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Ultrasonic fuel level sensor 2UF...

+ Contactless fluid level measurement
+ Space-saving design
+ No moving parts
+ High reliability and long service life thanks to contactless ultrasonic technology
+ Available with and without focus tube
+ Analogue current/voltage output signal
+ Suitable for the harshest of environments due to its IP67 protection class
+ Extreme operating temperature range from -40° to +105°C
+ EMC resistance in accordance with DIN EN 13309, ISO 13766, DIN EN 1498

Use

The ultrasonic fuel level sensor was specially developed for use in diesel and biodiesel, but can also be used in many other media. Due to its wear-free transmitter / receiver principle, this sensor has a long service life. It can also be used in harsh environmental conditions thanks to its IP67 protection class. With installation lengths of up to 1,200 mm, this fuel level sensor is suitable for applications with large fuel capacities. The ultrasonic fuel level sensor is mounted in the tank from above meaning the measurement takes place on the fluid through the air.

Variants

For applications in vehicles, the version with fluid offers the best performance. The focus tube prevents the signal from being negatively influenced by unsettled media surfaces. Furthermore, the focus tube also increases the maximum achievable measurement length. For applications in level and stationary containers, the sensor can be used without a focus tube meaning no contact with the medium is necessary. For convenient sealing of the flange against the tank, a suitable flat seal or O-ring seal is available.

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Fluid level measurement with ultrasound

The 2UF… level sensor is based on ultrasonic technology. Ultrasonic waves are emitted and reflected by the surface of the medium that is to be measured. These reflected ultrasonic waves are detected by the sensor. The time that elapses between transmission and reception is then determined which allows the distance between sensor and media surface to be calculated. The measurement of the fluid level using ultrasound is one of so-called transit-time methods.

The ultrasonic waves spread in a conical shape. As the slope relative to vertical increases, the strength of the received ultrasonic waves decreases. By using a focus tube, the sound waves are guided and this effect reduced. Moreover, the speed of sound is dependent on the temperature, i.e., extreme temperatures reduce the measurement range in which a good measurement result can be achieved.

Near the sensor there is a dead zone in which no measurement can be performed. This area, referred to as a blind zone, occurs because the sensor is still in transmit mode when the reflected ultrasonic waves are received.

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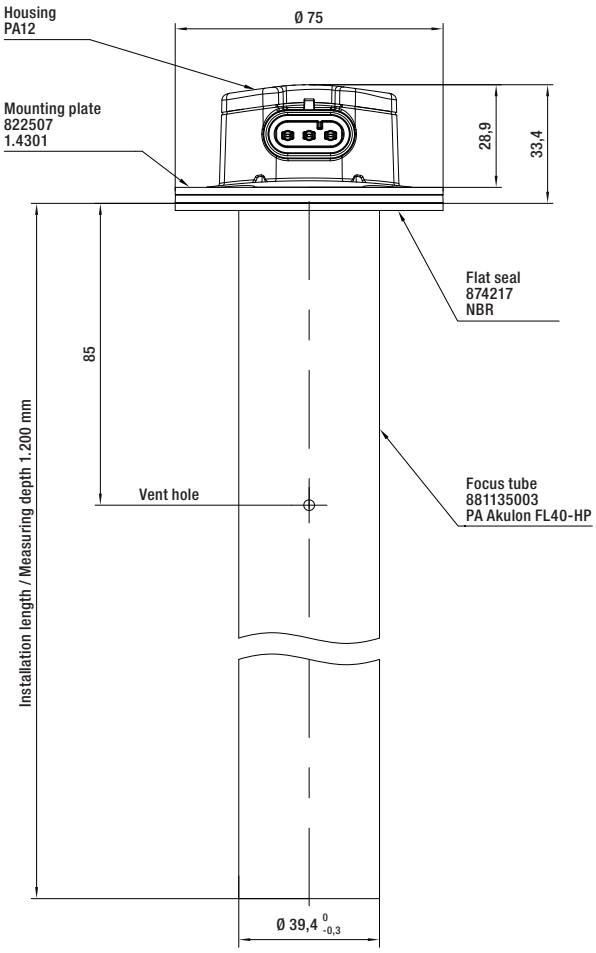
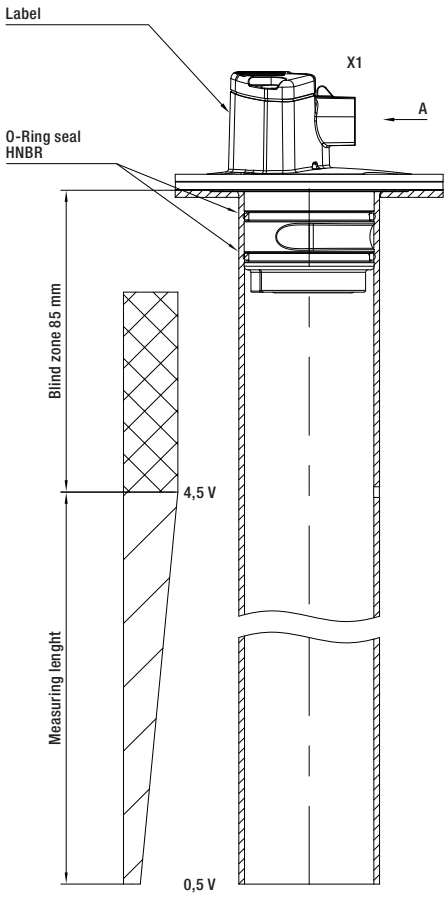
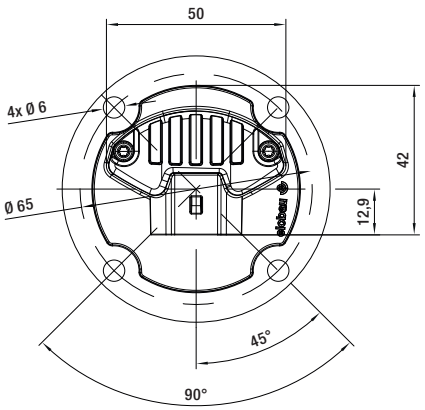
Mechanical assembly

Version with focus tube 2UF1.....01.A00







Connector
View "A"

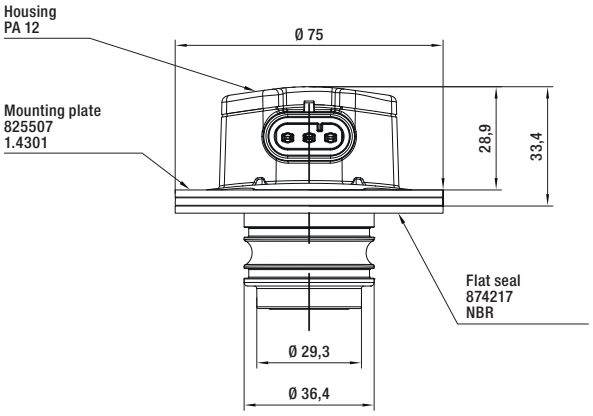
AMP Superseal 1.5 Series
Housing 282105-1
Terminal 282105-1
Rubber seal 281934-2

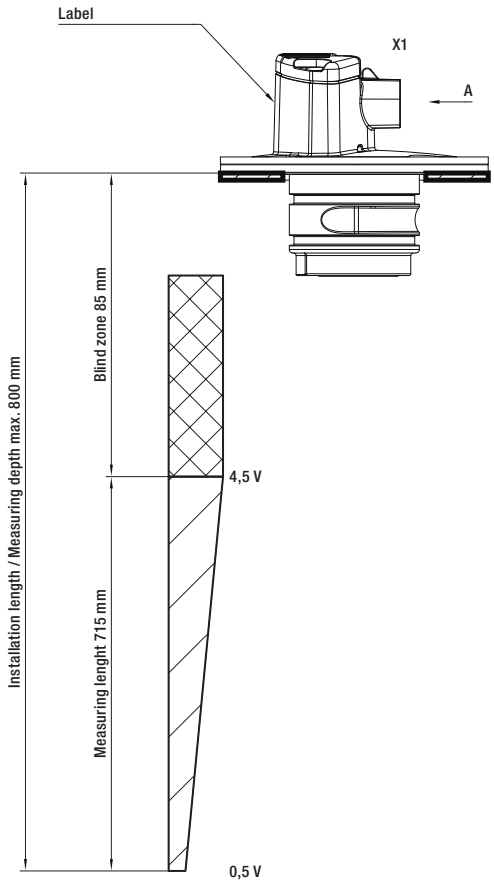
Connector X1

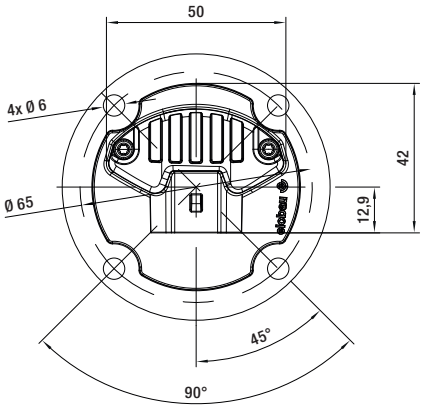
PIN	Function
1	UB
2	Signal
3	GND

Mechanical assembly

Version without focus tube 2UF1.....01.A00







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Installation dimensions

Assembly type	Installation from above
Mounting	4 x 6 mm through-hole VA mounting plate (included standard)
Max. tightening torque	2 Nm (tighten screws crosswise)
Bolt circle	65 mm
Recommended mounting opening	Ø 39.9 mm with 4 x 45° phase (Phase only necessary with O-ring seal)
Diameter of focus tube	Approx. 39.4 mm
Head height without seal	Approx. 34 mm
Total diameter	75 mm
Seal	O-ring NBR 70 O-ring FKM 70 Flat seal FKM 70 Flat seal NBR 70 (included standard)
Connection	AMP Superseal, 1.5 3-pin

Key electrical data

Operating voltage	8…36 V
Current consumption	Approx. 20 mA (plus output current)
Output	0.5 V…4.5 V; 4 mA…20 mA

Key mechanical data

Working temperature range	-40…+105°C
Storage temperature range	-40…+105°C
Protection class	Upper housing part: IP 67 DIN EN 60529 / IPX9K acc. to ISO 20653
EMC resistance	DIN EN 13309 ISO 13766 DIN EN 14982

Other technical data

Measurement accuracy	± 8 mm
Resolution	1 mm
Repeating accuracy	± 2 mm
Measurement length from sealing surface	85…1,200 mm with focus tube
Blind zone from sealing surface	85 mm (other values on request)
Place of installation	Max. measurement angle to medium surface 10°
Output signal	Averaged over 20 seconds (other times on request)
Operating frequency	Approx. 135 kHz
Reverse connection protected	Yes

Installation lengths dependent on incline and temperature

Maximum installation lengths with focus tube

	Total operating temperature range -40°…+105°C	Limited operating temperature range -40°...+85°C	Ideal operating temperature range 0°…+55°C
0° incline	1,200 mm	1,500 mm	1,800 mm
5° incline	900 mm	1,100 mm	1,250 mm
10° incline	500 mm	600 mm	700 mm

Maximum installation length without focus tube

	Total operating temperature range -40°…+105°C	Limited operating temperature range -40°...+85°C	Ideal operating temperature range 0°…+55°C
0° to 5° incline	800 mm	1,000 mm	1,100 mm
10° incline	150 mm	200 mm	300 mm

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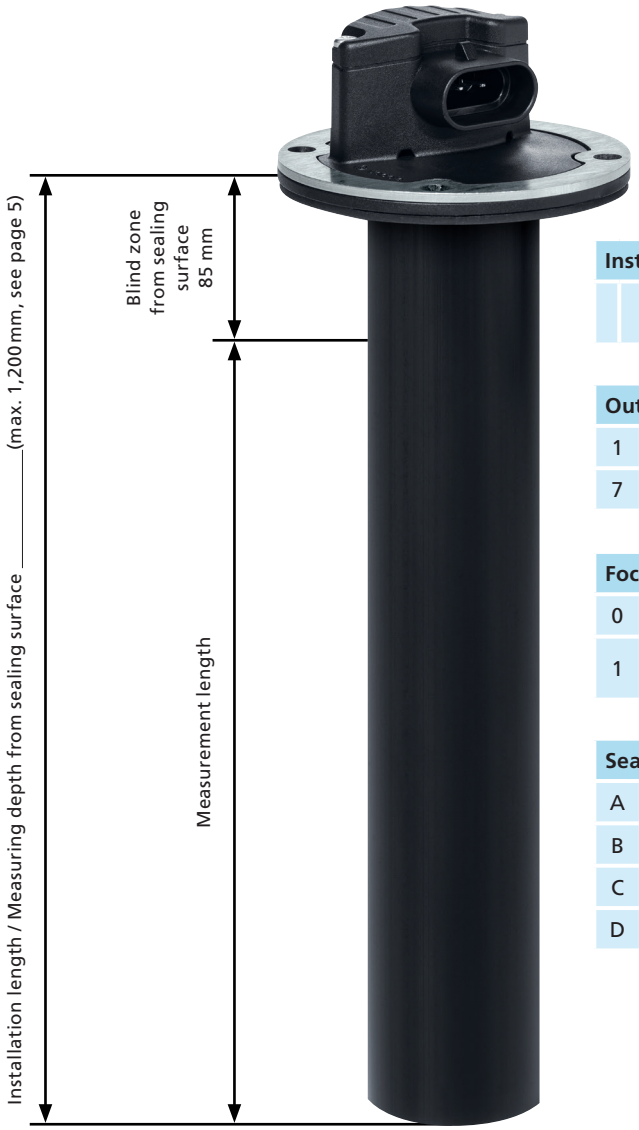
Specification of your ultrasonic fuel level sensor



2UF1 [ ][ ][ ][ ][ ] 0 [ ][ ] A00

Installation length from sealing surface	
[ ][ ][ ][ ]	Installation length from sealing surface in mm

Output signal	
1	Current output 4 mA…20 mA
7	Voltage output 0.5 V…4.5 V

Focus tube	
0	Without focus tube
1	With focus tube, material PA 6, Akulon Fuel Lock

Sealing type	
A	Flat seal material NBR
B	Flat seal material FKM
C	O-ring material NBR
D	O-ring material FKM

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Your product inquiry

Quantity _____ **Batch size** _____

Name _____

Company _____

Address _____

Postal code/town _____

Country _____

✆ _____

✆ _____

E-Mail _____

Notes, questions, other