

Technical Note



Subject: Optimizing USB Communication Between the PC and Potentiostat



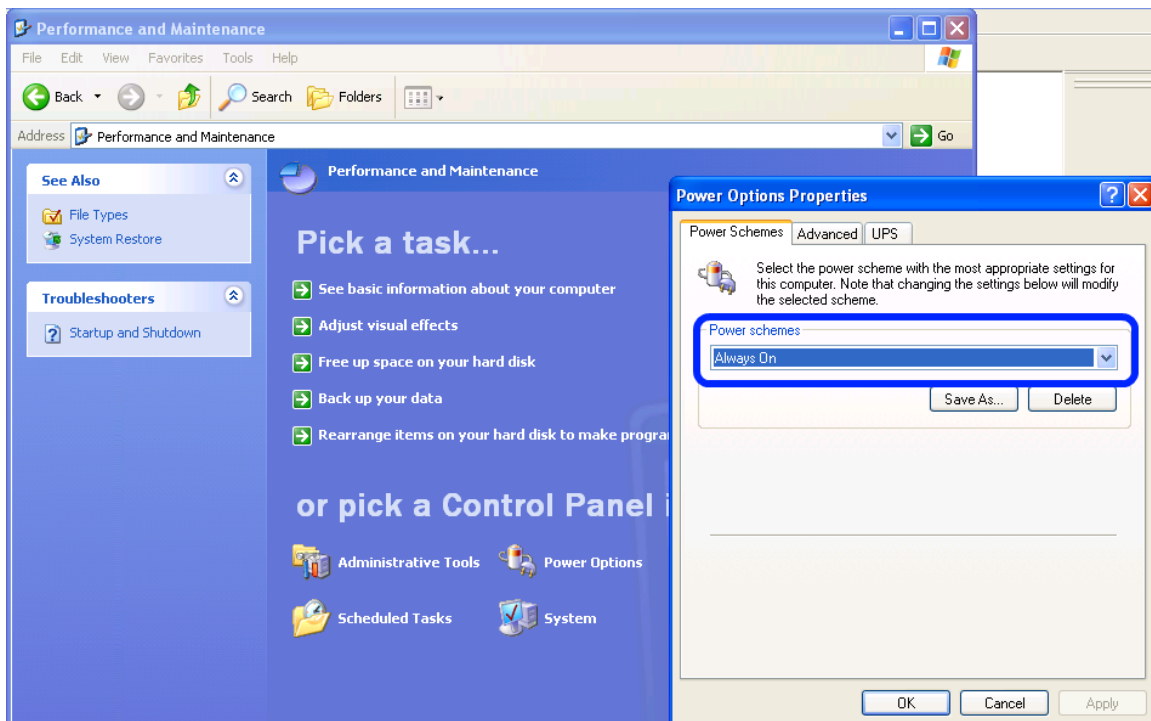
As laptops become more and more the choice for computer platforms, their manufacturers create methods to increase battery life. Operating Systems (OS) have additional settings that starve the hardware for the power required to function as part of a professional data acquisition system. Many personal users of laptops are even unaware of the expanding number of these options and profiles.

The document describes the recommended settings for ensuring that the potentiostat receives all the power it needs from the computer to operate as it was designed. In addition to these settings, some computers require the use of an externally powered USB hub to ensure sufficient and steady power is supplied to the potentiostat.

Since each OS is slightly different, the document is sectioned accordingly.

Windows XP

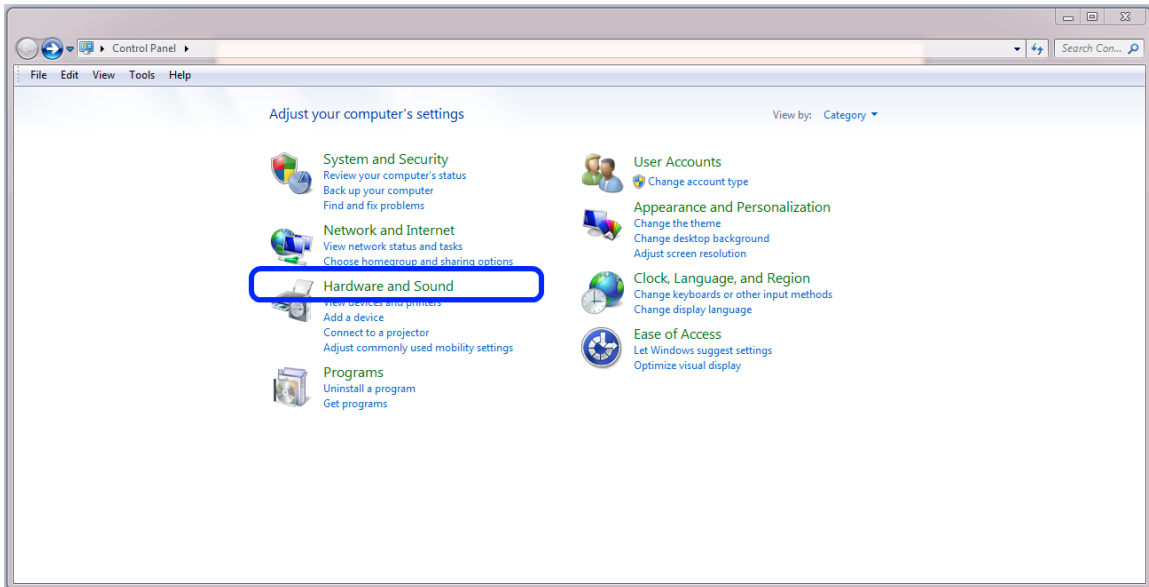
Windows XP does not have the variety of settings available in Windows 7/8. In Windows XP, find “Power Options” in the Control Panel, and select the “Always On” Power Scheme as shown here.



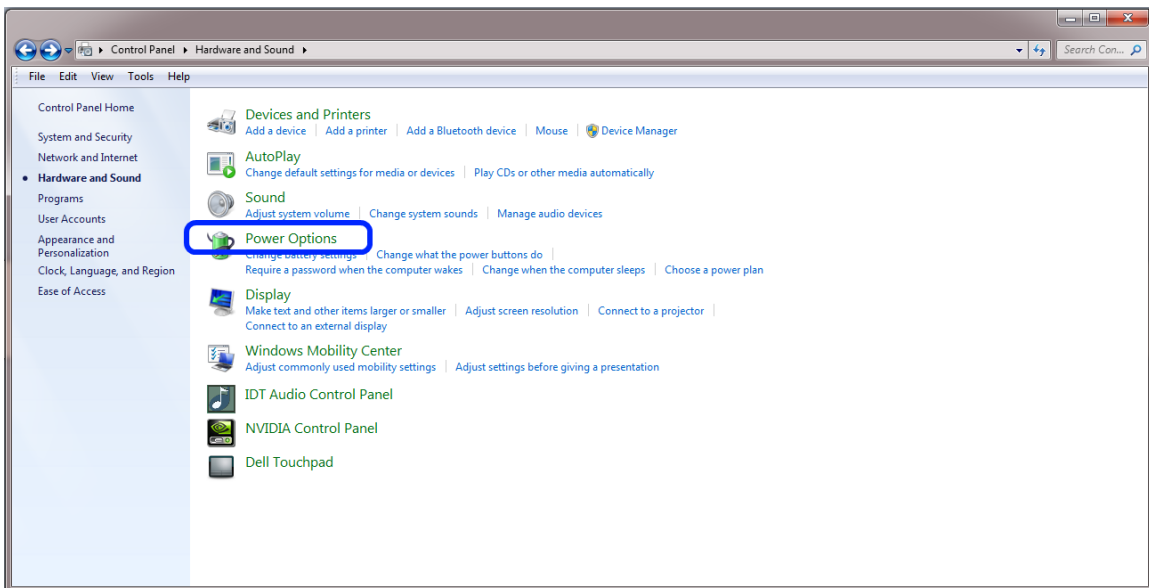
Click the “OK” button to save the modified Power scheme selection. If Windows XP is used, the remainder of this document can be ignored.

Windows 7 (Used for Windows 8 also)

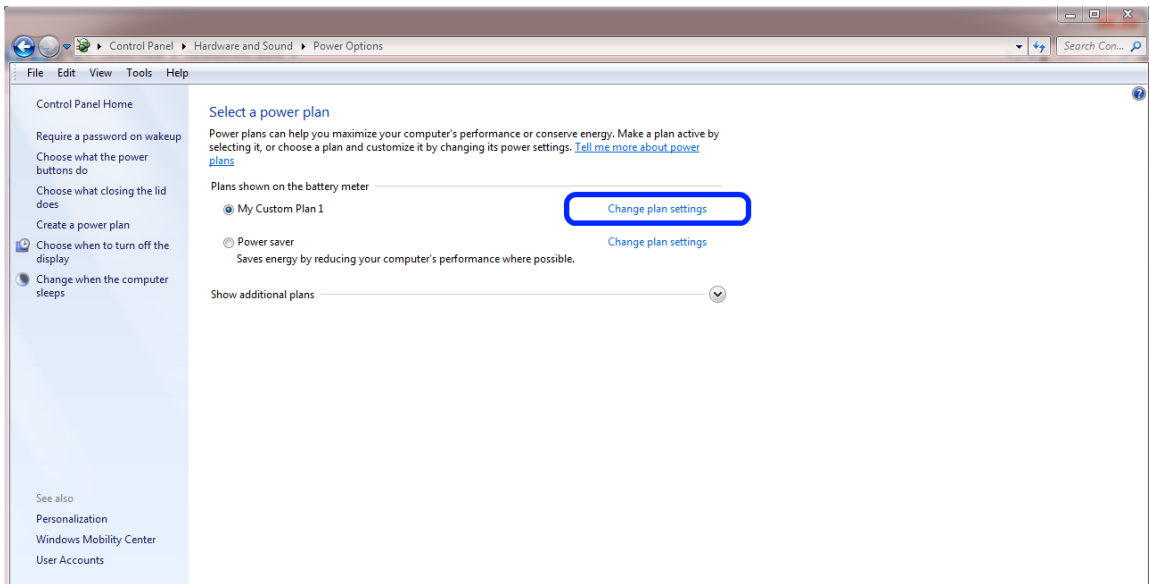
Open the **Control Panel** and then click “**Hardware and Sound**”:



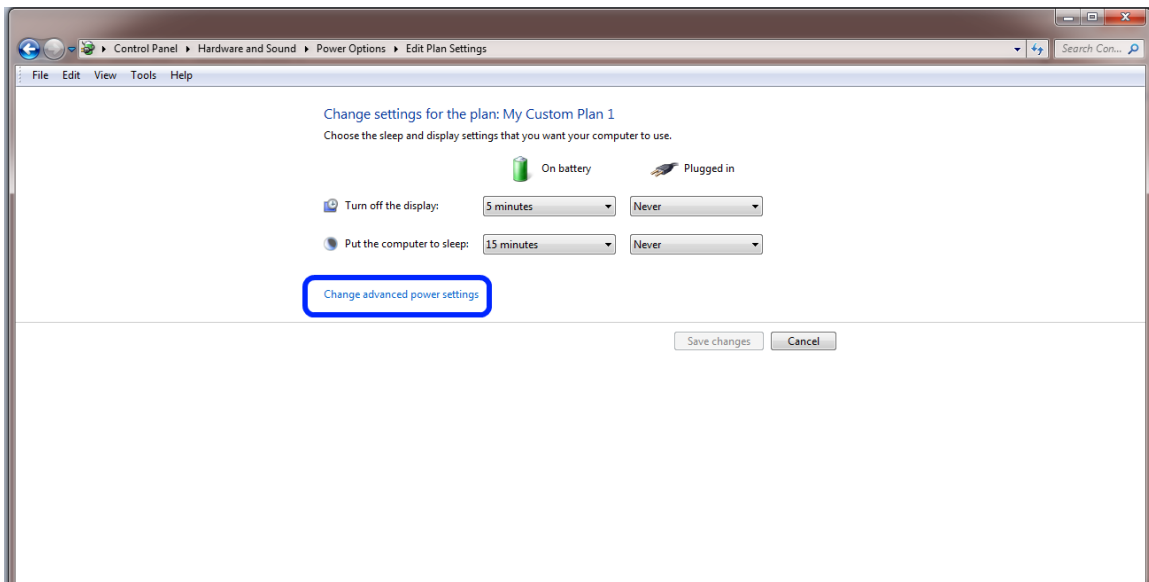
Click on “**Power Options**”:



Next to whatever “**Custom Plan**” is shown, click on “**Change plan settings**”:



In the “Edit Plan Settings” window, click on “**Change advanced power settings**”:



The “**Power Options**” window opens and displays a number of Advanced settings with regards to how Power is managed in the PC.

To summarize for those that are familiar with such settings, see below. For those unfamiliar, there is a step-wise process including screen captures detail afterwards.

+ “Turn off hard disk” → “On battery” = Never / 0, “Plugged in” = Never / 0,

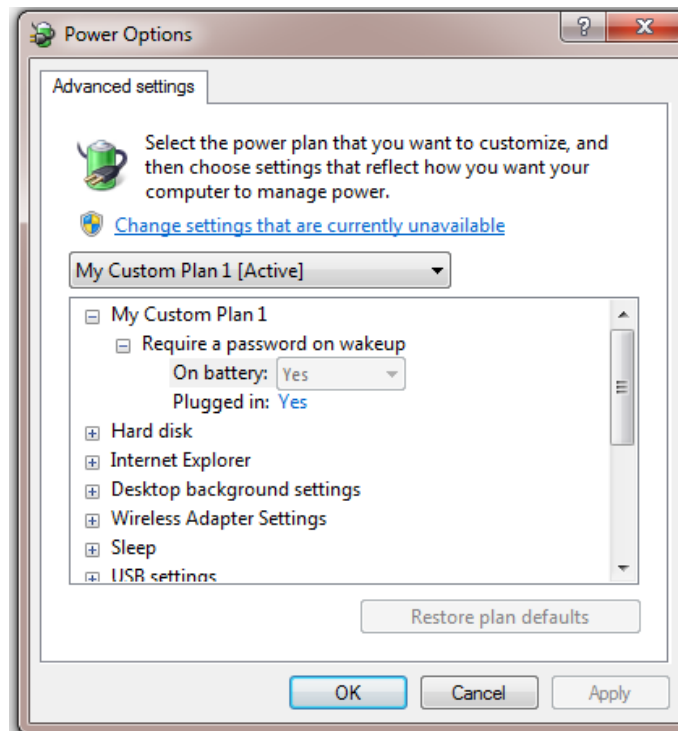
+ “Sleep” → “Sleep After” → “On battery”/“Plugged in” = Never/Never; “Allow Hybrid Sleep” = Off/Off; “Hibernate After” = Never/Never

+ “USB Settings” → “USB Selective suspend...” → “On battery”/“Plugged in” = Disabled/Disabled

+ “Power Buttons and lid” → “Lid Close Action” → “On battery”/“Plugged in” = Do Nothing/Do Nothing

+ “Battery” → “Critical Battery Action” → “On battery”/“Plugged in” = Hibernate/Do Nothing; “Low battery action” = Do nothing/Do nothing.

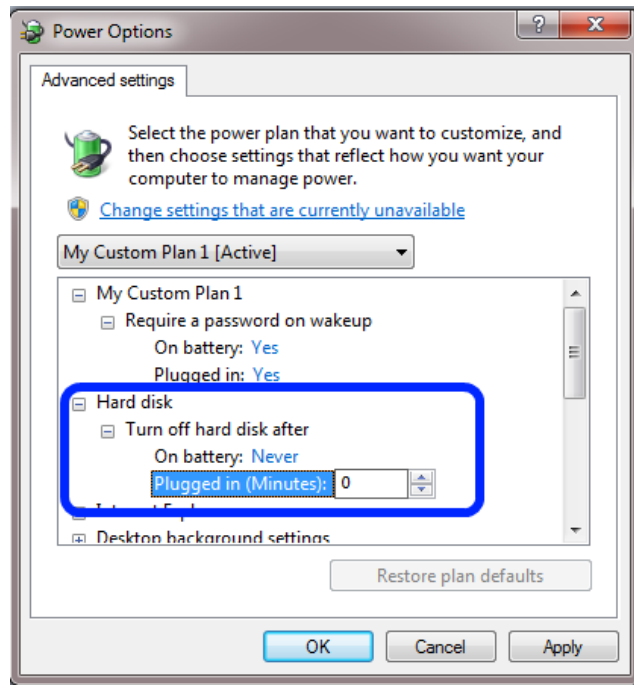
Apply → OK.



A number of settings need to be checked and modified as necessary as outlined below to ensure proper USB communications between your PC and its connected USB devices, particularly for any longer term experiments or measurements to be made.

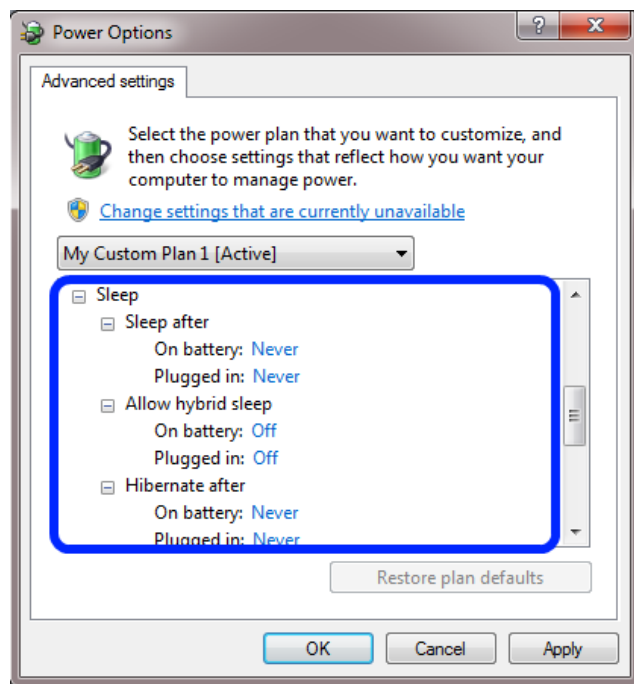
However, not all of the settings need to be modified. Only set the following as described. If the PC is a desktop unit, there will not be options shown for “**On battery:**”. If the PC is a laptop, options will be shown in the Power Options for both “**On battery:**” and “**Plugged in:**”. While most users will naturally operate their PC’s with the instrument and the PC plugged in, it is still a good idea to modify the “**On battery:**” settings in the event the laptop PC is run via battery power.

First, click on **“Hard Disk”** to expand it to show the options for **“Turn off hard disk after”**. Set **“On battery:”** to **“Never”** and **“Plugged in:”** to **“Never”**. This is accomplished by setting the time to **“0”** minutes and clicking onto another field within the Power Options window to accept the new value.

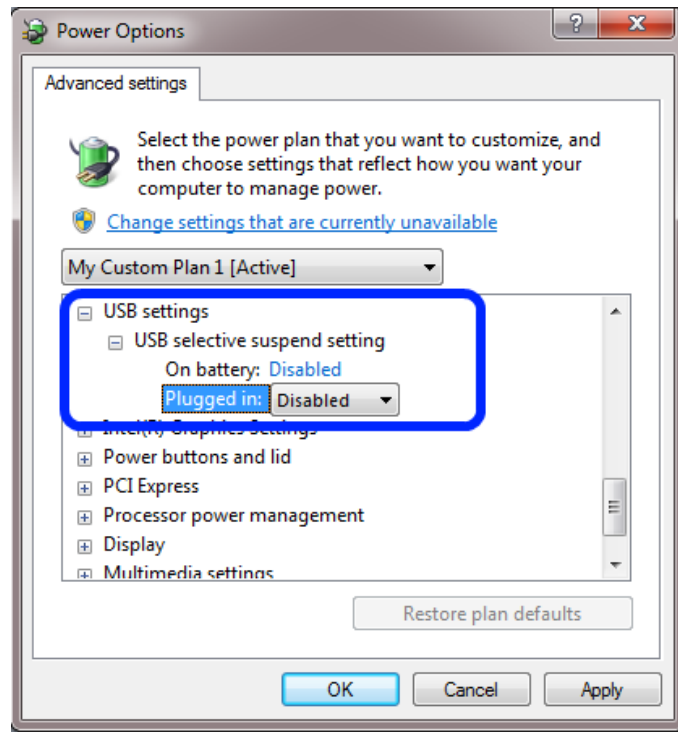


NOTE: Clicking the **“Enter”** key at this point will cause you to Exit the **Power Options** window.

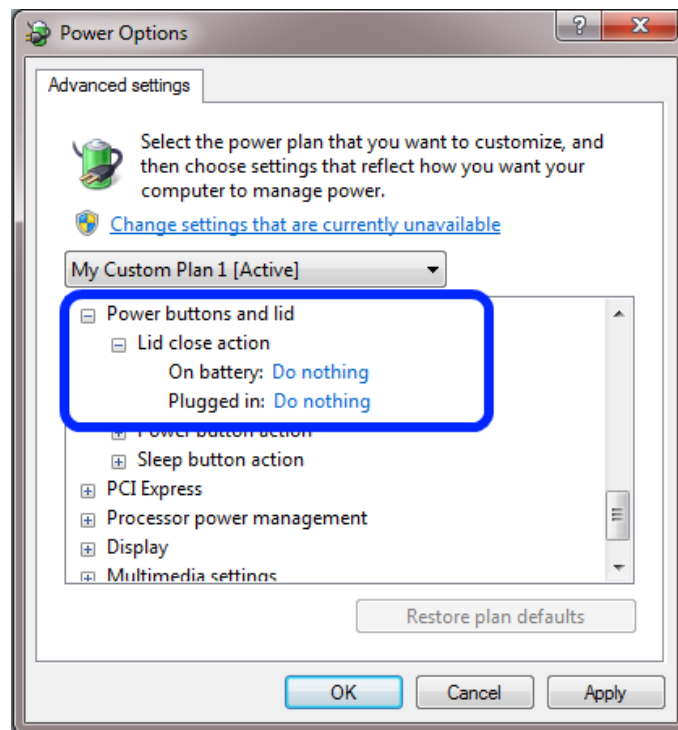
Expand **“Sleep”** to access the options for **“Sleep after”**, **“Allow hybrid sleep”**, and **“Hibernate after”**. Settings for **“Allow wake timers”** can be left at default or set to a user-preference. Ensure the settings are set exactly as below:



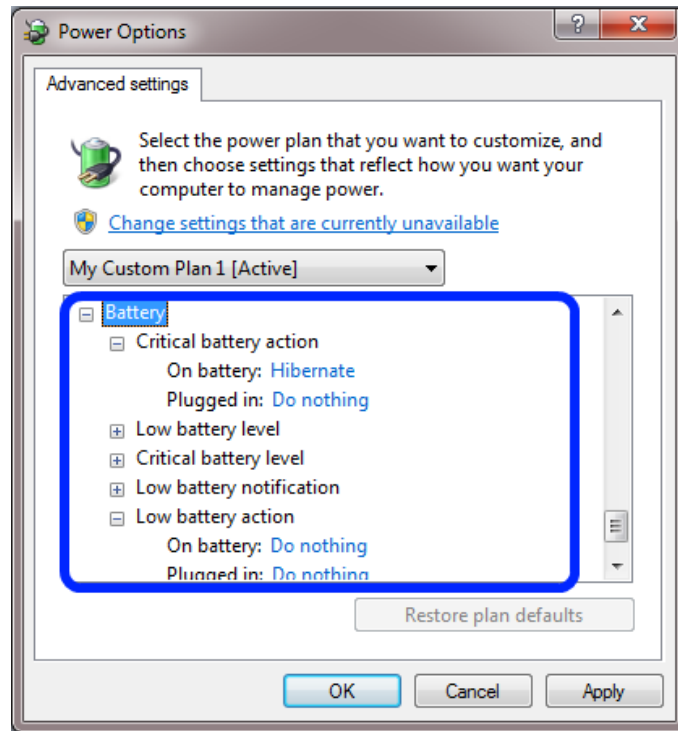
Expand on “**USB settings**” to access the “**USB selective suspend setting**”. Ensure the setting is “**Disabled**” as shown below:



The following setting applies only to laptop PC's. Click on “**Power button and lid**” to see the “**Lid close action**” settings. Ensure the settings are set as shown below. The settings for “**Power button action**” and “**Sleep button action**” can be left at the default or set to user preference.



Expand **Battery** to access the **Critical battery action** and **Low battery action** settings. Ensure they are set exactly as shown below. The settings for **Low battery level**, **Critical battery level**, and **Low battery notification** can be left at default or set to user preference.



Ensure that you click the **Apply** or **OK** button at the bottom of the Power Options window to save all changes that have been made to the power plan.

