
















Guidelines and Instructions		Page
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Datasheet 20010501	Installation Instructions (Datasheet 20010501)	4
Bi-stable reed	General information about bi-stable reed-switch type level transmitters	5

WEKA transmitters: Resistant output or current supplied voltage output (3-wire)			
Transmitter	Media temperature	Connection	
29710	-50°C ... +150°C	Cable, shielded	6
29710-W	-50°C ... +350°C	Cable	7


WEKA transmitters: Current output 4...20mA (2-wire)			
Transmitter	Media temperature	Connection	
31967	-50°C ... +150°C	Cable, shielded	8
31967-W	-50°C ... +250°C	Cable, halogen-free 	9
31967-K	-50°C ... +150°C	Terminal box	10
31967-KST	-50°C ... +150°C	Plug-in connector	11

WEKA transmitters for hazardous areas: Intrinsically safe (Ex i)			
Resistant output, current supplied voltage output (3-wire) or current output 4...20mA (2-wire)			
Transmitter	Media temperature	Connection	Marking
29710-NI 	-50°C ... +150°C	Cable, halogen-free 	II 2 G Ex ia IIC T4 Gb II 2 D Ex ia IIIC T115°C
32607-NI 	-50°C ... +150°C	Cable, halogen-free 	II 2 G Ex ia IIC T4 Gb II 2 D Ex ia IIIC T115°C

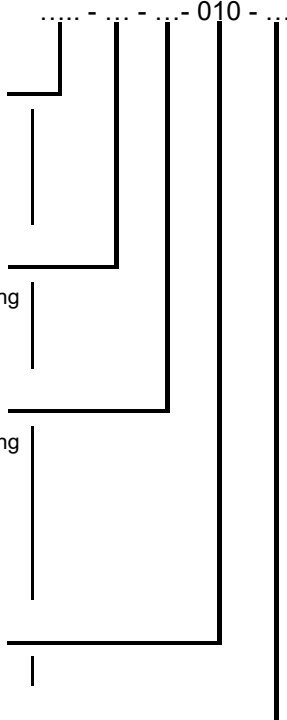
WEKA transmitters for hazardous areas: Flameproof enclosures (Ex d)			
Resistant output, current supplied voltage output (3-wire) or current output 4...20mA (2-wire)			
Transmitter	Media temperature	Connection	Marking
29710-ND 	-50°C ... +150°C	Cable, halogen-free 	II 2 G Ex db IIC T6 Gb II 2 D Ex tb IIIC T85°C Db
32608-ND 	-50°C ... +150°C	Cable, halogen-free 	II 2 G Ex db IIC T6 Gb II 2 D Ex tb IIIC T85°C Db

WEKA transmitters for use with HART®, Profibus PA® or Foundation Fieldbus™ converter module interface					
4...20mA current output or resistance output					
WEKA transmitters with resistance output or current supplied voltage output					
Transmitter	Media temperature	Connection	Protection class	Certificate	
29710-R	-50°C ... +150°C	Cable, shielded	Non-hazardous	-	20
29710-R-NI 	-50°C ... +150°C	Cable, halogen-free 	Ex i	see 29710-NI	21
29710-R-W	-50°C ... +350°C	Cable	Non-hazardous	-	22
29710-R-ND 	-50°C ... +150°C	Cable, halogen-free 	Ex d	see 29710-ND	23
Differenz to 29710, 29710-NI, 29710-W and 29710_ND is only the entended measuring length Mel.					
4...20mA converter with diagnostic functions, ready to connect, mounted in junction box					
Converter	Description	Compatible transmitters			
SC-10 45755	4...20mA converter in IP65 metal enclosure	29710-xx			24
HART® converter, ready to connect, mounted in junction box					
Converter	Description	Compatible transmitters			
HART 37383	HART® converter in IP65 metal enclosure	29710-R and 29710-R-W			25
HART 40038	HART® converter in IP65 metal enclosure with digital display	29710-R and 29710-R-W			26
HART 37384 	HART® converter - Intrinsically safe	29710-R-NI and 29710-R-W			27
HART 38021 	HART® converter - Flameproof enclosures	29710-R-ND			28
Profibus PA® and Foundation Fieldbus™ converter, ready to connect, mounted in junction box					
Converter	Description	Compatible transmitters			
PA+FF 40268	Profibus PA® and FF™ converter in IP65 metal enclosure	29710-R and 29710-R-W			29

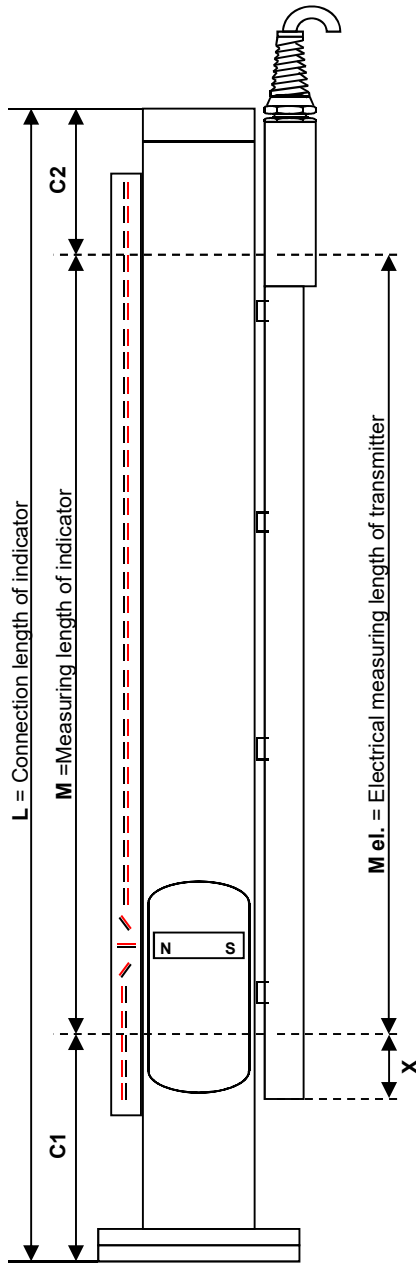
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Ex-Info 	Classification of hazardous zones and marking of equipment	30
Ex-5.7	Extract of standard of simple electrical apparatus	31

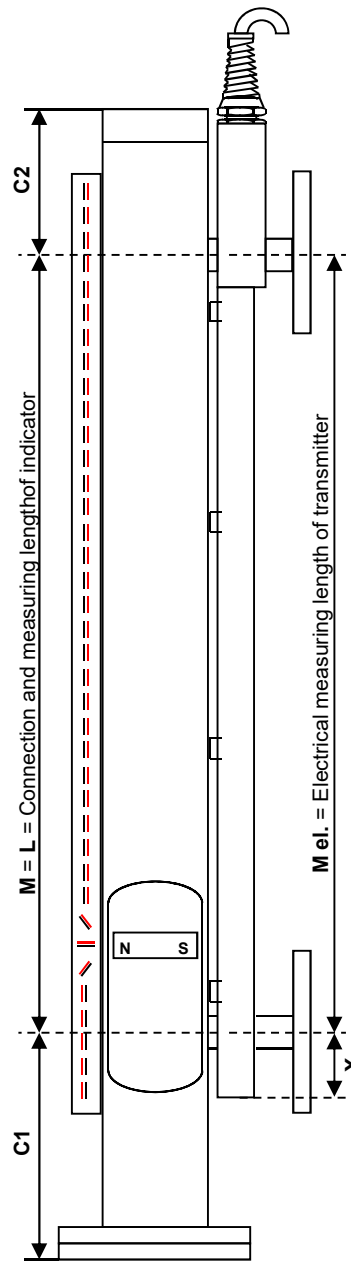
Type code

	available for:	index:	
Type of transmitter			
3-wire: resistant output or current supplied voltage output		29710	<div style="text-align: right;">.....-.....-.....-010-.....</div> 
2-wire: 4...20mA current output, current sink		31967	
2-wire: Intrinsically safe Ex ia; 4...20mA current output, current sink		32607	
2-wire: Flameproof enclosures Ex d, 4...20mA current output, current sink		32608	
Specialities			
Standard		no marking	
With resistant output for HART®, Profibus PA® and Foundation Fieldbus™	29710	R	
Transmitter with bi-stable reed switch at the top end	29710 / 31967	BI	
Execution			
Standard		no marking	
for high media temperature	29710 / 31967	W	
with terminal box	31967	K	
with plug connector	31967	KST	
Intrinsically safe Ex ia	29710 / 32607	NI	
Flameproof enclosures, Ex id	29710 / 32608	ND	
Size of resistance			
10 Ohm per step (not applicable for NI/ND)	all	010	
Resolution			
5mm	all	05	
10mm	all	10	

Level Indicator A-version



Level Indicator K-version



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
 - 10 mm resolution -> X = 65 mm
 - 5 mm resolution -> X = 30 mm
 - 29710-R-xx version -> see datasheet

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.

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:

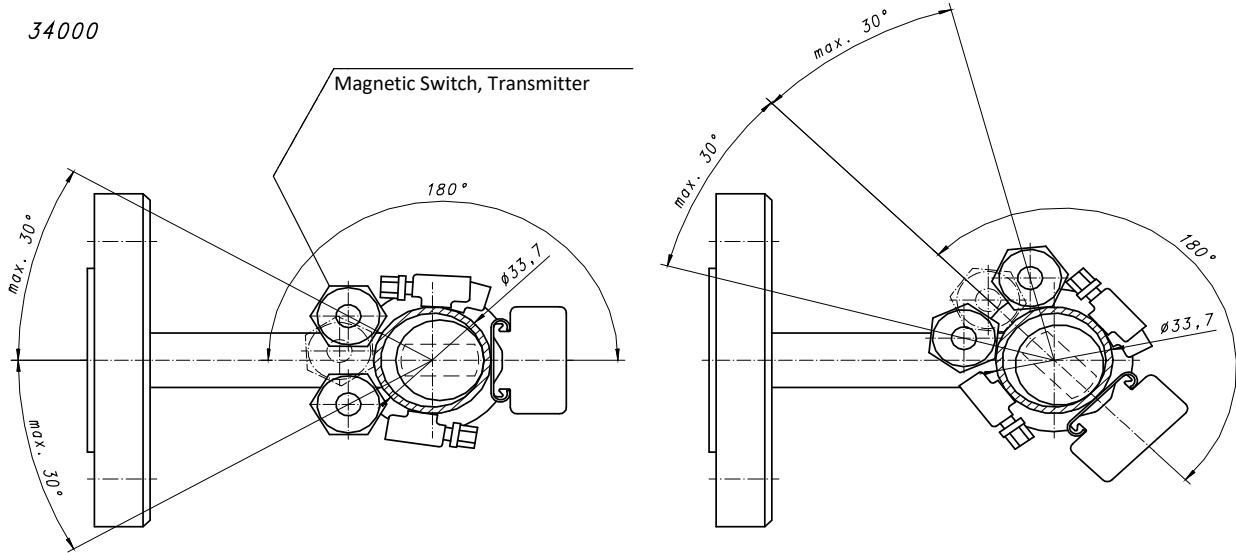
When M el. < M, then a bi-stable reed switch is necessary.
 For transmitters type 29710-R-x-010-xx M el. must be > M.

Mounting

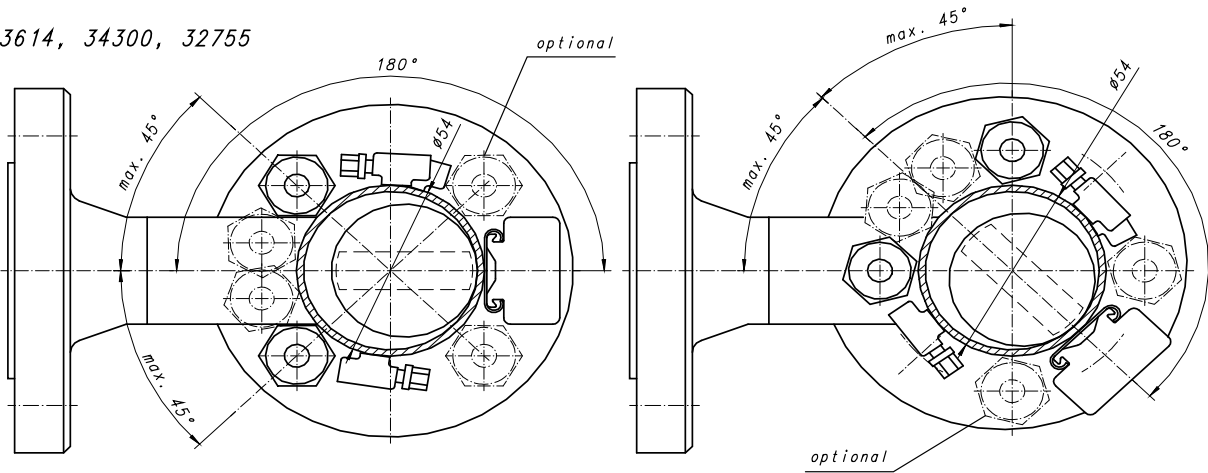
Normal: Installation 180 °C opposite of the indication rail with the permitted tolerance according to the tube diameter (refer to layout below)
Cable exit upwards.

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

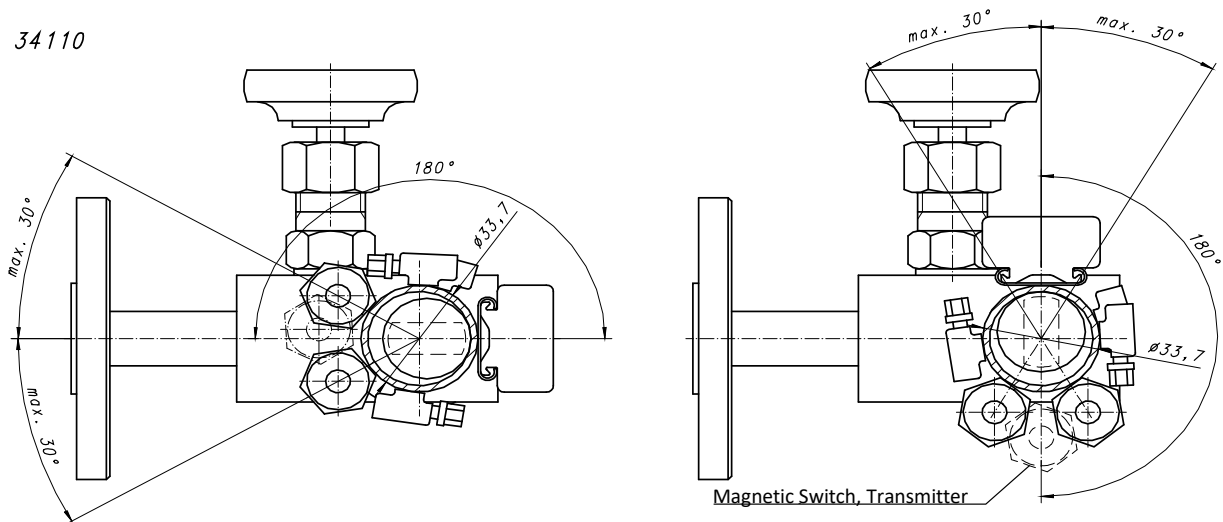
34000



23614, 34300, 32755



34110



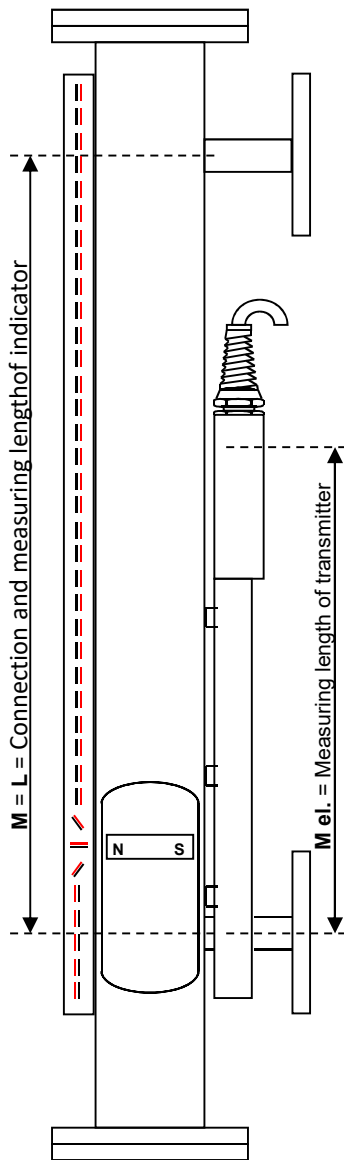


Figure 1

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.

Signal output with correctly adjusted transmitter

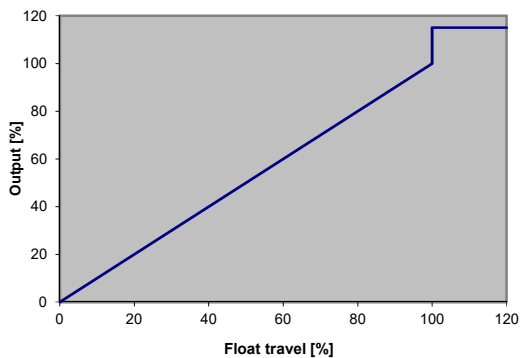


Figure 2

Faultive signal output with closed bi-stable reed-switch

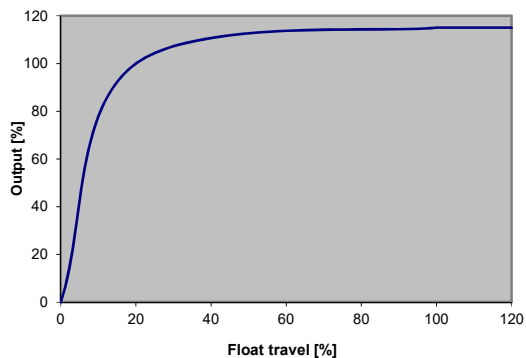


Figure 3

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



1258



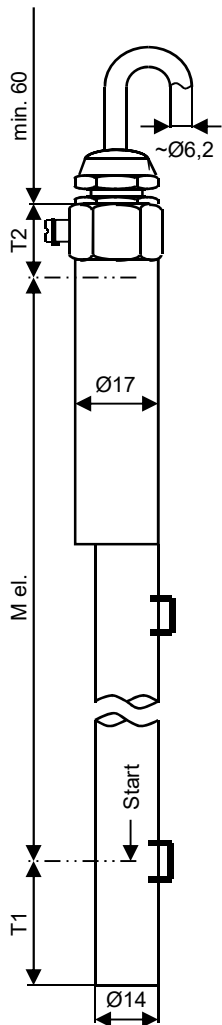
II 2 G Ex ia IIC T4 Gb

II 2 D Ex ia IIIC T115°C Db

SEV 17 ATEX 0104

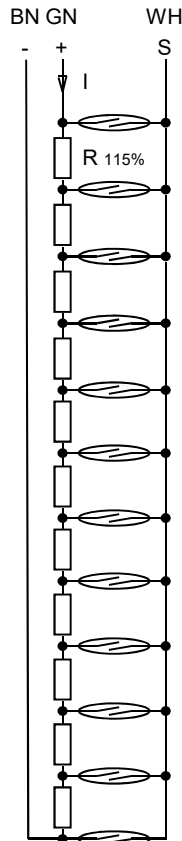
IECEx SEV 17.0001

Dimensions

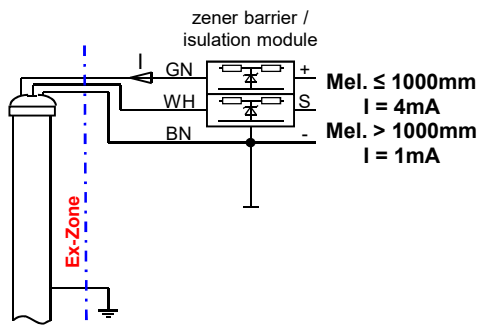


Internal circuit

Type xxxxx-10 T1=65mm T2=30mm / Type xxxxx-05 T1=30mm T2=65mm



External electrical connections



Product code:
[For details see page 2](#)

29710-NI-10 **10mm resolution**
29710-NI-05 **5mm resolution**
M el. = Measuring length in mm

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

29710-NI-10 **29710-NI-05**
10mm 5mm
Ø 14 / 10 Ø 17 / 14
200mm (min.) ... 4000mm (max.)

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

Operating temperatures

Media temperature	Ambient temperature	Temperature class
-50°C...+150°C	-50°C...+50°C	T4 (115°C)

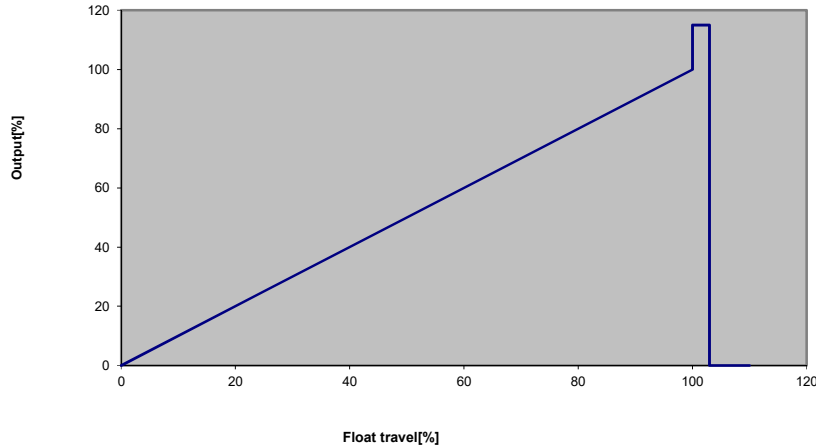
For dust explosion hazardous areas (D) the media temperature has to be considered instead of the surface temperature.

Enclosure


IP68 - 10bar (EN60529)

Signal output

- with R = 10Ω and I = 1mA
10mV per step (1cm) For 29710-NI-10 one step = 1cm and for 29710-NI-05 one step = 5mm
- with R = 10Ω and I = 4mA
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 0,5mm ² , Ø ~6,2mm, largely resistant to oils/petroleum products, halogen-free	
Type label	Stainless steel, lasered	

Electrical limit values

U_{max} = 15VDC
I_{max} = 4mA

Safety related limit values

U_i = max. 22,6V
I_i = max. 160mA
P_i = max. 900mW
C_i ≈ 0
L_i ≈ 0

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	89249
For pipe diameter	40...57mm and 57...80mm	P/O	89250

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.

Function: Intrinsically safe transmitter with ATEX/IECEx certificate for use with WEKA VLI for media temperature $\leq 150^{\circ}\text{C}$

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



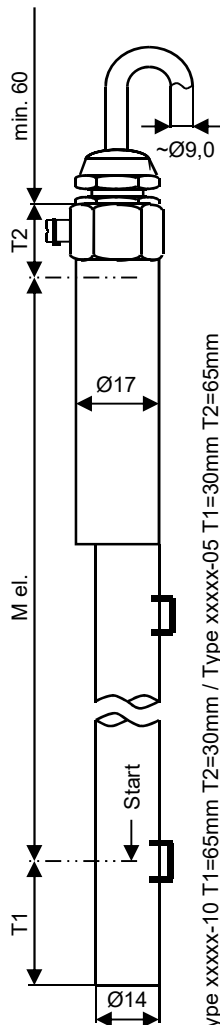
II 2 G Ex ia IIC T4 Gb

II 2 D Ex ia IIIC T115°C Db

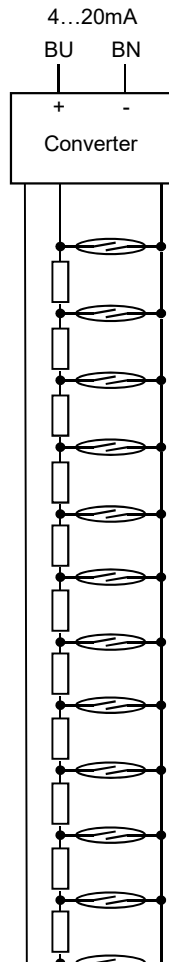
SEV 17 ATEX 0104

IECEx SEV 17.0001

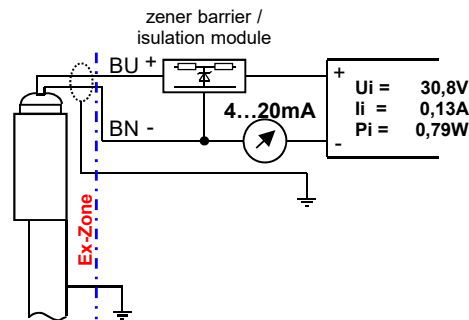
Dimensions



Internal circuit



External electrical connections



Product code:
[For details see page 2](#)

32607-NI-10 **10mm resolution**
32607-NI-05 **5mm resolution**
M el. = Measuring length in mm

Resolution	32607-NI-10	32607-NI-05
	10mm	5mm
Transmitter tube dia.	Ø 14 / 10	Ø 17 / 14
Measuring length "M el."	200mm (min.) ... 4000mm (max.)	

Supply voltage
14VDC ... 30VDC

Operating temperatures

Media temperature	Ambient temperature	Temperature class
-50°C...+150°C	-50°C...+50°C	T4 (115°C)

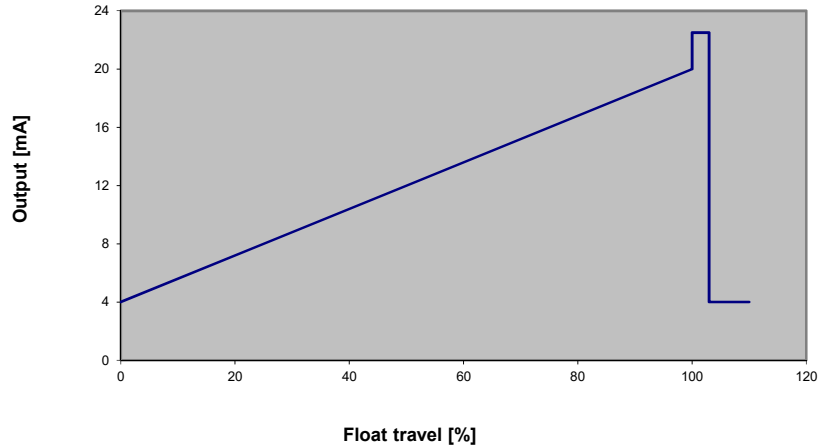
For dust explosion hazardous areas (D) the media temperature has to be considered instead of the surface temperature.

Enclosure

IP68 - 10bar (EN60529)

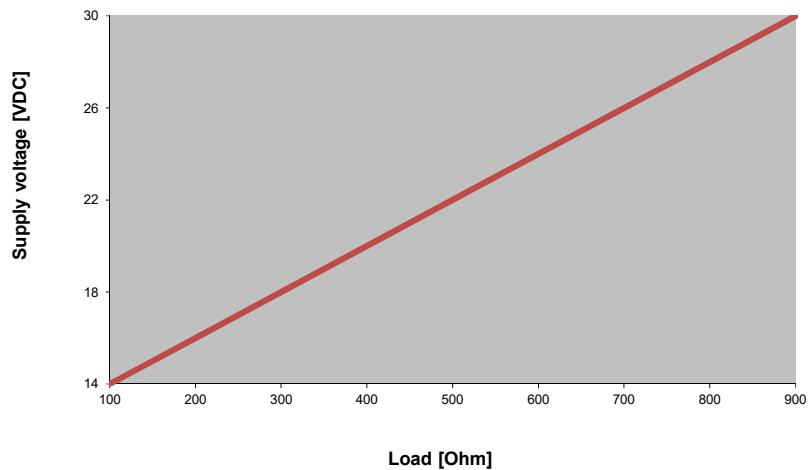
Signal output

4...20mA current loop



Output load (including energy limiting device and cables)

max. 100Ohm at 14VDC
max. 900Ohm at 30VDC



Materials

Housing tube
Cable gland
- Seal
Cable
shielded (standard)

Stainless steel 316 / 316L
Brass, nickel-plated
PA / NBR



5m, Silicone, black 2 x 1,0mm², Ø ~9,0mm, largely resistant to oils/petroleum products, halogen-free

Type label

Stainless steel, lasered

Electrical limit values

U_{max} = 31VDC
I_{max} = 25mA

Safety related limit values

U_i = max. 30,8V
I_i = max. 130mA
P_i = max. 790mW
C_i ≈ max. 49nF
L_i ≈ 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 separately.

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

For pipe diameter 30...40mm P/O 89249

For pipe diameter 40...57mm and 57...80mm P/O 89250

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.

Function: Transmitter Ex d with ATEX/IECEX certificate for use with WEKA VLI for media temperature $\leq 150^{\circ}\text{C}$

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



II 2 G Ex db IIC T6 Gb

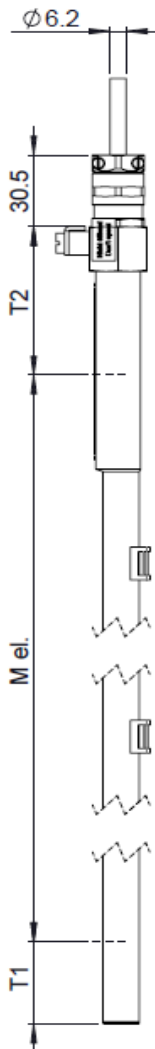
II 2 D Ex tb IIIC T85°C Db

SEV 17 ATEX 0104

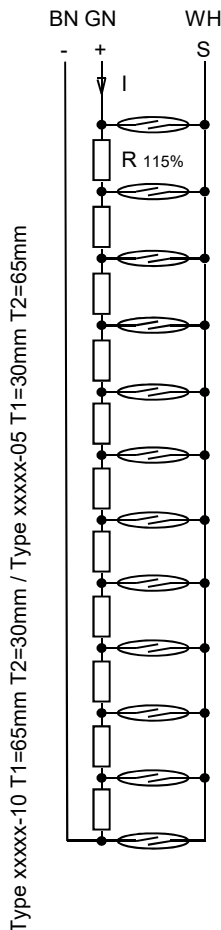
IECEX SEV 17.0001

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

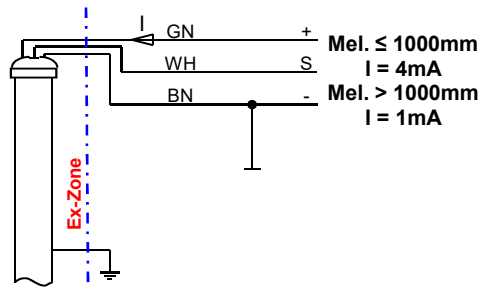
Dimensions



Internal circuit



External electrical connections



Product code:
[For details see page 2](#)

29710-ND-10 **10mm resolution**
29710-ND-05 **5mm resolution**
M el. = Measuring length in mm

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

29710-ND-10 **29710-ND-05**
10mm 5mm
Ø 14 / 10 Ø 17 / 14
200mm (min.) ... 4000mm (max.)

Supply current
M el. $\leq 1000\text{mm}$ I = 4mA
M el. $> 1000\text{mm}$ I = 1mA

Operating temperatures

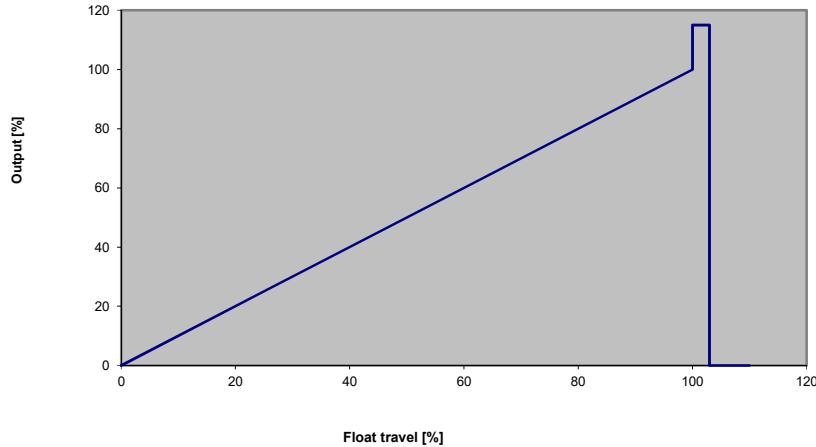
Media temperature	Ambient temperature	Temperature class
-50°C...+150°C	-50°C...+50°C	T4 / T105°C
-50°C...+135°C	-50°C...+50°C	T4 / T100°C
-50°C...+100°C	-50°C...+50°C	T5 / T95°C
-50°C...+85°C	-50°C...+50°C	T6 / T85°C

Enclosure

IP66 & IP68 - 10bar (EN60529)

Signal output

- with R = 10Ω and I = 1mA
10mV per step (1cm) For 29710-ND-10 one step = 1cm and for 29710-ND-05 one step = 5mm
- with R = 10Ω and I = 4mA
40mV per step (1cm) For 29710-ND-10 one step = 1cm and for 29710-ND-05 one step = 5mm



Materials

Housing tube	Stainless steel 316 / 316L
Cable gland	Brass, nickel-plated
- Seal	PA / FPM
Cable (Standard 5m)	Silicone, red, 3 x 0,5mm ² , Ø ~6,2mm, largely resistant to oils/petroleum products, halogen-free
Type label	Stainless steel, lasered



Electrical limit values

U_{max} = 15VDC
I_{max} = 4mA

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	89249
For pipe diameter	40...57mm and 57...80mm	P/O	89250

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.

Function: Transmitter Ex d with ATEX/IECEX certificate for use with WEKA VLI for media temperature $\leq 150^{\circ}\text{C}$

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

Certificate

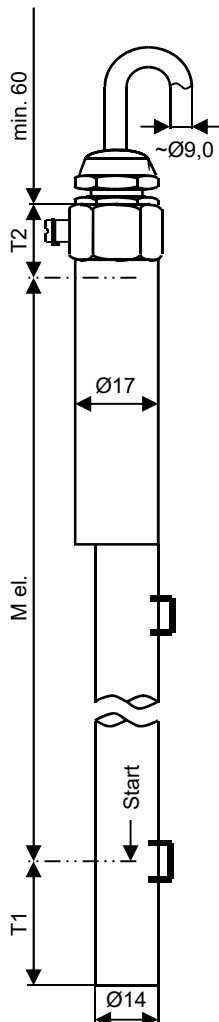


II 2 G Ex db IIC T6 Gb
II 2 D Ex tb IIIC T85°C Db

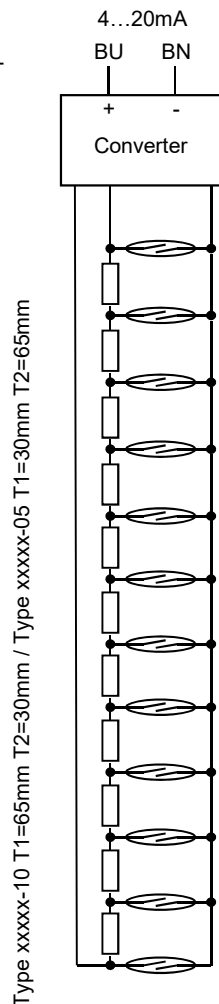
SEV 17 ATEX 0104
IECEX SEV 17.0001

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

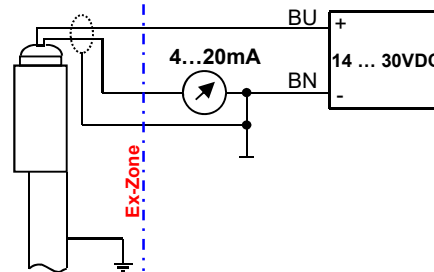
Dimensions



Internal circuit



External electrical connections



Product code:
[For details see page 2](#)

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

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

32608-ND-10 10mm
32608-ND-05 5mm
Ø 14 / 10 Ø 17 / 14
200mm (min.) ... 4000mm (max.)

Supply voltage
14VDC ... 30VDC

Operating temperatures

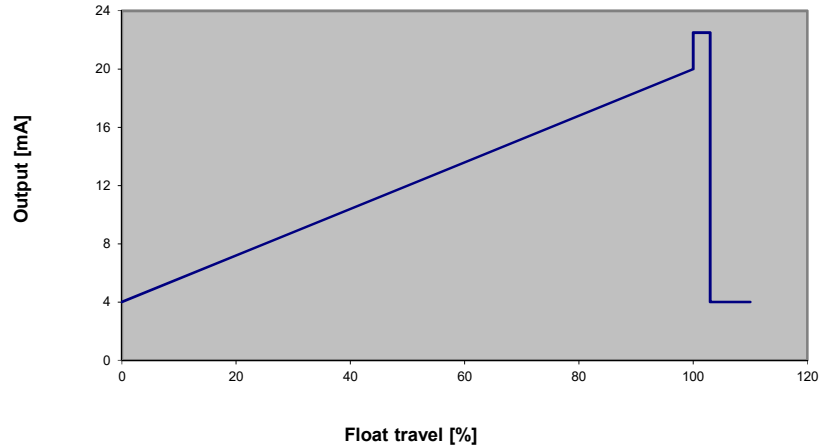
Media temperature	Ambient temperature	Temperature class
-50°C...+150°C	-50°C...+50°C	T4 / T105°C
-50°C...+135°C	-50°C...+50°C	T4 / T100°C
-50°C...+100°C	-50°C...+50°C	T5 / T95°C
-50°C...+85°C	-50°C...+50°C	T6 / T85°C

Enclosure

IP66 & IP68 - 10bar (EN60529)

Signal output

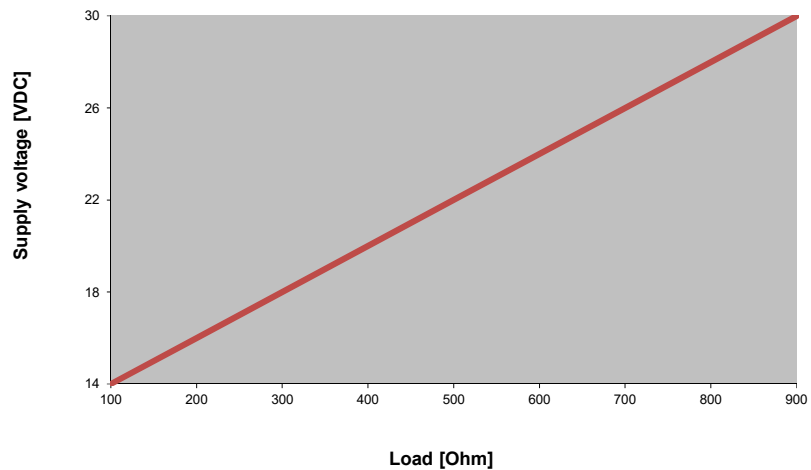
4...20mA current loop



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

shielded (standard)

5m, Silicone, black 2 x 1,0mm², Ø ~9,0mm, largely resistant to oils/petroleum products, halogen-free



Type label

Stainless steel, lasered

Electrical limit values

U_{max} = 31VDC

I_{max} = 25mA

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 89249

For pipe diameter 40...57mm and 57...80mm P/O 89250

Note

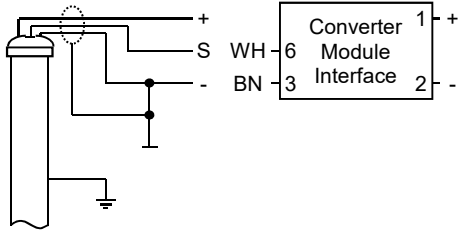
Please read the instructions in our datasheet 20010501 before performing installation.

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.

External electrical connections



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.

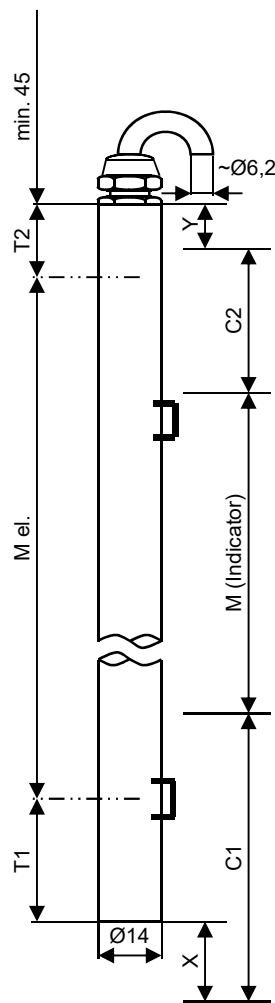
The measuring length of transmitter (M el.) must be larger than the measuring length of the indicator (M). Refer to the table below. Transmitter settings are selected through the Converter Module Interface.

Product code: 29710-R-NI-10 10mm Resolution
29710-R-NI-05 5mm Resolution
M el. = (see below)

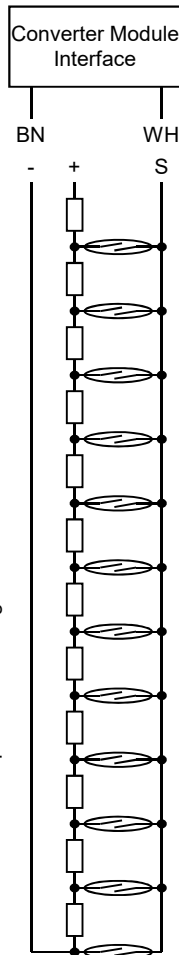
[For details see page 2](#)

Dimensions

Internal circuit



Type xxxxx-10 T1/T2 = Depends on settings of Converter Module Interface
Type xxxxx-05 T1/T2 = Depends on settings of Converter Module Interface



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

Level Indicator	Media Density	x	y	Measuring Length (M el.)
Type	[g/cm3]	[mm]	[mm]	[mm]
34000-A /-K u. 34110-K	≥ 0,6	20	10	= M + 330
34000-A /-K u. 34110-K	≥ 0,7	20	10	= M + 230
34000-A /-K u. 34110-K	≥ 0,8	20	10	= M + 160
34000-A /-K u. 34110-K	≥ 1,0	20	10	= M + 120
Standard Line -A /-K				= M + 180
High Pressure Line -A /-K				
Petro Line -A /-K				

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. refer to type 29710-NI

Resolution refer to type 29710-NI

Power supply Refer to HART® Converter data sheet

Operating temperature refer to type 29710-NI

Enclosure refer to type 29710-NI

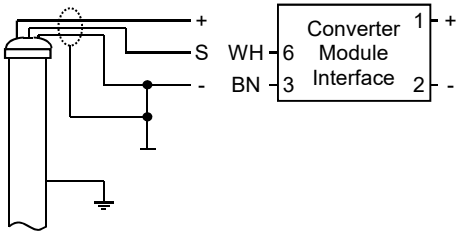
Materials refer to type 29710-NI

Certificates refer to type 29710-NI

Fixation refer

Note refer to type 29710-NI

External electrical connections



Description:

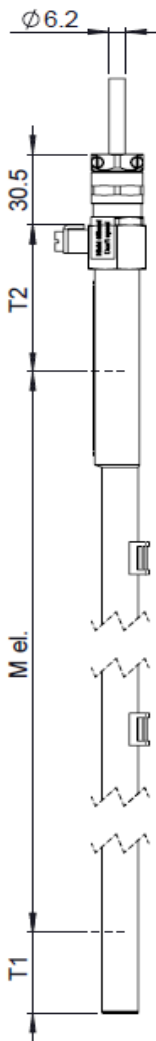
Flameproof enclosures transmitter for use with HART® converter module interface and 4...20mA current output for use with WEKA Level Indicators media temperature ≤ 150°C

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.

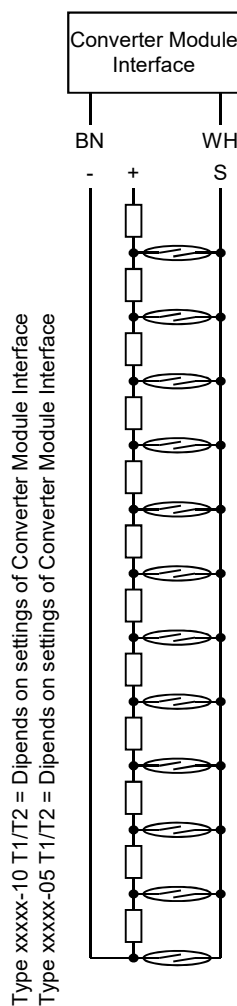
The measuring length of transmitter (M el.) must be larger than the measuring length of the indicator (M). Refer to the table below. Transmitter settings are selected through the Converter Module Interface.

Product code: 29710-R-ND-10 10mm Resolution
29710-R-ND-05 5mm Resolution
M el. = (see below)

Dimensions



Internal circuit



Measuring length "M el."

250mm (min.) to 4000mm (max.)

Level Indicator	Media Density	x	y	Measuring Length (M el.)
Type	[g/cm ³]	[mm]	[mm]	[mm]
34000-A /-K u. 34110-K	≥ 0,6	20	10	= M + 330
34000-A /-K u. 34110-K	≥ 0,7	20	10	= M + 230
34000-A /-K u. 34110-K	≥ 0,8	20	10	= M + 160
34000-A /-K u. 34110-K	≥ 1,0	20	10	= M + 120
Standard Line -A /-K High Pressure Line -A /-K Petro Line -A /-K				= M + 180

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 38021](#)

Transmitter housing tube dia.

refer to type 29710-ND

Resolution

refer to type 29710-ND

Power supply

Refer to HART® Converter data sheet

Operating temperature

refer to type 29710-ND

Enclosure

refer to type 29710-ND

Materials

refer to type 29710-ND

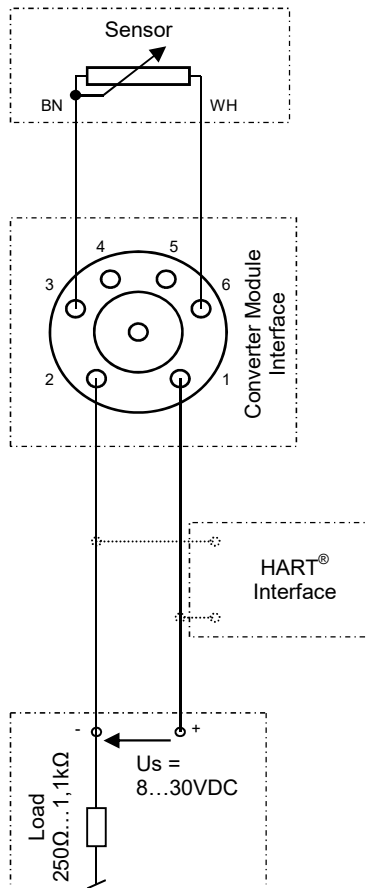
Certificates

refer to type 29710-ND

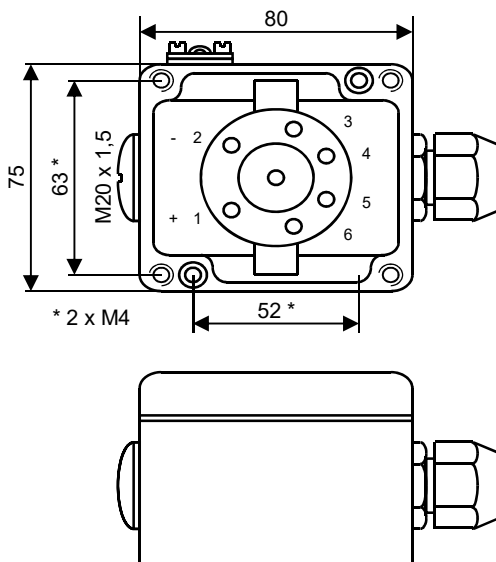
Fixation
refer

Note
refer to type 29710-ND

External electrical connections



Dimensions



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 loop 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
Ambient temperature (Ta)	for T1, T2, T3, T4	-30°C ... +85°C
	for T5, T6	-30°C ... +60°C
Operating temperature	(mounted on VLI)	-30°C ... +85°C
	(away from VLI)	< -30°C / > +85°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 1mm ²

CE 0344  II 1 G Ex ia IIC T4 or T6
II 1 D Ex iaD KEMA 03 ATEX 1537

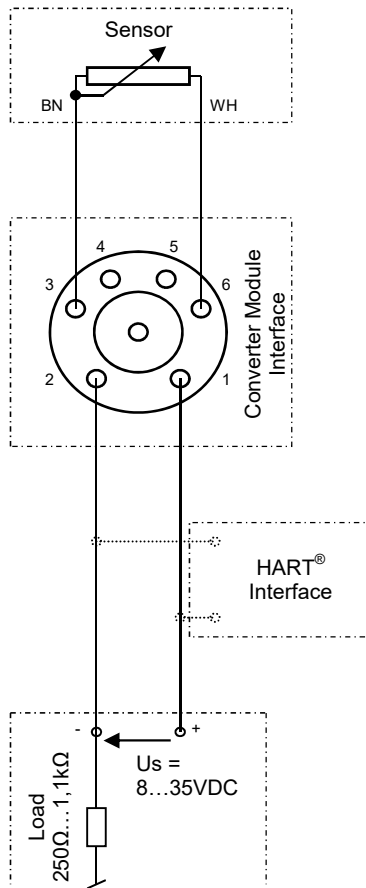
Electrical limit values

Ui =	max. 30VDC
Ii =	max. 120mA
Pi =	max. 840mW
Ci =	≤ 1nF
Li =	≤ 10μH

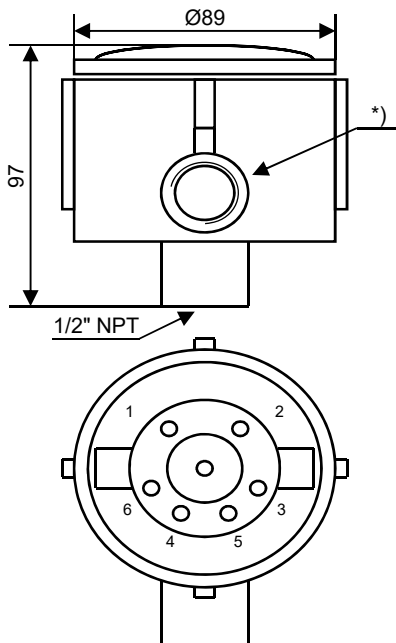


IECEx KEM 10.0083X issue 3

External electrical connections



Dimensions



IECEx KEM 10.0083X issue 3

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
Ambient temperature (Ta)		-30°C ... +50°C
Operating temperature	(mounted on VLI)	-30°C ... +85°C
	(away from VLI)	< -30°C / > +85°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 1mm ²
Type label	Polyester: silver, black printing

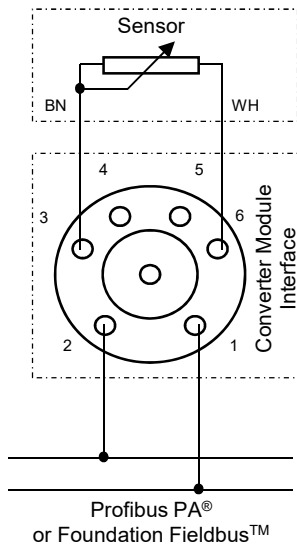
Housing:

CE 0722 Ex d IIC CESI 03 ATEX 059U

Converter:

II 3 GD Ex nA[nL] IIC T4...T6 or
 II 3 GD Ex nL IIC T4...T6 or
 CE 0344 Ex nA[ic] IIC T4...T6 or
 II 3 GD Ex ic IIC T4...T6
KEMA 03 ATEX 1508 X

External electrical connections



Description:

Profibus PA® or Foundation Fieldbus™ converter module Interface for use with WEKA Transmitter 29710-R-010-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 digital current output with Profibus PA® or Foundation Fieldbus™ communication. The converter switches automatically between the 2 protocols. Zero and range setting is done through the digital 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 40268

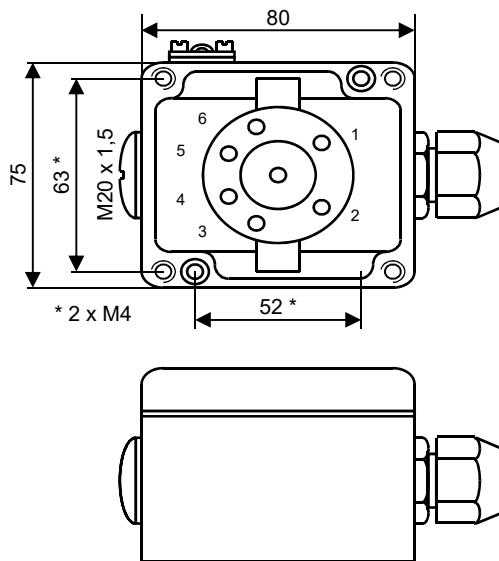
Resolution refer to [29710-R-010-xx](#) [29710-R-W-010-xx](#)

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

Dimensions



Specifications

Loop supply voltage	9 to 30VDC
Consumption	< 11mA
Isolation voltage	test = 1.5kVAC; operation = 50VAC
Communication	PROFIBUS [®] PA / FOUNDATION [™] Fieldbus
Response time	1 ... 60s
Sensor error detection	Yes
Short circuit detection	< 15Ω
Input	0Ω (min.) to 10'000Ω (max.)
Cable resistance per wire	50Ω
Transmitter current	0.2mA, nominal
Basic accuracy	≤ +/- 0,05Ω
Temperature coefficient	≤ +/- 2mΩ / °C

Operating temperature

Media temperature	29710-R-010-xx	-50°C ... +150°C
	29710-R-W-010-xx	-50°C ... +350°C
Ambient temperature (Ta)		-30°C ... +50°C
Operating temperature	(mounted on VLI)	-30°C ... +85°C
	(away from VLI)	< -30°C / > +85°C

Enclosure

IP65 (EN60529)

Materials

Housing	Alu: blue, with grounding terminal
Cable gland	PA: grey, M20x1.5
- Seal	Perbunan (NBR)
- Cable compatibility	Ø 3 ... 7mm; max. 2 x 1mm ²
Type label	Polyester: silver, black printing

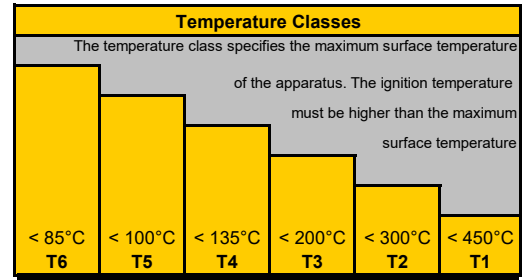
Note

- A unique switch function ensures the automatic shift between the Profibus PA® and the Foundation Fieldbus™ protocols.
- Profibus PA® Version 3.0 or Foundation Fieldbus™ Version ITK 4.51 is applied.
- Set-up for Profibus PA® can be done via Siemens Simatic® PDM®, ABB Melody/Harmony, Honeywell Ax and Metso DNA software
- Set-up for Foundation Fieldbus™ can be done via Emerson Delta V, Yokogawa CS 1000/CS 3000, ABB Melody/Harmony and Honeywell Psource software.
- Polarity-independent bus connection
- Profibus PA[®] function blocks: 2 analogue
- Foundation Fieldbus[™] function blocks: 2 analogue and 1 PID
- Foundation Fieldbus[™] capability: BASIC or LAS






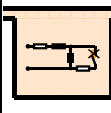
Classification and Marking of Flameproof enclosures Apparatus				
Inflammable Material	Incidence of inflammable material in Ex zone. Explosive media	Hazardous zones	Marking of Flameproof enclosures equipment	
			Apparatus group	Apparatus category
Gases Vapor Steam	Present continuously, frequently, or over extended periods of time	Zone 0	II	
	Present occasionally	Zone 1	II	1G Ga 2G Gb 3G Gc
	Presence unlikely or rare and only for brief periods of time	Zone 2	II	
Inflamm-able dust cloud	Present continuously, frequently, or over extended periods of time	Zone 20	II	
	Present occasionally	Zone 21	II	1D Da 2D Db 3D Dc
	Presence unlikely or rare, and only for brief periods of time	Zone 22	II	
Methane	-	Mines	I	M1 M2
	-	Mines	I	

Classification of Gases, Aerosols, Vapors				
Apparatus Group	Examples of inflammable Gases			
[Note: This is only a partial list of inflammable gases/vapors]				
IIA IIIA	Ammonia, Methane, Ethane, Propane	Ethyl alcohol, Cyclohexane, N-butane	Benzene, Diesel, Furnace oil, N-hexane	Acetaldehyde
IIIB IIIC	Town gas, Acrylonitrile	Ethylene, Ethylene oxide	Ethyl glycol, Hydrogen sulfide	Ethyl ether
	Hydrogen	Acetylene		Carbon disulfide



Example:


1258

II
2G
Ex d
IIC
T6
SEV 17 ATEX0168
-
Gb

Marking - including the reference number of the certification authority (notified body)	An explosion inside the enclosure is prevented from spreading outside Flameproof enclosures Ex d  Zone 1 or 2 IEC EN 60079-1 (Gas) IEC EN 60079-31 (Dust)						ATEX marking and certificate number	The equipment may be used without restriction -	
	The energy in the electrical circuit in the hazardous zone is limited by design, thus preventing dangerous sparks and/or ignition temperatures Intrinsically safe Ex i  Zones 0, 1 and 2: Ex ia Zones 1 and 2: Ex ib IEC EN 60079-11							Abbreviated name of certification authority (notified body)	The equipment may be used subject to specific conditions X
Certificate reference number	Principle of protection [All methods of ignition protection are not indicated here, for simplification]	Means of protection	Marking [Omitted here: Ex o, Ex p, Ex q, Ex e, Ex m, Ex n]	Symbol	Zone compatibility	Standard	Traceability reference		Conditions
Authority	Methods of Protection and Apparatus Marking						Certificate	Additional information	

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.

EN 60079-11:2012

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.