Suggestions for possible issues that may cause you a problem with your USB connected DAQ/Control system – these are intended as 'general guidleines and things to consider:

If your system comprises of inductive motors and/or lighting it is possible that you may experience interference with USB connected DAQ/Control cards.

Here is a list of 'general' suggestions of things you should consider in your design – if you are not an electronics engineer, please consult a suitably qualified hardware design engineer. We can only give general guidance – we cannot give specific recommendations regarding components or wiring etc.

Not all of these items will necessarily be applicable to your design:

1) Ensure that you try out your system design before deploying to a customer site.

2) If you encounter problems with our USB cards, try disconnecting them from your target hardware system and running in isolation to verify your software works correctly in combination with the cards. This will also prove that any problems you encounter lie with your target hardware connection or some other external influence (see below).

3) If you are connecting to an inductive load or a DC/AC motor consider using appropriate suppression devices across the terminals of the relay contacts. It is possible that electrical noise/back EMF from motors and inductive loads (such as solenoids) but feed back onto the USB card and electrically couple to the onboard 5V/PIC chip/USB chip and cause it to hang or reset.

4) If you are controlling solenoids with our USB relays and you experience occasional 'dropout' or loss of communication with the card/USB port comms, it is highly likely to be caused by 'back emf' (electrical interference) created by the solenoid coil. The solution is to connect a diode (such as a 1N4148 signal diode) across the connections to the relay coil. If you are not sure what to do or how to do this, please consult an electonics engineer or someone with electronics experience.

5) Ensure your software allows sufficient time in between successive commands (> 10mS).

6) Ensure that you allow sufficient time for the relays to settle before changing their state (> 100mS).

7) Be careful with the electrical connections to your target hardware system. If you are using inductive loads or switching/connecting to mains voltages, consider using a suppression circuit across the relay contacts. This will help reduce/prevent problems with EMC/electrical spikes and back EMF effects. Even though the relay contacts are entirely isolated from the low level DC circuits, there is still a possibility of electrical interference with the onboard electronics.

8) There may be some sort of ground loop issue or a huge spike being induced onto the PC's USB port and +5V supply thus upsetting the onboard PIC chip or FTDI USB chip.

9) If your card has the option of isolating the USB 5V supply from the relays and providing an external supply to the relays, try this. Some cards have a header link (HD1) which allows you to isolate the 5V supply to the relays so that it can be fed from an external +5V supply (not from the USB port).

10) Measure the 5V supply voltage at the USB card (there are onboard test points or you can use the corner PSU connector pads). If the PC's PSU is not able to supply a solid 5V, this may be a source of potential problems or random 'drop out' of the USB card. (We have seen voltages as low as 4V when these cards are fitted at the end of a USB cable on some (older) PC's - the USB cards will not work reliably with voltages as low as this).

11) Try reducing the length of your USB cable. Depending on your setup this may help - these cards do not always work reliably with USB cable lengths longer than 3 Meters.

12) If you have the necessary hardware skills (& tools), try fitting a high value tantalum or electrolytic capacitor (such as 100 Micro Farad (5V) or greater - observe correct polarity when fitting) in the C5 position (diagonally opposite corner to the USB connector). This will help reduce/eliminate any electrical noise or EMF field collapse affects you may be experiencing.

13) What power are you switching - are you using the onboard 5V PSU or are you switching an external PSU via the relay contacts? If using the USB supply, maybe you are taking too much current from it.

14) If LV, which version - does it use standard serial drivers or VISA?
15) Have you tried any of the example '.exe' application programs from our website, if so, do they work correctly (when run standalone)?
16) If you are using the onboard 5V supply, remember that it is, in effect, the 5V supply of your PC, therefore, extreme care must be taken with how it is connected to your target hardware.
17) Ensure you are using the correct FTDI driver version (32 or 64 bit).
18) Could your problem be associated with a power glitch from nearby mains source such as heavy motor, machinery, air conditioning, heating system, fluorescent lights etc starting up? (This could glitch the onboard PIC chip and corrupt it's comms settings).
19) The USB interface uses an industry standard FTDI virtual comm port chip which is unlikely to be the source of your problem, however it is worth checking the FTDI website for any info or reported similar problems.
20) Check the NI website re issues with VISA
21) Are you using a built app (.exe)?
22) Are you connecting another USB device at any stage (such as a memory stick)
23) Note, you cannot dynamically unplug and then re-plug your USB to a different physical USB port on your PC without reassigning USB/virtual com port numbers. The OS will assign the different physical ports new numbers (just like with a serial port). However, if you reboot, or unplug and reboot then connect to the same USB connector, port numbers do not re-assign (unless you have plugged something else in before connecting the USB card) - the same USB port number will be assigned (in the Windows OS).
24) Note also, if you unplug the USB card and then reconnect, you will need to restart your app to re-initialise the card. It has an onboard PIC chip which will loose its port settings if unplugged.
25) If you have a second card (of the same type), can you try and replicate the setup on a separate system (perhaps via a laptop?) and run it 'stand alone' to try and isolate it and identify if you have a software or hardware related problem?
26) If you don't have a second card, can you remove the card you do have and try the same software in an isolated situation?