



제13-0450호

# 안 전 인 증 서

## R.STAHL Schaltgeraete GmbH

Am Bahnhof 30 74638 Waldenburg Germany

위 사업장에서 제조하는 아래의 품목이 「산업안전보건법」 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

### 품 목

Switching Repeater

### 형식 · 모델 / 용량 · 등급 / 인증번호

형식·모델	용량 · 등급	인증번호
9170/**-**-2*	첨부 참조	13-GA4BO-0450X
9170/**-**-2-1*	[Ex ia] IIC,	
9170/**-**-3-1*	[Ex ia] IIIC	

### 인 증 기 준

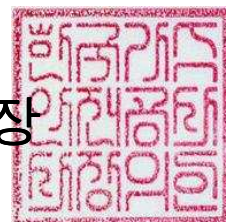
방호장치 의무안전인증 고시(고용노동부고시 제2010-36호)

### 인 증 조 건

Tamb = -20℃ to +70℃, 뒷면 인증조건 참조

2013 년 6 월 10 일

한국가스안전공사 사장





# 인 증 조 건

## 1. 제조공장:

Am Bahnhof 30 74638 Waldenburg Germany에 위치한 R. STAHL Schaltgeraete GmbH에서 생산한 제품 중 아래 인증범위의 제품에 한함.

## 2. 제품개요

첨부 인증조건(2013-0450) 참조

## 3. 인증범위: 본 인증서는 아래의 형식번호에 한하여 유효함

품목 명 Switching Repeater, 모델 명 9170/\*\*-\*\*-2\*,9170/\*\*-\*2-1\*,9170/\*\*-\*3-1\*에 한하여 인증함. 첨부 인증조건(2013-0450) 참조

## 4. 안전한 사용을 위한 조건

안전지역에 설치할 것

## 5. 인증(변경)사항

## 6. 그 밖의 사항

안전인증품의 품질관리, 확인심사 수검, 변경사항 신고 등 인증 받은 자의 의무 준수

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## 인증조건(2013- 0450)

### Electrical Data

#### Auxiliary Power Supply

Maximum safety voltage:  $U_m \leq 253 \text{ V AC}$

Models type 9170/\*\*-\*\*-1\* and 9170/\*\*-\*\*-6\*

(Terminal No. 7 (L+), 9 (L-) and pac-bus connector V006 / 1 (+), 2 (-))

Nominal Voltage:  $U_n = 24 \text{ V DC (18 ... 31.2 V DC)}$

Nominal Current:  $I_n \leq 50 \text{ mA}$

Models type 9170/\*\*-\*\*-2\*

(Terminal: No. 7 (L), 9 (N))

Nominal Voltage:  $U_n = 120/230 \text{ V AC (96 ... 253 V AC)}$

Nominal Current:  $I_n \leq 13 \text{ mA}$

#### Non I.S. signal circuits

##### Input circuits

On 2-channel versions the input circuits are galvanically separated from each other.

(Input 1: Terminal: No. 10 (+), 11 (-))

Input 2: Terminal: No. 14 (+), 15 (-) (9170/21-\*\*-6\* only))

Models type 9170/\*1-c\*-6\*; c = 1, 3 to 6

$U_N = 8.2 \text{ V}$

$I_N = 1.2 / 2.1 \text{ mA}$

$R_i = 1 \text{ k}\Omega$

Models type 9170/\*1-2\*-6\*

$U_N = 0 / 24 \text{ V}$

$I_N \leq 2 \text{ mA}$

$R_i \geq 10 \text{ k}\Omega$

##### Output circuits

On 2-channel versions the output circuits are galvanically separated from each other.

Maximum safety voltage:  $U_m \leq 253 \text{ V AC}$

Models type 9170/2\*-0-\*\*

(Output 1: Terminal No. 1, 2 (common), 3

Output 2: Terminal No. 4, 5, 6 (common))

Nominal Voltage:  $U_n = 125 \text{ V AC or DC}$

Nominal Current:  $I_n = 1 \text{ A}$

Models type 9170/1\*-1-\*\*

(Output 1: Terminal No. 1, 2 (common), 3

and Terminal No. 4, 5, 6 (common))

Both changeover contacts are galvanically separated from each other.

Nominal Voltage:  $U_n = 125 \text{ V AC or DC}$

Nominal Current:  $I_n = 1 \text{ A}$



## 인증조건(2013- 0450)

### Models type 9170/2\*-\*1-\*\*

(Output 1, Contact 1: Terminal No. 1, 2 (common)  
Contact 1: Terminal No. 3, 2 (common)  
Output 2, Contact 1: Terminal No. 4, 6 (common)  
Contact 1: Terminal No. 5, 6 (common))  
Nominal Voltage: Un = 125 V AC or DC  
Nominal Current: In = 1 A

### Models type 9170/\*\*-\*2-\*\*

(Output 1: Terminal No. 1, 2 (common), 3  
Output 2: Terminal No. 4, 5, 6 (common); (9170/20-\*2-\*1 only))  
Nominal Voltage: Un = 250 V AC or DC  
Nominal Current: In = 4 A AC or 2 A DC

### Models type 9170/1\*-\*3-\*\*

(Output 1: Terminal: No. 1, 2 (common), No. 3  
and Terminal: No. 4, 5, 6 (common)  
Both changeover contacts are galvanically separated from each other.  
Nominal Voltage: Un = 250 V AC or DC  
Nominal Current: In = 2 A DC or 4 A AC

### Models type 9170/\*\*-\*4-\*\*

(Output 1: Terminal: No. 1, 2  
Output 2: Terminal: No. 5, 6; (9170/20-\*4-\*\* only))  
Nominal Voltage: Un = 35 V DC  
Nominal Current: In = 50 mA

### Line fault monitoring circuit

(Loop 1; Terminal 8, 9 (-); Loop 2; pac-bus connector V006 / 3, 4)  
Loop 1 reference to the return of the auxiliary power supply.  
Loop 2 is galvanically separated from Loop 1.  
Nominal Voltage: Un = 24 V DC (18 ... 31.2 V DC)  
Nominal Current: In = 100 mA

### Intrinsically safe input circuits, level of protection "ia"

The intrinsically safe circuits may also be used in areas endangered by explosive dust atmospheres and be connected to apparatus certified accordingly.

For explosive dust atmospheres the maximum allowed values for inductance and capacitance as for gas group IIB apply.

(Input 1: Terminal: No. 10 (+), 11 (-);  
Input 2: Terminal: No. 14 (+), 15 (-))

### Models type 9170/\*0-c\*-e\*; with c = 1, 3, 4, 5, 6; e = 1, 2

Uo = 10.6 V  
Io = 24 mA  
Po = 64 mW (linear characteristic)  
Ci = 2.42 nF Li = negligible



## 인증조건(2013- 0450)

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC
Lo	230 mH	63 mH
Co	16.2 $\mu$ F	2.32 $\mu$ F

If both input circuits are connected in parallel (Terminal No. 10 - 14 (+); 11 - 15 (-)) the following values apply to the resulting circuit:

$$\begin{aligned} U_o &= 10.6 \text{ V} \\ I_o &= 48 \text{ mA} \\ P_o &= 128 \text{ mW (linear characteristic)} \\ C_i &= 4.84 \text{ nF} \quad L_i = \text{negligible} \end{aligned}$$

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC
Lo	61 mH	16 mH
Co	16.2 $\mu$ F	2.32 $\mu$ F

Models type 9170/\*b-c\*-e\*; with b = 1, 2; c = 1, 3, 4, 5, 6; e = 1, 2

$$\begin{aligned} U_o &= 9.6 \text{ V} \\ I_o &= 10 \text{ mA} \\ P_o &= 24 \text{ mW (linear characteristic)} \\ C_i &= 2.42 \text{ nF} \quad L_i = \text{negligible} \end{aligned}$$

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC	I
Lo	1000 mH	350 mH	1000 mH
Co	26 $\mu$ F	3,6 $\mu$ F	99 $\mu$ F

If both input circuits are connected in parallel (Terminal No. 10 - 14 (+); 11 - 15 (-)) the following values apply to the resulting circuit:

$$\begin{aligned} U_o &= 9.6 \text{ V} \\ I_o &= 20 \text{ mA} \\ P_o &= 48 \text{ mW (linear characteristic)} \\ C_i &= 4.84 \text{ nF} \quad L_i = \text{negligible} \end{aligned}$$

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC	I
Lo	340 mH	90 mH	1000 mH
Co	26 $\mu$ F	3,6 $\mu$ F	99 $\mu$ F

Models type 9170/\*0-2\*-e\* with e = 1, 2

$$\begin{aligned} U_o &= 10.6 \text{ V} \\ I_o &= 1.1 \text{ mA} \\ P_o &= 2.9 \text{ mW (linear characteristic)} \\ C_i &= 2.42 \text{ nF} \quad L_i = \text{negligible} \end{aligned}$$

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC
Lo	1000 mH	1000 mH
Co	16.2 $\mu$ F	2.32 $\mu$ F



## 인증조건(2013- 0450)

If both input circuits are connected in parallel (Terminal No. 10 - 14 (+); 11 - 15 (-)) the following values apply to the resulting circuit:

U<sub>o</sub> = 10.6 V  
I<sub>o</sub> = 2.2 mA  
P<sub>o</sub> = 5.8 mW (linear characteristic)  
C<sub>i</sub> = 4.84 nF      L<sub>i</sub> = negligible

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC
L <sub>o</sub>	1000 mH	1000 mH
C <sub>o</sub>	16.2 μF	2.32 μF

Models type 9170/\*b-2\*-e\*; with b = 1, 2; e = 1, 2

U<sub>o</sub> = 9.6 V  
I<sub>o</sub> = 0.61 mA  
P<sub>o</sub> = 1.5 mW (linear characteristic)  
C<sub>i</sub> = 2.42 nF      L<sub>i</sub> = negligible

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC
L <sub>o</sub>	1000 mH	1000 mH
C <sub>o</sub>	26 μF	3,6 μF

If both input circuits are connected in parallel (Terminal No. 10 - 14 (+); 11 - 15 (-)) the following values apply to the resulting circuit:

U<sub>o</sub> = 9.6 V  
I<sub>o</sub> = 1.22 mA  
P<sub>o</sub> = 3.0 mW (linear characteristic)  
C<sub>i</sub> = 4.84 nF      L<sub>i</sub> = negligible

The maximum values for inductance or capacitance are shown in the table below.

	IIB	IIC
L <sub>o</sub>	1000 mH	1000 mH
C <sub>o</sub>	26 μF	3,6 μF

### Ambient temperature range

Any assembling position

-20 °C ≤ Ta ≤ +70 °C