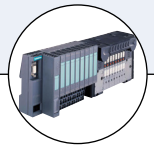
Vibrating level switch

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

Type 8111 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 8111 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.
Depending on the version it is also used for monitoring or controlling levels in hazardous environments, even for combustible liquids, gases, fumes or vapours.
Due to the simple and rugged measuring system, the 8111 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.

General technical data	
Materials	
Housing / Cover / Seal ring	PBT, Stainless steel 316L (1.4404) / PC / EPDM
Wetted parts	
Tuning fork and process fitting	Stainless steel 316L (1.4435)
Process seal	Klingersil C 4400
Weight	Approx. 890 g
Electrical connections	1 or 2 cable glands M20 × 1.5 (depends on output version)
Process fitting	Thread G or NPT, ¾" or 1"; clamp 2"
Surface finishing quality	Ra < 3.2 µm (thread) / Ra < 0.8 µm (clamp)
Dynamic viscosity	0.1…10000 mPa.s (requirement: with density 1)
Flow velocity	max. 6 m/s (with a viscosity of 10000 mPa.s)
Density	0.5…2.5 g/cm³ (selected by DIP switch) or 0.7…2.5 g/cm³
Fluid temperature	-50…+150 °C *(-58...+302 °F)*
Fluid pressure	-1…64 bar *(-14.51...+928.64 PSI)*
Measurement deviation[1]	
Hysteresis	Approx. 2 mm with vertical installation
Delay time / Frequency	Approx. 500 ms / Approx. 1200 Hz
Output	Double relay output or NAMUR output

[1] = "measurement bias" as defined in the standard JCGM 200:2012

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Electrical data - Sensor with relay output	
Output	Relay (DPDT), 2 floating spdts
Power supply	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)*)
Power consumption	1…8 VA (AC); approx. 1.3 W (DC)
Turn-on voltage	min.: 10 mV; max.: 253 V AC, 253 V DC
Switching current	min.: 10 mA; max.: 5 A (AC), 1 A (DC)
Switching capacity	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: 1 s
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_U 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)
Environment	
Ambient temperature	
Operating	-40…+70 °C *(-40...+158 °F)*
Storage	-40…+80 °C *(-40 ...+176 °F)*
Standards, directives and certifications	
Protection class	• IP66/IP67 with M20×1.5 gland mounted and tightened • II (relay output); II (NAMUR output)
Overvoltage category	III
Standards	
EMC	EN61326
Security	EN61010-1
ATEX[1)]	EN50014; EN50020; EN50284
NAMUR	IEC 60947-5-6 (EN 50227)
Specifications Ex	
Ⓔx - Protection	Categories 1/2G, 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...+85 °C *(-40...+185 °F)* (depend on categories)
Internal capacity Ci	negligible
Internal inductivity Li	negligible

[1)] **homologation certificate PTB 07 ATEX 2004X**

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Target applications with Type 8111

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 overfill 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 8111 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.

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

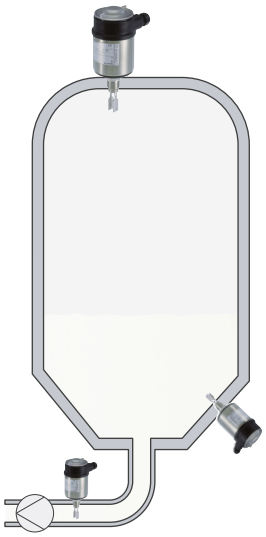
Advantages:
- high reproducibility

Chemical industry - reactors

Thanks to the manifold application possibilities, the Type 8111 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.

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 foodstuffs such as milk.

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

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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.

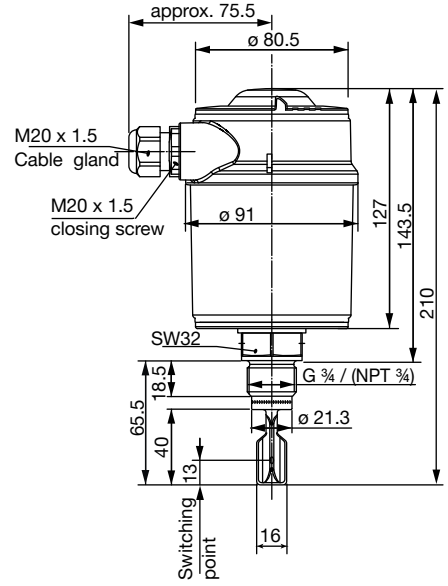
The integrated fault monitor detects the following faults:

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

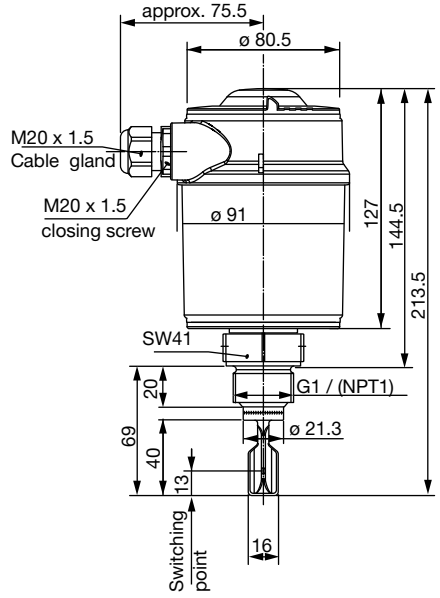
If one of these faults is detected or in case the power supply fails, the electronic system switches to a defined switching state, e.g. the output transistor is blocked (safe condition).

Dimensions [mm]

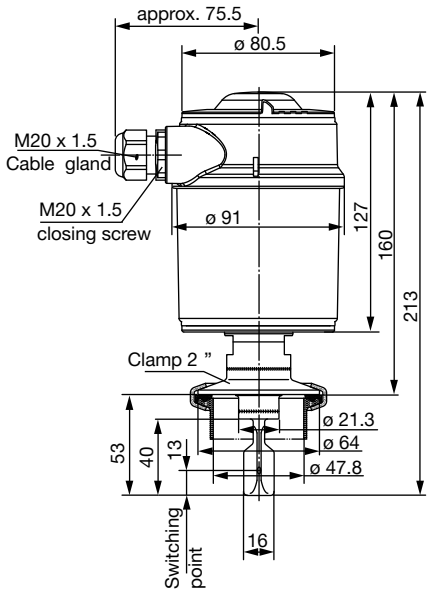
With G ¾" or NPT ¾" connection



With G 1" or NPT 1" connection



With Clamp 2" connection



Ordering chart for the 8111 vibrating level switch

Output	Power supply	Process connection	Electrical connection	Article no.
Double relay (DPDT) , 2 floating spdts	20…72 V DC / 20…250 V AC (5 A)	G ¾"	2 cable glands M20 × 1.5	558110
		NPT ¾"	2 cable glands M20 × 1.5	558111
		G 1"	2 cable glands M20 × 1.5	558112
		NPT 1"	2 cable glands M20 × 1.5	558113
		Clamp 2"	2 cable glands M20 × 1.5	558114
Namur signal - Ex version ATEX approval	8.2 V DC - via an intrinsic safety interface with NAMUR input	G ¾"	1 cable gland M20 × 1.5	558115
		G 1"	1 cable gland M20 × 1.5	558116

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

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 × 1.5	551782

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Customized 8111 level switch - request for quotation

Please fill in and send to your local Bürkert Sales Centre* 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:

Vibrating level switch 8111

Quantity: **Desired delivery date:**

Process fitting connection:

External thread	☐ G ¾"		☐ NPT ¾"	
	☐ G 1"		☐ NPT 1"	
Clamp	☐ 1"	☐ 1"½	☐ 2"	
Flange	☐ DN25	☐ DN40	☐ DN50	
DIN 11851	☐ DN25	☐ DN32	☐ DN40	☐ DN50
SMS 1145	☐ DN38	☐ DN51		

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

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

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