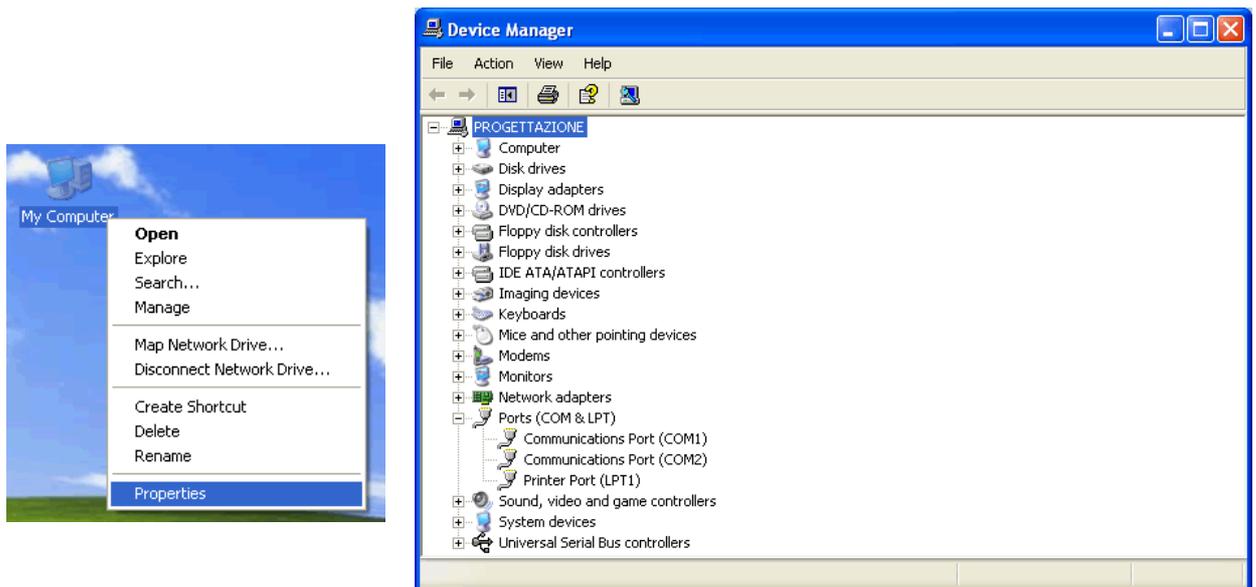


## PARALLEL PORT CONFIGURATION

The parallel port you use to control the QCBOX must be configured in **STANDARD** (or **NORMAL** or **AT**) mode.

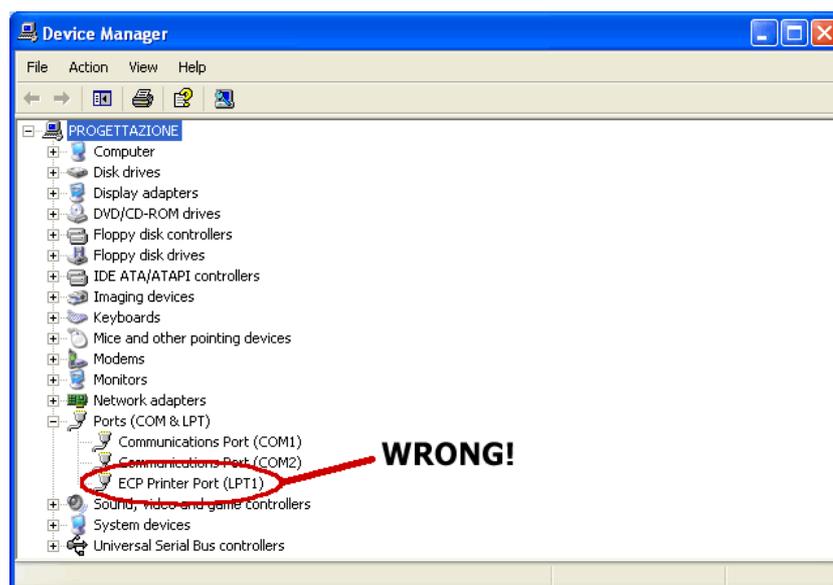
**Be sure that the parallel port is NOT in ECP mode otherwise the software control won't take place.**

There is a simple way to check if the parallel port is properly configured. Click with the **right** mouse button on the 'My Computer' icon on the Windows desktop. Then click 'Properties', select the 'Hardware' tab and press the 'Device Manager' button as in figure.



Then select 'Ports (COM&LPT)'. The situation above is correct, the parallel port is configured in standard mode.

You may find the following situation:



In this case the parallel port **must** be reconfigured as outlined before. The **only** way to

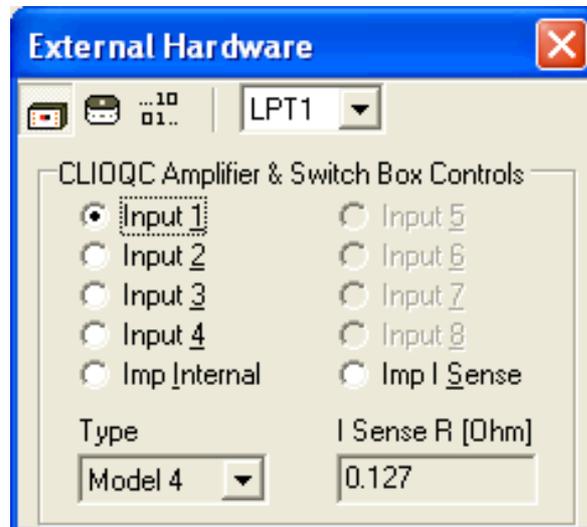
do this is from within **BIOS** settings at the computer startup. This is usually accomplished pressing a particular key or sequence of keys while your PC is booting; the correct key to press normally shows up during the early booting of the computer: the most common is the 'Del' key but you may need to press 'F2' or a different one.

When inside BIOS you should locate a menu like '**INTEGRATED PERIPHERALS**' or 'PERIPHERALS SETUP' inside which there are listed the peripherals present and their settings. Locate the parallel port settings and change them from ECP to Normal.

## SOFTWARE CONTROL

It is possible to control the QCBOX from the CLIOwin software.

Run CLIOwin, then click on the External Hardware Button (or simply press **Shift-F4**).



Select the proper parallel port and choose the proper Model in the 'Type' drop down. The control should be active; an acoustic confirmation should come from the internal relays, you should hear them clicking when changing inputs.

Please refer to the CLIOwin User's Manual for executing frequency response and impedance measurements.

## CALIBRATING SOFTWARE

It is possible to calibrate the CLIOwin software to obtain maximum precision when executing current sensing measurement. The calibration relies on the input of the correct sensing resistor value (**I Sense R**) in the External Hardware panel.

Inside the unit there is a sensing resistor of nominal value of 0.1 Ohm; as it is rather difficult to maintain such a low value under strict production control the software allows for the input of its value. The calibration relies on an impedance measurement of a precision resistor of known value.

**Please enter the value of 0.1 Ohm; this will give you reasonable precision during measurements even in absence of the calibration described hereafter.**

If you want to proceed with the calibration:

- 1) Take a resistor of known value (in the range 10 to 22 Ohm); assume, for example, a known resistor of 10 Ohm
- 2) Connect the resistor directly to the output (D.U.T.) socket of the QCBox (don't use connecting cables)
- 3) Simply perform an impedance measurement (refer to chapter 13 of CLIOwin User's Manual)
- 4) Read the value of its modulus at 1kHz; assume you read 9.5 Ohm
- 5) Multiply 0.1 by 1.05 (10/9.5) to obtain 0.105
- 6) Input this new value
- 7) Verify calibration with a new impedance measurement