OPTISWITCH 5300 C
VF534(*). CE/Q***R/S/T/I/Z/L******

Vibrating Level Switch

CSA 2883849
CL I Div 1, GP ABCD; CL II Div 1, GP EFG; CL III
Ex d IIC T6 … T1 Gb
CL I, Zone 0/1, 1 AEx d IIC T6 … T1 Gb
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Please note:
These safety instructions are part of the operating instructions:
- 48075 - OPTISWITCH 5300 C - Relay
- 48076 - OPTISWITCH 5300 C - Transistor (NPN/PNP)
- 48074 - OPTISWITCH 5300 C - Two-wire
- 51358 - Certificate of Conformity CSA 2883849

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1 Area of applicability
These safety instructions apply to the vibrating level switches OPTISWITCH 5300 C VF534(*).
CE/Q***R/S/T/I/Z/L****** according to Certificate of Conformity CSA 15.xxxxx (certificate number on
the type label) and to all instruments with the number of the safety instruction (51357) on the type
label.

2 General information
The OPTISWITCH 5300 C VF534(*).CE/Q***R/S/T/I/Z/L****** are used for monitoring or control
of levels in hazardous areas, also when combustible liquids, gases, mist, vapours, dusts, fibers or
flyings are present.

The OPTISWITCH 5300 C VF534(*).CE/Q***R/S/T/I/Z/L****** are suitable for use in hazardous at-
mospheres of all combustible materials of explosion group A, B, C, E, F, G for applications requiring
Class I, II, III, Div 1 instruments or of explosion groups IIA, IIB, IIC for applications requiring Class I,
Zone 0/1, 1 Ex d Gb instruments.

If the OPTISWITCH 5300 C VF534(*).CE/Q***R/S/T/I/Z/L****** are installed and operated in
hazardous areas, the general Ex installation regulations in the Canadian Electrical Code (Canada),
National Electrical Code as well as these safety instructions must be observed.

The installation of explosion-endangered systems must always be carried out by qualified person-
nel.

Installation at the separation wall between Zone 0 and Zone 1
The electronics housing is installed in hazardous areas requiring instruments of type EPL-Gb. The
process connection elements are installed in the separating wall, which separates Zone 0 and Zone
1. The sensor with the mechanical fixing element is installed in hazardous areas requiring instru-
m ents of type EPL-Ga.

Installation in Zone 1/Division 1
The OPTISWITCH 5300 C VF534(*).CE/Q***R/S/T/I/Z/L****** are installed in hazardous areas
requiring a EPL-Gb instrument.

3 Technical data

Electrical data

OPTISWITCH 5300 C VF534(*).IE***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   | Maximum values:  
| (terminals 3, 4, 5), contact    | AC max. 253 V, 5 A, 1250 VA  
| set 2 (terminals 6, 7, 8)      | DC max. 253 V, 1 A, 40 W  

OPTISWITCH 5300 C VF534(*).IE***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  | max. 400 mA, 55 V DC  
| (NPN/PNP): (terminals 2, 3)     |
OPTISWITCH 5300 C VF534(*)IE***Z/L with integrated electronics module SG60HT-Z/L

Power supply and signal circuit: (terminal $U_1 = 9.6 \ldots 35$ V DC
1+, 2-) $U_m = 253$ V AC

The metallic parts of the level switches are electrically connected with the internal and external earth terminals.

4 Application conditions

Permissible ambient temperatures
The max. permissible ambient temperatures depending on the temperature class are specified in the following table.

Class I, Zone 0/1 applications

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Permissible ambient temperature on the electronics</th>
<th>Permissible ambient temperature on the sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6, T5, T4, T3, T2, T1</td>
<td>-50 … +60 °C</td>
<td>-20 … +60 °C</td>
</tr>
</tbody>
</table>

If the sensors of OPTISWITCH 5300 C VF534(*)IE/Q***R/S/T/I/Z/L****** are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values specified in the above table. The application conditions when operating in the absence of explosive mixtures can be found in the operating instructions.

Zone 1/Division 1 applications

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Permissible ambient temperature on the electronics</th>
<th>Permissible ambient temperature on the sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-50 … +60 °C</td>
<td>-196 … +85 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-50 … +60 °C</td>
<td>-196 … +100 °C</td>
</tr>
<tr>
<td>T4</td>
<td>-50 … +60 °C</td>
<td>-196 … +135 °C</td>
</tr>
<tr>
<td>T3</td>
<td>-50 … +60 °C</td>
<td>-196 … +200 °C</td>
</tr>
<tr>
<td>T2</td>
<td>-50 … +60 °C</td>
<td>-196 … +300 °C</td>
</tr>
<tr>
<td>T1</td>
<td>-50 … +60 °C</td>
<td>-196 … +450 °C</td>
</tr>
</tbody>
</table>

If the sensors of OPTISWITCH 5300 C VF534(*)IE/Q***R/S/T/I/Z/L****** are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values specified in the above table. The application conditions when operating in the absence of explosive mixtures can be found in the operating instructions.
5 Protection against static electricity
The OPTISWITCH 5300 C VF534(*)CE/Q***R/S/T/I/Z/L****** in versions with electrostatically chargeable plastic parts, such as e.g. metal housing with inspection window, with plastic coated sensor or distance tube, have a caution label pointing out the safety measures that must be taken with regard to electrostatic charges during operation.

Caution: Plastic parts! Danger of electrostatic charging!
- Avoid friction
- No dry cleaning
- Do not mount in areas with flowing, non-conductive products

6 Installation
The OPTISWITCH 5300 C VF534(*)CE/Q***R/S/T/I/Z/L****** have to be mounted so that the sensor is effectively secured against bending or oscillating as well as contact of the sensor to the vessel wall, under consideration of the vessel installations and flow conditions in the vessel.

7 Impact and friction sparks
The OPTISWITCH 5300 C VF534(*)CE/Q***R/S/T/I/Z/L****** must be mounted in such a way that sparks from impact and friction between aluminium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

8 Grounding/Potential equalization
The "Ex-d" housing must be grounded. The external or internal ground connection terminal on the housing of OPTISWITCH 5300 C VF534(*)CE/Q***R/S/T/I/Z/L****** serves for this purpose.

9 Use of an overvoltage arrester
If necessary, a suitable overvoltage arrester can be connected in front of the OPTISWITCH 5300 C VF534(*)CE/Q***R/S/T/I/Z/L******.
Due to the metallic separation between the medium and the electronics a OPTISWITCH 5300 C VF534(*)CE/Q***R/S/T/I/Z/L****** does not require lightning protection measures according to the
10 **Material resistance**

For applications requiring instruments of category EPL-Ga/Gb the OPTISWITCH 5300 C VF534(*) CE/Q***R/S/T/I/Z/L****** should only be used in media against which the wetted materials are sufficiently resistant.

11 **Ignition protection type flameproof enclosure Ex "d"**

The terminals for connecting to the operating voltage, i.e. signal circuits, are integrated in the connection compartment according to protection type flame-proof enclosure "d".

The gaps between housing and cover as well as between threaded fitting and container are ignition-proof gaps.

The "Ex-d" connection compartment is provided with a M20 x 1.5 or ½-14 NPT thread for connection to a certified "Conduit" system or for mounting a "Ex-d" cable entry. Cable entries of simple construction may not be used. Please take note of section 13.1 and 13.2 of IEC 60079-1. When connecting to a "Conduit" system, the associated sealing facility must be located directly on the "Ex-d" connection compartment.

A certified "Ex-d" cable gland can optionally be supplied with the delivery. It is suitable for insertion of armoured or unarmoured cables in Zones applications depending on the ordered version. The instructions in the document accompanying the respective cable gland must be observed. The "Ex-d" cable gland must be screwed tightly into the housing. The supplied cable gland is suitable for the housing temperature range mentioned in the OPTISWITCH 5300 C VF534(*).CE/Q***R/S/T/I/Z/L****** specification. If a different cable gland is used, the separately certified cable gland or the temperature classes on the electronics determines the maximum permissible ambient temperature on the housing.

The factory-installed screw plug or blind plug (depending on the type ordered) is part of the "Ex-d" housing. If a screw plug type other than the factory-installed screw plug or the one with article number 2.30690 is used, it must be suitable for the function.

Before opening the lid of the "Ex-d" connection compartment or in case it is already open (e.g. during connection or service work), make sure that either the supply cable is completely voltage free or no explosive atmosphere is present.

When wiring the connection line to the "Ex-d" connection compartment, it must be sufficiently secured against damage and in conformity with the corresponding electrical code.

The connection cables, the cable entries and the closing screws or the pipeline sealing facilities must be suitable for the lowest ambient temperature.

The cover of the "Ex-d" connection compartment must be screwed in completely before commissioning and secured by screwing out the lid locking screw all the way to the stop.

Unused openings must be sealed according to the corresponding electrical code.

The cover of the "Ex-d" connection compartment is provided with the warning label "Do not open when an explosive gas atmosphere is present".
Single chamber housing with "Ex-d" connection compartment

1. Thread protection
2. Locking screw of the cover
3. Screw plug
4. Marking of the thread
5. "Ex-d" connection compartment with electronics module
6. Optionally with inspection window
7. External ground terminal

12  Type and size of the threads for the "Ex-d" cable entries

The "Ex-d" connection compartment of OPTISWITCH 5300 C VF534(*)..IE***R/S/T/I/Z/L***M has cable entries M20 x 1.5.

The "Ex-d" connection compartment of OPTISWITCH 5300 C VF534(*)..IE***R/S/T/I/Z/L***N has cable entries ½-14 NPT.
KROHNE product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- Vortex flowmeters
- Flow controllers
- Level meters
- Temperature assemblies
- Pressure transmitters
- Analysis products
- Products and systems for the oil and gas industry

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