

NK Kestrel 2000 Pocket Thermo Wind Meter

Wind Speed, Max & Avg Wind Speed, Temperature & Wind Chill

SPECIFICATIONS

Wind Speed Functions

Operating Modes: Moving 3-second average (M/S), maximum 3-second gust since power on (MAX) and average since power on (AVG).

Units: Knots (KT), meters per second (M/S), kilometers per hour (KM/H), miles per hour (MPH), feet per minute (FPM) and Beaufort (B).

On-axis Accuracy: greater of $\pm 3\%$ or \pm least significant digit.

Off-axis Response: -1% @ 5° , -2% @ 10° , -3% @ 15° .

Calibration Drift: $< 2\%$ after 100 hours use at 7 M/S [~ 14 KT, 25 KM/H, 16 MPH or 1400 FPM].

Minimum Speed: 0.3 M/S [~ 0.6 KT, 1.0 KM/H, 0.7 MPH or 59.0 FPM].

Maximum Speed: 40 M/S [~ 78 KT, 144 KM/H, 89 MPH or 7877 FPM].

Temperature and Wind Chill Functions

Operating Modes: Temperature (T), wind chill (W).

Units: Degrees Centigrade ($^\circ\text{C}$) and degrees Fahrenheit ($^\circ\text{F}$).

Accuracy: $\pm 1.0^\circ\text{C}$.

Minimum Temperature: -30°C [-22°F].

Maximum Temperature: 70°C [158°F].

Display

Type: Reflective $3\frac{1}{2}$ digit LCD.

Digit Height: 9 mm. [0.36 in.].

Update: 1 second.

Range and Resolution: Depends on measurement scale selected – see chart:

Scale	Range	Resolution
KT, M/S, KM/H		
MPH, $^\circ\text{C}$ & $^\circ\text{F}$	0.0-199.9	0.1
FPM	0-1,999	1
	2,000-19,990	10
%	0-100	1

Temperature Limitations: Normal operation from -15°C to 60°C [-4°F to 140°F]. Below -15°C [-4°F], accurate readings may be taken by keeping the unit warmer than -15°C [4°F] and exposing it for the minimum time necessary to take a reading (less than one minute).

Auto Shutdown: 30 minutes after last key press.

Environmental

Buttons: Two sealed tactile rubber buttons control all functions.

Battery: User-replaceable CR2032 coin cell. Typical life, 800 hrs.

Sealing: Electronics enclosure IP67 – water resistant to 1 m. [3 ft.]. Floats.

Shock: Drop tested to 2 m. [6 ft.].

Storage Temperature: Prolonged exposure to temperatures below -20°C [-4°F] or above 80°C [176°F] may cause permanent damage.

Physical

Impeller: 25 mm. [1 in.] diameter, sapphire bearings, light weight. User-replaceable impeller/housing assembly.

Temperature Sensor: Hermetically sealed precision thermistor.

Case: Slip-on case prevents damage to display and moving parts.

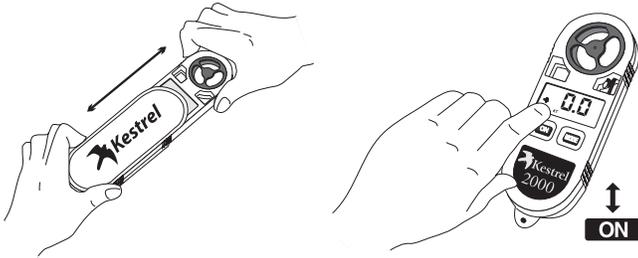
Dimensions: 122 x 42 x 14 mm. [4.8 x 1.7 x 0.6 in.]; case, 117 x 46 x 19 mm. [4.6 x 1.8 x 0.7 in.]; lanyard, 0.5 m. [10 in.].

Weight: Unit, 43 g. [1.5 oz.]; case, 23 g. [0.8 oz.].

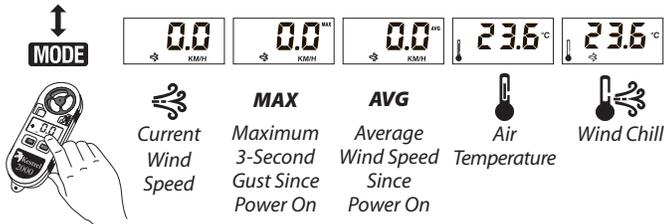
OPERATION

1) Slide off Cover.

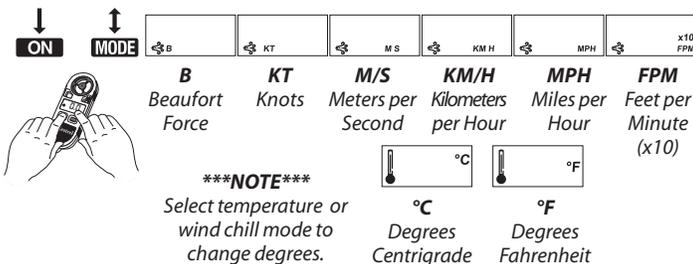
2) Turn On: Press [ON] to turn on unit.



3) Select Operating Mode: Press and release [MODE] to change the operating mode. You can select a different operating mode at any time.



4) Select Measurement Scale: Hold down [ON] while pressing [MODE] to change the measurement scale. You can select a different scale at any time.



5) Measure wind speed, max and average: Simply point the unit into the air flow you wish to measure.

Measure temperature and wind chill: The Kestrel's temperature sensor is located in the right opening below the impeller. Because it is external to the case, you can take fast and accurate measurements by simply waving the unit rapidly back and forth OR holding it into an air flow of at least 1 M/S [2 KT, 4 KM/H, 2 MPH or 197 FPM] and reading the display immediately. (The air flow ensures that the temperature sensor measures the temperature of the air, not the case.) **Alternatively,** you can take accurate readings with no air flow by allowing the case to reach the same temperature as the surrounding air. (If the case is much warmer or cooler than the air, this can take up to 30 minutes.)



The Kestrel turns itself off automatically after 30 minutes of no button presses.

MAINTENANCE & TROUBLESHOOTING

Storing Your Kestrel

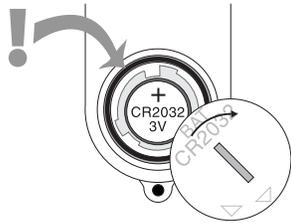
Avoid storing your Kestrel where it will be exposed to temperatures below -20°C [-4°F] or above 80° C [176° F] for extended periods of time. Doing so may permanently damage the LCD, electronics, battery or enclosure. (Note that the inside of a car parked in the hot sun can reach very high temperatures.) If the temperature of the actual LCD of your unit exceeds 70° C [158° F], it will temporarily become solid black until it cools down to below this temperature.

Use of the Lanyard and Cover

Your Kestrel is shipped with the slip-on cover captivated by the lanyard to prevent loss. If you prefer to be able to remove the cover entirely, open the lanyard end cap with a small screw driver, then remove the slip-lock. Slide the cover completely off the lanyard, then reassemble the slip-lock and lanyard end cap as before.

Replacing the Battery

When your display grows dim or blank, replace the battery. Use a large coin to open the battery compartment. Insert a new CR2032 coin cell (available wherever watch batteries are sold), positive (+) pole up. **When replacing the battery door, be sure to keep the black rubber o-ring seated in the groove on the case back.**



Why does the Impeller Appear Imbalanced?

It is NORMAL for the impeller to oscillate as it comes to a stop. It is NOT imbalanced. Rather, it contains a very small magnet which responds to the earth's magnetic fields. This does not affect the accuracy of the windspeed readings because the magnetic field applies both a braking and an accelerating force which cancel each other. The impeller has been calibrated to be accurate to within at least $\pm 3\%$.

High Speed Use

After several hours of sustained operation over 25 M/S (~49 KT, 90 KM/H, 56 MPH or 4,923 FPM), the Kestrel will lose some accuracy due to wear of the sapphire bearings in the impeller assembly. If you require accurate high AND low speed measurements, we recommend a second impeller.



Troubleshooting a Damaged Impeller

If the impeller rotates, but only "0" or "-" shows on the display, the impeller may no longer be sending a signal to the unit. Test the unit by turning it on and placing it near an electromagnetic source (i.e. back of computer monitor or TV). If the display shows any number other than "0" or "-", **the unit does not need to be returned** but does need a new impeller assembly. Contact Nielsen-Kellerman or your place of purchase to order a replacement.

Replacing the Impeller

Press FIRMLY on the sides of the black impeller housing with your thumbs to remove the entire housing. **When inserting the new impeller, be sure the arrow is facing the display side of the unit, and is aligned with the top of the meter. Press on the sides of the housing rather than the center.**



BEAUFORT SCALE

The **Beaufort Scale** is a system for estimating wind force without the use of instruments based on the visible effects of the wind on the physical environment. The behavior of smoke, waves, trees, etc., is rated on a 13 point scale. The scale was devised in 1805 by the British naval Commander Sir Francis Beaufort (1774-1875) and is still commonly used by mariners.

Force	Description	Kts
0	Calm	0
1	Light Air	1-3
2	Light Breeze	4-6
3	Gentle Breeze	7-10
4	Moderate Breeze	11-16
5	Fresh Breeze	17-21
6	Strong Breeze	22-27
7	Near Gale	28-33
8	Gale	34-40
9	Strong Gale	41-47
10	Storm	48-55
11	Violent Storm	56-63
12+	Hurricane	64+

WIND CHILL

The Kestrel 2000 automatically calculates wind chill, which can provide useful guidance when preparing for cold-weather outdoor activities. "Wind chill" provides an indication of how cold it feels given the combined effects of the actual air temperature and the wind speed. Wind Chill based on National Weather Service standards as of Nov. 1, 2001. For more information about the derivation and meaning of wind chill, visit www.nkhome.com.

WARRANTY & SERVICE

Warranty

Your Kestrel is covered by a full parts and labor warranty for one year from your date of purchase. The provisions of this warranty do not apply to: a) batteries, whether contained in a unit or sold individually; b) units which have been subjected to misuse, negligence, accident or improper maintenance or application; or c) units which have been repaired or altered by a party other than Nielsen-Kellerman's employees or agents without Nielsen-Kellerman's prior written consent.

Parts and Service

To order replacement parts for your Kestrel or obtain warranty service please contact Nielsen-Kellerman or your original place of purchase.

ADDITIONAL INFORMATION



What is a "Kestrel"? The American Kestrel is the smallest North American falcon. Beautiful and highly adaptable, it can be found virtually everywhere in North America. It is unique among falcons for its ability to both hover at very low speeds and dive at very high speeds.



Assembled in the USA. The Kestrel 2000 is protected by US Patents 5,783,753 and 5,939,645. Nielsen-Kellerman reserves the right to change product specifications. © 1999. Kestrel, the Kestrel logo, NK and the NK logo are trademarks of the Nielsen-Kellerman Co.

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