# FCI Aerospace Division
# Temperature Switch Series: Model AS-TS

***Aerospace and Military Applications***

## FCI's Temperature Switches

FCI Aerospace Division provides a complete line of temperature switches that feature up to 3 different switch points in a single sensor. The sensors use a Resistance Temperature Detector (RTD) and FCI's electronic package to provide discrete high and low outputs at customer specified temperature ranges. If it is specified that only two switch points are needed, the sensor can be modified to provide a conditioned analog output from the RTD in lieu of the third switch point. The lightweight, small package design can be used in a variety of aerospace and military applications.

The sensors are typically packaged in AISI 300 series stainless steel bodies and can be designed to support a variety of installation techniques. Custom designs can provide sensors made from aluminum, titanium, and other thermally conductive materials. Switches can be provided with a flange or threaded mounting connection. The threaded mounting connection includes straight military or aerospace style fittings that seal with O-rings or gaskets, or National Pipe Threads (NPT) that seal with pipe sealant or tape. The flanged mounting is available in a number of arrangements that will mate with virtually any customer's process connection.

## FCI's Temperature Switch Features

- No moving parts
- High reliability
- Wide temperature range
- Up to 3 different switch points
- Simple Installation
- Light weight, compact design
- Exceptional corrosion and abrasion resistance

## Wide Variety of Mounting Options

The Temperature Switch can be tailored to meet a variety of applications. The insertion length of the thermowell may be specified with a flush mounted configuration that does not penetrate the sensing environment or with an extended length element up to 40 inches. The customer specifies the length that best meets their requirements.

FCI will supply its Temperature Switch product line with a variable length flying lead (pigtail cable) or with a wide variety of commercial or military connectors. The design will even allow the sensor and electronics to be integrally or remotely mounted.

FCI Aerospace Division Temperature Switches are designed to meet the demanding requirements of aerospace and military customers. FCI has sensors that have been fully qualified to meet the high vibrations, severe shock, high acceleration, and EMI environments that customers expose them to. They have been fully qualified to RTCA/DO-160C environmental, power and electronic interference requirements. They have been designed to perform after exposure to temperatures from –40 °F to over 300 °F, and can survive temperatures of –85 °F to over 400 °F. High temperature switches are available to 650+ °F.

FCI's Aerospace design team uses the latest in computer aided engineering technology and has access to FCI's extensive test facilities to fully analyze and test sensor under a variety of conditions. Custom designs are available for any application. FCI fully tests each sensor to customer requirements before shipping them. FCI strives to continually meet and exceed customer expectations and requirements for products and services.

## FCI's Temperature Switches Applications

- Environmental Cooling Systems
- Power Management Systems
- Fluid Temperature Control
- Cabin Air Temperature Management
- Temperature Limit Alarms

**Visit FCI Aerospace Division on the Web: www.fluidcomponents.com**
1755 La Costa Meadows Drive, San Marcos, California 92078 USA Phone 760-744-6950 800-854-1993 Fax 760-736-6250
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## Specifications

**Service:** Temperature measurement switch for liquid or gas.

**Material of Construction:** All-welded, 300 series stainless steel; aluminum, titanium or other alloys optional.

**Electrical Connection:** Military or commercial electrical connector, pigtail cable of customer specified type and length.

**Process Connection:** threaded or flanged:

Typical threaded process connections

| | |
|---|---|
| AS930 | .250 – 18 Dryseal NPTF |
| AS4395 | .375 – 18 Dryseal NPTF |
| MS33656 | |

**Insertion Length:** 0.160 to 4.0 inches.

**Temperature Performance Properties:**

Typical electrical properties.

| | | |
|---|---|---|
| Ouput with 28 VDC input | Open-leakage < 40µA | Close-sink 400µA - 800mA |
| No. 1 | On temperature rise (Temp 1) °C + 3 °C/-0 °C | On temperature decline (Temp 2) °C + 0 °C/-3 °C |
| No. 2 | On temperature rise (Temp 3) °C + 3 °C/-0 °C | On temperature decline (Temp 4) °C + 0 °C/-3 °C |
| No. 3 [a] | On temperature rise (Temp 5) °C + 3 °C/-0 °C | On temperature decline (Temp 6) °C + 0 °C/-3 °C |
| No. 3 [b] | 0.5 to 4.5 volts; or 4-20 mA | |
| Nos. 1,2 and 3 | At no power | N/A |

**Sensor Parameters:**

| | |
|---|---|
| Weight | 0.23 lbs. |
| Temperature Range | -40°C to +100°C Operating<br>-55°C to +212°C Survival |
| Switch Point Range | -30°C to +90°C |
| Number of Points | up to 3 |
| Switch Point Accuracy | ± 1°C |
| Switch Point Hysteresis | <10°C |
| Repeatability | ±.5°C |

**Electrical Parameters:**

| | |
|---|---|
| Input Current | <10 mA |
| I.R. Test Voltage | <500 VDC |
| D.R. Test Voltage [c] | <500 VDC |
| Bonding | <2.5milliohms |

**Notes:**

a. In a three set point configuration.

b. With 2 switch points and an Analog output.

c. Without EMI filters

**Environmental Parameters:**

| | |
|---|---|
| Proof Pressure: | 12,500 PSIG |
| Operating Pressure: | 7,500 PSIG |
| Altitude: | 100,000 ft |
| Humidity: | 100% |
| Thermal Shock: | 10°C/min. |
| Vibration: | Rotary/Fixed Wing |
| Acceleration: | 10 gs |

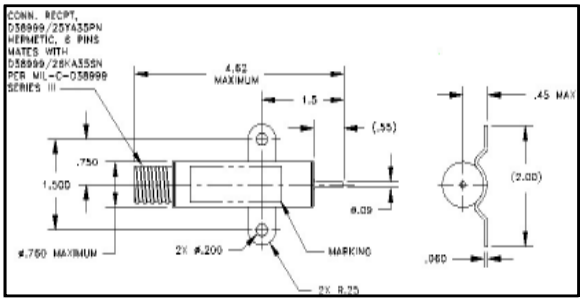
**Qualifications:**

| | |
|---|---|
| MIL-STD-130 | Marking |
| MIL-STD-810 | Environmental Testing |
| MIL-STD-889 | Dissimilar Metals |
| MIL-STD-461/462 | EM |

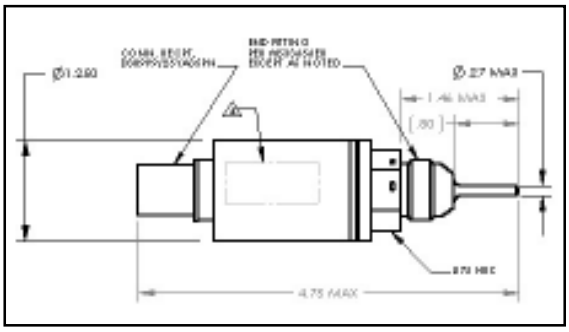
**Quality Systems Approval:**

ISO 9001

AS 9000




**Temperature Switch With Bracket Mounting**



**Temperature Switch With Threaded Mounting Connection**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