
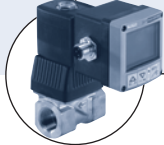




## Ultrasonic level transmitter, non-contact

- Compact for level measurement up to 5 m
- 4...20 mA/Hart - 2 wires
- Suitable for solids
- ATEX approvals 

Type 8176 can be combined with...



**Type 8624**

PI-controller on  
valve



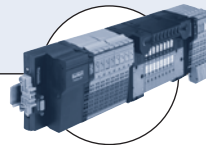
**Type 8635**

SideControl EEx



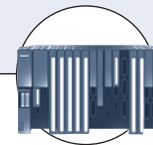
**Type 2712 (8630)**

Continuous  
TopControl system



**Type 8644**

Valve islands



**PLC**

The Type 8176 is a non-contact ultrasonic level transmitter, designed for continuous level measurement in open or closed vessels. The unit is suitable for liquids, but also for solids, in virtually all industries, particularly in water and waste water management.

### General data

#### Materials

Housing	PBT, Stainless steel 316L (1.4435)
Cover	PC
Seal ring	NBR
Ground terminal	Stainless steel 316Ti/316L (1.4571/1.4435)
Wetted parts	
Process fitting, transducer	PVDF
Process seal	EPDM

#### Display

LCD in full dot matrix

#### Process fitting

Thread G1 1/2" A, NPT 1 1/2"

#### Max. torque mounting boss

25 Nm

#### Electrical connections

Cable gland M20 x 1.5

#### Measuring type

Distance between lower edge of the transducer and product surface

#### Dead zone

0.25 m

#### Measuring range

0.25 up to 5 m (for liquids)  
0.25 up to 2 m (for solids)

#### Process temperature

-40 up to 80°C

#### Vessel pressure

-0.2 up to 2.0 bar (-20...200 kPa)

#### Vibration resistance

Mechanical vibrations with 4.g and 5...100 Hz

#### Temperature coefficient

0.06%/10K (Average temperature coefficient of the zero signal - temperature error)

#### Resolution

max. 1 mm

#### Ultrasonic frequency

70 kHz

#### Interval

> 2 s (dependent on the parameter adjustment)

#### Beam angle at - 3 db

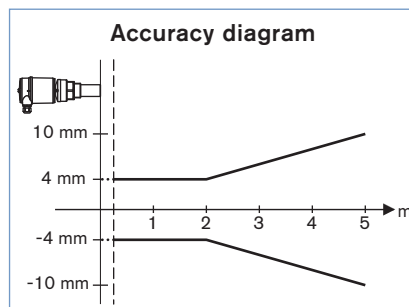
5.5 degrees

#### Adjustment time

> 3 s (dependent on the parameter adjustment)

#### Accuracy

< 0.2% or  $\pm$  4 mm (see diagram)



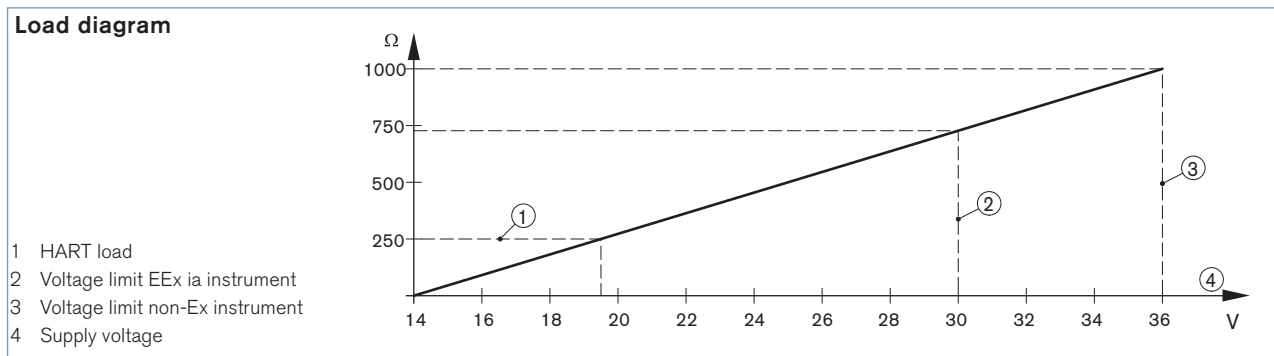
Electrical data	
<b>Power supply</b>	14 to 36 V DC or 14 to 30 V DC (EEx ia instrument)
<b>Permissible residual ripple</b>	< 100 Hz: $U_{ss} < 1$ V 100 Hz...10 kHz: $U_{ss} < 10$ mV
<b>Output signal</b>	4...20 mA/HART
<b>Resolution</b>	1.6 $\mu$ A
<b>Fault signal</b>	current output unchanged; 20.5 mA; 22 mA < 3.6 mA (adjustable)
<b>Current limitation</b>	22 mA
<b>Load</b>	see load diagram
<b>Integration time</b> (63% of the input variable)	0...999 s, adjustable
<b>Fulfilled NAMUR recommendation</b>	NE 43

Environment	
<b>Ambient temperature</b> with display, adjustment elements	-20 to +70°C (operation and storage)
<b>Relative humidity</b>	45-75 %; non condensated

Standards and approvals	
<b>Protection</b>	IP66/IP67 with M20 x 1.5 gland mounted and tightened
<b>Overvoltage category</b>	III
<b>Protection class</b>	II
<b>Standard</b>	
EMC	EN61326
Security	EN61010-1
ATEX	EN50014; EN50020; EN50284
NAMUR	NE 21; NE 43

Specifications EEx	
<b>Ⓢ - Protection</b>	Categories 1/2 G or 2G
<b>Ⓢ - Certification</b>	EEx ia IIC T6
<b>Conformity specifications<sup>1)</sup></b>	
Power supply $U_i$	30 V
Short circuit rating $I_i$	131 mA
Power limitation $P_i$	983 mW
Ambient temperature	-20 up to +41°C (depend on categories)
Internal capacity $C_i$	negligible
Internal inductivity $L_i$	negligible

1) homologation certificate PTB 07 ATEX 2003 X



## Principle of operation

The transducer of the ultrasonic sensor emits short ultrasonic pulses, at 70 kHz to the measured product. These pulses are reflected by the product surface and received by the transducer as echoes. The running time of the ultrasonic pulses from emission to reception is proportional to the distance and hence to the level. An integrated temperature sensor detects the temperature in the vessel and compensates the influence of temperature on the signal running time. The determined level is converted into an output signal and transmitted as a measured value.

## Target applications with Type 8176

■ Continuous level measuring for fluids and solids.

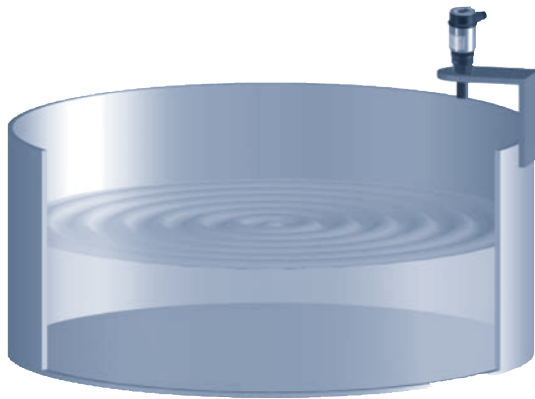


■ Distance measuring.



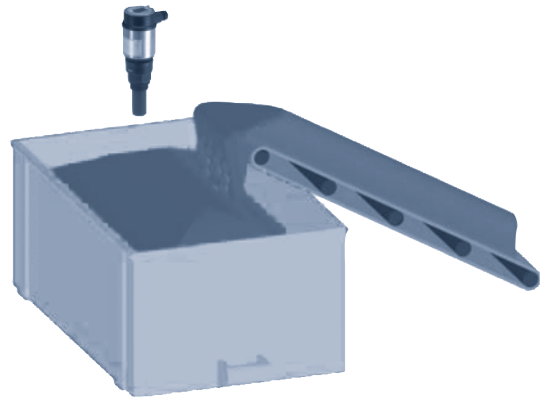
### Open basins

A typical application for the 8176 ultrasonic transmitter is level measurement in open basins. Products such as rain water or sewage water, i.e. with impurities. Here is where the advantages of non-contact measurement with the 8176 come into their own: simple and maintenance-free. The degree of pollution of water or an accumulation of mud in the basin is not important, because the 8176 transmitter measures the surface.

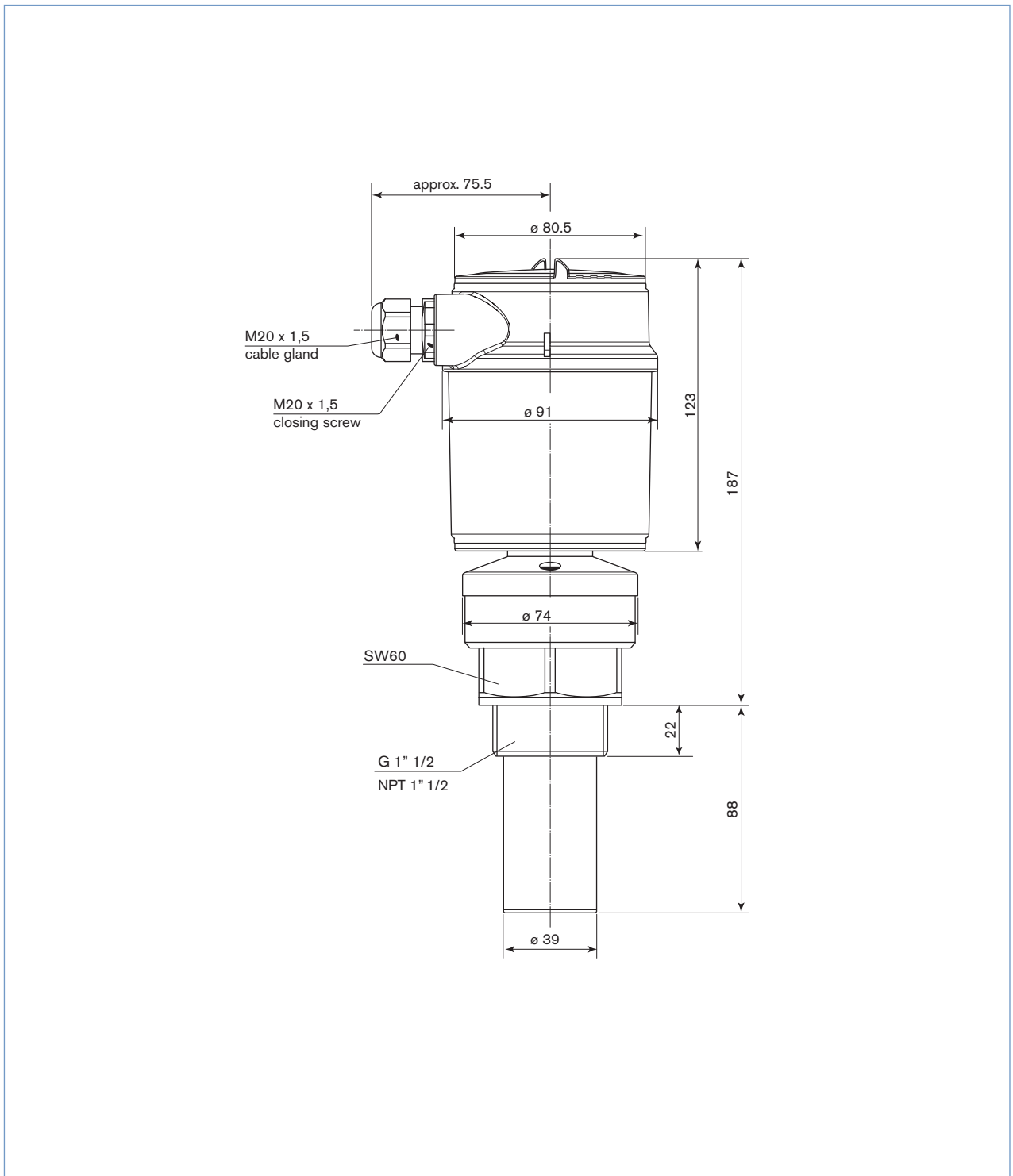


### Sludge container

In sewage treatment plants, the accumulated sludge is dewatered and transported via conveyor belts to containers. The 8176 transmitter measures the filling of the container. An empty container can thus be readied in good time before the max. level is reached.



## Dimensions [mm]



## Ordering chart for compact transmitter Type 8176

Specifications	Voltage supply	Output	Electrical connection	Item no.	
				with program module and display	without program module no display
<b>G 1"1/2 mounting thread</b>	14-36 V DC	4-20 mA/HART (2 wires)	Cable gland M 20 x 1.5	558 220	559 240
<b>NPT 1"1/2 mounting thread</b>	14-36 V DC	4-20 mA/HART (2 wires)	Cable gland M 20 x 1.5	558 221	559 241
<b>EEx version - ATEX approval G 1"1/2 mounting thread</b>	14-30 V DC	4-20 mA/HART (2 wires)	Cable gland M 20 x 1.5	558 222	559 242

 Further versions on request


## Port connection

Tri-Clamp® 2", 3", 3"1/2, 4"

DIN 11851 DN50, DN80, DN100

## Ordering chart - accessories for transmitter Type 8176 (has to be ordered separately)

Specifications	Item no.
Set with 2 reductions M 20 x 1.5 / NPT1/2" + 2 neoprene flat seals for cable gland + 2 screw-plugs M 20 x 1.5	551 782
Program module with display	559 279

## Ultrasonic level transmitter Type 8176 - request for quotation

Please fill out and send to your nearest Bürkert facility\* with your inquiry or order.

### Note

You can fill out the fields directly in the PDF file before printing out the form.

Company:	Contact person:
Customer No.:	Department:
Address:	Tel. / Fax.:
Postcode / Town:	E-mail:

### Ultrasonic level transmitter 8176

Quantity:

Desired delivery date:

#### ■ Process fitting connection:

**External thread**  G 1"1/2

NPT 1"1/2

**Tri-Clamp®**  2"  3"

3"1/2  4"

**DIN 11851**  DN 50  DN 80

DN 100

#### ■ Program module and display

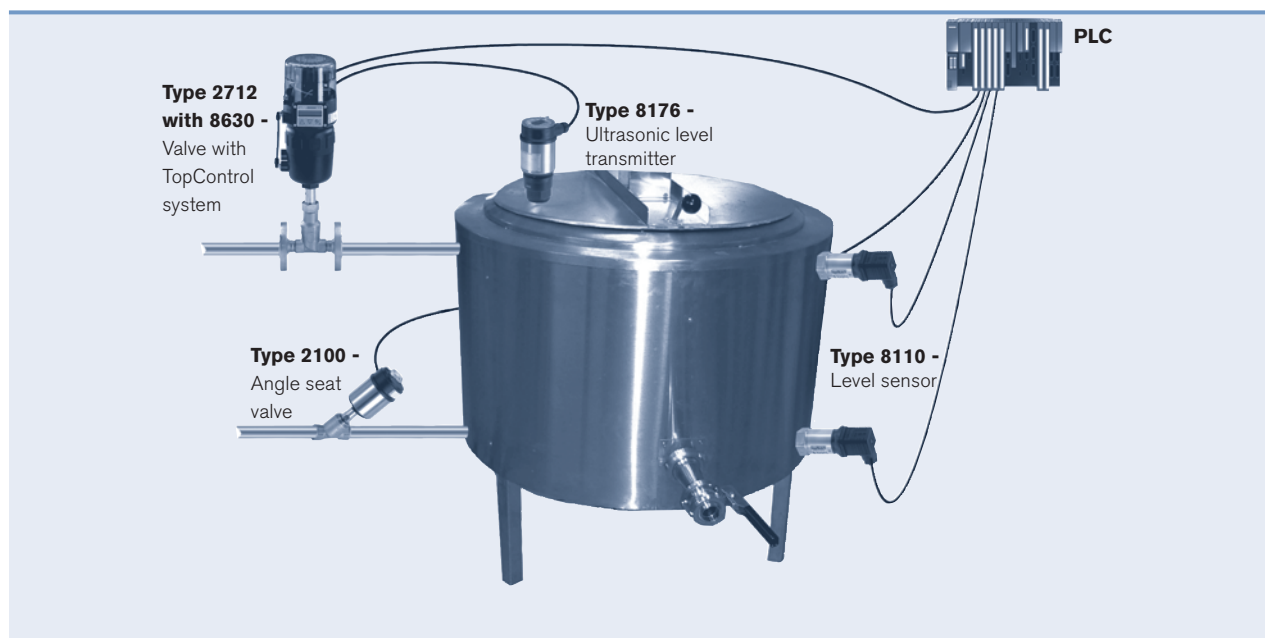
Yes

No

#### ■ ATEX approval

Yes

No



\*To find your nearest Bürkert facility, click on the orange box →

[www.burkert.com](http://www.burkert.com)

In case of special application conditions, please consult for advice.

We reserve the right to make technical changes without notice.  
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