



Ultrasonic level transmitter, non-contact

- Compact for level measurement up to 15 m
- 4...20 mA/Hart - 2 wires
- Suitable for solids

Type 8178 can be combined with...



Type 8611

PI-controller on a valve



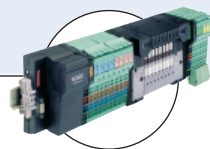
Type 1067

SideControl



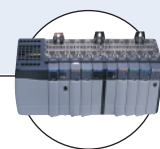
Type 2712 (8630)

Continuous TopControl system



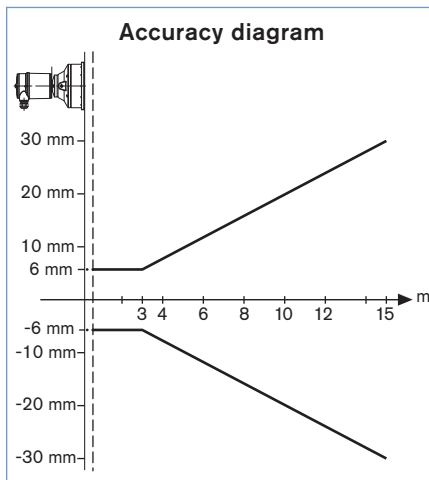
Type 8644

Valve islands with electronic I/O



PLC

The Type 8178 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 / Ground terminal	NBR / Stainless steel 316Ti/316L (1.4571/1.4435)
Mounting strap	UP
Wetted parts	
Process fitting / Process seal	Stainless steel 1.4301 / EPDM
Transducer diaphragm	Stainless steel 1.4571

Display

LCD in full dot matrix

Process fitting

Mounting strap

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

0.6 m

Measuring range

0.6 up to 15 m (for liquids)
0.6 up to 7 m (for solids)

Process temperature

-40 up to 80°C (-40 to 176°F)

Vessel pressure

0 bar (0 PSI) (0 kPa) - because no sealing possibility

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

35 kHz

Interval

> 2 s (dependent on the parameter adjustment)

Beam angle at - 3 db

6 degrees

Adjustment time¹⁾

> 3 s (dependent on the parameter adjustment)

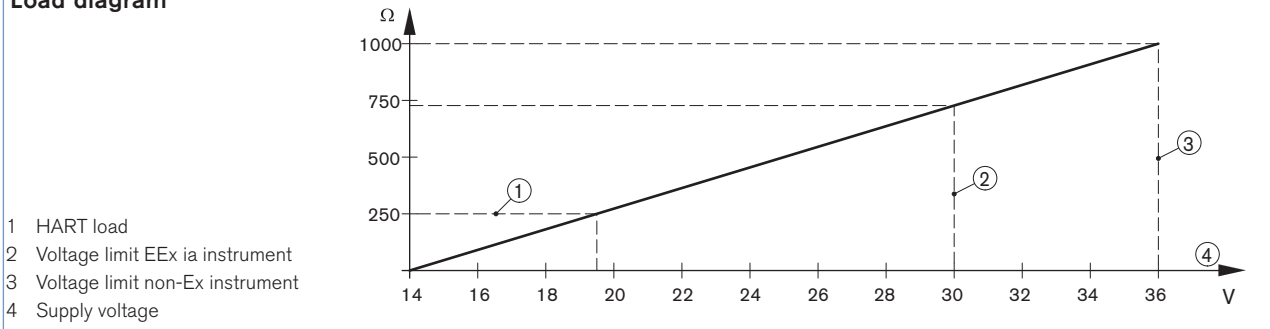
Accuracy

< 0.2% or ± 6 mm (see diagram)

¹⁾ Time to output the correct level (with max. 10% deviation) after a sudden level change.

Electrical data	
Power supply	14 to 36 V DC
Permissible residual ripple	< 100 Hz: $U_{ss} < 1 \text{ V}$ 100 Hz...10 kHz: $U_{ss} < 10 \text{ mV}$
Output signal	4...20 mA/HART
Resolution	1.6 μA
Fault signal	current output unchanged; 20.5 mA; 22 mA < 3.6 mA (adjustable)
Current limitation	22 mA
Load	see load diagram
Integration time (63% of the input variable)	0...999 s, adjustable
Fulfilled NAMUR recommendation	NE 43
Environment	
Ambient temperature with display, adjustment elements	-20 to +70°C (-4 to 158°F) (operation and storage)
Relative humidity	45-75 %; without condensation
Standards and approvals	
Protection	IP66/IP67 with M20 x 1.5 gland mounted and tightened
Overvoltage category	III
Protection class	II
Standard	
EMC	EN61326
Security	EN61010-1
NAMUR	NE 21; NE 43

Load diagram

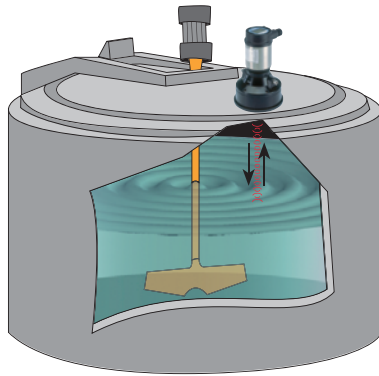


Principle of operation

The transducer of the ultrasonic sensor emits short ultrasonic pulses, at 35 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 an measured value.

Target applications with Type 8178

■ Continuous level measuring for fluids and solids.



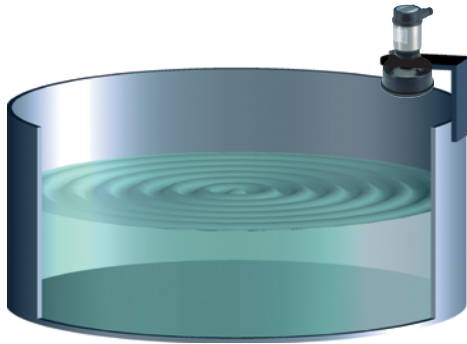
■ Distance measuring.



Dimensions [mm]

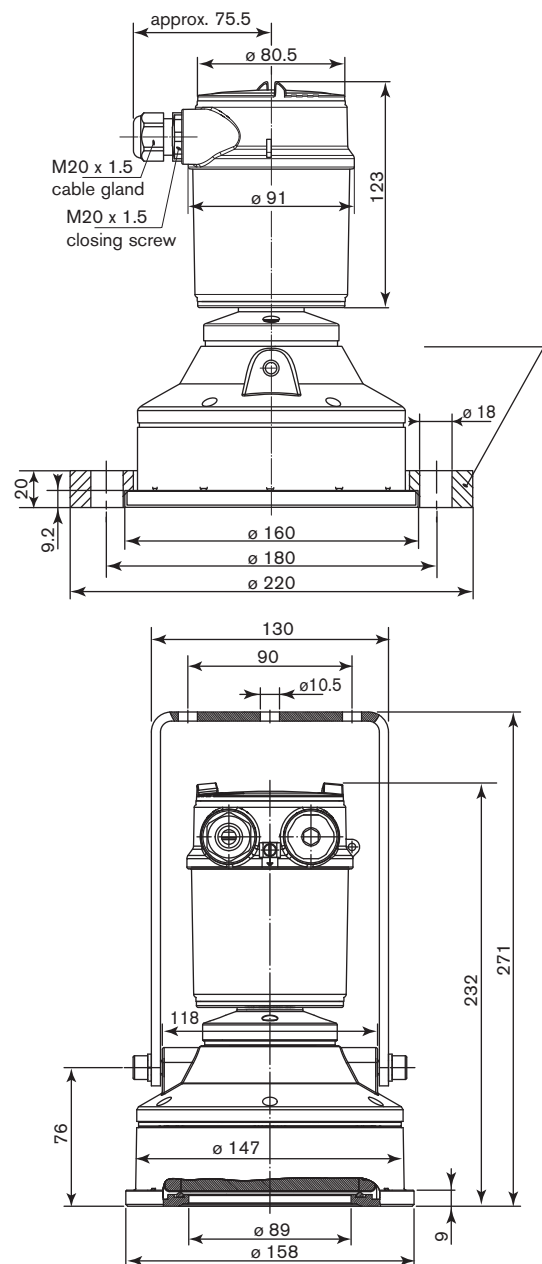
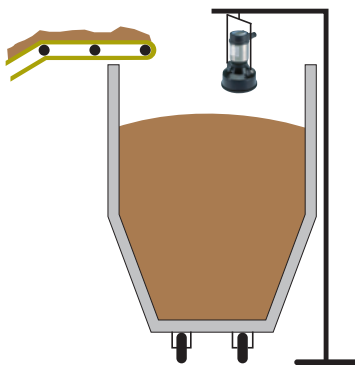
Open basins

A typical application for the 8178 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 8178 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 8178 transmitter measures the surface.



Sludge container

In sewage treatment plants, the accumulated sludge is dewatered and transported via conveyor belts to containers. The 8178 transmitter measures the filling of the container. An empty container can thus be readied in good time before the max. level is reached.



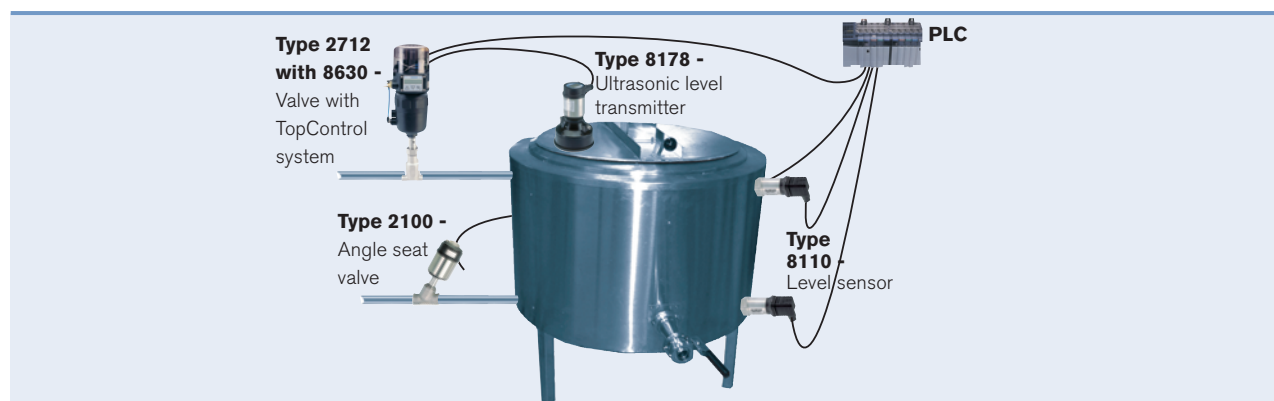
Ordering chart for compact transmitter Type 8178

Specifications	Voltage supply	Output	Electrical connection	Item no.	
				with program module and display	without program module no display
Mounting loop	14-36 V DC	4-20 mA/HART (2 wires)	Cable gland M 20 x 1.5	558 228	559 246

Ordering chart accessories

Description	Item no.
Set with 2 reductions M20 x 1.5 / NPT1/2" + 2 neoprene flat seals for cable gland + 2 screw-plugs M20 x 1.5	551 782
Set with a display and programming module, a transparent cover and a seal ring	559 279
Set with a transparent cover and a seal ring	561 006
Slip over flange, DN100, PN16, 316L	560 536

Interconnection possibilities with other Bürkert devices



Ultrasonic level transmitter Type 8178 - request for quotation

Please fill in and send to your local Bürkert Sales Centre with your inquiry or order.

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

Note

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

Ultrasonic level transmitter 8178

Quantity: Desired delivery date:

■ Process fitting connection:

Mounting loop ☐Compression flange ☐Materials ☐☐

DN 100

Stainless steel

☐ ANSI 4"☐ PPH

■ Program module and display

☐ Yes☐ No

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

www.burkert.com

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

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