



# mA - Isolating Repeater

## Series 9164



### Selection Table

Version	Channels	Input	Output	Order number
mA - Isolating Repeater Series 9164	1	Ex i: 4 ... 20 mA HART (sink)	Ex i: passive HART (sink)	9164/13-22-08
	1	Ex e: 4 ... 20 mA HART (sink)	Ex i: passive HART (sink)	9164/13-22-09

### Explosion Protection

Version	9164/13-22-08 (Ex i Input)
<b>Explosion protection</b>	
Europe (ATEX) Gas and dust	KEMA 04 ATEX 1298 ⊕ II 2 G (1) GD EEx ia IIC T4
USA (NEC) Gas	3022545 Cl. I, II, III Div. 1, GP, A,B,C,D,E,F,G, T4 Cl. I, ZN 1 AEx ia IIC T4 at Ta = 70 °C with connections to Cl. I, II, III, Div. 1, GP, A,B,C,D,E,F,G, T4 Cl. I, ZN 0,GP, IIC
Russia (Gost-R) Gas	0 Ex ia IIC T4
Certificates and approvals Certificates	ATEX, Brazil (INMETRO), Kazakhstan (GOST-K), Korea (KTL), Russia (GOST-R), Serbia (SRPS), Belarus (GOST-B), USA (FM)
Other approvals	ship approval (DNV)
<b>Further parameters</b>	
Installation	In Zone 1, Zone 2 and in the safe area
Further information	see respective certificate and operating instructions

### Technical Data

Version	9164/13-22-08 (Ex i Input)
<b>Safety data</b>	
Input	
Max. Spannung U <sub>o</sub>	0 V
Max. Current I <sub>o</sub>	0 A
Max. Power P <sub>o</sub>	0 W
Max. voltage U <sub>i</sub>	30 V
Max. current I <sub>i</sub>	150 mA
Max. power P <sub>i</sub>	1 W
Internal capacitance C <sub>i</sub>	negligible
Internal inductance L <sub>i</sub>	negligible
Output	
Max. Spannung U <sub>o</sub>	0 V
Max. Current I <sub>o</sub>	0 A
Max. Power P <sub>o</sub>	0 W
Max. voltage U <sub>i</sub>	30 V
Max. current I <sub>i</sub>	150 mA
Max. power P <sub>i</sub>	800 mW
Internal capacitance C <sub>i</sub>	negligible
Internal inductance L <sub>i</sub>	negligible
Further information and combinations of values, see certification.	

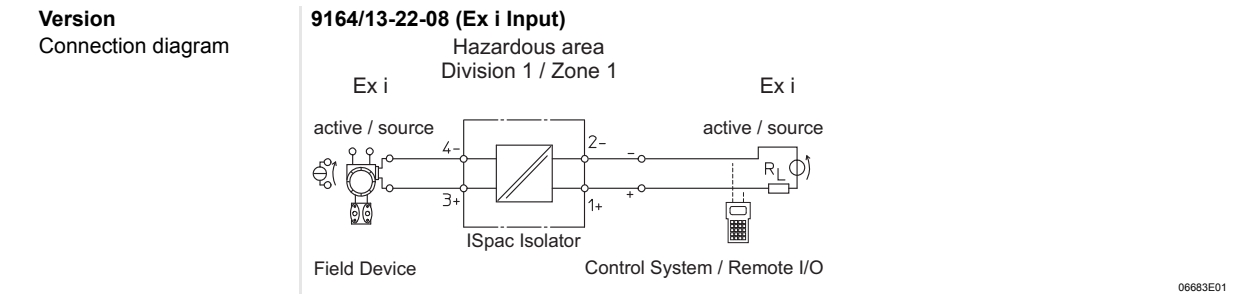
**Technical Data**

**Electrical data**

Galvanic isolation	
Test voltages	
Acc. to standard	EN 60079-11
Ex i input to Ex i output	60 V AC
Auxiliary power	without
Input	
Version	passive (current sink)
Input signal	3.6 ... 21 mA with HART
Functional range	2.4 mA ... 25 mA
Constant voltage drop	≤ 3.5 V
Input resistance	at 0.5 kHz ... 5 kHz; 240 Ω ... 260 Ω (AC-Impedance HART)
Communication signal	HART transmission bidirectional; 0.5 kHz ... 5 kHz
Polarity reversal protection	yes
Output	
Version	passive (current sink)
Output signal	3.6 ... 21 mA with HART
Area around supply voltage of 2-wire input (active)	12 V ... 30 V
Response time (10 ... 90 %)	≤ 1 ms
Input resistance	> 10 kΩ
Communication signal	HART transmission bidirectional; 0.5 kHz ... 5 kHz
Polarity reversal protection	yes
Error detection, input I <sub>e</sub> ~ 0	
Open circuit	Output current < 2.4 mA
Short-circuit	Output current < 2.4 mA
Fault limits	
	Accuracy, typical data expressed as % of calibrated span (21 mA) at 23 °C
Linearity error	≤ 0.1 %
Offset error	≤ 0.1 %
Temperature effect	≤ 0.1 % / 10 K
Linearity error EMV	≤ 1 %
Electromagnetic compatibility	Tested under the following standards and regulations: EN 61326 Use in industrial environment
<b>Ambient conditions</b>	
Ambient temperature	- 20 °C ... + 70 °C (watch instructions)
Storage temperature range	- 40 °C ... + 80 °C
Relative humidity (no condensation)	≤ 90 %

**Technical Data**

**Electrical connection**



# mA - Isolating Repeater

## Series 9164



### Explosion Protection

<b>Version</b>	<b>9164/13-22-09 (Ex e Input)</b>
<b>Explosion protection</b>	
Europe (ATEX) Gas and dust	KEMA 04 ATEX 1236 X Ⓜ II 2 G (1) GD Ex e mb [ia] IIC T4
Russia (Gost-R) Gas	2 Ex e m [ia] IIC T4 X
Certificates and approvals Certificates	ATEX, Brazil (INMETRO), India (PESO), Kazakhstan (GOST-K), Russia (GOST-R), Belarus (GOST-B)
Other approvals	ship approval (DNV)
<b>Further parameters</b>	
Installation	In Zone 1, Zone 2 and in the safe area
Further information	see respective certificate and operating instructions

### Technical Data

<b>Version</b>	<b>9164/13-22-09 (Ex e Input)</b>
<b>Safety data</b>	
Input	
Nominal voltage $U_n$	30 V
Nominal current $I_n$	30 mA
Nominal power $P_n$	1 W
Back-up fuse	63 mA; external (R.STAHL Type 8560/51-4041)
Output	
Max. Spannung $U_o$	0 V
Max. Current $I_o$	0 A
Max. Power $P_o$	0 W
Max. voltage $U_i$	30 V
Max. current $I_i$	150 mA
Max. power $P_i$	800 mW
Internal capacitance $C_i$	negligible
Internal inductance $L_i$	negligible
	If installed in Zone 1: the isolating repeater has to be fitted into an enclosure which meets the requirements of EN 60079-7 (Ex e)
	If installed in Zone 2: the isolating repeater has to be fitted into an enclosure which meets the requirements of EN 60079-15
	Furhter information and combinations of values, see certification.
<b>Electrical data</b>	
Galvanic isolation	
Test voltages	
Acc. to standard	EN 60079-11
Ex e input to Ex i output	1500 V AC
Auxiliary power	without
Input	
Polarity reversal protection	yes
Communication signal	HART transmission bidirectional; 0.5 kHz ... 5 kHz
Input resistance	at 0.5 kHz ... 5 kHz; 240 $\Omega$ ... 260 $\Omega$ (AC-Impedance HART)
Constant voltage drop	$\leq 3.5$ V
Functional range	2.4 mA ... 25 mA
Input signal	3.6 ... 21 mA with HART
Version	passive (current sink)
Output	
Polarity reversal protection	yes
Communication signal	HART transmission bidirectional; 0.5 kHz ... 5 kHz
Input resistance	> 10 k $\Omega$
Response time (10 ... 90 %)	$\leq 1$ ms
Area around supply voltage of 2-wire input (active)	12 V ... 30 V
Output signal	3.6 ... 21 mA with HART
Version	passive (current sink)

