

Safety instructions

VEGAPULS 62, 63, 66, 67, 68

Dust ignition protection by enclosure

HW \leq 1.10, SW \leq 3.90

IECEX BVS 05.0008 X

4 ... 20 mA/HART - two-wire

4 ... 20 mA/HART - four-wire



Document ID: 55991



VEGA

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Supplementary documentation:

- Operating Instructions VEGAPULS 62, 63, 66, 67, 68
- Certificate of Conformity BVS 05.0008 X , Issue 6 (Document ID: 55993)

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1 Area of applicability

These safety instructions apply to radar sensors VEGAPULS type VEGAPULS PS62/63. GI****H/V/E/D****, VEGAPULS PS66/67/68. GI****H/V**** according to Certificate of Conformity IECEx BVS 05.0008 X issue 6 (certificate number on the type label) and for all instruments with the number of the safety instruction (55991) on the type label.

2 General information

The level measuring instrument VEGAPULS PS6*.GI***** is based on radar technology and is used to detect the distance between product surface and sensor (the antenna) 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 radar sensors VEGAPULS PS6*.GI***** consist of a metal housing, a process connection element and a sensor (the antenna). As an option the indication and adjustment module can also be integrated.

The VEGAPULS PS6*.GI***** are used for monitoring or control also in areas with combustible, dust-generating bulk solids requiring instruments of category EPL Da, EPL Da/Db, EPL Da/Dc or EPL Db.

If the VEGAPULS PS6*.GI***** 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 installation regulations or standards that apply for explosion protection of electrical systems must generally be observed.

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

The requirements of IEC 60079-14 e.g. with respect to dust and temperatures must be fulfilled.

EPL Da instrument

The electronics housing and the antennas with the mechanical fixing element are installed in explosion-endangered areas, in areas requiring EPL Da instruments.

EPL Da/Db or EPL Da/Dc instrument

The electronics housing is installed in hazardous areas requiring instruments of EPL Da/Db or EPL Da/Dc. The process connection element is installed in the separating wall, which separates areas requiring instruments of EPL Db, EPL Dc or EPL Da. The antenna system with the mechanical fixing element is installed in hazardous areas requiring instruments of EPL Da.

EPL Db instrument

The electronics housing and the antenna system with the mechanical fixing element are installed in explosion-endangered areas, in areas requiring instruments of EPL Db.

3 Technical data

Electrical data

VEGAPULS PS62/63. GI**E****, VEGAPULS PS62/63/66/68. GI****V****, VEGAPULS PS67. GI****V******

Voltage supply: (terminals 1, 2 in the connection compartment) U = 20 ... 253 V AC, 50/60 Hz or U = 20 ... 253 V DC, max. 1 W

U_m = 253 V AC

Signal current output: (terminals 3, 4 in the connection compartment) 4 ... 20 mA with superimposed HART signal

VEGAPULS PS62/63.GI**D****, VEGAPULS PS62/63/66/68.GI****H****, VEGAPULS PS67.GI****H******

Power supply and signal circuit: (terminals 1[+], 2[-] in electronics compartment; with double chamber housing version in connection compartment) Ignition protection type intrinsic safety Ex ia IIC
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 negligible.

The effective inner inductance L_i is negligible.

The intrinsically safe circuit is electrically isolated from parts which can be grounded. The metallic parts of VEGAPULS PS6*.GI**D/H** are electrically connected with the internal and external earth terminal.

In applications requiring instruments of category EPL Dc, the instruments can be operated also on a non-intrinsically safe circuit. In this case, the connection values of the respective operating instructions manual are applicable for the supply and signal circuit.

Make sure that instruments which were operated on non-intrinsically safe circuits are no longer used as EPL Da/Db or EPL Db instrument.

VEGAPULS PS62/63/66/67/68.GI*****

Display and adjustment circuit: (terminals 5, 6, 7, 8 in electronics compartment) Ignition protection type intrinsic safety Ex ia IIC

Only for connection to an intrinsically safe circuit of the appropriate external display and adjustment unit VEGADIS 61 (BVS 05 ATEX E 023, PTB 02 ATEX 2136 X).

The rules for the interconnection of intrinsically safe circuits between VEGAPULS PS6*.*.* and the external display and adjustment unit VEGADIS 61 are fulfilled, provided that the total inductance and total capacity of the connection cable between VEGAPULS PS6*.*.* and the external display unit VEGADIS 61 $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 2.8 \mu\text{F}$ is not exceeded.

The display and adjustment module integrated in VEGAPULS PS6*.*.* and the connected VEGACONNECT are taken into account.

Communication circuit: (I²C bus socket in the electronics compartment, additionally in the connection compartment with double chamber housing version) Ignition protection type intrinsic safety Ex ia IIC

Only for connection to the intrinsically safe signal circuit of an interface converter VEGACONNECT (PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).

Display and adjustment module circuit: (spring contacts in the electronics compartment, additionally in the connection compartment with double chamber housing version) Ignition protection type intrinsic safety Ex ia IIC

Only for connection to the display and adjustment module.

With the double chamber housing version, the display and adjustment module may be mounted either in the electronics compartment or in the connection compartment.

4 Application conditions

Permissible ambient temperatures

On the sensor (antenna), EPL Da or EPL Db			
VEGAPULS PS62(*)*****X****	X:	2	FKM (SHS FPM 70C3 GLT) and PTFE / -40 ... +130 °C
		3	FFKM (Kalrez 6375) and PTFE / -20 ... +130 °C
		4	FKM (SHS FPM 70C3 GLT) und PTFE / -40 ... +200 °C mit Temperaturzwischenstück (ohne Dampf)
		5	FFKM (Kalrez 6375) and PTFE / -20 ... +200 °C
		7	FFKM (Kalrez 6230) and PTFE / -15 ... +130 °C
		9	FFKM (Kalrez 6230) and PTFE / -15 ... +200 °C with temperature adapter
		B	FKM (SHS FPM 70C3 GLT) and PP / -40 ... +80 °C, max. 3 bar
		D	FFKM (Kalrez 6375) and PP / -15 ... +80 °C, max. 3 bar
VEGAPULS PS63(*)**X****	X:	P	Aseptically encapsulated horn antenna / TFM-PTFE / -40 ... +150 °C
		N	Aseptically encapsulated horn antenna / TFM-PTFE / -40 ... +200 °C
		J	Aseptically encapsulated horn antenna / TFM-PTFE / -196 ... +200 °C
		U	Aseptically encapsulated horn antenna / PTFE (8 mm) / -196 ... +200 °C
		A	Aseptically encapsulated horn antenna / TFM-PTFE (8 mm) / -40 ... +150 °C
		R	Aseptically encapsulated horn antenna / PTFE (8 mm) / -40 ... +200 °C
		G	Aseptically encapsulated horn antenna, Alloy 400 (2.4360) / TFM-PTFE (8 mm) / -10 ... +150 °C
		W	Aseptically encapsulated horn antenna / PCTFE (8 mm) / -40 ... +200 °C
		*	several suitable horn antennas
VEGAPULS PS67(*)**X*****	X:	B	PP / -40 ... +80 °C
		*	several suitable versions
VEGAPULS PS66(*)*****X****	X:	2	FKM (A+P GLT FPM 70.16-06) / -40 ... +150 °C
		3	FFKM (Kalrez 6375) / -20 ... +150 °C
		5	EPDM (A+P 75.5/KW75F) / -40 ... +150 °C
		G	Graphite and ceramic / -60 ... +250 °C
		H	Graphite and ceramic / -60 ... +400 °C
VEGAPULS PS68(*)*****X****	X:	2	FKM (SHS FPM 70C3 GLT) and PTFE / -40 ... +130 °C
		3	FFKM (Kalrez 6375) and PTFE / -20 ... +130 °C
		4	FKM (SHS FPM 70C3 GLT) und PTFE / -40 ... +200 °C mit Temperaturzwischenstück (ohne Dampf)
		5	FFKM (Kalrez 6375) and PTFE / -20 ... +200 °C with temperature adapter
		7	FFKM (Kalrez 6230) and PTFE (FDA) / -15 ... +130 °C
		9	FFKM (Kalrez 6230) and PTFE / -15 ... +200 °C

On the electronics housing, EPL Db	
VEGAPULS PS6* .*****	-40 ... +60 °C

Surface temperature increases

On the sensor (antenna), EPL Da or EPL Db	
VEGAPULS PS62/63/66/67/68.GI*****	Process temperature +2 K
On the electronics housing, EPL Da, EPL Db, EPL Dc	
VEGAPULS PS62/63/66/67/68.GI****H**** VEGAPULS PS62/63.GI****D****	Ambient temperature +86 K
VEGAPULS PS62/63/66/68.GI****V**** VEGAPULS PS62/63.GI****E****	limited to +98 °C by the temperature link

The max. surface temperature of the instrument with which the hazardous dust atmosphere can come into contact, **is the higher** of the two specified surface temperatures on the electronics housing or the sensor/antenna.

Permissible operating pressure on the sensor (antenna)

For operation in hazardous atmospheres the process pressure must be between 0.8 ... 1.1 bar.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

Protection rating

Housing protection classification, EPL Db: IP 66

Sensor (antenna), EPL Da or EPL Db: IP 68

5 Installation/construction

The VEGAPULS PS6*.GI***** must be mounted in such a way that the antenna or tube extensions cannot bend or touch the vessel wall due to the influence of vessel installations and moving bulk solids. This applies especially to lengths over 3 m.

6 Material resistance

The VEGAPULS PS6*.GI***** must only be used in media against which the materials of the wetted parts are sufficiently resistant.

7 Grounding

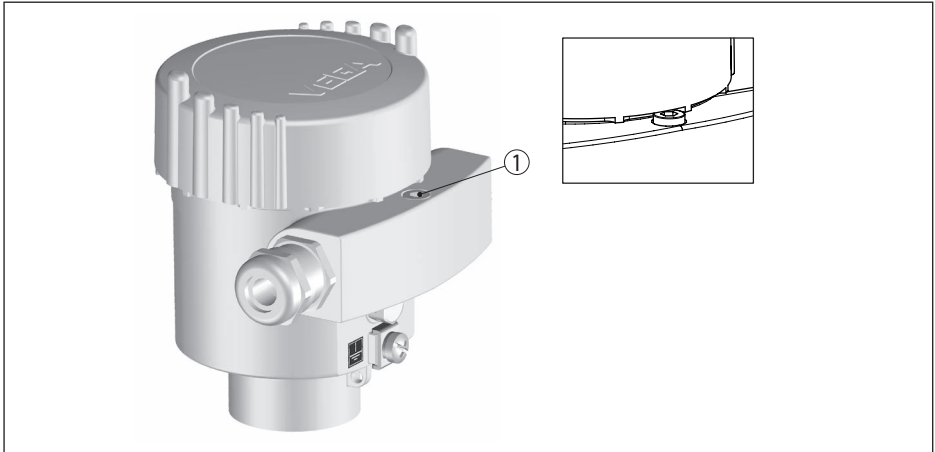
The VEGAPULS PS6*.GI***** must be grounded.

8 Locking mechanism of housing cover

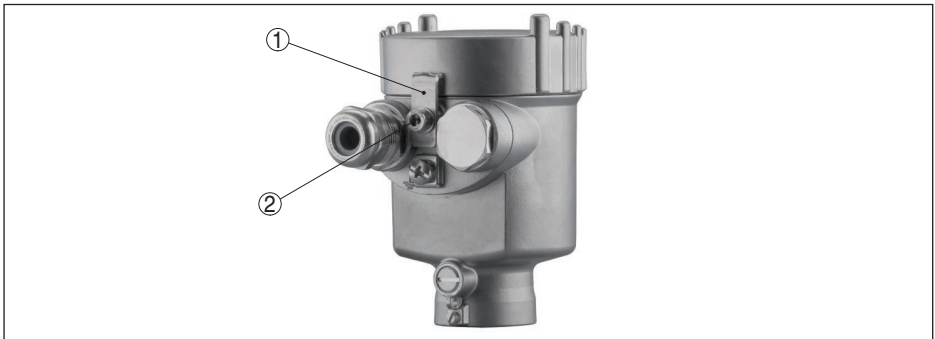
With single-chamber housing versions, the lid must be screwed in to the stop and secured with the locking device before setup and use of VEGAPULS PS6*.GI***** in hazardous atmospheres.

With double-chamber housing versions, the lid of the connection compartment and the lid of the electronics compartment must be screwed in to the stop and secured with the corresponding locking device before setup and use of VEGAPULS PS6*.GI***** in hazardous atmospheres.

Single chamber housing

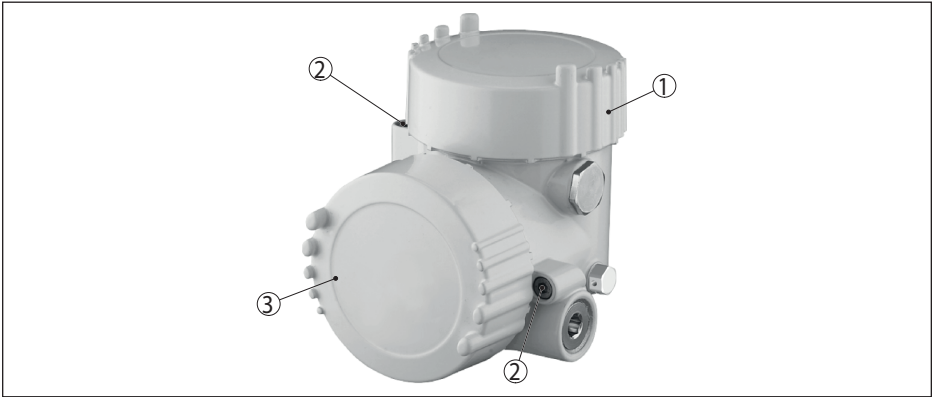


1 Locking screw of the lid



1 Bracket
2 Locking screw of the lid

Double chamber housing with "Ex-d" connection compartment



- 1 "Ex-i" connection compartment with electronics module
- 2 Locking screw of the lid
- 3 "Ex d" connection compartment with integrated barrier

9 Cable entries

Cable entries must only be replaced by the same types or suitable cable entries/glands which are certified according to ATEX with at least IP 66.

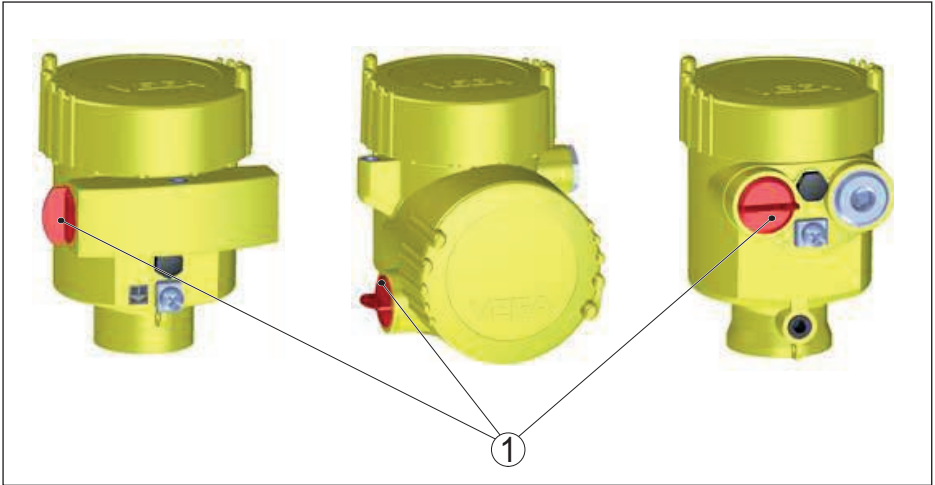
The cable entry sent with the delivery is suitable for the housing temperature range specified in the VEGAPULS PS6*.GI***** certificate. If a different cable entry is used, the separately certified cable entry/gland determines the max. permissible ambient temperature on the housing (max. values: -40 °C, +98 °C).

10 Removing and replacing the red threaded/dust cover

When the VEGAPULS PS6*.GI***** are delivered, depending on the version, the red threaded or dust protection caps must be removed before installing the device and the openings must be sealed according to the requirements of the type of protection and the IP protection type specified on the type label.

When using certified i.e. suitable cable glands, sealing plugs or plug connectors, they must be mounted correctly and the respective certificates/documents must be observed.

The sealing plugs included in the delivery by VEGA meet the necessary requirements.



1 Red threaded or dust protection cap

11 Installation with swivelling holder

The VEGAPULS PS6*.GI***** in the version with swivelling holder must be mounted so that, after the antenna has been aligned by means of the swivelling holder and the clamping flange has been screwed down, protection class IP 66 is maintained between zone 20 and 21.

12 Versions with rinsing connection

For the VEGAPULS PS6*.GI***** in the version with rinsing connection, please make sure that protection IP 66 is ensured at the connection to the reflux valve. After removal of the reflux valve or the rinsing connection on the reflux valve, the opening must be closed with a suitable plug screw in order to maintain protection IP 66.

Please make sure that there is no explosive atmosphere present during rinsing processes in the antenna or sensor cleaning.

13 Electrostatic charging (ESD)

In case of instrument versions with electrostatically chargeable plastic parts, the danger of electrostatic charging and discharging must be taken into account!

The following parts can charge and discharge:

- Lacquered housing version or alternative special lacquering
- Plastic housing, plastic housing parts
- Metal housing with inspection window
- Plastic process fittings
- Plastic-coated process fittings and/or plastic-coated sensors
- Connection cable for separate versions
- Type label
- Isolated metallic labels (measuring point identification plate)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces

- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- in the case of extremely flammable dusts with a minimum ignition energy (MIE) of less than 3 mJ, the device must not be used in areas where intensive electrostatic charging processes can be expected
- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

The warning label indicates danger:

WARNING- POTENTIAL ELECTROSTATIC
CHARGING HAZARD - SEE INSTRUCTIONS

Printing date:

VEGA

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.

Subject to change without prior notice

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