

Features

- High accuracy, RVSM compliant
- Accuracy to 2 ft, 0.03 knots
- True differential sensor for airspeed (Qc)
- One year calibration interval
- Automatic zeroing
- Variety of Ps and Qc ranges available

For more than thirty years, we have provided high precision Air Data Test Sets (ADTS) to the aerospace industry, airframe and component manufacturers for testing avionics instrumentation used on a variety of aircraft from fixed-wing to rotary to the space shuttle. The AeroCal 7750i Air Data Test Set represents the latest generation ADTS incorporating a unique quartz sensor having unequalled precision and long term

stability with the latest pressure control technology. The AeroCal 7750i ADTS provides high performance measurement and control of all air data parameters.

The AeroCal 7750i is a laboratory ADTS for calibrating a wide variety of avionics instrumentation such as altimeters, airspeed indicators, rate of climb meters, Mach meters, air data computers and engine-based control systems that rely on accurate control and measurement of pressure. The AeroCal 7750i can be used to calibrate devices that are required to meet the Reduced Vertical Separation Minimal (RVSM) requirements, controlling altitude to within two feet (better than 0.003 in Hg) at sea level. Additionally, the AeroCal 7750i provides precision rate control for both altitude and airspeed.

The AeroCal 7750i is ideal for use in Automatic Test Equipment (ATE) systems. The seven-inch height (4U) allows easy integration into comprehensive test systems. Additionally, an IEEE-488 interface is provided for PC-based control. The AeroCal 7750i can be set to emulate previous generation ADTS (Model 6610), eliminating the need to alter existing software.

AeroCal™ 7750i

Ruska Laboratory Air Data Test Set

AeroCal is a Ruska product.
Ruska has joined other GE
high-technology sensing businesses
under a new name—
GE Industrial, Sensing.



AeroCal 7750i Specifications

Automatic Go to Ground

Upon selecting the go to ground command, the AeroCal 7750i safely controls the pressure to the current, local barometric pressure. The user can then disconnect the device under test (DUT) without exposing sensitive instruments to a potential pressure transient or shock.

Leak Test Mode

A separate mode is provided for performing leak checks prior to beginning an actual calibration.

Protecting the Device Under Test

In order to protect the DUT, the operator can program in high and low limit settings for:

- Altitude
- Airspeed
- Rate of climb
- Mach

Automatic Volume Characterization

The AeroCal 7750i automatically tunes the controller into external volumes ranging from 5 to 60 cubic inches. This allows a large degree of flexibility for the configuration of the test system and the type of aircraft and components to be tested. For component manufacturers, a large number of devices can be tested simultaneously on a single manifold.

Automatic Zeroing

As with any instrument, regular zeroing is suggested to achieve maximum performance. This task is now automated and can be performed at the push of a button, or over the PC interfaces. The AeroCal 7750i incorporates the vacuum sensors onboard; no separate or external vacuum gauges or sensors are required. In addition, only one vacuum pump is required to operate and zero the AeroCal 7750i ADTS.

Avionics and Pressure Units

The AeroCal 7750i displays the common avionics units including feet and meters for altitude, calibrated airspeed in knots, km/hr, mph and Mach with corresponding rate displays for each unit per minute. It can display pressure units of mbar, in Hg @ 0°C, mm Hg, in H₂O @ 4, 20°C and 60°F, psi, hPa and kPa.

Mode	Ps Absolute		Qc Differential	
	Precision ¹	From 25% to 100% of FS: 0.005% of reading below 25% FS: 0.005% of 25% FS		
Stability: over 3 months Over 1 year	0.0019% RDG/3 months 0.0075% RDG/year		0.0019% RDG/3 months 0.0075% RDG/year	
Zeroing vacuum sensor	±10 mTorr (1.33 Pa)		N/A	
Control stability	0.001% FS		0.001% FS	
Control low limit ²	0.3 in Hg a (10 mbar a)		0 in Hg - Qc mode/0.3 in Hg at Pt mode	
Rate of climb	0 to 50,000 ft/min		N/A	
Rate of climb tolerance	1% of commanded to 50,000 ft		N/A	
Standard load volume	5 to 60 in (80 to 1,000 cc's)		5 to 60 in (80 to 1,000 cc's)	
Mach	N/A		0 to 10,000 ⁴	
Total Uncertainty ³ (Aeronautical Units)	<u>32 in Hg a</u> Sea level ±2ft 30,000 ±2 ft 60,000 ±7 ft	<u>40 in Hg a</u> Sea level ±2 ft 30,000 ±3 ft 60,000 ±8 ft	<u>32 in Hg D</u> 50 ±0.1 knots 100 ±0.05 knots 250 ±0.02 knots	<u>68 in Hg D</u> 50 ±0.2 knots 250 ±0.04 knots 500 ±0.02 knots 1,000 ±0.02 knots
Total Uncertainty ³ (Engineering Units)	<u>32 in Hg a</u> 30 ±0.0025 in Hg 15 ±0.0013 in Hg 5 ±0.0008 in Hg	<u>40 in Hg a</u> 30 ±0.0026 in Hg 15 ±0.0014 in Hg 5 ±0.0009 in Hg	<u>32 in Hg D</u> 0.5 ±0.0005 in Hg 16 ±0.0013 in Hg 32 ±0.0026 in Hg	<u>68 in Hg D</u> 0.5 ±0.001 in Hg 16 ±0.0016 in Hg 32 ±0.0027 in Hg 68 ±0.0055 in Hg

1. Precision is defined as the combined effect of linearity, repeatability and hysteresis throughout the operating temperature range. Some manufacturers use the word "Accuracy" in place of "Precision," however the meaning is identical.

2. Requires vacuum pump to control 0 psig, or the vent mode can be used to obtain 0 psig.

3. Total uncertainty is defined as the two sigma combined uncertainty of linearity, hysteresis, repeatability, thermal effects one year drift stability and the uncertainty in the GE Ruska primary standard, which include the uncertainty from NIST.

4. Limits can be set to prevent excessive mach.

AeroCal 7750i Specifications

High Performance for Fixed-Wing or Rotary Aircraft

Although the standard configuration offered is a Ps range of 32 in Hg and a Qc range of 68 in Hg, we also offer customer ranges. For example, for exclusive testing of rotary aircraft, a Qc range of 32 in Hg can be provided, increasing performance in the lower airspeed ranges. For other custom ranges please consult factory.

Ranges

Part Number	Ps	Qc
7750i-802	32	68
7750i-803	40	68
7750i-804	32	32
7750i-805	40	32

Display

TFT, VGA, active matrix, 6.4 in, 640 x 480 resolution, 65,000 colors

Scaling Factors

Altitude: ft, meters

Airspeed: knots, km/hr, mpg, Mach

Others: mbar, in Hg @ 0°C, in H₂O @ 4, 20°C and 60°F, mm Hg, kPa, hPa, psi

Control

Rate Control Indication

RoC—Rate of climb

RtAS—Rate of airspeed

Options

Lines and fittings kit (supply and test lines), vacuum pump—85 liter/minute capacity with auto-vent valve, filter and muffle. Portable cart system is available.

General

Electrical Power

115/230 VAC, 50/60 Hz, 150W

Temperature

Warmup time: 2 hours

Operating temperature: 15°C to 28°C (59°F to 82°F)

Storage temperature: -20°C to 70°C (-4°F to 158°F)

Humidity

Operating humidity: 20% to 75% RH, non-condensing

Storage humidity: 0% to 95%, non-condensing

Pressure Medium

High purity nitrogen or dry, clean air

Calibration

One year interval is recommended. Use of primary standard such as the Model 2468 pitot static gas piston gauge is recommended.

Digital Interface

IEEE-488.2

RS232

Pneumatic Connections

Static: AN-6

Pitot: AN-4

Vacuum supply: AN-6

Pressure Supply: AN-4

Weight and Dimensions (w x h x d)

Weight: 60 lb (28 kg)

Size: 19 in x 7 in x 19 in (48.26 cm x 17.78 cm x 48.26 cm)

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