External electrical connections

Instruction manual

Function
Magnetic switch for WEKA-VLI

The magnetic switch is mounted outside of the float chamber opposite to the indication rail. The switching logic can be reversed by inverting the switch module with cable-exit upwards or by installing the switch module adjacent to the indication rail where technically authorised (see datasheet 20010501).

The magnet inside the float activates the reed switch, when the liquid in the float chamber reaches that level.

Please refer to the safety guidelines.

Product code (standard) 31130-NI/3 with 3m cable
31130-NI/5 with 5m cable
31130-NI/10 with 10m cable
31130-NI/20 with 20m cable

Switching logic on/off, bi-stable

Electrical data:

Only for connection to certified intrinsically safe circuits with the following maximum values:

\[ U_i = 250V \quad I_i = 1.3A \]

The effective internal capacitance and inductance are negligibly small. Additionally the maximum effective capacitance and inductance of the firmly connected cable have to be considered with \( C = 110pF/m \) and \( L = 0.7\mu H/m \).

Enclosure
IP68 - 10bar (EN 60529)

Material

Housing
Stainless steel 316 /316L

Cable gland
PA6: blue, 4…8mm

Seal
Perbunan (NBR)

Cable
LIYC/EB: blue, Ø 5.8mm

Shield
shielded, but not connected

Cable cores
2 x 0.75mm²

Core colours
WH, BN

Type label
Polyester: silver, black printing

Operating conditions

<table>
<thead>
<tr>
<th>Media temperature</th>
<th>Ambient temperature</th>
<th>Temperature class</th>
</tr>
</thead>
<tbody>
<tr>
<td>-50°C…+150°C</td>
<td>-20°C…+65°C</td>
<td>T3 (200°C)</td>
</tr>
<tr>
<td>-50°C…+135°C</td>
<td>-20°C…+65°C</td>
<td>T4 (135°C)</td>
</tr>
<tr>
<td>-50°C…+100°C</td>
<td>-20°C…+65°C</td>
<td>T5 (100°C)</td>
</tr>
<tr>
<td>-50°C…+85°C</td>
<td>-20°C…+65°C</td>
<td>T6 (85°C)</td>
</tr>
</tbody>
</table>

Media temperature
Temperature of liquid within the float chamber

Ambient temperature
Temperature of air around the magnetic switch

Temperature class
Specified max. surface temperature

Grounding

A connection to protection ground is only guaranteed if both fastening clamps are used to fix the magnetic switch to the float chamber. If the float chamber does not have electrical continuity to protective ground, or if only one fastening clamp can be used for fixing the switch, the connection must be made with the foreseen screw clamp of the switch.

Fixation

When ordering level indicators with switches, hose clamps are included.
When ordering switches as spare parts, hose clamps are never included and must be ordered separately.

Only genuine parts have to be used as spare parts. In case of ordering hose clamps pipe size must be indicated:

For pipe diameter 30…40mm Article no. 80648
For pipe diameter 40…57mm and 57…80mm Article no. 84043

Note

EC-Type-Examination Certificate resp. IECEx CoC has additionally to be considered. The cable must be durably installed. This device is maintenance free and repair work is prohibited. For use in areas with explosive dust consider the max. media temperature instead of max. surface temperature. Only to use in combination with thermal non-insulated float chamber.
External electrical connections

- Installed opposite to indication rail
- Cable exit downwards

Instruction manual

Function

Magnetic switch for WEKA-VLI

The magnetic switch is mounted outside of the float chamber opposite to the indication rail. The switching logic can be reversed by inverting the switch module with cable-exit upwards or by installing the switch module adjacent to the indication rail where technically authorised (see datasheet 20010501).

The magnet inside the float activates the reed switch, when the liquid in the float chamber reaches that level. Please refer to the safety guidelines.

Product code (standard)

- 31160-NI/3 with 3m cable
- 31160-NI/5 with 5m cable
- 31160-NI/10 with 10m cable
- 31160-NI/20 with 20m cable

Switching logic

Change-over, bistable

Electrical data:

Only for connection to certified intrinsically safe circuits with the following maximum values:

- $U_i = 230\text{V}$
- $I_i = 1.0\text{A}$

The effective internal capacitance and inductance are negligibly small. Additionally the maximum effective capacitance and inductance of the firmly connected cable have to be considered with $C_i = 110\text{pF/m}$ and $L_i = 0.7\mu\text{H/m}$.

Enclosure

IP 68 - 10bar (EN 60529)

Material

- Housing: Stainless steel 316 /316L
- Cable gland: PA6: blue, 4...8mm
- Seal: Perbunan (NBR)
- Cable: LIYCY/EB: blue, $\varnothing$ 6.2mm
- Shield: shielded, but not connected
- Cable cores: 3 x 0.75mm²
- Core colours: WH, BN, GN
- Type label: Polyester: silver, black printing

Dimensions

- Hysteresis: $= 10\text{mm}$
- $\varnothing 17.2\text{mm}$
- $8\text{mm}$
- $100\text{mm}$
- $22\text{mm}$

Operating conditions

<table>
<thead>
<tr>
<th>Media temperature</th>
<th>Ambient temperature</th>
<th>Temperature class</th>
</tr>
</thead>
<tbody>
<tr>
<td>$-50\degree \text{C}$...+150\degree \text{C}</td>
<td>$-20\degree \text{C}$...+65\degree \text{C}</td>
<td>T3 (200\degree \text{C})</td>
</tr>
<tr>
<td>$-50\degree \text{C}$...+135\degree \text{C}</td>
<td>$-20\degree \text{C}$...+65\degree \text{C}</td>
<td>T4 (135\degree \text{C})</td>
</tr>
<tr>
<td>$-50\degree \text{C}$...+100\degree \text{C}</td>
<td>$-20\degree \text{C}$...+65\degree \text{C}</td>
<td>T5 (100\degree \text{C})</td>
</tr>
<tr>
<td>$-50\degree \text{C}$...+85\degree \text{C}</td>
<td>$-20\degree \text{C}$...+65\degree \text{C}</td>
<td>T6 (85\degree \text{C})</td>
</tr>
</tbody>
</table>

Grounding

A connection to protection ground is only guaranteed if both fastening clamps are used to fix the magnetic switch to the float chamber. If the float chamber does not have electrical continuity to protective ground, or if only one fastening clamp can be used for fixing the switch, the connection must be made with the foreseen screw clamp of the switch.

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When ordering level indicators with switches, hose clamps are included.

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- For pipe diameter 30...40mm Article no. 80648
- For pipe diameter 40...57mm and 57...80mm Article no. 84043

Note

- EC - Type-Examination Certificate resp. IECEx CoC has additionally to be considered.
- The cable must be durably installed. This device is maintenance free and repair work is prohibited.
- Only genuine parts have to be used as spare parts. In case of ordering hose clamps pipe size must be indicated.
Classification and Marking of Flameproof Enclosures Apparatus

<table>
<thead>
<tr>
<th>Inflammable Material</th>
<th>Incidence of inflammable material in Ex zone. Explosive media</th>
<th>Hazardous zones</th>
<th>Marking of Flameproof enclosures equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methane</td>
<td>Present continuously, frequently, or over extended periods of time</td>
<td>Zone 0 II</td>
<td>Ex d</td>
</tr>
<tr>
<td></td>
<td>Present occasionally</td>
<td>Zone 1 II</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Presence unlikely or rare and only for brief periods of time</td>
<td>Zone 2 II</td>
<td></td>
</tr>
<tr>
<td>Gases</td>
<td>Present continuously, frequently, or over extended periods of time</td>
<td>Zone 20 II</td>
<td>Ex d</td>
</tr>
<tr>
<td>Vapor</td>
<td>Present occasionally</td>
<td>Zone 21 II</td>
<td></td>
</tr>
<tr>
<td>Steam</td>
<td>Present continuously, frequently, or over extended periods of time</td>
<td>Zone 22 II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mines I</td>
<td>Ex ia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M2</td>
<td></td>
</tr>
<tr>
<td>Inflammable dust cloud</td>
<td>Present continuously, frequently, or over extended periods of time</td>
<td>Zone 20 II</td>
<td>Ex d</td>
</tr>
<tr>
<td></td>
<td>Present occasionally</td>
<td>Zone 21 II</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Presence unlikely or rare and only for brief periods of time</td>
<td>Zone 22 II</td>
<td></td>
</tr>
</tbody>
</table>

Example:

0820 II 2G Ex d IIC T6 ZELM 03 ATEX0168

Classification of Gases, Aerosols, Vapors

<table>
<thead>
<tr>
<th>Apparatus Group</th>
<th>Examples of inflammable Gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIA</td>
<td>Ammonia, Methane, Ethanes, Propanes</td>
</tr>
<tr>
<td>IIB</td>
<td>Ethyl alcohol, Cyclohexane, N-butane</td>
</tr>
<tr>
<td>IIC</td>
<td>Benzene, Diesel, Furnace oil, N-hexane, Acetylene</td>
</tr>
</tbody>
</table>

Temperature Classes

The temperature class specifies the maximum surface temperature of the apparatus. The ignition temperature must be higher than the maximum surface temperature.

- <85°C T6
- <100°C T5
- <135°C T4
- <200°C T3
- <300°C T2
- <450°C T1

Note:
- Per ATEX guidelines, WEKA Level Indicators and accessories are components only, as they function only together with other equipment.
- An electrical device can be used in a temperature class lower than its certification, if operating conditions allow this.
- "Ex" components and attached metallic equipment must be connected to a common electrical ground point.
IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx ZLM 10.0003issue No.:0
Certificate history: 

Status: Current

Date of Issue: 2010-12-15 Page 1 of 3

Applicant: Weka AG
Schuerlistr.8
8344 Baeretswil
Switzerland

Electrical Apparatus: magnetic switch type 31130-N/® and type 31160-N/®

Optional accessory: 

Type of Protection: Intrinsic Safety

Marking: Ex ia IIC T6 Gb Ex iaD IIIC T85°C Db

Approved for issue on behalf of the IECEx Certification Body: Dipl.-Ing. Harald Zelm

Position: Head of Certification Body

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:
ZELM Explosionsschutz GmbH
Siekgraben 56
D-38124 Braunschweig
Germany

http://iecex.iec.ch/iecex/iecexweb.nsf/uid/1D93E057AC2E8F17C125778D002AE0B0?opendocument
IECEx Certificate of Conformity

Certificate No.: IECEx ZLM 10.0003
Date of Issue: 2010-12-15
Issue No.: 0

Manufacturer: Weka AG
Schuerlistr. 8
8344 Baeretswil
Switzerland

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2007-10 Edition: 5
Explosive atmospheres - Part 0: Equipment - General requirements

Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

IEC 61241-11 : 2005 Edition: 1
Electrical apparatus for use in the presence of combustible dusts - Part 11: Protection by intrinsic safety 'iD'

This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS: A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report: DE/ZLM/EXTR10.0003/00

Quality Assessment Report: DE/ZLM/QAR09.0001/00
IECEx Certificate of Conformity

Certificate No.: IECEx ZLM 10.0003
Date of Issue: 2010-12-15
Issue No.: 0
Page 3 of 3

Schedule

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:

The magnetic switches type 31130-NI/* and type 31160-NI/* are for the generation of a signal at a level change of media.
Therefore the switch will be used together with a visual level indicator.
The type 31130-NI/* uses an on/off switch, the type 31160-NI/* uses a changeover switch.
The star (*) indicates the length in meter of the permanently connected cable.

CONDITIONS OF CERTIFICATION: NO
Certificate No.: IECEx ZLM 10.0003
Issue No.: 0
Date of Issue: 2010-12-15

The permissible ambient temperature range is −20°C to +65°C.

**Electrical Data**

**Switching current circuit:** type of protection Intrinsic Safety Ex ia IIC resp. Ex iaD IIIC

Only for the connection to certified intrinsically safe circuits with the following maximum values:

**for type 31130-NII*/

\[ U_i = 250 \text{ V} \]
\[ I_i = 1,3 \text{ A} \]

**for type 31160-NII*/

\[ U_i = 230 \text{ V} \]
\[ I_i = 1,0 \text{ A} \]

The effective internal capacitance and internal inductance of the switches are negligibly small. However the permanently connected cable has to be considered having \( C = 110 \text{ pF/m} \) and \( L = 0,7 \text{ μH/m} \).

**Reference**

The instruction manual has to be considered.

At media temperatures of above 85°C the temperature class has to be adapted correspondingly to the instruction manual.