

# Datalogger and RS232 Interface

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# RS-232 Protocol

19200,N,8,1

## On Line Transfer ( 8 bytes data to PC )

Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start 02	Status1	Status2	Status3	Fahrenheit			Stop 03

### Details:

(1) Start byte 02 (Byte1)

(2) Status1 (Byte2)

bit7	bit6	bit5	bit4	bit3	bit2	bit0~1	
Full	Auto Rec.	No.99	Auto pwr off	BT	0:C 1:F	0:T1	1:T2 2:T3 3:T4

(3) Status2 (Byte3)

bit7	bit6	bit5	bit4	bit0~bit3										
Reserved	reserved	hold	read	0:K	1:J	2:E	3:T	4:R	5:S	6:N	7:L	8:U	9:B	10:C

(4) Status3 (Byte4)

bit7	bit6	bit5	bit4	bit3	bit2	bit0~1	
Reserved	under	over	Out range	plug	rec	0:normal	1:max 2:min 3:max-min

(5) Fahrenheit

Byte5	Byte6	Byte7		
Fahrenheit Integer	bit7: positive	bit4,5: X	bit0~3: Fahrenheit Decimal	

If Positive then Fahrenheit Integer = 65536 - Fahrenheit

(6) Stop Byte 03 (Byte6)

### Pre-Order

“A” command:

Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
02	Last Add of Auto Rec.s			Manual Rec.s	FF	03

Commands : (after “A” command)

### Q : Read Manually Recorded Data

02 + No.s of Rec.s + Data1 + Data2+.....+03

Data : Flg0 + Flg8 + Flg9 + (T1-T4)Type + YYMMDDhhnnss + T1F + T2F + T3F + T4F

(3 Byte + 4 Bytes + 6 Bytes + 3 Bytes x 4)

### R : Read Automatically Recorded Data

02 + Last Add + Data1 + Data2+.....+03

Data : 00 55 AA 00 + Flg0 + (T1-T4)Type + YYMMDDhhnnss + Intv + Rec.s

+ Flg8 + Flg9 + (T1F + T2F + T3F + T4F)

+ Flg8 + Flg9 + (T1F + T2F + T3F + T4F)+.....+03

(4 Bytes + 1 Byte + 4 Bytes + 6 Bytes + 1 Bytes + 3 Bytes + 2 Bytes + (3 Bytes x 4)

Flg0:

bit1~7	bit0
Reserved	F

Flg8

bit7	bit4~6	bit3	bit2	bit1	bit0
Out range	Reserved	T4 Plug	T3 Plug	T2 Plug	T1 Plug

Flg9

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
T4 Under	T3 Under	T2 Under	T1 Under	T4 Over	T3 Over	T2 Over	T1 Over

Type

bit4~7	bit0~bit3
Reserved	0:K 1:J 2:E 3:T 4:R 5:S 6:N 7:L 8:U 9:B 10:C

Fahrenheit

Byte1	Byte2	Byte3		
Fahrenheit Integer	bit7: positive	bit4,5: X	bit0~3: Fahrenheit Decimal	

**S : Set up Date of Meter**

“S” + YY + MM + DD (4 Bytes)

**T : Set up Time of Meter**

“T” + hh + nn + ss (4 Bytes)

**X : Read Real Time Clock**

02 + YYMMDDhhnnss + 03 ( 8bytes)

**U : Intv**

“U” + 0 + 0 + 0 : Read Intv (02 + Intv + 03)

“U” + 1 + Intv + 0: Set up Intv

**V : Power-off Time**

“V” + 0 + 0 + 0 : Read Power-off Time (02 + Index + 03)

“V” + 1 + Index + 0 : Set up Power-off Time

Index:

0	1	2
5 min	15 min	30 min

**W : Button command**

“W” + B1 + B2 + B3 : Button Command

B1:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
TYPE	MEM	MAX	TIME	SET	C / F	Alarm	Read

B2:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
A.Rec.	Reserved	Down	Right	Enter	Left	Up	Hold

B3:

bit3~bit7	bit2	bit1	bit0
Reserved	Cancel MMA Rec	Clr Auto	Clr Manual

# Hardware Requirements and Setup

## PC Hardware Requirements :

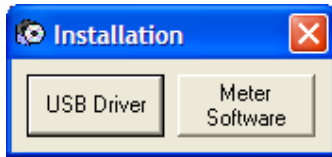
HDD, CD Rom, 486 PC or above, with USB port  
EGA or higher monitor  
4M bytes or more memory size

## PC Hardware Setup :

Connect the Meter with PC by USB cable

# Software Requirements and Setup

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

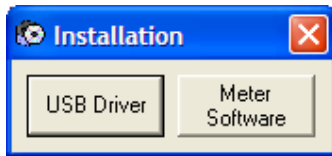


Click 

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

Follow the on-screen instructions to set up USB driver.

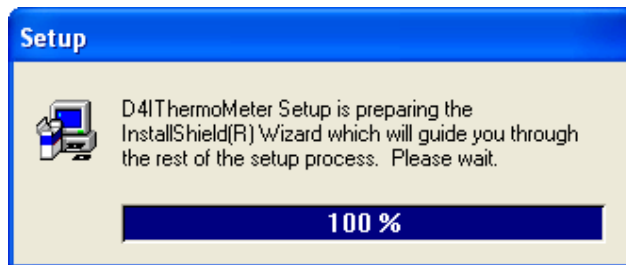
- 4) Restart the personal computer.
- 5) Insert the disk in CD drive



Click 

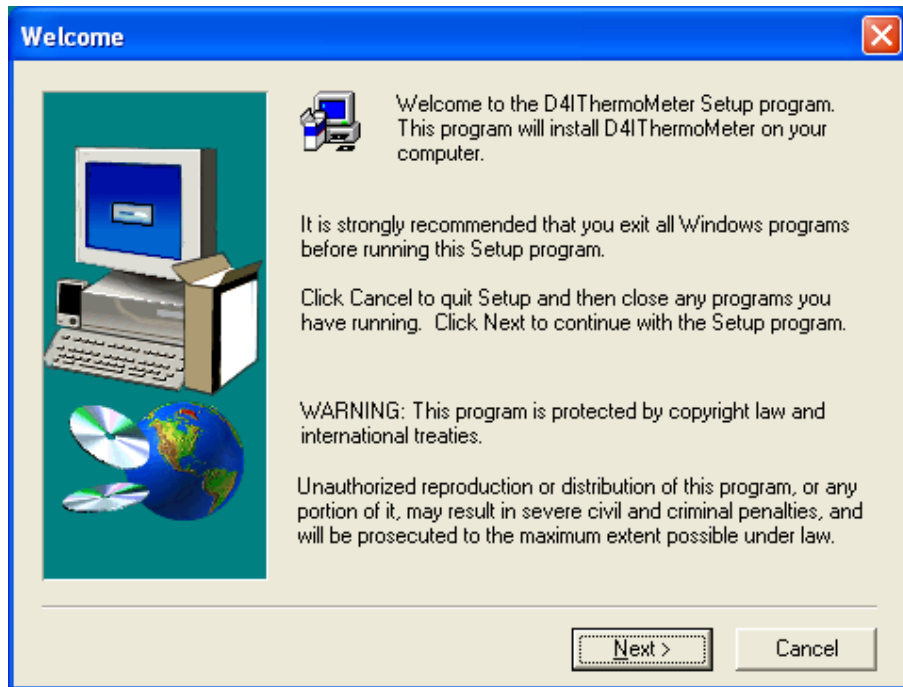
(If "autorun" does not start, click on "Start" then "Run". Type the drive letter and  
": \Software\setup.exe" and click "OK" .)

- 6) Follow the on-screen instructions.
  - 1).



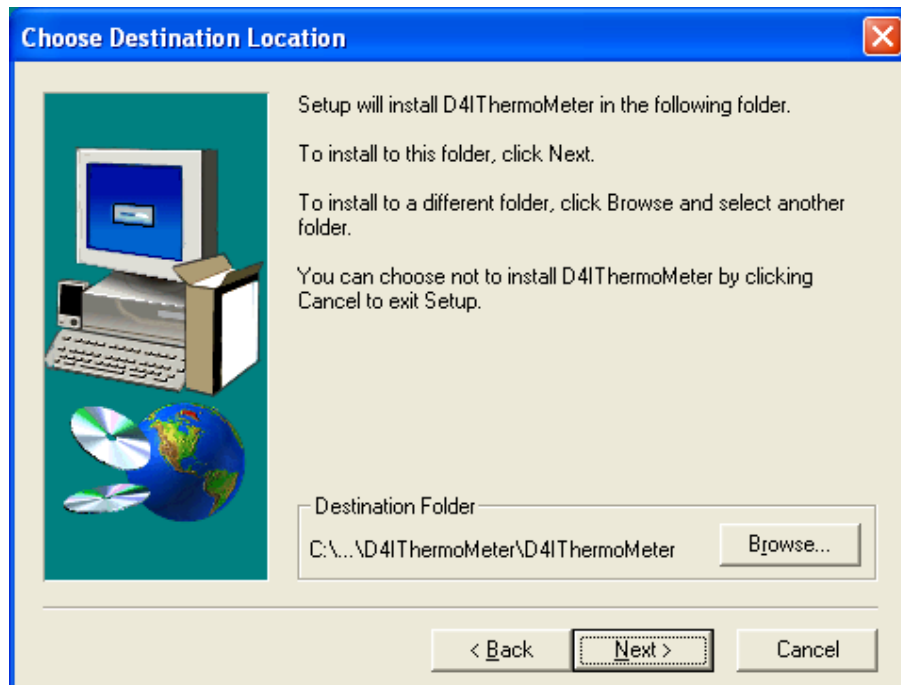
Setup program will run automatically.

2).



Click Next> button

3).



a. Click Next> to use the default folder

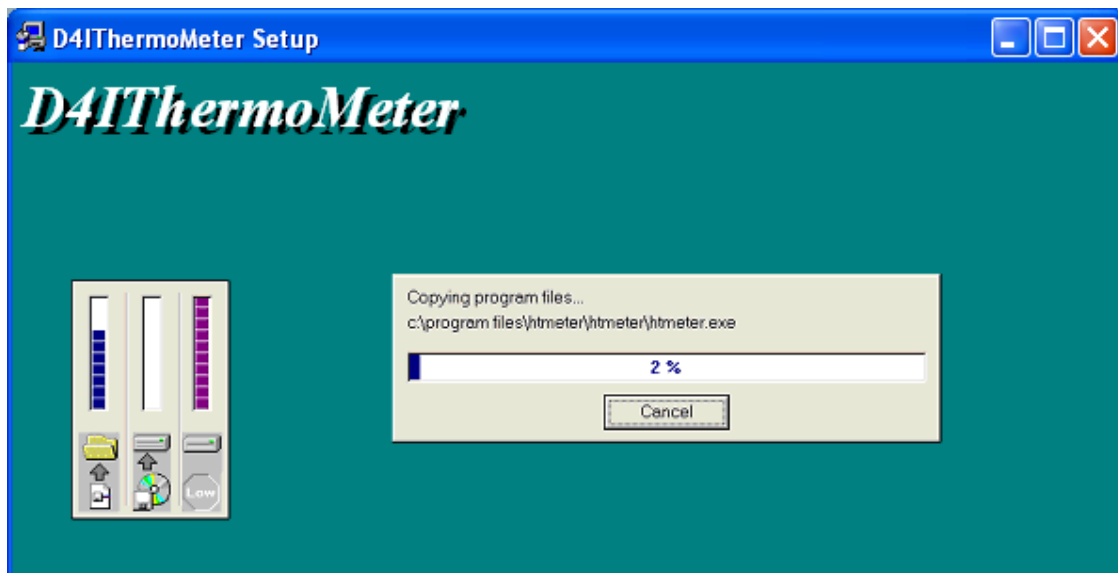
or

b. Click Browse... to select a different folder

4).



Click Next> button

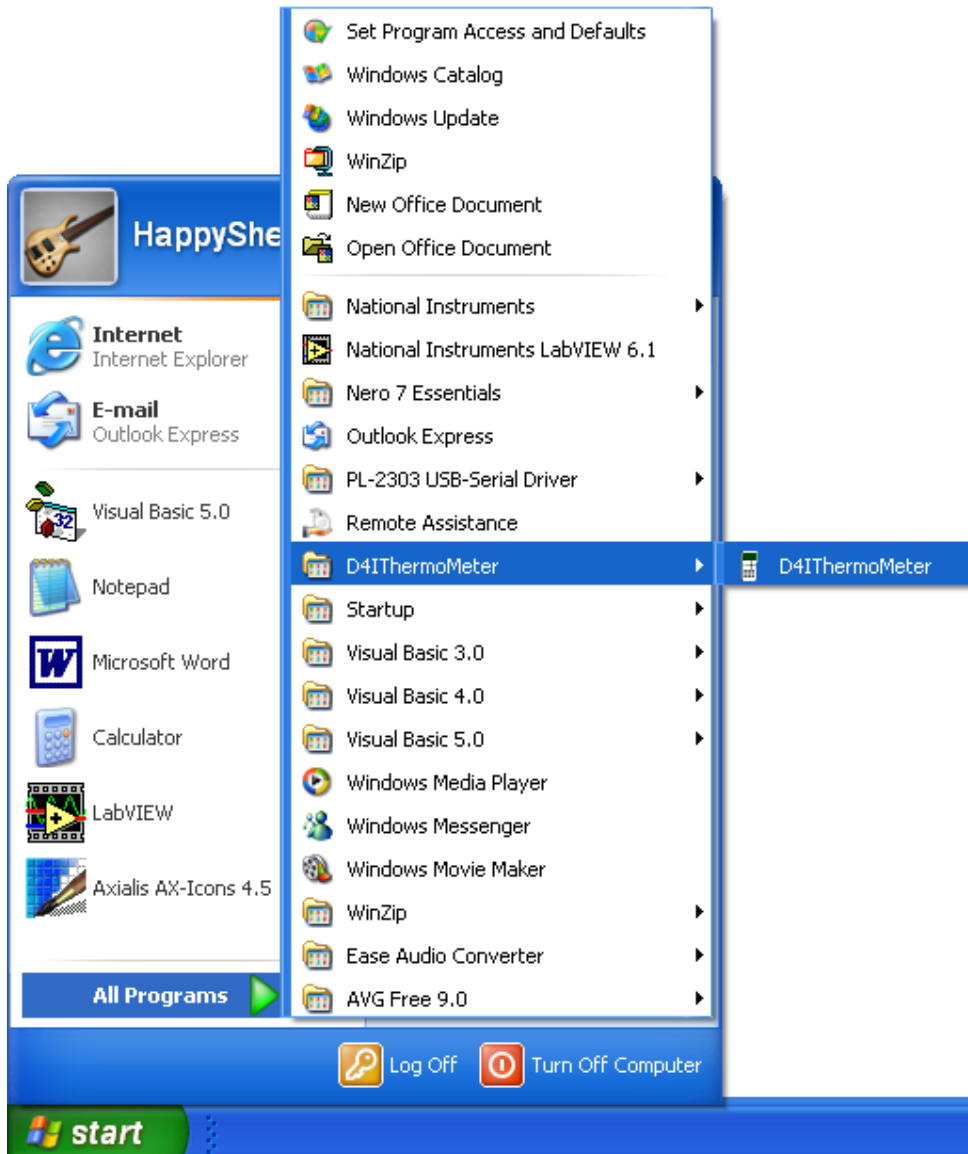


Setup is completed.

# On-Line Operation

## ■ Run the software

1. Click "Start" from Start menu then move to "All Programs" (or "Programs") then "D4IThermoMeter" and then click the "D4IThermoMeter" icon.



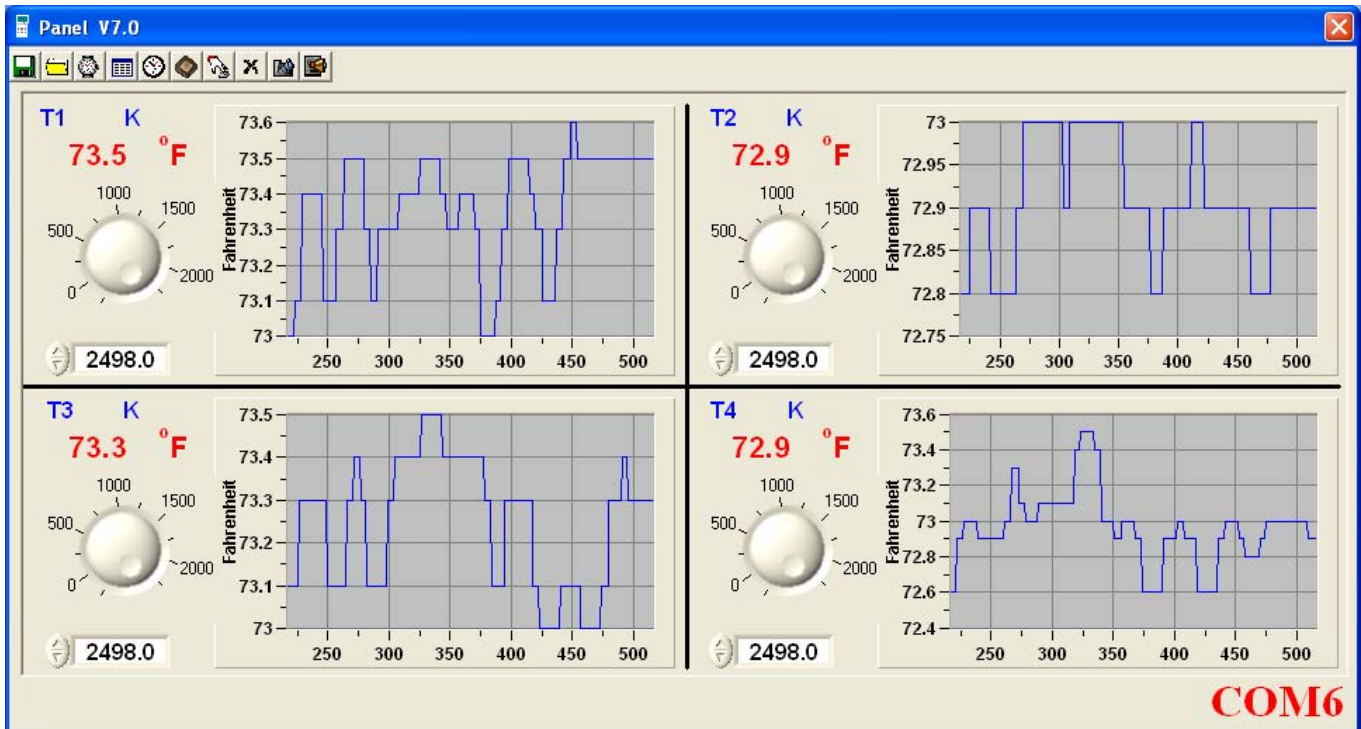


2.

Click an available COM port



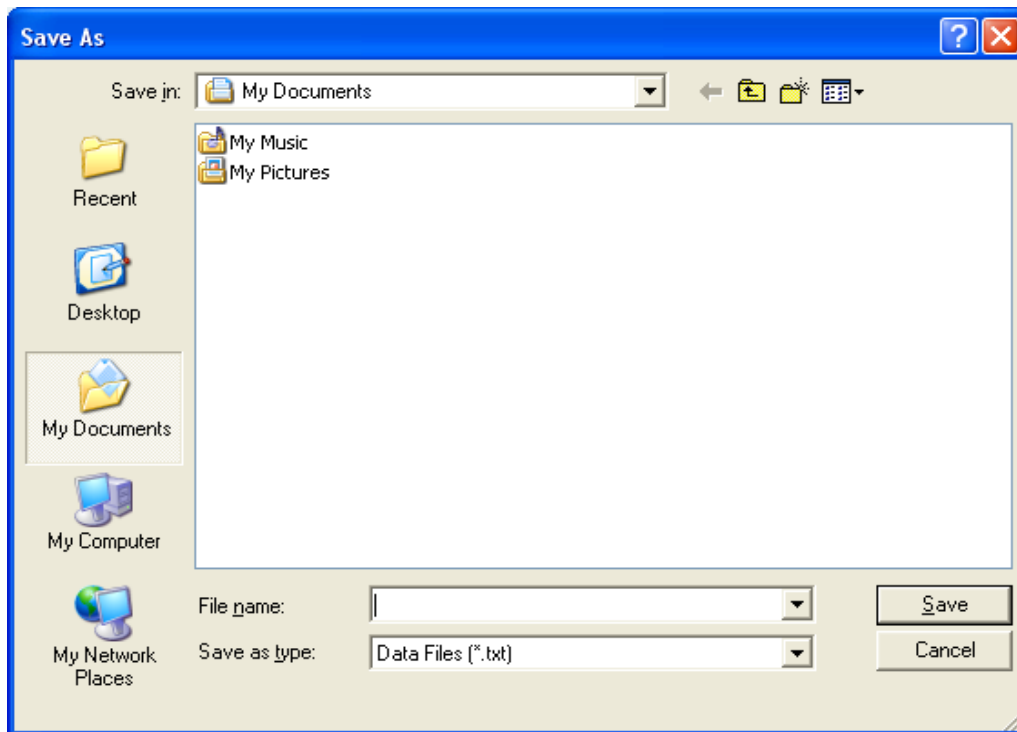
3. Main software screen



## ■ 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.

Rec 19

COM6

Click  button to stop recording.

## Save to EEPROM

### 1. Automatically Record


Keep pressing **MEM** on the meter till **A-M** flashes on LCD to record data. Keep pressing **MEM** again till **A-M** disappears to stop recording.

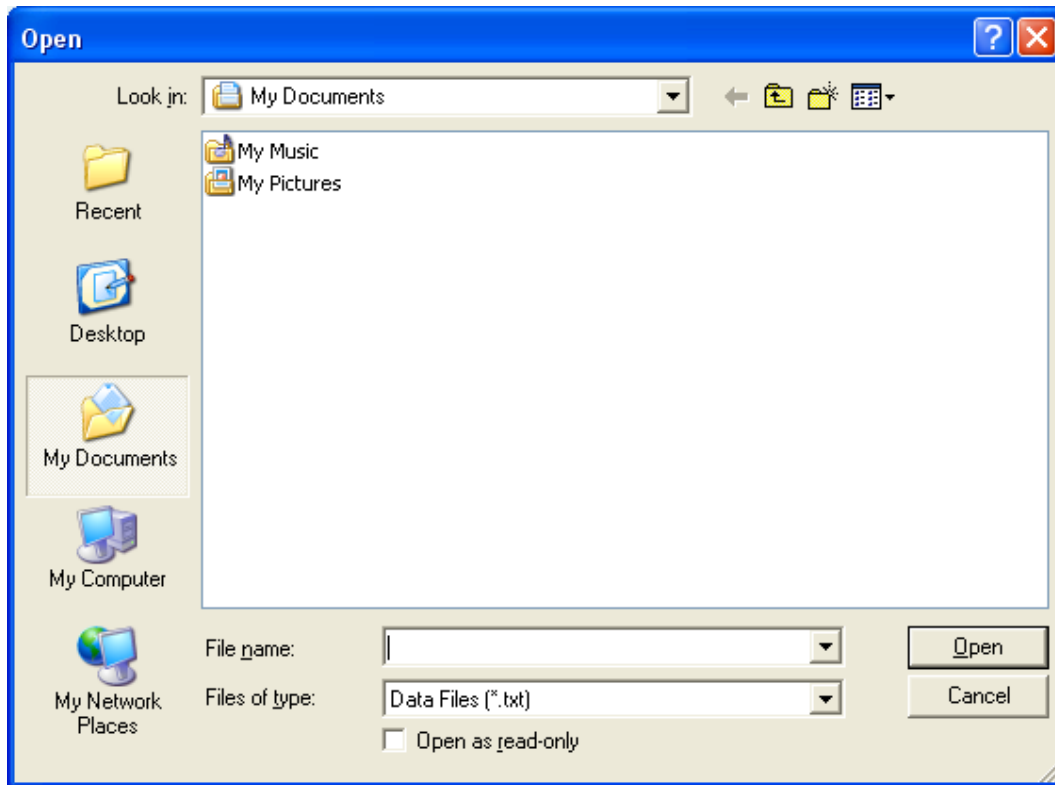
### 2. Manually Record

Press the **MEM** on the meter momentarily to store one reading. The **M** then flashes once.

# Download Data


## 1. Download Data from Hard Disk

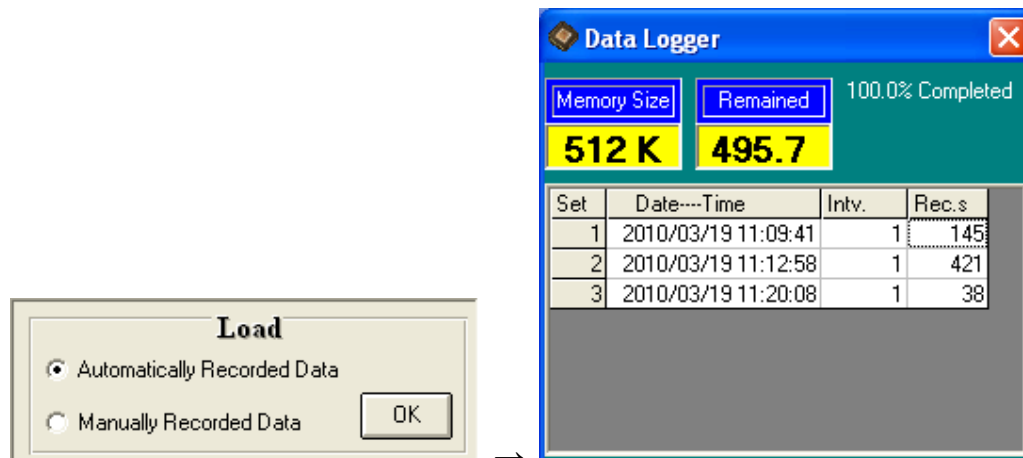
Click  button. The Open window, shown below, appears



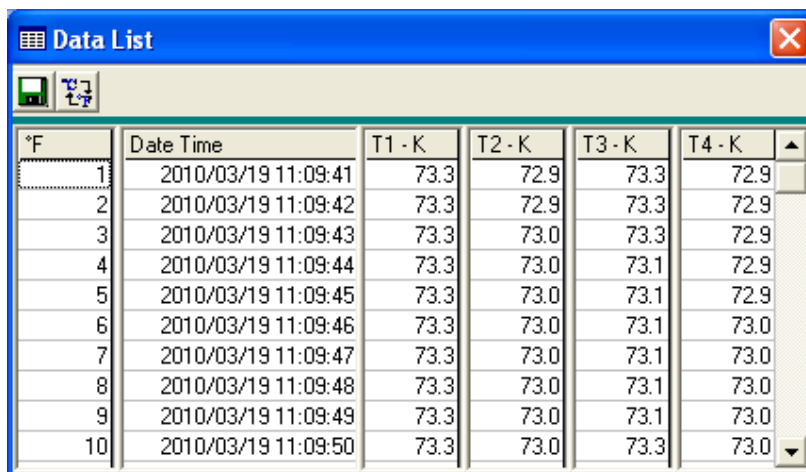
Input the file that was selected earlier and then click the Open button.

## 2. Download Data from EEPROM

Click  button. The Load window, shown below, will open.

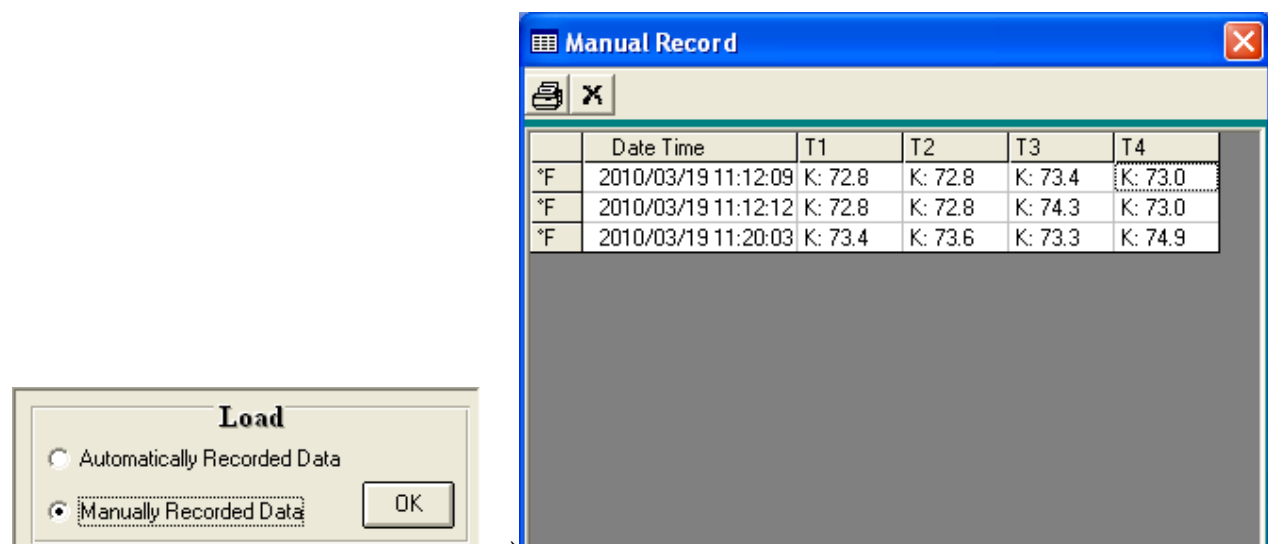


Click on a SET number to view the set's details. For example, in the window above, there are 3 sets from which to choose. The list below side is an example of an opened set.




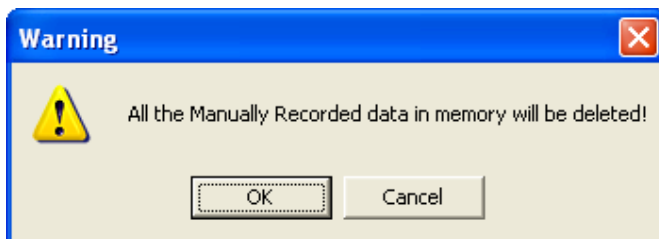
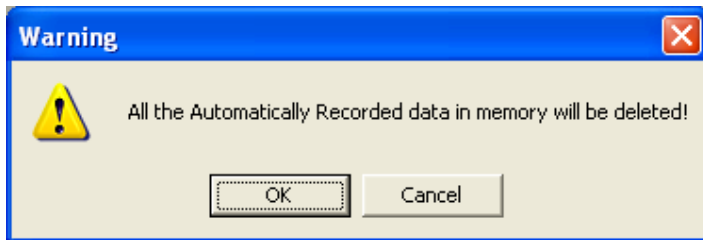
°F	Date Time	T1 - K	T2 - K	T3 - K	T4 - K
1	2010/03/19 11:09:41	73.3	72.9	73.3	72.9
2	2010/03/19 11:09:42	73.3	72.9	73.3	72.9
3	2010/03/19 11:09:43	73.3	73.0	73.3	72.9
4	2010/03/19 11:09:44	73.3	73.0	73.1	72.9
5	2010/03/19 11:09:45	73.3	73.0	73.1	72.9
6	2010/03/19 11:09:46	73.3	73.0	73.1	73.0
7	2010/03/19 11:09:47	73.3	73.0	73.1	73.0
8	2010/03/19 11:09:48	73.3	73.0	73.1	73.0
9	2010/03/19 11:09:49	73.3	73.0	73.1	73.0
10	2010/03/19 11:09:50	73.3	73.0	73.3	73.0

To read manually recorded data, select Manually Recorded data then Press OK to confirm.



## ■ Erase Memory

Click  button. The dialog box, shown below, will open.

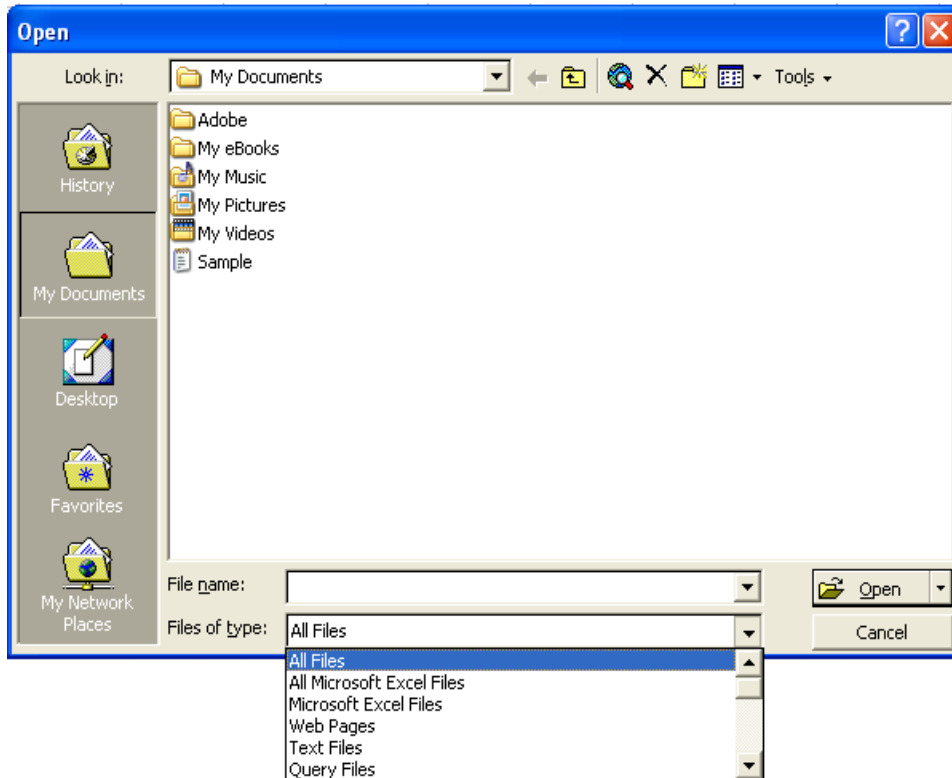


Press **OK** button to confirm.

## ■ Data Convert

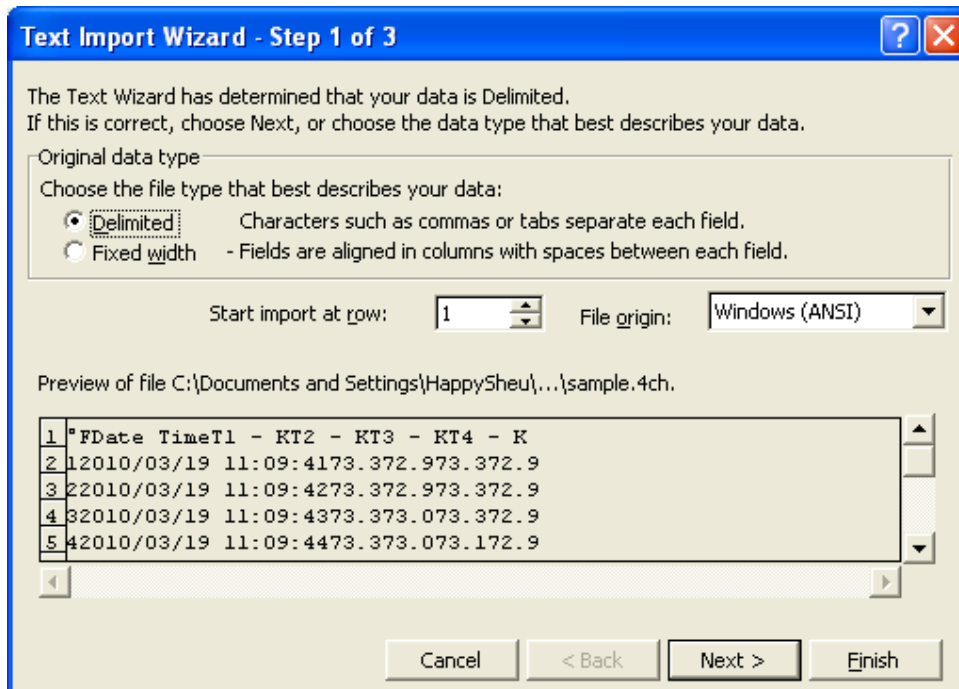
### Apply for Excel

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

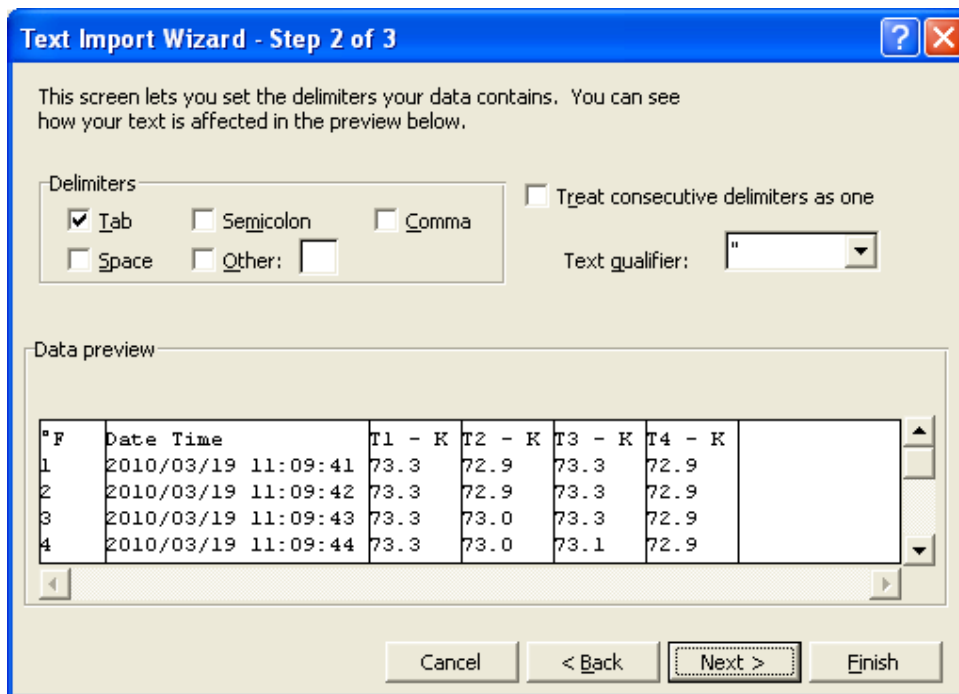


or find any file already saved in HDD, for example, sample.dat.

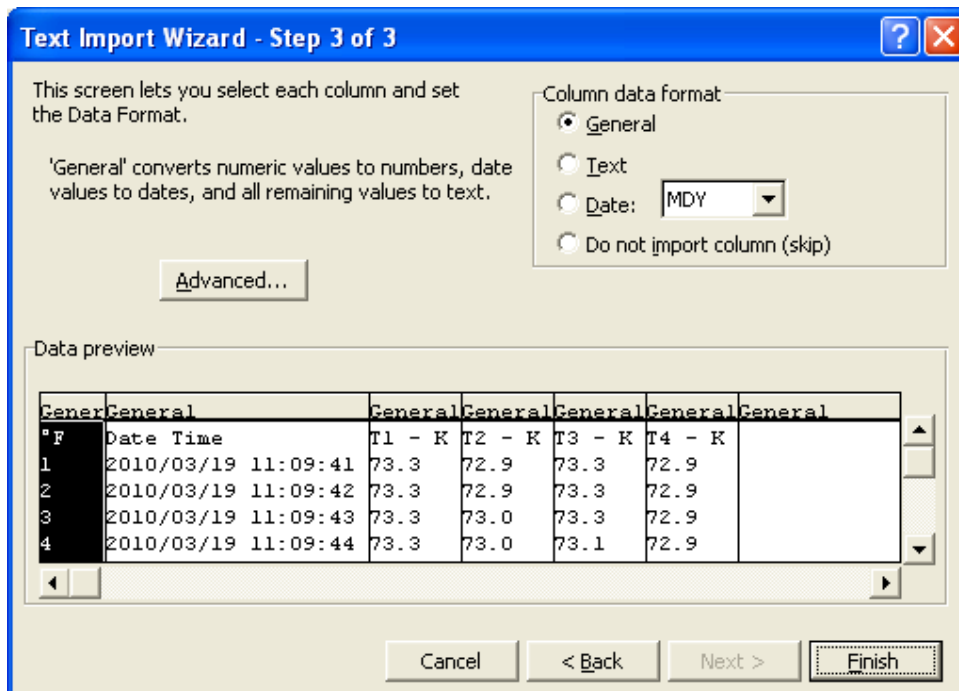
The "Text Import Wizard" then appears. Follow the steps 1 to 3 to complete.



Click Next> button



Click Next> button



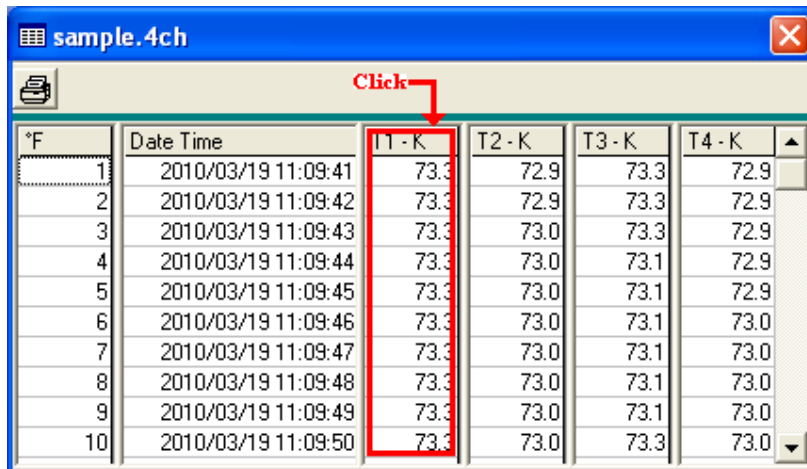
Click **Finish** button

	A	B	C	D	E	F
1	°F	Date Time	T1 - K	T2 - K	T3 - K	T4 - K
2	1	3/19/2010 11:09	73.3	72.9	73.3	72.9
3	2	3/19/2010 11:09	73.3	72.9	73.3	72.9
4	3	3/19/2010 11:09	73.3	73	73.3	72.9
5	4	3/19/2010 11:09	73.3	73	73.1	72.9

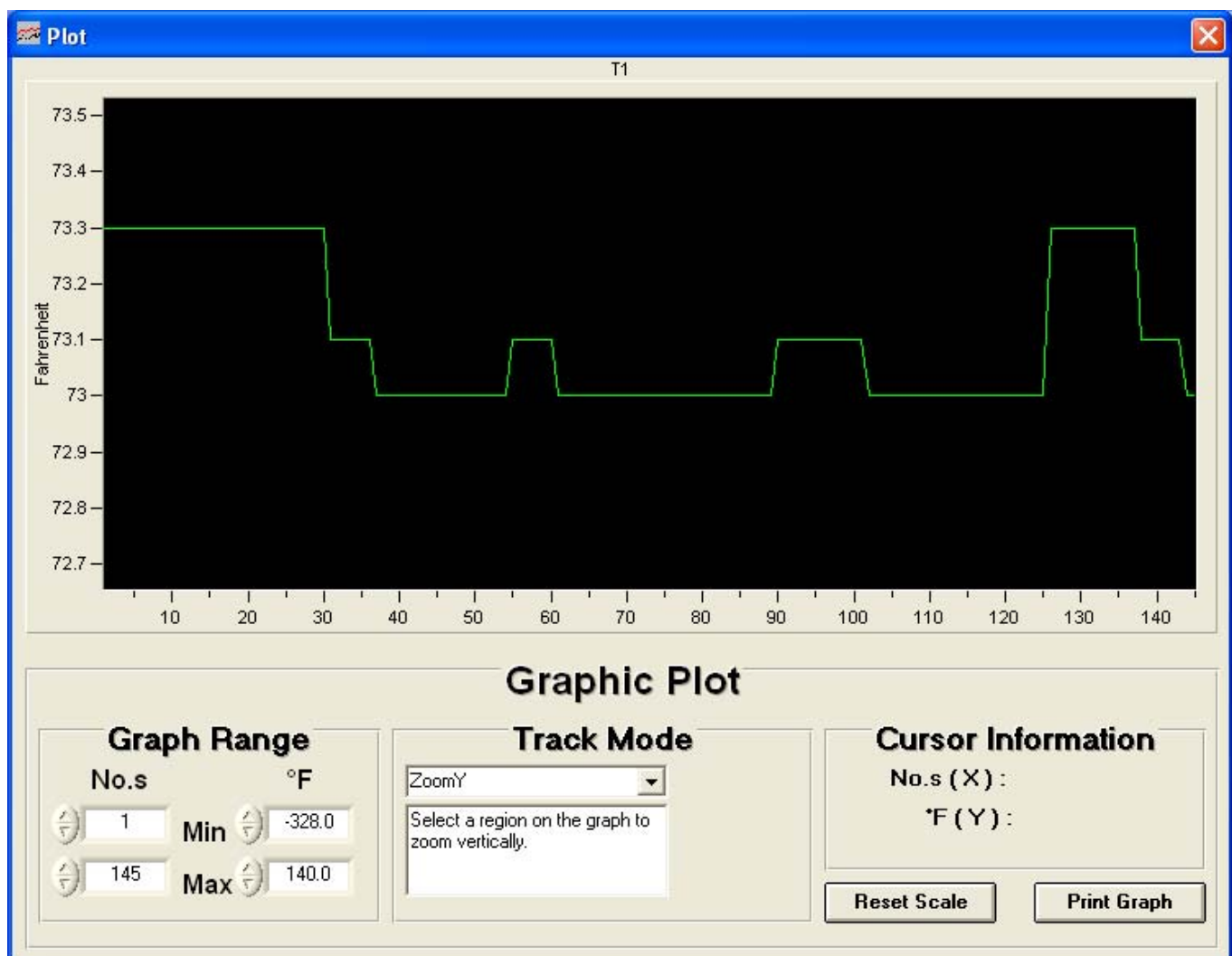


## Apply for Graph

Open a saved data file in the software program and then select a channel to confirm.




°F	Date Time	T1 - K	T2 - K	T3 - K	T4 - K
1	2010/03/19 11:09:41	73.3	72.9	73.3	72.9
2	2010/03/19 11:09:42	73.3	72.9	73.3	72.9
3	2010/03/19 11:09:43	73.3	73.0	73.3	72.9
4	2010/03/19 11:09:44	73.3	73.0	73.1	72.9
5	2010/03/19 11:09:45	73.3	73.0	73.1	72.9
6	2010/03/19 11:09:46	73.3	73.0	73.1	73.0
7	2010/03/19 11:09:47	73.3	73.0	73.1	73.0
8	2010/03/19 11:09:48	73.3	73.0	73.1	73.0
9	2010/03/19 11:09:49	73.3	73.0	73.1	73.0
10	2010/03/19 11:09:50	73.3	73.0	73.3	73.0

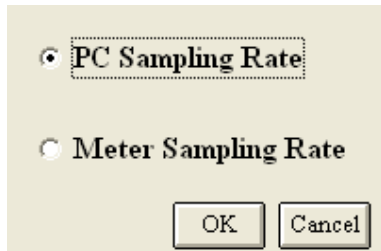


## Sampling Time

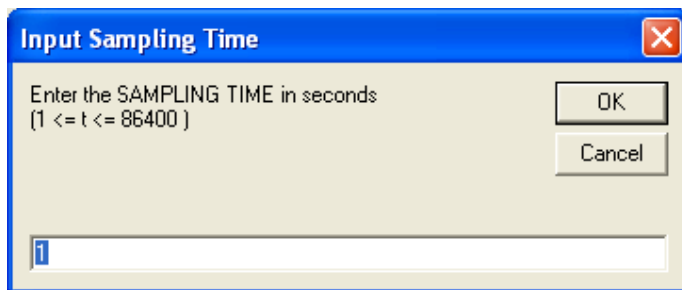
### PC Sampling Rate:

(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.

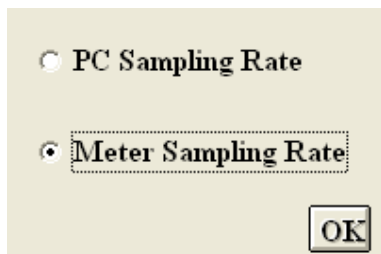


In the **Input Sampling Time** dialog box, input a sampling time and then click "OK" button to confirm.

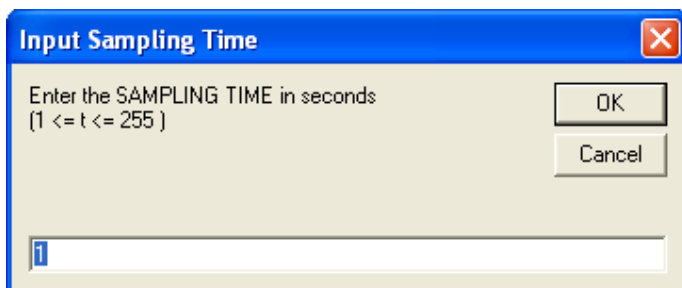
### Meter Sampling Rate:

(rate at which meter stores readings)

Click  on the **Menu Bar**.




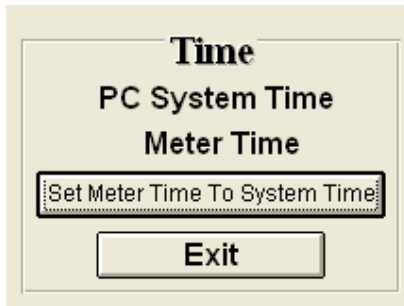
Choose "PC Sampling Rate" and then click "OK" button.



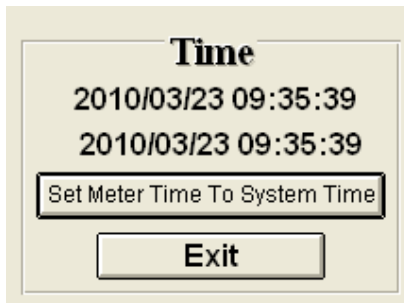
Input a sampling time and then click "OK" button to confirm.


## ■ RTC ( Real Time Clock)

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




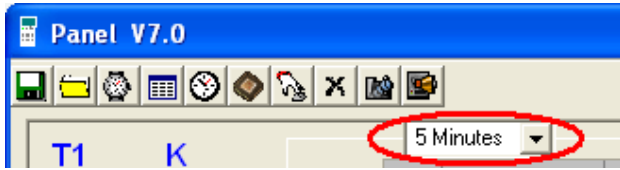
Click **PC System Time** to show PC System Time or **Meter Time** to show Meter Time.



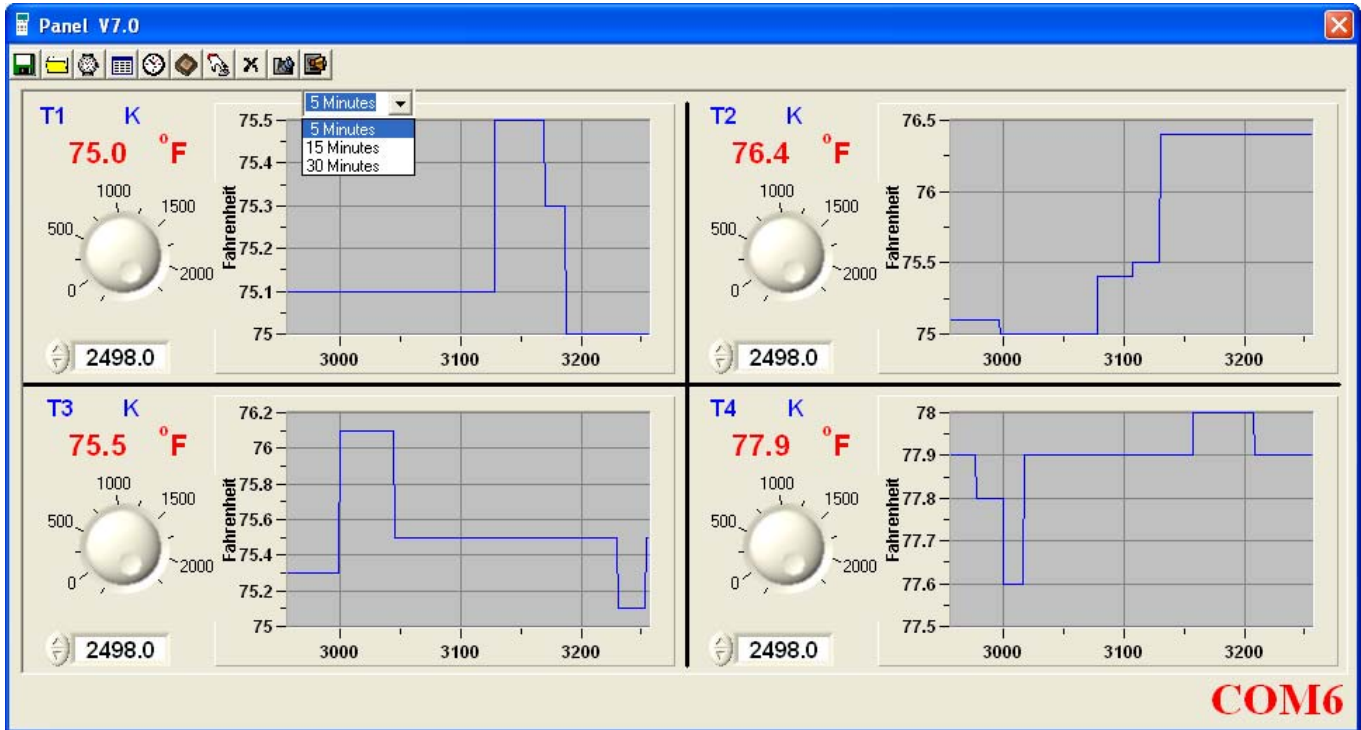
Click  to set the meter time to PC system time.

## ■ Auto Power Off


Click  on the **Menu Bar**. The window shown below will appear.

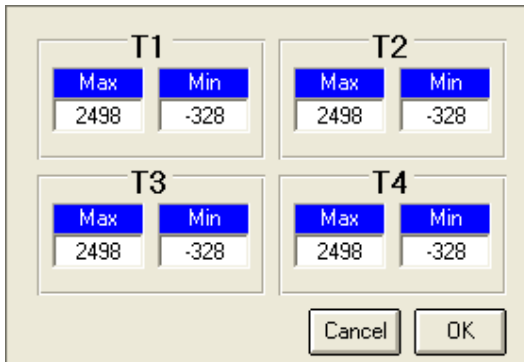



Select an expected power-off Time to confirm.



## ■ Alarm Range

Click  on the **Menu Bar**. The window shown below will appear.



Change the alarm range and then press  to confirm.

