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Hydro-Füll

Hydrostatic Level Transmitter with integrated aerator connection

with measuring pipe

with hose connection

ATTENTION

Safety Instructions ✓

- Installation, start-up and maintenance work may only be performed by trained personnel!
- Isolate the unit prior commencing installation/ maintenance work.
- The device may only be connected to the supply voltage specified in the technical data!
- Operate only under the conditions defined in the operating instructions!

Functional Description

The HYDRO-FÜLL hydrostatic level transmitter functions in accordance with the head-pressure principle, i.e. the current fill level is derived from hydrostatic pressure within a measuring pipe which has been submersed into a liquid.

Applications Limitations

Because it functions in accordance with the head-pressure principle, the HYDRO-FÜLL hydrostatic level transmitter is not fully suited for media with greatly fluctuating densities: fill level can only be derived based upon mean density in such cases.

For media with large temperature fluctuations or for media which liberate gases (e.g. hydrochloric acid) the hydrostatic level transmitter should be connected to an automatic blower.

The ventilation connection could be connected to the hose connection, e.g. PVC-hose Ø 4x1 mm. The pressure of the purge air may not exceed 2.5 bar.

Technical Data

Power Supply

- 12 to 28 V DC, max 5% residual ripple

Ambient Temperature

- -15 to +60° C

Medium temperature

- PVC: 0 ... +60 °C
- PP: 0 ... +90 °C

Output Signal

- 4 ... 20 mA

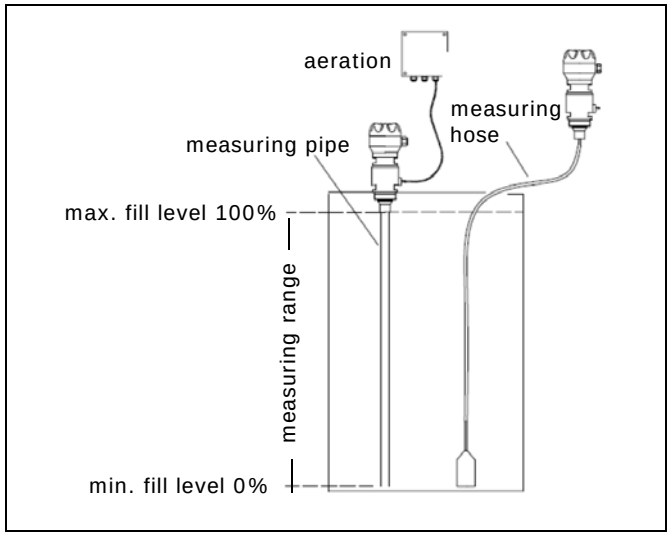
Connector Cable

- Min. conductor cross-section: 0.5 mm², shielded
- Observe max. allowable load! See diagram.

Terminal housing

- PBT, fiber glass reinforced, IP 65 acc. EN 60 529

Mechanical Installation



Various methods can be used to install the hydrostatic level transmitter to containers and tanks:

- Measuring pipe submersed into the tank from above
- Measuring hose submersed into the tank from above, terminal housing installed in the proximity of the tank

NOTE

Consider please! ✓

The lower end of the measuring pipe or hose determines the 0% level measuring point = 4 mA output signal.

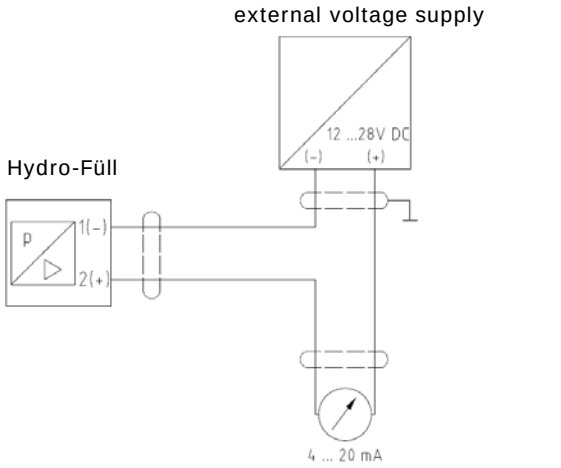
Maintenance

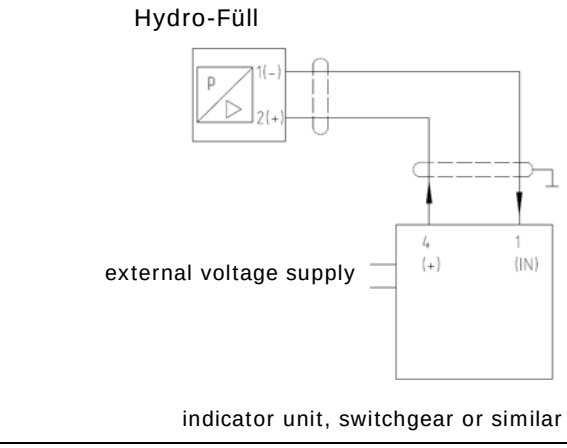
If used for its intended purpose, the hydrostatic level transmitter is maintenance-free.

NOTE

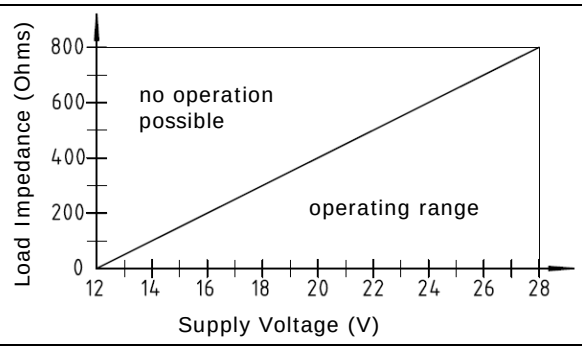
If used with highly adhesive liquids (e.g. lime slurry), the measuring pipe or hose must be inspected at regular intervals and cleaned if necessary. ✓

Electrical Connection





Load as Related to Supply Voltage



NOTE

Load is the sum of all resistors within the measuring circuit. ✓

Start-Up

All hydrostatic level transmitters are preset at the factory to the measuring cell nominal value. DIP switch S1 = ON 100% fill level

- 0 % fill level = 4 mA
- 100 % fill level = 20 mA

The zero point and the max. value must always be examined during initial start-up and readjusted to the desired measuring range if necessary. It is advantageous to adjust with the original liquid.

Procedure

1. Electrical connection acc. connection diagram

2. Preset of the measuring range:

100 % fill level range (m water column) lies in the range		
measuring cell Type 1	measuring cell Type 2	DIP switch setting
(1000 mm WS)	(2500 mm WS)	
0,20 – 0,30	0,4 – 0,7 m	DIP 6 = ON
0.20 – 0,45	0,5 – 1,1 m	DIP 5 = ON
0,25 – 0,55	0,7 – 1,4 m	DIP 4 = ON
0,35 – 0,80	0,8 – 2,0 m	DIP 3 = ON
0,55 – 1,0	1,4 – 2,5 m	DIP 2 = ON
0,65 – 1,0	1,6 – 2,5 m	DIP 1 = ON
measuring cell Type 4	measuring cell Type 10	DIP switch setting
(4000 mm WS)	(10000 mm WS)	
0,7 – 1,2	2,0 – 3,0	DIP 6 = ON
0,8 – 1,8	2,0 – 4,5	DIP 5 = ON
1,2 – 2,2	2,5 – 5,5	DIP 4 = ON
1,5 – 3,2	3,5 – 8,0	DIP 3 = ON
2,0 – 4,0	5,5 – 10	DIP 2 = ON
2,4 – 4,0	6,5 – 10	DIP 1 = ON

NOTE

always switch only one of the DIP switches to ON-position ✓

Select DIP switches in such a way that desired 100 % level lies approximately in the center of the range.

Type of measuring cell (1, 2, 4 or 10) see type sign

Example:

Measuring of liquid level 0... 1.0 m (with measuring cell 2):

-> 100 %- liquid level lies approximately in the enter of the range 0.7 - 1.4 m

-> DIP switch 4 is selected!

3. Zero Point = 4 mA

- Empty the container or remove the measuring pipe/ hose
- Adjust measuring current to 4 mA with the "4 mA" trimming potentiometer

4. 100 %-Point = 20 mA

- Fill container with the original liquid to desired max. level
- Adjust measuring current to 20 mA with the "20 mA" trimming potentiometer

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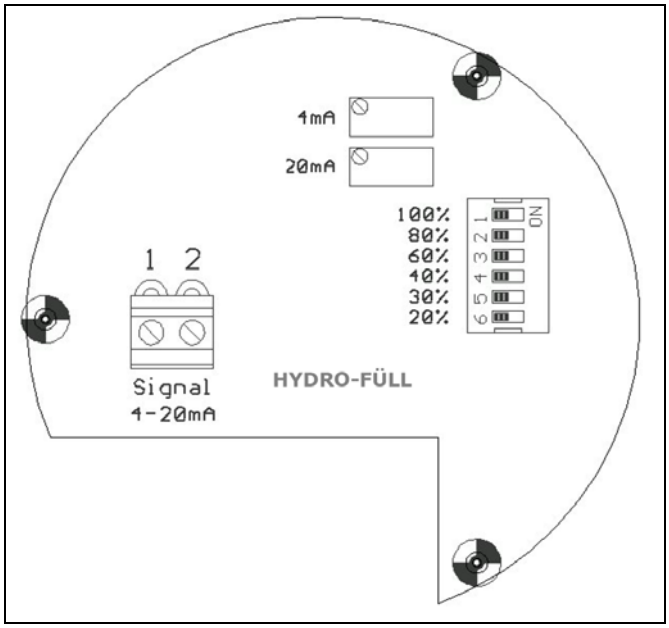
NOTE

If the container is refilled with liquids which have another density it must be readjusted! ✓

Electronic plate in the terminal housing



NOTE

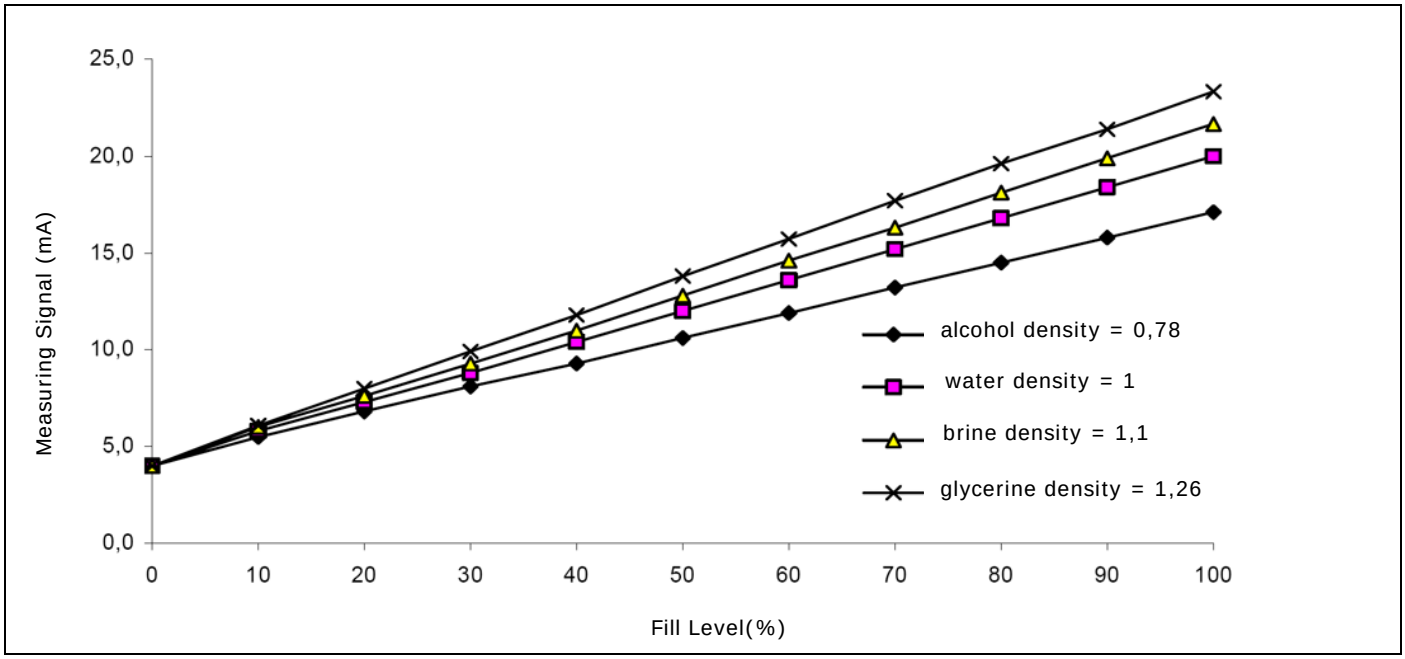
Characteristics with the employment in liquids with a density ρ > 1.0 kg/dm³! ✓

Liquids with a density greater than water will reduce the nominal measuring range.

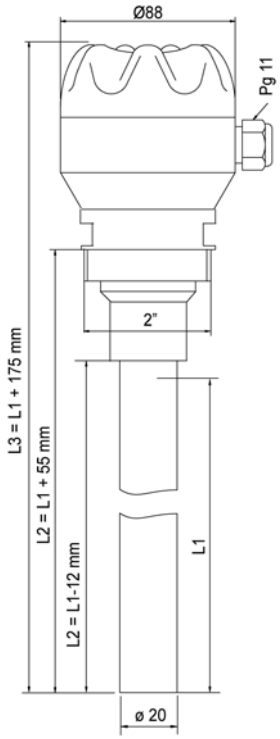
f = (density $_{water}$ / density$_{\rho > 1}$)

Result: the 20 mA measuring signal is already reached at a lower filling level

Diagram: Fill Level Measuring Signal versus Density

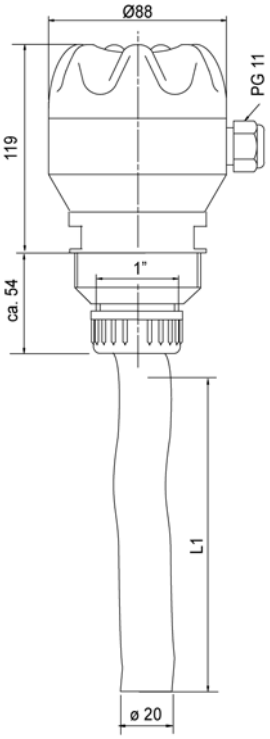


Dimension



Hydro-Füll with measuring pipe

L1 = Measuring range



Hydro-Füll with hose connection

CE Mark

Acc. Low Voltage Guideline
(73/23/EWG) and EMC Guideline (89/336/EWG)

Ident number with measuring range

Body	Measuring range (mm)	Ident-No.
PVC-U	1000	136396
PVC-U	2500	136397
PVC-U	4000	136398
PVC-U	10000	auf Anfrage
PP	1000	136399
PP	2500	136400
PP	4000	136401
PP	10000	auf Anfrage

Pipe length is equivalent to the max. measuring range. Cut if required.

Ident number with hose connection

Body	Measuring range(mm)	Ident-No.
PVC-U	1000	136408
PVC-U	2500	136409
PVC-U	4000	136410
PVC-U	10000	auf Anfrage
PP	1000	136411
PP	2500	136412
PP	4000	136413
PP	10000	auf Anfrage

Please order EPDM-hose, ident number 136442, separately.

Subject to technical modifications

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