Atlas & Horizon µADC

The Aeroprobe Atlas & Horizon Air Data Systems are a complete solution for in flight measurement of air data at an unprecedented combination of range, size, and accuracy. The Atlas & Horizon µADS each consist of two primary components: a Pitot-Static Probe and Micro Air Data Computer (µADC). These components provide direct measurements of **airspeed**, **static and total pressure**, **and barometric altitude**.

Atlas Highlights	
✓	User Configurable Operational Modes
✓	Command Line Interface
✓	Field Upgradeable Firmware
✓	Battery-backed Real Time Clock/Calendar
✓	Start-up Sync Signal
✓	Rugged Aluminum Enclosure
✓	LED Indicator Lights
✓	Data Logging (Standard 8GB)
✓	External GPS Synchronization
✓	PT100 RTD Temperature Input
✓	Mounting Hardware
✓	Probe Heater Control

Qualifications

The Atlas and Horizon Micro Air Data Computer have been tested and certified compliant with the following military and commercial standards.

Table 1. Military and Commercial Standards		
Test Standard	**Method/Procedure/Section**	**Title**
DO-160G	Sections 4.5.1 & 4.5.2, 8 hours @ -55°C (4 hours non-op./4 hours op.)	Storage & Operational Low Temperature
DO-160G	Sections 4.5.3 & 4.5.4 (Proc. I & III), 85°C	Storage & Short-Term Operational High Temperature
DO-160G	Section 4.5.3 (Proc. II), 3 24-hour cycles	Operational High Temperature
Custom	1000 ft @ 25°C to 65000 ft @ -55°C, 3 9-hour cycles	Cyclic Temperature & Altitude
MIL-STD-810H	Method 514.8, Cat. 24, GMI, 1 hour/axis	Vibration
MIL-STD-810H	Method 516.8, Proc. I, 50G, 6 ms, TPS, 3/dir./axis	Shock

System Specifications

Table 2. µADC Interface and SWAP			
Parameter	**Atlas**	**Horizon**	**Unit**
ELECTRICAL			
Input Voltage Range	8 to 36		VDC
Power at 12 VDC	1.1		W
Power at 28 VDC	1.5		W
Probe Heater Max Operating Current[1]	3		Amps
Probe Heater Max Operating Voltage[1]	60		VDC
RTD (Class A or B) Range	-200 to 600		°C
COMMUNICATION			
Sampling Data Rate Options[2]	10, 20, 50, 100		Hz
Serial Specification Options	RS232, RS422		-
Serial Data Output Streaming Rate Options[2]	460800, 230400, 115200, 57600, 38400, 19200		bps
Analog to Digital Resolution, bits	16		bits
MECHANICAL			
Size	(66 x 79 x 41) 2.6 x 3.1 x 1.6		mm (inches)
Mounting Flange Footprint	66 x 97 x 1.5 (2.6 x 3.8 x 0.06)		mm (inches)
Weight	181	192	grams

[1]µADC specification only. Check Air Data Probe Technical drawings for operating voltage and power.
[2]Serial streaming data rate and sample rate are interrelated. All combinations are not available. Refer to the Aeroprobe Micro Air Data Interface Document (Document No. 91034-14-ICD-01).

Table 3. Range Options (Properties at Sea Level, 15°C)				
Speed Range		**Low**	**Mid**	**High**
Maximum Indicated Airspeed		120 knots, Mach 0.19	310 knots, Mach 0.46	630 knots, Mach 0.95
Recommended Minimum Airspeed[1]		9.0 knots	17 knots	40 knots
Indicated Airspeed Error[2]	±4° AoA	±1 m/s	±1 m/s	±2 m/s
	±8° AoA	±2 m/s	±3 m/s	±4 m/s
	±12° AoA	±3 m/s	±5 m/s	±6 m/s
Minimum Reported Airspeed[3]		5.0 knots	12 knots	31 knots
Maximum Safe Over-Pressure[4]		9.7 psi	10 psi	20 psi
Operating Temperature Range[6]		-40 to 85 °C		
Storage Temperature Range		-55 to 85 °C		
µADC Model		**Atlas**	**Horizon**	
Barometric Altitude Range		-500 to 65,000 ft	-500 to 75,000 ft	
Barometric Altitude Resolution[5]		3.3 ft	3.3 ft	

[1]Indicated airspeeds below minimum recommended values may result in IAS errors greater than specified.
[2]Assumes use with Aeroprobe Pitot-Static probes. Can be used with third party probes though accuracy is not guaranteed.
[3]The minimum reported airspeed is dictated by the minimum dynamic pressure that can accurately be measured at zero altitude.
[4]Pressures above the specified maximum safe over-pressure will cause damage to the internal pressure sensors.
[5]Does not include error due to local barometric pressure variance. See Figure 1 for more detail.
[6]Still air at sea level pressure.

Figure 1. Barometric Altitude Error (2σ)

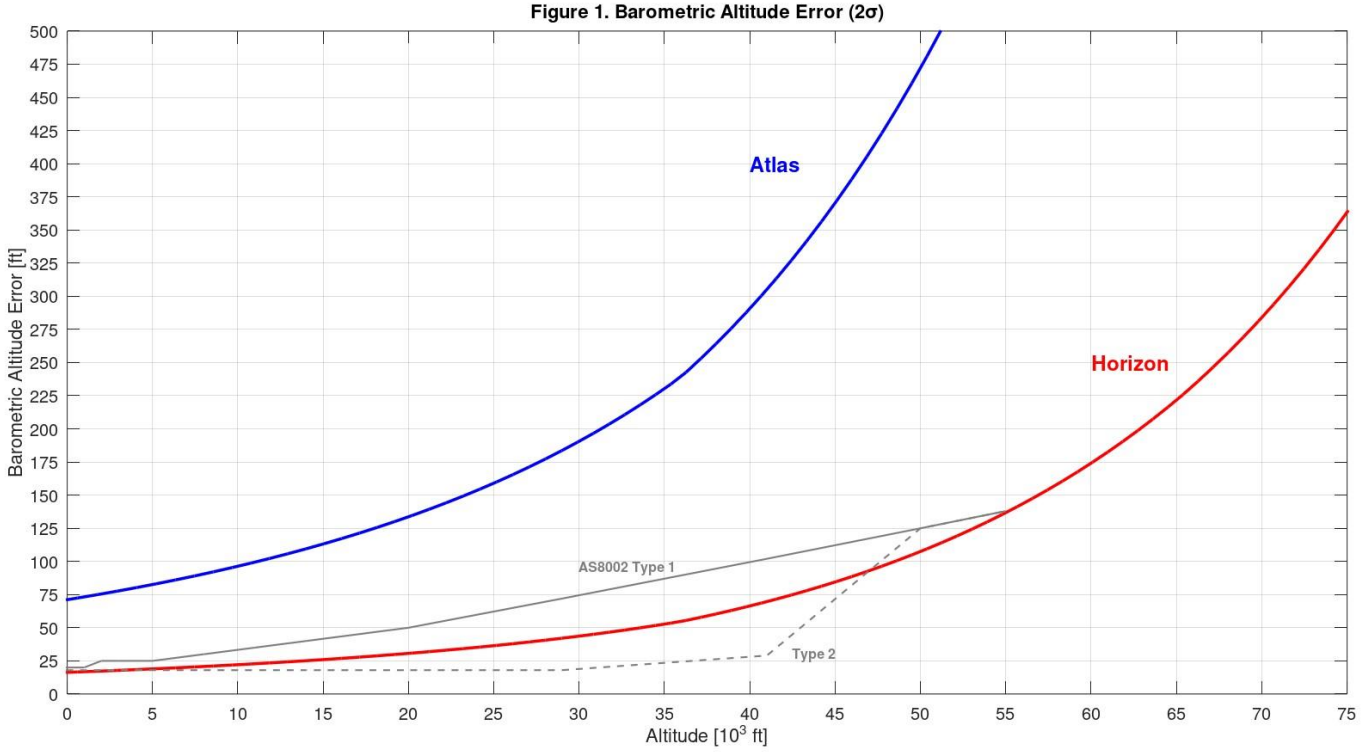
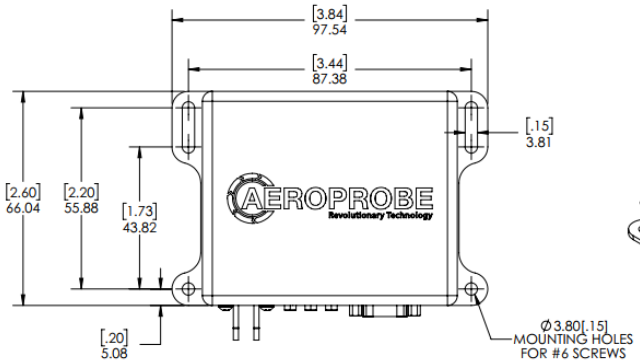
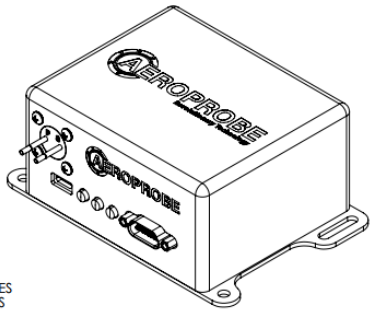


Table 4. Attitude Heading Reference System (AHRS) Specifications		
Parameter	**Typical**	**Unit**
Roll/Pitch	0.75 (static), 1.0 (dynamic)	deg
Heading	2.0	deg
Output Rate	100	Hz
Gyro Range	±2000	°/s
Gyro Non-linearity	0.1	%FS
Gyro Noise Density	0.01	°/s/√Hz
Gyro G-sensitivity	0.001	°/s/g
Gyro In-run Bias Stability	10	°/hr
Accelerometer Range	±16	g
Accelerometer Non-linearity	0.5	%FS
Accelerometer Noise Density	200	µg/√Hz
Accelerometer Zero g-output	±2	mg
Accelerometer In-run Bias Stability	0.1	mg
Bandwidth	180	Hz
Magnetometer Range	±0.8	Gauss
Magnetometer Non-linearity	0.1	%FS
Magnetometer Noise Density	200	µG/√Hz
Magnetometer Non-linearity	0.2	%FS
Magnetometer Total RMS noise	0.5	mG

Mechanical Properties

NOTES:
1. 2 PORT PNEUMETIC QUICK DISCONNECT
2. MICRO USB CONNECTOR
3. D SUB CONNECTOR, MICRO D, RECEPTACLE, MIL-DTL-83513 SERIES, 15 CONTACTS





DETAIL A
PROBE PNEUMETIC CONNECTOR
PORT LOCATIONS
SCALE 4 : 1