PICOTEST®

PT-TOOL & LINK Operation Instructions

Version: 1.00

Contents

Introduction

Picotest M35 Series' software includes the PT-TOOL & the PT-LINK. The software is easy to control through either USB (USBTMC) or GPIB (IEEE-488.2) interface.

The PT-TOOL simulates the front panel operation of the DMM, such as DCV, ACV, DCI, ACI, 2Ω, 4Ω, Freq, Period, Cont, Diod, RTD, Thermocouple. In addition to these functions, the PT-TOOL provides the 10/20-Channel scanner card applications, the SCPI commands control, and the data transformation service to Microsoft excel format. However, it doesn't provide the math statistic fuctions.

The PT-LINK includes the Excel Add-In and the Word Add-In and is workable only under the condition when Microsoft Excel and Word are installed.

The Excel Add-In provides real-time data records with time, values, chart and diagram of curves. You also can set functions like PT-TOOL except the function of the scanner card measurement.

The Word Add-In also provides real-time measurement. However, it only can get one single value from each function. To get move values, you need to press the button more times.

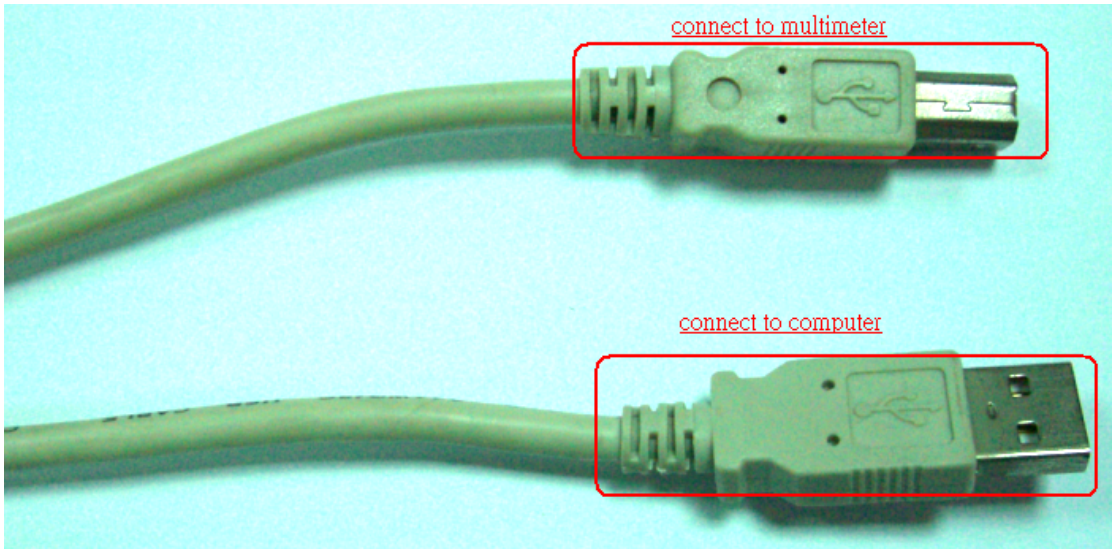
Followings are the requirements and the device connection information you should know. Afterwards, the detailed descriptions and the illustration of the PT-TOOL and PT-LINK will be presented immediately.

I. Requirements:

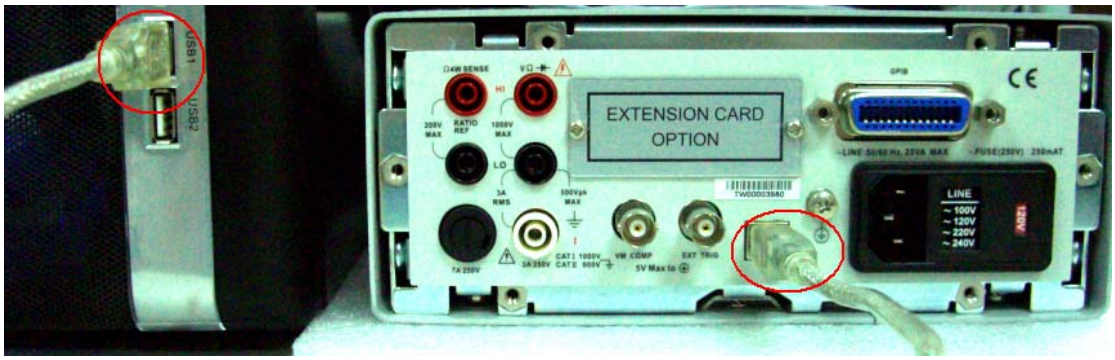
Picotest M35XXA conforms to the USBTMC protocol. So you have to download and install the NI-VISA Run Time Driver from NI websie www.ni.com .
If your Windows Operation System's version (OS) is XP/2000, please download the version at least NI-VISA 3.6. If your OS version is Vista or Win7, download the NI-VISA version 4.6 (Recommended).

In addition, to use the PT-TOOL, the available connections between DMM and PC are through USB and GPIB only. The RS-232 solution is not supported. For the RS-232 application, you can use Windows Hyper Terminal and NI software.

II. How to connect M3500A and your PC (USB Solution as The Example)
Please use the specific USB cable (Figure-1) to connect M3500A and your PC (Figure-2).



〔Figure-1〕USB Cable



〔Figure-2〕Use the USB cable to connect your M3500A and PC.

Part I. PT-TOOL

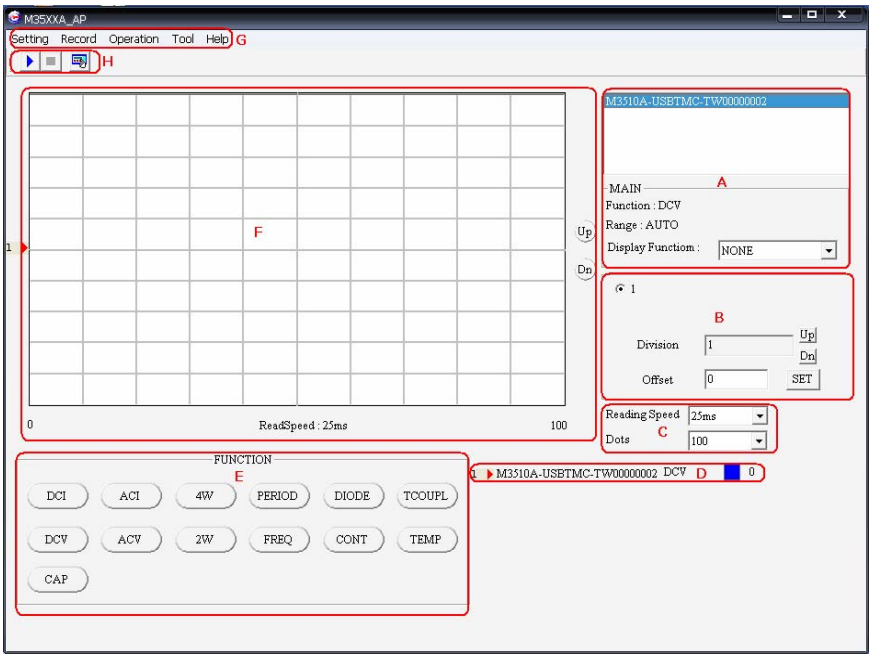
1. Execute the PT-TOOL

To use the software, you have to execute the icon M35XX PT-Tool on the PC's desktop. If you don't have that software, install it from the attached CD.

〔Figure-3〕M35XX PT-Tool Icon

2. How to use the PT-TOOL

The following parts from A ~ H form the PT-Tool Graphic User's Interface (GUI at Figure-4).



〔Figure-4〕PT-Tool's GUI

A. It's the location of showing the connectible device and recent function and range. For M3510A/M3511A, you can also enable the 2ND Function by setting the Display Function. Please note that the Display Function will be closed when you use M3500A.

B. It's the location of setting the Division (Graphic Resolution) & the Offset (Visible Area Adjustment) which will act on the location F.

C. It's the location of setting the Reading Speed (ms) and Dots (Sampling) which will act on the location F as well.

D. It's the location of showing the recent controlled device information, line color and reading.

E. It's the location of setting the function.

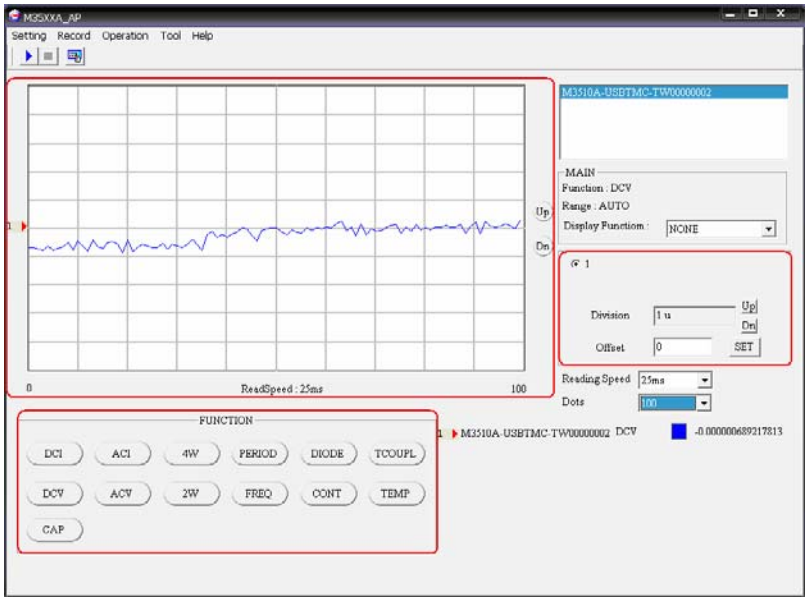
F. It's the location of showing the receiving value in dynamic linear pattern。

G. It's the location of the toolbar.

H. means "Start drawing and painting", means "Stop drawing and painting", means "Setting Device"。

2.1 Single Display

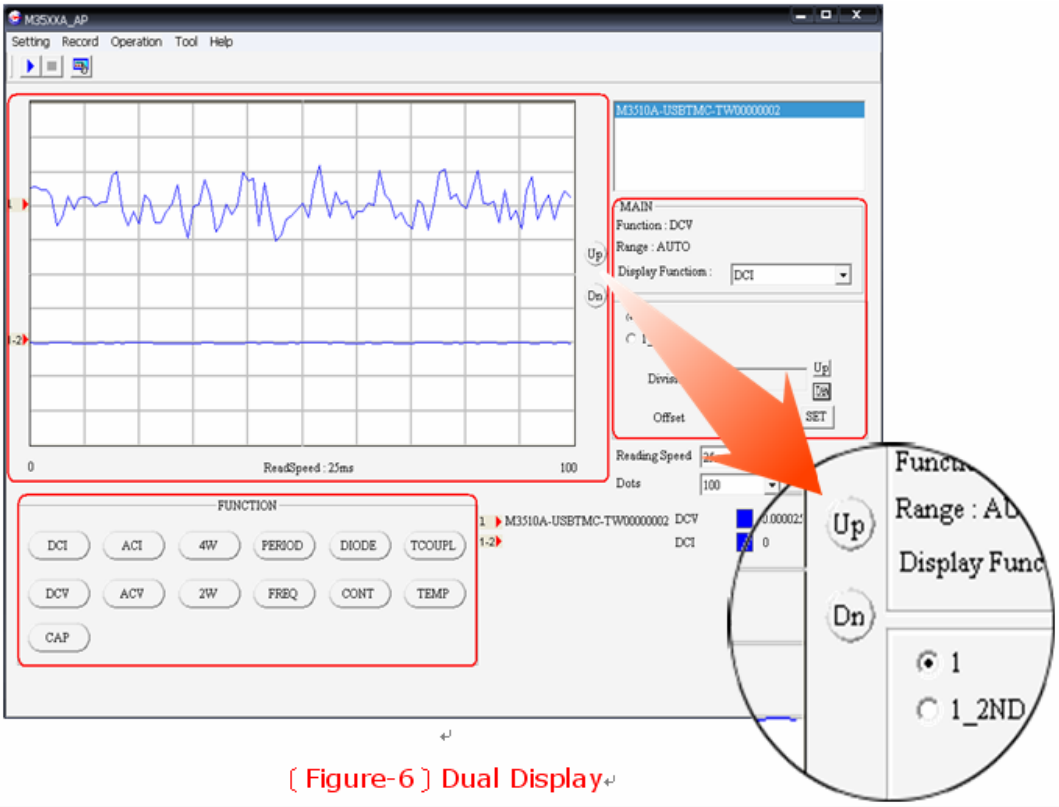
To create a perfect visible position (Figure-5), you have to select the main function first and adjust the resolution & Offset. Then execute measurement pressing , and move the curve pisition through the Up/Dn buttons of the display.



〔Figure-5〕Single Display

2.2 Dual Display (For M3510A/M35110A only)

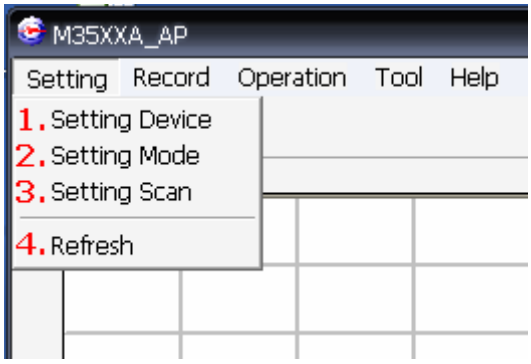
To use the 2ND function, such as DCV & DCI, you have to select DCV first at the Function area. Then enable the Display Function by selecting DCI. To create a perfect visible position (Figure-6) with 2ND measurement, such as DCV & DCI, you have to select the main function first, and enable the Display Function with DCI. Then adjust the resolution & Offset. After that, execute measurement pressing ▶, and move the curve pisition through the Up/Dn buttons of the display and 1/1_2ND.



〔Figure-6〕Dual Display

3. Setting

The Toolbar Item "Setting" (Figure-7) includes Setting Device, Setting Mode, Setting Scan and Refresh (Re-search Device).

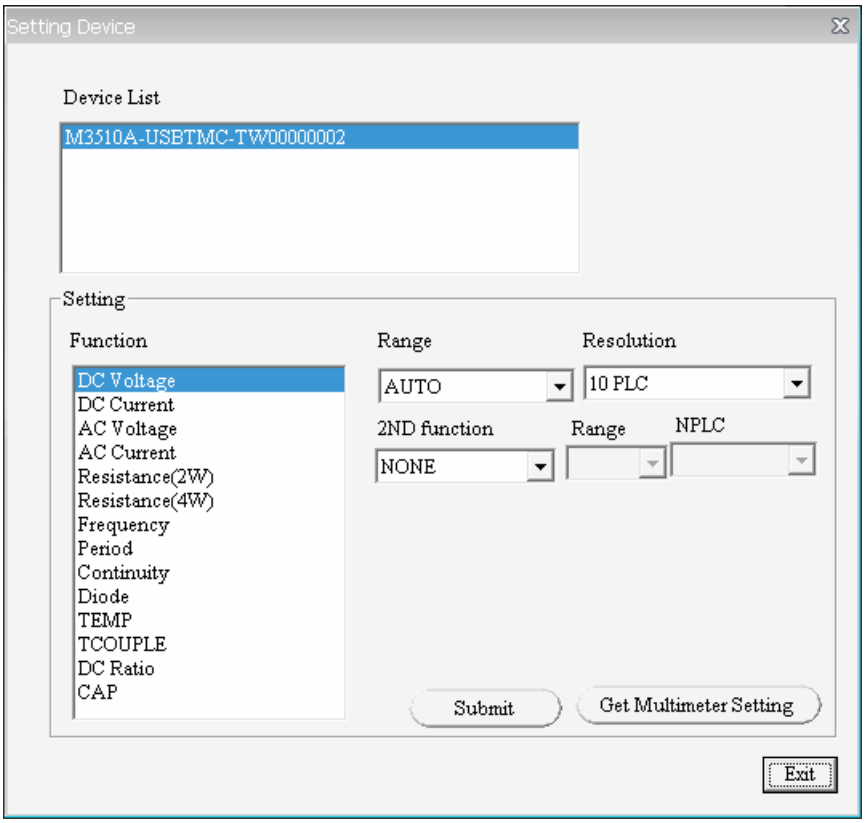


〔Figure-7〕Setting

3.1 Setting Device

When the setting device is selected, the Figure-8 will pop up. Some available Devices will be presented on the Device List. You can select the desired device, and set its Function, Range, Resolution, 2ND Function (For M3510A/M3511A only), Range and NPLC (relates to Digits & Speed) individually.

When every setting is confirmed, press Submit to execute DMM measurement. You can also press Getting Multimeter Setting to gain (copy) the local settings, which is through the front panel operation.

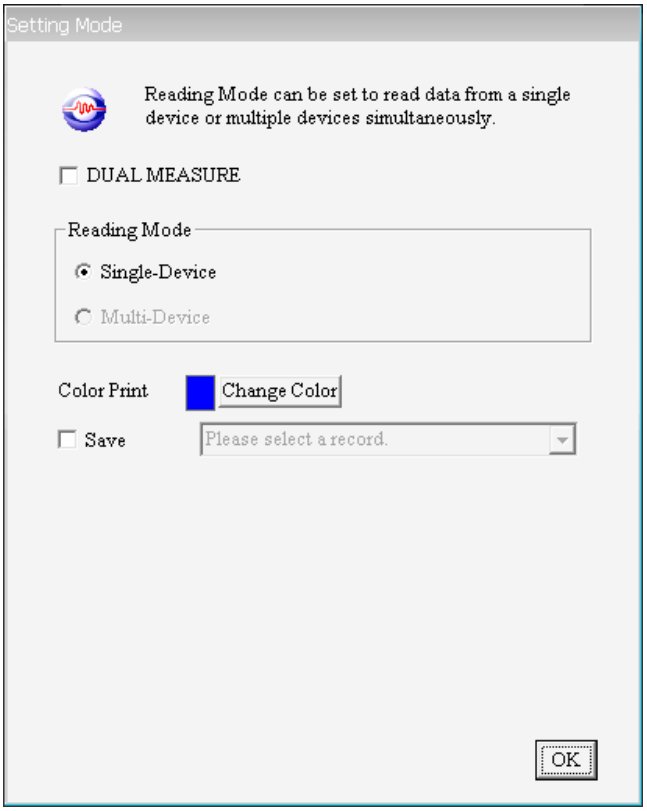


〔Figure-8〕Setting Device

3.2 Setting Mode

When the setting mode is selected, the Figure-9 will pop up. The setting mode allows you to change the line color including the other line color when enabling the Dual Measure. For the reading mode (Single- or Multi-Device), it depends on your application. Selecting the Multi-Device, you can control multiple units simultaneously (Max. 4 DMMs).

In setting mode you can also tick (enable) the Save function and select the file name from record 1 ~ 10 to save data. Then click OK to finish and exit the screen. Values will be written in the file you selected when measurement is executed by pressing button on the main screen.

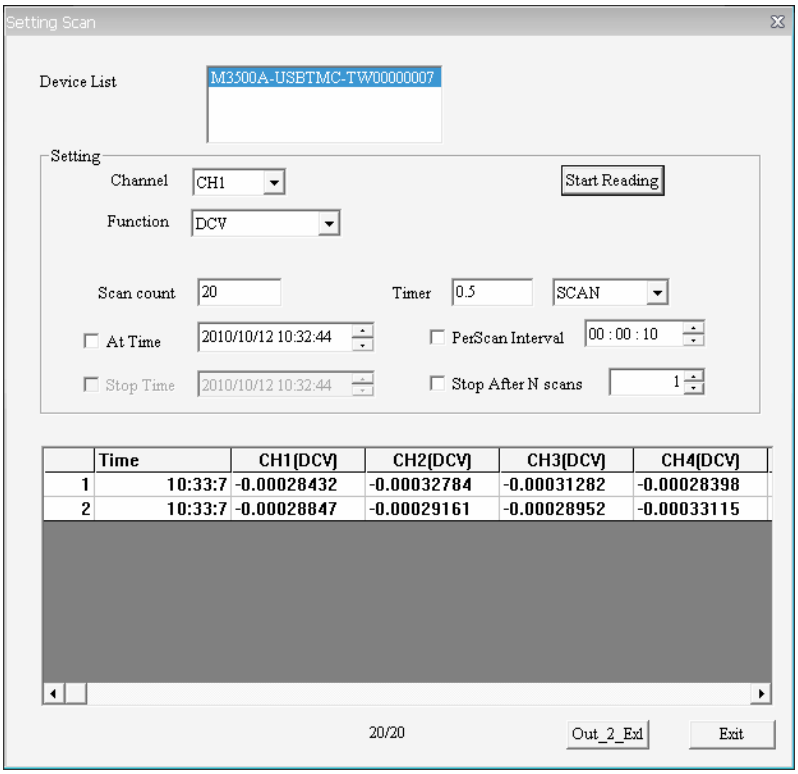


〔Figure-9〕Setting Mode

3.3 Setting Scan

When the setting device is selected, the Figure-10 will pop up. Please note that this function is workable only when the optional scanner card, M3500-opt01 (10-Channel) or M3500-opt09 (20-Channel), is inserted in the M3500A. The following table is about the scanner card functions and descriptions.

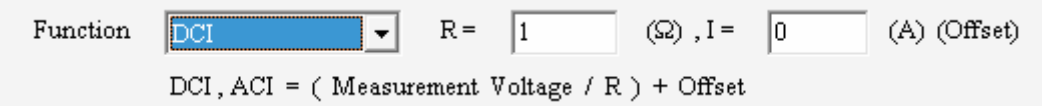
When the settings are ready, press “Start Reading” to execute measurement through the scanner card.



〔Figure-10〕Setting Scan

Scanner Card Function	Description
Device List	Select the DMM you want to control.
Channel	Select CH1 ~ CH10 to enable/disable function scanning.
Function	Select your desired function, such as DCV, ACV, DCI, ACI, Freq, 2W & 4W. Or you can select None to disable the channel.
Scan Count via a Buffer	Set the Scan Count (Max. 2000). This setting allows scanning by inputting a number (1 ~ 2000).
System Interval Time (Timer)	Set the interval time between Step (each) readings
Software Interval Time (PerScan Interval)	Set the interval time between Scan (Group) readings.
Start Time	Set the start working time.
Stop Time	Set the end working time.
Real Time Scan Count (Stop after N Scans)	Set the full scanning times. This setting allows to scan a group of channels by times. It depends on opt01/opt09 you use.
Start Reading	Execute scanner card measurement after setting.
Out_2_Exl	Transform the recent value into Microsoft Excel format.
Exit	Exit the scanner card measurement.

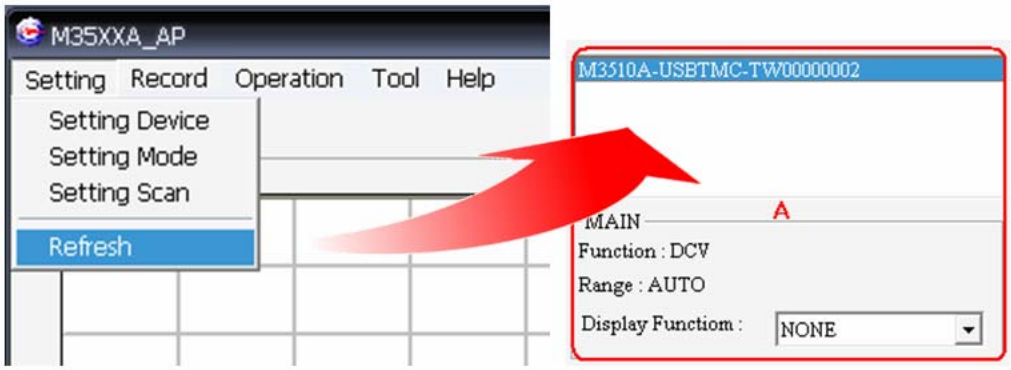
Please note that when you want to use DCI/ACI measurement through the scanner card, you have to keep in mind three things. 1. The current shunt you bought from other reseller had been built/soldered on the scanner card according to the user guide's instructions. 2. To get accurate measured values, correctly fill the current shunt's information in the following blanks. 3. The input source must conform to the conditons of the user's guide.



In addition, the measured values won't be saved in the record. You have to use the Out_2_Exl function to transform the data into Microsoft Excel format.

3.4 Refresh

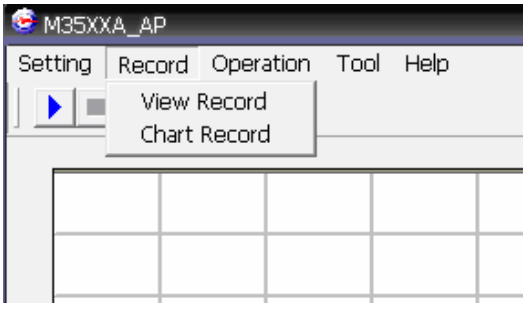
When the Refresh is selected (Figure-11), your PC will re-search the connectible DMM(s). The re-detected DMM's information will be shown on the location A.



〔Figure-11〕Refresh

4. Record

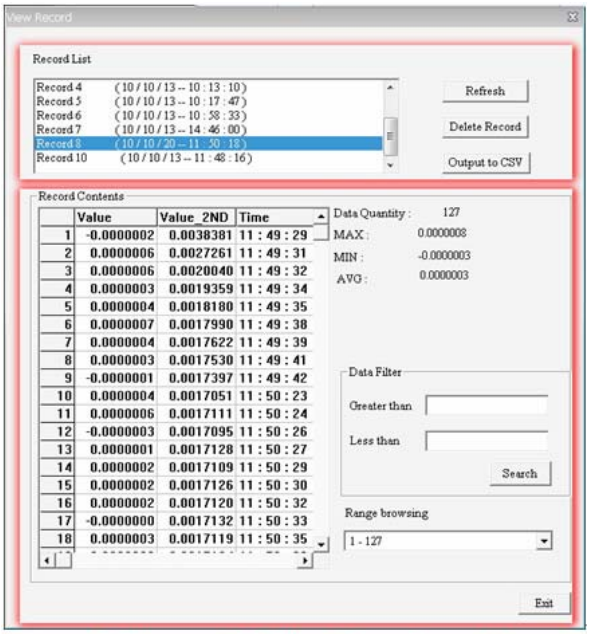
The Record includes View Record and Chart Record (Figure-12).



〔Figure-12〕Record

4.1 View record

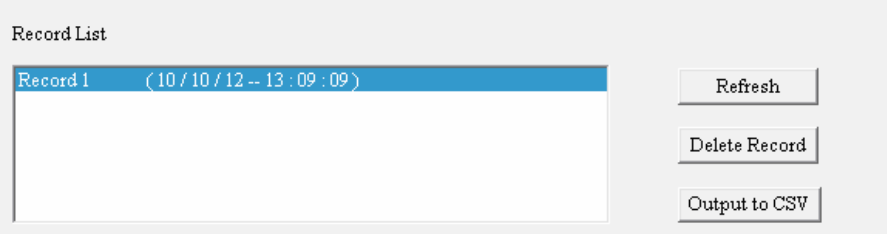
When the View Record is selected, the Figure-13 will pop up. This screen can be divided into 2 parts. 1. About Record List. 2. About Record Contents.



〔Figure-13〕The View Record

4.1.1 About Record List (Max. 6 Records)

Data saving must be through the section **3.2 Setting Mode**. If there is no data record in the Record List, enable the save function through the setting mode, select the file number (1 ~ 10) you want to save, and execute measurement. If data saving is successful, it will show on the Record List (Figure-14). The following table is about the saved data information.

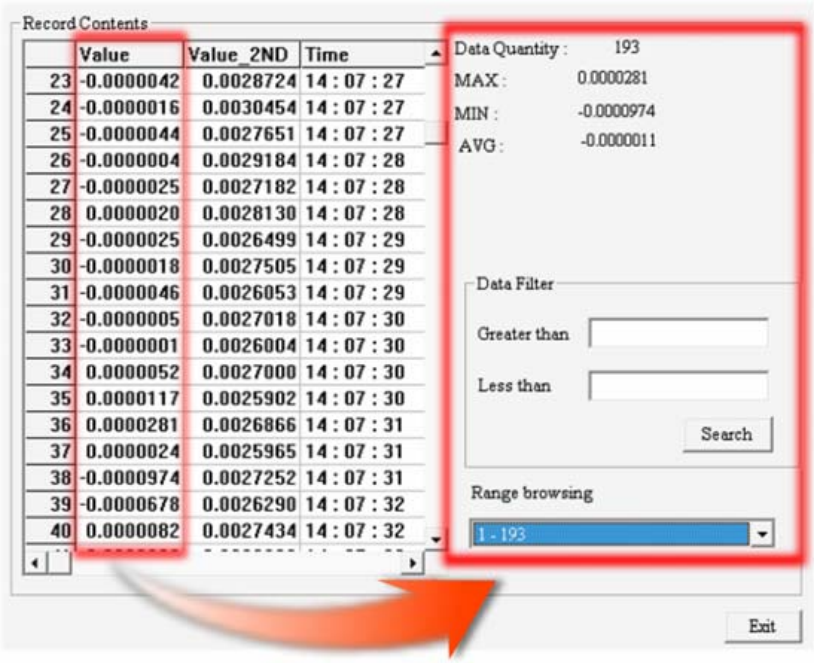


〔Figure-14〕Record List

Record Info. 1	Description
Record 1 ~ 10	It's the location of your saved data.
Refresh	Display the currect saved data existing in the system.
Delete Record	Delete the saved record you don't want.
CSV Output	Transform the saved data into CSV format (Microsoft Excel).

4.1.2 About Record Contents

When one of records is selected, the data information will display in the Record Contents (Figure-15). The following table is about the saved data information. Please note that the data quantity, MAX/MIN/AVG, Data Filter, Search and Range Browsing are relatve to the "Value" at the left rank.



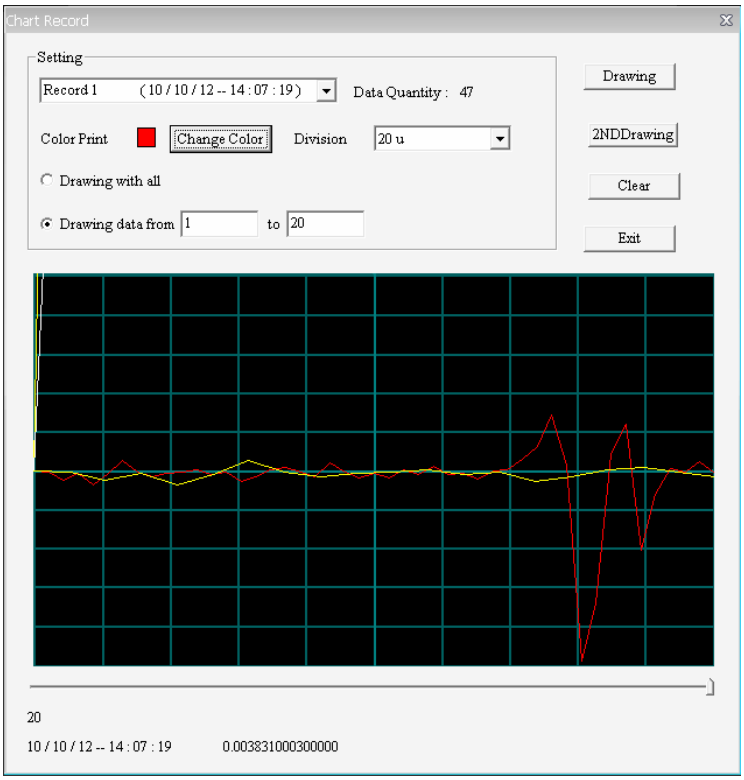
〔Figure-15〕Record Contents

Record Info. 2	Description
Record Contents	This part includes Main Value, Secondary Value (For M3510A / M3511A only) and Time Information
Data Quantity	Display sampling counts of the saved record.
MAX/MIN/AVG	Disaply a maximum, a minimum, and a total average value.
Data Filter	Set upper and lower borderlines to sort out values you want.
Search	Execute the data filter function.
Range Browsing	Check section within counts on target data.
Exit	Exit the view record screen.

4.2 Chart Record

When the Chart Record is selected, the Figure-16 will pop up. To drawing charts, you need the saved data. Generally, you can find data in the records (1 ~ 10) by clicking dropdown menu. Select the target record you want to draw and adjust the setting properly. Then click Drawing or 2ND Drawing to start. Please note that the 2ND Drawing is only for the model M3510A/M3511A. If you have one of these models, and want to use the 2ND drawing function, it's beter to use different colors on drawing.

In addition, if you aren't satisfied with the drawing, press Clear to clean up the drawing. The following table is about the Chart Record information.

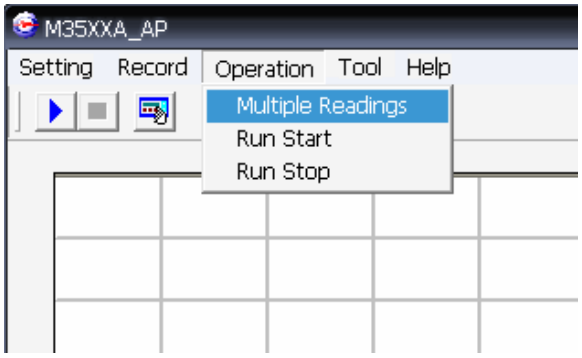


〔Figure-16〕Chart Record

Chart Record	Description
Record 1 ~ 10	It's the location of your saved data.
Data Quantity	Display sampling counts of the saved record.
Color Print	The difined color print will work on the data you select.
Division	It's the resolution of data print.
Drawing with All	It's the full drawing according to sampling counts .
Drawing Data from…	It's the partial drawing according to the desired section within sampling counts.
Drawing	Start drawing on the drawing area.
2ND Drawing	Start 2ND Drawing if the record contains 2ND measured value.
Clear	Clean up the drawing if you aren't satisfied with it.
Exit	Exit the chart record screen.

5. Operation

The Operation includes Multiple Readings, Run Start and Run Stop (Figure-17). Please note that the functions "Run Start" and "Run Stop" are the same as pressing the buttons and , and the functions won't be mentioned in the following sections.

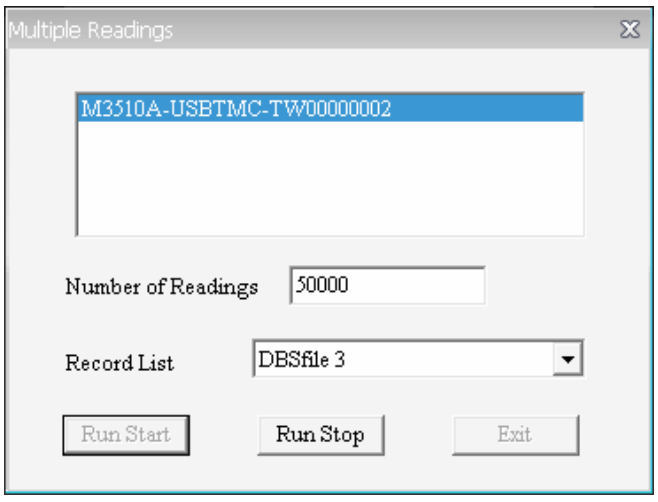


〔Figure-17〕Operation

5.1 Multiple Readings

When the Chart Record is selected, the Figure-18 will pop up. Select a Device you want. Set Reading Counts (1 ~ 50000) and choose an empty file or an used file which you want to cover. Press "Run Start" to begin the measuremen, and "Run Stop" to end the measurement. If you aren't satisfied with the data you saved, detele it through Record > View Record > Select the Record you want > Delete.

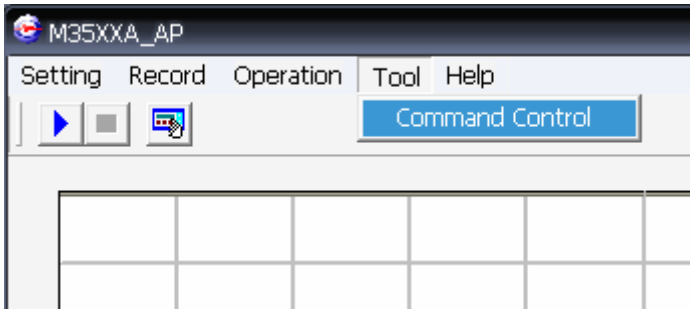
In additon, when executing the multiple readings, the measurement won't bring out any dynamic curve or visible change. It will just statically record data in the file, and remains the same screen. After receiving readings, the Run Stop button will be automatically disabled.



〔Figure-18〕Multiple Readings

6. Tool

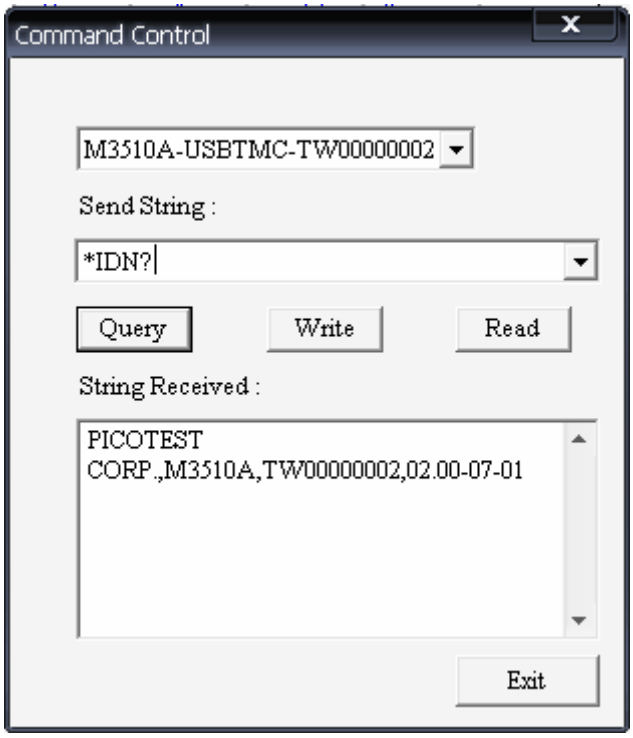
The Command Control is included in the Tool (Figure-19). You can leave commands to control the listed DMM(s). For more command information, refer to the user's manual.



〔Figure-19〕Tool

6.1 Command Control

When the Command Control is selected, the Figure-20 will pop up. You can use commands to query, write and read results from DMM. The following table is about the Command Control information.



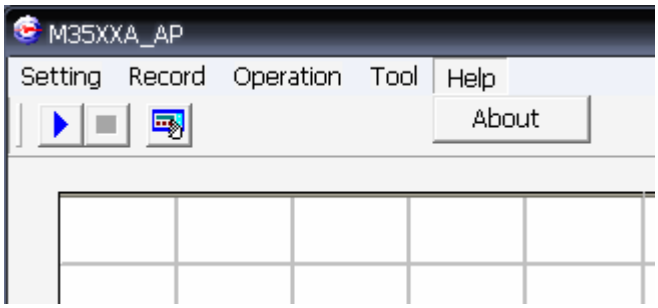
〔Figure-20〕Command Control

Command control	Description
Device	The controlled device will display on the top of the dropdown menu.
Send String	This is the location where you can leave commands.
Query	Press Query. The entered command will be sent to the DMM, and reads a value back. This act includes Write and Read.
Write	The entered command is sent to the DMM.
Read	The entered command gets a value from the DMM.
String Received	Results after pressing Query & Read will be displayed in this part.
Exit	Exit the Command Control screen.

For example, the *IDN? is the command for inquiring manufacturer, model number, serial number and version information. When you press Query, the command will send the inquiry to the DMM, and get the inquiried information from it immediately. It's the same as pressing Write then Read.

7. Help

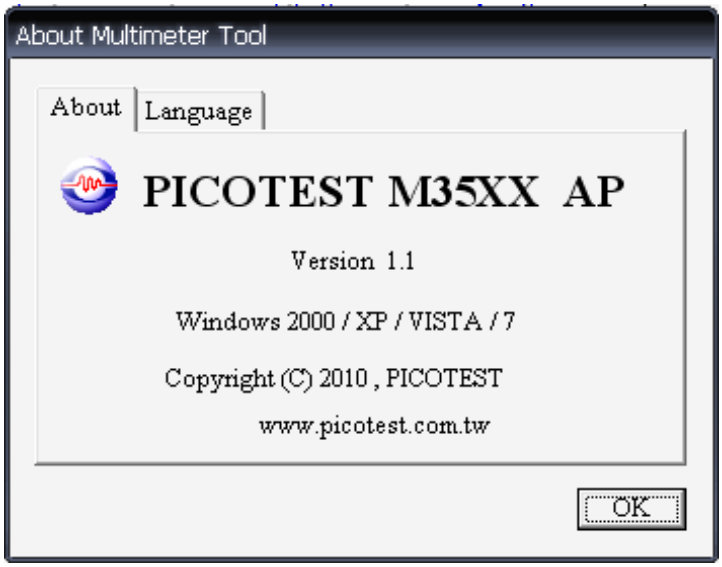
The About is included in the Help (Figure-21). You can get the software version information, and change language at the About.



〔Figure-21〕Help

7.1 About

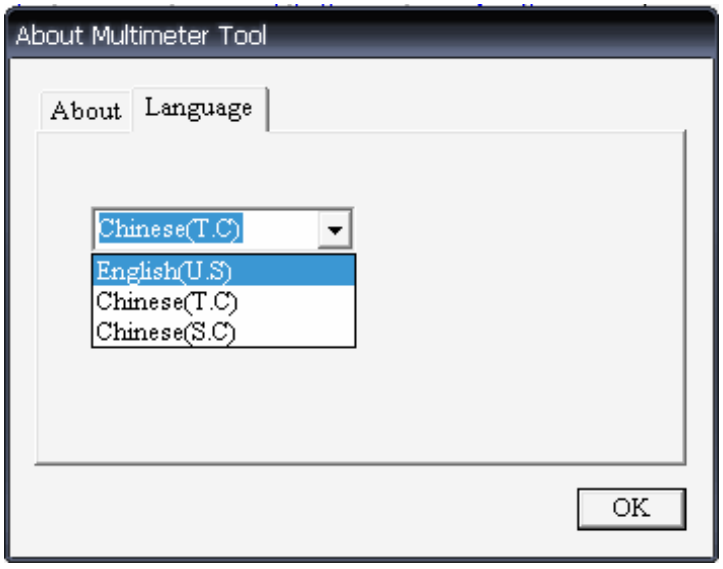
When the About is selected, the Figure-22 will pop up. You can see the sofware version, compatible OS vesion, copyright and website on it.



〔Figure-22〕About

7.2 Language

When the Language is selected, the Figure-23 will pop up. There are some languages you can select, such as English, Chinese (Traditional) and Chinese (Symplified).



〔Figure-23〕Language

Part II. PT-LINK (Excel Add-In)

1. Execute the Excel Add-In

To use the software, you have to execute the icon M35XX Excel Add-In (Figure-24) on the PC's desktop. If you don't have that software, install it from the attached CD or our website http://www.picotest.com.tw/download_dmm_fs.html .

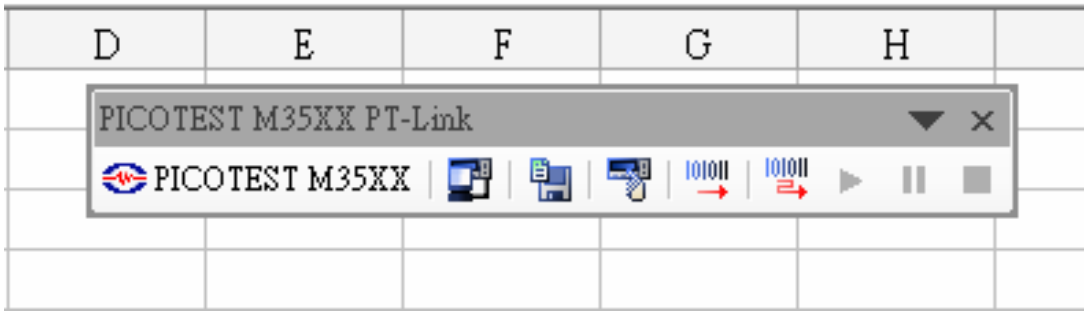
〔Figure-24〕M35XX Excel Add-In Icon

Please note that to execute Excel Add-In, the Microsoft Excel has to be installed first. If it isn't installed, your PC will appear the error message like the figure-25, and the Excel Add-In won't work at all.

〔Figure-25〕Error Message

2. How to use the Excel Add-In

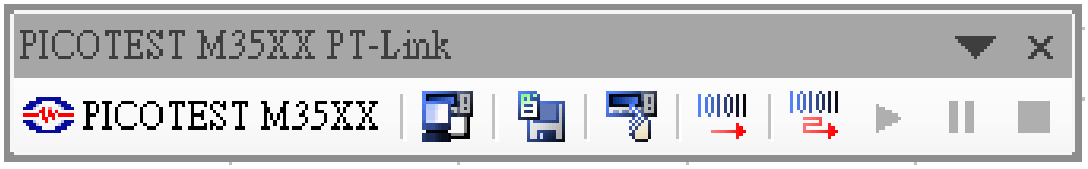
When the Add-In software successfully work with Excel, a toolbar (Figure-26) will pop up.



〔Figure-26〕M35XX PT-Link Excel Add-In

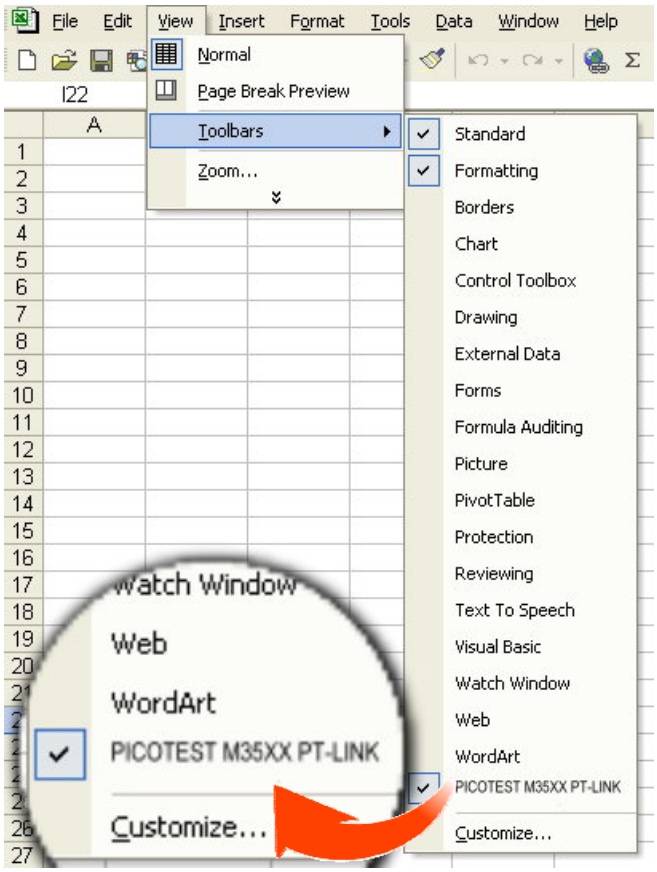
3. Excel Add-In Toolbar

You can use the toolbar (Figure-27) for version check/language selection, device detection, setting saving/loading, function settings, single reading, data logging, run, pause and stop.



〔Figure-27〕Excel Add-In Toolbar

If the toolbar is closed by the failed operation or the erroneous act, please tick the item again through View > Toolbars > PICOTEST M35XX PT-LINK (Figure-28). It will appear on the Excel Sheet.



〔Figure-28〕Reactivate the PT-Link Toolbar

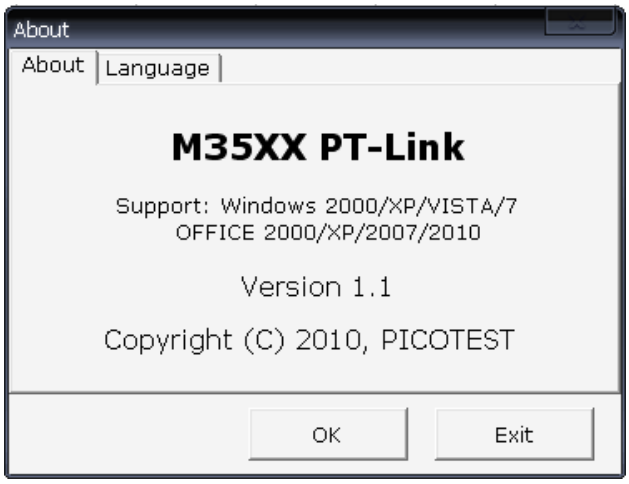
3.1 Picotest M35XX

After pressing the "Picotest M35XX" (Figure-29), the pop-up window will appear and inclues the About (default page) and the Language information.

〔Figure-29〕About & Language

- **About**

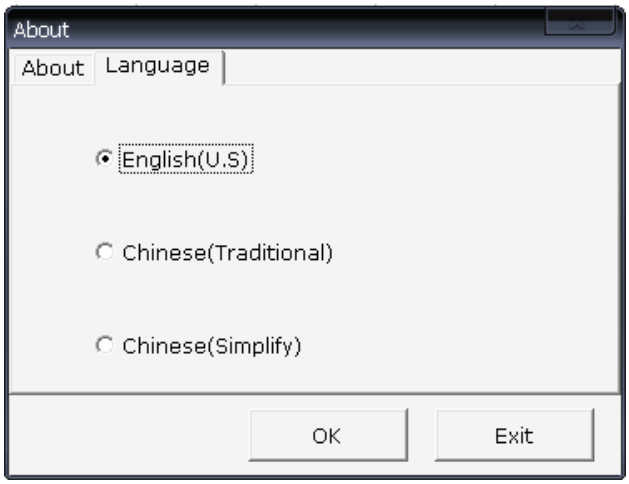
  This page (Figure-30) is regarding showing the compatable operation system (OS) and the software version.



〔Figure-30] About

- **Language**

  Clicking the language (Figure-31), there are English (U.S), Chinese (Traditional) and Chinese (Simplify) for your selection. The default language is English (U.S). After selecting language and clicking OK, the words on the Excel Add-In software will be translated.

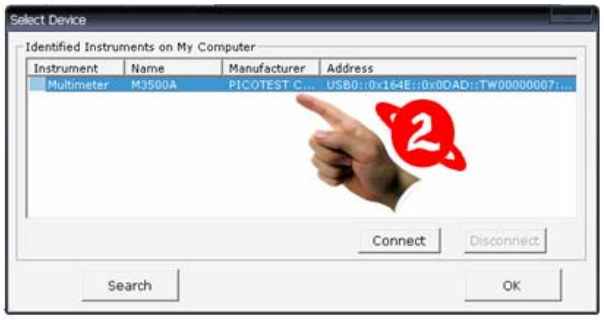


〔Figure-31〕Language

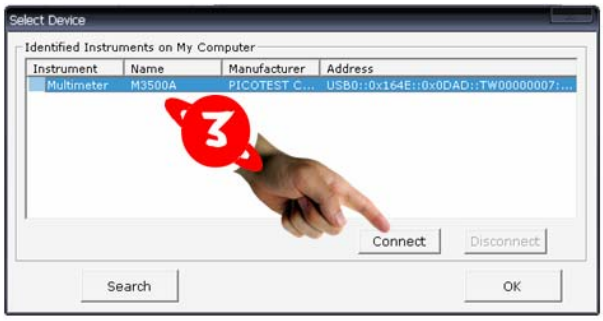
3.2 Device Detection

To detect the connected device, click the selection  on the toolbar. Then obey the following figure's procedures (Figure-32~35).

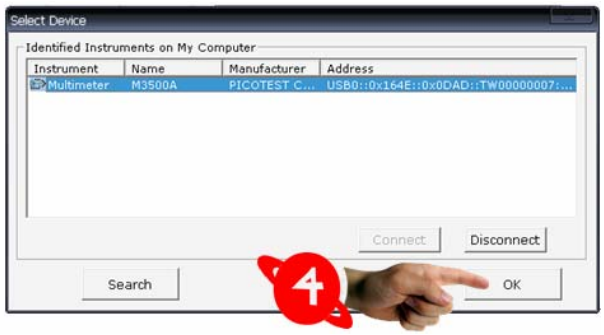
1. [Figure-32〕Click the Serach button.



2. [Figure-33] Select the listed device certainly.



3. [Figure-34] Click the Connect button.



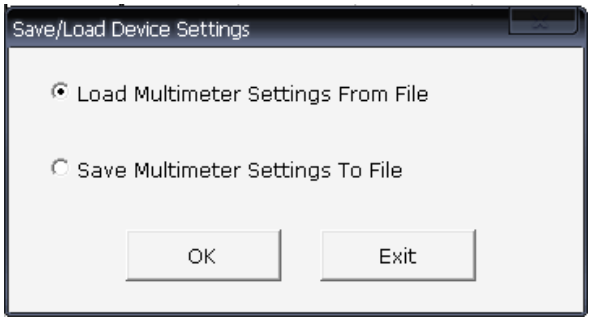
4. [Figure-35] Click the OK button to finish.

Before detecting a device, you might click one of the functions on the toolbar. A pop-up window with a "no instrument connected" message (Figure-36) will appear except the function Picotest M35XX (Figure-29).

[Figure-36] No Instrument Connected

3.3 Save / Load Device Settings

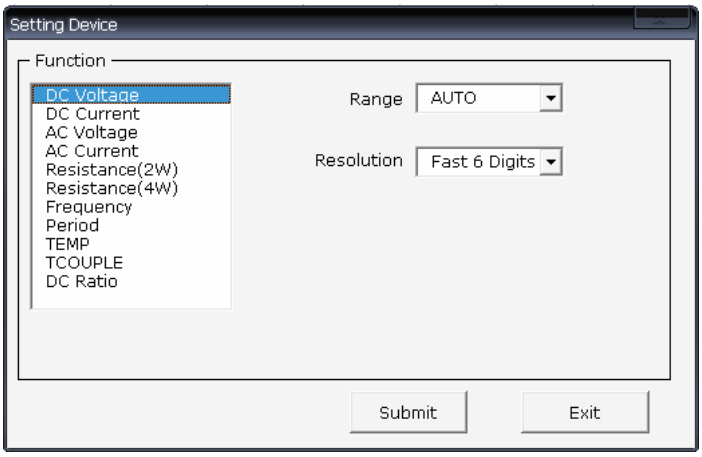
To save/load device settings, click the selection  on the toolbar. For the saving purpose, you can create a file in a specific location on your PC to save settings. For the loading purpose, you can load previous saved setting file in the specific location (Figure-37).



[Figure-37] Save/Load Device Settings

3.4 Function Settings

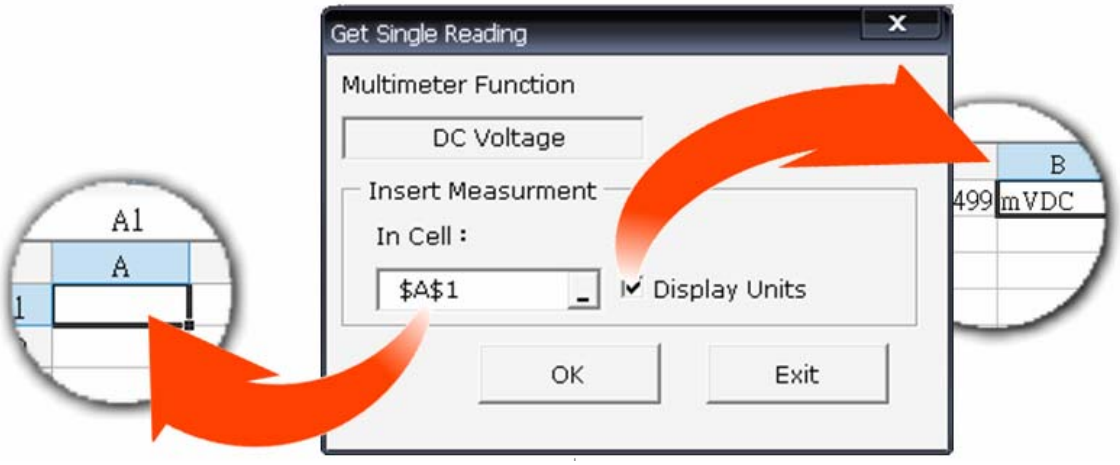
To set functions, range & resolution/filter/apeture/unit (Figure-38), click the selection  on the toolbar. After pressing the "Submit" button, your settings will be applied.



[Figure-38] Function Settings

3.5 Signal Reading

To get a single reading (Figure-39), click the selection  on the toolbar. Before clicking the OK button, you're allowed to select a different location to display a tested value by double clicking the cursor on a Excel cell you want. Then tick the "Display Units" to show value's unit if necessary.



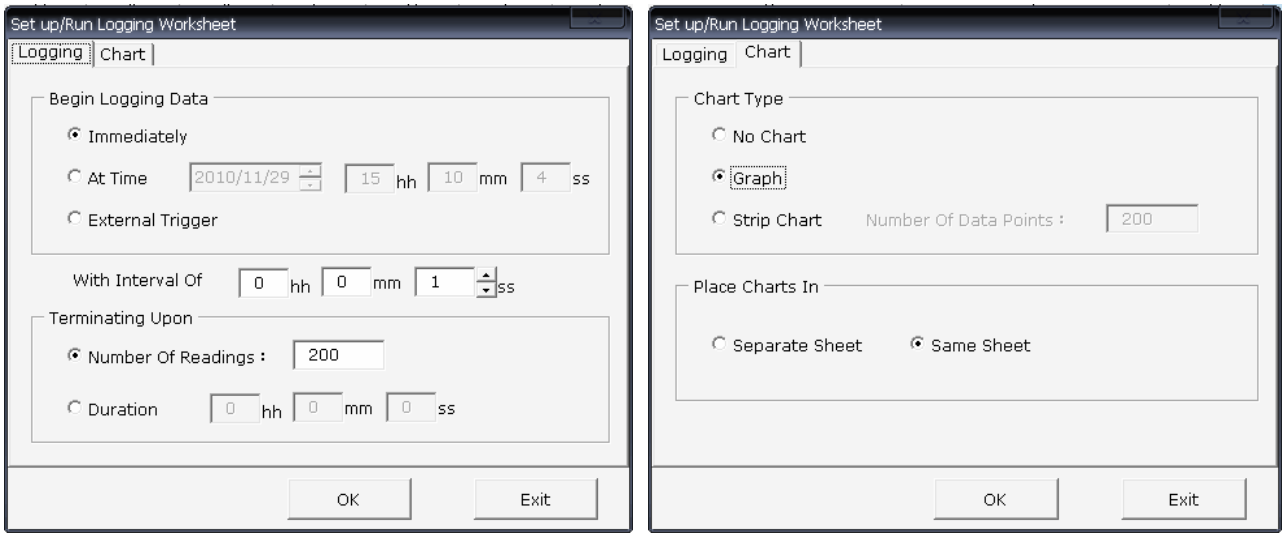
[Figure-39] Single Reading

3.6 Data Logging

To get data logging (Figure-39), click the selection  on the toolbar. The set-up screen for logging timing and chart display request will pop up.

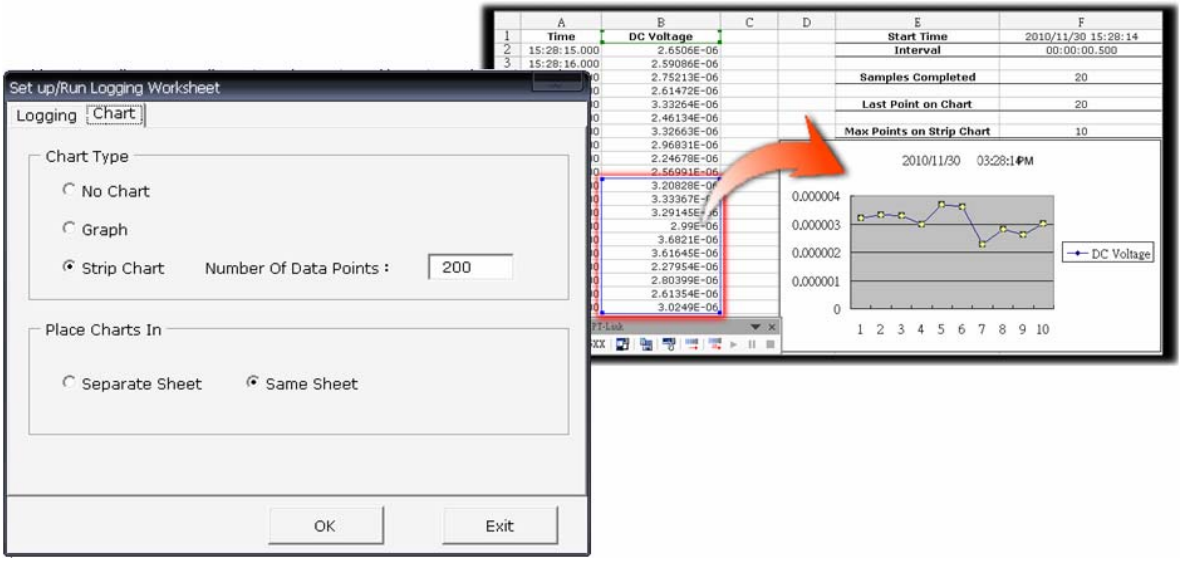
- **Logging & Chart**

To ease customers' applications, we created the data logging function with the start/end timing and the chart display's information (Figure-40).

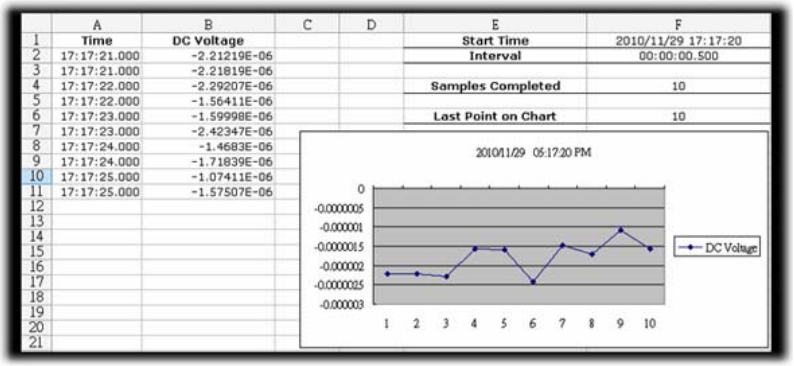


[Figure-40] Logging's & Chart's settings

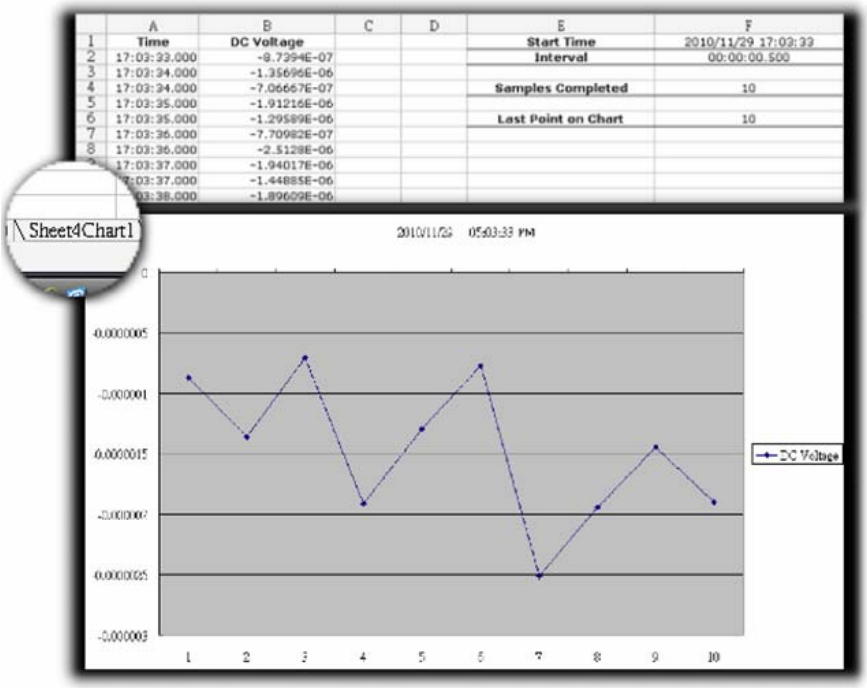
Begin Logging Data	Description
Immediately	Start measuring immediately
At Time	Start measuring at a settled time. (Format: Date/hh/mm/ss)
External Trigger	Start measuring by pressing the LOCAL button on the front panel.
With Internal of	The maximum interval time can be set 23hh/59mm/59ss. The minimum interval time can be set 0.5ss.
Terminating Upon	**Description**
Number of Readings	Input a number of Readings within 1~65535/1~1048575. (according to Excel 2003/2007 or up version)
Duration	The available duration time is within 1ss ~ 23hh/59mm/59ss.
Chart Type	**Description**
No Chart	Selecting this item, the chart information won't appear with measured data on the Excel sheet after pressing OK.
Graph	Selecting this item, the complete chart information will appear with measured data on the Excel sheet after pressing OK.
Strip Chart	Selecting this item and inputting a number, the last number of data points will be charted after pressing OK. Please refer to the Figure-41.
Place Charts In	**Description**
Separate Sheet	The measured values and chart are put on different sheets after pressing OK. Please refer to the Figure-42.
Same Sheet	The measured values and chart are put on the same sheet after pressing OK. Please refer to the Figure-43.



[Figure-41] Strip Chart Setting



[Figure-42] Measured Data on The Same Sheet



[Figure-43] Measured Data on Different Sheets

3.7 Start, Pause & Stop

To start/pause/stop measurements, please press ▶, ⏸, or ■ buttons on the toolbar respectively.

Part III. PT-LINK (Word Add-In)

1. Execute the Word Add-In

To use the software, you have to execute the icon M35XX Word Add-In (Figure-44) on the PC's desktop. If you don't have that software, install it from the attached CD or our website http://www.picotest.com.tw/download_dmm_fs.html .

〔Figure-44〕M35XX Word Add-In Icon

Please note that to execute Word Add-In, the Microsoft Word has to be installed first. If it isn't installed, your PC will appear the error message like the figure-45, and the Word Add-In won't work at all.

〔Figure-45〕Error Message

2. How to use the Word Add-In

When the Add-In software successfully work with Word, a toolbar (Figure-46) will pop up.

〔Figure-46〕Word Add-In Toolbar

For the Word Add-In settings and operation information, you can refer to the section of Part II PT-LINK **(Excel Add-In)** except some functions which the Word Add-In doesn't provide.

※NOTE: Contents are subject to change without notice due to desgn iprovement.