Vibrating level switch

- For universal use as overfill or dry run protection system
- Setup without adjustment
- Smallest mounting dimensions

Type 8110 can be combined with…

Type 2030
Diaphragm valve

Type 8644
Process actuation control system AirLINE

Type 2712
Globe control valve

Type 8619
multiCELL transmitter/controller

PLC

The 8110 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 small tuning fork (40 mm in length) can be used in vessels, tanks and pipes.

Due to the simple and rugged measuring system, the 8110 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 Tuning fork and fitting Process seal Housing	 Stainless steel 316L (1.4435) Klingersil® C 4400 Stainless steel 316L and plastic PEI
Weight	Approx. 250 g
Electrical connections	Cable plug acc. to EN 175301-803 or M12 × 1 male fixed connector
Process fitting	Thread G or NPT, ½", 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
Flow velocity	max. 6 m/s (with a viscosity of 10000 mPa.s)
Density	0.7…2.5 g/cm³
Fluid temperature	-40…+100 °C *(-40...+212 °F)* (150 °C *(302 °F)* for clamp process connection)
Fluid pressure	-1…64 bar *(-14.51...+928.64 PSI)*
Measurement deviation[1] Hysteresis Delay time / Frequency	 Approx. 2 mm with vertical installation Approx. 500 ms / Approx. 1200 Hz
Output	Transistor output PNP or contactless electronic switch

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

Further versions on request

- Clamp 1", 1½" connection
- DIN 11851 DN25, DN40, DN50 connection
- SMS 1145 DN38 connection
- Quick on connection (IP65)
- Ra < 0.8 µm for G or NPT threaded connection

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Electrical data - Sensor with PNP transistor output	
Power supply	10…35 V DC
Power consumption	max. 0.5 W
Load current	Max. 250 mA (output - overload and permanently short circuit proof)
Voltage loss	Max. 3 V DC
Turn-on voltage	Max. 34 V DC
Blocking current	< 10 µA
Mode	Min./max changeover by electrical connection Max.: overfill protection - Min.: dry run protection LED indication: green and red
Electrical data - Sensor with contactless electronic switch output	
Power supply	20…253 V AC, 50/60 Hz or 20…253 V DC
Domestic current requirement	Approx. 3 mA (via the load circuit) (Not with PLC)
Load current	Min. 10 mA - Max. 250 mA
Mode	Min./max changeover by electrical connection Max.: overfill protection - Min.: dry run protection
Environment	
Ambient temperature	
Operating	-40…+70 °C *(-40...+158 °F)*
Storage	-40…+80 °C *(-40 ...+176 °F)*
Standards, directives and certifications	
Protection class	IP65 with cable plug EN175301-803 mounted and tightened IP66/IP67 with M12 × 1 plug mounted
Standard	
EMC	EN 61326
Security	EN 61010-1

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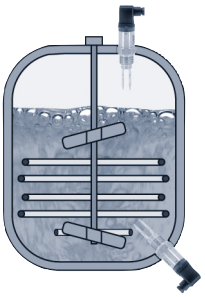
Target applications with Type 8110

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 8110 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



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Thanks to the manifold application possibilities, the Type 8110 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.

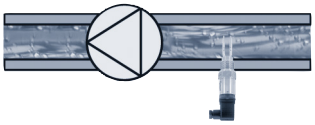
Advantages:
- various electrical versions
- product-independent
- completely gas-tight
- high reliability
- universal level detection for all liquids.

Water/sewage water plants

Chemicals are required for sewage water treatment. They are used for precipitation. Phosphate and nitrate are sedimented and 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 reproductibility

Pipelines



Level monitoring is also important in pipelines because dry running often causes pump damage or faults.
The Type 8110 level switch is recommended as dry run protection system, e.g. for drinking water pumps. With a fork of only 40 mm length, this level switch is very reliable - even for small diameters.

Advantages:
- universal level detection for all liquids
- adjustement and maintenance-free

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).

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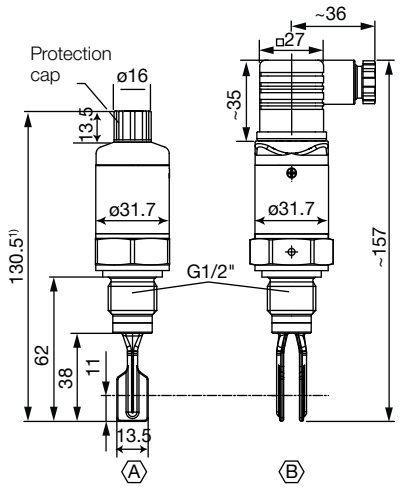
Installation

Inflowing material:
If the Type 8110 vibrating level switch is mounted in the filling stream, unwanted switching signals can be generated. Mount the switch at a location in the vessel where no disturbing influence from e.g. filling openings, agitators, etc, can occur.

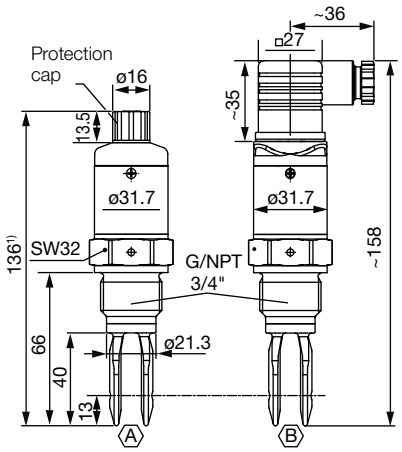
Flow:
If there is movement within the product, the tuning fork of the switch should be mounted in such a way that the surfaces of the fork are parallel to the product movement.

Dimensions [mm]

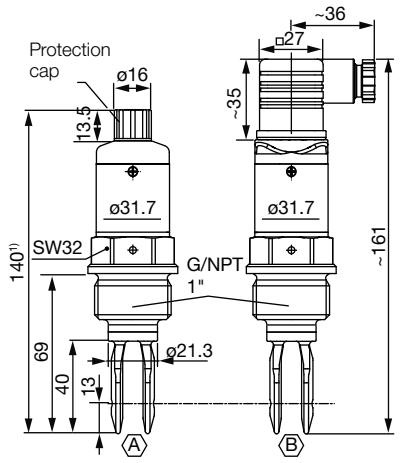
Thread G ½" or NPT ½"



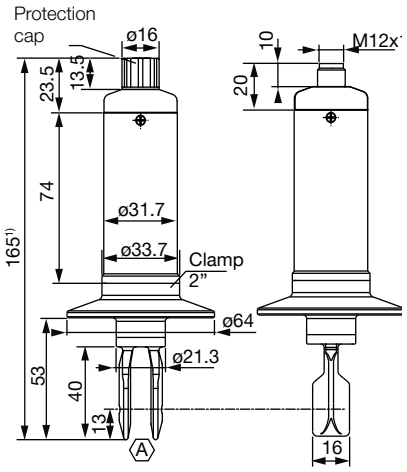
Thread G ¾" or NPT ¾"



Thread G 1" or NPT 1"



Clamp 2"



¹⁾ Keep in mind that the total length is increased by the cable connection

Ⓐ M12 × 1

Ⓑ Cable plug EN175301-803

Ordering chart for the vibrating level switch Type 8110

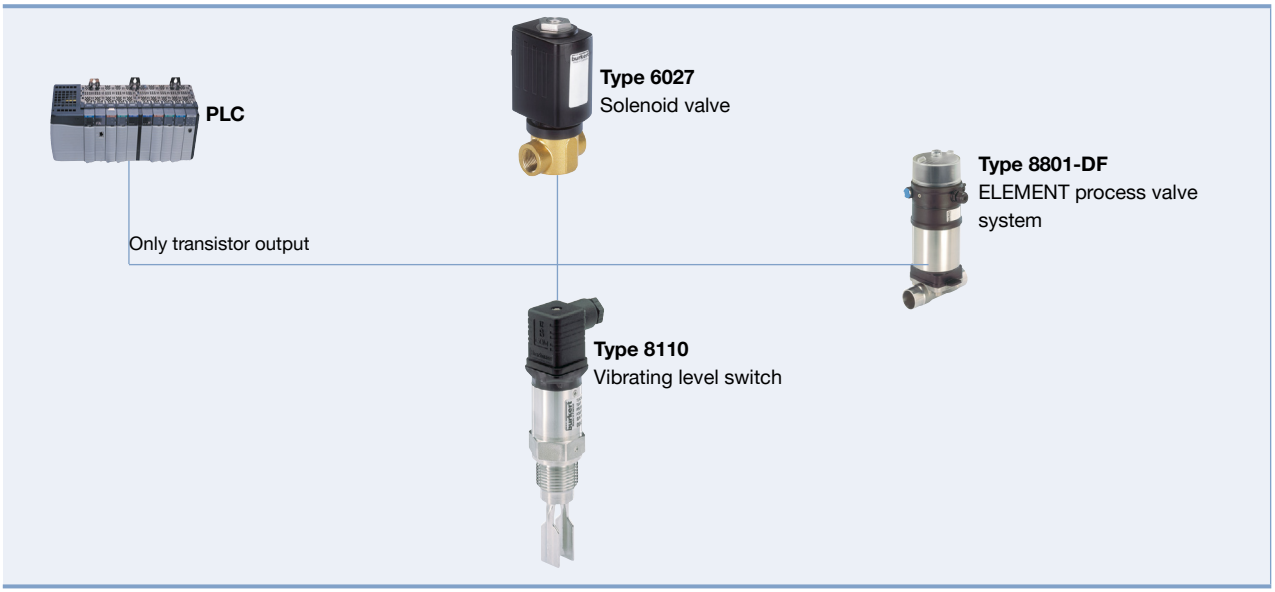
Output	Power supply	Process connection	Electrical connection	Article no.
Transistor PNP	10…35 V DC	G ½"	Cable plug EN 175301-803	563554
			Multipin M12×1	563474
		NPT ½"	Cable plug EN 175301-803	563556
			Multipin M12×1	563555
		G ¾"	Cable plug EN 175301-803	555291
			Multipin M12×1	555290
		NPT ¾"	Cable plug EN 175301-803	560986
			Multipin M12×1	557154
		G 1"	Cable plug EN 175301-803	555293
			Multipin M12×1	555292
		NPT 1"	Multipin M12×1	557155
		Clamp 2"	Multipin M12×1	555294
Contactless electronic switch (Not with PLC)	20…253 V AC, 50/60 Hz or 20…253 V DC	G ¾"	Cable plug EN 175301-803	555296
		G 1"	Cable plug EN 175301-803	555298

Other versions on request

Ordering chart for accessories for sensor Type 8110 (to be ordered separately)

Specifications	Article no.
5 pin M12 female connector moulded on cable (2 m, shielded)	438680
5 pin M12 female cable connector with plastic threaded locking ring	917116

Interconnection possibilities with other Bürkert devices



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bürkert

Customized sensor Type 8110 - 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 8110

Quantity: **Desired delivery date:**

Process fitting connection:

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

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

Electrical connection ☐ Cable plug EN175301-803 ☐ Multipin M12×1 ☐ Quick On

Output signal and power supply ☐ Transistor PNP and 10…35 V DC ☐ Contactless electronic and 20…253 V AC/DC

reset form

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

Subject to alteration.

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