Safety instructions
VEGABOX 03

Intrinsic safety "i"

CE 0044

Document ID: 47899

VEGA

Contents

Supplementary documentation:

- Operating Instructions VEGABOX 03
- EU-type approval certificate TÜV 13 ATEX 7478 X (Document ID: 47900)

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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 VEGABOX 03 of type series:

- BOX03(*).AC*******
- BOX03(*).AO*******

According to EU type approval certificate TÜV 13 ATEX 7478 X (certificate number on the type label) and for all instruments with safety instruction 47899.

The classification as well as the respective standards are stated in the EU type approval certificate:

- EN IEC 60079-0: 2018
- EN 60079-11: 2012
- EN 60079-26: 2015

Type of protection marking:

- II 1G Ex ia IIC T6 … T1 Ga
- II 2G Ex ia IIC T6 … T1 Gb

2 Important specification in the type code

BOX03(*).abcdefghi

Position		Feature	Description
a	Scope	A	Europe
b	Approval	C	ATEX II 1G, 2G Ex ia IIC T6 … T1 Ga, Gb
		O	ATEX II 1G, 2G Ex ia IIC T6 … T1 Ga, Gb + Ship approval (DNV GL, BV, RMROS)
c	Version	A	Pressure compensation
d	Housing	K	Plastic
		A	Aluminium
		V	Stainless steel (precision casting)
		H	Special colour, Aluminium
e	Protection rating	I	IP66/IP67; NEMA 4X
		N	IP66/IP68 (0.2 bar); NEMA 6P
f	Cable entry / Connection	D	M20 x 1.5 / Blind plug
		N	½ NPT / Blind plug
		M	M20 x 1.5 / Cable gland PA black (ø5-9 mm), standard
		J	½ NPT / Cable gland PA black (ø5-9 mm)
		*	further cable glands, blind plugs, cable leadthroughs, plug connectors, Conduit system
g	Mounting type	A	for wall mounting with Aluminium or stainless steel housing
		C	for carrier rail and wall mounting with plastic housing
		D	for carrier rail with Aluminium or stainless steel housing
		E	for tube mounting (29 … 60 mm) incl. mounting material
h	Certificates	X	No
		M	Yes

In the following, all above mentioned versions are called VEGABOX 03. If parts of these safety instructions refer only to certain versions, then these will be mentioned explicitly with their type code.

3 General information

The VEGABOX 03 is preferably used for field mounting for separated connection of sensor circuits and as breather housing. The VEGABOX 03 of type series VEGABOX 03 with integrated connection terminals are preferably used for pressure compensation of the pressure measuring cell and as terminal box in conjunction with pressure transmitters of Messrs. VEGA in the cable version with capillary cable.

In VEGABOX 03 only terminal blocks as type VEGABOX 03 for connection of intrinsically safe circuits can be installed. A terminal block is preferably used for connection of an inrinsically safe circuit of VEGA pressure transmitters in the version with connection cable with corresponding power supply or signal conditioning instrument.

The VEGABOX 03 is an intrinsically safe electrical instrument for installation in hazardous areas with combustible gases, mist or vapour, requiring instruments of category 1G or 2G or for installation outside of hazardous areas. The VEGABOX 03 is an intrinsically safe instrument for installation in hazardous areas of all combustible materials of explosion group IIA, IIB and IIC.

If the VEGABOX 03 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.

4 Application area

Category 1G (EPL Ga instruments)
The VEGABOX 03 is installed in hazardous areas requiring instruments of category 1G (EPL Ga).

Category 2G (EPL Gb instruments)
The VEGABOX 03 is installed in hazardous areas requiring instruments of category 2G (EPL Gb).

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGABOX 03, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)
You can find the details in chapter " *Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature
You can find the details in chapter " *Thermal data*" of these safety instructions.

Impact and friction sparks
The VEGABOX 03 in light metal versions (e.g. aluminium, titanium, zircon) must be mounted in such a way that sparks from impact and friction between light metals and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

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 as follows:

Measurement loop identification label	Capacitance
45 x 23 mm (standard)	21 pF
100 x 30 mm	52 pF
73 x 47 mm	61 pF

Installation
If a cable other than the VEGA connection cable is used as interconnection for signal and power supply circuit and the temperature circuit (PT100-measuring circuit), please make sure that the insulation voltage of at least 500 V AC according to EN 50020 sect. 6.4.12 is maintained and the insulation thickness of the wire insulation is at least 0.25 mm.

6 Important information for mounting and maintenance

General instructions
The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC/EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the EU type approval certificate and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- Components for installation and connection not included in the approval documents are only permitted if these correspond technically to the latest standard mentioned on the cover sheet. They must be suitable for the application conditions and have a separate certificate. The special conditions of the components must be noted and if necessary, the components must be integrated in the type test. This applies also to the components already mentioned in the technical description.
- Vessel installations and probable flow must be taken into account

Mounting
Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- Close the housing lid (s) up to the stop before starting operating, to ensure the IP protection rating specified on the type label

Maintenance
To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

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- Valid regulations for connection of intrinsically safe circuits, e.g. proof of intrinsic safety according to IEC/EN 60079-14 must be observed
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- When connecting a circuit with protection level Ex ib, the device, the sensor meas. system of the device must no more be used in hazardous areas of zone 0.
- When connecting an intrinsically safe instruments with classification mark Ex ia to a circuit with protection level Ex ib, then the classification mark of the instrument changes to Ex ib. After the use as instrument with Ex ib power supply, the instrument must no more be used in circuits with protection level Ex ia
- When connecting an intrinsically safe instrument to an non-intrinsically safe circuit, the instrument must be no longer used in intrinsically safe circuits
- With surface temperatures > 70 °C, the cables must be suitable for the higher application conditions

7 Safe operating mode

General operating conditions

- Do not operate the instrument outside the electrical, thermal and mechanical specifications of the manufacturer
- Use the instrument only in media against which the wetted parts are sufficiently resistant
- Note the relation between process temperature on the sensor/antenna and the permissible ambient temperature on the electronics housing. For permissible temperatures, see the respective temperature tables. See chapter " *Thermal data*".
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGABOX 03
- For assessment and reduction of the explosion risk, valid standards such as for example ISO/EN 1127-1 must be taken into account

8 Potential equalization/Grounding

- Integrate the instruments into the local potential equalisation, e.g. via the internal or external earth terminal
- The potential equalization terminal must be secured against loosening and twisting
- If grounding of the cable screening is necessary, this must be carried out acc. to the valid standards and regulations, e.g. acc. to IEC/EN 60079-14
- The intrinsically safe input and the intrinsically safe output circuits are ground-free. The voltage resistance against ground is min. 500 Veff.
- The supply and signal circuit zwischen dem VEGABOX 03 und dem Sensor should be set up without grounding

9 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:

- 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

10 Instructions for zone 0 applications

In hazardous areas, the instrument should only be operated under atmospheric conditions:

- Temperature: -20 … +60 °C.
- Pressure: 80 … 110 kPa (0.8 … 1.1 bar)
- Air with normal oxygen content, normally 21 %

If no explosive mixtures or additional application conditions are certified resp. supplementary measures such as e.g. according to EN 1127-1 taken, then the instruments can be also operated according to the manufacturer specification outside atmospheric conditions.

If there is a risk of dangerous potential differences inside zone 0, then suitable measures for circuits in zone 0 must be taken, e.g. according to the requirements of IEC/EN 60079-14.

11 Electrical data

Supply and signal circuit:	
Terminals 1, 2	In type of protection intrinsic safety Ex ia IIC/IIB
	For connection to a certified, intrinsically safe circuit. Maximum values: ● Ui = 30 V ● Ii = 150 mA ● Pi = 1000 mW ● Ci = 0 ● Li = 0
	When using the supplied connection cable, the following cable inductances L_i' and cable capacitances C_i' have to be taken into account: ● Li = 0.6 µH/m ● $C_{i\ wire/wire}$ = 133 pF/m ● $C_{i\ wire/screen}$ = 215 pF/m

Temperature measuring circuit:	
Terminals 3, 4, 5, 6	In type of protection intrinsic safety Ex ia IIC/IIB
	For connection to a certified, intrinsically safe circuit. Maximum values: ● Ui = 30 V ● Ii = 100 mA ● Pi = 500 mW ● Ci = 0 ● Li = 0
	When using the supplied connection cable, the following cable inductances L_i' and cable capacitances C_i' have to be taken into account: ● Li = 0.6 µH/m ● $C_{i\ wire/wire}$ = 188 pF/m ● $C_{i\ wire/screen}$ = 555 pF/m

The intrinsically safe circuits are electrically isolated from each other and from parts which can be grounded.

12 Thermal data

In version VEGABOX 03 with terminal blocks

Permissible ambient temperatures depending on temperature class

Category 1G (EPL Ga instruments)

Temperature class	T6 … T1
Permissible ambient temperature	-20 … +60 °C

The connection housing must only be operated in a hazardous area requiring instruments of category 1 if there are atmospheric conditions (pressure of 0.8 bar to 1.1 bar). If there is no explosive atmosphere, then the permissible operating temperatures and pressures must be taken from the manufacturer specifications.

Category 2G (EPL Gb instruments)

Temperature class	T6 … T1
Permissible ambient temperature	-50 … +80 °C

The permissible operating temperatures without explosion-endangered atmosphere are mentioned in the respective manufacturer instructions, e.g. operating instructions manuals.

Printing date:

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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