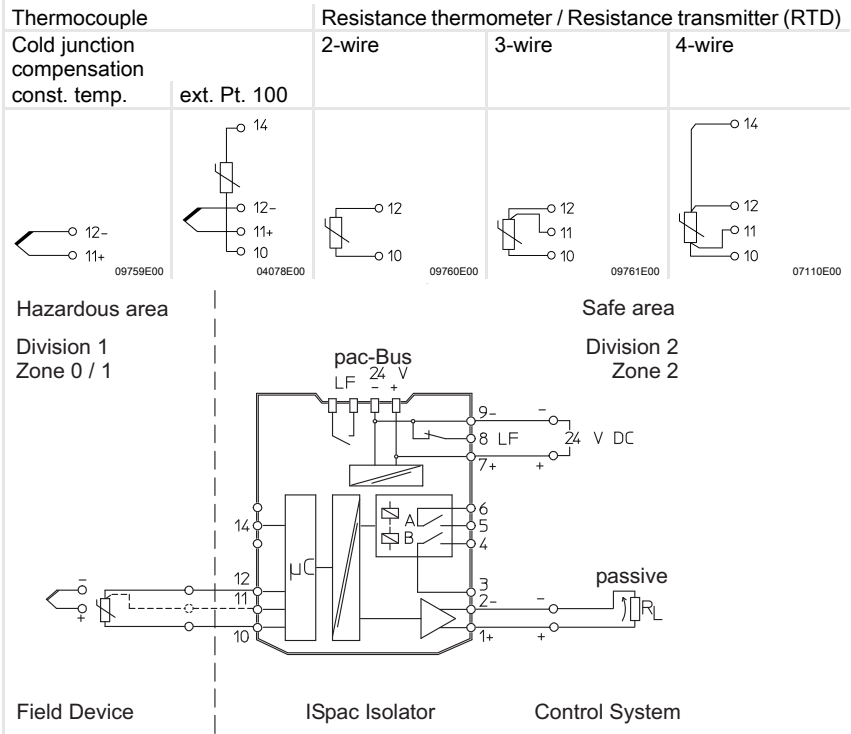
Input thermocouple	Types	Standard	Basic range [°C]	Min. span	Middle resolution	Middle measurement error	
	B	IEC 60584	250 ... 1800	314 K	0,1 K	1,2 K	
	E		- 200 ... 1000	36 K	0,1 K	0,2 K	
	J		- 200 ... 1200	42 K	0,1 K	0,2 K	
	K		- 200 ... 1370	63 K	0,1 K	0,3 K	
	N		- 200 ... 1300	75 K	0,1 K	0,3 K	
	R		- 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	0/4 ... 20 mA (configurable)						
Output signal	0 ... 21 mA						
Functional range	0 ... 750 Ω						
Connectable load resistance R _L	≤ 1 μA						
Resolution	≤ 35 ms						
Response time (10 ... 90 %)	≤ 500ms						
Delay input - output	2 NO / NC (configurable using ISpac Wizard)						
Limiting values	≤ ± 30 V						
Message	≤ 100 mA						
Switching voltage	≤ 2.5 Ω (typical < 1 Ω)						
Switching current (resistive load)	Reset using the DIP switch or „Power-Off“ (configurable)						
Switch on resistance	for resistance thermometers, thermocouples and resistance transmitters > 1 kΩ						
Reclosing lockout	for resistance thermometers with temperature linearisation and resistance transmitters						
Error detection Ex i input	2.4 mA (configurable 0 ... 23 mA or "hold last value")						
Open circuit	activated / deactivated						
Short-circuit	LED red "LF"						
Behaviour of the output	- contact (30 V / 100 mA) closed to earth in case of error						
Settings (switch LF)	- pac-Bus, potential-free contact (30 V / 100 mA)						
Error detection	Accuracy, typical data expressed as % of the basic measuring range at U _N , 23 °C						
Message of line fault and auxiliary power failure	≤ 0.1 %						
Error limits	≤ 0.1 % / 10 K						
Middle measurement error	Tested under the following standards and regulations: EN 61326-1 Use in industrial environment; NAMUR NE 21						
Temperature influence							
Electromagnetic compatibility							
Ambient conditions							
Ambient temperature	-20 ... +70 °C						
Single device	-20 ... +60 °C						
Group assembly	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

Connection diagram



06726E01

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 II 3 (1) G Ex nAc nCc [ia] IIC T4 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 μ F
IIB	570 μ F
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	$\leq 3.6 V_{SS}$
Nominal current at U_N	
1 channel	70 mA
2 channels	80 mA
Power consumption at U_N	$\leq 1.9 W$
Power dissipation at U_N	$\leq 1.9 W$
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
 At resistance sensors
 Configuration
 Interface
 Version
 Software
 Connection
 Settings
 Ex i Input
 Input resistance
 temperature detector (RTD)

20 V
 - -

RS 232 C
 ISpac Wizard 9199
 4-pole plug on the front
 all device functions and diagnostics
 The input parameters can be set via parameterising software ISpac Wizard.

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
 Linearity
 Measuring current
 Max. line resistor each core
 Input thermocouple

2-, 3-, 4-wire circuit
 temperature / resistance
 ≤ 0.25 mA
 50 Ω (2-wire connection)
 100 Ω (3-, 4-wire connection)

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
 Max. line resistance per conductor
 External references

temperature / voltage
 $\leq 1000\Omega$
 Pt 100 2-wires connection (-40 ... +85 °C)
 constant temperature (-40 ... +85 °C)

Technical Data

Electrical data

Input potentiometer	<table border="1"> <tr> <th>Basic measuring range</th> <th>Middle measurement error</th> </tr> <tr> <td>50 ... 500 Ω</td> <td>0,1 Ω</td> </tr> <tr> <td>0,5 ... 5 kΩ</td> <td>1 Ω</td> </tr> <tr> <td>1 ... 10 kΩ</td> <td>2 Ω</td> </tr> <tr> <td>10 ... 100 kΩ *)</td> <td>--</td> </tr> </table> <p>*) with parallel 10 kΩ Shunt, no open-circuit detection</p>	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 *)	--
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 *)	--										
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											
Middle measurement error	Accuracy, typical data expressed as % of the basic measuring range at U _N , 23 °C ≤ 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

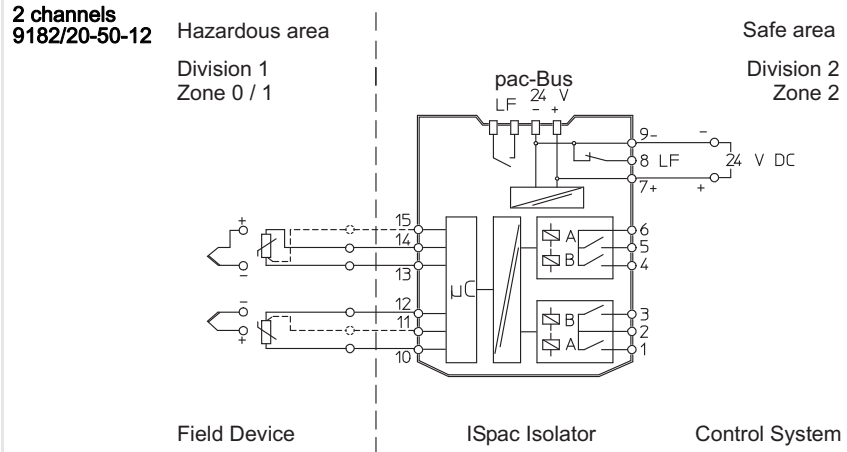
Configuration input	Thermocouple	Resistance thermometer				Resistance transmitter (RTD)
	Cold junction compensation const. temp.	2-wire	3-wire	4-wire (1 channel)	4-wire (2 channels)	3-wire
Channel 2	ext. Pt. 100					
Channel 1						

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

Technical Data

Electrical connection

Connection diagram



06728E01

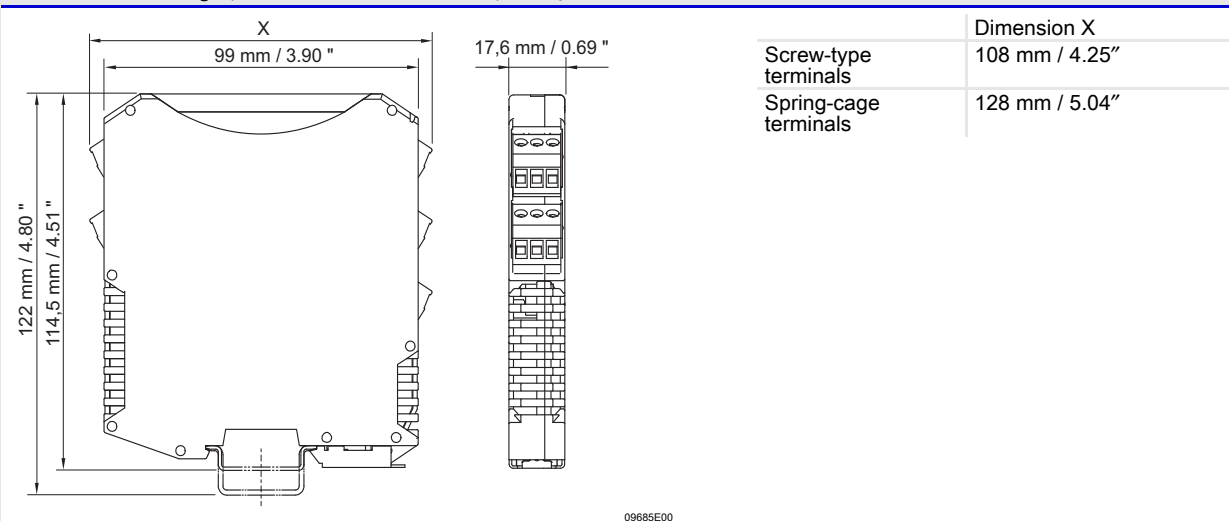
Technical Data

Mechanical data

Connection	Screw-type terminals	Spring-type terminals
Single-wire connection		
- rigid	0.2 ... 2.5 mm ²	0.2 ... 2.5 mm ²
- flexible	0.2 ... 2.5 mm ²	0.2 ... 2.5 mm ²
- flexible with core end sleeves (without / with plastic sleeve)	0.25 ... 2.5 mm ²	0.25 ... 2.5 mm ²
Two-wire connection		
- rigid	0.2 ... 1 mm ²	--
- flexible	0.2 ... 1.5 mm ²	--
- flexible with core end sleeves	0.25 ... 1 mm ²	0.5 ... 1 mm ²
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	

A3

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



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

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.

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
<input type="checkbox"/> 9182 / 10 - 51 - 11.	1	0/4...20 mA	none
<input type="checkbox"/> 9182 / 10 - 51 - 13.	1	0/4...20 mA	none
<input type="checkbox"/> 9182 / 10 - 51 - 12.	1	0/4...20 mA	2 NC / NO
<input type="checkbox"/> 9182 / 10 - 51 - 14.	1	0/4...20 mA	2 NC
<input type="checkbox"/> 9182 / 10 - 59 - 13.	1	passive	none
<input type="checkbox"/> 9182 / 20 - 51 - 11.	2	0/4...20 mA	none
<input type="checkbox"/> 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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sensor type	PT 100	<input type="checkbox"/> PT 100 <input type="checkbox"/> PT 500 <input type="checkbox"/> PT 1000 <input type="checkbox"/> NI 100 <input type="checkbox"/> NI 500 <input type="checkbox"/> NI 1000	<input type="checkbox"/> PT 100 <input type="checkbox"/> PT 500 <input type="checkbox"/> PT 1000 <input type="checkbox"/> NI 100 <input type="checkbox"/> NI 500 <input type="checkbox"/> NI 1000
Circuit type	3-Wires	<input type="checkbox"/> 2-Wires <input type="checkbox"/> 3-Wires <input type="checkbox"/> 4-Wires	<input type="checkbox"/> 2-Wires <input type="checkbox"/> 3-Wires <input type="checkbox"/> 4-Wires
Measurement range	0 °C ... 400 °C	from to <input type="checkbox"/> °C <input type="checkbox"/> °F <input type="checkbox"/> K <input type="checkbox"/> Ω	from to <input type="checkbox"/> °C <input type="checkbox"/> °F <input type="checkbox"/> K <input type="checkbox"/> Ω
Thermocouple		<input type="checkbox"/>	
Type		<input type="checkbox"/> Type B <input type="checkbox"/> Type E <input type="checkbox"/> Type J <input type="checkbox"/> Type K <input type="checkbox"/> Type N <input type="checkbox"/> Type R <input type="checkbox"/> Type S <input type="checkbox"/> Type T <input type="checkbox"/> Type L <input type="checkbox"/> Type U <input type="checkbox"/> Type XK	<input type="checkbox"/> Type B <input type="checkbox"/> Type E <input type="checkbox"/> Type J <input type="checkbox"/> Type K <input type="checkbox"/> Type N <input type="checkbox"/> Type R <input type="checkbox"/> Type S <input type="checkbox"/> Type T <input type="checkbox"/> Type L <input type="checkbox"/> Type U <input type="checkbox"/> Type XK
CJC type		<input type="checkbox"/> external PT 100 <input type="checkbox"/> fixed Temp. <input type="checkbox"/> internal	<input type="checkbox"/> external PT 100 <input type="checkbox"/> fixed Temp. <input type="checkbox"/> internal
Measurement range		from to <input type="checkbox"/> °C <input type="checkbox"/> °F <input type="checkbox"/> K <input type="checkbox"/> mV	from to <input type="checkbox"/> °C <input type="checkbox"/> °F <input type="checkbox"/> K <input type="checkbox"/> mV
Resistance Transmitter		<input type="checkbox"/>	
Range		<input type="checkbox"/> up to 500 Ω <input type="checkbox"/> up to 5 kΩ <input type="checkbox"/> up to 10 kΩ <input type="checkbox"/> up to 100 kΩ (+ Shunt)	<input type="checkbox"/> up to 500 Ω <input type="checkbox"/> up to 5 kΩ <input type="checkbox"/> up to 10 kΩ <input type="checkbox"/> 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	<input type="checkbox"/> 0 mA ... 20 mA *) <input type="checkbox"/> 4 mA ... 20 mA	<input type="checkbox"/> 0 mA ... 20 mA *) <input type="checkbox"/> 4 mA ... 20 mA
Fault behavior	Output Fault value	<input type="checkbox"/> Hold last value (start with fault value *) <input type="checkbox"/> Fault control off <input type="checkbox"/> Output Fault value: (standard 2.4 mA)	<input type="checkbox"/> Hold last value (start with fault value *) <input type="checkbox"/> Fault control off <input type="checkbox"/> Output Fault value: (standard 2.4 mA)
Limit value for Relay A (9182/*0-5*-12. and 9182 / 10 - 51 - 14.)			
Signaling	inactive	<input type="checkbox"/> active <input type="checkbox"/> inactive	<input type="checkbox"/> active <input type="checkbox"/> inactive
Value	25 %	% or absolute:	% or absolute:
Behavior contact	inactive	<input type="checkbox"/> inactive <input type="checkbox"/> closes, if value > limit value *) <input type="checkbox"/> closes, if value < limit value *) <input type="checkbox"/> opens, if value > limit value <input type="checkbox"/> opens, if value < limit value	<input type="checkbox"/> inactive <input type="checkbox"/> closes, if value > limit value *) <input type="checkbox"/> closes, if value < limit value *) <input type="checkbox"/> opens, if value > limit value <input type="checkbox"/> opens, if value < limit value
Hysteresis	1 %	% (0.1 % ... 10 %)	% (0.1 % ... 10 %)
Lockout function	inactive	<input type="checkbox"/> active <input type="checkbox"/> inactive <input type="checkbox"/> active-pwrrst	<input type="checkbox"/> active <input type="checkbox"/> inactive <input type="checkbox"/> active-pwrrst
Limit value for Relay B (9182/*0-5*-12. and 9182 / 10 - 51 - 14.)			
Signaling	inactive	<input type="checkbox"/> active <input type="checkbox"/> inactive	<input type="checkbox"/> active <input type="checkbox"/> inactive
Value	75 %	% or absolute:	% or absolute:
Behavior contact	inactive	<input type="checkbox"/> inactive <input type="checkbox"/> closes, if value > limit value *) <input type="checkbox"/> closes, if value < limit value *) <input type="checkbox"/> opens, if value > limit value <input type="checkbox"/> opens, if value < limit value	<input type="checkbox"/> inactive <input type="checkbox"/> closes, if value > limit value *) <input type="checkbox"/> closes, if value < limit value *) <input type="checkbox"/> opens, if value > limit value <input type="checkbox"/> opens, if value < limit value
Hysteresis	1 %	% (0.1 % ... 10 %)	% (0.1 % ... 10 %)
Lockout Function	inactive	<input type="checkbox"/> active <input type="checkbox"/> inactive <input type="checkbox"/> active-pwrrst	<input type="checkbox"/> active <input type="checkbox"/> inactive <input type="checkbox"/> active-pwrrst

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