



HARCOSEMCO
EMPOWERED 2 BE BETTER

SENSORS



ENGINE | FIXED WING | ROTORCRAFT

TOTAL AIR TEMPERATURE SENSORS (TATS)

A Total Air Temperature Sensor is a heated probe mounted on the surface of the aircraft. It is manufactured with corrosion-resistant materials, and is hermetically sealed. Total air temperature is an essential input to an air data computer in order to enable computation of static air temperature and hence true airspeed. Our sensors are currently being used on U.S. military aircraft, as well as numerous derivative models. In addition to our wide range of in-stock sensors, we can customize features such as the mounting flange and connector, depending on your specific application. We are one of only a few companies that can produce TAT technology sensors.

FEATURES:

- Fuselage and engine TAT options • Specially constructed to prevent de-icing heat from adversely affecting temperature output • Special design requirements can be met
- Can be boom mounted



OUTSIDE AIR TEMPERATURE SENSORS (OATS)

We manufacture three versions of Outside Air Temperature Sensors (OAT). The OAT Sensors are designed and fabricated to stringent standards utilizing integrated 3D modeling, comprehensive in-house aerodynamic test and evaluation facilities, and specialized manufacturing processes that include customized fine wire winding of sensing elements. OATs are a cost effective replacement for Total Air Temperature (TAT) sensors.

FEATURES AND BENEFITS

The following pertains to part number 100366-XX shown:

- Non-de-iced fuselage mount (formation of ice inhibited by aerodynamic design)
- Rugged, hermetically sealed construction • Wide temperature range
- Low excitation current
- No moving parts • DO-160 environmental compliance • Custom configurations
- Tip-sensitive measurement (avoids the boundary layer)



OIL TEMPERATURE RTD

RTDs are considered to be among the most accurate temperature sensors available. Our RTDs also feature high immunity to electrical noise. Using multiple RTD elements allows the units to monitor oil levels.

FEATURES

- Single/Multi element • Cold junction compensation • Level/Temperature

BENEFITS

- Customizable • Adjusts for delta temperature across the engine • Reduces FADEC complexity • Highly reliable

APPLICATIONS

- Fluids other than oil • Oil level • Oil temperature

FUEL TEMPERATURE RTD

The Fuel Temperature RTD is a hermetically sealed unit that monitors Fuel Temperature, using various RTD elements such as Platinum wire wound. RTDs are considered to be among the most accurate temperature sensors available. In addition to offering high accuracy, they provide excellent stability and repeatability. Our RTDs are engineered for the most exacting applications and environments. Probe tip, channel and sheath designs are optimized to maintain accuracy in the most turbulent fuel environments.

FEATURES

- Application-specific design • High-accuracy platinum wire-wound elements
- Hermetically sealed construction • Low excitation current • High signal-to-noise ratio
- Fast linear response • Excellent stability • Wide temperature range • Low maintenance
- High reliability

BENEFITS

- Economical solution for highly accurate temperature measurement
- Small packages add little weight to the system



OTHER RTD APPLICATIONS

Temperature monitoring of critical aircraft components and subsystems such as:

- Nacelle temperature sensor—integrated into a rigid harness to monitor PW1000 Engine Nacelle Temperature • Engine fuel • Cabin temperature control • Compressor discharge
- Avionics • Cylinder heads • Engine bearing oil • Hydraulic fluids
- Inlet air ducts (T1) • Air flow



ENGINE TEMPERATURE SENSORS

Our hermetically sealed EGT probes have demonstrated consistent, trouble-free performance in installations around the globe. In typical applications, multiple EGT probes are connected to a single, flexible cable assembly. This provides the ability to easily replace individual probes—a distinct advantage over rigid thermocouple harnesses.

The P1/T1 integrated sensor is perfect for air inlet applications. The temperature sensor is an RTD. The pressure sensor is a strain-gauge instrumented silicon diaphragm buried in a machined housing. The silicon diaphragm distorts the strain gauge to measure pressure. The resistance delta is proportional to pressure.

FEATURES

- Pressure and temperature sensor in one unit (P1/T1)
- Temperature range: -65°F to 2300°F
- Accuracy: $\pm 2^\circ\text{F}$ from 32°F to 530°F, $\pm .4\%$ from 530°F to 2000°F

BENEFITS

- Single unit – saving weight and complexity
- Highly reliable
- Additional features can be added

APPLICATIONS

- Inlet sensor
- Temperature and pressure



BRAKE TEMPERATURE SENSORS

The Brake Temperature Sensor uses an RTD or Premium Type K material. Its housing is manufactured from stainless steel. With a welded connector the unit is hermetically sealed. Our brake temperature sensors are manufactured with probe designs that are customized to envelope fit requirements. Custom, repeatable, bending achieves probe tips that can fit intricate geometries.

FEATURES

- Application-specific design
- High-accuracy platinum wire-wound elements
- Hermetically sealed construction
- Low excitation current
- High signal-to-noise ratio
- Fast linear response
- Excellent stability
- Wide temperature range
- Low maintenance
- High reliability



N1/N2 SPEED SENSORS

Our Speed and Torque Sensors include Magnetic Reluctance and Hall Effect sensors. These sensors respond to the presence or the interruption of a magnetic field by producing output proportional to the magnetic field strength. Our sensors are durable, reliable, have long-life, and are compatible with other electronic circuits.

FEATURES

- Single coil
- Multi coil
- Variable reluctance
- Hall effect

BENEFITS

- Zero speed detection
- 100% testing to real condition
- High reliability

APPLICATIONS

- N1/N2, NP/NF, Gearbox



MASS AIR FLOW SENSORS

Mass Air Flow Sensors consist of high stability platinum RTD's, a precision heater and an electronic interface that provides analog DC voltages. The basic design and the measurement range are adaptable to any installation.

As a pioneer in sensor technology, we offer a variety of sensors that can be customized for your particular environment or application. Our Electronic Flow Sensor is often used in the avionics cooling system for low flow detection and operates on the “thermal dispersion” principle where flow rate is proportional to the temperature of a heated element in cross-flow. This technology provides a weight and flow disruption advantage over traditional venturi technology, especially in less bleed systems.

FEATURES

- Mass air flow rate and temperature outputs
- Better than 3% of reading for -40°C to 100°C
- Automated calibration and ATP
- Robust design; no moving parts

BENEFITS

- Proven track record of technology
- High Accuracy; Flow and Temperature
- Ultralow pressure drop
- Light weight (<1/2 lb)



PRESSURE SENSORS

Our pressure sensors can be configured for gauge, differential or absolute measurement of pressure with output and sensing technology dependent on your application. They are typically housed in stainless steel and can be environmentally sealed or hermetic. We offer two ranges—standard (temperature ranges 125°C and below) and high performance (above 125°C)—that can be customized to any application.

FEATURES

- Gauge, Differential, Absolute • Temperature ranges from -55°C to 205°C
- Pressure ranges up to 10,000 psi
- Most pneumatic and hydraulic fittings • Lightweight option available

BENEFITS

- Technology is ready to be customized for any application
- No active electronics—highly reliable
- Built-in redundancy for critical applications



LIQUID LEVEL SENSORS

Liquid level sensors use our thermal dispersion technology to detect the presence or absence of a fluid in a reservoir, including oil or fuel. Construction is stainless steel, hermetically sealed, and uses proven RTD elements with high reliability. They are readily adapted to multiple applications and requirements.

FEATURES

- -60°C to 150°C working fluid • Flexible interface: 2 and 3 pin configurations
- Minimal electronics; DO-160 compliant interface • Ultralight
- >60,000 cycle life test

BENEFITS

- Very high reliability—no moving parts • Liquid media agnostic
- Based on field-proven thermal dispersion technology
- Redundancy for safety critical applications



PROXIMITY SENSORS

Proximity sensors are similar in technology to speed sensors, coming in either Hall Effect or inductive sensing types. They will respond to the presence or absence of a ferrous or non-ferrous target material within or outside of a range of distances, providing an output signal to indicate that location. The housings are typically of durable stainless steel, although lightweight options are available, and the envelope and construction can be customized to fit in any application.

FEATURES

- -55°C to 100°C temperature range
- Flexible Interface: 2 and 3 pin configurations
- Ultralight
- >60,000 cycle life test

BENEFITS

- Two technologies available—ferrous and non-ferrous metals
- Very high reliability—no moving parts
- No discreet electronics—COTS ICs
- Technology is ready to be customized for any application



ENVIRONMENTAL SYSTEM SENSORS

Environmental system sensors are all manufactured using RTD Elements, they are placed in a metallic housing and terminated with flexible leads or terminated to a connector. The connector termination can be hermetically sealed or environmental sealed.

- Bleed Air Temperature Sensors • Wing Anti-Icing Sensors • Pack Discharge Temperature Sensors
- Mixed Manifold Sensors • Cabin Temperature • Mass Air Flow Sensors • Pressure Sensors



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HARCOSEMCO EMPOWERED 2 BE YOUR GLOBAL PARTNER.

HarcoSemco's mission is to provide superior service, technologically advanced products and custom solutions for challenging aerospace applications. We deliver on that commitment by empowering our people to provide a better customer experience, find innovative solutions, and deliver quality products on time, every time. We have been the partner of choice in the

Aerospace industry for over 65 years and continue to be a cutting edge supplier that you can trust.



The fusion of Harco & Semco has created a truly exceptional, united body of people whose attention to detail, unwavering desire to innovate, and devotion to their customers is second to none. We at HarcoSemco, look forward to working with you.

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