Vibrating Level Switch - 8110

- Set up without adjustment
- Can be used in turbulence and difficult conditions
- Horizontal or Vertical mounting
- Universal use for over run or run dry protection
- Supplied with cable plug

Description:

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 of length) allows the use in vessels, tanks and pipes.
Due to the simple and rugged measuring system, it is virtually unaffected by the chemical and physical features of the liquid.
It works even under unfavourable conditions such as turbulences, air bubbles and foam generation,

General Applications:

Liquids
Pump Protection
Level measurement
Overfill
Dry run protection

Description
8110 – Level switch tuning fork in a compact stainless steel design. Simple to set up without adjustments, make this perfect for fitting into process environment's. The 40mm fork offers a clear reliable measurement.

Beschreibung
8110 - Niveauschalter-Stimmgabel in kompakter Edelstahl-Ausführung. Einfach einzurichten ohne Anpassungen, ideal für den Einbau in Prozessumgebungen. Die 40mm Gabel bietet eine klare und zuverlässige Messung.

Descripción
8110 - Horquilla de cambio de nivel en un diseño compacto de acero inoxidable. Simple de configurar sin ajustes, lo hacen perfecto para adaptarse a los entornos del proceso. La horquilla de 40 mm ofrece una medición clara y confiable.

La description
8110 - Interrupteur de niveau à diapason dans un design compact en acier inoxydable. Simple à mettre en place sans réglages, il est parfait pour s'adapter à un environnement de processus. La fourche de 40 mm offre une mesure claire et fiable.

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

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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

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.

Electrical Connections
¾" and 1"
Cable Plug or M12 Connector
Clamp M12 Connector

M12 5 pin cable connector female with plastic threaded locking ring
917116

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

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.

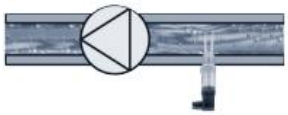
Advantages:
- various electrical versions
- product-independent
- completely gas-tight
- high reliability
- universal level detection for all liquids.

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

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 Storage	 -40…+70 °C *(-40...+158 °F)* -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 Security	 EN 61326 EN 61010-1

Ordering chart for the vibrating level switch Type 8110

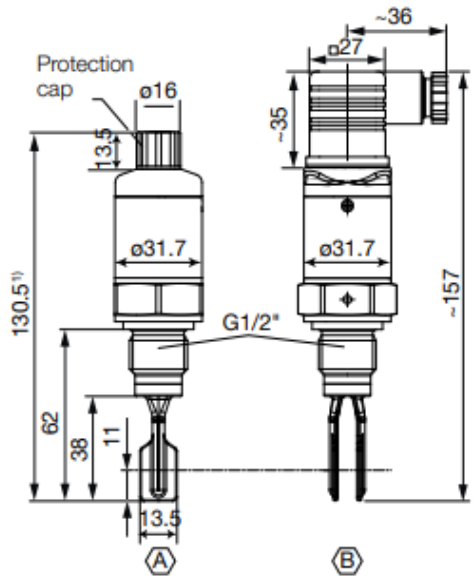
Output	Power supply	Process connection	Electrical connection	Article no.
Transistor PNP	10…35 V DC	G ½"	Cable plug EN 175301-803	563554
			Multipin M12 × 1	563474
		NPT ½"	Cable plug EN 175301-803	563556
			Multipin M12 × 1	563555
		G ¾"	Cable plug EN 175301-803	555291
			Multipin M12 × 1	555290
		NPT 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

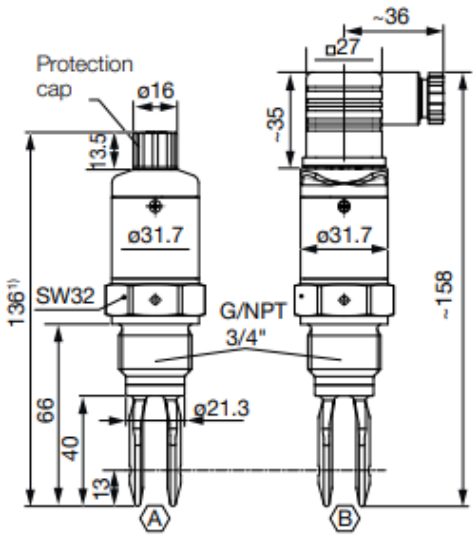
Ordering chart for accessories for sensor Type 8110 (to be ordered separately)

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

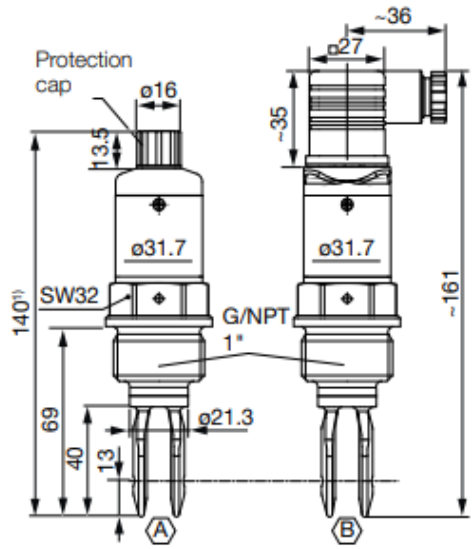
Thread G ½" or NPT ½"



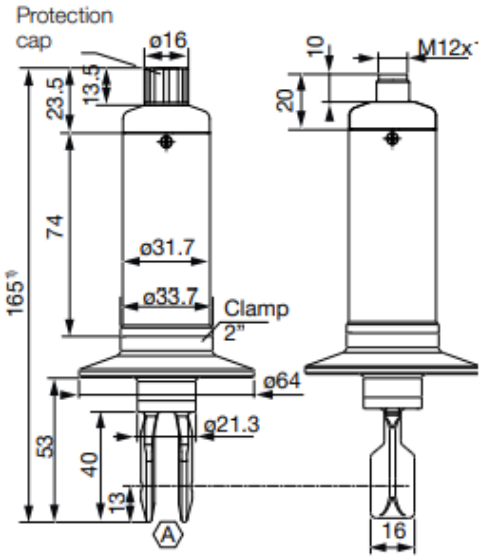
Thread G ¾" or NPT ¾"



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

½" Cable plug EN 175301-803	563554
½" Multipin M12×1	563474
G ¾" Cable plug EN 175301-803	555291
G ¾" Multipin M12×1	555290
G 1" Cable plug EN 175301-803	555293
Multipin M12×1	555292
Clamp 2" Multipin M12×1	555294