Congratulations on the purchase of your Kestrel 4000 Pocket Weather Tracker! The Kestrel 4000 is the next generation of weather monitoring. Now, you can instantly measure EVERY major environmental condition easily, accurately, and right in the palm of your hand. While the Kestrel 4000 is user-friendly and simple to use, (and the Quick Start Card will help get you started) reading the instruction manual is recommended in order to use the Kestrel 4000 to its fullest potential.

NK, manufacturer of Kestrel Pocket Weather Meters, is available to answer questions and provide support. Contact NK by phone: 610.447.1555, fax: 610.447.1577, email: info@nkhome.com, or web: www.nkhome.com.

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Getting Started

Pouch and Lanyards
A soft pouch and wrist and neck lanyards have been provided. To install the lanyard, feed the thin end of the lanyard around the metal post on the battery door (as shown in diagram). Feed the thick end of the lanyard through the loop on the thin end.

Battery Installation
Use only AAA batteries. Install batteries as indicated on the battery door. After installing the batteries, the Kestrel 4000 will automatically start in the Date and Time Setting mode. (See Date and Time Setup below.) Custom settings and chart data will be saved during a battery change.

Turning the Kestrel 4000 ON and OFF
ON: Press the button. 
OFF: Hold the button for two seconds. Or, press the button, then press the button with the word OFF highlighted. (Note: your unit will automatically store data when the power is turned off.)

Date and Time Setup
The first time that you turn on your Kestrel 4000, as well as after a battery change, you will need to set the date and time. The Introduction Screen will appear for 3 seconds, followed by the Date/Time Setup Screen. Press the and buttons to scroll through the settings. Press the and buttons to scroll through the setting options. After entering the date and time, press the button to exit the Date/Time Setup. Then press the button again to exit the Main Setup Menu.

Measurement Navigation
Starting on the Date & Time Screen…

...Press the button to scroll to the Current Wind Speed Screen.
Press the button again to scroll to the Current Temperature Screen.
Continue pressing the button to scroll through the Current Measurement Screens, listed on the previous page, followed by the 3 User Screens. Press the button to scroll through these screens in reverse order.

Mode Navigation
While in a Current Screen, press the button to view the Min/Max/Avg for a measurement. If there is no stored data, the values will be displayed as --.
Press the button again to view a chart for the measurement. If there is no stored data, the axis will appear, but the chart will be blank.
Press the button to return to the Min/Max/Avg and Current Screens. From either Min/Max/Avg or Chart Screen, press the or button to scroll through the Min/Max/Avg or Chart Screen for the other measurements.

Navigation of Charts
The Kestrel 4000 is capable of storing up to 250 data points. To review the data, press the button while viewing a chart. A cursor will appear on the most recent data point. Press the button to scroll through older data points and the button to scroll through more recent data points. The date and time at which the data was stored will be displayed at the bottom of the screen. The data value will be displayed at the top of the screen. Hold down the or button to scroll quickly through the data points.
Press the or button to review the data for the other measurements. Please note that the cursor will remain at the same date and time. If new data is stored while viewing chart data, the entire chart will shift left with the new data point charted on the right. The cursor will not shift with the chart.
Press the button to return to the Chart Mode.

Navigation
The Kestrel 4000 is set up to display 10 Measurements (some are actually calculations) in 3 Modes.

The Measurements are listed to the right with their corresponding screen icon. Using the and buttons will scroll through the various Measurements.

The Modes are: 
Current - displays the instantaneous reading 
Min/Max/Avg - displays the Minimum/Maximum/Average readings from stored data 
Chart - displays a graphical representation of up to 250 stored data points.

Examples of each of these screens are shown below. Using the and buttons will scroll through the various Modes.

In addition to these Measurements and Modes, there are also 3 User Screens, which simultaneously show 3 current measurements (see pages 8 and 10 for more information); and the Date & Time Screen, which gives the current date and time.

Special Functions

User Screens
The Kestrel 4000 has three User Screens which can be customized to display three current measurements simultaneously. (See page 10 for setup instructions.)

Min/Max/Avg for Wind Speed and Wind Chill
The Min/Max/Avg values for Wind Speed and Wind Chill are measured independently from the stored and charted data. While viewing the Min/Max/Avg screen for either Wind Speed or Wind Chill, press the button to begin collecting data for both measurements. Press the button again to stop collecting data and hold the values on the display. Press the button a third time to clear the data. This routine will work simultaneously for both measurements, regardless of which one is displayed while the routine is run. The Min/Max/Avg for Wind Speed and Wind Chill will not affect any other Min/Max/Avg or stored data.

Barometric Pressure and Altitude Adjustment
The Kestrel 4000 will measure air pressure in order to calculate barometric pressure and altitude. Changes in either air pressure or altitude will affect these readings, so it’s important to make adjustments as necessary.

Altitude Adjustment
Obtain a barometric pressure reading from a local weather source to use as your reference altitude.
From the Current Barometric Pressure Screen, press the button to enter the adjustment mode. Press the button to increase the reference altitude or the button to decrease the reference altitude. You will notice that the Barometric Pressure will change with changes in the reference altitude. Press the button to exit the adjustment mode.

Pressure Adjustment
Obtain your altitude from a topographical map or landmark to use as your reference altitude.
From the Current Barometric Pressure Screen, press the button to enter the adjustment mode. Press the button while viewing a chart. A cursor will appear on the most recent data point. Press the button again to return to the Min/Max/Avg screen.

Special Features

Measurements

Wind Speed
Temperature
Wind Chill
Humidity
Heat Index
Dew Point
Wet Bulb
Barometric Pressure
Altitude
Density
Altitude
**Main Setup Menu**

You can customize your Kestrel 4000 in multiple ways. Press the button to access the Main Setup Menu. Press the button to select the highlighted setting.

**Off** - Press the or the button to turn the display off. Even when the Kestrel’s display is turned off, the unit will continue to automatically store data at the defined Store Rate. Wind speed will NOT be stored when the unit is off. To continuously measure wind speed, turn the auto shutdown off (pg. 12). The battery life is decreased if data is stored frequently. The only way to completely shut off the unit is to remove the batteries. Custom settings and data will be stored when the batteries are removed.

**Clear Log**

All stored data is cleared. This will also clear Min/Max/Avg data.

Press or to clear the log.

**Reset MMA**

Press or to clear the MMA.

**Store Rate**

The frequency at which data sets are automatically stored. (Battery life may be shortened if data is stored frequently.)

Press or to increase or decrease Store Rate frequency.

**Overwrite**

This setting only applies when the data log is full.

Press or to toggle on and off. When On, oldest data point is discarded to allow memory for the new data point. When Off, new data points are not saved.

**Man Store**

When data is stored when the button is pressed. When off, the button is disabled.

Press or to toggle between On and Off.

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**Graph Scale** - These settings control the chart limits of your meter. Depending on the conditions, the lower and upper limits of the chart scale may need to be adjusted in order to get the best view of the data. Highlight the desired measurement by pressing the or button. Select the highlighted measurement by pressing the button. Press the or button to increase or decrease the value of the limits. Press the or button to change between the upper and lower limits. Press the button to exit and return to the measurement selection screen. Press the button to return to the Main Setup Menu.

**Units** - The units of measure can be adjusted to best suit the application. The following units are available:

- **Wind Speed**
  - m/s: meters per second
  - km/h: kilometers per hour
  - ft/m: feet per minute
  - Bft: Beaufort

- **Temperature**, **Dewpoint**, **Wet Bulb Temp**, **Wind Chill**, and **Heat Index**
  - °C: Celsius
  - °F: Fahrenheit

- **Pressure**
  - hPa: hecto pascals
  - psi: pound per square inch
  - mb: millibar

- **Altitude**
  - Density Alt.

Highlight the desired measurement by pressing the or button. Press the or button to scroll through the available units. Press the button to return to the Main Setup Menu.

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**User Screens** - The three User Screens can be reconfigured to display the most appropriate information for the application. Only current measurements can be selected for the User Screens - Min/Max/Avg and Charts are not available.

Highlight the desired User Screen by pressing the or button. Press the button to select the highlighted User Screen. Press the and buttons to change lines, and the or button to scroll through the available measurements for each highlighted line. Press the button to return to the User Screen Setup Menu. Repeat above process for the other User Screens or press the button to return to the Main Setup Menu.

---

**System** - The display Contrast and Auto Shutdown can be reconfigured as required. Press the and buttons to highlight either Contrast or Auto Shutdown, and the or button to adjust.

The Contrast can be adjusted for better visibility depending on the ambient lighting conditions. Press the or button to increase or decrease the contrast from 0 to 20 (0 is lightest, 20 is darkest).

The display can be set to automatically turn off in order to conserve the battery life. Auto Shutdown will only work after the preset time has elapsed without any button presses. Press the or button to scroll through the Auto Shutdown options (15 minutes, 60 minutes, Off).

The percent of full battery power is also shown in this menu.

Press the button to return to the Main Setup Menu.

**Date & Time** - The date and time, as well as date and time formats, can be adjusted.

The Date Formats available are: 12 hour and 24 hour. The Date formats available are day/month/year and month/day/year. (See page 5 for instructions on how to set the date and time.) Press the button to return to the Main Setup Menu.

**Language** - Displayed text can be set in one of three languages: English, French or Spanish. To choose a language, use the and buttons to highlight the desired language. Press the button to select the language and return to the Main Setup Menu. Otherwise, press the button to return to the Main Setup Menu without changing languages.

**Restore** - Factory default menu settings can be restored. Press the or button on either Metric or Imperial to restore the factory settings. (See page 12 for a list of the Factory Default Settings.) Press the button to return to the Main Setup Menu.

**Baro Cal** - Please contact NK for information about recalibrating the barometric pressure sensor.

**Humidity Cal** - Please contact NK for information about recalibrating the humidity sensor.

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**Glossary**

The below definitions have been greatly simplified in order to keep this section brief. We strongly recommend that anyone who wishes to make use of these measurements refer to one of the many excellent weather references available for a more in-depth definition. On the internet, visit www.usatoday.com or www.noaa.gov. Or, locate the USA Today publication, The Weather Book. Please note that any words in a definition printed in *italics* are themselves defined in this glossary.

**Altitude**: The distance above sea level. The Kestrel 4000 calculates altitude based on the measured station pressure and an assumed or known barometric pressure.

**Barometric Pressure**: The air pressure of your location reduced to sea level. Pressure will change as weather systems move into your location. Falling pressure indicates the arrival of a low pressure system and an assumed or known station pressure will continue to automatically store data at the defined Store Rate. Wind speed will NOT be stored when the unit is off. To continuously measure wind speed, turn the auto shutdown off (pg. 12). The battery life is decreased if data is stored frequently. The only way to completely shut off the unit is to remove the batteries. Custom settings and data will be stored when the batteries are removed.

**Dewpoint**: The temperature to which air must be cooled in order for condensation to occur. The difference between dewpoint and temperature is referred to as the “temperature/dew point spread.” A low dewpoint spread indicates high relative humidity, while a large dewpoint spread indicates dry conditions.

**Density Altitude**: The altitude at which you would be, given the current air density. Often used by pilots in order to determine how an aircraft will perform. Also of interest to individual who tune high performance internal combustion engines, such as race care engines.

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**Units** - The units of measure can be adjusted to best suit the application. The following units are available:

- **Wind Speed**
  - m/s: meters per second
  - km/h: kilometers per hour
  - ft/m: feet per minute
  - Bft: Beaufort

- **Temperature**, **Dewpoint**, **Wet Bulb Temp**, **Wind Chill**, and **Heat Index**
  - °C: Celsius
  - °F: Fahrenheit

- **Pressure**
  - hPa: hecto pascals
  - psi: pound per square inch
  - mb: millibar

- **Altitude**
  - Density Alt.
Heat Index: A practical measure of how hot the current combination of relative humidity and temperature feels to a human body. Higher relative humidity makes it seem hotter because our ability to cool ourselves by evaporating perspiration is reduced.

Relative Humidity: The amount of water vapor actually in the air divided by the maximum amount of water vapor the air could hold at that temperature, expressed as a percentage.

Station Pressure: The air pressure of your location, NOT reduced to the sea level equivalent.

Temperature: The ambient air temperature.

Wet Bulb Temperature: The lowest temperature to which a thermometer can be cooled by evaporating water into the air at constant pressure. This measurement is a holdover from the use of an instrument called a sling psychrometer. To measure wet bulb temperature with a sling psychrometer, a thermometer with a wet cloth covering over the bulb is spun rapidly through the air. If the relative humidity is high, there will be little evaporative cooling and the wet bulb temperature will be quite close to the ambient temperature. Some exercise physiology guides use wet bulb temperature, rather than heat index, as a measure of the safety of exercise in hot and humid conditions.

Wind Chill: The cooling effect of combining wind and temperature. The wind chill gives a more accurate reading of how cold it really feels to the human body.

### Specifications

**Accuracy** (within operational range stated below)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Metric Low</th>
<th>Metric High</th>
<th>Imperial Low</th>
<th>Imperial High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Speed</td>
<td>±3% of reading</td>
<td>±13 m/s</td>
<td>0.6 knots</td>
<td>78 knots</td>
</tr>
<tr>
<td>Temperature</td>
<td>±2°C</td>
<td>±1°C</td>
<td>1°C</td>
<td>±1°F</td>
</tr>
<tr>
<td>Wet Bulb Temp</td>
<td>±2°C</td>
<td>±1°C</td>
<td>1°C</td>
<td>±1°F</td>
</tr>
<tr>
<td>Dewpoint</td>
<td>±3°C (above 20% RH)</td>
<td>±3°C</td>
<td>±0.1°F</td>
<td>±0.5°F</td>
</tr>
<tr>
<td>Heat Index</td>
<td>±3%</td>
<td>±3%</td>
<td>±3%</td>
<td>±3%</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>±3%</td>
<td>±3%</td>
<td>±3%</td>
<td>±3%</td>
</tr>
<tr>
<td>Pressure</td>
<td>±3hPa</td>
<td>±3hPa</td>
<td>±3hPa</td>
<td>±3hPa</td>
</tr>
<tr>
<td>Altitude</td>
<td>±30m</td>
<td>±30m</td>
<td>±30m</td>
<td>±30m</td>
</tr>
<tr>
<td>Altitude Resolution</td>
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<td>1m</td>
<td>1m</td>
<td>1m</td>
</tr>
<tr>
<td>Density Altitude</td>
<td>±75m</td>
<td>±75m</td>
<td>±75m</td>
<td>±75m</td>
</tr>
</tbody>
</table>

**Response Time**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Metric</th>
<th>Imperial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Speed</td>
<td>1 Sec</td>
<td>1 Sec</td>
</tr>
<tr>
<td>Temperature, Relative Humidity, Wind Chill, Heat Index, Dewpoint</td>
<td>&lt;1 Min</td>
<td>&lt;1 Min</td>
</tr>
</tbody>
</table>

**Display**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Metric</th>
<th>Imperial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update</td>
<td>1 second</td>
<td>1 second</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>Normal operation from -20°C to 60°C (-4°F to 140°F). Below -20°C (-4°F), accurate readings may be taken by keeping the unit warmer than -20°C (-4°F) and exposing it for the minimum time necessary to take a reading (less than one minute).</td>
<td>Normal operation from -20°C to 60°C (-4°F to 140°F). Below -20°C (-4°F), accurate readings may be taken by keeping the unit warmer than -20°C (-4°F) and exposing it for the minimum time necessary to take a reading (less than one minute).</td>
</tr>
</tbody>
</table>

**Storage Temperature**

-30°C to 60°C [-22°F to 140°F].

**Physical**

- **Battery**: Two AAA alkaline batteries (included).
- **Impeller**: 25 mm. [1 in.] diameter, sapphire bearings, light weight. User replaceable impeller/housing assembly.
- **Temperature Sensor**: Hermetically sealed precision thermistor.
- **Humidity Sensor**: Capacitive sensor.
- **Pressure Sensor**: Monolithic Silicon Piezoresistive sensor.
- **Dimensions**: 12.7 x 4.5 x 2.8 cm. [5 x 1.8 x 1.1 in.]
- **Weight**: 102 g. [3.6 oz.]

For more information or more detailed specifications, please visit www.nkhome.com.