



**I.S. Isolators
(DIN Rail Mounting)
mA Isolating Repeater
Loop Powered
Type 9311**

- Intrinsically safe output [EEx ia] IIC
- Galvanic isolation between input and output
- Loop powered
- Extremely low internal resistance
- HART signal transmission, bidirectional (units with revision number B and higher)
- Installation in Zone 2 (Div 2) possible
- EMC tested, CE marking

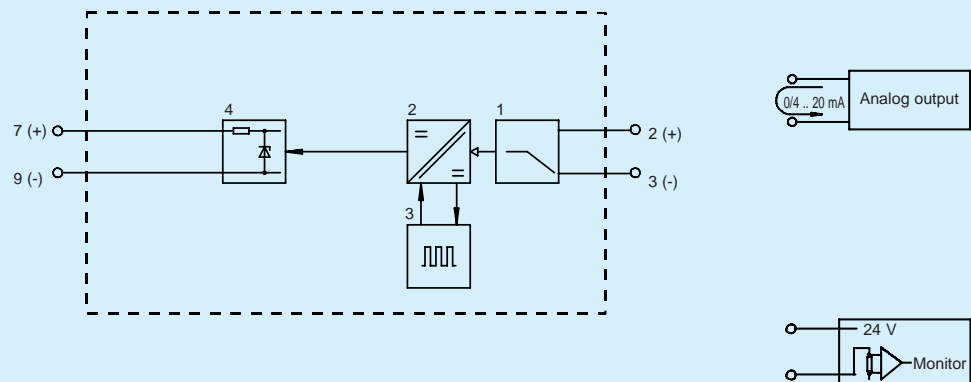
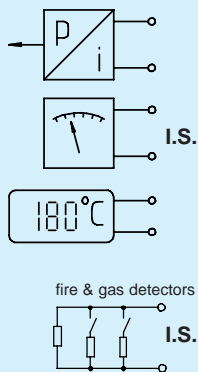
Basic function: analog output, mA, 1 channel.

The mA isolating repeaters are used for intrinsically safe operation of control valves, i/p transmitters, analog and digital displays etc.

9311/52 is also suitable for fire & gas detectors.

STAHL

Hazardous area



Selection table	
Version	Ordering code
Output signal (safety values)	
15.8 V / 60 mA	9311 / 51 - 11 - 00
25.2 V / 92 mA	9311 / 52 - 11 - 00
18.9 V / 110 mA	9311 / 54 - 11 - 00

Safety data for output			
Certifications	BVS (Europe, CENELEC), CSA (Canada), SEV (Switzerland), FTZU (Czech Republic), BKI (Hungary), KDB (Poland), VNIIEF (Russia), FM (USA)		
Marking	[EEx ia] IIC/IIB according to CENELEC		
Classification	associated electrical apparatus		
Safe maximum values (CENELEC)			
Types	9311/51	9311/52	9311/54
Max. voltage U_m	15.8 V	25.2 V	18.9 V
Max. current I_m	60 mA	92 mA	110 mA
Max. capacitance C_a for [EEx ia] IIC / IIB	500 nF/1900 nF	90 nF/580 nF	240 nF/1100 nF
Max. inductance L_a for [EEx ia] IIC / IIB	10 mH/40 mH	4.8 mH/17 mH	3 mH/12 mH
Further information and combinations of values, see certifications			

Technical data (units with revision number B and higher)				
Types		9311/51	9311/52	9311/54
Signal transmission				
Current range (specified accuracy)	$I_A = I_E$	0..20 mA	0..20 mA	0..20 mA
Internal resistance (for $I_A \leq 20$ mA)	$R_{i20} \leq$	380 Ω	400 Ω	290 Ω
Response time (10 .. 90%)	\leq	1 ms	1 ms	1 ms
Input				
Input voltage	$U_E \leq$	35 V	35 V	35 V
Max. effective voltage $U_{E\text{ eff}}$		15.4 V	24.5 V	18.2 V
Polarity reversal protection		yes	yes	yes
Output				
Load resistance (for $I_A = 20$ mA, $U_{E\text{ eff}}$)	$R_L \leq$	380 Ω	820 Ω	620 Ω
Open-circuit				
Input behaviour for open-circuit	$I_E \leq$	1.0 mA		
Error limits				
in % of the measuring range				
Linearity error for $R_L = 0 \Omega$, 23 °C	\leq	0.15 %		
Temperature effect	\leq	$\pm 0.05 \% / 10K$		
Dimensions (Casing type A), mechanical data, ambient conditions and accessories see page 3/58f.				

Engineering

Calculation of input voltage U_E :
(see also Technical data)

In range $I = 0 \dots 22$ mA:
 $U \geq U_E \geq U_L + (R_{i20} + R_i) \cdot I$

In range $22 \text{ mA} < I \leq I_m$:
 $U \geq U_E \geq U_L + \Delta U + (R_i + R_i) \cdot I$

The calculated value of U_E has to be smaller than the value of $U_{E\text{ eff}}$ (internal limitation)!

