

## Vibrating level switch



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

Type 8110 can be combined with...



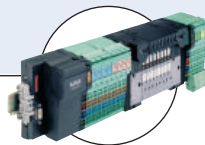
**Type 2030**

Diaphragm valve



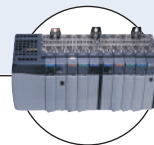
**Type 8802-GD**

ELEMENT globe control Valve system



**Type 8644**

Valve islands with electronic I/O



**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 overflow or dry run protection.

The small tuning fork (40 mm of length) allows the use 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 turbulences, air bubbles, foam generation, buildup or varying products.

### **i** Further versions on request

- Clamp 1", 1 1/2" 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

General data	
<b>Materials</b>	Stainless steel 316L (1.4435) Klingsil® C 4400/ Stainless steel 316L and plastic PEI
Tuning fork and fitting Process seal / Housing	
<b>Weight</b>	Approx. 250 g
<b>Electrical connections</b>	Cable plug acc. to EN 175301-803 or M12 x 1 male fixed connector
<b>Process fitting</b>	Thread G or NPT, 1/2", 3/4" or 1"; clamp 2"
<b>Surface finishing quality</b>	Ra < 3.2 µm (thread) / Ra < 0.8 µm (Clamp)
<b>Dynamic viscosity / Density</b>	0.1 to 10000 mPa.s / 0.7 to 2.5 g/cm <sup>3</sup>
<b>Medium temperature</b>	-40 to 100°C (150°C for Clamp process connection)
<b>Medium pressure</b>	-1 to 64 bar
<b>Accuracy</b>	
Hysteresis	Approx. 2 mm with vertical installation
Delay time / Frequency	Approx. 500 ms / Approx. 1200 Hz
<b>Output</b>	Transistor output PNP or contactless electronic switch
Electrical data - Sensor with PNP transistor output	
<b>Power supply / power consumption</b>	10-55 V DC / max. 0.5 W
<b>Load current</b>	Max. 250 mA (output - overload and permanently short circuit proof)
<b>Voltage loss</b>	Max. 1 V DC
<b>Turn-on voltage</b>	Max. 55 V DC
<b>Blocking current</b>	< 10 µA
<b>Mode</b>	Min./max changeover by electrical connection Max.: overflow protection - Min.: dry run protection LED indication: green and red
Electrical data - Sensor with contactless electronic switch output	
<b>Power supply</b>	20 to 253 V AC, 50/60 Hz or 20 to 253 V DC
<b>Domestic current requirement</b>	Approx. 3 mA (via the load circuit) (Not with PLC)
<b>Load current</b>	Min. 10 mA - Max. 250 mA
<b>Mode</b>	Min./max changeover by electrical connection Max.: overflow protection - Min.: dry run protection

Environment	
<b>Ambient temperature</b>	
Operating	-40 to +70°C
Storage	-40 to +80°C
Standards and approvals	
<b>Protection class</b>	
	IP65 with cable plug EN175301-803 mounted and tightened IP66/IP67 with M12 x 1, plug mounted
<b>Standard</b>	
EMC	EN 61326
Security	EN 61010-1

## Target applications with type 8110

### 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 overflow protection system, but a second, physically different measuring principle offers optimum safety and redundancy.

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.

### Water/sewage water plants



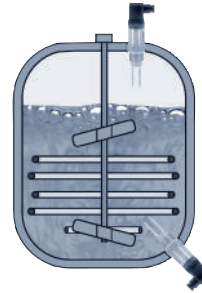
Chemicals are required for sewage water treatment. They are used for precipitation. Phosphate and nitrate are sedimented and separated. For the sludge treatment and neutralization, acids and solvents are stored apart from lime water and ferric chloride. These substances are subject to the regulations for water-endangering substances. Therefore overflow protection systems must be mounted on storage tanks.

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

Advantages:

- high reproductibility

### Chemical industry - reactors



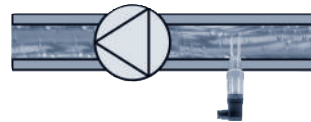
Thanks to the manifold application possibilities, the Type 8110 vibrating level switch is ideal for all applications concerning stock-keeping of liquids.

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.

### Pipelines



Monitoring of levels is also important in pipelines as dry running often causes damages or failure of the pumps.

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 functions reliably - even with small tube diameters.

Advantages:

- universal level detection for all liquids
- 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).

## Installation

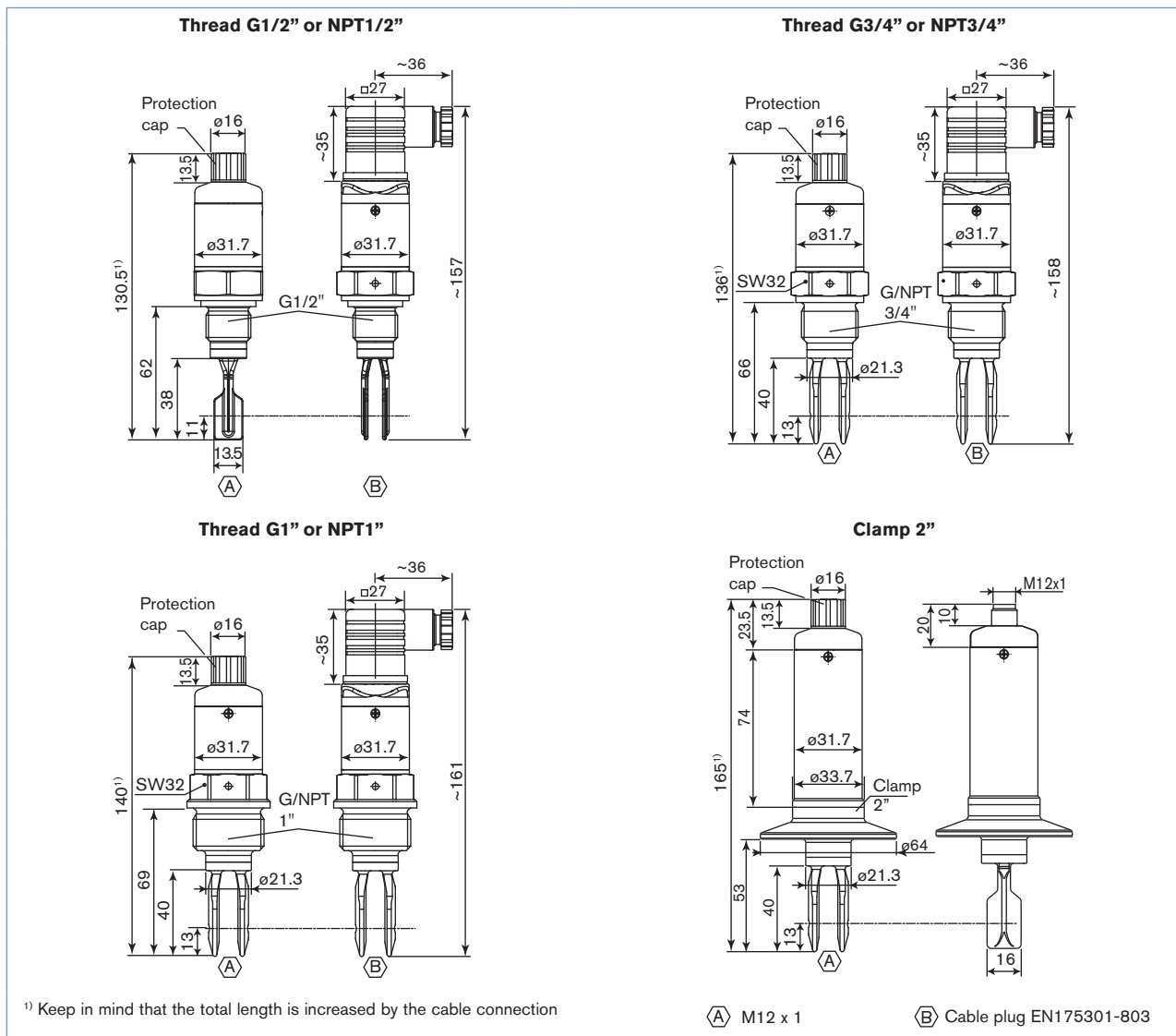
### Inflowing material:

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]



**Ordering chart for the vibrating level switch Type 8110**

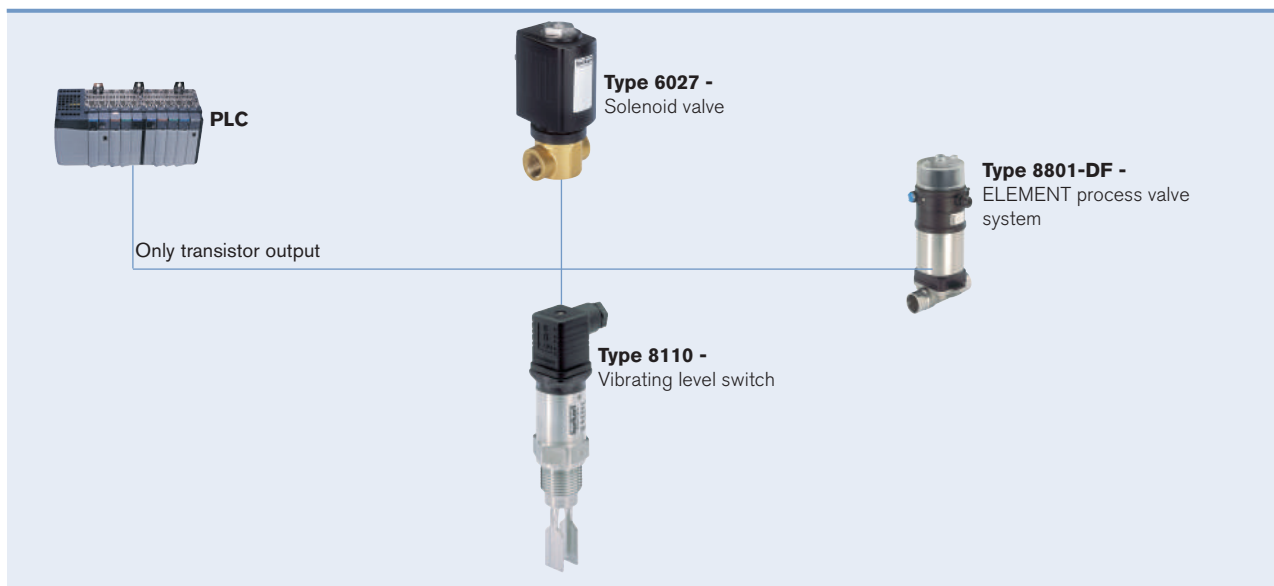
Output	Power supply	Process connection	Electrical connection	Item no.
Transistor PNP	10 - 55 V DC	G 1/2"	Cable plug EN 175301-803	563 554
			Multipin M12 x 1	563 474
		NPT 1/2"	Cable plug EN 175301-803	563 556
			Multipin M12 x 1	563 555
		G 3/4"	Cable plug EN 175301-803	555 291
			Multipin M12 x 1	555 290
		NPT 3/4"	Cable plug EN 175301-803	560 986
			Multipin M12 x 1	557 154
		G 1"	Cable plug EN 175301-803	555 293
			Multipin M12 x 1	555 292
Contactless electronic switch (Not with PLC)	20 - 253 V AC, 50/60 Hz or 20 -253 V DC	G 3/4"	Cable plug EN 175301-803	555 296
			Cable plug EN 175301-803	555 298
		G 1"	Cable plug EN 175301-803	555 298

Other versions on request

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

Specifications	Item no.
5 pin M 12 female connector moulded on cable (2 m, shielded)	438 680
5 pin M 12 female cable connector with plastic threaded locking ring	917 116

**Interconnection possibilities with other Bürkert devices**



**Customized sensor Type 8110 - 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 8110**  
Quantity:       Desired delivery date:

■ **Process fitting connection:**

<b>External thread</b>	<input type="checkbox"/> G 1/2"	<input type="checkbox"/> G 3/4"	<input type="checkbox"/> G 1"	<input type="checkbox"/> NPT 1/2"	<input type="checkbox"/> NPT 3/4"	<input type="checkbox"/> NPT 1"
<b>Clamp</b>	<input type="checkbox"/> 1"	<input type="checkbox"/> 1 1/2"	<input type="checkbox"/> 2"			
<b>DIN 11851</b>	<input type="checkbox"/> DN25	<input type="checkbox"/> DN40	<input type="checkbox"/> DN50			
<b>SMS 1145</b>	<input type="checkbox"/> DN38					

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

■ **Electrical connection**    Cable plug EN175301-803     Multipin M12 x 1                                       Quick On

■ **Output signal and power supply**     Transistor PNP and 10 - 55 V DC                                       Contactless electronic and 20 - 253 V AC/DC