Acuview User's Guide

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Accuenergy Corporation

Contents

Welcome to Acuview

Developed by Accuenergy Corporation, Acuview software is designed for the Acuvim-X, Acuvim-L, Acuvim II and Acuvim series power meters.

Acuview software provides user-friendly real time monitoring and data logging for energy saving and power quality analysis. This software is intended for users to monitor multiple parameters continuously, and allow users to monitor and maintain the meter in real-time.

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Getting started

1. New connection

A connection should be required first before communicating with the meter. To start adding, do one of the following:

    1) Before you enter the main window.

    or

    2) Click **Settings** > **Connection Manager**.

    or

    3) Click the icon .

The dialog box is shown as figure 1.
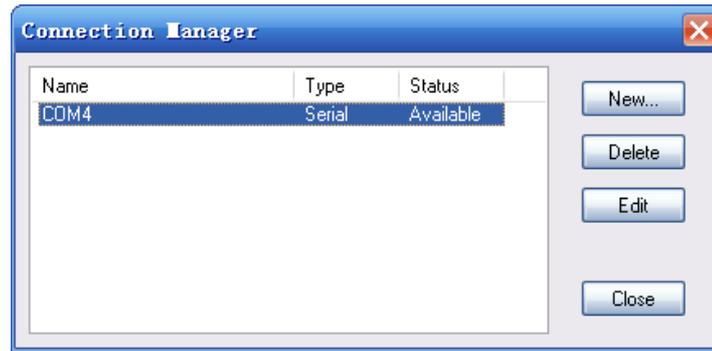
Figure 1: Connection manager

- **New:** Add a new connection.

- **Delete:** Delete the selected connection.

- **Edit:** Set the selected connection settings.

- **Close:** Close the window.

- **Status:** The 'Available' means **Com Port** opened or **network** connected, and 'Not Available' means **Com Port** unopened or **network** unconnected. If status is blank, it means that **Com Port** and **network** never be tested.

2. Connection settings

Then, set the connection parameters. The dialog box is shown as figure 2.
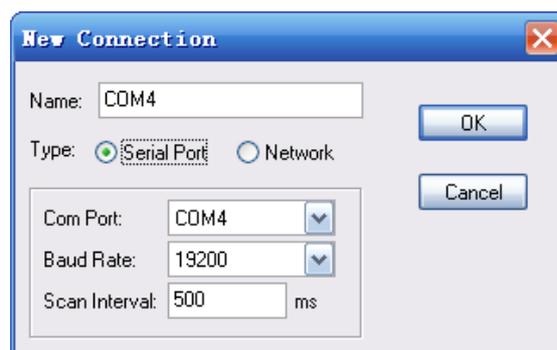
Figure 2: New connection

- **Name:** Specify a name easy to understand for the connection.

- **Type:** Select Serial Port with RS485; Select network with Modbus TCP gateway (for example: Acuvim II + AXM-net).

- **Com Port:** Select a serial port on a computer.
- **Baud Rate:** This should be the same as the meter setting.
- **Scan Interval:** This is used to adjust the time interval between two messages. (500ms or 1000ms is recommended.)

3. Add new device

After the above step, you need to select a device to communicate with. To add a new device, do one of the following:

1) Click **Operation** > **Add Device**.

or

2) Click the icon 🔀.

The dialog box is shown as figure 3.
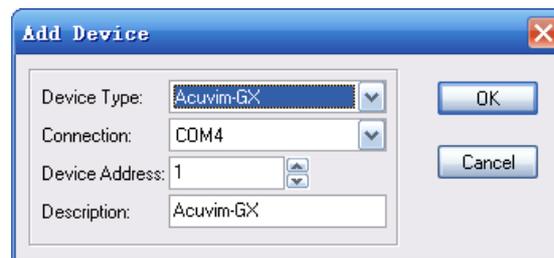
Figure 3: Add device

- **Device Type:** Model of the device you are going to communicate with.
- **Connection:** Select a connection to communication.
- **Device Address:** This should be same as the meter setting.
- **Description:** Indicates where the device is used such as XX line.

Notice: In the network mode, it needs to input device password when data or parameters related to meter are changed, such as **Update Device**, **Modify Energy Value** and **Reset Demands** and so on.

4. Connection

You can read all the measurements after you have correctly finished the steps. To connect, do one of the following:

📁① Click **Operation** > **Connect**.

or

📄① Click the icon 💡 .

or

📄① Press F9 on keyboard.

Notice：If you can't start communication normally, please make sure the device connection and the communication setting parameters are correct.

5. Getting help

For more information, do one of the following:

1) Click **Help** > **Help**.

or

2) Click the icon 📙 .

User interface

Main window
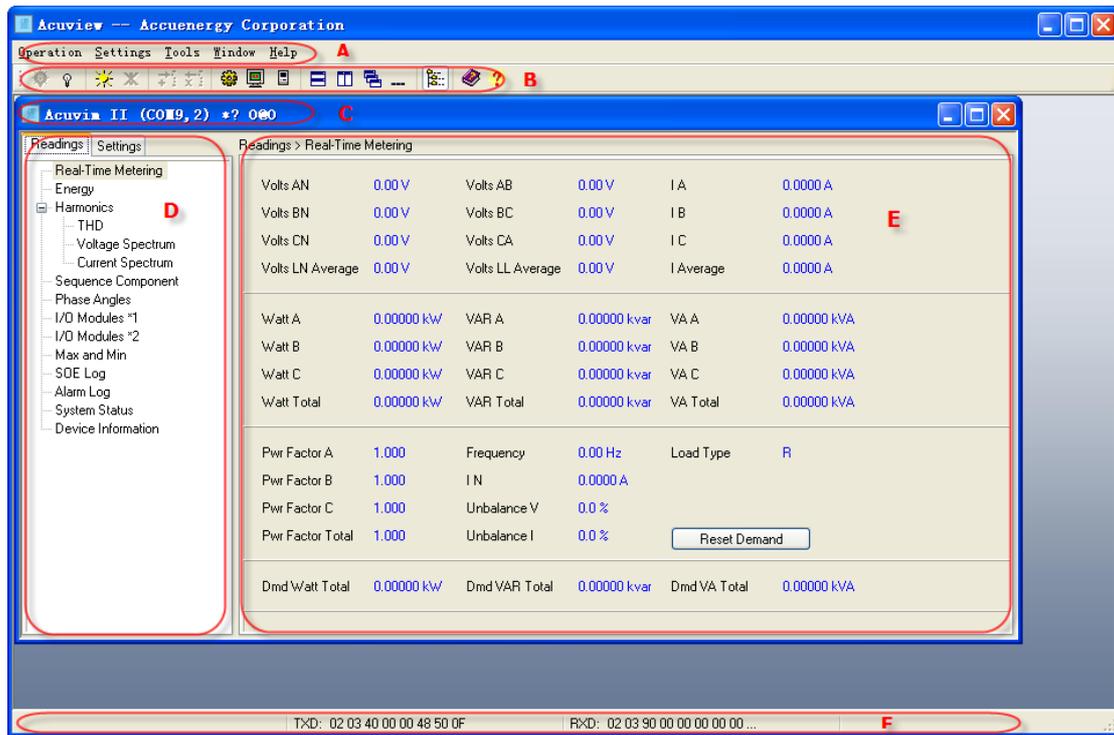
Figure 3: Main window

The main window includes a menu bar, a toolbar, workspace, a status bar. The workspace displays meter's windows. The status bar displays messages.

As shown in Figure 3, the following includes a description of all items:

A -- **Menu bar**

B -- **Toolbar**

C -- **Window title:**

Displays connection, device address, device description, connection status, etc

D -- **Tree browser:**

You can browse meter functions quickly.

E -- **Data area:**

Displays data related to meter function or available operation.

F -- **Communication:**

Displays sent/received messages, and also indicating communications errors in the monitoring state, which generally are numbers of devices in problem (not refreshing in time)

Main menu

The Main menu includes operation, settings, tools, window and help.

1. **Operation**
   - **Connect:** Connect device and read data and allow write command.
   - **Disconnect:** Disconnect device and stop data reading and disallow write command.
   - **Start Data Logging:** Start data logging, record data at setting time.
   - **Stop Data Logging:** Stop data logging, stop recording.
   - **Add Device:** Add a new device that is going to be connected.
   - **Delete Current Device:** Delete top window of current active device.
   - **Exit:** Quit the application.

2. **Settings**
   - **Connection Manager:** Manage connections and set connection parameters here.
   - **Data Log Settings:** Check and set data logging parameters of every device to be monitored.
   - **Device Properties:** Modify device address here.
   - **Text Size:** Set text size of data area.

3. **Tools**
   - **Import Device Profile:** Load the settings of current active device window from a device profile file.
   - **Export Device Profile:** The device profile of current active device window can be saved as a file.
   - **Import and Update Device:** Load and send all settings in current active device

window to meter.

- **Find Device:** Search on-line for Acuvim II in LAN.

4. **Window**

- **Tile Horizontally:** Rearrange all windows in tile horizontal mode.
- **Tile Vertically:** Rearrange all windows in tile vertical mode.
- **Cascade:** Rearrange all windows in cascade mode.
- **Minimize All:** Minimize all windows.
- **Multi-window Refresh:** Selected that permit multi-window at the same time to refresh the data; Unselected that only permit the current window to refresh the data.
- **Explorer Bar:** Show or hide the explorer bar.

5. **Help**

- **Help:** Display help document.
- **About:** Display version, copyright information.

Toolbar

Connect: Connect device and read data and allow write command.

Disconnect: Disconnect device and stop data reading and disallow write command.

Start Data Logging: Start data logging, record data at setting time.

Stop Data Logging: Stop data logging, stop recording.

Add Device: Add a new device that is going to be connected.

Delete Current Device: Delete top window of current active device.

Connection Manager: Manage connections and set connection parameters here.

Data log Settings: Check and set data logging parameters for every device that is to be monitored.

Device Properties: Modify device address here.

Text Size: Set text size of data area.

Tile Horizontally: Rearrange all windows in tile horizontal mode.

Tile Vertically: Rearrange all windows in tile vertical mode.

Cascade: Rearrange all windows in cascade mode.

Minimize All: Minimize all windows.

Explorer Bar: Show or hide the explorer bar.

Help: Display help document.

Functions

Basic monitoring

1. Add new connection. Refer to the New connection section.
2. Set connection parameters. Refer to the Connection settings section.
3. Add device window. Refer to the Add new device section.
4. Connect. Refer to the Connection section.
5. Click the node in tree browser on the left side, you can see measuring values. The content displayed in the device window may be different according to different device

types.

6. Click **Disconnect** menu or icon to stop whenever you want.

Add/Delete device

1. Add a new device. Refer to the Add new device section.

2. If there is an unused device window, select it and click **Device Properties** menu or icon, then make the device available.

3. If some windows may not be used any more, click **Delete Current Device** menu or icon.

Data Logging

1. Data logging settings

   You must set data log before you use this function. To set it, do one of the following:

   1) Click **Settings** > **Data Log Settings**.

   or

   2) Click the icon .

   The dialog box is shown as figure 4.
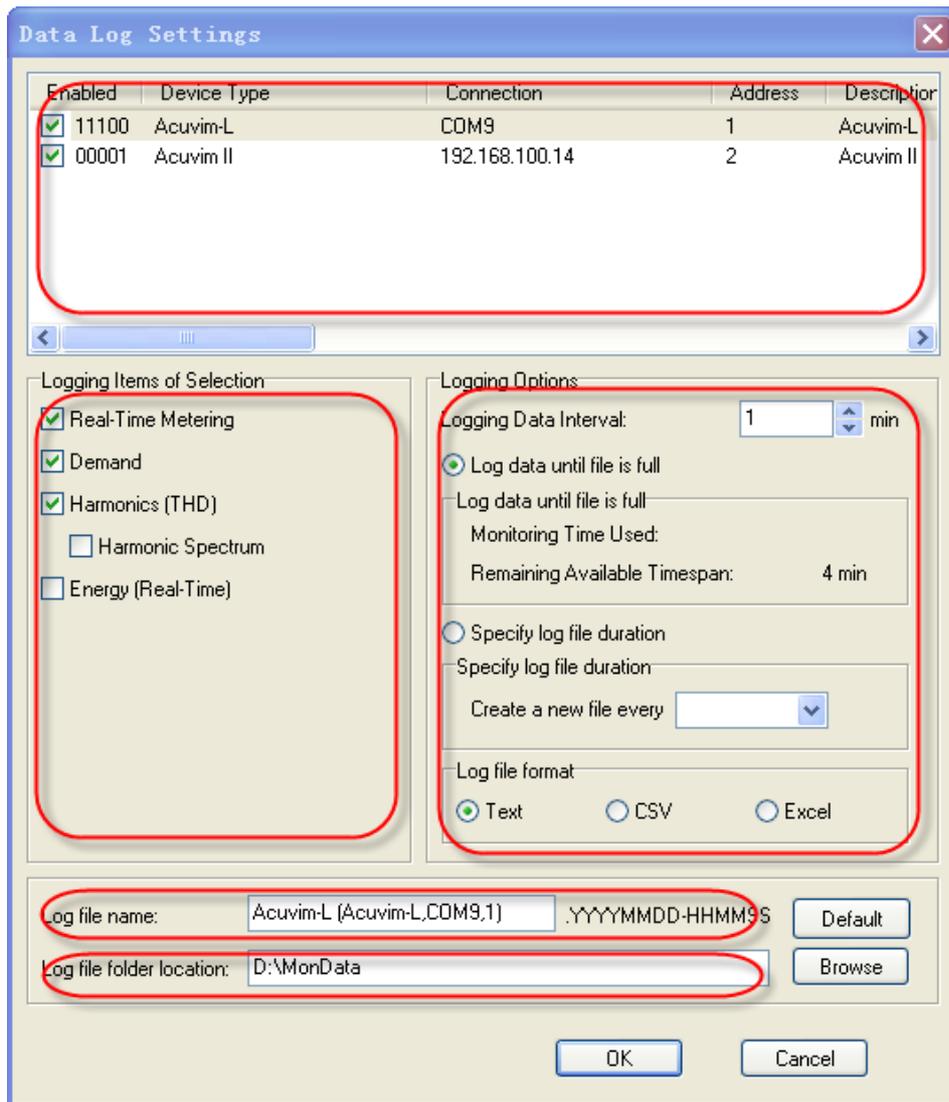
Figure 4: Data log settings

- **Device List:** Displaying all of those available device which are working in data logging mode. It also can enable or disable data logging of any device. Every list item displays the monitoring parameters of corresponding device.

- **Logging Items of Selection:** Select a list item, and then you can select one or more valid logging items of it.

- **Logging Options:** Select a list item, and then you can Set Monitoring Parameters for it .This option include 4 aspects about Logging data. At the same time, you can check out the information in monitoring process. The 4 aspects about data logging are introduced as following:

    1) **Logging Data Interval**: Set data logging interval which indicates how often to

store monitoring results

2) **Log data until file full**: The maximum rows number of data logging which log file can store is 64800.When the maximum number of records is reached, a new log file will be created to keeping storing monitoring data logging.

3) **Specify log file duration**：Set the time interval about when to create a new log file. When the time is reached, a new file will be created to keeping storing the monitoring records.

4) **Log file format**：Set format of log file. It can be .txt or .csv or .xls.

- **Log file name:** For user to set name of log file. If the name of Log file is blank, the default file name will be used. Click the [default] button to get default file name.

- **Log file folder location**: For user to set the file storage Path. If Log file folder location is blank, the default file folder location will be used. Click the [Brower] button to set file storage path.

Special Attention:

1) **Device List->** Enabled

2) **Logging Items of Selection**

3) **Logging Options**

4) **Log file name**

5) **Log file folder location**

Must set all of the above monitoring parameters for **each monitoring device** in the device list.

---

2. Now connect, and pause for 5 second. Then click the **Start Data Logging** menu or icon to enable this function.

3. Click the **Stop Data Logging** menu or icon to stop this function as required.

4. **View and analyze data**

Try to find data logging files in the Log file folder location. There is a folder called

MonData in the installation directions where all data logging files are stored by default. By default, each file name consists of the device description、device type、port or IP(in the network mode)、device address and data logging starts time which format is YYYYMMDD-HHMMSS (Year, Month, Day, Hour, Minute, Second). And make sure to according to following rules before you open any Excel file:

<div style="border:1px solid black">

Special Attention:

Never double click any EXCEL files (inc. monitoring data files) on your computer when data logging is active, otherwise it may cause software to become unstable and potentially produce inaccurate results (such as out-of-order and loss of data, etc.).

The correct options to open the objective files are:

1. Click **Start** > **Program** > **Microsoft Office** > **Microsoft Office Excel** to open the Excel application. When the main window of Excel is open, click **File** > **Open** and choose the objective files in the dialog box.

or

2. Copy the objective files to another computer and open them.

</div>

5. **Data Log file**

After you open a data log file of excel format, you can see the following items:

- Real-Time: Real-Time Metering

- Demand: Demand

- Energy: Real-Time Energy

- THD: THD

- VHS: Voltage Spectrum

- IHS: Current Spectrum

When saved as .txt and .CSV, contents of the files are the same as excel files. But there is an difference that is each sheet of Excel will be saved as a separate text or CSV document.

All parameters in the table are shown as following:

● Real-Time								
Time	Record Time	ULL	Volts	LL	PC	Watt C	SC	VA C

			Average			
FREQ	Frequency	IA	I A	P	Watt Total	S	VA Total
UA	Volts AN	IB	I B	QA	VAR A	PFA	Pwr Factor A
UB	Volts BN	IC	I C	QB	VAR B	PFB	Pwr Factor B
UC	Volts CN	I	I Average	QC	VAR C	PFC	Pwr Factor C
ULN	Volts LN Average	IN	I N	Q	VAR Total	PF	Pwr Factor Total
UAB	Volts AB	PA	Watt A	SA	VA A	U_UNBL	Unbalance V
UBC	Volts BC	PB	Watt B	SB	VA B	I_UNBL	Unbalance I
UCA	Volts CA						

● Demand

Time	Record Time	QC_IMP	Delivered VAR C	IA	I A
PA_IMP	Delivered Watt A	QA_EXP	Received VAR A	IB	I B
PB_IMP	Delivered Watt B	QB_EXP	Received VAR B	IC	I C
PC_IMP	Delivered Watt C	QC_EXP	Received VAR C	I	I Average
PA_EXP	Received Watt A	P_IMP	Delivered Watt Total	P_IMP_PRED	Pred. Del. Watt Total
PB_EXP	Received Watt B	P_EXP	Received Watt Total	P_EXP_PRED	Pred. Rec. Watt Total
PC_EXP	Received Watt C	Q_IMP	Delivered VAR Total	Q_IMP_PRED	Pred. Del. VAR Total
QA_IMP	Delivered VAR A	Q_EXP	Received VAR Total	Q_EXP_PRED	Pred. Rec. VAR Total
QB_IMP	Delivered VAR B	S	VA Total	S_PRED	Pred. VA Total

● Energy

EP_IMP	Ep_imp	EQ_EXP	Eq_exp	EP_net	Ep_net
EP_EXP	Ep_exp	ES	Es	EQ_TOTAL	Eq_total
EQ_IMP	Eq_imp	EP_TOTAL	Ep_total	EQ_net	Eq_net

● THD

UA_THD	THD Volts AN/AB	UA_CF	Crest Factor V A	IB_ETHD	Even THD I B
UB_THD	THD Volts BN/BC	UA_THFF	THFF V A	IB_KF	K Factor I B
UC_THD	THD Volts CN/CA	IA_OTHD	Odd THD I A	UC_OTHD	Odd THD V C
U_THD	THD Volts Average	IA_ETHD	Even THD I A	UC_ETHD	Even THD V C
IA_THD	THD I A	IA_KF	K Factor I A	UC_CF	Crest Factor V C
IB_THD	THD I B	UB_OTHD	Odd THD V B	UC_THFF	THFF V C
IC_THD	THD I C	UB_ETHD	Even THD V B	IC_OTHD	Odd THD I C
I_THD	THD I Average	UB_CF	Crest Factor V B	IC_ETHD	Even THD I C
UA_OTHD	Odd THD V A	UB_THFF	THFF V B	IC_KF	K Factor I C
UA_ETHD	Even THD V A	IB_OTHD	Odd THD I B		

● VHS							
UA_H2 UA_H3 UA_H4 ... UA_H31	2nd~31st Harmonic V A	UB_H2 UB_H3 UB_H4 ... UB_H31	2nd~31st Harmonic V B	UC_H2 UC_H3 UC_H4 ... UC_H31	2nd~31st Harmonic V C		

● IHS							
IA_H2 IA_H3 IA_H4 ... IA_H31	2nd~31st Harmonic I A	IB_H2 IB_H3 IB_H4 ... IB_H31	2nd~31st Harmonic I B	IC_H2 IC_H3 IC_H4 ... IC_H31	2nd~31st Harmonic I C		

Import/Export device profile

1. You can import device profiles for current active device window very easily. If you simply want to check the content of the imported profile, be sure to disconnect first, so that you do not update to the meter's current settings. If you want to send the imported profile to device, follow these steps:

   1) Connect first.

   2) Click **Tools** > **Import and Update Device**, select the file you want.

2. You can store the settings of the current window to a file via **Export Device Profile**.

Acuvim-X series

Acuvim-X series includes Acuvim-DX (TOU), Acuvim-EX (PQ), Acuvim-FX (Alarm), Acuvim-GX (All).

A Comparison of Acuvim-X series is shown in table 1.

Table 1: Comparison of Acuvim-X series

Functions			DX	EX	FX	GX
Real-Time Metering			√	√	√	√
Digital I/O			√	√	√	√
Demand			√	√	√	√
Harmonics	THD	*Total*		√	√	√
		Phases		√		√
	Voltage Spectrum			√		√
	Current Spectrum			√		√

Feature						
Sequence Component				√	√	√
Phase Angles				√	√	√
Energy	Real-Time		√	√	√	√
	Current Month TOU		√			√
	Prior Month TOU		√			√
	Cumulative TOU		√			√
	Frozen	Real-Time	√			√
		Current Month TOU	√			√
		Cumulative TOU	√			√
Max and Min	Current			√	√	√
	Prior			√	√	√
Voltage Eligibility Ratio	Daily			√		√
	Monthly			√		√
	Yearly			√		√
	Cumulative			√		√
	Frozen			√		√
SOE Log					√	√
Alarm Log				√	√	√
Waveform Log					√	√
Trending Log					√	√
System Status	*Alarm*			√	√	√
	SOE, Waveform, Trending				√	√
	TOU Schedules Settings		√			√
	Device Run-Time		√	√	√	√
Device Information			√	√	√	√
General Settings			√	√	√	√
Digital I/O Settings			√	√	√	√
Demand Settings			√	√	√	√
Energy Settings			√			√
TOU Schedules Settings			√			√
Alarm Settings	*Alarm Settings*			√	√	√
	Waveform Settings				√	√
Voltage Eligibility Ratio Settings				√		√
Other Settings	*Max and Min Recording Mode*			√	√	√
	Trending Settings				√	√

We have used Acuvim-GX (All) as the example to introduce some of the functions. In order to entirely understand the abilities of the software, please ***thoroughly*** read the Acuvim-X series user's manual.

Readings

1. **Digital I/O**

   To control the relay, please click the related **Control** button.

2. **Demand**

   If you want to synchronize demand calculation of all the devices on the bus, please click **Synchronize Demand** button.

3. **Voltage Spectrum, Current Spectrum**

The A in figure 5 means there's no display when harmonics are 0%.
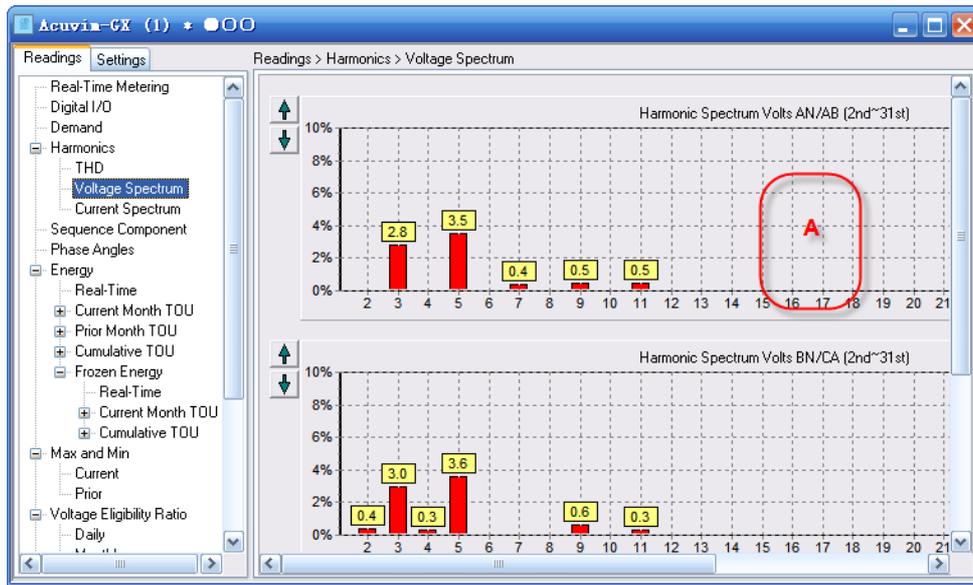
Figure 5: Voltage spectrum

4. Sequence Component

Φuaia is the angle between I A and V A. The broken-line circle on the outside indicates 100% of full range.
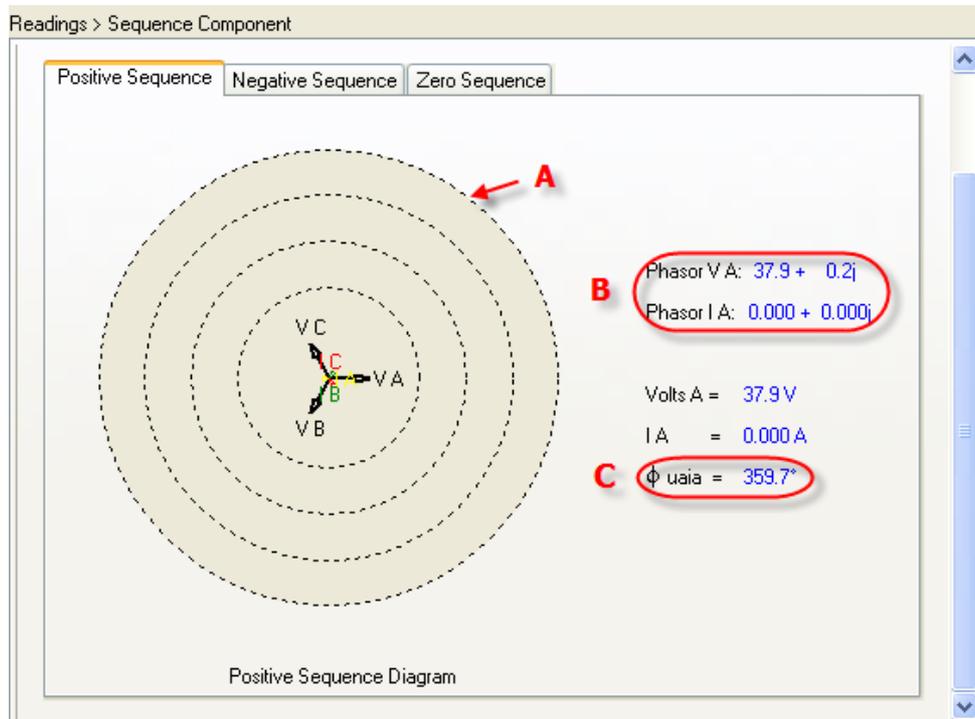

Figure 6: Positive sequence

As shown in Figure 6, the following includes a description of all items:

A -- Full range indicator

B -- Vector expression

C -- Angle between I A and V A

5. Real-Time Energy, Current Month TOU, Cumulative TOU

You can modify the value of energy by clicking <u>underlined</u> characters.
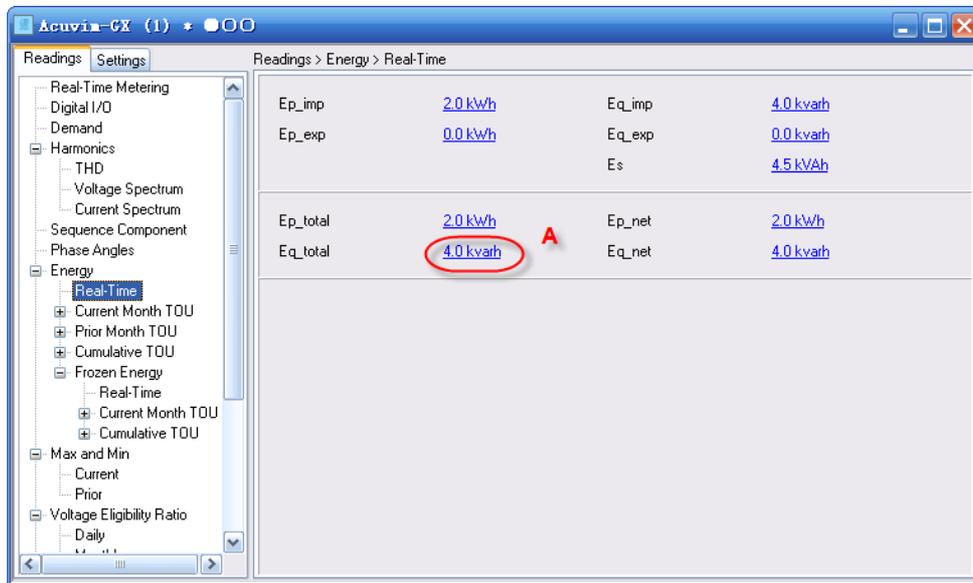
Figure 7: Real-time energy
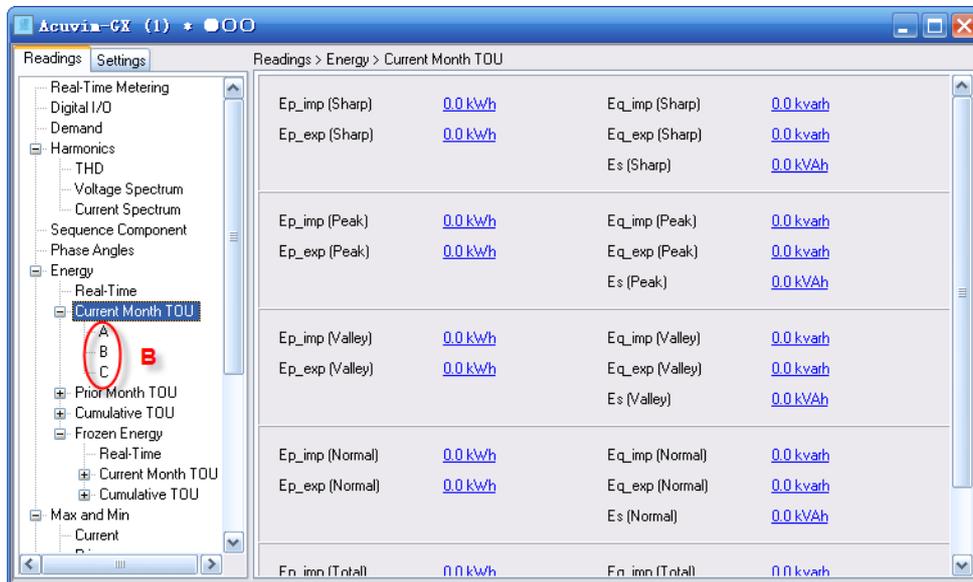
Figure 8: Current month TOU

As shown in figure 7 and figure 8, the following includes a description of all items:

A — You can modify energy value by clicking characters.

B -- You can check current month TOU of all phases by clicking characters.

6. Prior Month TOU

As shown in figure 9, the A has pointed out the billing time of prior month on the Prior

Month TOU node in the browser tree.
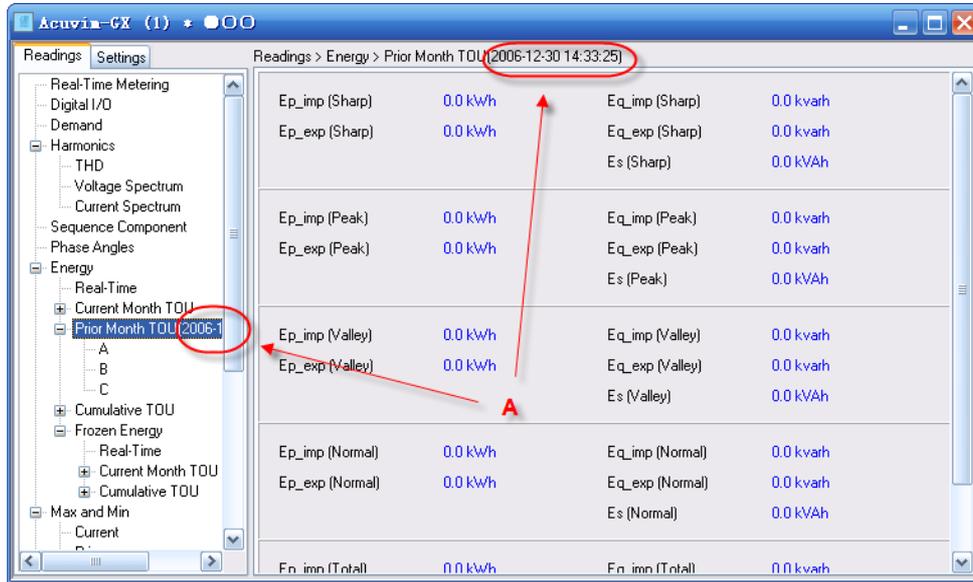
Figure 9: Prior month TOU

7. Frozen Energy

As shown in figure 10, the time displayed on the Frozen Energy node in the browser

tree is the time of freezing real-time energy, current month TOU and accumulative TOU.
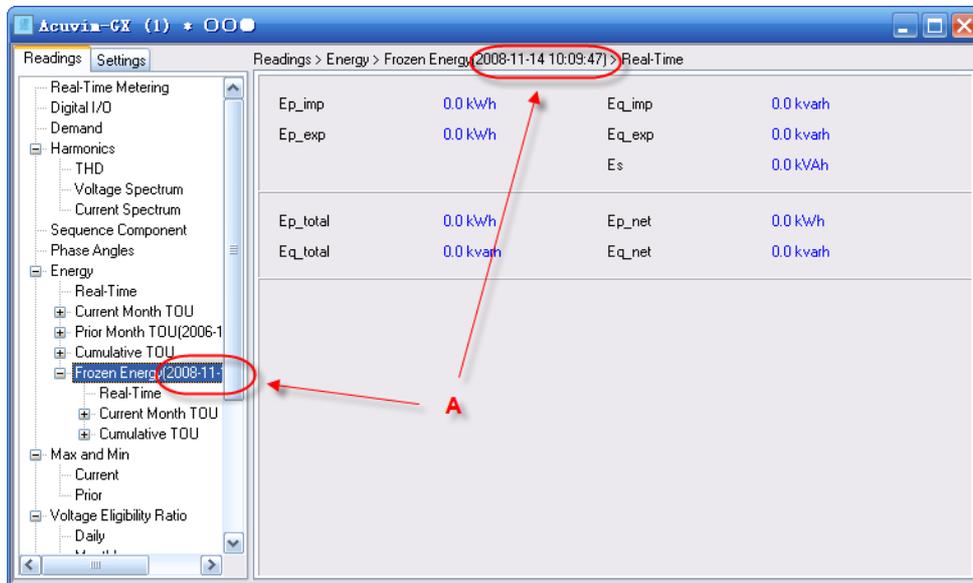
Figure 10: Frozen energy

8. Prior Max and Min

As shown in figure 11, the time displayed on the Prior node in the browser tree is the

time of recording Prior Max and Min.
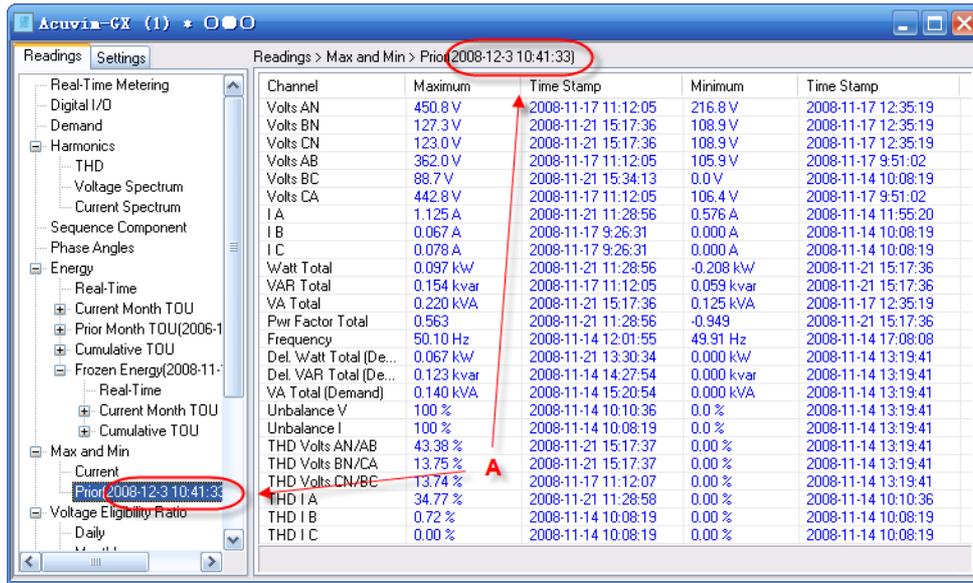
Figure 11: Prior Max and Min

9. Frozen Voltage Eligibility Ratio

As shown in figure 12, the time displayed on the Frozen node in the browser tree is the time of freezing voltage eligibility ratio.
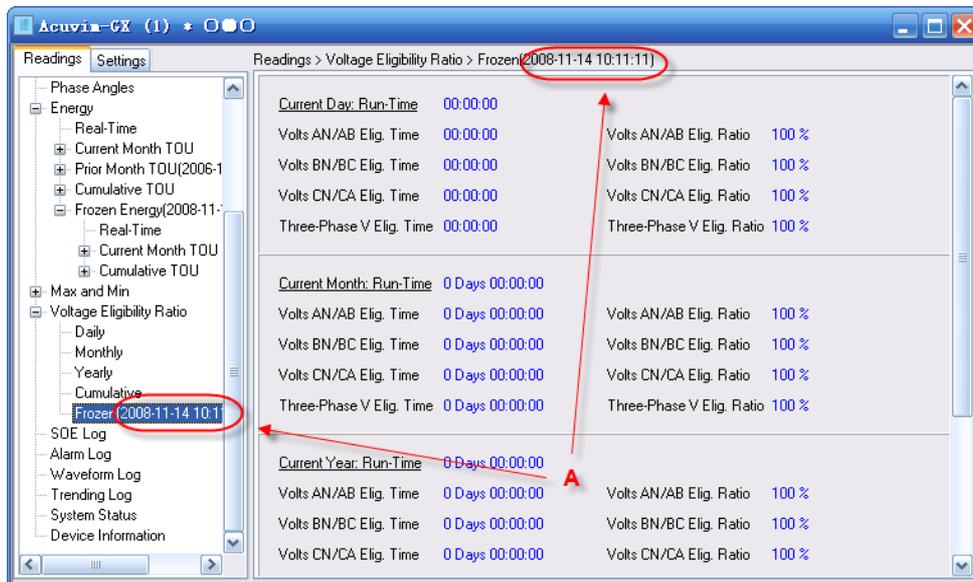
Figure 12: Frozen voltage eligibility ratio

10. Waveform Log

There are two kinds of situation in waveform log:

1) Click the **Retrieve Waveform** button to read the data corresponding to the selected item, and the Data column will not be empty after your reading. It will then draw a waveform graph automatically.
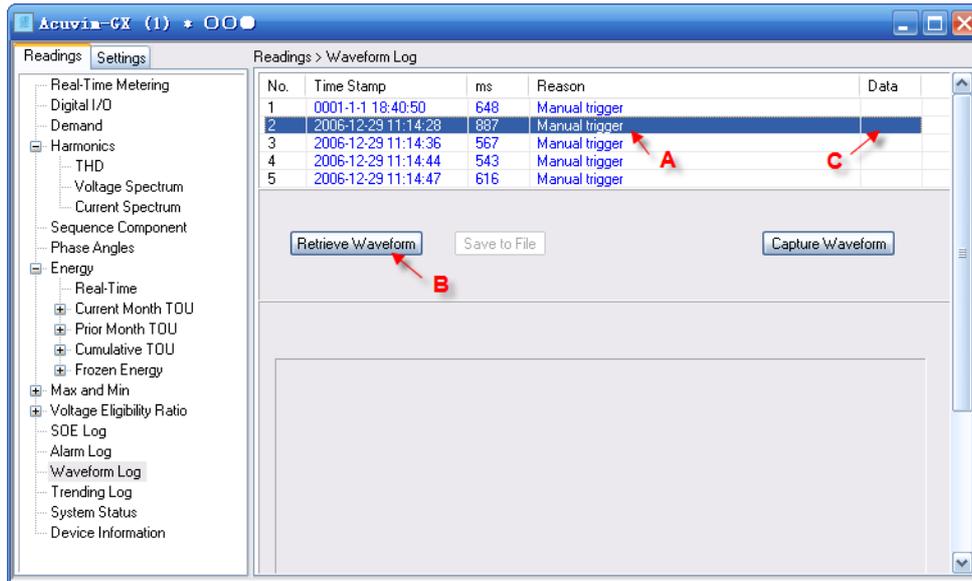
Figure 13: Waveform log (1)

As shown in figure 13, the following includes a description of all items:

A -- Step 1: Select an item to read.

B — Step 2: Click the **Retrieve Waveform** button.

C -- The Data column will not be empty after reading.

or

2) You may select an item whose data is not empty, then its waveform will be displayed as shown in figure 14. The A means to click an item with data.
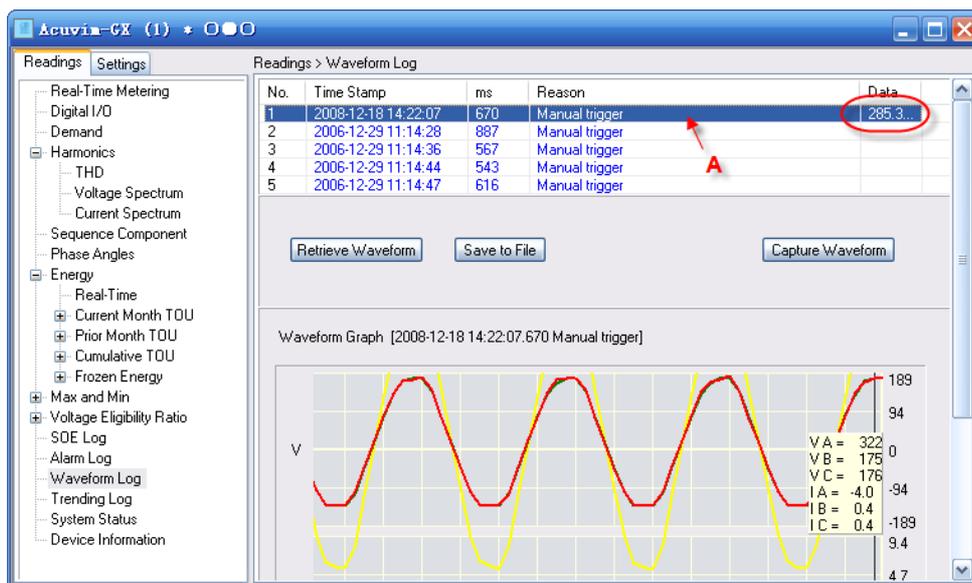
Figure 14: Waveform log (2)

Click the **Save to File** button, then you can save the data of selected items as an

Text/CSV/Excel file, for later analysis.

In typical waveform as is shown in figure 15, the following includes a description of all items:

A -- Capture time and reason

B -- Capture time when capturing condition is satisfied

C -- Values on current time stamp

D -- Movable time label
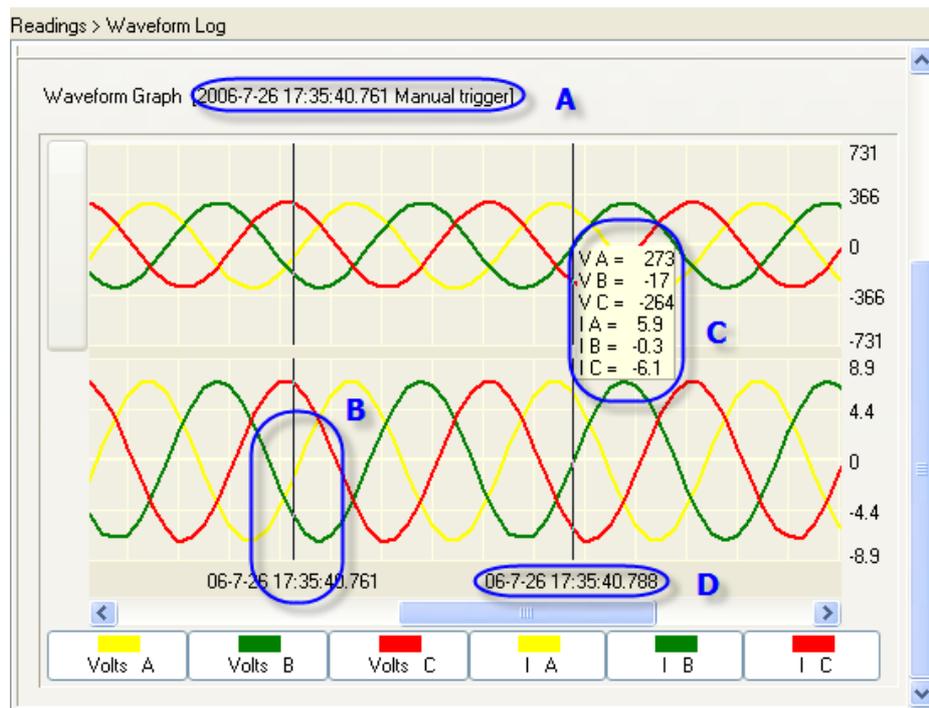
Figure 15: Waveform graph

11. Trending Log

You can read current trending data by clicking the **Retrieve Trending** button. It will draw a trending graph automatically after reading. Then click the **Save to File** button, and the data will be saved in an Text/CSV/Excel file for later analysis.
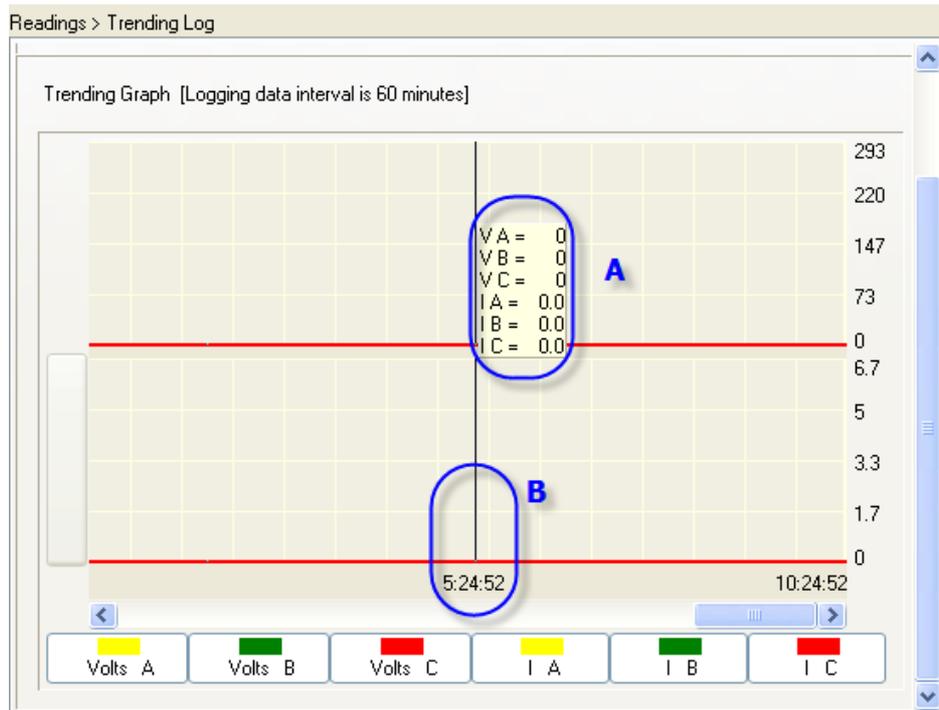
Figure 16: Trending graph

In typical trending as shown in figure 16, the following includes a description of all items:

A -- Logging data interval

B -- Movable time label

C -- Values on current time stamp

12. System Status
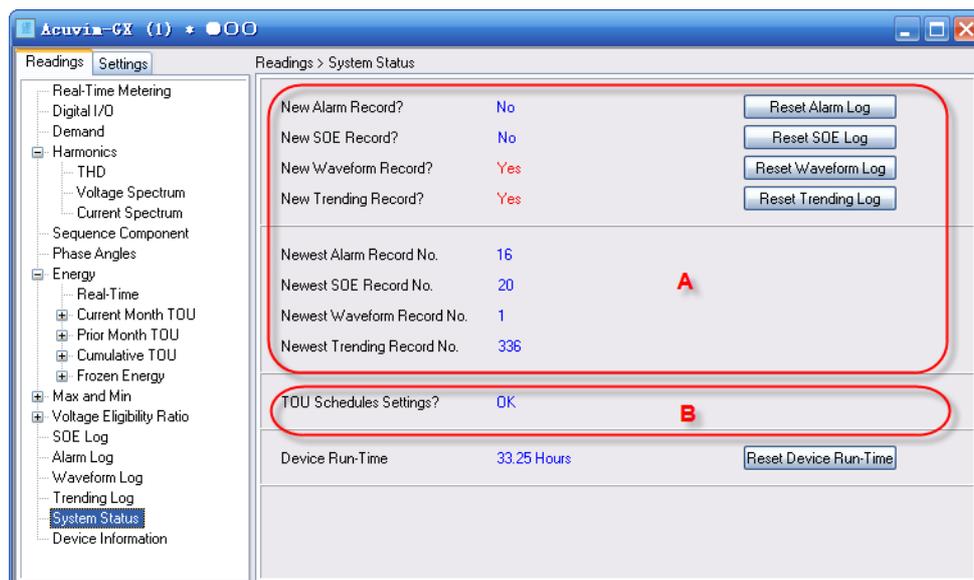
Figure 17: System status

As shown in figure 17, the following includes a description of all items:

A — Important parameters used in reading data automatically

B -- Important feedback information used in TOU settings

Settings

1. **Digital I/O**

   Don't forget to select the type of RO or DO when it is used as alarm output.
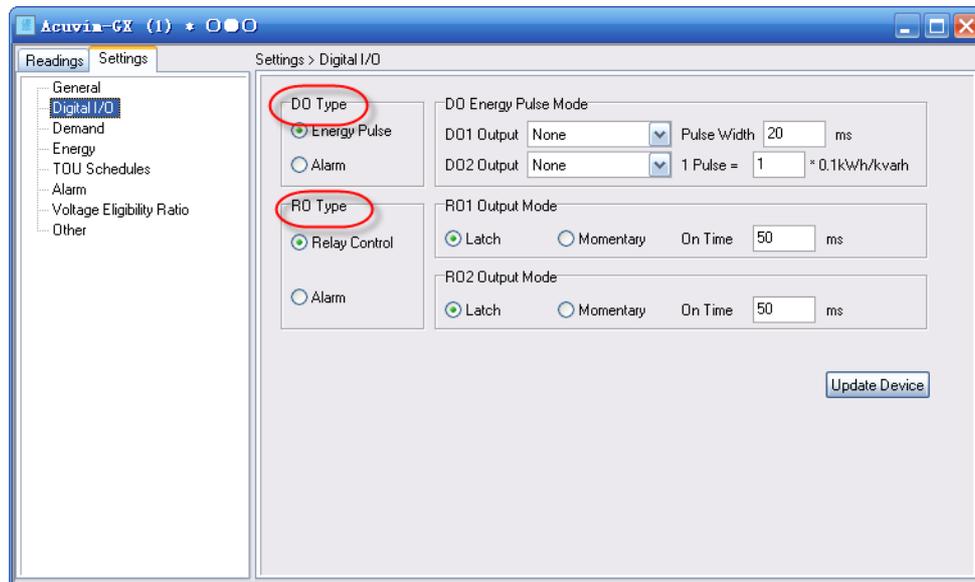
Figure 18: Digital I/O settings

2. **Energy**

   Notice: When you click **Reset Real-Time Energy**, **Start Resetting TOU**, **Start Freezing** and **Restore TOU Schedules to Defaults** buttons, it will take effect at once without having to click the **Update Device** button.

3. **Alarm**

   Notice: When you set the Set point of alarm limit, there is are no units for them. All units are displayed in Alarm Channel.
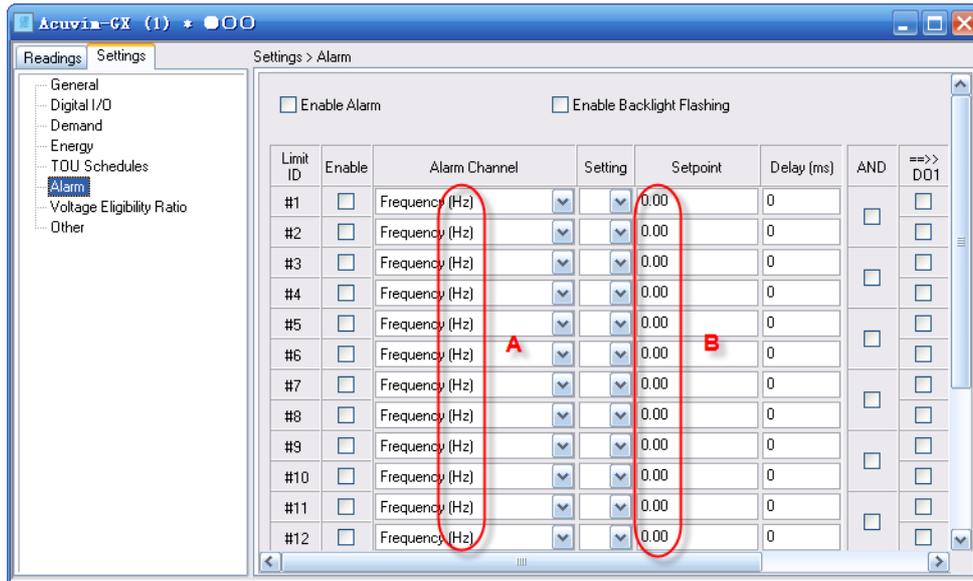
Figure 19: Alarm settings

As shown in figure 19, the following includes a description of all items:

A -- Unit of Alarm Channel

B — Value without unit

4. Voltage Eligibility Ratio

Notice: When clicking **Start Resetting TPVER** and **Start Freezing TPVER** button, it will take effect at once without having to click the **Update Device** button.

Acuvim-L series

Here we introduce some of the functions of Acuvim-CL. In order to understand the software abilities, please ***thoroughly*** read the user's manual of the Acuvim-L series.

Readings

1. Voltage Spectrum, Current Spectrum

The A in figure 24 means there is no display when harmonics are 0%.
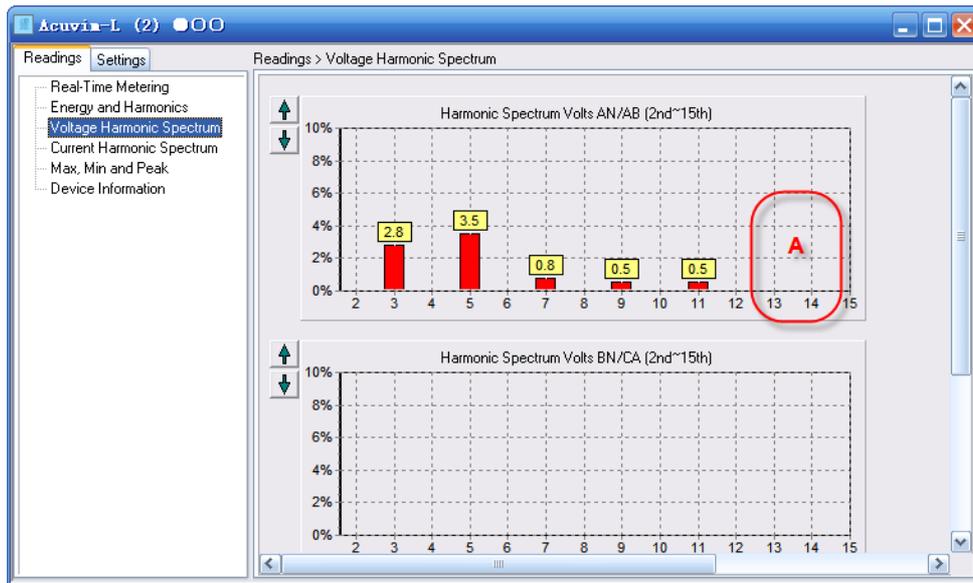
Figure 20: Voltage spectrum

2. Energy and Harmonics

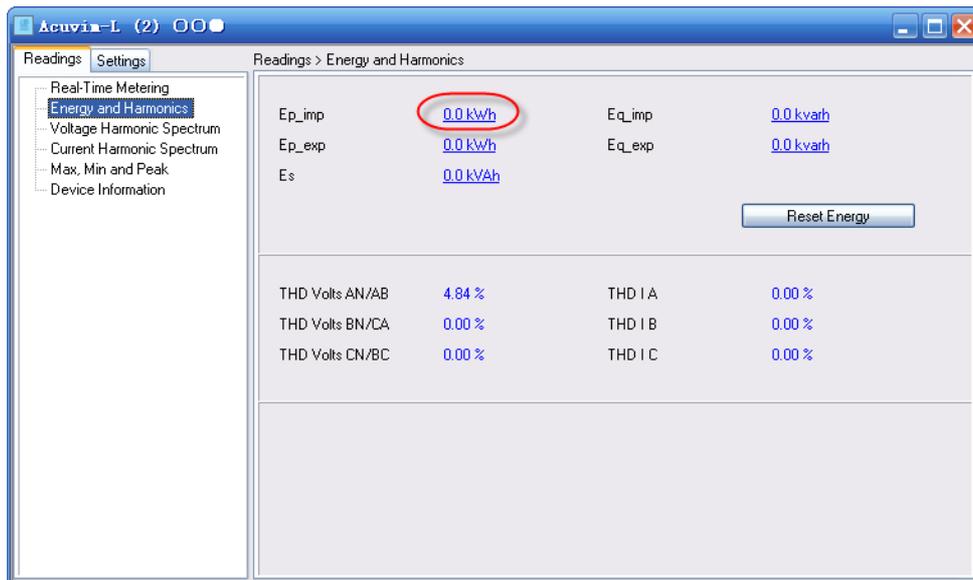You can modify the value of energy by clicking underlined characters .

Figure 21: Energy and Harmonics

Acuvim II

Here we introduce some of the functions of the Acuvim II. In order to understand the software abilities, please ***thoroughly*** read the user's manual of the Acuvim II.

Readings

1. Energy

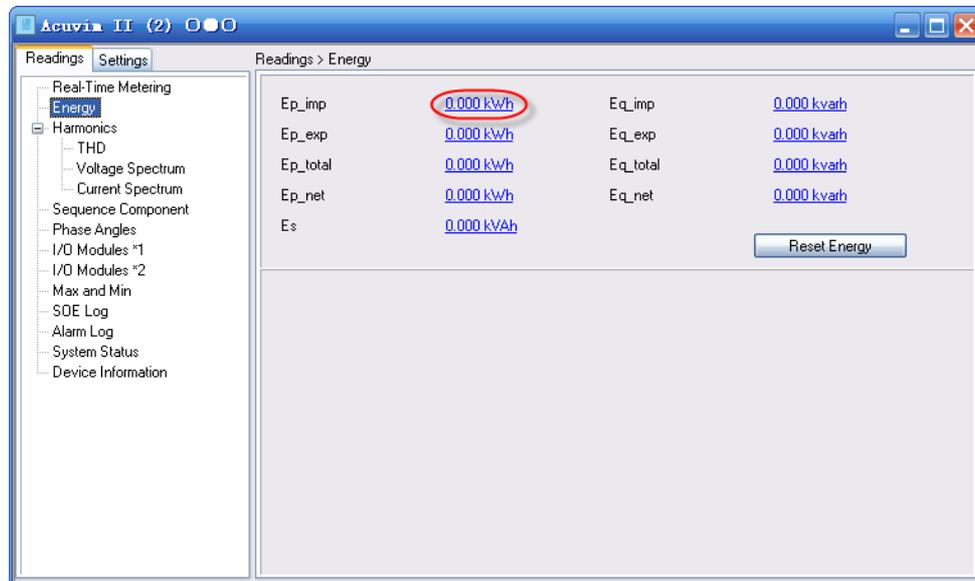You can modify the value of energy by clicking <u>underlined</u> characters.

Figure 22: Energy

2. Voltage Spectrum, Current Spectrum

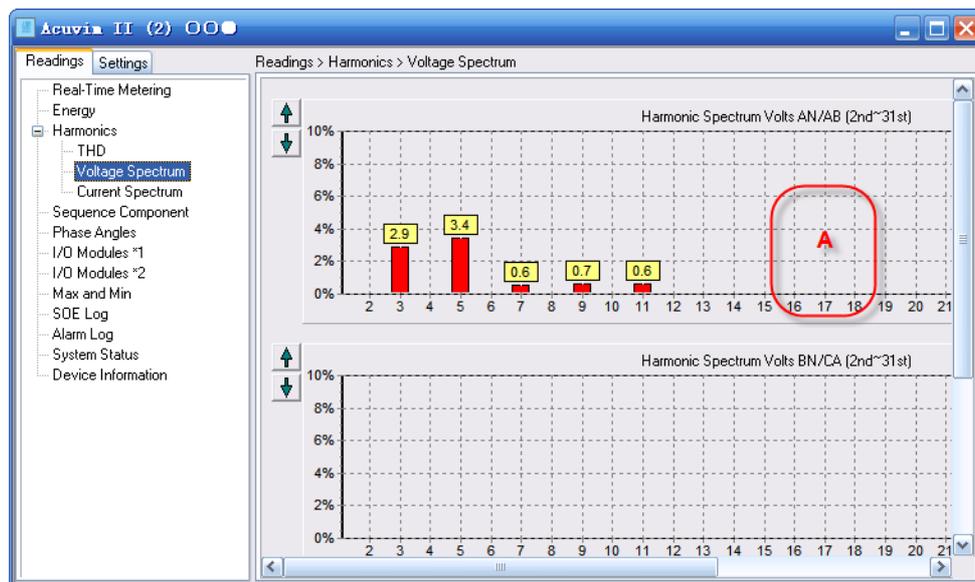The A in figure 23 means there is no display when harmonics are 0%.

Figure 23: Voltage spectrum

3. Sequence Component

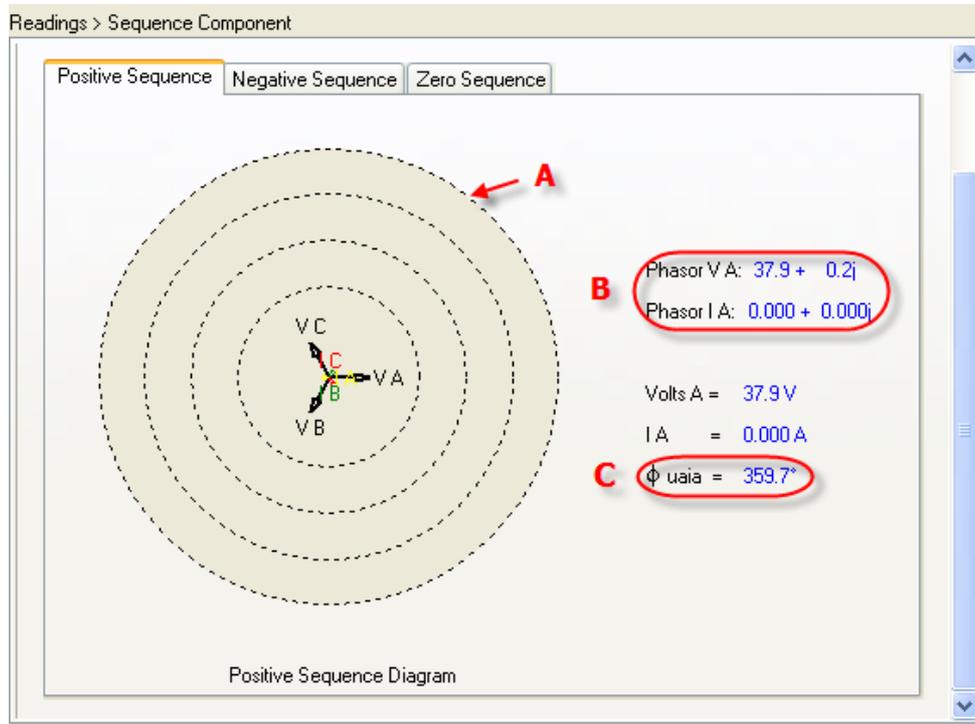Φuaia is the angle between I A and V A. The broken-line circle on the outside indicates 100% of full range.

Figure 24: Positive sequence

As shown in Figure 24, the following includes a description of all items:

A -- Full range indicator

B -- Vector expression

C -- Angle between I A and V A

4. I/O Modules

As shown in Figure 25, AO parameters are shown as real value, and AI parameters show as numerical value (range: 0~4095).

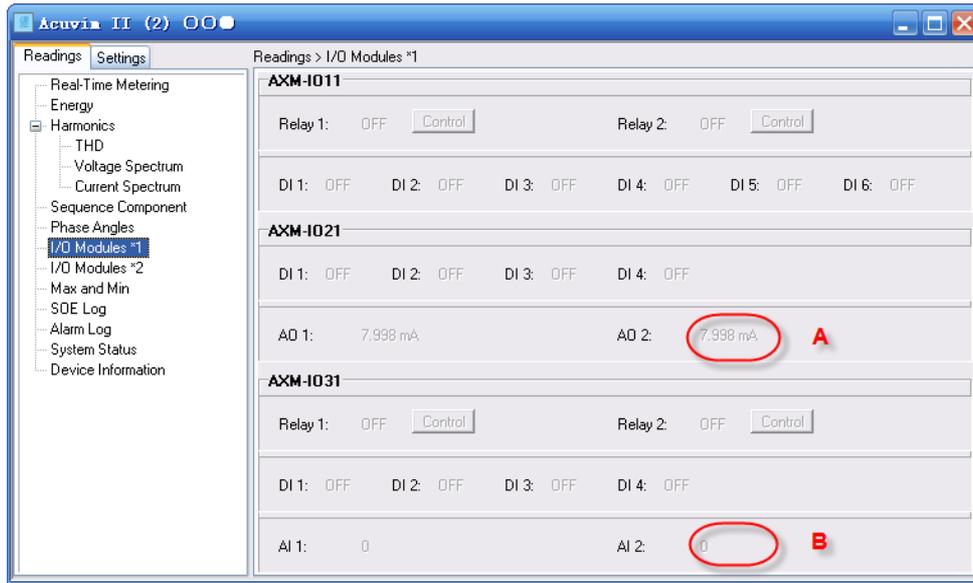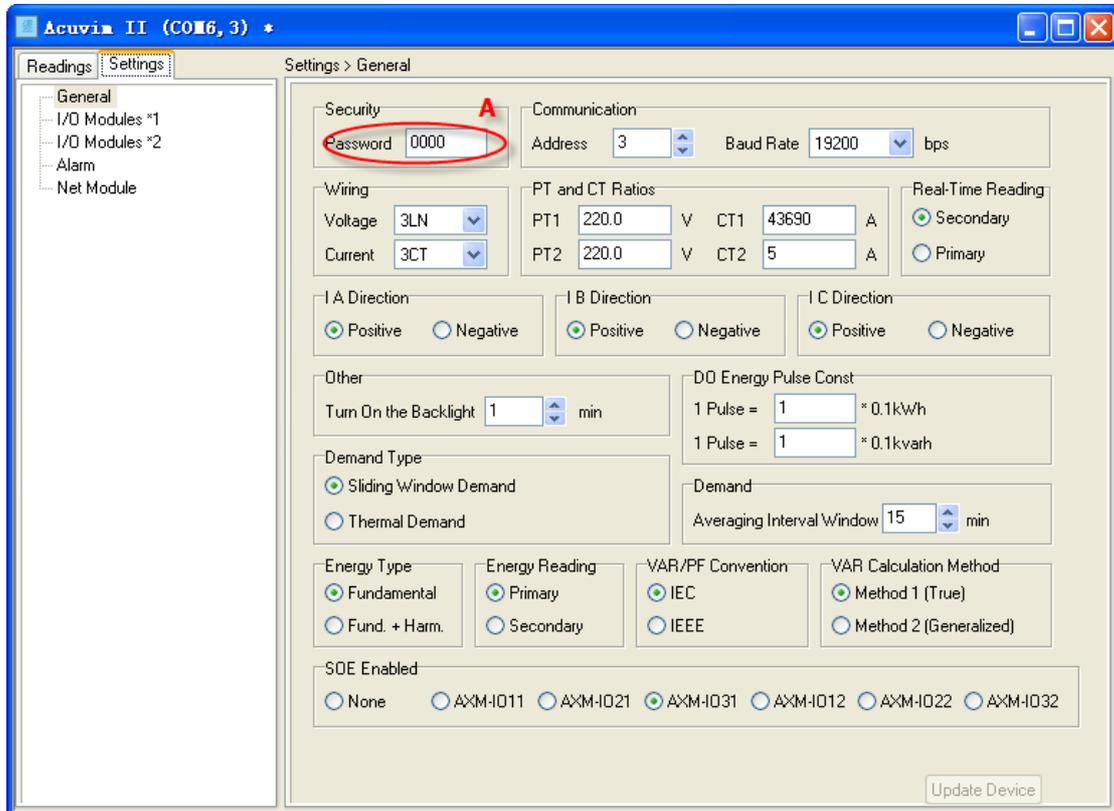Figure 25: I/O Modules

Settings
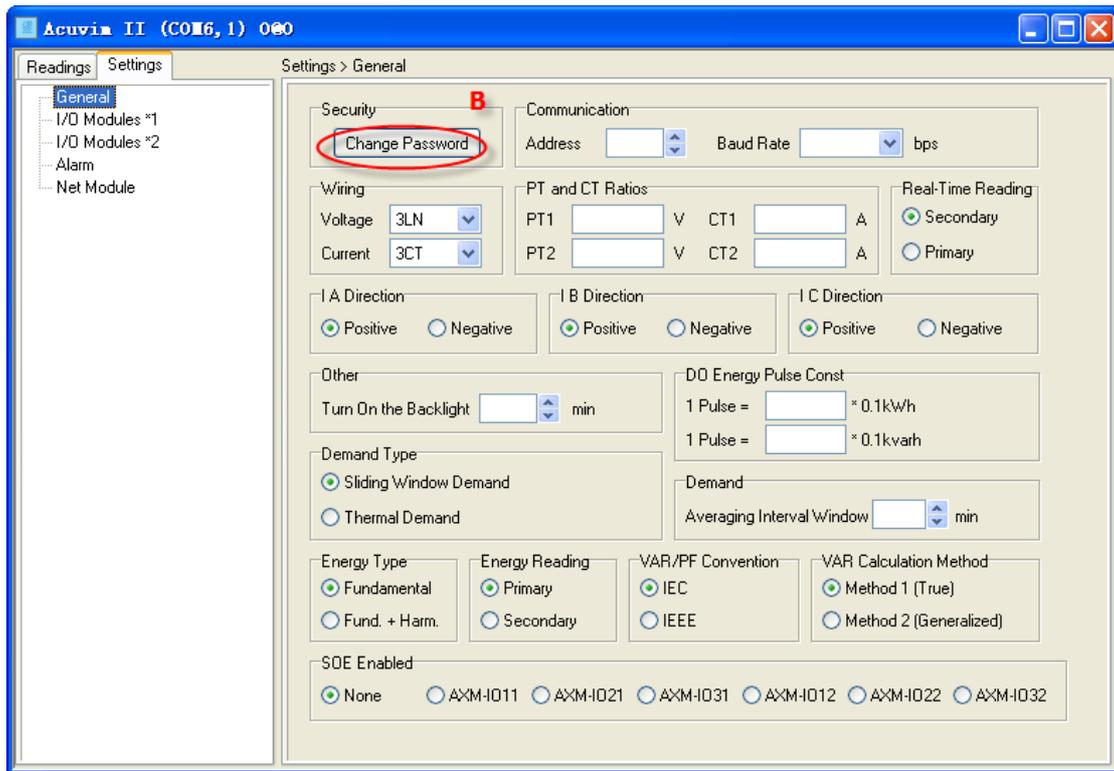
1. General

Figure 26:General settings (serial mode)

Figure 27:General settings (network mode)

Figure 28:Change Password

A — As shown in figure 26, **in the serial mode,** Password is visible and displays with decimal number.

B — As shown in figure 27, **in the network mode,** Password is not visible and instead of decimal number, it is displayed as '*' . Click the **Change Password** button, then there will pop-up **Changing password** window which is as shown in figure 28.

2. Alarm

Notice: When you set the Set point of the alarm limit, there are no units for them. All units are displayed in the Alarm Channel.
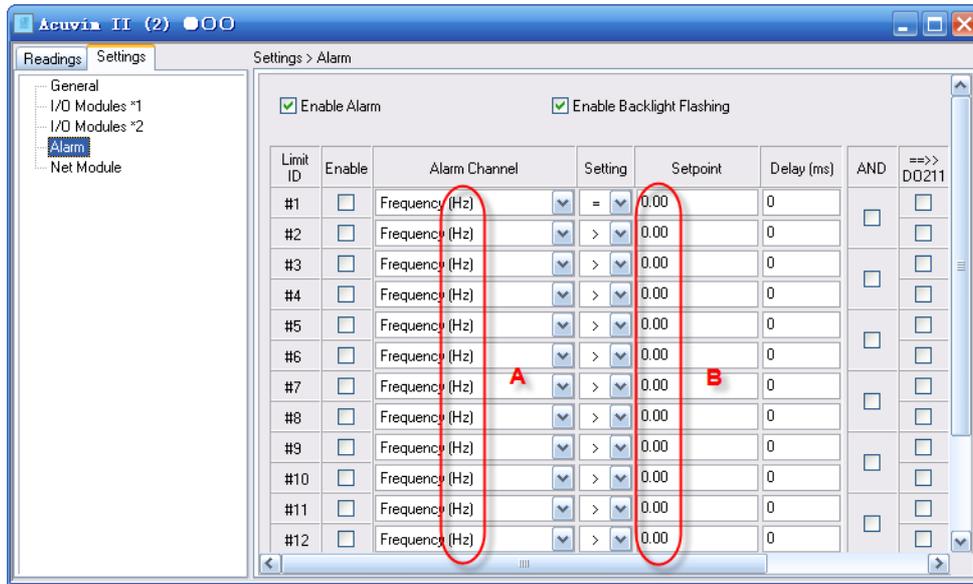
Figure 29: Alarm settings

As shown in figure 29, the following includes a description of all items:

A -- Unit of Alarm Channel

B -- Value without unit

Acuvim series

Here we introduce some of the functions of the Acuvim+. In order to understand the software abilities, please ***thoroughly*** read the user's manual of the Acuvim.

Readings

1. **Energy**

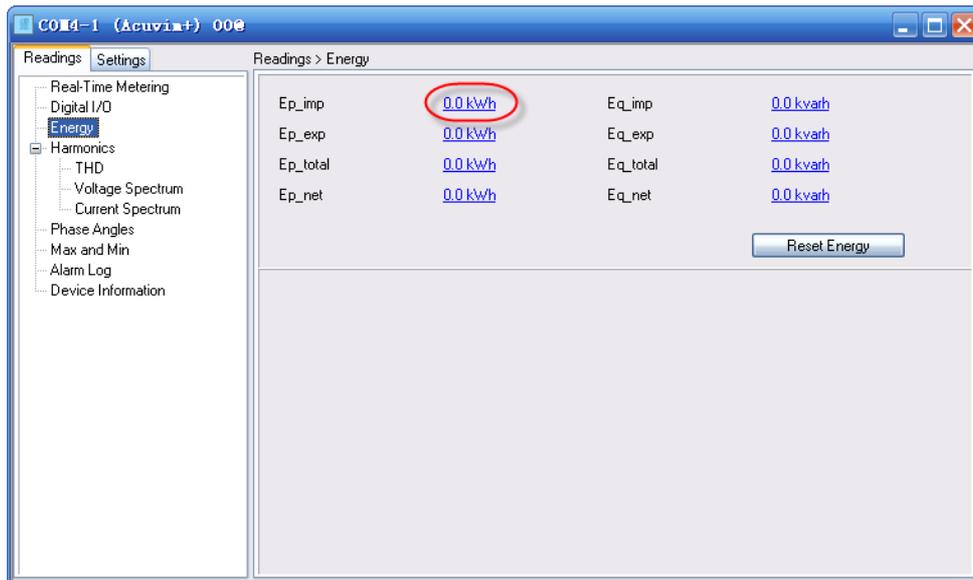You can modify the value of energy by clicking underlined characters.

Figure 30: Energy

2. Voltage Spectrum, Current Spectrum

The A in figure 31 means there is no display when harmonics are 0%.
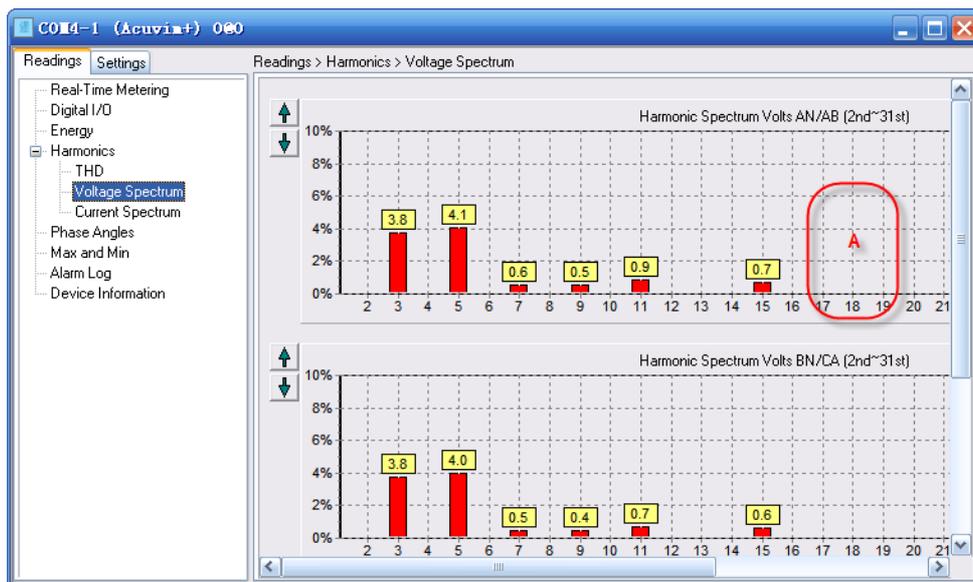

Figure 31: Voltage spectrum

Settings

1. Alarm

Notice: When you set the Set point of the alarm limit, there are no units for them. All units are displayed in the Alarm Channel.
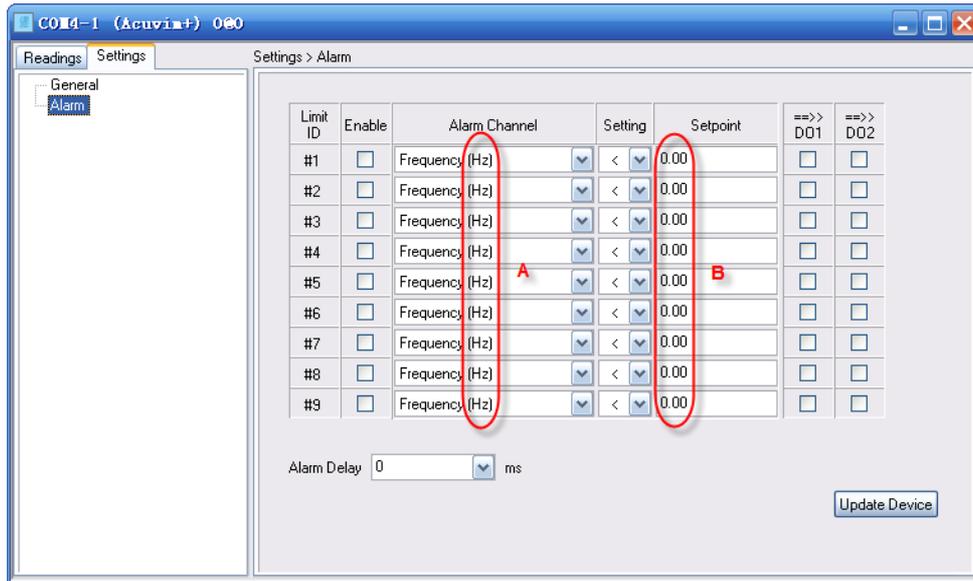
Figure 32: Alarm settings

As shown in figure 32, the following includes a description of all items:

A -- Unit of Alarm Channel

B -- Value without unit

Troubleshooting

1. Why is the drop-down list of the Com Port in Connection Settings dialog empty?

   Answer: Because the program has not detected any available serial port, please check if there are any idle.

2. Why is there no new waveform in the list after I clicked Capture Waveform button?

   Answer: Because the waveform buffer is full. Make sure that the current 5 waveforms are not being used, and clear them in the System Status page by clicking Reset Waveform Log button.

3. Why are there inconsistencies between the displaying value and the real value of voltage and current?

   Answer: This may be caused by incorrect settings of the PT and/or CT ratios, please check the General Settings page.

4. How can I know whether the settings of TOU are right and taking effect?

　　Answer: Firstly, check out whether the feedback information of TOU settings in the System Status page is correct. If correct, then check whether related TOU settings are enabled. Lastly, check whether there is any change in the Current Month TOU page.

5. Does Start Freezing mean to freeze at once?

　　Answer: Yes. But if you want to go back to Assign freeze mode after clicking the Start Freezing button, you have to set it again.

6. Can I change the number of device windows tiled display it?

　　Answer: You can change the configuration file **MaxMDIChildCount** key values. But displays the window more, the software occupied the more system resources.

7. Under what conditions, can I use the data summary table function?

　　Answer: In the Data Log Settings, you must ensure that each **Logging Options** and **Log file folder location** in the device list are the same.

Installation

1. **Installing**

   Double click setup file, follow the guide step by step.

   Notice: Allowed to install software to a different directory (up to 8).

2. **Uninstalling**

   To remove this program from your system:

   a) Open the Windows Control Panel, double-click Add/Remove Programs.

   b) Find the application name in the list and select it.

   c) Follow the instructions in the Uninstall Wizard step by step.

3. System Requirement

The minimum running requirements of Acuview software:

a) Operating System: Windows 2000/XP/Vista/Windows 7.

b) Memory: 128MB/256MB or more.

c) HDD: 100MB/500MB or more free space.

d) Display Resolution: 1024 * 768 or higher.

e) Need to pre-installed software: Microsoft Office Excel 2000/XP/2003/2007.

Notice: If Excel Application is not installed in the system, files can't be saved as Excel document when using the data logging function.