

# WINDSCEPTOR<sup>®</sup>

## OPTICAL AIR DATA SENSOR SUITE

### SENSOR CAPABILITIES

- Pitot Tube Replacement
  - ✓ *Remote* Airspeed measurement from zero knots to 300 knots.
  - ✓ Insensitive to atmospheric conditions such as moisture and icing.
- Extremely Accurate True Airspeed (TAS),  $\alpha$ , and  $\beta$ 
  - ✓ True Airspeed: Installed accuracy better than 1 knot
  - ✓ AoA: Installed accuracy better than 0.25<sup>±</sup>
  - ✓ AoS : Installed accuracy better than 0.25<sup>±</sup>
- Relative Wind Speed, Wind Direction, Gust, and Turbulence
  - ✓ Real-time measurement of gust and turbulence ahead of aircraft
- Tail Rotor Effectiveness
  - ✓ Mapping wind field to predict impending loss of directional control
  - ✓ Mapping wind field to predict loss of main rotor power
  - ✓ Ideal for low speed, high power margin operations
- Flexible Installation



**OVER 1,000 FLIGHT HOURS**  
TESTING WITH MORE THAN 200 LANDINGS IN  
DEGRADED VISUAL ENVIRONMENT (DVE)

### IMPLEMENTATION BENEFITS

- Conformal/flush installation for low observability & minimizing drag.
- Higher accuracy than an all-pneumatic system.
- Eliminates pneumatic lag/hysteresis in TAS, AoA & AoS measurements.
- Accurate air data measurement in all flight regimes.
- No sensitivity to air vehicle skin surface changes - RVSM.
- No performance degradation due to moisture or icing conditions.
- No need for periodic calibration of sensors.
- No requirement to mount sensors on the nose area
- Line replaceable units (LRU) for minimum maintenance.



Optical Air Data Systems

10781 James Payne Ct. Manassas, VA 20110

Tel. (703) 393-0754 Web: [www.oads.com](http://www.oads.com)

For more information email: [info@oads.com](mailto:info@oads.com)

# WIND SCEPTOR®

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### SENSOR SPECIFICATION

Parameter	Specification
Wind Speed	-50 knots → 200 knots
Wind Direction	0° to 359° relative to aircraft
Measurement Accuracy	Speed: ± 1 knot Direction: ± 2° for winds > 15 knots
Data Fields	GPS Time, True Airspeed, Relative Wind Speed, relative Wind Direction, Turbulence Strength
Data Reporting	ARINC-429
Data Rate	20 Hz
Sensor Dimensions	Chassis: 14" L x 10" W x 9.6" H Transceiver: 13" L x 4.5" D
Weight	Chassis: 26 lbs. Transceiver: 9 lbs.
Power	28VDC (160 W max.)
Laser Classification	Class 1M Eye-safe (compliance with IEC 60825-1 standard)
Operating Temperature	-20° C to 55° C
Storage Temperature	-50° C to +85° C
Other Features	GPS time-stamped, platform motion compensated



### MEASUREMENT CONCEPT



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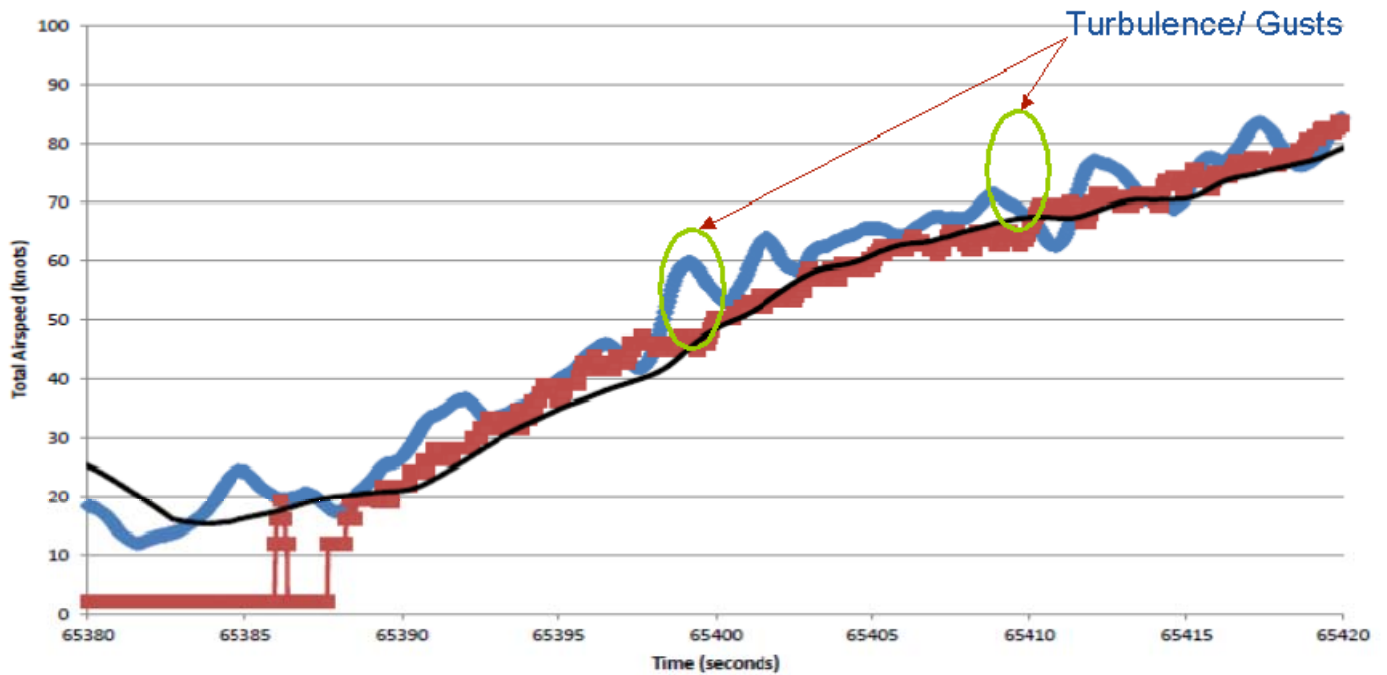
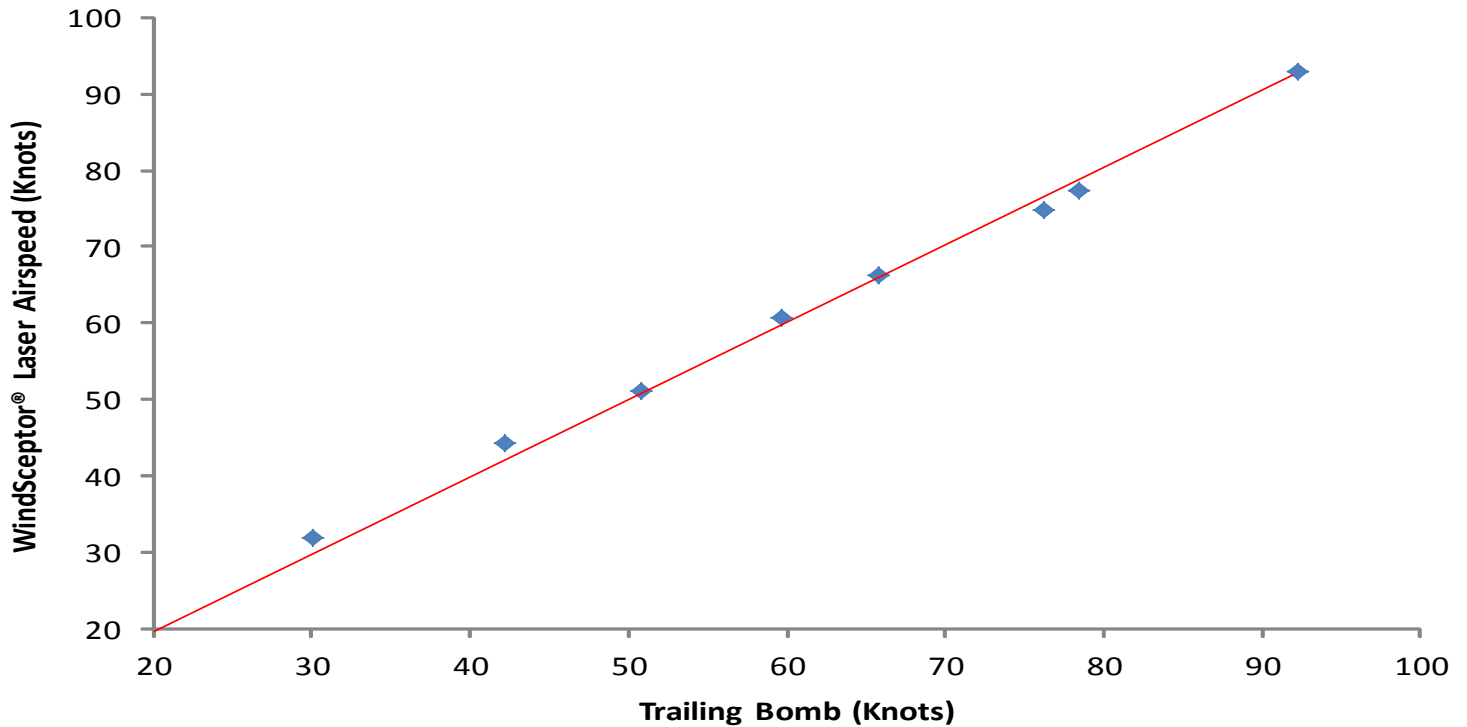
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## OPTICAL AIR DATA SENSOR SUITE

### PERFORMANCE VALIDATION



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## OPTICAL AIR DATA SENSOR SUITE

### SYSTEM ELEMENTS

➤ ATR Style Chassis

- Designed to be installed in the Avionics Bay.
- Contains all of the system electronics.



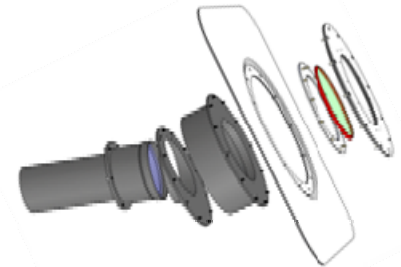
➤ Optical Air Data Probe (OADP)

- Sends multiple beams of light above and below the aircraft.
- Compact electrically passive flush mounted lens tube behind a heated optical window.
- OADP can be installed in any location with a clear vertical line of sight.
- Once installed, the orientation of the OADP needs to be measured relative to the CG and body axes of the aircraft.



➤ Armored reinforced fiber optic cable

- Connects the system chassis to the OADP.
- Fiber Optic Cable can be as much as 300 feet long.



### About Optical Air Data Systems

Optical Air Data Systems, LLC (OADS) is a high technology, award winning small business located in Manassas, Virginia that specializes in the rapid design, development, and prototyping of lightweight, rugged solutions to meet real world laser and laser sensor requirements of military, aviation, handheld, as well as commercial customers. OADS has been designing and developing fiber based lasers and laser remote sensing solutions for over 23 years. The OADS team consists of experienced subject matter experts, scientists, engineers, and program managers capable of rapidly transitioning customer requirements from a concept to hands-on working prototypes and low rate production systems. OADS has won multiple awards for outstanding development of new technology, including the 2007 Tibbetts Award by the Small Business Technology Council.

Born out of the aerospace industry. OADS has integrated telecom advancements in fiber optic technology along into its own patented technology, resulting in a suite of lasers and laser sensor capabilities including:

- The world's first all-fiber LIDAR based airspeed sensor for aircraft applications
- Laser altimeter & ground velocity sensor for rotary wing aircraft for precision approach and landing applications
- LIDAR sensor for wind turbine control
- The first ever hand held laser wind sensor
- All fiber 1064 nm high power pulsed lasers
- Laser range finders



OADS' products are successfully transitioning to full-scale manufacturing with the aid of OADS' product transition team. OADS maintains a fully operational prototype and low rate production line capability.

For more info email: [info@oads.com](mailto:info@oads.com)  
or visit our website: [www.oads.com](http://www.oads.com)

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