



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.:	<b>IECEX BVS 09.0041X</b>	Page 1 of 4	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 4	Issue 3 (2018-07-25)
Date of Issue:	2023-03-21		Issue 2 (2012-03-23)
Applicant:	<b>R. STAHL Schaltgeräte GmbH</b> Am Bahnhof 30 74638 Waldenburg Germany		Issue 1 (2011-02-17)
Equipment:	<b>Switching Repeater type 9170/**.**.**</b>		Issue 0 (2009-08-07)
Optional accessory:			
Type of Protection:	<b>Increased safety "e"; Intrinsic safety "i", Type of protection "n"</b>		
Marking:	See Annex		

Approved for issue on behalf of the IECEx  
Certification Body:

**Dr Michael Wittler**

Position:

**Deputy Head of Certification Body**

Signature:  
(for printed version)

Date:  
(for printed version)

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Dinnendahlstrasse 9  
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Germany





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Manufacturer: **R. STAHL Schaltgeräte GmbH**  
Am Bahnhof 30  
74638 Waldenburg  
**Germany**

Manufacturing  
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

## STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

[IEC 60079-15:2017](#) Explosive atmospheres - Part 15: Equipment protection by type of protection "n"  
Edition:5.0

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"  
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

## TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[DE/BVS/ExTR09.0037/03](#)

Quality Assessment Report:

[DE/BVS/QAR10.0002/18](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

### **Subject and Type**

See Annex

### **Description**

The switching repeater type 9170 is an associated apparatus per IEC 60079-11. The connection terminals are compliant to IEC 60079-7. The signal relays are compliant to IEC 60079-15. The intrinsically safe circuits are galvanically separated from each other as well as from the non I.S. signal circuits as well as from the power supply circuits

The switching repeater receives at its input intrinsically safe binary signals and transmits the signal status to the output. The binary signal can be generated by NAMUR proximity switches (according to IEC 60947-5-6), contacts, electronic switches, etc.

### **Parameters**

See Annex

### **SPECIFIC CONDITIONS OF USE: YES as shown below:**

For types 9170/\*\*-0-1\*, 9170/\*\*-1-1\* and 9170/\*\*-4-1\* only:

- For installation in areas, where EPL Gc equipment is required, the equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54 in accordance with IEC 60079-0.
- For installation in areas, where EPL Gc is required, the equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1.



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## **DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

- Assessment of Switching Repeater in accordance with the current standard versions
- Change from Ex nA to Ex ec, therefore assessment for the IEC 60079-7 standard and changes in type code, marking etc.

## **Annex:**

[BVS\\_09\\_0041X\\_Stahl\\_Annex\\_issue4\\_.pdf](#)



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### General product information:

Switching Repeater type 9170/\*\*-\*\*-\*\*

Instead of the \*\*\* in the complete denomination letters and numerals will be inserted which characterize the following modifications:

		* a	* b	-	* c	* d	-	* e	* f
Channels	1, 2								
Design	0, 1, 2								
Input	1, 2, 3, 4, 5, 6								
Output	0, 1, 2, 3, 4								
Power supply	1, 2								
Line fault detection	0, 1, 2, 3								

### Description

The switching repeater type 9170 is an associated apparatus per IEC 60079-11. The connection terminals are compliant to IEC 60079-7. The signal relays are compliant to IEC 60079-15. The intrinsically safe circuits are galvanically separated from each other as well as from the non I.S. signal circuits as well as from the power supply circuits.

The switching repeater receives at its input intrinsically safe binary signals and transmits the signal status to the output. The binary signal can be generated by NAMUR proximity switches (according to IEC 60947-5-6), contacts, electronic switches, etc.

### Listing of all components used referring to older standards

None

### Parameters

#### 1 Auxiliary Power Supply

##### 1.1 Type 9170/\*\*-\*\*-1\*

Terminals 7 (+), 9 (-) and pac-bus connector 9194/50-01 / 1 (+), 2 (-)

Nominal voltage	$U_n$	24 V DC (18 ... 31.2 V DC)
Nominal current	$I_n$	50 mA
Maximum voltage	$U_m$	AC 253 V

##### 1.2 Type 9170/\*\*-\*\*-2\*

Terminals L, N

Nominal voltage	$U_n$	120/230 V AC (96 ... 253 V AC)
Nominal current	$I_n$	13 mA
Maximum voltage	$U_m$	AC 253 V

#### 2 Non-intrinsically safe input circuits

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

Output 1: terminals 1,2 (common), 3

Output 2: terminals 4, 5,6 (common)

Nominal voltage	$U_n$	125 V AC or DC
Nominal current	$I_n$	1 A
Maximum voltage	$U_m$	AC 253 V



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

Output 1: terminals 1,2 (common), 3 and terminals 4, 5,6 (common)

Nominal voltage	$U_n$		125 V AC or DC
Nominal current	$I_n$		1 A
Maximum voltage	$U_m$	AC	253 V

**2.3 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	$U_n$		125 V AC or DC
Nominal current	$I_n$		1 A
Maximum voltage	$U_m$	AC	253 V

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

9170/\*b-\*2-\*\*, with b = 0 or 1

Output 1: terminals 1,2 (common), 3  
Output 2: terminals 4, 5,6 (common); 9170/2\*-\*2-\*\* only  
Type 9170/\*2-12-\*3

Output 1: terminals 8,7 (common), 6  
Output 2: terminals 3,2 (common), 1; 9170/22-12-\*3 only

Nominal voltage	$U_n$		250 V AC or DC
Nominal current	$I_n$		4 A AC or 2 A DC
Maximum voltage	$U_m$	AC	253 V

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

Output 1: terminals 1,2 (common), 3  
          terminals 4, 5,6 (common)

Nominal voltage	$U_n$		250 V AC or DC
Nominal current	$I_n$		2 A DC or 4 A AC
Maximum voltage	$U_m$	AC	253 V

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

Output 1: terminals 1, 2  
Output 2: terminals 5, 6; (9170/2\*-\*4-\*\* only)

Nominal voltage	$U_n$	DC	35 V
Nominal current	$I_n$		50 mA
Maximum voltage	$U_m$	AC	253 V

**3 Line fault monitoring circuit**

Loop 1; terminals 8, 9 (-); Loop 2; pac-bus connector 9194/50-01 / 3, 4  
Loop 1 reference to the return of the auxiliary power supply.  
Loop 2 is galvanically separated from Loop 1.

Nominal voltage	$U_n$		24 V DC (18 ... 31.2 V DC)
Nominal current	$I_n$		100 mA
Maximum voltage	$U_m$	AC	253 V



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- 4 Intrinsically safe output circuits, level of protection "ia"  
 Input 1: terminals 10 (+), 11 (-) (9170/\*b-\*\*-\*\*, with b = 0 or 1 only)  
 Input 1: terminals 11 (+), 12 (-) (9170/\*2-12-\*3 only)  
 Input 2: terminals 14 (+), 15 (-) (9170/2\*-\*\*-\*\* only)

- 4.1 Type 9170/\*0-c\*-\*\*; with c = 1, 3, 4, 5, 6  
 For each channel:

Maximum output voltage	$U_o$	10.6	V
Maximum output current	$I_o$	24	mA
Linear output characteristics			
Maximum output power	$P_o$	64	mW

The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC
$L_o$	230 mH	63 mH
$C_o$	16.2 $\mu$ F	2.32 $\mu$ F

If two channels are connected in parallel the following values apply to the resulting circuit:

Maximum output voltage	$U_o$	10.6	V
Maximum output current	$I_o$	48	mA
Linear output characteristics			
Maximum output power	$P_o$	128	mW

The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC
$L_o$	61 mH	16 mH
$C_o$	16.2 $\mu$ F	2.32 $\mu$ F

- 4.2 Type 9170/\*b-c\*-\*\*; with b = 1, 2; c = 1, 3, 4, 5, 6

For each channel:

Maximum output voltage	$U_o$	9.6	V
Maximum output current	$I_o$	10	mA
Linear output characteristics			
Maximum output power	$P_o$	24	mW

The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC	I
$L_o$	1000 mH	350 mH	1000 mH
$C_o$	26 $\mu$ F	3.6 $\mu$ F	99 $\mu$ F

If two channels are connected in parallel the following values apply to the resulting circuit:

Maximum output voltage	$U_o$	9.6	V
Maximum output current	$I_o$	20	mA
Linear output characteristics			
Maximum output power	$P_o$	48	mW



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The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC	I
$L_o$	340 mH	90 mH	1000 mH
$C_o$	26 $\mu$ F	3.6 $\mu$ F	99 $\mu$ F

4.3 Type 9170/\*0-2\*-.\*\*  
For each channel:

Maximum output voltage	$U_o$	10.6	V
Maximum output current	$I_o$	1.1	mA
Linear output characteristics			
Maximum output power	$P_o$	2.9	mW

The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC
$L_o$	1000 mH	1000 mH
$C_o$	16.2 $\mu$ F	2.32 $\mu$ F

If two channels are connected in parallel the following values apply to the resulting circuit:

Maximum output voltage	$U_o$	10.6	V
Maximum output current	$I_o$	2.2	mA
Linear output characteristics			
Maximum output power	$P_o$	5.8	mW

The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC
$L_o$	1000 mH	1000 mH
$C_o$	16.2 $\mu$ F	2.32 $\mu$ F

4.4 Type 9170/\*b-2\*-.\*\*; with b = 1, 2  
For each channel:

Maximum output voltage	$U_o$	9.6	V
Maximum output current	$I_o$	0.61	mA
Linear output characteristics			
Maximum output power	$P_o$	1.5	mW

The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC
$L_o$	1000 mH	1000 mH
$C_o$	26 $\mu$ F	3.6 $\mu$ F





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If two channels are connected in parallel the following values apply to the resulting circuit:

Maximum output voltage	$U_o$	9.6	V
Maximum output current	$I_o$	1.22	mA
Linear output characteristics			
Maximum output power	$P_o$	3.0	mW

The maximum values for maximum external capacitance  $C_o$  or maximum external inductance  $L_o$  are shown in the table below.

	IIB / IIIC	IIC
$L_o$	1000 mH	1000 mH
$C_o$	26 $\mu$ F	3.6 $\mu$ F

5 Ambient temperature range  $-20\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$

## Marking

Code	Type
[Ex ia Ga] IIC	9170/**_**-2*
[Ex ia Da] IIIC	9170/**_*2-1*
[Ex ia Ma] I	9170/**_*3-1*
Ex ec nC [ia Ga] IIC T4 Gc	9170/**_*0-1*
[Ex ia Da] IIIC	9170/**_*1-1*
[Ex ia Ma] I	9170/**_*4-1*