Druck is the foremost supplier of air data test systems, with over 25 years experience in the design and manufacture of advanced pressure measuring instruments and sensors. The ADTS 405 is a series of reliable, high accuracy, air data test systems. The rugged, compact design has evolved as a result of Druck’s continuous research and development, customer feedback and experience gained from manufacturing thousands of automatic pressure controllers. This has enabled performance, maintainability, and operational simplicity to be optimized.

**ADTS 405 MkII**

**Druck Air Data Test System**

**Design history with TERPS innovation**

**Features**

- High accuracy TERPS sensor suitable for testing RVSM aircraft
- Flightline and rack mount versions
- Civil and military specifications
- Integral or remote pressure/vacuum supplies
- Fully programmable for aircraft type
- Protection for aircraft instruments
- Fully CE and ROHS II compliant
- 2 year warranty as standard
The ADTS 405 MKII series is a proven world leader and industry standard specified by many:

- National and international civil airlines
- Military forces
- Aircraft manufacturers
- Ground support organisations
- Corporate fleet owners

The ADTS 405 MKII is a twin-channel Ps and Pt pressure control system used for the precision calibration/verification of aircraft pitot statics, compliant with RVSM (Reduced Vertical Separation Minima) requirements.

Fully programmable for a wide range of fixed or rotary wing aircraft operating envelopes, the ADTS 405 MKII enables vital flight instrumentation, such as altimeters, airspeed indicators, rate of climb indicators, Mach meters and air data computers to be accurately and rapidly tested. A remote control hand terminal enables the instrument to be driven from the cockpit or flight deck by a single operator.

This versatile instrument can be supplied in two formats:

**ADTS 405 - Rack mounted unit (RS)**

This is a compact, 50 cm (19 in) rack mounting unit for laboratory or workshop use. It is ideal for integration with ATE systems, or simply for use as a convenient bench top tool. Pneumatic connections are available via either the front or rear panel to suit specific applications. An optional matched pressure/vacuum supply unit (PV103R) is available as a separate rack module.

**ADTS 405F - Transportable flight line unit (FS/ FX/LS/LX)**

This is a self contained portable unit with integral pressure/vacuum supplies, housed in a single military standard enclosure. It is ideal for calibration and simulation on the flightline.

---

**Instrument operation**

All the instruments can be controlled directly via the membrane keypad/display on the front panel. A remote control terminal for cockpit/flight deck operation is supplied as standard (optional for ADTS 405RS). This enables a single person to complete the entire test program, while conveniently seated in the aircraft.

A wide range of calibrations and simulations can be performed that monitor and control Ps, Pt, Qc, Mach, Rate of Climb and EPR. The instrument can be scaled in numerous units including ft, knots, inHg, mbar, psi, inH20. In addition Mach or airspeed can be held constant while altitude is controlled.

The ADTS 405 series is specifically designed to ensure that the instrument or aircraft system under test cannot be damaged.
**The preferred choice of the military**

Military authorities throughout the world have adopted the ADTS 405F variant as standard equipment such as:

**Remote control terminal**

The remote control terminal is a rugged handheld unit that provides the operator with all the display and keypad facilities featured on the ADTS 405 front panel. Operation from the flightdeck is then possible by a single operator. 18 m (59 ft) and a 2 m (6.5 ft) cables are supplied as standard. There is also a 50m cable option available. Examples of the many keypad functions are listed below:

- **EPR**
  Engine Pressure Ratio test (Ps/Pt for inlet exhaust).
- **RoC/Ps rate**
  Rate of climb, rate of speed entry and timing display.
- **Rate timer**
  Select timing for RoC testing or leak testing.
- **Hold**
  Freeze control value to ‘on state’ at current conditions.
- **Rate**
  Rate control for Pt channel.
- **Leak measure/control**
  Select Measure or Control Mode – start up in measure mode.
- **Ground**
  Controlled vent to ground and read QFE/QNH.
- **Local/remote**
  Control/transferred to ATE/IEEE 488.
- **Port**
  Select multi-outputs on Ps and Pt if fitted.
- **Print**
  Prints to internal memory.
- **Execute test program**
  Manual stepping when in-built TPM program.
- **Help**
  Provides advice to operator on control procedures as required.
- **Set Up**
  Select units, limits, local conditions, display format, etc.

**US Army**
NSN 4920-01-388-6790

**US Navy**
NSN 4920-01-656-6280

**UK RAF**
NSN 6625-99-567-0696

**ALT/Ps**
Altitude read and value entry.

**Speed/QC**
Airspeed read and value entry. Mach/PtMach number.
### ADTS 405 MkII specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Operating range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Altitude</strong></td>
<td>-914 to 24,384 m (3,000 to 80,000 ft)</td>
<td>0.3 m (1 ft)</td>
<td>0.9 m at sea level (3 ft at sea level)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.1 m at 9144 m (7 ft at 30,000 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.8 m at 18,288 m (29 ft at 60,000 ft)</td>
</tr>
<tr>
<td><strong>Static sensor</strong></td>
<td>35 (1 to 1355 mbar absolute)</td>
<td>0.01 mbar (0.0003 inHg)</td>
<td>±0.1 mbar (±0.003 inHg)</td>
</tr>
<tr>
<td></td>
<td>(1 to 40 inHg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Airspeed</strong></td>
<td>10 to 850 knots or 10 to 1,000 knots</td>
<td>0.1 kts</td>
<td>±0.5 kts at 50 kts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1 kts</td>
<td>±0.07 kts at 550 kts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>±0.05 kts at 1,000 kts</td>
</tr>
<tr>
<td><strong>Pitot sensor</strong></td>
<td>35 (1 to 2700 mbar absolute)</td>
<td>0.01 mbar (0.0003 inHg)</td>
<td>±0.2 mbar</td>
</tr>
<tr>
<td></td>
<td>(1 to 80 inHg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35 (1 to 3500 mbar absolute)</td>
<td>0.01 mbar (0.0003 inHg)</td>
<td>±0.26 mbar</td>
</tr>
<tr>
<td></td>
<td>(1 to 103 inHg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rate of climb</strong></td>
<td>0 to 6000 ft/min</td>
<td>1 ft/min</td>
<td>±1% of value</td>
</tr>
<tr>
<td><strong>Mach</strong></td>
<td>0.6 to 10.000</td>
<td>0.001</td>
<td>Better than 0.005</td>
</tr>
<tr>
<td><strong>Engine Pressure Ratio (EPR)</strong></td>
<td>0.1 to 10</td>
<td>0.001</td>
<td>Better than 0.005</td>
</tr>
</tbody>
</table>

1. Accuracy includes non-linearity, hysteresis and repeatability over the full operating temperature range, 12 months drift and calibration standard uncertainty.
2. 32,004 m (105,000 ft) available (control with suitable vacuum pump).
3. 30,480 m (100,000 ft/min) rates selectable – limit protected for safety – volume dependent
4. Limits settable to prevent excessive mach. (Civil limit Mach 5).
**Rack mounted ADTS 405**

The ADTS 405RS is a 50 cm (19 in) rack mounting module housing the main control system with local front panel display and keypad. The remote hand terminal is optional for this model and a matched separate pressure / vacuum supply unit is available – please refer to PV 103R Datasheet.

**Scaling factors**

- Altitude: ft, metres
- Airspeed: knots, km/hr, mph
- Pressure: mbar, inHg, inH20 (4°C, 20°C, 60°F), mm Hg, kPa, hPa, psi.
- Airspeed: CAS (calibrated) : TAS (true - ability to enter temperature)

**Rate control/indication**

- RoC: Rate of Climb
- Rt Ps: Rate of Static
- Rt Pt: Rate of Pitot
- Rt Qc: Rate of (Pt-Ps)
- Rt CAS: Rate of calibrated airspeed
- Rt EPR: Rate of engine pressure ratio

**Overpressure**

Negligible calibration change with up to 1.25 x FS overload applied.

**Control stability**

Better than 40 ppm.

**Recalibration**

Simple keypad instruction. 12 month interval suggested. Use of primary standard pressure reference is recommended. Recalibration can be done on nitrogen or air (See media compatibility.)
ADTS 405 Rack specifications

Display
VFD Display, 123 mm x 42 mm (4.8 in x 1.6 in) window with 4 lines of 20 characters 8 mm (0.3 in) high. Optional hand terminal display window 73 mm x 24 mm (2.87 in x 0.95 in).

Response
• Two readings per second display value update.
• Five readings per second remote interface updates.

Power supplies
• 100/120/230 Vac, 50/60 Hz
• 115 Vac 400 Hz
• Power consumption upto 400VA

Power failure protection
In the event of a power interruption, the output ports will be vented to ambient conditions safely. On power reconnect, the system is in measure mode.

Self test
Integral test routines and reporting for both electrical and pneumatic systems.

Digital interfaces
IEEE488.2 optional – Earlier versions also available.

Temperature range
• Operating: -20°C to 60°C (-4°F to 131°F)
• Storage: -51°C to 71°C (-60°F to 160°F)

Sealing
ADTS 405 MkII front panel is rainproof.

Humidity
0 to 100% condensing. “Tropicalised” pcb’s to MIL-T-28800

Shock/vibration
• MIL-PRF-28800 Class 2

Safety performance
• EN61010 for electrical and mechanical safety

Electromagnetic compatibility
• EN 61326-1

Physical
• 13 kg (29 lb) nominal.
• Case dimensions: 485 mm x 270 mm x 305 mm (19 in x 10.5 in x 12 in)

Pneumatic connections
Front panel mounted fittings with blanking caps
• Static: AN-6 37° flare
• Pitot: AN-4 37° flare

Fitted with replaceable filter
• Vacuum (AN6) and pressure (AN4) supply fittings on rear panel
• Rear mounted Static AN-6 and Pitot AN-4 (Option)

Pneumatic supplies
For normal use with source pressure at 25% above specified pressure range. Compatibility with other dry, non-corrosive gases can be provided. Please refer to Druck.

Media compatibility
Non-condensing dry gases compatible with 316L Stainless Steel, Silicon, Silicon dioxide, Fluorosilicon RV adhesive and glass
Flight line ADTS 405F
Transportable military cased version incorporating the ADTS 405 with built-in pressure/vacuum supplies. Control is via local keypad/display or standard remote control terminal.

Power supply
- 100/120/230 Vac, 50/60 Hz
- 115 Vac 400 Hz
- Power consumption upto 500VA

Digital interfaces
- IEEE488 Optional - Earlier versions also available.
- Ethernet and USB options available shortly.

Temperature
Flight line (FS/LS)
  - Operating: -20°C to 55°C (-4°F to 131°F)
  - Storage: -51°C to 71°C (-60°F to 160°F)
Extended (FX/LX)
  - Operating: -40°C to 55°C (-40°F to 131°F)
  - Storage: -51°C to 71°C (-60°F to 160°F)

Humidity
0 to 90% condensing. “Tropicalised” pcb’s to MIL-T-28800

Shock/vibration
- MIL-PRF-28800 Class 2

Sealing
Weatherproof in operating mode (lid removed).

Electromagnetic compatibility
To MIL-STD-461F for Extended case (FX and LX Option) & EN61326-1

Lid Line Switching unit (LS and LX Option)
Lid line switching unit offers customers the option of two five-way manifolds for multiple output ports, consists of 5 Static AN6 and 5 Pitot AN4 manually switched ports.

Safety performance
EN61010 for Electrical and Mechanical safety

Physical
- 35 kg (77 lb)
- 762 mm x 320 mm x 480 mm (30 in x 13 in x 19 in) nominal. Wheels supplied for ease of transport.

Pressure/vacuum unit
Integral pneumatic supplies. Auxiliary connections for external supplies to boost or drive other equipment. Supply for vacuum hold down static adaptors also provided.

Related products
Pressure/vacuum supply unit
For use with the ADTS 405, the PV103R is a 19” rack mounting module for ATE systems and features low maintenance dry pumps.

Accessories
Additional power cable and output hose styles are available, please inquire. Operators manual, safety manual and calibration certificate also supplied as standard.

Calibration standards
Instruments manufactured by Druck are calibrated against precision calibration equipment traceable to international standards.
Supporting services
Druck provides services to enhance, support and complement the Aviation GSE range. Our highly trained staff can support you, no matter where you are in the world.
Further details can be found in https://www.bakerhughesds.com/druck/air-data-test-sets
Training available on request.

Nationally accredited calibration certificates
New product is supplied with factory calibration certificates with measurements traceable back to international standards. For applications where initial nationally accredited calibration certificates are required or periodic re-calibration is desired, Druck Sensing can provide the solution.

Extended warranty terms
New product is supplied with an industry benchmarked initial warranty. For peace of mind, particularly if final installation is months away from your product purchase, extend coverage on your equipment beyond the initial period up to 4 years term.
• Improved cost predictability
• Increased assurance

Multi-year calibration and repair services agreements
Available for indicators and instruments, multi-year service agreements increase cost predictability by providing fixed rates for extended periods. With larger scope undertakings customized plans can be adapted to your needs.

Rental
Druck's rental program offers a simple, quick and affordable solution for unexpected measurement need. Rentals allow customers to be fully operational when challenges that are not foreseen arise. Assisting our customers in meeting peak demands, unexpected situations, evaluations and also to minimize downtime of important processes a wide range of measurement, test and calibration equipment is available on a short-term rental basis, from pressure indicators to portable calibrators and sophisticated air data test systems. The rental fleet is available from inventory, Factory tested & calibrated with a minimum rental period only 1 week. With larger scope undertakings any product can be made available for rental.

Maintenance
Should your equipment need maintenance our global repair facilities are happy to serve. Work is conducted by trained approved technicians, using controlled original equipment parts and procedures so restoring the product to design condition. This is particularly important with Intrinsically Safe products operated in hazardous environments and aviation ground support equipment.
Ordering information

Part numbering string

Model type
ADTS405MK2 Pitot Static Tester

Case Style
- RS - RS: Controller Rack Only
- FS - FS: Flightline Case Standard
- FX - FX: Flightline Case Extended
- LS - LS: Flightline Case Standard with Line switching Unit *
- LX - LX: Flightline Case Extended with Line switching unit *

Airspeed (CAS) Range
- A1 - A1: 850 knots CAS range Front
- A2 - A2: 1000 knots CAS range Front
- A3 - A3: 850 knots CAS range Rear
- A4 - A4: 1000 knots CAS range Rear

Power Input
- C1 - C1: Universal AC Input Power
- C2 - C2: AC or DC Input Power

Communication Ports
- D1 - D1: GPIB, Ethernet, USB, RS232
- D2 - D2: All D1 + Sperry (Rear)

Aircraft Bus
- B0 - B0: No Aircraft Bus Interface
- B1 - B1: Altim. Encoder Interface

Remote Hand Terminal (HT)
- T0 - T0: No Hand Terminal
- T1 - T1: Remote HT + 2m,18m Cables
- T2 - T2: All T1 + 50m cable

External Pneumatics Connectors
- P1 - P1: AN6 (Static), AN4 (Pitot)
- P2 - P2: Staubli Static-9 Pitot ~3

ADTS405MK2 - FS - A1 - C1 - D1 - B1 - T1 - P1 Typical part number

* Line switching unit consists of 5 Static AN6 and 5 Pitot AN4 manually switched ports.
## Accessories

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA405F-1</td>
<td>Power Cable 2m UK</td>
</tr>
<tr>
<td>AA405F-2</td>
<td>Power Cable 10m UK</td>
</tr>
<tr>
<td>AA405F-3</td>
<td>Power Cable 2m USA</td>
</tr>
<tr>
<td>AA405F-4</td>
<td>Power Cable 10m USA</td>
</tr>
<tr>
<td>AA405F-5</td>
<td>Power Cable 2m Europe</td>
</tr>
<tr>
<td>AA405F-6</td>
<td>Power Cable 10m Europe</td>
</tr>
<tr>
<td>AA405F-7</td>
<td>Power Cable 2m Australia &amp; New Zealand</td>
</tr>
<tr>
<td>AA405F-8</td>
<td>Power Cable 10m Australia &amp; New Zealand</td>
</tr>
<tr>
<td>AA405F-9</td>
<td>Power Cable 2m India</td>
</tr>
<tr>
<td>AA405F-10</td>
<td>Power Cable 10m India</td>
</tr>
<tr>
<td>AA405F-11</td>
<td>Power Cable 2m China</td>
</tr>
<tr>
<td>AA405F-12</td>
<td>Power Cable 10m China</td>
</tr>
<tr>
<td>AA405F-13</td>
<td>Power Cable 2m South Africa</td>
</tr>
<tr>
<td>AA405F-14</td>
<td>Power Cable 10m South Africa</td>
</tr>
<tr>
<td>AA405F-15</td>
<td>Power Cable 2m Japan</td>
</tr>
<tr>
<td>AA405F-16</td>
<td>Power Cable 10m Japan</td>
</tr>
<tr>
<td>AA405F-17</td>
<td>ADTS405 MK2 PRESSURE CONN AN4 ROUND</td>
</tr>
<tr>
<td>AA405F-18</td>
<td>ADTS405 MK2 PRESSURE CONN AN6 ROUND</td>
</tr>
<tr>
<td>AA405F-30</td>
<td>IEC Power Cable 2.5m to UK Style, BS1363</td>
</tr>
<tr>
<td>AA405F-31</td>
<td>IEC Power Cable 2.5m to USA/Canada style, NEMA 5-15P</td>
</tr>
<tr>
<td>AA405F-32</td>
<td>IEC Power Cable 2.5m to European style, Schuko CEE 7/7</td>
</tr>
<tr>
<td>AA405F-33</td>
<td>IEC Power Cable 2.5m to Australia/New Zealand style</td>
</tr>
<tr>
<td>AA405F-34</td>
<td>IEC Power Cable 2.5m to India style, IS 1293 (IA16A3, BSS46)</td>
</tr>
<tr>
<td>AA405F-35</td>
<td>IEC Power Cable 2.5m to China style, GB 15934</td>
</tr>
<tr>
<td>AA405F-36</td>
<td>IEC Power Cable 2.5m to South Africa style, SANS 184-1</td>
</tr>
<tr>
<td>AA405F-37</td>
<td>IEC Power Cable 2.5m to Japan style, JIS 8303 (NEMA 5-15P)</td>
</tr>
<tr>
<td>AA500F-17</td>
<td>Black Hose (please state length in meters or feet)</td>
</tr>
<tr>
<td>AA500F-19</td>
<td>Red Hose (please state length in meters or feet)</td>
</tr>
<tr>
<td>AA500F-20</td>
<td>Blue Hose (please state length in meters or feet)</td>
</tr>
<tr>
<td>AA500F-21</td>
<td>AN3 Female hose connector</td>
</tr>
<tr>
<td>AA500F-22</td>
<td>AN4 Female hose connector</td>
</tr>
<tr>
<td>AA500F-23</td>
<td>AN6 Female hose connector</td>
</tr>
<tr>
<td>AA500F-24</td>
<td>Staubli Male hose connector Kit</td>
</tr>
</tbody>
</table>