

# MODEL 3682

## Air Data Calibrator



## General description

The King Nutronics Corporation Model 3682 Air Data Calibrator is designed to perform automatic and manual Calibrations of various types of instruments and testers in the air data pressure range. Typical instruments and equipment that can be calibrated by the Model 3682 include:

- Air Data Test Sets (TTU-205, etc.)
- Air Data Computers
- Aircraft Altimeters, airspeed indicators, and vertical speed indicators
- Laboratory pressure and vacuum instruments, barometers, and pneumatic recording devices.

The primary operation and information center of the Model 3682 Air Data Calibrator is the touch panel display. All operation menus, data entry keys, and test parameters are activated and displayed at this panel along with a continuous update of pressure conditions. The 480 character panel provides the operator with a complete prompt scenario for a large variety of test set-ups and procedures. The dynamic control capability of the software allows the operator to change test parameters at any point of the operation or take a measurement of the instantaneous pressures. An on-board

printer is included to provide hard copy of the test data when desired.

In addition to a wide range of test modes, the Model 3682 includes an automatic leak test capability which can be used to check operational readiness of both the calibrator and the test item. Also, a complete diagnostic mode is available to aid a technician in finding electronic fault locations without using external test equipment.

The Model 3682 System is housed in a bench-top console 24" wide X 20" high X 18" deep and weighs 75 pounds. All functional components are mounted to a chassis which is attached to the front panel. A hinged, removable top/back panel allows access to all circuit boards without removing the chassis.

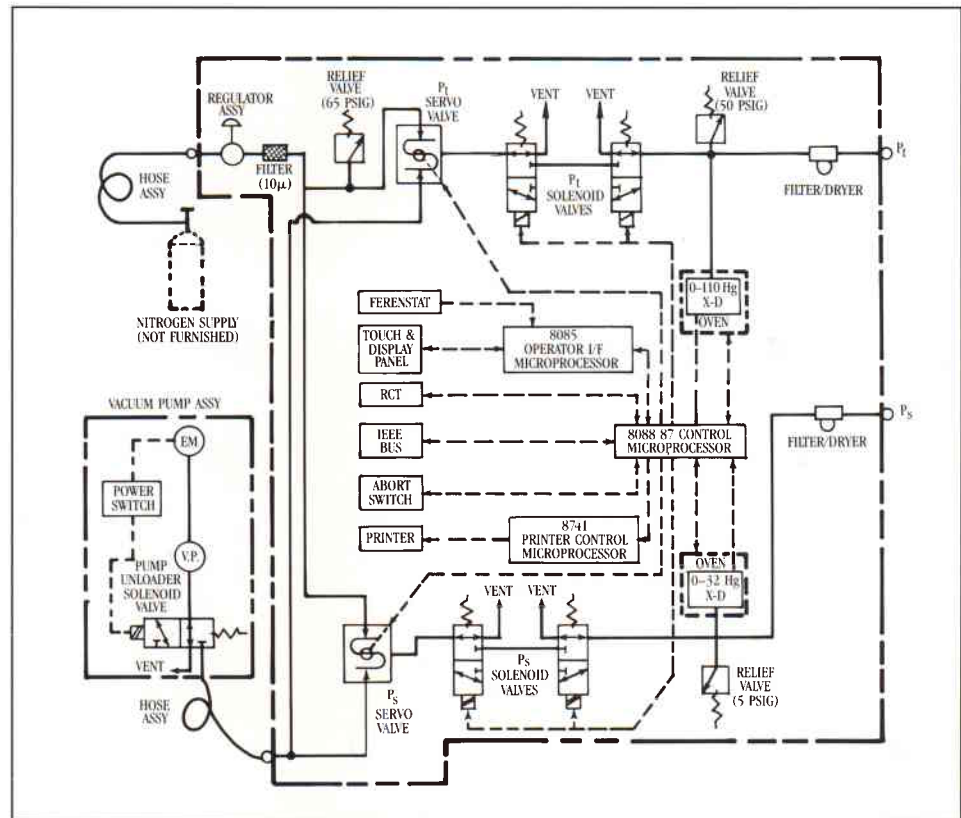


## Functional description

The critical components and their functional relationship are shown in the schematic. A regulated source of 60 psig air or nitrogen and a vacuum source are connected directly to the Ps and Pt servo control valves. The Ps and Pt circuits are identical downstream of the servo valve and each line has a dual solenoid valve pair to isolate and vent the test port.

The pressure control is accomplished by two independent servo valves acting in feedback loops from the transducers. The valves respond to the internal computer demands based on the desired output pressure in each channel. Stable pressure control is achieved through high-resolution conversion of the transducer signal and continuous pulsing of the valves.

The key electronic function components are also shown on the diagram. A series of three microprocessors direct all operations of the system based on operator input programming and transducer feedback. The electronic components are mounted on a series of circuit



boards installed in a card cage and interconnected through the back plane and three flexible circuits

route the signals throughout the chassis to the functional components.

## Operation

The operation of the Model 3682 is completely menu-driven and provides the operator with detailed step-by-step instructions for control. At the conclusion of power-on self-test routines, a screen appears offering a test menu; "Air Data Control," "Air Data Monitor," "TTU-205 Test," etc. The operator then touches the panel at the point underscored and the next screen appears. Each successive operator action is depicted on the screen and the parameters of test, such as altitude, airspeed, and rate of change are displayed. The operator can change the parameters at any time during the operation by touching the panel at the parameter point and entering a new value.

All test functions of the Model 3682 can be controlled by an external computer through the IEEE bus. This capability is of particular benefit in cases where repetitive test points or cycling tests are involved.

Single channel control of either the Ps or Pt test ports is available to the operator at the menu level. A variety of units of measurement in both absolute and gauge can be selected in the programming phase of operation.

All steps of the operator inputs are clearly directed by the prompt scenario on the touch panel display. A very modest amount of training is required to become efficient in the programming and set-up of tests.

# Specifications

## Physical:

Console Size	24' W X 20" H X 18" D
Weight	75 Pounds
Pressure Medium	Dry Air or Nitrogen
Vacuum Pump	50 L/M free air
Power Requirements	115 VAC, 50/60 Hz, 2 AMP

## General:

### Operational Modes:

Air Data Control  
 Air Data Monitor  
 Ps Control  
 Pt Control  
 Gauge Test  
 Leak Test  
 IEEE Control  
 TTU-205 Test

### Units of Measure:

Altitude \_\_\_\_\_ Feet, Meters  
 Airspeed \_\_\_\_\_ Knots, Km/Hr, Mach No.  
 Pressure \_\_\_\_\_ In. Hg, PSI, mm Hg, In. H<sub>2</sub>O, millibars

### Display

Type \_\_\_\_\_ AC Plasma  
 Characters \_\_\_\_\_ 12 line/40 Characters per line

### Touch Panel:

Type \_\_\_\_\_ Resistance Actuated  
 Material \_\_\_\_\_ Filtered, transparent sensitive plastic

## Performance:

### Transducers

	Ps	Pt
Range	0.3-32" Hg	0.5-110" Hg
Accuracy	± 0.002" Hg	± 0.004" Hg
Resolution	0.001" Hg	0.001" Hg

### Control:

### Ps Channel

### Pt Channel

Range	0.3-32" Hg	0.5-110" Hg
Stability	± 0.001" Hg	± 0.002" Hg
Slew Rate-(MAX)	100" Hg/MIN	100" Hg/MIN
Altitude Slew Rate	—	0-35,000 FT/MIN
Airspeed Slew Rate	—	0-750 KT/MIN