Safety instructions
VEGAWAVE 61, 62, 63

Dust ignition protection by enclosure
BVS 06 ATEX E 092 X
Transistor (NPN/PNP)
Contactless electronic switch
Relay (DPDT)
Two-wire
NAMUR

CE 0044

Document ID: 48039

VEGA

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Supplementary documentation:

- Operating instructions VEGAWAVE 61, 62, 63
- EU type approval certificate BVS 06 ATEX E 092 X (Document ID: 48040)
- EU declaration of conformity (Document ID: 44383)

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DE	Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen
EN	Safety instructions for the use in hazardous areas
FR	Consignes de sécurité pour une application en atmosphères explosibles
IT	Normative di sicurezza per l'impiego in luoghi con pericolo di esplosione
ES	Instrucciones de seguridad para el empleo en áreas con riesgo de explosión
PT	Normas de segurança para utilização em zonas sujeitas a explosão
NL	Veiligheidsaanwijzingen voor gebruik op plaatsen waar ontploffingsgevaar kan heersen
SV	Säkerhetsanvisningar för användning i explosiionsfarliga områden
DA	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfare
FI	Turvallisuusohjeet räjähdysvaarallisisssa tiloissa käyttöä varten
EL	Υποδείξεις ασΦαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης

DE	Die vorliegenden Sicherheitshinweise sind im Download unter www.vega.com standardmäßig in den Sprachen deutsch, englisch, französisch und spanisch verfügbar. Weitere EU-Landessprachen stellt VEGA nach Anforderungen zur Verfügung.
EN	These safety instructions are available as a standard feature in the download area under www.vega.com in the languages German, English, French and Spanish. Further EU languages will be made available by VEGA upon request.
FR	Les présentes consignes de sécurité sont disponibles au téléchargement sous www.vega.com en standard en allemand, en anglais, en francais et en espagnol. VEGA met à disposition d'autres langues de l'Union Européenne selon les exigences.
ES	Las indicaciones de seguridad presentes están disponibles en la zona de descarga de www.vega.com de forma estándar en los idiomas inglés, francés y español. VEGA pone a disposición otros idiomas de la UE cuando son requeridos.

1 Area of applicability

These safety instructions apply to the vibrating level switches VEGAWAVE WE6*(*).****** according to EU type approval certificate BVS 06 ATEX E 092 X (certificate number on the type label) and for all instruments with the number of the safety instruction (48039) on the type label.

2 General information

The VEGAWAVE WE6*(*).****** are used for monitoring or control of levels also in areas with combustible, dust generating bulk solids.

The VEGAWAVE WE6*(*).****** consist of a sensor, a process connection element and a processing unit.

The VEGAWAVE WE6*(*).****** are suitable for use in hazardous atmospheres of combustible dusts, for applications requiring instruments of category II 1D or II 1/2D or instruments of category II 2D.

If the sensors VEGAWAVE WE6*(*).****** are installed and operated in hazardous areas, the general Ex mounting instructions and 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-protected systems must always be carried out by qualified personnel.

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

Category 1D instruments
The electronics housing and the sensor with the mechanical fixing element are installed in explosion-endangered areas, in areas requiring instruments of category 1D.

Category 1/2D instruments
The electronics housing is installed in hazardous areas requiring instruments of category 2D. The process connection element is installed in the separating wall, which separates areas requiring instruments of category 2D or 1D. The sensor with the mechanical fixing element is installed in hazardous areas requiring instruments of category 1D.

Category 2D instruments
The electronics housing and the sensor with the mechanical fixing element are installed in explosion-endangered areas, in areas requiring instruments of category 2D.

Tested according to the following applied standards:

EN IEC 60079-0: 2018

EN 60079-31: 2014

Type of protection marking:
II 1D, 1/2D, 2D Ex ta, ta/tb, tb IIIC T* Da, Da/Db, Db IP66

Important specification in the type code

VEGAWAVE WE61/63(*).abcdefghij

Position		Feature	Description
ab	Approval	GX	ATEX II 1D, 1/2D, 2D Ex ta, ta/tb, tb IIIC T* Da, Da/Db, Db IP66

Position		Feature	Description
c	Version / Process temperature	A	Standard / -40 … +150 °C
		B	with adapter / -40 … +250 °C
		C	Detection of solids in water / -40 … +150 °C
		D	Detection of solids in water / -40 … +250 °C
		E	with Carbocer coating, less buildup, no corrosion/abrasion protection / -40 … +150 °C
		F	with Carbocer coating, less buildup, no corrosion/abrasion protection / -40 … +250 °C
de	Process fitting / Material	**	Process fittings acc. to industry standard
f	Electronics	C	Contactless electronic switch 20 … 250 V AC/DC
		R	Relay (DPDT) 20 … 72 V DC/20 … 250 V AC (3A)
		T	Transistor (NPN/PNP) 10 … 55 V DC
		Z	Two-wire (8/16 mA) 10 … 36 V DC
		N	NAMUR signal
g	Housing / Protection	A	Aluminium single chamber / IP66/IP67
		V	Stainless steel single chamber (precision casting) / IP66/IP67
		*	Further housings with special colour
i	Cable entry / Cable gland / Plug connection	M	M20 x 1.5 / without / without
		N	½ NPT / without / without
		*	Further suitable Cable gland and Plug connection
j	Additional equipment	X	

VEGAWAVE WE62(*).abcdefghij

Position		Feature	Description
ab	Approval	GX	ATEX II 1D, 1/2D, 2D Ex ta, ta/tb, tb IIIC T* Da, Da/Db, Db IP66
c	Version / Process temperature	T	Cable PUR / -20 … +80 °C
		H	Cable FEP / -40 … +150 °C
		C	Cable PUR detection of solids in water / -20 … +80 °C
		E	Cable FEP detection of solids in water / -40 … +100 °C
		K	Cable PUR with Carbocer coating, less buildup, no corrosion/abrasion protection / -20 … +80 °C
		L	Cable FEP with Carbocer coating, less buildup, no corrosion/abrasion protection / -50 … +150 °C
		M	Kabel PUR detection of solids in water with Carbocer coating, less buildup, no corrosion/abrasion protection / -20 … +80 °C
		N	Cabel FEP detection of solids in water with Carbocer coating, less buildup, no corrosion/abrasion protection / -40 … +100 °C
de	Process fitting / Material	**	Process fittings acc. to industry standard

Position		Feature	Description
f	Electronics	C	Contactless electronic switch 20 … 250 V AC/DC
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		*	Further housings with special colour
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		N	½ NPT / without / without
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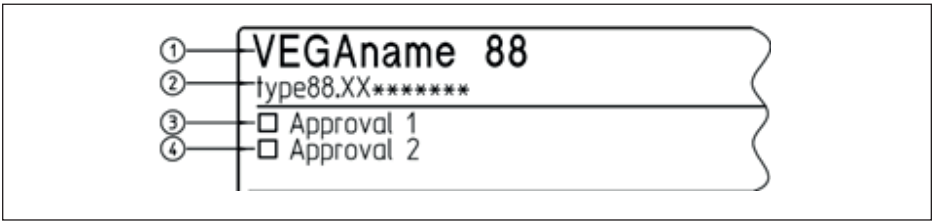
j	Additional equipment	X	

3 Different ignition protection types

The VEGAWAVE WE6*(*).****** can be either used in explosive dust atmospheres or in explosive gas atmospheres.

The operator must specify the selected ignition protection type before installation. The selected ignition protection must be determined by marking it firmly on the identification label of the type plate.



1 VEGAWAVE WE6(*).******
2 Instrument version
3 Identificatiion label: Approval in dust ignition protection type e. g. „Ex t“
4 Identificatiion label: Approval in Gas ignition protection type e. g. „Ex i“, „Ex d“*

4 Technical data

Electrical versions and data
VEGAWAVE WE6*(*).GX *C*** with integrated electronics module WE60 *C*:**

Voltage supply: (terminals 1, 2)	U = 20 … 253 V AC, 50/60 Hz or
	U = 20 … 253 V DC, max. 1 W
	Um = 253 V AC
Output	Contactless electronic switch
Domestic current requirement	<3 mA (via load circuit)
Load current	min. 10 mA, max. 400 mA
Short-circuit current I_{cn}	100 A

VEGAWAVE WE6*(*).GX* *R**** **with integrated electronics module WE60 *R*:**

Voltage supply: (terminals 1, 2)	20 … 253 V AC, 50/60 Hz U = 20 … 72 V DC Um = 253 V AC
Power consumption	1 … 8 VA, max. 1.6 W
Relay circuit: contact set 1 (terminals 3, 4, 5), contact set 2 (terminals 6, 7, 8)	Maximum values: Alternating current: 253 V, 3 A, 500 VA Direct current: 253 V, 1 A, 41 W
Short-circuit current I_{cn}	35 A

VEGAWAVE WE6*(*).GX* *T**** **with integrated electronics module WE60 *T*:**

Voltage supply: (terminals 1, 4)	10 … 55 V DC Um = 253 V AC
Power consumption	max. 0.5 W
Load currrent, floating transistor output: (terminals 2, 3)	max. 400 mA, 55 V DC
Short-circuit current I_{cn}	100 A

VEGAWAVE WE6*(*).GX* *Z**** **with integrated electronics module WE60 *Z*:**

Power supply and signal circuit: (terminals 1[+], 2[-] in the electronics compartment)	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 Effective internal inductance Li is negligible; effective internal capacity Ci is negligible

The intrinsically safe circuit is electrically isolated from parts which can be grounded. The metallic parts of VEGAWAVE WE6*(*).GX/CK**Z** are electrically connected with the internal and external earth terminal.

VEGAWAVE WE6*(*).GX* *N**** **with integrated electronics module WE60 *N*:**

Power supply and signal circuit: (terminals 1[+], 2[-] in the electronics compartment)	In type of protection intrinsic safety Ex ia IIC For connection to a certified, intrinsically safe circuit. Maximum values: • U_i = 20 V • I_i = 103 mA • P_i = 516 mW The effective internal inductance Li is < 5 µH; the effective internal capacity C_i is negligible.

The intrinsically safe circuit is electrically isolated from parts which can be grounded. The metallic parts of VEGAWAVE WE6*(*).GX/CK**N** are electrically connected with the internal and external earth terminal.

5 Application conditions

Permissible ambient temperatures
On the sensor, category 1D or 2D

VEGAWAVE WE61/63(*).GXA/C/E******:	-40 … +150 °C
VEGAWAVE WE62(*).GXB/D/F******:	-40 … +80 °C
VEGAWAVE WE61/63(*).GXC/K/M/T******: in high temperature version	-40 … +250 °C

On the electronics housing, category 1D or 2D

VEGAWAVE WE61/62/63(*).***:	-40 … +60 °C

Surface temperature increases
On the sensor, category 1D or 2D

VEGAWAVE WE61/62/63(*).***:	Process temperature +6 K

On the electronics housing, category 2D

VEGAWAVE WE61/62/63(*).***Z***:	Ambient temperature +36 K
VEGAWAVE WE61/62/63(*).***N***:	Ambient temperature +23 K
VEGAWAVE WE61/62/63(*).***C/R/T***: Restricted due to temperature limitation to	98 °C

On the electronics housing, category 1D

VEGAWAVE WE61/62/63(*).***Z***:	Ambient temperature +43 K
VEGAWAVE WE61/62/63(*).***N***:	Ambient temperature +23 K
VEGAWAVE WE61/62/63(*).***C/R/T***: Restricted due to temperature limitation to	98 °C

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.

Protection according to EN 60529
Protection rating

Sensor	IP68
Electronics housing	IP66

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

The permissible combinations of pressure and temperature without explosive mixtures are stated in the manufacturer specifications, e.g. the operating instructions manuals.

6 Grounding

The VEGAWAVE WE6*(*).****** must be grounded.

7 Cable entries

The supplied cable entry is suitable for the housing temperature range mentioned in the EU type approval certificate VEGAWAVE WE6*(*).******.

Cable entries may only be replaced by the same type or by suitable, separately ATEX certified cable entries with at least IP66. If another cable entry is used, the separately certified cable entry determines the max. permissible ambient temperature on the housing (maximum values: -40 °C, +77 °C).

8 Important information for mounting

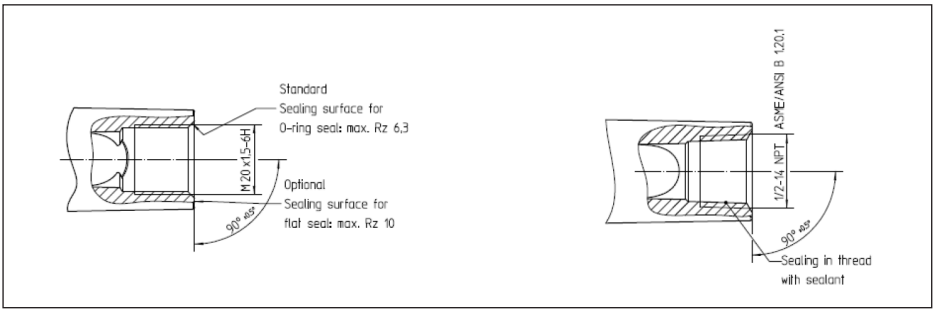
Cable glands, threaded openings

Type	Thread	Cable diameter [mm]	Torques [Nm]
Hummel EXIOS A2F 1.608.2003.50	M20 x 1.5	6 … 12 mm	8
Hummel EXIOS A2F 1.608.1203.70	½ NPT	6 … 12 mm	8
Hummel EXIOS MZ 1.6Z5.2000.51	M20 x 1.5	9 … 13 mm	8
Hummel EXIOS MZ 1.6Z5.1200.70	½ NPT	9 … 13 mm	8
Hummel HSK-M-Ex 1.640.2000.51	M20 x 1.5	5 … 9 mm	8

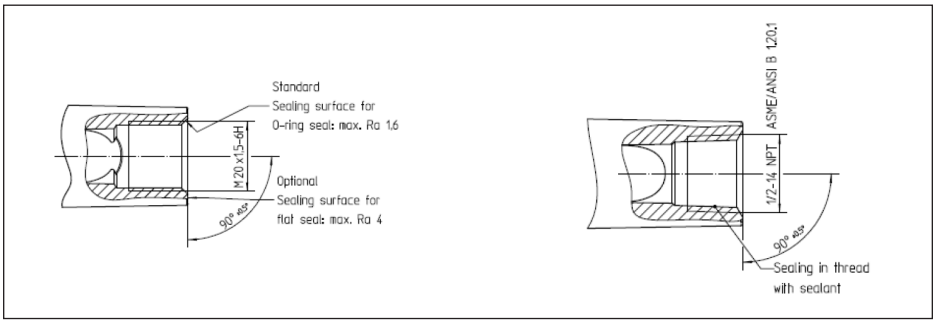
The specified tightening torques are test torques and are to be seen only as recommended values. These were determined according to the specifications of the listed valid standards. The tightening torques may devicate depending on the type and characteristic of the cables/lines. If assembly instructions of the manufacturer are provided, these must be observed.

If suitable cable glands or cable insertion possibilities not included in the scope of supply are used, these must be compatible with the threaded openings.

Aluminium housing with M20 x 1.5 thread, ½ NPT thread



Stainless-steel housing (fine cast) with M20 x 1.5 thread, ½ NPT thread



9 Installation, mounting

The VEGAWAVE WE63 must be mounted in a way that adequately ensures that the sensor and the extension tube will not bend due to the movements of other installations or bulk solids in the vessel.

10 Material resistance

The VEGAWAVE WE6*(*).****** must only be used in media against which the materials of the wetted parts are sufficiently resistant.

The min. fatigue strength of the vibrating element is 8.8 x 10^{11} load changes with a max. amplitude of 222 µm. The lifetime is minimum 20 years.

11 Tensile force on the suspension cable VEGAWAVE WE62

For VEGAWAVE WE62(*).****** the permissible tensile force is 3000 N.

12 Shortening of the suspension cable, version VEGAWAVE WE62

On request the length of the suspension cable of VEGAWAVE WE62(*).****** can be shortened on site according to customer-specific requirements. For this purpose, the enclosed operating instructions manuals must be observed.

13 Locking mechanism of housing cover

With the single-chamber housing versions, the housing cover must be screwed into the stop and secured with the cover lock before instrument setup.

With double-chamber housing versions, the cover of the connection compartment and the cover of the electronics compartment have to be screwed in to the stop and secured with the corresponding cover lock before instrument setup.

14 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 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

Non-grounded, metallic parts
The resistance between aluminium housing to metal measuring point identification plate is > 10^9 Ohm.

The capacitance of the metal measuring point identification plate was measured with 15 pF.

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