

Continuously Measuring Level Sensor



GENERAL DESCRIPTION

- Continuous, contact-free level monitoring over wide measurement ranges
- High accuracy
- Immune to almost any interference from the outside
- Capacitive measurement of many liquids, granular or pulverized materials
- Small sized sensor easily mountable to the outside of a container
- Wall thickness up to about 8 mm
- Accurate measurement even with air gaps between sensor and container, allowing operation e.g. with exchangeable tanks
- Output PWM, digital output options (UART, I2C) on request
- Various custom options available



TECHNICAL DATA

DIMENSION	see outline drawing (others on request)
MEASUREING RANGE (VERTICAL)	see outline drawing (others on request)
MEASUREMEMT TYPE	capacitive
PERMITIVITY	$4 < \varepsilon_r < 82$
WALLTHIKNESS GLASS	max. 7 mm
WALLTHICKNESS PLASTIC	max. 8 mm
AIR GAP	max. 2 mm
ACCURACY	typ. 1 mm 🥊 🔪 🔪 💙
RESOLUTION	typ. 11 bit
RESPONSE TIME	typ. 100 ms
POWER SUPPLY	5 VDC, max. 30 mA
ОЛТЬЛА	PWM
OUTPUT RANGE	max. 3.3 V
CONNECTOR	4 pole, WR-WTB 2.0MM
OPERATION TEMPERATURE	-20°C to +85°C
STORAGE TEMPERATURE	-40°C to +100°C
HUMIDITY	max. 95% r.H.
MAX. HEIGHT OVER SEALEVEL	0 – 2000 m
PROTECTION CLASS	IP20
MOUNTING	plastic mounting clips, glueing tape outside the sensing area (e.g. 3M 4910F / Tesa 4965)



OUTLINE DRAWING

LCPB025D:



The active sensing area of the sensor is on the bottom side of the PCBA. To avoid influences on the capacitive measurement system, keep area free of metallic surfaces or mounting components e.g. screws (> 5 mm distance to the outer bounds of the active sensing area).



ELECTRICAL CONNECTION

A 2 mm 4-pole shrouded SMT header (e.g. Würth Electronic 620304124022) is assembled on the sensor PCB. To avoid mechanical stress on the connector, a cable fixation shall be used to avoid damaging the sensor.

Pin	Direction		Description	
1	Power	VCC		
2	Output	PWM output ¹		
3	NC	Not connected		
4	Power	Ground		

¹ PWM is default output signal

In standard operational mode, the sensor PWM output is a linear function on the fill level, varying the duty-cycle proportional to the fill level state. Depending on the application, integration of an offset in the linear mapping function can bring advantages due to hiding e.g. edge effects.

Typical output signal graph (depending on application setting, example for LCPB096D):



When fill level exceeds the active sensing area, the mapping function will get non-linear.



Mounting

To get best sensor performance, attention is necessary on sensor mounting:

- Do not use screws or any metallic object to fixture the sensor in your application
- Plastic screws can be used, there's no negative influence on the measurement
- Keep air-distance between sensor and container wall as small as possible
- If condensation could occur during operation, placing silicone based grease may be an option to avoid droplets due to condensation between container wall and sensing area

Grounding

No special grounding to PE (protective earth) is necessary for this sensor. Based on the sensor's design, the level sensor is decoupled from PE. To get best results, a stable power supply with reduced ripple noise is required or additional filter are required.

Typical application example



Preliminary Data Sheet



DISCLAIMER

The information contained in this document is for general guidance only. The user is responsible for determining the suitability of the technical information referred to herein for his application. On delivery of the component, EBE is only obliged to implement those properties set out and agreed upon in this technical data sheet. Preliminary marked datasheets or data and data marked with "about" or "typically/typ." refers to non-binding estimates. Further properties are not included. No guarantee is given. The component has been designed for installation in our customer's products. Manufacturer of the resulting product and consequent liability according to the Product Liability Act lies with the customer. This datasheet may be subject to errors and to technical changes as part of product improvement.

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