

Stratomaster Smart Single

ASX-1

Wide range precision aviation altimeter and airspeed indicator



The ASX-1 altimeter/airspeed combo is a 2.25" instrument based on a precision altimeter and a wide range, sensitive airspeed indicator.

The altimeter conforms to ANSI standard atmosphere rules from -700 ft up to a minimum of 40,000 ft. The airspeed indicator can show air speeds from 16 to 250 mph. The airspeed indicator as well as altimeter can interface to a static port and the airspeed indicator is based on a standard aviation pitot tube.

The altimeter can display altitude in feet or meters, local pressure can be set in millibars or inches or mercury. The airspeed indicator can be set to indicate speeds in mph, km/h or knots.

The ASX-1 is the ideal instrument for installations where panel space is at a premium.

Setting up the ASX-1

Press the Menu key to enter the menu. You can move forward and backwards in the menu by using the + and – keys. To change or select a menu item, move the highlight to the desired item and then press the Menu key. To end an edit or function, press the Menu key again.

To exit the menu and continue normal operation, select the *****Done***** function and press the Menu key. Note, all changes you have initiated during your session will only be remembered by the instrument if you exit the menu using the *****Done***** function.



Contrast ...

This function allows you to change the display contrast to your liking. You can select values from about 20 to 45. (can vary depending on display type).

BL ...

This function allows you to switch the display backlight on or off.

ALT ...

Select if you want your altitude readout in feet (ft) or meters (m).

QNH ...

Select if you want your local pressure readout in millibars (mB) or inches or mercury ("HgA).

ASI ...

Select your preferred units. You can select statute miles per hour (mph), kilometers per hour (km/h) or nautical miles per hour (knots). According to this selection your airspeed will be indicated in mph, km/h or knots.

ALT cal

This is a technical function that is used to calibrate your altimeter to an exact reference. On the back of your altimeter you will find the calibration number that has been determined to result in the

most accurate reading of your altimeter. This is the value that should be entered here. Should you have access to an accurate reference you may use this function to calibrate your altimeter. Before you do this, ensure that you have your local pressure set to coincide with a calibrated and certified reference.

Your altimeter has been calibrated by the factory to an accuracy of +/- one mB or approximately +/- 30 ft (10m).

ASI Cal

This function is used to calibrate your airspeed indicator. During the factory calibration a factor has been determined and entered here that will give you accurate airspeed provided your pitot tube is not influenced by pressure effects caused by airflow around your airframe.

The calibration works in % of the reading and you can increase or decrease the reading if required to help cancel out under or over reading of the airspeed indicator on your aircraft.

The original calibration factor has been written onto the back of your instrument.

Zero ASI

This setup allows your instrument to measure the zero airspeed reading of the airspeed sensor and set a calibration value internally for this. This is equivalent to some mechanical airspeed indicators that have an adjustment to set the needle to zero when the aircraft is not moving.

You would use this function occasionally if you see an airspeed reading when the aircraft is at rest. This may be caused by aging of the built in pressure sensor or related electronics.

When you perform this function, please make sure that no wind is blowing into the pitot tube as this would result in an incorrect internal calibration.

ADC

This function is for technical personal. It is not used for ordinary operation of the unit.

Technical specifications:

Display temperature range (operational): -20 to +80 degrees C
Supply voltage: +8 to +18V. +24/28V with optional pre regulator.
Supply current: 30mA/50mA (backlight off/on)
Altimeter range: -700ft to 40.000ft (45.000ft typical, not guaranteed)
Altimeter resolution: 10ft at sea level.
Measurement accuracy: +/- 1mB, +/- 30ft at sea level.
Airspeed range: 16mph to 250mph
Airspeed resolution: 1 mph
Measurement accuracy: +/-1% at 85mph nominal.

Weight: 100 grams.

Warranty:

MGL avionics warrants their products for a period of one year from date of purchase against faulty workmanship. Warranty is limited to the replacement of faulty components and includes the cost of labor. Shipping costs are for the account of the purchaser.

Note for operation on supplies with inductive loads:

Any operation of electronic instrumentation on power supplies that are subject to high voltages caused by operation of inductive loads (starter motors, solenoids, relays) are required to be fitted with suitable protection.

All Smart Singles are guaranteed to withstand temporary over voltage up to 40V without additional protection. We recommend that measures are taken to prevent voltage transients in excess of this limit.

MGL Avionics recommends the fitment of a fuse in line with a 33V transorb (available from MGL Avionics at low cost) to protect electronic instruments, radios and intercom systems. Only one such arrangement is required for a cluster of instruments.

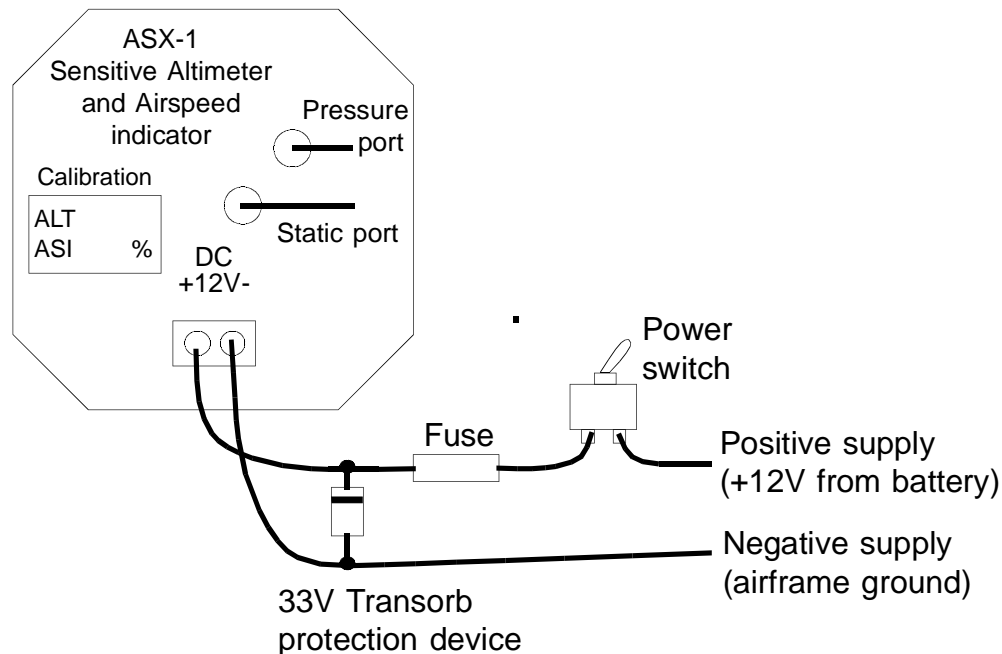
Please note that product warranty excludes damages caused by unprotected, unsuitable or incorrectly wired electrical supplies.

This instrument is not certified by the FAA. Fitting of this instrument to certified aircraft is subject to the rules and conditions pertaining to such in your country. Please check with your local aviation authorities if in doubt.

This instrument is intended for ultralight, microlight, homebuilt and experimental aircraft.

Operation of this instrument is the sole responsibility of the pilot in command (PIC) of the aircraft. This person must be proficient and carry a valid and relevant pilots license. This person has to make him/herself familiar with the operation of this instrument and the effect of any possible failure or malfunction. Under no circumstances does the manufacturer condone usage of this instrument for IFR flights.

Installing the ASX-1



Installing the ASX-1 is quite straight forward.

Connect the supply terminals to your aircrafts power supply (you need a dropping resistor or pre-regulator for 24/28V systems).

Install suitable power supply protection if you have a supply that can contain large voltage transients such as can be created by starter motors and solenoids.

Ensure that the supply voltage will not drop below 8V during operation as this may result in incorrect altitude and airspeed readings.

Connect the static port to a suitable static air pressure line. If you have a slow aircraft or an aircraft where the internal cabin pressure does not change during flight and is equivalent to the outside air pressure you may find that it is not required to connect a static port.

For installations in typical ultralight aircraft pods, be aware of possible pressure changes inside the pod during flight caused by ram air or suction effects. This may lead to a false indication of altitude and/or airspeed. Often these effects are dependent on the current angle of attack of the airflow around your pod. You will need to install a suitable static port in these cases.

Connect your pitot tube to the "pressure port".

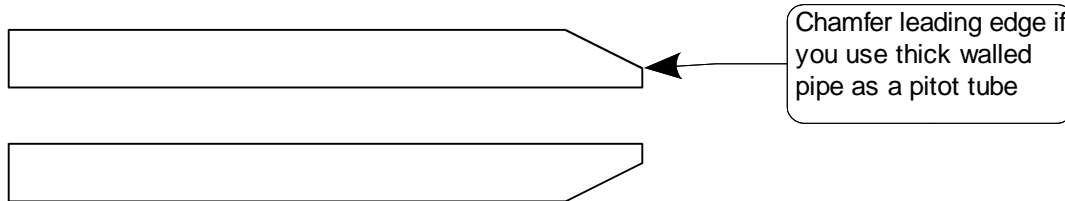
Pitot tubes are found in a large variety in at your aircraft parts shop, in mail order catalogs or you can make your own.

Contrary to popular belief, Pitot tubes are not carefully designed and calibrated but are simple orifices or tubes that get pointed in the direction that you are flying. The forward movement of the aircraft causes air to dam inside the pitot tube. This increases the pressure inside the tube. Most small aircraft such as ultralights or microlights do not require a connection to a static port. In these cases, simply leave the static port open. Ensure however that the static port does not receive pressurized air due to the forward movement of the aircraft. Be especially critical of your

pod or panel if you do not use a static port. Any build up of a pressure differential due to ram air or suction can lead to large errors of the indicated airspeed.

Static ports are usually mounted at a strategic position on the rear side of the aircraft fuselage for faster, pressurized aircraft.

Suitable pitot tubes can be made from a short piece of hollow aluminium or copper piping. Length and diameter are not important. Ensure that the front of the pitot tube has a suitable chamfer if you use thick walled tubing or you may introduce a speed reading error if you have a faster aircraft.



Example cross-section of thick walled pitot tube.

Suitable connection hose for both pitot tube and static port can be obtained from a hardware store or even a pet shop. Good quality tubing is often used for fish tanks and it has just the right diameter.

Please note that this kind of tubing is not advised for pressurized aircraft. In this case you would need to obtain aircraft grade tubing of suitable diameter. You would also have to use hose clamps to fasten the hose onto the Stratomaster pitot and static ports.

The ASI-1 allows you to calibrate the airspeed reading. This is done in the "ASI Cal" menu item. The main reason for this is to be able to remove errors introduced due to the airflow around your aircraft which may have an effect of your pitot tube pressure.