

Kestrel FlexAR Product Family



K2 Pico BlueTooth Pairing Guide



Table of Contents

Opening Remarks3

Caveats of BlueTooth in Microsoft® Windows.....3

Windows XP4

Windows 710

Known Issues in Windows 7 16

Windows 1019

Disclaimer: Kestrel Radar Sensors cannot accept any liability for Microsoft® BlueTooth Device Support. To guarantee the best user experience, Kestrel Radar Sensors recommends that users always keep the firmware of Radars & Kestrel Workbench as up-to-date as possible. This guide is provided as-is with no warranty of any kind. Any details included maybe subject to change without notice.

Should you feel that any specific instructions that would be helpful, but for whatever reason are not included in this guide, please get in contact with us and we will consider adding in extra content.

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Opening Remarks

This guide provides some examples of the steps involved to pair a Kestrel K2 Pico Flex Radar device on Windows operating systems. It will serve as a useful handbook when using Microsoft® Windows to pair Kestrel Radar Sensors products using BlueTooth. Many Laptops/PCs may have BlueTooth capability built in, but if not, you may need to purchase a suitable BlueTooth Dongle/Adaptor. In this guide, the Dynamode BT-USB-M2 BlueTooth Adaptor has been utilized.

Before you begin, **please ensure Kestrel Workbench remains closed while you are in the pairing or un-pairing process, as leaving the program open has the potential to cause problems.** Once the device is successfully paired with a Windows operating system, then you may open Kestrel Workbench and proceed to operate the connected device.

Please ensure your K2 Pico BlueTooth module is connected via the Kestrel Expansion Bus to a K2 Pico Flex Radar. Please ensure there are no misconnections as each pin is individually power rated, and it is possible to damage units with wires connected in the wrong pin locations. Please refer to the K2 Pico Flex Operations Manual for guidance on this.

When commissioning radar systems, please ensure they are running the latest version of firmware to ensure the best user-experience. New updates are essential as they include extra features, support and improvements of any issues that have been reported. Updates are sent out periodically over email with the Firmware Update process detailed in the K2 Pico Flex Operations Manual.

Caveats of BlueTooth in Microsoft® Windows

Pairing and removing devices equipped with BlueTooth in Microsoft® Windows across all their operating systems appears to have a number of cumbersome quirks. Device support problems on Windows platforms are well documented and cause problems for many vendors, nonetheless, Kestrel Radar Sensors has attempted to navigate around these known issues as much as is possible.

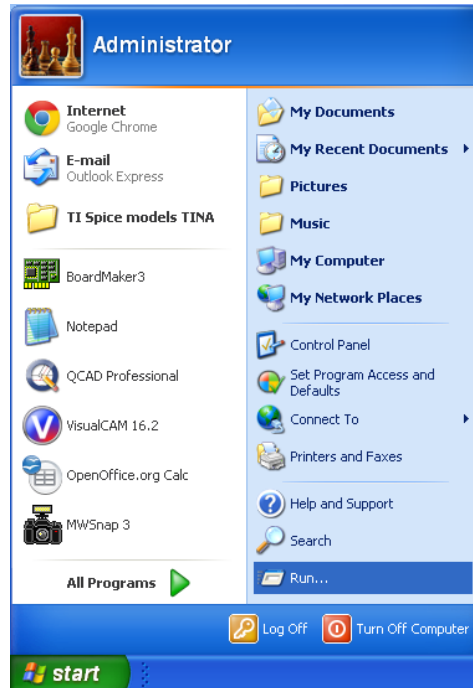
As stated above, **you must only open Kestrel Workbench after a K2 Pico Radar is successfully paired with Windows.** When Kestrel Workbench detects that a Kestrel BlueTooth Module is paired, after about 20 seconds, the radar will automatically appear in the “Devices” pane, ready for configuration, uploading or downloading of Data Logs, Firmware or Application Scripts.

The Windows pairing process can take up to 5 minutes in some cases, so please exercise patience when using the Windows pairing procedure. Our best advice is to keep this guide to hand.

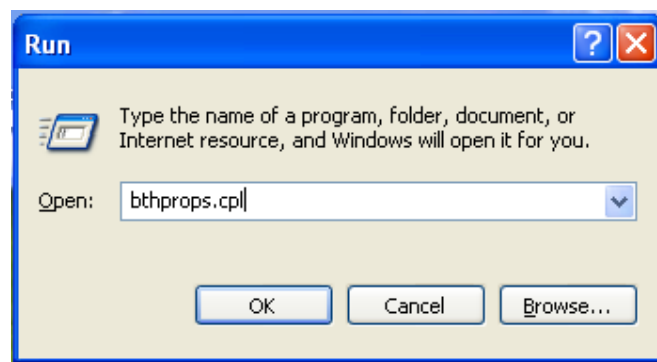
Unfortunately Windows does not offer any ranging information to report if a device is too far away, but the absolute maximum range of BlueTooth in ideal conditions is 100m. If you do encounter problems in scanning for nearby devices or if Windows throws up an error, please keep re-trying. We have attempted to document the various errors, and given advice. Generally, the age old tricks apply: For PCs with built-in Bluetooth support, you may need to disable and re-enable BlueTooth, for users operating a BlueTooth dongle, unplug it and plug it back in again.

Windows XP

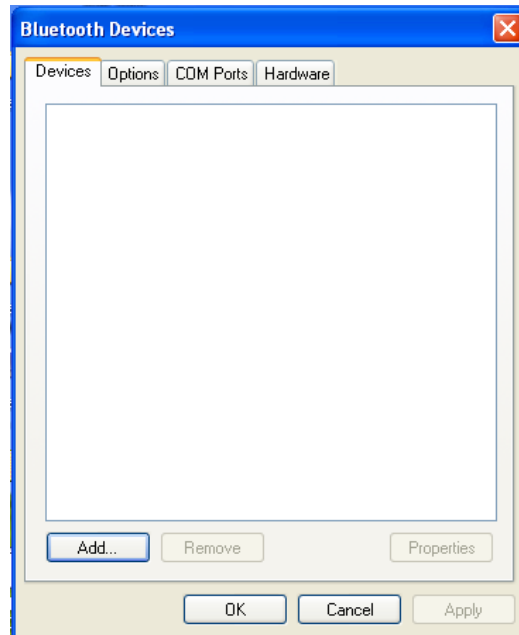
Go to the Windows **Start** Menu, Click on **Run...**



When the **Run** Window pops up, type in **“bthprops.cpl”** and press **Ok**.



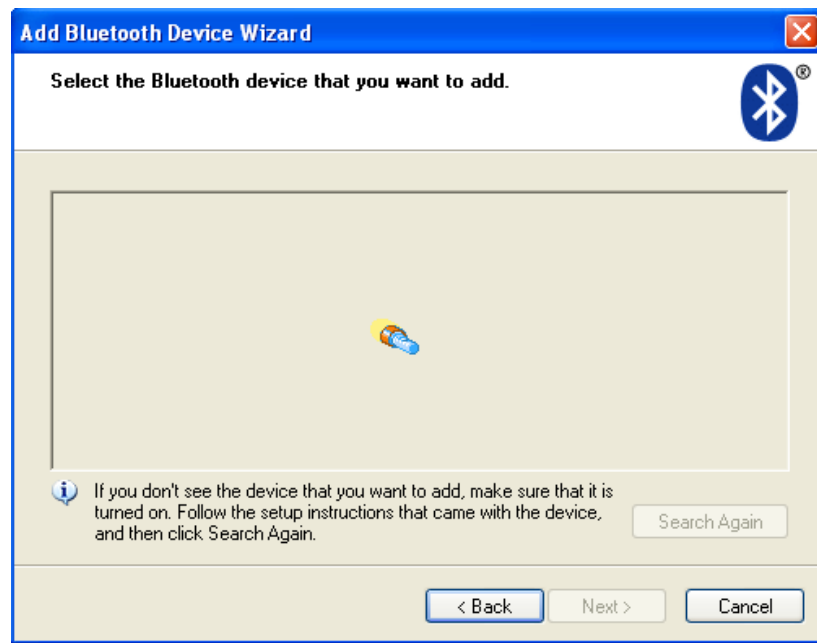
The following window will appear. Now click on **“Add...”**



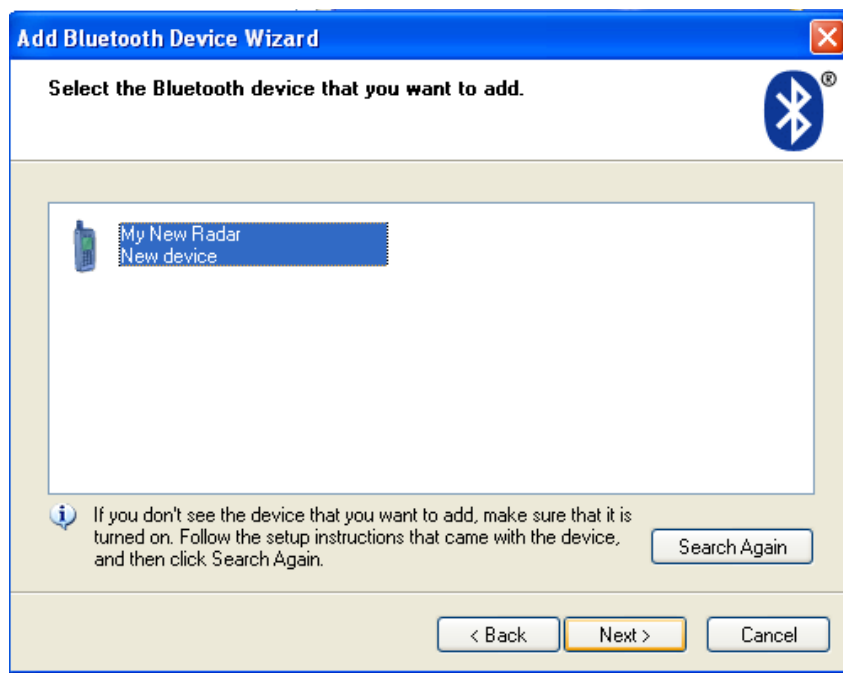
As you will see, this opens the **Add BlueTooth Device Wizard**. Please check the box that says **“My device is set up and ready to be found”** and press **Next**.



The wizard will then begin to search for devices as shown here:

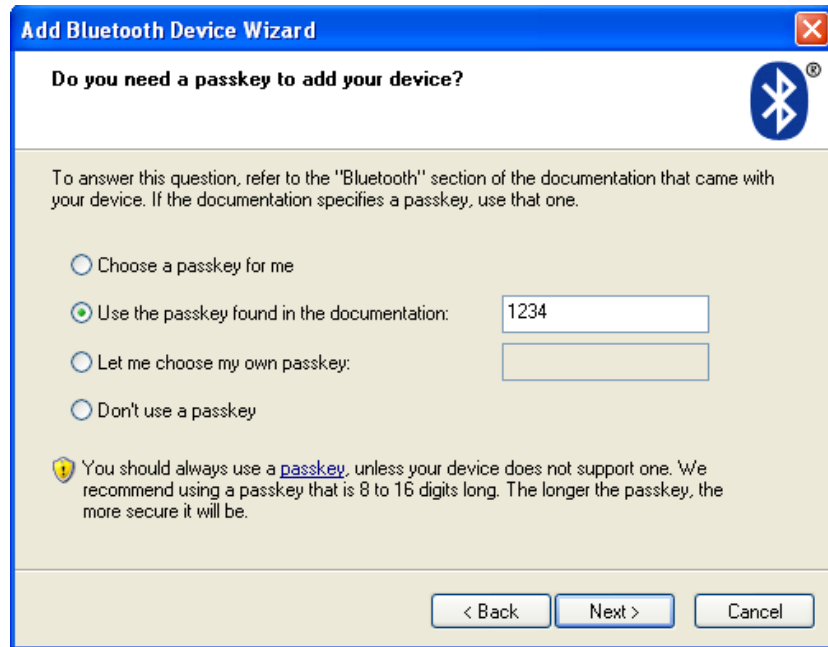


The wizard has now found the Radar Device associated with the BlueTooth Module. Select the desired Device. Normally it would show as K2 Pico Radar (With the serial number), but in this example we have already named our device "My New Radar". To proceed, select the device and click on **Next**.

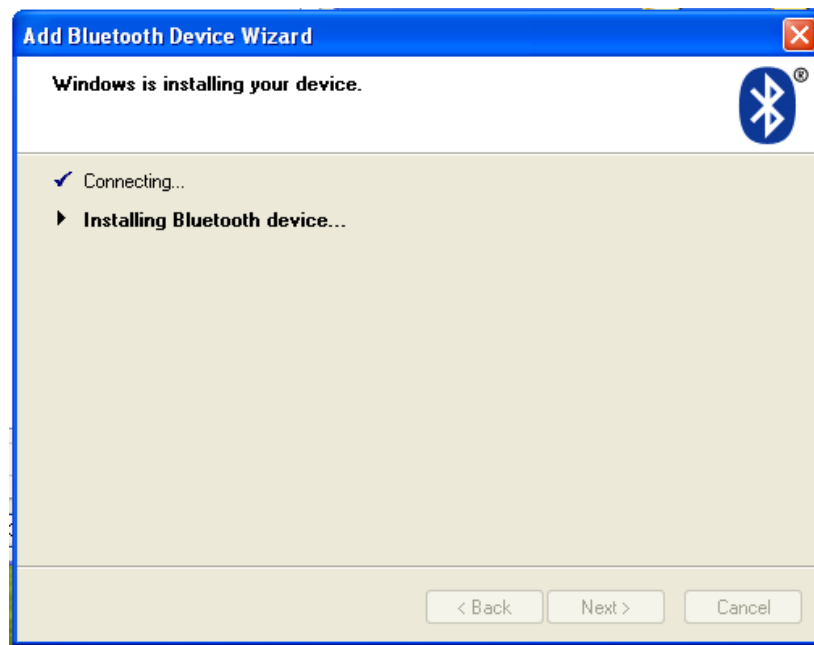


This opens a menu that requests the Passkey of your radar device. **The default passkey for K2 Radars is normally 0000.** You can change the name and passkey for each different radar device on the **Properties** page in Kestrel Workbench once you are paired.

Always select **“Use the passkey found in the documentation”**. In this example “My New Radar” has a passkey of “1234”. When entered, press **Next**.



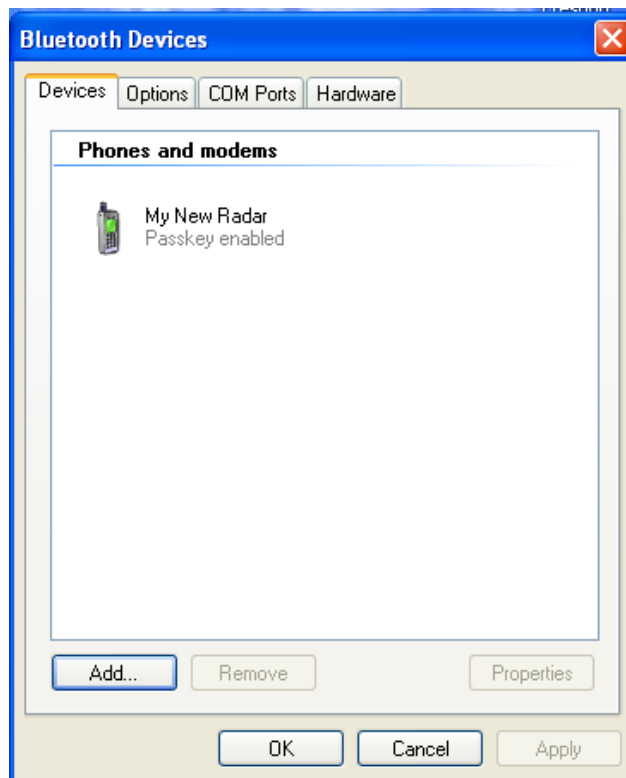
Now the wizard will begin to install the device.



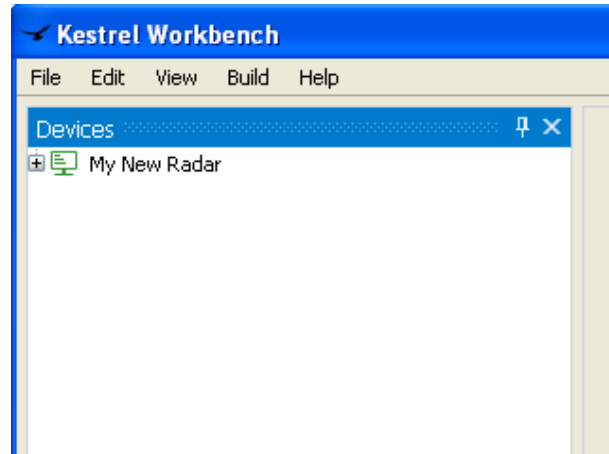
Once this process is complete, you will see that the K2 BlueTooth Module has been paired and that Windows has assigned COM Ports for communications. When this window appears, press **Finish**.



Now on the main BlueTooth Devices window it should show that **My New Radar** is connected, with the passkey enabled.

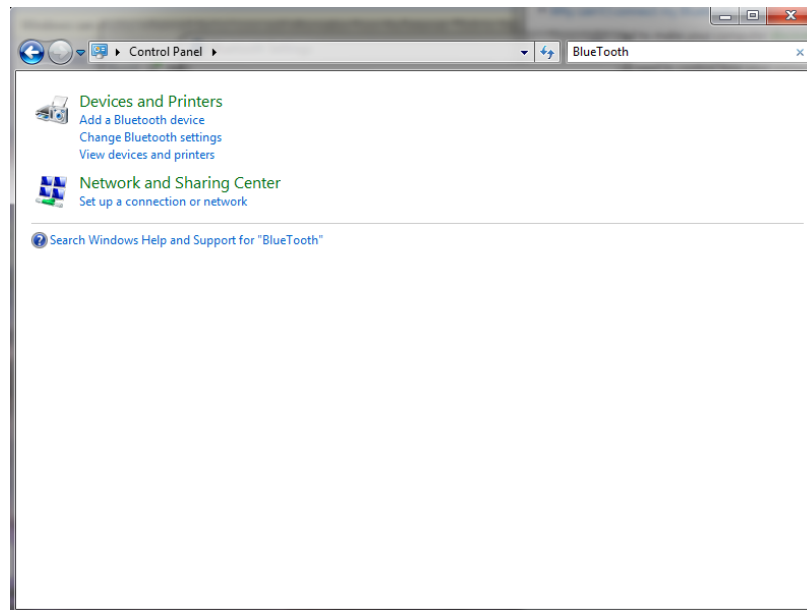


When opening Kestrel Workbench after the device has successfully paired with Windows, after about 20 seconds the radar will appear in the Devices Pane ready for use. The connection is now complete. Double-Clicking on the radar will expand its options allowing access to Configurations, Properties and Download/Upload of Firmware, Application Scripts and Detection Data (For Data Logging Radars only)

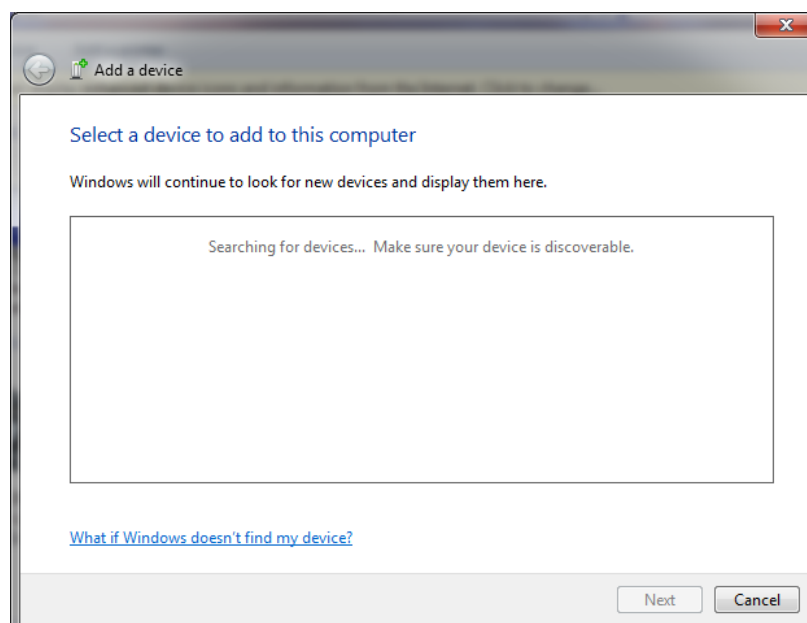


Windows 7

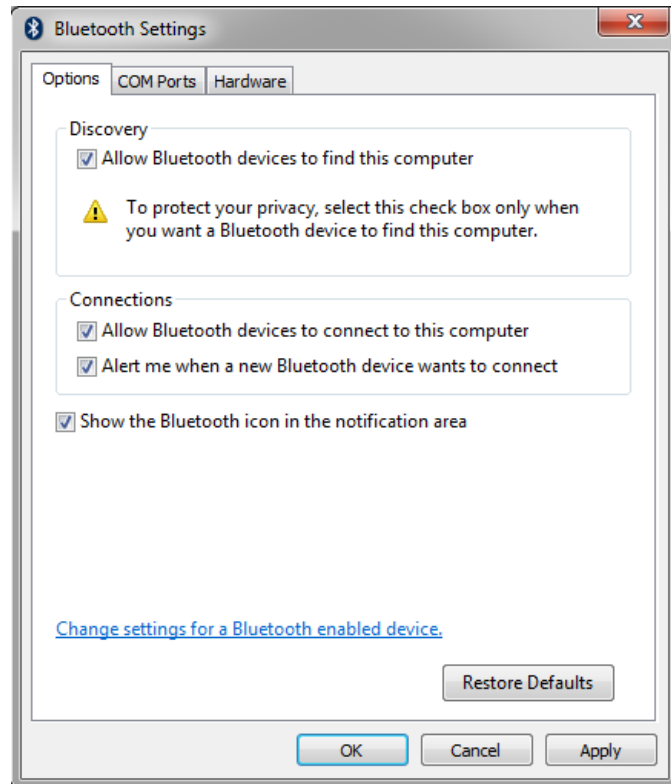
Find and open the Control Panel. In the search box in the top right-hand corner of this window, type in “BlueTooth”. A list of relevant items will appear. Select “Add a BlueTooth Device”.



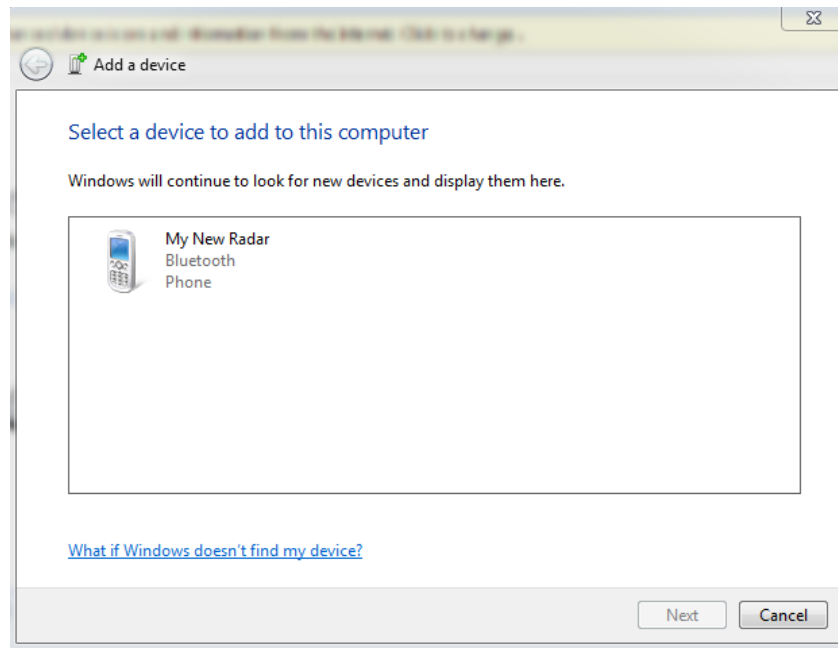
This will open the “Add a Device” window which will immediately begin to search for discoverable devices:



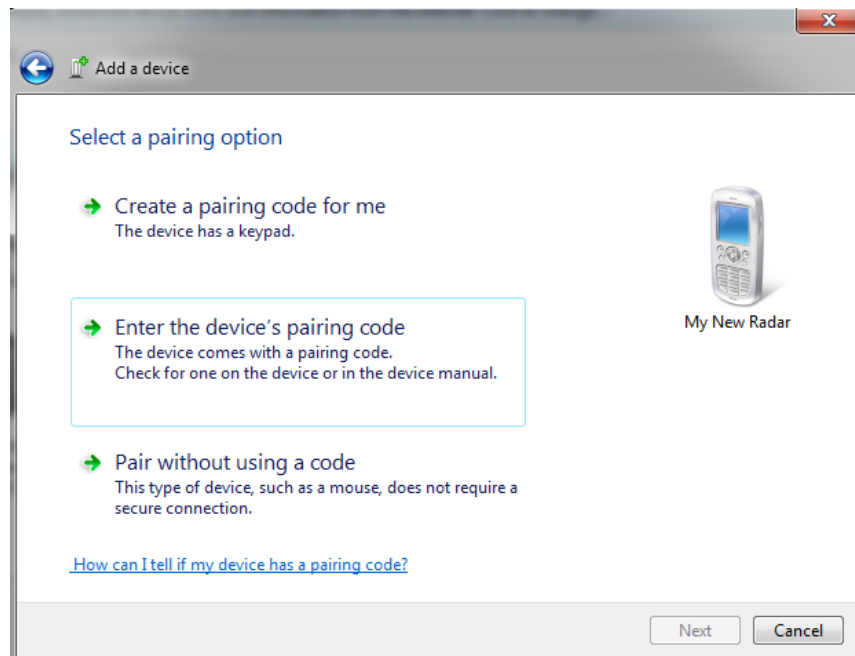
If you are having a problem at this stage, please go back to the Control Panel, search BlueTooth again and open the option that says “Change BlueTooth Settings”. This will open the following window. You need to make sure you tick the box that says “Allow BlueTooth Devices to find this computer”. Once this is done, click Apply, then OK to close the window.



Now if you try to search for devices again, after about 20 seconds if your radar and BlueTooth modules are powered up and operating correctly, you should see it appearing in the “Add a Device” window as below. In this example, the radar we are using has the name “My New Radar”. You can change the name and passkey for each different radar device on the **Properties** page in Kestrel Workbench once you are paired.



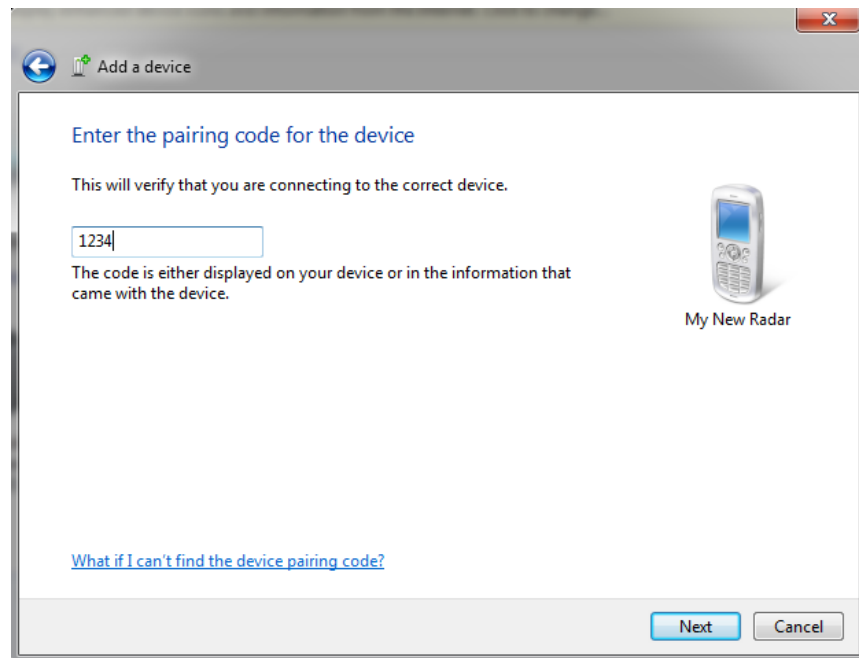
If you select the Radar Device and press next, the following window appears, prompting you to select a pairing option. All K2 Pico Flex Radars are coded with a **default pairing code of 0000**, so you need to select **“Enter the device’s paring code”** and press **Next**.



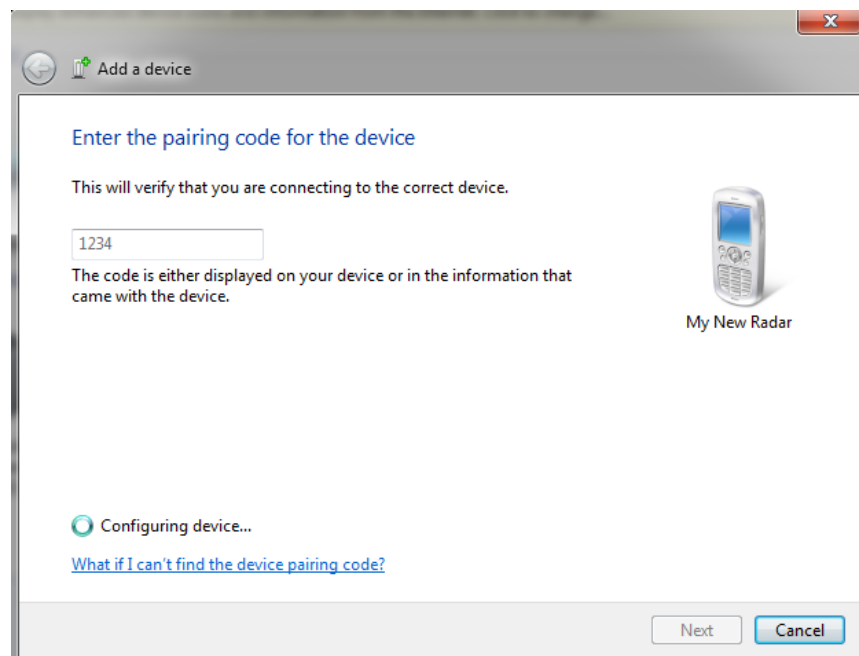
Please note: Sometimes Windows 7 won't request a passcode it appears to be quite random, so you may not see this exact process during the pairing process.

K2 Pico BlueTooth Pairing Guide

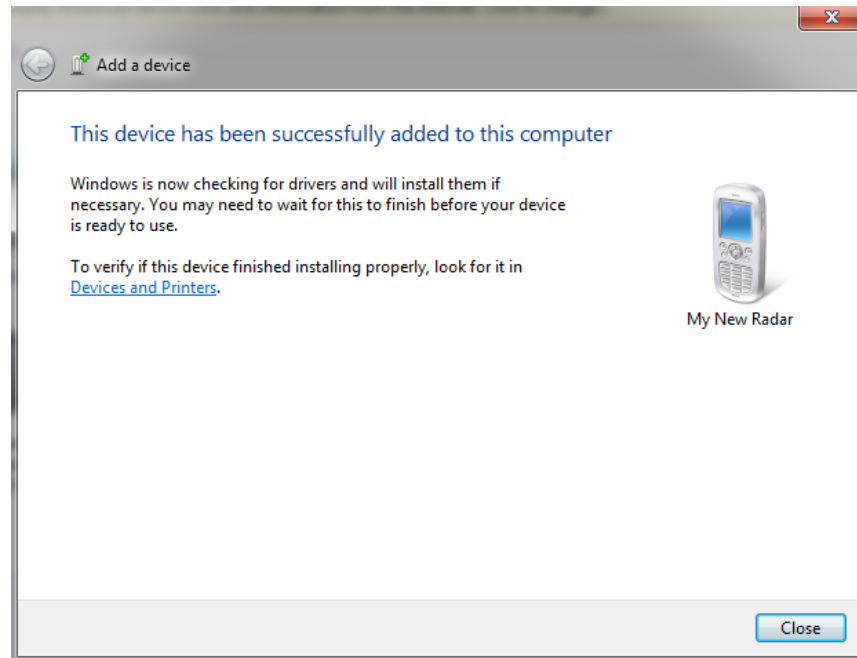
If you are required to enter the device passcode, the default pairing code is 0000. In this example “My New Radar” has the passcode 1234. Once entered, press **Next**.



The wizard will then begin to verify and connect to the device as below:

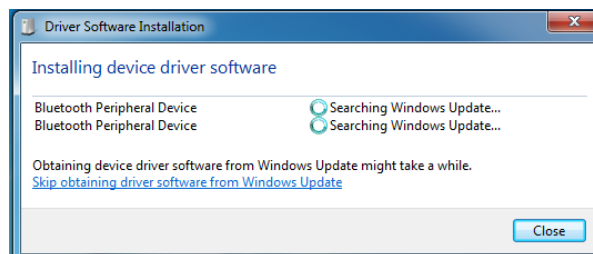


The process should be quite quick, and upon making a successful connection, the following message will appear.

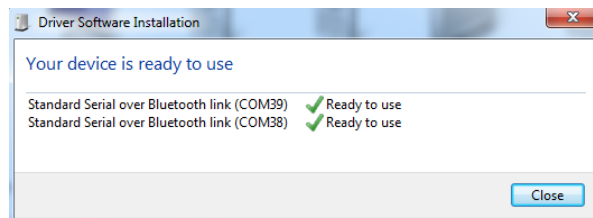


Please note: In some cases Windows 7 may not immediately pair correctly and install the device. If you look to the Notifications Area of the Windows Taskbar, in here the Windows Device Installation tool has been known in some circumstances to randomly attempt to “Search Windows Update” for BlueTooth Peripheral Device Drivers (of course, it should work immediately). This can affect both the BlueTooth Dongle in use, and also the K2 Pico BlueTooth Module. This unfortunate quirk may appear as follows, and it may take Windows up to 5 minutes to resolve itself should this happen.

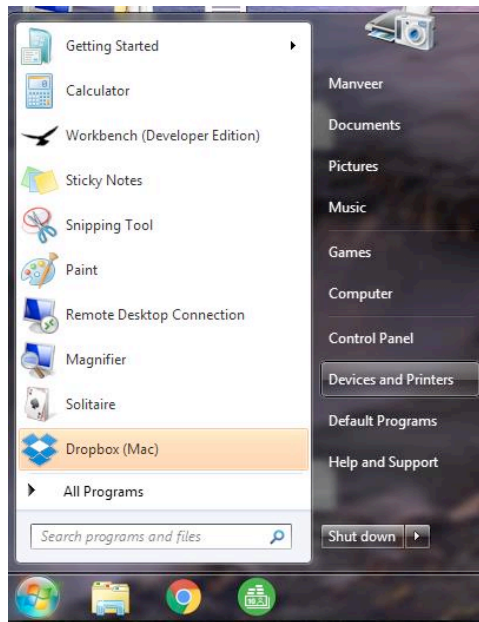
Windows deciding it wants to search for BlueTooth Device Drivers.



After 5 minutes, it kicks back into life, assigns COM Ports and indicates the device is ready to use.



You need not concern yourself with COM Ports. If Windows reports that the device is paired and ready to use, go to the **Start Menu > Devices & Printers** area (as below)

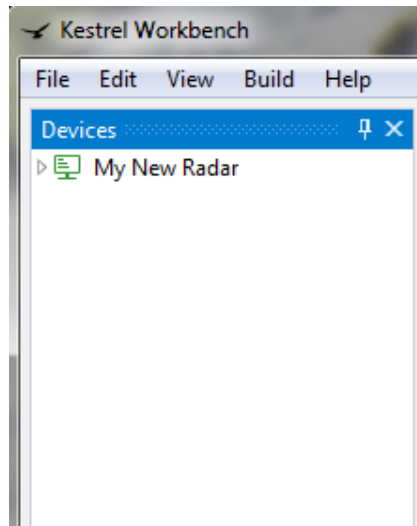


The **Devices & Printers** menu is the easiest menu from which to Manage all connected devices. From here, you can see which devices are paired to the computer, easily “remove” a device (i.e. un-pairing), and also Add new devices. It is the same method as above, but by using the Start Menu shortcut, this takes you right where you need to be to monitor any devices connected or remembered by your PC. If you would like to remove the device, you just click on the radar, and a button will appear next to “Add a Printer” that says “Remove Device”. If you select remove devices, it should take no more than a few seconds to remove it.



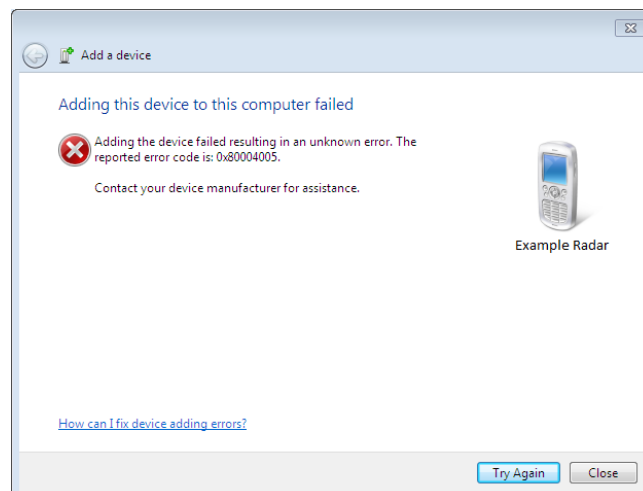
If the radar appears as above, you are now paired, and can proceed to open Kestrel Workbench to communicate with the radar.

When opening Kestrel Workbench after the device has successfully paired with Windows, after about 20 seconds the radar will appear in the Devices Pane ready for use. The connection is now complete. Double-Clicking on the radar will expand its options allowing access to Configurations, Properties and Download/Upload of Firmware, Application Scripts and Detection Data (For Data Logging Radars only).



Known Issues in Windows 7

The image that follows shows a crash which occurs in Windows 7 during an attempt to pair a Kestrel BlueTooth Device. This error appears in some rare circumstances. The error code Microsoft provide relates to windows boot registries, it does not in any way relate to the Kestrel BlueTooth Module failing to perform a task. The advice they give is contact us as the manufacturer of the device you are trying to pair with.

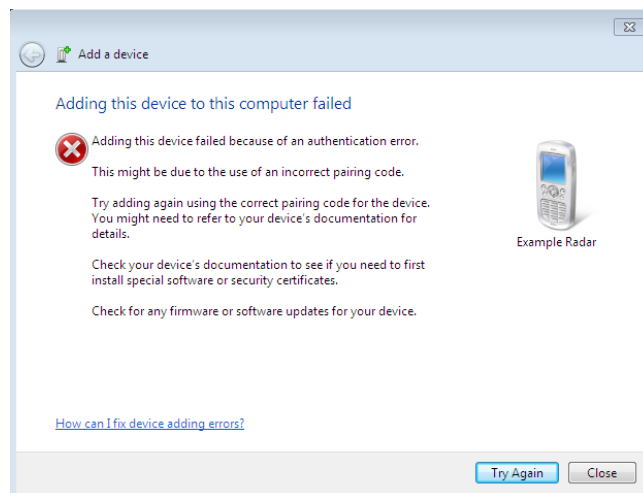


The assistance we can give if you encounter this situation is:

- Windows has failed to pair the device, for no clear reason. Keep retrying until you get the correct sequence of menus as in the above example.
- Your BlueTooth dongle has crashed or is not located in an appropriate position. Unplug it and plug it back in again, and retry.
- It could also be that the Kestrel BlueTooth Device is out-of-range (Windows does not provide confirmation of any ranging issues). Please check your distance. For guaranteed success in pairing try to be within 10m from the device. The Maximum range of BlueTooth in ideal conditions is 100m.

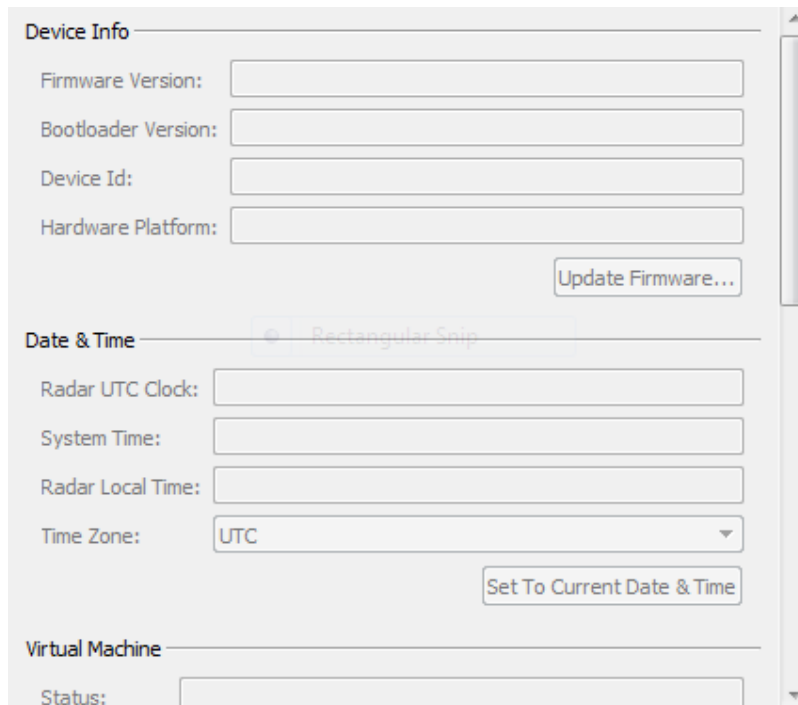
Please address these points and continue to re-try until you are successful. There is no need to interfere with the Radar or BlueTooth PCB hardware, if the **Add a Device** menu scans the surroundings and “sees” the Kestrel device, there should be no reason why it cannot pair. Any difficulties are likely due to Windows’ lack of support for handling interactions with external devices.

The next image shows another circumstance where windows fails to ask you for a pairing code at all, then reports that it has failed to pair due to an “authentication error”.



The advice from us if you encounter this seemingly random error, is to re-try until Windows goes through the correct sequence as in the above pairing examples. Of course, we also recommend that you keep your devices up to date with the latest firmware versions, but this should not hamper your ability to pair with and access the device over BlueTooth.

The next image shows what happens if you have already paired a device, and can see it on the list of Devices in Kestrel Workbench, but when you Double-Click on any of the menus of the radar, it just greys out and does nothing:



This situation (above) can only occur if the BlueTooth connection has been lost for whatever reason, as Kestrel Workbench tries to communicate with the radar and retrieve information, it gets no response and it just waits forever in a loop.

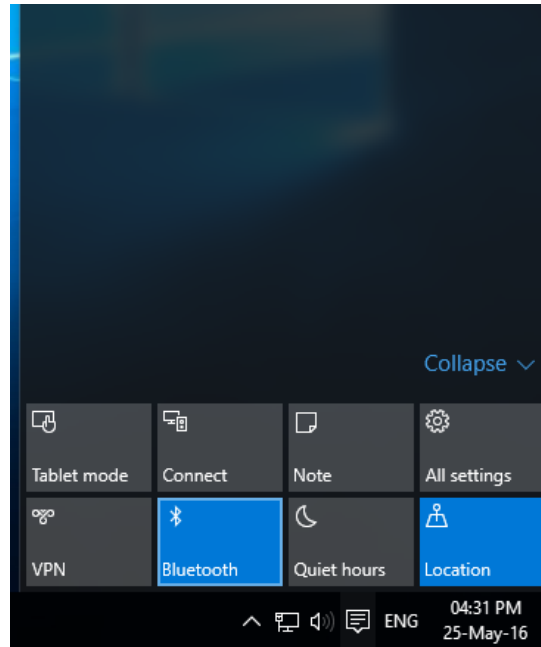
The basic steps to diagnose the problem are:

1. If Kestrel Workbench has crashed, close the entire program.
2. Go to Start Menu > Devices & Printers and check that the Radar is still successfully paired as a device. Remove the device and re-pair it again. You might find that it fails the first time around, which indicates that the issue is to do with being out-of-range or that the BlueTooth Dongle needs to be power cycled by unplugging it and plugging it back in again.

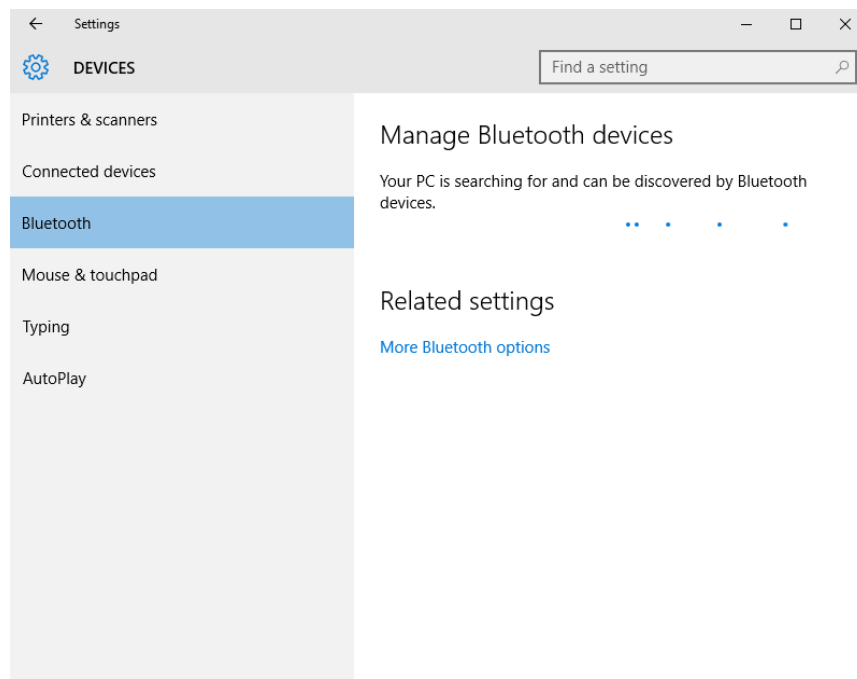
Please note: We would like to stress that these pairing issues are widely documented and affect a range of devices from many manufacturers, and any pairing issues are largely due to poor device support in Microsoft® Windows Operating Systems. Whilst it can be tedious, the pairing process is still reliable, as in most cases, if you persevere, following the steps as we have advised throughout this guide, you will be able to pair and access the device successfully. The specifics of pairing cannot be influenced in any way by Kestrel Radar Sensors, we, as a vendor, rely on Microsoft to provide a platform with which to use BlueTooth technology. We work tirelessly to improve and refine every aspect of our product range including the support in Kestrel Workbench. As always, we strongly recommend staying as up-to-date as possible on all versions of radar firmware and versions of Kestrel Workbench.

Windows 10

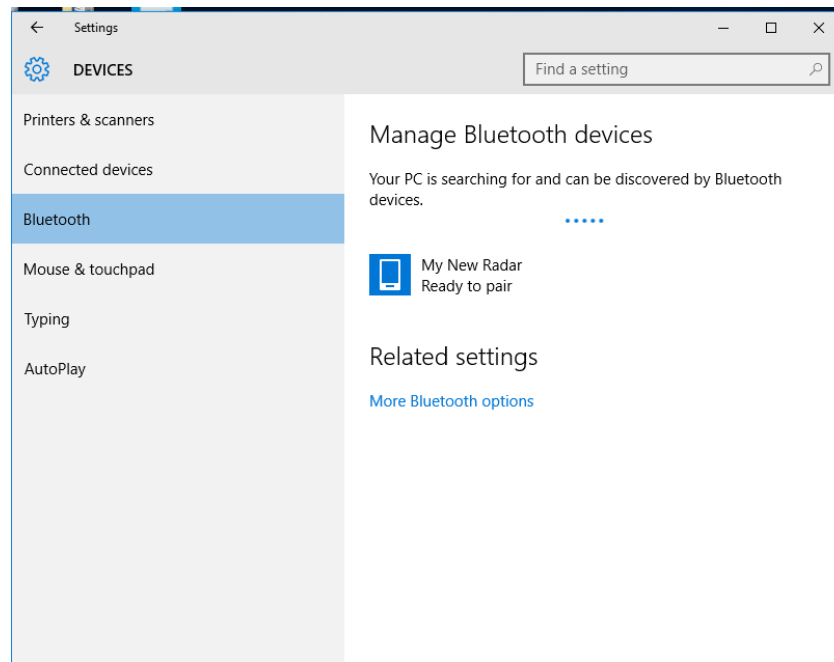
From the startup screen, to the bottom right of the Taskbar and open the **Action Centre**. Click on the **BlueTooth** option. You can also go to the start menu, and look for the Control Panel or Devices Window. There are different methods to get to the same settings.



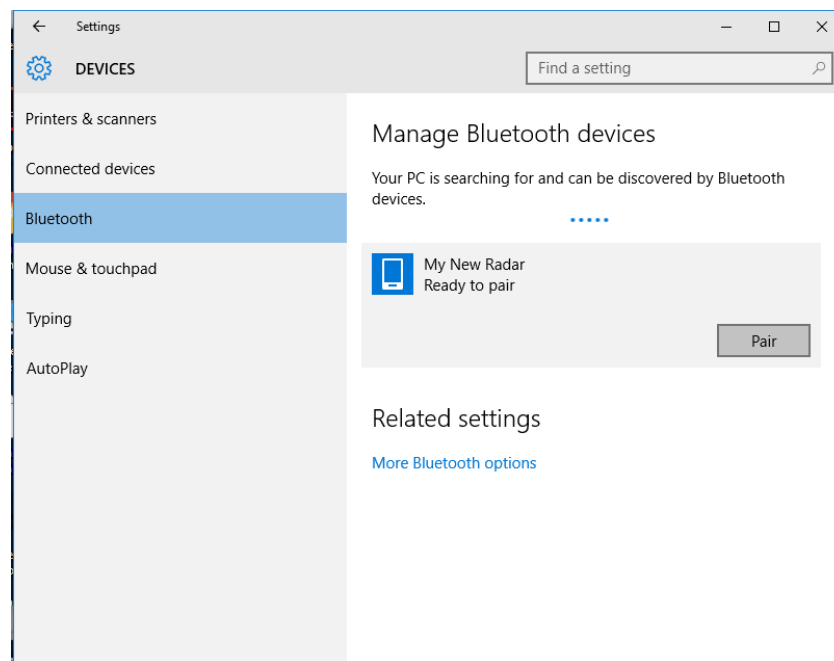
The following **Devices** window will appear detailing all information regarding devices connected to the PC. The PC will automatically be scanning for nearby BlueTooth devices. Make sure your K2 Pico Radar and BlueTooth module are powered up.



When Windows had located the radar, it should appear on the list, as below:

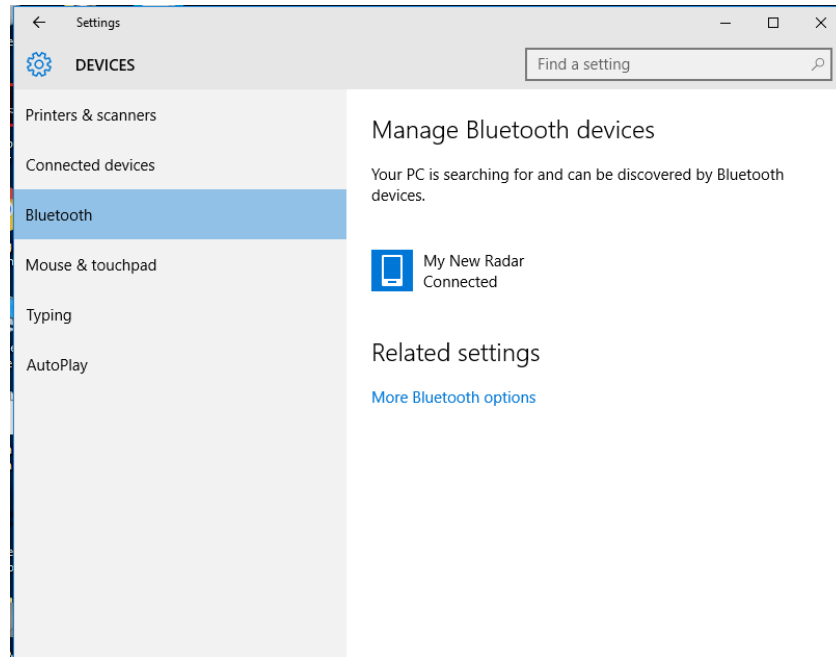


Select the device and press **Pair**.



Please note: There may be occasions where, when you click the “Pair” button, Windows 10 pops up with a random window asking for passcodes, sometimes it will show a long number, not give you an opportunity to do anything, and then close down saying the pairing process has failed. Please ignore this window and keep closing down and re-trying. This appears to be a quirk with Windows 10 that is out of our control. If it asks you, the default passcode of a radar is always 0000.

Once the pairing process is complete, the radar will appear as **Connected**.



When opening Kestrel Workbench after the device has successfully paired with Windows, after about 20 seconds the radar will appear in the Devices Pane ready for use. The connection is now complete. Double-Clicking on the radar will expand its options allowing access to Configurations, Properties and Download/Upload of Firmware, Application Scripts and Detection Data (For Data Logging Radars only).

