

Datalogger and RS232 Interface

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RS232 Wiring Hardware

RS232 Wiring Diagram

Meter Side

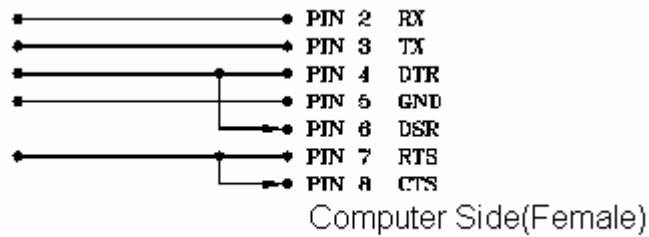
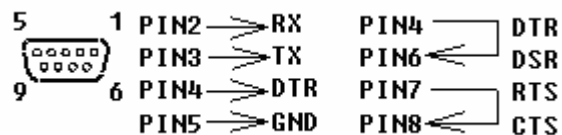


Figure-2

RS232 Connector Diagram

The RS-232 “DB-9” side of the PC Interface Cable connects to the PC’s COM port. Refer to the diagram below for wiring information. Note that a SERIAL to USB Adapter may be used.



RS232 Settings

19200, N, 8, 1

RS-232 Protocol

Settings : 19200,N,8,1

On Line Transfer (36 bytes data to PC)

| Byte1 | Byte2 | Byte3 | Byte4 | Byte5 | Byte6 |
|----------|----------|----------|----------|----------|----------|
| Start 02 | Status 1 | Status 2 | Status 3 | Status 4 | MR Value |

| Byte7 | Byte8 | Byte9 | Byte10 | Byte11 | Byte12 | Byte13 |
|-----------|-------|------------|--------|------------|--------|---------|
| Cal value | | Main value | | Time value | | Stop 03 |

Details:

(1) Starting byte 02 (Byte1)

(2) Status:

Status 1

| | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|------|-----------|---------|------|------|------|------|------|
| 1 | BT | Down of : | Up of : | MMA | AVG | MIN | MAX | Hold |

Status 2

| | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|------|------------|-------------|--------------|------|------|------------|------|
| 1 | | Main x 0.1 | Main x 0.01 | Main x 0.001 | R | M | Dot of Cal | CAL |

Status 3

| | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|------|------|------|------|------|----------------|------|------|
| 1 | Btu | k | % | d | /h | m ² | h | W |

Status 4

| | Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|------|------|------|------|------|------|------|--------------------|
| 1 | NO | YES | CLR | OL | d | /h | .h | (ft ²) |

(3) LCD Displayed Data

MR Value (Byte6) : 00~99

CAL Value, Main Value, Time Value : C: X Cal Value: DDDD: FULL

(4) Stop Byte 03 (Byte13)

“A” command:

02 + AAh + Last Add (2 Bytes) + 03

Commands : (after “A” command)

“O”---Power off “T”---Time switch “H”---Hold “U”---Unit Switch
 “P”---Percent(%) “B”---Manual Recording “R”---Read “X”---MAX/MIN/AVG
 “E”---Escape from MMA “I”---Auto Recording “D”---Erase Memory “M”---Reply 1333
 “C”+ DD + hh + mm + ss---Set up Time “G” + mm + ss---Set up Intv “F”---Read Auto Records

Auto Rec.s :

00 55 AA 00 + Intv + DDHHMMSS + Intv (2 Bytes)

+ Data1 + Data2 + Data3 + Data1 + Data2 + Data3

+ Data1 + Data2 + Data3 + Data1 + Data2 + Data3 + ...

00 55 AA 00 + Intv + DDHHMMSS + Intv (2 Bytes)

+ Data1 + Data2 + Data3 + Data1 + Data2 + Data3

+ Data1 + Data2 + Data3 + Data1 + Data2 + Data3 + ...

Data : $(\text{Data1} \times 65536 + \text{Data2} \times 256 + \text{Data3}) / 1000$

Hardware Requirements and Setup

PC HardWare Requirements :

HDD, CD Rom, 486 PC or above, with available COM port

EGA or higher monitor

4M bytes or more memory size

PC HardWare Setup :

- 1) Switch off all power related to the PC
- 2) Connect the DB9 (female) end of the supplied RS-232 cable to available COM port
- 3) Switch on all related power
- 4) Connect the PS/2 plug end of the RS232 cable to the meter

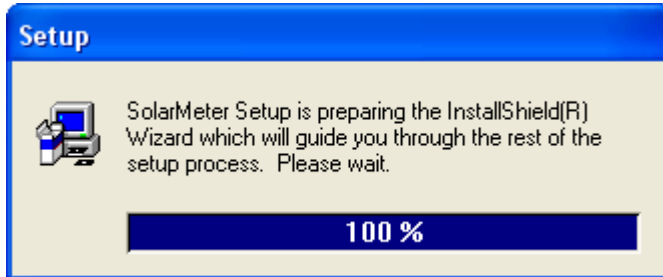
Software Requirements and Setup

- 1) Start up windows 95 / 98 / 2000 / XP operating system
- 2) Close all other applications
- 3) Insert disk in CD drive

Wait for "Autorun" to start and follow on-screen instructions

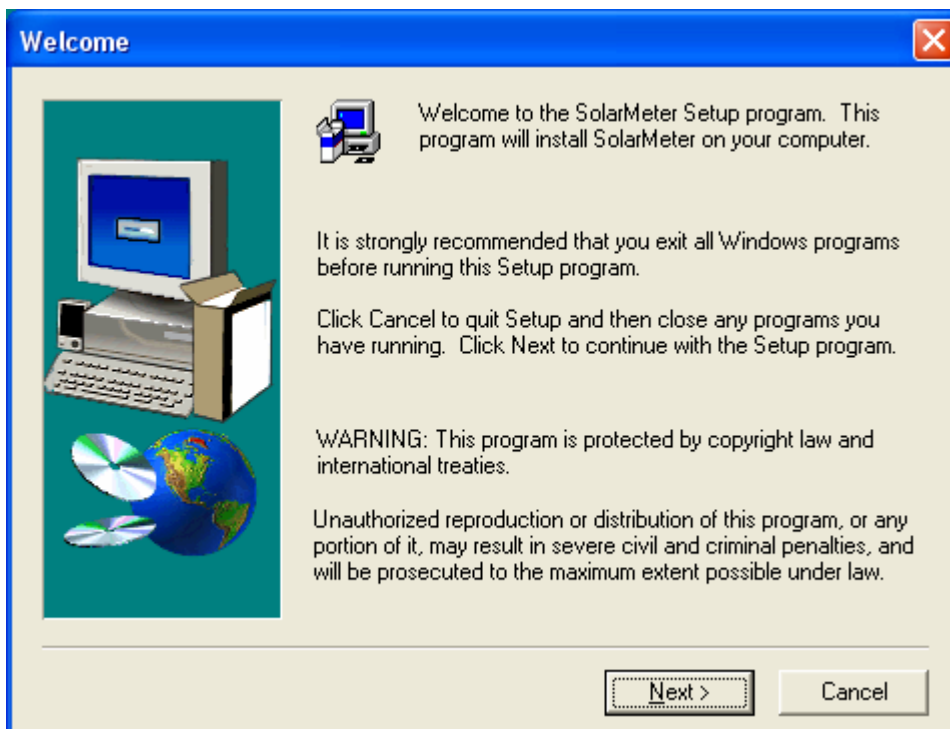
(If "autorun" does not start, click on "Start" then "Run". Type the drive letter and
": \Disk1\Setup.exe" and click "OK" .)

1).



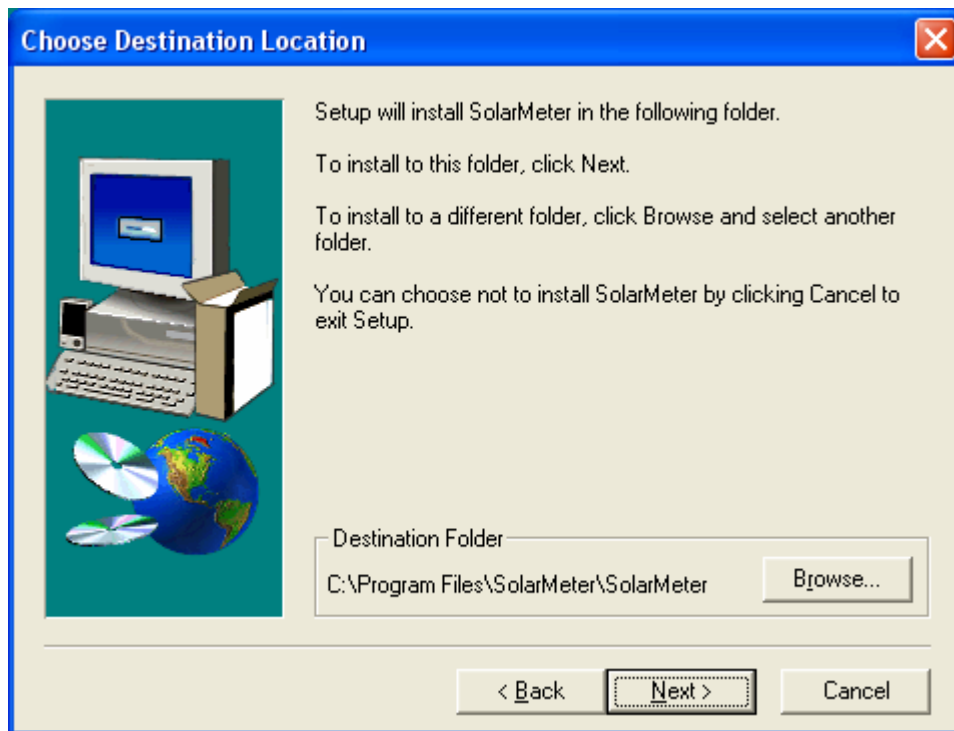
Setup program will run automatically.

2).



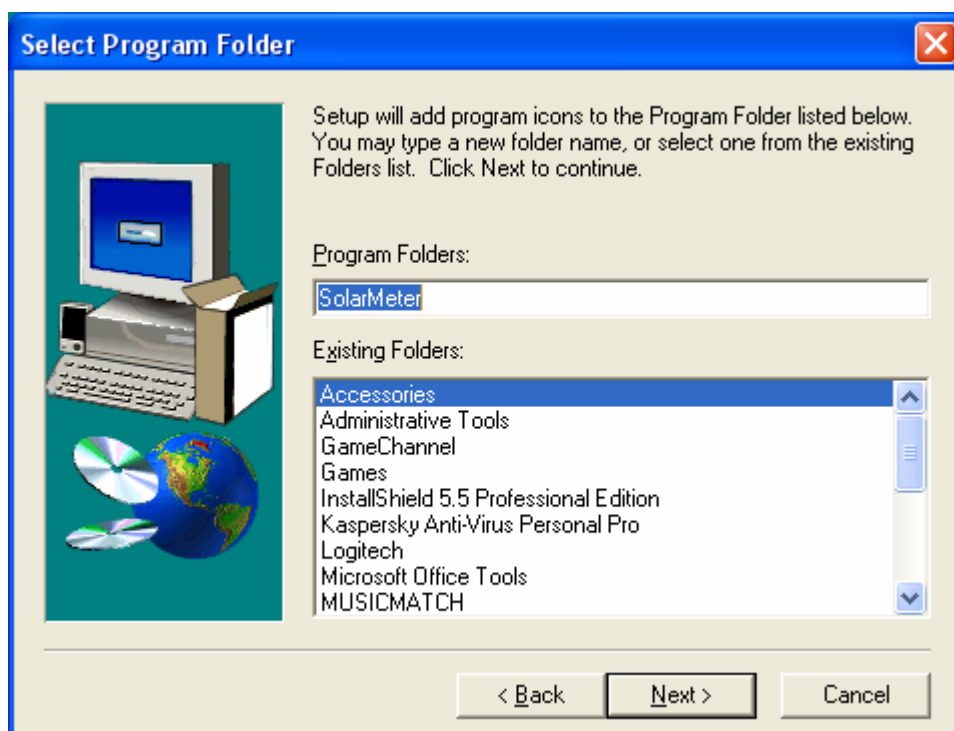
Click Next> button

3).

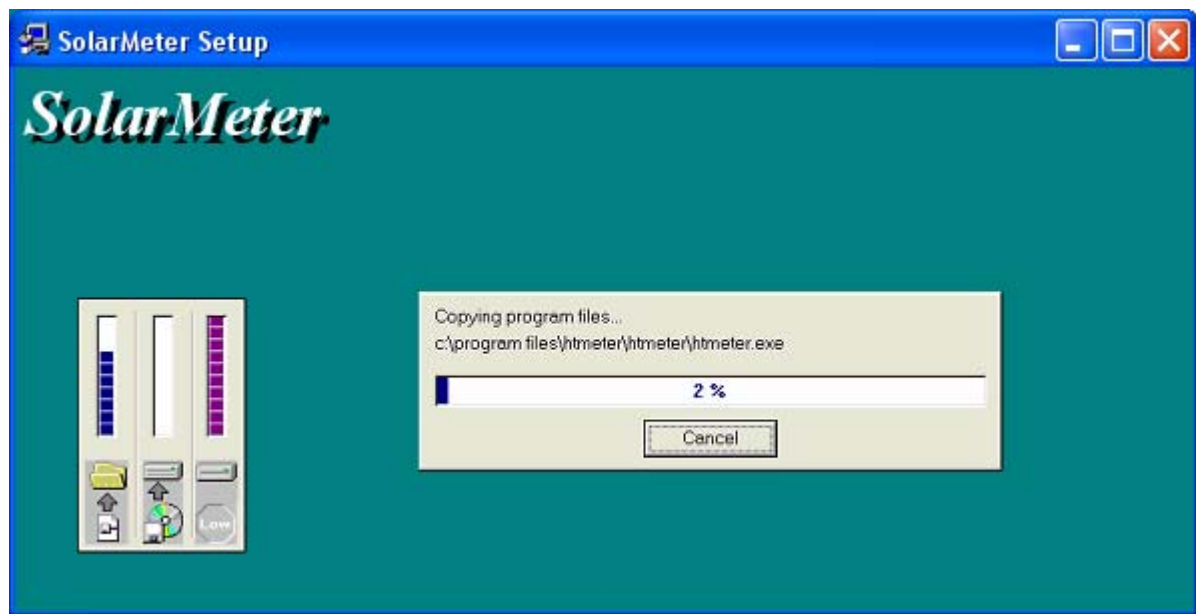


- a. Click Next> to use the default folder
- or
- b. Click Browse... to select a different folder

4).



Click Next> button

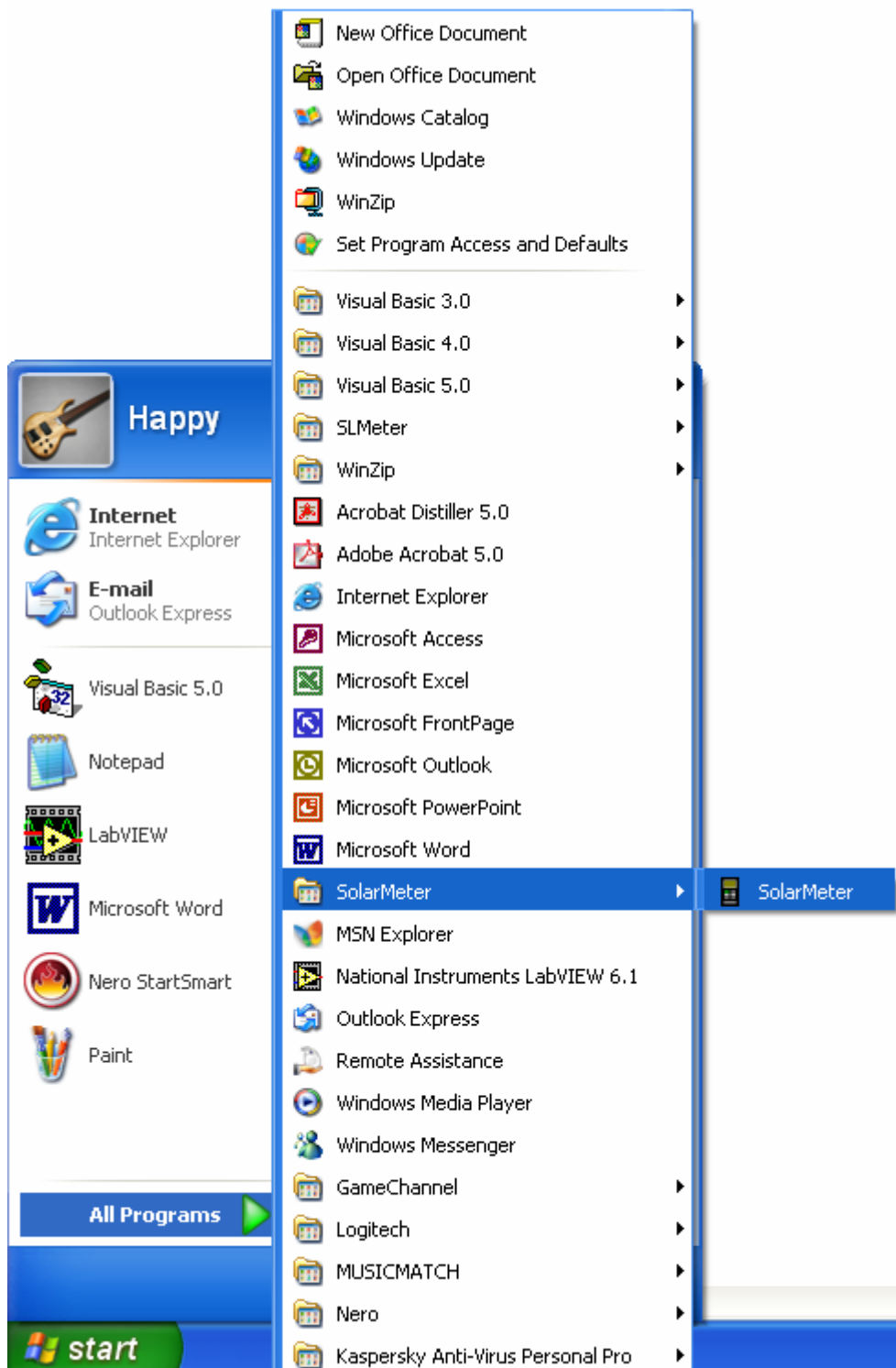


Setup is complete.

Communicating Operation

■ Run the software

1. Click "Start" form Start menu then move to "All Programs" (or "Programs") then "SolarMeter" and then click the "SolarMeter" icon.



2.

Click an available COM port



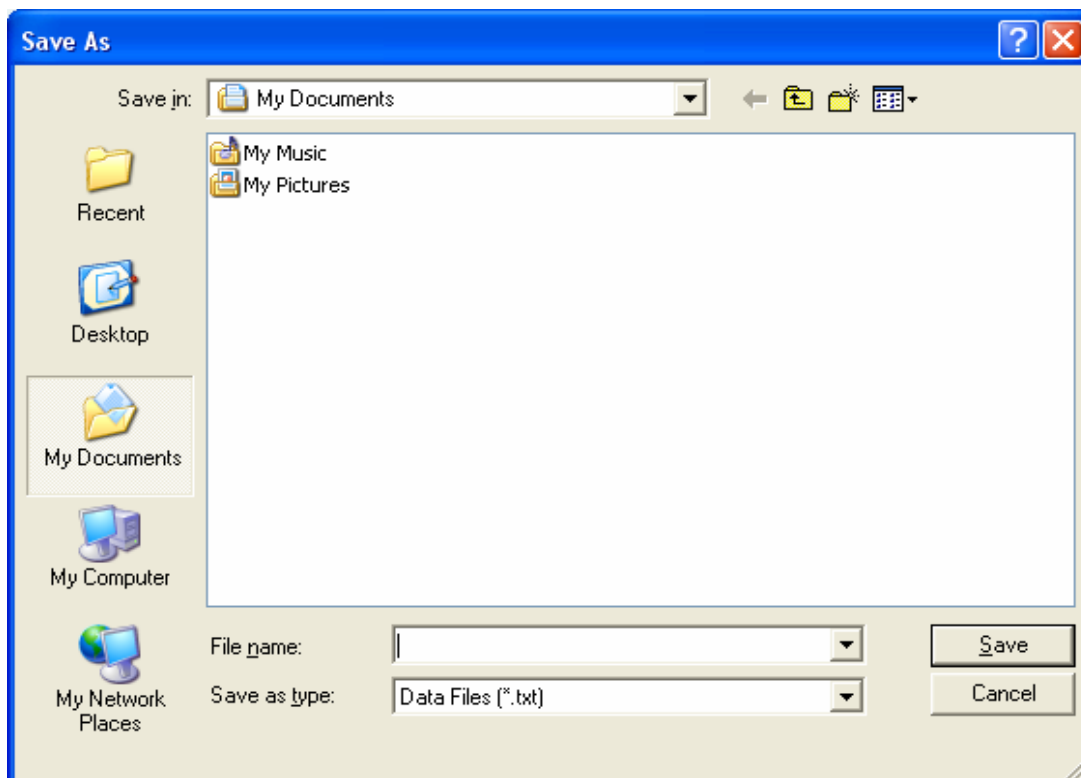
3. Main software screen



■ Record


Save to Hard Disk (PC)

Click  button. The dialog box shown below will appear.




Input a file name and then click "Save" to begin saving data to the file just named.




Click  button to stop recording.

Save to EEP Rom (Light Meter)

1. Automatically Record


Press the button  named MEMORY for about 3 seconds till “**M**” symbol starts flashing on the LCD. Press that button again (momentarily) to stop recording.

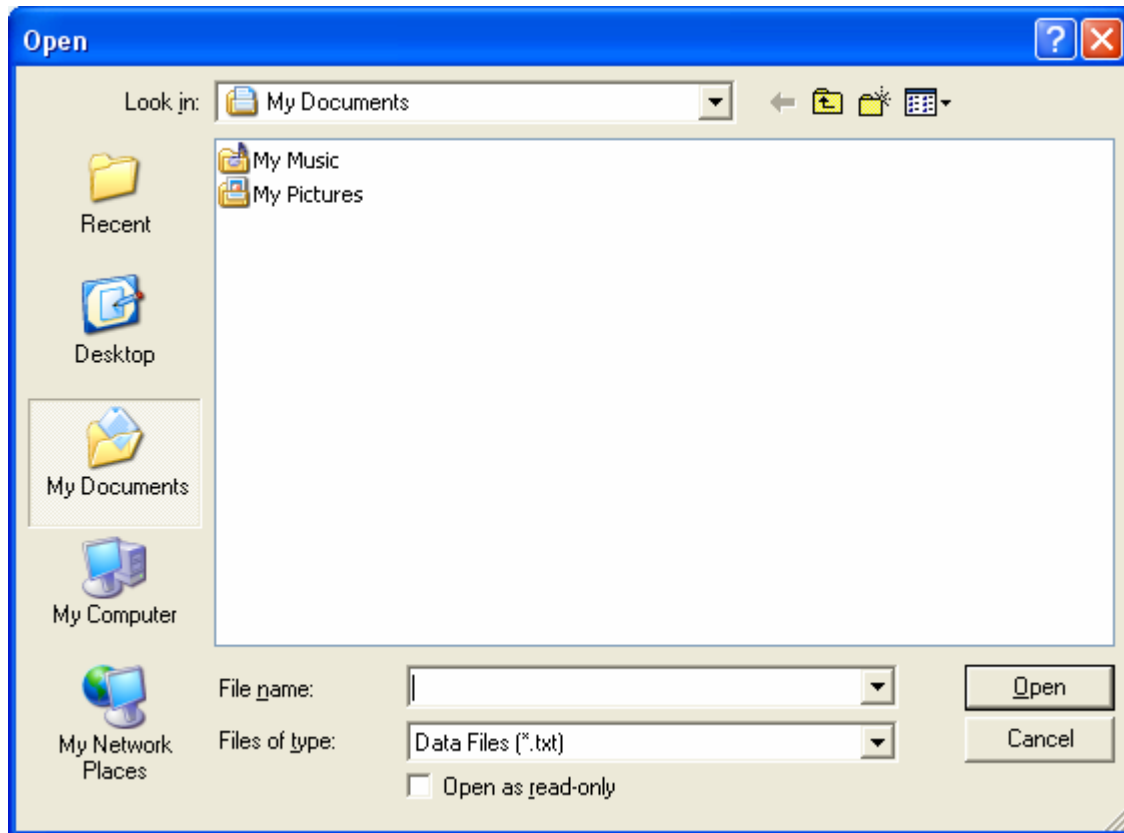
2. Manually Record

Press the button  named MEMORY momentarily to store one reading. The “**M**” symbol will flash once.

Download Data


1. Download Data from Hard Disk

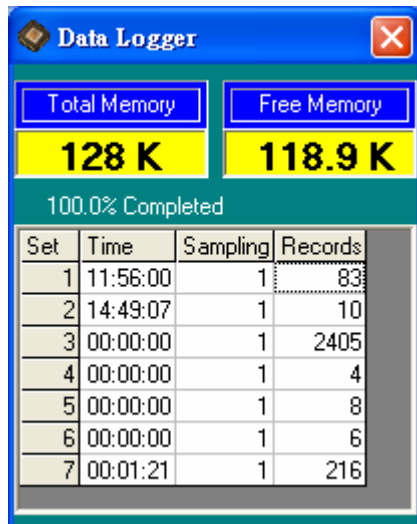
Click  button. The Open window, shown below, appears



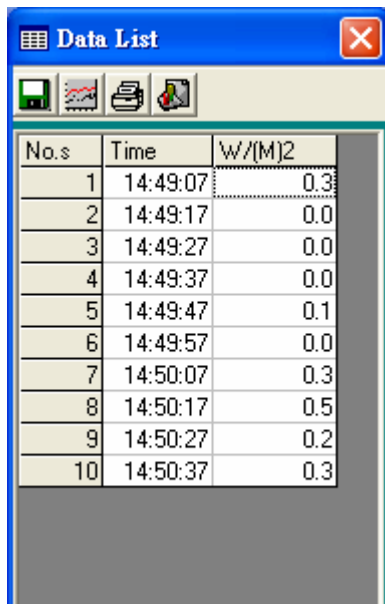
Input the file that was selected earlier and then click the Open button.

2. Download Data from EEP ROM

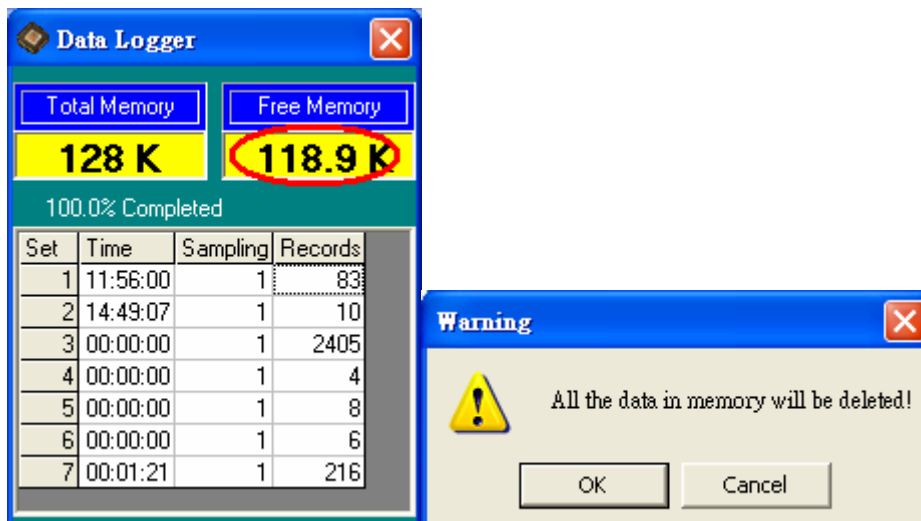
Click  button. The Data Logger window, shown below, will open.



Click on a SET number to view the set's details. For example, in the window above, there are 7 sets from which to choose. The list below is an example of an opened set.



To erase saved data in EEP ROM, click the Free Memory label (see below)

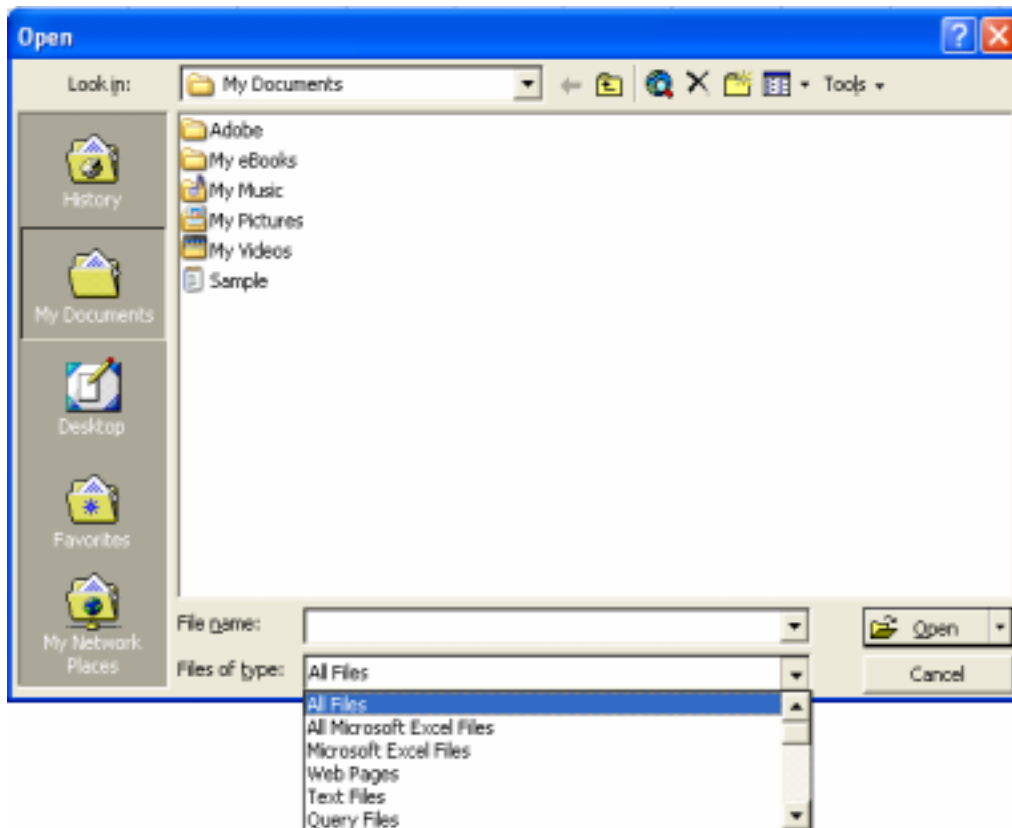


Press OK to confirm.

■ Data Convert

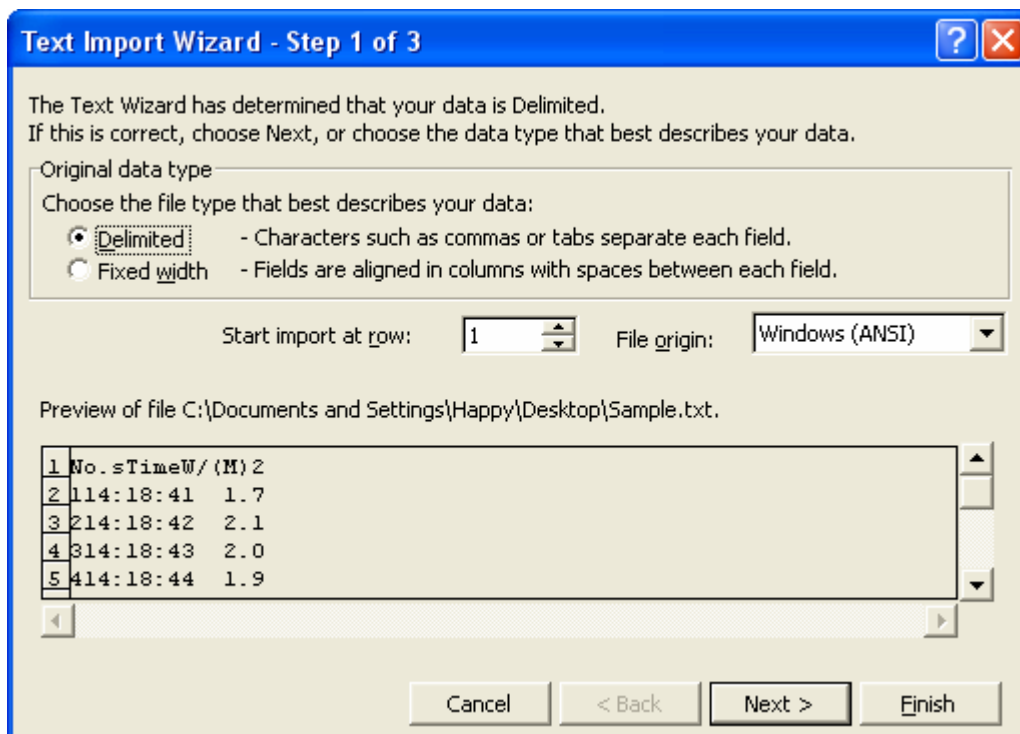
Apply for Excel

Open Microsoft Excel, find the file saved in Excel type, for example, test.xls.



or find any file already saved in HDD, for example, sample.dat.

The "Text Import Wizard" then appears. Follow the steps 1 to 3 to complete.



Click Next> button

Text Import Wizard - Step 2 of 3

This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.

Delimiters

☒ Tab ☐ Semicolon ☐ Comma
☐ Space ☐ Other:

☐ Treat consecutive delimiters as one

Text qualifier:

Data preview

| No.s | Time | W/(M)2 |
|------|----------|--------|
| 1 | 14:18:41 | 1.7 |
| 2 | 14:18:42 | 2.1 |
| 3 | 14:18:43 | 2.0 |
| 4 | 14:18:44 | 1.9 |

Cancel < Back Next > Finish

Click Next> button

Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced...

Column data format

☒ General
☐ Text
☐ Date:
☐ Do not import column (skip)

Data preview

| No.s | Time | W/(M)2 |
|------|----------|--------|
| 1 | 14:18:41 | 1.7 |
| 2 | 14:18:42 | 2.1 |
| 3 | 14:18:43 | 2.0 |
| 4 | 14:18:44 | 1.9 |

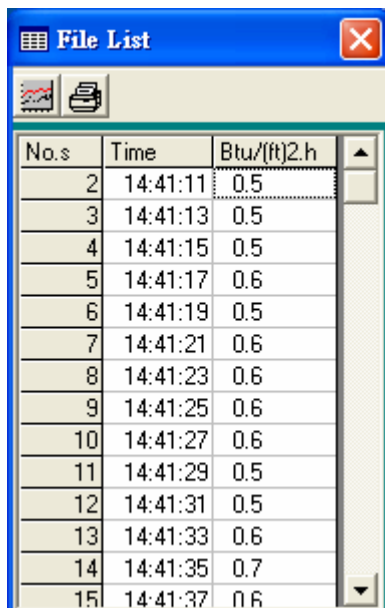
Cancel < Back Next > Finish

Click **Finish** button

| | | | |
|----|------|----------|--------|
| 1 | No.s | Time | W/(M)2 |
| 2 | 1 | 14:18:41 | 1.7 |
| 3 | 2 | 14:18:42 | 2.1 |
| 4 | 3 | 14:18:43 | 2 |
| 5 | 4 | 14:18:44 | 1.9 |
| 6 | 5 | 14:18:45 | 2 |
| 7 | 6 | 14:18:46 | 1.3 |
| 8 | 7 | 14:18:47 | 1.7 |
| 9 | 8 | 14:18:48 | 2 |
| 10 | 9 | 14:18:49 | 1.8 |
| 11 | 10 | 14:18:50 | 1.6 |
| 12 | 11 | 14:18:51 | 1.2 |

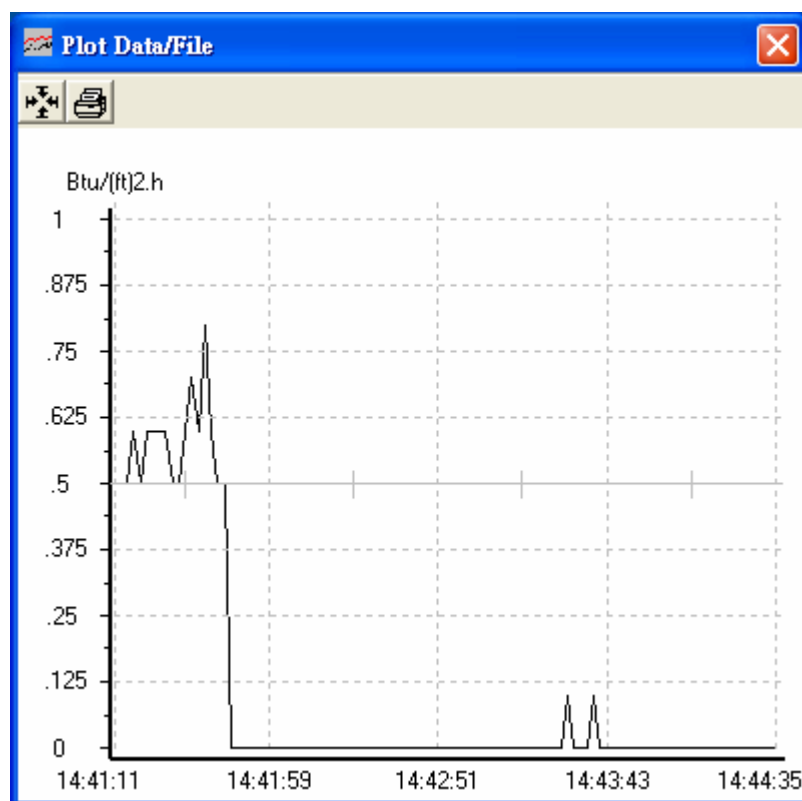
Apply for Graph

Open a saved data file in the software program and then click  .



The 'File List' window displays a table of data points. The table has three columns: 'No.s', 'Time', and 'Btu/(ft)2.h'. The data points are numbered 2 through 15, with corresponding times and values.


| No.s | Time | Btu/(ft)2.h |
|------|----------|-------------|
| 2 | 14:41:11 | 0.5 |
| 3 | 14:41:13 | 0.5 |
| 4 | 14:41:15 | 0.5 |
| 5 | 14:41:17 | 0.6 |
| 6 | 14:41:19 | 0.5 |
| 7 | 14:41:21 | 0.6 |
| 8 | 14:41:23 | 0.6 |
| 9 | 14:41:25 | 0.6 |
| 10 | 14:41:27 | 0.6 |
| 11 | 14:41:29 | 0.5 |
| 12 | 14:41:31 | 0.5 |
| 13 | 14:41:33 | 0.6 |
| 14 | 14:41:35 | 0.7 |
| 15 | 14:41:37 | 0.6 |

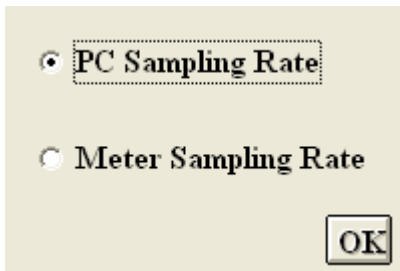


■ Sampling Time

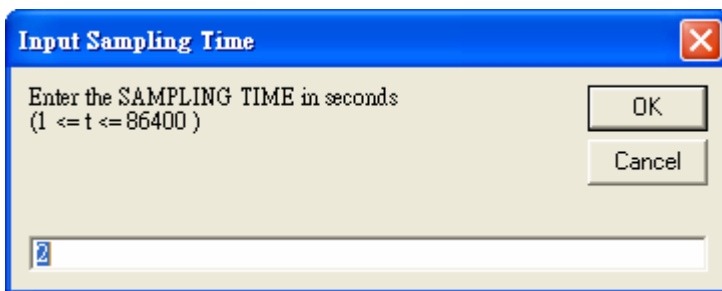
PC Sampling Rate:

(rate at which the PC collects readings while connected to the meter)

Click  on the **Menu Bar**.




Choose "PC Sampling Rate" and then click "OK" button.

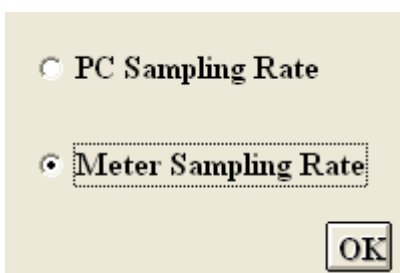


In the **Input Sampling Time** dialog box, input a sampling time and then click "OK" button to confirm.

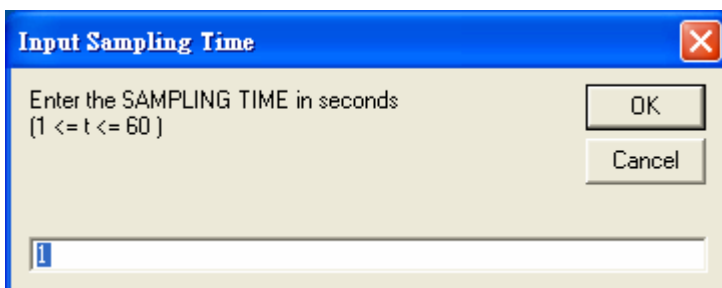
Meter Sampling Rate:

(rate at which meter stores readings)

Click  on the **Menu Bar**.




Choose "PC Sampling Rate" and then click "OK" button.



Input a sampling time and then click "OK" button to confirm.

■ RTC (Real Time Clock)

Click  on the **Menu Bar** to set the meter time to PC system time.