Safety instructions
VEGADIS 81

Intrinsic safety "i"

CE 0044

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Supplementary documentation:

- Operating Instructions VEGADIS 81
- EU-type approval certificate PTB 02 ATEX 2136 X (Document ID: 45390)
- EU declaration of conformity (Document ID: 43830)
- SIL Safety Manual (Document ID: 50224)

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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 VEGADIS 81 of type series:

- VEGADIS DIS81(*).AC*******
- VEGADIS DIS81(*).AO*******
- VEGADIS DIS81(*).AH*******

According to EU type approval certificate PTB 02 ATEX 2136 X (certificate number on the type label) and for all instruments with safety instruction 45389.

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

VEGADIS DIS81(*).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)
		H	ATEX II 1G, 2G Ex ia IIC T6 Ga, Gb or ATEX II 2D Ex tb IIIC T75°C Db IP66
c	Electronics	I	Digital (I²C communication)
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

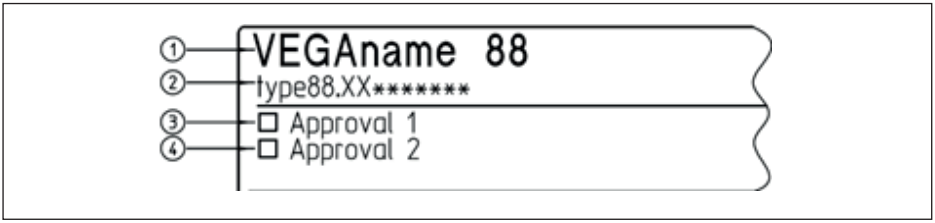
Position		Feature	Description
g	Display and adjustment module PLICSCOM	X	without
		A	mounted
		F	without; lid with inspection window
		K	mounted; with Bluetooth, magnetic pen operation
h	Mounting type	A	for wall mounting with Aluminium or stainless steel housing
		C	for carrier rail and wall mounting with plastic housing
		D	for carrier rail with Aluminium or stainless steel housing
		E	for tube mounting (29 … 60 mm) incl. mounting material
i	Certificates	X	No
		M	Yes

In the following, all above mentioned versions are called VEGADIS 81. If parts of these safety instructions refer only to certain versions, then these will be mentioned explicitly with their type code.

3 Different ignition protection types

The VEGADIS 81 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 VEGADIS 81
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“

If VEGADIS 81 is installed in a dust atmosphere, then the safety instructions and the instructions in the respective certificates must be noted:

Installation	Feature	Certificate	Safety instruction
Dust	"AH"	BVS 05 ATEX E 023	55131

4 General information

The VEGADIS 81 is used for separate parameter adjustment and visualization of measured values.

The VEGADIS 81 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB and IIC.

The VEGADIS 81 are suitable for applications requiring category 1G (EPL Ga) or 2G (EPL Gb) instruments.

5 Application area

Category 1G (EPL Ga instruments)
The VEGADIS 81 with the mechanical fixing element are installed in hazardous areas of zone 0 requiring category 1G (EPL Ga) instruments.

Category 2G (EPL Gb instruments)
The VEGADIS 81 with the mechanical fixing element are installed in hazardous areas of zone 1 requiring category 2G (EPL Gb) instruments.

6 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGADIS 81, 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 VEGADIS 81 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

7 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

Intrinsic safety "i"

- 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

8 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 VEGADIS 81
- For assessment and reduction of the explosion risk, valid standards such as for example ISO/EN 1127-1 must be taken into account

9 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 VEGADIS 81 und dem Sensor should be set up without grounding

10 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

11 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.

12 Electrical data

VEGADIS DIS81(*).AC/O/H

Supply and signal circuit:	
Terminals 5, 6, 7, 8	In type of protection intrinsic safety Ex ia IIC.
	For connection to a certified, intrinsically safe circuit. $U_i \leq 6$ V $P_i \leq 332$ mW
	Characteristics: Linear
	C_i negligibly small L_i negligibly small
	For connection to the indicating and adjustment circuit, terminal 5, 6, 7, 8 of the certified VEGA sensors with separate certifications.
	The permissible L_o and C_o values of the connection cable between VEGADIS 81 and the connected sensor are mentioned in the EU type approval certificate.

Display and adjustment circuit:	
Spring contacts in the connection compartment	In type of protection intrinsic safety Ex ia IIC
	Only for connection to the display and adjustment module PLICSCOM or for service purposes to the interface adapter VEGACONNECT.

The circuits of VEGADIS 81 are galvanically separated from ground.

The metallic parts of VEGADIS 81 are electrically connected with the earth terminals.

13 Thermal data

The following temperature tables are valid for all housing and electronics versions.

The relationship between the permissible ambient temperature for the electronics housing depending on the area of application and the maximum surface temperatures, temperature classes, can be seen in the following tables.

Category 1G (EPL Ga instruments)

Temperature class	**Ambient temperature (Ta)**
T6	-20 … +46 °C
T5, T4, T3, T2, T1	-20 … +60 °C

The application conditions during operation without explosion-endangered atmosphere are mentioned in the respective manufacturer instructions, e.g. operating instructions manuals.

Category 2G (EPL Gb instruments)

Temperature class	**Ambient temperature (Ta)**
T6	-40 … +46 °C
T5	-40 … +60 °C
T4, T3, T2, T1	-40 … +80 °C

The application conditions during operation without explosion-endangered atmosphere are mentioned in the respective manufacturer instructions, e.g. operating instructions manuals.

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