

Insitu Integrator unmanned aerial system (UAS) with SpaceAge Control pitot-static probe mounted. Photo: Insitu, Inc.



Air Data Sensing

UAV Special Edition (S162A(NC))

Insitu Selects SpaceAge Control Pitot-Static Probe for Integrator UAS

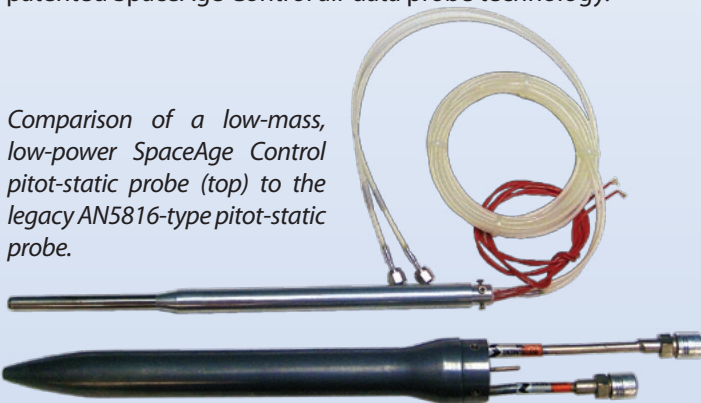
Air Data Probe Power, Size, and Mass Match Long-Mission Requirements of Leading-Edge Unmanned System.

SpaceAge Control, Inc. has been selected by Insitu Inc. to provide the miniature pitot-static probe for the Integrator unmanned aircraft system (UAS). The probe provides primary air data pressure information required by the aircraft. This series of air data probes provides leading-edge power-efficiency, low mass, and small size for UAVs and light jets.

"After months of field evaluations by other end users, we are excited about Insitu selecting one of the SpaceAge Control's miniature pitot-static probes for the Insitu Integrator," said Pat Birmingham, Operations, SpaceAge Control. "This project serves as a testimony of the value of this type design to the UAV and light aircraft markets," Birmingham added.

This series of air data probes and similar SpaceAge Control solutions offer several benefits over traditional air data systems including 35% to 50% less power, 35% mass reduction, and mechanical interface backwards compatibility with legacy designs. The patented design specifically addresses the unique requirements of long-duration, smaller-sized aircraft such as unmanned aerial vehicles and light jets. The Insitu Integrator is one of several legacy and new aircraft programs using the patented SpaceAge Control air data probe technology.

Comparison of a low-mass, low-power SpaceAge Control pitot-static probe (top) to the legacy AN5816-type pitot-static probe.



Comparison of a low-mass, low-power SpaceAge Control 4392-similar pitot probe (top) to an AN5812-type pitot probe.



AN5812-Interface Compatible Pitot Probe Used on CEI Unmanned Aerial Targets

Pitot Probe Power, Size, and Mass Match Subscale Target System Requirements.

SpaceAge Control, Inc. has been selected by Composite Engineering (CEI), Inc. to provide miniature pitot probes for CEI subscale target systems. These air data probes provide the primary total pressure information required by the aerial target. The 4392-series air data probe gives leading-edge power-efficiency, low mass, and small size for very light jets, aerial targets, and UAVs.

The 4392-series product was designed specifically for CEI's requirements. The patented design specifically addresses the unique requirements of long-duration, smaller-sized aircraft such as unmanned aerial vehicles and very light jets.

"After extensive evaluation in the field, we appreciate CEI choosing the 4392-01 pitot probe for their aerial targets," said Jeff Anderson, Application Engineering, SpaceAge Control. "This product takes a load off of aerospace engineers -- for size, mass, and electrical current draw."

"The probes' small size, custom interface, and low power provide our solution with a lot more design flexibility," said Dallas Shelby, Procurement, CEI.

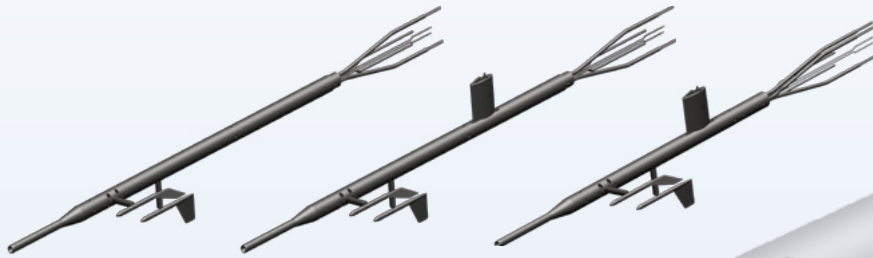


CEi MQM107 subscale aerial target.

CEi has been producing components for the MQM-107 for a number of years. Through this introduction to the aerial target world, CEi is now a major player in the subscale market and embraces customers who have needs for both legacy products and spares, as well as the state-of-the-art target systems.

Air Data Probes for UAVs and Light Aircraft Now Shipping

Full Air Data Sensing in Miniature Packaging.



SpaceAge Control's family of miniature, multi-functional air data probes.

The 4383-, 4418-, and 4512-type multi-functional air data probes offering complete air data sensing capability for unmanned aerial vehicles (UAVs) and light aircraft are now shipping. The products give users combinations of pitot pressure, static pressure, angle of attack, angle of sideslip, and air temperature. The comprehensive offerings reduce system integration efforts, reduce mass, and reduce power requirements.

The products are suited for use with production, flight test, and development aircraft and are distinguished from each other as follows:

- **4383 type - heated pitot-static (P-S) pressure with angle of attack (AOS) and angle of sideslip (AOS) outputs**
- **4512 type - heated P-S pressure with AOA and AOS and air temperature outputs**
- **4418 type - unheated P-S pressure with AOA and AOS outputs**

4512-type multifunctional air data probe shown near actual size.

The products weight about 9 ounces (249 g) with full-length electro-pneumatic harnesses. In the case of the 4512-type air data probe, full air data sensing outputs are provided in a 16-inch long package.

"SpaceAge Control's 20-year history with unmanned aircraft combined with our focus on listening to the customer have allowed us to design, test, and manufacture this family of products ideally suited for aircraft needing low mass and comprehensive air data sensing," said Pat Birmingham, Operations, SpaceAge Control. "These products allow avionics, test, and design engineers to focus more on the data and less on the data source."

The air data probes can be modified for:

- **different angle of attack and angle of sideslip sensor ranges**
- **custom mechanical interfaces to include pressure fittings and electrical connectors**
- **pitot-static probes provided with or without drain holes**
- **longer lengths for easier aircraft integration**

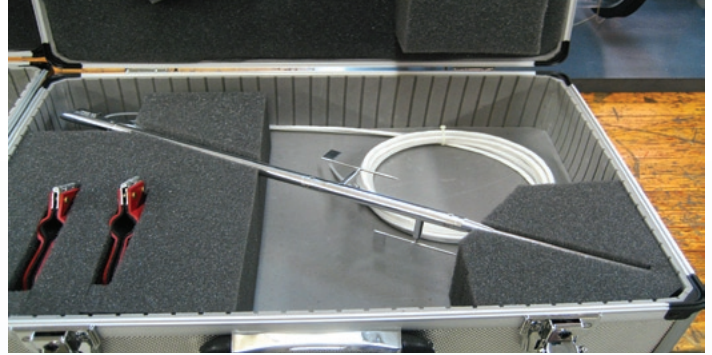
Subminiature Air Data Boom for Unmanned Aerial Vehicles (UAVs)

Small size and low mass increases sensing capabilities for small air vehicles.

Flight test engineers, avionics designers, and technicians can now more accurately monitor airspeed, altitude, angle of attack, and angle of sideslip on small unmanned aerial vehicles (UAVs). The SpaceAge Control 101100 subminiature air data boom and customized derivatives provide air data sensors that meet the small size and mass requirements of today's small UAVs.



NASA Langley S2 aircraft (1/24 scale L-1011) with 101100 subminiature air data booms on each wingtip.



The 101100 subminiature air data boom ready for shipment for a UAV platform.

The 101100 boom, which is the world's smallest flight test air data boom, was initially used by NASA Langley Research Center to support "refuse to crash" research efforts. Two 101100 booms are mounted on an S2 aircraft, one boom on each wingtip. The S2 is roughly equivalent to a 1/24th scale L-1011 transport aircraft. At 18.5 inches (469.9 mm) long, 0.50 inches (12.7 mm) in diameter, and only 0.60 pounds (272 grams), the 101100 boom is a breakthrough in miniaturization with potential applications on vehicles of any size.

The 101100 boom includes:

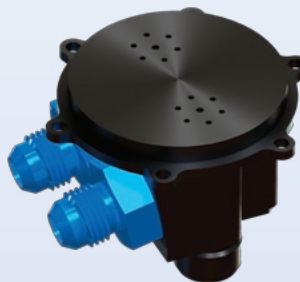
- **Pitot (total) and static pressure ports**
- **Angle of attack and angle of sideslip sensors with voltage divider outputs**
- **18.50-inch (469.9-mm) length**
- **0.60-pound (272 g) mass**
- **-65° to +125° C (-85° to +257° F) operating temperature range**
- **Mounting features ideal for small UAVs, very light aircraft, scale model aircraft, and lighter-than-air vehicles**

The 101100 boom is the latest in a series of small air data products now available from SpaceAge Control. SpaceAge Control first focused on the UAV market in 1987 with the introduction of the 100400 mini air data boom. The 101100 boom is shipping with a 30-day lead time.

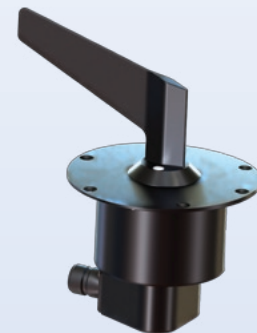
Need Other Air Data Sensors?



4260-XX Pitot-Static Probe



4456-XX Static Pressure Port



4470-01 AOA Sensor

REQUEST INFORMATION ON THESE PRODUCTS AND OTHER PRODUCTS ON THE OTHER SIDE OF THIS PAGE!

Technical Information Request

To obtain technical information on the below products, check the items you are interested in and return this form via

- fax **+1-661-273-4240**
- e-mail **s162@spaceagecontrol.com**
- or mail **SpaceAge Control, 38850 20th Street East, Palmdale, CA 93550 USA**

Or, send an e-mail or fax message with your contact details.

- | | |
|---|---|
| <input type="checkbox"/> 4470 angle of attack sensor | <input type="checkbox"/> 4222 air temperature sensor |
| <input type="checkbox"/> 4207 pitot and pitot-static probes | <input type="checkbox"/> 4455 static pressure ports |
| <input type="checkbox"/> 4383 air data probe | <input type="checkbox"/> 4418 air data probe |
| <input type="checkbox"/> 4512 air data probe | <input type="checkbox"/> 4380 pitot probe |
| <input type="checkbox"/> 4420 pitot-static probe | <input type="checkbox"/> 101100 subminiature air data probe |



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**AIR DATA SENSING
UAV SPECIAL EDITION**

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Unmanned Aerial Vehicles (UAVs) Possible Air Data Sensor / Probe Configurations

