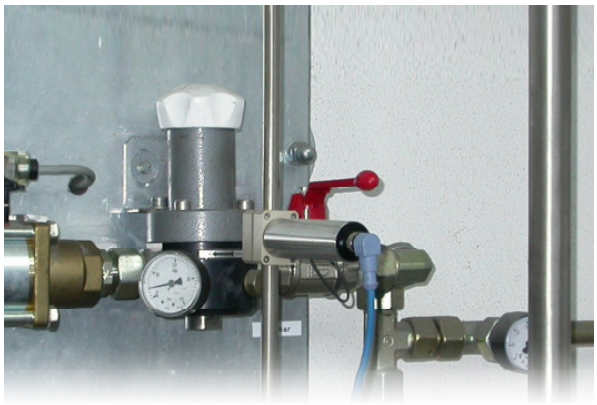
LIMIT SWITCH FOR LIQUIDS AT SMALL DIAMETER PIPES

contactless
easy to use
adjustable

ULTRASONIC SENSING



SONOCONTROL 15

short response time
safe
cost-effective

SONOTEC

SONOCONTROL 15

LIMIT SWITCH FOR LIQUIDS

With the new ultrasonic pipe detector it is possible to detect easily if a pipeline is full or empty. Filling the pipeline with the liquid causes the reliable switching.

The advantages

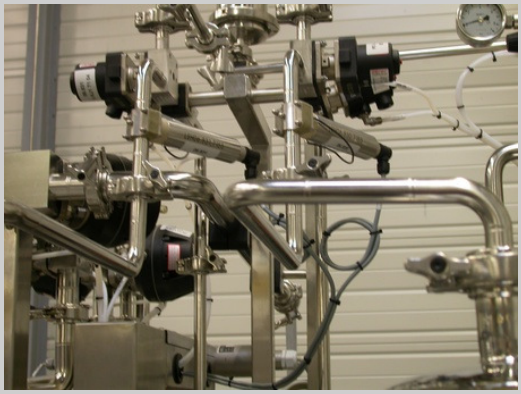
- Easy installation; the sensor is mounted from the outside of the pipe.
- No downtime or process interruption needed for detector installation.
- Short response time.
- No wear and tear.
- No moving parts.
- Optionally possible for the use in hazardous areas.
- Quick start-up of the equipment:
  1. Installation
  2. Self-programmable sensor
  3. Sensor is ready for operation.

  The self-programmable function can be re-peated at each start-up.

Application Example

Detection of empty / full pipeline
at small diameter pipes

The sensor is mounted sideways at the pipe. In this position it will be distinguished between liquid and gas. The detection point has to be set up on the vertical pipe in order to make sure that the switching function is working optimally.



SONOCONTROL 15 with cable

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DIN EN ISO 9001: 2000 TÜV Cert

Technical data

Type of instrument	Two-wire-detector as empty/ full limit switch at pipes with small nominal diameters for the detection of liquids and for pump protection
Construction of sensor	Compact sensor
Measuring principle	Ultrasound through the pipe wall, no contact of sensor with the liquid, for mounting the sensor no structural changes at the pipes are required
Mounting	Hazardous area: At the pipe (clamp in 3 different sizes or mounting plate (size 4), each with coupling glue) Non-hazardous area: With PVDF-clamp
Material of the pipe	Steel, stainless steel, plastic, glass Outside metallic polished or lacquer Size 1 10...27 mm Size 2 > 27...38 mm Size 3 > 38...50 mm Size 4 > 50...65 mm
Liquid	Water or water like liquids
Temperature range	Pipe temperature: -40 °C ... 140 °C Ambient temperature: -40 °C ... 80 °C Storage temperature: -40 °C ... 85 °C
Power supply	Standard: 12 - 40 VDC/ EX-Type: 12-33-VDC, max. 22 mA, max., max. ripple 5% peak value maximum St:40V / Ex:33V
Output	Condition is represented by the current draw of the sensor. 2 LED indicators are inside the housing LED - green: power on Power ON: LED on Power OFF or error: LED off LED - yellow: switch condition „full“: LED on, current 16 mA ± 2% „empty“: LED off, current 8 mA ± 2% „error“: LED off, current ca. 22 mA response time: 0.5 s
Connections	4-pole M12 connection (2 contacts connected)
Protection	IP 67, waterproof and oil resistant
Ex-protection (optionally)	II 2 G EEx ib IIC T6
Housing	Stainless steel and plastics (PEEK), L = 131 mm, Ø = 30 mm without mounting
Maintenance	Maintenance-free

Order codes

order number	description	
	SONOCONTROL 15	
	normal version	
	size	pipe diameter (outside)
200 01 0163	1	ø 10 mm – 23 mm
200 01 0164	2	ø >23 mm – 36 mm
200 01 0165	3	ø >36 mm – 54 mm
	version for hazardous areas	
	size	pipe diameter (outside)
200 01 0052	1	ø 10 mm – 27 mm
200 01 0053	2	ø >27 mm – 38 mm
200 01 0054	3	ø >38 mm – 50 mm
200 01 0102	4	ø >50 mm – 65 mm

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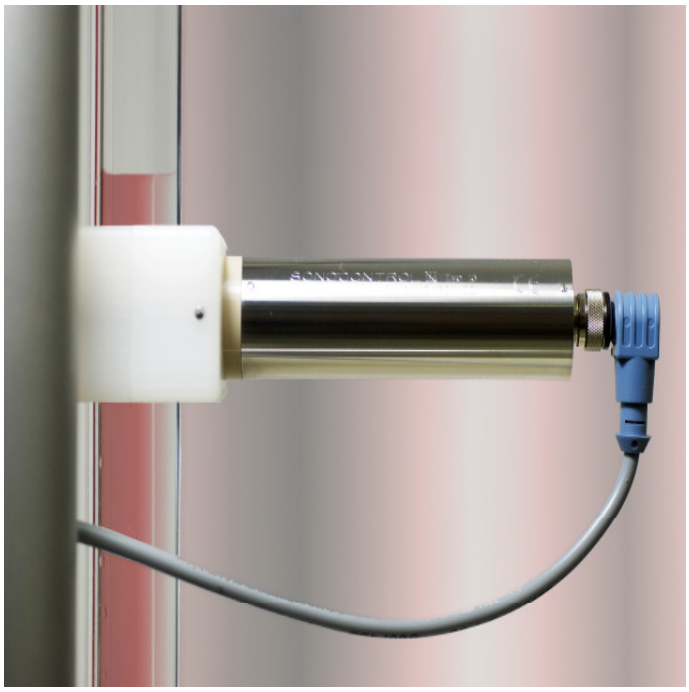
Technical Datasheet

Ultrasonic Limit Switch **SONOCONTROL 15**

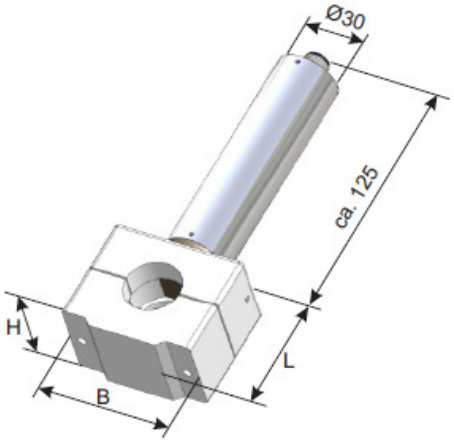


Note: This Datasheet explains the standard version of the sensor. For applications in hazardous areas the SONOCONTROL 15 is also available in a different configuration.

System	**SONOCONTROL 15**
Function	Non-intrusive full/empty limit switch at pipes with smaller nominal diameters (DN8 ... DN50) Application examples: • Low level control in chromatography plant systems (HPLC) • Protection against dry running for ultrapure / deionized water supply • Overflow indication at ultrafiltration systems
Measuring principle	Ultrasound through the pipe wall, detected is the complete filling with liquids in the sensor axis; no direct contact between sensor and liquids; no need for constructional changes mounting the sensor at the pipe
Material of the sensor	Stainless steel 1.4301, PEEK
Mounting	PVDF-clamp
Liquids	Water and watery liquids; liquids of low viscosity; Less suitable for: emulsions, dispersions, suspensions, liquids with a lot of bubbles or solids
Material of the pipe	Steel, Stainless steel, plastics, glass, ceramics
Coatings of the pipe	Without coating, galvanized, lacquering, plastic coating, and the like
Teach-in	The sensor takes the characteristics of the pipe in the empty and in the filled condition (in this order), triggered by an operating magnet.

Mounting at the pipe / dimensions

Together with a coupling putty the sensor is mounted laterally at the pipe.
The fastening element consists of two parts. Together with the coupling putty, the sensor forms a complex connection around the pipe.



The sensor is available in 3 sizes, which correspond to the different outer pipe diameters. The pipe clamp is delivered in a customized version adapted to the outer pipe diameter (when ordering quote the exact diameter). The given dimension L_{max} applies for the corresponding maximum possible pipe diameter.

Size	Order codes	Outer pipe diameter	Dimensions of the PVDF-fastening element L_{max} x W x H
1	200 01 0163	10 mm ... 23 mm	50 x 40 x 42 mm
2	200 01 0164	>23 mm ... 36 mm	65 x 40 x 58 mm
3	200 01 0165	>36 mm ... 54 mm	80 x 40 x 77 mm

Temperature range

Storage temperature: -40° ... 85°C
Pipe temperature: -40° ... 140°C
Ambient temperature: -40° ... 80°C
(the acceptable pipe temperature and ambient temperature are interdependent)

Time response / switching delay

Full → empty: 500ms
Empty → full: 500ms

Connection / power supply

4-pole M12 sensor connector (2 contacts connected)
Direct current 12-40V,
Ripple max. 5 % (peak value: min. 12V, max. 40V)

Output / switching display

2-wire system (4...20mA concept)
The switching status is represented by the current consumption of the sensor. There is no additional switching output.
Current consumption: empty: 8mA ± 2%
full: 16mA ± 2%
error: approx. 22mA
failed teach-in: approx. 0,2mA
Display: 2 LED (operating state, switching status)

Accessories

Sensor connector M12x1 (cable length 5m)

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