

# SFMS

SENSORS AND FLUID MANAGEMENT SYSTEMS

AMETEK®

## PRESSURE

# Pressure Transducers Thin Film Technology

## Overview

AMETEK thin film pressure transducers have a long and distinguished heritage for space applications. Long term reliability and stability have become the trademark of AMETEK's thin film technology pressure transducers. These pressure transducers have been in space for over twenty years on many satellite and spacecraft programs, demonstrating stability better than  $\pm 0.10\%$  of full scale output per year. AMETEK has pressure transducers mounted in a broad variety of applications – including manned and unmanned space vehicles, satellites, and interplanetary probes. AMETEK's proprietary state-of-the-art technology is based on a sputter-deposited thin film, piezoresistive strain gage sensor bridge. With an applied excitation voltage, the fully-active, four-arm Wheatstone Bridge generates a differential voltage output proportional to the applied pressure.

Temperature sensitive resistors are added to the bridge circuit to precisely calibrate the pressure sensor over its required operating temperature range. The standard unamplified thin film pressure transducer operates with a 10 volt excitation and provides an output of 0 to 30 millivolts. The amplified thin film pressure transducer utilizes a discrete electronics package and level "S" EEE components to convert a 28 volt excitation and provide an isolated output signal of 0 to 5 volts. An EMI filter is incorporated to meet the requirements of MIL-STD-461. The modular design of the AMETEK thin film transducers allows the mechanical pressure fitting and electrical interface to be constructed per specific customer requirements. AMETEK's thin film pressure transducers are the ideal choice when accuracy, high reliability, long term stability, and an exceptional heritage are requirements for the application.



## Applications

- Space Shuttle
- Space Station
- Expendable Launch Vehicles
- Telecommunication Satellites
- Scientific Research Satellites - Interplanetary Probes

## Features

- High Reliability and stability
- Wide operating range, including cryogenic
- Customized configuration. Rated for space heritage
- Distinguished space heritage

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## Specifications

### Performance Characteristics: Model PA/PG8224 Model PA4089

|                             |  |
|-----------------------------|--|
| <b>Pressure Range:</b>      | 0 to 25 psi up to 0 to 10,000 psi                            |
| <b>Static Accuracy:</b>     | +0.25% of FS*  |
| <b>Stability:</b>           | +0.1% of FS per year up to a lifetime maximum of $\pm 1.0\%$ |
| <b>Repeatability:</b>       | +0.1% of FS*   |
| <b>Zero Balance:</b>        | +2% of FS*   |
| <b>Thermal Zero Shift:</b>  | +0.005% FS/°F*   |
| <b>Thermal Sensitivity:</b> | +0.005% FS/°F*   |
| <b>Proof Pressure:</b>      | Rated Range <5000 psi 200% of rated range                    |
| <b>Rated Range</b>          | >5000 psi 150% of rated range                                |
| <b>Burst Pressure:</b>      | 300% of rated range  |

### Electrical Characteristics - Unamplified / Amplified with EMI filter

|                               |  |
|-------------------------------|--|
| <b>Operating Temperature:</b> | -320° to 460°F (-196° to 238°C) -65° to 250°F(-54° to 121°C)     |
| <b>Shock:</b>                 | 2000 - 6000 g pyroshock  |
| <b>Vibration:</b>             | >140 g random from 20 to 2000 Hz >75 g random from 20 to 2000 Hz |

### Physical Characteristics

|                               |   |
|-------------------------------|---|
| <b>Pressure Fitting:</b>      | Threaded Fitting or Pressure Tube as Defined                          |
| <b>Electrical Connection:</b> | Connector or Cable as Defined   |
| <b>Documentation:</b>         | Customer Defined Acceptance Data Package and Supporting Documentation |



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