



Safety instructions

VEGASWING 61, 63

Dust ignition protection by enclosure

Two-wire

NAMUR



CE 0044



Document ID: 50810



VEGA

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Supplementary documentation:

- Operating Instructions VEGASWING 61, 63
- EU type approval certificate BVS 04 ATEX E 205 X (Document ID: 50811)
- EU declaration of conformity (Document ID: 44385)

Editing status: 2021-06-25

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 explosionsfarliga områden
DA	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfære
FI	Turvallisuusohjeet räjähdysvaarallisissa tiloissa käyttöä varten
EL	Υποδείξεις ασφαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης

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1 Area of applicability

These safety instructions apply to the level sensors VEGASWING 61, 63 of type series:

- SWING61(*).GX/CK**N/W/Z
- SWING63(*).GX/CK**N/W/Z

with the electronics versions

- Z - Two-wire
- N - NAMUR
- W - NAMUR (250 ms)

According to EU type approval certificate BVS 04 ATEX E 205 X (certificate number on the type label) and for all instruments with safety instruction 50810.

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

- EN IEC 60079-0: 2018
- IEC 60079-26: 2021
- EN 60079-31: 2014

Type of protection marking:

- II 1D Ex ta IIIC T... Da IP66
- or
- II 1/2D Ex ta/tb IIIC T... Da/Db IP66
- or
- II 2D Ex tb IIIC T... Db IP66

2 Important specification in the type code

VEGASWING SWING61/63(*).abcdefghij

Position		Feature	Description
ab	Approval	CK	ATEX II 1/2D, 2D Ex ta/tb, tb IIIC T... Da/Db, Db IP66
		CK	ATEX II 1/2D, 2D Ex ta/tb, tb IIIC T... Da/Db, Db IP66 + Overfill protection (WHG)
		GX	ATEX II 1/2D, 2D Ex ta/tb, tb IIIC T... Da/Db, Db IP66
cde	Process fitting / Material	**	Process fittings acc. to industry standard
f	Adapter / Process temperature	X	without / -40 ... +150 °C
		T	with / -50 ... +250 °C
		H	with / -50 ... +200 °C with enamel coating
		G	without adapter, gas-tight leadthrough / -50 ... +150 °C
		D	with adapter, gas-tight leadthrough / -50 ... +250 °C

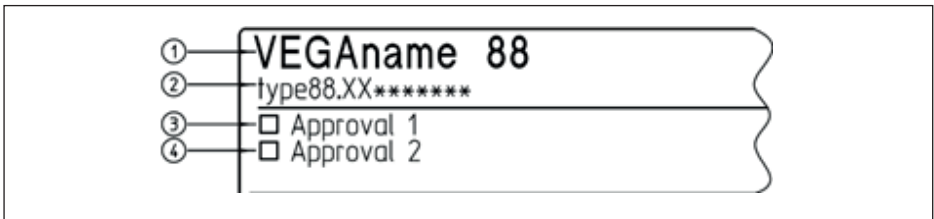
Position		Feature	Description
g	Housing / Protection / Cable gland	M	Aluminium single chamber / IP66/IP67 / M20 x 1,5
		7	Special colour Aluminium single chamber / IP66/IP67 / M20 x 1,5
		U	Aluminium single chamber / IP66/IP67 / ½ NPT
		4	Special colour Aluminium single chamber / IP66/IP67 / ½ NPT
		V	Stainless steel single chamber (precision casting) / IP66/IP67 / M20 x 1,5
		A	Stainless steel single chamber (precision casting) / IP66/IP67 / ½ NPT
		*	Further housings with suitable plug connectors and special colours
h	Electronics	Z	Two-wire (8/16 mA) 12 ... 36 V DC
		N	NAMUR signal
		W	NAMUR signal (250 ms)
i	Switching point	X	Standard
		L	with extended switching point
j	Measurement loop identification label	*	

In the following, all above mentioned versions are called VEGASWING 61, 63. 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 VEGASWING 61, 63 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 VEGASWING 61, 63
- 2 Instrument version
- 3 Identification label: Approval in dust ignition protection type e. g. „Ex t“
- 4 Identification label: Approval in Gas ignition protection type e. g. „Ex i“, „Ex d“

4 General information

The VEGASWING 61, 63 are used for level measurement in hazardous areas.

The VEGASWING 61, 63 are suitable for use in areas with combustible, dust-generating bulk solids of explosion groups IIIA, IIIB and IIIC.

The VEGASWING 61, 63 are suitable for applications requiring category 1D (EPL Da), 1/2D

(EPL Da/Db), 1/3D (EPL Da/Dc) or 2D (EPL Db) instruments.

5 Application area

Category 1D (EPL Da instruments)







The VEGASWING 61, 63 with the mechanical fixing element are installed in hazardous areas of zone 20 requiring category 1D (EPL Da) instruments.

Category 1/2D (EPL Da/Db instruments)

The VEGASWING 61, 63 with mechanical fixing element are installed in hazardous areas of zone 21 requiring instruments of category 2D (EPL Db). The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring instruments of category 2D (EPL Db) or 1D (EPL Da). The sensor measuring system is installed in hazardous areas of zone 20 requiring instruments of category 1D (EPL Da).

Category 2D (EPL Db instruments)

The VEGASWING 61, 63 with the mechanical fixing element are installed in hazardous areas of zone 21 requiring category 2D (EPL Db) instruments.

VEGA Instrument	2D (EPL Db)	1/2D (EPL Da/Db)	1D (EPL Da)
Ex Zone 22 			
Ex Zone 21 			
Ex Zone 20 			

6 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGASWING 61, 63, 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 VEGASWING 61, 63 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

> 10⁹ 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

Media resistance

The wetted materials must be resistant against the measured media.

The min. fatigue strength of the vibrating element is 8.6×10^{11} load changes with a max. amplitude of 7.5 µm. The lifetime is minimum 20 years.

All VEGASWING 61, 63 contain a separation element according to EN 60079-0. This partition wall is made of stainless steel with a thickness of ≥ 1 mm.

Installation

The VEGASWING 61, 63** must be mounted in a way that adequately ensures that the sensor tube will not bend due to the movements of other installations or the medium in the vessel.

Cable entry

The supplied cable entry is suitable for the housing temperature range mentioned in the EU type approval certificate VEGASWING 61, 63.

Cable entries may only be replaced by the same type or by 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 ... +73 °C).

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

Cable and wire entries

- The VEGASWING 61, 63 must be connected via suitable cable gland or conduit systems that are in conformity with the requirements of the flame proofing and the IP protection and provided with a separate type approval certificate. When connecting VEGASWING 61, 63 to conduit systems, the corresponding sealing facility must be connected directly to the housing.
- The red thread or/dust covers screwed in when the instruments are shipped (depending on the version) must be removed before setup and replaced by cable entries or closing screws suitable for the respective ignition protection type and IP protection.
- Note type and size of the thread: A label with the respective thread name is in the area of the respective thread
- Threads must have no damages
- Cable entries and closing screws should be mounted correctly and according to the safety instructions of the manufacturer to ensure the specified ignition protection type and IP protection rating. When using certified or suitable cable glands, closing screws or plug connections, it is absolutely necessary to note the corresponding certificates/documents. Supplied cable entries or closing screws meet these requirements.
- Unused openings must be closed with plugs suitable for the ignition protection type and IP protection. Supplied plugs meet these requirements.
- Cable or wire entries resp. the closing screws must be tightly screwed into the housing
- The connection cables resp. pipeline sealing facilities must be suitable for the application conditions (e.g. temperature range) of the application
- With surface temperatures > 70 °C, the cables must be suitable for the higher application conditions
- The connection cable of VEGASWING 61, 63 has to be wired fix and in such a way that damages can be excluded.

Single chamber housing "Ex t"



- 1 Lid, optionally with inspection window
- 2 "Ex t" connection compartment with electronics module
- 3 Label: Thread type
- 4 Screw plug
- 5 External ground terminal
- 6 Red threaded or dust protection cap
Transport protection, replace with installation
- 7 Locking screws of the lid for lid locking

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- Vessel installations and probable flow must be taken into account
- Process connections separating two areas of different Ex-zones must comply to valid regulations and standards and the protection rating must be in conformity to IEC/EN 60529
- Close the housing lid (s) up to the stop before starting operating, to ensure the IP protection rating specified on the type label
- Protect the lid against unauthorized opening by unscrewing the locking screw up to the stop. With double chamber housing, you have to protect both lids.

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

The parts of the VEGASWING 61, 63 being in contact with flammable media during operation must be included in the periodic overpressure test of the plant.

Dust ignition protection by enclosure "t"

- The terminals for connecting the operating voltage or signal circuits are integrated in the connection compartment with type of protection dust explosion protection by housing "t"
- Cable, wire entries and the closing screws must be certified acc. to ignition protection type dust ignition protection by enclosure "t"
- Cable, wire entries resp. the closing screws in simple construction must not be used
- Separately certified cable and wire entries can determine the permissible ambient temperature range or the temperature classes

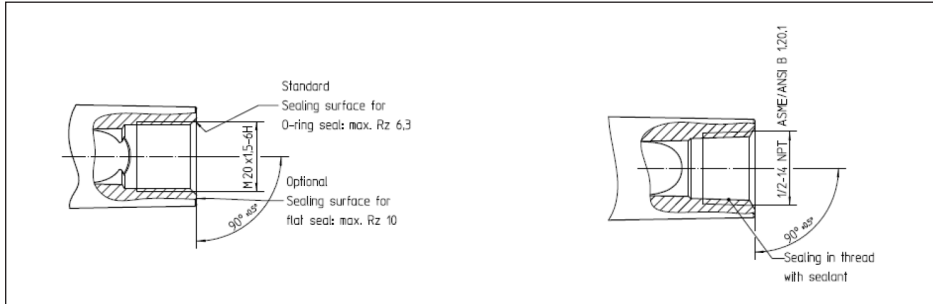
Cable glands, threaded openings

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

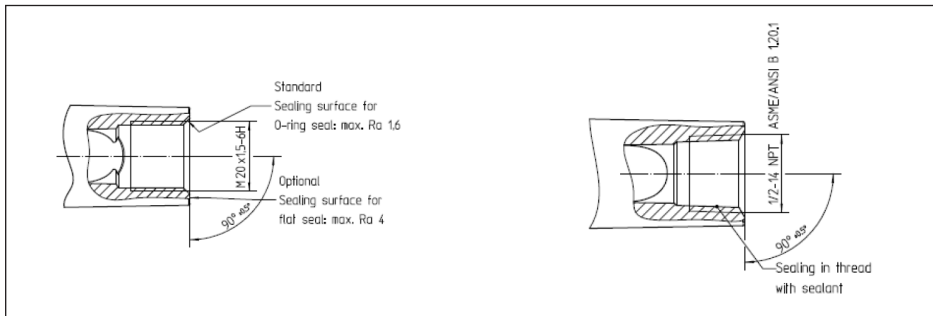
The specified tightening torques are test torques and are to be seen only as recommended values. These were determined according to the specifications of the listed valid standards. The tightening torques may deviate depending on the type and characteristic of the cables/lines. If assembly instructions 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, 1/2 NPT thread



Stainless-steel housing (fine cast) with M20 x 1.5 thread, 1/2 NPT thread



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 VEGASWING 61, 63
- For assessment and reduction of the explosion risk, valid standards such as for example ISO/EN 1127-1 must be taken into account
- Lids must not be opened if there is a hazardous atmosphere. The housing lids are marked with the warning label:

WARNING - DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

9 Instructions for zone 20, zone 20/21 applications

In hazardous areas, the instrument, sensor measuring system in zone 20 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 %

The surface temperature in zone 20 must not be higher than 2/3 of the min. ignition temperature of the dust cloud and the ignition temperature of the dust layer, 75 K plus a safety distance acc. to standard IEC/EN 60079-14. The operator has to make sure that the max. permissible surface temperature will not be exceeded. The parts of the sensor which during operation are in contact with flammable products, must be integrated in the periodic overpressure test of the plant.

If no explosive mixtures or additional application conditions are certified or supplementary measures such as e.g. according to ISO/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 20, then suitable measures for circuits in zone 20 must be taken, e.g. according to the requirements of IEC/EN 60079-14.

10 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

11 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

12 Electrical data

VEGASWING SWING6*.GX/CK***** Z**	
Supply and signal circuit: Terminals 1[+], 2[-]	In type of protection intrinsic safety Ex ia IIC For connection to a certified, intrinsically safe circuit. Maximum values: ● $U_i = 29\text{ V}$ ● $I_i = 116\text{ mA}$ ● $P_i = 841\text{ mW}$ or ● $U_i = 24\text{ V}$ ● $I_i = 131\text{ mA}$ ● $P_i = 786\text{ mW}$ The effective internal capacitance C_i is negligibly small. The effective internal inductance L_i is negligibly small.
The intrinsically safe circuits are electrically separated from parts which can be grounded. The metallic parts of VEGASWING 61, 63 are electrically connected with the earth terminals.	

VEGASWING SWING6*.GX/CK***** N/W**	
Supply and signal circuit: Terminals 1[+], 2[-]	In type of protection intrinsic safety Ex ia IIC For connection to a certified, intrinsically safe circuit. Maximum values: ● $U_i = 20\text{ V}$ ● $I_i = 103\text{ mA}$ ● $P_i = 516\text{ mW}$ The effective internal capacitance C_i is negligibly small. The effective internal inductance L_i is negligibly small.
The intrinsically safe circuits are electrically separated from parts which can be grounded. The metallic parts of VEGASWING 61, 63 are electrically connected with the earth terminals.	

13 Thermal data

Permissible ambient/process temperature

Category 1D or 2D (EPL Da or EPL Db instrument)

	Process temperature on the sensor
VEGASWING SG61/63(*).GX*****X**	-40 ... +150 °C
VEGASWING SG61/63(*).GX*****G**	-50 ... +150 °C
VEGASWING SG61/63(*).GX*****H**	-50 ... +200 °C
VEGASWING SG61/63(*).GX*****T/D**	-50 ... +250 °C
In the high temperature version with temperature adapter	-40 ... +250 °C

Category 2D (EPL Db instruments)

	Ambient temperature on the electronics housing
VEGASWING SG61/63(*).GX/CK*****Z/N/W**	-40 ... +60 °C

Surface temperature increases

Category 1D or 2D (EPL Da or EPL Db instrument)

	Surface temperature increases on the sensor
VEGASWING SG61/63(*).GX/CK*****Z/N/W**	Process temperature +6 K

Category 2D (EPL Db instruments)

	Surface temperature increases on the electronic housing
VEGASWING SG61/63(*).GX/CK*****Z/N/W**	Ambient temperature +13 K

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.

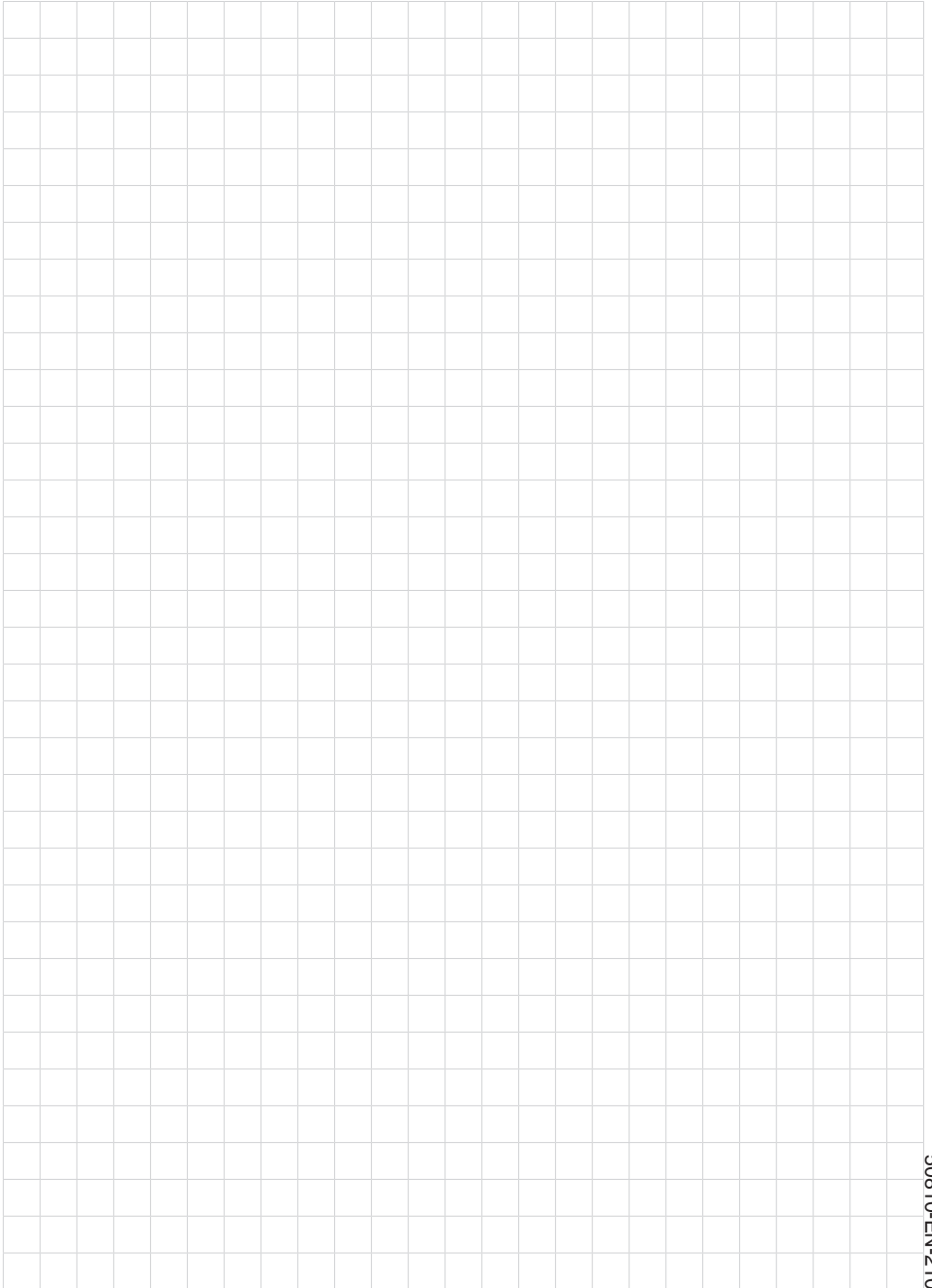
Permissible operating pressure on the sensor

The process pressure during operation in hazardous atmosphere must be between 0.8 ... 1.1 bar. The permissible combinations of pressure and temperatures without hazardous atmospheres are mentioned in the manufacturers' instructions (the operating instructions manuals).

Protection rating

Protection according to EN 60529

On the housing, Category 2D (EPL Db instruments)	IP66
On the sensor, Category 1D or 2D (EPL Da or EPL Db instrument)	IP68





Printing date:

VEGA

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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50810-EN-210727

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