



# 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)

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Status: **Current** Issue No: 0

Date of Issue: 2021-02-19

Applicant: **VEGA Grieshaber KG**  
Am Hohenstein 113  
77761 Schiltach  
Germany

Equipment: **Ex Separators for one or two intrinsically safe 4 ... 20 mA/HART sensors, VEGATRENN 141(\*), VEGATRENN 142(\*)**.

Optional accessory:

Type of Protection: **Intrinsic Safety "ic"**

Marking: [Ex ia Ga] IIC  
[Ex ia Da] IIIC  
[Ex ia Ma] I  
Ta = -20°C ... +60°C

Approved for issue on behalf of the IECEx  
Certification Body:

**Erin LaRocco**

Position:

**Staff Engineer**

Signature:  
(for printed version)

Date:

**2021-02-19**

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Denmark





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Manufacturer: **VEGA Grieshaber KG**  
Am Hohenstein 113  
77761 Schiltach  
Germany

Additional manufacturing locations: **VEGA Americas, Inc**  
4241 Allendorf Drive  
Cincinnati, Ohio 45209  
United States of America

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

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:

[DK/ULD/ExTR20.0019/00](#)

Quality Assessment Report:

[DE/TUN/QAR06.0002/10](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

The VEGATrenn 140(\*) series are Ex Separators for one or two intrinsically safe 4 ... 20 mA/HART sensors.

They are used for galvanic separation, intrinsically safe power supply as well as the signal transmission of Ex approved 4... 20 mA/HART sensors in hazardous areas.

The single channel Ex separator VEGATRENN 141(\*) is used for one intrinsically safe 4 ... 20 mA/HART sensor and the double channel Ex separator VEGATRENN 142(\*) for two intrinsically safe 4 ... 20 mA/HART sensors.

They are able to supply up to two sensors with an intrinsically safe circuit (Ex ia) and can convert their measurement values through a 4...20 mA output.

Up to 2 current outputs can be used for data transmission to other control equipment or external indicating instruments can be used to operate equipment.

The VEGATrenn 140(\*) series are suitable for bidirectional transmission of HART signals. The HART signal can be tapped via the front-mounted HART communication sockets or the terminals.

VEGATrenn 140(\*) series can be mounted in control cabinet / carrier rail. The VEGATRENN 140 series supplies the sensor with 4...20mA interface.

The intrinsically safe circuit is safely separated from the non-intrinsically safe circuits up to a peak value of the nominal voltage of 375V.

The maximum voltage at the non-intrinsically safe circuits must not exceed 253Vrms in the event of a fault.

**Please see Annex for additional information.**

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

- The installer must ensure that the rated ambient temperature range of the equipment is not exceeded when installed in an enclosure with other equipment and that sufficient separation is provided around the device.
- The installation orientation of the device must be in accordance with the instructions.

## **Annex:**

[Annex to IECEx ULD 20.0019X Issue 0.pdf](#)

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## TYPE DESIGNATION

Models VEGATRENN 141(\*), VEGATRENN 142(\*)

Nomenclature:

VEGATRENN	a	b	c
	1	Housing for the installation in the control cabinet (indoor)	
		4	Active, separate power supply
		1	Single channel version, for use with one sensor
		2	Dual channel version, for use with one or two sensors
		(*)	Reserved for OEM partners with same device

The placeholder within brackets (VEGATRENN 14x(\*)) is reserved for internal production control without effect on the product construction.

## PARAMETERS RELATING TO THE SAFETY

Electrical parameters:

Power supply: Nominal range: VEGATRENN 141(\*)  
 (terminals 16, 17) 24 V ... 230 V AC 50/60 Hz; 15 VA  
 24 V ... 65 V DC; 3 W  
 Um = 253V AC for [Ex ia] only

Power supply: Nominal range: VEGATRENN 142(\*)  
 (terminals 16, 17) 24 V ... 31 V DC; 5 W  
 Um = 253V AC for [Ex ia] only

Current output: 4...20 mA/HART active  
 (terminals 10 to 12 [TRENN 141(\*)]) U ≤ 16.5 V  
 (terminals 10 to 15 [TRENN 142(\*)]) Load = max. 600 Ω (without internal HART resistor)  
 Um = 253V AC for [Ex ia] only

Sensor input circuit: 4...20 mA/HART  
 (terminals 1,2 [TRENN 141(\*)]) Maximum values of the intrinsically safe signal circuit:  
 (terminals 1,2, 4,5 [TRENN 142(\*)]) Uo ≤ 26.3 V  
 Io ≤ 100 mA  
 Po ≤ 658 mW  
 characteristic: linear

Ci = 1.2 nF  
 Li = negligibly small

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The maximum values in the following table may be used as concentrated capacitances and concentrated inductances.

The values for IIC and IIB are also permissible for explosive dust atmospheres.

Ex ia	IIC		IIB, IIIC		IIA	I
permissible external inductance $L_o$	0.2 mH	1 mH	0.2 mH	2 mH	10 mH	5 mH
permissible external capacitance $C_o$	95.8 nF	54.8 nF	618.8 nF	328.8 nF	508.8 nF	708.8 nF
Permissible $L_o/R_o$ ratio	-		216 $\mu\text{H} / \Omega$	216 $\mu\text{H} / \Omega$	433 $\mu\text{H} / \Omega$	710 $\mu\text{H} / \Omega$

Environmental Ratings:  $-20\text{ }^\circ\text{C} \leq T_{amb} \leq +60\text{ }^\circ\text{C}$

## MARKING

Marking has to be readable and indelible; it has to include the following indications:

VEGATRENN 141(*)	
<p><b>IECEx ULD 20.0019X</b>          [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I (see doc. 64569)</p> <p>Associated Apparatus for use in Undersclassified Locations  <math>U_o \neq 26.3\text{V}</math>, <math>I_o \neq 100\text{mA}</math>, <math>P_o \neq 658\text{mW}</math>, <math>U_{im} \neq 253\text{V}</math>, IIC: <math>C_o \neq 958\text{nF}</math>, <math>L_o \neq 0.2\text{mH}</math>  <math>T_a: -20^\circ\text{C} \dots +60^\circ\text{C}</math></p>	
<p>~ 24...65V          24...230V ~ 50/60Hz          ~ 4...20mA          ~ 4...20mA          3W, 15VA          IP20</p>	  2020
VEGA Grieshaber KG Made in Germany	D-7761 Schiltach <a href="http://www.vega.com">www.vega.com</a> s/n 12345678



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## **ROUTINE EXAMINATIONS AND TESTS**

Each pieces of equipment defined above has to have successfully passed; before delivery:

Transformer TR101 and TR201 (VEGA TRENN 142(\*) only) shall be subjected to a voltage of 1500 V rms between primary and secondary windings, for at least 60 seconds, in accordance with the requirements of Clause 11.2 of IEC 60079-11. Alternatively, the test may be carried out at 1.2 times the test voltage, but with a reduced duration of at least 1 second.



