Safety instructions
VEGASWING 66

Explosion protection for Zone 2 "nA"
Relay (2 x SPDT)
Transistor (NPN/PNP)
Two-wire (8/16 mA)

Document ID: 58650

Contents

Supplementary documentation:

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

Editing status: 2018-09-17

58650-EN-230126

1 Area of applicability

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

- VEGASWING SG66(*).CA/CN****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 58650.

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. 60079-15:12
- CSA Std. C22.2 No. 213-M1987 (R 2013)
- ANSI/UL 60079-0 (6th Ed. 2013)
- ANSI/ISA-60079-15 (12.12.02)-2012
- ANSI/ISA 12.12.01-2013

Ignition protection label:

- Class I Div 2, Groups A, B, C, D T6…T1
- Class I, Zone 2 AEx nA IIC T6…T1 Gc

2 Important specification in the type code

VEGASWING SG66(*).abcdefghijk

Position		Feature	Description
a	Scope	C	Canada
b	Approval	A	C-CSA-US (NI) CL I, DIV2, GP ABCD
		N	C-CSA-US (NI) CL I, DIV2, GP ABCD + 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 alphanumerical 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)
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 A, B, C, D for applications requiring instruments of Class I, DIV 2 or of explosion groups IIA, IIB and IIC for applications requiring EPL Gc instruments.

4 Application area

EPL Gc instrument

The VEGASWING 66 are installed in hazardous areas requiring a EPL Gc instrument.

VEGA Instrument	EPL Gc
Ex Zone 2 	

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 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 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.

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.

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

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 or CEC/NEC

10 Electrical data

VEGASWING SG66(*).CA/CN*****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(*).CA/CN*****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(*).CA/CN*****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 mm²

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.

Temperature class	Permissible ambient temperature on the sensor	Permissible ambient temperature on the electronics
T6	-196 … +80 °C	-50 … +48 °C
T5	-196 … +95 °C	-50 … +63 °C
T4	-196 … +130 °C	-50 … +70 °C
T3	-196 … +195 °C	-50 … +70 °C
T2	-196 … +290 °C	-50 … +70 °C
T1	-196 … +440 °C	-50 … +70 °C

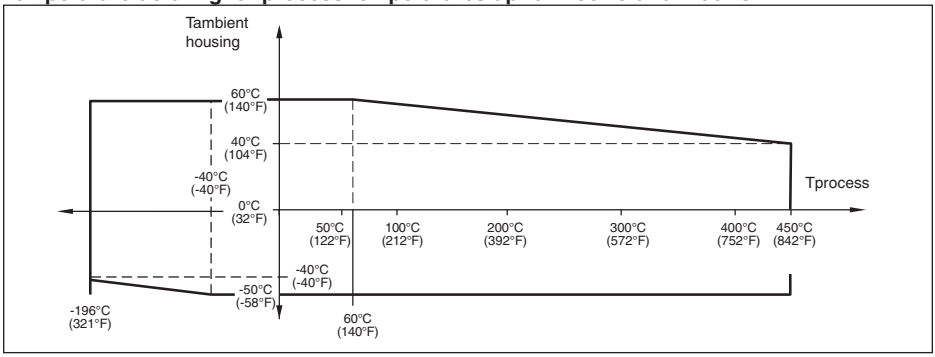
If sensor measuring systems are operated at higher temperatures, make sure by means of appropriate measures that there is no danger of ignition from hot surfaces and that the max. permissible temperature on the housing/electronics does not exceed the values specified in above table.

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

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 %

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



Printing date:

58650-EN-230126

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

Phone +49 7836 50-0
E-mail: info.de@vega.com
www.vega.com