### WEKA transmitters: Resistant output or current supplied voltage output (3-wire)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Media temperature</th>
<th>Connection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>29710</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>6</td>
</tr>
<tr>
<td>29710-W</td>
<td>-50°C ... +350°C</td>
<td>Cable</td>
<td>7</td>
</tr>
</tbody>
</table>

### WEKA transmitters: Current output 4...20mA (2-wire)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Media temperature</th>
<th>Connection</th>
<th>Connection Type</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>31967</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Current</td>
<td>8</td>
</tr>
<tr>
<td>31967-W</td>
<td>-50°C ... +250°C</td>
<td>Cable</td>
<td>Current</td>
<td>9</td>
</tr>
<tr>
<td>31967-K</td>
<td>-50°C ... +150°C</td>
<td>Terminal box</td>
<td>Current</td>
<td>10</td>
</tr>
<tr>
<td>31967-KST</td>
<td>-50°C ... +150°C</td>
<td>Plug-in connector</td>
<td>Current</td>
<td>11</td>
</tr>
</tbody>
</table>

### WEKA transmitters for hazardous areas: Intrinsically safe (Ex i)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Media temperature</th>
<th>Connection</th>
<th>Connection Type</th>
<th>Marking</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>29710-NI</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Resistant</td>
<td>II 2 G Ex ia IIC T4 Gb II 2 D Ex ia IIC T115°C</td>
<td>12</td>
</tr>
<tr>
<td>32607-NI</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Current</td>
<td>II 2 G Ex ia IIC T4 Gb II 2 D Ex ia IIC T115°C</td>
<td>14</td>
</tr>
</tbody>
</table>

### WEKA transmitters for hazardous areas: Flameproof enclosures (Ex d)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Media temperature</th>
<th>Connection</th>
<th>Connection Type</th>
<th>Marking</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>29710-ND</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Resistant</td>
<td>II 2 G Ex db IIC T6 Gb II 2 D Ex tb IIC T85°C Db</td>
<td>16</td>
</tr>
<tr>
<td>32608-ND</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Current</td>
<td>II 2 G Ex db IIC T6 Gb II 2 D Ex tb IIC T85°C Db</td>
<td>18</td>
</tr>
</tbody>
</table>

### WEKA transmitters for use with HART®, Profibus PA® or Foundation Fieldbus™ converter module interface

#### WEKA transmitters with resistance output or current supplied voltage output

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Media temperature</th>
<th>Connection</th>
<th>Protection class</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>29710-R</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Non-hazardous</td>
<td>-</td>
</tr>
<tr>
<td>29710-R-NI</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Ex i</td>
<td>Zone 1 and 2</td>
</tr>
<tr>
<td>29710-R-W</td>
<td>-50°C ... +350°C</td>
<td>Cable</td>
<td>Non-hazardous or Ex i *</td>
<td>Zone 1 and 2</td>
</tr>
<tr>
<td>29710-R-ND</td>
<td>-50°C ... +150°C</td>
<td>Cable</td>
<td>Ex d</td>
<td>Zone 1 and 2</td>
</tr>
</tbody>
</table>

* The transmitter can be used as a simple electrical apparatus as defined by EN60079-11

#### HART® converter, ready to connect, mounted in junction box

<table>
<thead>
<tr>
<th>Converter</th>
<th>Description</th>
<th>Compatible transmitters</th>
</tr>
</thead>
<tbody>
<tr>
<td>HART 37383</td>
<td>HART® converter in IP65 metal enclosure</td>
<td>29710-R and 29710-R-W</td>
</tr>
<tr>
<td>HART 40038</td>
<td>HART® converter in IP65 metal enclosure with digital display</td>
<td>29710-R and 29710-R-W</td>
</tr>
<tr>
<td>HART 37384</td>
<td>HART® converter - Intrinsically safe</td>
<td>29710-R-NI and 29710-R-W</td>
</tr>
<tr>
<td>HART 38021</td>
<td>HART® converter - Flameproof enclosures</td>
<td>29710-R-ND</td>
</tr>
</tbody>
</table>

#### Profibus PA® and Foundation Fieldbus™ converter, ready to connect, mounted in junction box

<table>
<thead>
<tr>
<th>Converter</th>
<th>Description</th>
<th>Compatible transmitters</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA+FF 40268</td>
<td>Profibus PA® and FF™ converter in IP65 metal enclosure</td>
<td>29710-R and 29710-R-W</td>
</tr>
</tbody>
</table>

### Magnetostrictive transmitters with 4-20 mA current output (2-wire) with HART® protocol

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Media Temperatures:</th>
<th>Output</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>38614</td>
<td>-50°C ... +120°C</td>
<td>4...20mA</td>
<td>-</td>
</tr>
<tr>
<td>38614-W</td>
<td>-50°C ... +250°C</td>
<td>4...20mA</td>
<td>for high media temp. -</td>
</tr>
<tr>
<td>38614-NI</td>
<td>-40°C ... +450°C</td>
<td>4...20mA</td>
<td>Ex i</td>
</tr>
<tr>
<td>38614-ND</td>
<td>-40°C ... +450°C</td>
<td>4...20mA</td>
<td>Ex d, with or without display Zone 1 and 2</td>
</tr>
</tbody>
</table>

### Ex-Info

- Classification of hazardous zones and marking of equipment
- Extract of standard of simple electrical apparatus
## Type code

### Type of transmitter

<table>
<thead>
<tr>
<th>Type of transmitter</th>
<th>Available for:</th>
<th>Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-wire: resistant output or current supplied voltage output</td>
<td></td>
<td>29710</td>
</tr>
<tr>
<td>2-wire: 4…20mA current output, current sink</td>
<td></td>
<td>31967</td>
</tr>
<tr>
<td>2-wire: Intrinsically safe Ex ia; 4…20mA current output, current sink</td>
<td></td>
<td>32607</td>
</tr>
<tr>
<td>2-wire: Flameproof enclosures Ex d, 4…20mA current output, current sink</td>
<td></td>
<td>32608</td>
</tr>
</tbody>
</table>

### Specialities

<table>
<thead>
<tr>
<th>Specialities</th>
<th>Available for:</th>
<th>Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>With resistant output for HART®, Profinet PA® and Foundation Fieldbus™</td>
<td>29710</td>
<td>R</td>
</tr>
<tr>
<td>Transmitter with bi-stable reed switch at the top end</td>
<td>29710 / 31967</td>
<td>BI</td>
</tr>
</tbody>
</table>

### Execution

<table>
<thead>
<tr>
<th>Execution</th>
<th>Available for:</th>
<th>Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td></td>
<td>29710</td>
</tr>
<tr>
<td>for high media temperature</td>
<td>29710 / 31967</td>
<td>W</td>
</tr>
<tr>
<td>with terminal box</td>
<td>31967</td>
<td>K</td>
</tr>
<tr>
<td>with plug connector</td>
<td>31967</td>
<td>KST</td>
</tr>
<tr>
<td>Intrinsically safe Ex ia</td>
<td>29710 / 32607</td>
<td>NI</td>
</tr>
<tr>
<td>Flameproof enclosures, Ex id</td>
<td>29710 / 32608</td>
<td>ND</td>
</tr>
</tbody>
</table>

### Size of resistance

<table>
<thead>
<tr>
<th>Size of resistance</th>
<th>Available for:</th>
<th>Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Ohm per step (not applicable for NI/ND)</td>
<td>all</td>
<td>010</td>
</tr>
</tbody>
</table>

### Resolution

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Available for:</th>
<th>Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5mm</td>
<td>all</td>
<td>05</td>
</tr>
<tr>
<td>10mm</td>
<td>all</td>
<td>10</td>
</tr>
</tbody>
</table>
Terminology:

- **L**: Length between process connections
- **M**: Measuring length (indication length) of level indicator
- **M el.**: Measuring length of transmitter
- **C1**: Bottom float extension
- **C2**: Top float extension
- **X**: Initiating point of transmitter

Transmitter length:
- Type -K and -O magnetic level indicators:
  - \( M_{el.} = M = L \) or \( M_{el.} = \) according to customer order (<M)
- Type -A and -B magnetic level indicators:
  - \( M_{el.} = M \) or \( M_{el.} = \) according to customer order (<M)

Note:
- When \( M_{el.} < M \), then a bi-stable reed switch is necessary.
- For transmitters type 29710-R-x-010-xx \( M_{el.} \) must be > M.

Visual level indicators version -A and -K are recommended for most applications.

Visual level indicators version -B and -O may require special dimensions and should be confirmed by WEKA before ordering.
Installation Instructions (20010501)
Transmitters for WEKA Visual Level Indicators

Mounting Normal: Installation 180 °C opposite of the indication rail with the permitted tolerance according to the tube diameter (refer to layout below)
Cable exit upwards.

Variation: Mounting the Transmitter adjacent to the indication rail except for Smartline.
Cable exit upwards.

34000

Magnetic Switch, Transmitter

23614, 34300, 32755

optional

34110

Magnetic Switch, Transmitter
Transmitters with high-limit bi-stable reed switches

Installation and initial set-up

Identification
Type XXXXX-Bi-xx-010-xx

Example
31967-Bi-W-010-05

Principles of operation:

The permanent magnet inside the float activates the reed switches of the transmitter depending on the vertical position of the float. This results in an electrical signal output proportional to the level of liquid in the indicator’s float chamber.

If the float rises above the transmitter’s measuring range (M el.), the value of the electrical signal output will jump to 115% of the total measuring range. This over-limit value of the signal will remain constant for any level above the total measuring range (M el.). See figure 2.

Since the over-limit output signal represents a non-defined level, a second high-limit bi-stable reed switch can be fitted.

This bi-stable reed switch closes when the south pole of the float’s magnet reaches the high-limit level and remains closed while the float is at any level above this limit. It opens again when the float drops below this limit again. See figure 2.

Possible error condition:

If the bi-stable reed switch is closed due to any other reasons such as during transport, or forced by an external magnetic field, the output signal will be incorrect. See Figure 3.

Corrective actions:

- Install the transmitter module 180° opposite to the indication rail. See Installation Instructions, datasheet 20010501.
- OR fill the vessel on which the level indicator is installed so that the float rises above the bi-stable reed switch. Empty the vessel, so the bi-stable reed switch is operated through one complete close-open cycle.
- OR pass a permanent bar magnet with its south pole pointing towards the transmitter downwards from top to bottom over the bi-stable reed switch and that the switch opens.
As a result the level transmitter will give the correct output signal. See Figure 2.

Figure 1

Signal output with correctly adjusted transmitter

Faultive signal output with closed bi-stable reed-switch

Figure 2

Figure 3
Transmitter 3-wire, intrinsically safe

Function: Intrinsically safe transmitter with ATEX/IECEx certificate for use with WEKA VLI for media temperature ≤ 150°C

The transmitter is mounted outside of the float chamber opposite to the indication rail (see datasheet 20010501). The magnet inside the float activates the reed switches in the transmitter, depending on the level of liquid in the float chamber, thereby changing the effective value of a resistance network. This converts a current input into a variable voltage output signal that can be fed directly to a remote display or recording instrument.

If the liquid level rises above the measuring range of the transmitter the output signal jumps to 115% and remains on that limit. This transmitter is compatible with Zones 1, 2, 21 and 22 for gas groups IIA, IIB, IIC, IIIA, IIIB and IIIC.

The transmitter must be connected with a certified energy limiting device (e.g. Zener barrier) installed in a safe area. This device guarantees the electrical limit values specified below, including the cable. The metal housing of the transmitter must be connected to protection ground.

Certificate

0820 II 2 G Ex ia IIC T4 Gb II 2 D Ex ia IIIIC T115°C ZELM 15 ATEX 0536 II 2 D Ex ia IIIIC T115°C Db IECEx ZLM 15.0002

Dimensions

Internal circuit

External electrical connections

Product code:

29710-NI-10 10mm resolution
29710-NI-05 5mm resolution

M el. = Measuring length in mm

Resolution

Transmitter tube dia.

Measuring length "M el."

Supply current

M el. ≤ 1000mm I = 4mA
M el. > 1000mm I = 1mA

Operating temperatures

<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>-50°C...+50°C</td>
<td>T4 (115°C)</td>
</tr>
</tbody>
</table>

For dust explosion hazardous areas (D) the media temperature has to be considered instead of the surface temperature.

Enclosure

IP68 - 10bar (EN60529)
Transmitter 3-wire, intrinsically safe

Type 29710-NI-xx

Signal output
- with $R = 10\Omega$ and $I = 1\,mA$
  
  10mV per step (1cm)

For 29710-NI-10 one step = 1cm and for 29710-NI-05 one step = 5mm

- with $R = 10\Omega$ and $I = 4\,mA$
  
  40mV per step (1cm)

For 29710-NI-10 one step = 1cm and for 29710-NI-05 one step = 5mm

Materials

- Housing tube: Stainless steel 316 / 316L
- Cable gland: Brass, nickel-plated
- Seal: PA / NBR
- Cable (Standard 5m): Silicone, red, 3 x 0.5mm², Ø ~6.2mm, largely resistant to oils/petroleum products, Halogene free
- Type label: Stainless steel, lasered

Electrical limit values

<table>
<thead>
<tr>
<th>Max. Limit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U_{\text{max}}$</td>
<td>15VDC</td>
</tr>
<tr>
<td>$I_{\text{max}}$</td>
<td>4mA</td>
</tr>
<tr>
<td>$U_{\text{i}}$</td>
<td>max. 22.6V</td>
</tr>
<tr>
<td>$I_{\text{i}}$</td>
<td>max. 160mA</td>
</tr>
<tr>
<td>$P_{\text{i}}$</td>
<td>max. 900mW</td>
</tr>
<tr>
<td>$C_{\text{i}}$</td>
<td>0</td>
</tr>
<tr>
<td>$L_{\text{i}}$</td>
<td>0</td>
</tr>
</tbody>
</table>

Safety related limit values

Fixation

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

When ordering transmitters as spare parts, hose clamps are never included and must be ordered separately.

In case of ordering hose clamps pipe size must be indicated.

<table>
<thead>
<tr>
<th>Pipe Diameter</th>
<th>P/O</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>30…40mm</td>
<td>P/O</td>
<td>80648</td>
</tr>
<tr>
<td>40…57mm and 57…80mm</td>
<td>P/O</td>
<td>84043</td>
</tr>
</tbody>
</table>

Note

Please read the instructions in our datasheet 20010501 before performing installation.

This device is maintenancefree and repair work is prohibited.

The cable must be durably installed.

The relevant certificates are available at [www.weka-ag.ch](http://www.weka-ag.ch) These information has to be considered additionally.

---

Subject to change without notice
Transmitter 2-wire, intrinsically safe
II 2 G Ex ia IIC T4 Gb II 2 D Ex ia IIIC T115°C Type 32607-NI-xx

Function: Intrinsically safe transmitter with ATEX/IECEx certificate for use with WEKA VLI for media temperature ≤ 150°C

The transmitter is mounted outside of the float chamber opposite to the indication rail (see datasheet 20010501). The magnet inside the float activates the reed switches in the transmitter, depending on the level of liquid in the float chamber, thereby changing the effective value of a resistance network. The resulting voltage output is converted by an internal electronic circuit to a 4...20mA signal.

If the liquid level rises above the measuring range of the transmitter the output signal jumps to 115% and remains on that limit. This transmitter is compatible with Zones 1, 2, 21 and 22 for gas groups IIA, IIB, IIC, IIIA, IIIB and IIIC. The transmitter must be connected with a certified energy limiting device (e.g. Zener barrier) installed in a safe area. This device guarantees the electrical limit values specified below, including the cable. The metal housing of the transmitter must be connected to protection ground.

Certificate
II 2 G Ex ia IIC T4 Gb ZELM 15 ATEX 0536
II 2 D Ex ia IIIC T115°C Db IECEx ZLM 15.0002

Dimensions

Internal circuit

External electrical connections

Product code: 32607-NI-10 10mm resolution
32607-NI-05 5mm resolution
M el. = Measuring length in mm

Resolution
Transmitter tube dia.
Measuring length "M el."

Supply voltage
14VDC ... 30VDC

Operating temperatures

<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>-50°C…+50°C</td>
<td>T4 (115°C)</td>
</tr>
</tbody>
</table>

For dust explosion hazardous areas (D) the media temperature has to be considered instead of the surface temperature.

Enclosure
IP68 - 10bar (EN60529)
Transmitter 2-wire, intrinsically safe
Type 32607-NI-xx

Signal output
4…20mA current loop

Output load (including energy limiting device and cables)
max. 100Ohm at 14VDC
max. 900Ohm at 30VDC

Output [%]

Supply voltage [VDC]

Load [Ohm]

Materials
Housing tube Stainless steel 316 / 316L
Cable gland Brass, nickel-plated
- Seal PA / NBR
Cable (Standard 5m) Silicone, red, 2 x 0,5mm², Ø ~5,9mm, largely resistant to oils/petroleum products, Halogene free
Type label Stainless steel, lasered

Electrical limit values
Umax = 31VDC
Imax = 25mA

Safety related limit values
Ui = max. 30,8V
Ii = max. 130mA
Pi = max. 790mW
Ci = max. 49nF
Li = 0mH

Fixation
When ordering level indicators with transmitters, hose clamps are included.
When ordering transmitters as spare parts, hose clamps are never included and must be ordered seperately.
In case of ordering hose clamps pipe size must be indicated.
For pipe diameter 30…40mm P/O 80648
For pipe diameter 40…57mm and 57…80mm P/O 84043

Note
Please read the instructions in our datasheet 20010501 before performing installation.
This device is maintenancefree and repair work is prohibited.
The cable must be durably installed.
The relevant certificates are available at www.weka-ag.ch These information has to be considered additionally.
Transmitter 3-wire, flameproof enclosures

Function: Transmitter Ex d with ATEX/IECEX certificate for use with WEKA VLI for media temperature \( \leq 150°C \)

The transmitter is mounted outside of the float chamber opposite to the indication rail (see datasheet 20010501). The magnet inside the float activates the reed switches in the transmitter, depending on the level of liquid in the float chamber, thereby changing the effective value of a resistance network. This converts a current input into a variable voltage output signal that can be fed directly to a remote display or recording instrument.

If the liquid level rises above the measuring range of the transmitter the output signal jumps to 115% and remains on that limit.

This transmitter is compatible with Zones 1, 2, 21 and 22 for gas groups IIA, IIB, IIC, IIIA, IIIB and IIIC.

The metal housing of the transmitter must be connected to protection ground.

Certificate:

Temperature class resp. max. surface temperature refers to below mentioned table.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Internal circuit</th>
<th>External electrical connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Product code:

<table>
<thead>
<tr>
<th>Code</th>
<th>Resolution</th>
<th>Measuring length</th>
</tr>
</thead>
<tbody>
<tr>
<td>29710-ND-10</td>
<td>10mm</td>
<td>200mm (min.) ... 4000mm (max.)</td>
</tr>
<tr>
<td>29710-ND-05</td>
<td>5mm</td>
<td></td>
</tr>
</tbody>
</table>

Operating temperatures

<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>-50°C...+50°C</td>
<td>T4 / T105°C</td>
</tr>
<tr>
<td>-50°C...+135°C</td>
<td>-50°C...+50°C</td>
<td>T4 / T100°C</td>
</tr>
<tr>
<td>-50°C...+100°C</td>
<td>-50°C...+50°C</td>
<td>T5 / T95°C</td>
</tr>
<tr>
<td>-50°C...+85°C</td>
<td>-50°C...+50°C</td>
<td>T6 / T85°C</td>
</tr>
</tbody>
</table>

Enclosure

IP68 - 10bar (EN60529)
Transmitter 3-wire, flameproof enclosures

Type 29710-ND-xx

Signal output
- with $R = 10\Omega$ and $I = 1\text{mA}$
  10mV per step (1cm)
  For 29710-ND-10 one step = 1cm and for 29710-ND-05 one step = 5mm
- with $R = 10\Omega$ and $I = 4\text{mA}$
  40mV per step (1cm)
  For 29710-ND-10 one step = 1cm and for 29710-ND-05 one step = 5mm

![Graph showing output vs. float travel]

Materials
- Housing tube: Stainless steel 316 / 316L
- Cable gland: Brass, nickel-plated
- Seal: PA / FPM
- Cable (Standard 5m): Silicone, red, 3 x 0.5mm², Ø ~6.2mm, largely resistant to oils/petroleum products, Halogene free
- Type label: Stainless steel, lasered

Electrical limit values
- $U_{\text{max}} = 15\text{VDC}$
- $I_{\text{max}} = 4\text{mA}$

Fixation
When ordering level indicators with transmitters, hose clamps are included.
When ordering transmitters as spare parts, hose clamps are never included and must be ordered separately.
In case of ordering hose clamps pipe size must be indicated.
- For pipe diameter 30…40mm: P/O 80648
- For pipe diameter 40…57mm and 57…80mm: P/O 84043

Note
Please read the instructions in our datasheet 20010501 before performing installation.
This device is maintenance free and repair work is prohibited.
The cable must be durably installed.
The relevant certificates are available at www.weka-ag.ch
These information has to be considered additionally.
Transmitter 2-wire, flameproof enclosure
II 2 G Ex db IIC T6 Gb II 2 D Ex tb IIIC T85°C Db Type 32608-ND-xx

Function:
Transmitter Ex d with ATEX/IECEx certificate for use with WEKA VLI for media temperature ≤ 150°C

The transmitter is mounted outside of the float chamber opposite to the indication rail (see datasheet 20010501).
The magnet inside the float activates the reed switches in the transmitter, depending on the level of liquid in the float chamber, thereby changing the effective value of a resistance network. The resulting voltage output is converted by an internal electronic circuit to a 4...20mA signal.
If the liquid level rises above the measuring range of the transmitter the output signal jumps to 115% and remains on that limit.
This transmitter is compatible with Zones 1, 2, 21 and 22 for gas groups IIA, IIB, IIC, IIIA, IIIB and IIIC.
The transmitter must be connected with a certified energy limiting device (e.g. Zener barrier) installed in a safe area. This device guarantees the electrical limit values specified below, including the cable. The metal housing of the transmitter must be connected to protection ground.

Certificate
Ce 0820
II 2 G Ex db IIC T6 Gb ZELM 15 ATEX 0536
II 2 D Ex tb IIIC T85°C Db IECEx ZLM 15.0002
Temperature class resp. max. surface temperature refers to below mentioned table.

Dimensions

Internal circuit

External electrical connections

Product code:
32608-ND-10 10mm resolution
32608-ND-05 5mm resolution
M el. = Measuring length in mm

Resolution
32608-ND-10 10mm
32608-ND-05 5mm
Transmitter tube dia.
Ø 14 / 10 Ø 17 / 14
Measuring length "M el."
200mm (min.) ... 4000mm (max.)

Supply voltage
14VDC ... 30VDC

Operating temperatures

<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>-50°C...+50°C</td>
<td>T4 / T105°C</td>
</tr>
<tr>
<td>-50°C...+135°C</td>
<td>-50°C...+50°C</td>
<td>T4 / T100°C</td>
</tr>
<tr>
<td>-50°C...+100°C</td>
<td>-50°C...+50°C</td>
<td>T5 / T95°C</td>
</tr>
<tr>
<td>-50°C...+85°C</td>
<td>-50°C...+50°C</td>
<td>T6 / T85°C</td>
</tr>
</tbody>
</table>

Enclosure
IP68 - 10bar (EN60529)
Transmitter 2-wire, flameproof enclosure

Type 32608-ND-xx

Signal output
4…20mA current loop

Output load (including energy limiting device and cables)
max. 100Ohm at 14VDC
max. 900Ohm at 30VDC

Materials
- Housing tube: Stainless steel 316 / 316L
- Cable gland: Brass, nickel-plated
- Seal: PA / FPM
- Cable (Standard 5m): Silicone, red, 2 x 0.5mm², Ø ~5.9mm, largely resistant to oils/petroleum products, Halogene free
- Type label: Stainless steel, lasered

Electrical limit values
- $U_{\text{max}} = 31\text{VDC}$
- $I_{\text{max}} = 25\text{mA}$

Fixation
When ordering level indicators with transmitters, hose clamps are included.
When ordering transmitters as spare parts, hose clamps are never included and must be ordered separately.
In case of ordering hose clamps pipe size must be indicated.
- For pipe diameter 30…40mm: P/O 80648
- For pipe diameter 40…57mm and 57…80mm: P/O 84043

Note
Please read the instructions in our datasheet 20010501 before performing installation.
This device is maintenancefree and repair work is prohibited.
The cable must be durably installed.
The relevant certificates are available at [www.weka-ag.ch](http://www.weka-ag.ch) - These information has to be considered additionally.
Transmitter, Intrinsically safe - Ex ia for use
with HART® Converter Module Interface
Type 29710-R-NI-xx

Description:
Intrinsically safe transmitter with HART® converter module interface and 4...20 mA current output for use with WEKA Visual Level Indicators media temperature ≤ 150°C

The transmitter is mounted outside of the float chamber opposite to the indication rail (see datasheet 20010501). The magnet inside the float activates the reed switches in the transmitter, depending on the level of liquid in the float chamber, thereby changing the effective value of a resistance network. The resulting voltage output is converted into a 2-wire 4...20mA current output with superimposed HART® digital communication.
The measuring length of transmitter (M el.) must be larger than the measuring length of the indicator (M). Refer to the table below. Transmitter settings are selected through the Converter Module Interface.

Product code:
- 29710-R-NI-10  10mm Resolution
- 29710-R-NI-05  5mm Resolution

M el. = (see below)

Measuring length "M el."
250mm (min.) to 4000mm (max.)

<table>
<thead>
<tr>
<th>Level Indicator</th>
<th>Media Density</th>
<th>x</th>
<th>y</th>
<th>Measuring Length (M el.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 23614-A /-K</td>
<td>≥ 0.6</td>
<td>25</td>
<td>5</td>
<td>= M + 195</td>
</tr>
<tr>
<td>Type 34300-A /-K</td>
<td>≥ 0.6</td>
<td>40</td>
<td>5</td>
<td>= M + 190</td>
</tr>
<tr>
<td>Type 32755-A /-K</td>
<td>≥ 0.6</td>
<td>55</td>
<td>5</td>
<td>= M + 180</td>
</tr>
<tr>
<td>Type 34000-A /-K</td>
<td>≥ 0.6</td>
<td>20</td>
<td>10</td>
<td>= M + 330</td>
</tr>
<tr>
<td>Type 34000-A /-K u. 34110-K</td>
<td>≥ 0.6</td>
<td>20</td>
<td>10</td>
<td>= M + 230</td>
</tr>
<tr>
<td>Type 34000-A /-K u. 34110-K</td>
<td>≥ 0.8</td>
<td>20</td>
<td>10</td>
<td>= M + 160</td>
</tr>
<tr>
<td>Type 34000-A /-K u. 34110-K</td>
<td>≥ 1.0</td>
<td>20</td>
<td>10</td>
<td>= M + 120</td>
</tr>
</tbody>
</table>

Valid for standard level indicators. For others, calculate M el. as follows:
M el. [mm] = M + C1 - X - 65 + C2 + Y - 30 (M = measuring length of indicator)

HART® Converter
- HART 37384

Transmitter housing tube dia.
- Ø 14 / 10
- Ø 17 / 14

Resolution
- 10mm
- 5mm

Power supply
- Refer to HART® Converter data sheet

Operating temperature
- Media temperature -50°C ... +150°C
- Ambient temperature (Ta) -20°C ... +50°C
- Surface temperature T6 (max. 85°C)

Enclosure
- IP68 - 10bar (EN60529)

Materials
- Housing tube Stainless steel 316 / 316L
- Cable gland PA: blue
- Seal Perbunan (NBR)
- Cable (Standard 5m) PVC: blue, 2 x 0.75mm², Ø ~ 6.2mm, shielded, largely resistant to oils/petroleum products
- Type label Polyester: silver, black printing

Fixation
When ordering level indicators with transmitters, hose clamps are included.
When ordering transmitters as spare parts, hose clamps are never included and must be ordered separately.
In case of ordering hose clamps pipe size must be indicated:
- For pipe diameter 30...40mm Part no. 80648
- For pipe diameter 40...57mm and 57...80mm Part no. 84043

Note
Please read the instructions in our datasheet 20010501 before performing installation.
The cable shielding is not connected with the transmitter housing. This connection should be effected by the user.
The cable must be durably installed. This device is maintenancefree and repair work is prohibited.
The transmitter can be inverted with the cable entry at the bottom. Setting of the converter module interface must then be changed.

For details see page 2
250mm (min.) to 4000mm (max.)

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Subject to change without notice

www.weka-ag.ch
13/15
**External electrical connections**

![Diagram](https://via.placeholder.com/150)

**Description:**

Flameproof enclosures transmitter for use with HART® converter module interface and 4...20mA current output for use with WEKA Level Indicators. Media temperature ≤ 150°C

The transmitter is mounted outside of the float chamber opposite to the indication rail (see datasheet 20010501). The magnet inside the float activates the reed switches in the transmitter, depending on the level of liquid in the float chamber, thereby changing the effective value of a resistance network. The resulting voltage output is converted into a 2-wire 4...20mA current output with superimposed HART® digital communication.

The measuring length of transmitter (M el.) must be larger than the measuring length of the indicator (M). Refer to the table below. Transmitter settings are selected through the Converter Module Interface.

<table>
<thead>
<tr>
<th>Product code</th>
<th>Resolution</th>
<th>Measuring Length (M el.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29710-R-ND-10</td>
<td>10mm</td>
<td>250mm (min.) to 4000mm (max.)</td>
</tr>
<tr>
<td>29710-R-ND-05</td>
<td>5mm</td>
<td></td>
</tr>
</tbody>
</table>

M el. = (see below)

**Measuring length "M el."

<table>
<thead>
<tr>
<th>Type Indicator</th>
<th>Media Density (g/cm³)</th>
<th>x</th>
<th>y</th>
<th>Measuring Length (M el.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23614-A /-K</td>
<td>≥ 0.6</td>
<td>25</td>
<td>5</td>
<td>= M + 195</td>
</tr>
<tr>
<td>34300-A /-K</td>
<td>≥ 0.6</td>
<td>45</td>
<td>5</td>
<td>= M + 190</td>
</tr>
<tr>
<td>32755-A /-K</td>
<td>≥ 0.6</td>
<td>55</td>
<td>5</td>
<td>= M + 180</td>
</tr>
<tr>
<td>34000-A /-K u. 34110-K</td>
<td>≥ 0.6</td>
<td>20</td>
<td>10</td>
<td>= M + 330</td>
</tr>
<tr>
<td>34000-A /-K u. 34110-K</td>
<td>≥ 0.7</td>
<td>20</td>
<td>10</td>
<td>= M + 230</td>
</tr>
<tr>
<td>34000-A /-K u. 34110-K</td>
<td>≥ 0.8</td>
<td>20</td>
<td>10</td>
<td>= M + 160</td>
</tr>
<tr>
<td>34000-A /-K u. 34110-K</td>
<td>≥ 1.0</td>
<td>20</td>
<td>10</td>
<td>= M + 120</td>
</tr>
</tbody>
</table>

Valid for standard level indicators. For others, calculate M el. as follows:

M el. [mm] = M + C1 - X - 65 + C2 + Y - 30 (M = measuring length of indicator)

**HART® Converter**

- **Transmitter housing tube dia.**
  - Ø 14 / 10
  - Ø 17 / 14

- **Resolution**
  - 10mm
  - 5mm

- **Power supply**
  - Refer to HART® Converter data sheet

- **Operating temperature**
  - Media temperature: -50°C ... +150°C
  - Ambient temperature (Ta): -20°C ... +50°C
  - Surface temperature: T6 (max. 85°C)

- **Enclosure**
  - IP68 - 10bar (EN60529)

- **Materials**
  - **Housing tube**: Stainless steel 316 / 316L
  - **Cable gland**: Brass: nickel plated, PTB 00 ATEX 1059
  - **Seal**: Perbunan (NBR)
  - **Cable (Standard 5m)**: PVC: grey, 2 x 0.75mm², Ø ~ 8.2mm, shielded, largely resistant to oils/petroleum products
  - **Type label**: Polyester: silver, black printing

**Fixation**

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

When ordering transmitters as spare parts, hose clamps are never included and must be ordered separately.

In case of ordering hose clamps pipe size must be indicated:

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

**Note**

Please read the instructions in our datasheet 20010501 before performing installation.

The cable shielding is not connected with the transmitter housing. This connection should be effected by the user.

The cable must be durably installed. This device is maintenance free and repair work is prohibited.

The transmitter can be used as a resistor network only when leads WH and BN are connected.

The transmitter can be inverted with the cable entry at the bottom. Setting of the converter module interface must then be changed.
HART® Converter Module Interface

Intrinsically Safe - Ex ia with IP65 Metal Housing

Type 37384

Description:

HART® converter module interface with 4...20mA current loop output, Intrinsically safe for use in zone 1 and 2 and with WEKA Transmitter 29710-R-NI-xx and 29710-R-W-010-xx

The converter module interface attached to the float chamber generates a resistance output proportional to the liquid level inside the chamber. The interface converts this variable resistance into a 2-wire 4...20mA current output with superimposed HART® digital communication. Zero and range setting is done through the HART® communication channel. For high temperature applications, the converter module interface can be installed at a distance (up to 10m) away from the level indicator and transmitter.

Product code

37384

Resolution

refer to 29710-R-NI-xx 29710-R-W-010-xx

Housing dimensions

80 x 75 x 57mm

Cable entry

Threaded socket, M20 x 1.5

Installation

On mounting plate (860528) or at other suitably prepared location using 2 x M4 screws 52 x 63 mm diagonal spacing

Specifications

Loop supply voltage 8 ... 30VDC
Voltage drop 8VDC
Isolation voltage Test = 1.5kVAC; operation = 50VAC
Communication Loop Link 5905 & HART®
Current loop output 4 - 20mA
Response time 440ms
Transmitter fault output 3.5mA or 23mA (programmable)
Input 0Ω (min.) to 7000Ω (max.)
Minimum span 25Ω
Lead wire resistance Max. 5Ω
Transmitter current 0.2mA, nominal
Basic accuracy ≤ +/- 0,1Ω
Temperature coefficient ≤ +/- 5mΩ / °C
Zero offset Max. 50% of selected span

Operating temperature

Media temperature 29710-R-NI-xx -50°C ... +150°C
29710-R-W-010-xx -50°C ... +350°C

Operating temperature

Ambient temperature (Ta) for T1, T2, T3, T4 -20°C ... +85°C
for T5, T6 -20°C ... +60°C

Enclosure

IP65 (EN60529)

Materials

Housing Alu: blue, with grounding terminal
Cable gland PA: blue; M20x1.5
- Seal Perbunan (NBR)
- Cable compatibility Ø 6 ... 8mm; max. 2 x 1mm²

Electrical limit values

Ui = max. 30VDC
Ii = max. 120mA
Pi = max. 840mW
Gi = ≤ 1nF
Li = ≤ 10µH
HART® Converter Module Interface Flameproof enclosures
Ex d with IP68 Metal Housing
Type 38021

Description:
HART® converter module interface with 4...20mA current loop output, Flameproof enclosures for use in zone 1 and 2 and with WEKA Transmitter 29710-R-ND-xx

The converter module interface attached to the float chamber generates a resistance output proportional to the liquid level inside the chamber. The interface converts this variable resistance into a 2-wire 4...20mA current output with superimposed HART® digital communication. Zero and range setting is done through the HART® communication channel. For high temperature applications, the converter module interface can be installed at a distance (up to 10m) away from the level indicator and transmitter.

Product code
38021

Resolution
refer to 29710-R-ND-xx

Housing dimensions
Ø ~ 130mm x 97mm (height)

Cable entry *)
Threaded socket, M20 x 1.5 or 1/2"NPT

Installation
Mounted on the level indicator (or at other suitably prepared location) using a hose clamp (84242) and coupling (20000710).

Specifications

- Loop supply voltage 8 ... 35VDC
- Voltage drop 8VDC
- Isolation voltage Test = 1.5kVAC; operation = 50VAC
- Communication Loop Link 5905 & HART®
- Current loop output 4 - 20mA
- Response time 440ms
- Transmitter fault output 3.5mA or 23mA (programmable)
- Input 0Ω (min.) to 7000Ω (max.)
- Minimum span 25Ω
- Lead wire resistance Max. 5Ω
- Transmitter current 0.2mA, nominal
- Basic accuracy ≤ +/- 0.1Ω
- Temperature coefficient ≤ +/- 5mΩ / °C
- Zero offset Max. 50% of selected span

Operating temperature

- Media temperature 29710-R-ND-xx -50°C ... +150°C
- Operating temperature -40°C ... +85°C
- Ambient temperature (Ta) -20°C ... +50°C

Enclosure
IP68 - 10bar (EN60529)

Materials

- Housing Alu: grey, Ex d
- Cable gland Brass: nickel plated, PTB 00 ATEX 1059
- Seal Perbunan (NBR)
- Cable compatibility Ø ~ 7 … 9mm; max. 2 x 1mm²
- Type label Polyester: silver, black printing

Housing:

0722 II 2GD Ex d IIC CESI 03 ATEX 059U

Converter:

0344 II 3 GD Ex nA[nL] IIC T4...T6 or
II 3 GD Ex nL IIC T4...T6 or
II 3 GD Ex nA[ic] IIC T4...T6 or
II 3 GD Ex ic IIC T4...T6
KEema 03 ATEX 1508 X
Installation:
1. Connect the signal wires to the transmitter after switching off power to this circuit.
2. Open the transmitter housing cover with a spanner (SW17).
3. Loosen the cable gland nut (5) and insert the cable. Cable outer Ø must be between 5 and 10 mm.
4. Connect the signal wires (4) to the + and - terminals tightly. Observe proper polarity.
5. Replace and tighten the cable gland nut.
6. If necessary, connect the ground wire/cable-shield to the grounding terminal at the bottom of the terminal head.
7. After the transmitter settings are effected, replace and firmly fasten the cover.

Settings:
The 4mA and 20 mA signal output levels of the transmitter are activated using the respective key-switches (2 or 1) and the LED lamp (3).

1. Connect the signal cable as mentioned above under "Installation".
2. Switch on the power supply (10...30 VDC).
3. Press the 4mA key-switch (2) for at least 3 seconds.
   - The transmitter will then enter in to the setting mode.
   - The green "Cal/Err" LED (3) will start blinking.
   - The loop current will shift to a steady value of 12 mA.
   - If neither key-switch is pressed for 20 seconds, the transmitter will revert by itself to normal operating mode.
4. Set the level corresponding to 4mA output:
   - Adjust the float level to the desired 4mA point. Press the 4mA key-switch (2) for approximately 2 seconds.
   - The green "Cal/Err" LED (3) will turn off for 5 seconds.
   - The loop current value will change to 4mA, and then revert to 12 mA.
   - If neither key-switch is pressed for 15 seconds, the transmitter will revert by itself to normal operating mode.
5. Set the level corresponding to 20 mA output:
   - Adjust the float level to the desired 20mA point. Press the 4mA key-switch (2) for approximately 2 seconds.
   - The green "Cal/Err" LED (3) will turn off for 5 seconds.
   - The loop current value will change to 20mA, and then revert to 12 mA.
   - If neither key-switch is pressed for 15 seconds, the transmitter will revert by itself to normal operating mode.
6. The new values are stored only when the transmitter changes by itself from setting mode to normal operating mode.
   - The green "Cal/Err" LED lamp (3) will turn off at that point

Fault signaling output
If the transmitter is unable to sense the float position (measure the level of liquid) for a pre-determined period of time, it will signal a fault/error condition by shifting the output to a constant 21.5mA (permanently set error signal value).

Explosion-proof transmitters
- Every explosion-proof transmitter rated Ex i (Intrinsically safe) must have its signal and power supply lines connected only through a certified isolation amplifier located in a non-hazardous zone.
- The electric characteristic values of the transmitter must be coordinated with those of the isolation amplifier and also of the cable in between.
- The transmitter enclosure must be properly connected to ground.
Magnetostrictive Transmitter, Intrinsically safe

III 2 G Ex ia IIC T6 ... T1 TÜV 01 ATEX 1772

Type 38614-NI

External electrical connections

- wire
- isolation amplifier
- 4...20mA
- 10...30VDC

Description

Intrinsically safe magnetostrictive transmitter with ATEX certificate for use with WEKA Visual Level Indicators. Media temperature ≤ 250°C.

The transmitter is mounted outside of the float chamber opposite to the indication rail (see datasheet 20010501).

This transmitter is compatible with Zones 1, gas groups IIA, IIB, and IIC, and temperature classes T1 to T6. The transmitter must be connected with a certified energy limiting device (e.g., Zener barrier) installed in a safe area.

This device guarantees the electrical limit values specified below, including the cable. The metal housing of the transmitter must be connected to protection ground.

Product code

38614-NI - xxxx mm

xxxx = M el. = M + 100 electr. Measuring length in mm (200mm ... 6000mm)

Linearity

< +/- 0.5mm

Resolution

< 0.1mm

Accuracy, analog circuit

+/- 0.1% + 0.01%/K

Certification

II 2 G Ex ia IIC T6 ... T1 TÜV 01 ATEX 1772 X

Electrical limit values

Ui = max. 30V
Id = max. 200mA
Pi = max. 1W
Ci = max. 5nF
Li = max. 0.25mH

Enclosure

IP68 - 10bar (EN60529)

Operating temperatures

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Ambient temperature Ta</th>
<th>Media temperature T1</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-40°C ... +40°C</td>
<td>-40°C ... +85°C</td>
</tr>
<tr>
<td>T5</td>
<td>-40°C ... +55°C</td>
<td>-40°C ... +100°C</td>
</tr>
<tr>
<td>T4</td>
<td>-40°C ... +85°C</td>
<td>-40°C ... +135°C</td>
</tr>
<tr>
<td>T3</td>
<td>-40°C ... +85°C</td>
<td>-40°C ... +200°C</td>
</tr>
<tr>
<td>T2</td>
<td>-40°C ... +85°C</td>
<td>-40°C ... +300°C</td>
</tr>
<tr>
<td>T1</td>
<td>-40°C ... +85°C</td>
<td>-40°C ... +450°C</td>
</tr>
</tbody>
</table>

Materials

Housing / tube 1.4571, Ø 12mm
Cable gland PA, grey
- for cable outer Ø 5 ... 10mm

Installation / Settings (interactive or with HART® converter module interface)

Instructions: see "Install Magneto"

Fixation

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

When ordering transmitters as spare parts, hose clamps are never included and must be ordered separately.

In case of ordering hose clamps pipe size must be indicated:

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

Note

The cable must be durably installed. This device is maintenancefree and repair work is prohibited.

More relevant instructions and certificates are available at www.weka-ag.ch
Magnetostrictive Transmitter, Flameproof Enclosure
II 2 G Ex d IIC T4 TÜV 09 ATEX 555395 X
Type 38614-ND

Dimensions

The Ex d housing extends the intrinsically safe version 38614-NI into a flameproof enclosure version Ex d.

Threaded cable gland (not included)
* without display 65.5mm, with display 72.5mm

Sensor dimensions and electrical data refer to 38614-NI

- Signal output: 4 - 20mA, current sink
- Enclosure: IP68 - 10bar (EN60529)
- Connection thread: M20 x 1.5
- Ambient temperature: -40°C … +85°C
- Accuracy, analog circuit: +/- 0.5% + 0.01%/K (4…20mA)
- Housing material: 1.4571 (316Ti)

Product code
xxxx = M el. = electrical Measuring length in mm (refer to 36814-NI)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>38614-ND</td>
<td>38614-ND with display - xxxx mm 3 digits, 10mm, LED, adjustable Indication 0% … 100%</td>
</tr>
<tr>
<td>Power supply</td>
<td>21V ... 26V</td>
</tr>
<tr>
<td>Voltage drop</td>
<td>8V</td>
</tr>
<tr>
<td>Power supply</td>
<td>21V ... 29V</td>
</tr>
<tr>
<td>Voltage drop</td>
<td>11V</td>
</tr>
</tbody>
</table>

Certification:

Safety barrier SB1

II (1)2 G Ex d [ia Ga] IIC T4 Gb
TÜV 10 ATEX 381296 X
Ex d [ia] IIC T4 Ga/Gb
IECEx TUN 10.0003X

Electrical limit values

| U   | = 26VDC |
| Um  | = 253V  |
| I   | ≤ 30mA  |

Ex d housing

II 2 G Ex d IIC T4
TÜV 09 ATEX 555395 X
Ex d IIC T4 Gb
IECEx TUN 09.0013X

Sensor (38614-NI)

II 2 G Ex ia IIC T6 ... T1
TÜV 01 ATEX 1772 X
Ex ia IIC T6 Gb
IECEx TUN 04.0006X

Note

The potential equalisation conection has to be connected with the potential equalisation system of the explosion hazardous area. Maximum permissible pressure is 12.9bar.

Further relevant instructions and certificates are available at www.weka-ag.ch

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### Classification and Marking of Flameproof enclosures Apparatus

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

### 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, Ethane, Propane</td>
</tr>
<tr>
<td>IIB</td>
<td>Ethylene, Hydrogen, Ethane, Propane</td>
</tr>
<tr>
<td>IIC</td>
<td>Ethylene oxide, Ethanol, Hydrogen sulfide</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.

- T1: < 450°C
- T2: < 300°C
- T3: < 200°C
- T4: < 135°C
- T5: < 85°C
- T6: < 55°C

### Example:

| CE 0820 | II | 2G | Ex d | IIC | T6 | ZELM 03 ATEX0168 |

- The equipment may be used without restriction.
- The equipment may be used subject to specific conditions.
- The equipment is an "Ex" component with part-certification and therefore cannot be used as standalone.

- Methods of Protection and Apparatus Marking

- Principle of protection: Intrinsically safe (Ex i)
- Means of protection: Omitted here: Ex d, Ex p, Ex q, Ex e, Ex m, Ex rj
- Symbol: Z
- Zone compatibility: Non-hazardous
- Standard: IEC EN 60079-31 (Dust)
- Traceability reference: www.zelm.ch
- Certificate reference: ZELM 03 ATEX0168
- Authority: ZELM

**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.
5.7 Simple apparatus

The following apparatus shall be considered to be simple apparatus:

a) passive components, for example switches, junction boxes, resistors and simple semiconductor devices;

b) sources of stored energy consisting of single components in simple circuits with well-defined parameters, for example capacitors or inductors, whose values shall be considered when determining the overall safety of the system;

c) sources of generated energy, for example thermocouples and photocells, which do not generate more than 1.5V, 100mA and 25mW.

Simple apparatus shall conform to all relevant requirements of this standard. The manufacturer or intrinsically safe system designer shall demonstrate compliance with this clause, including material data sheets and test reports, if applicable. The apparatus need not comply with Clause 12.

The following aspects shall always be considered:

1) simple apparatus shall not achieve safety by the inclusion of voltage and/or current-limiting and/or suppression devices;

2) simple apparatus shall not contain any means of increasing the available voltage or current, for example DC-DC converters;

3) where it is necessary that the simple apparatus maintains the integrity of the isolation from earth of the intrinsically safe circuit, it shall be capable of withstanding the test voltage to earth in accordance with 6.3.12. Its terminals shall conform to 6.2.1;

4) non-metallic enclosures and enclosures containing light metals when located in the explosive gas atmosphere shall conform to 7.3 and 8.1 of IEC 60079-0;

5) when simple apparatus is located in the explosive gas atmosphere, it shall be temperature classified. When used in an intrinsically safe circuit within their normal rating and at a maximum ambient temperature of 40°C, switches, plugs, sockets and terminals will have a maximum surface temperature of less than 85°C, so they can be allocated a T6 temperature classification for Group II applications and are also suitable for Group I applications. Other types of simple apparatus shall be temperature classified in accordance with Clause 4 of this standard.

Where simple apparatus forms part of an apparatus containing other electrical circuits, the whole shall be assessed according to the requirements of this standard.

NOTE 1
Sensors which utilize catalytic reaction or other electro-chemical mechanisms are not normally simple apparatus. Specialist advice on their application should be sought.

NOTE 2
It is not a requirement of this standard that the conformity of the manufacturer's specification of the simple apparatus needs to be verified.