



Biospherical Instruments Inc.

APPLICATION NOTE:

Using BSI's USB-to-Serial Adapter with Port Powered Sensors

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Using BSI's USB-to-Serial Adapter with Port Powered Sensors

NOTE 1: This adapter can be used with all BSI Q-series digital (2100 and 2150) sensors: QSR, QSP, QSL, QCR, and QCP, as well as the BIC, BIR, BIS, and BNF multichannel radiometers (hereafter referred to as the "BIC-class radiometers").

NOTE 2: Microsoft stopped including the terminal emulation program, *HyperTerminal*, in Windows 7 (Win7), however, it is available from numerous Internet sites.

1.0 INTRODUCTION

Biospherical Instruments' Logger-2100 and Logger_{Light} software programs are fully compatible with Win7. The Q-series of sensors, in conjunction with the Logger-2100 software, and the Logger_{Light} software used with the BIC-class radiometers, were designed to be operated and powered by the host computer's serial communication port (COM port). BSI understands, however, that serial COM ports are no longer standard equipment on newer PCs and laptop computers. Although this situation has been partially corrected by using commercially available USB-to-serial adapters, these adapters do not work in all cases.

Additionally, many computer manufacturers have reduced the voltage that is supplied to their machine's COM ports. Problems with these newer Win7 computers might be related to this insufficient power at the PC COM port. BSI's engineers have modified a commercial USB-to-serial adapter to include a voltage boosting circuit. This should allow any Windows USB port to work with Biospherical's port powered sensors.

2.0 BSI'S USB-TO-SERIAL ADAPTER

The USB-to-serial adapter (Figure 1) included with your instrument has been modified to boost the voltage available on pin 4 of the DB9 serial connector to approximately +7.75 V. This voltage is sufficient to power all Q-series

digital sensors, as well as BIC-class radiometers. Figure 2 shows the USB-to-serial adapter properly configured with a laptop computer and attached to a BSI QSL-2101. Note that the adapter can be installed in any available USB port. If an Internet connection is available, Windows will automatically install the appropriate drivers. If Windows is unable to properly configure the device, copies of the drivers and instructions can be found on the software disk. To date, BSI has not had any failures on Win7, Windows 2000, or Windows XP machines.



Figure 1. The BSI USB-to-serial adapter, with the DB9 serial connector, is shown with BSI's customized labels on either side of it. Top: The adapter is plugged directly into the laptop's USB port; the label says to connect it only to BSI Instruments (referring to the side of the adapter with the DB9). Bottom: The reverse side of the same adapter is shown plugged into an extension cable; the warning label says that the serial output voltage has been modified.



Figure 2. The USB-to-serial adapter (middle of photo) is shown properly configured with the laptop and one of BSI's Q-series instruments, the QSL-2101.

3.0 TROUBLESHOOTING

3.1 Testing the Hardware Connection

If the sensor is not found by the Biospherical software, a terminal emulation program, such as HyperTerminal, can be used to confirm the validity of the hardware connection. Configure HyperTerminal as follows:

- 9600 bits per second
- 8 data bits
- no parity bit
- 1 stop bit
- no flow control

BSI's Q-Series instruments that start with model numbers 210 or 211 (e.g., QSL-2101) should respond to the ***2P!** command—the basic command that instructs any attached unit (having a tag "2") to report its presence—even without the USB-to-serial booster. For Q-Series instruments that start with model number 215, e.g., QSP-2150, entering a "?" or pressing the "Esc" key should access the main menu. Any BIC-class radiometer

will respond to a question mark (?) command by displaying the full menu.

3.2 Testing the Voltage

To test the voltage boosting of BSI's USB-to-serial adapter, monitor the voltage on pin 4 of the booster's DB9 connector relative to pin 5 of its DB9 connector with a voltmeter, while using HyperTerminal to access the COM port indicated in the device manager window. The voltage should be between 7.4 V and 8.1 V

3.3 Testing the Software

If the hardware connection is good, but the software still fails to find the instrument, then the software installation itself is suspect. Biospherical Instruments places a copy of the latest software in the PUB directory of our FTP site, located at <ftp://ftp.biospherical.com/>. Please feel free to download and re-install a fresh copy of the software.

If HyperTerminal cannot get a response, try using the probe on a different computer. This will help determine if the problem is in the probe itself or with the computer configuration.

NOTE: Occasionally, it is necessary to reboot a Win7 machine after a new USB-to-serial booster is installed—especially if the COM port has been renamed. While the Logger-2100 software should search all COM ports from 1–16, the Logger_{Light} software will require the operator to select the appropriate COM port.

In addition, the Logger-2100 and Logger_{Light} software packages are written for use with "English (US)" text and number format. Specifically, the software will not recognize the comma text character "," as a decimal separator. A period "." must be used for decimals. Figure 3 is a screen capture, which shows an example of these appropriate "Regional and Language Options".

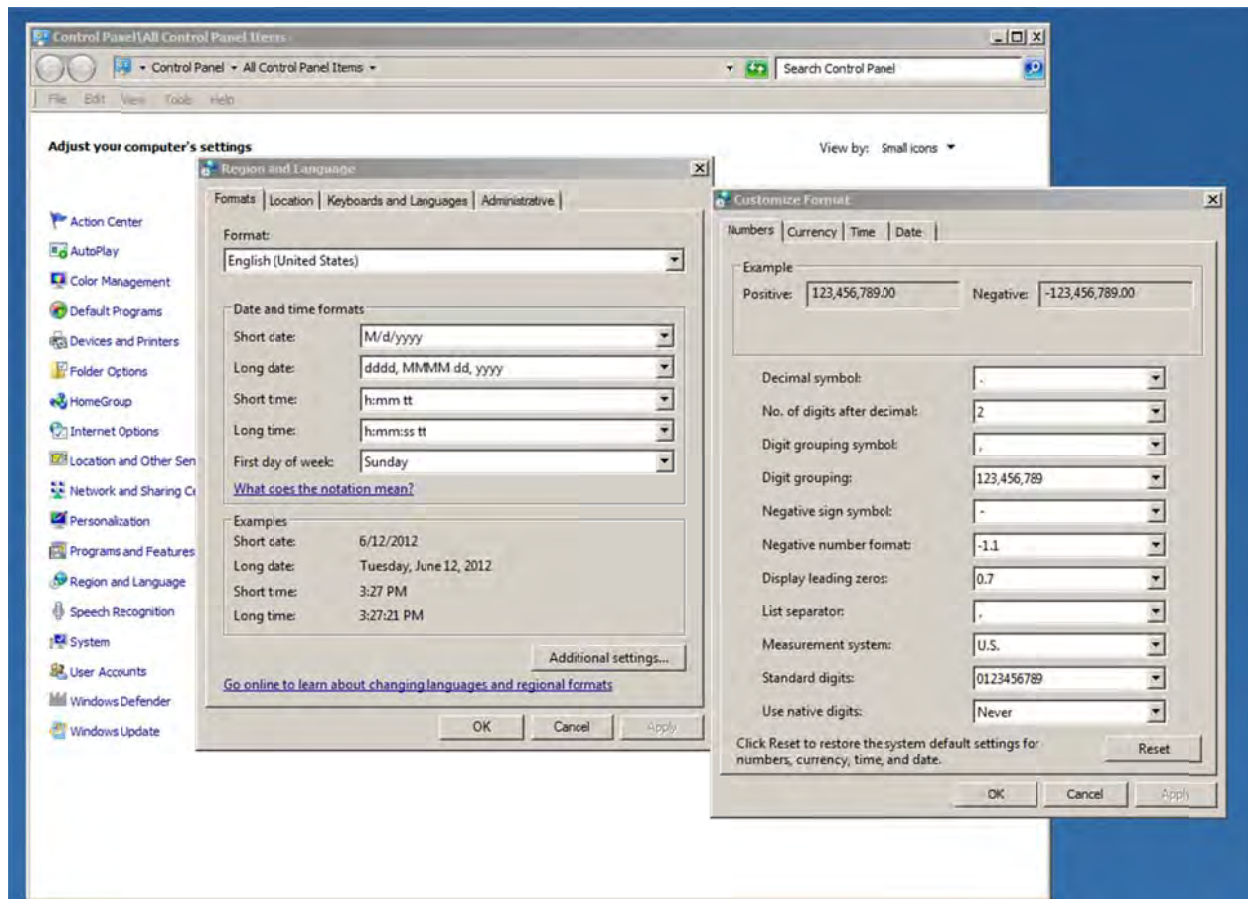


Figure 3. A screen capture of the appropriate Regional and Language Options



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