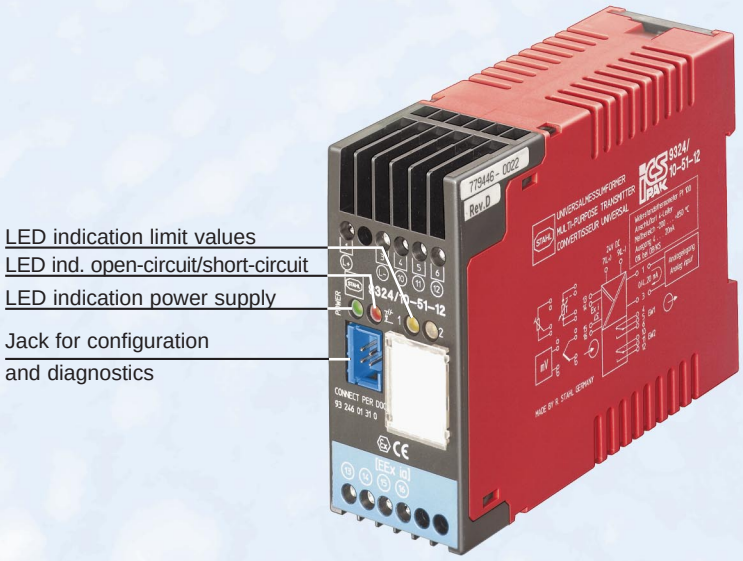
I.S. Isolators



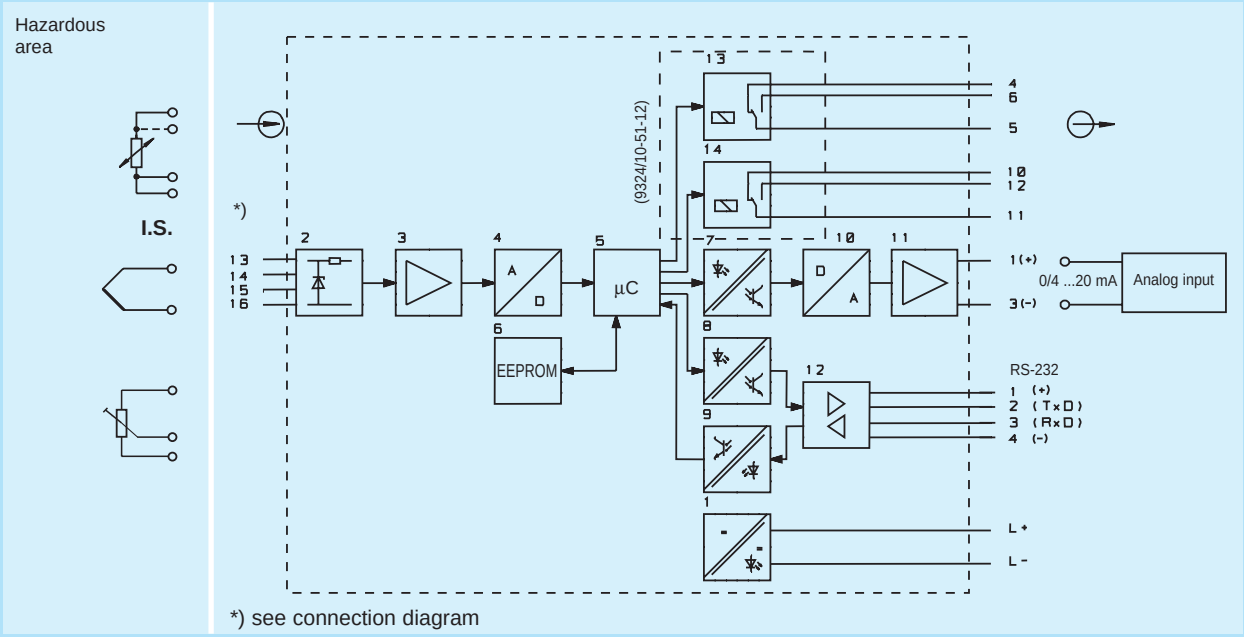
I.S. Isolators
(DIN Rail Mounting)
Multi-Purpose Transmitter
Type 9324

- Intrinsically safe input [EEx ia] IIC
- Output 0...20 mA or 4...20 mA
- One unit for most temperature sensors
- Signalling relay for two limit values
- All circuits galvanically isolated (power supply/input/output/ configuration interface)
- Simple configuration with PC via RS-232-C
- Power supply 18..35 V DC
- Installation in Zone 2 (Div 2) possible
- EMC tested, CE marking

STAHL

Basic function: temperature input, Ω, 1 channel

This multi-purpose transmitter is used for the intrinsically safe operation of temperature sensors or voltage sources. Most currently available sensors can be connected, such as Pt 100, Pt 500, Pt 1000, thermocouples and resistance transmitters. All parameters can be set by using suitable software.



*) see connection diagram

Selection table	
Version	**Ordering code**
without relay for limit values	**9324 / 10 - 51 - 11**
with two relays for limit values	**9324 / 10 - 51 - 12**

Safety data for input	
Certifications	BVS (Europe, CENELEC), CSA (Canada), SEV (Switzerland), FTZU (Czech Republic), EVPU (Slovakia), BKI (Hungary), KDB (Poland), VNIIEF (Russia), FM (USA)
Marking	[EEx ia] IIC/IIB according to CENELEC
Classification	associated electrical apparatus

Safe maximum values (CENELEC)		
Max. voltage U_m		8 V
Max. current I_m		15 mA
Max. power P_m		49.5 mW
Trapezoidal characteristic with	R =	880 Ω
Max. capacitance C_a for [EEx ia] IIC/IIB		13 µF / 160 µF
Max. inductance L_a for [EEx ia] IIC/IIB		50 mH / 50 mH

Further information and combinations of values, see certifications

Technical data

Power supply	
Rated voltage U_N	24 V DC
Voltage range	18...35 V
Rated current	80 mA
Max. power consumption	2 W
Polarity reversal protection	yes

Input

All given input quantities can be set by using a PC-software (see accessories)

Input: Resistance thermometer

Types	Pt 100	Pt 500	Pt 1000	Ni 100
Basic range in °C	-200...850	-200...850	-200...850	-60...180
Min. span in K	50	50	50	50
Resolution in K	0.1	0.1	0.1	0.1

Type of circuit		3-,4-wire circuit
Linearity		temperature / resistance
Measuring current	≈	0.5 mA
Max. line resistance per wire		40 Ω

Input: Thermocouple

Standard	IEC 584-1								DIN 43 710	
Types	B	E	J	K	N	R	S	T	L	U
Basic range in °C	400...1800	-200...1000	-200...1200	-200...1370	-200...1300	-50...1767	-50...1767	-200...400	-200...900	-200...600
Min. span in K	300	75	100	150	150	200	200	50	100	100
Middle resolution in K	0.3	0.15	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.2

Linearity	Temperature / voltage
Measurement principle	Single/differencial measurement
External cold junction compensation	Pt 100 (-40...+65 °C)
	const. temp. (-40...+65 °C)

I.S. Isolators (DIN Rail Mounting)
Multi-Purpose Transmitter
Type 9324

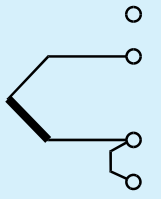
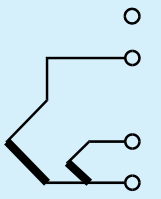
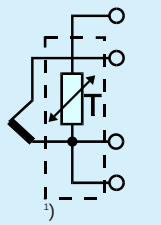
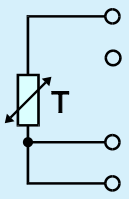
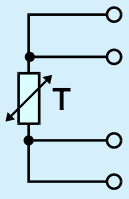
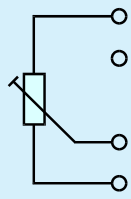
Technical data (continuation)

Input: Resistance transmitter			
Basic range		20...400 Ω	0.4...3.2 kΩ
min. span		50 %	50 %
Resolution		20 mΩ	200 mΩ
Circuit type		3-wire circuit	
Measuring current	≈	0.5 mA	
Max. line resistance per wire		40 Ω	
Analog output			
The settings (0...20 mA oder 4...20 mA) are made via PC.			
Output signal		0...20 mA or 4...20 mA	
Load R_L		0…750 Ω	
Settling time (step response 10...90%)	≤	950 ms	
Interface for configuration/diagnostics		RS-232-C	
Intrinsic safety of input is not given while a PC is connected.			
Limit values (Type 9324/10-51-12)			
Number		2	
Switching point/hysteresis/operating mode		programmable via PC	
Signalling contact		1 changeover (30 V/100 mA)	
Open-circuit / short-circuit			
Output behaviour		programmable via PC	
Output signals		≤ 0% or >100% or 0 mA	
Error limits			
Tolerance band setting, in % of the measuring range			
Input error limits			
Pt 100, Ni 100 / Pt 500, Pt 1000		0.25 K / 0.5 K	
Thermocouples E, J, K, N, T, L, U, B, R, S		0.3 K / 1.0 K	
Pt 100-cold junction compensation		0.25 K	
Resistance transmitter < 400 Ω / > 400 Ω		50 mΩ / 650 mΩ	
Deviation from characteristic at U_N, 23 °C	≤	0.05% · measuring value + 0,05 % · span	
Temperature drift per 10 K change of ambient temperature	≤	0,1% · measuring value + 0.1 % · span	

Dimensions (Casing type E), mechanical data, ambient conditions and accessories see page 3/58f.

Engineering

Connection diagram

Thermocouple			Resistance thermometer		Remote resistance transmitter	Terminal
Standard	Difference	+Ref. junction	3-wire	4-wire	3-wire	
		 [1)]				13, I+ 14, U+ 15, U- 16, I-

[1]) Pt 100 for cold junction compensation see accessories

Please fill out for customer specific parameterization.	
Order No.	
Type	☐ **9324 / 10 - 51 -11** ☐ **9324 / 10 - 51 -12**
No. of units	

	Standard setting	**Specific setting**
General information		
Measuring point description	STANDARD	_ _ _ _ _ _ _ _ _ _ _ _ _
Units	°C	☐ °F ☐ K
Input		
Resistance thermometer	☒	
Type	Pt 100	☐ Pt 500 ☐ Pt 1000 ☐ Ni 100
Type of circuit (4-, 3-wire)	4-wire	☐ 3-wire
Linearity	Temperature	☐ Resistance
Measuring range	-200 °C ... +850 °C	from: up to:
Thermocouple		☐
Type	–	☐ B ☐ E ☐ J ☐ K ☐ N ☐ R ☐ S ☐ T ☐ L ☐ U
Linearity	Temperature	☐ Voltage
Measurement principle	Single	☐ Difference
Cold junction compensation	external Pt 100	☐ external const. temp.:
Measuring range	–	from: up to:
Resistance transmitter		☐
Value of resistance	–	☐ ≤ 400 Ω ☐ > 400 Ω
Measuring range	–	from: up to:
Output		
Analog output		
Signal	4 ... 20 mA	☐ 0 ... 20 mA
Fault behaviour	≤ 0%	☐ > 100% ☐ 0 mA
Limit value 1		
Limit value signalling	deactivated	☐ activated
Limit value in %	20%	
Relay energised on	value < limit value	☐ value > limit value
Hysteresis / position	1% /	% / ☐ ☐ ☐
Limit value 2		
Limit value signalling	deactivated	☐ activated
Limit value in %	80%	
Relay energised on	value > limit value	☐ value < limit value
Hysteresis / position	1% /	% / ☐ ☐ ☐