



Semiconductors

Application-specific sensors

Wet process

A full lineup of sensors that reliably detect liquid levels



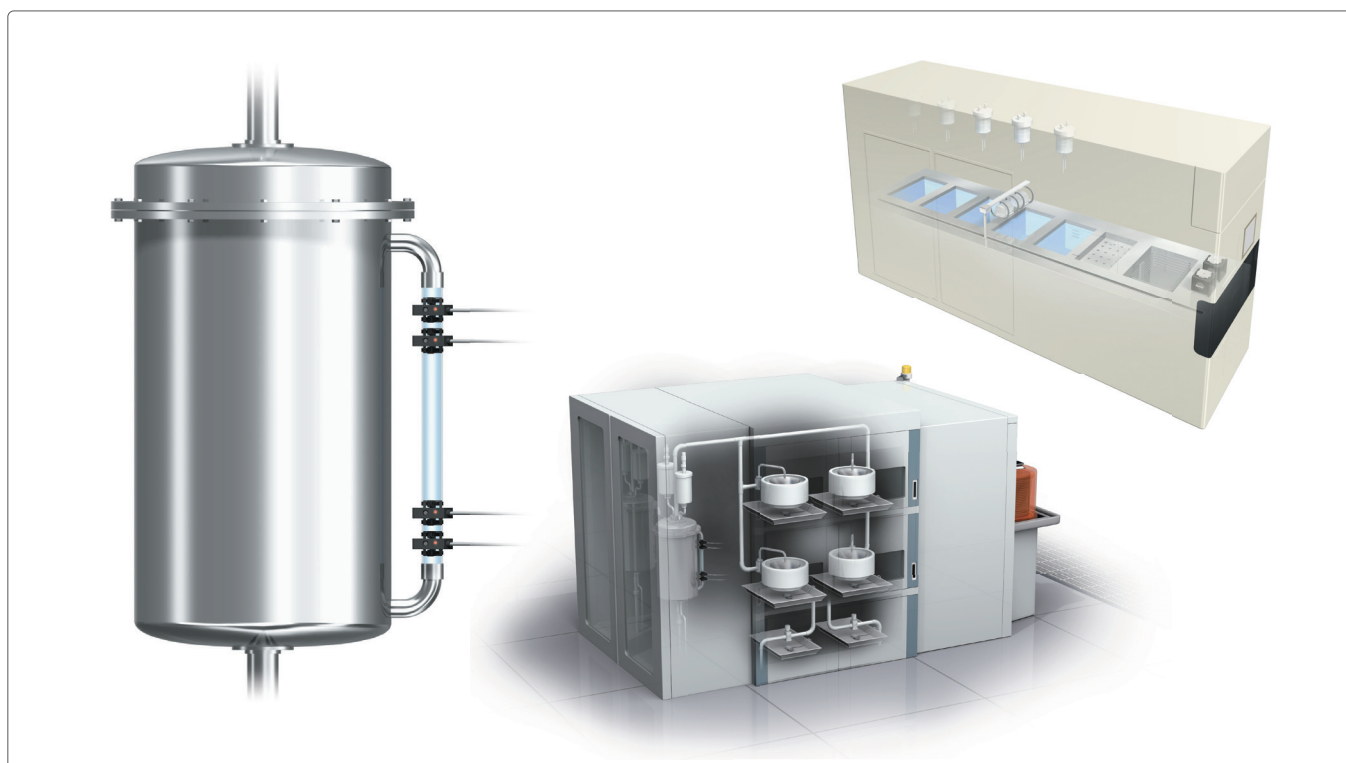
Product name	Discrete sensors Pipe-mounted liquid level switches with built-in amplifier / Pipe-mounted / tank-inserted fiber-optic liquid level sensors	Process and equipment name	Batch, single wafer cleaning equipment
Model No.	HPQ-T__ / HPF-T032_ / HPF-T034_ / HPF-D027/ HPF-D033		

Current Situation

- Pipes of various thicknesses in the discharge section.
- Various liquid states inside the pipes.
- Float or electrode sensors are used.
- Sensors are used for upper/lower limit detection.

Current Issues

- Pipes are too thin for sensor installation.
- Air bubbles and cloudiness interfere with reliable detection.
- Sticking of movable parts and metal contamination.
- No fail-safe measures.



Solution 1

Small diameters of 1/16 inch and 3–7 mm are supported.

Model HPQ-T__ pipe-mounted liquid level switches with built-in amplifier are available for small (3–7 mm) and ultra-small (1/16") diameter pipes, in addition to standard diameters (φ8–φ13). The pipe-mounted fiber-optic liquid level sensor (HPF-T032) supports φ3–φ13. In addition, all pipe-mounted models use a transmission-reflection method to ensure a large difference between the received and blocked light levels.

Solution 2

Pipe-mounted fiber-optic liquid level sensors use 16 optical axes to reduce the effects of air bubbles and water droplets

Models HPF-T032 and HPF-T034 reduce the effects of small air bubbles and water droplets with an array (about 9 mm wide) of 16 optical axes. In addition, HPF-T034 receives light when no liquid is present, ensuring reliable detection even with cloudy liquids.

Solution 3

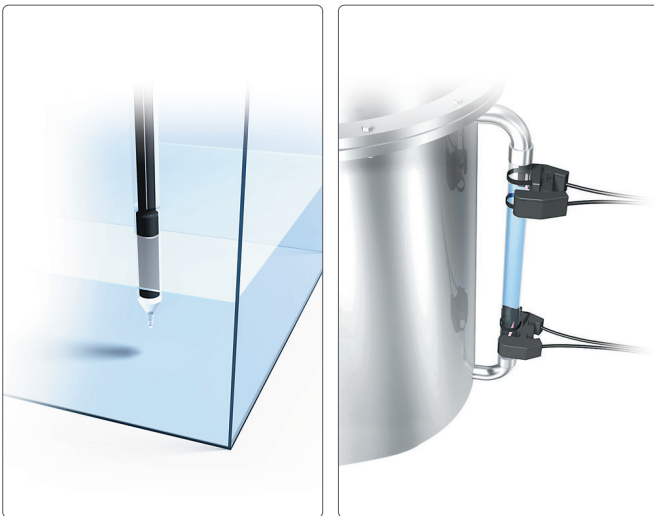
Tank-inserted fiber-optic sensors have no movable parts, and their all-resin structure does not cause metal contamination

HPF-D027 and HPF-D033 tank-inserted fiber-optic sensors use optical refraction to detect liquid reliably. Their PFA fluorine resin tube structure ensures safety even if the unit gets wet.

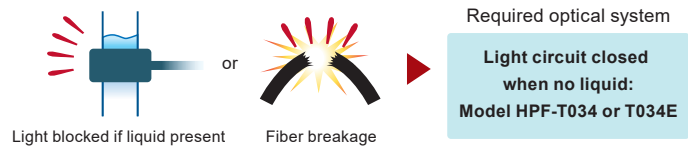
Solution 4

Lineup of pipe-mounted fiber-optic liquid level sensors with fail-safe protection

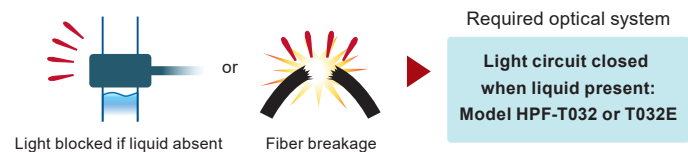
Fail-safe measures for detection of fiber breakage can be implemented by using HPF-T032 (light-ON) for detection of liquid lower limit and HPF-T034 (dark-ON) for detection of liquid upper limit.



Upper limit detection



Lower limit detection



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