Flight Test Measurement

All Aerospace products must be tested extensively to prove that the designs are valid before production can begin. Testing begins with computer generated drawings, followed by wind tunnel and ground tests. Finally, all products must be tested in flight conditions. Instrumentation used to monitor and record the test data must not only be rugged and compact but also able to withstand extreme temperature, shock and vibration.

Scanivalve's high sample rate pressure, electrical, and thermocouple measuring products and data systems are ideally suited for Flight Test measurements. All of our flight test application scanners have been vibration and shock tested to MIL-STD-810.

Pressure Measurement

All Scanivalve pressure modules are capable of recording most pressure measurements that must be made during Flight Tests. Modules can measure wing leading edge pressure distributions, nacelle engine inlet distortion pressures and gas turbine pressure measurements.

There are a range of pressure scanners with 16, 32, or 64 input designs which can be placed in the cabin, in the wing, or in the engine nacelle to minimize tubing length.

All pressure scanners incorporate internal pneumatic valves to allow a user to:

- Measure pressures
- Zero correct all sensors
- Multi-point calibration (pre-flight or flight)
- Purge the input lines of condensation and other contaminants

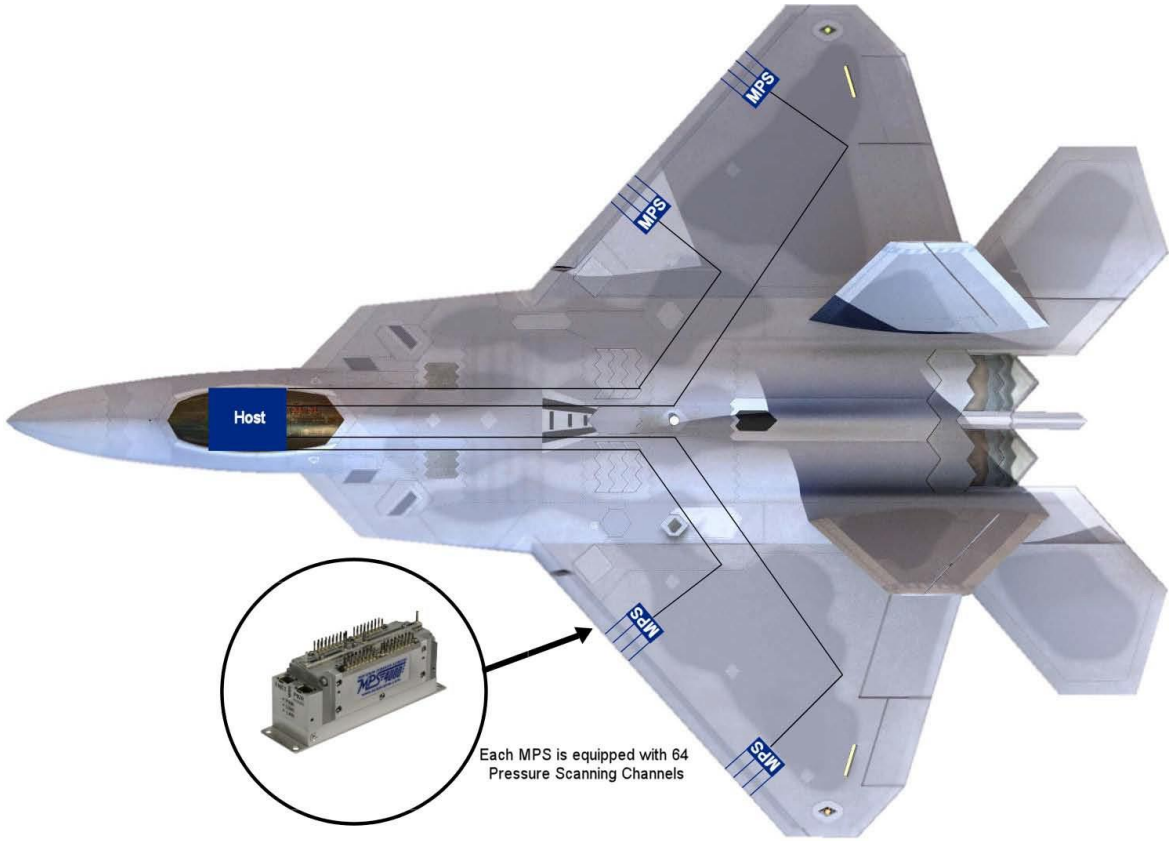
Single systems are available up to 512 channels or more. Standard Full Scale Pressure ranges are available from 4" H2O up to 750 psid. Limited absolute pressure ranges are also available.

The MPS pressure scanner can be installed in an optional compact insulated Thermal Control Unit (TCU). The Thermal Control Unit has a heater circuit to regulate the temperature of the sensors for thermal stability in extreme temperatures.

The maximum data sampling and throughput speed is 875 Hz when the dynamic zero function is enabled.

Applications

- Complete Flight Test pressure measurement systems utilizing Scanivalve's model DSA and MPS pressure scanners.
- MPS 64 channel pressure scanners interfaced to commercially available PCM manufacturer's interface cards.
- The intelligent DSA and MPS4264 miniature pressure scanners are equipped to handle all of the flight test pressure measurement needs with engineering unit conversion directly in the module.



The MPS4264 is an intelligent pressure measurement device delivering digital data. Designed from the ground up with size, accuracy and functionality in mind, it boasts 64 pressure channels, a small footprint, TCP/ IP Ethernet connectivity, and a wealth of other innovative features. The MPS4264 is designed around a core sensor pack that uses a custom packaged, ultra-stable sensor. Scanivalve engineers evaluated known causes of non-repeatability in piezoresistive pressure transducers. Designing a patented double isolation method of bonding the sensors to the base substrates minimizes the mechanical influences of assembly and thermal expansion. This process dramatically improves the stability and the resulting accuracy of the sensors.

Scanivalve engineers also developed a proprietary means of maximizing sensor stability for span and offset in the miniature pressure scanner. This technique of "Dynamic Zero Correction" greatly improved the sensor's stability overtime and temperature (patent pending). The increase in overall sensor stability reduces the need for zero offset and span calibrations, resulting in significantly reduced test interruptions and down time. This device is a stand-alone scanner and handles all of the A/D conversion at the module level. Communication to the module is Ethernet TCP/IP or UDP.

A TCU (Thermal Control Unit) is available to help stabilize sensor temperature in extreme conditions. Placing the MPS within the TCU, allows the MPS to be directly fitted to the aircraft, capturing live data in the air.

For more details on the MPS pressure scanner visit www.EvolutionMeasurement.com or call +44 (0)1264 316470

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