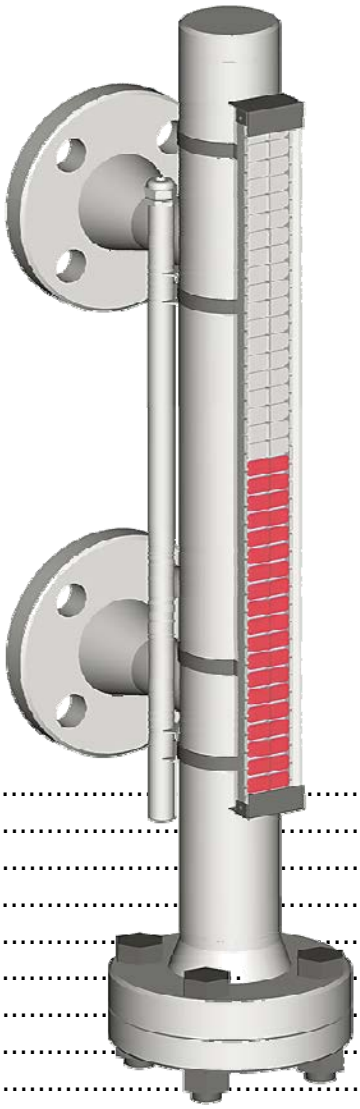
Control Components Pty Ltd
Ph: +61 2 9542 8977
Fx: +61 2 9542 7978
Em: help@ccezy.com.au
Web: www.ccezy.com.au

WEKA AG, CH-8344 Bäretswil, www.weka-ag.ch

Instruction manual

Transmitter & Converter



Accessory
for WEKA Visual Level Indicators (VLI)

Transmitter
29710-x
31967-x
32607-NI
32608-ND
38614-x

Contents

1. Symbols and signs used in the instruction manual

	**Warning** Indicates potential damage to the device and / or an injury of the operator or user in case of failure to observe the instructions.
	**Caution** Indicates potential damage to the device in case of failure to observe the instructions.
	**Safety note** For equipment with normal conditions of use in explosion-prone environments according to EU-Directive 94/9/EC (ATEX) or IECEx scheme. These notes apply in addition to all other notes.

2. Safety notes and warnings

The manufacturer is not liable for damages which are caused as a result of failure to observe safety notes and warnings.

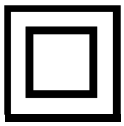
- Burn hazard! Work on hot magnetic level indicators can lead to bodily injuries and burns. The surfaces of the float chambers and the process connections can become hot. Let the tank cool down to ambient temperature prior to carrying out any work on the magnetic level indicator. Wear appropriate PPE (gloves, face protection, possibly respiratory protection equipment). Keep sufficient distance during operation.
- The magnetic level indicator and thus also the transmitter can unnoticeably become inoperative by a blocking of the float. Should you be unsure about the liquid level indicated another method should be used to check the magnetic level indicator.
- Should you suspect a defective function or should you find such defective function, it must be remedied.

- Only use the magnetic level indicator and the transmitter, once you have read and understood the complete instruction manual.
- The present instruction manual must also be accessible for later users.
- Keep magnetic and magnetisable parts (magnets, construction steel, steel wire or clamps etc.) away from the magnetic level indicator or accessories such as the transmitter. This also applies to strong electromagnetic fields (transformers, welding equipment etc.), as both can interfere with the magnetic force of the magnets contained in the magnetic level indicator or the transmitter and can lead to malfunctions or failures of the indicator or the accessory parts (switch, transmitter, measuring converter) attached.
- Replace damaged or faulty components with original spare parts.
- Solvents can blunt the plastic components used or can cause cracks. Clean the devices with soap and water or a plastic cleaner.

- Falling parts (bolting, floats etc.) can create impact sparks and cause explosions in an explosion-prone atmosphere. Make sure that an explosion-prone atmosphere does not exist and no parts fall down when working on the magnetic level indicator.
- When working on the magnetic level indicator, use only equipment and tools which were approved for the explosion-prone area according to the European directive.
- Polycarbonate indicator rails can be electrostatically charged, e.g. during cleaning. When discharging, sparks can cause explosions in an explosion-prone atmosphere. Please clean the parts only with anti-static cleaning agents and auxiliary tools.

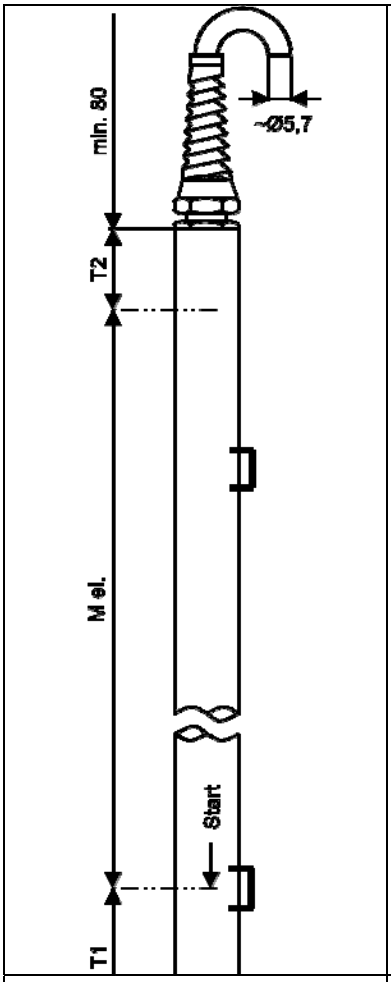
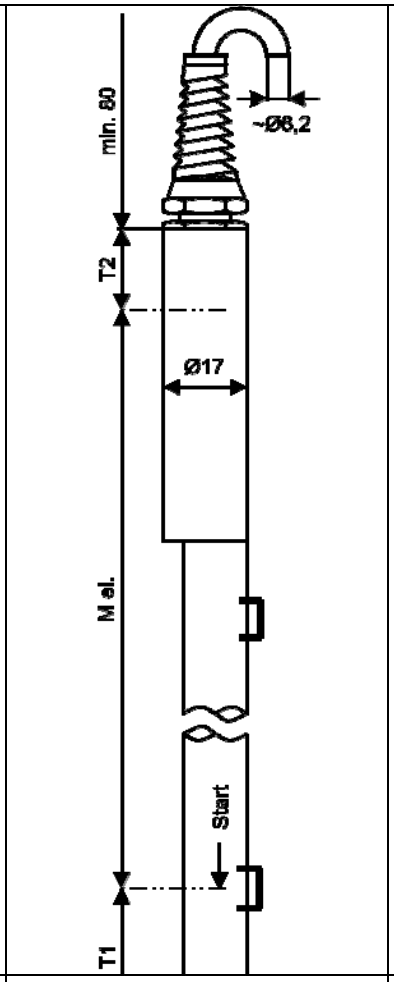
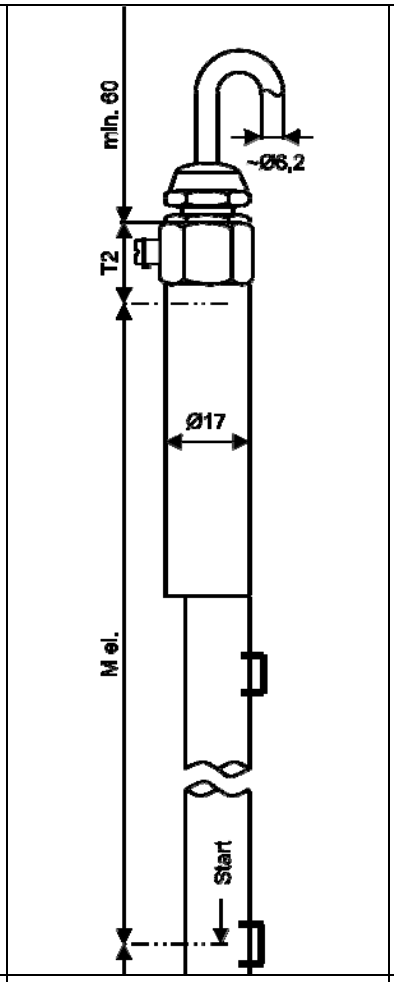
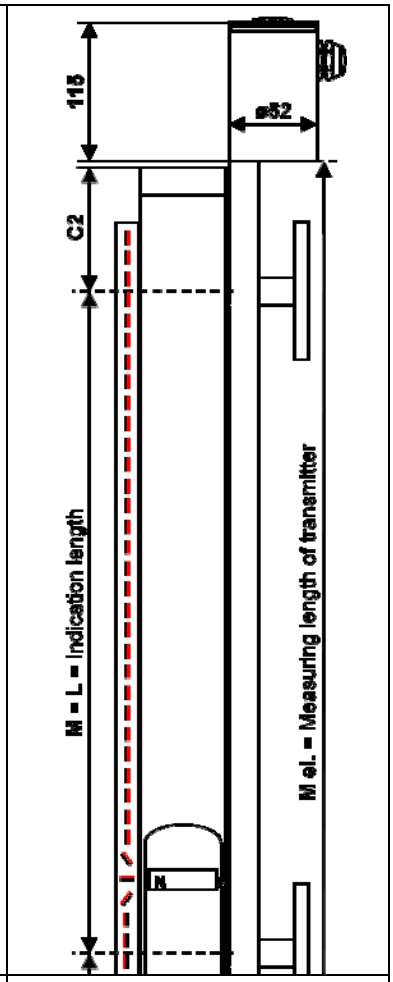
3. Intended use

- The transmitters may only be used in connection with original WEKA magnetic level indicators and their individual parts, e.g. floats.
- The transmitters may only be used for the intended use indicated on the type plate. The data recorded on the type plate and the data sheet must correspond to the maximum operation parameters occurring within the plant.
- Intended use, rebuilding measures and alterations of the transmitters not provided by the manufacturer are carried out at one's own risk and are potentially dangerous (exclusion of warranty).
- The transmitters may only be installed, commissioned and maintained by trained specialist staff.
- The manufacturer is not liable for damages which are caused by improper use or incorrect operation.
- The transmitters are classified according EN 61140 to protection level II and will be high voltage tested for 100% each.



- The transmitters may only be used for the intended use indicated on the type plate and the labelling according to Directive 94/9/EC and/or IECEx.
- The transmitters may only be installed, commissioned and maintained by trained specialist staff with knowledge on EX protection.
- The transmitters may only be repaired and modified by the manufacturer (where required in consultation with the mentioned body).

4. Overview of transmitters and converters

			
3-wire transmitter 10mm resolution	2-wire transmitter 10mm resolution	Ex transmitter 10mm resolution	magnetostrictive transmitter mounted at VLI

5. Type codes

Standard reed transmitters

….. - … - …- 010 - …

	available for:	index:
Type of transmitter		
3-wire: resistant output or current supplied voltage output		29710
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

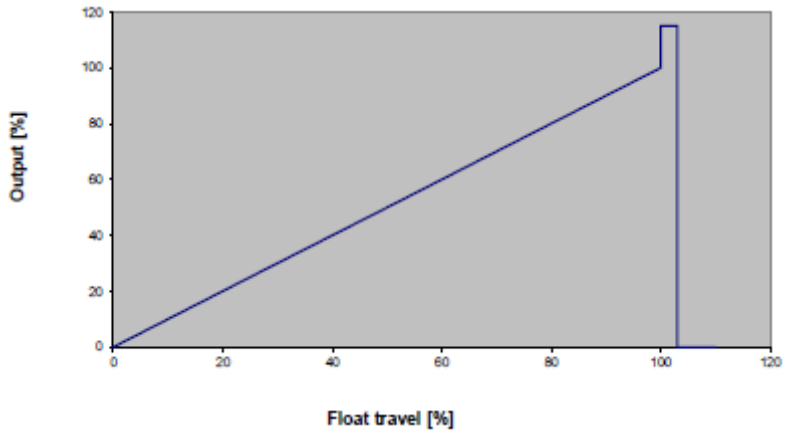
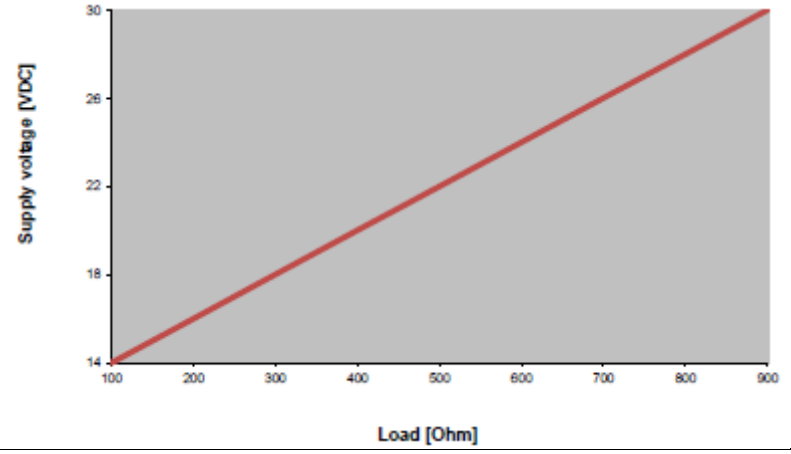
Magnetostrictive transmitters

38614 - …

	available for:	index:
Type of transmitter		
Magnetostrictive transmitter with 4...20mA output and HART®		
Execution		
Standard		no marking
for high media temperature	38614	W
Intrinsically safe Ex ia	38614	NI
Flameproof enclosures, Ex id	38614	ND

6. Functional description

The transmitters are fit laterally as an accessory on the WEKA magnetic level indicators. 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.
For the 2-wire transmitters the resulting voltage output is converted by an internal electronic to a 4...20mA signal. If the liquid level rises above the measuring range of the transmitter (30 mm) the output signal jumps to 115% (ca. 22,5mA) and remains on that limit.

i.e. signal output of a 2-wire transmitter 4...20mA	
i.e. output load of a 2-wire transmitter 4...20mA	

All transmitters, except magnetostrictive once, are available in 10mm or 5mm resolution.

The minimum and maximum available electrical measuring length ($M_{el.}$) is stated in the technical data or the data sheets.

- The transmitters of type -NI (Ex i) are to be operated with appropriate intrinsically safe equipment. The inner capacities and the cable have to be considered. Please find detailed information in the EC type-examination certificates.
- For each type, none of the specified values must be exceeded. The values apply to ohmic loads. If the transmitter is overloaded, this leads to a malfunction of the electronics and thus the device is defective. Protective circuitry can significantly increase the life expectancy of the transmitter.

7. Bi-stabile switch function

This option is used if the measuring range of the transmitter is shorter than the indication range of the indicator.
Because the zero point (4mA) is fixed, it is necessary to install the transmitter at the lower start point of measurement. This will cause the possibility that the float will rise higher than the full scale point (20mA) of the transmitter. In this case it is possible to use a bi-stabile reed switch on top of the transmitter to avoid a loss of signal.

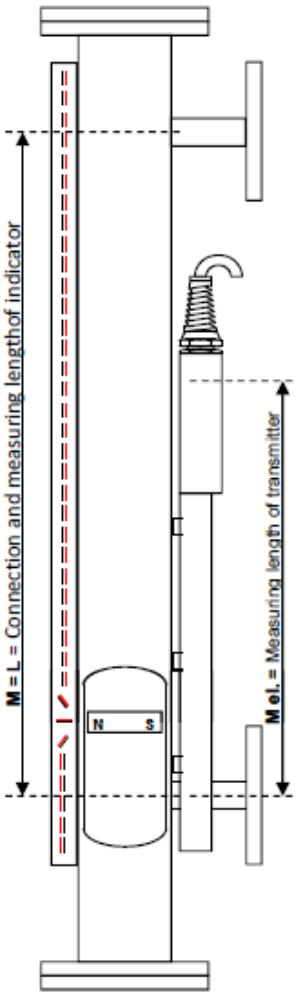


Figure 1

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 bellow 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

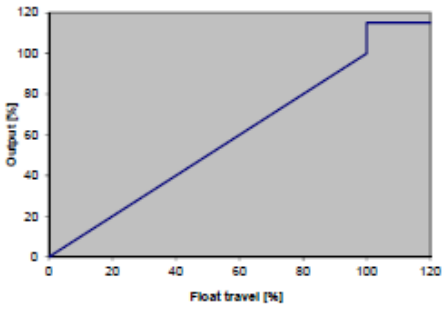


Figure 2

Faultive signal output
with closed bi-stable reed-switch

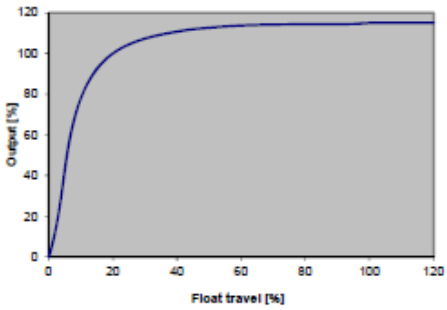


Figure 3

8. Scope of delivery

- When ordering a level indicator with transmitter, hose clamps are included.
- When ordering transmitters as spare parts, hose clamps are never included and must be ordered separately. Should you place an order, the hose clamp sizes must be specified:
  For pipe diameter 30…40mm Article number 80648
  For pipe diameter 40…57mm and 57…80mm Article number 84043
- When ordering a transmitter please mention the electrical measuring length $M_{el.}$. For spare parts you will find the electrical measuring length etched on the metal housing of the existing transmitter.

9. Unpacking

1. Open the packaging and remove the transmitter.
2. Make sure that no further parts remain in the packaging.
3. Visually check the transmitter and all parts delivered for potential transport damages. Do not use any damaged or hazardous parts.

10. Disposing of packaging materials

Preserve the environment and properly dispose of or recycle the packaging material.

11. Dismantling / Disposal

- **Dismantling**
  Prior to dismantling, make sure that the transmitter has been disconnected from the mains and that the missing transmitter function does not have any effect on the subsequent processes.

- **Disposal**
  Preserve the environment and properly dispose of the transmitter.

12. Assembly

Prior to assembly, the preparations for unpacking the transmitter must be completed.
Prepare the tools (screwdriver size 4 or nut driver SW 6) and materials (hose clamps) required for the assembly of the transmitter.
The signal output by cable or connecter is foreseen for the upper side. The red sticker at the lower end of the transmitter shows the starting point of the measurement. The transmitter should be mounted in that way that the zero point marking is at the height where the float starts with measurement. See adjacent drawing 20010501.

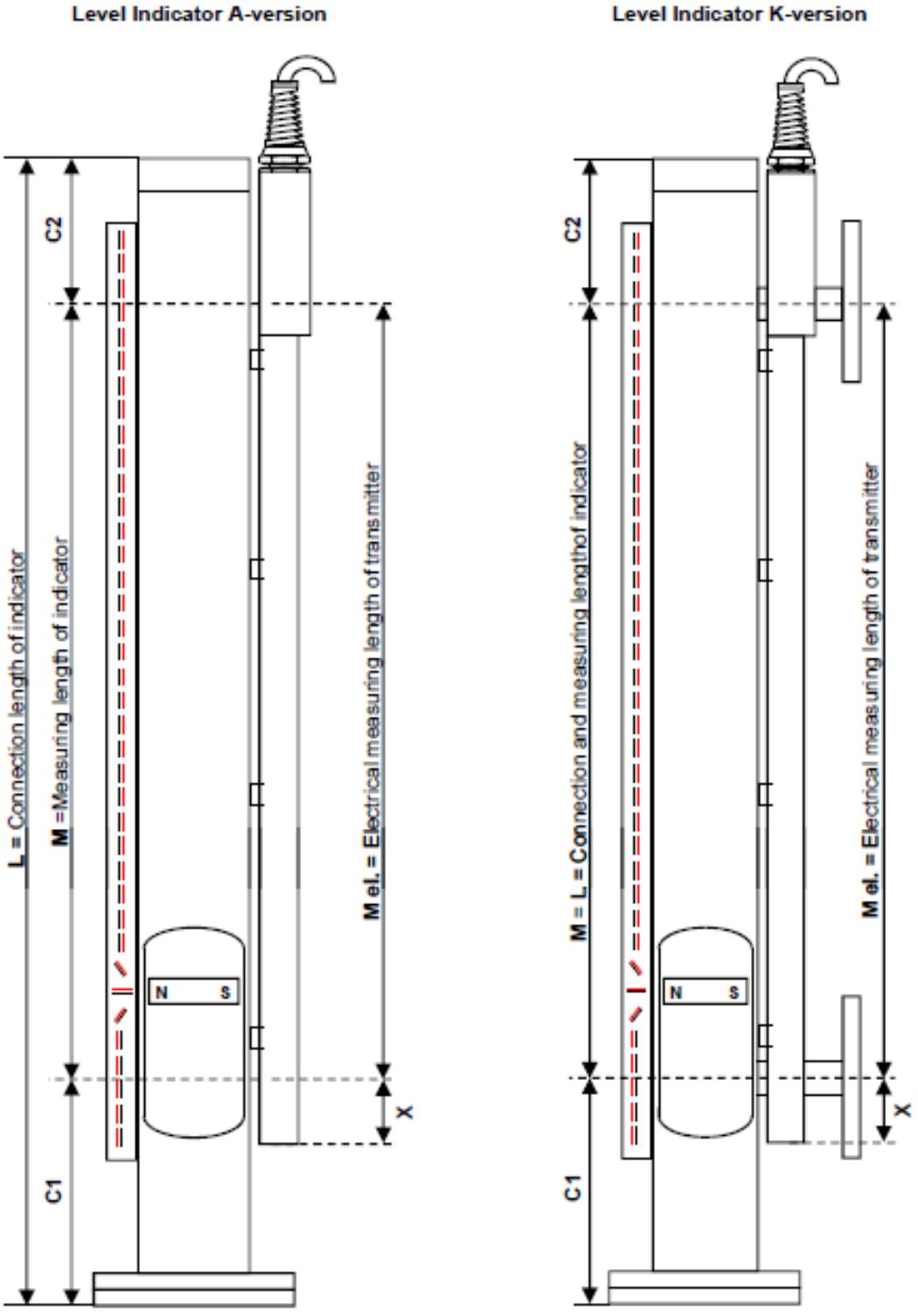
Position the transmitter on the magnetic level indicator in the subsequent specified assembly position and at the level on which you want starting the measurement. It may be that you have to loosen the closely located hose clamps of the indicator rail in order to introduce the hose clamp of the transmitter. After the assembly, all hose clamps must again be tightened.
Check the position and the seat of the transmitter after you have finished the work.

- Assembly position:
  The transmitter is to be assembled 180° opposite the indication rail with the cable outlet towards the top, taking into account the tolerances. The tolerances depend on the respective pipe diameter (see subsequent drawing).
  Optional:
  With the exception of Smartline, there is an option to assemble the transmitter directly next to the indication rail.
- The cable is to be laid in fixed position.
  The hose clamps should be tightened with a torque of 3 … 5 Nm
  After the assembly, the transmitter must be fixed tightly and in line with the float chamber.

- Please consider also the instruction details of the certificates.

- Potential equilisation is only guaranteed if both hose clamps are assembled on the standing pipe. If there is no continuous connection between the standing pipe and the potential equalisation or if only a hose clamp can be used due to constructive reasons, a connection to the terminal designed for this purposed must be ensured.

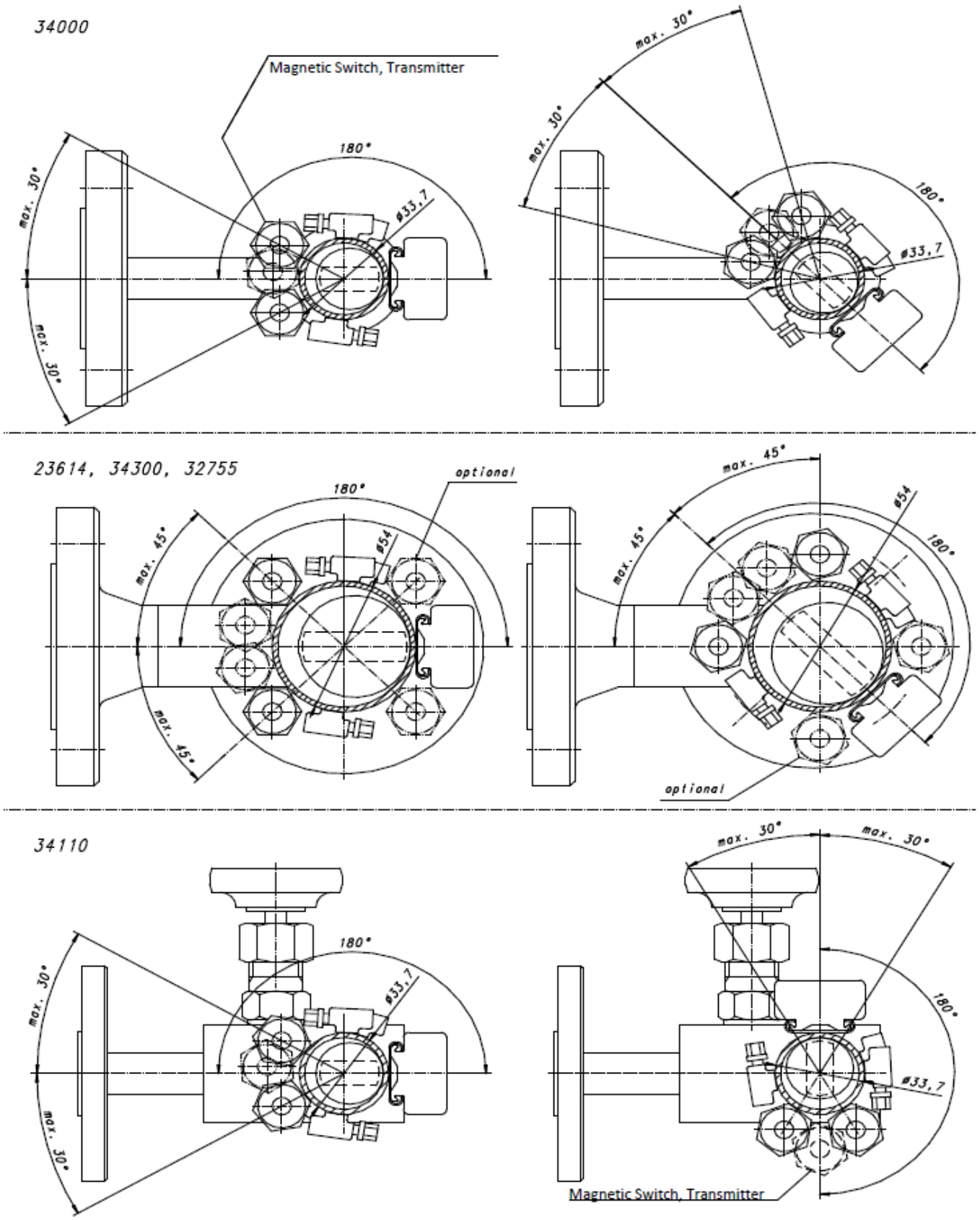
Installation of transmitter to VLI



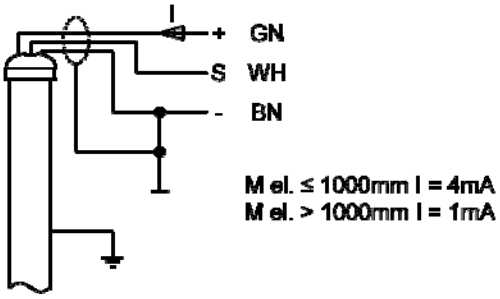
Terminology:

L =	Length between process connections	
M =	Measuring length (indication length) of VLI	
$M_{el.}$ =	Measuring length of transmitter	
C1 =	Bottom float extension	
C2 =	Top float extension	
X =	Zero point of transmitter	
	10mm resolution	X = 65mm
	5mm resolution	X = 30mm
	29710-R-xx version	see data sheet
	38614-x version	see data sheet

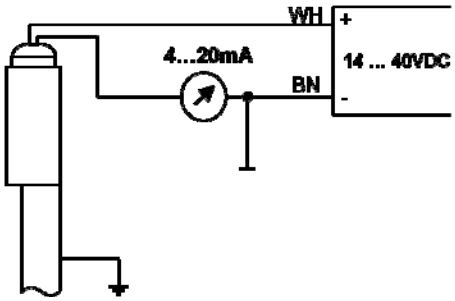
Drawing 20010501 – installation of accessories



13. Electrical installation



i.e. 3-wire transmitter type 29710-xx



i.e. 2-wire transmitter type 31967-xx

Please consider the connecting diagrams of the datasheets or the type labels of the transmitters.

- Wrong polarisation or overload will cause the damage of the device.

14. Commissioning of reed transmitters

Prior to commissioning, the entire assembly (12) must be completed.

- Should the data recorded on the type label (power supply, maximum operating temperature, maximum load etc.) not match the application, the transmitter can be damaged and represent danger to human life and the environment. Make sure that the data recorded on the type plate is a match with the application.
- Inappropriate mounting components (magnetic etc.) can cause error functions and damage and can endanger human life and the environment. Only use components suitable for the application.
- Prior to the first commissioning, the transmitter position is undefined. Observe the following procedure to establish a defined output state.
- Prior to use, check the transmitter for visible exterior damages. Do not commission a damaged transmitter.
- The transmitter may only be used for intended purposes recorded on the type plate and in the certificates according to directive 94/9/EC and/or IECEx scheme.

The magnetic level indicator is filled with liquid via the tank. As soon as the float floats, it needs some time to adjust itself with regard to the magnetic band of the indication rail. From that point on, the float should indicate the level by turning the indication flaps.
In order to bring the transmitters into a defined state, we recommend once driving off the complete tank volume under supervision and visually checking the level so as to be able to guarantee perfect functioning.
It is also possible to bring the transmitter into the specified position by means of a weak hand magnet (e.g. magnet board). In this way, you can also manually test the mobility of the indication flaps. However, the flaps should always be put back into starting position.

For magnetostrictive transmitters follow the separate commissioning instruction in the data sheets or on the website.

15. Commissioning of magnetostrictive transmitters

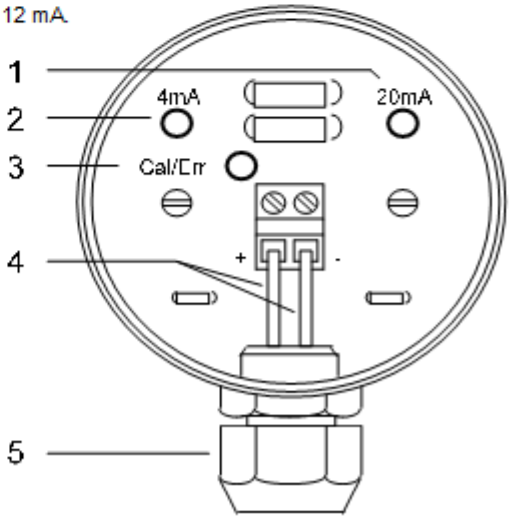
Installation:

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).
The transmitter is initially set at the factory to 20 mA corresponding to the highest float position and 4 mA corresponding to a lowesr float position.
The end point settings of the transmitter can be changed by the user whenever needed. However the difference between the lowest and highest float levels must be at least 5 mm, otherwise the direction of the output signal will automatically be inverted.

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 12mA.
   - -> 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 to12 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 newvalues 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).

16. Maintenance

In general, the magnetic level indicator and the transmitter are maintenance-free.
You should only check the transmitter in cases of suspected error function.
You find notes on the approach in chapter “Commissioning” (14).

- Should you suspect or detect an error function, it must be immediately rectified.Damaged or faulty components must be replaced with original spare parts.

- When checking the output signal, only use hand magnets which are not too strong and which cannot influence the reed switches of the transmitter with regard to its values. Otherwise, this can result in a malfunction of the transmitter.

- Clean the transmitter only with a damp cloth. Solvents and abrasive cleaners can destroy cables, plastic cable gland and type plate.

- Transmitters for the Ex area may only be repaired and modified by the manufacturer (where required in consultation with the named authority).

17. Technical data

Dimensions:	see data sheet	
Minimum $M_{el.}$:	all types	200mm
Maximum $M_{el.}$:	all types	4000mm
	Other lengths on request (multiple piece design)	
Minimum medium temperature:	all reed types	-50°C
	38614	-45°C
	38614-W	-200°C
	38614-NI/-ND	-40°C
Maximum medium temperature:	29710-W	+350°C
	31967-W	+250°C
	all other reed types	+150°C
	38614	+120°C
	38614-W	+250°C
	38614-NI/-ND	+450°C
Minimum ambient temperature:	all reed types	-20°C
	Ex reed types	-50°C
	38614-x	-40°C
Maximum ambient temperature:	all reed types	+50°C
	38614-x	+85°C
Standard cable lengths:	all types	5 m
	not for magnetostrictive transmitters or transmitters with junction boxes or connectors	
Protection class:	all types	IP68-10bar
	for junction boxes and connectors see data sheet	
Housing material:	Stainless steel, 316L	
Cable gland material:	see data sheet	
Cable material:	see data sheet	

18. Troubleshooting

Problem	Possible causes	Possible solution
1. No visual level display despite liquid being in the tank.	Float is blocked due to dirt in the float chamber.	Clean float chamber and float (see instruction manual of the magnetic level indicator)
	Float is damaged, filled with liquid and has sunk.	Replace the float. Compare test pressure of the system with the type plate information.
	Float is stuck on magnetic or magnetisable components assembled outside the float chamber.	Look for iron parts along the magnetic level indicator by means of magnet (clamps, screws etc.), remove them and respectively replace them with original add-on components.
2. No output signal	The installation does not correspond to the assembly instructions.	Check correctly installation. Consider that accessories have to be moved/turned when “moving/turning” the indication rail. Without indication rail, the float has no guidance and cannot activate the accessories!
	The transmitter is not activated by the float.	Check the function of the magnetic level indicator according to point 1. Ensure that the right combination of float chamber type and float was selected.
	Open circuit, short circuit or wrong polarity	Check electrical installation and power supply.
3. Wrong output signal	Offset in output signal.	Check the zero point of installation. Maybe shift the height of transmitter installation.
	Output signal is not linear.	The transmitter was probably overloaded or one reed switch is permanently closed. For bi-stabile versions see descriptions above.
4. Interruptions on output signal	Float is stuck on magnetic or magnetisable components assembled outside the float chamber.	Look for iron parts along the magnetic level indicator by means of magnet (clamps, screws etc.), remove them and respectively replace them with original add-on components.

19. Transport and storage conditions

- Protect transmitters against strong thrusts.
- Do not place any heavy items on the transmitter and its packaging.
- Store the transmitter in a dry environment.
- Avoid contact with water and humidity.
- Protect transmitter against strong magnetic fields.
- Temperature: -10°C … +50°C
- Relative humidity: 10% … 95%

20. Labelling

- The transmitter may only be used for the intended use recorded on the type plate. Please observe the information on the type plate.

21. Customer service

You find a list with all WEKA representatives worldwide under
www.weka-ag.ch ➢ contact ➢representatives and your choice of country

or contact us directly under

WEKA AG
Schuerlistrasse 8
CH-8344 Baeretswil
Switzerland
Phone ++41 (0)43 833 43 43
Fax ++41 (0)43 433 43 49
Email info@WEKA-ag.ch

22. EC Type-examination certificates

(1) EC-TYPE-EXAMINATION CERTIFICATE

ZELM ex

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 94/9/EC**

(3) EC-TYPE-EXAMINATION CERTIFICATE Number:

ZELM 15 ATEX 0536

(4) Equipment: **Transmitter type 29710-ND-05, 29710-ND-10, 29710-NI-05, 29710-NI-10, 32607-NI-05, 32607-NI-10, 32608-ND-05 and 32608-ND-10**

(5) Manufacturer: **Weka AG**

(6) Address: **Schürlistr. 8, CH-8344 Bäretswil**

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Prüf- und Zertifizierungsstelle ZELM Ex, notified body No. 0820 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report ZELM Ex 18513131076.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 + A11:2013 **EN 60079-1:2014** **EN 60079-11:2012** **EN 60079-31:2014**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Certificate.

(12) The marking of the equipment shall include the following:

Ex

II 2 G Ex d IIC T6 Gb
II 2 D Ex tb IIIC T85°C Db
resp.
II 2 G Ex ia IIC T4 Gb
II 2 D Ex ia IIIC T115°C Db

Braunschweig, 2015-06-10

ZELM ex
Zertifizierungs-stelle

Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

ZELM ex

Sheet 1 of

EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM ex. The English version is based on the German text. In the case of dispute, the German text shall prevail.

ZELM ex
Prüf- und Zertifizierungsstelle
Siekgraben 56 · D-38124 Braunschweig

(13) **SCHEDULE**

ZELM ex

(14) **EC-TYPE-EXAMINATION CERTIFICATE ZELM 15 ATEX 0536**

(15) Description of equipment

The transmitters are used as part of a measurement line for continuous monitoring of tank levels. They are installed along with visual level indicators (VLI) at liquid-filled tanks and serve as a sensor
Type 29710-NI-xx resp. 29710-ND-xx in 3-wire technology with resistance output or
Type 32607-NI-xx resp. 32608-ND-xx in 2-wire technology with current output.

In the visual level indicator is a float located which contains a permanent magnet. This permanent magnet activates reed switches located inside the transmitter arranged in a 5 mm (xxxxx-xx-05) or 10 mm grid (xxxxx-xx-10), whereby a change in resistance occurs. The function of this device could be seen similar to a potentiometer.

Type 29710-xx-xx:
The output signal can either be directly the resistance value or the transmitter can be powered by an external electronics with a current, so that the resistance change is converted as a voltage at the output. The supply current for sensors shorter than 1 m should be maximum 4 mA and for sensors longer than 1 m should not exceed 1 mA.

Type 32607-NI-xx and type 32608-ND-xx:
The sensors work the same as the type 29710-xx-xx, but the electronics at the top of the transmitter converts the voltage signal into a 4...20 mA current signal (current sink) in 2-wire technology.

Type 29710-ND-xx and type 32608-ND-xx

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

The temperature class resp. the maximum surface temperature of the equipment depends on the medium temperature and the ambient temperature and shall be taken from the following table:

Medium temperature	Ambient temperature	Temperature class of the equipment	Max. surface temperature
-50°C...+150°C	-50°C...+50°C	T4	105°C
-50°C...+135°C	-50°C...+50°C	T4	100°C
-50°C...+100°C	-50°C...+50°C	T5	95°C
-50°C...+85°C	-50°C...+50°C	T6	85°C

Type 29710-NI-xx and type 32607-NI-xx

II 2 G Ex ia IIC T4 Gb
II 2 D Ex ia IIIC T115°C Db

Permissible ambient temperature range: -50°C...+50°C
Permissible medium temperature range: -50°C...+150°C

Schedule
to EC-Type-Examination Certificate ZELM 15 ATEX 0536

ZELM ex

Electrical Data

Type 29710-ND-xx and type 32608-ND-xx

Measurement circuit: Rated values:

Type 29710-ND-xx	U =	15	VDC
	I =	4	mA
Type 32608-ND-xx	U =	30	VDC
	I =	23	mA

Type 29710-NI-xx

Measurement circuit: In type of protection Intrinsic Safety Ex ia IIC resp. IIIC Only for connection to certified intrinsically safe circuits

Maximum values:

U_i =	22.6	VDC
I_i =	160	mA
P_i =	900	mW

The maximum effective internal capacitance and inductance is negligible small.

Type 32607-NI-xx

Measurement circuit: In type of protection Intrinsic Safety Ex ia IIC resp. IIIC Only for connection to certified intrinsically safe circuits

Maximum values:

U_i =	30.8	VDC
I_i =	130	mA
P_i =	790	mW
C_i =	49	nF
L_i ≈	0	mH

(16) Report No.

ZELM Ex 18513131076

(17) Special conditions for safe use

not applicable

(18) Essential Health and Safety Requirements

met by standards

Braunschweig, 2015-06-10

ZELM ex
Zertifizierungs-stelle

Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

ZELM ex

23. IECEx Certificate of conformity

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx ZLM 15.0002 issue No.:0
Status:	Current
Date of Issue:	2015-07-03 Page 1 of 3
Applicant:	**WEKA AG** Schuerlistrasse 8 8344 Baeretswil **Switzerland**
Electrical Apparatus: *Optional accessory:*	**Transmitter 29710-ND-05, 29710-ND-10, 32608-ND-05, 32608-ND-10, 29710-NI-05, 29710-NI-10, 32607-NI-05 and 32607-NI-10**
Type of Protection:	**Flameproof Enclosures, Intrinsic Safety, Protection by enclosure**
Marking:	Ex db IIC T6 Gb Ex tb IIIC T85°C Db Resp. Ex ia IIC T4 Gb Ex ia IIIC T115°C Db
Approved for issue on behalf of the IECEx Certification Body:	Dipl.-Ing. Harald Zelm
Position:	Head of Certification Body
Signature: *(for printed version)*	
Date:	

Certificate history:

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

Certificate issued by:

ZELM Explosionsschutz GmbH
Siekgraben 56
D-38124 Braunschweig
Germany

IECEx Certificate of Conformity

Certificate No.: IECEx ZLM 15.0002

Date of Issue: 2015-07-03 Issue No.: 0

Manufacturer:
WEKA AG
Schuerlistrasse 8
8344 Baeretswil
Switzerland

Additional Manufacturing location (s):

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

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

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition: 7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31 : 2013 Edition: 2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

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

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

Test Report:
DE/ZLM/ExTR15.0002/00

Quality Assessment Report:

DE/ZLM/QAR09.0001/02

IECEx Certificate of Conformity

Certificate No.: IECEx ZLM 15.0002

Date of Issue: 2015-07-03 Issue No.: 0

Schedule

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

The transmitters are used as part of a measurement line for continuous monitoring of tank levels. They are installed along with visual level indicators (VLI) at liquid-filled tanks and serve as a sensor
Type 29710-NI-xx resp. 29710-ND-xx in 3-wire technology with resistance output or
Type 32607-NI-xx resp. 32608-ND-xx in 2-wire technology with current output.
In the visual level indicator is a float located which contains a permanent magnet. This permanent magnet activates reed switches located inside the transmitter arranged in a 5 mm (xxxxx-xx-05) or 10 mm grid (xxxxx-xx-10), whereby a change in resistance occurs. The function of this device could be seen similar to a potentiometer.
Type 29710-xx-xx:
The output signal can either be directly the resistance value or the transmitter can be powered by an external electronics with a current, so that the resistance change is converted as a voltage at the output. The supply current for sensors shorter than 1 m should be maximum 4 mA and for sensors longer than 1 m should not exceed 1 mA.
Type 32607-NI-xx and type 32608-ND-xx:
The sensors work the same as the type 29710-xx-xx, but the electronics at the top of the transmitter converts the voltage signal into a 4...20 mA current signal (current sink) in 2-wire technology.
Refer to Annex for details.

CONDITIONS OF CERTIFICATION: NO

Annex: IECExZLM15.0002-Annex.pdf

ANNEX to IECEx Certificate

ZELM ex

Certificate No.: IECEx ZLM 15.0002

Issue No.: 0

Date of Issue: 2015-07-03

Permissible ambient and medium temperature range

Type 29710-ND-xx and type 32608-ND-xx

Ex db IIC T6 Gb

Ex tb IIIC T85°C Db

The temperature class resp. the maximum surface temperature of the equipment depends on the medium temperature and the ambient temperature and shall be taken from the following table:

Medium temperature	Ambient temperature	Temperature class of the equipment	Maximum surface temperature
-50°C...+150°C	-50°C...+50°C	T4	105°C
-50°C...+135°C	-50°C...+50°C	T4	100°C
-50°C...+100°C	-50°C...+50°C	T5	95°C
-50°C...+85°C	-50°C...+50°C	T6	85°C

Type 29710-NI-xx and type 32607-NI-xx

Ex ia IIC T4 Gb

Ex ia IIIC T115°C Db

Permissible ambient temperature range: -50°C...+50°C

Permissible medium temperature range: -50°C...+150°C

ANNEX to IECEx Certificate

ZELM ex

Electrical Data

Type 29710-ND-xx and type 32608-ND-xx

Measurement circuit: Rated values:

Type 29710-ND-xx	U =	15	VDC
	I =	4	mA
Type 32608-ND-xx	U =	30	VDC
	I =	23	mA

Type 29710-NI-xx

Measurement circuit: In type of protection Intrinsic Safety Ex ia IIC resp. IIIC
Only for connection to certified intrinsically safe circuits

Maximum values:

U_i =	22.6	VDC
I_i =	160	mA
P_i =	900	mW

The maximum effective internal capacitance and inductance is negligible small.

Type 32607-NI-xx

Measurement circuit: In type of protection Intrinsic Safety Ex ia IIC resp. III
Only for connection to certified intrinsically safe circuits

Maximum values:

U_i =	30.8	VDC
I_i =	130	mA
P_i =	790	mW
C_i =	49	nF
L_i ≈	0	mH

24. Conformity declarations

CE
KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE

Wir
We WEKA AG
Nous

(Name des Anbieters) (supplier's name) (nom du fournisseur)

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product
declarons sous notre seule responsabilite que le produit

Messwertgeber / Liquid Level Probe

Typen: 29710; 29710-R; 29710-W; 29710-R-W; 31967; 31967-W; 31967-K; 31967-KST; 34067; 34167; 34267; 34307; 29710-BI; 29710-BI-W; 31967-BI; 31967-BI-W; 31967-BI-K; 31967-BI-KST

(Bezeichnung Typ oder Modell, Los-, Chargen- oder Seriennummer, möglichst Herkunft und Stückzahl)
(name, type or model, lot, batch or serial number, possibly sources and numbers of items)
(nom, type ou modele, no de lot, d'echantillon ou de serie, eventuellement sources et nombre dsexemplaires)

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt
to which this declaration relates is in conformity with the following standard(s) or other normative document(s)
auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s)

EN61326-1:2011; EN61010-1:2011

(Titel und/oder Nummer sowie Ausgabedatum der Norm(en) oder der anderen normativen Dokumente)
(title and/or number and date of issue of the standard(s) or other normative document(s))
(titre et/ou no et date de publication de la (des) norme(s) ou autre(s) document(s) normatif(s))

Gemäss den Bestimmungen der Richtlinie(n),
following the provisions of Directive(s),
conformement aux dispositions de(s) directive(s)
(falls zutreffend) (if applicable) (le cas echeant)

2004/108/EC (EMV); 2006/95/EC (LVD)

(Ort und Datum der Ausstellung) (Place and date of issue) (Lieu et date)	(Name und Unterschrift oder gleichwertige Kennzeichnung des Befugten) (name and signature or equivalent marking of authorized person) (nom et signature du signataire autorise)	
Bäretswil, den 20.03.2013	Fridolin Holdener (Manager)	Stefan Otto (Produkt Manager)

CE
KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE

Wir
We WEKA AG
Nous

(Name des Anbieters) (supplier's name) (nom du fournisseur)

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product
declarons sous notre seule responsabilite que le produit

Messwertgeber / Liquid Level Probe

Typen: 29710-NI-10; 29710-NI-05; 29710-R-NI-10; 29710-R-NI-05;
29710-ND-10; 29710-ND-05; 29710-R-ND-10; 29710-R-ND-05;
32607-NI-10; 32607-NI-05; 32608-ND-10; 32608-ND-05

(Bezeichnung Typ oder Modell, Los-, Chargen- oder Seriennummer, möglichst Herkunft und Stückzahl)
(name, type or model, lot, batch or serial number, possibly sources and numbers of items)
(nom, type ou modele, no de lot, d'echantillon ou de serie, eventuellement sources et nombre dsexemplaires)

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokument(en) übereinstimmt
to which this declaration relates is in conformity with the following standard(s) or other normative document(s)
auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s)

xxxxx-NI-xx & xxxxx-R-NI-xx: EN 61326-1:2011; EN 60079-0:2009; EN 60079-11:2012
xxxxx-ND-xx & xxxxx-R-ND-xx: EN 61326-1:2011; EN 60079-0:2009; EN 60079-1:2007; EN 60079-31:2009

EG- Baumusterprüfbescheinigung / EC Type Examination Certificate ZELM 03 ATEX 0536

(Titel und/oder Nummer sowie Ausgabedatum der Norm(en) oder der anderen normativen Dokumente)
(title and/or number and date of issue of the standard(s) or other normative document(s))
(titre et/ou no et date de publication de la (des) norme(s) ou autre(s) document(s) normatif(s))

Gemäss den Bestimmungen der Richtlinie(n),
following the provisions of Directive(s),
conformement aux dispositions de(s) directive(s)
(falls zutreffend) (if applicable) (le cas echeant)

2004/108/EC (EMV); 94/9/EC (ATEX)

(Ort und Datum der Ausstellung) (Place and date of issue) (Lieu et date)	(Name und Unterschrift oder gleichwertige Kennzeichnung des Befugten) (name and signature or equivalent marking of authorized person) (nom et signature du signataire autorise)	
Bäretswil, den 24.07.2015	Robert Schäppi (Quality Manager)	Stefan Otto (Produkt Manager)

38614; 38614-NI; 38614-ND

CE

FAFNIR™

EU–Konformitätserklärung
EU Declaration of Conformity
Déclaration UE de Conformité

FAFNIR GmbH
Bahrenfelder Straße 19
22765 Hamburg / Germany

erklärt als Hersteller in alleiniger Verantwortung, dass die Produkte
declares as manufacturer under sole responsibility that the products
déclare sous sa seule responsabilité en qualité de fabricant que les produits

Füllstandsensoren
Filling Level Sensors
Capteurs de Niveau

VISY-Stick ...
TORRIX ...

den Vorschriften der europäischen Richtlinien
comply with the regulations of the European directives
sont conformes aux réglementations des directives européennes suivantes

94/9/EG	Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen	ATEX
94/9/EC	Equipment and protective systems intended for use in potentially explosive atmospheres	ATEX
94/9/CE	Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles	ATEX
2011/65/EU	Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten	RoHS
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment	RoHS
2011/65/UE	Limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques	RoHS
2014/30/EU	Elektromagnetische Verträglichkeit	EMV
2014/30/EU	Electromagnetic compatibility	EMC
2014/30/UE	Compatibilité électromagnétique	CEM

durch die Anwendung folgender harmonisierter Normen entsprechen
by applying the harmonised standards
par l'application des normes

ATEX / ATEX / ATEX	EN 60079-0:2012 + A11 :2013 EN 60079-11:2012 EN 60079-26:2007
RoHS / RoHS / RoHS	EN 50581:2012
EMV / EMC / CEM	EN 55011:2009 + A1:2010 EN 61326-1:2013

Die Produkte entsprechen den EG-Baumusterprüfbescheinigungen
The products comply with the EC-Type Examination Certificates
Les produits sont conformes avec l'attestation d'examen de type "CE"

VISY-Stick ..., TORRIX Ex ...	TÜV 99 ATEX 1496
TORRIX Ex ...	TÜV 01 ATEX 1772 X

Die Anerkennung des Qualitätssicherungssystems erfolgt durch die benannte Stelle Nr.
The production quality assessment notification is carried out by the notified body N°
La reconnaissance du système-qualité est effectuée par l'organisme notifié N°

0044	TÜV NORD CERT GmbH

Die Produkte entsprechen den EMV-Anforderungen
The products comply with the EMC requirements
Les produits sont conformes aux exigences CEM

Störaussendung / Emission / Émission	Klasse B / Class B / Classe B
Störfestigkeit / Immunity / D'immunité	Industrielle elektromagnetische Umgebung / Industrial electromagnetic environment / Environnement électromagnétique industriel

Hamburg, 18.02.2015
Ort, Datum / Place, Date / Lieu, Date

Geschäftsführer / Managing Director / Gérant: René Albrecht

25. Statement for transmitter with HART converter

Herstellererklärung

zu

WEKA- Messwertgeber in Kombination mit HART®- Konverter

Die Messwertgeber, welche für den Anschluss an HART®- Konverter konzipiert sind, sind baugleich mit den Standardtypen, jedoch kann die elektrische Messlänge im Einzellfall abweichend sein, weshalb diese Messwertgeber an dem ‚-R' in der Typenbezeichnung identifiziert werden können.
Hinsichtlich der Zulassungen und der Zertifizierung soll die folgende Tabelle auf die Grundtypen verweisen, deren Zertifikate benutzt werden können, dies gilt insbesondere für die Ex- Baumusterprüfungen:

29710-R	-	29710
29710-R-NI	-	29710-NI
29710-R-W	-	29710-W
29710-R-ND	-	29710-ND

Die beiden Typen sind jeweils bis auf die Länge absolut identisch in der Bauweise.

Statement from Manufacturer

concerning

WEKA transmitter in combination with HART®- converter

Transmitters for use in combination with HART® converters are same design as the standard transmitters. These transmitters are marked with ‚-R' in the type number because it is possible that the electrical measuring length can differ from standard types.
The following table should refer to the standard types. It is possible to use the certificates and approvals from the standard types, which is especially valid for the Ex type approvals:

29710-R	-	29710
29710-R-NI	-	29710-NI
29710-R-W	-	29710-W
29710-R-ND	-	29710-ND

Each of both types is absolutely identical in construction and manufacturing.

WEKA AG

Stefan Otto
PM Füllstandsmessgeräte / PM Level Instruments

Baeretswil, 26. July 2011