



Safety instructions

VEGASWING 66

Flameproof enclosure "d"

Relay (2 x SPDT)

Transistor (NPN/PNP)

Two-wire (8/16 mA)



Document ID: 50632



VEGA

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Supplementary documentation:

- Operating Instructions VEGASWING 66
- Certificate of Conformity CSA 14.2644793 (Document ID: 50633)
- SIL Safety Manual (Document ID: 44621)

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1 Area of applicability

These safety instructions apply to the VEGASWING 66 of type series:

- VEGASWING SG66(*).CE/CQ****R/T/Z/S/I/L***

With the electronics versions:

- R - Relay (2 x SPDT) 20 ... 72 V DC/20 ... 253 V AC (5 A)
- T - Transistor (NPN/PNP) 9.6 ... 55 V DC
- Z - Two-wire (8/16 mA) 9.6 ... 35 V DC
- S - Relay (2 x SPDT) 20 ... 72 V DC/20 ... 253 V AC (5 A) with SIL qualification
- I - Transistor (NPN/PNP) 9.6 ... 55 V DC with SIL qualification
- L - Two-wire (8/16 mA) 9.6 ... 35 V DC with SIL qualification

According to Certificate of Conformity CSA 14.2644793 (certificate number on the type label) and for all instruments with safety instruction 50632.

The classification as well as the respective standards are stated in the Certificate of Conformity:

- CAN/CSA Std. C22.2 No. 60079-0:11
- CAN/CSA Std. C22.2 No. 60079-1:11
- CSA Std. C22.2 No. 30 M1986 (R 2012)
- ANSI/UL 60079-0 (6th Ed. 2013)
- ANSI/UL 60079-1 (6th Ed. 2009)
- UL Std. No. 1203, Ed 5 (2013)

Ignition protection label:

- Class I Division 1, Group BCD T6...T1
- Ex d IIC T6...T1 Ga/Gb
- Ex d IIC T6...T1 Gb
- Class I, Zone 0/1 AEx d IIC T6...T1 Ga/Gb
- Class I, Zone 1 AEx d IIC T6...T1 Gb

2 Important specification in the type code

VEGASWING SG66(*).abcdefghijkl

Position	Feature	Description
a	Scope	C Canada
b	Approval	E C-CSA-US (XP) CL I, DIV1, GP BCD
		Q C-CSA-US (XP) CL I, DIV1, GP BCD + Ship approval
c	Version / Material	K Compact version / Inconel 718 (2.4668), Alloy C22 (2.4602)
		R with tube extension / 316L and Inconel 718 (2.4668), Alloy C22 (2.4602)
		H with tube extension / Alloy C22 (2.4602) and Inconel 718 (2.4668)
de	Process fitting / Material	** One or two-digit alphanumeric code for gas-tight threaded connections, pipe connections and industrial flanges acc. to ASME, BS, DIN, EN, GOST, HG/T, JIS, other international, national or industrial standards, regulations or standards with pressure specifications
e	Second line of defense / Process temperature	A with / -196 ... +450 °C

Position		Feature	Description
k	Electronics	R	Relay (2 x SPDT) 20 ... 72 V DC/20 ... 253 V AC (5 A)
		T	Transistor (NPN/PNP) 9.6 ... 55 V DC
		Z	Two-wire (8/16 mA) 9.6 ... 35 V DC
		S	Relay (2 x SPDT) 20 ... 72 V DC/20 ... 253 V AC (5 A) with SIL qualification
		I	Transistor (NPN/PNP) 9.6 ... 55 V DC with SIL qualification
		L	Two-wire (8/16 mA) 9.6 ... 35 V DC with SIL qualification
l	Housing / Protection	A	Aluminium single chamber / IP 66/IP 67
		A	Aluminium single chamber / IP 66/IP 68 (0.2 bar)
		V	Stainless steel single chamber (precision casting) / IP 66/IP 67
		V	Stainless steel single chamber (precision casting) / IP 66/IP 68 (0.2 bar)
		*	Further housings with special colour
j	Cable entry / Connection	D	M20 x 1.5 / Blind plug
		1	M20 x 1.5 / without
		N	½ NPT / Blind plug
		Q	½ NPT / without
		*	One-digit alphanumerical variable for cable entries/connections suitable for the flame proofing.
k	Certificates	X	No
		M	Yes

In the following, all above mentioned versions are called VEGASWING 66. 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 VEGASWING 66 are used for monitoring or control of levels in hazardous areas, also when combustible liquids, gases, mist and vapours are present.

The VEGASWING 66 are suitable for use in hazardous atmospheres of all combustible materials of explosion group B, C, D for applications requiring instruments of Class I, DIV 1 or of explosion groups IIA, IIB and IIC for applications requiring EPL Ga/Gb or EPL Gb instruments.





4 Application area

EPL Ga/Gb instrument

The VEGASWING 66 with mechanical fixing element are installed in hazardous areas of zone 1 requiring EPL Gb instruments. The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring EPL Gb or EPL Ga instruments. The sensor measuring system is installed in hazardous areas of zone 0 requiring EPL Ga instruments.

EPL Gb instrument

The VEGASWING 66 with the mechanical fixing element are installed in hazardous areas of zone 1 requiring EPL Gb instruments.

VEGA Instrument	EPL Ga/Gb	EPL Gb
Ex Zone 0/1 		
Ex Zone 1 		

5 Special operating conditions

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 66 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 with 15 pF.

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 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 Certificate of Conformity 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 inte-

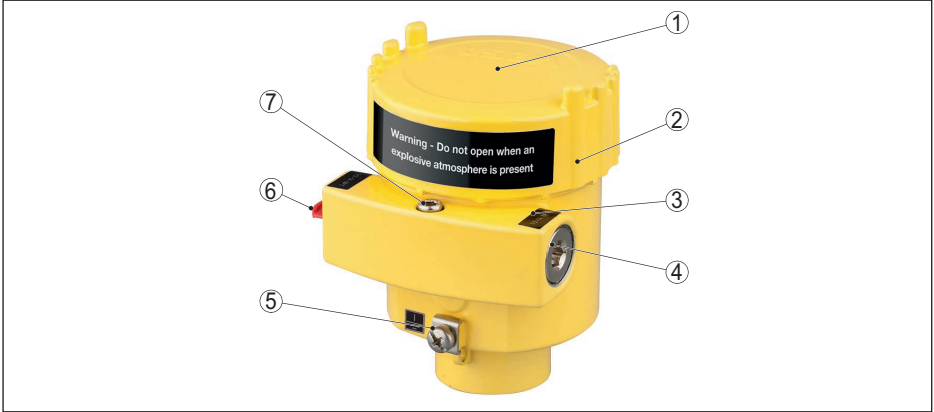
grated in the type test. This applies also to the components already mentioned in the technical description.

- Vessel installations and probable flow must be taken into account

Cable and wire entries

- The VEGASWING 66 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 66 to conduit systems, a seal shall be installed within 18 inches of the enclosure.
- 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 > 60 °C, the cables must be suitable for the higher application conditions
- The connection cable of VEGASWING 66 has to be wired fix and in such a way that damages can be excluded.

Single chamber housing



- 1 Lid, optionally with inspection window
- 2 Electronics compartment
- 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

Double chamber housing



- 1 Lid, optionally with inspection window
- 2 Electronics compartment
- 3 Screw plug
- 4 Connection compartment
- 5 Transport protection, replace with installation
Red threaded or dust protection cap
- 6 Label: Thread type
- 7 Locking screws of the lid for lid locking
- 8 Lid, optionally with inspection window
- 9 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 66 being in contact with flammable media during operation must be included in the periodic overpressure test of the plant.

Flameproof enclosure "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 gaps between housing and cover as well as between threaded fitting and container are flameproof joints
- It is not allowed to repair the flameproof joints.
- Cable, wire entries and closing screws must be certified acc. to ignition protection type Flameproof enclosures "d". Cable, wire entries and closing screws of simple design must not be used.
- Separately certified cable and wire entries can determine the permissible ambient temperature range or the temperature classes
- Only one threaded adapter is allowed per thread, when using a closing screw, threaded adapters are not allowed

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 VEGASWING 66
- 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

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 or CEC/NEC

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
- 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 -- DO NOT OPEN WHEN AN EXPLOSIVE
ATMOSPHERE IS PRESENT

AVERTISSEMENT -- NE PAS OUVRIR SI UNE
ATMOSPHÈRE EXPLOSIVE PEUT ÊTRE PRÉSENTE

WARNING -- A SEAL SHALL BE INSTALLED WITHIN
18 inch OF THE ENCLOSURE

AVERTISSEMENT -- UN SCELLEMENT DOIT ÊTRE
INSTALLÉ À MOINS DE 18 POUCE DU BOÎTIER

10 Electrical data

VEGASWING SG66(*).CE/CQ****R/S*** with integrated electronics module SG60HT-R/S	
Voltage supply: Terminals 1, 2	U = 20 ... 253 V AC, 50/60 Hz U = 20 ... 72 V DC U _m = 253 V AC
Power consumption:	max. 3 VA, max. 1 W
Relay circuit: Contact set 1: (terminals 3, 4, 5) Contact set 2: (terminals 6, 7, 8)	Maximum values: AC max. 253 V, 5 A, 1250 VA DC max. 253 V, 1 A, 40 W

VEGASWING SG66(*).CE/CQ****T/I*** with integrated electronics module SG60HT-T/I	
Voltage supply: Terminals 1, 4	U = 9.6 ... 55 V DC U _m = 253 V AC
Power consumption:	max. 2 W
Load current, transistor output (NPN/PNP): (terminals 2, 3)	max. 400 mA, 55 V DC

VEGASWING SG66(*).CE/CQ****Z/L*** with integrated electronics module SG60HT-Z/L	
Supply and signal circuit: Terminals 1+, 2-	U = 9.6 ... 35 V DC

The metallic parts of VEGASWING 66 are electrically connected with the earth terminals.

11 Mechanical data

The following mechanical data are valid for all housing and electronics versions.

Mechanical data	
Ground terminal (connection cross-section)	≥ 4 mm ²

12 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.

Division 1, Zone 0/1, Zone 1

Temperature class	Permissible ambient temperature on the sensor	Permissible ambient temperature on the electronics
T6	-196 ... +80 °C	-50 ... +60 °C
T5	-196 ... +95 °C	-50 ... +60 °C
T4	-196 ... +130 °C	-50 ... +60 °C
T3	-196 ... +195 °C	-50 ... +60 °C
T2	-196 ... +290 °C	-50 ... +60 °C
T1	-196 ... +440 °C	-50 ... +60 °C

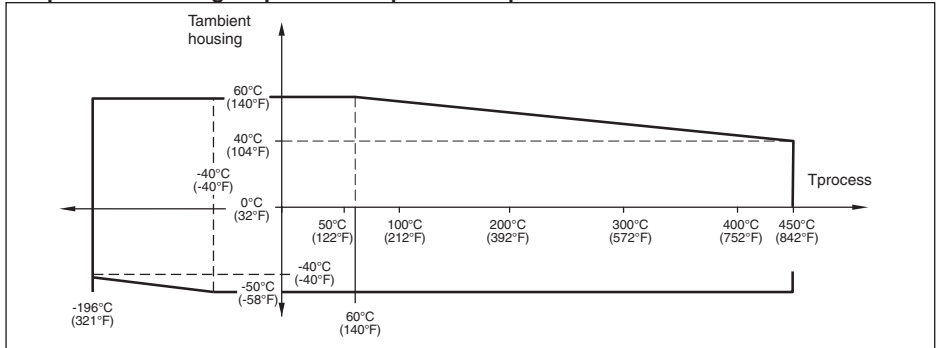
If sensor measuring systems are operated at higher temperatures, make sure by means of appropriate measures that there is no danger of ignition from hot surfaces and that the max. permissible temperature on the housing/electronics does not exceed the values specified in above table.

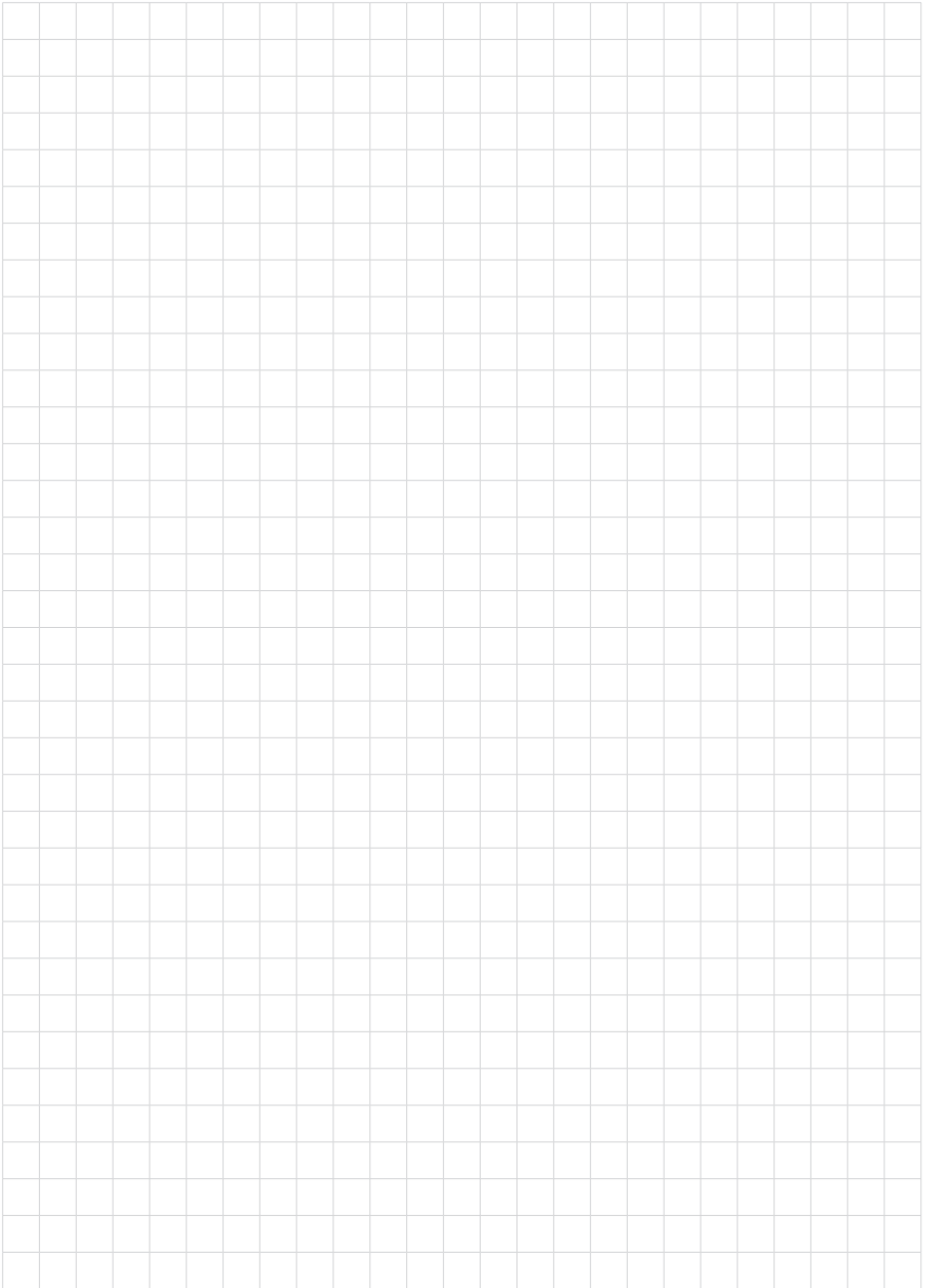
In hazardous areas, the instrument should only be operated under atmospheric conditions:

- Pressure: 80 ... 110 kPa (0.8 ... 1.1 bar)
- Air with normal oxygen content, normally 21 %

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

Temperature derating for process temperatures up to +450 °C and -196 °C







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.

Subject to change without prior notice

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