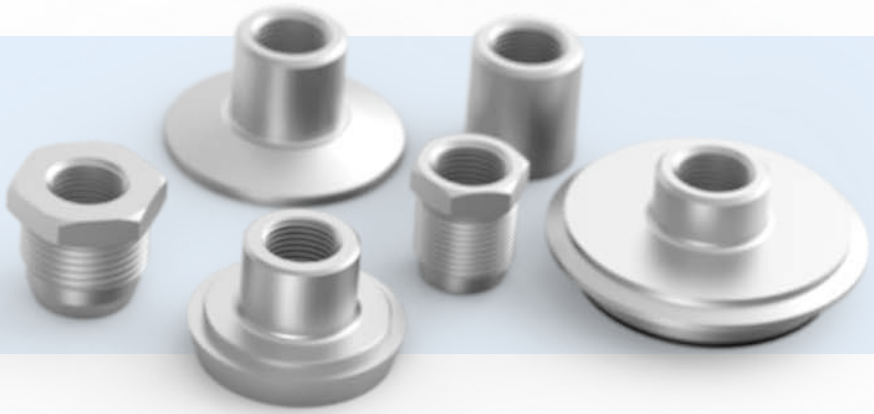
Ultrasonic level switches SonarFox® USG series

NEW



Advantages – your benefits

- Piggable pipes: limit switch without interfering contours
- Effective cleaning cycles in hygienic processes: Suitable for CIP and SIP
- Extremely short response time of 0.02 seconds
- Easy conversion of existing measuring points via modular process connections
- Suitable for many applications: Independent of the conductivity of the liquid
- Process reliability: Versions with additional status output for continuous function monitoring

Function principle

The SonarFox® USG series level switches use the physical properties of ultrasonic waves to determine the limit level. An ultrasonic wave is emitted which creates a characteristic "signature" when it passes through materials. This signature indicates whether the ultrasonic waves have passed through air or liquid. Type, density and temperature of the medium have no effect on the measurement. Installations in the tank or the pipe do not affect the measurement.

SonarFox® USG operates independently of density and temperature and can be used for all liquids with a maximum dynamic viscosity of 10,000 mPa • s.

Overview of SonarFox® USG versions – installation situation

Ultrasonic level switch SonarFox® USG 20

- **Piggable: Flush installation without interfering contours for optimum cleaning results**
- **Also suitable for small pipe cross sections**
- **Modular process connection concept for application diversity**
- **No wearing parts**

Application

Ideal for applications in which vibration level switches cannot be used due to the interfering contour "vibration fork" (pipe cross section, cleaning method) and float switches cannot be used because of flow, turbulence or formation of deposits. Particularly suited for small pipe diameters or as an overflow alarm or for dry-run protection. Due to flush installation, the device is ideal for hygienic processes, cleaning methods using pigging and efficient CIP and SIP cycles.

Description

The level switch SonarFox® USG 20 is flush with the inside wall of the tank or the pipe. Compared to vibration level switches, USG 20 is piggable so that it can also be used as a measuring point in systems with CIP or SIP.
USG 20 is connected via a threaded connection G½. The modular adapter concept allows for adaptation to the measuring point via the screwed connection and a great variety of process connections (such as G¾, G1, Tri-Clamp, dairy fitting or VARIVENT) or a weld-in socket. Compatible mechanical and electrical connections enable easy retrofitting and replacement of vibration forks.

Technical specifications

Density of medium
Independent of density

Dynamic viscosity of the medium
Max. 10,000 mPa • s

Operating temperature range
Wetted parts
can be cleaned up to 150 °C (60 min)
Medium: -20/+100 °C
Ambient: -20/+60 °C

Process pressure
10 bar

Process connection
G½
See accessories table for available adapters

Housing
Stainless steel 304 (1.4301)
Process connection: stainless steel 316 L (1.4435)
Sensor surface: PEEK

Supply voltage
DC 12–28 V

Power input
< 1 W

Output
ISO 4400 active DC (max. 1 A)
(active if "Wetted/Dry", selectable via connection)
M 12 x 1, 4-pin
1 x wetted active DC (max. 1 A)
1 x dry active DC (max. 1 A)
M 12 x 1, 8-pin
2 x voltage-free changeover contact
(max. 0.5 A/30 V)

Switching delay
After transition "Dry > Liquid": 0.02 s
After transition "Liquid > Dry": 0.02 s

Switching point
At 50 % wetted

Switching hysteresis
Approx. 2 mm
Maximum switching frequency 1 Hz

Function test
With test magnet for simulation
of the switching signal

Electrical connection
Connector and junction box as per ISO 4400
(DIN 43650-A) IP 65 or M 12 x 1 (IP 67)
4-pin/8-pin

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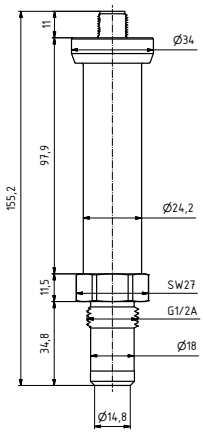
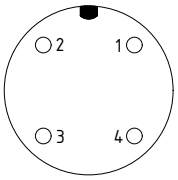
Housing types and dimensions (mm)

USG 20-1/-2

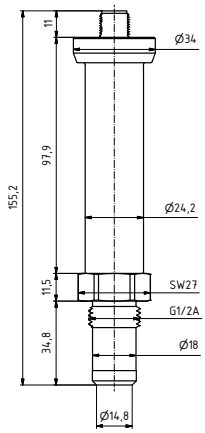


Wiring diagram USG 20-1, USG 21-1

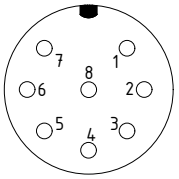


① +24 V
② Active if "Dry"
③ GND
④ Active if "Wetted"

USG 20-1/-2, USG 21-1/-2

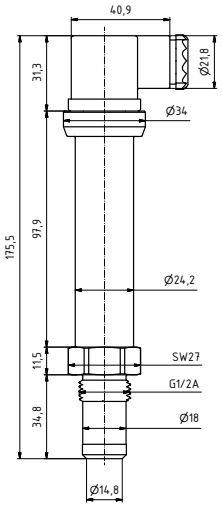


Wiring diagram USG 20-2

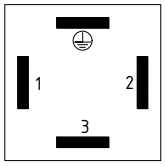


① Output "Dry"
② COM "Dry/Wetted"
③ Output "Wetted"
④ +24 V
⑤ Output self-test "OK"
⑥ COM self-test
⑦ Output self-test "Error"
⑧ GND

USG 20-3, USG 21-3



Wiring diagram USG 20-3

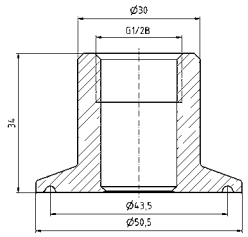
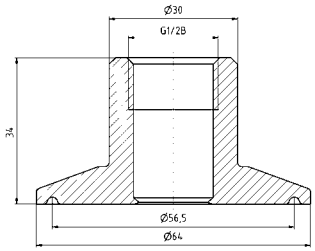
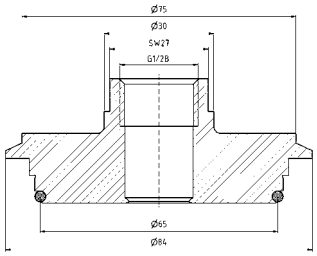
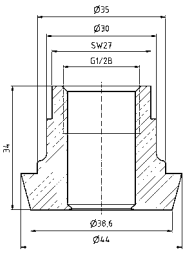
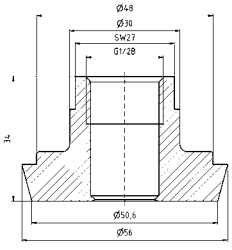
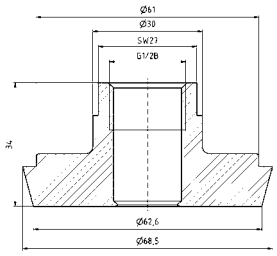


① GND
② Active if "Dry"
③ +24 V

① GND
② +24 V
③ Active if "Wetted"

Ultrasonic level switch SonarFox® USG 20

NEW

Accessories	Process adapter USG 20 G½ to ...	PG	Part no.	Price €
	Tri-Clamp 1", stainless steel 316 L (1.4404)	3	56193	
	Tri-Clamp 2", stainless steel 316 L (1.4404)	3	56194	
	VARIVENT®, stainless steel 316 L (1.4404)	3	56196	
	Dairy fitting as per DIN 11851, stainless steel 316 L (1.4404), nominal diameter DN 25	3	56197	
	Dairy fitting as per DIN 11851, stainless steel 316 L (1.4404), nominal diameter DN 40	3	56198	
	Dairy fitting as per DIN 11851, stainless steel 316 L (1.4404), nominal diameter DN 50	3	56199	
	Other process adapters			**On request**

Blue part no. = in-stock items

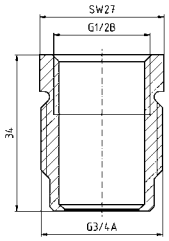
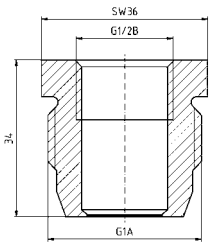
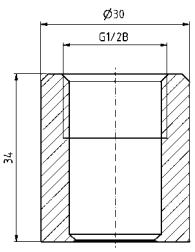
Ultrasonic level switch SonarFox® USG 20

NEW

DG: H, PG: 4

Type	USG 20-1	USG 20-2	USG 20-3
Version			
Process connection	G½	G½	G½
Supply voltage	DC 12–28 V	DC 12–28 V	DC 12–28 V
Output	1 x "Wetted" active DC (max. 1 A) 1 x "Dry" active DC (max. 1 A)	2 x voltage-free contact changeover contact (max. 0.5 A/30 V)	ISO 4400 active DC (max. 1 A) (active if "Wetted/Dry", selectable via connection)
Electrical connection	M 12 x 1, 4-pin	M 12 x 1, 8-pin	Connector and junction box as per ISO 4400
Price €			
Part no.	56180	56181	56182

Blue part no. = in-stock items

Accessories	Process adapter USG 20 G½ to ...	PG	Part no.	Price €
	G¾, stainless steel 316 L (1.4404)	3	**56190**	
	G1, stainless steel 316 L (1.4404)	3	**56191**	
	Weld-in socket, stainless steel 316 L (1.4404)	3	**56192**	

Blue part no. = in-stock items