

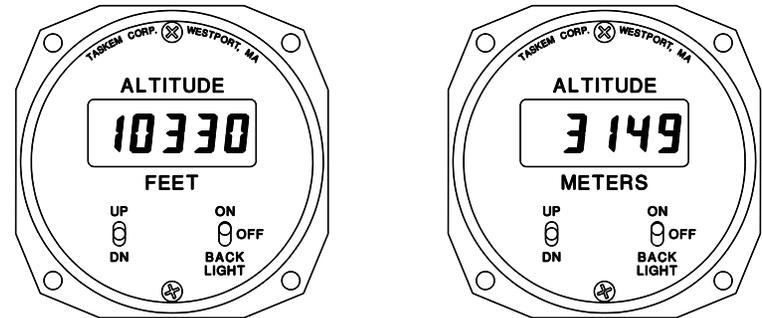
## SPECIFICATIONS

- **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) with a resolution of 0.01 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 battery will power the instrument for over 40 hours (20 hours with backlight on continuously).
- **LOW BATTERY INDICATOR:** A flashing "LOBAT" 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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## User's Manual Model 5000 Altimeter



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 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 advances in technology have made possible.

Operation of the altimeter is extremely simple yet there are some hidden features described within, so please read this manual thoroughly. The instrument is supplied with faceplates in either **FEET** or **METERS**. Except for the printed faceplate, both models are internally identical and the display units can easily be changed. A simple stick-on label can be affixed to the faceplate if the altitude units are changed, or a new panel may be ordered for a more professional look.

It can be powered from a wide range of direct current sources varying from 7 to 30 Volts. Since 9 Volts is a practical and convenient source, a 9V-battery clip is provided on the back of the case. The battery has purposely been placed external to the instrument to keep a potentially destructive leaky battery away from the electronics. It is protected for polarity reversal, so no damage will result from accidentally connecting the power source backwards.

There are two positions of the power switch that turn the unit on. The **BACK LIGHT** position turns on both the instrument and the back light display illuminator for night viewing. The **ON** position is for daytime use and this setting does not illuminate the display to conserve battery power. Current consumption without the illumination is about 15mA and operation with the light on doubles this value. Battery life with a standard 9V alkaline battery is just over 40 hours. This is reduced to about 20 hours if the illumination is left on continuously. Lighting is barely visible during the day but is easily readable at dusk or in full darkness.

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.

When the unit is first turned on all of the LCD segments are momentarily displayed to verify that they are all working. This is shown in the figure below. The LO BAT legend is displayed just to test it and make sure it is functional. It does not



mean that the battery needs to be replaced. When the battery voltage falls too low to operate the instrument, the LO BAT legend will continuously flash on and off as a warning. When this first happens, there is still sufficient life in a 9V alkaline battery to operate the instrument for almost 2 hours.

After the LCD test the altimeter will proceed to its normal function. Initially the readout will gradually change as the internal circuitry stabilizes. After about 15 seconds the displayed value should then remain constant. The barometric reference (BARO) can then be adjusted if desired by using the **UP/DN** switch.

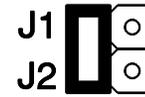
The **UP/DN** switch functions identically to the BARO control on mechanical altimeters. It adjusts for the local barometric pressure and is used to set the altimeter to either the known field altitude or zero prior to takeoff. Unlike its predecessor, it can be zeroed for field altitudes as high as 6000 feet without having to open the instrument. The BARO setting is 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, radio-less craft, a calibrated BARO 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 barometric 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 BARO reference is not viewable but can be set to the standard pressure of 29.92 inHg if desired.

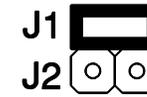
The altitude range extends from below sea level to twenty thousand feet. The specific limits are -1,000 to +19,990 feet or -305 to +6,093 meters. Altitude increments are in 10 feet or 1 meter steps. This fine resolution, particularly in meters, provides a useful tool for land surveying. Due to the internal resolution, there are occasionally some missing steps when displaying altitude in meters.

Moving an internal jumper plug changes the display modes. Possible displays are FEET, METERS and PRESSURE. When in the pressure mode, the instrument displays local atmospheric pressure in inches of mercury (inHg). This should not be confused with a barometer. A barometer is a pressure sensor that is corrected for the device's altitude and displays the pressure **at sea level**. This device measures the actual **local** ambient pressure. It can be used as a barometer by adding a simple correction factor for altitude.

To access the jumper plug, first carefully remove the two black screws from the front panel using a #1 Philips screwdriver. Be sure to use the proper screwdriver or it may slip and scratch the front panel. The circuit board is attached by the 9V battery wires, which are of sufficient length to adequately remove the unit from the case. Slide the assembly out being careful not to pull on the wires. The jumper plug arrangements are as shown in the following figure. The jumper plug



FEET



METERS



PRESSURE

can be lifted with fingernails or a pair of needle-nosed pliers. It can safely be removed and repositioned with power on. When reassembling, make sure that the wires are not pinched between the circuit board and the case.

Since there is no display of the BARO value, there is no way to determine what it is set to other than by the following procedure. If the jumper plug is in the PRESSURE position when power is switched from off to on, the BARO will be set to 29.92 inHg (the displayed pressure will likely be quite different). This is called "standard pressure" and is the value experienced at sea level on a "standard day". If the jumper is then moved to FEET or METERS, the unit will then display what is commonly referred to as "pressure altitude". This is altitude referenced to 29.92 inHg and is typically used by high-flying jets and Air Traffic Control towers. It will remain in effect as long as the **UP/DN** switch is not moved. Once the **UP/DN** switch is moved, the internal BARO setting is again unknown and the procedure must be repeated to set it to 29.92 again.

The altimeter is really a pressure sensor with a display of equivalent altitude rather than pressure units. When you adjust the **UP/DN** switch before a flight, what you're really doing is adjusting for the current barometric pressure so that your altimeter reads true field altitude (or zero if that's your preference). After that, normal variations in barometric pressure will cause the altitude to creep slowly. 10 feet per 10 minutes or so is not unusual, and much greater variations will be seen if a weather front is passing through. This is not a fault of the instrument. It's just something we have to live with, since pressure not only changes with altitude, but also with time. Licensed pilots know this and compensate for it by routinely getting the latest barometric pressure via radio from Air Traffic Control and other sources.

Every effort has been put into providing you with a highly accurate and equally reliable instrument. All components are rated far in excess of what they will normally be subjected to in terms of temperature and power. In addition, an extensive burn-in weeds out any early component defects, and our 1 year warranty against defects in materials and workmanship is one more assurance of satisfaction. As with any electronic device, care should be taken not to leave it exposed to the elements. It is **not waterproof** and may sustain permanent damage if exposed to rain or salt air. The instrument should never be transported or left outside uncovered, particularly overnight. Please be sure to fill out and return the Warranty Registration card. Beyond the warranty period, quick service can always be obtained direct from our factory at reasonable cost.