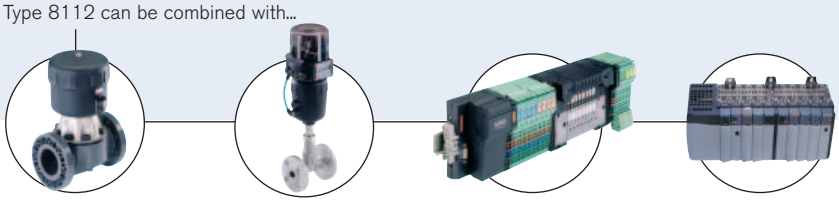
bürkert
FLUID CONTROL SYSTEMS

Vibrating level switch

- For universal use as overfill or dry run protection system
- Setup without adjustment
- For food and beverage industry thanks to surface finishing < 0.8 µm
- ATEX approvals

Type 8112 can be combined with...



Type 2030
Diaphragm valve

Type 2712
Globe control valve with TopControl

Type 8644
Valve islands with electronic I/O

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 overfill or dry run protection.

The Type 8112 is available with different sensor length using 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, buildup or varying products.

General data	
Materials	
Housing / Cover / Seal ring	PBT, Stainless steel 316L (1.4435) / PC / EPDM
Wetted parts	
Tuning fork and process fitting	Stainless steel 316L (1.4435)
Extension tube ø 21.3	Stainless steel 316L (1.4435)
Process seal	Klingersil C 4400
Weight	approx. 890 g + approx. 110 g/m (tube extension)
Electrical connections	1 or 2 cable glands M20 x 1.5 (depends on output version)
Process fitting	Thread G, NPT 3/4", G, NPT 1" or Clamp 2"
Surface finishing quality	Ra < 3.2 µm (thread) / Ra < 0.8 µm (Clamp)
Extension tube length	200 ... 1000 mm
Viscosity dynamic	0.1 up to 10000 mPa.s (requirement: with density 1)
Density	0.5 up to 2.5 g/cm³ (selected by DIP switch) or 0.7 up to 2.5 g/cm³
Fluid temperature	-50 up to 150°C *(-58 to 302°F)*
Fluid pressure	-1 to 64 bar *(-14.51 to 928.64 PSI)*
Accuracy	
Hysteresis	Approx. 2 mm with vertical installation
Delay time / Frequency	Approx. 500 ms / Approx. 1200 Hz
Output	Double relay output or Namur output
Environment	
Ambient temperature	-40 up to +70°C *(-40 to 158°F)* (Operating); -40 up to +80°C *(-40 to 176°F)* (Storage)

Electrical data - Sensor with relay output	
Output	Relay (DPDT), 2 floating spdts
Power supply	20 to 253 V AC, 50/60 Hz or 20 to 72 V DC (at U > 60 V DC the ambient temperature must be max. 50 °C *(122°F)*)
Power consumption	1 to 8 VA (AC); approx. 1.3 W (DC)
Turn-on voltage	min.: 10 mV; max.: 253 VAC, 253 V DC
Switching current	min.: 10 µA; max.: 5 A (AC), 1 A (DC)
Breaking capacitance	max. 1250 VA, 50 W
Modes (adjustable)	A = max. detection or overfill protection B = min. detection or dry run protection
Delay time	when immersed: 0.5 s when laid bare: 1s

Electrical data - Sensor with NAMUR output	
Output	2 wire current modulation according to NAMUR
Power supply	
Voltage supply	via connection to an interface according to NAMUR IEC 60947-5-6, approx. 8.2 V
Open-circuit voltage	U_0 approx. 8.2 V
Short-circuit current	I_0 approx. 8.2 mA
Current consumption	
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
Necessary processing system	NAMUR processing system acc. to IEC 60947-5-6 (EN50227/DIN19234)
Modes (NAMUR output adjustable to falling or rising characteristics)	Min.: rising characteristics (High current when immersed) Max.: falling characteristics (Low current when immersed)

Standards and approvals	
Protection	IP66/IP67 with M20 x 1.5 gland mounted and tightened
Overvoltage category	III
Protection class	I (relay output); II (NAMUR output)
Standards	
EMC / Security	EN61326 / EN61010-1
ATEX[1)]	EN50014; EN50020; EN50284
NAMUR	IEC 60947-5-6 (EN 50227)

Specifications Ex	
Ⓔx - Protection	Categories 1/2 G, 2G
Ⓔx - Certification	Ex ia IIC T6
Conformity specifications[1)]	
Power supply Ui	20 V
Short circuit rating Ii	103 mA
Power limitation Pi	516 mW
Ambient temperature	-40 up to +85°C *(-40 to 185°F)* (depend on categories)
Internal capacity Ci	negligible
Internal inductivity Li	negligible

1) homologation certificate PTB 07 ATEX 2004X

Target applications with type 8112

Chemical industry - solvents

Beside the continuous level measurement, level detection is a main safety characteristic for storage tanks.
Many modern sensors for continuous level measurement, however, are approved as overfill protection system, but a second, physically different measuring principle offers optimum safety and redundancy.
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.

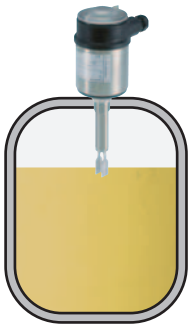
Advantages:
- various electrical versions
- product-independent
- universal level detection for all liquids.

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.

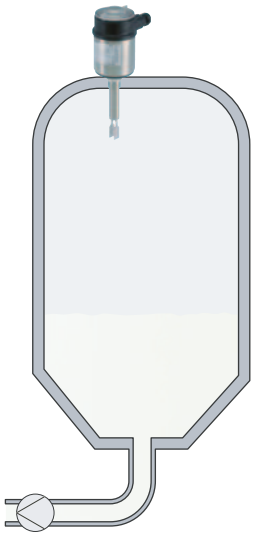
Water/sewage water plants



Chemicals are required for sewage water treatment. They are used for precipitation. Phosphate and nitrate are sedimented and separated. For the sludge treatment and neutralization, acids and solvents are stored apart from lime water and ferric chloride.
These substances are subject to the regulations for water-endangering substances. Therefore overfill protection systems must be mounted on storage tanks.
To avoid overfilling of vessels with toxic products, sensors for level detection are an important safety element.

Advantages:
- high reproducibility

Food processing industry



The processes in food processing tanks such as e.g. for milk have a high demand to the installed technology. High pressures and temperatures are caused during sterilization and cleaning of the tanks. The installed level sensors must meet the requirements of the hygienic construction. The harmlessness of all wetted materials must be proven and optimum cleanability must be ensured by hygiene-technical design.
The Type 8112 is installed for level detection and as dry run protection system. The tuning fork is highly polished for the use in sensitive foodstuffs such as milk.

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

Principle of operation

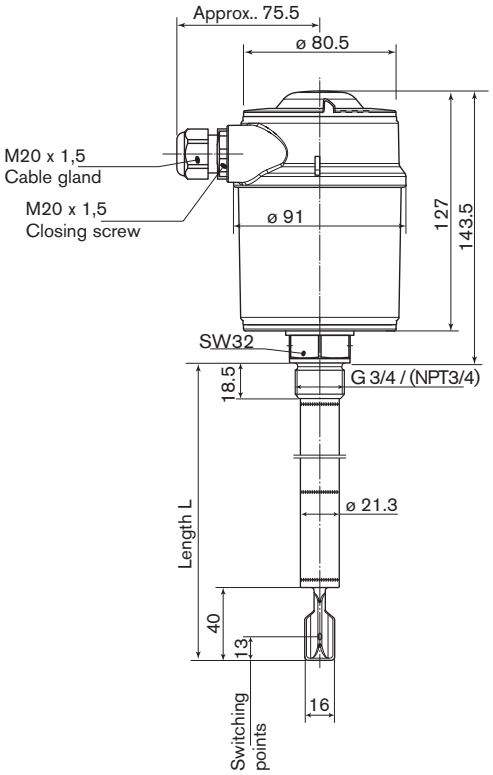
The tuning fork is piezoelectrically energised and vibrates at its mechanical resonance frequency of approx. 1200 Hz. When the tuning fork is submerged in the product, the frequency changes. This change is detected by the integrated oscillator and converted into a switching command.

The integrated fault monitoring detects the following faults:
- interruption of the connection cable to the piezoelectric elements
- extreme material wear on the tuning fork
- break of the tuning fork
- absence of vibration.

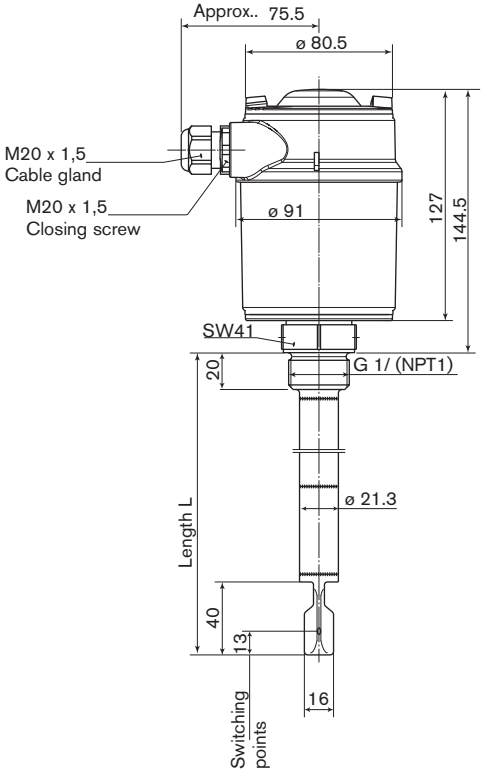
If one of these faults is detected or in case the power supply fails, the electronics takes on a defined switching condition, e.g. the output transistor blocks (safe condition).

Dimensions [mm]

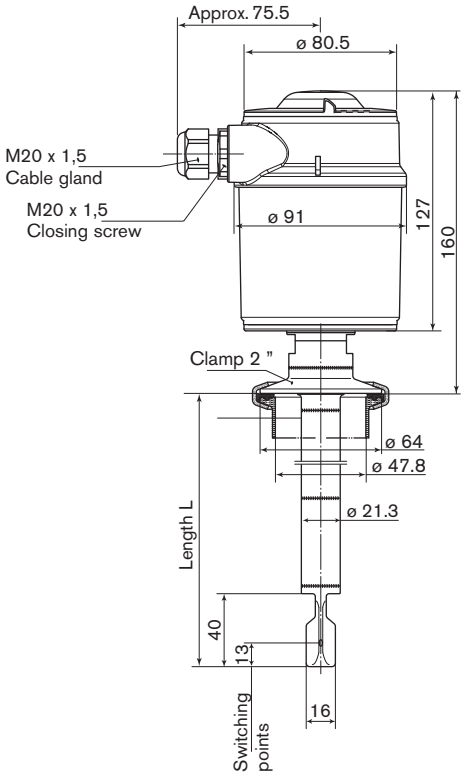
With G or NPT 3/4" connection



With G or NPT 1" connection



With Clamp 2" connection



Ordering chart for the vibrating level switch Type 8112

Output	Power supply	Extension tube length [mm]	Process connection	Electrical connection	Item no.
Double relay (DPDT) , 2 floating spdts	20-72 VDC / 20 - 250V AC (5A)	300	G 3/4”	2 cable glands M20 X 1.5	558 119
			NPT 3/4”	2 cable glands M20 X 1.5	558 120
		500	G 3/4”	2 cable glands M20 X 1.5	558 121
			NPT 3/4”	2 cable glands M20 X 1.5	558 122
		1000	G 3/4”	2 cable glands M20 X 1.5	558 123
			NPT 3/4”	2 cable glands M20 X 1.5	558 124
		300	G 1”	2 cable glands M20 X 1.5	558 125
			NPT 1”	2 cable glands M20 X 1.5	558 126
		500	G 1”	2 cable glands M20 X 1.5	558 127
			NPT 1”	2 cable glands M20 X 1.5	558 128
		1000	G 1”	2 cable glands M20 X 1.5	558 129
			NPT 1”	2 cable glands M20 X 1.5	558 130
		300	Clamp 2”	2 cable glands M20 X 1.5	558 131
		500	Clamp 2”	2 cable glands M20 X 1.5	558132
		1000	Clamp 2”	2 cable glands M20 X 1.5	558 133
Namur signal - Ex version ATEX approval	8.2 V DC - via an intrinsic safety interface with NAMUR input	300	G 3/4”	1 cable gland M20 X 1.5	558 134
			G 1”	1 cable gland M20 X 1.5	558 135
		500	G 3/4”	1 cable gland M20 X 1.5	558 136
			G 1”	1 cable gland M20 X 1.5	558 137
		1000	G 3/4”	1 cable gland M20 X 1.5	558 138
			G 1”	1 cable gland M20 X 1.5	558 139

Further versions on request

Port connection
Clamp 1”; 1”1/2
DIN 11851
Flange
SMS;
Neumo BioControl®

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 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
Lock fitting - only for pressureless handling, -50...150°C; G1”	558 218
Lock fitting - only for pressureless handling, -50...150°C; NPT1”	558 219

bürkert

Vibrating level switch Type 8112 - 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:**

External thread	☐ G 3/4"		☐ NPT 3/4"	
	☐ G 1"		☐ NPT 1"	
Clamp	☐ 1"	☐ 1"1/2	☐ 2"	
Flange	☐ DN 25	☐ DN 40	☐ DN 50	
DIN 11851	☐ DN 25	☐ DN 32	☐ DN 40	☐ DN 50
SMS 1145	☐ DN 38	☐ DN 51		

■ **Special rugosity** ☐ No ☐ Yes with Ra ext. = 0.8 µm ☐ Yes with Ra ext. = 0.3 µm

■ **Length** ☐ 300 mm ☐ 500 mm ☐ 1000 mm

☐ specific length in mm (must be a multiple of 500 mm and between 1500 and 6000 mm) → _____ mm

■ **Output signal and power supply** ☐ Double relay and 20-253 V AC - 20-72 V DC ☐ NAMUR and 8-15 V DC

■ **ATEX approval** only with Namur Output ☐ Yes ☐ No

reset form