IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx BVS 09.0041X	Issue No: 3	Certificate history:
			Issue No. 3 (2018-07-25)
Status:	**Current**		Issue No. 2 (2012-03-23)
		Page 1 of 4	Issue No. 1 (2011-02-17)
Date of Issue:	**2018-07-25**		Issue No. 0 (2009-08-07)

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

Equipment: **Switching Repeater type 9170/**-**-****

Optional accessory:

Type of Protection: **Equipment protection by intrinsic safety "i", Equipment protection by type of protection "n"**

Marking:

See Annex

Approved for issue on behalf of the IECEx Certification Body: Jörg Koch

Position: Head of Certification Body

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

DEKRA EXAM GmbH
Dinnendahlstrasse 9
44809 Bochum
Germany

On the safe side.

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

Additional Manufacturing location(s):

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 apparatus 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 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15 : 2010 Edition:4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"

*This Certificate **does not** indicate compliance with electrical 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/ExTR09.0037/02

Quality Assessment Report:

DE/BVS/QAR10.0002/13

Schedule

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 as well as an apparatus per IEC 60079-15. The intrinsically safe circuits are galvanically separated from each other, as from the non I.S. signal circuits and from the auxiliary power supply circuit. Additional variants exist without intrinsically safe circuits.
The Switching repeater receives the binary signals from the intrinsically safe circuits applied to its input and transmits the signal status to the output. The binary signals can be produced by NAMUR proximity switches, contacts, electronic switches, active sensors, etc.

Parameters

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

For use in Zone 2 the Switching repeater has to be mounted inside an enclosure which is in accordance with the standard IEC 60079-15.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

No technical changes; only update of the Test Report

Annex:

BVS_09_0041X_R.Stahl_Annex_Issue3.pdf

Marking

Code	alternative	Type
[Ex ia Ga] IIC [Ex ia Da] IIIC	[Ex ia] IIC [Ex ia] IIIC	9170/**-**-2* 9170/**-*2-1* 9170/**-*3-1*
Ex nA nC [ia Ga] IIC T4 Gc [Ex ia Da] IIIC	Ex nAc nCc [ia] IIC T4 [Ex ia] IIIC	9170/**-*0-1* 9170/**-*1-1* 9170/**-*4-1*
[Ex ia Ma] I	[Ex ia] I	9170/*2-12-*3
Ex nA nC IIC T4 Gc	Ex nAc nCc IIC T4	9170/**-**-6*

Subject and Type

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

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

Switching repeater Type 9170 / * * - * * - * *

			a b - c d - e f
Channels	1	1	a
	2	2	a
Design	U_o 10.6 V, I_o 24 mA	0	b
	U_o 9.6 V, I_o 10 mA	1	b
	U_o 9.6 V, I_o 10 mA, MSHA	2	b
Input	NAMUR	1	c
	Passive	2	c
	Leakage Monitor	3	c
	Special Input resistance	4 to 5	c
	Enhanced hysteresis	6	c
Output	Signal relay: 1 C per Channel	0	d
	Signal relay: single Ch.: 2 C dual Ch.: 2 A per Channel	1	d
	Power relay: 1 C per Channel	2	d
	Power relay: single Ch.: 2 C	3	d
	Electronic output	4	d
Power supply	24 V DC associated, or acc. 60079-15	1	e
	120/230 V AC	2	e
	24 V DC non-incendive apparatus	6	e
Line fault detection	Without	0	f
	With	1	f
	With, transparent to output	2	f
	With, only LED indication	3	f

Parameters

1. Auxiliary Power Supply

Maximum safety voltage: $U_m \leq 253$ V AC

1.1. 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 V DC (18 ... 31.2 V DC)
Nominal Current: $I_n \leq 50$ mA

1.2 Models type 9170/**-**-2*

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

Nominal Voltage: U_n = 120/230 V AC (96 ... 253 V AC)

Nominal Current: $I_n \leq 13$ mA

2 Non I.S. signal circuits

2.1 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))

2.1.1 Models type 9170/*1-c*-6* with c = 1, 3 to 6

U_n = 8.2 V
I_n = 1.2 / 2.1 mA
R_i = 1 kΩ

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

U_n = 0 / 24 V
I_n ≤ 2 mA
R_i ≥ 10 kΩ

2.2 Output circuits

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

Maximum safety voltage: $U_m \leq 253$ 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 V AC or DC
Nominal Current: I_n = 1 A

2.2.1 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 V AC or DC
Nominal Current: I_n = 1 A

2.2.2 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

2.2.3 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: U_n = 250 V AC or DC
Nominal Current: I_n = 4 A AC or 2 A DC

2.2.4 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: U_n = 250 V AC or DC
Nominal Current: I_n = 2 A DC or 4 A AC

2.2.5 Models type 9170/**-*4-**

(Output 1: Terminal: No. 1, 2
Output 2: Terminal: No. 5, 6; (9170/20-*4-** only))

Nominal Voltage: U_n = 35 V DC
Nominal Current: I_n = 50 mA

2.3 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: U_n = 24 V DC (18 ... 31.2 V DC)
Nominal Current: I_n = 100 mA

3 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 (-))

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

U_o = 10.6 V
I_o = 24 mA
P_o = 64 mW (linear characteristic)
C_i = 2.42 nF
L_i = negligible

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

	IIB	IIC
L_o	230 mH	63 mH
C_o	16.2 µF	2.32 µF

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

U_o = 10.6 V
I_o = 48 mA
P_o = 128 mW (linear characteristic)
C_i = 4.84 nF
L_i = negligible

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

	IIB	IIC
L_o	61 mH	16 mH
C_o	16.2 µF	2.32 µF

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

U_o = 9.6 V
I_o = 10 mA
P_o = 24 mW (linear characteristic)
C_i = 2.42 nF
L_i = negligible

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

	IIB	IIC	I
L_o	1000 mH	350 mH	1000 mH
C_o	26 µF	3.6 µF	99 µF

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

U_o = 9.6 V
I_o = 20 mA
P_o = 48 mW (linear characteristic)
C_i = 4.84 nF
L_i = negligible

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

	IIB	IIC	I
L_o	340 mH	90 mH	1000 mH
C_o	26 µF	3.6 µF	99 µF

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

U_o = 10.6 V
I_o = 1.1 mA
P_o = 2.9 mW (linear characteristic)
C_i = 2.42 nF
L_i = negligible

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

	IIB	IIC
L_o	1000 mH	1000 mH
C_o	16.2 µF	2.32 µF

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

U_o = 10.6 V
I_o = 2.2 mA
P_o = 5.8 mW (linear characteristic)
C_i = 4.84 nF
L_i = negligible

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

	IIB	IIC
L_o	1000 mH	1000 mH
C_o	16.2 µF	2.32 µF

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

U_o = 9.6 V
I_o = 0.61 mA
P_o = 1.5 mW (linear characteristic)
C_i = 2.42 nF
L_i = negligible

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

	IIB	IIC
L_o	1000 mH	1000 mH
C_o	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_o = 9.6 V
I_o = 1.22 mA
P_o = 3.0 mW (linear characteristic)
C_i = 4.84 nF
L_i = negligible

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

	IIB	IIC
L_o	1000 mH	1000 mH
C_o	26 µF	3.6 µF

4 Ambient temperature range -20 °C ≤ T_a ≤ +70 °C