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Power & Harmonics Analyzer

Software User Manual v1.5.4

1. Introduction

1.1 Operation Environment

* Application Program should be installed in the operation system of Microsoft Vista / XP / 2000 (SP3).
* NI-VISA Runtime Engine should be installed (Application Program will install it automatically).
* USB driver program should be installed (refer to chapter 2.2).

1.2 Hardware

* Personal Computer (PC): we recommend the processor of Pentium III Celeron 600MHz or above.
* RAM: min. 256MB, but we recommend 512MB of RAM or more.
* Screen resolution: requires 1,024 x 768 pixels.
* Power & Harmonics Analyzer. (“Analyzer” for short in this manual)
* USB cable.

1.3 Connecting Procedures

Step 1: Turn on PC and Analyzer.

Step 2: Connect RS-232 to USB Cable.

Step 3: Start Analyzer’s Application Program.

Step 4: Select correct “Serial Port Number”.

2. Software Installation

2.1 Install Application Program

Execute setup.exe (which is in installation disc) to enter the procedures of installing Application Program. Please follow the instructions to install Application Program.

Remark:

1. If users have ever installed our Programs (NI-VISA) of other versions in his PC, first please (go to Control Panel to) remove them.

2. After putting the installation disc into CD-ROM drive, the application program will automatically execute the installation.

3. If the installation is not automatically executed, please choose the setup.exe program in the installation disc to perform the installation.

4. After Application Program has been installed, please Restart the system.

2.2Install USB Driver

Choose USB Driver Directory in the installation disc, click CP210x_VCP_Win2K_XP_S2K3.exe program (for Windows Vista / XP / 2000) to execute the installation of USB Driver.

Remark:

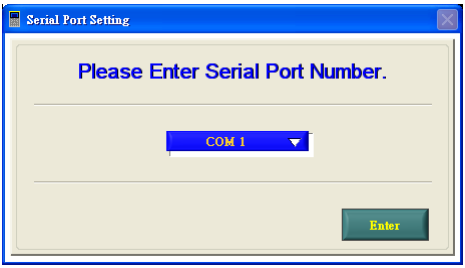
1. If the driver can't detect the hardware, please remove the hardware and then plug it in properly.

3. Software Operation

3.1 Start Executing Program

Click Start -> All Programs, choose “Power & Harmonics Analyzer” or click shortcut to start executing program.

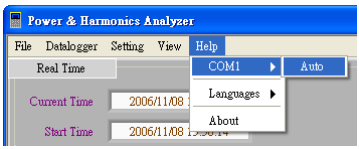
Choose the Serial Port connected to Analyzer.



Remark :

1. Click  to choose the serial port number connected to Analyzer.
2. After choosing the correct serial port number, click  to confirm.

Click Help -> COM1 -> Auto to change the serial port connected to Analyzer.



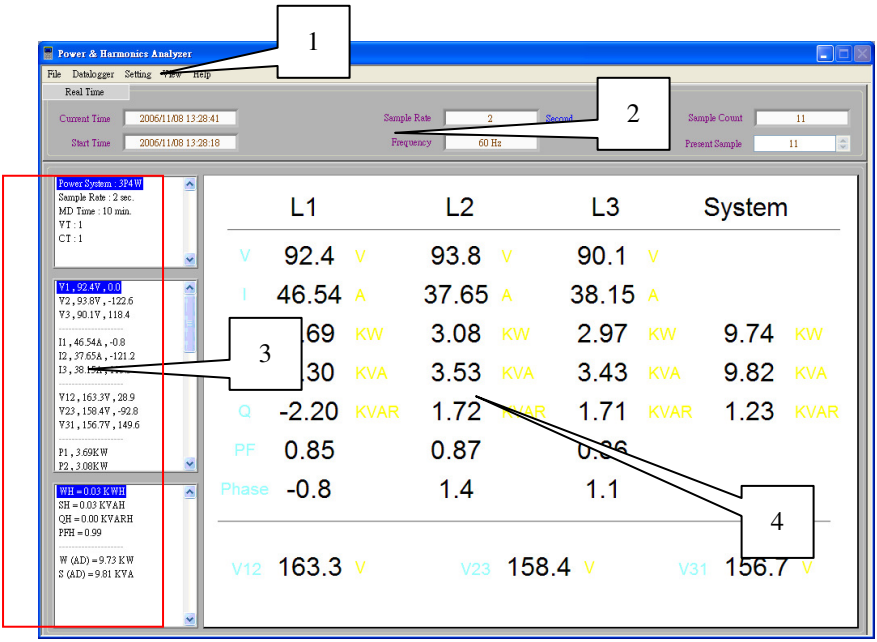
Remark:

1. Before entering Analyzer's Application Program, please turn on PC and Analyzer, and properly connect USB Cable. Then, Application Program will be able to automatically set the correct serial port.

2. This function will be performed only when Application Program can't set the correct serial port (communication error).

3.2 Power Screen

When Analyzer is turned to Power Measurement, the Application Program will automatically get in Power screen.



Power Screen

Remark:

1. Tool bar: including

   File: Open/Save (Ctrl+O / Ctrl+S), Export (file format: CSV), Print (the present screen, Ctrl+P);

Datalogger: Download Data / Clear Memory (Ctrl+D / Ctrl+C), Download Transient;
Setting: VT / CT, MD Time, Sample Rate;
View: changing modes.

2. System message: including Current Time, Start Time (time to start datalogging), Sample Rate (unit: second), Frequency, Sample Count (number of logged samples), Present Sample (the present displayed sample).

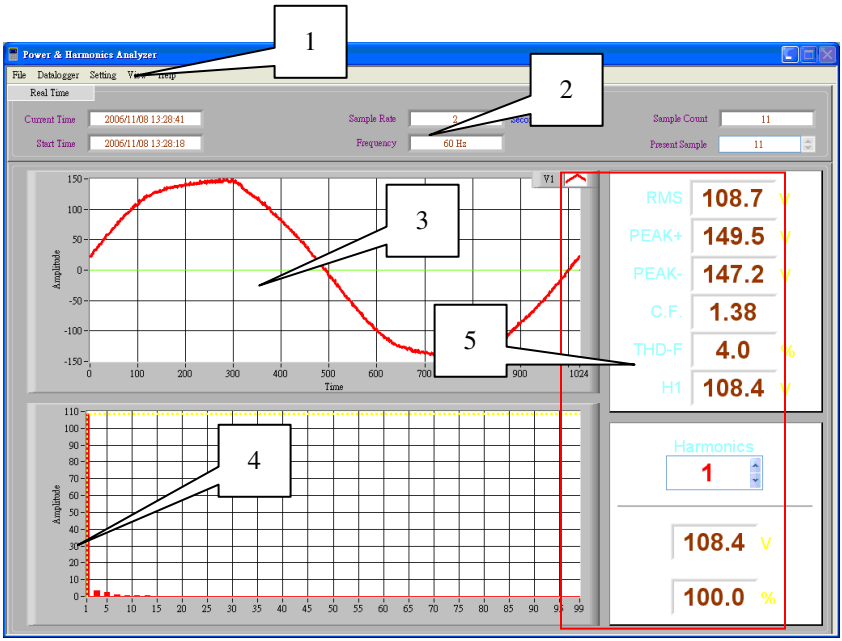
3. Display all the measurement messages. Please move the Scrollbar at the right hand side to display other messages.

4. Display the present measurement data.

Note:
If Analyzer is not turned to Power or Harmonic measurement (screen), it won't be able to connect the Application Program.

3.3 Harmonics Screen

When Analyzer is turned to Harmonics Measurement, the Application Program will automatically get in Harmonics screen.



Harmonics Screen

Remark:

1. Tool bar: including

   File: Open/Save (Ctrl+O / Ctrl+S), Export (file format: CSV), Print (the present screen, Ctrl+P);

Datalogger: Download Data / Clear Memory (Ctrl+D / Ctrl+C), Download Transient;
Setting: VT / CT, MD Time, Sample Rate;
View: changing modes.

2. System message: including Current Time, Start Time (time to start datalogging), Sample Rate (unit: second), Frequency, Sample Count (number of logged samples), Present Sample (the present displayed sample).

3. Display the present measurement waveform.

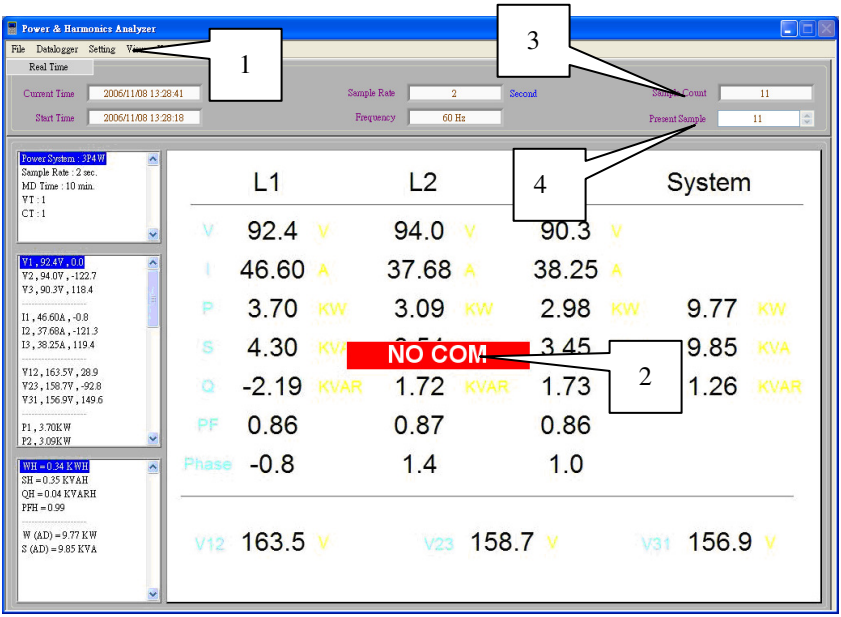
4. Display the present measurement harmonics (each harmonics showed by bar graph).

5. Display the present measurement data.

Note:
If Analyzer is not turned to Power or Harmonic measurement (screen), it won't be able to connect the Application Program.

3.4 Operation Mode / Communication Status

Observe the status of Application Program from screen.



Remark :

1. Display the present operation mode (refer to chapter 3.13).
2. Communication status abnormal (“NO COM” will blink).
3. Sample Count: the number of logged samples.
4. Only under History mode or File mode, the function of Present Sample is available.

3.5Waveform

Select a value to draw its Waveform.

Remark:

1. Sample Count and Present Sample.
2. Value of the sample located at the cursor position.
3. Waveform of the chosen value.
4. Tool of adjusting the curve line.
5. Change scale: double click the scales to type in min. and max. values you want to observe.

Note:

1. Please select a value in the present measurements of Power screen.
2. Click File -> Redraw to automatically re-draw a waveform.
3. Waveform screen can be printed out by clicking File -> Print.

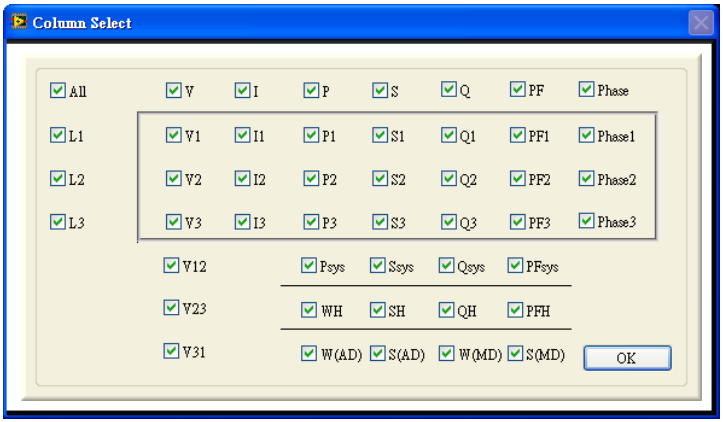
3.6 Open / Save Data

By Open / Save Date to read the logged/downloaded data from PC or to save them in PC. Click File -> Save (Ctrl+S) to save the data of present screen as a .6830 file.

3.7Export Data

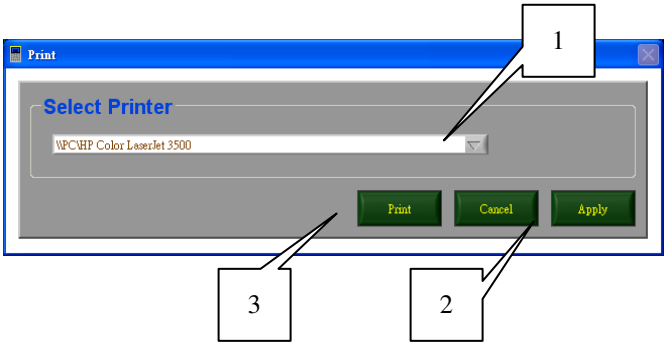
By Export Data to export the logged/downloaded data.
Click File -> Export to export the data of present screen as a .CSV file.

Under Power -> Meter or Power -> Phasor modes, users can select All, columns, rows, or individual data for export.



3.8 Print

Click File -> Print to print out the present screen from a printer.

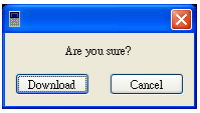


Remark:

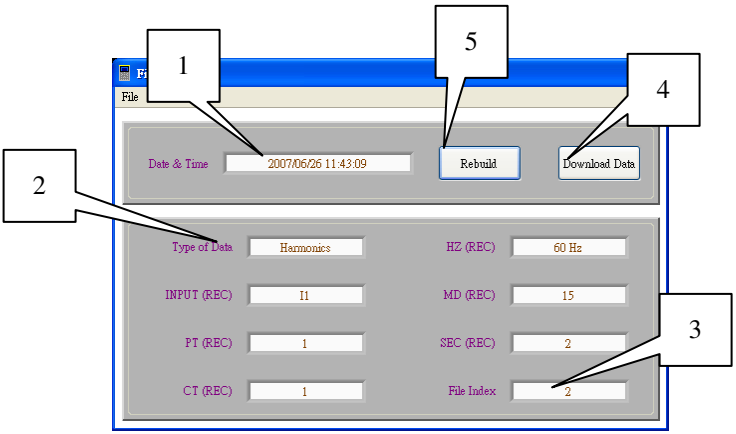
1. Select a printer.
2. Save the present settings as defaults.
3. Perform printing.

3.9 Download Data

Click Datalogger -> Download Data (Ctrl+D), the logged data in Analyzer's memory will be down loaded to PC.



Press Download button to enter File Index.



Remark :

1. Date/Time of the data.
2. Type of the data:
   (1) Harmonics: logged data of harmonics.
   (2) Power: logged data of power.
   (3) Hardcopy: logged data of screen.

3. File Index.
4. Download Data.
5. Rebuild.

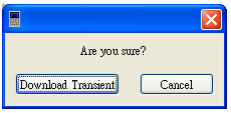
Note:

1. Please use Analyzer's SETUP function to choose the Down Load File. After choosing the files, please exit SETUP screen. (Files can't be downloaded if Analyzer doesn't exit SETUP screen.)
2. Confirm the file is the one you really want to download by checking its Date & Time, Type of Data and File Index.
3. Press 

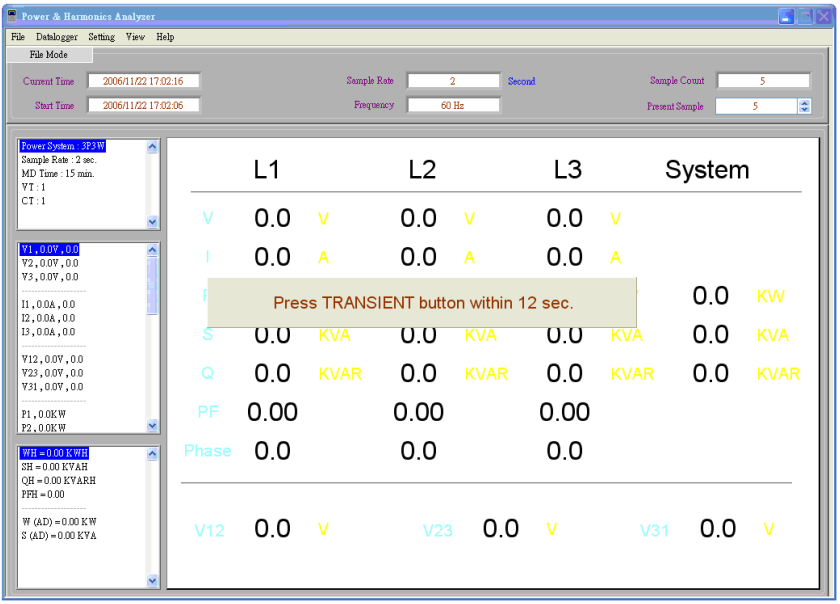
button to start downloading data.
4. When use Analyzer to re-choose a Down Load file, after choosing the files, Application Program should perform Rebuild function to re-read the present File Index.
5. The Down Load Files of application program are displayed in File Index (number) screen.

3.10 Download Transient

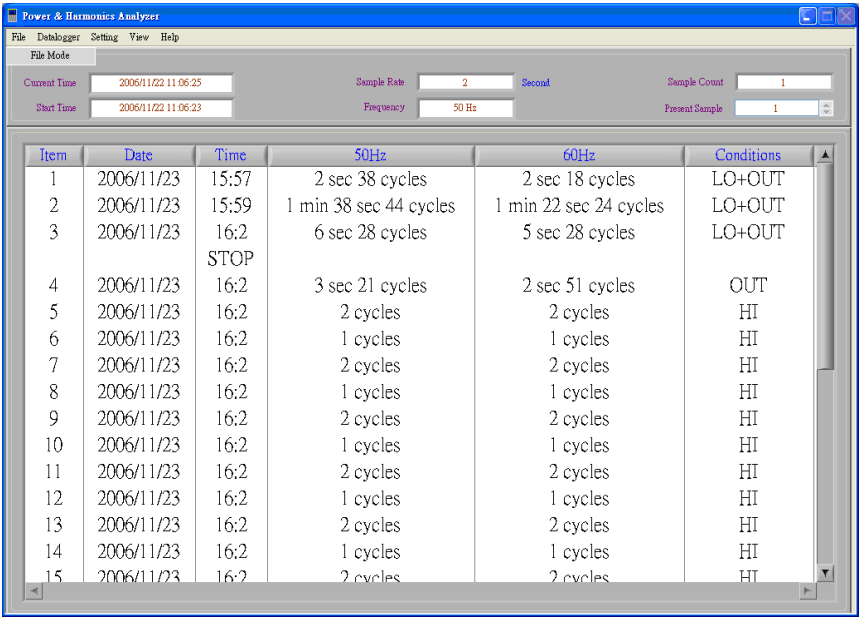
Click Datalogger -> Download Transient to down load Analyzer's transient data to PC.



Press Download Transient in the dialogue to enter the function of Download Transient. And, press the TRANSIENT button of Analyzer within 12 sec. to enter Download Transient screen.



Download Transient Data is finished.



Item	Date	Time	50Hz	60Hz	Conditions
1	2006/11/23	15:57	2 sec 38 cycles	2 sec 18 cycles	LO+OUT
2	2006/11/23	15:59	1 min 38 sec 44 cycles	1 min 22 sec 24 cycles	LO+OUT
3	2006/11/23	16:2	6 sec 28 cycles	5 sec 28 cycles	LO+OUT
		STOP			
4	2006/11/23	16:2	3 sec 21 cycles	2 sec 51 cycles	OUT
5	2006/11/23	16:2	2 cycles	2 cycles	HI
6	2006/11/23	16:2	1 cycles	1 cycles	HI
7	2006/11/23	16:2	2 cycles	2 cycles	HI
8	2006/11/23	16:2	1 cycles	1 cycles	HI
9	2006/11/23	16:2	2 cycles	2 cycles	HI
10	2006/11/23	16:2	1 cycles	1 cycles	HI
11	2006/11/23	16:2	2 cycles	2 cycles	HI
12	2006/11/23	16:2	1 cycles	1 cycles	HI
13	2006/11/23	16:2	2 cycles	2 cycles	HI
14	2006/11/23	16:2	1 cycles	1 cycles	HI
15	2006/11/23	16:2	2 cycles	2 cycles	HI

Remark :

1. Item: serial number of transient data.
2 Date: the date that a transient event happens.
3 Time: the time that a transient event happens.
4 50Hz / 60Hz: the period that a transient status lasts. For example, if 60Hz power system is used, refer to “60Hz” column you will see the periods that transient statuses last.
5 Conditions: transient statuses, Dip (LO), Swell (HI), Outage (OUT).

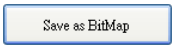
Note:

1 Turn the Analyzer to POWER measurement, then enter PHASE screen. Press TRANSIENT button to enter TRANSIENT data capture screen.

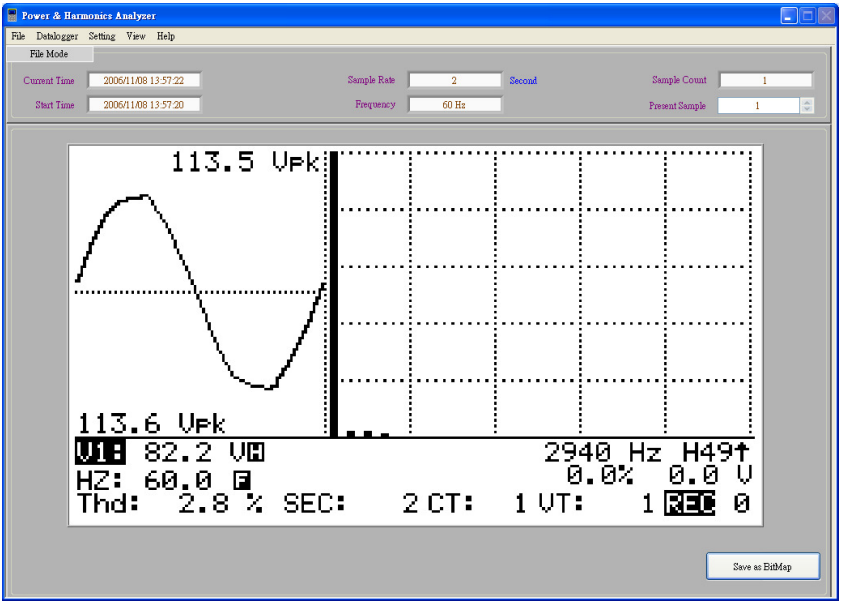
2 The transient statuses can be detected at the same time. For example, “LO+OUT” means Dip (LO) and Outage (OUT) statuses happen simultaneously.

3 When “Time” column shows STOP, it means: transient measurement mode has ever stopped. The time of last data will be used as the starting time to figure out the date/time of transient data afterwards.

3.11 Download Screen Data

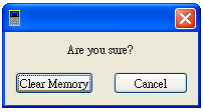
Press 

button to save the downloaded screen data as a bit map.



3.12 Clear Memory

Click Datalogger -> Clear Memory (Ctrl+C) to enter the function of clearing memory. Press Clear Memory in the dialogue to remove Analyzer's logged data.



Note:

1. After clearing memory, Analyzer's data will be removed forever. If necessary, before Clear Memory please down load Analyzer's logged data first and then save them in PC.
2. While Analyzer is performing datalogging, please do not connect it to Application Program. Otherwise, the logged data will be incorrect (i.e. the downloaded data will be incorrect data).

3.13 Setting

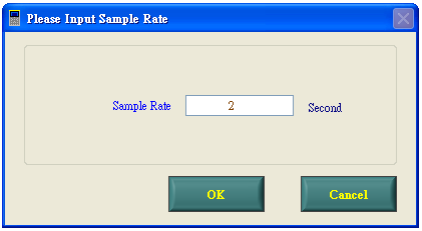
The functions of Setting can replace part of Analyzer's SETUP functions to perform same works.

Functions	Range	Remark
VT	1 ~ 3000	
CT	1 ~ 600	
MD	1 ~ 60 (min)	
Sample Rate	2 ~ 6000 (sec)	Only even numbers can be inputted

Note:

When performing SETUP function, the present logged data will be reset.

Click Setting -> Sample Rate to re-set sample rate (unit: second).



After setting the parameter, press 

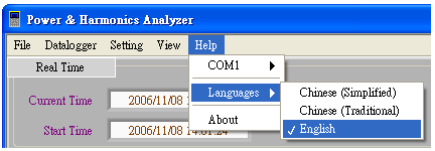
button. Then, the present logged data will be removed. If necessary, please save the logged data before re-setting the sample rate.

Note:

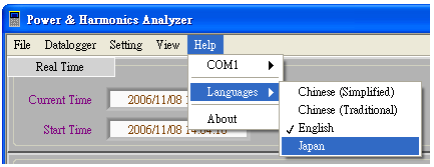
Other Setting functions like VT, CT, MD, please refer to the above explanation.

3.14 Multi-languages

Click Help -> Languages to select the language used in the system screen. The available languages are: Chinese (Traditional), Chinese (Simplified), and English.



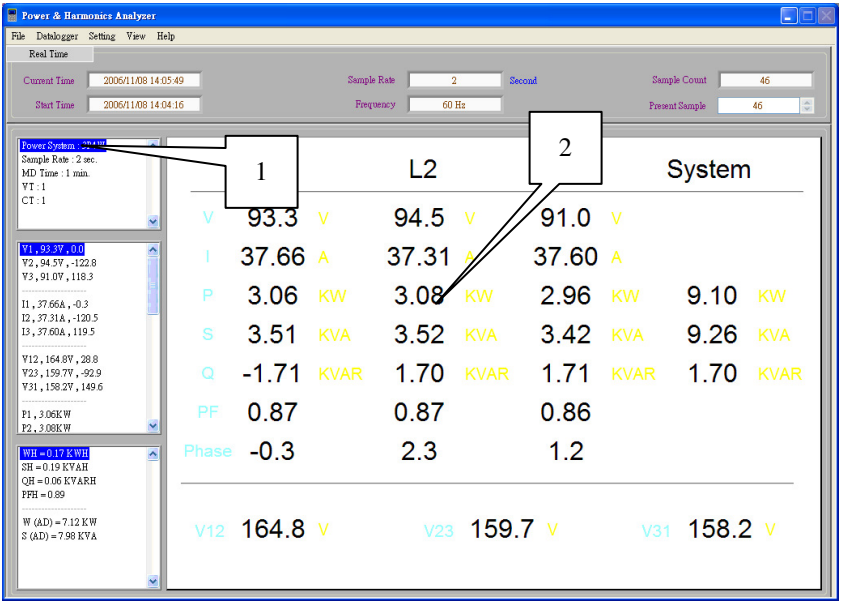
Users also can add a blank *.lng (e.g. Japan.lng) under system's installation path (C : \Program Files\Power & Harmonics Analyzer\data). Then, system will automatically search for the new language. But users need to compile the characters of Japan.lng file by themselves.



4. View

4.1 Power -> Meter

When Analyzer is turned to Power mode, Application Program will automatically turn to Power mode, too.



Remark :

1. Display the type of Power System.
2. Display the present measurement results.

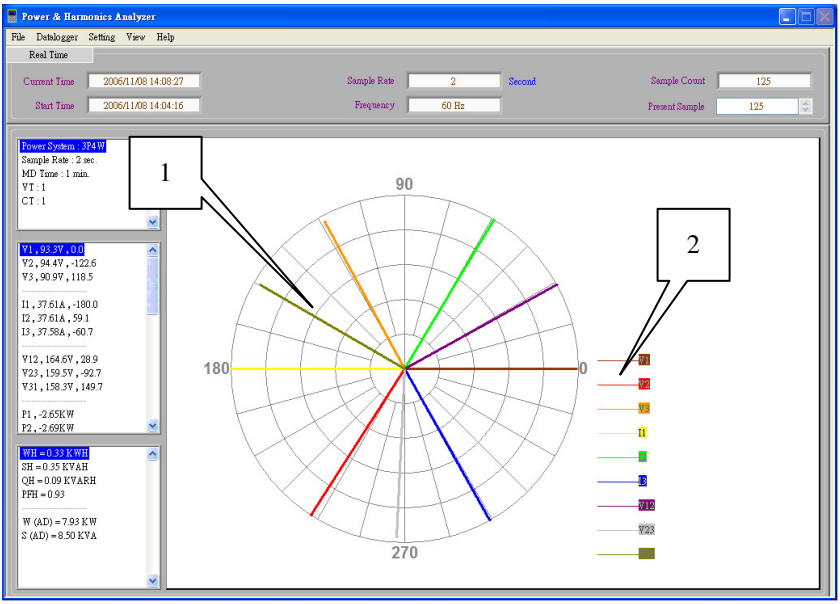
Note:

1 When Analyzer is turned to Power mode, users can select to observe measurement values, phasor diagram, or waveform, etc. When Analyzer is turned to Harmonics mode, users can select to observe waveform, harmonics, etc.

2. To enter or exit the Waveform mode, all the present logged data will be reset.

4.2 Power -> Phasor

Click Power -> Phasor, the present measurement results will be displayed as a phasor diagram.

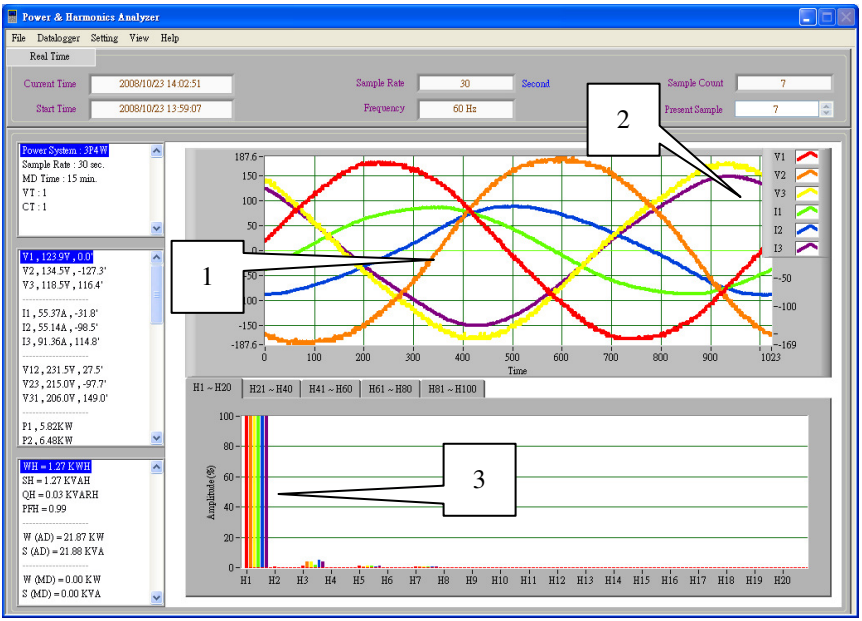


Remark :

1. Display a Phasor Diagram.
2. Inputs are represented by different colors.

4.3 Power -> Waveform

Click Power -> Waveform, the present measurement results will be displayed in graphs and histograms.

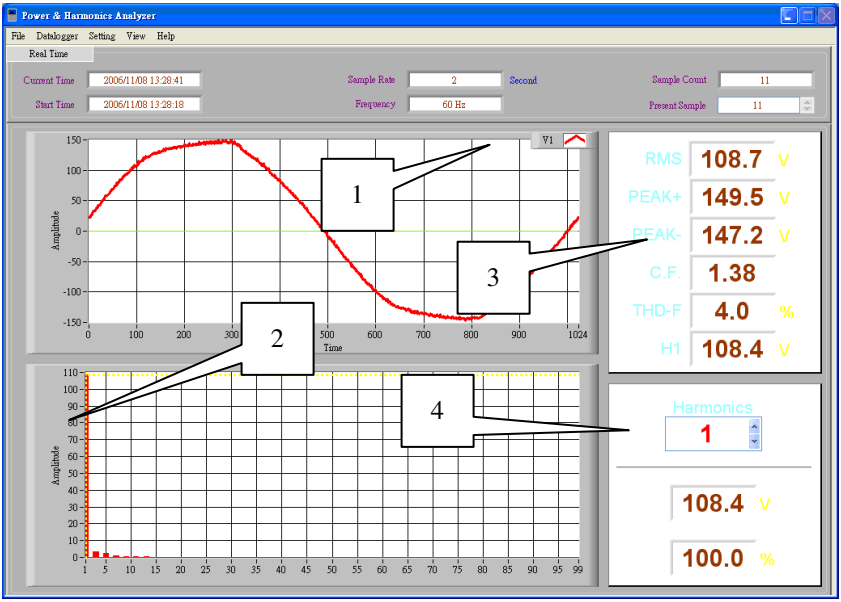


Remark:

1. Waveforms are displayed in graphs (a diagram of curves).
2. Tool to adjust the curve lines of Waveform. (This tool will disappear if the cursor is moved out of Waveform area.)
3. Harmonics are displayed in histogram.

4.4 Harmonic

When Analyzer is turned to Harmonics mode, Application Program will automatically turn to Harmonics mode, too.



Remark :

1. Present Measurement is for Input V1, I1, V2, I2, V3, I3. (Always use Analyzer to select the input you want to measurement.)
2. Bar graphs of 1~99th harmonics.
3. Measurement results: RMS, PEAK+, PEAK-, C.F. (Crest Factor), THD-F (Total Harmonics Distortion), H1 (Harmonics value).
4. Select the order of Harmonics. Cursor will move accordingly.

4.5 Operation Mode

There are several operation modes such as Real Time mode, History mode, File mode. To select the operation mode under “View”, then you can get into it.

Remark :

1. Real Time mode: real time display the present data.
2. History mode: observe history data and continue datalogging.
3. File mode: start/open a saved data.

Note:

When the operation is turned to File Mode, the Application Program will stop connecting (software to Analyzer) and datalogging.

4.6 View Reset

Click View -> Reset, all the present data will be reset and new data will be logged. And the mode will turn to Real Time.