



Safety instructions

VEGAPULS 64

VEGAPULS 69

Dust ignition protection by enclosure

FM16US0260



CE 0044



Document ID: 51139



VEGA

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Please note:

These safety instructions are part of the documentation:

- 51141 - VEGAPULS 64 - 4 ... 20 mA/HART - two-wire
- 47247 - VEGAPULS 69 - 4 ... 20 mA/HART - two-wire
- 47249 - VEGAPULS 69 - 4 ... 20 mA/HART - four-wire
- 47250 - VEGAPULS 69 - Profibus PA
- 47251 - VEGAPULS 69 - Foundation Fieldbus
- 47252 - VEGAPULS 69 - Modbus
- 51140 - Certificate of compliance FM16US0260

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1 Area of applicability

These safety instructions apply to the radar sensor VEGAPULS PS64 and PS69 according to Certificate of compliance FM16US0260 3. supplement and for all instruments with the number of the safety instruction (51139) on the type label.

2 General information

The level measuring instrument VEGAPULS PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) are based on radar technology and used to detect the distance between product surface and sensor (the antenna) by means of high frequency electromagnetic waves in the GHz range. The electronic uses the running time of the signals, reflected by the product surface to calculate the distance to the product surface.

The VEGAPULS PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) consist of a metal housing, a process connection element and a sensor (the antenna). As an option the display and adjustment module can also be integrated.

The VEGAPULS PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) are used for monitoring or control in areas with combustible, dust-generating bulk solids requiring instruments with (DIP) approval.

If the VEGAPULS PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) are installed and operated in hazardous areas, the general Ex-installation regulations as well as these safety instructions must be observed.

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

The installation of explosion-endangered equipment or systems must always be carried out by qualified personnel trained in explosion protection who is familiar with the national regulations.

The equipment has to be operated within the specified electrical, thermal and mechanical parameters.

Hazardous location designation:

CL II DIV1, GP EFG CL III, T6 Ta = -40 ... +60 °C

FM 3600: 2011, FM 3616: 2011, FM 3810: 2005

The temperature class T6 is assigned to the electronic housing.

The maximum surface temperature of the sensor/antenna is TProcess plus 2K.

Process temperatures are from -40 ... +200 °C, depending on the antenna length and process sealing materials.

Environmental designation:

VEGAPULS PS64(*).FR****H*****(*)(*)

HOUSING TYPE	ELECTRONIC	MODEL	PROTECTION
ALUMINUM AND STAINLESS STEEL (CASTED) SINGLE CHAMBER HOUSING	H	A, H, V	IP66/68 (0.2bar), TYPE 6P
ALUMINUM AND STAINLESS STEEL (CASTED) DOUBLE CHAMBER HOUSING	H	D, S, W	IP66/68 (0.2bar), TYPE 6P, DUAL SEAL

VEGAPULS PS69(*).FR**H/B//P/F/U*****(*)(*), VEGAPULS PS69(*).FR****HZ*****(*)(*)**

HOUSING TYPE	ELECTRONIC	MODEL	PROTECTION
ALUMINUM AND STAINLESS STEEL (CASTED) SINGLE CHAMBER HOUSING	H, P, F	A, H, V	IP66/68 (0.2bar), TYPE 6P
ALUMINUM AND STAINLESS STEEL (CASTED) DOUBLE CHAMBER HOUSING	H, I, P, F, U	D, S, W	IP66/68 (0.2bar), TYPE 6P, DUAL SEAL
	B	D, S, W	IP66/67, TYPE 4X, DUAL SEAL
	HZ	D, S, W	IP66/68 (0.2bar), TYPE 6P, DUAL SEAL

ANSI/NEMA 250: 2008, ANSI/IEC 60529: 2004, ANSI/ISA 12.27.01: 2011

Working pressure ranges:

The working pressure ranges of the VEGAPULS64 series level transmitter are:

- 1 ... +2 bar for the PP antenna (antenna/material model code B or D)
- 1 ... +16 bar for the flange with encapsulated antenna (antenna/material model code G)
- 1 ... +20 bar for the thread with integrated horn antenna (antenna/material model code U)

The working pressure ranges of the VEGAPULS69 series level transmitter are:

- 1 ... +2 bar for the PP antenna (antenna/material model code B)
- 1 ... +3 bar for the PEEK antenna (antenna/material model code C)

3 Technical data

VEGAPULS PS64(*).FR**H*****(*)(*)**

Supply and signal circuit: U = 12 – 35 V DC

Terminals 1, 2 for 1-chamber housing in the electronics compartment

Terminals 1, 2 for 2-chamber housing in the connection compartment

VEGAPULS PS69(*).FR**H*****(*)(*)**

Supply and signal circuit: terminals 1[+], 2[-], U = 9.6 – 35 V DC

Terminals 1, 2 for 1-chamber housing in the electronics compartment

Terminals 1, 2 for 2-chamber housing in the connection compartment

VEGAPULS PS69(*).FR**B*****(*)(*)**

Supply circuit: terminals 1[+], 2[-] U = 90 – 253 V AC, 50/60 Hz

Signal circuit: terminals 5[+], 7[-] 4 ... 20 mA with superimposed HART signal

Passive signal circuit: terminals 6[+], 7[-] 4 ... 20 mA with superimposed HART signal

Terminals 1, 2, 5, 6, 7 in the connection compartment

VEGAPULS PS69(*).FR**I*****(*)(*)**

Supply circuit: terminals 1[+], 2[-] U = 9.6 – 48 V DC or U = 20 – 42 V AC

Signal circuit: terminals 5[+], 7[-] 4 ... 20 mA with superimposed HART signal

Passive signal circuit: terminals 6[+], 7[-] 4 ... 20 mA with superimposed HART signal

Terminals 1, 2, 5, 6, 7 in the connection compartment

VEGAPULS PS69(*).FR***P/F*****(*)(*)

Supply and signal circuit: U = 9 – 32 V DC

Terminals 1, 2 for 1-chamber housing in the electronics compartment

Terminals 1, 2 for 2-chamber housing in the connection compartment

VEGAPULS PS69(*).FR***U*****(*)(*)

Supply circuit: terminals 1[+], 2[-] U = 8 – 30 V DC

Signal circuit Modbus: terminals 3[D0 +], U_{max} = 5 V
4[D0 -]

Functional ground: terminal 5

Terminals 1, 2, 3, 4, 5 in the connection compartment

VEGAPULS PS69(*).FR***HZ*****(*)(*)

Supply and signal circuit 1: terminals 1[+], 2[-] U = 9.6 – 35V DC

Supply and signal circuit 2: terminals 7[+], 8[-] U = 9.6 – 35V DC

Terminals 1, 2, 7, 8 in the connection compartment

4 Application conditions

Permissible temperatures

Permissible ambient/operating/process temperature of the sensor in dependency on the gasket or antenna used:

VEGAPULS PS64(*).FRB/D**X*****(*)(*)

X: C = PP -40 ... +80 °C

X: D = FKM and PP -40 ... +80 °C

X: E = EPDM (COG AP310) and PP -40 ... +80 °C

VEGAPULS PS64(*).FRU**X*****(*)(*)

X: A = FKM -40 ... +130 °C

X: B = FKM -40 ... +200 °C

X: G = FFKM (Kalrez 6375) -20 ... +130 °C

- X: H = FFKM (Kalrez 6375) -20 ... +200 °C

- X: F = EPDM (A+P 75.5/KW75F) -40 ... +130 °C

VEGAPULS PS64(*).FRG**X*****(*)(*)

X: I = PTFE -40 ... +130 °C

X: J = PTFE -40 ... +200 °C

X: K = PTFE (8 mm) -40 ... +130 °C

X: L = PTFE (8 mm) -40 ... +200 °C

X: M = PFA -40 ... +130 °C

X: N = PFA	-40 ... +200 °C
X: P = PFA (8 mm)	-40 ... +130 °C
X: Q = PFA (8 mm)	-40 ... +200 °C

VEGAPULS PS69(*).FRB/C**X*****(*)

X: A = FKM and PEEK with short T-reduction adapter	-40 ... +130 °C
X: B = FKM and PEEK with long T-reduction adapter	-40 ... +200 °C
X: C = PP	-40 ... +80 °C
X: D = FKM and PP	-40 ... +80 °C
X: E = EPDM (COG AP310) and PP	-40 ... +80 °C
X: F = EPDM (COG AP302) and PEEK(FDA) with short T-reduction adapter	-40 ... +130 °C

PP antenna (antenna/material model code B)

PEEK antenna (antenna/material model code C)

5 Grounding

The VEGAPULS PS64(*).FR****H*****(*) and VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*) and VEGAPULS PS69(*).FR****HZ*****(*) must be grounded.

6 Impact and friction sparks

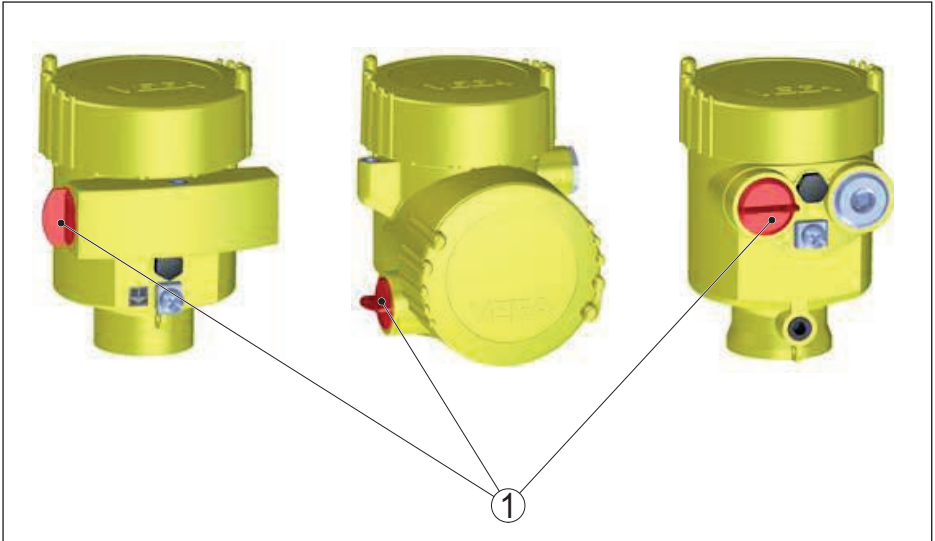
Enclosures containing aluminum constitute a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.

7 Material resistance

The VEGAPULS PS64(*).FR****H*****(*) and VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*) and VEGAPULS PS69(*).FR****HZ*****(*) must only be used in products against which the wetted materials are sufficiently resistant.

8 Field wiring entries (supply connections)

The red, threaded dust protection caps screwed in the field wiring entries of the VEGAPULS PS64(*).FR****H*****(*) and VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*) and VEGAPULS PS69(*).FR****HZ*****(*) must be removed before installing the device. All field wiring entries must be sealed using suitably-rated products during installation by a protection fulfilling the requirements of the ignition protection type.

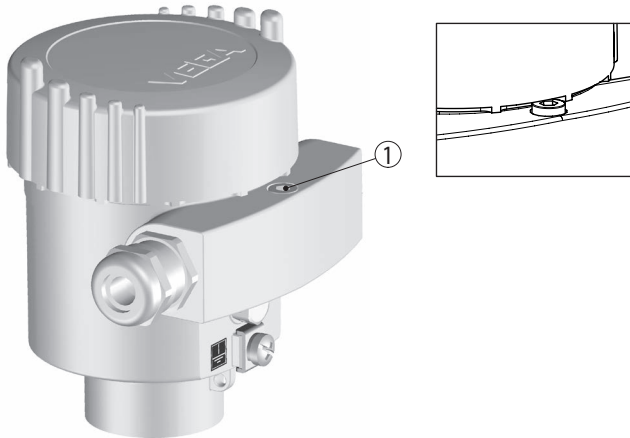


1 Red threaded or dust protection cap

9 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 PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) 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 PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) in hazardous atmospheres.

Single chamber housing



1 Locking screw of the cover

10 Installation with swivelling holder

VEGAPULS PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) in the version with swiveling holder must be mounted so that, the environmental designation given in chapter "General information" is maintained, after the antenna has been aligned by means of the swiveling holder and the clamping flange has been screwed down.

11 Versions with rinsing connection

For VEGAPULS PS64(*).FR****H*****(*)(*), VEGAPULS PS69(*).FR****H/B/I/P/F/U*****(*)(*) and VEGAPULS PS69(*).FR****HZ*****(*)(*) in the version with rinsing connection, 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. Make sure that there is no explosive atmosphere present during rinsing processes in the antenna or sensor cleaning.



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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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