

8TJ209 Capacitive Oil Level Sensor

Capacitive Technology Complements AMETEK's Existing Designs

AMETEK is the world leader in the design and manufacture of aircraft engine lube oil sensing devices. Introduced in the 1960s, AMETEK's potentiometric devices continue to be selected for their accuracy, value and reliability. With the introduction of a capacitive device, AMETEK is now able to offer a complementary technology for those applications where existing interfaces and continuous resolution are key factors.

The AMETEK family of oil level sensor products is the unquestioned choice for today's challenging engine applications.

Applied on Engines Worldwide

The AMETEK 8TJ209 series of oil level sensors have been selected for business, regional and fighter applications since their introduction in 2000. The basic design can be easily adapted and qualified for new applications. Development cycle times are measured in weeks. Furthermore, to improve reliability of existing aircraft, AMETEK transmitters are readily adaptable to retrofit older engine lubrication systems. The design is ideal for small engine and auxiliary power unit applications where weight and size constraints are major factors.

Proven Sensing Interface Along with Simple Construction

The Capacitance Level Sensor produces a DC current signal proportional to fluid level when excited with 20 VAC at 30 KHz. Two concentric aluminum tubes along the length of the sensor form a variable capacitance circuit. The tube electrodes are isolated from each other using a molded RYTONTM insulator. The electrical capacitance of the tubes increases with the rising height of oil due to the higher dielectric constant of the oil compared to air.

Along with AC excitation, AMETEK's variable capacitor and printed wiring board mounted high temperature, dual-diode circuit design produces a half-wave rectified current that when filtered by the purchaser's signal conditioning circuit yields a DC current proportional to level. Two diodes convert the AC signal to a DC current, and make the output insensitive to cable capacitance. With this approach, there is no high impedance circuit to carefully shield.

All materials are selected with high temperature and engine oil compatibility in mind.



Features

- *Continuous resolution*
- *Simple, rugged construction*
- *Top or bottom mounted designs*
- *Able to integrate resistive temperature measurement device*
- *Measurement range can be offset with fixed value capacitors*
- *Flexible mechanical and electrical interface options*

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Specifications

Level Sensing Range:	Adjusted to fit application
Signal Output:	8.0 pf/inch, or 15 microamp/inch for MIL-7808 oil
Accuracy:	Dry–within 1% of FS. Wet–within 2% of FS
Non-linearity:	Less than 2% of FS
Temperature Range:	-65° to 400°F (-54° to 205°C) Weight: 0.40 lb (0.18 kg)

Testing Capacity

AMETEK maintains in-house state-of-the-art testing capability for verification of environmental and performance requirements. These capabilities include contaminated oil rigs and level cycling rigs. In addition, AMETEK is able to perform nearly all RTCA/DO-160 environmental test requirements such as Vibration, Impact, Humidity, Pressure and Temperature as well as a host of electrical tests such as EMI and Pin Injection.

SFMS
SENSORS AND FLUID MANAGEMENT SYSTEMS

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