

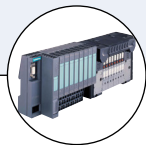
## Vibrating level switch with extension tube



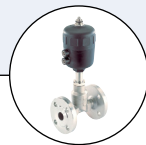
Type 8112 can be combined with...



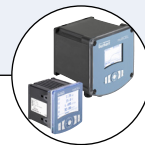
**Type 2030**  
Globe control valve



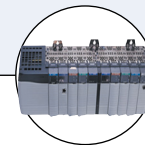
**Type 8644**  
Process actuation control system  
AirLINE



**Type 2712**  
Diaphragm valve



**Type 8619**  
multiCELL  
transmitter/controller



**PLC**

The 8112 is a vibrating level switch for liquids, using a tuning fork for level detection.

It is designed for industrial use in areas of process technology and can be used in liquids. Typical applications are overflow or dry run protection.

The 8112 is available with different sensor lengths using a tube extension. The right length can be adapted thanks to a lock fitting.

Due to the simple and rugged measuring system, the 8112 is virtually unaffected by the chemical and physical features of the liquid. It works even under unfavourable conditions such as turbulence, air bubbles, foam generation (not suitable for measuring the foam thickness itself), buildup or varying products.

- For universal use as overflow or dry run protection system
- Setup without adjustment
- For food, beverage and pharmaceutical industry thanks to surface finishing <math>< 0.8 \mu\text{m}</math>
- ATEX approvals

### General technical data

<b>Materials</b>	
Housing / Cover / Seal ring Wetted parts	PBT, Stainless steel 316L (1.4404) / PC / EPDM
Tuning fork and process fitting	Stainless steel 316L (1.4435)
Extension tube $\varnothing$ 21.3	Stainless steel 316L (1.4435)
Process seal	Klingsil C 4400
<b>Weight</b>	Approx. 890 g + approx. 110 g/m (tube extension)
<b>Electrical connections</b>	1 or 2 cable glands M20 x 1.5 (depends on output version)
<b>Process fitting</b>	Thread G or NPT, $\frac{3}{4}$ " or 1"; clamp 2"
<b>Surface finishing quality</b>	Ra <math>< 3.2 \mu\text{m}</math> (thread) / Ra <math>< 0.8 \mu\text{m}</math> (clamp)
<b>Extension tube length</b>	200...1000 mm
<b>Dynamic viscosity</b>	0.1...10000 mPa.s (requirement: with density 1)
<b>Flow velocity</b>	max. 6 m/s (with a viscosity of 10000 mPa.s)
<b>Density</b>	0.5...2.5 g/cm <sup>3</sup> (selected by DIP switch) OR 0.7...2.5 g/cm <sup>3</sup>
<b>Fluid temperature</b>	-50...+150 °C (-58...+302 °F)
<b>Fluid pressure</b>	-1...64 bar (-14.51...+928.64 PSI)
<b>Measurement deviation<sup>1)</sup></b>	
Hysteresis	Approx. 2 mm with vertical installation
Delay time / Frequency	Approx. 500 ms / Approx. 1200 Hz
<b>Output</b>	Double relay output or NAMUR output

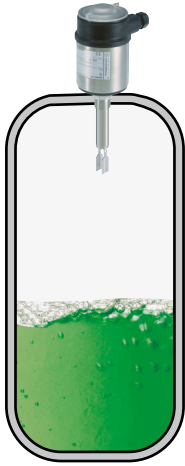
<sup>1)</sup> = "measurement bias" as defined in the standard JCGM 200:2012

Electrical data - Sensor with relay output	
<b>Output</b>	Relay (DPDT), 2 floating spdts
<b>Power supply</b>	20...253 V AC, 50/60 Hz or 20...72 V DC (at U > 60 V DC the ambient temperature must be max. +50 °C (+ 122 °F))
<b>Power consumption</b>	1...8 VA (AC); approx. 1.3 W (DC)
<b>Turn-on voltage</b>	min.: 10 mV; max.: 253 V AC, 253 V DC
<b>Switching current</b>	min.: 10 mA; max.: 5 A (AC), 1 A (DC)
<b>Switching capacity</b>	max. 1250 VA, 50 W
<b>Modes (adjustable)</b>	A = max. detection or overflow protection B = min. detection or dry run protection
<b>Delay time</b>	when immersed: 0.5 s when laid bare: 1 s
Electrical data - Sensor with NAMUR output	
<b>Output</b>	2 wire current modulation according to NAMUR
<b>Power supply</b>	
Voltage supply	via connection to an interface according to NAMUR IEC 60947-5-6, approx. 8.2 V
Open-circuit voltage	U <sub>o</sub> approx. 8.2 V
Short-circuit current	I <sub>o</sub> approx. 8.2 mA
<b>Current consumption</b>	
Falling characteristic	≥ 2.2 mA (blade uncovered) / ≤ 1.0 mA (blade covered)
Rising characteristic	≤ 1.0 mA (blade uncovered) / ≥ 2.2 mA (blade covered)
Fault signal	≤ 1.0 mA
<b>Necessary processing system</b>	NAMUR processing system acc. to IEC 60947-5-6 (EN50227/DIN19234)
<b>Modes (NAMUR output adjustable to falling or rising characteristics)</b>	Min.: rising characteristics (High current when immersed) Max.: falling characteristics (Low current when immersed)
Environment	
<b>Ambient temperature</b>	
Operating	-40...+70 °C (-40...+158 °F)
Storage	-40...+80 °C (-40...+176 °F)
Standards, directives and certifications	
<b>Protection class</b>	<ul style="list-style-type: none"> <li>• IP66/IP67 with M20 × 1.5 gland mounted and tightened</li> <li>• II (relay output); II (NAMUR output)</li> </ul>
<b>Overvoltage category</b>	III
<b>Standards</b>	
EMC	EN61326
Security	EN61010-1
ATEX <sup>1)</sup>	EN50014; EN50020; EN50284
NAMUR	IEC 60947-5-6 (EN 50227)
Specifications Ex	
<b>⚡ - Protection</b>	Categories 1/2G, 2G
<b>⚡ - Certification</b>	Ex ia IIC T6
<b>Conformity specifications<sup>1)</sup></b>	
Power supply U <sub>i</sub>	20 V
Short circuit rating I <sub>i</sub>	103 mA
Power limitation P <sub>i</sub>	516 mW
Ambient temperature	-40...+85 °C (-40...+185 °F) (depend on categories)
Internal capacity C <sub>i</sub>	negligible
Internal inductivity L <sub>i</sub>	negligible

<sup>1)</sup> homologation certificate PTB 07 ATEX 2004X

## Target applications with Type 8112

### Chemical industry - solvents



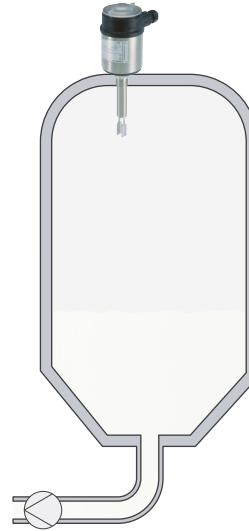
In addition to continuous level measurement, level detection is an essential safety feature for storage tanks. However, most modern level sensors are approved as overflow protection systems for level measurement, but a different second physical measuring principle provides optimum redundancy and safety.

Thanks to the manifold application possibilities, the type 8112 vibrating level switch is ideal for all applications concerning stock-keeping of liquids. A number of electrical and mechanical versions ensures simple integration into existing processing systems.

#### Advantages:

- various electrical versions
- product-independent
- universal level detection for all liquids.

### Food processing industry



The processes carried out in food-processing tanks, such as for example for milk, place high demands on the installed technology. Sterilization and cleaning of the vessels involves high pressures and temperatures. The level sensors installed must meet the requirements of hygienic construction. Materials in contact with the fluid and its level of roughness ensure optimum cleanability during CIP cycles.

Type 8112 is installed for detection and overflow protection or pump protection. The tuning fork is highly polished for the use in sensitive food-stuffs such as milk.

#### Advantages:

- universal level detection for all liquids.
- high resistance sensor materials
- adjustment and maintenance-free

### Water/sewage water plants



Chemicals are required for sewage water treatment. They are used for precipitation. Phosphate and nitrate are sedimented and isolated. For the treatment and neutralisation of sludge, acids and solvents are stored away from lime water and ferric chloride. These substances are subject to the regulations on substances hazardous to water. Therefore, overflow protection systems must be installed on the storage tanks.

To avoid overflowing of vessels with toxic products, sensors for level detection are an important safety element.

#### Advantages:

- high reproducibility

### Chemical industry - reactors



Thanks to the manifold application possibilities, the Type 8112 vibrating level switch is ideal for all applications concerning stock-keeping of liquids. A number of electrical and mechanical versions ensures simple integration into existing processing systems.

#### Advantages:

- various electrical versions
- product-independent
- completely gas-tight
- high reliability
- universal level detection for all liquids.

## Principle of operation

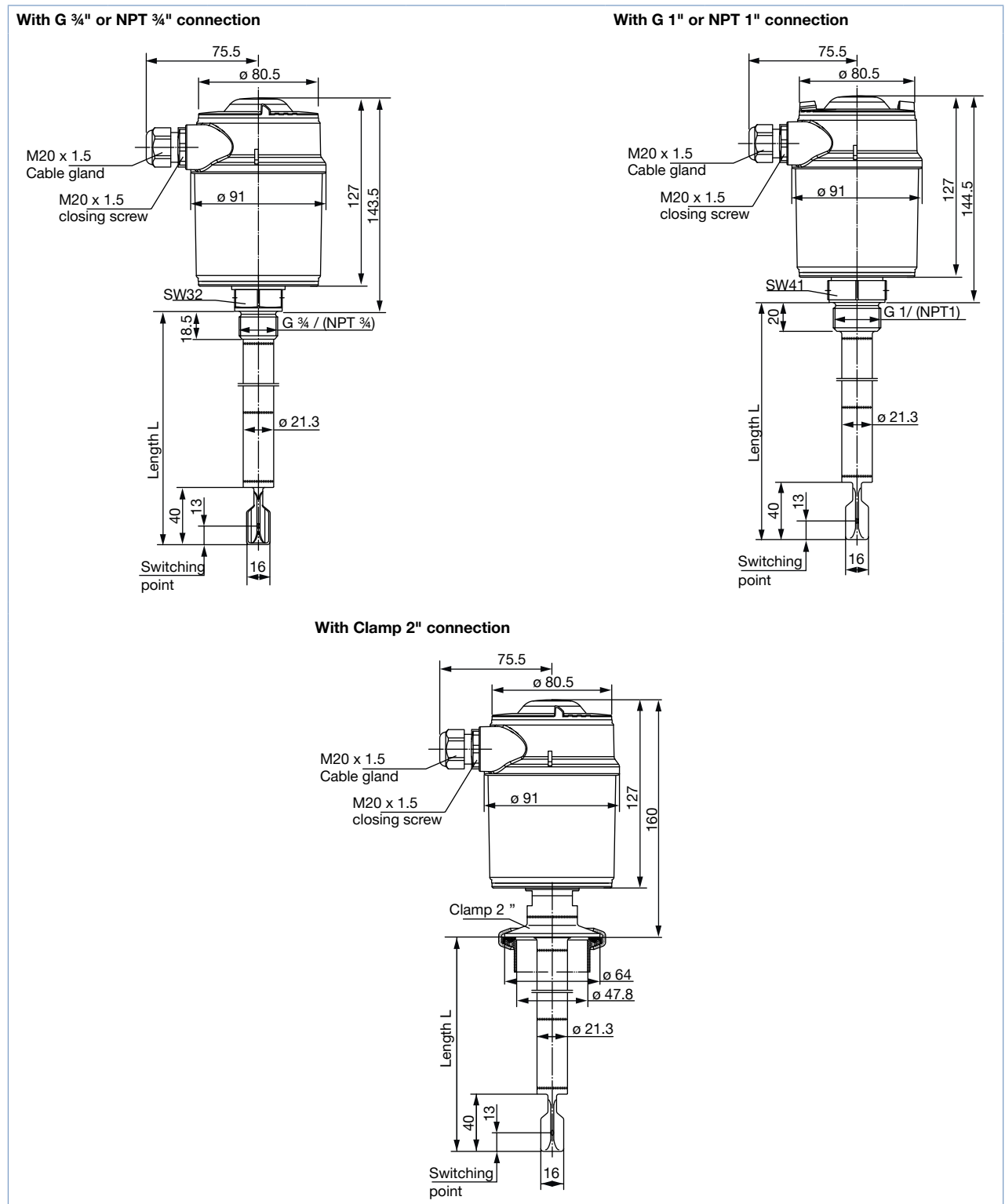
The tuning fork is piezoelectrically energised and vibrates at a mechanical resonance frequency of approx. 1200 Hz. When the tuning fork is submerged in the product, the frequency changes. This change is detected by the integrated oscillator and converted into a switching command.

The integrated fault monitor detects the following faults:

- interruption of the connection cable to the piezoelectric elements
- extreme material wear on the tuning fork
- breakage of the tuning fork
- absence of vibration.

If one of these faults is detected or in case the power supply fails, the electronic system switches to a defined switching state, e.g. the output transistor is blocked (safe condition).

## Dimensions [mm]



## Ordering chart for the 8112 vibrating level switch

Output	Power supply	Extension tube length	Process connection	Electrical connection	Article no.		
Double relay (DPDT), 2 floating spdts	20...72 V DC / 20...250 V AC (5 A)	300	G ¾"	2 cable glands M20 × 1.5	558119		
			NPT ¾"	2 cable glands M20 × 1.5	558120		
		500	G ¾"	2 cable glands M20 × 1.5	558121		
			NPT ¾"	2 cable glands M20 × 1.5	558122		
		1000	G ¾"	2 cable glands M20 × 1.5	558123		
			NPT ¾"	2 cable glands M20 × 1.5	558124		
		300	G 1"	2 cable glands M20 × 1.5	558125		
			NPT 1"	2 cable glands M20 × 1.5	558126		
		500	G 1"	2 cable glands M20 × 1.5	558127		
			NPT 1"	2 cable glands M20 × 1.5	558128		
		1000	G 1"	2 cable glands M20 × 1.5	558129		
			NPT 1"	2 cable glands M20 × 1.5	558130		
		300	8.2 V DC - via an intrinsic safety interface with NAMUR input	Clamp 2"	2 cable glands M20 × 1.5	558131	
				500	Clamp 2"	2 cable glands M20 × 1.5	558132
				1000	Clamp 2"	2 cable glands M20 × 1.5	558133
Namur signal - Ex version ATEX approval	8.2 V DC - via an intrinsic safety interface with NAMUR input	300	G ¾"	1 cable gland M20 × 1.5	558134		
			G 1"	1 cable gland M20 × 1.5	558135		
		500	G ¾"	1 cable gland M20 × 1.5	558136		
			G 1"	1 cable gland M20 × 1.5	558137		
		1000	G ¾"	1 cable gland M20 × 1.5	558138		
			G 1"	1 cable gland M20 × 1.5	558139		

## Further versions on request

**Port connection**

Clamp 1"; 1 ½"  
DIN 11851  
Flange  
SMS  
Neumo BioControl® (a registered Trademark of Neumo-Ehrenberg Group)

**Materials**

ECTFE, enamel, Hastelloy C4 or PFA for flange connection

**Hygienic version**

Ra < 0.8 µm for G or NPT threaded connection  
Ra < 0.3 µm for Clamp connection

**Temperature**

-50...+250 °C

**Additional**

up to 6000 m

## Ordering chart for accessories (to be ordered separately)

Description	Article no.
Set with 2 reductions M20 x 1.5 / NPT ½" + 2 neoprene flat seals for cable gland + 2 screw-plugs M20 x 1.5	551782
Lock fitting - only for pressureless handling, -50...150°C; G1"	558218
Lock fitting - only for pressureless handling, -50...150°C; NPT1"	558219

**Customized 8112 vibrating level switch - request for quotation**

**Note**

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

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:

**Vibrating level switch 8112**

Quantity:

Desired delivery date:

■ **Process fitting connection:**

<b>External thread</b>	<input type="checkbox"/> G ¾"	<input type="checkbox"/> NPT ¾"		
	<input type="checkbox"/> G 1"	<input type="checkbox"/> NPT 1"		
<b>Clamp</b>	<input type="checkbox"/> 1"	<input type="checkbox"/> 1"½	<input type="checkbox"/> 2"	
<b>Flange</b>	<input type="checkbox"/> DN25	<input type="checkbox"/> DN40	<input type="checkbox"/> DN50	
<b>DIN 11851</b>	<input type="checkbox"/> DN25	<input type="checkbox"/> DN32	<input type="checkbox"/> DN40	<input type="checkbox"/> DN50
<b>SMS 1145</b>	<input type="checkbox"/> DN38	<input type="checkbox"/> DN51		
<b>Special rugosity</b>	<input type="checkbox"/> No	<input type="checkbox"/> Yes with Ra ext. = 0.8 µm	<input type="checkbox"/> Yes with Ra ext. = 0.3 µm	
<b>Length</b>	<input type="checkbox"/> 300 mm	<input type="checkbox"/> 500 mm	<input type="checkbox"/> 1000 mm	
	<input type="checkbox"/> specific length in mm (must be a multiple of 500 mm and between 1500 and 6000 mm) <input type="text"/> mm			
<b>Output signal and power supply</b>	<input type="checkbox"/> Double relay and 20...253 V AC / 20...72 V DC	<input type="checkbox"/> NAMUR and 8...15 V DC		
<b>ATEX approval</b> only with Namur Output	<input type="checkbox"/> Yes		<input type="checkbox"/> No	

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