

# TAS 1000

## OPERATION INSTRUCTIONS

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**PLEASE READ INSTRUCTIONS**  
**COMPLETELY**  
**BEFORE PROCEEDING**  
**WITH INSTALLATION**



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## **CAUTIONARY NOTICE**

Insight Instrument Corp. TAS 1000 is an air data computer system.

The TAS 1000 is an effective device for measuring airplane data, although no air data computer is 100% accurate.

To ensure accurate readings, it is crucial that altitude, heading, barometric setting and fuel on board (fuel remaining) data are correctly entered into Insight's TAS 1000.

TAS 1000 is only as accurate as the data that is entered at flight time.

## **WARRANTY**

Insight Instrument Corp. T.A.S. 1000 is warranted against defects in materials and workmanship for two years from date of purchase.

Insight will, at its option, repair or replace, without charge, those products that it finds defective.

The installation is warranted by the installing dealer.

Insight will not be responsible for repairs required by improper installation, unauthorized maintenance or abuse.

No other warranty is expressed or implied. Insight is not liable for consequential damages.

**INTRODUCTION TO THE TAS 1000 SYSTEM**

The TAS 1000 system includes a TAS 1000 panel mounted air data and fuel computer, a Windicator display for graphically showing winds aloft, head / tail wind and drift angle, fuel flow sensor(s), and an air temperature sensor. The TAS 1000 display has an alpha-numeric display, a selector knob, and a photo-cell. Air Data functions are shown on the alpha-numeric display, and controlled by the selector knob. The selector knob may be turned and/or pushed in momentarily or pushed and held as required by the following instructions. Display brightness is automatically controlled by the photo-cell.

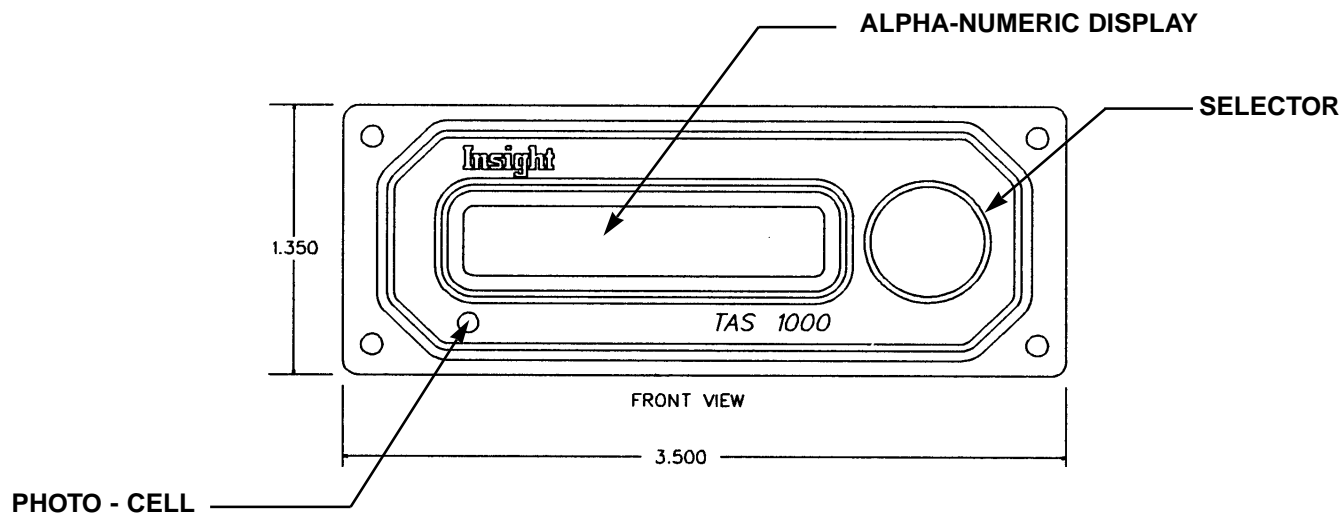


Figure 1. TAS 1000 panel mounted air data and fuel computer display.

## **THE TAS 1000 HAS THREE MODES OF OPERATION:**

NORMAL, CONFIGURATION, and DEALER mode.

Normal mode is the default operating mode used to input initial data and, display in-flight fuel and air data. Configuration mode may be used to customize the TAS 1000 data menu.

Dealer mode should be used only by installation and service personnel.

Throughout these instructions the TAS 1000 will be referred to as the “TAS”, the TAS’s selector knob will be referred to as the “selector”, and the TAS’s alpha-numeric display will be referred to as the “display”.

## **NORMAL MODE**

NORMAL mode is the default power-up operating mode of TAS. On application of electrical power, TAS first performs an auto-test sequence of critical TAS functions; processor, memory, and data acquisition hardware. TAS will display an error message and halt operation if a fault condition is detected. If this occurs, power-down the TAS and contact Insight technical support.

NORMAL mode requires some initial data to be entered before the TAS can begin calculating air data:

1. BR (Barometer or Altimeter Setting if TAS is not slaved to an altimeter)
2. HDG (Heading if TAS is not slaved to a compass system)
3. TR (Total Remaining Fuel MUST be updated with the actual current amount of fuel on board)

The accuracy of all air data calculations performed by the TAS is dependent on the accuracy of the initial data. This data entry should be performed on the ground, but may be performed in flight if necessary.

After initial data entry is complete, TAS will immediately begin to calculate and display all available data. Data which is unavailable will be indicated by a “N/A” message. If this occurs, contact Insight technical support for assistance.

## PREFLIGHT INITIAL DATA ENTRY

- Step 1:** Power up the TAS and observe the software version number followed by the serial number.
- Step 2:** Observe the TAS's current Altimeter Setting (BR xxxx). Adjust as necessary by turning the selector CW (clockwise) to increase or CCW (counter clock wise) to decrease and then momentarily pushing the selector to accept the displayed value.
- Step 3:** Observe the TAS's current heading (HDG xxx). Adjust as necessary by turning the selector CW or CCW to match the aircraft's current heading and then push the selector to accept the displayed value.
- Step 4:** Observe the TAS's current total remaining fuel (TR xxxxx). Adjust as necessary to display the exact amount of fuel actually onboard the aircraft and push the selector to accept.

Initial data entry is now complete.

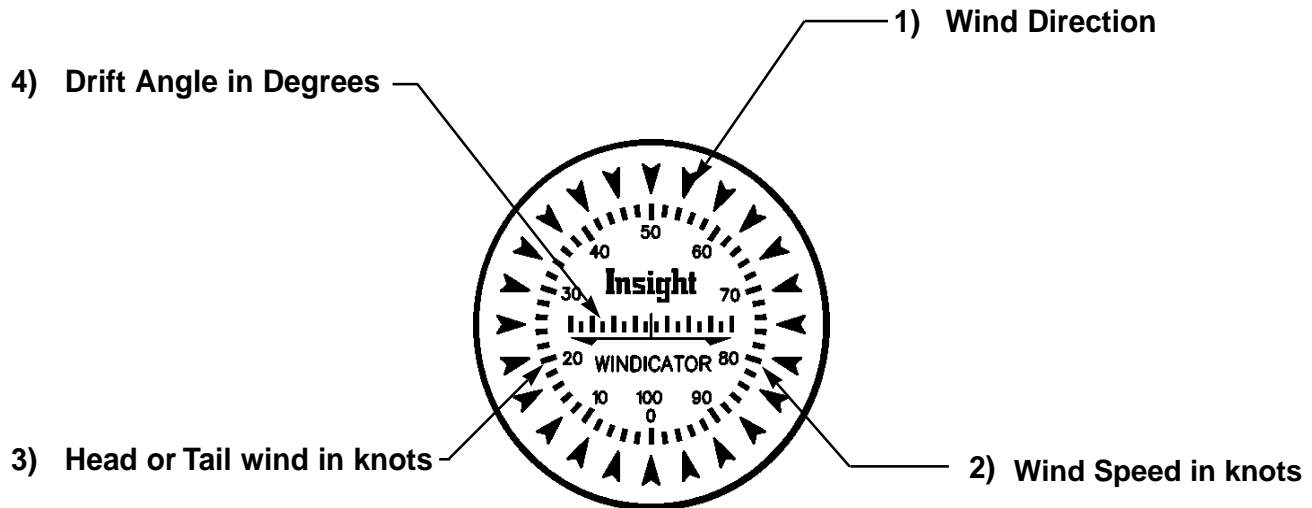
## VIEWING AIR DATA

After initial data entry is completed, TAS will automatically begin to calculate all air data functions.

Air data may be viewed in three ways; on the Windicator, directly on the TAS display, and on the AIR DATA page(s) of the connected GPS.

Refer to the GPS's manual for instruction on the latter.

## TAS 1000 WINDICATOR



## VIEWING THE WINDICATOR

The Windicator will continuously display actual wind aloft data for the aircraft's current altitude. Wind direction relative to the aircraft's heading, head/tail wind component, and wind drift angle are displayed graphically.

- 1) Wind Direction.  
Displays wind direction relative to the aircraft heading shown by a single lit pointer on the outer ring.
- 2) Wind Speed in knots.  
Wind speed is displayed clockwise from the six o'clock position on the inner circle bar graph. Each LED = 2 knots.
- 3) Head or Tail wind in knots.  
Head or tail wind is displayed by a single blinking LED on the same inner circle bar graph as the Wind Speed.
- 4) Drift Angle in Degrees.  
The drift angle is displayed on the inner bar graph. Each LED = 5 degrees

## **SELECTING DATA ON THE TAS DISPLAY**

Turn the selector knob CW or CCW to scroll through the Air Data functions.  
(Refer to Table 1.0 TAS Function List)

The default configuration of a new TAS has all functions enabled for display.  
Refer to the CONFIGURATION MODE section to customize the display list.

## **UPDATING TAS DATA**

The user is allowed to update the following data:

1. ALTITUDE (Use if Altimeter Setting is unavailable but field elevation is known)
2. HEADING (Use routinely if slaved compass is unavailable)
3. BAROMETER (Use routinely for entering Altimeter Setting if not slaved to an Altimeter)
4. FUEL ON BOARD (Use routinely to enter amount of fuel on board after refueling)

## **TO UPDATE A VALUE:**

Step 1: Scroll through the functions until the desired data is displayed and push the selector.

Step 2: The displayed data (but not it's enunciator) will flash. Modify the value by turning the selector CW or CCW.

Step 3: Once the desired value is displayed, push selector to accept the new value and stop the flashing.

## **CONFIGURATION MODE**

Configuration Mode allows the user to customize the display list by hiding unwanted functions. Hidden functions will still be calculated by the TAS but will not appear on the TAS display when scrolled by turning the selector. Hidden functions can be restored to the display list at any time by reconfiguring the TAS. (Refer to Table 1.0 TAS 1000 Function List)

### **TO ENTER CONFIGURATION MODE:**

Step 1: Turn off the TAS. Push and hold the selector while applying electrical power.

Step 2: "CONFIG" will appear on the display. Release the selector.

Step 3: TAS functions can now be configured to be displayed or hidden.

Step 4: Function status set to "Y" (Yes) will be displayed in Normal Mode. An "N" (No) status will not be displayed in Normal Mode. Toggle function display status by pressing the selector.

Step 5: Scroll through the function list by turning the selector CW or CCW.

Step 6: Each functions selected display status is stored in nonvolatile memory.

Step 7: Exit CONFIGURATION Mode by scrolling to the "EXIT N" function, and pressing the selector.

Step 8: TAS will automatically switch to NORMAL Mode.

**DEALER MODE** Refer to installation procedures

## ALTITUDE ALERTER

### When Enabled

The altitude alerter will beep once when the aircraft is within 1000 feet of the target altitude. The altitude alerter will beep twice when the aircraft is within 100 feet of the target altitude. The altitude alerter will beep 3 times when the aircraft either climbs or descends outside the altitude alert band setting.

Note: The altitude alert warning band (AWB) is set in dealer mode.

Example.

Altitude alerter warning band is set to 200 feet, in dealer mode.

On the ground, the pilot sets the altitude alerter to 10,000 Feet.

As the aircraft climbs past 9000 feet, the altitude alerter will beep once.

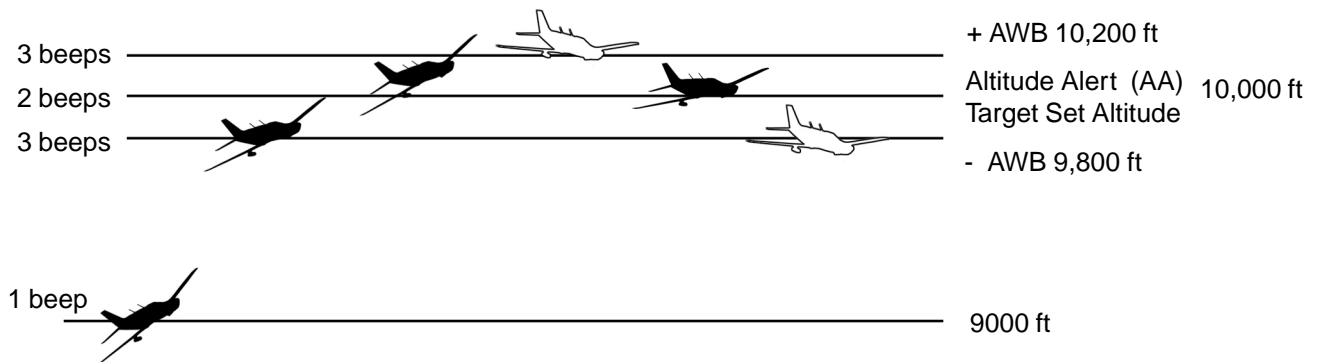
When the aircraft is within 100 feet of the target altitude, it will beep twice.

If the aircraft descends to less than 9,800 feet or climbs above 10,200 feet, the Altitude Alerter will beep three times. This indicates that the aircraft is outside the altitude warning band.

Once the aircraft has returned to the target altitude, the altitude alerter is in monitor mode and will beep three times if the aircraft descends or climbs outside of the set altitude alert warning band.

The pilot can set a new altitude set point while in the air. If the new altitude target is greater than 1000 feet, the altitude alerter will again beep once when the aircraft is within 1000 feet of the new set point. When the aircraft has reached the new target altitude, the altitude alerter will beep twice.

Note: The Altitude Alerter is disabled on power up, and is only enabled after the pilot enters an altitude alert set point. Once the TAS is turned off or power is removed, the TAS does not preserve the last target altitude.



## **TAS 1000 OPTIONAL EXPANSION MODULE**

Altitude Encoder / Overspeed Indicator

The expansion module has two functions. It provides pressure altitude in gray code to your transponder, and alerts the pilot when the aircraft has reached its rated overspeed limit.

The expansion module receives data from the TAS 1000 Air Data Computer System. The TAS 1000 verifies the data sent to the expansion module is correct and that the expansion module is working correctly every second.

Every expansion module is programmed and configured at Insight with overspeed data for your specific aircraft model type.

## **TESTING THE OVERSPEED LIMIT**

On the TAS, scroll through the functions until OVS is displayed.

Push the selector once. The overspeed warning will be activated. The airplane type on the OVS menu will begin to flash on the TAS display. Depending on the configuration selected when installing the expansion module, the pilot should see or hear an overspeed warning. Push the selector a second time to end the test.

## **CONTINUING AIRWORTHINESS**

The TAS system has very simple care and maintenance requirements. Avoid spilling liquids on the TAS display or Windicator. Clean the displays only when necessary and only with a soft, lint free, non-abrasive cloth dampened with water or mild lens cleaner.

Insight recommends periodic testing and calibration of the TAS system every two years to ensure continued accuracy and precision.

Contact Insight technical support for all service issues.

**TABLE 1.0**  
**TAS 1000 CONFIGURATION AND FUNCTION LIST:**

AL : pressure altitude .....	feet	YES or NO
BR : barometric setting .....	inches of mercury	YES or NO
BR : barometric setting .....	milibar	YES or NO
DA : density altitude .....	feet	YES or NO
DAD : density altitude difference .....	feet	YES or NO
IAS : indicated air speed .....	nautical miles per hour	YES or NO
IAS : indicated air speed .....	miles per hour	YES or NO
TAS : true air speed .....	nautical miles per hour	YES or NO
TAS : true air speed .....	miles per hour	YES or NO
GRS : ground speed .....	nautical miles per hour	YES or NO
GRS : ground speed .....	miles per hour	YES or NO
MACH: Mach number .....	dimensionless	YES or NO
VS : rate of change of alt .....	feet per minute	YES or NO
GR : gradient .....	feet per nautical mile	YES or NO
WSP : wind speed .....	nautical miles per hour	YES or NO
WSP : wind speed .....	miles per hour	YES or NO
WDR : wind direction .....	degree magnetic	YES or NO
HDG : heading .....	degree magnetic	YES or NO
DRF : drift .....	degree magnetic	YES or NO
WD / WS : W dir/W speed .....	degree/knots	YES or NO
HWD : head/tail wind .....	nautical miles per hour	YES or NO
HWD : head/tail wind .....	miles per hour	YES or NO
EF : engine(s) efficiency .....	miles/gallon	YES or NO
TAT : total air temperature .....	degrees Celsius	YES or NO
TAT : total air temperature .....	degrees Fahrenheit	YES or NO
SAT : static air temperature .....	degrees celsius	YES or NO
SAT : static air temperature .....	degrees fahrenheit	YES or NO
ISA : ISA temperature .....	degrees celsius	YES or NO
TR : total fuel remaining .....	gallons, pounds or liters	YES or NO
TU : total fuel used .....	gallons, pounds or liters	YES or NO
TF : total fuel flow .....	gallons,pounds,liters/hour	YES or NO
FL : left eng fuel flow .....	gallons,pounds,liters/hour	YES or NO
FR : right eng fuel flow .....	gallons,pounds,liters/hour	YES or NO
UL : engine 1 fuel used .....	gallons,pounds or liters	YES or NO
UR : engine 2 fuel used .....	gallons, pounds or liters	YES or NO
FL/FR : fuel flow left and right .....	gallons,pounds,liters/hour	YES or NO
BT : battery voltage .....	volts	YES or NO
AA : altitude alert .....	feet	YES or NO
AD : altitude difference .....	feet	YES or NO
OVS : overspeed warning .....	preset	YES or NO
EXIT		YES or NO