EXTECH INSTRUMENTS
A FLIR COMPANY

MS420 / MS 460 Software Help Utility (V2.0.4.1 / March 2010)

Contents

Welcome to the MS420 / MS460 Software Help Utility

This software program facilitates data transfer from an MS420 or MS460 to a connected PC. This software can be used to graph transferred data, display data in real time, analyze data, and print data.

I. METER-TO-PC CONNECTION AND SOFTWARE DRIVERS

Two transmission methods are available:

A. USB Transmission for Windows™ XP or WINDOWS™ 2000

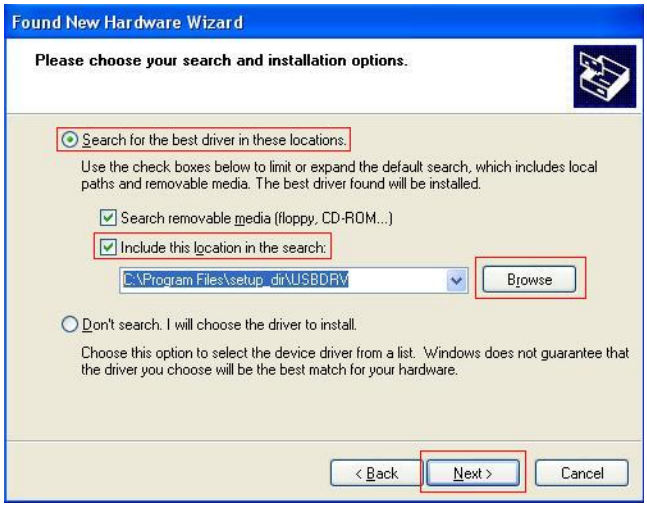
Note: 32 bit and 64 bit systems are supported

- With the supplied software and driver installed, connect the meter to the PC using the supplied cable. The alert box will appear on the lower right of the PC screen:

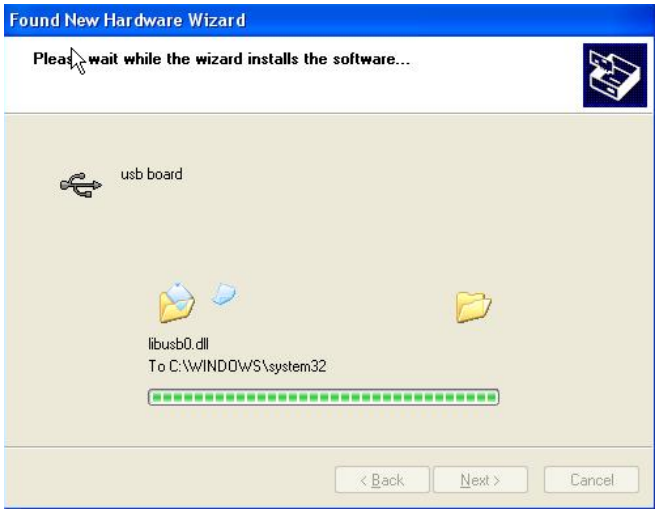
- When the wizard opens select **NO NOT THIS TIME**

- Select **INSTALL FROM A LIST OR SPECIFIC LOCATION (ADVANCED)**

- Select **SEARCH FOR THE BEST DRIVER IN THESE LOCATIONS** and then select **INCLUDE THIS LOCATION IN THE SEARCH**. Indicate the directory location for the USB driver (USBRV). This will be in the directory where the program was installed on the PC.



- The installation will begin:



- The installation will finish:

- **The FOUND NEW HARDWARE** prompt will appear:

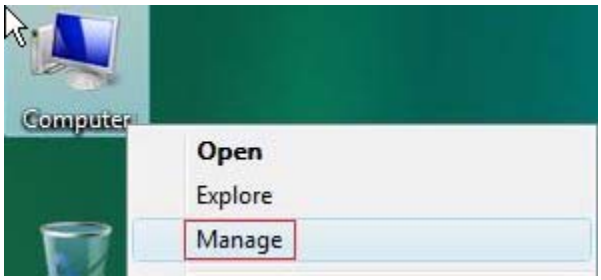
NOTE: To use the USB transmission method, the USB device driver must first be installed on the PC. This USB driver should automatically install when the **SETUP.EXE** program is launched as detailed above. To install the driver manually, locate the driver in the directory where the program is installed on the PC: <install directory>\USBDRV\ and run the setup or .exe file located in the USBDRV folder.

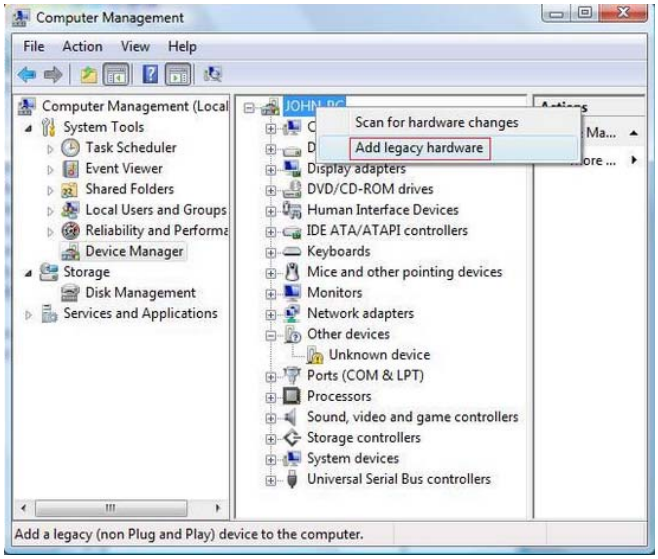
NOTE: At the lower right-hand side of the software window the AUTOMATICALLY CHECK USB text alerts the user as to the status of the meter-to-PC communication. Green text indicates successful communication between the meter and PC. Red text indicates that the meter and PC are not communicating.

B. USB Transmission for WINDOWS VISTA or WINDOWS 7

Note: The following steps are likely unnecessary for 32 bit systems but strongly recommended for 64 bit systems.

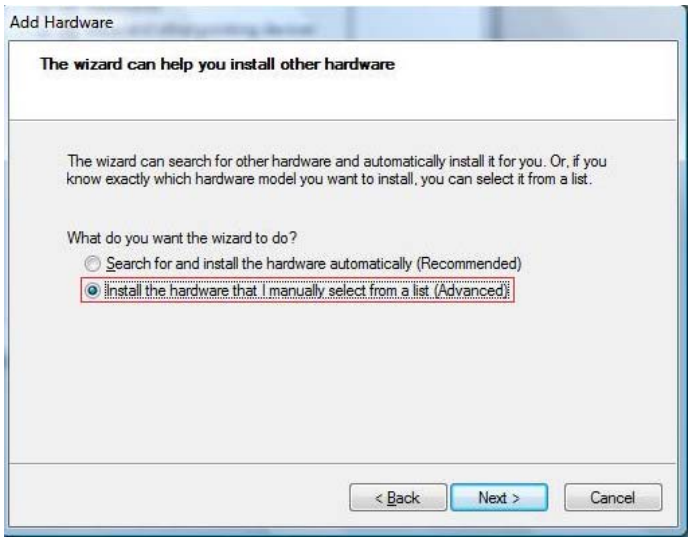
Right click COMPUTER MANAGEMENT and click MANAGE. Right click the top item to select ADD LEGACY HARDWARE.



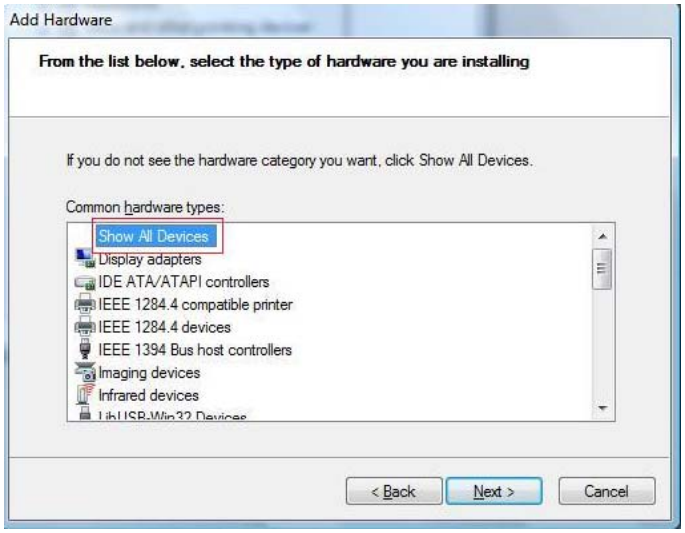


In the ADD HARDWARE wizard, click NEXT>

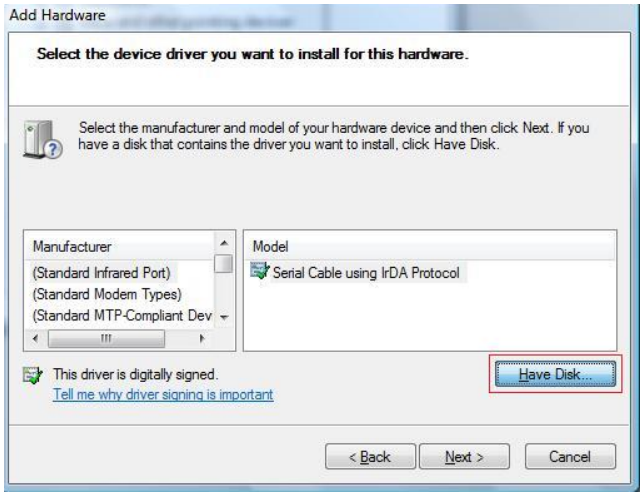
Select INSTALL THE HARDWARE THAT I MANUALLY SELECT FROM A LIST (ADVANCED) and then click NEXT >



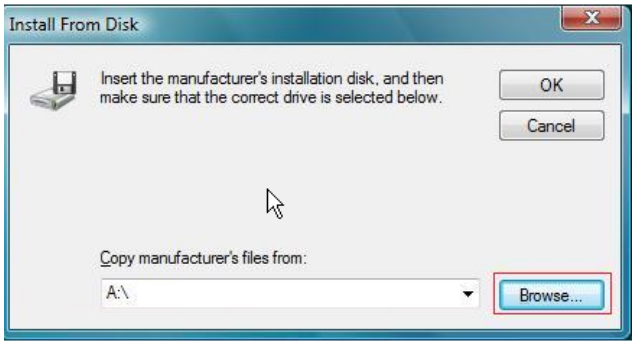
Select SHOW ALL DEVICES from the list and click NEXT >



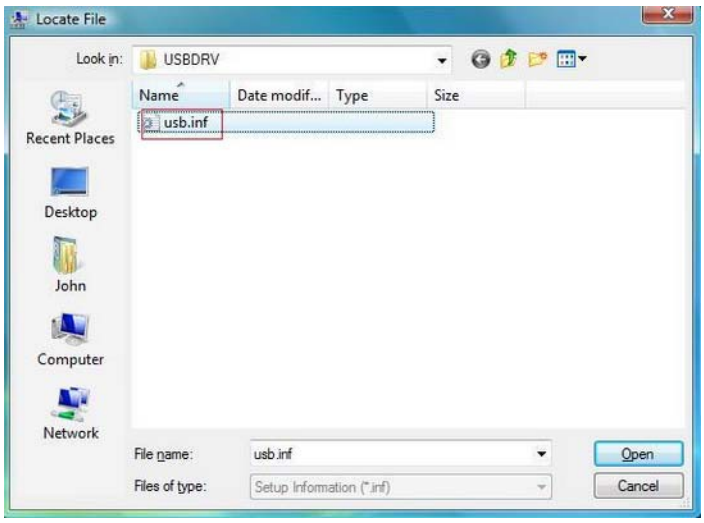
Click HAVE DISK…



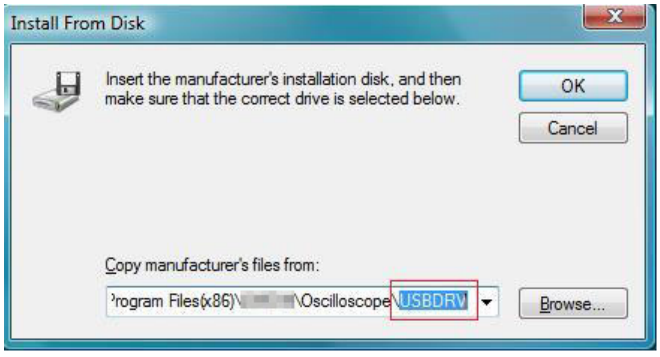
Click BROWSE…



Select the *.inf file (located in the USBDRV directory) and then click OPEN



Click OK

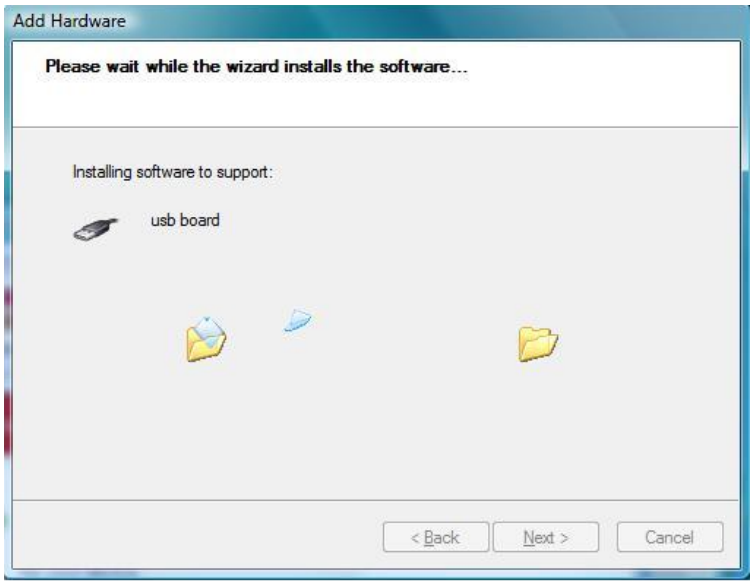


Select USB BOARD and then click NEXT >

From WINDOWS SECURITY select INSTALL THIS DRIVER SOFTWARE ANYWAY

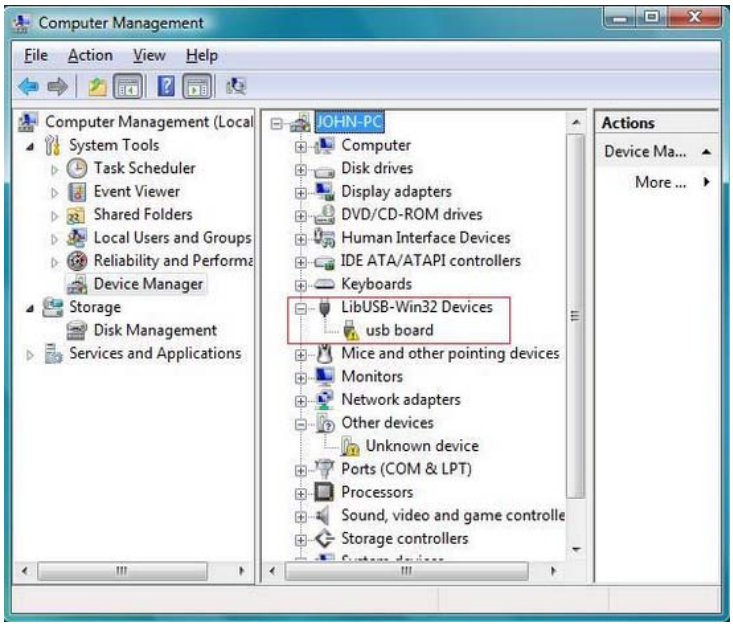
Click NEXT

The installation will then begin



When the installation is complete click FINISH

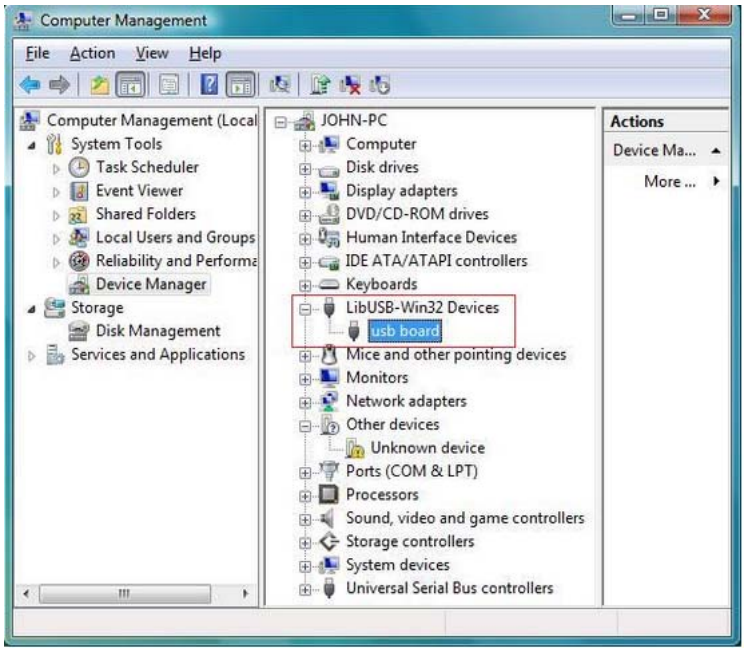
Return to COMPUTER MANAGEMENT – DEVICE MANAGER and notice that the device has been installed.



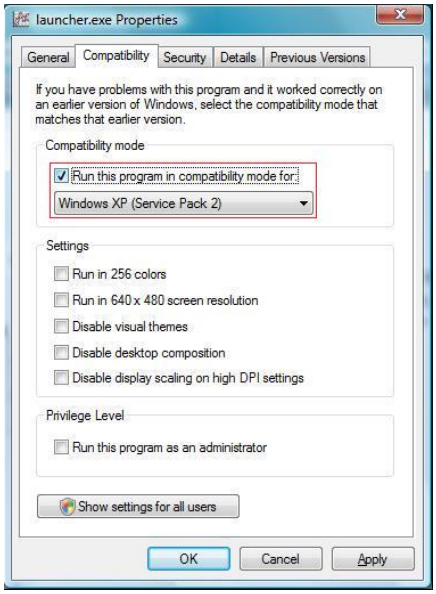
For Vista users several steps remain to be followed before the software driver can be fully installed and operational; see below:

Restart the computer and from the black boot menu (Windows Boot Manager) move the cursor (using the keyboard) to WINDOWS VISTA. Press F8 to choose ADVANCED OPTIONS and then select DISABLE DRIVER SIGNATURE ENFORCEMENT and press ENTER.

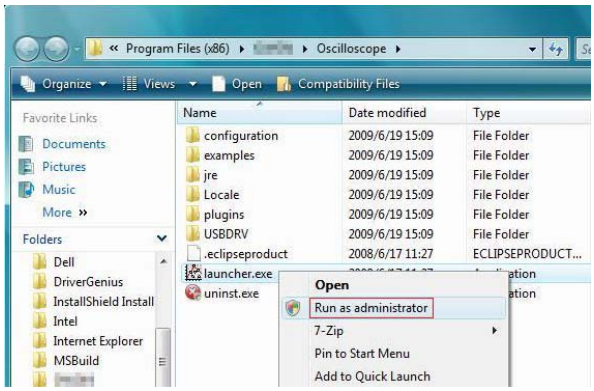
From the COMPUTER MANAGEMENT / DEVICE MANAGER location, notice that the driver is installed and operational.



For XP uses: Right click the program .exe file and then select PROPERTIES. Select the COMPATIBILITY page and select RUN THIS PROGRAM IN COMPATIBILITY MODE.



Select RUN AS ADMINISTRATOR



The supplied software program can now be used

C. SERIAL Port Transmission

- Install the supplied software program on the PC
- Connect the meter to the PC using a serial communications cable
- Launch the supplied software program
- Open **PORT SETTINGS** in the **COMMUNICATIONS** menu and select **SERIAL** and configure the settings (default: 115200, 8, N, 1)
- Select **GET DATA** from the **COMMUNICATIONS** menu in order to transfer the selected waveform from the meter to the PC. The user can rename the waveform before saving (Fig. 3-12)

NOTE: Waveforms can be transferred from meter to PC in either of two formats BITMAP (*.bmp) or VECTOR (*.bin). However, only the VECTOR format can be displayed and manipulated by the supplied software.

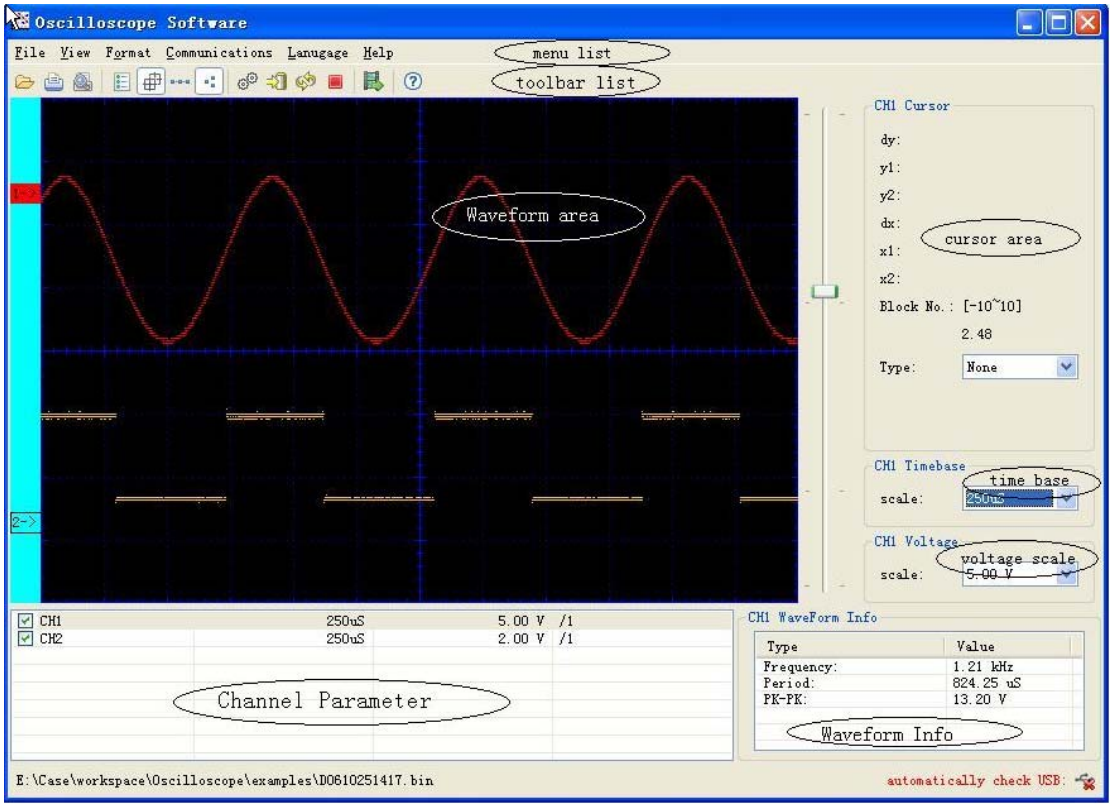
II. THE SOFTWARE USER INTERFACE

Introduction to the User Interface

a. Greeting Window

When the software is launched the greeting window is displayed briefly

b. Main User Interface (Fig. 2-2)



Shortly after the software program is launched the system will display the Main User Interface. The following eight (8) items are included on the Main User Interface:

MENU LIST: The user selects various software functions from this list

TOOL BAR: Shortcut buttons for frequently used functions

WAVEFORM AREA: Main waveform display area

CURSOR AREA: The user can select areas of a waveform to view and measure with the help of the Reference Cursor Lines. This program offers four (4) reference modes: NONE, HORIZ LINE, VERT LINE, and ALL (Horizontal and Vertical Lines).

CHANNEL PARAMETERS: This area displays basic information for each waveform channel. Users can view or hide each channel and select channels for analysis.

TIME BASE AREA: Users can view and set the Time Base for each channel

VOLTAGE SCALE AREA: Users can view and set the Voltage Scale for each channel

WAVEFORM PARAMETER AREA: The section shows the Period, Frequency, and Peak Value for selected waveforms. In the case of aperiodic (non-repetitive) waves, both the period and the frequency will display Zero.

Each of the above is explored in detail in subsequent sections of this HELP Utility

III. THE MENU LIST

The Menu includes six (6) sub-menu items: FILE, VIEW, FORMAT, COMMUNICATION, LANGUAGE, and HELP. Detailed explanations are provided below.

a. FILE (Fig. 3-1)

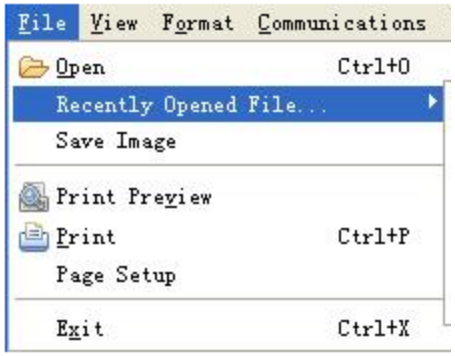


Fig 3-1

1. OPEN: Open a previously save waveform (file must have the extension *.bin)
2. OPEN RECENT: List of recently used files
3. SAVE: Store the opened waveform as an image file (.bmp, .png, .gif, etc.)
4. PRINT PREVIEW: Preview the waveform before printing
5. PRINT: Print waveform
6. PAGE SETUP: Configure printer parameters
7. EXIT: Close the software program

b. VIEW

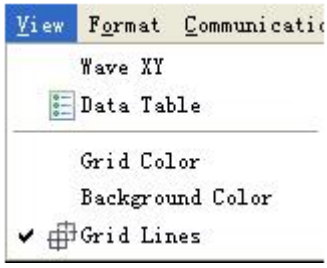


Figure 3-2-1

WAVE X-Y: Displayed Waveform shown with x-y graph coordinates

DATA TABLE (LIST): Save the displayed waveform's data as a TEXT FILE with the extension *.txt or *.xls using the SAVE AS…button. Select the desired channel data in the SAVE dialogue box shown on the right side of the Table. Use the SELECT menu to select or de-select all data (right-clicking the mouse can also be used). Click EXIT to close this Table.

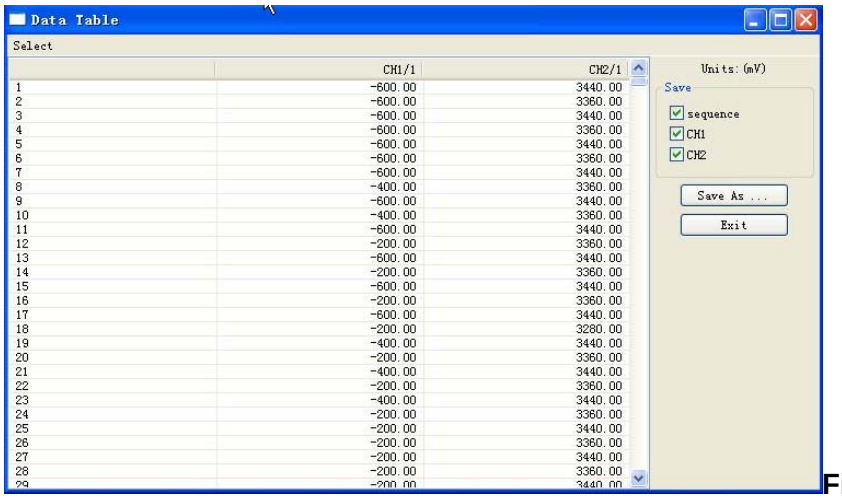


Fig. 3-2-2 Data Table

GRID COLOR: Select a grid color from the color chart. Grid color selections are saved and recalled each time the file is opened.

BACKGROUND COLOR: Select a background color from the color chart or double click the waveform area and then select a color. Background color selections are saved and recalled each time the file is opened.

GRID LINES: View or hide grid lines for the waveform background

c. FORMAT MENU

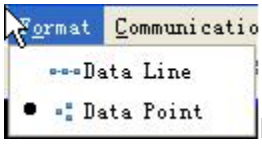


Fig. 3-3-1 Format Menu

DATA LINE: Display waveforms in **CURVE MODE** (all sample points will be connected by a line)

DATA POINT: Display waveforms in **POINT MODE** (waveforms are displayed as separate sample points)

d. COMMUNICATIONS MENU

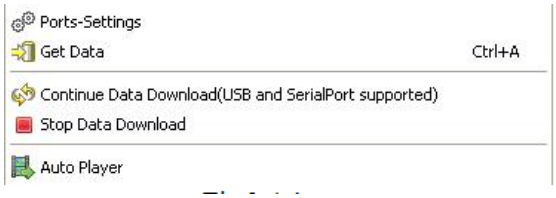


Fig. 3-4-1 Communications menu

PORT SETTINGS: Select the communication method (USB or SERIAL). USB is the default communication method. For a Serial interface the user must select the COM PORT number and then configure the Baud Rate, Data Bits, Parity, and Stop Bit information from the drop-down menus that appear when COM is selected rather than USB.

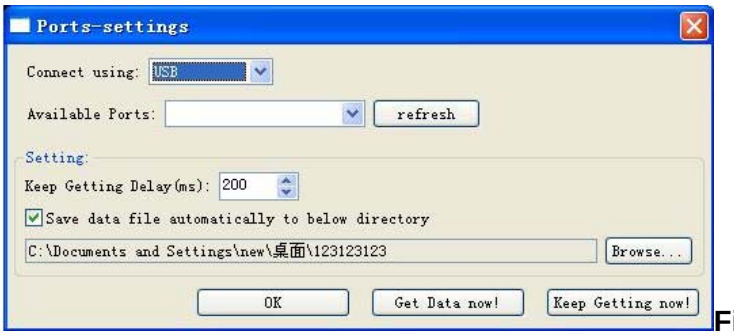


Fig. 3-4-2 USB COM

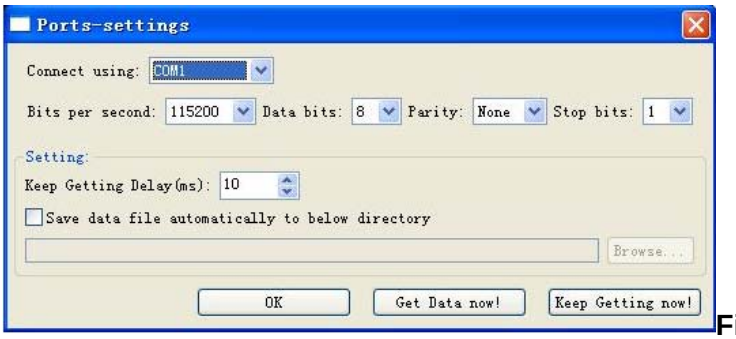


Fig. 3-4-3 Serial COM

The SETTING area in the PORT SETTINGS window allows the user to select the sampling rate ('Keep Getting Delay' field) in milliseconds (ms) for recording data. The user can select a directory in which to store the sampled (recorded) data. GET DATA NOW allows the user to take one sample. KEEP GETTING DATA allows the user to continuously record data at the programmed timed interval in milliseconds.

GET DATA: Upload a waveform from the meter to the PC. The meter and the PC should be communicating successfully before an attempt to GET DATA is made. The waveform format should be set to VECTOR (*.bin). Waveforms can be transferred from meter to PC in either of two formats BITMAP (*.bmp) or VECTOR (*.bin). However, only the VECTOR format can be displayed and manipulated by the supplied software. Click BROWSE to set the desired location for saving waveforms on the PC. The PROGRESS box indicates that data transfer is taking place. The RECEIVED and the TOTAL file size windows inform the user.

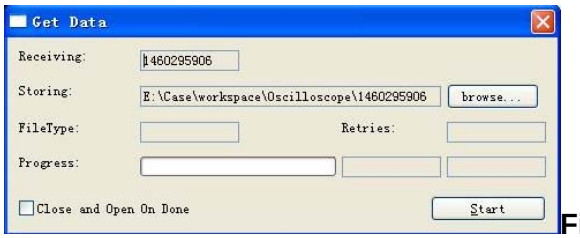


Fig. 3-4-4 Capturing data

Fig. 3-4-5 Progress bar

CONTINUE DATA DOWNLOAD: Continuously upload waveforms at the pre-programmed sampled rate discussed in the earlier PORT SETTINGS paragraph. For best results, do not set a sample rate shorter than 500 milliseconds (ms).

STOP DATA DOWNLOAD: Cease the continuous recording session.

AUTO PLAYER: Automatically display waveform data. Note that the CONTINUE DATA DOWNLOAD mode must be used to record data prior to using the AUTO DISPLAY mode. When the AUTO DISPLAY window is opened select 'ADD' this directory path as a display (HISTORY). Choose TURN or REVERSE under the PLAY MODE field. Set the sampling rate (time delay) in milliseconds (ms). Click the start arrow button to begin recording (press STOP to cease recording). Drag the slider to a desired location if needed.

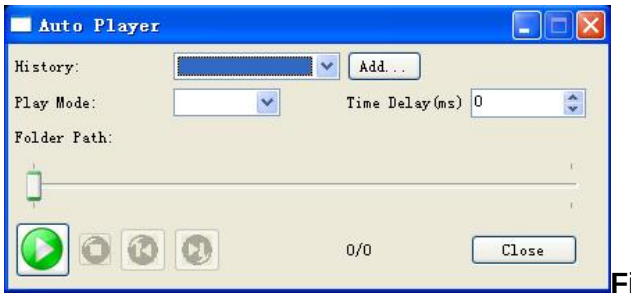


Fig. 3-4-6 Auto Play window

e. LANGUAGE MENU (Fig. 3-5)

Select ENGLISH, SPANISH, or CHINESE

Fig. 3-5 Language selection

f. HELP (Fig. 3-6)

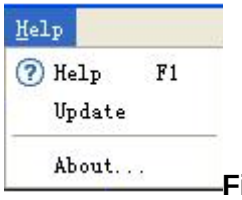


Fig. 3-6-1 Help menu

HELP MENU: Open the HELP Utility

UPDATE: Download latest version of Software Program; for best results visit www.extech.com for software updates

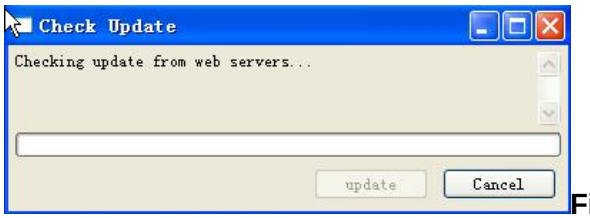


Fig. 3-6-2 Checking software update

ABOUT MENU: Displays the Software Revision

IV. THE TOOL BAR

The Tool Bar has the following function buttons:

1. **OPEN**: Open a waveform file with the extension *.bin
2. **PRINT**: Print waveform image or data file
3. **PRINT PREVIEW**: Preview the waveform before printing
4. **DATA TABLE**: Display a data list representing a selected waveform
5. **GRID LINES**: View or Hide the display grid lines
6. **DATA LINE**: Waveform data points are connected by a line
7. **DATA POINTS**: Waveform points appear as separate and discrete steps
8. **PORT SETTINGS**: PC Interface communication settings
9. **GET DATA**: Open dialogue box for transferring waveform image from the meter to a PC
10. **CONTINUOUS DATA DOWNLOADING**: Continuously transfer data from the meter to a PC until the user selects STOP
11. **STOP**: Cancel the Auto Upload mode
12. **AUTO PLAYER**: Play back a previously recorded data file (*.bin files only)
13. **HELP**: Access the HELP Utility

V. SOFTWARE OPERATION

a. WAVEFORM DIMENSIONS

Note: The user can select a channel by clicking the channel line (the background will turn blue in color once selected). Users can then view and adjust the parameters of the channel from the Time Base area, Voltage Scale area, Waveform area, and Cursor area as described below.

When a stored waveform file is opened, the system will identify the channels and automatically check the appropriate channel boxes.

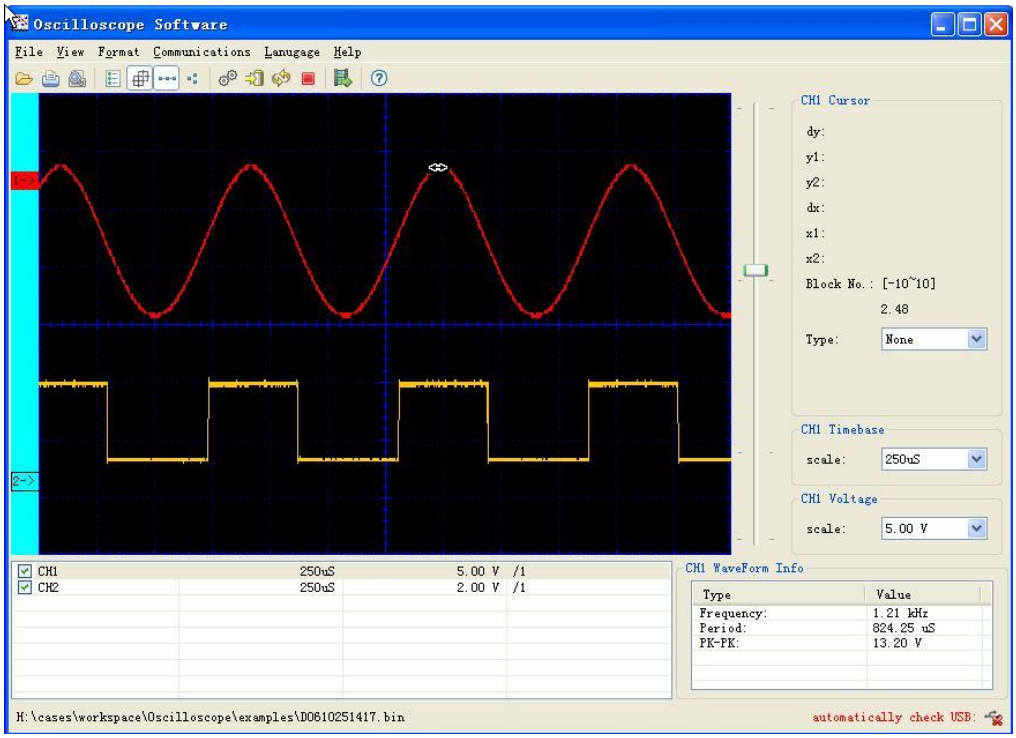


Figure 5-1-1 Waveform display range

1. **Moving the waveform horizontally (Fig. 5-1-1)**

   Small steps: For slight waveform movements, click, hold, and drag the ‘1->’ rectangle as desired

   Large steps: Drag the vertical bar on the right side of the waveform window

2. **Moving the waveform horizontally (Fig. 5-1-1)**

   Move the mouse over a point on the waveform. When the cursor changes to an arrow, click and drag using the left mouse button and drag the waveform horizontally as desired

3. **Change the waveform color**

Double click the 1-> rectangle to call up the color selection window and then select a color.

4. Set the Time Base (Fig. 5-1-2)

The user can view and adjust a waveform's Time Base in this area. First the user must select a channel in the Channel Parameter area. The Scale Bar displays the current Time Base in the range of 5ns (nanoseconds) to 100 seconds. To change the Time Base value, use the pull-down menu.

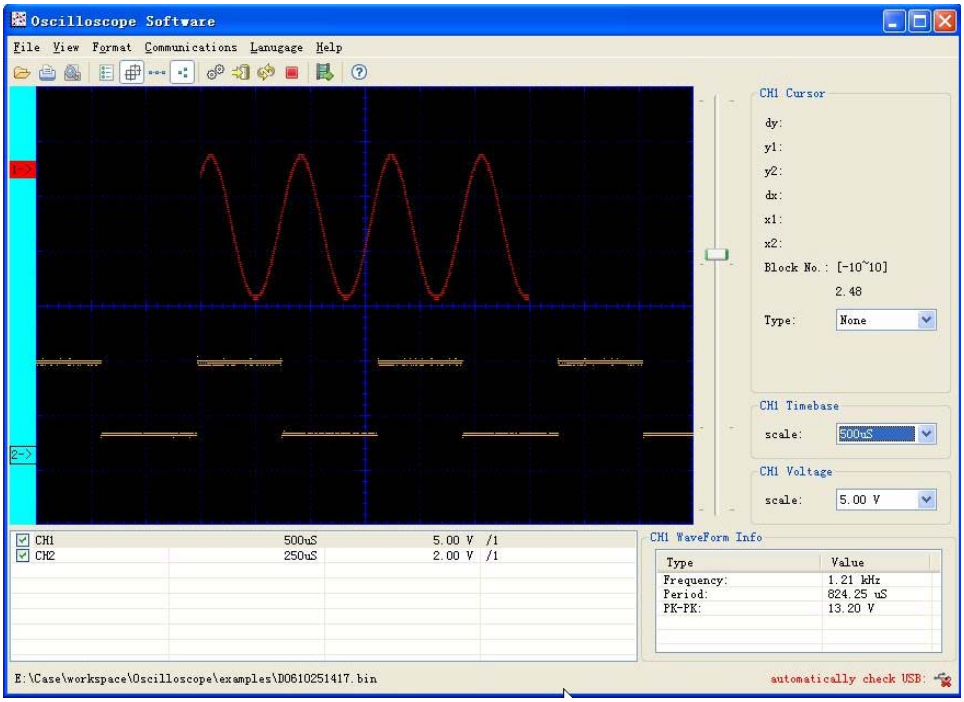


Figure 5-1-2 – Waveform Time Base and Voltage scale

5. Set the Voltage Scale

The user can view and adjust a waveform's Voltage Scale in this area. First the user must select a channel in the Channel Parameter area. The Scale Bar displays the current Voltage Scale in the range of 2.00mV to 100.0V. To change the Voltage Scale value, use the pull-down menu.

b. CURSOR LINES

The user can select areas of a waveform to view and measure with the help of the Reference Cursor Lines. This program offers four (4) reference modes: NONE, HORIZ LINE, VERT LINE, and ALL (Horizontal and Vertical Lines).

NONE: To measurement reference line or cursor value displayed in the cursor area

HORIZONTAL LINE: Two horizontal lines measure the voltage difference between any two points along a waveform. The Y1 and Y2 in the cursor area indicate the vertical relative value of the two horizontal lines. The A-> on the left hand side of the waveform is the relative zero position. The ‘dy’ value is the difference in voltage between the two reference lines.

VERTICAL LINE: Two vertical lines measure the time difference between any two points along a waveform. The X1 and X2 in the cursor area are the coordinates for each time position. The first sample point is the Zero point for time measurements. The ‘dx’ value is the difference in time between the two reference lines.

ALL: The horizontal and vertical lines are displayed in the waveform area simultaneously; users can measure the time and the voltage differences at the same time.