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UNITED KINGDOM CONFORMITY ASSESSMENT

UK-TYPE EXAMINATION CERTIFICATE

[2]

Product or Protective System Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended by UKSI 2019:696) – Schedule 3A, Part 1

[3] Type Examination Certificate No.: **UL21UKEX2294X Rev. 0**

[4] Product: **Ex Separators VEGATRENN 141(*) and VEGATRENN 142(*)**

[5] Manufacturer: **VEGA Grieshaber KG**

[6] Address: **Am Hohenstein 113, 77761 Schiltach, Germany**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] UL International (UK) Ltd, Approved Body number 0843, in accordance with Regulation 44 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended by UKSI 2019:696), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations. The examination and test results are recorded in the confidential report **4790037837.17.1**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN IEC 60079-7:2015 + A1: 2018 EN 60079-11:2012

Except in respect of those requirements listed at section 18 of the schedule to this certificate.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to specific conditions of use specified in the schedule to this certificate.

[11] This UK-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

II 3 (1) G Ex ec [ia Ga] IIC T4 Gc

II 3 G (1) D Ex ec [ia IIIC Da] IIC T4 Gc

II 3 G (M1) Ex ec [ia I Ma] IIC T4 Gc

Certification Manager
David Lloyd

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the Ex UK Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Regulations. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2021-09-30

Approved Body UL International (UK) Ltd Unit 1-3 Horizon Kingsland Business Park Wade Road, Basingstoke RG24 8AH, UK
Phone : +44 (0)1256 312100

[13]
[14]

Schedule
UK-TYPE EXAMINATION CERTIFICATE No.
UL21UKEX2294X Rev. 0

[15] Description of Product

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.

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.

Feature	VEGATRENN 141(*)	VEGATRENN 142(*)
Number of 4…20 mA/HART sensor inputs Ex ia	1	2
Number of 4…20 mA/HART current outputs	1	2
Type of current outputs	active	active
Supply voltage	24 … 230 V AC, 24 … 65 V DC	24 … 31 V DC

The optical radiation output of the product with respect to explosion protection, according to Schedule 1, Part 16 of Regulation UKSI 2016:1107 (as amended by UKSI 2019:696) is covered in this certificate based on Exception 1) to the scope of EN 60079-28:2015

Temperature range

The ambient temperature range is -20 °C to +60 °C.

Electrical data

Intrinsically safe specifications:

Power supply: Nominal range: (terminals 16, 17)	VEGATRENN 141(*): 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: (terminals 16, 17)	VEGATRENN 142(*): 24 V ... 31 V DC; 5 W Um = 253V AC for [Ex ia] only
Current output: (terminals 10 to 12 [TRENN 141(*)]) (terminals 10 to 15 [TRENN 142(*)])	4…20 mA/HART active U ≤ 16.5 V Load = max. 600 Ω (without internal HART resistor) Um = 253V AC for [Ex ia] only
Sensor input circuit: (terminals 1,2 [TRENN 141(*)]) (terminals 1,2, 4,5 [TRENN 142(*)])	4…20 mA/HART Maximum values of the intrinsically safe signal circuit: Uo ≦ 26.3 V Io ≦ 100 mA Po ≦ 658 mW characteristic: linear Ci = 1.2 nF Li = negligibly small

[13]
[14]

Schedule
UK-TYPE EXAMINATION CERTIFICATE No.
UL21UKEX2294X Rev. 0

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 Lo	0.2 mH	1 mH	0.2 mH	2 mH	10 mH	5 mH
Permissible external capacitance Co	95.8 nF	54.8 nF	618.8 nF	328.8 nF	508.8 nF	708.8 nF
Permissible Lo/Ro ratio	-		216 µH / Ω	216 µH / Ω	433 µH / Ω	710 µH / Ω

Routine tests
Transformer TR101 and TR201 (VEGATRENN 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 EN/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.

[16] Test Report No. (associated with this certificate issue)
Ex TR Number DK/ULD/ExTR20.0018/00

[17] Specific conditions of use:

- The equipment must be mounted in a housing that has been tested according to EN 60079-0 and meets the requirements of protection class IP54.
- The device may only be used in an area with a pollution degree of 2 or better.
- 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.

[18] Essential Health and Safety Requirements (Regulations Schedule 1)
In addition to the Essential Health and Safety Requirements covered by the standards listed at item 9, all other requirements are demonstrated in the relevant reports.

The trademark VEGA will be used as the company identifier on the marking label.

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Schedule 3A, Part 1 of Regulation UKSI 2016:1107 (as amended by UKSI 2019:696).

[19] Drawings and Documents

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
VEGATRENN 141 Circuit Diagram	SB1607-1	-	2020-10-07
VEGATRENN 142 Circuit Diagram	SB1608-1	-	2020-05-25
Component layout of VEGATRENN 141	BB1607-1	-	2020-10-07
Component layout of VEGATRENN 142	BB1608-1	-	2020-06-05
Trace layout of VEGATRENN 141	LP1607-1	-	2020-10-07
Trace layout of VEGATRENN 142	LP1608-1	-	2020-06-05
Coating layout of VEGATRENN 141	GE1607-1	-	2020-12-21
Coating layout of VEGATRENN 142	GE1608-1	-	2020-12-21
Part List of VEGATRENN 141	Part List of VEGATRENN 141; circuit diagram SB1607-1	-	2020-05-29
Part List of VEGATRENN 142	Part List of VEGATRENN 142; circuit diagram SB1608-1	-	2020-05-25
Construction drawing VEGATRENN 141/142	GE3467	-	2015-10-23
Safety instructions VEGATRENN 141, 142 Installation in Zone 2 with output intrinsic safety	66343	-	2021-08-09

[13]

[14]

Schedule
UK-TYPE EXAMINATION CERTIFICATE No.
UL21UKEX2294X Rev. 0

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
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Product Marking	GE3472_UKEX_Zone 2_ Marking	00	2021-09-27
VEGATRENN 141 explosion drawing	GE4293	-	2020-06-16
Electronic TRENN142 minimum distances	GE4336	-	2020-12-07
Ex-Übertrager BV1718 (20 pages, German)	Woe 01 1503	-	2015-9-23
Ex-Transformer EFD 20/10/7	GE3488	01	2015-08-11
DC-DC-isolation transformer	BV1718-00	01	2015-07-06
Sicherheitshinweise Ex-Transformator BV1718-00 (16 pages, German)	51918	-	2015-09-23
Antrag zur Ausstellung der 1. Ergänzung zu den Ex-Übertrager BV1718-00 (German)	VEGAZW-6-35740	-	2017-06-26
DC-DC-isolation transformer	BV1718-01	-	2016-10-26