

# Settling Behavior of 757-Series Miniature Tilt Sensors

## Tech Note

After an “instantaneous” rotation of a 757-Series tilt sensor, the output settles to approximately 99.9% of its new value within eight time constants. Since the sensor’s time constant is 0.13-second, this settling occurs over about one second. The final 0.1% of output change takes a bit longer for the following reason: When the sensor is rotated to a new position, the surfaces now occupied by the internal bubble were previously covered with liquid. A small amount of liquid remains on these surfaces and drains slowly into the pool until equilibrium is achieved. The magnitude of this final output change is proportional to the magnitude of the initial rotation. The proportionality constant is approximately 0.1%.

The plot below illustrates the final settling behavior for a 757-Series sensor that was rotated from zero to the end of its range. Data were collected manually beginning a few seconds after the instantaneous rotation. The final 0.03 degree of settling occurs over a period of about 30 minutes.

**Model 757-1173-VAC Wide-Angle Tilt Sensor**  
**Settling time after -64 degree rotation**

