



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 BVS 13.0095X** Page 1 of 4 [Certificate history:](#)
Issue 0 (2013-09-10)

Status: **Current** Issue No: 1

Date of Issue: 2022-10-05

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

Equipment: **Frequency Transmitter type 9146/*0-1*-****

Optional accessory:

Type of Protection: **Intrinsic safety "i", Equipment protection by type of protection "n"; Increased safety "e"**

Marking: For type 9146/*0-1*-1*:
Ex ec nC [ia Ga] IIC T4 Gc and
Ex ia Da] IIIC and
[Ex ia Ma] I
For type 9146/*0-1*-6*:
Ex ec nC IIC T4 Gc

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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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:

DEKRA Testing and Certification GmbH
Certification Body
Dinnendahlstrasse 9
44809 Bochum
Germany

 **DEKRA**
On the safe side.



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

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

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/ExTR13.0103/01](#)

Quality Assessment Report:

[DE/BVS/QAR10.0002/17](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

General product information

The Frequency Transmitter Type 9146/*0-1*-** is an associated apparatus per IEC 60079-11 as well as an apparatus under controlled environments per IEC 60079-7. The intrinsically safe circuits are galvanically separated from the non-I.S. signal circuits as well as from the power supply circuit.

The Frequency Transmitter serves to connect up to 2 initiators to the system ISpac. The frequency of the input signal is converted into a proportional analog signal (0/4 – 20 mA), optionally voltage signals (0/1 – 5 V) are possible.

According to the variants the input signals are monitored with regard to limit values. A frequency or rotational speed / overrun is signalled via digital outputs. Per channel there exist two limit value switching outputs. They are implemented by solid state relays. One of these solid state relays can also be configured as a pulse output.

The signal input lines are monitored regarding open circuit / short circuit. A line fault is reported via relay contacts.

Type Designation

See Annex

Parameters

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

- 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.
- 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 Frequency Transmitter in accordance with the current standard versions
- Modification of the marking
- Update of the documentation

Annex:

[BVS_13_0095X_RStahl_Annex.pdf](#)



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Annex
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Type Designation

		Type 9146 /	*	0	-	1	*	-	*	*
Number of channels	1 channel		1							
	2 channels		2							
Output	analog	digital								
	without	Signal relay					0			
	0/4 - 20 mA active	Signal relay					1			
	0 / 1 - 5 V	without					5			
	0/4 - 20 mA passive	without					9			
Power supply	24 V DC, associated apparatus								1	
	24 V DC, non-incendive apparatus								6	
Special functions	Error message									1
	Limit value / error message relay									2

Parameters

1	Power supply circuit (terminals 7(L+) - 9 (L-) and pac-bus connector V007/1 (+) - V007/2(-))								
	Nominal voltage			DC	24	V			
	max. voltage	U_m		AC	253	V			
	Nominal current	I_N			75	mA			
2	Non-intrinsically safe signal circuits								
	max. voltage	U_m		AC	253	V			
3	Type 9146/*0-1*-6*								
	Active Input								
	Input 1: Terminals No. 10, 11								
	Input 2: Terminals No. 14, 15								
	Nominal voltage	U_N		DC	8.5	V			
	Nominal current ON / OFF	I_N			1.2 / 2.1	mA			
	Short circuit current	I_{SC}			8.5	mA			
	Input frequency	f_N			0.001 Hz to 20000	Hz			
4	Type 9146/20-11-*1								
	2 analog outputs, 0/4 mA...20 mA								
	Output 1: terminals 1 and 2								
	Output 2: terminals 5 and 6								
	Nominal voltage	U_N		DC	15	V			
	Nominal current	I_N			20	mA			



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5 Type 9146/10-11-*2
1 analog output, 0/4 mA...20 mA
2 contact outputs

5.1 Analogue output circuit
Output 1: terminals 1 and 2

Nominal voltage	U_N	DC	15	V
Nominal current	I_N		20	mA

5.2 Switching circuits
Contact 1: terminals 3 and 4
Contact 2: terminals 5 and 6

Nominal voltage	U_N	AC/DC	30	V
Nominal current	I_N		100	mA

6 Type 9146/20-10-*2
4 contact outputs
Contact 1: terminals 1 and 2
Contact 2: terminals 2 (together with switching contact 1) and 3
Contact 3: terminals 5 and 6
Contact 4: terminals 6 (together with switching contact 3) and 4

Nominal voltage	U_N	AC/DC	30	V
Nominal current	I_N		100	mA

7 Type 9146/10-19-*2
1 analog output passive, 0/4 mA...20 mA
2 switching contacts

7.1 Analogue output circuit
Output 1: terminals 1 and 2

Nominal voltage	U_N	DC	30	V
Nominal current	I_N		20	mA

7.2 Switching circuit
Contact 1: terminals 3 and 4
Contact 2: terminals 5 and 6

Nominal voltage	U_N	AC/DC	30	V
Nominal current	I_N		100	mA

8 Type 9146/10-15-*2
1 analog output, 0/1 V...5 V
2 switching contacts

8.1 Analogue output circuit
Output 1: terminals 1 and 2

Nominal voltage	U_N	DC	5	V
Nominal current	I_N		10	mA

8.2 Switching circuit
Contact 1: terminals 3 and 4
Contact 2: terminals 5 and 6

Nominal voltage	U_N	AC/DC	30	V
Nominal current	I_N		100	mA

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- 9 Type 9146/20-15-*1
 2 analog outputs, 0/1 V...5 V
 Output 1: terminals 1 and 2
 Output 2: terminals 5 and 6
 Nominal voltage DC 5 V
 Nominal current 10 mA
- 10 Error message circuits
 (Circuit 1: Terminal No. 8, 9 (-); Circuit 2: pac-Bus connector V007/ 3, 4)
 Circuit 1 is connected to the auxiliary power input via the return conductor
 Circuit 2 is galvanically isolated from circuit 1
 Nominal voltage U_N AC/DC 30 V
 Nominal current I_N 100 mA
- 11 Configuration circuits (RS232), plug connector V401 behind the front cover
 The device is electrically passive at these connections
 Nominal voltage U_N ± 15 V
 Nominal current I_N 10 mA
- 12 Intrinsically safe input circuits
 Terminals 10 up to 15, any combination
 Voltage U_o DC 10.5 V
 Current I_o 23.4 mA
 Power P_o 61.4 mW
 linear output characteristic
 Effective internal capacitance C_i negligible
 Effective internal inductance L_i negligible

The values for the external capacitances C_o and inductances L_o are shown in the following table:

	IIC	IIB/IIIC	IIA	I
L_o [mH]	63	230	450	600
C_o [μ F]	2.41	16.8	75	95

If inductances and capacitances are concentrated the following values apply:

	IIC				IIB/IIIC				IIA				I			
L_o [mH]	20	5	1	0.2	100	20	2	0.5	100	10	1	0.1	100	10	2	0.1
C_o [μ F]	0.49	0.67	0.96	1.4	1.9	2.7	4.5	6.4	2.9	4.5	7.3	14	4	5.7	7.8	17

- 13 Ambient temperature range T_a -40 °C up to +70 °C