Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 03 ATEX 2060 X **Issue: 01**

(4) Product: Level measuring instruments on microwave basis type series VEGAPULS PS62(*).CX****H/D**** resp. VEGAPULS PS66/68/SR68(*).CX****H**** resp. VEGAPULS PS61/63(*).CX***H/D****resp.VEGAPULS PS65(*).CX***H****.

(5) Manufacturer: VEGA Grieshaber KG.

(6) Address: Am Hohenstein 113, 77761 Schiltach, Germany.

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 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 Test Report PTB Ex 18-27088.

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

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

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of 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 in accordance to the Directive 2014/34/EU. Further requirements of the Directive 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:

1 G, 1/2 G oder 2 G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb

Konformitätsbewertungsstelle, Sektor Explosionsschutz Braunschweig, March 20, 2018
On behalf of PTB:

Dr.-Ing. F. Lienesch
Direktor und Professor

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(13) # SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 03 ATEX 2060 X, Issue: 01**

(15) Description of Product

The microwave sensor in Hardware version ≤1.10 and Software version ≤3.90:
Type series VEGAPULS PS62(*).CX****H/D**** resp. VEGAPULS PS66/68(*).CX****H**** resp. VEGAPULS PS61/63(*).CX***H/D**** resp. VEGAPULS PS65(*).CX***H****.

The microwave sensor in Hardware version ≥ 2.00 and Software version ≥ 4.00:
Type series VEGAPULS PS62(*).CX**** H/D**** resp. VEGAPULS PS68/SR68(*).CX****H**** resp. VEGAPULS PS61/63(*).CX***H/D**** resp. VEGAPULS PS65(*).CX***H****.

The microwave sensors consists of an electronic housing with the corresponding analyzing electronic system with integrated electronic assemblies PS60HC resp. PS60HK resp. PS60HS resp. PLICSZEKX.-01/-02, with a process connection element and an measuring sensor. They are used for level measurement in potentially explosive atmospheres requiring category- 1, category-1/2 or category-2 equipment. The enclosure may be optionally fitted with the control and display module "PLICSCOM" or PLICSCOM(*).*B/W/U* (TÜV 15 ATEX 161127 U) or VEGACONNECT with digital outputs for connecting to the external display VEGADIS61/81 for parameterization or visualization.

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Extract from the type key

VEGAPULS PS62/66/68/SR68(*). C * * * * * * * * * *
a b c d e f g h i j K

ab: Area of validity.

- **CX = ATEX II 1G, 1/2G, 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.**
- CA = ATEX with additional overfill protection.
- CM = ATEX with ship approval.
- CK = ATEX II 1/2G, 2G Ex ia IIC T6...T1 Ga/Gb, Gb +
  ATEX II 1D 1/2D 2D Ex ta ta/tb tb IIIC T... Da, Da/Db, Db IP66
- CI = IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.

c: Version / Material.

de: Process connection / Material.

f: Seal / Process temperature

g: Electronics.

- H = Two-wire signal HART.
- D = Two-wire signal HART with increased sensitivity.

VEGAPULS PS62(*).CX**H/D****
Hardware version ≤ 1.10, Software version ≤ 3.90 resp.
Hardware version ≥ 2.00, Software version ≥ 4.00.

VEGAPULS PS66/68(*).CX**H****
Hardware version ≤ 1.10, Software version ≤ 3.90.

VEGAPULS PS66/68/SR68(*).CX**H****
Hardware version ≥ 2.00, Software version ≥ 4.00.

h: Enclosure / Protection.

i: Cable gland / Plug connection

j: Display / Adjustment module PLICSCOM.

k: Additional equipment.

The full type code can be found in the safety instructions.

VEGAPULS PS61/63/65(*). C * * * * * * * * * *
a b c d e f g h i j

ab: Area of validity.

CX = ATEX II 1G, 1/2G, 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.

CA = ATEX with additional overfill protection.

CM = ATEX with ship approval.

CK = ATEX II 1/2G, 2G Ex ia IIC T6...T1 Ga/Gb, Gb +
ATEX II 1D 1/2D 2D Ex ta ta/tb tb IIIC T... Da, Da/Db, Db IP66

CI = IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.

c: Version / Process temperature / Material.

de: Process connection / Material.

f: Electronics.

H = Two- wire signal HART.

D = Two- wire signal HART with increased sensitivity.

VEGAPULS PS61/63(*).CX*H/D****
Hardware version ≤ 1.10, Software version ≤ 3.90 resp.
Hardware version ≥ 2.00, Software version ≥ 4.00.

VEGAPULS PS65(*).CX*H****
Hardware version ≤ 1.10, Software version ≤ 3.90 resp.
Hardware version ≥ 2.00, Software version ≥ 4.00.

g: Gehäuse / Schutzart / Enclosure / Protection.

h: Cable gland / Plug connection

i: Display / Adjustment module PLICSCOM.

j: Additional equipment.

The full type code can be found in the safety instructions.

Category 1-equipment

The level measuring devices are installed in potentially explosive atmospheres requiring category 1-equipment.

Category-1/2 equipment

The electronics housing is installed in potentially explosive atmospheres requiring category-2 equipment. The process connectors are installed in the partition separating areas requiring category-2 or category-1 equipment. The sensor is installed in the potentially explosive atmosphere for category-1 equipment.

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Category-2 equipment

The microwave sensors are installed in potentially explosive atmospheres requiring category 2 equipment.

For the relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made as follows:

The microwave sensor in Hardware version ≤ 1.10 and Software version ≤ 3.90:
Type series VEGAPULS PS62(*).CX****H/D**** resp. VEGAPULS PS66/68(*).CX****H**** resp. VEGAPULS PS61/63(*).CX***H/D**** resp. VEGAPULS PS65(*).CX***H****:

For the relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the different type series VEGAPULS PS6*(*).CX** must be observed from the safety instruction document nos. 34231-DE, 34234-DE, 34236-DE, 34237-DE, 34238-DE and 34241-DE, clause 4.

The microwave sensor in Hardware version ≥ 2.00 and Software version ≥ 4.00:
Type series VEGAPULS PS62(*).CX**** H/D**** resp. VEGAPULS PS68/SR68(*).CX****H**** resp. VEGAPULS PS61/63(*).CX***H/D**** resp. VEGAPULS PS65(*).CX***H****:

For the relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the different type series VEGAPULS PS6*(*).CX** must be observed from the safety instruction document nos. 37310-DE, 37311-DE, 37312-DE, 37313-DE, 37314-DE and 39575-DE, clause 4.

Category 1-Equipment

For applications requiring category-1 equipment, the media process pressure has to be between 80 kPa and 110 kPa (0,8 bar and 1,1 bar).
For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer. For further information refer to the safety instruction document.

Category 1/2-equipment

The process pressure of the media for use with required category 1/2-equipment must be in the range of 80 kPa and 110 kPa (0,8 bar and 1,1 bar).
When the level measuring devices are operated with higher temperatures than indicated in the safety instructions the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values provided in the safety instructions. In the process it shall be considered that the measuring sensor (even in case of failure) does not show any self-heating and that the operator is responsible for the safe operation of the plant regarding the pressures / temperatures of the materials used.

For operating conditions without explosive mixtures, the manufacturer indications are applicable and must be considered. For further information refer to the safety instruction document.

Category 2-equipment

When the level measuring devices are operated with higher temperatures than indicated in the safety instructions, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values provided in the safety instructions. In the process it shall be considered that the measuring sensor (even in case of failure) does not show any self-heating and that the operator is responsible for the safe operation of the plant regarding the pressures / temperatures of the materials used.

For operating conditions without explosive mixtures the manufacturer indications are applicable and must be considered. For further information refer to the safety instruction document. For further information refer to the safety instruction document.

Electrical data:

Hardware version ≤ 1.10, Software version ≤ 3.90:	**VEGAPULS PS66/68(*).CX****H**** **VEGAPULS PS62(*).CX****H/D**** **VEGAPULS PS65(*).CX***H**** **VEGAPULS PS61/63(*).CX***H/D****
Supply and signal circuit (terminals 1 [+], 2 [-] in the electronic compartment or for the 2-cell enclosure version in the terminal compartment of VEGAPULS)	In type of protection Intrinsic Safety Ex ia IIC For connection to a certified intrinsically safe circuit. Maximum values: U_i = 30 V I_i = 131 mA P_i = 983 mW C_i negligibly low or in the version with fixed connected cable VEGAPULS typen series PS61/62/63/65/66/68.C(*)****D/H3/4/5/9*** $C_i'_{Core/Core}$ = 58 pF/m, $C_i'_{Core/Screen}$ = 270 pF/m L_i negligibly low or in the version with fixed connected cable VEGAPULS typen series PS61/62/63/65/66/68.C(*)****H3/4/5/9*** $L_i' \leq$ = 0,55 µH/m

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Control and display circuit (terminals Nos. 5, 6, 7, 8 in the electronic compartment or plug connector for the 2-chamber enclosure version)	In type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61/81 (PTB 02 ATEX 2136 X). The rules for interconnection of intrinsically safe circuits between the microwave sensors VEGAPULS PS6*(*).CX*** and the external VEGADIS61/81 display unit are complied with if the total inductance and capacitance of the connecting line between the microwave sensors VEGAPULS PS6*(*).CX*** and VEGADIS61 (L_{cable} = 100 µH and C_{cable} = 2.8 µF) is not exceeded. By using of the provided VEGA connecting cable between VEGAPULS PS6*(*).CX*** and the external display unit VEGADIS61/81 the following cable inductance and cable capacitance are taken into consideration from a length ≥ 50 m: L_i' = 0,62 µH/m $C_i'_{core/core}$ = 132 pF/m $C_i'_{core/screen}$ = 208 pF/m $C_i'_{screen/screen}$ = 192 pF/m
Control and display module circuit (spring contacts in the electronic compartment, additionally for the 2-chamber-enclosure version in the terminal compartment)	In type of protection Intrinsic Safety Ex ia IIC Only for connection to the VEGA control and display module PLICSCOM or PLICSCOM*B/W/U (TÜV 15 ATEX 161127 U) With the 2-cell-enclosure version the operating and display module may either be fitted in the electronics compartment or in the terminal compartment.
Communication circuit I²C-bus socket in the "Ex i" terminal compartment)	In type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT (PTB 01 ATEX 2007, PTB 07 ATEX 2013X).

The metal elements of the level measuring devices based on microwave technology type series VEGAPULS PS6*** are electrically connected to the earth terminals.

In the versions of the microwave sensors VEGAPULS PS6*** the intrinsically safe circuit is electrically isolated from elements that may be earthed.

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The intrinsically safe signal and supply circuits are safely galvanic isolated from each other.

Electrical data:

Hardware version ≥ 2.00, Software version ≥ 4.00:	**VEGAPULS PS66/68/SR68 (*).CX****H**** **VEGAPULS PS62(*).CX****H/D**** **VEGAPULS PS65(*).CX***H**** **VEGAPULS PS61/63(*).CX***H/D****
Supply and signal circuit (terminals 1 [+], 2 [-] in the electronic compartment or for the 2-chamber-enclosure version in the terminal compartment of the VEGAPULS)	In type of protection Intrinsic Safety Ex ia IIC. For connection to a certified intrinsically safe circuit. Maximum values: U_i = 30 V I_i = 131 mA P_i = 983 mW Ci negligibly low or in the version with fixed cable, $C_i'_{core/core}$ = 58 pF/m, $C_i'_{core/screen}$ = 270 pF/m $L_i \leq 5$ µH or in the version with fixed cable $L_i = L'(0{,}55$ µH/m) + 5 µH
Control and display circuit (terminals Nos. 5, 6, 7, 8 in the electronic compartment or plug connector for the 2-chamber-enclosure version)	In type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61/81 (PTB 02 ATEX 2136 X). The rules for interconnection of intrinsically safe circuits between the microwave sensors VEGAPULS PS6*(*).CX*** and the external VEGADIS61/81 display unit are complied with if the total inductance and capacitance of the connecting line between the microwave sensors VEGAPULS PS6*(*).CX*** and VEGADIS61 (L_{cable} = 310 µH and C_{cable} = 2 µF) is not exceeded. By using of the provided VEGA connecting cable between VEGAPULS PS6*(*).CX*** and the external display unit VEGADIS61/81 the following cable inductance and cable capacitance are taken into consideration from a length > 50 m: L_i' = 0,62 µH/m

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	$C_i'_{core/core}$ = 132 pF/m $C_i'_{core/screen}$ = 208 pF/m $C_i'_{screen/screen}$ = 192 pF/m
Control and display module circuit (spring contacts in the electronic compartment, additionally for the 2-chamber-enclosure version in the terminal compartment)	In type of protection Intrinsic Safety Ex ia IIC For connection to the VEGA control and display module PLICSCOM or PLICSCOM*B/W/U (TÜV 15 ATEX 161127 U) or VEGACONNECT (PTB 07 ATEX 2013 X). With the 2-cell-enclosure version the operating and display module may either be fitted in the electronics compartment or in the terminal compartment.

The metal elements of the level measuring devices based on microwave technology type series VEGAPULS PS6*/SR6*** are electrically connected to the earth terminals.

In the versions of the microwave sensors VEGAPULS PS6*/SR6*** the intrinsically safe circuit is electrically isolated from elements that may be earthed.

The intrinsically safe signal and supply circuits are safely galvanic isolated from each other.

Modifications to the EC-Type-Examination Certificate:

Update to newest standard versions of EN 60079-0, EN 60079-11 and EN 60079-26:2015.

Declaration of model coding in the EU-Type Examination Certificate in protection type "Ex ia":
The microwave sensor in Hardware version ≤ 1.10 and Software version ≤ 3.90:
Type series VEGAPULS PS62(*).CX****H/D**** resp. VEGAPULS PS66/68(*).CX****H**** resp. VEGAPULS PS61/63(*).CX***H/D**** resp. VEGAPULS PS65(*).CX***H****.
The microwave sensor in Hardware version ≥ 2.00 and Software version ≥ 4.00:
Type series VEGAPULS PS62(*).CX**** H/D**** resp. VEGAPULS PS68/SR68(*).CX****H**** r esp. VEGAPULS PS61/63(*).CX***H/D**** resp. VEGAPULS PS65(*).CX***H****.

Change of the internal construction, as well as an adjustment of the electrical data related of the alternate use of the electronic modules PS60* in the hardware versions ≤ 1.10 und ≥ 2.20 and the Software versions ≤ 3.90 und ≥ 4.00, as well as the alternative electronic module PLICSZEKX.-01/-02.(PTB 14 ATEX 2017X issue 01)

Consideration of the EC-Type Examination Certificate TÜV 15 ATEX 161127 U for the inclusion of display – and adjustment module PLICSCOM or PLICSCOM(*).*B/W/U* (TÜV 15 ATEX 161127 U)in the "Ex-i" compartment with additional operating modes.

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(16) Test Report PTB Ex 18-27088

(17) Specific conditions of use

1) The microwave sensors type series VEGAPULS PS61/62/63(*).CX(*)***H/D**** and VEGAPULS PS65/66/68/SR68(*).CX(*)***H**** in all hardware and software versions which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
2) The microwave sensors with plastic enclosure, metal enclosure with display window, with enclosure parts made of plastic as well as sensors including surfaces that can become charged electrostatically (note warning label).
3) The microwave sensors in the versions with standpipe or antenna extension shall be installed in such a way that contact between the antenna and the tank wall will be excluded with sufficient safety, considering the tank installations and the flow conditions inside the tank.
4) When used as category-1 or category-1/2 equipment, the level measuring instruments shall be connected to the equipotential bonding conductor (contact resistance ≤ 1MΩ) (e.g. using the earthing terminal) in order to prevent metal elements from being charged electrostatically.
5) For applications where equipment of category- 1 or category- 1/2 is required, all parts of the microwave sensors which are in contact with the medium must only be used in such media, against which the materials are sufficiently resistant.
6) For the microwave sensors in the version with ball valve, it must be observed that the ball valve is closed before the flange connection is disconnected.
7) For the microwave sensors in the version with flushing connection, it must be observed that the Microwave sensors, when operating as category -1/2 equipment, have protection class IP 67 at the connection to the non-return valve. After removing the check valve or the rinsing device on the non-return valve, the opening must be sealed with a suitable screw plug so that protection class IP 67 is maintained.

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(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, March 20, 2018

Dr.-Ing. F. Lienesch
Direktor und Professor