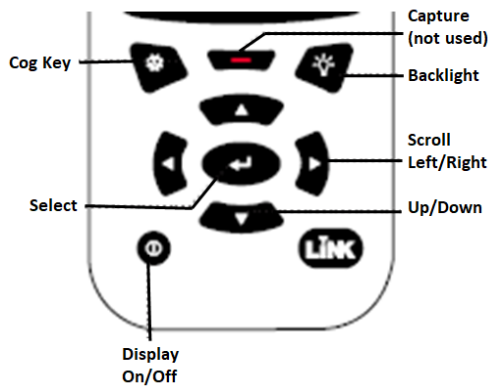# Quick Guide to using the Kestrel 5500 as a weather station



## Introduction

The Kestrel weather station uses five sensors to measure temperature, humidity, wind speed, wind direction and pressure. It displays these in real time, shows graphs of how they have varied, and stores data from them which can be transmitted later using Bluetooth to a PC, mobile phone or other device.

The Kestrel has a wide range of options, which can be a bit bewildering until you get used to them. This guide assumes it is being used as a stand-alone weather station, to be left recording for some hours or days and the data downloaded, rather than handheld with data read manually. Notes at the end refer to places in the text where the Kestrel capability can be extended or changed.

When you receive it from the RMetS, it will have been set for simplicity to show the quantities it measures directly, in metric units: Temperature (ºC), Relative Humidity (%), Wind Speed (m/s), Wind Direction (degrees) and Pressure (corrected to sea level, hPa). See Note 1 and Note 2 on how to change these settings.

The Kestrel has a great User Guide (UG), which you should read the first time you use it, but it can be a bit daunting for everyday use.  Here are the main things you need to know.

## Using the Kestrel

Switch on the display with ⏻ (It switches off after 15mins but still logs data). As soon as it comes on, there is a quick flash message showing the battery %age capacity. Then the screen shows date and time.

Use the down arrow ⌄ to scroll through a display of current values of each of the measured quantities: **DIRECTION, WIND SPD, TEMP, HUMIDITY** and **BARO** (= Sea-Level Pressure).

Keep scrolling down ⌄ to go through 2 "User Screens". The first of these shows Time, Temperature and Humidity; the second shows Sea-Level Pressure, Wind Speed and Wind Direction.  (See Note 3).           Scrolling up ⌃ obviously does the reverse.

When showing a current reading of a particular quantity (e.g. temperature), pressing ➤ or ◀ scrolls between three temperature Mode Screens showing
(1) current temperature,
(2) minimum, average and maximum temperature over the period between pressing start and stop; you will probably not need this screen when using the Kestrel as a stand-alone weather station
(3) a graph of all the temperature data since last cleared. This is useful to check that data is being logged OK.  You can read off the data by pressing the central arrow key, and then scrolling through point by point using ➤ or ◀  whereupon a vertical line will show. At any point it shows the date and time of that observation and the observed value.

## Logging data

The Kestrel 5500 will log data at a rate you choose. Press cog key ⚙ , scroll down to

**Memory Options** and select ⏎ . First check that **Auto Store** is **On**. Then scroll down to **Store Rate**. Using right arrow key, choose the logging interval you want; this can be from seconds to hours. Roughly, at 1min logging rate the memory will hold 1 day of data, 2min holds 2 days, etc. A commonly used interval for weather recording is 10 minutes, so this will log for 10 days before the memory is full.

Unwanted data can be cleared using **Clear Log (Cog key ⌄ Memory Options** ⏎

then  ⌄ **Clear Log,** then ⏎ to confirm clear**)**

**Overwrite** will write over old data with new data if the memory is full, **so the old data will be lost**.  Generally, this is kept **Off**, but if you think you might exceed storage and you value recent data more than older data it can be switched **On**.

## Pressure

The names used for pressure quantities can be confusing. **Station Pressure ("PRESSURE")** refers to the actual (absolute) atmospheric pressure where the Kestrel is, in hectoPascals (hPa – same as millibars). **Barometric Pressure** ("BARO") refers to the Station Pressure corrected to sea level – pressure decreases by about 1 hPa for every 8m increase in altitude. Sea-Level Pressure (**BARO**) is the quantity reported from weather stations and is almost certainly the one you want.

In order for it to make this correction, you will have to enter the altitude of the Kestrel. Go

to the **BARO** screen, press select ⏎ , scroll to **Ref Alt** and set this to the Kestrel altitude in metres using ➤.  The **BARO** screen will now show the sea level pressure. (You can find the altitude using e.g. Google Earth. Put the hand icon over the location of the Kestrel and the altitude will appear in the bottom RH side).

# Wind speed and direction

Assuming you are setting up the weather station to stand alone and log over a period (rather than just taking some values by hand) then you will have to fit the wind vane and mount the Kestrel on the tripod. This not only allows wind direction to be measured, using an internal digital compass, but also keeps the anemometer impeller (propeller) pointing into the wind at all times.

The digital compass has been calibrated, but if you take out the battery you will have to do it again – it is simple and only takes a few minutes. See UG page 11 item 4.

If the impeller is damaged it can get sticky, so the wind speed will be wrong. See UG page 18 for how to replace it.

# General information

- To replace battery, slide key at base and cover will open. Use AA Lithium.
- The Kestrel is logging even when the display is off; you can stop it logging by using ✿ ➤ **Memory Options** ➤ **Auto Store** ➤**Off**.
- The backlight is switched on and off by pressing the bulb key.
- The User Guide is at https://kestrelinstruments.com/mwdownloads/download/link/id/13/
- For more technical information, including accuracy, go to: https://kestrelinstruments.com/kestrel-5500-weather-meter

**Looking at data on a mobile phone**

For this, you will need to install the Kestrel LiNK app from www.kestrelinstruments.com on your mobile.

Next, pair the Kestrel to your phone using Bluetooth. On the Kestrel go to ✿

➤**Bluetooth** ➤**On.** Then **Bluetooth** and it should display **Conct** as **PC/Mobile** and **Status** as **Available**.  It is now available for pairing.  Set your mobile Bluetooth to Searching; **Status** should soon change to **Connected**, and the Bluetooth icon should appear in the top right of the screen.

The Kestrel real-time data will all now be visible on the mobile phone, and data stored on it will be transferred to your mobile, where it can be viewed (but not analysed)

# Exporting data from Kestrel to a PC

If your intention is to analyse the data, draw graphs, etc, then the Kestrel data should be transferred to a PC.  First, insert the LiNK dongle (distinguished by a yellow cable tie) into a USB port on the PC. (Standard dongles do not work).

Next, download the LiNK app for Windows from the Kestrel website at https://kestrelinstruments.com/faqs/question/view/id/89/ When downloaded the Kestrel LiNK icon will appear on the PC screen.    *(NB: There may be a warning message from Windows or your security software saying that it is "… not commonly downloaded and could harm your computer"; we have ignored this with no apparent consequences, but it is obviously the responsibility of individual users to make a judgement).*

Open the LiNK app; this should say "Connected to dongle" at the bottom. Click on **Restart Scan**; this should pick up the PC dongle and display its name; click on it to connect it.  Click on **Manage** and then **Download Log**.  The data log appears on the app panel with a Dataset number (e.g. 3015). Click on this to highlight, then click **Export** to send data file to a folder on your PC. This will appear as an Excel .csv file, which can be opened and then saved as an Excel Workbook (.xls) file and subsequently used to analyse the data, produce graphs etc.

# Notes

*Note 1*: The Kestrel can also show, display and store other quantities derived from the ones directly measured, such as Wind Chill or Crosswind (others are listed on page 5 of the User Guide in the column 5500 Weather). To show additional quantities, press the cog key ⚙, scroll down to **System** and select ⏎, scroll down to **Measurements** and select ⏎, then scroll down each quantity in turn. Press right scroll ➤ to select **On or Off**.

*Note 2*. The Kestrels has been set to read in metric units, but this can be changed if you wish using the select button ⏎ when each quantity is being displayed.

*Note 3*.  Three User Screens are available, each of which can be set to show any combinations of three measured quantities at once. In most applications, we find these User Screens are of limited use. The Kestrel has been set to show two user screens. To display different quantities, go to the User Screen, press settings and select the quantities that you want displayed.