



The Model 5000 digital altimeter is a precision instrument that will satisfy the most demanding user. It is packaged in the standard 3 1/8" instrument case and will fit into existing aircraft panel cutouts without any modifications.

The design of the Model 5000 is the result of years of development and experience. It is a replacement for our very successful Model 1000 altimeter introduced in 1988, and incorporates new features that customers have asked for and improvements that recent advances in technology have made possible.

It has a full 4 1/2 digit liquid crystal (LCD) display with large, 1/2" high characters. Because the LCD uses "direct drive" it is easily readable from most viewing angles and does not disappear when viewed from an angle. Also, it does not washout in bright sunlight, but remains sharp and easily readable. The display includes a backlight for night or dusk viewing.

As can be seen from the photographs, it is available in either U.S. or metric units. Although **FEET** or **METERS** are printed on the front panel, the end user can easily switch from one to the other by moving an internal jumper plug. In such cases, a simple "stick-on" label with the new units can be applied or you can purchase a new front panel for a more professional look. Front panels are available at low cost and are easily replaced.

The altitude range extends from below sea level to well above the need for supplementary oxygen. The limits are -1,000 to +19,990 feet or -305 to +6,093 meters. Altitude increments are in 10 feet or 1 meter steps. This fine resolution, particularly in meters, provides a useful tool for land surveying.

Like mechanical "clock hands" altimeters, it is a barometric device. This means that the instrument calculates and displays altitude based on a measurement of local atmospheric pressure. Pressure sensors are notoriously affected by temperature and this can contribute to significant errors. The Model 5000 incorporates a state-of-the-art, laser-trimmed, temperature compensated pressure sensor to minimize thermal effects and thus provide the highest accuracy. The end result is an instrument that, in addition to meeting the room temperature calibration requirements of FAA Standard TSO-10B (para 6.1), is accurate to 1% of reading  $\pm 100$  feet (30 meters) over the range of 0 to 50°C (32-122°F). It is fully expected that it will be FAA approved for use in hot air balloons, as was its predecessor Model 1000.

Unlike mechanical altimeters, it is insensitive to the high vibration of 2-stroke engines frequently used on ultralight aircraft. This has literally shaken many mechanical altimeters apart. The 5000 is all solid state and can withstand severe shock and vibration without damage.

Just as too much vibration is harmful to mechanical altimeters, too little is also a problem. Mechanical devices use geared clockworks to drive the dials and this is geared up so high that it sticks. A little vibration is needed to give the gears a continuous nudge to keep freeing them. If you've ever had the experience of placing a mechanical altimeter on the seat of your auto, you've seen the result - the dials don't move at all, even when going down a steep hill. When the tension in the diaphragm finally overcomes the static friction in the gears, the device finally jumps a couple of hundred feet to a new reading. The model 5000 doesn't suffer from this static friction, and readily displays smooth altitude changes without having to beat on it. At first glance this might sound like a trivial feature, but if you care to use it in a relatively vibration-free environment like a hot air balloon, it's essential.

The **UP/DN** switch functions identically to the **BARO** control on mechanical altimeters. It adjusts for the local barometric pressure and is used to set the altimeter to either the known field altitude or zero prior to takeoff. Unlike its predecessor, it can be zeroed for field altitudes as high as 6000 feet without having to open the instrument. Baro settings are retained in permanent memory, so if you turn the instrument off then on again, it returns to exactly where it was. This is particularly important if you zero the altimeter at very high altitude fields, as you don't have to adjust it much (if at all) each time you turn it on.

Since most ultralights are basically fair weather, radioless craft, a calibrated barometric scale is not provided as there is no need or means to readjust the barometric reference during short, local flights. If a calibrated baro scale is a requirement, our Model 2000 altimeter has this feature. For those longer flights where a significant change in baro pressure could be expected and can be received via radio, a chart is provided that allows the pilot to recalibrate based on the change in pressure. The barometric reference is not viewable but can be set to the standard reference of 29.92 inHg if desired. The resulting displays are then "pressure altitude".

The instrument is powered from DC in the range of 7-30 volts and is protected for accidental polarity reversal. A 9V battery is a common power source and a battery holder for this is provided on the back, external to the case. An alkaline battery will provide over 40 hours of operation, without the backlight illuminated. The backlight is not powered in the **ON** power switch position to conserve battery life.

The Model 5000 is packaged in a standard 3 1/8" instrument case and will fit into existing aircraft panel cutouts without any modifications. The case is molded

of heavy-walled, high-impact ABS plastic and will withstand considerable abuse. All units undergo 100% burn-in testing to provide the customer with a highly reliable product that will provide years of trouble free service. The altimeter is warranted against defects in material and workmanship for a period of 1 year.

## SPECIFICATIONS

- **RANGE:** -1,000 to +19,990 feet or -305 to +6,093 meters. Units selectable by internal jumper plug.
- **RESOLUTION:** 10 feet or 1 meter.
- **ACCURACY:** 1% of reading  $\pm 100$  feet (30 meters) over full specified operating temperature range. Meets accuracy requirements of FAA TSO-10B, paragraph 6.1.
- **PRESSURE DISPLAY:** Displays absolute ambient pressure in inches of mercury (inHg).
- **POWER:** 7 to 30VDC. 15 mA @ 9VDC (w/o backlight). Backlight draws additional 15 mA independent of supply voltage. A 9V battery holder is included on back of instrument.
- **BATTERY LIFE:** A 9V alkaline will power the instrument for over 40 hours (20 hours with backlight on continuously).
- **LOW BATTERY INDICATOR:** A flashing "BAT" symbol appears when less than 2 hours of battery life remains.
- **DISPLAY:** 4 1/2 digit, high contrast, liquid crystal display with 1/2" high characters. All digits and legends visibly tested on power up. Backlight for night or dusk viewing.
- **DISPLAY UPDATE RATE:** 0.6 seconds.
- **BARO ADJ:** The UP/DN switch compensates for changes in ambient, sea-level barometric pressure and can be used to set the altimeter to known field altitude or zero before flight.
- **BARO ADJ. RANGE:** The instrument can be zeroed at altitudes as high as 6000 feet above mean sea level and retains baro setting in non-volatile memory.
- **WEIGHT:** Less than 10 oz. with 9V alkaline battery.
- **DIMENSIONS:** Standard 3 1/8" instrument case outline. Depth behind back face of instrument panel is 4 5/8". May be reduced to 3 7/8" by removing external battery holder.
- **TEMPERATURE RANGE:** Full accuracy performance from 0 to 50°C (32 to 122°F). Degraded accuracy, but useable from -20 to +60°C (-4 to 140°F). Temperature limiting factor is liquid crystal display.

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