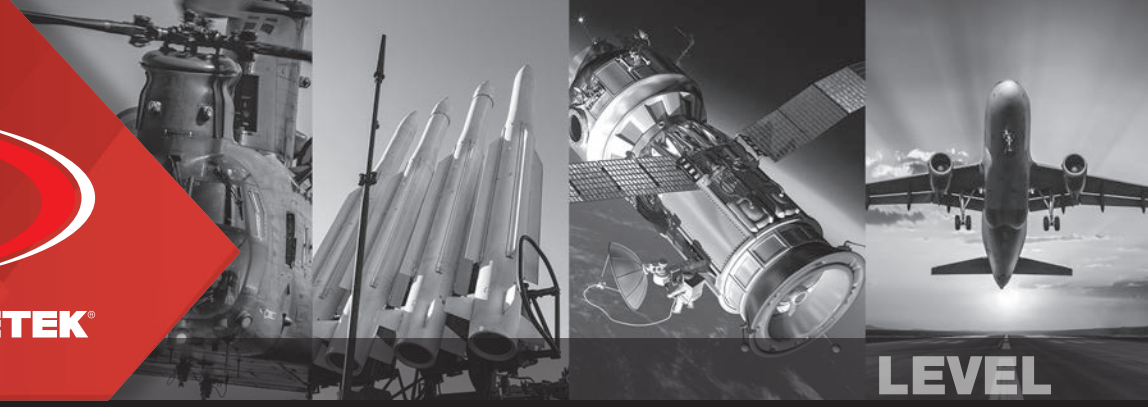
SFMS
SENSORS AND FLUID MANAGEMENT SYSTEMS

AMETEK



Engine Oil Quantity Transmitters

Overview

AMETEK is the world leader in the design and manufacture of aircraft engine lube oil sensing devices. Beginning in 1965, AMETEK's patented reed switch / float magnet device has been continuously improved for accuracy, value, and reliability. The AMETEK family of oil level sensor products is the unquestioned choice for today's challenging engine applications.

Applied on Engines Worldwide

The TJ146 series of Oil Quantity Transmitters are in service on virtually every aircraft in the world. It 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.

A Simple Approach in a Rugged Package

The TJ146 series feature a family of rugged airborne transmitters for sensing oil quantity in the lubrication system oil tank or gearbox of every size gas turbine engine in the world. Designed for immersion in lubrication oil, the transmitter is comprised of several integrated assemblies which include a circuit board, magnetically operated reed switches, a series of discrete high temperature resistors, an innovative buoyant float and magnet assembly, a supporting framework, and a tank or gearbox fitting flange assembly.

The series of discrete high temperature resistors and hermetically sealed reed switches are mounted on a circuit board to provide a voltage ratio network, which operates in a similar manner to a variable potentiometer. The switches are evenly spaced along a circuit board in a ladder-rung formation. As the switches are actuated, the circuit resistance changes the output voltage ratioed to the input voltage, which provides for a highly accurate signal of oil quantity. Switch actuation is accomplished as a permanent magnet, contained within a uniquely designed float, travels with lube oil level changes.

The float/magnet assembly is guided within a specially designed, two-channel, extruded aluminum tube or supporting framework that provides both support and vortex compensation. A second channel contains a set of guides, which positions the circuit board.



Features

- *Reliability in excess of 200,000 hours*
- *Rugged yet simple design using proven materials*
- *Hot and cold temperature operation*
- *No temperature compensation or source regulation required*
- *Highly reliable hermetic switches…over nine (9) billion operations*
- *On-condition maintenance*
- *AMETEK comprehensive customer service for spare parts and technical support*

Engine Oil Quantity Transmitters

Specifications

ENVIRONMENTAL CHARACTERISTICS

Ambient Temperature Range: -80O to 450OF (-65O to 232OC)

Oil Temperature Range: -70O to 380OF (-57O to 193OC) Operating Voltage: 0.5 to 32 volts DC or AC

Typical Current: Less than 200 milliamps Vibration: 20 Gs at typical engine frequencies

PHYSICAL CHARACTERISTICS

Material: Tube–aluminum

Flange–aluminum or stainless steel

Qualifications

The transmitters are qualified for both military and commercial airborne applications having met numerous requirements for environmental testing. Besides customer proprietary requirements, the design has been qualified against MIL-STD-810 and RTCA/DO-160 specifications.

Design Features:

- *Leak-proof float construction*
- *Dual redundant switch actuation*
- *Cantilever, mid-support or end-support applications*
- *Up to 45OF (7OC) off vertical operation*
- *Unique, fastener free vibration damping approach*
- *Operates in current as well as voltage mode*
- *Resolution to +0.125 in. (3.2 mm)*

A Flexible Design to Suit All Engine Needs

Although common and proven materials are employed throughout the TJ146 series of transmitters, the design lends itself to be highly flexible. The flange size and overall length can be patterned to fit any oil tank or gearbox configuration. The circuit can be customized to characterize the output signal so that it is linearly proportional to the quantity of oil. The transmitter may be mounted in almost any location and attitude with a flange designed to match the interface. High-temperature connectors and seals are provided for severe environments.

Optional features include RTD's, temperature switches, ultra-high resolution, low-level warning, high temperature components, and various supports. In addition, AMETEK offers single point transmitters, oil temperature sensors, a sight glass with built-in oil quantity transmitter, dual-redundant oil quantity transmitters, and a wide variety of cockpit oil level indicators.

SFMS
SENSORS AND FLUID MANAGEMENT SYSTEMS

AMETEK®

www.ameteksfms.com

© 2023 AMETEK Corporation. All Rights Reserved. Specifications are subject to change without notice. Other company names and product names used in this document are the registered trademarks or trademarks of their respective owners.