YellowFrog 2 Power Meter

Manual Version 1.3

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YellowFrog II Contents

PC REQUIREMENTS

Windows Vista, XP or 2000 operating system
1152x864 32bit color display recommended
USB interface (driver supplied)
USB Driver requires 100 KB
Disk Space required is 3000 KB

YellowFrog Power Meter II Quick Start

Step 1: Install Yellow Frog II Power Meter PC software.

Step 2: Connect the YellowFrog unit to a PC through a USB cable. Install the **USB driver** if needed (Please see Appendix A).

Step 3: Open the PC software. If the unit is not detected, please click the  button to **connect the unit to PC** (Please see "Section I. Unit Properties" for details).

Step 4: Reset the frequency, cable loss, modulation factor, and display type. Click the  button to **load the parameters into the unit**. The unit will "remember" these parameters for all the frequencies. (Please see "Section II. Unit Setup" for details).

Step 5: Check the **battery status**. If it is low (empty box), please turn on the unit. If it is still low, please recharge the unit for the field test. A fully charged unit can last for 8 hours.

Step 6: Connect the unit with RF input to measure the strength of RF signal (Please see "Section III. Measurement Data" for details). **MAKE SURE ALL THE RF CABLES ARE TIGHTLY CONNECTED AND THE UNIT OUTPUT PORT IS PERFECTLY MATCHED to 50 Ω.**

Step 7: If it is desired to monitor the RF power, please set the time period in the "Trace Data" section and the click the "  " button to trace it.

Step 8: If a RF signal with a different frequency or other parameters is to be measured, please go to step 4 to reset the frequency.

Notes: 1. When the temperature is over **45°C** or **113°F**, please do not charge the battery.

2. Please **recharge the battery every month** regardless of use in order to maximize the battery's life.

3. If the PC cannot get any data from the unit, please disconnect and reconnect the unit to the USB. If the unit does not work properly, please disconnect the USB cable, turn off the unit, reconnect the USB cable, click the  button to connect the unit to PC, check the parameters, and then click the  button to reload the parameters into the unit.

4. After clicking the  button to load the parameters, please do not take any further action with the PC software until the dialog box

appears or the dialog box showing a failed unit setup appears.

YELLOW FROG II POWER METER Measurement

The Yellow Frog II power meter has a wide range (700 to 2700 MHz, it can be extended to 100 to 2700 MHz), 0.1 dB resolution, 0.5 dB accuracy, and battery powered RF power meter with LCD display. It can be used “stand alone” or in conjunction with a PC. When connected to a PC using its built in USB port, the Yellow Frog II displays both dBm and Watts on the PC screen, this output can be saved to a disk file for use with programs such as Microsoft Excel. The PC software required to interface to the Yellow Frog is supplied with the unit. While the Yellow Frog II is connected via the USB interface, it is fully powered by the PC (through the USB cable).

Yellow Frog II continually measures the RF at its input and reports the results on its built-in LCD display. Either dBm, Watts or both can be displayed. When displaying both, dBm and Watts are alternated every 4 seconds. LED’s on the Yellow Frog II display panel indicate the measured units being displayed (dBm or Watts). At the same time, the Yellow Frog II outputs the data measured via the built in USB interface 4 times per second. As supplied, the Yellow Frog II is ready to be powered up and begin measurement of RF power. For the best accuracy over frequency, the Yellow Frog II must be set to the frequency range that is being measured. To do this the Yellow Frog II must be connected to a PC via the USB port. Once settings are made, the Yellow Frog II stores the setting so that the PC is only required whenever some parameter needs to be changed OR if it is desired to save measurement data to a disk file. The PC is also used to set the Yellow Frog II display mode (dBm, Watts or both). As supplied from the factory, the Yellow Frog II is set to the middle frequency (1700 MHz in most cases) and to display both dBm and Watts.

YELLOW FROG II PC SOFTWARE

When the Yellow Frog II is first connected to a PC via the USB interface; a driver must be loaded (see appendix A). After the driver is loaded, the PC software can be run if it has been installed (see appendix A). Figure 1 shows the PC software on screen, which has four sections.

Section I. Unit Properties

This section will show the properties of the unit, including calibration date, serial number, frequency range, power resolution, and firmware version. When the unit is properly connected to a PC, “**Yellow Frog Connected**” will be shown. Otherwise, “**No Yellow Frog Found!**” will be shown on the screen. If the unit is already connected to the PC, please click on the  button for reconnection.

Serial Number:	The Yellow Frog II serial number.
Calibration Date:	The day of this unit’s calibration.
Frequency Rang:	Range of this Yellow Frog II.

Power Resolution The dBm resolution of this Yellow Frog II.
Firmware Version: Firmware version of this Yellow Frog II.

When there are multiple Yellow Frog II units connected to a PC, the dialog to select one device will be shown. Please select the one to be tested or set.

Note: If the Yellow Frog II unit still cannot be connected by clicking the  button, please disconnect the USB cable to the unit, turn off the unit, close the Yellow Frog II PC software, reconnect the unit, and open the Yellow Frog PC software again.

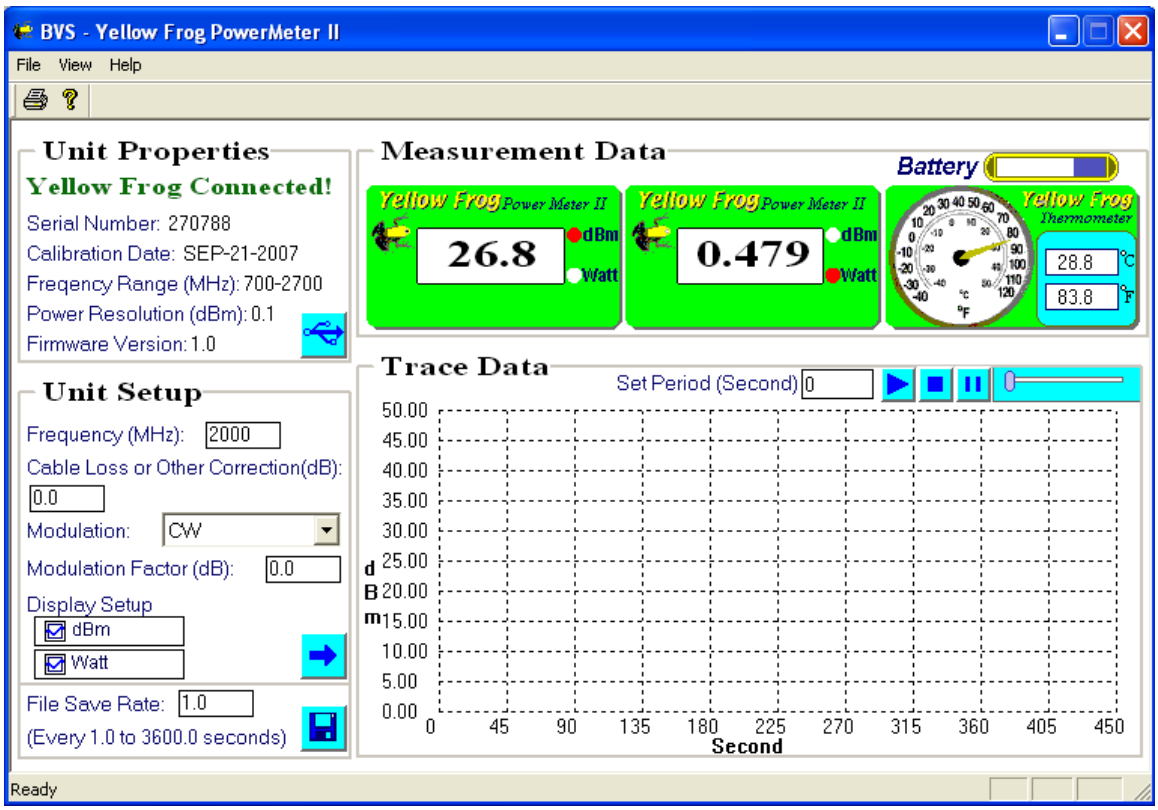


Figure 1. Yellow Frog II PC Software

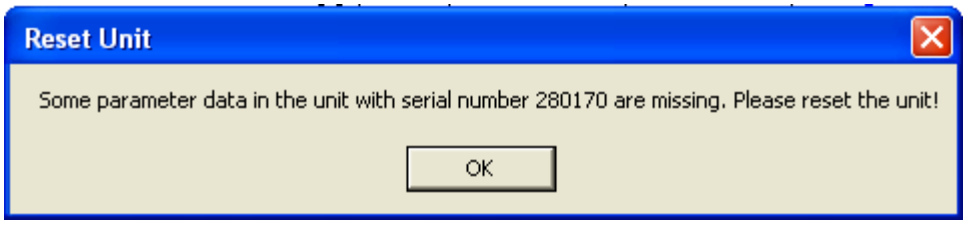
Section II. Unit Setup

The components in this section are used to set up parameters in Yellow Frog II power meters. Please fill in the frequency and cable loss, select the modulation type and display type for the unit. Cable Loss (dB) is the db value of cable loss so that the Yellow Frog can adjust its readings. Enter 0 if no cable loss (default). Please note here that PC software has the modulation factor for square wave, CDMA forward and reverse link, GSM and PDC channel. However, for OFDM, WiMAX, or other signals, please measure the signal with a spectrum analyzer to get the modulation factor and fill it in the blank. After input all the parameters, press the button  to load these parameters into the unit. The PC software will pop up window to show if the unit has been set successfully.

Note: After click the  button to load the parameters, please do not take any further action with the PC software until the dialog box

appears or the dialog box showing a failed unit setup appears.

If the follow box is shown when a unit is connected to a PC, it means some parameters are missing for the unit. Please reset the unit.



The measurement data can be saved in a file with the rate from every one second to every 3600 seconds. The application will continue to save data until you close the application. To view the data in the file created, open the file with Microsoft Excel. Pressing the  button will pop up the dialog for the options in saving a file.

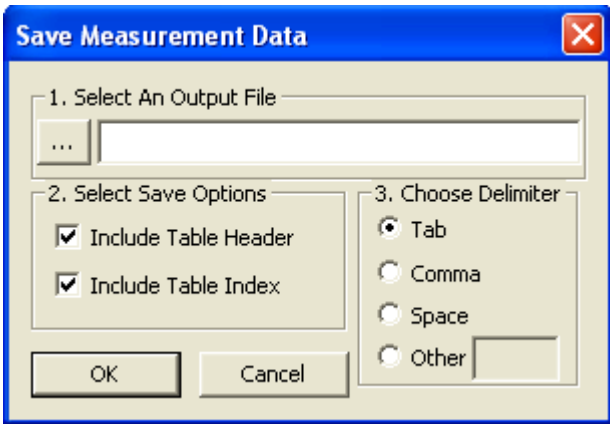


Figure 2: Dialog for saving measurement data

The first step is to select an output file. The second step is to choose if including table header or table index in the file. The third step is to select the delimiter to separate the data in the file. An example of the file format is here:

ASCII FILE FORMAT

test2.txt - Notepad

File Edit Format View Help

```
Yellow Frog Power Meter II-Serial Number: 270788
#       dBm     Watt    Temp(F/C)       Time            Date
0       3.10    0.002   81.5/27.5       09:38:12        09/25/2007
1       3.10    0.002   82.0/27.8       09:38:13        09/25/2007
2       3.10    0.002   81.5/27.5       09:38:14        09/25/2007
3       3.10    0.002   81.5/27.5       09:38:15        09/25/2007
4       3.10    0.002   81.5/27.5       09:38:16        09/25/2007
5       3.10    0.002   82.0/27.8       09:38:17        09/25/2007
6       3.10    0.002   81.5/27.5       09:38:18        09/25/2007
7       3.10    0.002   81.5/27.5       09:38:19        09/25/2007
8       3.10    0.002   81.5/27.5       09:38:20        09/25/2007
9       3.10    0.002   81.5/27.5       09:38:21        09/25/2007
10      3.10    0.002   82.0/27.8       09:38:22        09/25/2007
11      3.10    0.002   81.5/27.5       09:38:23        09/25/2007
12      3.10    0.002   81.5/27.5       09:38:24        09/25/2007
```

Figure 3: Example of the ASCII output file generated by the Yellow Frog II PC application.

File components:
Line 1: Contains the serial # of the Yellow Frog II used to measure the data.
Line 2: Header indicating the parameter recorded in the column below.
Lines 3 to the end of the file contain the ASCII values of the Yellow Frog II data.
The parameters from Line 3 to the end of the file are separated by the ASCII TAB character (0x09).

Section III. Measurement Data

There are three types of measurement data shown in this section. The measured power is shown in both dBm and Watts. The measured temperature at the sensor is shown in both Fahrenheit and Celsius. The battery level is illustrated by a battery box. If the box is filled up with blue color ( ), it means the battery is full. If the box is empty ( ), it means the battery is low. When the battery is below a factory-set level, the unit will shut down automatically.

a. MAIN SCREEN WITH INPUT OVERLOAD

The following screen is displayed, if the RF power being measured by Yellow Frog II is over a factory pre-set limit of 45 dBm, where the "Power is over the limit!" announcement will be flashing. Do not run the Yellow Frog for prolonged periods of time in this condition.

Figure 4: PC software screen when RF power is over the limit.

The PC software displays "----" if the RF power being measured by Yellow Frog II is below the threshold (-5 dBm). The Yellow Frog II LCD also displays "----"in this situation.

b. MAIN SCREEN WITH HIGH TEMPERATURE

The following screen is shown when the internal temperature of the Yellow Frog II is over 45°C, where "TEMP is over the limit!" will be flashing.

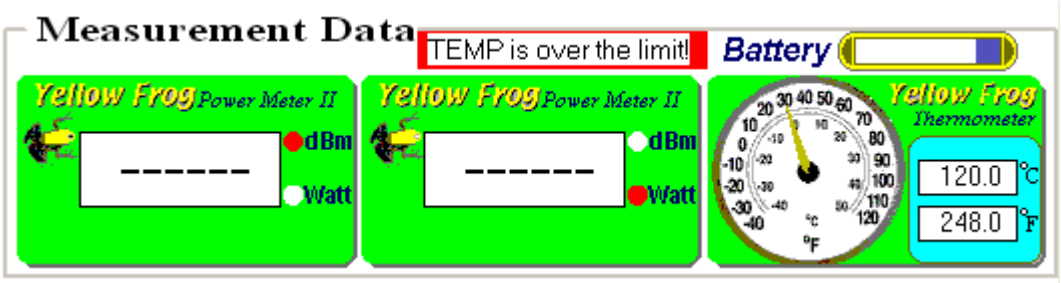


Figure 5: PC software screen when the temperature is over the limit.

If both temperature and power are over the limit, the following screen is shown, where "Both are over the limit!" will be flashing.

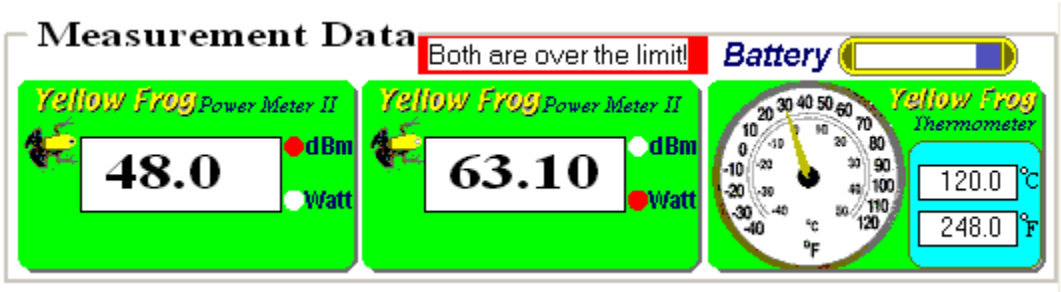


Figure 6: PC software screen when both RF power and temperature are over the limit.

c. MAIN SCREEN WITH YELLOW FROG II BATTERY LOW

If the Yellow Frog II internal battery is low, the flashing battery sign will be displayed on the screen. The Yellow Frog II LCD also shows “LOBAT”. Since the Yellow Frog II may be powered by the PC's USB port, this condition is a warning, but does not cause a degradation of the data received. However, when the Yellow Frog II is detached from the USB the batteries should be charged.

Note: 1. Battery cannot be charged when the temperature is over 45°C or 113°F.
2. PLEASE RECHARGE THE BATTERY WHEN LOW BATTERY SIGN IS SHOWN ON PC SOFTWARE OR LCD SCREEN. PLEASE RECHARGE THE BATTERY EVERY MONTH TO PROLONG THE LIFE OF THE BATTERY.
3. When the battery indicator on the PC software shows a low charge (PC connection via USB), please check if the Yellow Frog II unit has been switched off (ON-OFF switch on the unit panel). Please turn the unit on to check the status of the battery. The battery cannot be measured with the unit off because the battery is disconnected in this situation.

Section IV: Trace Data

This section is used to trace the measurement data. First, please set the period for tracing the data and the press the ▶ button to start. The data will be updated every second. The trace process can be stopped (■), paused (❚❚), and resumed by pressing the ▶ button. The progress control is used to show the tracing progress. Pressing the Print button will print out the trace data over the time period. The trace period can be up to one hour.

MENU BAR

Clicking the “About Yellow Frog…” displays the About Yellow Frog dialog box, the same as clicking the tool bar "About" button.

Clicking the “Print” will print out the trace data over the time. The trace period can be up to one hour.

YELLOW FROG LCD DISPLAY

YELLOW FROG WATT DISPLAY

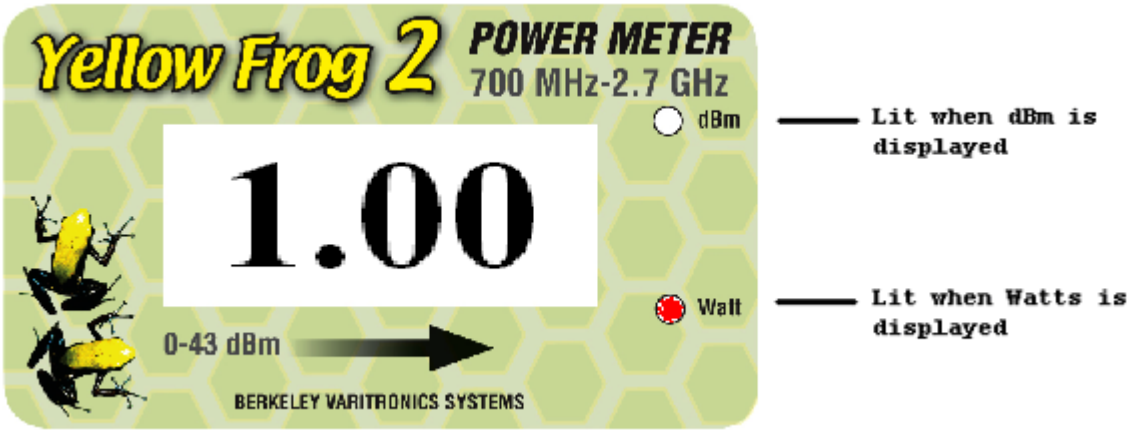


Figure 7 is an example Yellow Frog Watt display screen.

YELLOW FROG DBM DISPLAY

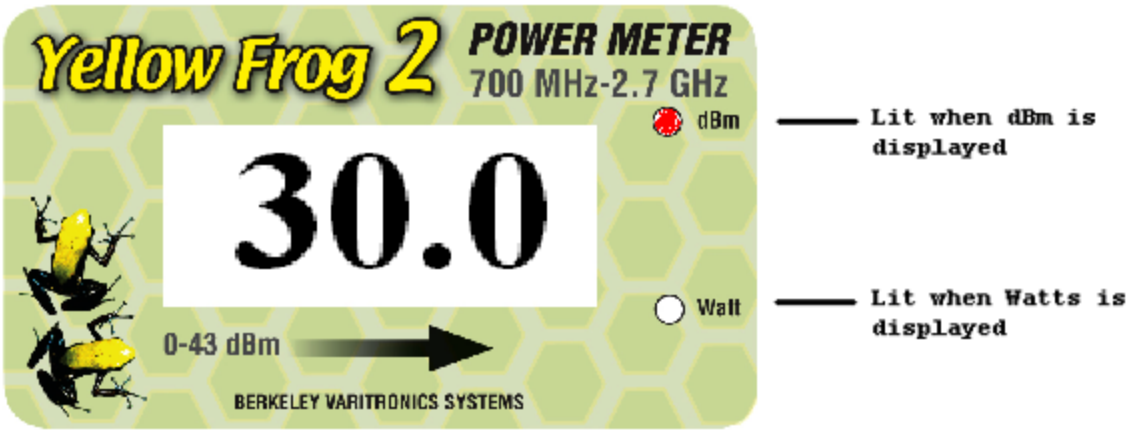


Figure 8 is an example Yellow Frog dBm display.

YELLOW FROG LOW BATTERY

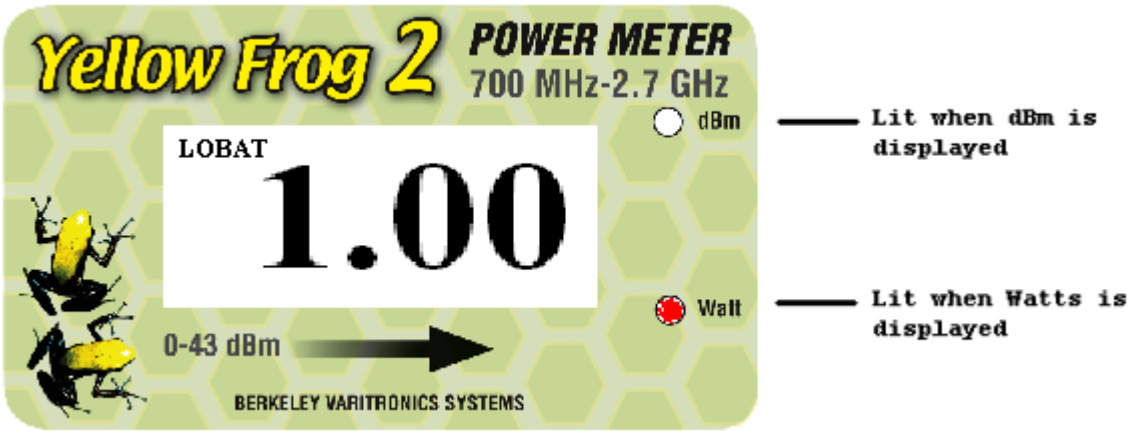
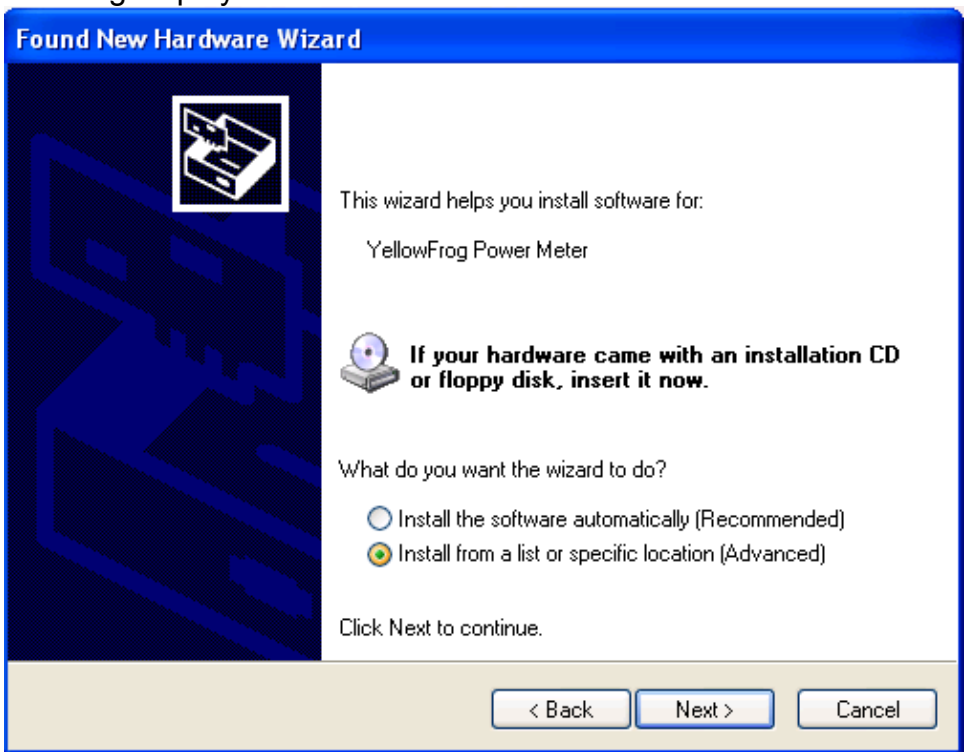


Figure 9 is an example display when the Yellow Frog internal battery is low.

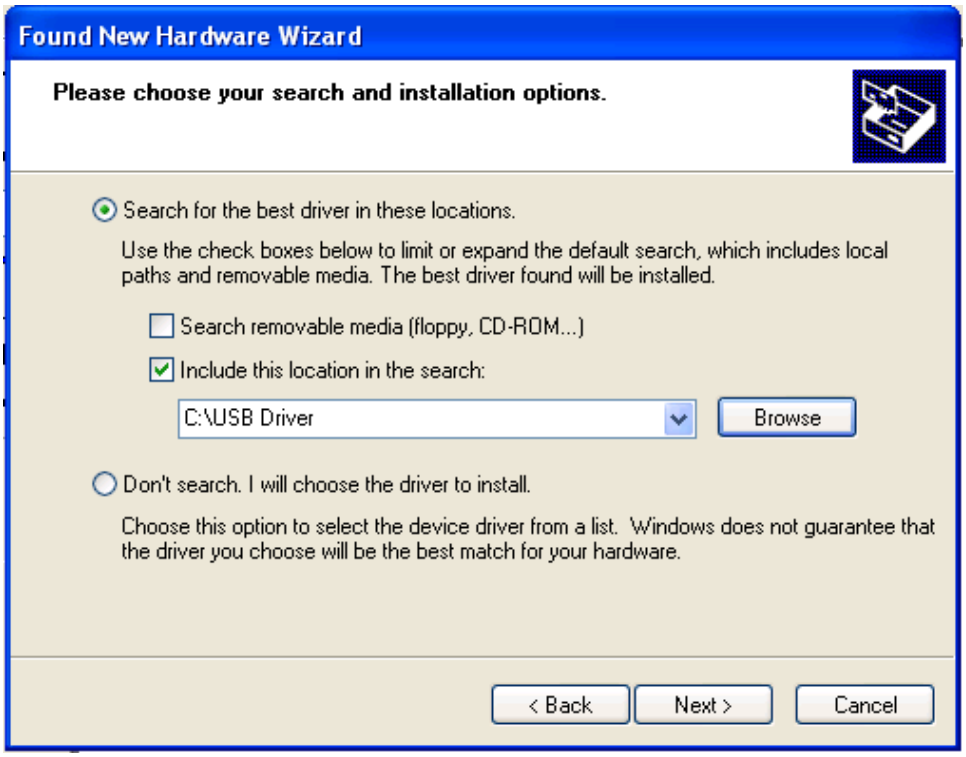
Appendix A. USB DRIVER INSTALLATION

The first time the Yellow Frog II is plugged into a PC with the USB cable, Windows displays the following dialog:

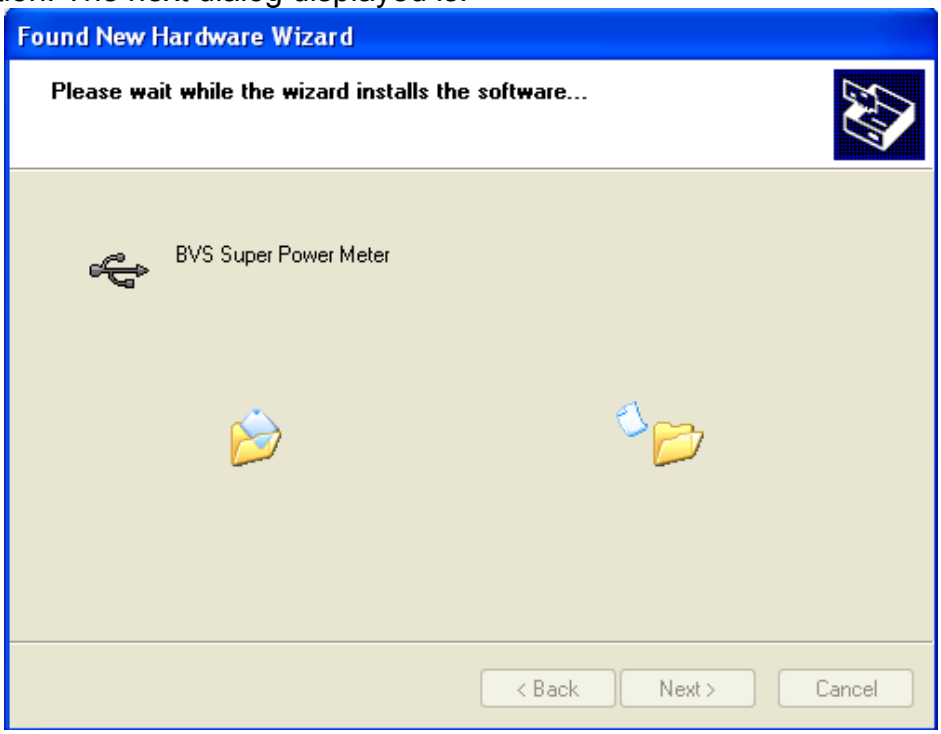
Click the “No, not this time” radio button then click “Next >”.
The next dialog displayed is:



Click the “Install from a list or specific location (Advanced)” radio button, then “Next >”.

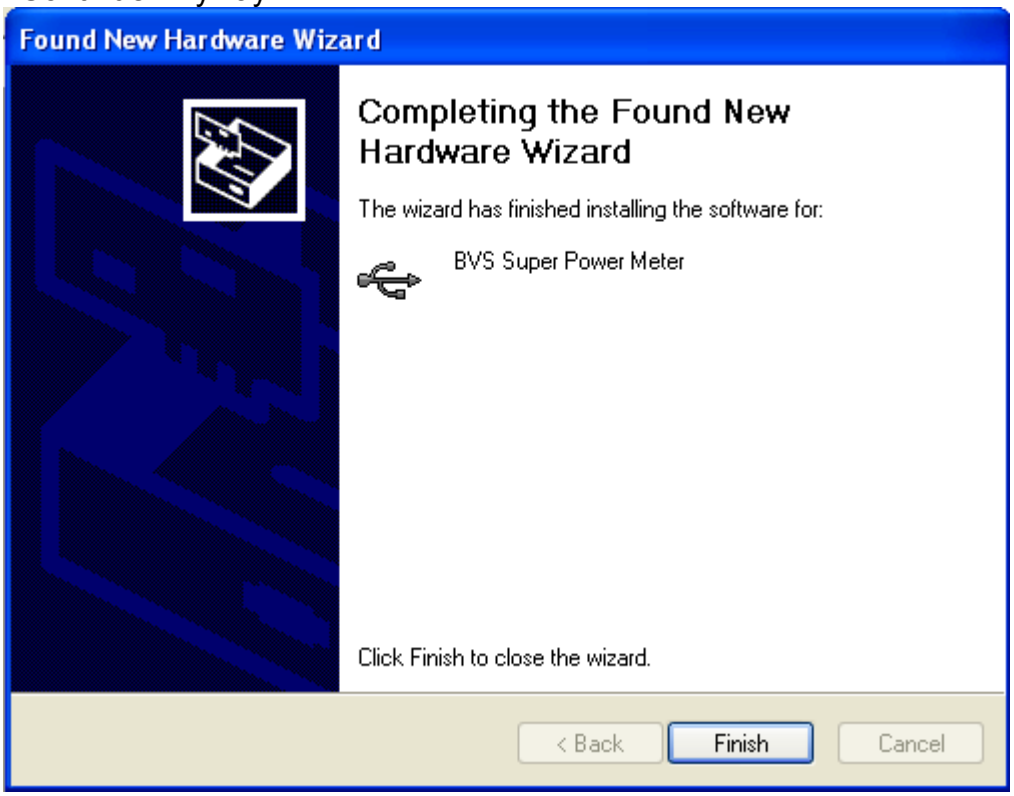


Click the “Include this location in the search:” radio button and then click the “Browse” button to select the folder “USB Driver” in the CD for software installation. The next dialog displayed is:



Which is followed by a dialog with a progress bar. Wait until the following dialog is displayed:

Click “Continue Anyway”.



Click “Finish” when this dialog is displayed.

The USB Driver for Yellow Frog is now ready to use with the PC software.