

VEGA

Safety instructions

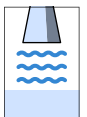
VEGAPULS PS62.C***D/H******

KOSHA 11-AV4BO-0473

Ex ia IIC T6



41890



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Please note:

These safety instructions are part of the documentation:

- VEGAPULS 62
 - 36503 - 4 ... 20 mA/HART - two-wire
 - 36504 - 4 ... 20 mA/HART - four-wire
 - 36507 - 4 ... 20 mA/HART - two-wire - standpipe version
 - 36508 - 4 ... 20 mA/HART - four-wire - standpipe version
 - 41913 - KOSHA Certificate of Conformity 11-AV4BO-0473

1 Area of applicability

These safety instructions apply to the radar sensor VEGAPULS PS62 series VEGAPULS PS62.C****D/H**** according to KOSHA Certificate of Conformity 11-AV4BO-0473 (certificate number on the type label) and for all instruments with the number of the safety instruction (41890) on the type label.

2 General information

The level measuring instrument VEGAPULS PS62.C****D/H**** is based on radar technology and is used to detect the distance between product surface and sensor by means of high frequency, electromagnetic waves in the GHz range. The electronics uses the running time of the signals reflected by the product surface to calculate the distance to the product surface.

The VEGAPULS PS62.C****D/H**** consist of an electronics housing, a process connection element and a sensor (the antenna). As an option the indicating and adjustment module can also be integrated.

The measured products can also be combustible liquids, gases, mist or vapour.

The VEGAPULS PS62.C****D/H**** are suitable for use in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring instruments of Zone 0, Zone 0/Zone 1 oder Zone 1.

If the VEGAPULS PS62.C****D/H**** are installed and operated in hazardous areas, the general Ex installation regulations IEC 60079-14 as well as these safety instructions must be observed.

The operating instructions as well as the corresponding valid Ex mounting regulations and standards for electrical equipment must be observed.

The installation of explosion-endangered systems must always be carried out by qualified personnel.

2.1 Zone 0 instrument

The VEGAPULS PS62.C****D/H**** are installed in hazardous areas requiring Zone 0 instruments.

2.2 Zone 0/Zone 1 instrument

The electronics housing is installed in hazardous areas requiring instruments of Zone 1. The process connection element is installed in the separating wall, which separates areas requiring instruments of Zone 0 or Zone 1. The antenna system with the mechanical fixing element is installed in hazardous areas requiring instruments of Zone 0.

2.3 Zone 1 instrument

The VEGAPULS PS62.C****D/H**** are installed in hazardous areas requiring Zone 1 instruments.

3 Technical data

3.1 Electrical data

Ignition protection type intrinsic safety Ex i

Power supply and signal circuit: (terminals 1[+], 2[-] in "Ex-i" electronics compartment; with double chamber housing version in connection compartment)

In ignition protection type intrinsic safety Ex ia IIC/IIB
Only for connection to a certified, intrinsically safe circuit.

Maximum values:

$$U_i = 30 \text{ V}$$

$$I_i = 131 \text{ mA}$$

$$P_i = 983 \text{ mW}$$

The effective internal capacitance C_i is negligibly small.

Effective internal inductance $L_i = 5 \mu\text{H}$.

In the version with fix mounted connection cable $L_i = 55 \mu\text{H/m} + 5 \mu\text{H}$, $C_{i \text{ wire/wire}} = 58 \text{ pF/m}$ and $C_{i \text{ wire/screen}} = 270 \text{ pF/m}$ must be taken into account.

Indicating and adjustment circuit: (terminals 5, 6, 7, 8 in "Ex-i" electronics compartment or plug connection; with double chamber housing version in the connection compartment)

In ignition protection type intrinsic safety Ex ia IIC
For connection to the intrinsically safe circuit of the associated external indicating instrument VEGADIS 61.

The rules for the interconnection of intrinsically safe circuits between VEGAPULS PS62.C****D/H**** and the external indicating unit VEGADIS 61 are fulfilled, provided that the total inductance and total capacitance of the connection cable between VEGAPULS PS62.C****D/H**** and the external indicating unit VEGADIS 61 $L_{\text{cable}} = 310 \mu\text{H}$ and $C_{\text{cable}} = 2 \mu\text{F}$ are not exceeded.

When using the delivered VEGA connection cable between VEGAPULS PS62.C****D/H**** and the external indicating unit VEGADIS 61, the following listed cable inductances L_i and cable capacitances C_i must be taken into account with a cable length $\geq 50 \text{ m}$.

$$L_i = 0.62 \mu\text{H/m}$$

$$C_{i \text{ wire/wire}} = 132 \text{ pF/m}$$

$$C_{i \text{ wire/screen}} = 208 \text{ pF/m}$$

$$C_{i \text{ screen/screen}} = 192 \text{ pF/m}$$

Indicating and adjustment module circuit: (spring contacts in the "Ex-i" electronics compartment; with double chamber housing version also in the connection compartment)

In ignition protection type intrinsic safety Ex ia IIC
For connection to the indicating and adjustment module PLICSCOM or VEGACONNECT 4.

With the double chamber housing version, the indicating and adjustment module can be installed either in the "Ex-i" electronics compartment or in the connection compartment.

The intrinsically safe circuits are electrically separated from parts which can be grounded.

For applications requiring instruments of Zone 1, the intrinsically safe power supply and signal circuit can correspond to protection class ia or ib. For connection to a circuit with protection class ib, the ignition protection type identification is Ex ib IIC T6.

For applications requiring equipment of Zone 1 or Zone 0/Zone 1, the intrinsically safe power supply and signal circuit must correspond to protection class ia.

For applications requiring instruments of Zone 0 resp. Zone 0/Zone 1 the VEGAPULS PS62.C*****/H**** is preferably connected to associated apparatus with galvanically isolated, intrinsically safe circuits.

4 Application conditions

The max. permissible ambient temperatures depending on the temperature classes are specified in the following tables.

Zone 0 instrument

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
T6	-20 ... +50 °C	-20 ... +50 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-20 ... +60 °C

For applications requiring instruments of Zone 0 the process pressure of the media must be between 0.8 ... 1.1 bar. For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Zone 0/Zone 1 instrument

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
T6	-20 ... +60 °C	-40 ... +50 °C
T5	-20 ... +60 °C	-40 ... +65 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +82 °C

For applications requiring instruments of Zone 0/Zone 1 the process pressure of the media must be between 0.8 ... 1.1 bar. If the VEGAPULS PS62.C*****/H**** are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values specified in the above table. For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Zone 1 instrument

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
T6	-60 ... +85 °C	-40 ... +50 °C
T5	-60 ... +100 °C	-40 ... +65 °C
T4	-60 ... +135 °C	-40 ... +82 °C
T3	-60 ... +200 °C	-40 ... +82 °C
T2	-60 ... +300 °C	-40 ... +82 °C

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
T1	-60 ... +450 °C	-40 ... +82 °C

If the VEGAPULS PS62.C****D/H**** are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values specified in the above table. For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Zone 1 instrument - low temperature version up to -170 °C

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
T6	-170 ... +85 °C	-40 ... +50 °C
T5	-170 ... +100 °C	-40 ... +65 °C
T4	-170 ... +135 °C	-40 ... +82 °C
T3	-170 ... +200 °C	-40 ... +82 °C
T2	-170 ... +300 °C	-40 ... +82 °C
T1	-170 ... +450 °C	-40 ... +82 °C

If the VEGAPULS PS62.C****D/H**** are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values specified in the above table. For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

5 Protection against static electricity

The VEGAPULS PS62.C****D/H**** in versions with electrostatically chargeable plastic parts, such as e.g. plastic housing, metal housing with inspection window or plastic antenna, have a caution label pointing out the safety measures that must be taken with regard to electrostatic charges during operation.



Caution: Plastic parts! Danger of static charge!

- Avoid friction
- No dry cleaning
- Do not mount in areas with flowing, non-conductive products

6 Use of an overvoltage arrester

If necessary, the VEGAPULS PS62.C****D/H**** can be connected to an overvoltage arrester, e. g. type B62-36G from VEGA.

If the VEGAPULS PS62.C****D/H**** are used as Zone 0/Zone 1 instruments, overvoltage protection measures according to IEC 60079-14 chapter 12.3 are not required.

When used as Zone 0 instrument, a suitable overvoltage arrester, e. g. type B62-36G of VEGA (IECEX TUN 07.0002) must be connected according to IEC 60079-14 chapter 12.3, for protection against surges.

7 Versions with antenna extension

The VEGAPULS PS62.C****D/H**** with antenna extension have to be mounted so that the extension is effectively secured against bending or oscillating as well as contact of the sensor to the vessel wall, under consideration of the vessel installations and flow conditions in the vessel.

8 Versions with ball valve

With the VEGAPULS PS62.C****D/H**** in the version with ball valve, make sure that the ball valve is closed before separating the flange connection and that the IP rating IP 67 is maintained when removing the instrument.

9 Grounding

In order to avoid the danger of electrostatic charging of the metallic parts, the VEGAPULS PS62.C****D/H**** must be electrostatically connected to the local potential equalisation (transfer resistance $\leq 1 \text{ M}\Omega$), e.g. via the ground terminal, when used as Zone 0 instrument or Zone 0/Zone 1 instrument.

10 Impact and friction sparks

The VEGAPULS PS62.C****D/H**** in Aluminium/Titanium version must be mounted in such a way that sparks from impact and friction between Aluminium/Titanium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

11 Material resistance

For applications requiring instruments of type Zone 0 or Zone 0/Zone 1 the VEGAPULS PS62.C****D/H**** must only be used in products against which the wetted materials are sufficiently resistant.

12 Installation with swivelling holder

VEGAPULS PS62.C****D/H**** as Zone 0/Zone 1 instrument in the version with swivelling holder must be installed in such a way that, after the antenna has been aligned (by means of the swivelling holder) and the mounting flange screwed on, protection rating IP 67 is maintained.

13 Versions with rinsing connection

With VEGAPULS PS62.C****D/H**** as Zone 0/Zone 1 instrument in the version with rinsing connection, make sure the protection class IP 67 is ensured on the connection to the reflux valve.

After removal of the reflux valve or the rinsing air connection on the reflux valve, the opening has to be closed with an appropriate closing screw, so that protection class IP 67 is maintained. Please make sure that during rinsing processes in the antennas, i.e. when the sensor is cleaned, no hazardous atmosphere is present.

14 Mounting with external indicating unit VEGADIS 61

The intrinsically safe signal circuit between VEGAPULS PS62.C*****D/H**** and the external indicating unit VEGADIS 61 should be set up without grounding. The required insulation voltage is > 500 V AC. When using VEGA connection cable, this requirement is fulfilled. If grounding of the cable screen is required, it must be carried out according to IEC 60079-14 paragr. 12.2.2.3.



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