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Hydro-Füll R

Hydrostatic Level Transmitter with integrated aerator connection

with pipe connection

with measuring hose

ATTENTION

Safety Instructions ✓

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

Functional Description

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

The device is adapted to tank dimensions on-site in just a matter of seconds by means of an automatic calibration function.

Four limit value switching points can be assigned to the fill level range via the setup menu.

All switching points feature adjustable delay time, adjustable hysteresis and selectable NC/NO function.

The HYDRO-FÜLL R should be connected to an optionally available vent for tank contents with widely varying temperatures, or for adhesive or out gassing media. Clock generator control is integrated into the measuring electronics.

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 ... +60°C

Medium temperature

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

Output relays

- 3+1 floating limit value contacts
- 3 with common root
- 1 floating contact can be selected as a limit value contact, or as a clock generator output
- (can be switched between NC and NO function).

Output relay switching capacity:

- 250 V AC; 2,0 A / 30 V DC; 1,0 A

NOTE

Contacts are not protected against overload – use external protective device! ✓

Terminal housing

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

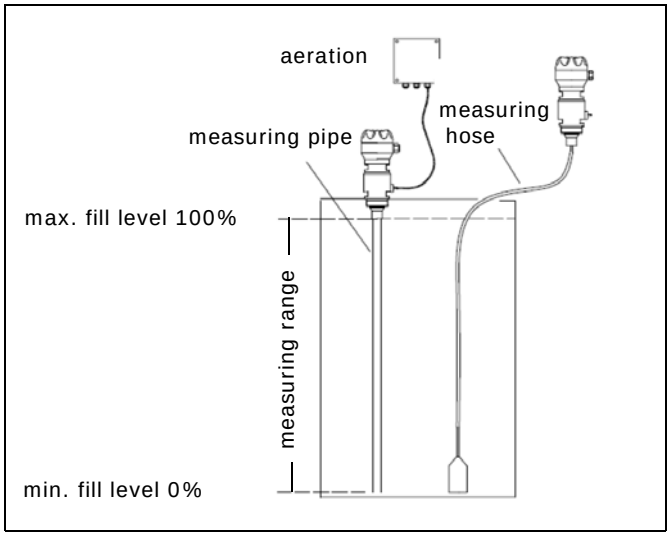
Mechanical Installation

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

Measuring hose submersed into the tank from above, terminal housing installed in the proximity of the tank.The measuring pipe may not make contact with the floor of the tank, nor may it be immersed into bottom sludge! ✓



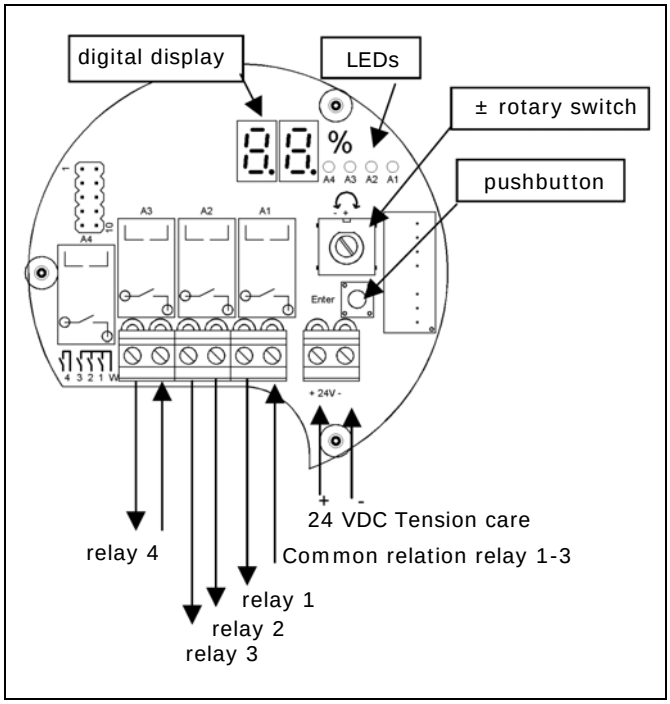
Maintenance

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 tube must be inspected at regular intervals and cleaned if necessary. ✓

Electrical Connection



Controls

± rotary switch

- The desired relay (1 through 4) is selected in menu level 1.
- The desired values are selected in menu levels 2 through 6.

Pushbutton

- For selecting the submenus

Output Relays A1 through A4

- LED lights up = relay pulled in = contact closed

Setting range

- Range 0 ... 100 % relative to the selected 100 % fill level
- Default settings:
  A1 = 80 %, A2 = 60 %, A3 = 40 %, A4* = 20 %

Delay Time

- Adjustable from 0.1 to 10 seconds

After the selected limit value is violated, delay time is allowed to elapse and the relay is then switched.

- Default setting: 0.1 seconds

Hysteresis

- Setting range: 0 to 99%

The output relay is not switched back until the measured value is fallen short of by the selected percentage value.

- Default setting: 1%

NC-NO Selection

- NO = normally open = contact is open as long as the actual fill level is less than the selected limit value.
- NC = normally closed = contact is closed as long as the actual fill level is less than the selected limit value.
- Default setting: NO

NOTE

All relays are open in the event of power failure ✓

Overranging Display

- Measuring signal > mA max. value

=> digital display= nn

- Measuring signal < mA min. value

=> digital display = uu

Clock Generator (* for air supply control)

The aerator hose (PVC-hose Ø 4x1 mm) could be connected to the connection with is under the silver label.

NOTE

Purge air pressure should not exceed a level of 2.5 bar. ✓

The clock controls are integrated into the electronics, and relay 4 is used to connect, for example, a solenoid valve.

Setting the clock generator

- Set pump-time (on-time) such that air bubbles are discharged from the bottom end of the measuring tube for 3 to 5 seconds (depending upon the length of the measuring tube and the air supply tube) during each pumping operation!
- Off-time: For liquids which may plug the tube with sediment, pumping should be activated as required.
- Measured value drift is reduced by means of frequent pumping if the liquid is subject to temperature fluctuations.

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NOTE

Pumping for a duration of approximately 30 seconds once or twice a day is adequate for most applications.

The clock generator is switched on as soon as on and off-time is set to a value of greater than 0.

* Setting values for limit value relay A4 are rendered inactive as a result.

On-Time

The contact at relay 4 remains closed as long as the selected on-time has not yet elapsed.

- Setting range: 1 second to 24 hours
- Available setting values: 0*, 1, 2, 5, 10, 30 s = no decimal point is illuminated
- 1, 2, 5, 10, 30 min. = the right decimal point is illuminated
- 1, 2, 3, 6, 12, 24 hours = the left decimal point is illuminated
- Default setting: 0

Off-Time

- The contact at relay 4 remains open as long as the selected off-time has not yet elapsed. Setting values same as above.
- Default setting: 0

NOTE

After power failure, the device is rebooted and the program starts with on-time.

If on or off-time is changed during operation, the new on or off-time becomes immediately effective.

Initial Start-Up

Automatic setting of the 100% fill-level

The 100% fill-level is set at the factory to the length of the measuring tube (see drawing).

This 100 % level can be adapted to on-site conditions with the help of the setup menu.

1. Fill the tank to a level of between 50 and 100 % (it is best to fill the tank to the 100 % level)
2. Accurately determine and make a note of the fill-level as a percentage (with a dipstick or similar device)
3. Install the Hydro Füll R to the tank.

NOTE

=>The measuring pipe may not make contact with the floor of the tank, nor may it be immersed into bottom sludge!

4. Switch power supply on.
5. Wait approximately 10 seconds until the device is ready for operation.
6. Press and hold the pushbutton for 3 seconds until the digital display starts blinking.
7. Select the previously determined fill level percentage with the ± rotary switch.
8. Press the pushbutton once again, or wait for 10 seconds until the digital display stops blinking. The device calculates the 100 % fill level and saves it to memory.

NOTE

The measuring pipe or hose may not be shortened indiscriminately!

It may not be any shorter than 20 % of the maximum measuring range!

Measuring cell Type	Measuring range	Minimum pipe / hose length
Type 1	0 ... 1000 mm WS	200 mm
Type 2	0 ... 2500 mm WS	500 mm
Type 4	0 ... 4000 mm WS	1000

Measuring cell type .. see serial plate

Setting Limit Value Switching

1. Press the pushbutton once until A1 is displayed: LED A1 flushes
2. Press the pushbutton once again
3. Set limit value switching point 1 with the rotary switch (0 to 100%, default setting: 80%)
4. Press the pushbutton once again
5. Set delay time
6. Press the pushbutton once again
7. Set hysteresis
8. Press the pushbutton once again
9. Select NC or NO function
10. Press the pushbutton once again
11. Return to menu level 1

All other values can be selected and adjusted in the same way
»(see “Setup Menu” graphic)«

Limit value switching points A1 through A4 and the clock generator are selected in menu level 1 (press the pushbutton once) with the ± rotary switch

If none of the controls are activated for more than approximately 10 seconds, the display is returned to the current fill level and the setting values are saved to memory.

Reset to Default Settings

Switch power supply on, within 3 seconds (i.e. during the test routine), press and hold the pushbutton for approximately 5 seconds:

The display counts up: 1, 2, 3, 4 ... 99, St....

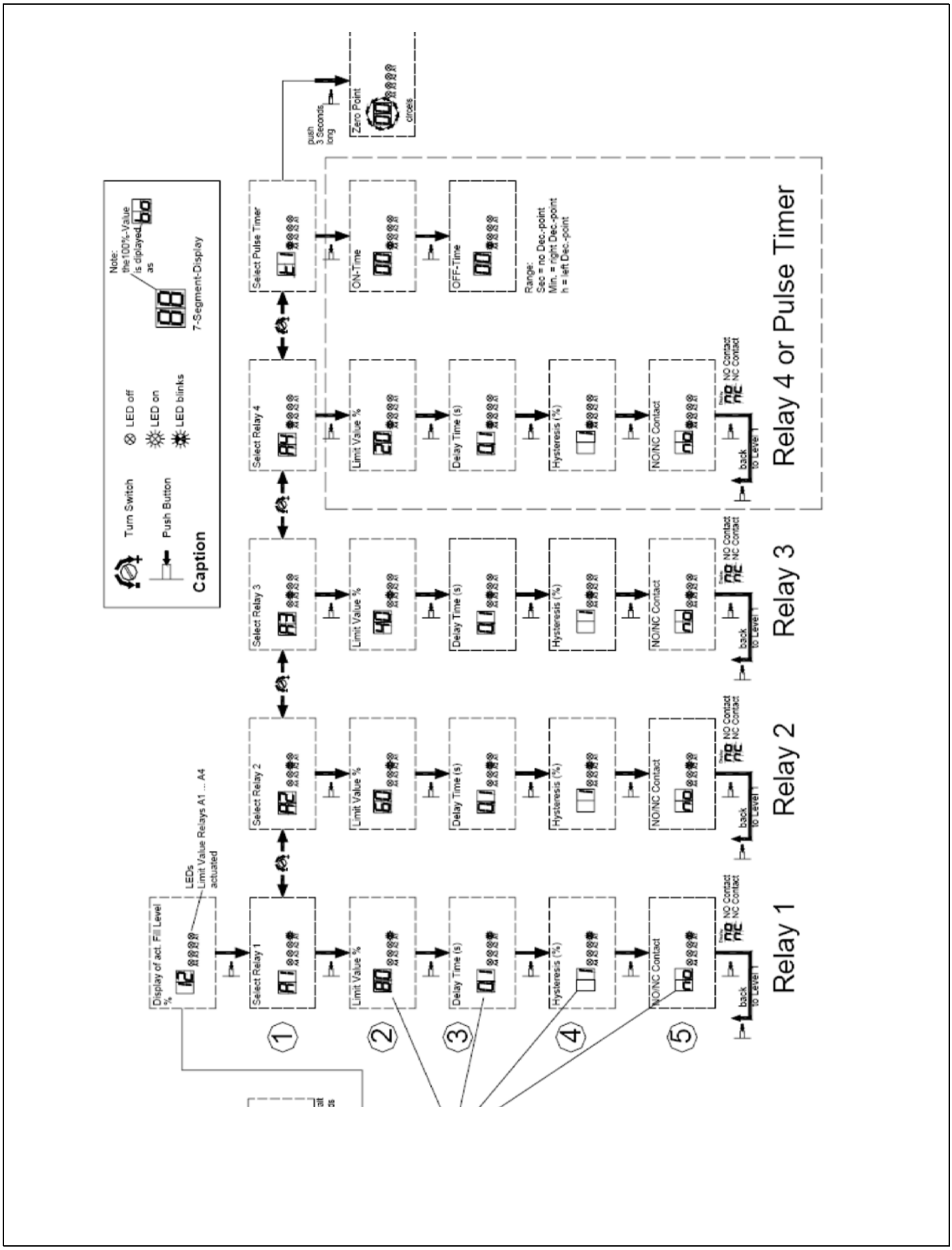
=> .. All settings are returned to their default values.

NOTE

The pressure sensor’s zero point must be set first after a reset:

Remove the Hydro-Füll R or empty the tank entirely; press and hold the pushbutton for approximately 3 seconds while in menu “t1” until the LED display “rotates”

Setup Menu



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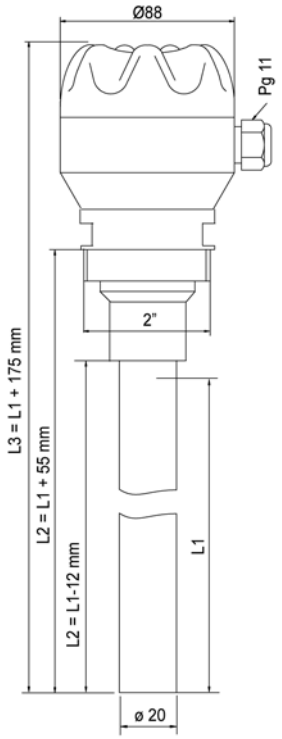
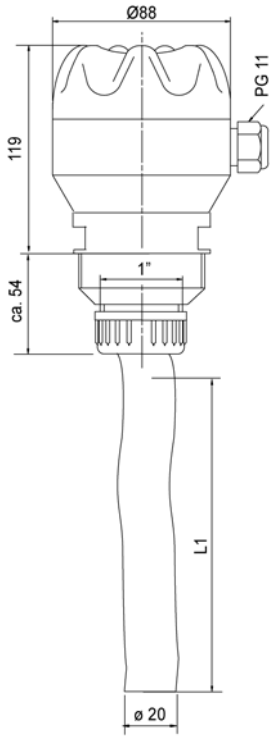
Dimensions



Hydro-Füll R with pipe connection

L1 = Measuring range



Hydro-Füll R with measuring hose

CE Mark

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

Ident number with pipe connection

Body	measuring range (mm)	Ident-Nr.
PVC-U	1000	136420
PVC-U	2500	136421
PVC-U	4000	136422
PVC-U	10000	auf Anfrage
PP	1000	136432
PP	2500	136433
PP	4000	136434
PP	10000	auf Anfrage

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

Ident number with hose connection

Gehäuse	Messbereich (mm)	Ident-Nr.
PVC-U	1000	136408
PVC-U	2500	136409
PVC-U	4000	136410
PVC-U	10000	auf Anfrage
PP	1000	136435
PP	2500	136436
PP	4000	136437
PP	10000	auf Anfrage

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

Subject to technical modifications

Notizen / notes

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