

Technical Note: Bubble Sensors - Test Pin

SMD Bubble Sensors have an optional test pin that is often required for medical device applications. On our standard sensors, the last digit of the part number denotes whether the test pin is enabled or disabled:

- "E-Type" sensors (e.g. A430-SLTE) have the test function enabled.
- "D-Type" sensors (e.g. A430-SLTD) have the test function disabled.

If the test function is enabled, the test pin (typically white wire) must be grounded for normal operation. Pulling the test pin to 5VDC internally disables the transmitter portion of the circuit while the test pin is high.

If the transmitter is disabled, you should expect to see an "air" output under all circumstances - if you see a 5V output while the test pin is pulled high then there is something wrong with the circuit. The sensor is not detecting bubbles while the test pin is high so if you're checking the test pin during device operation, ideally you should only pull the test pin high for a short amount of time (for example 1 to 2 50 microsecond cycles).

Do not apply more than 5VDC to the test pin of any bubble sensor, regardless of the input voltage of the sensor.

The tables below summarize the output logic of bubble sensors with test pin disabled and test pin enabled.

Bubble Sensor Logic - Test Function Disabled

Test Pin	Fluid in Tube	Sensor Output
0 VDC	Air	0 VDC
0 VDC	Liquid	+5 VDC
+5 VDC	Air	0 VDC
+5 VDC	Liquid	+5 VDC
Floating	Air	0 VDC
Floating	Liquid	+5 VDC

Bubble Sensor Logic - Test Function Enabled

Test Pin	Fluid in Tube	Sensor Output
0 VDC	Air	0 VDC
0 VDC	Liquid	+5 VDC
+5 VDC	Air	0 VDC
+5 VDC	Liquid	0 VDC
Floating	Air	Undefined
Floating	Liquid	Undefined