Translation

(1) EU-Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**

(3) **Certificate Number** **TÜV 12 ATEX 098525 X** **issue:** 01

(4) for the product: Microwave sensors type series VEGAFLEX FX8*(*).*/VD/I/V/P****A/H/B/I/UX****

(5) of the manufacturer: **VEGA Grieshaber KG**

(6) Address: Am Hohenstein 113
77761 Schiltach
Germany

Order number: 8000489411

Date of issue: 2019-05-29

(7) The design of this product and any acceptable variation thereto are specified in the schedule to this EU-Type Examination Certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, Notified Body No. 0044, in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014, 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 Annex II to the Directive.
The examination and test results are recorded in the confidential ATEX Assessment Report No. 19 203 231184.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN 60079-1:2014** **EN 60079-11:2012**
EN 60079-26:2015

except in respect of those requirements listed at item 18 of the schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions for Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design, and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 1/2 G Ex db ia IIC T6...T1 Ga/Gb
II 2 G Ex db ia IIC T6...T1 Gb

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body

Reder

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(13) **SCHEDULE**

(14) **EU-Type Examination Certificate No. TÜV 12 ATEX 098525 X issue 01**

(15) **Description of product**

The microwave sensors type series VEGAFLEX FX8*(*).*/VD/I/V/P****A/H/B/I/UX**** are used for evaluation of the distance between a product surface and the sensor via high-frequency microwave pulses. The microwave sensors emit high-frequency microwave pulses, which are carried along a measuring rod resp. a measuring cable. The electronics evaluate the delay time of the signals reflected by the product surface to calculate the distance to this surface.

Type code

VEGAFLEX FX8*(*).*/VD/I/V/P****A/H/B/I/UX****

Electrical data

VEGAFLEX FX8*(*).*/VD/V/P/I**A/HX****, double chamber housing, Ex d connection compartment**

Supply and signal circuit (Terminals1[+], 2[-])	U = 15 ... 35 V d.c U_m = 253 V a.c/d.c I ≤ 3.5 ... 22.5 mA (with superimposed HART signal)

VEGAFLEX FX8*(*).*/VD/V/P/I**BX****, double chamber housing, Ex d connection compartment**

Supply circuit (Terminals 1[+], 2[-])	U = 90 ... 253 V d.c U_m = 253 V a.c/d.c
Active 4 ... 20 mA-signal circuit (Terminals 5[+], 7[-])	U_m = 60 V a.c/d.c I ≤ 3.5 ... 22.5 mA (with superimposed HART signal)
Passive 4 ... 20mA-signal circuit (Terminals 6[+], 7[-])	U_m = 60 V a.c/d.c I ≤ 3.5 ... 22.5 mA (with superimposed HART signal)

VEGAFLEX FX8*(*).*/VD/V/P/I**IX****, double chamber housing, Ex d connection compartment**

Supply circuit (Terminals 1[+], 2[-])	U = 9.6 ... 48 d.c; 42 V a.c U_m = 253 V a.c
Active 4 ... 20 mA-signal circuit (Terminals 5[+], 7[-])	U_m = 60 V a.c/d.c I ≤ 3.5 ... 22.5 mA (with superimposed HART signal)
Passive 4 ... 20 mA-signal circuit (Terminals 6[+], 7[-])	U_m = 60 V a.c/d.c I ≤ 3.5 ... 22.5 mA (with superimposed HART signal)

VEGAFLEX FX8*(*).*/VD/V/P/I**UX****, double chamber housing, Ex d connection compartment**

Supply circuit (Terminals 1[+], 2[-])	U = 8 ... 32 V d.c U_m = 253 V a.c
Signal circuit (Terminals MB[+], MB[-])	U = 5 V with Modbus signal (telegram) U_m = 253 V a.c
USB-connection (6-pin mini USB connector)	U = 5 V with USB signal (USB protocol) U_m = 253 V a.c

Display and adjustment circuit, Ex d connection compartment:

Display and adjustment circuit (Terminals 5, 6, 7, 8)	For connection to the circuit of the passive indicating unit VEGADIS 81 in ignition protection type flameproof enclosure "d" (BVS 13 ATEX E 054).

Intrinsically safe circuit for the external display and adjustment unit, Ex i-electronics compartment:

Intrinsically safe circuit for the external display and adjustment unit: (Terminals 5, 6, 7, 8)	In ignition protection type intrinsic safety Ex ia IIC For connection to the intrinsically safe circuit of the corresponding external indicating unit VEGADIS 81 in ignition protection type Intrinsic safety "i" (PTB 02 ATEX 2136 X). The proof for intrinsic safety of the interconnection rendered if the total inductance and total capacitance of the connection cable L_{cable} = 212 µH and C_{cable} = 1.98 µF is not exceeded When using the supplied VEGA connection cable, then the permissible cable length is L_{zul} = 341 m.

Display and adjustment circuit

Spring contacts in the Ex d connection compartment	Only for connection to the display and adjustment module PLICSCOM or for service purposes the interface adapter VEGACONNECT, if it is ensured that no explosive atmosphere is present.
Spring contacts in the Ex i electronics compartment	In ignition protection type intrinsic safety Ex ia IIC Only for connection to the display and adjustment module PLICSCOM.

The circuits of VEGAFLEX 81, 82, 83, 86 are galvanically separated from ground.
The circuits of VEGAFLEX 81, 82, 83, 86 are galvanically connected to ground potential vial the earth terminals.
The metallic parts of VEGAFLEX 81, 82, 83, 86 are electrically connected with the earth terminals.

Thermal data

The following temperature tables are valid for all housing and electronics versions.
The relationship between the permissible ambient temperature for the electronics housing depending on the area of application and the maximum surface temperatures, temperature classes, can be seen in the following tables.

VEGAFLEX FX8*(*).*/VD/I/V/P**A/HX******

Temperature class	Temperature on the sensor (measuring cable, rod)	Ambient temperature on the electronics	
		Housing lid without inspection window	Housing lid with inspection window
T6	-60°C ... +80 °C	-60°C ... +46 °C	-50 °C ... +46 °C
T5	-60°C ... +95 °C	-60°C ... +61 °C	-50 °C ... +61 °C
T4	-60°C ... +130 °C	-60°C ... +70 °C	-50 °C ... +70 °C
T3	-60°C ... +195 °C	-60°C ... +70 °C	-50 °C ... +70 °C
T2	-60°C ... +290 °C	-60°C ... +70 °C	-50 °C ... +70 °C
T1	-60°C ... +440 °C	-60°C ... +70 °C	-50 °C ... +70 °C

VEGAFLEX FX8*(*).*/VD/I/V/P**A/HX******, Low-temperature execution down to -196 °C**

Temperature class	Temperature on the sensor (measuring cable, rod)	Ambient temperature on the electronics	
		Housing lid without inspection window	Housing lid with inspection window
T6	-196°C ... +80 °C	-60°C ... +46 °C	-50 °C ... +46 °C
T5	-196°C ... +95 °C	-60°C ... +61 °C	-50 °C ... +61 °C
T4	-196°C ... +130 °C	-60°C ... +70 °C	-50 °C ... +70 °C
T3	-196°C ... +195 °C	-60°C ... +70 °C	-50 °C ... +70 °C
T2	-196°C ... +290 °C	-60°C ... +70 °C	-50 °C ... +70 °C
T1	-196°C ... +440 °C	-60°C ... +70 °C	-50 °C ... +70 °C

Schedule to EU-Type Examination Certificate No. TÜV 12 ATEX 098525 X issue 01

VEGAFLEX FX8*(*).*/VD/I/V/P**B/I/UX****

Temperature class	Temperature on the sensor (measuring cable, rod)	Ambient temperature on the electronics	
		Housing lid without inspection window	Housing lid with inspection window
T6	-60°C ... +80 °C	-60°C ... +46 °C	-50 °C ... +46 °C
T5	-60°C ... +95 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T4	-60°C ... +130 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T3	-60°C ... +195 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T2	-60°C ... +290 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T1	-60°C ... +440 °C	-60°C ... +60 °C	-50 °C ... +60 °C

VEGAFLEX FX8*(*).*/VD/I/V/P**B/I/UX****, Low-temperature execution down to -196 °C**

Temperature class	Temperature on the sensor (measuring cable, rod)	Ambient temperature on the electronics	
		Housing lid without inspection window	Housing lid with inspection window
T6	-196°C ... +80 °C	-60°C ... +46 °C	-50 °C ... +46 °C
T5	-196°C ... +95 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T4	-196°C ... +130 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T3	-196°C ... +195 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T2	-196°C ... +290 °C	-60°C ... +60 °C	-50 °C ... +60 °C
T1	-196°C ... +440 °C	-60°C ... +60 °C	-50 °C ... +60 °C

The measuring sensors are allowed to be operated in areas for EPL Ga/Gb and EPL Gb applications only if atmospheric conditions exist (Temperatures: see tables above and pressure from 0.8 bar to 1.1 bar).
If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).
If the measuring sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by hot surfaces is excluded.
The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.

(16) Drawings and documents are listed in the ATEX Assessment Report No. 19 203 231184

Schedule to EU-Type Examination Certificate No. TÜV 12 ATEX 098525 X issue 01

(17) Specific Conditions for Use

1. At the plastic parts of the microwave sensors type series VEGAFLEX FX8*(*).*/VD/I/V/P****A/H/B/I/UX**** there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.

2. For EPL Ga/Gb applications, at the metallic parts of the microwave sensors type series VEGAFLEX FX8*(*).*/VD/I/V/P****A/H/B/I/UX**** made of light metal there is a danger of ignition by impact or friction.
Observe manual of the manufacturer.

3. For EPL Ga/Gb applications and at risks by pendulum or vibration the respective parts of the microwave sensors type series VEGAFLEX FX8*(*).*/VD/I/V/P****A/H/B/I/UX**** have to be secured effectively against these dangers.
Observe manual of the manufacturer.

4. For EPL Ga/Gb applications the medium tangent materials of the microwave sensors type series VEGAFLEX FX8*(*).*/VD/I/V/P****A/H/B/I/UX**** have to be resistant to the media.
Observe manual of the manufacturer.

5. The ambient temperature range depending on temperature class is to be taken from the operating instructions.

6. The flameproof housing of these devices must be provided with cable entries and filler plugs resp. conduits which are certified according to EN 60079-0 and EN 60079-1. The connection cable, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.

(18) Essential Health and Safety Requirements
No additional ones

- End of Certificate -

Translation

(1) # EU-Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**

(3) **Certificate Number** **TÜV 12 ATEX 098525 X** **Issue:** 00

(4) for the product: Microwave sensors
type series VEGAFLEX FX8*(*).A/VD/I/V/P****H/A/B/I/U*****

(5) of the manufacturer: **VEGA Grieshaber KG**

(6) Address: Am Hohenstein 113
77761 Schiltach
Germany

Order number: 8000462860

Date of issue: 2016-12-08

(7) The design of this product and any acceptable variation thereto are specified in the schedule to this EU-Type Examination Certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, Notified Body No. 0044, in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014, 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 Annex II to the Directive.
The examination and test results are recorded in the confidential ATEX Assessment Report No. 16 203 185307.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 + A11:2013 EN 60079-1:2014 EN 60079-11:2012 EN 60079-26:2015

except in respect of those requirements listed at item 18 of the schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions for Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design, and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 1/2 G resp. II 2 G Ex d ia IIC T6...T1 Ga/Gb resp. Gb

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body

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(13) **SCHEDULE**

(14) **EU-Type Examination Certificate No. TÜV 12 ATEX 098525 X Issue 00**

(15) Description of product

The microwave sensors type series VEGAFLEX FX8*(*).A/VD/I/V/P****H/A/B/I/U***** are used for evaluation of the distance between a product surface and the sensor via high-frequency microwave pulses. The microwave sensors emit high-frequency microwave pulses, which are carried along a measuring rod resp. a measuring cable. The electronics evaluate the delay time of the signals reflected by the product surface to calculate the distance to this surface.

Changes:

1. Extension, installation and mounting of the display and adjustment module PLICSCOM 3
2. Update of type key: FX8*(*).A/VD/I/V/P****H/A/B/I/U*****
3. Technical update
4. Update to actual standards
5. Usage with external housings.

The specifications in the

- EC-Type Examination Certificate TÜV 12 ATEX 098525 X / Test Report 12 203 098525 and
- 1. Supplement TÜV 12 ATEX 098525 X / Test Report 13 203 119800 and
- 2. Supplement TÜV 12 ATEX 098525 X / Test Report 15 203 152571

are also still valid for the original versions.

(16) Drawings and documents are listed in the ATEX Assessment Report No. 16 203 185307.

(17) Specific Conditions for Use

1. At the plastic parts of the microwave sensors type series VEGAFLEX FX8*(*).AD****A/H/B/I/U***** resp. VEGAFLEX FX8*(*).A/VD/I/V/P****H/A/B/I/U***** there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.
2. For EPL Ga/Gb applications, at the metallic parts of the microwave sensors type series VEGAFLEX FX8*(*).AD****A/H/B/I/U***** resp. VEGAFLEX FX8*(*).A/VD/I/V/P****H/A/B/I/U***** made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
3. For EPL Ga/Gb applications and at risks by pendulum or vibration the respective parts of the microwave sensors type series VEGAFLEX FX8*(*).AD**** A/H/B/I/U***** resp. VEGAFLEX FX8*(*).A/VD/I/V/P****H/A/B/I/U***** have to be secured effectively against these dangers. Observe manual of the manufacturer.
4. For EPL Ga/Gb applications, the medium tangent materials have to be resistant to the media. Observe manual of the manufacturer.
5. The flameproof housing of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60079-0 and IEC 60079-1. The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.
6. VEGAFLEX FX8*(*).AD****B/I/U***** resp. VEGAFLEX FX8*(*).A/VD/I/V/P****B/I/U*****: The PA terminal of the Ex-d connection room (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.

(18) Essential Health and Safety Requirements
no additional ones

- End of Certificate -

Translation

2. SUPPLEMENT

to Certificate No.	**TÜV 12 ATEX 098525 X**
Equipment:	Guided Wave Radar sensors type series VEGAFLEX FX8*(*).AD/I/V/P****A/H/B/I/U*****
Manufacturer:	VEGA Grieshaber KG
Address:	Am Hohenstein 113 77761 Schiltach Germany
Order number:	8000442068
Date of issue:	2015-03-17

For the Guided Wave Radar sensors type series VEGAFLEX FX8*(*).AD****A/H/B/I/U*****, the following changes were performed:

- New type designation: Guided Wave Radar sensor type series VEGAFLEX FX8*(*).AD/I/V/P****A/H/B/I/U*****
- Different colours for the housing
- Modifications at the process connections
- Modifications at the measuring sensors
- Electrical data regarding the max. cable length to the external indication unit

Electrical data

VEGAFLEX FX8*(*).AD/I/V/P**A/H*D/W/Y/Q***, Ex-i electronics compartment**

Operation and indication circuit ..... (Terminals 5, 6, 7, 8 or plug connector in the electronics compartment)

in type of protection „Intrinsic Safety" Ex ia IIC
Only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 or VEGADIS81.
The rules for the interconnection of intrinsically safe circuits between the **VEGAFLEX FX8*(*).AD/I/V/P****A/H*D/W/Y/Q*** and the VEGADIS61/81 are adhered to if the complete inductance and capacitance of the connection cable between **VEGAFLEX FX8*(*).AD/I/V/P****A/H*D/W/Y/Q*** and VEGADIS61/81 does not exceed the following values:

L_{cable} = 212 µH
C_{cable} = 1.98 µF

If the connection cable supplied by the manufacturer between the **VEGAFLEX FX8*(*).AD/I/V/P****A/H*D/W/Y/Q*** and the VEGADIS61/81 is used, the following cable length has to be observed:

l_{cable} = 341 m

VEGAFLEX FX8*(*).ID/I/V/P**B/I/U*Y/Q***, Ex-i connection compartment**	
Operation and indication circuit ..... (Plug connector in the electronics compartment)	in type of protection „Intrinsic Safety" Ex ia IIC Only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 or VEGADIS81. The rules for the interconnection of intrinsically safe circuits between the **VEGAFLEX FX8*(*).AD/I/V/P****B/I/U*Y/Q*** and the VEGADIS61/81 are adhered to if the complete inductance and capacitance of the connection cable between **VEGAFLEX FX8*(*).AD/I/V/P****B/I/U*Y/Q*** and VEGADIS61/81 does not exceed the following values: L_{cable} = 212 µH C_{cable} = 1.98 µF If the connection cable supplied by the manufacturer between the **VEGAFLEX FX8*(*).AD/I/V/P****B/I/U*Y/Q*** and the VEGADIS61/81 is used, the following cable length has to be observed: l_{cable} = 341 m

All other details remain unchanged.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2012 EN 60079-1:2007 EN 60079-11:2012
EN 60079-26:2007

(16) The test documents are listed in the test report No. 15 203 152571.

(17) Special conditions for safe use

Unchanged; but see new type designation.

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

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Translation

1. SUPPLEMENT

to Certificate No.	**TÜV 12 ATEX 098525 X**
Equipment:	Microwave sensors type series VEGAFLEX FX8*(*).AD**** A/H/B/I/U *****
Manufacturer:	VEGA Grieshaber KG
Address:	Am Hohenstein 113 77761 Schiltach Germany
Order number:	8000420029
Date of issue:	2013-06-26

For the microwave sensors type series FX8*(*).AD****A/H/B/I/U*****, the following changes were performed:

- Modified PLICSCOM module with additional power limitation for the LED
- Change of components (according to VEGAFLEX FX8*(*).AC****A/H*****, TÜV 12 ATEX 098523 X) in the following circuitries: Digital part, power supply part, HF part
- Optional insertion of an adapter print instead of the operation and indication module PLICSCOM
- Permissible ambient temperature of the electronics and the electronic housings down to -50 °C

The "Special conditions for safe" use and the electrical data remain unchanged. In the following, the data in dependence of the type designation are listed:

Electrical data for the non intrinsically safe circuits in the Ex d connection room of the VEGAFLEX FX8*(*).AD****H/A/B/I/U*D/W/Y/Q***

VEGAFLEX FX8*(*).AD**H/A*D/W/Y/Q*** with galvanically separating barrier P3-2LH**

Supply and signal circuit	U = 14 ... 35 V d. c.
(Terminals KL1/1, KL1(2)	U_m = 253 V a. c.

VEGAFLEX FX8*(*).AD**U*D/W/Y/Q*** with barrier P3-MODBUS, connected with earth potential**

Supply and signal circuit	U = 8 ... 32 V d. c.
(Terminals KL1[+], KL2[-])	U_m = 253 V a. c.
Signal circuit	U = 5 V MODBUS signal (telegram)
(Terminals MB[+], MB[-])	U_m = 253 V a. c.
USB connection	U = 5 V USB signal (USB protocol)
(6 pole USB mini bushing)	U_m = 253 V a. c.

VEGAFLEX FX8*(*).AD**B*D/W/Y/Q*** with barrier P3-4LH, connected with earth potential**

Supply and signal circuit	U = 90 ... 253 V a. c.
(Terminals KL1[+], KL2[-])	U_m = 253 V a. c.
Active 4-20 mA signal circuit	I_{out} = 4-20 mA with superposed HART signal
(Terminals KL5[+], KL7[-])	U_m = 60 V a. c./d. c.
Passive 4-20 mA signal circuit	I_{in} = 4-20 mA with superposed HART signal
(Terminals KL6[+], KL7[-])	U_m = 60 V a. c./d. c.

VEGAFLEX FX8*(*).AD**I* D/W/Y/Q*** with barrier P3-4LH, connected with earth potential**

Supply and signal circuit ..... (Terminals KL1[+], KL2[-])	U = 9.6 ... 42 V a. c./48 V d. c. U_m = 253 V a. c.
Active 4-20 mA signal circuit ..... (Terminals KL5[+], KL7[-])	I_{out} = 4-20 mA with superposed HART signal U_m = 60 V a. c./d. c.
Passive 4-20 mA signal circuit ..... (Terminals KL6[+], KL7[-])	I_{in} = 4-20 mA with superposed HART signal U_m = 60 V a. c./d. c.

Electrical data for the intrinsically safe circuits in the Ex i electronics room

VEGAFLEX FX8*(*).AD**H/A*D/W/Y/Q***

Operation and indication circuit ..... (Terminals 5, 6, 7, 8 or plug connection in the electronics room)	in type of protection „Intrinsic Safety" Ex ia IIC Only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 or VEGADIS81. The rules for the interconnection of intrinsically safe circuits between the VEGAFLEX FX8*(*).AD****H/A*D/W/Y/Q*** and the VEGADIS61/81 are adhered to if the complete inductance and capacitance of the connection cable between FX8*(*).AD****H/A*D/W/Y/Q*** and VEGADIS61/81 does not exceed the following values: L_{cable} = 212 µH C_{cable} = 1.98 µF If the connection cable supplied by the manufacturer between the VEGAFLEX FX8*(*).AD****H/A*D/W/Y/Q*** and the VEGADIS61/81 is used, the following values have to be observed: L_i' = 0.62 µH/m $C_{i\ wire/wire}'$ = 132 pF/m $C_{i\ wires/shield}'$ = 208 pF/m
Operation and indication module circuit ..... (Spring contacts)	in type of protection „Intrinsic Safety" Ex ia IIC Only for connection to the VEGA operation and indication module PLICSCOM or the interface adapter VEGACONNECT.
HF circuit ..... (Coaxial connection cable)	in type of protection „Intrinsic Safety" Ex ia IIC In the execution with coaxial connection cable between housing for the electronics and measuring sensor housing, a length of the provided cable of 50 m is permissible.

The intrinsically safe circuits of the VEGAFLEX FX8*(*).AD****H/A*D/W/Y/Q*** are safe galvanically separated from the non intrinsically safe circuit up to the peak value of the voltage of 375 V.

VEGAFLEX FX8*(*).AD**B/I/U*Y/Q*****

Operation and indication circuit ..... (Plug connection in the electronics room)	in type of protection „Intrinsic Safety" Only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 or VEGADIS81. The rules for the interconnection of intrinsically safe circuits between the VEGAFLEX FX8*(*).AD****B/I/U*Y/Q*** and the VEGADIS61/81 are adhered to if the complete inductance and capacitance of the connection cable between FX8*(*).AD****B/I/U*Y/Q*** and VEGADIS61/81 does not exceed the following values: L_{cable} = 212 µH C_{cable} = 1.98 µF If the connection cable supplied by the manufacturer between the VEGAFLEX FX8*(*).AD****B/I/U*Y/Q*** and the VEGADIS61/81 is used, the following values have to be observed: L_i` = 0.62 µH/m $C_{i\ wire/wire}$` = 132 pF/m $C_{i\ wires/shield}$` = 208 pF/m	Ex ia IIC
HF circuit ..... (Coaxial connection cable)	in type of protection „Intrinsic Safety" In the execution with coaxial connection cable between housing for the electronics and measuring sensor housing, a length of the provided cable of 50 m is permissible.	Ex ia IIC

The intrinsically safe circuits of the VEGAFLEX FX8*(*).AD****B/I/U*Y/Q*** are galvanically connected with the earth potential via the internal and external earth terminal.

VEGAFLEX FX8*(*).AD**B/I/U*D/W*****

Operation and indication module circuit ..... (Spring contacts)	in type of protection „Intrinsic Safety" Only for connection to the VEGA operation and indication module PLICSCOM or the interface adapter VEGACONNECT.	Ex ia IIC
HF circuit ..... (Coaxial connection cable)	in type of protection „Intrinsic Safety" In the execution with coaxial connection cable between housing for the electronics and measuring sensor housing, a length of the provided cable of 50 m is permissible.	Ex ia IIC

The intrinsically safe circuits of the VEGAFLEX FX8*(*).AD****B/I/U*D/W*** are galvanically connected with the earth potential via the internal and external earth terminal.

If the microwave sensors are used in explosion hazardous areas for
EPL Ga/Gb applications, the permissible temperature range in the area of the electronics/at the measuring sensor dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range (electronics, zone 1)	Medium temperature range (measuring sensor, zone 0)
T6	-50 °C ... +46 °C	-20°C ... +60 °C
T5, T4, T3, T2, T1	-50 °C ... +60 °C	-20°C ... +60 °C

The measuring sensors are allowed to be operated in an explosion hazardous area for EPL Ga applications, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).
If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).
If the measuring sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.

If the microwave sensors are used in explosion hazardous areas for
EPL Gb applications, the permissible temperature range in the area of the electronics/at the measuring sensor dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range (electronics)	Medium temperature range (measuring sensor)
T6	-50 °C ... +46 °C	-60 °C ... +85 °C
T5	-50 °C ... +60 °C	-60 °C ... +100 °C
T4	-50 °C ... +60 °C	-60 °C ... +135 °C
T3	-50 °C ... +60 °C	-60 °C ... +200 °C
T2	-50 °C ... +60 °C	-60 °C ... +300 °C
T1	-50 °C ... +60 °C	-60 °C ... +450 °C

If the measuring sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.
If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

VEGAFLEX FX86(*).AD****A/H/B/I/U*****, low-temperature execution down to -196 °C

If the microwave sensors are used in explosion hazardous areas for
EPL Gb applications, the permissible temperature range in the area of the electronics/at the measuring sensor dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range (electronics)	Medium temperature range (measuring sensor)
T6	-50 °C ... +46 °C	-196 °C ... +85 °C
T5	-50 °C ... +60 °C	-196 °C ... +100 °C
T4	-50 °C ... +60 °C	-196 °C ... +135 °C
T3	-50 °C ... +60 °C	-196 °C ... +200 °C
T2	-50 °C ... +60 °C	-196 °C ... +300 °C
T1	-50 °C ... +60 °C	-196 °C ... +450 °C

If the measuring sensors of the microwave sensors VEGAFLEX FX86(*).AD****A/H/B/I/U***** are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.
If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

The ambient temperature derating
at process temperatures up to +150 °C, +200 °C, +250 °C, +280 °C, +450 °C and down to -196 °C has to be taken from the manual of the manufacturer.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2012 EN 60079-1:2007 EN 60079-11:2012
EN 60079-26:2007

(16) The test documents are listed in the test report No. 13 203 119800.

(17) Special conditions for safe use

1. At the plastic parts of the microwave sensors type series VEGAFLEX FX8*(*).AD****A/H/B/I/U***** there is a danger of ignition by electrostatic discharge.
   Observe manual of the manufacturer and warning label.
2. For EPL Ga/Gb applications, at the metallic parts of the microwave sensors type series VEGAFLEX FX8*(*).AD****A/H/B/I/U***** made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
3. For EPL Ga/Gb applications and at risks by pendulum or vibration the respective parts of the microwave sensors type series VEGAFLEX FX8*(*).AD**** A/H/B/I/U***** have to be secured effectively against these dangers. Observe manual of the manufacturer.
4. For EPL Ga/Gb applications, the medium tangent materials have to be resistant to the media. Observe manual of the manufacturer
5. The flameproof housing of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60079-0 and IEC 60079-1. The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.
6. VEGAFLEX FX8*(*).AD****B/I/U*****: The PA terminal of the Ex-d connection room (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.

(18) Essential Health and Safety Requirements

no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body

Meyer

Hanover office, Am TÜV 1, 30519 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

Translation

(1) # EC-Type-Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**

(3)	**Certificate Number**	**TÜV 12 ATEX 098525 X**
(4)	for the equipment:	Microwave sensors type series VEGAFLEX FX8*(*).*D**** A/H/B/I/U*****
(5)	of the manufacturer:	VEGA Grieshaber KG
(6)	Address:	Am Hohenstein 113 77761 Schiltach Germany
	Order number:	8000405997
	Date of issue:	2012-06-12

(7) The design of this equipment or protective system and any acceptable variation thereto are specified in the schedule to this EC-Type-Examination Certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 12 203 098525.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2009 EN 60079-1:2007 EN 60079-11:2007
EN 60079-26:2007

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

Ex II 1/2 G resp. II 2 G Ex d ia IIC T6 ... T1 Ga/Gb resp. Gb

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body

Schwedt

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(13) SCHEDULE

(14) EC-Type-Examination Certificate No. TÜV 12 ATEX 098525 X

(15) Description of equipment

The microwave sensors type series VEGAFLEX FX8*(*).*D****A/H/B/I/U***** executed in type of protection flameproof enclosures "d" and intrinsic safety "i" are used for evaluation of the distance between a product surface and the sensor via high-frequency microwave pulses.
The microwave sensors emit high-frequency microwave pulses, which are carried along a measuring rod resp. a measuring cable.
The electronics evaluate the delay time of the signals reflected by the product surface to calculate the distance to this surface.
The VEGAFLEX microwave sensors type series VEGAFLEX FX8*(*).*D****H***** are 2 wire 4-20 mA sensors with superposed HART signal and built-in galvanically separating barrier P3-2LH.

The VEGAFLEX microwave sensors type series VEGAFLEX FX8*(*).*D****A***** are 2 wire 4-20 mA sensors with superposed HART signal, with built-in galvanically separating barrier P3-2LH and with additional SIL qualification.

The VEGAFLEX microwave sensors type series VEGAFLEX FX8*(*).*D****U***** are 4 wire sensors with built-in barrier P3-MODBUS connected with earth potential and with auxiliary energy supply and a MODBUS communication circuit.

The VEGAFLEX microwave sensors type series VEGAFLEX FX8*(*).*D****B/I***** are 4 wire sensors with built-in barrier P3-4LH connected with earth potential and with auxiliary energy supply and 4-20 mA sensor circuit, superposed with a HART signal.

Electrical data for the non intrinsically safe circuits in the Ex d connection room

VEGAFLEX FX8*(*).*D**H/A***** with galvanically separating barrier P3-2LH**

Supply and signal circuit	U = 14 ... 35 V d. c.
(Terminals KL1/1, KL1(2)	U_m = 253 V a. c.

VEGAFLEX FX8*(*).*D**U***** with barrier P3-MODBUS, connected with earth potential**

Supply and signal circuit	U = 8 ... 32 V d. c.
(Terminals KL1[+], KL2[-])	U_m = 253 V a. c.
Signal circuit	U = 5 V MODBUS signal (telegram)
(Terminals MB[+], MB[-])	U_m = 253 V a. c.
USB connection	U = 5 V USB signal (USB protocol)
(6 pole USB mini bushing)	U_m = 253 V a. c.

VEGAFLEX FX8*(*).*D**B***** with barrier P3-4LH, connected with earth potential**

Supply and signal circuit ..... (Terminals KL1[+], KL2[-])	U = 90 ... 253 V a. c. U_m = 253 V a. c.
Active 4-20 mA signal circuit ..... (Terminals KL5[+], KL7[-])	I_{out} = 4-20 mA with superposed HART signal U_m = 60 V a. c./d. c.
Passive 4-20 mA signal circuit ..... (Terminals KL6[+], KL7[-])	I_{in} = 4-20 mA with superposed HART signal U_m = 60 V a. c./d. c.

VEGAFLEX FX8*(*).*D**I***** with barrier P3-4LH, connected with earth potential**

Supply and signal circuit ..... (Terminals KL1[+], KL2[-])	U = 9.6 ... 42 V a. c./48 V d. c. U_m = 253 V a. c.
Active 4-20 mA signal circuit ..... (Terminals KL5[+], KL7[-])	I_{out} = 4-20 mA with superposed HART signal U_m = 60 V a. c./d. c.
Passive 4-20 mA signal circuit ..... (Terminals KL6[+], KL7[-])	I_{in} = 4-20 mA with superposed HART signal U_m = 60 V a. c./d. c.

Electrical data for the intrinsically safe circuits in the Ex i connection room

VEGAFLEX FX8*(*).*D**H/A*****

Operation and indication circuit ..... (Terminals 5, 6, 7, 8)

in type of protection „Intrinsic Safety" Ex ia IIC
Only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 or VEGADIS81.
The rules for the interconnection of intrinsically safe circuits between the VEGAFLEX FX8*(*).*D****A/H***** and the VEGADIS61/81 are adhered to if the complete inductance and capacitance of the connection cable between VEGAFLEX FX8*(*).*D****A/H***** and VEGADIS61/81 does not exceed the following values:

L_{cable} = 212 µH
C_{cable} = 1.98 µF

If the connection cable supplied by the manufacturer between the VEGAFLEX FX8*(*).*D****A/H***** and the VEGADIS61/81 is used, the following values have to be observed:

L_i' = 0.62 µH/m
$C_{i\ wire/wire}'$ = 132 pF/m
$C_{i\ wires/shield}'$ = 208 pF/m

VEGAFLEX FX8*(*).*D**A/H/B/I/U*****

Operation and indication module circuit ..... (Spring contacts)	in type of protection „Intrinsic Safety" Ex ia IIC Only for connection to the VEGA operation and indication module PLICSCOM or the interface adapter VEGACONNECT.
HF circuit ..... (Coaxial connection cable)	in type of protection „Intrinsic Safety" Ex ia IIC In the execution with coaxial connection cable between housing for the electronics and measuring sensor housing, a length of the provided cable of 50 m is permissible.

The intrinsically safe circuits of the **VEGAFLEX FX8*(*).*D****H/A***** are safe galvanically separated from the non intrinsically safe circuit up to the peak value of the voltage of 375 V.

The intrinsically safe circuits of the **VEGAFLEX FX8*(*).*D****B/I/U***** are galvanically connected with the earth potential via the internal and external earth terminal.

If the microwave sensors are used in explosion hazardous areas for EPL Ga/Gb applications, the permissible temperature range in the area of the electronics/at the measuring sensor dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range (electronics, zone 1)	Medium temperature range (measuring sensor, zone 0)
T6	-40 °C ... +46 °C	-20°C ... +60 °C
T5, T4, T3, T2, T1	-40 °C ... +60 °C	-20°C ... +60 °C

The measuring sensors are allowed to be operated in an explosion hazardous area for EPL Ga applications, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).
If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).
If the measuring sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.

If the microwave sensors are used in explosion hazardous areas for EPL Gb applications, the permissible temperature range in the area of the electronics/at the measuring sensor dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range (electronics)	Medium temperature range (measuring sensor)
T6	-40 °C ... +46 °C	-40 °C ... +85 °C
T5	-40 °C ... +60 °C	-40 °C ... +100 °C
T4	-40 °C ... +60 °C	-40 °C ... +135 °C
T3	-40 °C ... +60 °C	-40 °C ... +200 °C
T2	-40 °C ... +60 °C	-40 °C ... +300 °C
T1	-40 °C ... +60 °C	-40 °C ... +450 °C

If the measuring sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.
If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

VEGAFLEX FX86(*).*D****A/H/B/I/U*****, low-temperature execution down to -196 °C

If the microwave sensors are used in explosion hazardous areas for EPL Gb applications, the permissible temperature range in the area of the electronics/at the measuring sensor dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range (electronics)	Medium temperature range (measuring sensor)
T6	-40 °C ... +46 °C	-196 °C ... +85 °C
T5	-40 °C ... +60 °C	-196 °C ... +100 °C
T4	-40 °C ... +60 °C	-196 °C ... +135 °C
T3	-40 °C ... +60 °C	-196 °C ... +200 °C
T2	-40 °C ... +60 °C	-196 °C ... +300 °C
T1	-40 °C ... +60 °C	-196 °C ... +450 °C

If the measuring sensors of the microwave sensors VEGAFLEX FX86(*).*D**** A/H/B/I/U ***** are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.
If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

Schedule EC-Type Examination Certificate No. TÜV 12 ATEX 098525 X

All types VEGAFLEX FX8*(*).*D**** A/H/B/I/U*****

The ambient temperature derating at process temperatures up to +150 °C, +200 °C, +250 °C, +280 °C and down to -196 °C has to be taken from the manual of the manufacturer.

(16) Test documents are listed in the test report No. 12 203 098525

(17) Special conditions for safe use

1. At the plastic parts of the microwave sensors type series VEGAFLEX FX8*(*).*D****A/H/B/I/U***** there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.

2. For EPL Ga/Gb applications, at the metallic parts of the microwave sensors type series VEGAFLEX FX8*(*).*D**** A/H/B/I/U***** made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.

3. For EPL Ga/Gb applications and at risks by pendulum or vibration the respective parts of the microwave sensors type series VEGAFLEX FX8*(*).*D**** A/H/B/I/U***** have to be secured effectively against these dangers. Observe manual of the manufacturer.

4. For EPL Ga/Gb applications, the medium tangent materials have to be resistant to the media. Observe manual of the manufacturer

5. The flameproof housing of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to EN 60079-0 and EN 60079-1. The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.

6. VEGAFLEX FX8*(*).*D****B/I/U*****: The PA terminal of the Ex-d connection room (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.

(18) Essential Health and Safety Requirements

no additional ones

49562-EN-170616
49562-EN-190529