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

Certificate No.: **IECEx PTB 12.0003X**

Certificate history:
Issue 0 (2012-02-07)

Status: **Current**

Issue No: 1

Date of Issue: 2023-03-06

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

Equipment: **Safety Barrier, type 9004/**-***-***-**1**

Optional accessory:

Type of Protection: **Intrinsic Safety 'i', Increased Safety 'e'**

Marking: Ex ec [ib Gb] IIC T4 Gc and [Ex ib Db] IIIC

or

Ex ec [ib Gb] IIB T4 Gc and [Ex ib Db] IIIC

Approved for issue on behalf of the IECEx Certification Body: **Dr.-Ing. Martin Thedens**

Position: **Head of Department "Explosion Protection in Sensor Technology and Instrumentation"**

Signature:
(for printed version)

Date:
(for printed version)

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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 www.iecex.com or use of this QR Code.

Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

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Certificate No.: **IECEx PTB 12.0003X** Page 2 of 4

Date of issue: 2023-03-06 Issue No: 1

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 60079-7:2017 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/PTB/ExTR12.0003/01

Quality Assessment Report:

DE/BVS/QAR10.0002/18

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Safety Barrier, type 9004/**-***-***-**1.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. Inside of the hazardous area the safety barrier of type 9004/**-***-***-**1 shall be installed into an enclosure that corresponds to an acknowledged type of protection according to IEC 60079-0 and that provides a minimum degree of protection of IP54 according to EN 60529.
2. Outside of the hazardous area the safety barrier of type 9004/**-***-***-**1 shall be installed into an enclosure that provides a minimum degree of protection of IP54 according to EN 60529 or inside an area with maximum pollution degree 2 / overvoltage category III.
3. The safety barrier of type 9004/**-***-***-**1 shall be connected safely to the local equipotential bonding system.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Adaption of the test specification to the current state of standards
- Omission of type of protection Non-sparking Device ‘nA‘
- Adding type of protection Increased Safety ‘ec‘
- Adaption of the marking with regard to the modified type of protection
- Omission of the alternative markings
- Adaption of the type label, the safety-relevant description and the operating instructions manual

Annex:

CoCA12.0003X-01_1.pdf

Applicant: R. STAHL Schaltgeräte GmbH

Electrical Apparatus: Safety barrier, type 9004/**-***-***-**1

Description of equipment

The electronic safety barriers type 9004/**-***-***-**1 can be installed outside the hazardous area or in the hazardous area up to zone 2 (additional housing protection required). They provide an intrinsically safe circuit reaching in zone 0 or zone 20 as associated equipment.

Note: The values of the maximum permissible inductances and capacitances in the intrinsically safe circuit for dust explosion protection correspond to those of gas group IIB.

The terminals for the equipotential bonding conductor are infallibly connected to the local equipotential bonding system.

The maximum permissible range of the ambient temperature is -20 °C ≤ T_a ≤ +60 °C.

Electrical data

Non-intrinsically safe circuits (terminals 1 and 2)

type of protection Increased Safety Ex ec Gc, safety-related maximum voltage for application as associated apparatus:

U_m = 253 V

Nominal data according to the following table:

Type	U_n [V]	I_{max} [mA]	R_{min} [Ω]	R_{max} [Ω]	ΔU [V]
9004/0.-086-030-001	6	25	35	37	0,9
9004/0.-086-050-001	6	40	23	25	0,9
9004/0.-086-100-001	6	80	16	18	0,9
9004/0.-086-150-001	6	120	13	15	0,9
9004/0.-168-030-001	12	25	38	40	0,9
9004/0.-168-050-001	12	40	27	29	0,9
9004/0.-168-100-001	12	80	21	23	0,9
9004/0.-172-140-001	12	110	19	21	0,9
9004/0.-200-030-001	16	25	39	49	0,9
9004/0.-200-050-001	16	40	37	41	0,9
9004/0.-200-095-001	16	75	31	35	0,9
9004/0.-263-025-001	20	20	59	65	0,9
9004/0.-263-030-001	20	25	57	61	0,9
9004/0.-263-050-001	20	40	49	53	0,9
9004/0.-280-025-001	24	20	61	67	0,9
9004/0.-280-045-001	24	35	51	55	0,9
9004/0.-315-022-001	26	15	70	76	0,9
9004/0.-315-025-001	26	20	68	72	0,9

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Postfach 33 45, 38023 Braunschweig, Germany
Telephone +49 531 592-0, Telefax +49 531 592-3605

Type	U_n [V]	I_{max} [mA]	U_{amin} [V] at I_{max}		
9004/5.-206-030-001	23 – 27	25	17		
9004/5.-206-050-001	23 – 27	40	17		
9004/5.-206-085-001	23 – 27	70	17		
9004/5.-220-030-001	24 – 26	25	18		

Type	U_n [V]	I_{max} [mA]	U_{amin} [V] at 20 mA		
9004/61-220-035-001	24	22	12		
9004/61-232-028-041	20 – 35	22	15		

Intrinsically safe circuits
(terminals 3 and 4)

type of protection Intrinsic Safety Ex ib IIB/IIC Gb and Ex ib IIIC Db, rectangular characteristic, maximum values according to the following table

Maximum values for the simultaneous occurrence of reactances L_o and C_o

Typ	U_O [V]	I_O [mA]	P_O [mW]		IIC				IIB			
9004/0.-086-030-001	8,6	30	258	L_o / mH	2,5	2,0	1,0	0,2	2,5	2,0	1,0	0,2
				C_o / µF	0,79	0,86	1,10	1,70	5,0	5,3	6,4	10,0
9004/0.-086-050-001	8,6	50	430	L_o / mH	2,5	2,0	1,0	0,2	2,5	2,0	1,0	0,2
				C_o / µF	0,6	0,69	0,94	1,60	4,5	4,9	6,1	10,0
9004/0.-086-100-001	8,6	100	860	L_o / mH	2,3	2,0	1,0	0,2	2,5	2,0	1,0	0,2
				C_o / µF	0,27	0,32	0,63	1,50	3,4	3,9	5,3	9,7
9004/0.-086-150-001	8,6	150	1290	L_o / mH			0,97	0,2	2,5	2,0	1,0	0,2
				C_o / µF			0,38	1,3	2,3	3,0	4,6	9,3
9004/0.-168-030-001	16,8	30	504	L_o / mH	2,5	2,0	1,0	0,2	2,5	2,0	1,0	0,2
				C_o / µF	0,20	0,22	0,26	0,27	1,3	1,4	1,6	1,8
9004/0.-168-050-001	16,8	50	840	L_o / mH			0,86	0,2	2,5	2,0	1,0	0,2
				C_o / µF			0,16	0,23	1,2	1,3	1,6	1,7
9004/0.-168-100-001	16,8	100	1680	L_o / mH						1,6	1,0	0,2
				C_o / µF						1,1	1,4	1,5
9004/0.-172-140-001	17,2	140	2408	L_o / mH								0,17
				C_o / µF								1,2
9004/0.-200-030-001	20	30	600	L_o / mH	2,5	2,0	1,0	0,2	2,5	2,0		0,2
				C_o / µF	0,079	0,082	0,1	0,17	0,80	0,82		1,0
9004/0.-200-050-001	20	50	1000	L_o / mH					2,5	2,0		0,2
				C_o / µF					0,68	0,7		0,98
9004/0.-200-095-001	20	95	1900	L_o / mH								0,2
				C_o / µF								0,88
9004/0.-263-025-001	26,3	25	657,5	L_o / mH				0,17	2,5	2,0	1,0	0,2
				C_o / µF				0,097	0,33	0,34	0,41	0,64
9004/0.-263-030-001	26,3	30	789	L_o / mH					2,5	2,0	1,0	0,2
				C_o / µF					0,31	0,33	0,4	0,63
9004/0.-263-050-001	26,3	50	1315	L_o / mH						1,3	1,0	0,2
				C_o / µF						0,33	0,36	0,61
9004/0.-280-025-001	28	25	700	L_o / mH					2,5	2,0	1,0	0,2
				C_o / µF					0,28	0,3	0,37	0,58
9004/0.-280-045-001	28	45	1260	L_o / mH						1,5	1,0	0,2
				C_o / µF						0,28	0,33	0,56
9004/0.-315-022-001	31,5	22	693	L_o / mH					2,5	2,0	1,0	0,2
				C_o / µF					0,24	0,26	0,31	0,48
9004/0.-315-025-001	31,5	25	787,5	L_o / mH					2,5	2,0	1,0	0,2
				C_o / µF					0,23	0,25	0,31	0,48

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Typ	U_o [V]	I_o [mA]	P_o [mW]		IIC				IIB			
9004/5.-206-030-001	20,6	30	618	L_o / mH	2,5	2,0	1,0	0,2	2,5	2,0		0,2
				C_o / µF	0,065	0,072	0,095	0,16	0,72	0,72		0,96
9004/5.-206-050-001	20,6	50	1030	L_o / mH					2,5	2,0	1,0	0,2
				C_o / µF					0,58	0,58	0,62	0,92
9004/5.-206-085-001	20,6	85	1751	L_o / mH							0,37	0,2
				C_o / µF							0,68	0,85
9004/5.-220-030-001	22	30	660	L_o / mH		1,3	1,0	0,2	2,5	2,0	1,0	0,2
				C_o / µF		0,073	0,081	0,14	0,55	0,55	0,59	0,84
9004/61-220-035-001	22	35	770	L_o / mH				0,05	2,5	2,0	1,0	0,2
				C_o / µF				0,165	0,52	0,52	0,57	0,83
9004/61-232-028-041	23,2	28	649,6	L_o / mH			1,0	0,2	2,5	2,0	1,0	0,2
				C_o / µF			0,075	0,13	0,46	0,46	0,52	0,77

U_i = 31,5 V
I_i = 40 mA

L_i negligibly low
C_i negligibly low

The intrinsically safe and the non-intrinsically safe circuits are galvanically connected together and to the connectors for equipotential bonding via their reference conductors.

Special conditions for safe use

1. Inside of the hazardous area the safety barrier of type 9004/**-***-***-**1 shall be installed into an enclosure that corresponds to an acknowledged type of protection according to IEC 60079-0 and that provides a minimum degree of protection of IP54 according to EN 60529.
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3. The safety barrier of type 9004/**-***-***-**1 shall be connected safely to the local equipotential bonding system.