

Safety instructions

CCOE approval

VEGAVIB 61, 63

Flameproof enclosures

Contactless electronic switch

Relay (DPDT)

Transistor (NPN/PNP)

Two-wire

NAMUR



Document ID: 62500



VEGA

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Supplementary documentation:

- Operating instructions VEGAVIB 61, 63
- Letter P420452/1 By Government of India (Document ID: 62501)

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1 Area of applicability

These safety instructions apply to the vibrating level switches VEGAVIB VB6*.L****C/R/T/Z/NA** with integrated electronics module VB60C/R/T/Z/N according to Letter P420452/1 By Government of India (certificate number on the type label) and for all instruments with the number of the safety instruction (62500) on the type label.

2 General information

The VEGAVIB VB6*.L****C/R/T/Z/NA** are used for level measurement in hazardous areas.

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

The VEGAVIB VB6*.L****C/R/T/Z/NA** are suitable for use in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring instruments of category 1/2G or category 2G.

If the VEGAVIB VB6*.L****C/R/T/Z/NA** are installed and operated in hazardous areas, the general Ex installation regulations EN 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.

Category 1/2G instruments

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

Category 2G instruments

The VEGAVIB VB6*.L****C/R/T/Z/NA** are installed in hazardous areas requiring an instrument of category 2G.

Tested according to the following applied standards:

EN 60079-0: 2012 + A11: 2013

EN 60079-1: 2014

EN 60079-26: 2015

Type of protection marking

II 1/2G, 2G Ex db IIC T6 ... T1 Ga/Gb, Gb

Important specification in the type code

VEGAVIB VB61/63(*).abcdefghij

Position	Feature	Description
ab	Approval	LX
c	Version / Process temperature	*
d	Process fitting / Material	**
		Process fittings acc. to industry standard

Position		Feature	Description
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 / IP 66/IP 67
		*	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	

3 Technical data

Electrical data

VEGAVIB VB6*.L****CA** with integrated electronics module VB60C

Voltage supply: (terminals 1, 2)	U = 20 ... 253 V AC, 50/60 Hz or U = 20 ... 253 V DC, max. 1 W U _m = 253 V AC
Output	Contactless electronic switch
Domestic current requirement	< 5 mA (via load circuit)
Load current	
– min.	10 mA
– max.	400 mA

VEGAVIB VB6*.L****RA** with integrated electronics module VB60R

Voltage supply: (terminals 1, 2)	20 ... 253 V AC, 50/60 Hz U = 20 ... 72 V DC U _m = 253 V AC
Max. power consumption	1 ... 8 VA, 1.6 W
Relay circuit	Maximum values
– Contact set 1: (terminals 3, 4, 5)	253 V AC, 3 A, 500 VA
– Contact set 2: (terminals 6, 7, 8)	253 V DC, 1 A, 41 W

VEGAVIB VB6*.L****TA** with integrated electronics module VB60T

Voltage supply: (terminals 1, 4)	10 ... 55 V DC U _m = 253 V AC
Max. power consumption	0.5 W
Max. load current, floating transistor output: (terminals 2, 3)	400 mA, 55 V DC

VEGAVIB VB6*.L****ZA** with integrated electronics module VB60Z

Power supply and signal circuit: (terminals 1[+], 2[-]) $U_i = 12 \dots 36 \text{ V DC}$
 $U_m = 253 \text{ V}$

VEGAVIB VB6*.L****NA** with integrated electronics module VB60N

Power supply and signal circuit: (terminals 1[+], 2[-]) $U_i = 4 \dots 12.5 \text{ V DC}$
 $U_m = 253 \text{ V}$

4 Application conditions

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

Category 1/2G instruments

Temperature class	Ambient temperature on the electronics	Permissible ambient temperature on the sensor without temperature adapter	Permissible ambient temperature on the sensor with temperature adapter
T6	-40 ... +77 °C	-50 ... +85 °C	-50 ... +85 °C
T5	-40 ... +80 °C	-50 ... +100 °C	-50 ... +100 °C
T4	-40 ... +80 °C	-50 ... +135 °C	-50 ... +135 °C
T3	-40 ... +80 °C	-50 ... +150 °C	-50 ... +200 °C
T2, T1	-40 ... +80 °C	-50 ... +150 °C	-50 ... +250 °C

When the sensor of VEGAVIB 61 and 63 is operated in hazardous atmospheres of zone 0, there is no danger of ignition if it is operated under non-atmospheric pressures from vacuum to 16 bar and temperatures according to the temperature classes T6 ... T1.

Category 2G instruments

Temperature class	Ambient temperature on the electronics	Permissible ambient temperature on the sensor without temperature adapter	Permissible ambient temperature on the sensor with temperature adapter
T6	-40 ... +77 °C	-50 ... +85 °C	-50 ... +85 °C
T5	-40 ... +80 °C	-50 ... +100 °C	-50 ... +100 °C
T4	-40 ... +80 °C	-50 ... +135 °C	-50 ... +135 °C
T3	-40 ... +80 °C	-50 ... +150 °C	-50 ... +200 °C
T2, T1	-40 ... +80 °C	-50 ... +150 °C	-50 ... +250 °C

The permissible operating temperatures and pressures are mentioned in the respective manufacturer instructions.

Permissible process pressure on the sensor

Category 1/2G instruments

If VEGAVIB 61 and 63 are used as category 1/2G instruments, pressures on the sensor from vacuum to 16 bar are permissible according to the temperature classes T6 ... T1.

There is no danger of ignition if the sensor used in hazardous atmospheres of Zone 0 is operated

under non-atmospheric pressures and temperatures.

Category 1/2G instruments

If VEGAVIB 61 and 63 are used as category 1/2G instruments, pressures from -1 bis 16 bar according to temperature classes T6 ... T1 are permitted also in the version with lock fitting ARV-VB63.2*.

Category 2G instruments

If VEGAVIB 61 and 63 are used as category 2G instrument, pressures on the sensor from vacuum to 16 bar are permissible.

The permissible operating temperatures and pressures are mentioned in the respective manufacturer instructions.

5 Protection against static electricity

The VEGAVIB VB6*.L****C/R/T/Z/NA** in versions with electrostatically chargeable plastic parts, such as e.g. plastic housing, metal housing with inspection window, with plastic coated sensors or distance tube, have a caution label pointing out the safety measures that must be taken with regard to electrostatic charges during operation.

WARNING - POTENTIAL ELECTROSTATIC
CHARGING HAZARD - SEE INSTRUCTIONS

Caution: Plastic parts! Danger of electrostatic charging!

- Avoid friction
- No dry cleaning
- Construction/Installation: The VEGAVIB VB6*.L****C/R/T/Z/NA** must be constructed/installed in such a way that
 - electrostatic charges are ruled out during operation, maintenance and cleaning.
 - process-related electrostatic charges, e.g. by measuring media flowing past, are ruled out

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

6 Impact and friction sparks

When used as category 1/2G instruments, the VEGAVIB VB6*.L****C/R/T/Z/NA** aluminium versions must be mounted in such a way that sparks from impact and friction between aluminium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

7 Potential equalisation

The VEGAVIB VB6*.L****C/R/T/Z/NA** have to be connected to the local potential equalisation, e.g. via the external or internal earth terminal on the housing.

8 Installation

The VEGAVIB VB6*.L****C/R/T/Z/NA** have to be mounted such that they are effectively protected against oscillating and vibrating due to the influence of other vessel installations and the flow conditions. This applies especially to distance tube lengths over 3 m.

9 Material resistance

The VEGAVIB VB6*.L****C/R/T/Z/NA** must only be used in media against which the materials of the wetted parts are sufficiently resistant.

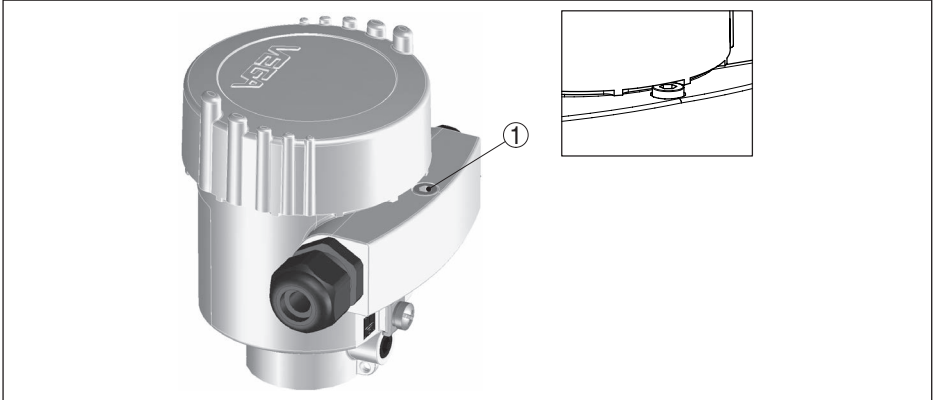
The min. fatigue strength of the vibrating element is 2.2×10^{11} load changes with a max. amplitude

of 45 µm. The lifetime is minimum 20 years.

10 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 VEGAVIB VB6*.L****C/R/T/Z/NA** in hazardous atmospheres. It must be secured by unscrewing the cover locking screw to the stop.

Single chamber housing



1 Locking screw of the lid

11 Type of protection flameproof enclosure Ex "d"

The terminals for connecting the operating voltage or signal circuits are integrated in the connection compartment with type of protection flameproof enclosure "d".

The thread gap between housing and cover is a flameproof gap.

The gap must not be damaged.

No repairs may be carried out on the flame-proof gap.

The "Ex-d" connection compartment is provided with a M20 x 1.5 or 1/2-14 NPT thread for connecting to a certified "Conduit" system or for mounting an "Ex-d" cable entry certified according to EN 60079-1. Cable entries of simple construction may not be used. Please take note of section 13.1 and 13.2 of EN 60079-1. When connecting to a "Conduit" system, the associated sealing facility must be located directly on the "Ex-d" connection compartment.

A certified "Ex-d" cable gland can optionally be supplied with the delivery. It is suitable for insertion of armoured or unarmoured cables depending on the ordered version. The instructions in the document accompanying the respective cable entry **must be observed**. The "Ex-d" cable entry must be screwed tightly into the housing. The supplied cable entry is suitable for the housing temperature range mentioned in the VEGAVIB VB6*.L****C/R/T/Z/NA** specification. If a different cable entry is used, the separately certified cable entry or the temperature classes on the electronics determines the maximum permissible ambient temperature on the housing.

Before opening the lid of the "Ex-d" terminal compartment or in case it is already open (e. g. during connection or service work), make sure that either the supply cable is completely voltage free or no explosive atmosphere is present.

When wiring the connection line to the "Ex-d" terminal compartment, it must be sufficiently secured against damage and in conformity with EN 60079-14.

The cover of the "Ex-d" connection compartment must be screwed in completely before commissioning and secured by screwing out the lid locking screw all the way to the stop.

Unused openings must be covered according to EN 60079-1 section 11.9. For this purpose, the supplied sealing plug marked 1/2-14 NPT 2.3069 can be used.

If the temperature at the inlet components exceeds 70 °C, temperature-resistant connection cables must be used.

The connection cables of VEGAVIB VB6*.L****C/R/T/Z/NA** must be connected in a housing meeting the requirements of the accepted ignition protection type according to EN 60079-0, section 1, if the connection is located in the hazardous area.

12 Type and size of the threads for the "Ex-d" cable entries

The "Ex-d" connection compartment of VEGAVIB VB6*.L****C/R/T/Z/NAM* has cable entries M20 x 1.5.

The "Ex-d" connection compartment of VEGAVIB VB6*.L****C/R/T/Z/NAN* has cable entries ½-14 NPT.

Confirmation

Hereby the company VEGA Grieshaber KG declares that the approved CCOE devices have been manufactured in accordance with the ATEX approval mentioned in the attached CCOE certificate.

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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.

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